iPRO-RC™ Series

Banknote Recycler Unit Assembly

Operation and Maintenance Manual

(Revision 4)

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REVISION HISTORY		
Rev №.	**Date**	**Reason for Update**
A	**6/06/12**	**Initial Version**
1	**12/30/13**	**Changed Specifications, DIP Switch Settings, Parts List, Copyright**
2	**9/16/15**	**Updated Product Descriptions, Parts Lists**
3	**2/7/18**	**Updated Product Descriptions in Section 1 and updated Parts Lists in Section 7**
4	**Jan. 29, 2021**	**Re-designed Cover, updated Product Descriptions and Specifications in Section 1, updated Technical Contact Information in Section 1 and 3, and updated Parts Lists in Section 7**
	Aug.24, 2021	**Updated Parts Lists in Section 7.**
	Oct. 29, 2021	**Added the UKCA mark to the International Compliance. Added "Australia Office" to JCM American in Oceania in Section 1 and Section 3.**
	Apr. 26, 2022	**Updated Parts Lists in Section 7.**

International Compliance

- RoHS Directive or or or or
- UL & c-UL Marks **File No. E142330**
- CE Mark
- UKCA Mark
- CB Scheme **JPULA-04222 (IEC 60950-1), JP-22215-UL (IEC 62368-1),**
- FCC Directive

This device complies with part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

FCC CAUTION
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
— Reorient or relocate the receiving antenna.
— Increase the separation between the equipment and receiver.
— Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
— Consult the dealer or an experienced radio/TV technician for help.

Electrical Current Symbol

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

The JCM Website for patents is: http://www.jcm-hq.co.jp/english/patents/

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Section 1

1 GENERAL INFORMATION

Description

This section provides a general overview of the iPRO-RC™ Series Banknote Recycler Unit Assembly (iPRO-RC) pictured in Figure 1-1. This first section is designed to help you navigate through this guide with ease, and provides the following information:

- iPRO-RC Unit Assembly
- Product Descriptions
- Precautions
- Preventive Maintenance
- Primary Features
- Component Names
- Specifications
- Unit Dimensions
- Technical Contact Information

In order to make operation of this device easier and make navigation within this manual simpler, the following illustrations were used within the text:

- **Safety Instructions,** which need to be observed in order to protect the operators and equipment, have been written in **Bold** text and have been given the following pictographs:
- **Special *Notes,*** which affect the use of the Banknote Recycler have been written in *italic* text and have been given the pictograph:
- **Steps,** requiring the operator to perform specific actions are given sequential numbers (1., 2., 3., etc).

iPRO-RC Unit Assembly

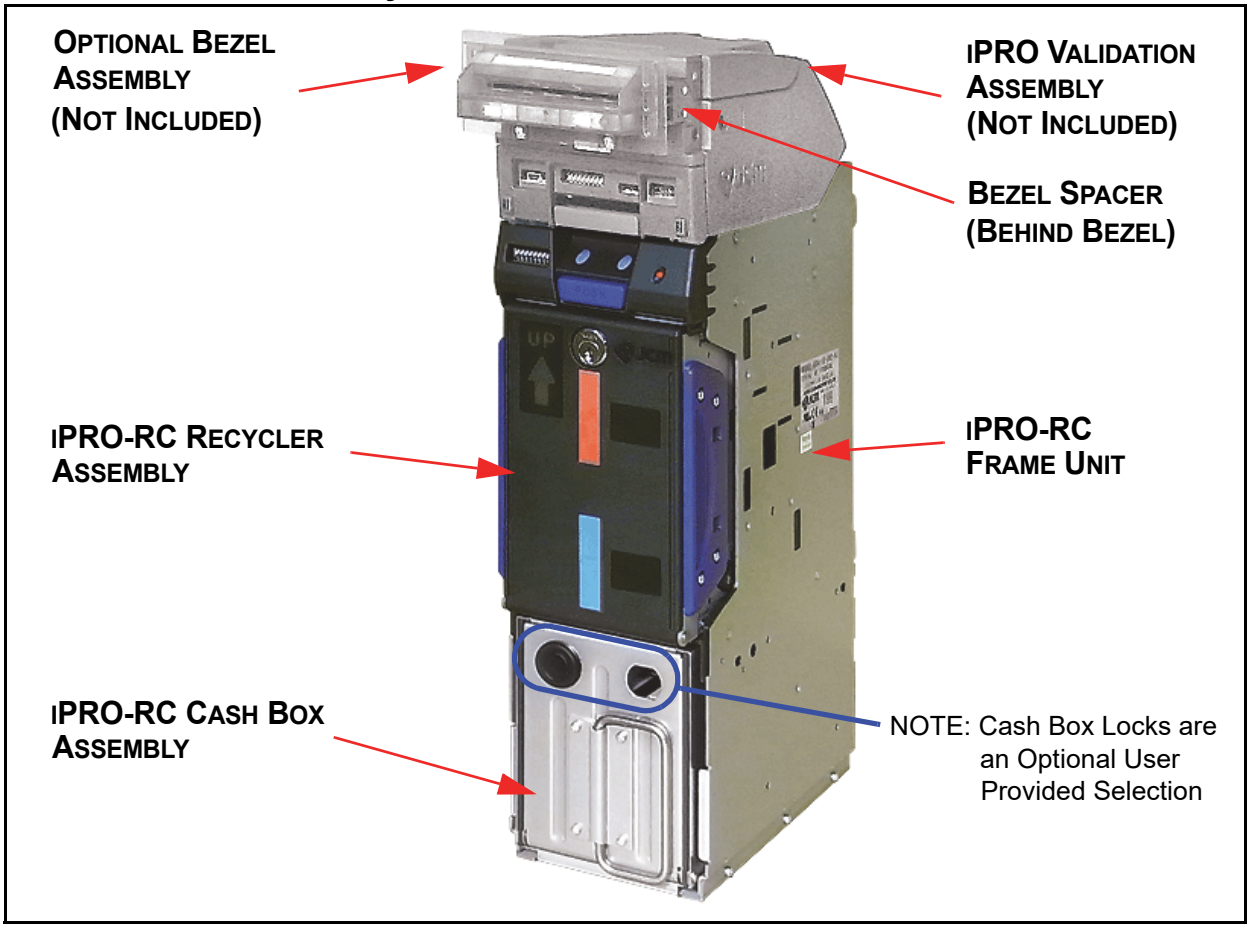


Figure 1-1 iPRO-RC Unit Assembly

Product Descriptions

Model Descriptions

Table 1-1 lists the Product Model Number descriptions.

Table 1-1 iPRO-RC Model Number Specifications

No.	Model: iPRO - * 0 * - * * * - RC No. (1) (2)(3)(4)(5)(6)(7) (8)
(1)	Product Series Name
(2)	Validation Sensor 1 = Standard (World Wide) 2 = World Wide Type 2
(3)	CPU Circuit Board 0 = Standard
(4)	Transport Unit Type 0 = Standard (World Wide) 1 = Reserved 2 = Reserved 3 = Asia Commercial Model (with the new material "UVH" Belt)
(5)	Option Unit (Input Section) none = Standard
(6)	Cash Box Type SH2 = WBA-SH2 Box, Meta, Horizontal Down (82mm Specification) SS = Large Cash Box, Plastic, Vertical Down
(7)	Cash Box Access None = Front Access (Standard)
(8)	Recycler Function RC = Recyclable

Type Descriptions for SH2-RC

Table 1-2 lists the Product Type Number Descriptions for the iPRO-RC with the SH2 Box.

Table 1-2 iPRO-*0*-SH2-RC Type Specifications

No.	Type: 4 0 0 - * 0 - 0 * 1 * * * * * * * * * * No. (1,2,3) (4,5) (6,7,8,9,10,11,12,13,14,15,16,17)
(1)	Cash Box Capacity 4 = 400 Notes (New Banknote)
(2)	Cash Box Type 0 = Standard
(3)	Cash Box Handle 0 = Standard
(4)	Transport Section 0 = Standard 1 = OEM 2 = Asia Commercial (with the new material "UVH" Belt and the Scraper) 3 = Asia Commercial for OEM (with the new material "UVH" Belt and the Scraper)
(5)	Transport Cover 0 = Standard (Black)
(6)	Optional Bezel* (Cannot be boxed together) 0 = None (Fixed)) *NOTE: The iPRO-RC Unit cannot be shipped with a Bezel installed on or packaged in the same box. Refer to "iPRO-RC Unit Parts List" on page 7-2 for an order.*
(7)	Bezel Spacer† 0 = No 1 = Yes
(8)	Optional Power Circuit Board 1 = Standard (Power Board Featured)
(9)	Input/Output Signal P = Photo-Coupler Isolation R = RS232C
(10)	External Communication Harness‡ 0 = None 1 = Standard 2 = USB I/F Harness 3 = OEM (3441-05-03) 4 = OEM (3441-05-04) 5 = MDB

Table 1-2 iPRO-*0*-SH2-RC Type Specifications

No.	Type: 4 0 0 - * 0 - 0 * 1 * * * * * * * * * * No. (1,2,3) (4,5) (6,7,8,9,10,11,12,13,14,15,16,17)
(11)	RC1 Recycler Unit Banknote Width Guide** 0 = None 1 = Width Guide 62 (Gray) 2 = Width Guide 67 (Red) 3 = Width Guide 72 (Blue)
(12)	RC2 Recycler Unit Banknote Width Guide* 0 = None 1 = Width Guide 62 (Gray) 2 = Width Guide 67 (Red) 3 = Width Guide 72 (Blue)
(13)	RC1 Recycler Unit Banknote Length Guide* 0 = None 1 = Length Guide 120 (Gray) 2 = Length Guide 127 (Red) 3 = Length Guide 133 (Blue) 4 = Length Guide 140 (Orange) 5 = Length Guide 147 (Green) 6 = Length Guide 152 (Black) 7 = Length Guide 158 (Black)
(14)	RC2 Recycler Unit Banknote Length Guide* 0 = None 1 = Length Guide 120 (Gray) 2 = Length Guide 127 (Red) 3 = Length Guide 133 (Blue) 4 = Length Guide 140 (Orange) 5 = Length Guide 147 (Green) 6 = Length Guide 152 (Black) 7 = Length Guide 158 (Black)
(15)	Lock Unit 0 = No (without Lock) 1 = Yes (with Lock)
(16)	Anti-Static (Option) 0 = No (without Anti-Static Sheets) 1 = Yes (with Anti-Static Sheets) 2 = Asia Commercial Model (Recycler Unit with the Anti-Static Sheet and Scraper)
(17)	Optional Fastener 0 = None 1 = Reserved 2 = P-Lock (Plastic Simple Lock Fastener) for the Recycler 3 = Reserved

*. Bezel Type Specifications for reference: 1 = Black/Green LED (UBA/iPRO Standard Bezel 85), 2 = Blue/Blue LED (UBA/iPRO Standard Bezel 85), A = Blue/Blue (2-Line) (UBA/iPRO Standard Bezel 85

†. Refer to "Entire Unit With Option Parts Outside Dimensions" on page 1-11.

‡. An iPRO-RC Unit comes with a power cord. Contact each region's local JCM representative for details.

**.Refer to each Country's "Software Information Sheet".

Type Descriptions for SS-RC

Table 1-3 lists the Product Type Number Descriptions for the iPRO-RC with the Large Box.

Table 1-3 iPRO-*0*-SS-RC Type Specifications

No.	Type: 8 * 0 - * 0 - 0 * 1 * * * * * * * * * * No. (1,2,3) (4,5) (6,7,8,9,10,11,12,13,14,15,16,17)
(1)	Cash Box Capacity 8 = 800 Notes (New Banknote)
(2)	Cash Box Type 0 = Standard 1 = Asia Commercial (with the Wave Rubber Plate)
(3)	Cash Box Handle 0 = Standard (Blue)
(4)	Transport Section 0 = Standard 1 = OEM 2 = Asia Commercial (with the new material "UVH" Belt and the Scraper) 3 = Asia Commercial for OEM (with the new material "UVH" Belt and the Scraper)
(5)	Transport Cover 0 = Standard (Black)
(6)	Optional Bezel* (Cannot be boxed together) 0 = None (Fixed)) *NOTE: The iPRO-RC Unit cannot be shipped with a Bezel installed on or packaged in the same box. Refer to "iPRO-RC Unit Parts List" on page 7-2 for an order.*

Table 1-3 iPRO-*0*-SS-RC Type Specifications

No.	Type: 8 * 0 - * 0 - 0 * 1 * * * * * * * * * * (No. (1,2,3) (4,5)(6,7,8,9,10,11,12,13,14,15,16,17))
(7)	Bezel Spacer† **0 = No 1 = Yes**
(8)	Optional Power Circuit Board **1 = Standard (Power Board Featured)**
(9)	Input/Output Signal **P = Photo-Coupler Isolation R = RS232C**
(10)	External Communication Harness‡ **0 = None 1 = Standard 2 = USB I/F Harness 3 = OEM (3441-05-03) 4 = OEM (3441-05-04) 5 = MDB**
(11)	RC1 Recycler Unit Banknote Width Guide** **0 = None 1 = Width Guide 62 (Gray) 2 = Width Guide 67 (Red) 3 = Width Guide 72 (Blue)**
(12)	RC2 Recycler Unit Banknote Width Guide* **0 = None 1 = Width Guide 62 (Gray) 2 = Width Guide 67 (Red) 3 = Width Guide 72 (Blue)**
(13)	RC1 Recycler Unit Banknote Length Guide* **0 = None 1 = Length Guide 120 (Gray) 2 = Length Guide 127 (Red) 3 = Length Guide 133 (Blue) 4 = Length Guide 140 (Orange) 5 = Length Guide 147 (Green) 6 = Length Guide 152 (Black) 7 = Length Guide 158 (Black)**
(14)	RC2 Recycler Unit Banknote Length Guide* **0 = None 1 = Length Guide 120 (Gray) 2 = Length Guide 127 (Red) 3 = Length Guide 133 (Blue) 4 = Length Guide 140 (Orange) 5 = Length Guide 147 (Green) 6 = Length Guide 152 (Black) 7 = Length Guide 158 (Black)**
(15)	Lock Unit **0 = No (without Lock) 1 = Yes (with Lock)**
(16)	Anti-Static (Option) **0 = No (without Anti-Static Sheets) 1 = Yes (with Anti-Static Sheets) 2 = Asia Commercial Model (Recycler Unit with the Anti-Static Sheet and Scraper)**
(17)	Optional Fastener **0 = None 1 = Thumb Lock (Thumb Twist Lock Fastener) for the Cash Box 2 = P-Lock (Plastic Simple Lock Fastener) for the Recycler 3 = Thumb Lock for the Cash Box and P-Lock for the Recycler**

*. Bezel Type Specifications for reference: 1 = Black/Green LED (UBA/iPRO Standard Bezel 85), 2 = Blue/Blue LED (UBA/iPRO Standard Bezel 85), A = Blue/Blue (2-Line) (UBA/iPRO Standard Bezel 85

†. Refer to "Entire Unit With Option Parts Outside Dimensions" on page 1-11.

‡. An iPRO-RC Unit comes with a power cord. Contact each region's local JCM representative for details.

**.Refer to each Country's "Software Information Sheet".

Software Descriptions

Table 1-4 lists the Software Number Specifications.

Table 1-4 iPRO-RC Software No. Specifications

No.	Software: iPRO-100-(*)SH2(*)-RC * * * - 0 * * - V * .** (No. (A) (B) (C) (D))
(A)	Software Model Name
(B)	Denomination (Country)*
(C)	Interface Protocol Name
(D)	Software Version

*. The Country Code is indicated by three (3) Alphabetical Characters officially assigned ISO 3166 alpha-3.

Precautions

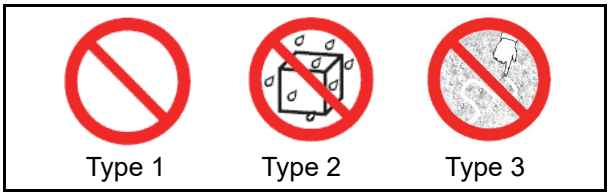


Figure 1-2 Precautionary Symbols

The Figure 1-2 symbols are defined as follows:

1. (**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.
2. (**Type 2**) Do not expose the Recycler Unit to water or any other liquids. The Unit contains several precision electronic devices that may be damaged if water or other liquids are sprayed or spilled into the Unit.
3. (**Type 3**) Do not install the Unit into a dusty environment. Dust may affect and degrade the Recycler'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 in order to confirm safe operation.

Installation Cautions

The Installation Cautions are defined as follows:

1. Do not allow the Unit to endure or operate at a high temperature, in high humidity and/or in a dusty environment.
2. Do not install the Unit into an area where excessive vibration or shock are present.
3. The Unit is not designed for outside 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.
4. Avoid exposing the Unit to direct Sunlight and/or Incandescent Lamp illumination (Refer to "Environmental Specifications" on page 1-8).
5. Ensure that the Host Machine is designed for daily operational access for maintenance and/or clearing a Banknote jam.
6. When installing the equipment, connect the Frame Housing to the Frame Ground of the Host Machine.
7. If an unused Interface Harness exists, cut the Harness off short to avoid attracting static electricity or a short circuit possibility that may cause damage to the Unit.
8. Because this equipment is a component product, close the Host Machine's door before using it.
9. Do not operate the iPRO-RC Unit while the Cash Box and/or the Recycler Unit's door is open. Personal injury may occur.
10. This Unit is designed to use a current limiting Power Source. Be sure that the Host Machine's cabinet material design meets local safety standards.

11. Do not use the Unit where it may be exposed to airborne evaporated or sporadic chemicals and/or oil.

MOUNTING, DISMOUNTING & TRANSPORTATION

Methods for Mounting, Dismounting, and Transporting the Unit are as follows:

1. Be sure to turn the Power OFF to the iPRO-RC Unit before mounting or removing the Recycler Unit from its permanent location. Attaching or unplugging Connector Plugs from their Receptacles while the Power is ON may damage the Unit.
2. When reassembling a Unit's Section, ensure that each part is replaced in its correct 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 Recycler Unit, or subject it to excessive vibration during transportation.
5. Check that the iPRO Transport Section does not drop off the Unit Frame while pulling the Recycler forward from the Frame.

Preventive Maintenance

The Preventive Maintenance requirements are defined as follows:

1. Be sure to turn the Power OFF before beginning a maintenance procedure. The equipment produces improper operating signals while in maintenance mode that may cause personal injury.
2. When closing the Recycler Unit, ensure all service door locks click into place.
3. If the iPRO Validator Section is dirty due to dust, foreign objects or other such debris adhering to it, the Banknote acceptance rate will degrade. Clean the Transport Unit once a month to keep its performance optimal.
4. Use a soft, lint-free cloth, cotton swab or a compressed air spray to clean dust and debris from the Banknote path and inside areas of the Recycler.

Caution: DO NOT use any alcohol, solvents, abrasive cleaning agents, or citrus-based cleaners that can damage the plastic surface of the device when cleaning it.

5. Do not redesign or disassemble the Recycler Unit. Unauthorized use by inadequately trained personnel, or use outside the original manufacturer's intent for operation voids the warranty.

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 Banknote jam and/or damage to the Unit's Transport path. Banknotes exhibiting the conditions listed below and illustrated in Figure 1-3 should be avoided:

- Torn
- Worn
- Taped
- Excessive folds or wrinkles
- Dirty
- Wet and/or Oiled
- Adhering foreign objects
- Excessive miscuts, misaligns and/or misprints

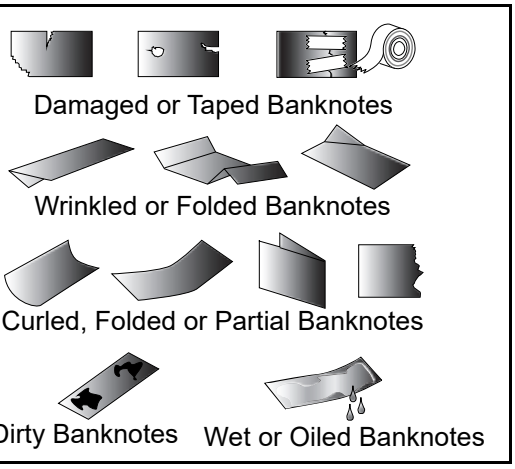


Figure 1-3 Unacceptable Banknotes

Banknote Storage Requirements

The following conditions are required when placing Banknotes directly into the Recycler Unit's Bins.

1. Replace the minimum Banknote count as required for Recycler initialization, so the Banknotes will be available for use during a standard recycle function.
   - The maximum number of recyclable Banknotes in a Recycler Unit's Bin should be:
     - Approximately 100 Notes if the Banknotes are all new
     - Approximately 70 Notes if the Banknotes are a mixed Street Grade level.

   NOTE: Do not insert more than the above recommended recyclable Banknotes.

2. Do not use any Banknotes indicated in Figure 1-3 “Unacceptable Banknotes ” shown on this page.
3. Make one edge of the Banknote bundle smooth.
4. Verify that no curled or folded Banknotes exist.
5. Before placing Banknotes into the Recycler Bins (especially new Notes), Flip-over and Fan-Flip the Banknote bundle; then curve the middle of the Banknote bundle to form a downward angled structure (Figure 1-4 a).
6. Verify that the Holographic image portion of a Banknote is always at the front end of the insertion direction (Figure 1-4 b).
7. Make sure the denomination of each Banknote bundle inserted is correctly placed in the same direction.
8. Make sure the Banknote bundle inserted is of the same denomination and from the same Country when restoring by hand.
9. Insert the Banknotes being recycled into the Recycler Unit’s Bins carefully until the bundle reaches the very back of the Bin.
10. Verify that the bottom Note of a Banknote bundle is not curled or folded when inserting the Banknote bundle into a Recycler Unit’s Bin.

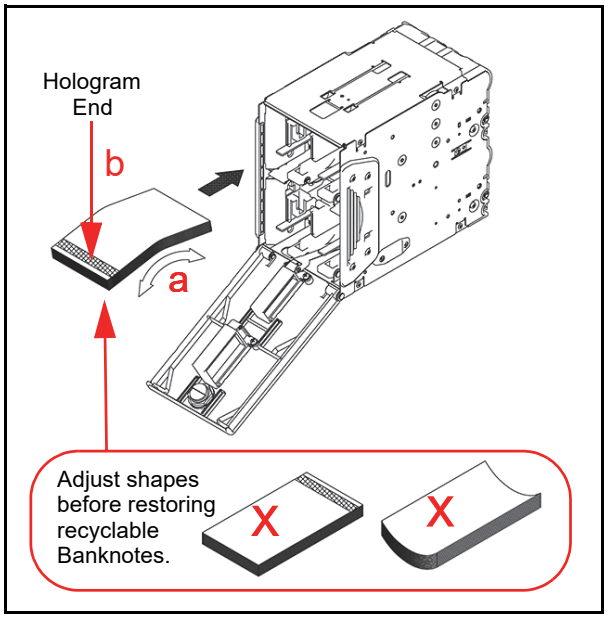


Figure 1-4 Banknote Storage Insertion Cautions

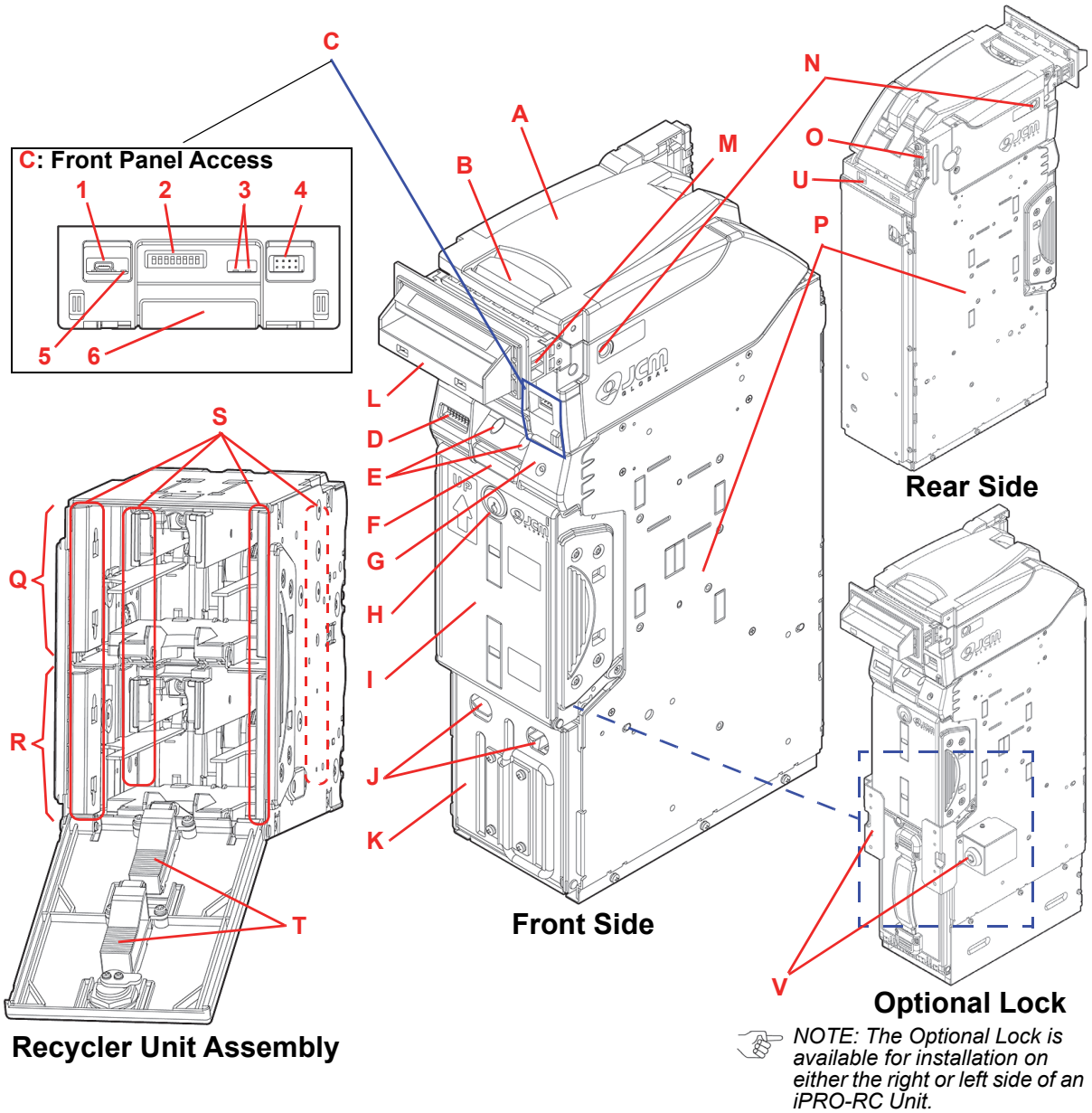
Primary Features

The iPRO-RC Series Banknote Recycler contains the following primary features:

- Allows a high capacity, compact size, Recycling Unit available for two (2) different Banknote denominations
- The Friction Roller System eases operation and maintenance of the Recycler Unit
- The Automatic Centering Mechanism allows the Unit to read Banknotes ranging from 62mm to 82mm in width, and a maximum of 158mm in length. It will automatically center Banknotes inserted at an angle to help improve the acceptance rate
- A secure Recycler Unit containing a Key Lock is composed of durable, impact-resistant plastic construction to assure safe and secure cash handling.
- The JCM patented Anti-Pullback Mechanism provides powerful protection against Banknote stringing operations.

Component Names

Figure 1-5 illustrates the iPRO-RC component names and locations.



NOTE: The Optional Lock is available for installation on either the right or left side of an iPRO-RC Unit.

A. iPRO Transport Unit (User Supplied)
B. iPRO Unit Upper Guide Access Lever
C. Front Panel Access
   1. USB mini-B Type Receptacle (for performing Software downloads and adjustments)
   2. 8 Position DIP Switch Block
   3. iPRO Transport Unit LEDs (Green & Red)
   4. Front Bezel Receptacle (for the Optional Bezel Assembly Plug)
   5. Centering LED
   6. Transport Unit Release Lever
D. RC Unit DIP Switch Block
E. RC Unit LEDs (Green, Red & Yellow)
F. Recycler Unit Release Pushbutton
G. Restore Pushbutton (for moving Banknotes from the Recycler Unit into the Cash Box)
H. Recycler Unit Lock (Supplied with Key)
I. Recycler Unit
J. Cash Box Lock Holes (Locks are User Supplied Options)
K. Cash Box
L. Bezel Accessory (One of 3 Options Available)
M. Bezel Spacer
N. Centering Guide Release Port
O. Interface Connector (Connects to the Host Machine)
P. Housing Frame
Q. RC1-Bin Assembly Banknote Space
R. RC2-Bin Assembly Banknote Space
S. Banknote Width Guide
T. Banknote Length Guide
U. Power Connector
V. Optional Lock Unit (Right or Left side)

Figure 1-5 iPRO-RC Component Names

Specifications

Technical Specifications

Table 1-5 iPRO-RC Technical Specifications

Acceptance Rate:	98% or greater* The following Banknote Types are excluded: a) Banknotes with excess or poor magnetism or unclear graphics b) Double (dual) Banknotes c) Worn, dirty, wet, stained, torn or excessively wrinkled Banknotes d) Banknotes having folded corners or edges e) Banknotes having the wrong cut dimensions or a printing displacement.
Banknote Types Accepted†:	Recycler Unit • Length: 120-158mm (4.72-6.22 in.)‡ • Width: 62-82mm (2.44-3.22 in.) WBA-SH2 Cash Box (Metal) • Length: 120-170mm (4.72-6.69 in.) • Width: 62-82mm (2.44-3.22 in.) Large Cash Box (Plastic) • Length: 120-165mm (4.72-6.49 in.) • Width: 62-88mm (2.44-3.46 in.)
Barcode Coupon**:	Standard Specification a) Interleaved Barcode Read: 2 of 5 b) Narrow Bar Width: 0.5mm-0.6mm (0.019-0.023 in.) c) Wide Bar to Narrow Bar ratio = 3:1 d) Characters: 18 Characters e) Print Position: Middle (Divides a Coupon equally to the left, right, top and bottom of the Coupon's center line) f) Print Width: Wider than 10mm (0.39 in.)
Insertion Direction:	Banknote: Refer to the specific Country's "Software Information Sheet" Barcode Coupon: Two-way (with Barcode Surface Facing Upward)
Processing Speed††:	From Banknote insertion to Vend signal output: • Approximately 2 seconds From Banknote insertion to stacking operation completion: • Approximately 5 seconds (to Recycler Unit) • Approximately 6 seconds (to Cash Box) From dispense beginning to dispensing operation completion: • Approximately 3 seconds From retrieve beginning to retrieving operation completion: • Approximately 7 seconds
Escrow:	1 Note
Diagnostic Indicators:	Transport Unit: Two Single-Color LEDs (Red/Green) RC Unit: Two Tri-Color LEDs (Red/Green/Yellow) Centering Home Position Indicator: LED (Red)
Cash Box‡‡:	WBA-SH2 Cash Box: Secure Type, Metal Large Cash Box: Secure Type, Plastic
Cash Box Capacity:	WBA-SH2 Cash Box: 400 Notes (New Banknotes Only) Large Cash Box: 800 Notes (New Banknotes Only)
Recycler Unit:	Key Lockable, 2 Denomination Integral Recycler (Friction Roller System)
Recycler Unit Capacity:	100 Notes (New Banknotes Only)
Recycle Unit Storage Method:	Stores Banknotes from the Acceptor (Recommended) Stores Banknotes directly
Interfaces:	USB (USB Specification Rev.2.0/Full Speed Transmission 12Mbps) Photo-Coupler Isolation,RS232C, cc-Talk, MDB

*. Refer to the "Software Information Sheet" for each Country's Acceptance Rate parameters.

†. Banknote size widths are limited by the specific Guide Types inserted.

‡. Contact each region's local JCM representative if the Banknote length is over 165mm (6.49 in.).

**.Refer to the specific Country's Barcode Coupon Specification for more details.

††.Excludes the time lag associated with Host Communication (Power Supply: +24V DC, Temperature: 25º C ±5º C).

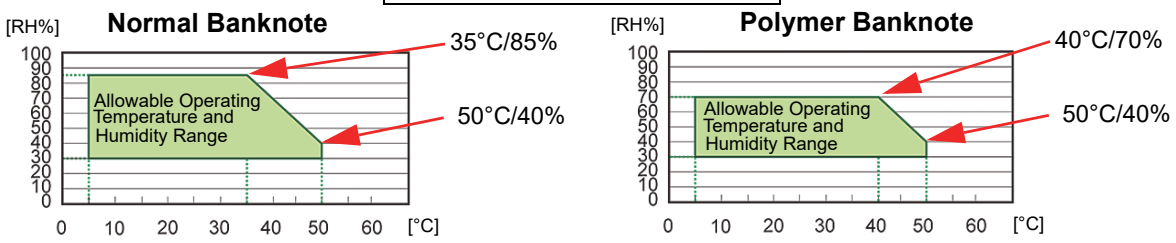
‡‡.Cash Box Lock(s) and Key(s) are provided by User (2 Key Hole Caps are fitted in place to cover existing holes when shipped).

Environmental Specifications

Table 1-6 iPRO-RC Environmental Specifications

Operating Temperature:	5ºC to +50ºC (41ºF to 122ºF)
Storage Temperature:	-20ºC to +60ºC (-4ºF to 140ºF)
Relative Operating Humidity:	30% to 85% RH (non-condensing)
Relative Storage Humidity:	30% to 85% RH (non-condensing)
Visible Light Sensitivity:	Avoid contact with direct Sunlight and/or Incandescent Lamp illumination (having a Gradient Angle of 15 Degree or more and an illumination index of 3000 Lux or less).
Installation:	Indoors Only

Hydrothermal Condition Table



Electrical Specifications

Table 1-7 iPRO-RC Electrical Specifications

Supply Voltage*:	24V DC (±5%) (Greater than 3.5A Recommended) (Use a Current Limiting Power Source)
Current Consumption:	Standby: 230mA Operation: 1.5A Peak: 2.5A

*. Use a Limited Power Source.

Structural Specifications

Table 1-8 iPRO-RC Structural Specifications

Weight Empty:	Approximately 9kg (19.8lbs)
Mounting:	Horizontal
Outside Dimensions:	Refer to Figure 1-6 “iPRO-RC with WBA-SH2 Cash Box Outside Dimensions” on page 1-9 of this Service Manual Section.

Unit Dimensions

Entire Unit Outside Dimensions

Figure 1-6 illustrates the iPRO-RC Unit with the Bezel and WBA-SH2 Cash Box outside dimensions.

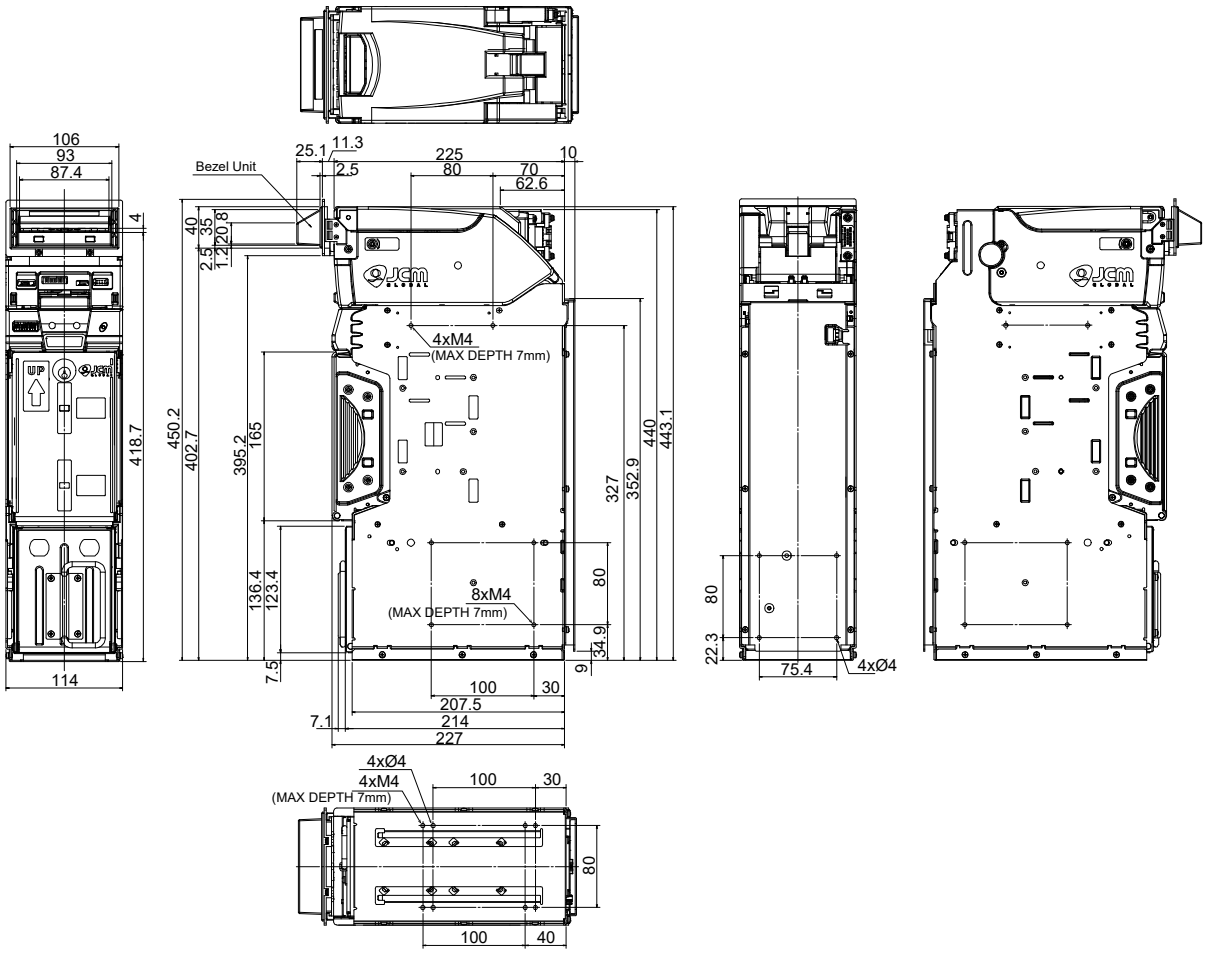
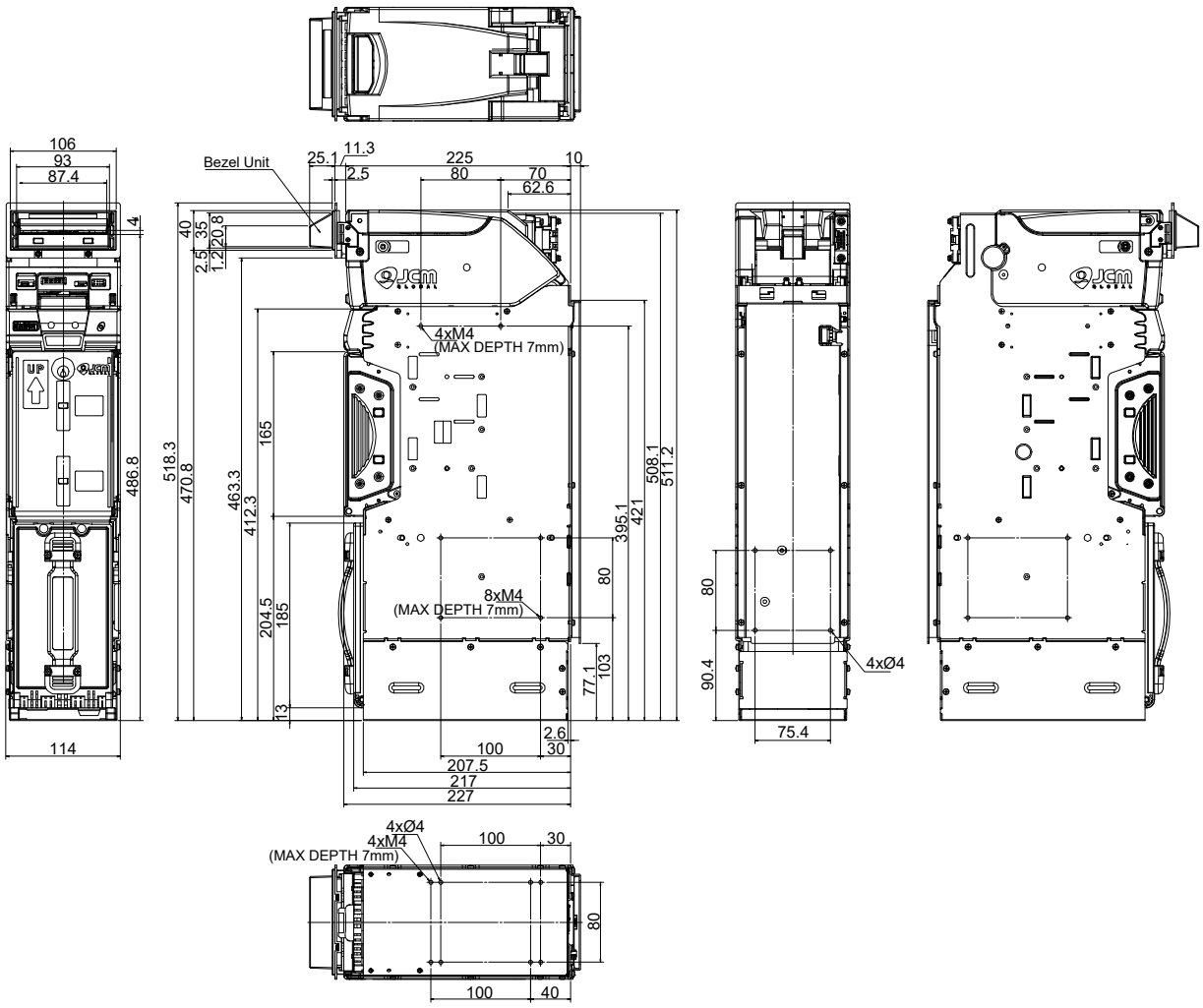


Figure 1-6 iPRO-RC with WBA-SH2 Cash Box Outside Dimensions

ENTIRE UNIT OUTSIDE DIMENSIONS (CONTINUED)

Figure 1-7 illustrates the iPRO-RC Unit with the Bezel and Large Cash Box outside dimensions.

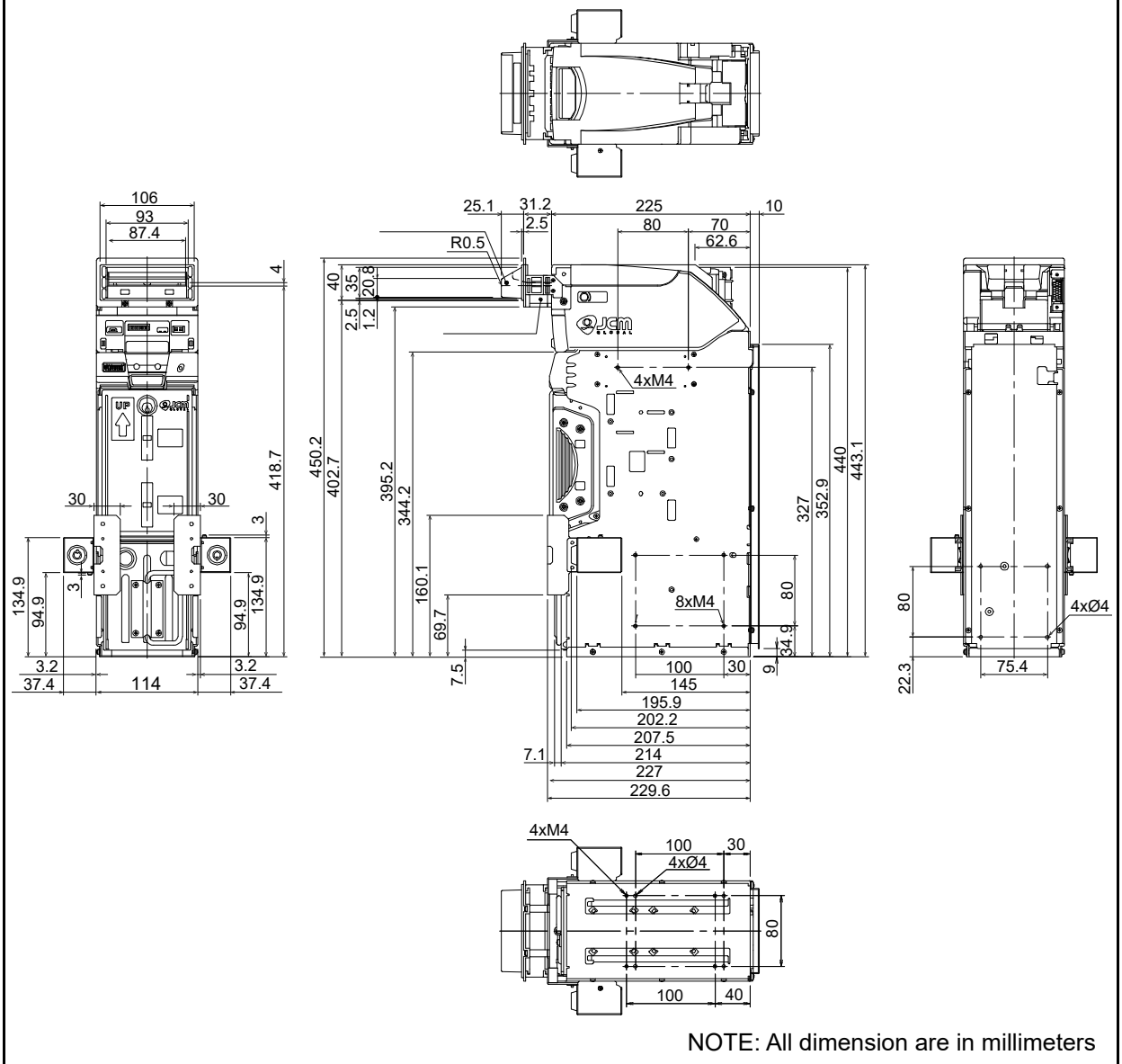


NOTE: All dimension are in millimeters

Figure 1-7 iPRO-RC with Large Cash Box Outside Dimensions

Entire Unit With Option Parts Outside Dimensions

Figure 1-8 illustrates the iPRO-RC Unit with the Bezel, Bezel Spacer, Lock Unit and WBA-SH2 Cash Box outside dimensions.



NOTE: All dimension are in millimeters

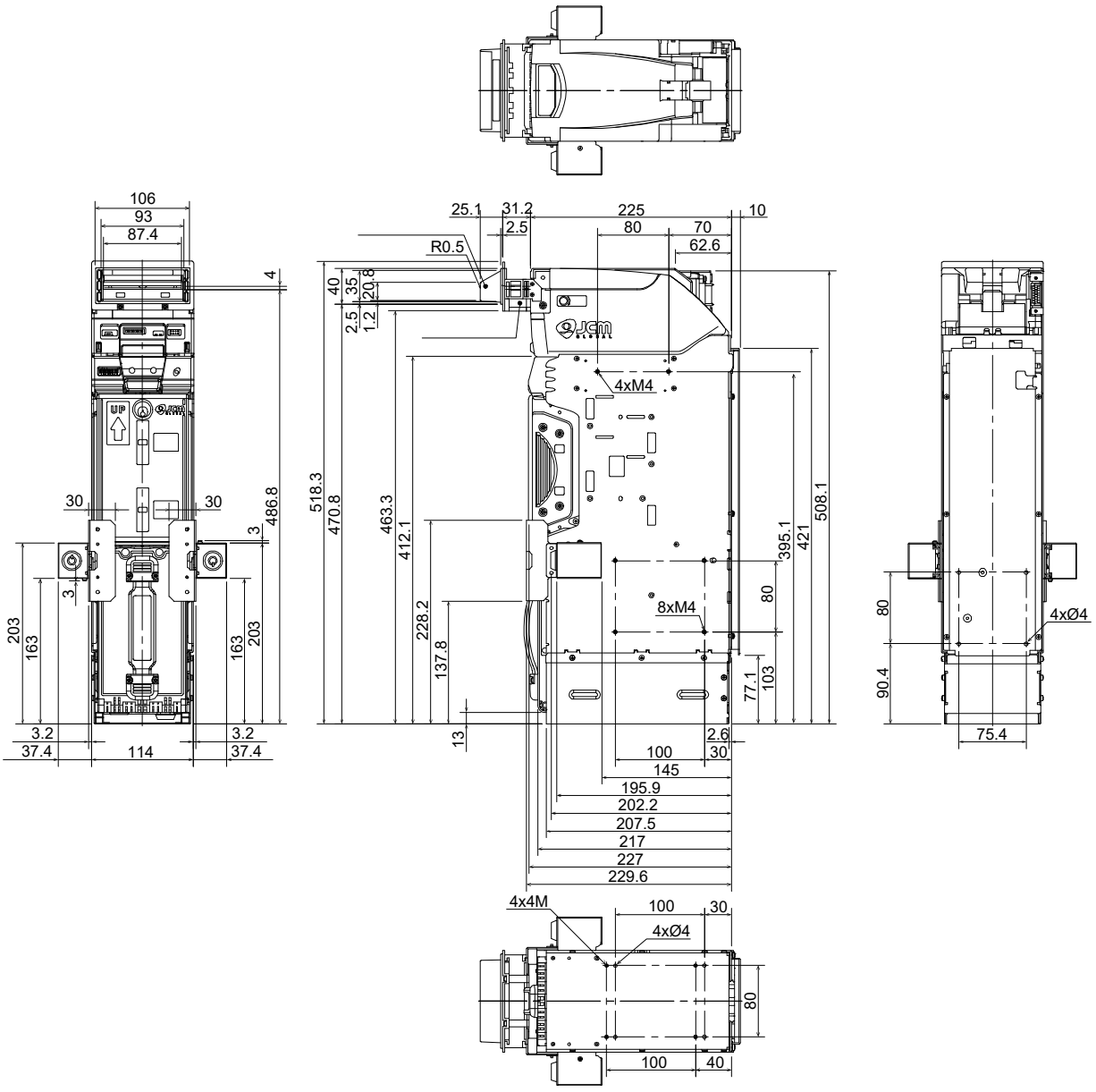
NOTE: The Lock Unit is available for installation on either the right or left side of the Unit.

NOTE: Small pieces of paper or receipts might accidentally inserted into the iPRO Unit. The Bezel Spacer makes the distance to the Sensor longer and the Sensor may not detect such foreign objects. Also, small pieces of paper or receipts are difficult to detect and remove.

Figure 1-8 iPRO-RC with Option Parts Outside Dimensions (WBA-SH2 Cash Box)

ENTIRE UNIT WITH OPTION PARTS OUTSIDE DIMENSIONS

Figure 1-9 illustrates the iPRO-RC Unit with the Bezel, Bezel Spacer, Lock Unit and Large Cash Box outside dimensions.



NOTE: All dimension are in millimeters

NOTE: The Lock Unit is available for installation on either the right or left side of the Unit.

NOTE: Small pieces of paper or receipts might accidentally inserted into the iPRO Unit. The Bezel Spacer makes the distance to the Sensor longer and the Sensor may not detect such foreign objects. Also, small pieces of paper or receipts are difficult to detect and remove.

Figure 1-9 iPRO-RC with Option Parts Outside Dimensions (Large Cash Box)

Technical Contact Information

To obtain further technical information regarding the iPRO-RC 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

Luminous House, 300 South Row,
Milton Keynes MK9 2FR, United Kingdom

E-mail: support@jcmglobal.eu

Asia and Oceania

JCM American (Australia Office)

Phone: +61-2-9648-0811

Fax: +61-2-9647-1438

Unit 21, 8 Avenue of the Americas Newington,
NSW 2127 Australia

E-mail: Sales-AsiaPac@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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iPRO-RC™ Series
Banknote Recycler
Section 2

2 INSTALLATION

This section provides installation and operating instructions for the iPRO-RC™ Series Banknote Recycler Unit Assembly (iPRO-RC). The information within contains the following features:

- Installation Procedure
- Cable Interconnection
- DIP Switch Configuration
- Switch Configuration
- Connector Pin Assignments
- Preventive Maintenance
- Sensor and Roller Locations
- Standard Interface Circuit Schematics
- Operational Flowchart

Installation Procedure

Holes are provided in each Frame Unit to accommodate mounting the iPRO-RC during installation. Select and perform the following steps required to install the iPRO-RC Unit:

1. When a side mounting configuration is preferred, bolt the left or right side of the iPRO-RC Frame into its intended location using six (6) M4 Screws from either side of the Frame (Figure 2-1).

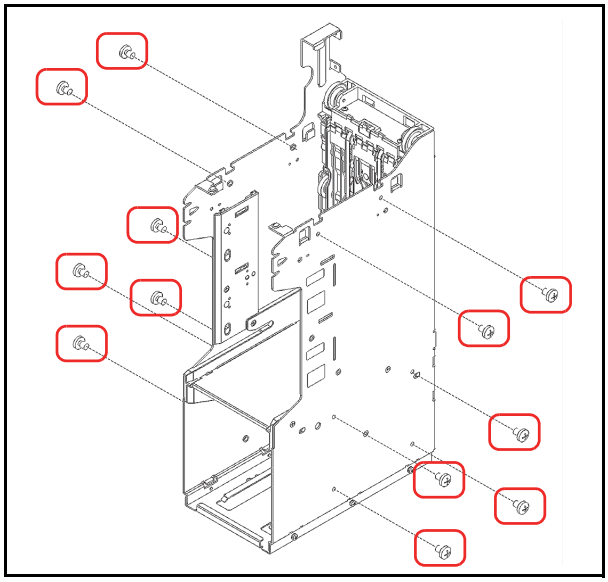


Figure 2-1 M4 Screws Locations (Right/Left)

2. When a rear mounting configuration is preferred, bolt the inside back of the iPRO-RC Frame into its intended location using four (4) M4 Phillips Head Screws (Figure 2-2 a_1 through a_4).
3. When a bottom mounting configuration is preferred, bolt the inside or outside of the iPRO-RC Frame into its intended location using four (4) M4 Phillips Head Screws. To bolt the Frame down from the inside, place the screws in the four un-threaded holes located inside the Frame (Figure 2-2 b_1 to b_4); or bolt the Frame down from the outside using the four (4) threaded Stud Insert holes located on the outside of the Frame (Figure 2-2 c_1 to c_4).

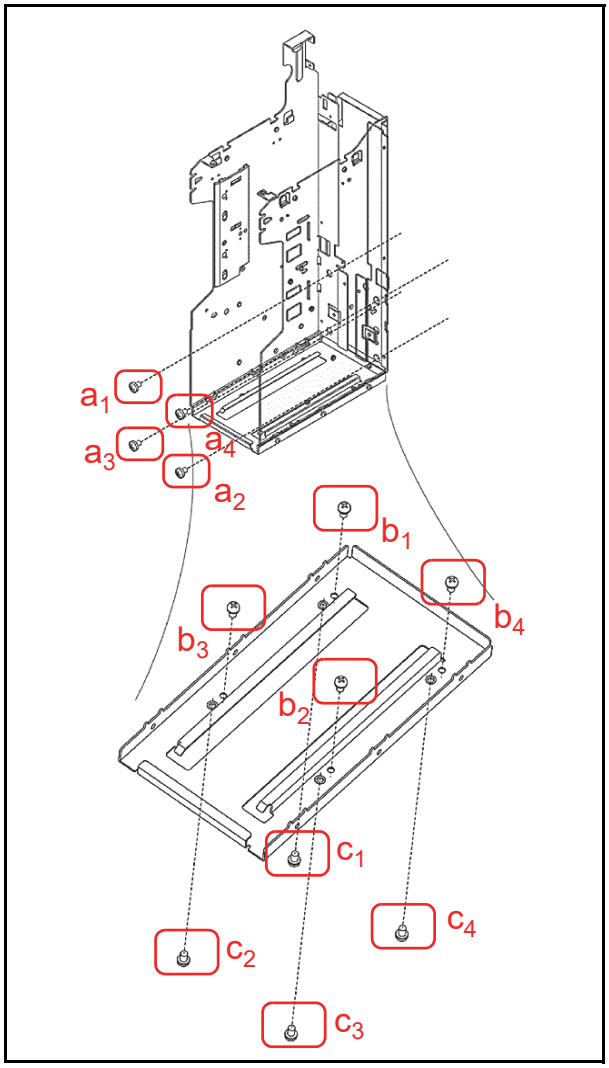
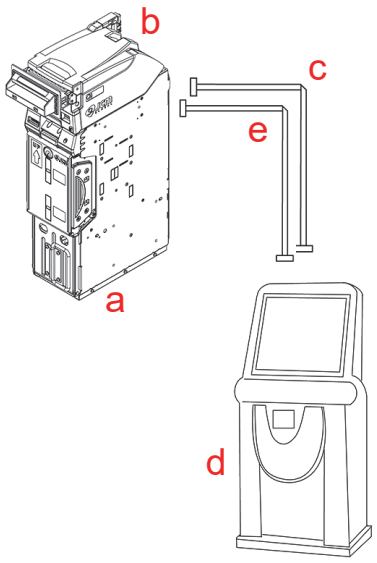


Figure 2-2 M4 Screws Locations (Rear & Bottom)

NOTE: Choose two (2) of the five (5) installation configuration sides shown, and bolt the correct number of M4 Screws firmly in place. When bolting the Screws from the outside, the maximum length of each M4 Screw must be less than 7mm long.

Cable Interconnection

Figure 2-3 illustrates the Cable interconnection requirements between the iPRO-RC and a Host Machine.



a) iPRO-RC Unit
b) Interface Connector
c) Interconnecting Harness
d) Host Machine (Game Machine, Kiosk, etc.)
e) Power Connection Harness

Figure 2-3 Cable Interconnection

DIP Switch Configuration

This section provides the denomination DIP Switch Block settings for the iPRO-RC Unit.

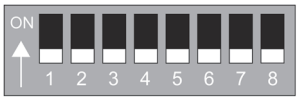
Table 2-1 iPRO Transport Unit DIP Switch Settings

iPRO Transport Unit DIP Switches

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	OFF	OFF

Table 2-2 iPRO-RC Unit DIP Switch Settings*

iPRO-RC Unit DIP Switches



Switch No.	Switch ON	Switch OFF
1	Reserved	Reserved
2	Reserved	Reserved
3	Reserved	Reserved
4	Reserved	Reserved
5	Reserved	Reserved
6	Reserved	Reserved
7	Reserved	Reserved
8	Reserved	Reserved

*. Refer to each Country's "Software Information Sheet" for making the proper Switch settings.

Switch Configuration

The CPU Circuit Board contains four (4) DIP Switches on the Circuit Board (Figure 2-4).

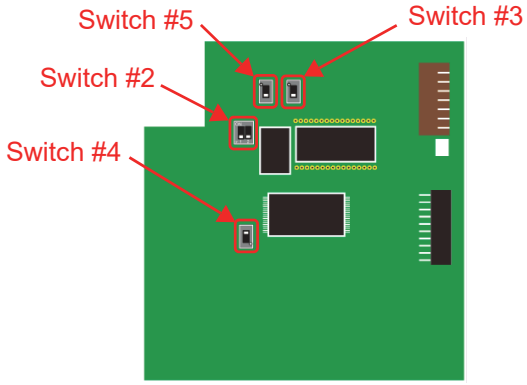


Figure 2-4 CPU Board Switch Locations

DIP Switches identify an RS232C, Photo-Coupler, MDB or ccTalk configuration selection (Table 2-3).

Table 2-3 CPU Board Switch Configurations

Switch 5	Switch 3	Signal Name
		RS232C
		Photo-Coupler Isolation or MDB
		cc-Talk
		Reserved

DIP Switches also select the ICB or Recycler options (Table 2-4).

Table 2-4 RC Selection Switch Configuration

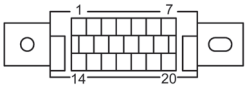
Switch 2	Switch 4	Description
		iPRO Unit without an RC Unit (When the ICB Expansion Circuit Board is installed)
		iPRO Unit without an RC Unit (When the ICB Expansion Circuit Board is NOT installed)
		iPRO Unit using an RC Unit

NOTE: Refer to the "iPRO Service Manual" for details regarding the DIP Switch Configurations when using the iPRO Unit without a Recycler Unit.

Connector Pin Assignments

Table 2-5 lists the USB Interface Connector Pin Assignments.

Table 2-5 USB Interface Connection Pin Assignments



Socket (Transport Unit Side): DRA-20PC-FO (JAE)
Contact (Transport Unit Side): D02-22-26P-10000 (JAE)
Socket (Frame Side): DRA-20SC-FO (JAE)
Contact (Frame Side): D02-22-26S-10000 (JAE)/D02-22-22S-10000 (JAE) (Terminal# 3, 13)
Recommended Wires: Slit Wire UL1061 AWG #26

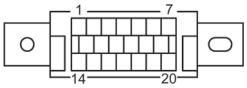
Pin No.	Signal Name	I/O*	Function
1	--	-	Reserved
2	--	-	Reserved
3	M.RES	IN	Acceptor Hard Reset Signal Line
4	NC	-	No Connection
5	--	-	Reserved
6	NC	-	No Connection
7	NC	-	No Connection
8	Vbus	IN	USB Communication Vbus Signal Line (+5V DC)
9	-DATA	IN/OUT	USB Communication Input/Output Signal Line
10	+DATA	IN/OUT	USB Communication Input/Output Signal Line
11	--	-	Reserved
12	GND (USB)	-	USB Communication Ground (0V DC)
13	NC	-	No Connection
14	LED (Power)	-	LED Drive Line (Anode)
15	--	-	Reserved
16	NC	-	No Connection
17	--	-	Reserved
18	LED	-	LED Drive Line (Cathode)
19	NC	-	No Connection
20	--	-	Reserved

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

Connector Pin Assignments (Continued)

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

Table 2-6 Photo Coupler Interface Connection Pin Assignments



Socket (Transport Unit Side): DRA-20PC-FO (JAE)
Contact (Transport Unit Side): D02-22-26P-10000 (JAE)
Socket (Frame Side): DRA-20SC-FO (JAE)
Contact (Frame Side): D02-22-26S-10000 (JAE)/D02-22-22S-10000 (JAE) (Terminal# 3, 13)
Recommended Wires: Slit Wire UL1061 AWG #26

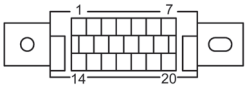
Pin No.	Signal Name	I/O*	Function
1	--	-	Reserved
2	--	-	Reserved
3	M.RES	IN	Acceptor Hard Reset Signal Line
4	TXD	OUT	Output Signal Line from Acceptor to Host
5	--	-	Reserved
6	RXD	IN	Input Signal Line from Host to Acceptor
7	GND (I/F)	-	Interface Power Supply (Photo Coupler 0V DC)
8	NC	-	No Connection
9	NC	-	No Connection
10	NC	-	No Connection
11	--	-	Reserved
12	NC	-	No Connection
13	NC	-	No Connection
14	LED (Power)	-	LED Drive Line (Anode)
15	--	-	Reserved
16	NC	-	No Connection
17	--	-	Reserved
18	LED	-	LED Drive Line (Cathode)
19	NC	-	No Connection
20	--	-	Reserved

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

Connector Pin Assignments (Continued)

Table 2-7 lists the RS232C Interface Connector Pin Assignments.

Table 2-7 RS232C Interface Connection Pin Assignments



Socket (Transport Unit Side): DRA-20PC-FO (JAE)
Contact (Transport Unit Side): D02-22-26P-10000 (JAE)
Socket (Frame Side): DRA-20SC-FO (JAE)
Contact (Frame Side): D02-22-26S-10000 (JAE)/D02-22-22S-10000 (JAE) (Terminal# 3, 13)
Recommended Wires: Slit Wire UL1061 AWG #26

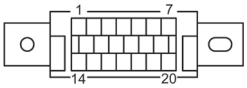
Pin No.	Signal Name	I/O*	Function
1	--	-	Reserved
2	--	-	Reserved
3	M.RES	IN	Acceptor Hard Reset Signal Line
4	TXD	OUT	Output Signal Line from Acceptor to Host
5	--	-	Reserved
6	RXD	IN	Input Signal Line from Host to Acceptor
7	NC	-	No Connection
8	NC	-	No Connection
9	NC	-	No Connection
10	NC	-	No Connection
11	--	-	Reserved
12	NC	-	No Connection
13	GND (I/F)	-	Interface Power Supply (RS232C 0V DC)
14	LED (Power)	-	LED Drive Line (Anode)
15	--	-	Reserved
16	NC	-	No Connection
17	--	-	Reserved
18	LED	-	LED Drive Line (Cathode)
19	NC	-	No Connection
20	--	-	Reserved

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

Connector Pin Assignments (Continued)

Table 2-8 lists the ccTalk Interface Connector Pin Assignments.

Table 2-8 ccTalk Interface Connection Pin Assignments



Socket (Transport Unit Side): DRA-20PC-FO (JAE)
Contact (Transport Unit Side): D02-22-26P-10000 (JAE)
Socket (Frame Side): DRA-20SC-FO (JAE)
Contact (Frame Side): D02-22-26S-10000 (JAE)/D02-22-22S-10000 (JAE) (Terminal# 3, 13)
Recommended Wires: Slit Wire UL1061 AWG #26

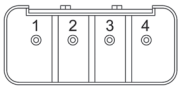
Pin No.	Signal Name	I/O*	Function
1	--	-	Reserved
2	--	-	Reserved
3	M.RES	IN	Acceptor Hard Reset Signal Line
4	NC	-	No Connection
5	--	-	Reserved
6	NC	-	No Connection
7	NC	-	No Connection
8	NC	-	No Connection
9	NC	-	No Connection
10	NC	-	No Connection
11	--	-	Reserved
12	NC	-	No Connection
13	GND (I/F)	-	Interface Power Supply (ccTalk 0V DC)
14	LED (Power)	-	LED Drive Line (Anode)
15	--	-	Reserved
16	TXD	OUT	Output Signal Line from Acceptor to Host
17	--	-	Reserved
18	LED	-	LED Drive Line (Cathode)
19	NC	-	No Connection
20	--	-	Reserved

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

Connector Pin Assignments (Continued)

Table 2-9 lists the iPRO-RC Power Supply Pin Assignments.

Table 2-9 Power Supply Pin Assignments



Header Type: 53426-0410 (MOLEX)
Contact Type: 50351-8100 (MOLEX)
Housing: 51103-0400 (MOLEX)
Recommended Wires: Slit Wire UL1007 AWG #22-24

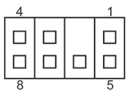
Pin No.	Signal Name	I/O*	Function
1	+24V Power	-	+24V DC Power Supply
2	+24V Power	-	+24V DC Power Supply
3	GND (Power)	-	0V DC Power
4	GND (Power)	-	0V DC Power

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

Connector Pin Assignments (Continued)

Table 2-10 lists the iPRO-RC Front Panel Bezel Interface Connection Pin Assignments.

Table 2-10 Front Panel Bezel Interface Connection Pin Assignments



Header Type: RF-H08(07)2SD-1110 (JST)
Contact Type: RF-SC2210 (JST)
Housing: RF-08 (JST)
Recommended Wires: Slit Wire UL1007 AWG #24-26

Pin No.	Signal Name	I/O*	Function
1	NC	-	No Connection
2	NC	-	No Connection
3	NC	-	No Connection
4	NC	-	No Connection
5	+13V (Power)	-	+13V DC Power (from the iPRO)
6	GND (Power)	-	0V DC Power (from the iPRO)
7	LED Power	-	LED Drive Line (Anode)
8	LED	-	LED Drive Line (Cathode)

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

Preventive Maintenance

Restoring Banknotes

To restore Banknotes into the Recycle Unit, perform one (1) of the following two (2) procedures:

Restoring Banknotes using the iPRO Transport Unit

1. Insert Banknotes note-by-note in a single fashion into the iPRO Transport Unit Insertion Slot (Figure 2-5 a).

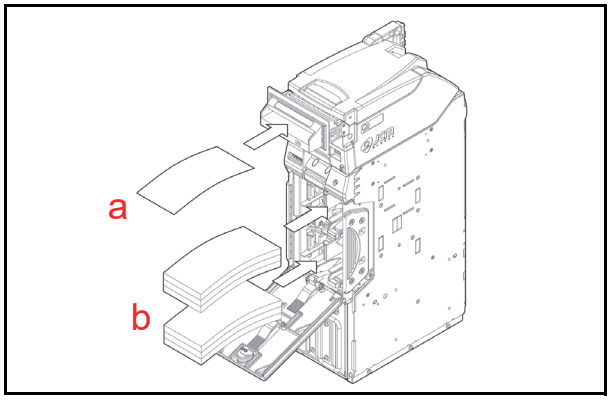


Figure 2-5 Banknote Restoration Methods

Restoring Banknotes Directly into the Recycler Unit

1. Turn the iPRO-RC Power Supply OFF.
2. Unlock and open the Recycler Unit's Door using the Key provided.
3. Smooth and insert the Banknote edges being fed into the Recycler Unit (Figure 2-5 b).
4. Close the Recycler Unit's Door, and lock it using the Key provided.

   Once Banknote restoration is complete, the data containing the number of restored Banknotes is sent from the Host Machine to the iPRO-RC.

   NOTE: When installing replacement Banknotes directly, make sure the denominations are aligned in an identical order. Before inserting, flip-over and Fan-Flip the Banknotes so one of the bundle edges is smooth; then place the Banknotes all the way to the back of the Bin's space. (Refer to "Banknote Storage Requirements" on page 1-4 of this Service Manual).

Retrieving Banknotes

To retrieve Banknotes from the Recycler Unit, perform one (1) of the following three (3) procedures.

Sending Retrieved Banknotes to the Cash Box

1. Send a Command to the iPRO-RC Unit from the Host Machine in order to enable the Restore Pushbutton Switch Functions.
2. Press the Restore Pushbutton on the Recycler Unit (Review Figure 1-5 G).

   NOTE: The Banknotes in the RC1-Bin Space and the RC2-Bin Space will be retrieved note-by-note into the Cash Box.
3. Remove the Cash Box from the iPRO-RC Unit to obtain the Banknotes just retrieved.
4. Use the appropriate User-supplied Key(s) to unlock the Cash Box.
5. Open the Cash Box Door and remove the retrieved Banknotes (Figure 2-6 a).

Sending Retrieved Banknotes to the Cash Box by Command

1. Send a Command to the iPRO-RC Unit from the Host Machine in order to retrieve its Banknotes.

   NOTE: The Banknotes in the RC1-Bin Space and the RC2-Bin Space will be retrieved note-by-note into the Cash Box.
2. Remove the Cash Box from the iPRO-RC Unit to obtain the Banknotes just retrieved.
3. Use the appropriate User-supplied Key(s) to unlock the Cash Box.
4. Open the Cash Box Door and remove the retrieved Banknotes (Figure 2-6 a).

Retrieving Banknotes Directly

1. Turn the iPRO-RC Power Supply OFF.
2. Unlock and open the Recycle Unit Door using the Key supplied.
3. Retrieve the Banknotes from the RC1-Bin Space and/or the RC2-Bin Space by hand (Figure 2-6 b).
4. Close the Recycler Unit Door and re-lock it using the Key supplied.

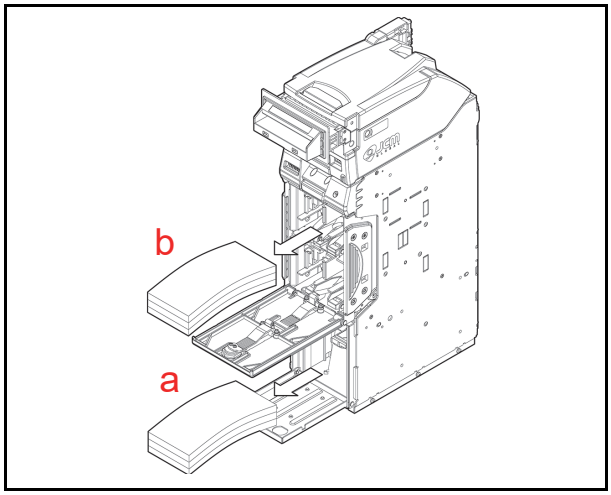


Figure 2-6 Retrieving Recycler Banknotes

Dispense Settings

Dispensing Banknotes from the RC1-Bin Space and/or the RC2-Bin Space of the Recycler Unit is possible. Banknote denomination dispensing is predetermined by settings made for each RC Bin Space.

When changing the dispensable Banknote denomination values, replace the Recycler Unit with another Unit containing the different denomination settings.

NOTE: When setting the Recycler's denomination values; check the Banknote sizes against the Recycler Unit's size limitation settings (e.g., 62-82mm widths, 120-158mm lengths), and ensure that the correct Banknote Guides are in place for the proper width and length. This operation should be performed once appropriate Operator training has been completed.

Clearing a Banknote Jam

When a Banknote is jammed in the iPRO-RC Unit, proceed as follows to clear it:

1. Open the Upper Guide of the iPRO's Transport Unit (Figure 2-7 a).
2. Remove the jammed Banknote from the Transport Path (Figure 2-8 a).
3. If the Banknote jam location is not visible, press the Recycler Unit's **"Release"** Push Button (Figure 2-7 b) and pull the Recycler Unit out of the Frame Assembly (Figure 2-7 c).

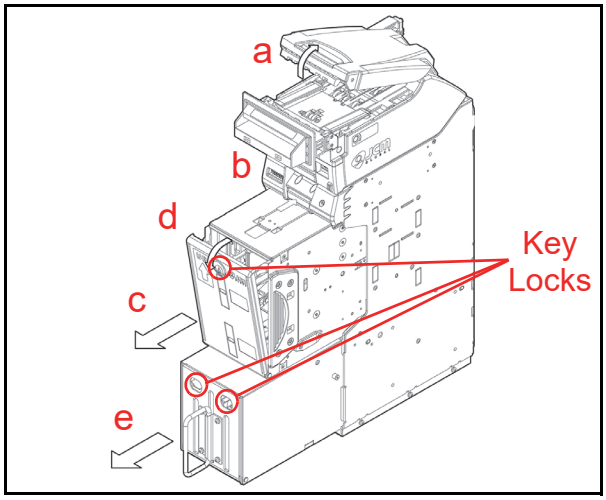


Figure 2-7 Clearing a Banknote Jam 1

4. Once the Recycler Unit is out of the Frame Assembly, check inside the Frame Housing and remove any jammed Banknotes that may be inside (Figure 2-8 b).
5. If the jammed Banknote is not visible, unlock and open the Recycler Unit Door using the appropriate Key supplied (Figure 2-7 d); then remove the jammed Banknote from inside either the RC1-Bin Space, or the RC2-Bin Space of the Recycler Unit Assembly (Figure 2-8 c).
6. If the Banknote jam location is still not visible, pull the Cash Box out of the Frame (Figure 2-7 e) and remove the jammed Banknote from inside the Frame Unit (Figure 2-8 d).
7. Open the Cash Box Door using the appropriate User Supplied Key(s) as shown in Figure 2-7, and remove the jammed Banknote from inside the Cash Box (Figure 2-8 e).

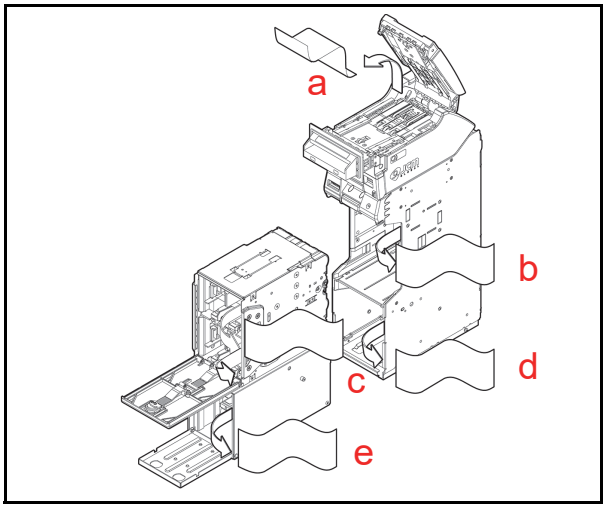


Figure 2-8 Clearing a Banknote Jam 2

Cleaning Procedure

It is important to keep the Banknote Path, Rollers, and Belts clean. Adhering foreign objects or dirt on the Validation Sensors may cause acceptance errors or an acceptance rate degradation. Use a soft lint-free Micro-fiber Cloth or a Cotton Swab to wipe dirt and stains from the surfaces of the Optical Sensors, Rollers and Belts. If necessary, blow foreign objects or dirt away using a jet of Compressed Air.

The Sensor Lenses are transparent, and made of a Polymer material; handle with care. Repeat the cleaning process as needed until the Banknote Transport Paths are free of contaminants.

Sensor Cleaning Procedure

Perform the following steps to clean the iPRO and iPRO-RC Unit's Sensors:

1. Turn the iPRO-RC Unit and the Host Machine's Power OFF.
2. Open the iPRO Transport Upper Guide.
3. Clean the Sensors, Lenses and Rollers within the iPRO Transport Unit.
4. Pull the Recycler Unit out of the Frame Housing.
5. Clean the Recycler Unit Lenses and Rollers, and the Rollers located in the Cash Box, as well.

NOTE: It is strongly recommended that regular cleaning be performed at least once a month.

Caution: DO NOT use alcohol, solvents, abrasive cleaning agents, or citrus based cleaners that can damage the plastic surface of the device when cleaning it. The lenses can become clouded by chemical evaporation residue that may cause acceptance errors.

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

NOTE: When closing the iPRO's Transport Unit or the Recycler Unit's Upper Guides, ensure they firmly click into place when closed. Also, when re-assembling the iPRO-RC Unit, ensure that it re-seats correctly into place when reassembly is complete.

NOTE: Wipe and clean all of the Green-colored Rollers and Belts shown in Figure 2-10 on page 2-12 using a slightly damp (not wet), lint-free Micro-fiber cloth.

Caution: DO NOT allow liquids to drip into the Unit's interior; otherwise, the Unit may not operate correctly.

NOTE: Cleaning the Pick Roller should be performed only when appropriate Operator training has been completed!

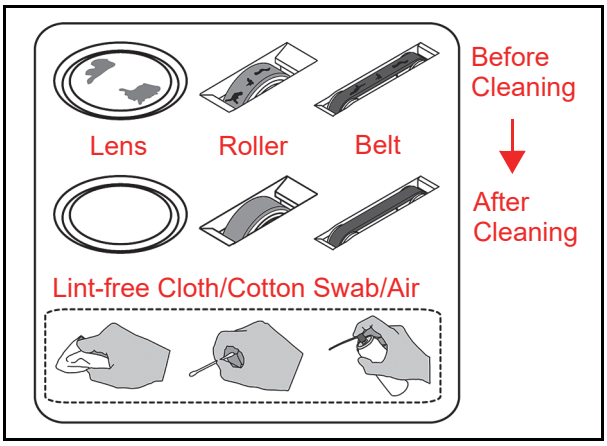


Figure 2-9 Sensor and Roller Cleaning

Sensor and Roller Locations

Figure 2-10 illustrates the various iPRO-RC Unit's sensor cleaning locations. Table 2-11 lists the iPRO-RC sensor type cleaning methods.

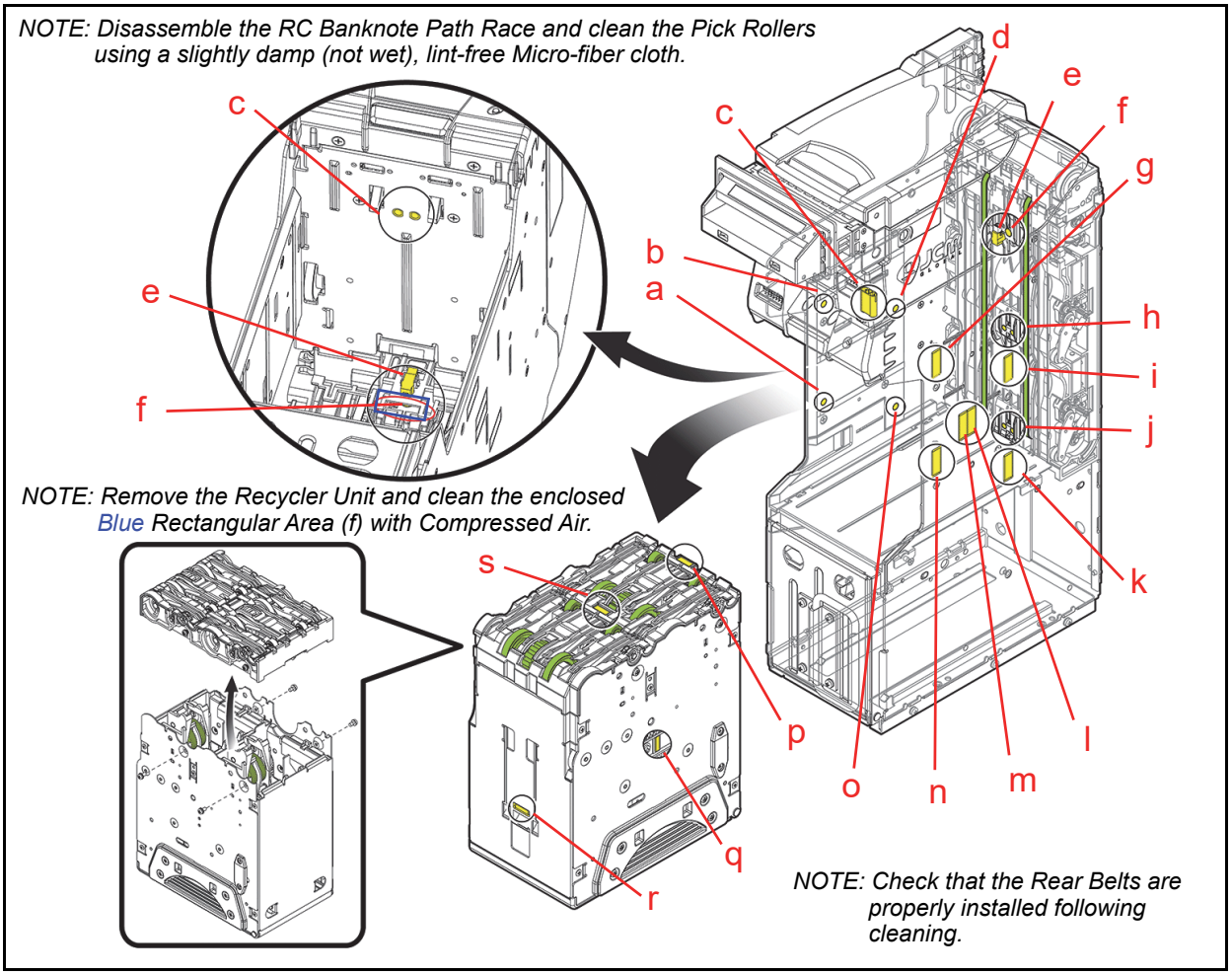


Figure 2-10 iPRO-RC Sensor Cleaning Locations

Table 2-11 iPRO-RC Sensor Type Cleaning Methods

Sym.	Sensor/Roller Type	Sym.	Sensor/Roller Type	Cleaning Method
a	RC2 End Sensor LED	k	RC2 Full Sensor LED	Wipe clean using a lint-free Micro-fiber cloth, or blow clean using Compressed Air*
b	RC1 End Sensor LED	l	Lifter Home Position Sensor LED	
c	Recycle Unit Sensor	m	Lifter Home Position Sensor PT	
d	RC1 Full Sensor PT	n	RC2 End Sensor PT	
e	Double Notes Detection Sensor LED	o	RC2 Full Sensor PT	
f	Double Notes Detection Sensor PT	p	Transport Sensor 2 Prism	
g	RC1 End Sensor PT	q	Lifter Home Position Sensor Prism	
h	Transport Sensor 1	r	Recycler Unit Sensor Prism	
i	RC1 Full Sensor LED	s	Transport Sensor 1 Prism	
j	Transport Sensor 2			

*. Wipe and clean all of the Green-colored Rollers and Belts shown in Figure 2-10 using a slightly damp (not wet), lint-free Micro-fiber cloth.
Caution! If liquids drip into the interior, the Unit may not perform correctly.

Standard Interface Circuit Schematics

Figure 2-11 illustrates the iPRO-RC USB Interface Schematic Diagram.

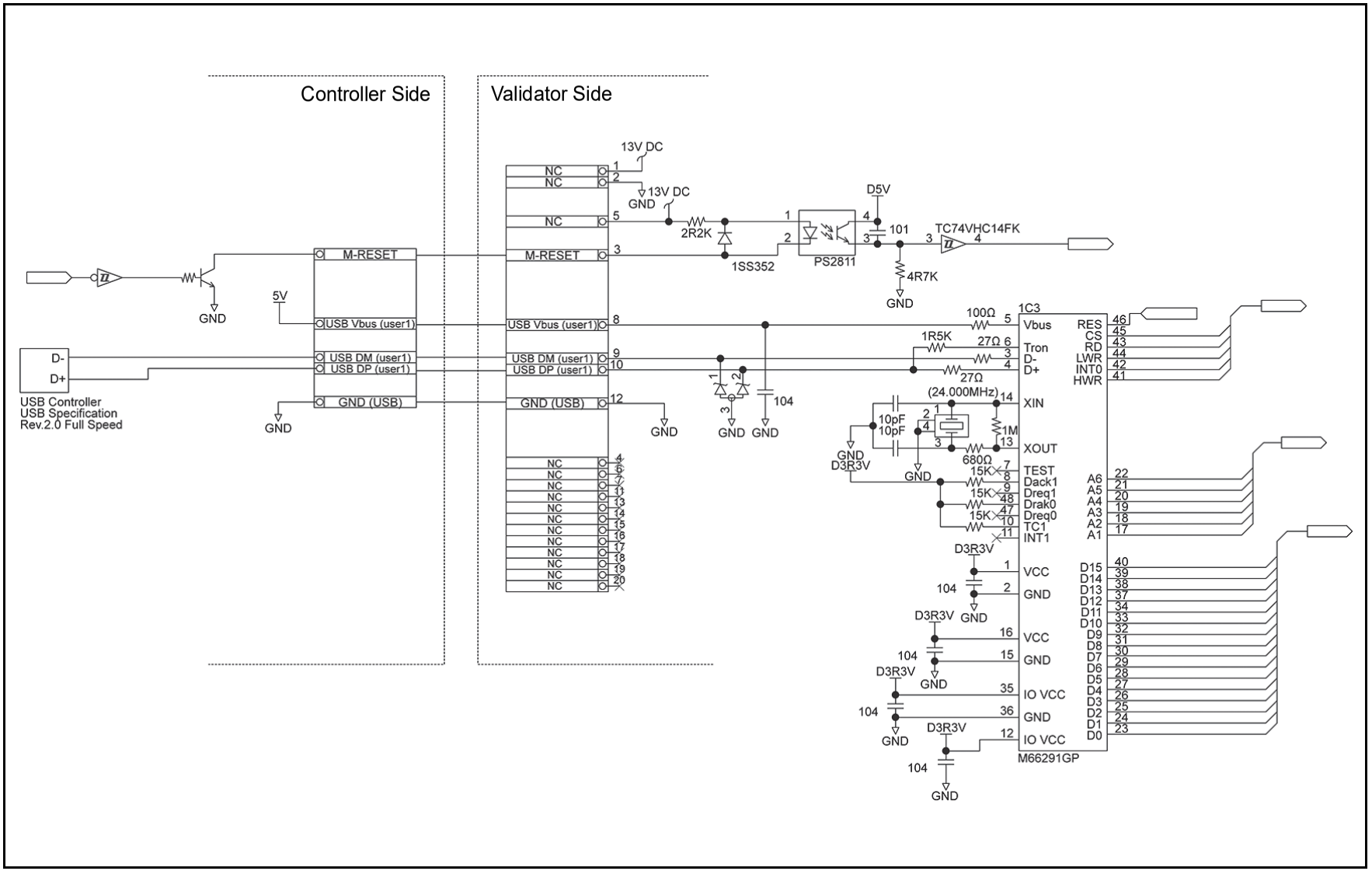


Figure 2-11 iPRO-RC USB Interface Schematic Diagram

Standard Interface Circuit Schematics (Continued)

Figure 2-12 illustrates the iPRO-RC Photo-Coupler Interface Schematic Diagram.

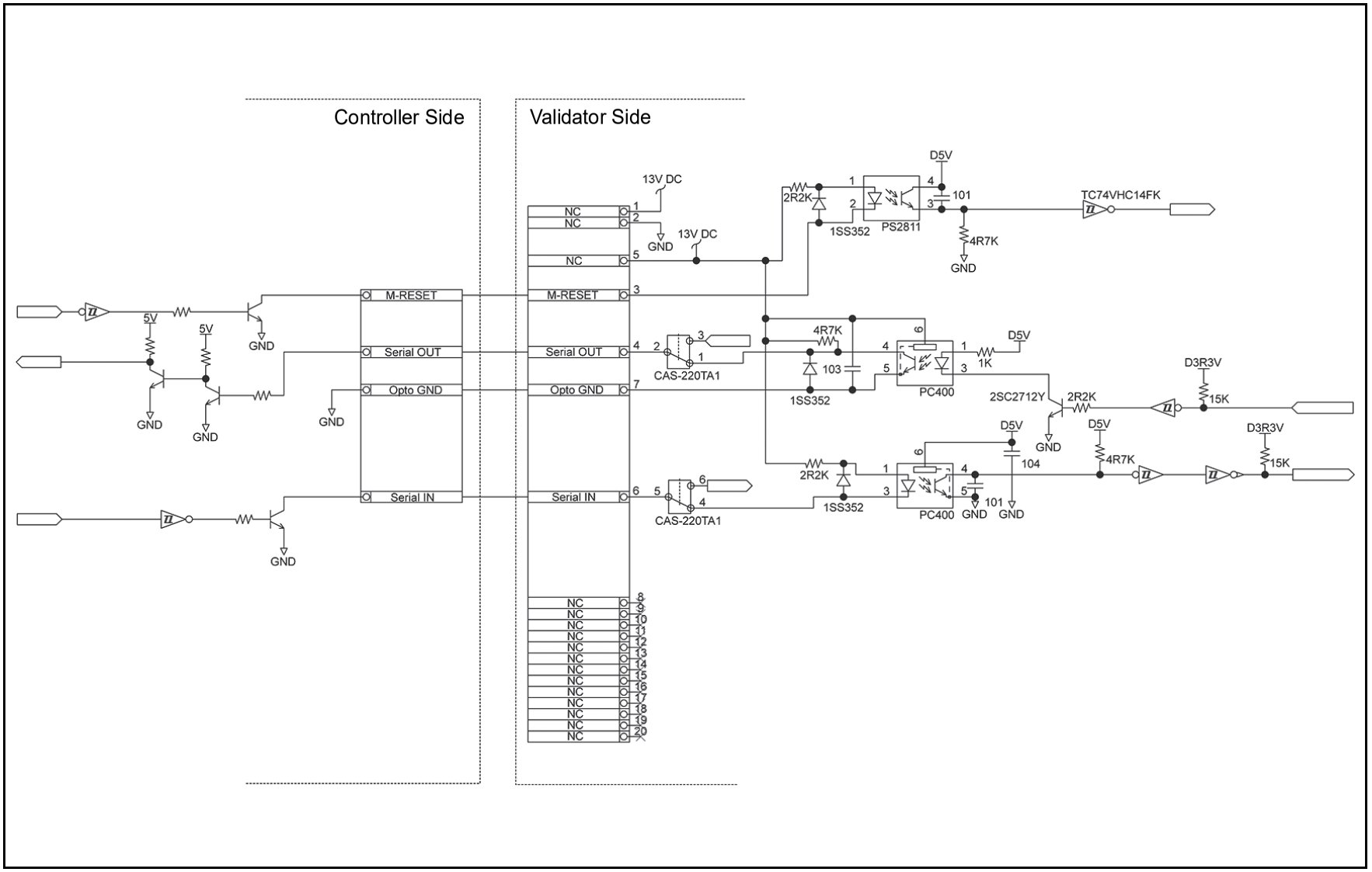


Figure 2-12 iPRO-RC Photo-Coupler Interface Schematic Diagram

Standard Interface Circuit Schematics (Continued)

Figure 2-13 illustrates the iPRO-RC RS232C Interface Schematic Diagram.

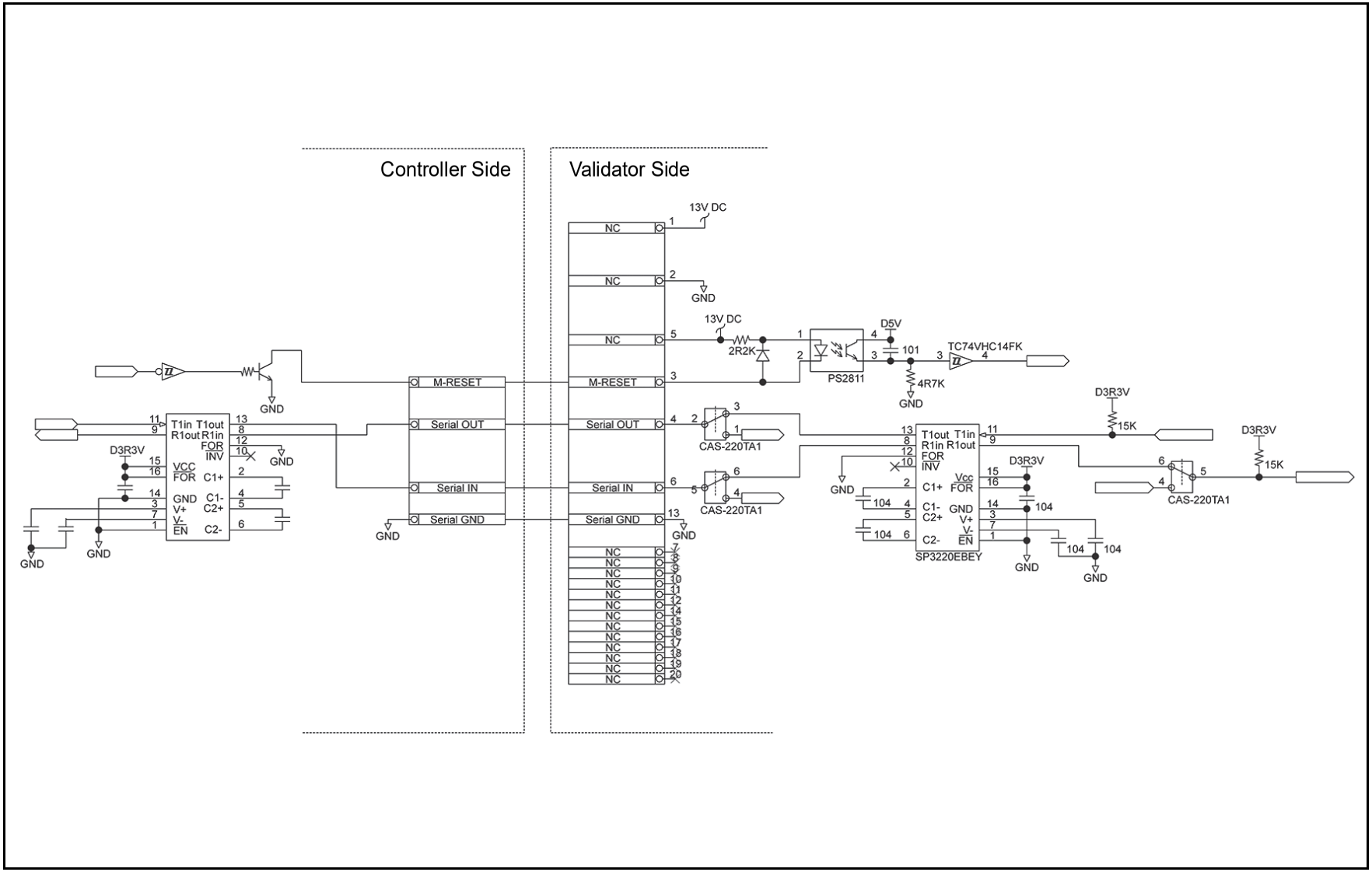


Figure 2-13 iPRO-RC RS232C Interface Schematic Diagram

Standard Interface Circuit Schematics (Continued)

Figure 2-14 illustrates the iPRO-RC ccTalk Interface Schematic Diagram.

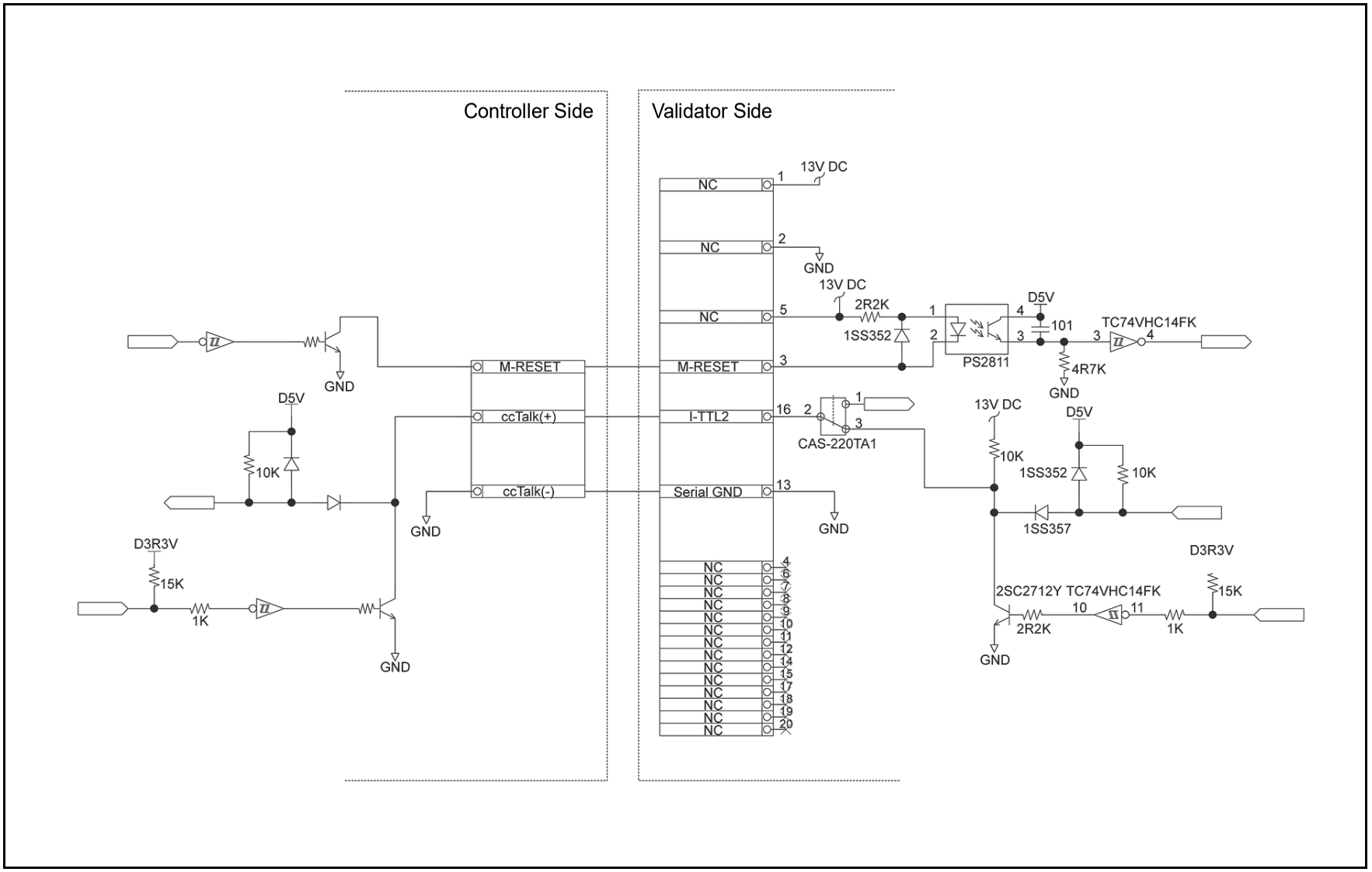


Figure 2-14 iPRO-RC ccTalk Interface Schematic Diagram

Standard Interface Circuit Schematics (Continued)

Figure 2-15 illustrates the iPRO-RC Bezel Circuit Interface Schematic Diagram

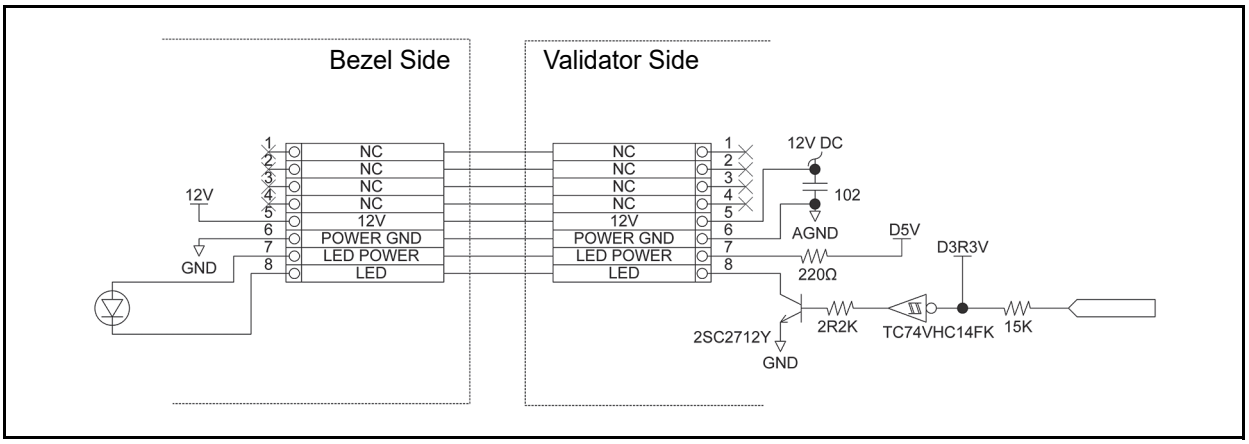
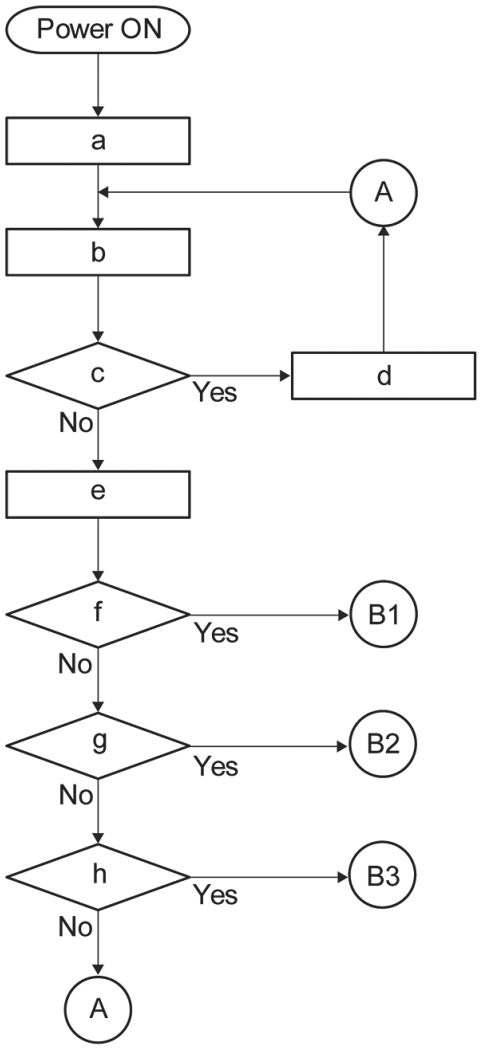


Figure 2-15 iPRO-RC Bezel Circuit Interface Schematic Diagram

Operational Flowchart

Figure 2-16 depicts a typical iPRO-RC Primary Sequence flow process.



Apply Power to the Unit.

a) Initializing

A) Return from “h” or “d” in this Flow

b) Stand-by

c) Is Acceptance inhibited?

d) External LED extinguished

e) External LED lights

f) Is a Banknote inserted?

B1) To Figure 2-17 “Validation” Flow on page2-19 of this Service Manual

g) Is Banknote dispensing required?

B2) To Figure 2-20 “Dispensing” Flow on page2-22 of this Service Manual

h) Is Banknote collection required?

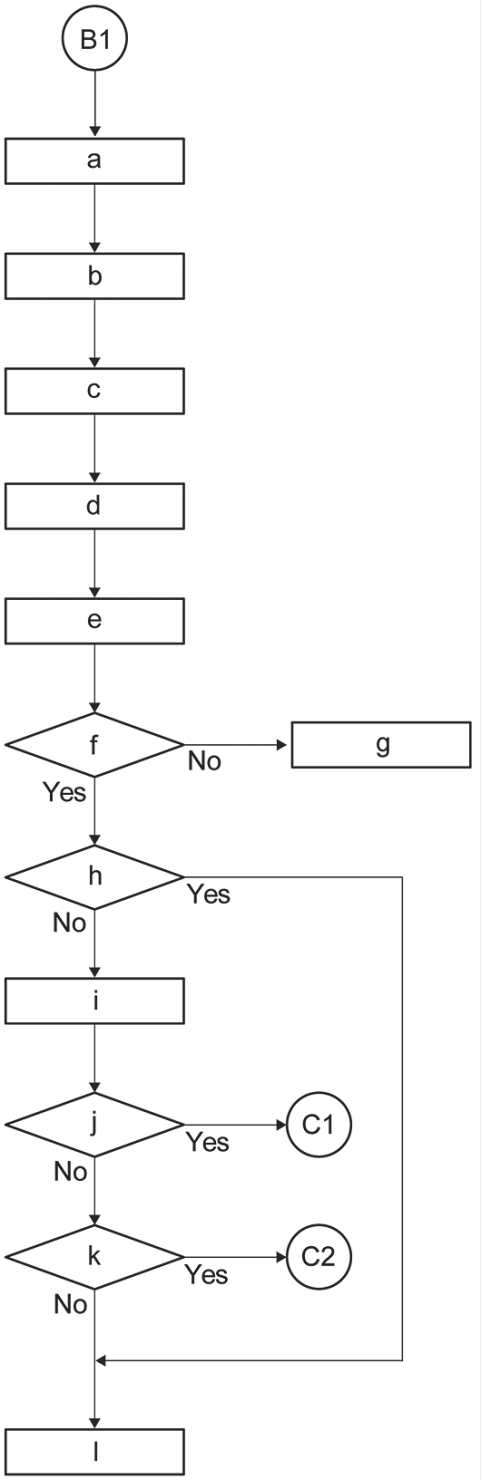
B3) To Figure 2-22 “Retrieving” Flow on page2-23 of this Service Manual

A) Return to “A” in this Flow

Figure 2-16 iPRO-RC Operational Flowchart (Primary Sequence)

Operational Flowchart (Continued)

Figure 2-17 depicts a typical iPRO-RC Validation flow process.



B1) Return from Figure 2-16 “Primary Sequence” Flow on page2-18 of this Service Manual

a) Intake the Banknote

b) Centering the Banknote

c) Transporting the Banknote

d) Sampling the Banknote Data

e) Stop Transportation

f) Is the Banknote authentic?

g) Returning the Banknote

h) Was Acceptance Inhibited?

i) Sending Denomination Signal

j) Is the Banknote being stored in the Recycle Unit?

C1) To Figure 2-18 “Stacking/Recycle Unit” Flow on page2-20 of this Service Manual

k) Is the Banknote being stored in the Cash Box?

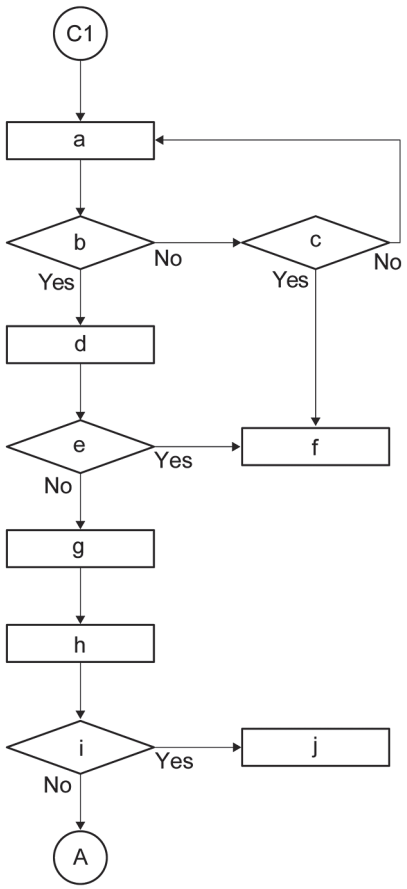
C2) To Figure 2-19 “Stacking/Cash Box” Flow on page2-21 of this Service Manual

l) Return the Banknote.

Figure 2-17 iPRO-RC Operational Flowchart (Validation)

Operational Flowchart (Continued)

Figure 2-18 depicts a typical iPRO-RC Recycler Unit Stacking flow process.



C1) Return from Figure 2-17 “Validation” Flow on page2-19 of this Service Manual

a) Transporting the Banknote to the Recycler Unit

b) Is the Banknote transporting to the Recycler Unit?

c) Was transportation retried three (3) time?

d) Rotating the Anti-Pullback (PB) Unit

e) Was an Abnormal Error detected by the PB Unit?

f) Stop performance, and send an Abnormal Operation Signal (*1)

g) Sending an Acceptance VEND Signal

h) Stacking the Banknote

i) Is the Recycler Unit full?

j) Sending a FULL Signal (*2)

A) Return to the Figure 2-16 “Primary Sequence” Flow on page2-18 of this Service Manual

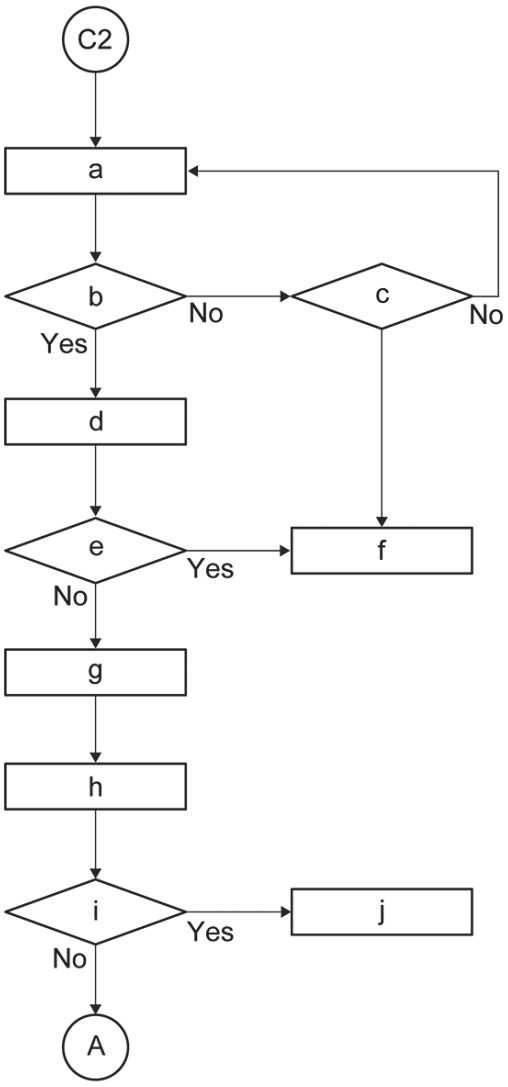
*1). When an abnormal signal is received, remove and re-supply Power to the iPRO-RC after resolving the problem, or send a RESET Command from the Host Machine.

*2). When either the RC1 or RC2-Bin Space inside the Recycler Unit is full, the recyclable Banknotes will be stacked into the Cash Box until the “Full” detection is cleared. The iPRO-RC responds via Status Request from the Host Machine while it is performing when either the RC1 or RC2-Bin Spaces are full.

Figure 2-18 iPRO-RC Operational Flowchart (Stacking/Recycler Unit)

Operational Flowchart (Continued)

Figure 2-19 depicts a typical iPRO-RC Cash Box Stacking flow process.



C2) Return from Figure 2-17 “Validation” Flow on page2-19 of this Service Manual

a) Transporting the Banknote to the Cash Box

b) Is the Banknote transporting to the Cash Box?

c) Was transportation retried three (3) time?

d) Rotating the Anti-Pullback (PB) Unit

e) Was an Abnormal Error detected by the PB Unit?

f) Stop performance, and send an Abnormal Operation Signal (*3)

g) Sending an Acceptance VEND Signal

h) Stacking the Banknote

i) Is the Cash Box full?

j) Stop performance and sending a FULL Signal (*4)

A) Return to the Figure 2-16 “Primary Sequence” Flow on page2-18 of this Service Manual

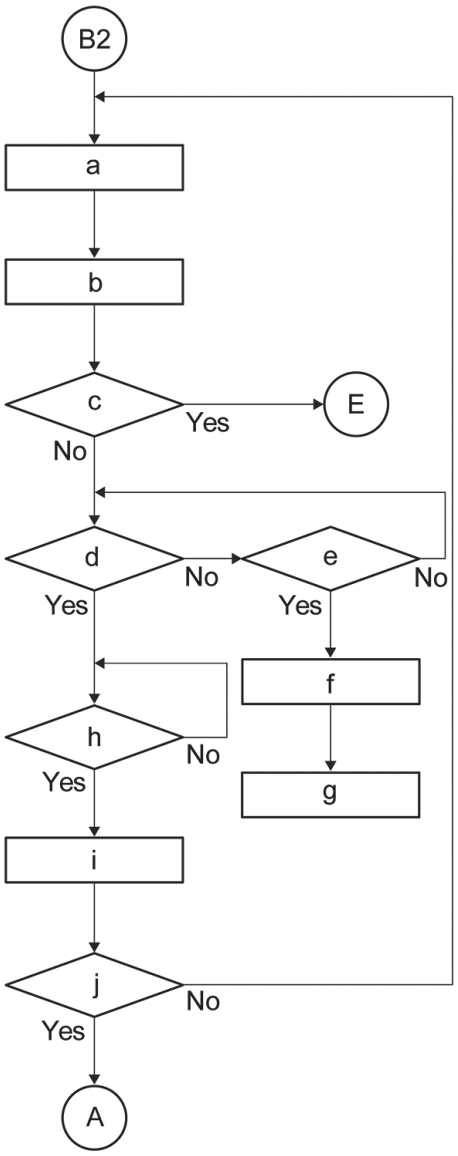
*3). When an Abnormal Signal is received, remove power, resolve the problem, and re-apply Power to the iPRO-RC; or send a RESET Command from the Host Machine to the iPRO-RC.

*4). When a “Cash Box Full” Signal is received, retrieve the Banknotes from the Cash Box and re-seat the Cash Box back into the Unit. The iPRO-RC will automatically perform its re-initialization movement operation.

Figure 2-19 iPRO-RC Operational Flowchart (Stacking/Cash Box)

Operational Flowchart (Continued)

Figure 2-20 depicts a typical iPRO-RC Dispensing flow process.



B2) Return from the Figure 2-16 “Primary Sequence” Flow on page2-18 of this Service Manual

a) Transporting the Banknote

b) Sampling the Banknote data

c) Abnormal Error occur?

E) To the Figure 2-21 “Abnormal Error” Flow on page2-23 of this Service Manual

d) Is the Banknote transporting to the Insertion Slot?

e) Was transportation retried ten (10) times?

f) Stop performance and sending Dispensing VEND Signal (*5)

h) Is the dispensing Banknote removed?

g) Sending Abnormal Signal

i) Sending Dispensing VEND Signal

j) Has the number of required Banknote dispensed?

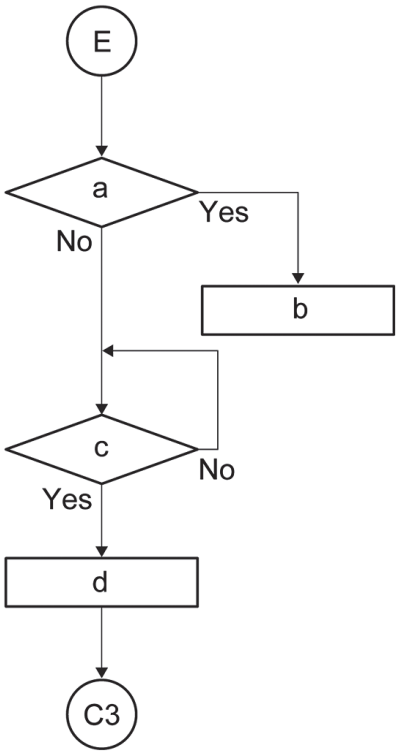
A) Return to Figure 2-16 “Primary Sequence” Flow on page2-18 of this Service Manual

*5). The specific Banknote position may be treated as Abnormal, and an “Abnormal Condition Error” state will occur instead of the normal dispensing “VEND Signal” being sent.

Figure 2-20 iPRO-RC Operational Flowchart (Dispensing)

Operational Flowchart (Continued)

Figure 2-21 depicts a typical iPRO-RC Abnormal Error flow process.



E) Return from the Figure 2-20 “Dispensing” Flow on page2-22 of this Service Manual

a) Was transportation retried two (2) times? (*6)

b) Sending Abnormal Signal

c) Is a Banknote being dispensed from the Recycler Unit?

d) Stop transportation

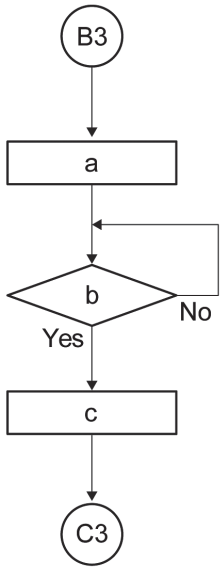
C3) Return to the Figure 2-23 “Retrieving/Cash Box” Flow on page2-24 of this Guide

*6). The specific Banknote position, or an abnormal Banknote may be treated as an “Abnormal Error” occurrence condition.

Figure 2-21 iPRO-RC Operational Flowchart (Abnormal Error)

Operational Flowchart (Continued)

Figure 2-22 depicts a typical iPRO-RC Retrieving flow process.



B3) Return from the Figure 2-16 “Primary Sequence” Flow chart on page2-18 of this Service Manual

a) Transporting the Banknote

b) Is a Banknote being dispensed from the Recycler Unit?

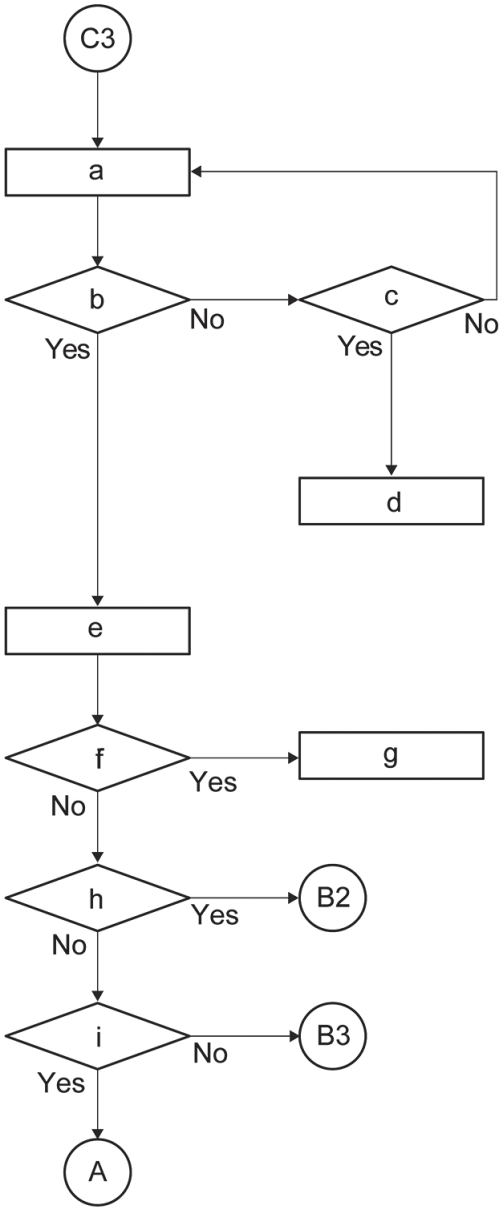
c) Stop transportation

C3) To the Figure 2-23 “Retrieving/Cash Box” Flow on page2-24 of this Service Manual

Figure 2-22 iPRO-RC Operational Flowchart (Retrieving)

Operational Flowchart (Continued)

Figure 2-23 depicts a typical iPRO-RC Retrieving/Cash Box flow process.



C3) Return from Figure 2-22 “Retrieving” Flowchart on page2-23 of this Service Manual

a) Transport the Banknote to the Cash Box

b) Is the Banknote being transported to the Cash Box?

c) Was transportation retried three (3) times?

d) Stop transportation and sending Abnormal Signal (*7)

e) Retrieving the Banknote

f) Is the Cash Box FULL detected?

g) Stop performance and send the FULL Signal (*8)

h) Is the Banknote retrieved while dispensing error?

B2) To the Figure 2-20 “Dispensing” Flow on page2-22 of this Service Manual

i) Has the number of required Banknotes retrieved while retrieving sequence?

B3) To the Figure 2-22 “Retrieving” Flow on page2-23 of this Service Manual

A) To the Figure 2-16 “Primary Sequence” Flow on page2-20 of this Service Manual

*7). When an Abnormal Signal is received, remove power, resolve the problem, and reapply Power to the iPRO-RC, or send a RESET Command from the Host Machine to the iPRO-RC.

*8). When a “Cash Box Full” Signal is received, retrieve the Banknotes from the Cash Box, and re-seat the Cash Box back into the Unit. The iPRO-RC will automatically perform its re-initialization movement operation.

Figure 2-23 iPRO-RC Operational Flowchart (Retrieving/Cash Box)

3 COMMUNICATIONS

This section was intentionally left out due to a Non-Disclosure Agreement requirement.

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iPRO-RC™ Series
Banknote Recycler
Section 4

4 DISASSEMBLY/REASSEMBLY

This section provides disassembly and reassembly instructions for the iPRO-RC™ Series Banknote Recycler Unit Assembly (iPRO-RC). This section contains the following information:

NOTE: Calibration is required after reassembly (Refer to "Calibration" on page 6-5).

- Tool Requirements
- Power Source Board Removal
- Lifter Motor Encoder Board Assy Removal
- Recycler CPU Board Assy Removal
- Emission Side Double Note Sensor Removal
- Lifter Motor Assy Removal
- Upper & Lower Full Sensor PT/Upper & Lower End Sensor LED Removal
- Upper & Lower Full Sensor LED/End Sensor PT/Lifter Home Position Sensor LED & PT Removal
- Upper & Lower Flapper Pusher Lever Solenoid Removal
- Flapper Open/Close Circuit Board Removal
- Banknote Transaction Sensor/Transport Unit Encoder Board & Double Note Sensor PT Removal
- Banknote Transaction Sensor & Box Sensor Board Removal
- Recycler Encoder Board Removal
- Upper & Lower Recycler Transport Motor Assy Removal
- Timing Belt Removal
- Pick Roller Removal
- Feed Roller Removal
- Impeller and Stop Roller Removal
- O-Ring (Pusher Plate) Removal
- Roller Timing Belt and O-Ring Removal
- Pusher Plate Re-installation

Tool Requirements

The following tools are required to perform iPRO-RC disassembly and reassembly.

- #1 & #2 Phillips Screw Drivers
- A #2, #2.5, #3 and #4 E-ring Tool
- Needlenose Pliers
- Tweezers

Power Source Board Removal

To remove the Power Source Circuit Board, proceed as follows:

1. Separate the Transport Unit, Recycler Box Unit and Cash Box Unit from the Frame Housing.
2. Remove the two (2) Mounting Screws (Figure 4-1 a_1 & a_2) retaining the Power Source Circuit Board (Figure 4-1 b) in place, and take the Power Source Circuit Board off the top of the Frame.

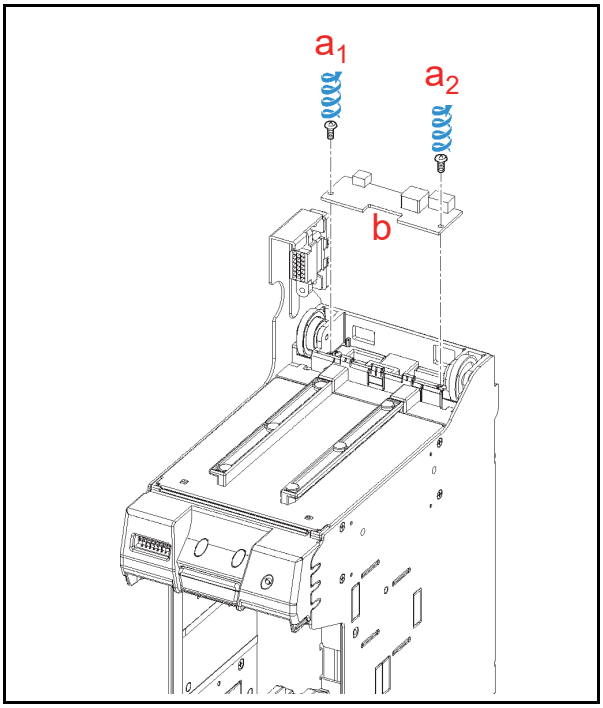

Figure 4-1 Power Source Circuit Board Removal

Lifter Motor Encoder Board Assy Removal

To remove the Lifter Motor Encoder Circuit Board Assembly, proceed as follows:

1. Remove the four (4) Mounting Screws (Figure 4-2 a_1 to a_4) retaining the UBA/iPRO-RC Upper Frame in place (Figure 4-2 b), and lift the Upper Frame up and off the Frame top.
2. Remove the single (1) Mounting Screw (Figure 4-2 c) retaining the Lifter Motor Encoder Circuit Board Assembly in place (Figure 4-2 d); unplug the single (1) Connector (Figure 4-2 e), and then remove the Lifter Motor Encoder Circuit Board Assembly from the Frame.

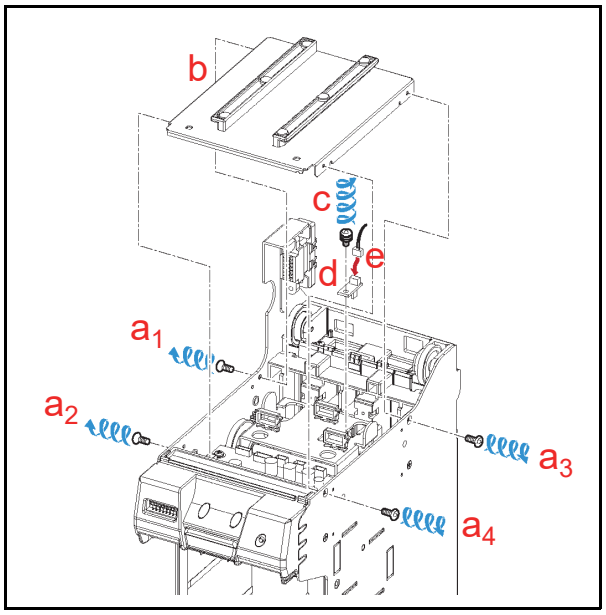

Figure 4-2 Lifter Motor Encoder Circuit Board Assembly Removal

Recycler CPU Board Assy Removal

To remove the Recycler CPU Circuit Board Assembly, proceed as follows:

1. Unplug the twelve (12) Connectors (Figure 4-3 a) from the Recycler CPU Circuit Board Assembly (Figure 4-3 b), and remove the three (3) Harnesses from their three (3) related Retainer Clamps (Figure 4-3 c_1, c_2 & c_3).

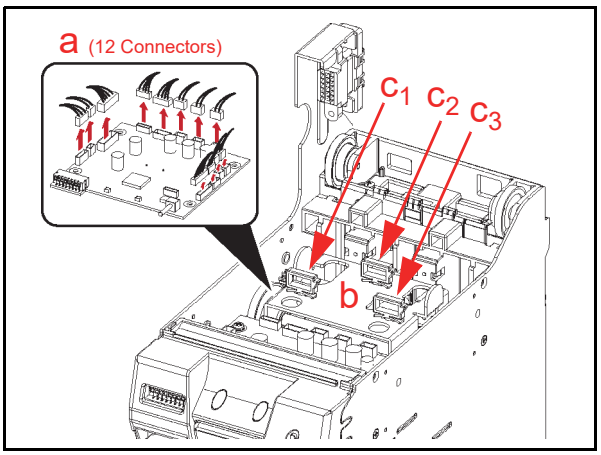

Figure 4-3 Connector & Harness Removals

2. Remove the two (2) Mounting Screws (Figure 4-4 a_1 & a_2) retaining the bottom of the RC Bezel Assembly (Figure 4-4 b) in place, and lift the RC Bezel Assembly off of the Frame.
3. Remove the four (4) Mounting Screws (Figure 4-4 c_1 to c_4) retaining the Recycler CPU Circuit Board Assembly in place (Figure 4-4 d) and take the Recycler CPU Circuit Board Assembly off of the Frame.

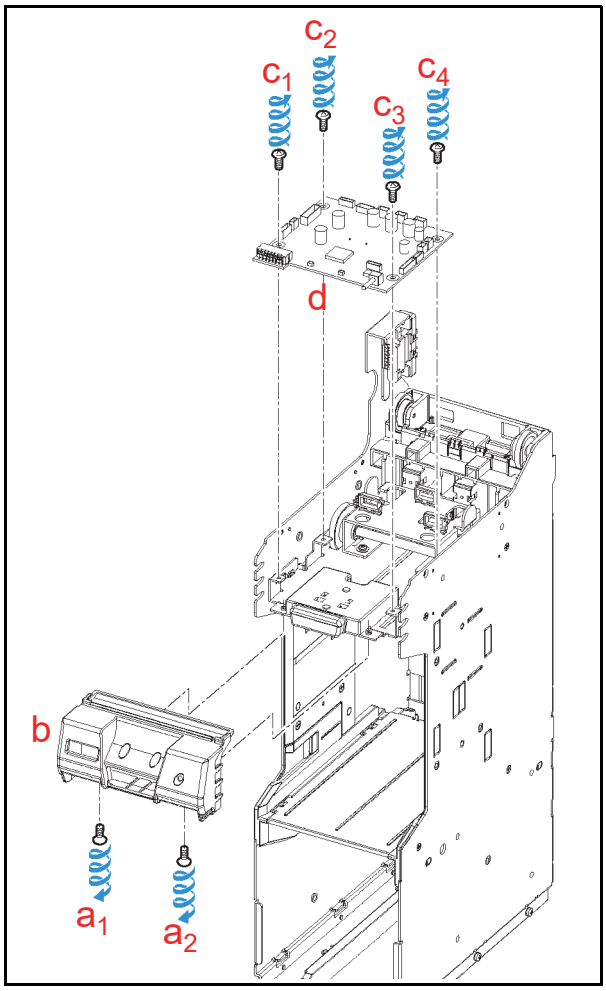

Figure 4-4 Recycler CPU Circuit Board Removal

Emission Side Double Note Sensor Removal

To remove the Emission Side Double Note Sensor, proceed as follows:

1. Remove the Frame Transport Guide (Figure 4-5 a) from the top of the Frame.

NOTE: When re-assembling the Frame Transport Guide onto the Frame, be sure to align the thick part of the Frame Transport Guide to the cut out area in the Frame (Figure 4-5 b).

2. Remove the Emission Side Double Note Sensor (Figure 4-5 c) from the Frame Transport Guide, and unplug its single (1) Signal Connector (Figure 4-5 d).

NOTE: If the Sensor Assembly does not remove easily, place the small head of a Flat-blade Screwdriver into the hole located on the back side of the Frame Transport Guide, and gently push the Sensor out of the Frame (Figure 4-5 e).

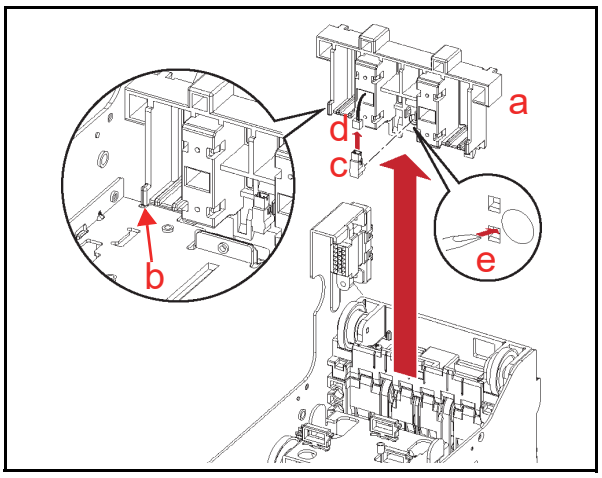

Figure 4-5 Emission Side Double Note Sensor Removal

Lifter Motor Assy Removal

To remove the Lifter Motor Assembly, proceed as follows:

1. Remove the four (4) Mounting Screws (Figure 4-6 a_1 to a_4) retaining the Lifter Motor Bracket in place (Figure 4-6 b), and take the Lifter Motor Bracket off of the Frame.

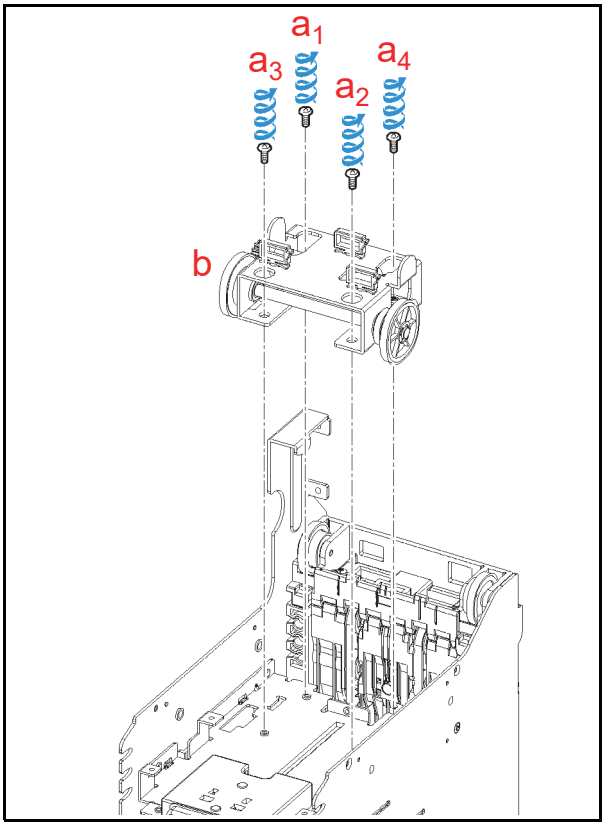

Figure 4-6 Lifter Motor Bracket Removal

2. Remove the single (1) E-Ring (Figure 4-7 a) and the single (1) Gear (Figure 4-7 b) from the Assembly.

NOTE: Ensure that the Parallel Pin (Figure 4-7 c) does not fall out when removing the Gear.

3. Remove the two (2) Mounting Screws (Figure 4-7 d_1 & d_2) retaining the Lifter Motor Assembly in place (Figure 4-7 e), and remove the Lifter Motor Assembly from the Lift Motor Bracket.

NOTE: When re-assembling the Motor, ensure that the Harness is correctly positioned as shown in Figure 4-7f, and that the Encoder Gear (Figure 4-7 g) does not touch either wall of the Sensor (Figure 4-7 h).

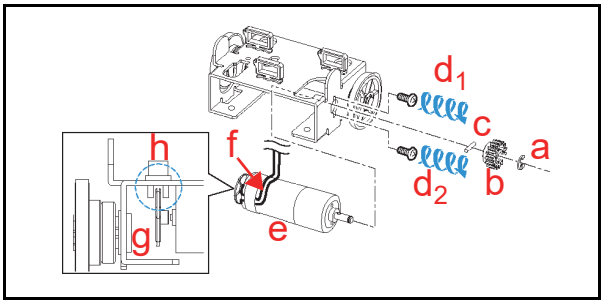

Figure 4-7 Lifter Motor Assy Removal

Upper & Lower Full Sensor PT/ Upper & Lower End Sensor LED Removal

To remove the Upper/Lower Full Sensor PT (Photo Transistor) and the Upper/Lower End Sensor LED, proceed as follows:

1. Remove the six (6) Mounting Screws (Figure 4-8 a_1 to a_6) retaining the Rear Frame Cover (Figure 4-8 b) to the back side of the Frame.
2. Remove the four (4) Mounting Screws (Figure 4-8 c_1 to c_4) retaining the Center Shelf in place (Figure 4-8 d) and slide it out of the Frame.

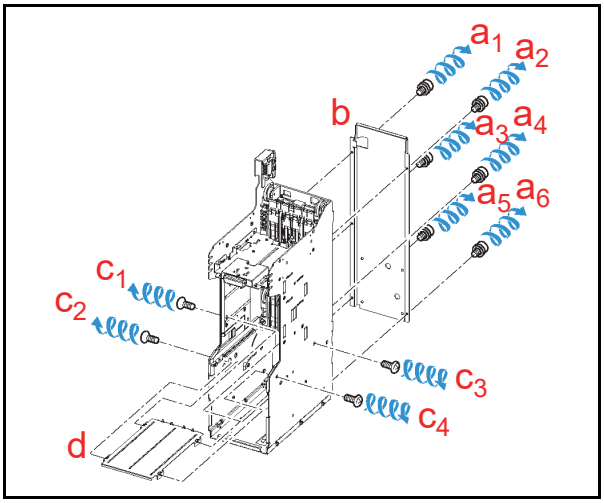

Figure 4-8 Rear Frame & Middle Frame Removal

3. Tilt the Rear Transport Assembly (Figure 4-9 a) backward and out of the Frame.

NOTE: Be careful that the Harness is not pinched between the Rear Transport Assembly and the Frame!

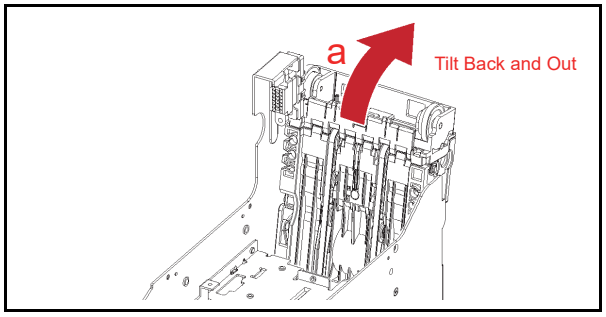

Figure 4-9 Rear Transport Assy Removal

4. Remove the five (5) Mounting Screws (Figure 4-10 a_1 to a_5) retaining the Left Frame Plate in place (Figure 4-10 b), and separate the Left Plate from the Frame bottom.

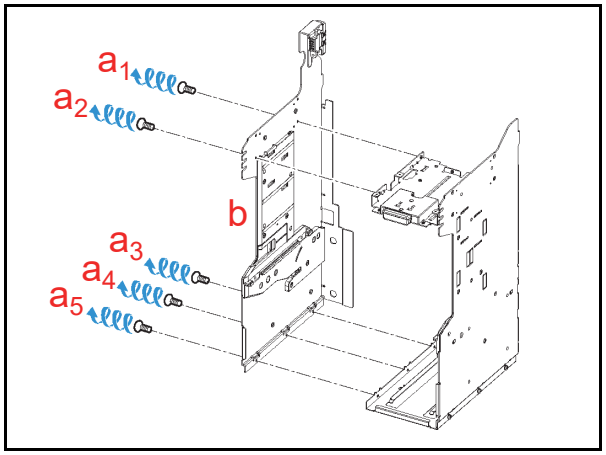

Figure 4-10 Left Frame Plate Removal

5. Remove the five (5) Mounting Screws (Figure 4-11 a_1 to a_5) retaining Frame Guide 4 in place (Figure 4-11 b), and remove Frame Guide 4 from the Left Frame Plate (Figure 4-11 c).

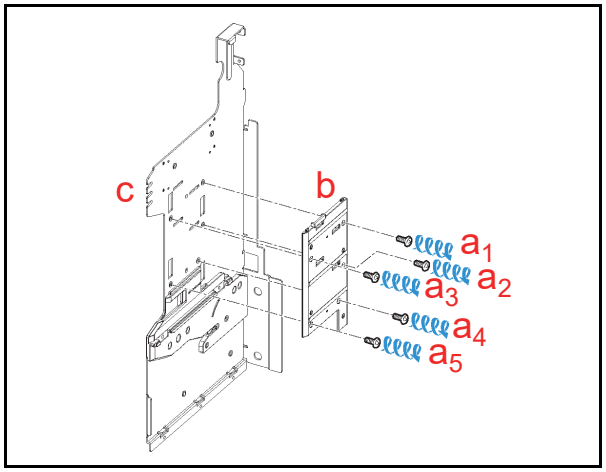

Figure 4-11 Frame Guide 4 Removal

6. Remove the four (4) Sensor Covers (Figure 4-12 a_1 to a_4); the Upper & Lower Full Sensor PTs (Figure 4-12 b & c) and the Upper & Lower End Sensor LEDs (Figure 4-12 d & e) located on the left side of the Frame from Frame Guide 4, and then unplug the four (4) related Signal Connectors (Figure 4-12 f_1 to f_4) from each Sensor.

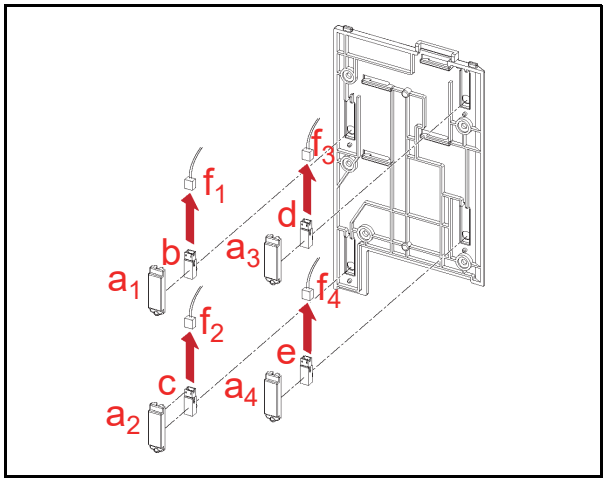

Figure 4-12 Full Sensor PTs and End Sensor LEDs Removal

Upper & Lower Full Sensor LED/ End Sensor PT/Lifter Home Position Sensor LED & PT Removal

To remove the Upper & Lower Full Sensor LED, the Upper & Lower End Sensor PT, and the Lifter Motor Home Position Sensor LED & PT, proceed as follows:

1. Remove the two (2) Mounting Screws (Figure 4-13 a_1 & a_2) retaining the UBA/iPRO-RC Internal Top Frame (Figure 4-13 b) in place, and take the UBA/iPRO-RC Internal Top Frame off of the Right Frame Assembly (Figure 4-13 c).

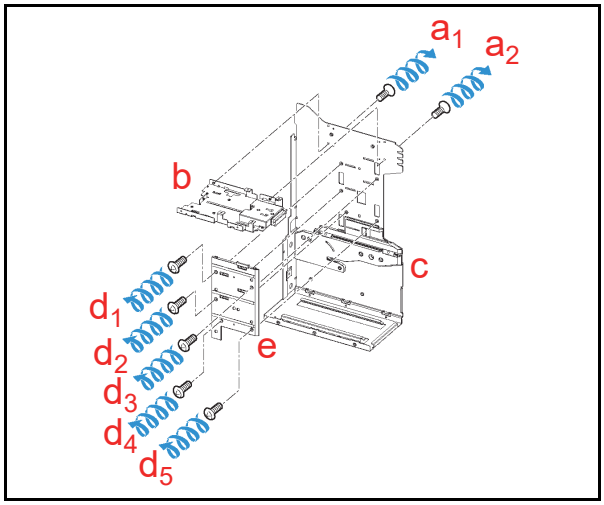

Figure 4-13 Frame Guide 3 Removal

2. Remove the five (5) Mounting Screws (Figure 4-13 d_1 to d_5) retaining Frame Guide 3 (Figure 4-13 e) in place, and separate the Frame Guide 3 from the Right Frame.
3. Remove the six (6) Sensor Covers (Figure 4-14 a_1 to a_6) and remove the Upper & Lower Full Sensor LEDs (Figure 4-14 b & c), the Upper & Lower End Sensor PTs (Figure 4-14 d & e) and the Lifter Home Position Sensor LED (Figure 4-14 f) and the Lifter Home Position Sensor PT (Figure 4-14 g) located on Frame Guide 3; then unplug the six (6) related Signal Connectors (Figure 4-14 h_1 to h_6) from each Sensor.

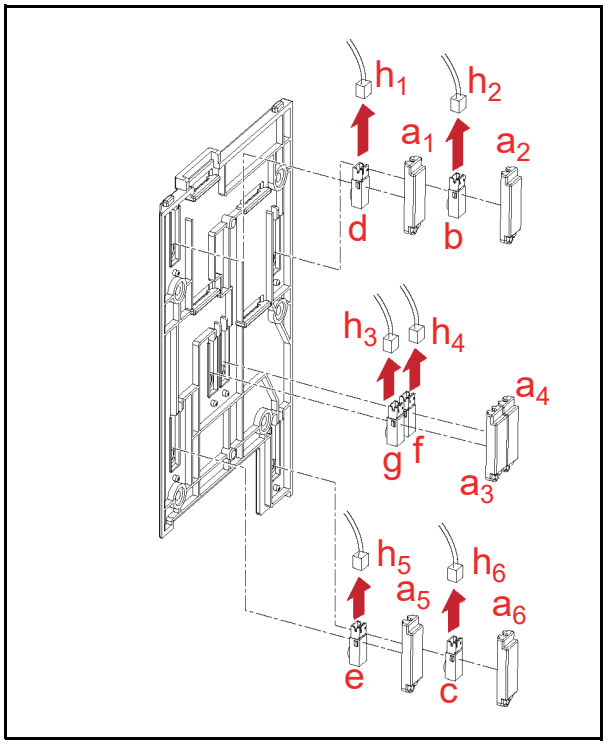

Figure 4-14 LEDs, Plates and Sensor Removal

Upper & Lower Flapper Pusher Lever Solenoid Removal

To remove the Flapper Pusher Lever Solenoid, proceed as follows:

1. Pull the Harness (Figure 4-15 a) to the back side of the Rear Transport Assembly (Figure 4-15 b).
2. Remove the six (6) Mounting Screws (Figure 4-15 c_1 to c_6) retaining the Upper Flapper Pusher Lever Solenoid (Figure 4-15 d) and the Lower Flapper Pusher Lever Solenoid in place (Figure 4-15 e); then remove both the Upper and Lower Flapper Lever Solenoids from the Rear Transport Assembly.

NOTE: When re-assembling both the Upper and Lower Flapper Solenoids, pull upward in the direction of the Red Arrow indicated in the Figure 4-15f inset, and then replace their related carrier with their mounting screws.

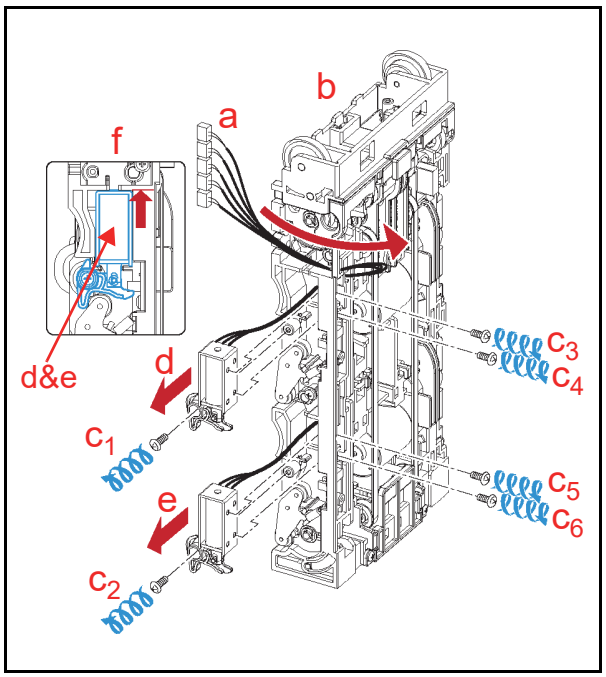

Figure 4-15 Upper & Lower Flapper Pusher Lever Solenoid Removal

Flapper Open/Close Circuit Board Removal

To remove the Flapper Open/Close Circuit Board, proceed as follows:

1. Remove the two (2) E-Rings (Figure 4-16 a_1 & a_2) retaining the two (2) Flapper Pusher Brackets (Figure 4-16 b_1 & b_2) in place, and remove the Flapper Pusher Brackets from the Rear Transport Assembly (Figure 4-16 c).
2. Remove the two (2) Mounting Screws (Figure 4-16 e_1 & e_2) retaining the Flapper Open/Close Circuit Boards (Figure 4-16 f_1 & f_2) in place, and unplug each of their related Signal Connectors (Figure 4-16 g_1 & g_2); then remove the two (2) Flapper Open/Close Circuit Boards from the Rear Transport Assembly.

NOTE: Before removing the Flapper Pusher Brackets, remove the two (2) Springs (Figure 4-16 d_1 & d_2) from the Rear Transport Assy.

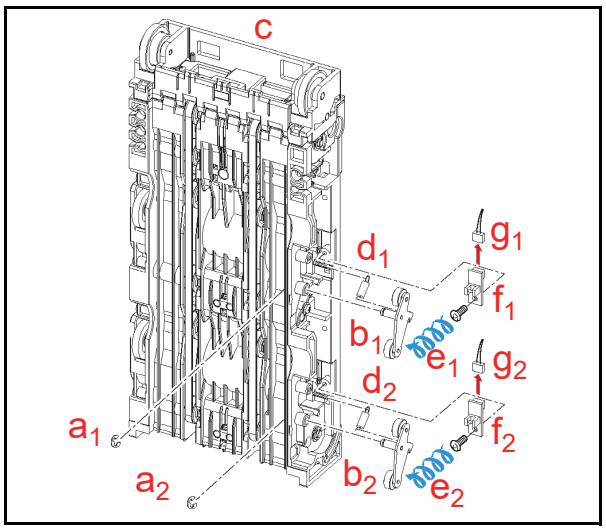

Figure 4-16 Flapper Open/Close Circuit Board Removals

Banknote Transaction Sensor/ Transport Unit Encoder Board & Double Note Sensor PT Removal

To remove the Banknote Transaction Sensor, the Transport Unit Encoder Circuit Board, and the Double Note Sensor PT, proceed as follows:

1. Remove the Banknote Transaction Sensor (Figure 4-17 a) from the Rear Transport Assembly, and unplug the single (1) Signal Connector (Figure 4-17 b) from the Sensor.

   NOTE: If the Sensor does not remove easily, place the head of a small Flat-blade Screwdriver into the hole located on the back side of the Frame Transport Guide, and push the Sensor out (Figure 4-17 c).

2. Remove the three (3) Mounting Screws (Figure 4-17 d_1, d_2 & d_3) retaining the Upper Rear Transport Cover (Figure 4-17 e) in place, and take the Upper Rear Transport Cover up and off the Rear Transport Assembly.
3. Remove the single (1) Mounting Screw (Figure 4-17 f) retaining the Transport Unit Encoder Board (Figure 4-17 g) in place, and take the Transport Unit Encoder Circuit Board off the Rear Transport Assembly; then unplug the single (1) Signal Connector (Figure 4-17 h).
4. Remove the Double Note Sensor PT (Figure 4-17 i) from the Rear Transport Assembly, and then unplug the single (1) Connector (Figure 4-17 j) from the Double Note Sensor PT.

   NOTE: If the Sensor does not remove easily, place the head of a small Flat-blade Screwdriver into the hole located on the back side of the Frame Transport Guide, and push the Sensor out (Figure 4-17 c).

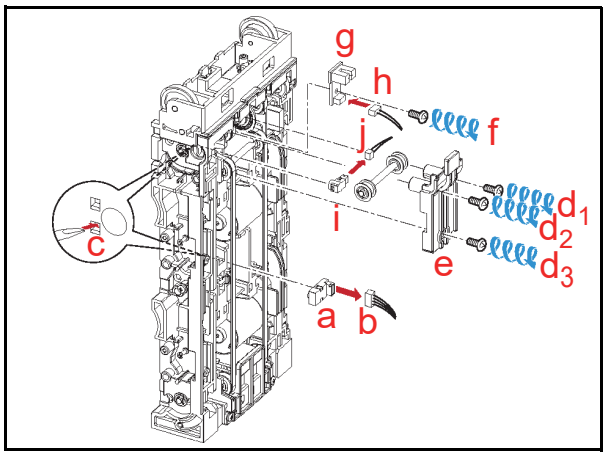

Figure 4-17 Sensors and Encoder Circuit Board Removal

Banknote Transaction Sensor & Box Sensor Board Removal

To remove the Banknote Transaction Sensor and the Box Sensor Circuit Board, proceed as follows:

1. Remove the two (2) Mounting Screws (Figure 4-18 a_1 & a_2) retaining the Lower Rear Transport Cover (Figure 4-18 b) in place from the Rear Transport Assembly.
2. Remove the Banknote Transaction Sensor (Figure 4-18 c) from the Rear Transport Assembly and unplug the single (1) Signal Connector (Figure 4-18 d) from the Board.

   NOTE: If the Sensor does not remove easily, place the head of a small Flat-blade Screwdriver into the hole located on the back side of the Frame Transport Guide, and push the Sensor out (Figure 4-18 e).

3. Remove the Cash Box Detection Circuit Board (Figure 4-18 f) from the Rear Transport Assembly and unplug the single (1) Signal Connector (Figure 4-18 g) from the Board.

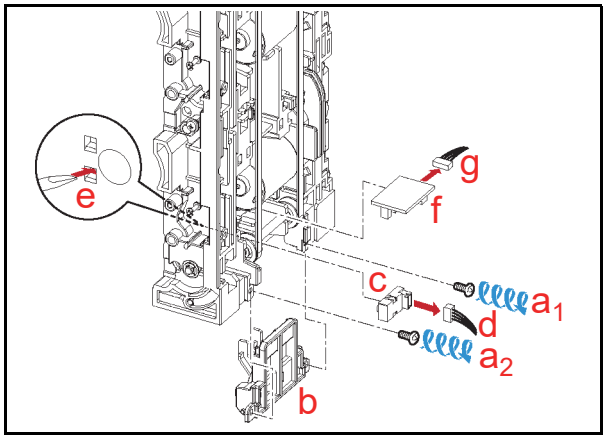

Figure 4-18 Banknote Transaction Sensor & Box Detection Circuit Board Removal

Recycler Encoder Board Removal

To remove the Recycler Encoder Circuit Board, proceed as follows:

1. Remove each of the four (4) Mounting Screws (Figure 4-19 a_1 to a_4 & b_1 to b_4) retaining two (2) Rear Transport Gear Covers (Figure 4-19 c_1 & c_2) in place, and take the Rear Transport Gear Covers off of the Rear Transport Assembly.
2. Remove each of the single (1) Mounting Screws (Figure 4-19 d_1 & d_2) retaining the two (2) Recycler Encoder Circuit Boards (Figure 4-19 e_1 & e_2) in place, and unplug each of the related single (1) Signal Connector's (Figure 4-19 f_1 & f_2) from each Board; then remove the Recycler Encoder Circuit Boards from the Rear Transport Assembly.

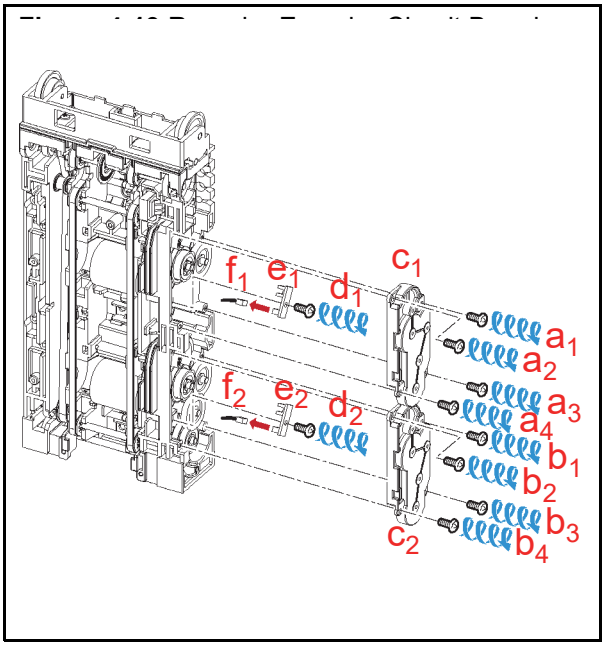

Figure 4-19 Recycler Encoder Circuit Board Removal

Upper & Lower Recycler Transport Motor Assy Removal

To remove the Recycler Transport Motors, proceed as follows:

1. Remove the nine (9) Gears (Figure 4-20 a_1 to a_9), the six (6) Shafts (Figure 4-20 b_1 to b_6) and the two (2) Poly Vinyl Sliders (Figure 4-20 c_1 & c_2) from the Rear Transport Assembly.

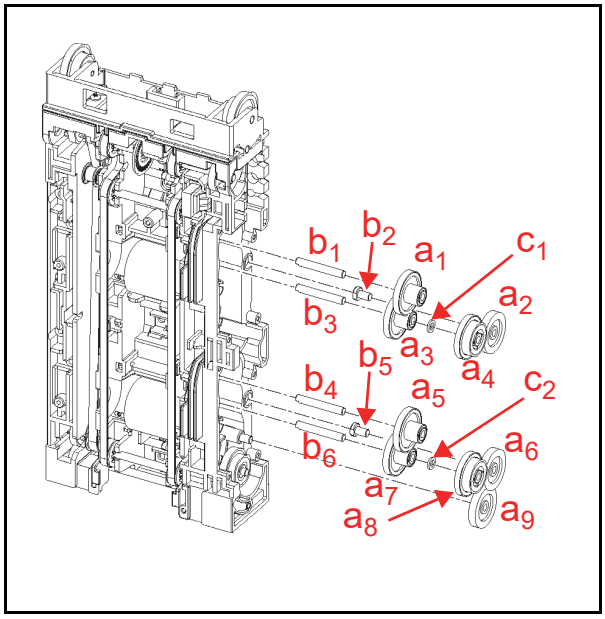

Figure 4-20 Gear & Shaft Removal

2. Remove the two (2) Mounting Screws (Figure 4-21 a_1, a_2 & b_1, b_2) retaining the two (2) Recycler Transport Motors (Figure 4-21 c_1 & c_2) in place; then remove the Recycler Transport Motor from the Rear Transport Assembly.

NOTE: When re-assembling the Motors, ensure that the holes on the Motors (Figure 4-21 d_1 & d_2) are visible from the front side of the Rear Transport Assembly.

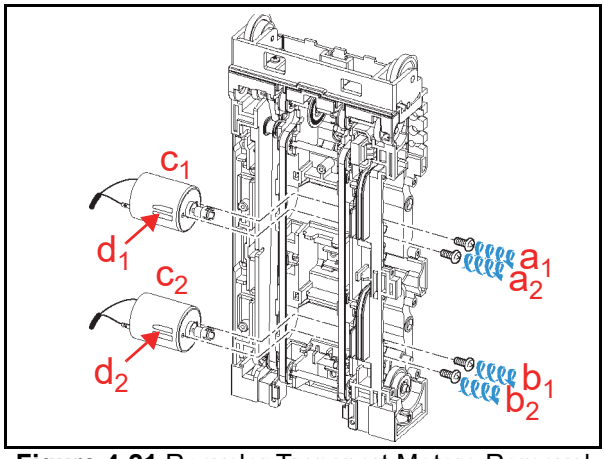

Figure 4-21 Recycler Transport Motors Removal

Timing Belt Removal

To remove the Timing Belt, proceed as follows:

1. Remove the two (2) Mounting Screws (Figure 4-22 a_1 & a_2) retaining the Rear Transport Upper Frame (Figure 4-22 b) in place, and take the Rear Transport Upper Frame off of the Rear Transport Assembly.
2. Remove the two (2) Springs (Figure 4-22 c_1 & c_2) retaining the single (1) Shaft (Figure 4-22 d) in its rest position, and remove the Shaft and the two (2) Gears (Figure 4-22 e_1 & e_2).

NOTE: When re-inserting the Shaft, press the edge of the Shaft in using the Springs visible from the front side of the Rear Transport Assembly (Figure 4-22 f).

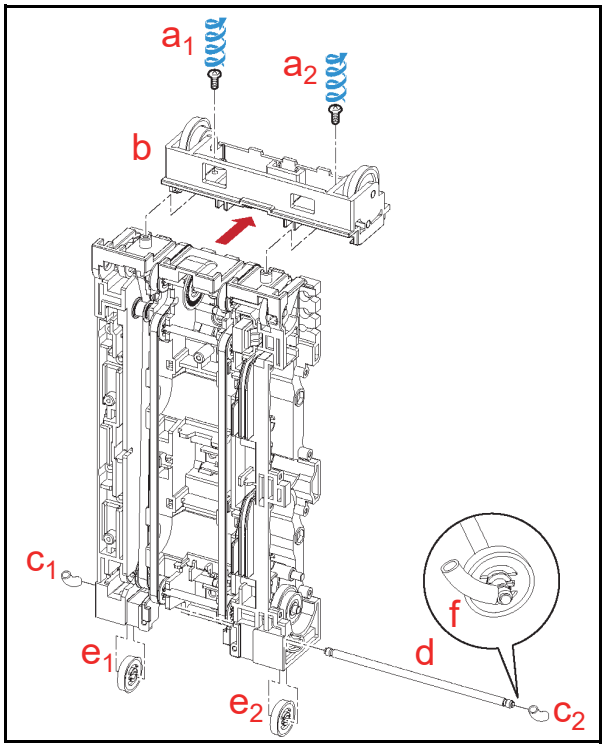

Figure 4-22 Rear Transport Upper Frame & Shaft Removal

3. Remove the two (2) E-Rings (Figure 4-23 a_1 & a_2), the two (2) Bearings (Figure 4-23 b_1 & b_2), the single (1) Shaft (Figure 4-23 c), the single (1) Gear (Figure 4-23 d), the single (1) Encoder (Figure 4-23 e) and the two (2) Pulleys (Figure 4-23 f_1 & f_2) from the Transport Assembly.
4. Remove the two (2) Timing Belt Covers (Figure 4-23 g_1 & g_2) from both the left and right sides of the Rear Transport Assembly.

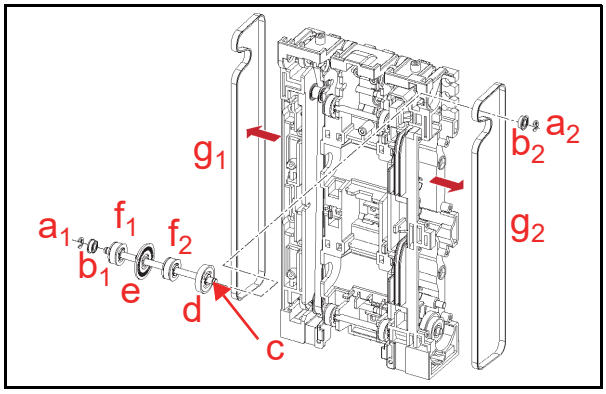

Figure 4-23 Timing Belt Cover Removals

5. Remove the single (1) Shaft Mounting Screw (Figure 4-24 a) and pull the single (1) Shaft and related Bearing out from the Rear Transport Assembly (Figure 4-24 b_1 & b_2).
6. Remove the two (2) E-Rings (Figure 4-24 c_1 & c_2), and the two (2) related Bearings (Figure 4-24 d_1 & d_2); then pull the two (2) Shafts (Figure 4-24 e_1 & e_2) out and remove the single (1) Timing Belt with its related pulleys (Figure 4-24 f) from the Assembly.

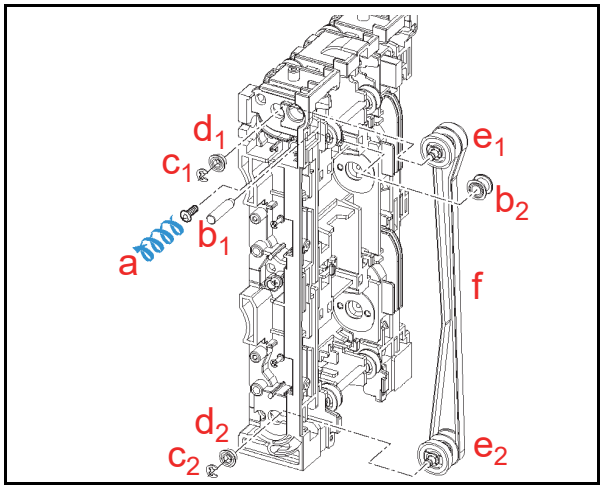

Figure 4-24 Timing Belt/Pulley Removal

Pick Roller Removal

To remove the Pick Roller, proceed as follows:

1. Remove the two (2) Mounting Screws (Figure 4-25 a_1 & a_2) retaining the two (2) RC Centering Guides (Figure 4-25 b_1 & b_2) in place, and remove the RC Centering Guide from the Cash Box.

NOTE: One of the two (2) RC Centering Guides contains a Prism installed in its Plate to detect the Cash Box (Figure 4-25 c). Ensure that this Guide Plate is <u>always</u> re-installed in the upper position of the Cash Box.

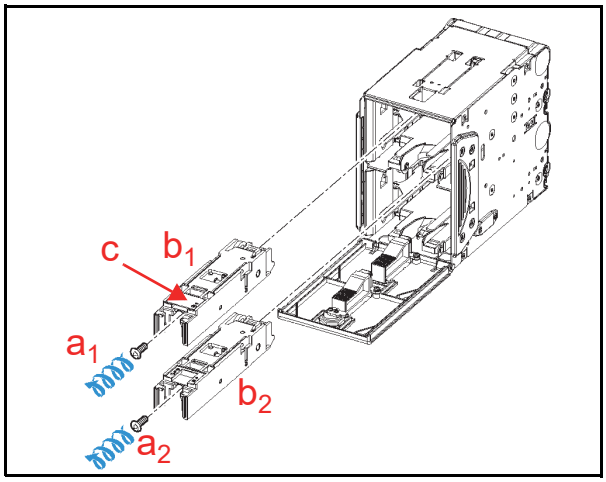

Figure 4-25 RC Centering Guide Removal

2. Remove the two (2) E-Rings (Figure 4-26 a_1 & a_2) retaining the Centering Guide Shaft (Figure 4-26 b) in place, and remove the Centering Guide Shaft, the End Lever (Figure 4-26 c) and the single (1) Spring (Figure 4-26 d) from the RC Centering Guide.

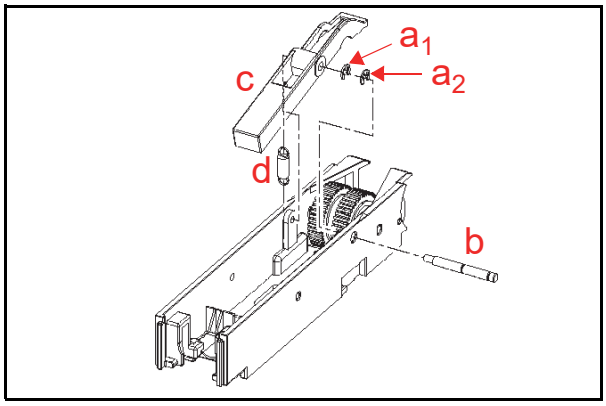

Figure 4-26 End Lever Removal

3. Remove the two (2) E-Rings (Figure 4-27 a_1 & a_2) retaining the RC Centering Guide Shaft (Figure 4-27 b) in place; then remove the Centering Guide Shaft, Pick Roller (Figure 4-27 c) and single (1) Gear (Figure 4-27 d).

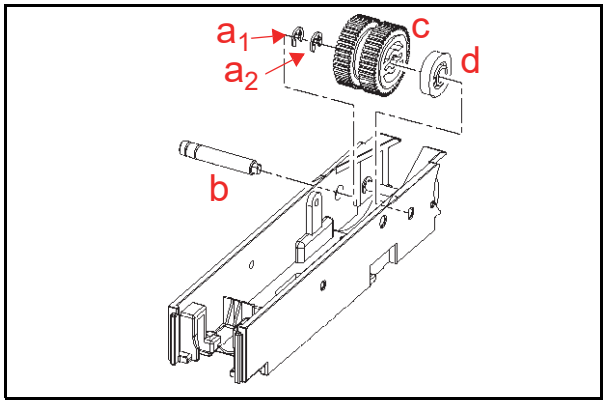

Figure 4-27 Pick Roller Removal

Feed Roller Removal

To remove the Feed Roller, proceed as follows:

1. Remove the four (4) Mounting Screws (Figure 4-28 a_1 to a_4) retaining the RC Course Assy. (Figure 4-28 b) in place, and remove the Race from the Cash Box Unit.

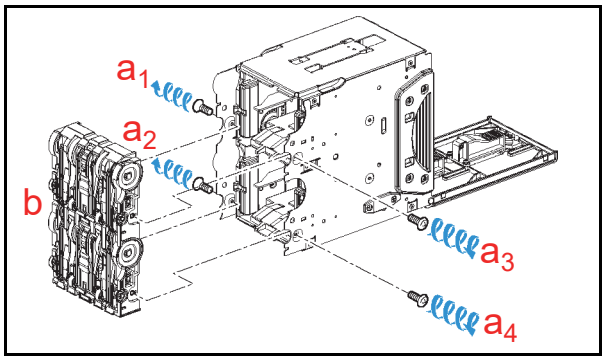

Figure 4-28 RC Course Assy. Removal

2. Remove the four (4) E-Rings (Figure 4-29 a_1 to a_4), the four (4) Bearings (Figure 4-29 b_1 to b_4), and the two (2) Gears (Figure 4-29 c_1 & c_2); then pull the two (2) Shafts (Figure 4-29 d_1 & d_2) out of the RC Course Assy..

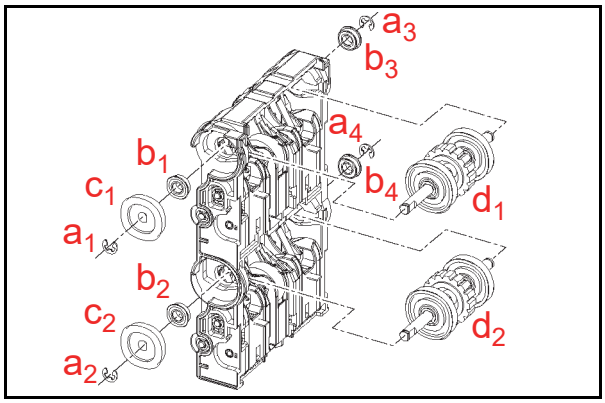

Figure 4-29 Transport Race Shaft Removal

3. Remove the two (2) E-Rings (Figure 4-30 a_1 & a_2), the Feed Roller (Figure 4-30 b), the single (1) Spacer (Figure 4-30 c), the single (1) Bearing (Figure 4-30 d), the single (1) Gear (Figure 4-30 e), the two (2) Parallel Pins (Figure 4-30 f_1 & f_2) and the single (1) Vinyl Poly Slider (Figure 4-30 g) from the Shaft.

NOTE: Be careful that the Parallel Pins are not lost when removing their related Spacer and Gear.

NOTE: When reassembling the Feed Roller, align both the Spacer and the Feed Roller teeth to the correct mesh (Figure 4-30 h).

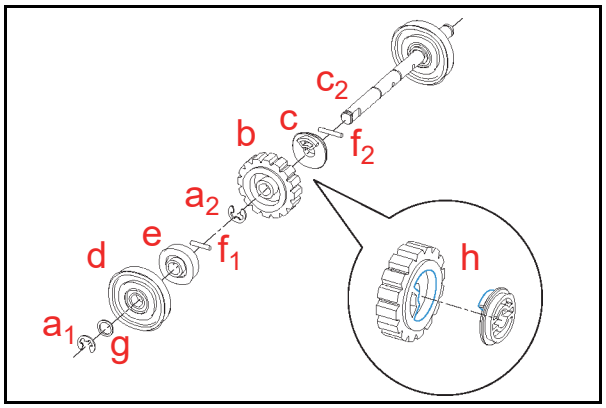

Figure 4-30 Feed Roller Removal

Impeller and Stop Roller Removal

To remove the Impeller and the Stop Roller, proceed as follows:

1. Remove the four (4) E-Rings (Figure 4-31 a_1 to a_4) retaining the two (2) Flappers (Figure 4-31 b_1 & b_2) in place, and remove the four (4) Plastic Pushing Bearings (Figure 4-31 c_1 to c_4) and Flappers from the RC Course Assy..

NOTE: Be careful that the Springs (Figure 4-31 d_1 & d_2) are not lost when removing the Flappers.

NOTE: When re-assembling the Plastic Bearing Bushing, align the groves to the cut area in the RC Course Assy. (Figure 4-31 f).

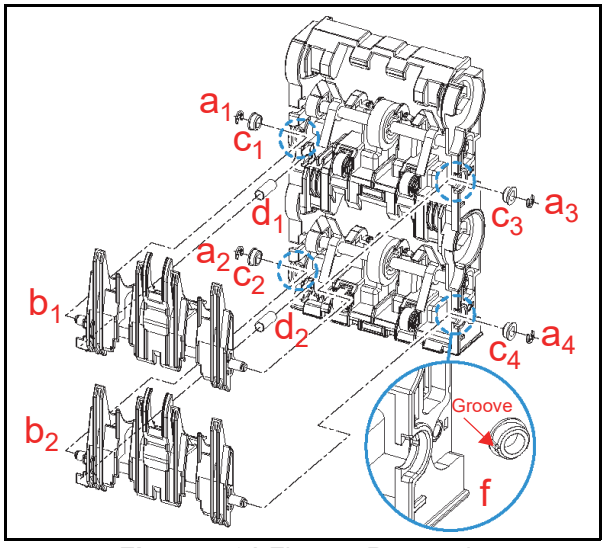

Figure 4-31 Flapper Removals

2. Remove each of the single (1) Return Springs (Figure 4-32 a) from the RC Course Assy. mounting hooks (Figure 4-32 b).

NOTE: Replace each Spring back (Figure 4-32 c) into its related Bearing (Figure 4-32 d) position when re-assembling Unit.

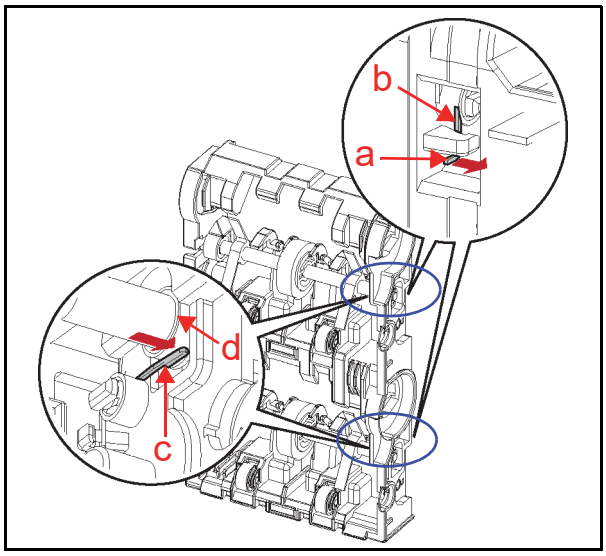

Figure 4-32 Spring Removals

3. Remove the four (4) E-Rings (Figure 4-33 a_1 to a_4) retaining the two (2) Shafts (Figure 4-33 b_1 & b_2) in place.
4. Remove the two (2) Shafts, the four (4) related Bearings (Figure 4-33 c_1 to c_4) and the four (4) Poly Vinyl Sliders (Figure 4-33 d_1 to d_4) from the RC Course Assy..

NOTE: Position the slanted cut surface of the One-Way Holder up when re-installing it (Figure 4-33 e).

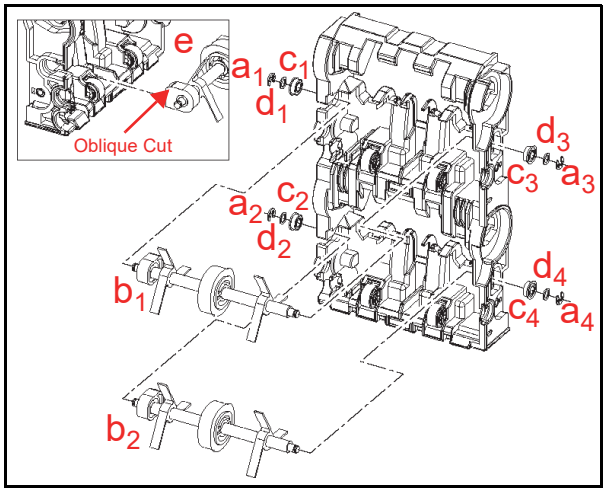

Figure 4-33 Impeller Shaft Removals

5. Remove the two (2) Impellers (Figure 4-34 a_1 & a_2) and the One-Way Holder (Figure 4-34 b) from the Shaft (Figure 4-34 c).
6. Remove the single (1) E-Ring (Figure 4-34 d) and the Stop Roller (Figure 4-34 e) from the Shaft.

NOTE: Be careful that the Parallel Pin (Figure 4-34 f) is not lost.

NOTE: Position the Impeller on the slotted portion of the Shaft when re-installing (Figure 4-34 g_1 & g_2).

NOTE: Be sure that the Impeller wing's direction is tilted toward the front, and that both sides of the wings are set in a parallel position as shown in the Figure 4-34 re-assembly illustration. If the wings are re-assembled in the wrong direction, it can cause transportation problems such as a Banknote Jam.

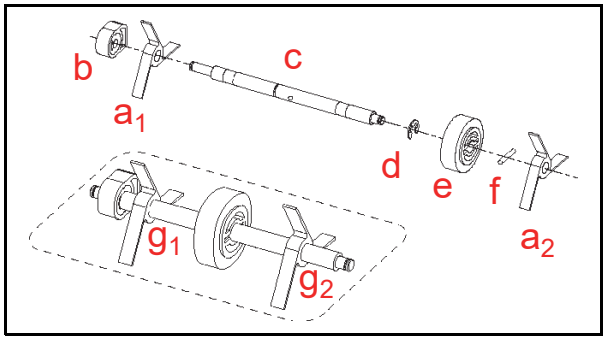

Figure 4-34 Impeller & Stop Roller Removal

O-Ring (Pusher Plate) Removal

To remove the O-Rings on the Pusher Plate, proceed as follows:

1. Remove the two (2) Mounting Screws (Figure 4-35 a_1 & a_2) retaining the Pusher Mechanism (Figure 4-35 b) in place, and slide the Pusher Mechanism out of the Cash Box Frame Housing.

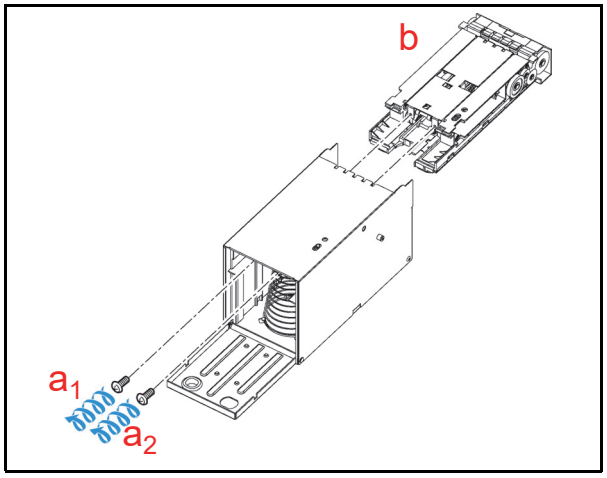

Figure 4-35 Pusher Mechanism Removal

2. Remove the six (6) O-Rings (Figure 4-36 a_1 to a_6) while lifting up on the Pusher Plate (Figure 4-36 b).

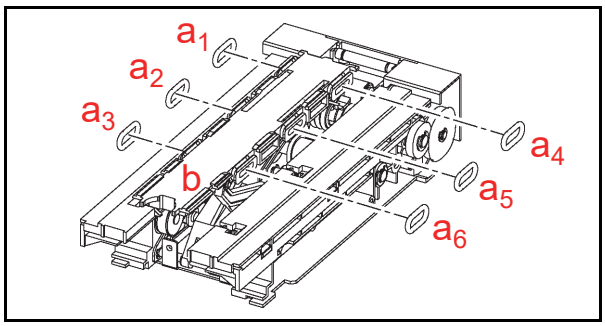

Figure 4-36 O-Ring Removals

Roller Timing Belt and O-Ring Removal

To remove the Timing Belt and O-Rings on the Roller part of the Pusher Plate, proceed as follows:

1. Remove the six (6) Mounting Screws (Figure 4-37 a_1 to a_6) retaining the Pusher Plate (Figure 4-37 b), and take the Pusher Plate off the Pusher Mechanism.

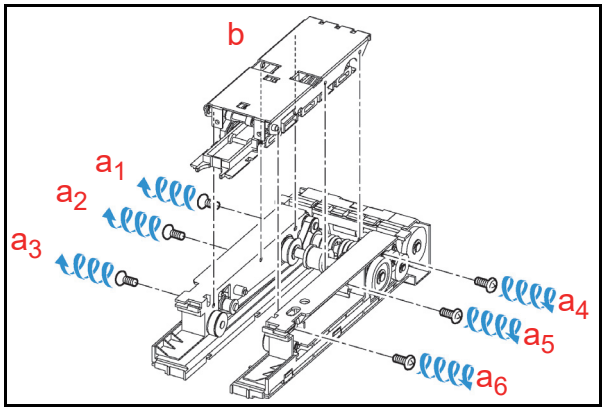

Figure 4-37 Pusher Plate Removal

2. Remove the five (5) E-Rings (Figure 4-38 a_1 to a_5), the two (2) Gears (Figure 4-38 b_1 & b_2) and three (3) Bushings (Figure 4-38 c_1, c_2 & c_3) from the Pusher Mechanism Assembly.

NOTE: Be careful that the Parallel Pin (Figure 4-38 d) is not lost while removing the Gears.

3. Remove the three (3) Frame Mounting Screws (Figure 4-38 e_1, e_2 & e_3) from the Pusher Mechanism Frame.

NOTE: One of the Screws is a Phillips Self Tightening/Tapping type (Figure 4-38 e_1). Do not confuse its placement with the others during re-assembly.

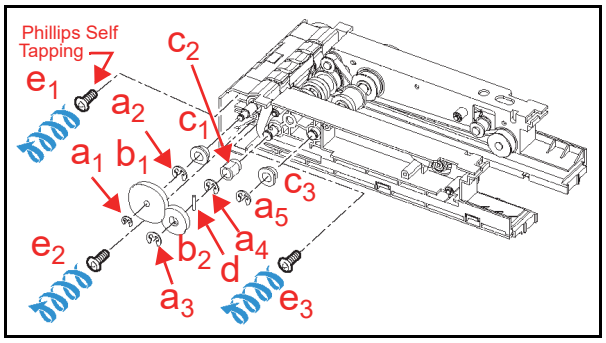

Figure 4-38 Pusher Drive Gear Removal

4. Separate Box Gear A (Figure 4-39 a) from the Pusher Mechanism, and remove the Timing Belt inside (Figure 4-39 b).

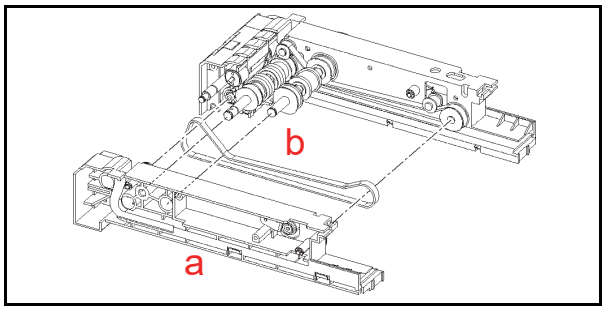

Figure 4-39 Pusher Timing Belt Removal 1

NOTE: The Pusher Timing Belt should be reinstalled as illustrated in Figure 4-40 when the Unit is being reassembled.

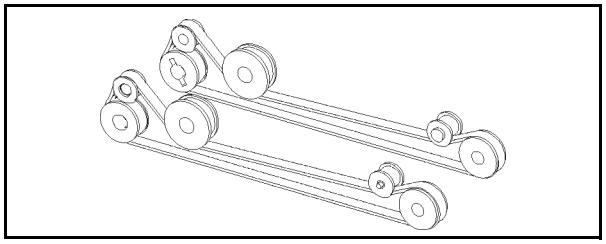

Figure 4-40 Pusher Timing Belt Replacement

5. Remove the two (2) E-Rings (Figure 4-41 a_1 & a_2), the single (1) Gear (Figure 4-41 b), the single (1) Shaft (Figure 4-41 c) and the single (1) Bushing (Figure 4-41 d) from the Pusher Mechanism, and then remove the Timing Belt from the Assembly (Figure 4-41 e).

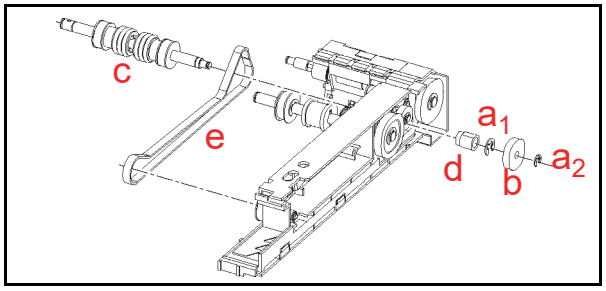

Figure 4-41 Pusher Timing Belt Removal 2

6. Remove the two (2) Pulleys (Figure 4-42 a_1 & a_2) from the Shaft (Figure 4-42 b), and remove the six (6) O-Rings (Figure 4-42 c_1 to c_6) from the individual Pulleys.

NOTE: Be careful that the Parallel Pins (Figure 4-42 d_1 & d_2) are not lost while removing the Gears.

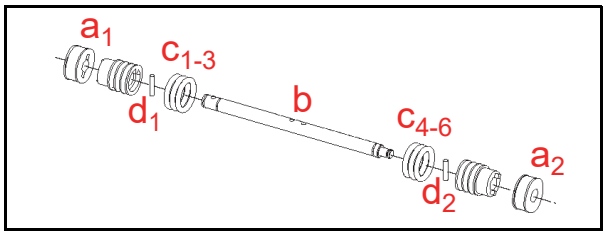

Figure 4-42 Pulley & O-Ring Removal

Pusher Plate Re-installation

After re-assembling the Pusher Plate onto the Pusher Mechanism, readjust each Gear position as follows:

1. Remove the single (1) E-Ring (Figure 4-43 a) and the single (1) small Gear (Figure 4-43 b) from the Pusher Mechanism (Figure 4-43 c) indicated by the j Arrow.
2. Rotate the White Gear (Figure 4-43 d) and the Black Gear (Figure 4-43 e) each in the direction indicated by the k Arrows until they stop rotating.
3. Reinstall the small Gear and its related E-Ring (removed during Step 1), as indicated by the l Arrow.
4. Rotate the White Gear in the direction indicated by the m Arrow, and make sure that the Home Position Arm (Figure 4-43 f) meets the surface of the Pusher Mechanism (Figure 4-43 g).

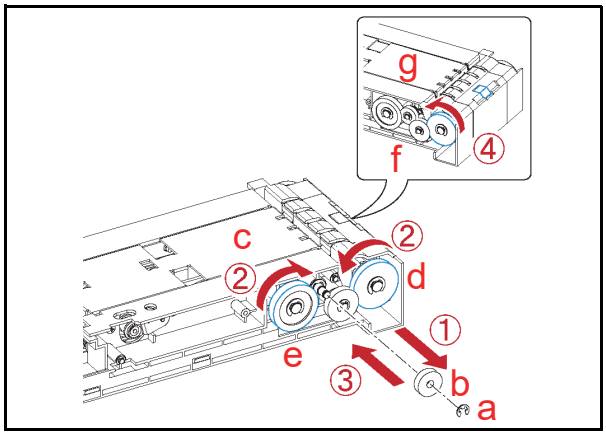

Figure 4-43 Pusher Plate Removal

NOTE: If the Gears are not correctly re-assembled, the Home Position Arm will not show on the surface.

This completes the iPRO-RC Disassembly and Reassembly Instructions section.

iPRO-RC™ Series
Banknote Recycler
Section 5

5 WIRING DIAGRAMS

This section provides the iPRO-RC™ Series Banknote Recycler Unit Assembly (iPRO-RC) wiring diagrams for the following items:

- Entire System Wiring Diagram
- Transport Unit & Frame Unit Wiring Diagram

Entire System Wiring Diagram

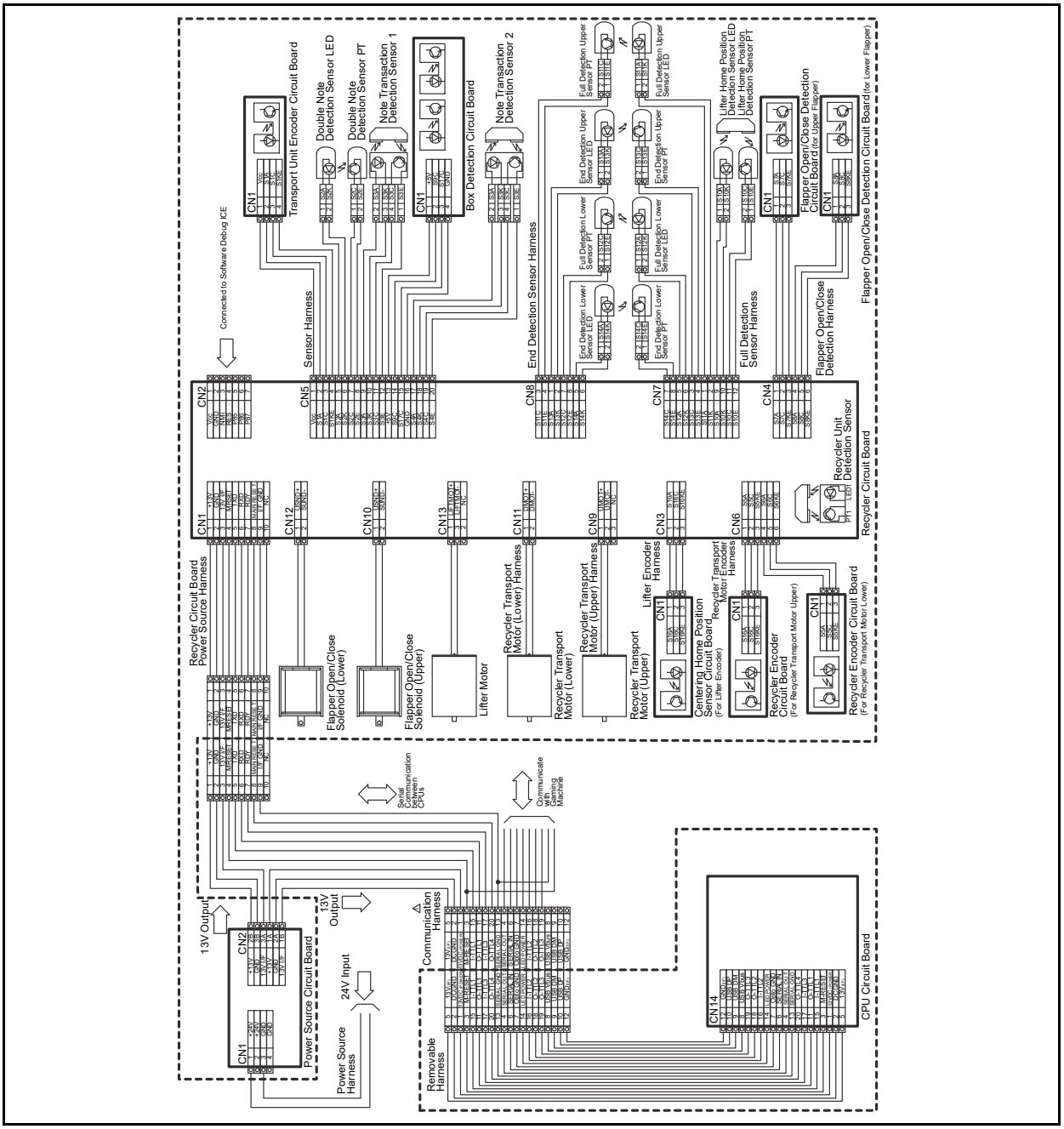

Figure 5-1 iPRO-RC Entire System Wiring Diagram (24V)

(Partial)

Transport Unit & Frame Unit Wiring Diagram (Partial)

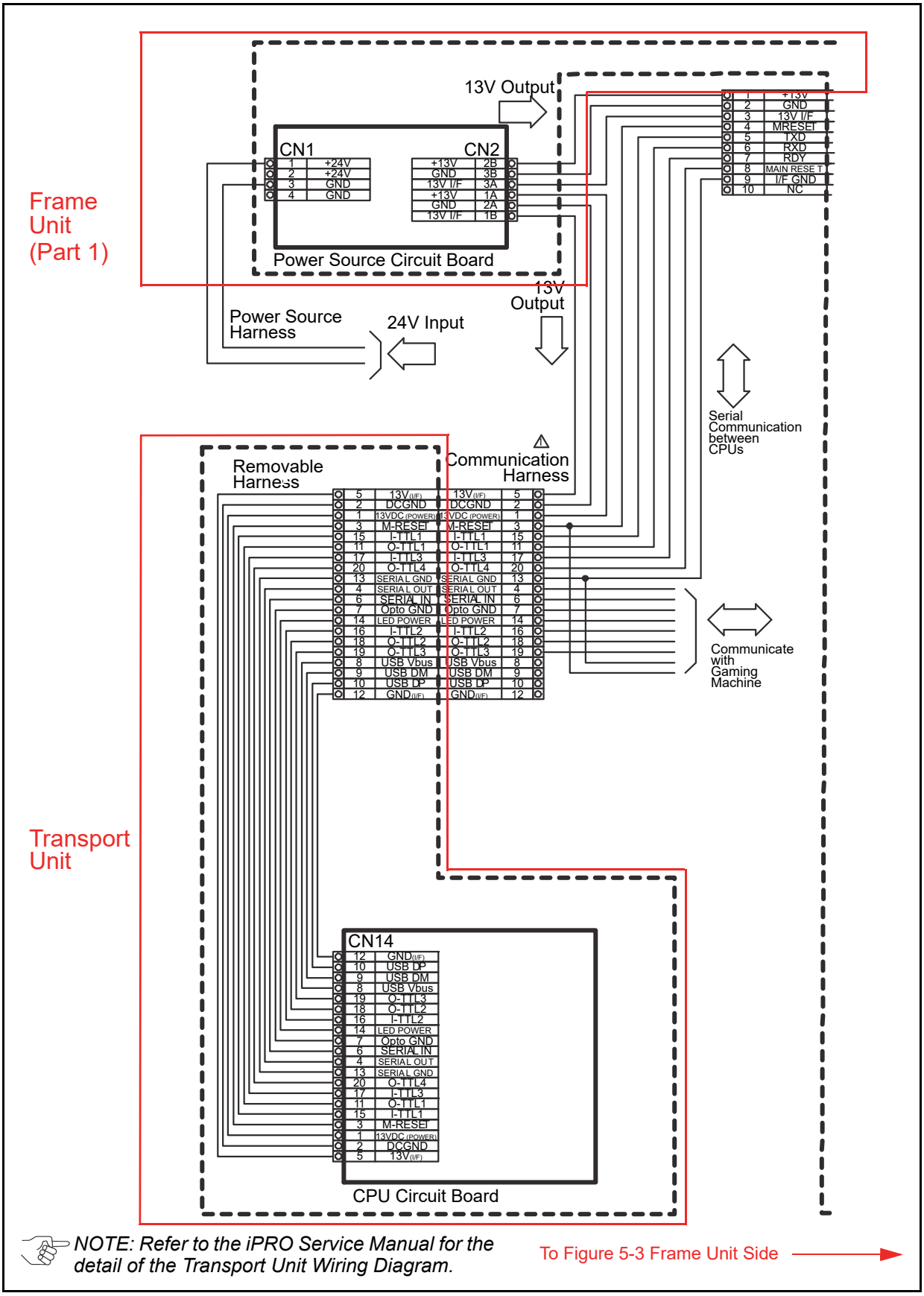

Figure 5-2 iPRO-RC Transport Unit/Frame Unit System Wiring Diagram (Part 1)

FRAME UNIT WIRING DIAGRAM (PARTIAL)

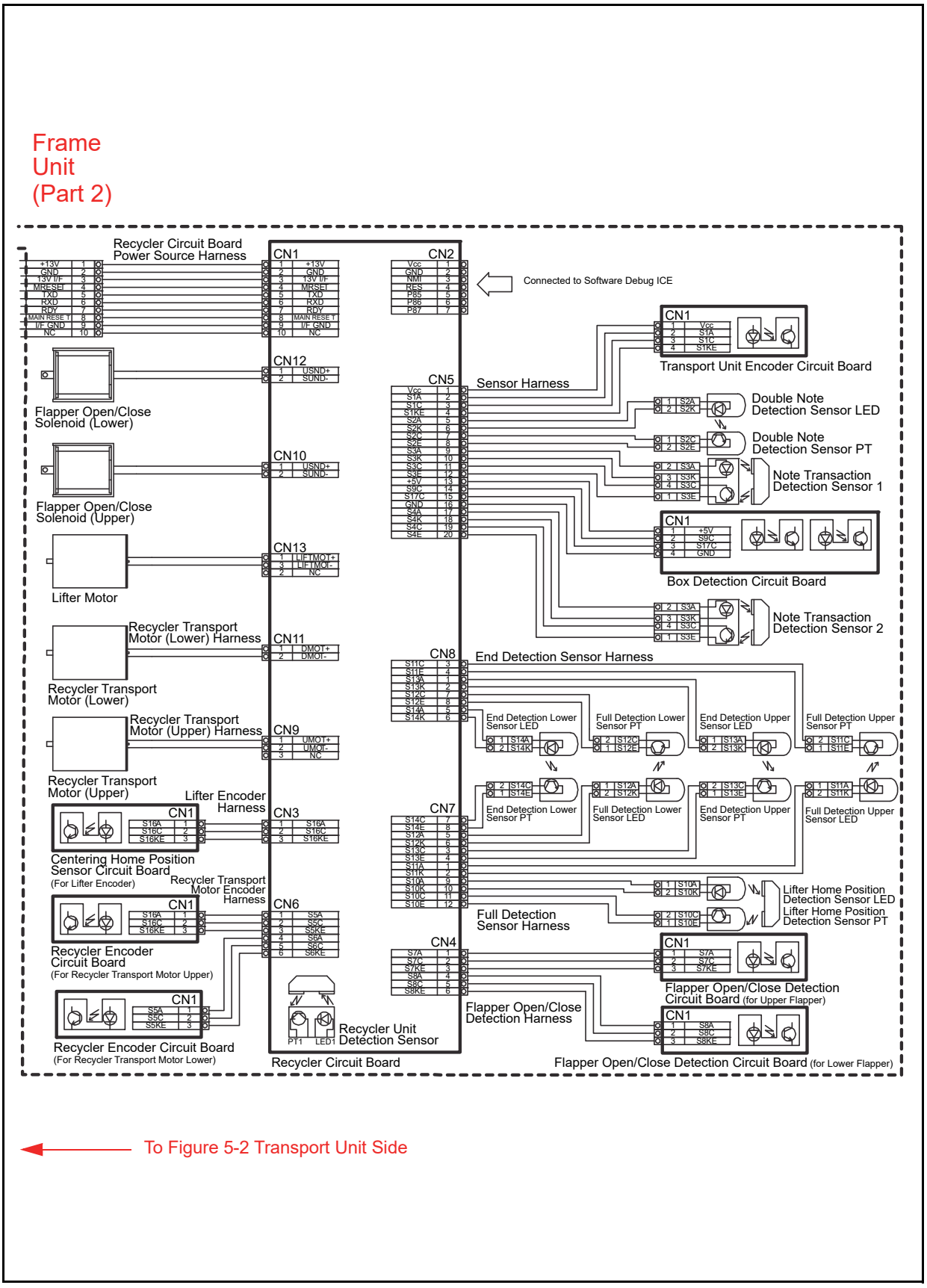

Figure 5-3 iPRO-RC Frame Unit System Wiring Diagram (Part 2)

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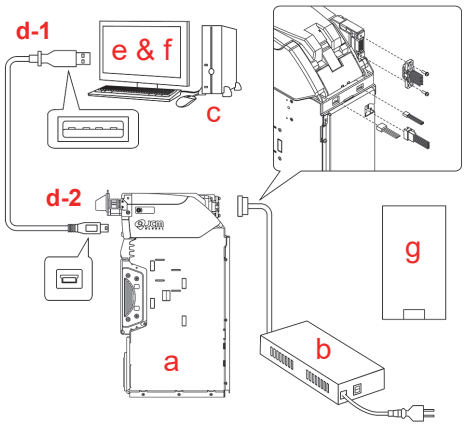
6 PERFORMANCE TESTS

This section provides Calibration and Performance Testing instructions for the iPRO-RC™ Series Banknote Recycler Unit Assembly (iPRO-RC) and contains the following information:

- Download and Installation Workbench Tool Requirements
- JCM Tool Suite Standard Edition Installation
- JCM Tool Suite Standard Edition
- Firmware Download Procedure
- Calibration
- Individual Calibration and Performance Test
- Performance Test without a PC

Download and Installation Workbench Tool Requirements

Figure 6-1 illustrates and identifies the tools and equipment interconnects necessary to download and install an iPRO-RC.



a) iPRO-RC Recycler with iPRO Transport Unit (User supplied)
b) Power Supply
c) PC (OS: Windows XP or later)
d) USB Cable
d-1) USB "A" Terminal Plug
d-2) USB "B" Terminal Plug
e) JCM Tool Suite
f) iPRO-RC Firmware
g) Reference Paper (KS-087)

Figure 6-1 Tool and Harness Connection

JCM Tool Suite Standard Edition Installation

Perform the following steps to install the JCM Tool Suite Standard Edition (Refer to Figure 6-1 for the necessary Tool Requirements and Harness Connector locations). The Driver and Tools required for the Calibration are installed on the PC once the JCMToolSuiteStandardEdition.exe is installed.
To install the JCMToolSuiteStandardEdition.exe, proceed as follows:

1. Copy the JCMToolSuiteStandardEdition.zip File and paste it in a related Folder on the PC desktop.
2. Extract the JCMToolSuiteStandardEdition.zip Files and Double-Click on the setup.exe Application in the extracted Folder (Figure 6-2 a).

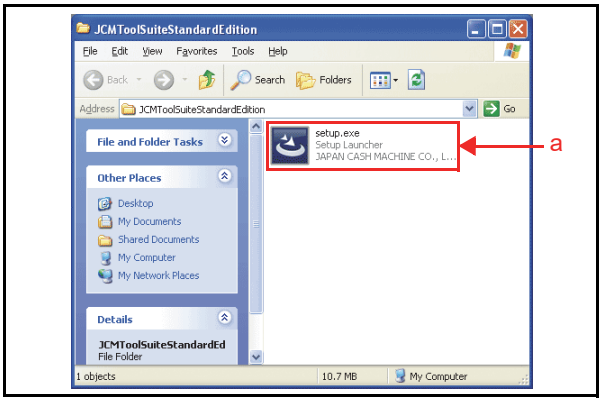


Figure 6-2 setup.exe Location

3. The JCM Tool Suite Standard Edition Install Shield Wizard Screen shown in Figure 6-3 will appear.
4. Click on the "Next>" Next > Screen Button (Figure 6-3 a) to begin installing the JCM Tool Suite Standard Edition Program.

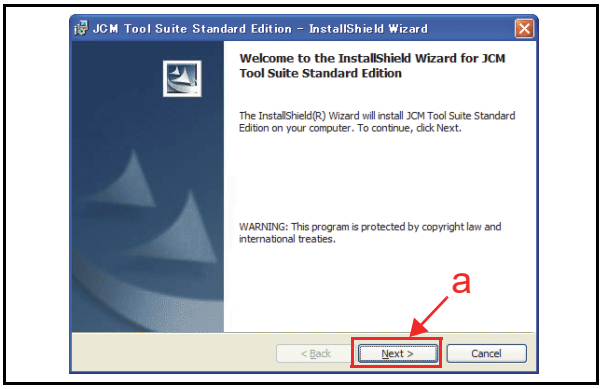


Figure 6-3 Install Shield Wizard Screen

5. Confirm that the Installation File was extracted automatically (Figure 6-4).

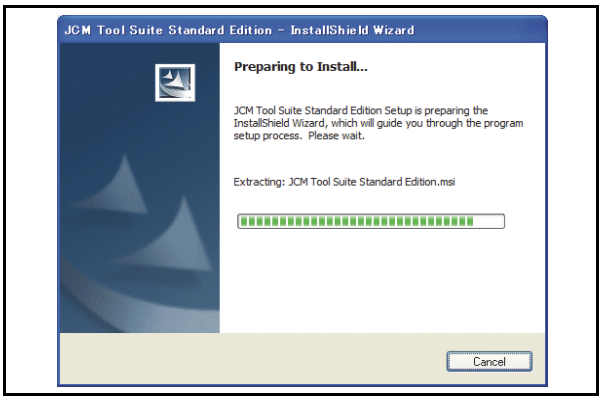


Figure 6-4 Installation File Extracting Screen

6. When the "Customer Information" Screen shown in Figure 6-5 appears, type the User Name and Organization (Figure 6-5 a) into each Text Field provided, if necessary.
7. Click on the Radio Screen Button located next to "Anyone who uses this computer" (Figure 6-5 b), and then click on the "Next>" Next > Screen Button (Figure 6-5 c) once all the information is entered.

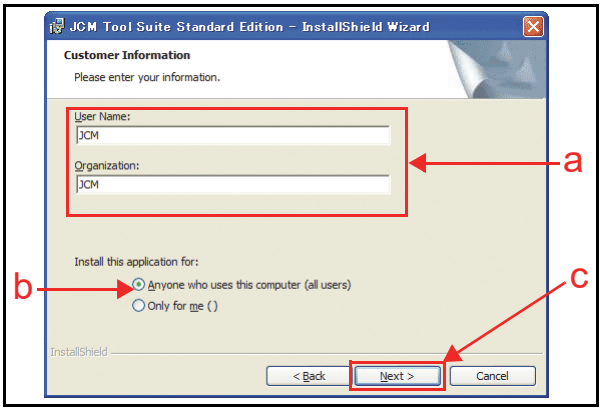


Figure 6-5 Customer Information Screen

8. Click on the "Next>" Next > Screen Button (Figure 6-6 a) when the "Destination Folder" Screen shown in Figure 6-6 appears. If the "Destination Folder" is not the desired location, click on the "Change..." Change... Screen Button (Figure 6-6 b) and select the desired location.

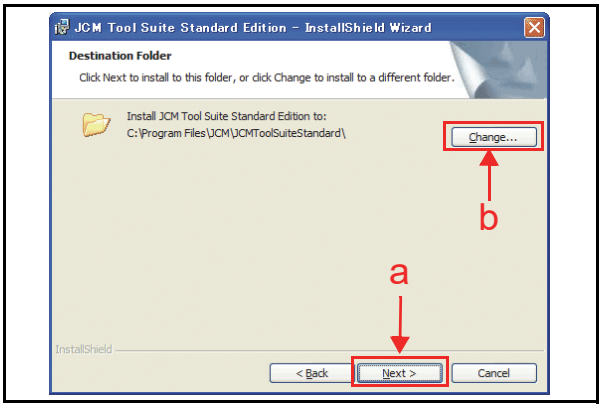


Figure 6-6 Destination Folder Screen

9. Check the "Current Settings" Area (Figure 6-7 a), and click on the "Install" Install Screen Button (Figure 6-7 b) to begin the installation process.

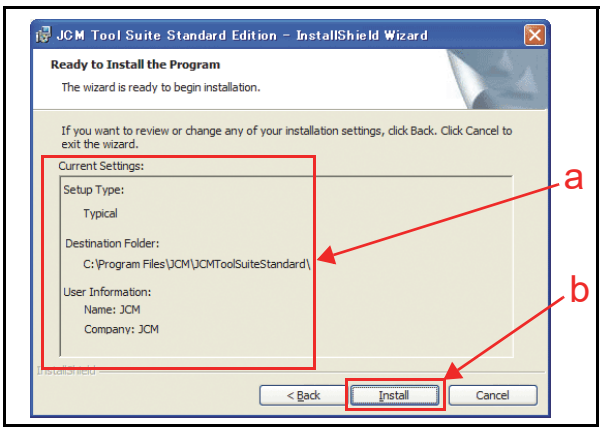


Figure 6-7 Current Settings Confirmation

10. Confirm the installation status by observing the Green Status Bar (Figure 6-8 a).

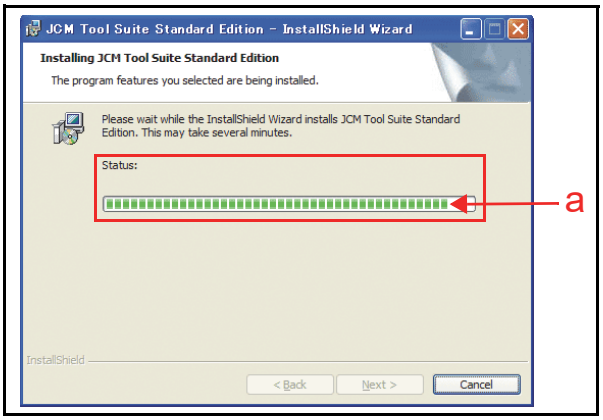


Figure 6-8 Installation Status Confirmation

11. When installation is complete, the "InstallShield Wizard Completed" Screen shown in Figure 6-9 will appear.

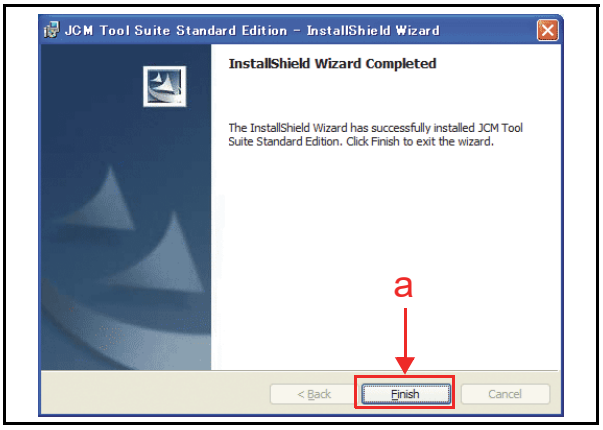


Figure 6-9 Installation Completion Screen

12. Click on the "Finish" Finish Screen Button.

This completes the "JCM Tool Suite Standard Edition" installation procedure.

JCM Tool Suite Standard Edition

When the "**JCM Tool Suite Standard Edition**" is installed, the Short-cut Icon shown in Figure 6-10 will appear on the PC Desktop.

Figure 6-10 JCM Tool Suite Short-cut Icon

To activate the "**JCM Tool Suite Standard Edition**" Software Program, Double-Click on the Short-cut Icon. The "**JCM Tool Suite Standard Edition**" Screen shown in Figure 6-11 will appear on the PC Monitor.

The Device Information Text Fields shown in Figure 6-11a list the Model Information when the Device is connected to a PC.
The Service Mode Pull-down Menu shown in Figure 6-11b contains several functional selections. The selection items will appear depending on the specific DIP Switches set to create them.

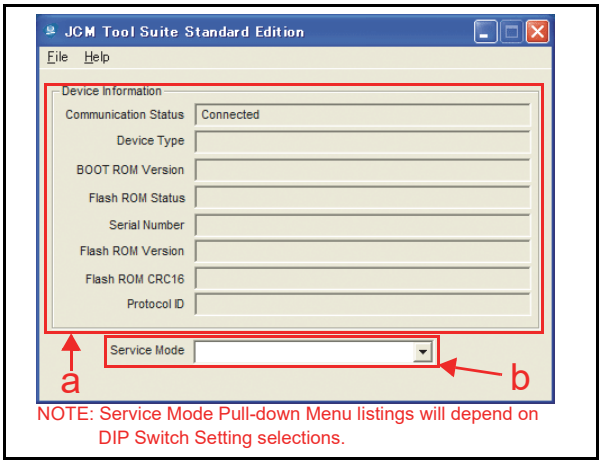


Figure 6-11 JCM Tool Suite Standard Edition

Firmware Download Procedure

To download the iPRO-RC Firmware, proceed as follows:

1. Copy the iPRO-RC Firmware File and paste it on the PC Desktop. (Review Figure 6-1 "Tool and Harness Connection" on page 6-1 to properly select and set-up the Cable connections).
2. Turn the iPRO-RC Power Supply **OFF**.
3. Set the iPRO Transport Unit's 8-Position DIP Switches #6, #7 and #8 to **ON** (Figure 6-12 & Figure 6-13 a).

Figure 6-12 iPRO-RC DIP Switch Setting

4. Connect the iPRO-RC and the PC together using the recommended USB Cable.

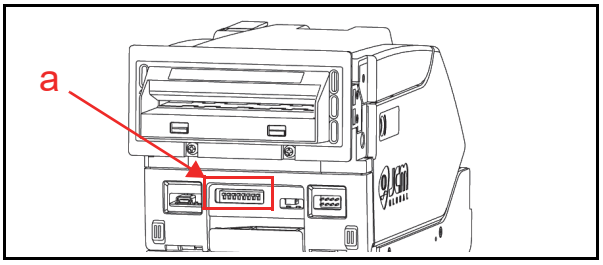


Figure 6-13 DIP Switch Location

5. Turn the iPRO-RC Power Supply **ON**. The iPRO Transport Unit LED will begin alternately flashing at a Green and Red Color Rate, and the iPRO-RC Status will revert to Stand-by Mode.
6. Launch the "JCMToolSuiteStandardEdition.exe" Program.
7. When the "**JCM Tool Suite Standard Edition**" Screen shown in Figure 6-14 appears, click on the Service Mode Pull-down Menu and select "Download" (Figure 6-14 a).

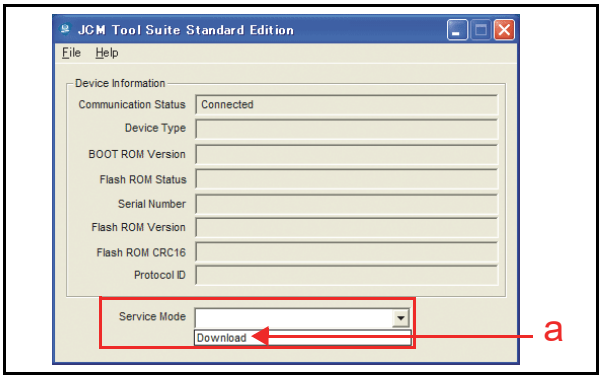


Figure 6-14 Select Download

8. The "**JCM Downloader Suite Edition Ver X.XX**" Program will activate automatically.

*NOTE: When the download program is activated for the first time, an "Invalid File!" message pop-up Dialog Box (Figure 6-15) will appear because the Firmware File has not yet been selected. Click on the Dialog's "**OK**" Screen Button (Figure 6-15 a), and select the proper Firmware File. Once the Firmware File is selected, the message will no longer appear again.*

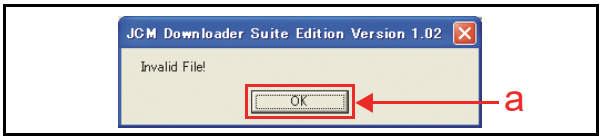


Figure 6-15 Invalid File! Dialog Pop-Up Screen

9. When the communication line between the iPRO-RC and the PC is connected, "Online" will appear in Green Text (Figure 6-16 a) below the Download Screen Button.
click on the "Browse" Browse Screen Button (Figure 6-16 b).

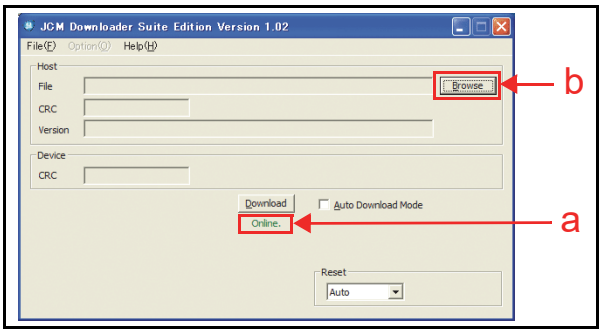


Figure 6-16 Select Firmware 1

10. Highlight select the desired iPRO-RC Firmware (Figure 6-17 a) from the PC Folder.
11. Click on the "Open" Open Screen Button (Figure 6-17 b) to launch the selected file.

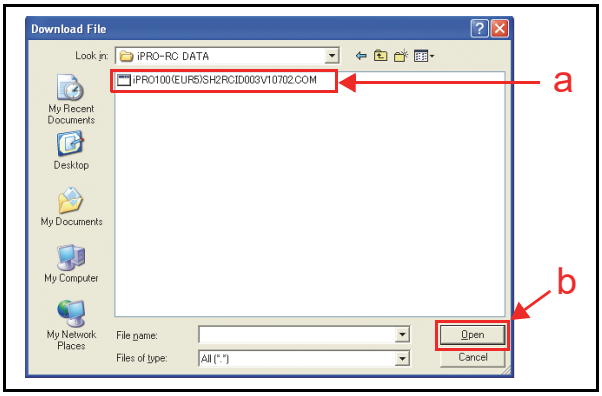


Figure 6-17 Select Firmware 2

12. The "**JCM Downloader Suite Edition Version X.XX**" Screen will re-appear (Figure 6-18).

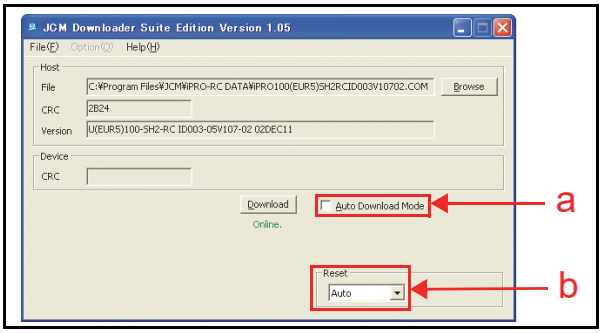


Figure 6-18 Select Firmware 3

If the "Auto Download Mode" Check Box ☑ located next to the "Download" Download Screen Button (Figure 6-18 a) is clicked, it will allow the same iPRO-RC Firmware to be downloaded to another iPRO-RC Unit automatically when Power is supplied to it during the launch of the JCM Downloader Screen.

The "Reset" Pull-down Menu contains the following three (3) selections:

- Auto
- Manual
- Reset.

If "**Auto**" is left pre-selected in the "Reset" Pull-down Menu (Figure 6-18 b), the Downloader will enter Stand-by Mode automatically when downloading is complete, and the iPRO Transport Unit LED will then start alternately flashing at a Green and Red Color rate.

If "**Manual**" is selected from the "Reset" Pull-down Menu, the LED will light a steady Green Color when the download is complete.

If "**Reset**" is selected from the "Reset" Pull-down Menu, the Downloader's Status will be reset back to Stand-by Mode. The LED will again begin alternately flashing between a Green and Red Color rate.

*NOTE: All of the above steps are explained in detail onscreen when "**Auto**" is selected in the "Reset" Pull Down Menu.*

13. Click on the center "Download" Download Screen Button (Figure 6-19 a) to begin a Firmware download. The LED will begin flashing alternately at a Green and Red Color Rate while a download is in progress. The Downloading Screen will display a Blue Progress Bar during the download operation (Figure 6-19 b), and a Blue Text Line below the "Download" Download Screen Button will indicate the download Percentage as "Downloading : XX%" (Figure 6-19 c).

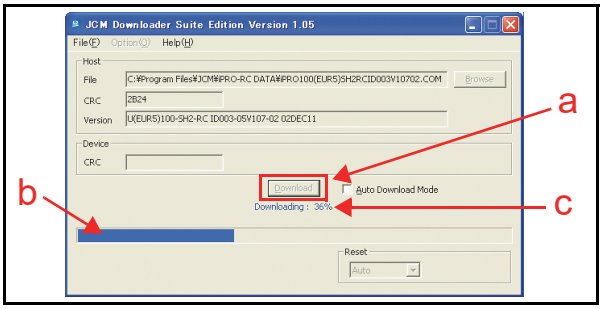


Figure 6-19 Download Progress Screen

14. When the desired download is complete, a "Getting and Verifying CRC and Version information." Blue Text Line will appear (Figure 6-20 a), and Model Information will start being collected.

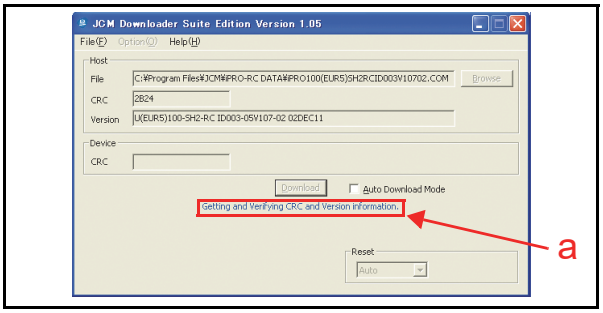


Figure 6-20 Download Progress Screen

15. First, a "Download Success. Validator is rebooting." message will appear; then, a second "Download Success. Reset Done. Waiting for USB Cable Disconnection." Blue Text Line will appear (Figure 6-21 a) during the Model information collection process.
16. Confirm that the Host's Checksum and the Unit's Checksum identically match each other (Figure 6-21 b) after the LED starts flashing at a Green Color Rate.

17. Remove power from the iPRO-RC. Set all the iPRO-RC Transport DIP Switches to **OFF**.

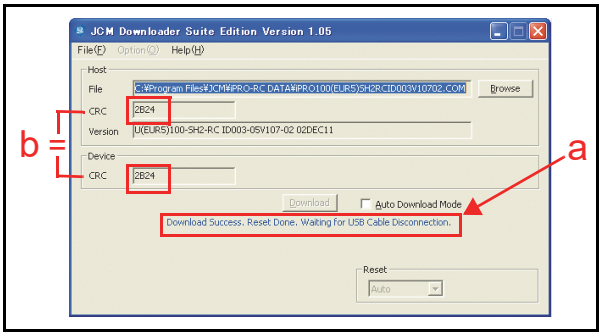


Figure 6-21 Download Completed Screen

18. Turn the iPRO-RC Power Switch to **ON**. The Firmware downloaded to the iPRO Transport Unit will begin transferring data to the iPRO-RC Unit.
19. Confirm that the iPRO-RC LED is lit a steady Yellow Color during the download. The LED will light a steady Green Color when the Firmware download to the iPRO-RC is complete.

*NOTE: If a Firmware upgrade is unnecessary, or iPRO Transport Unit DIP Switches #6, #7 and #8 are **ON**, the Firmware downloaded to the iPRO Transport Unit will NOT be sent to the iPRO-RC Unit!*

This completes the iPRO-RC Firmware installation procedure.

Calibration

This section provides instructions for performing Sensor calibration within the iPRO-RC Unit.

When to Calibrate

Calibration should be performed if the following conditions occur:

- When removing and replacing each Sensor.
- When dirt is adhering to Sensors. Perform Calibration after cleaning the Sensors and the Rollers. (See “Cleaning Procedure” on page2-10 of this Service Manual.)
- When the Banknote dispensing rate is drastically degraded.

Calibration Tool Requirements

To identify the tool and equipment interconnects necessary to calibrate the iPRO-RC Unit away from its Host Machine, refer to Figure 6-1 “Tool and Harness Connection” on page 6-1 of this Section.

NOTE: When the “USB-A Terminal” connects to a USB Hub, the iPRO-RC may not operate as expected. Ensure that the “USB-A Terminal” connects DIRECTLY to a PC USB Port!

iPRO-RC Reference Paper

Figure 6-22 illustrates the KS-087 iPRO-RC Reference Paper.

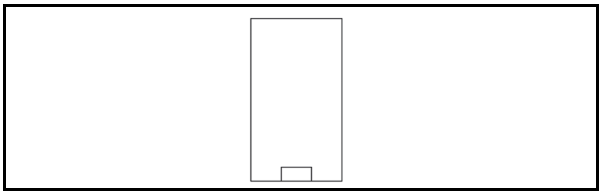


Figure 6-22 KS-087 Reference Paper

Placing the Reference Paper

The iPRO-RC requires only one (1) Reference Paper (KS-087) type for calibration and performance testing.
Insert the KS-087 Reference Paper into the iPRO Transport Unit’s Insertion Slot following the Calibration Tool instruction (Figure 6-22).

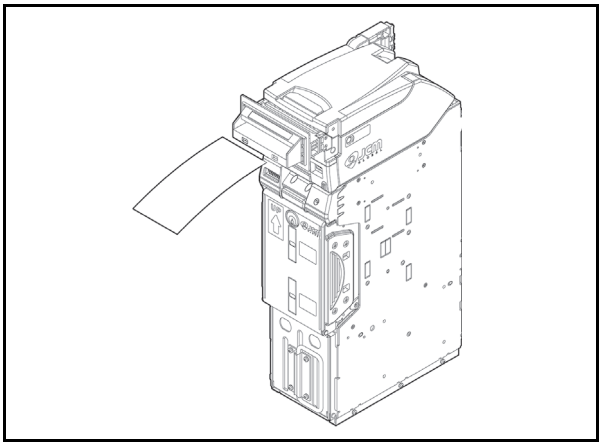


Figure 6-23 Reference Paper Insertion

Calibration and Testing Program

This portion provides the Calibration and Testing Program (iPRORC_MaintenanceSuiteEdition.exe) Configuration. The Calibration and Testing Program contains the following five (5) selections:

- Double Note Detection Sensor Calibration
- RC Full Sensor Calibration
- Transport Sensor Test
- Motor Test
- Model Information Input.

Sensor Calibration and Performance Testing

Perform the following steps to initiate Sensor Calibration and the Performance Testing processes.

1. Turn the iPRO-RC Power Supply **OFF**.
2. Set the iPRO Transport Unit’s 8-Position DIP Switches # 1, #2, #5 & #8 to **ON** (Figure 6-24 & Figure 6-26 a).

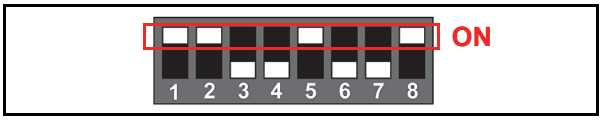


Figure 6-24 iPRO Transport DIP Switch Setting

3. Set iPRO-RC 8-Position DIP Switches #1, #5, #6 & #7 to **ON** (Figure 6-25 & Figure 6-26 b).

Figure 6-25 DIP Switch Setting

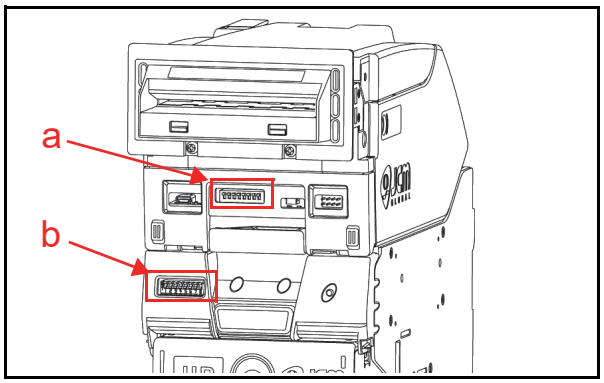


Figure 6-26 DIP Switch Location

4. Turn the iPRO-RC Power Supply **ON**. The two (2) LEDs on the iPRO Transport Unit will light a steady Green and Red Color, and the two (2) LEDs on the iPRO-RC Unit will light a steady Green Color.
5. Turn the iPRO Transport Unit's 8-Position DIP Switch #8 to **OFF**.
6. Connect the PC and the iPRO-RC Unit together using the recommended USB Cable.
7. Double-Click on the "JCM Tool Suite Standard Edition" Short-cut Icon on the PC Desktop.

8. Launch the "JCM Tool Suite Standard Edition" Application and the Model information will begin appearing in the Device Information Text Fields (Figure 6-27 a).

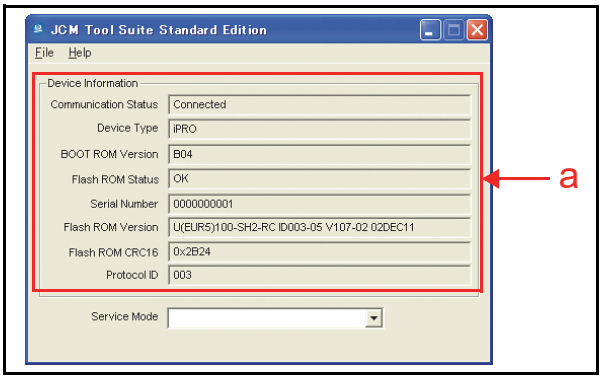


Figure 6-27 Model Information Screen

9. Click on the Service Mode Pull-down Menu and select the "Recycler Maintenance" Function (Figure 6-28 a).
10. Upon selection the "**iPRO-RC Maintenance Tool**" Screen shown in Figure 6-29 will launch automatically.
11. Click on the "Start" Start Screen Button (Figure 6-29 a) to begin the Calibration and Performance Testing Procedures.

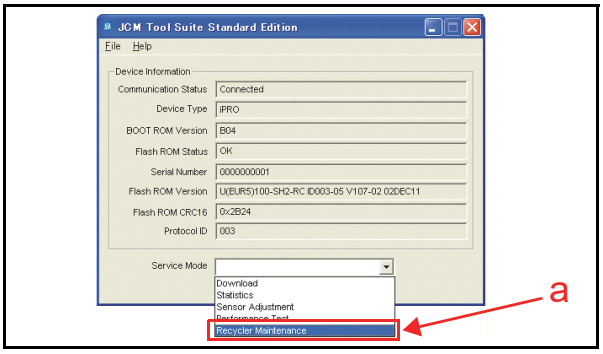


Figure 6-28 Model Information Screen

NOTE: The available Calibration and Performance Test items will appear in the Black rectangular space below the Start Screen Button (Figure 6-29 b).

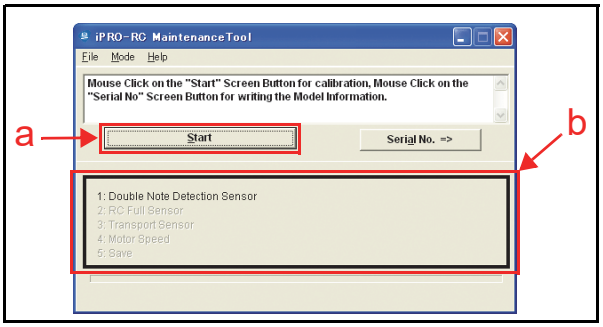


Figure 6-29 iPRO-RC Maintenance Tool Screen 1

12. Insert a piece of KS-087 Reference Paper into the iPRO Transport Unit Insertion Slot when the message provided in the lower Text Field area of the Screen (Figure 6-30 a) appears; then click on the "Start" Start Screen Button (Figure 6-30 b) to begin the Double Note Detection Sensor Calibration Procedure.

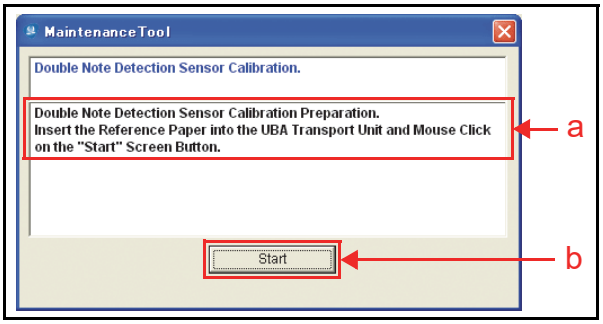


Figure 6-30 iPRO-RC Maintenance Tool Screen 2

13. Confirm that the Test's progress appears on the "**iPRO-RC Maintenance Tool**" Screen by viewing the Figure 6-31 a Green Progress Bar.
14. The KS-087 Reference Paper will be returned after the Double Note Detection Sensor Calibration Procedure is complete.

15. Remove the KS-087 Reference Paper from the Validator Head.
16. Confirm that the message "Double Note Detection Sensor Validation Success." (Figure 6-32 a) appears in the upper Text Field area of the Screen. This message notifies the User that Double Note Detection Sensor Calibration procedure is complete.

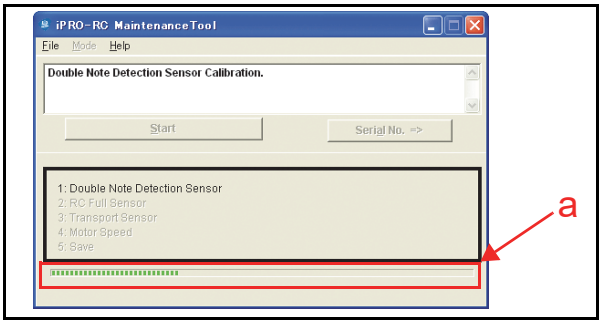


Figure 6-31 iPRO-RC Maintenance Tool Screen 3

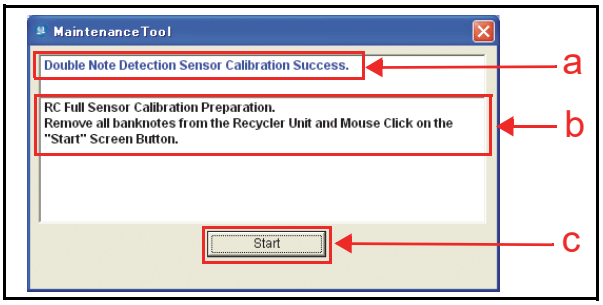


Figure 6-32 iPRO-RC Maintenance Tool Screen 4

17. Prepare to start the RC Full Sensor Calibration Procedure by following the Instructional Message stated in the Figure 6-32b Text Field.

NOTE: The RC End Sensor Calibration Procedure is performed during the RC Full Sensor Calibration Procedure.

Ensure that no KS-087 Reference Paper, or any Banknotes or Tickets are present within the Recycler Unit; and then click on the "Start" Start Screen Button (Figure 6-32 c) to begin the RC Full Sensor Calibration Procedure.

NOTE: Once the RC Full Sensor Calibration Procedure has begun, the Lifter within the Recycler Unit will move upward, and then return to its Home position when the Calibration Procedure is complete.

18. Confirm that the Test's progress appears on the "**iPRO-RC Maintenance Tool**" Screen by viewing the Figure 6-33a Green Progress Bar.

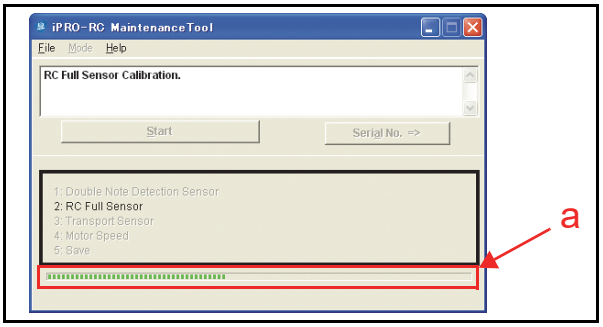


Figure 6-33 iPRO-RC Maintenance Tool Screen 5

19. Confirm that the message "RC Full Sensor Calibration Success" appears (Figure 6-34 a). The RC Full Sensor Calibration is complete.
20. Click on the "Start" Start Screen Button (Figure 6-34 b) and follow the Instructional Message stated in the Figure 6-34c Text Field to begin the Transport Sensor Check.

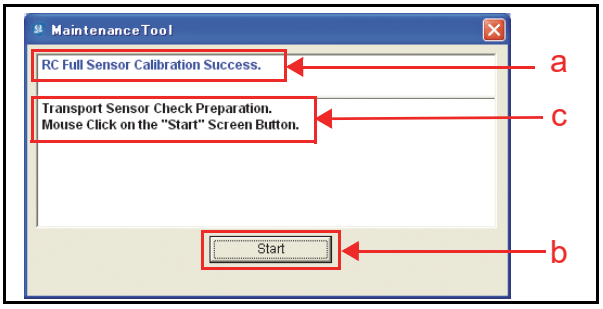


Figure 6-34 iPRO-RC Maintenance Tool Screen 6

21. Confirm that the Test's progress appears on the "**iPRO-RC Maintenance Tool**" Screen by viewing the Figure 6-35a Green Progress Bar.

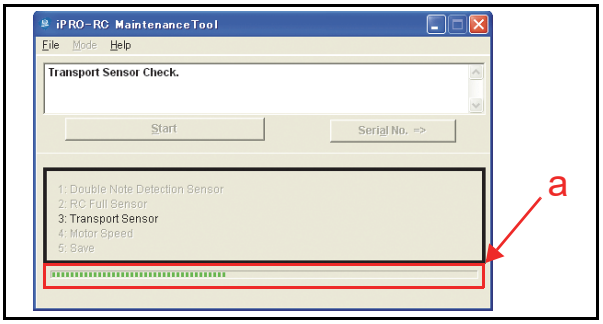


Figure 6-35 iPRO-RC Maintenance Tool Screen 7

22. Confirm that the message "Transport Sensor Check Success." (Figure 6-36 a) appears. The Transport Sensor Check is complete when this message appears.
23. Click on the "Start" Start Screen Button (Figure 6-36 b) and follow the Instructional Message stated in the Figure 6-36c Text Field to begin the Recycler Units Transport Motor Test.

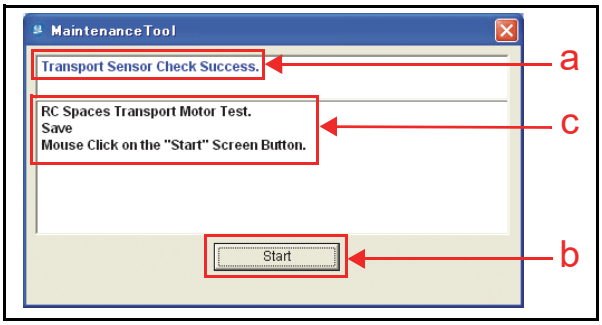


Figure 6-36 iPRO-RC Maintenance Tool Screen 8

24. Confirm that the Test's progress appears on the "**iPRO-RC Maintenance Tool**" Screen by viewing the Figure 6-37a Green Progress Bar.
25. When the RC Bin Transport Motor Tests are complete, the calibration value will be saved and the "Calibration Completed." Pop-up Dialog Screen message shown in Figure 6-38 will appear. Click on the "OK" OK Screen Button (Figure 6-38 a) to complete the Calibration and Testing Procedures.

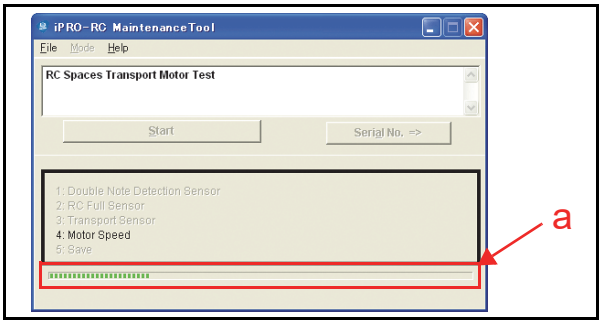


Figure 6-37 iPRO-RC Maintenance Tool Screen 9

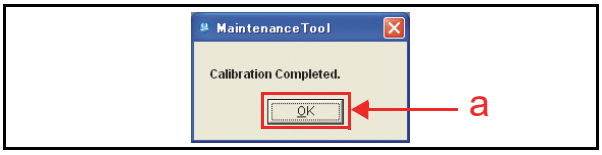


Figure 6-38 Calibration Completed Dialog Box

This completes the iPRO-RC Calibration and Performance Testing Procedures.

Model Information Confirmation

Perform the following steps to confirm the iPRO-RC Unit's Model Information.

1. On the "**iPRO-100 Maintenance Tool**" Screen, click on the "Serial No. =>" Serial No. => Screen Button (Figure 6-39 a).

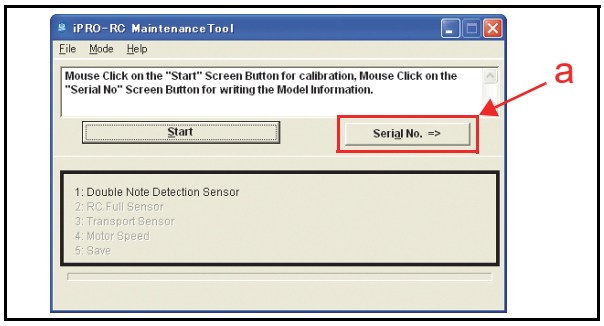


Figure 6-39 Serial No. Screen Button Location

2. Confirm the "Model Name" and the "Serial No." of the Unit being tested as shown in Figure 6-40.

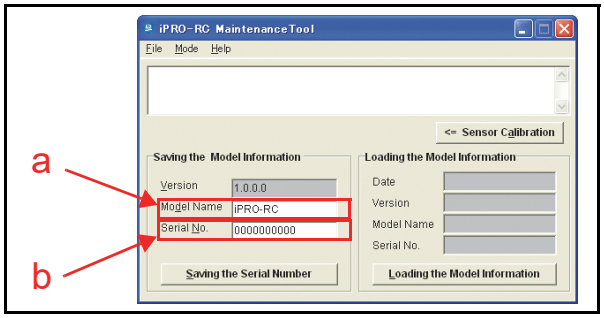


Figure 6-40 Model Information Saving Screen 1

*NOTE: The Model Name of the "iPRO-RC" (Figure 6-40 a), and the Serial No. "0000000000" shown in Figure 6-40b are default settings for use in this "*Saving the Model Information*" example.*

3. Type the required iPRO-RC Model Name using seven (7) Characters (Figure 6-41 a), and a Serial No. containing a maximum of ten (10) Characters (Figure 6-41 b) into each related Text Entry Field; then click on the "Saving the Serial Number" Saving the Serial Number Screen Button (Figure 6-41 c).

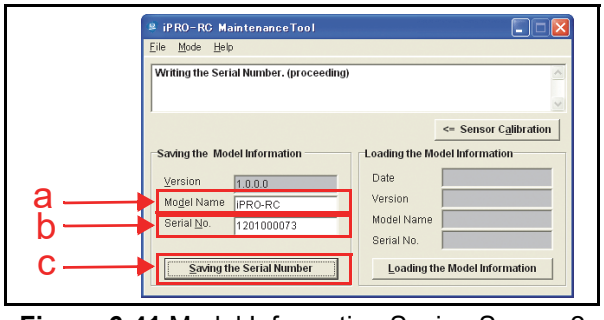


Figure 6-41 Model Information Saving Screen 2

4. Confirm that the message in the second Text Field of the "**Maintenance Tool**" Screen reads "Saving Completed" (Figure 6-42 a).

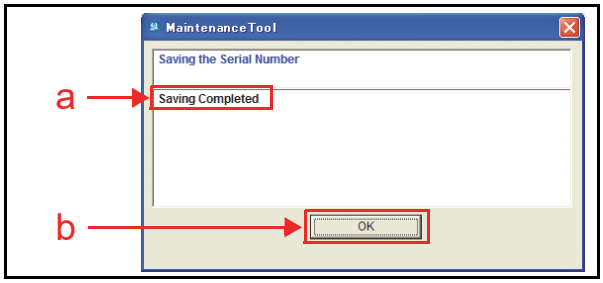


Figure 6-42 Model Information Saving Completed Screen

5. Click on the "OK" [OK] Screen Button to end the Procedure (Figure 6-42 b).

This completes the Model Information Saving Procedure.

Reading the Model Information

Perform the following steps to read an iPRO-RC Unit's Model Information.

1. On the "**iPRO-RC Maintenance Tool**" Screen, click on the "Serial No. =>" [Serial No. =>] Screen Button (Figure 6-43 a).

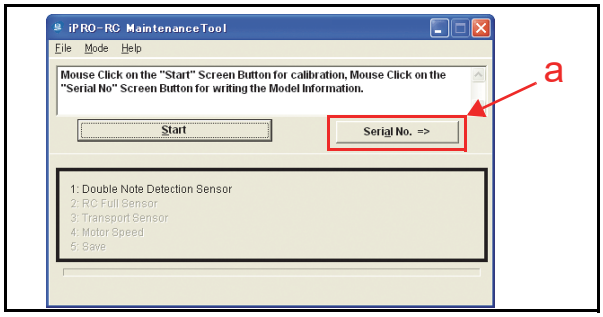


Figure 6-43 Sensor Calibration Screen Button

2. Confirm that the "**iPRO-RC Maintenance Tool**" Screen shown in Figure 6-44 appears.
3. Click on the "Loading the Model Information" [Loading the Model Information] Screen Button (Figure 6-44 a) located at the bottom of the "Loading the Model Information" Text Fields.

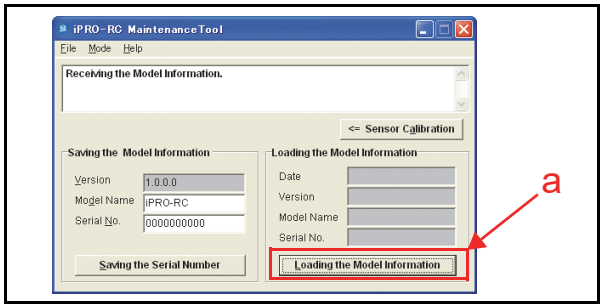
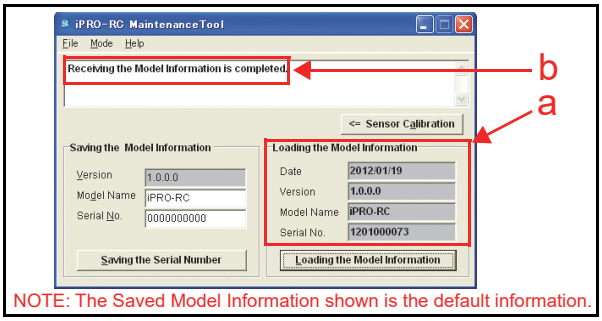


Figure 6-44 Loading Model Information Screen 1

The current Model Information for the Date, Version, Model Name and Serial No. will appear in each related Cell Field located below the "Loading the Model Information" Text Field (Figure 6-45 a), and a "Loading the Model Information Completed" message will appear in the upper Text Field (Figure 6-45 b).



NOTE: The Saved Model Information shown is the default information.

Figure 6-45 Loading Model Information Screen 2

This completes the Reading Model Information Procedure.

Reading the iPRO-RC Maintenance Tool Version

Perform the following steps to read an iPRO-RC Unit's Software Version using the "iPRO-RCMaintenanceTool.exe" Application.

1. Click on the "**iPRO-RC Maintenance Tool**" Tool Bar's "Help" pull-down Menu, and select "Version" from the selections available (Figure 6-46 a).

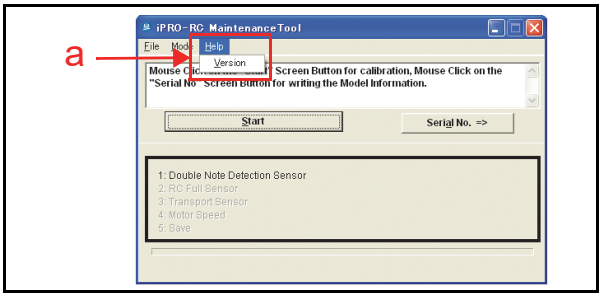


Figure 6-46 Version Information Screen 1

2. The "iPRO-RCMaintenanceTool.exe" Calibration Application Version information will appear in a Pop-up Dialog Screen on the PC. Each Version is indicated by an "X.X.X.X" Text Format (Figure 6-47 a).
3. Click on the "OK" [OK] Screen Button to accept the reported state (Figure 6-47 b).

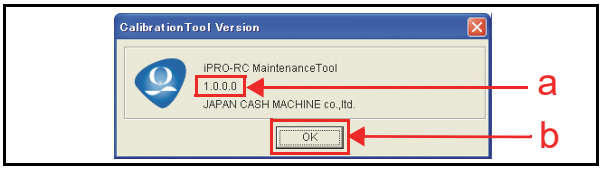


Figure 6-47 Version Information Screen 2

This completes the Reading Software Version Information Procedure.

Individual Calibration and Performance Test

This section explains the individual Calibration and Performance Testing Procedures for each Sensor within an iPRO-RC Unit. (Review "Sensor Calibration and Performance Testing" on page 6-5 of this Section for complete DIP Switch Settings).

Sensor Test Screen

Individual calibration and testing is available when the "**iPRO-RC Maintenance Tool**" is in the Sensor Test Mode. To change the Mode, proceed as follows:

1. Click on the "**iPRO-RC Maintenance Tool**" Tool Bar's "Mode" pull-down Menu, and select "Sensor Test" from the selections available (Figure 6-48 a).

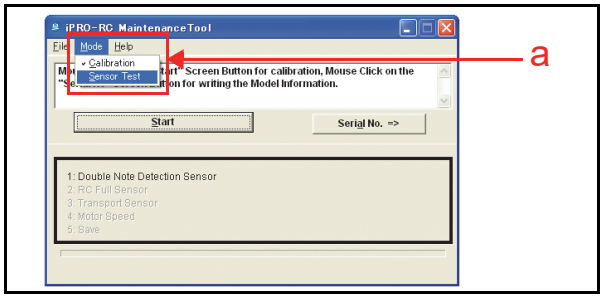
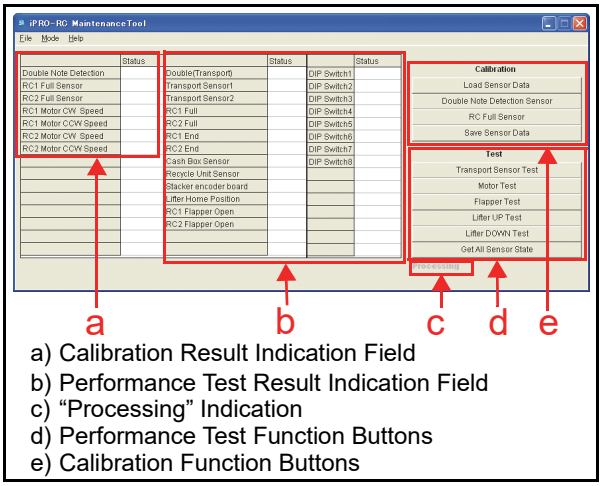


Figure 6-48 Sensor Test Selection

2. The Test Function Screen shown in Figure 6-49 will appear. Confirm that the each Screen Button Function and its related Status Cell indication contains a result.



a) Calibration Result Indication Field
b) Performance Test Result Indication Field
c) "Processing" Indication
d) Performance Test Function Buttons
e) Calibration Function Buttons

Figure 6-49 Test Function Listing Screen

Individual Calibration

The following four (4) Function Buttons are used to perform these related Calibrations:

- Load Sensor Data
- Double Note Detection Sensor
- RC Full Sensor
- Save Sensor Data

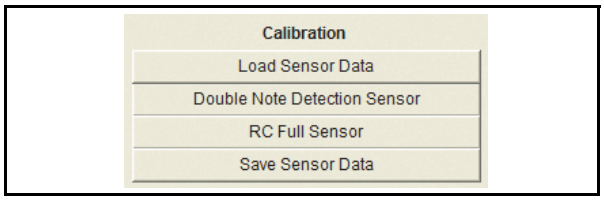


Figure 6-50 Calibration Test Function Screen Buttons

Load Sensor Data

1. Click on the "Load Sensor Data" Load Sensor Data Function Screen Button (Figure 6-51 a) to read the current iPRO-RC Sensor Data.

NOTE: Always read the Sensor Data first prior to starting one of the two (2) Sensor Calibration Procedures.

2. Confirm that the iPRO-RC Unit's LED indicates a steady Green Color. The Bold Text "Processing" ***Processing*** word appears during the Test's performance (Figure 6-51 b).

NOTE: The LED will flash at a Green Color Rate when an abnormal condition occurs!

3. When reading current data is complete, the Bold Text "Processing" Processing word will turn to Grayed-out text (Figure 6-51 b), and a "Load OK" text message will appear in the related Status result Field (Figure 6-51 c).

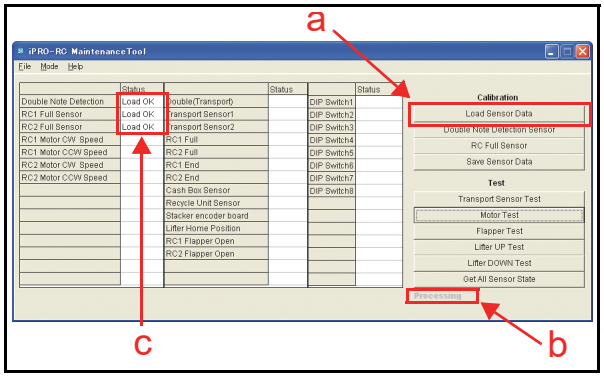


Figure 6-51 Load Sensor Data

Double Note Detection Sensor Calibration

1. Insert a piece of KS-087 Reference Paper into the iPRO Transport Unit Insertion Slot.
2. Click on the "Double Note Detection Sensor" Double Note Detection Sensor Calibration Screen Button (Figure 6-52 a).
3. Confirm that the iPRO-RC Unit's LED indicates a steady Green Color. The Bold Text "Processing" ***Processing*** word will re-appear during Performance Testing (Figure 6-52 b).

NOTE: The LED will flash at a Green Color Rate when an abnormal condition occurs!

4. When Double Note Detection Sensor Calibration is complete, the KS-087 Reference Paper will be returned, and the Bold Text "Processing"

Processing word will again turn to Grayed-out text (Figure 6-52 b).

5. Click on the "Save Sensor Data" Save Sensor Data Function Screen Button (Figure 6-52 c) to reflect the saved Status in the related result Field.
6. Click on the "Load Sensor Data" Load Sensor Data Function Screen Button (Figure 6-52 d) to read the saved Status result data.
7. Confirm that the "OK" (Figure 6-52 e) Status text message appears in the Status result Field next to the Double Note Detection text line label.

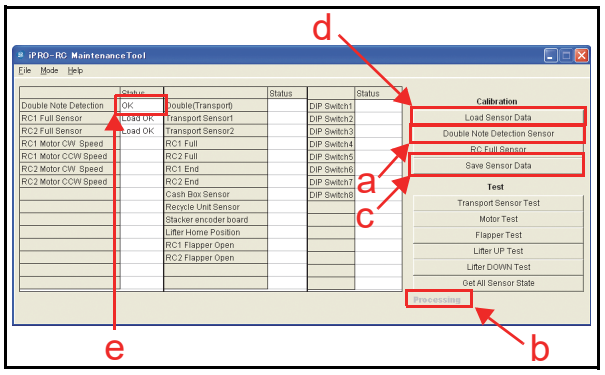


Figure 6-52 Double Note Detection Sensor

RC Full Sensor Button Calibration

1. Check that the Recycler Unit is Empty.
2. Click on the "RC Full Sensor" RC Full Sensor Calibration Screen Button (Figure 6-53 a).
3. Confirm that the iPRO-RC Unit LED indicates a steady Green Color. The Bold Text "Processing" ***Processing*** word appears during the Test's performance (Figure 6-53 b).

   NOTE: The LED will flash at a Green Color Rate when an abnormal condition occurs!

4. When the RC Full Sensor Calibration is complete, the Bold Text "Processing" Processing word will turn to Grayed-out text (Figure 6-53 b).
5. Click on the "Save Sensor Data" Save Sensor Data Screen Button (Figure 6-53 c) to reflect the saved Status in the related result Field.
6. Click on the "Load Sensor Data" Load Sensor Data Screen Button (Figure 6-53 d) to read the saved Status result data.
7. Confirm that the "OK" text message (Figure 6-53 e) appears in the Status result Field next to the RC1 Full Sensor and the RC2 Full Sensor text line labels.

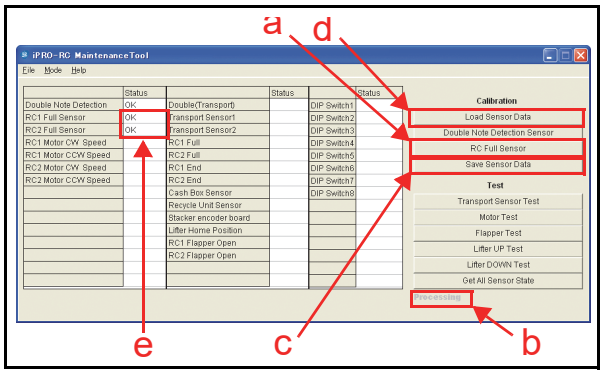


Figure 6-53 RC Full Sensor

Table 6-1 lists the Sensor Calibration Items, their descriptions and their resulting configurations.

Table 6-1 Sensor Calibration Configuration

Item	Description	Result
Double Note Detection Sensor	Indicates the Double Note Detection Sensor's Condition	Load OK = Current Calibration Value Read Completion OK = Calibration Success NG = Abnormal Condition Occurred
RC1 Full Sensor	Indicates the RC1 Full Sensor's Calibration Condition	
RC2 Full Sensor	Indicates the RC2 Full Sensor's Calibration Condition	

Individual Performance Test

The six (6) Function Buttons shown in Figure 6-54 are for activating Calibration tests for the following functions:

- Transport Sensor Test:
  Checks the Transport movement Sensor
- Motor Test:
  Checks the Motor Normal/Reverse rotation
- Flapper Test:
  Checks the Flapper's movement
- Lifter UP Test:
  Checks the Lifter's upward movement
- Lifter DOWN Test:
  Checks the Lifter's downward movement
- Get All Sensor States:
  Reads all of the Sensor's conditions.

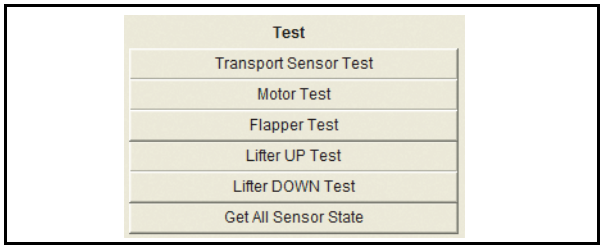


Figure 6-54 Test Function Screen Buttons

Click on the desired Test Function Screen Button to begin each Performance Test.
The Test begins, and will finish automatically. The "Processing" display message appears in bold

(**Processing**) during the Performance Test, then appears grayed-out once the Test is complete (Processing). The iPRO-RC LED will appear solid (non-flashing) Green when the Function has performed normally. If an abnormal condition occurs, the LED flashes Green. (Refer to the Table A-4 on page A-3 in this manual for information on LED Error Code Conditions.)

*NOTE: The Test Status will not appear in the Status Text Field unless the "*Get All Sensor State*" Screen Button is clicked! Only Motor Speed will appear in the Status Fields when a Motor Test is finished.*

Table 6-2 lists the functions of each Performance Test and the related LED configuration.

Table 6-2 Performance Test Configurations

Button	Description	Status Indication	Recycler Unit LED	
			Normal (Stand-by/ Testing)	Abnormal
Transport Sensor Test	Detects a Banknote's presence on the Double Note Detection Sensor (Does not detect double Notes)	-	Green Lit	Green Flash*
	Detect Banknote presence on Transport Sensor 1	-		
	Detect Banknote presence on Transport Sensor 2	-		
Motor Test	RC1 Motor CW Speed: Checks the RC1 Space Transport Motor's Normal Rotation Speed	Speed [mm/s]		
	RC1 Motor CCW Speed: Checks the RC1 Space Transport Motor's Reverse Rotation Speed			
	RC2 Motor CW Speed: Checks the RC2 Space Transport Motor's Normal Rotation Speed			
	RC2 Motor CCW Speed: Checks the RC2 Space Transport Motor's Reverse Rotation Speed			
Flapper Test	Checks the Flapper's performance	-	Green Lit	Green Flash*
Lifter UP Test	Checks the Lifter's Upward performance	-		
Lifter DOWN Test	Checks the Lifter's Downward performance	-		

*. Refer to Table A-4 in Appendix A of this Service Manual for further information regarding any Abnormal Green Flashes.

GET ALL SENSOR STATE

Table 6-3 Get All Sensor State Configurations

Item	Description	Status Text Field Indication	
		Detected	Not Detected
Double (Transport)	Detects a Banknote's presence on the Double Note Detection Sensor (Does not detect double Banknotes)	ON	OFF
Transport Sensor 1	Detects a Banknote's presence on Transport Sensor 1	ON	OFF
Transport Sensor 2	Detects a Banknote's presence on Transport Sensor 2	ON	OFF
RC1 Full	Detects that the RC1 Space is full (Detects a "Full" condition while the Lifter is in the UP position)	ON	OFF
RC2 Full	Detects that the RC2 Space is full (Detects a "Full" condition while the Lifter is in the UP position)	ON	OFF
RC1 End	Detects that the RC1 Space is Empty (Detects an "End" condition while the Lifter is in the DOWN position)	ON	OFF
RC2 End	Detects that the RC2 Space is Empty (Detects an "End" condition while the Lifter is in the DOWN position)	ON	OFF
Cash Box Sensor	Detects that the Cash Box is seated	ON	OFF
Recycle Unit Sensor	Detects that the Recycler Unit is seated	ON	OFF
Stacker Encoder Board	Detects the Pusher Plate's Home Position of the Cash Box Pusher Plate Home Sensor	ON	OFF
Lifter Home Position	Detects the Lifter's Home Position of the Lifter Home Sensor	ON	OFF
RC1 Flapper Open	Detect the RC1 Space Flapper's Open condition of the Flapper Open/Close Sensor	OPEN	CLOSE
RC2 Flapper Open	Detects the RC2 Space Flapper's Open condition of the Flapper Open/Close Sensor	OPEN	CLOSE
DIP Switch1	Detects the DIP Switch 1 condition on the iPRO-RC Unit	ON	OFF
DIP Switch2	Detects the DIP Switch 2 condition on the iPRO-RC Unit	ON	OFF
DIP Switch3	Detects the DIP Switch 3 condition on the iPRO-RC Unit	ON	OFF
DIP Switch4	Detects the DIP Switch 4 condition on the iPRO-RC Unit	ON	OFF
DIP Switch5	Detects the DIP Switch 5 condition on the iPRO-RC Unit	ON	OFF
DIP Switch6	Detects the DIP Switch 6 condition on the iPRO-RC Unit	ON	OFF
DIP Switch7	Detects the DIP Switch 7 condition on the iPRO-RC Unit	ON	OFF
DIP Switch8	Detects the DIP Switch 8 condition on the iPRO-RC Unit	ON	OFF

When clicking on the "Get All Sensor State" Screen Button, each Sensor's Status will appear in the "Status" Text Field. Table 6-3 lists all of the Sensor's Functions and their Status Indications.

Performance Test without a PC

Table 6-4 lists the Performance Test Items and the DIP Switch Settings for the Performance Test without using a PC for testing.

Table 6-4 Non-PC Performance Test Item and Configuration

No.	Test Item	Test Purpose	DIP Switches		LED*				
					iPRO			Recycler	
			iPRO	Recycler	Stand-by	Operating	After Banknote Insertion	Stand-by	Operating
1	Banknote Acceptance Test	Checks the Banknote Acceptance and Stacking movement into the Cash Box and the Recycler Unit	1, 2, 3, 4, 8	Recyclable Denomination Setting†	Red Lit Green Lit	Out Extinguished	Green Flashes €5 = 1 Time €10 = 2 Times €20 = 3 Times €50 = 4 Times €100 = 5 Times €200 = 6 Times €500 = 7 Times	Green Lit Green Lit	Out Extinguished
2	Aging Test	Checks each moving part and Sensor through aging movements	1, 2, 5, 8	4	Red Lit Green Lit			Green Lit Green Lit	
3	RC1 Space Transport Motor Normal Rotation Test	Checks the RC1 Space Transport Motor's normal rotation movement	1, 2, 5, 8	1	Red Lit Green Lit			Green Lit Green Lit	Green Lit Green Lit
4	RC1 Space Transport Motor Reverse Rotation Test	Checks the RC1 Space Transport Motor's reverse rotation movement	1, 2, 5, 8	1, 3	Red Lit Green Lit			Green Lit Green Lit	Green Lit Green Lit
5	RC2 Space Transport Motor Normal Rotation Test	Checks the RC2 Space Transport Motor's normal rotation movement	1, 2, 5, 8	2	Red Lit Green Lit			Green Lit Green Lit	Green Lit Green Lit
6	RC2 Space Transport Motor Reverse Rotation Test	Checks the RC2 Space Transport Motor's reverse rotation movement	1, 2, 5, 8	2, 3	Red Lit Green Lit			Green Lit Green Lit	Green Lit Green Lit
7	Lifter Test	Checks the Lifter's upward/downward movement	1, 2, 5, 8	3	Red Lit Green Lit			Green Lit Green Lit	Green Lit Green Lit
8	RC1 Space Flapper Test	Checks the RC1 Space Flapper's movement	1, 2, 5, 8	5	Red Lit Green Lit			Green Lit Green Lit	Green Lit Green Lit
9	RC2 Space Flapper Test	Checks the RC2 Space Flapper's movement	1, 2, 5, 8	6	Red Lit Green Lit			Green Lit Green Lit	Green Lit Green Lit

*. The LEDs exhibit a Stand-by indication when each Test is successfully completed. If the LED indicates any other state, an abnormal condition has occurred. Refer to the "iPRO Unit LED Code Conditions" on page A-1, "RC Unit LED Color Type Error Code Conditions" on page A-2, "Recycler Unit LED Code Conditions" on page A-3 and "Various Recycler Unit LED Flashing Error Code Conditions" on page A-3 in Appendix A of this Service Manual.

†. Refer to the "Software Specification" Document for more detailed information concerning this value setting.

Performance Test without PC Procedure

Perform the following steps to execute iPRO-RC performance Tests No.2 through No.9 without a PC:

1. Turn the iPRO-RC Power Switch to **OFF**.
2. Set the desired DIP Switches on the iPRO Transport Unit and Recycler Unit to **ON** for the desired Performance Test.
3. Turn the iPRO-RC Power Switch to **ON**. The iPRO Transport Unit LED will flash at a Green and a Red Color rate when entering the Performance Test Mode.
4. Set the iPRO Transport Unit's 8-Position DIP Switch No.8 **OFF** in order to start a desired Test.
5. Set the iPRO Transport Unit 8-Position DIP Switch No.8 back **ON** in order to end a Test. The iPRO-RC will revert to Stand-by Mode Status following each Test's completion.
   Return to Step 2 of this procedure if necessary to perform another DIP Switch Performance Test.

BANKNOTE ACCEPTANCE TEST

Perform the following steps to execute the Banknote Acceptance Test without a PC:

1. Turn the iPRO-RC Power Switch to **OFF**.
2. Set the desired DIP Switch Number on the iPRO Transport Unit's and Recycler Unit's 8-Position DIP Switch to **ON** to select the desired Performance Test (Table 6-4).

   NOTE: The denomination value stored in the RC1-Bin is set by DIP Switches No.1 to No.4 on the Recycler, and the denomination value stored in the RC2-Bin is set by DIP Switches No.5 to No.8 on the Recycler. Refer to the specific Country's "Software Specification Sheet" Document for more value setting details.

3. Turn the iPRO-RC Power Switch **ON**. The iPRO Transport Unit's LEDs will alternately flash at a Green and a Red Color Rate when entering the Performance Test Mode.
4. Set the 8-Position DIP Switch No.8 to **OFF** in order to start the iPRO-RC Unit's initialization routine.
5. Check that the iPRO Transport Unit's LEDs are off (extinguished), and that the iPRO-RC Status is in the Stand-by Mode.
6. Start the Test by inserting a Banknote.
7. Confirm the Banknote's denomination by counting the LED flashes between pauses (Table 6-4 in this Section for flash count vs. denomination value information).

This completes the Banknote Acceptance Test without using a PC Procedure.

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iPRO-RC™ Series
Banknote Recycler
Section 7

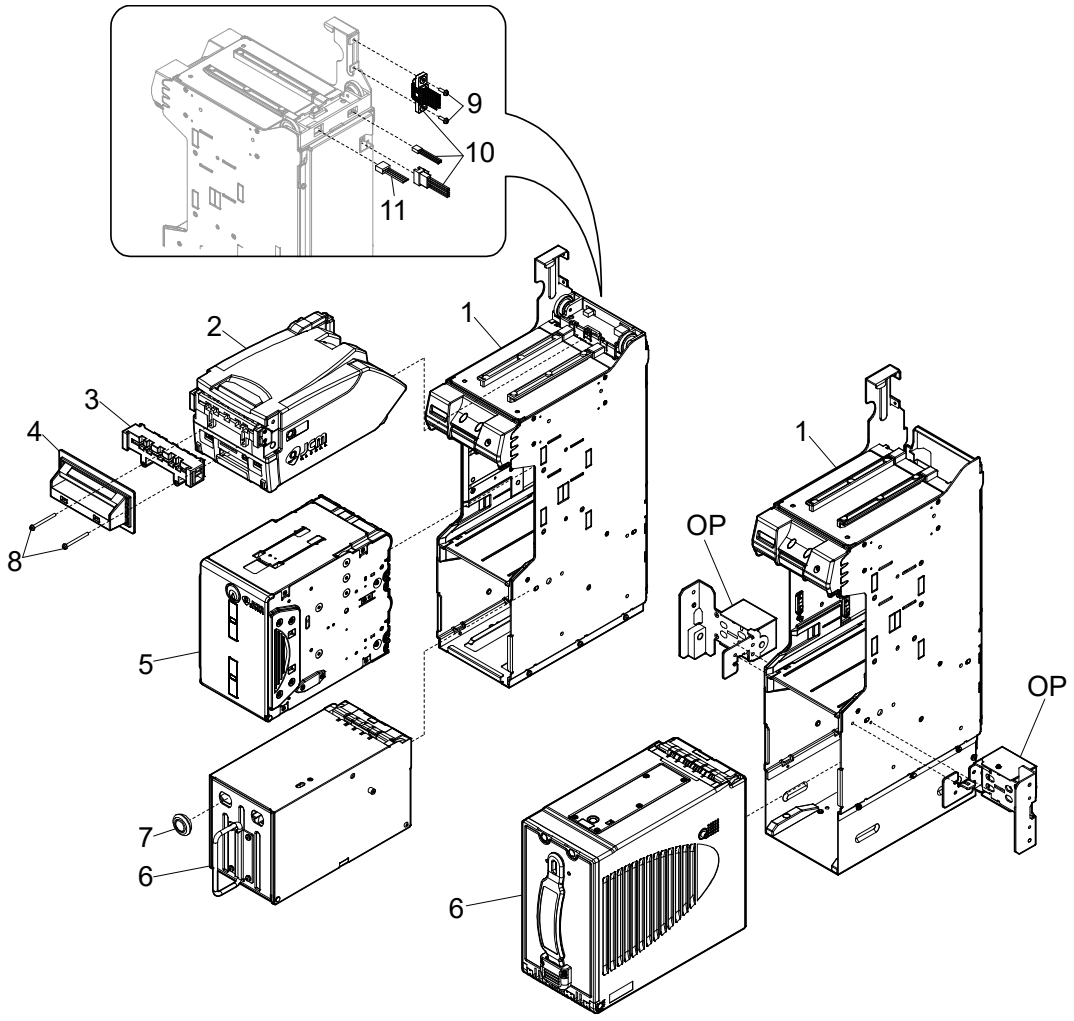
7 EXPLODED VIEWS AND PARTS LISTS

This section provides product exploded views and parts lists for the iPRO-RC™ Series Banknote Recycler Unit Assembly (iPRO-RC). This section contains the following information.

NOTE: Parts may be changed for improvement without notice.

- Entire iPRO-RC Unit Exploded View
- iPRO-RC Frame Unit Exploded View
- iPRO-RC Lower Unit
- iPRO-RC Upper Course Assembly
- iPRO-RC Recycler Unit Exploded View
- iPRO-RC Rear Transport Assembly Exploded View
- WBA-SH2 Cash Box Unit Exploded View
- iPRO-RC Large Cash Box Frame Unit Exploded View
- Optional Lock Unit Exploded View

Entire iPRO-RC Unit Exploded View



NOTE: Refer to the "UBA Series Standard & Large Cash Boxes Exploded View and Parts List" and/or the "UBA Series SH2 Cash Box Exploded View and Parts List" for the Cash Box parts.

Figure 7-1 Entire iPRO-RC Unit Exploded View

Entire iPRO-RC Unit Parts List

Table 7-1 iPRO-RC Unit Parts List

Ref No.	EDP No.	Description	Qty	Remark
1	196488	UBA-RC Frame	1	
	216287	UBA-RC FRAME(LARGE BOX)	1	
	288665	UBA-RC FRAME AC	1	**iPRO-103 Type**
	288666	UBA-RC FRAME(LARGE BOX) AC	1	**iPRO-103 Type**
2	282063	iPRO-100 Transport Unit TD	1	
	210726	iPRO-200 Transport Unit	1	
	236850	iPRO-100 Transport Unit OEM	1	
	288662	IPRO-103 TRANSPORT UNIT	1	
3	198102	Bezel Spacer	1	
4	202272	UBA Bezel SS 1 R (85mm, Black, Green LED)	1	**For Standard (SS) installation No Relay Harness The shipping container is included**
	202273	UBA Bezel SS 2 R (85mm, Blue, Blue LED)	1	
	202274	UBA Bezel SS 8 R (82mm, Black, Green LED)	1	
	202275	UBA Bezel SS A R (85mm, Blue, 2-Line Blue LED)	1	**For Standard (SS) installation With Relay Harness The shipping container is included**
	202276	UBA Bezel SS B R (85mm, Green, 2-Line Green LED)	1	
	202277	UBA Bezel SS Metal M1 R (85mm, Silver (Metal), Green LED)	1	**For Standard (SS) installation No Relay Harness The shipping container is included**
	202278	UBA Bezel SS Metal M2 R (85mm, Silver (Metal), Blue LED)	1	
	202279	UBA Bezel SU 1 R (85mm, Black, Green LED)	1	**For Stack Up (SU) installation No Relay Harness The shipping container is included**
	212987	UBA Bezel SS Metal M1 T (85mm, Gold (Metal), Green LED)	1	**For Standard (SS) installation No Relay Harness The shipping container is included**
	212988	UBA Bezel SS Metal M2 T (85mm, Gold (Metal), Blue LED)	1	
	212991	UBA Bezel SS Metal M1 N (85mm, Bronze Silver (Metal), Green LED)	1	
	212992	UBA Bezel SS Metal M2 N (85mm, Bronze Silver (Metal), Blue LED)	1	
	294065	UBA BEZEL SS W/O BOARD&HARNESS	1	**"UBA Bezel SS 1 R" without the Harness and the PCB**
5	280940	UBA-RC Box (PH)	1	**No Length or Width Guides**
	208235	UBA-RC RC-BOX 10/20	1	**#195963 "UBA-RC Box" with Length Guide 127/133 and Width Guide 67 (2x)/72 (2x) The shipping container is included**
	211276	UBA-RC RC-BOX 10/50	1	**#195963 "UBA-RC Box" with Length Guide 127/140 and Width Guide 67(2x) The shipping container is included**
	221282	UBA-RC RC-BOX 10/20 A-S	1	**#195963 "UBA-RC Box" with Length Guide 127/133, Width Guide 67 (2x)/72 (2x) and Anti-static Sheets The shipping container is included**
	280884	UBA-RC RC-BOX 5/1 A-S MYS	1	**#195963 "UBA-RC Box" with Length Guide 120/140 and Width Guide 67 (4x) Anti-static Sheets The shipping container is included**
	226497	UBA-RC BOX P-LOCK	1	**#195963 "UBA-RC Box" with P-Lock faster**
	237347	UBA-RC BOX ANTI STATIC	1	**#195963 "UBA-RC Box" with Anti-static Sheets**
	282412	UBA-RC RC-BOX 5/1 ANTI STATIC MYS (TD)	1	**#280940 "UBA-RC Box (PH)" with Length Guide 120/140 and Width Guide 67 (4x) Anti-static Sheets The shipping container is included**
	288664	UBA-RC Box AC	1	**iPRO-103 Type. No Length or Width Guides.**
	288667	UBA-RC RC-BOX 5/1 A-S MYS AC	1	**iPRO-103 Type. #288664 "UBA-RC Box AC" with Length Guide 120/140 and Width Guide 67 (4x) The shipping container is included**

Table 7-1 iPRO-RC Unit Parts List (Continued)

Ref No.	EDP No.	Description	Qty	Remark
6	280942	WBA-SH2 Cash Box Unit (PH)	1	**The shipping container is included**
	280824	UBA CASH BOX L TD	1	**Large Cash Box** **The shipping container is included**
7	075245	C-30-SG-18A	1	
8	199082	M3x35 Pan Head with W Washer (Small)	2	**Accessory**
9	013536	3x10 Pan Head with W Washer (Small)	2	**Accessory**
10	209567	3441-05-01x Communication Harness*	1	**Accessory (Standard)**
	222912	3441-05-03x Communication Harness*	1	**Accessory (OEM)**
	236849	3441-05-04x Communication Harness*	1	**Accessory (OEM)**
	272161	3441-08-001x MDB Harness ASSY*	1	**Accessory (MDB Harness Assemble)**
11	196555	3440-05-11A Power Harness	1	**Accessory (Power Cord)**
OP	206442	LOCK UNIT(UBA-RC)	1	**Optional**

*. An alphabetic character that represents the part's version is added at the end.

iPRO-RC Frame Unit 1 Exploded View

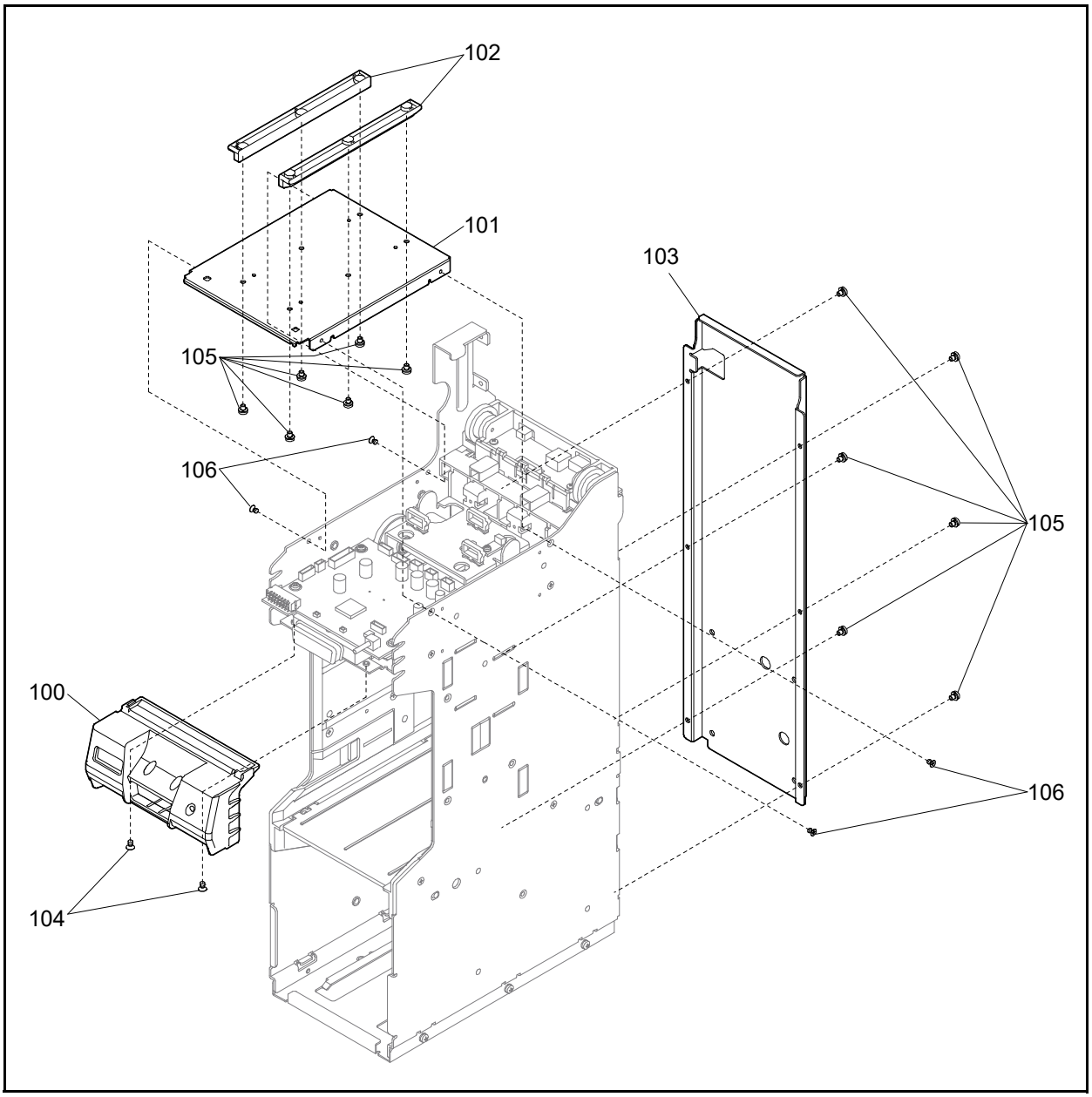


Figure 7-2 iPRO-RC Frame Unit 1 Exploded View

iPRO-RC Frame Unit 1 Parts List

Table 7-2 iPRO-RC Frame Unit 1 Parts List

Ref No.	EDP No.	Description	Qty	Remark
100	265015	RC FACE ASSY	1	
101	196443	UBA-RC UPPER FRAME	1	
102	265780	UBA-TRANS RAIL	2	
103	196441	UBA-RC BACK FRAME	1	
104	128427	3x5 Flat Head Screw with F-LOCK	2	
105	006036	3x4 Pan Head with Washer	12	
106	149635	3x4 Low Flat Head Screw with F-LOCK	4	

iPRO-RC Frame Unit 2 Exploded View

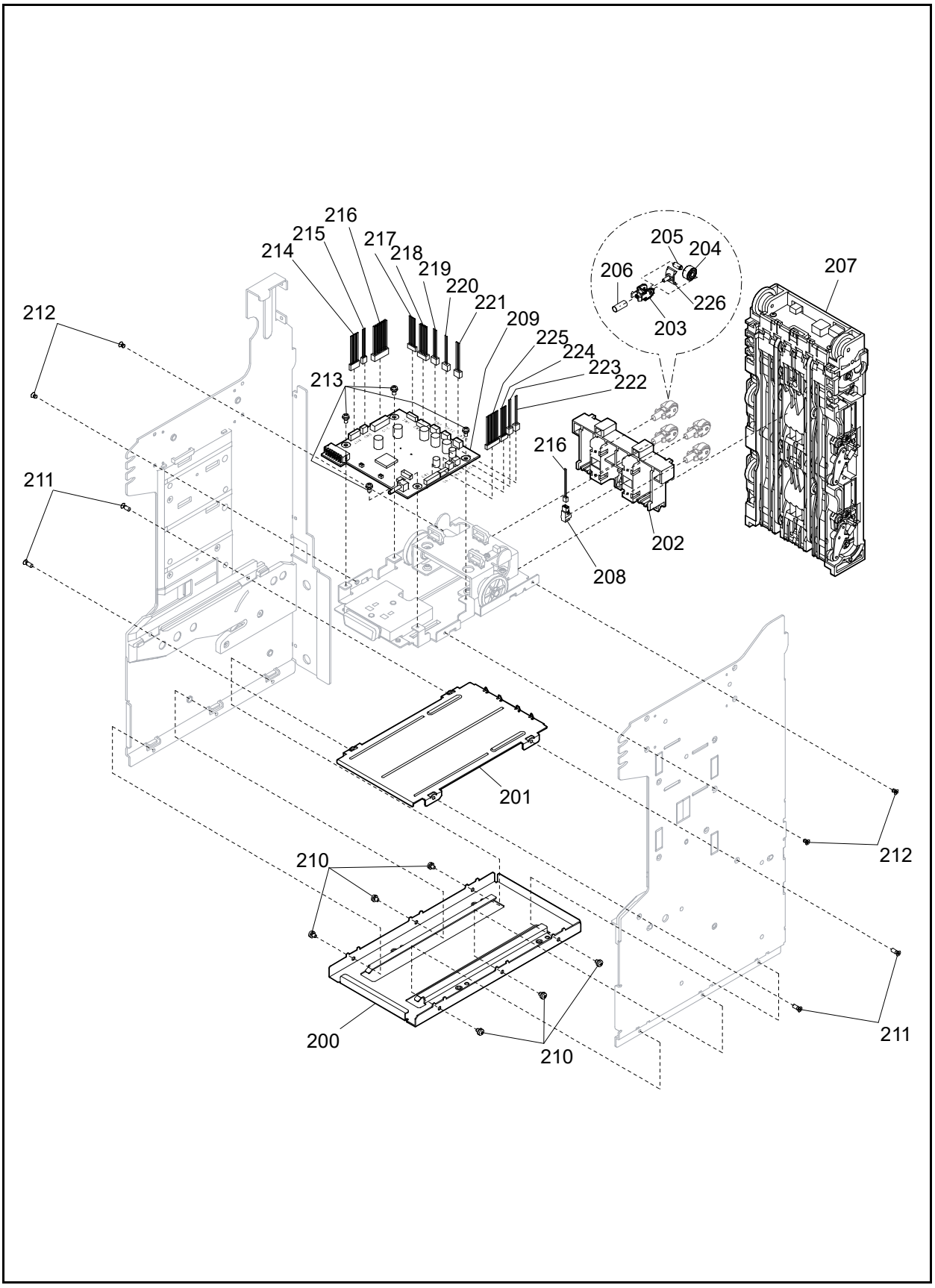


Figure 7-3 iPRO-RC Frame Unit 2 Exploded View

iPRO-RC Frame Unit 2 Parts List

Table 7-3 iPRO-RC Frame Unit 2 Parts List

Ref No.	EDP No.	Description	Qty	Remark
200	196440	UBA-RC Base Frame	1	**RC Pinch Roller**
201	196439	UBA-RC Middle Frame	1	
202	195324	FRAME TR GUIDE	1	**Pinch Roller Spring**
203	195323	PINCH ROLLER HOLDER	4	**Rear Transport Assembly**
204	195879	RC PR	4	
205	195935	BACK TRANS SHAFT 11	4	
206	195899	PR SP	4	
207	195966	UBA-RC BACK TRANS	1	**Rear Transport Assy.**
	288663	UBA-RC BACK TRANS AC	1	**iPRO-103 Type**
208	196542	KB3290-JC13LF	1	**Double Notes Detection Sensor LED**
209	268338	4088-3440-06-01D-01 Recycler CPU Board Assembly	1	
210	006036	3x4 Pan Head with Washer	6	
211	113803	3x8 Low Flat Head Screw with F-LOCK	4	
212	149635	3x4 Low Flat Head Screw with F-LOCK	4	
213	003609	3x6 Pan Head with W Washer (small)	4	
214	196553	3440-05-07A	1	**End Detection Sensor Harness**
215	196548	3440-05-02	1	**Lifter Motor Encoder Harness**
216	196550	3440-05-04A	1	**Sensor Harness**
217	196551	3440-05-05	1	**Recycler Transport Motor Encoder Harness**
218	216594	3440-05-101	1	**Recycler Board Power Harness**
219	196562	4088-3440-05-08-01 Recycler Transport Motor (Upper)	1	
220	196561	4088-3440-05-09-01 Recycler Transport Motor (Lower)	1	
221	196539	CN16-05301	1	**Lifter Motor Assembly**
222	196540	TDS-06K-438	1	**Flapper Open/Close Solenoid Assembly (Upper)**
223	196541	TDS-06K-439	1	**Flapper Open/Close Solenoid Assembly (Lower)**
224	196549	3440-05-03	1	**Flapper Open/Close Detection Harness**
225	196552	3440-05-06A	1	**Full Detection Sensor Harness**
226	288659	PINCH ROLLER SCRAPER	4	**iPRO-103 Type**

iPRO-RC Frame Unit 3 Exploded View

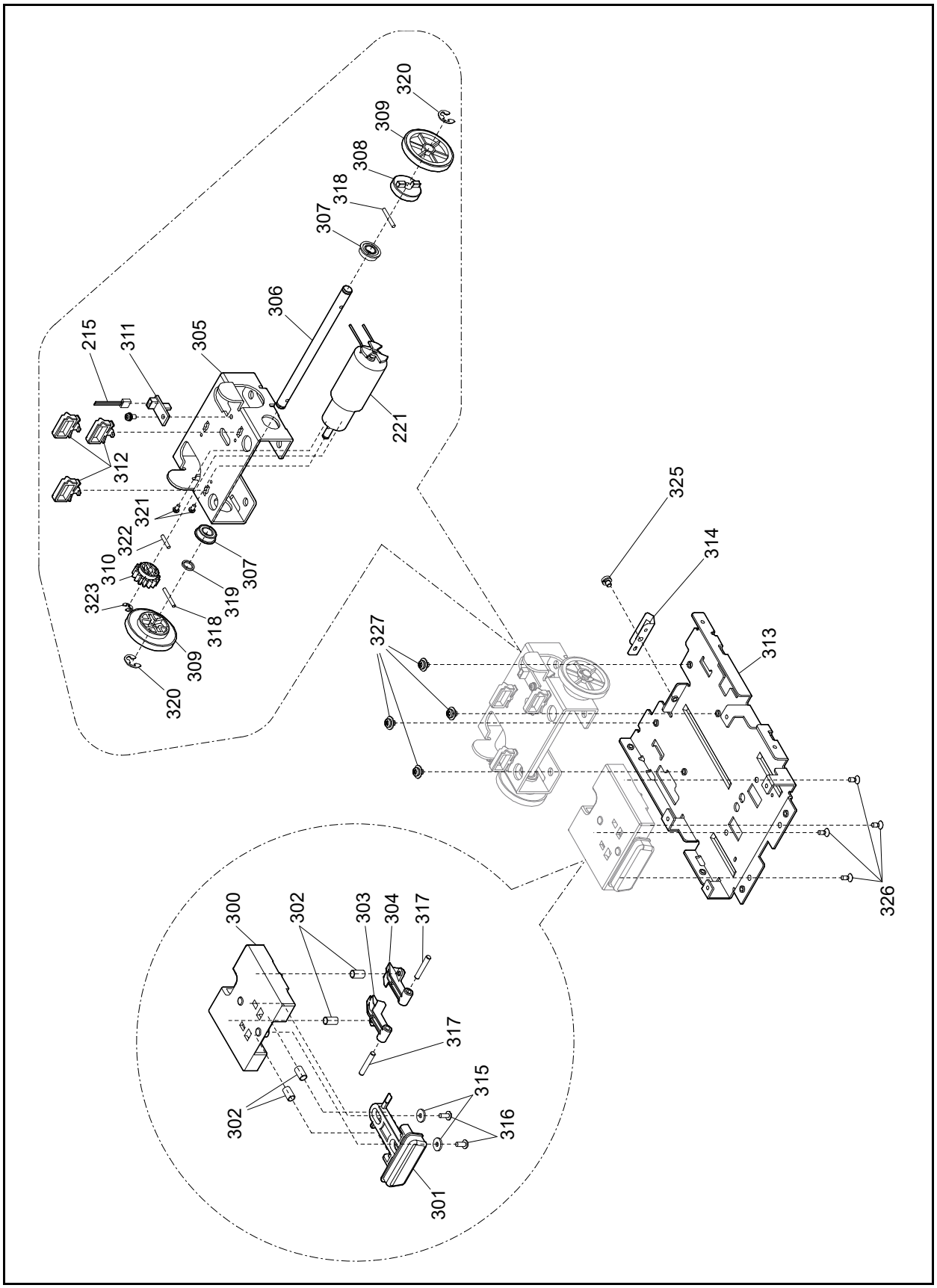


Figure 7-4 iPRO-RC Frame Unit 3 Exploded View

iPRO-RC Frame Unit 3 Parts List

Table 7-4 iPRO-RC Frame Unit 3 Parts List

Ref No.	EDP No.	Description	Qty	Remark
300	196451	RC Latch Case	1	
301	196452	RC LATCH BUTN	1	**RC Latch Button**
302	196472	LATCH BUTN SP	4	**Latch Button Spring**
303	196453	RC Latch L	1	
304	196454	RC Latch R	1	
305	196437	LIFT MOTOR BRKT	1	
306	196475	Lift Up Shaft	1	
307	007500	DDLF-1260ZZ Bearing SMF126	2	
308	196459	LIFT TIME LAG SPACER	1	**Lift Pitch Spacer**
309	196473	Lift Up Gear	2	
310	196474	Lift Motor Gear C	1	
311	116208	4033-3240-06-08B-01 R	1	**Centering Home Position Sensor Board Assembly**
312	196484	RBWS-1.5TL V0 BK Reuse Clamp	3	
313	196438	UBA-RC Internal Frame	1	
314	196442	UBA-RC FG PLATE	1	
315	201245	CC-2608-10 DURACON Washer	2	
316	063250	2.6x6 Phillips, Self Tightening, Binding P-TITE Screw	2	
317	113898	3x18 Parallel Pin SUS Hard	2	
318	133880	2x15 Parallel Pin SUS Hard	2	
319	196486	6.1x8.0x1.0 Poly Slider	1	
320	003709	E-Ring ø5 SUS	2	
321	005683	2x4 Pan Head with Washer	2	
322	038938	2x10 Parallel Pin SUS Hard	1	
323	003707	E-Ring ø3 SUS	1	
324	010377	2.6x5 Pan Head with W Washer (Small)	1	
325	006036	3x4 Pan Head with Washer	1	
326	052564	2.6x6 Phillips, Self Tightening, Flat Head P-TITE Screw	4	
327	025195	3x4 Pan Head with W Washer (Large)	4	

iPRO-RC Frame Unit 4 Exploded View

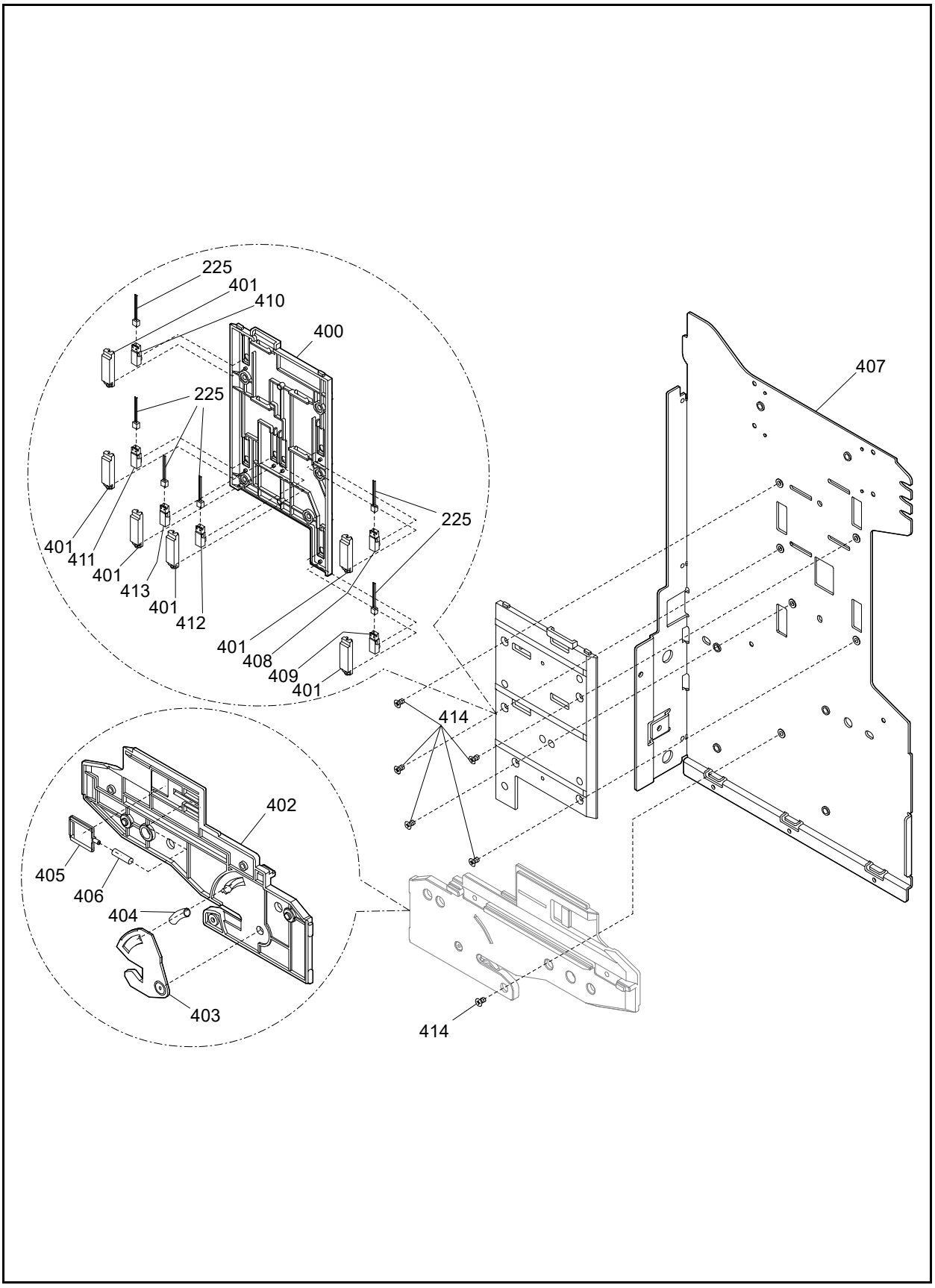


Figure 7-5 iPRO-RC Frame Unit 4 Exploded View

iPRO-RC Frame Unit 4 Parts List

Table 7-5 iPRO-RC Frame Unit 4 Parts List

Ref No.	EDP No.	Description	Qty	Remark
400	196448	Frame Guide 3	1	
401	196450	Sensor Cover	6	
402	196446	Frame Guide 1	1	
403	102984	Cash Box Holder B	1	
404	052649	BL Spring	1	**Box Lever Spring**
405	196458	BOX PUSH HOLDER	1	
406	196471	BOX PUSH SP	1	**Box Pusher Spring**
407	196435	UBA-RC R FRAME	1	
408	196545	PSIR0498-II	1	**End Detection Sensor (Upper) LED**
409	196545	PSIR0498-II	1	**End Detection Sensor (Lower) LED**
410	196546	PST0401E	1	**Full Detection Sensor (Upper) PT**
411	196546	PST0401E	1	**Full Detection Sensor (Lower) PT**
412	196545	PSIR0498-II	1	**Lifter Home Detection Sensor LED**
413	196546	PST0401E	1	**Lifter Home Detection Sensor PT**
414	128427	3x5 Flat Head Screw with F-LOCK	6	
-	141088	Acetate Cloth Tape 570F Black 20MMX30M	-	

iPRO-RC Frame Unit 5 Exploded View

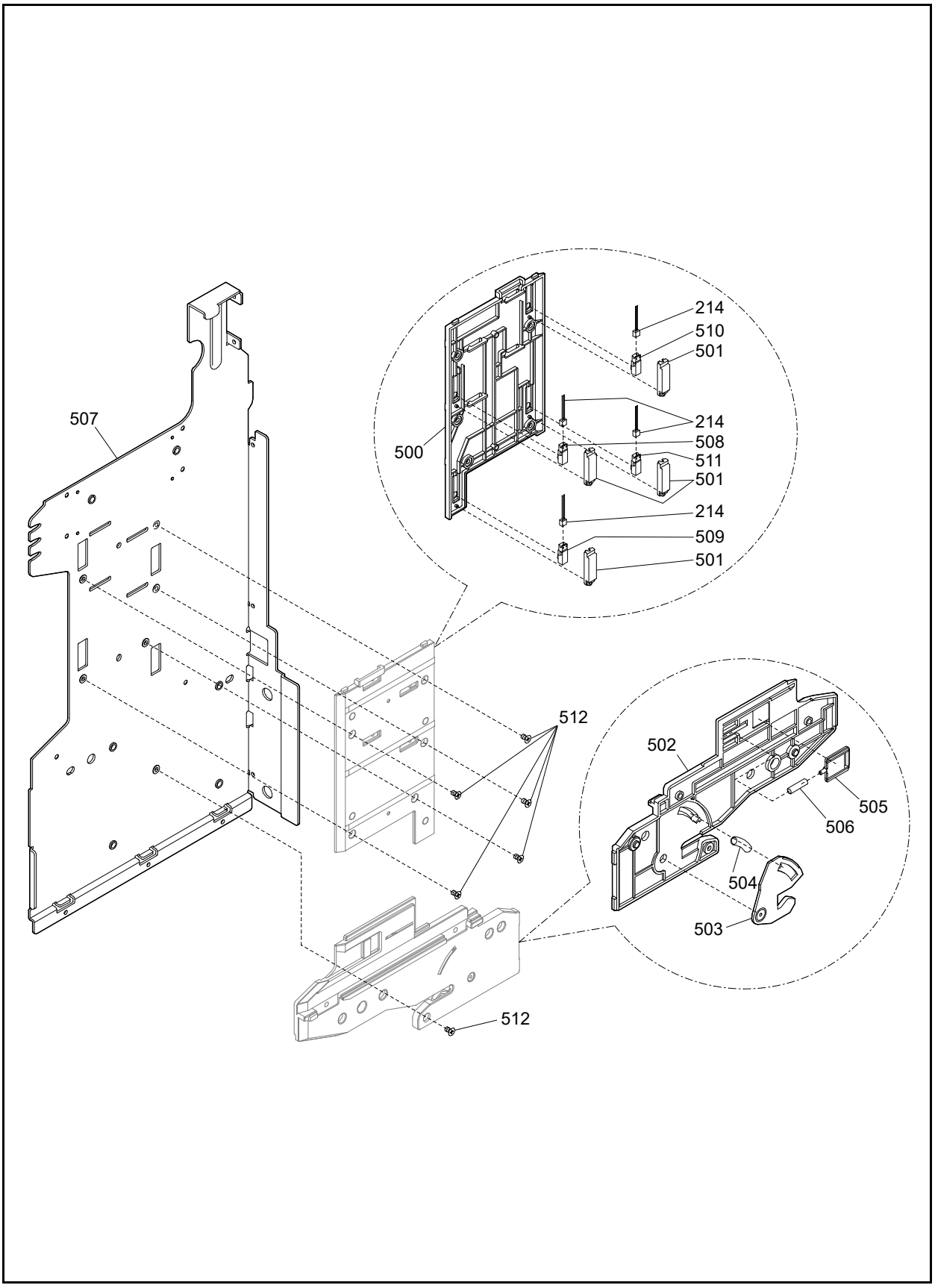


Figure 7-6 iPRO-RC Frame Unit 5 Exploded View

iPRO-RC Frame Unit 5 Parts List

Table 7-6 iPRO-RC Frame Unit 5 Parts List

Ref No.	EDP No.	Description	Qty	Remark
500	196449	Frame Guide 4	1	
501	196450	Sensor Cover	4	
502	196447	Frame Guide 2	1	
503	102983	Cash Box Holder A	1	
504	052649	Box Lever Spring	1	**Box Lever Spring**
505	196458	BOX PUSH HOLDER	1	
506	196471	BOX PUSH SP	1	**Box Pusher Spring**
507	196436	UBA-RC L FRAME	1	
508	196546	PST0401E	1	**Full Detection Sensor (Upper) PT**
509	196546	PST0401E	1	**Full Detection Sensor (Lower) PT**
510	196545	PSIR0498-II	1	**End Detection Sensor (Upper) LED**
511	196545	PSIR0498-II	1	**End Detection Sensor (Lower) LED**
512	128427	3x5 Flat Head Screw with F-LOCK	6	
-	141088	Acetate Cloth Tape 570F Black 20MMX30M	-	

iPRO-RC Recycler Unit 1 Exploded View

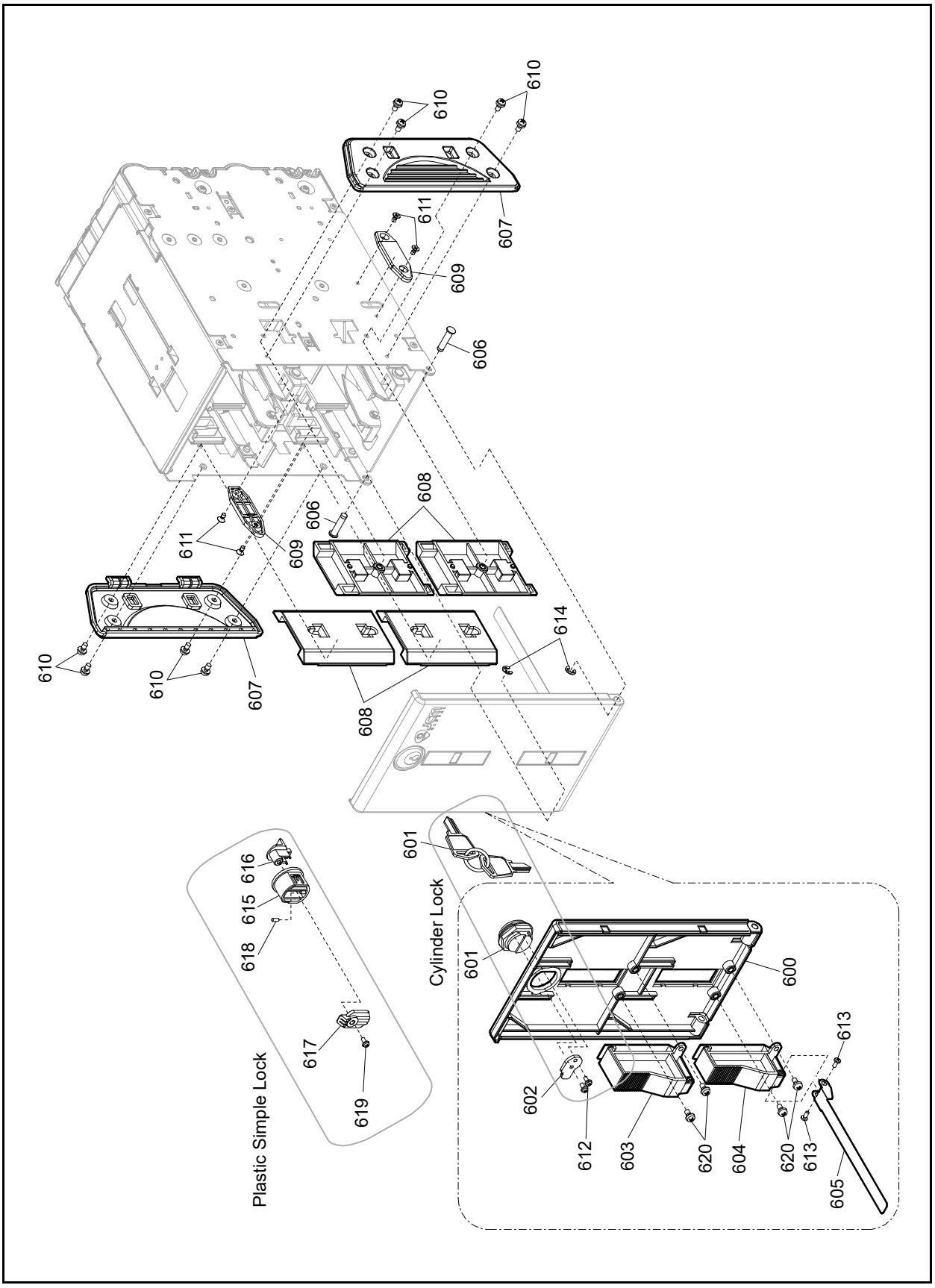


Figure 7-7 iPRO-RC Recycler Unit 1 Exploded View

iPRO-RC Recycler Unit 1 Parts List

Table 7-7 iPRO-RC Recycler Unit 1 Parts List

Ref No.	EDP No.	Description	Qty	Remark
600	251308	Door	1	
601	080522	C-89-1(#410) Lock	1	
602	195897	Tang	1	
603 and 604*	196462	Length Guide 120	1	**Gray**
	196464	Length Guide 127	1	**Red**
	196466	Length Guide 133	1	**Blue**
	196468	Length Guide 140	1	**Orange**
	196469	Length Guide 147	1	**Green**
	204457	Length Guide 152	1	**Black**
	196470	Length Guide 158	1	**Black**
605	195917	L GUIDE ASSIST SHEET	1	**Length Guide Assist Sheet**
606	195888	FULCRUM SH	2	
607	195915	RC Skid	2	
608	265781	SIDE GUIDE FRONT	4	**Front Width Guide**
609	195916	RC PRESS GUIDE	2	
610	003609	3x6 Pan Head with W Washer (small)	8	
611	081564	2.6x5 Flat Head Screw with F-LOCK	4	
612	063352	2.3x5 Pan Head with Washer	2	
613	138053	2x5 Phillips, Self Tightening, Binding P-TITE Screw	2	
614	003707	E-Ring ø3 SUS	2	
615	226493	RC Lock Guide	1	**For P-Lock**
616	226494	RC Lock Lever	1	**For P-Lock**
617	226495	RC Lock	1	**For P-Lock**
618	226496	RC Lock Spring	1	**For P-Lock**
619	104010	2.6x6 Binding P-TITE Screw, Iron (III) Zinc, White	1	**For P-Lock**
620	003610	3x6 Pan Head with W Washer (Large)	4	

*. Choose two guides of the seven various guides. Refer to the “Software Information Sheet” to choose appropriate guides for each currency.

iPRO-RC Recycler Unit 2 Exploded View

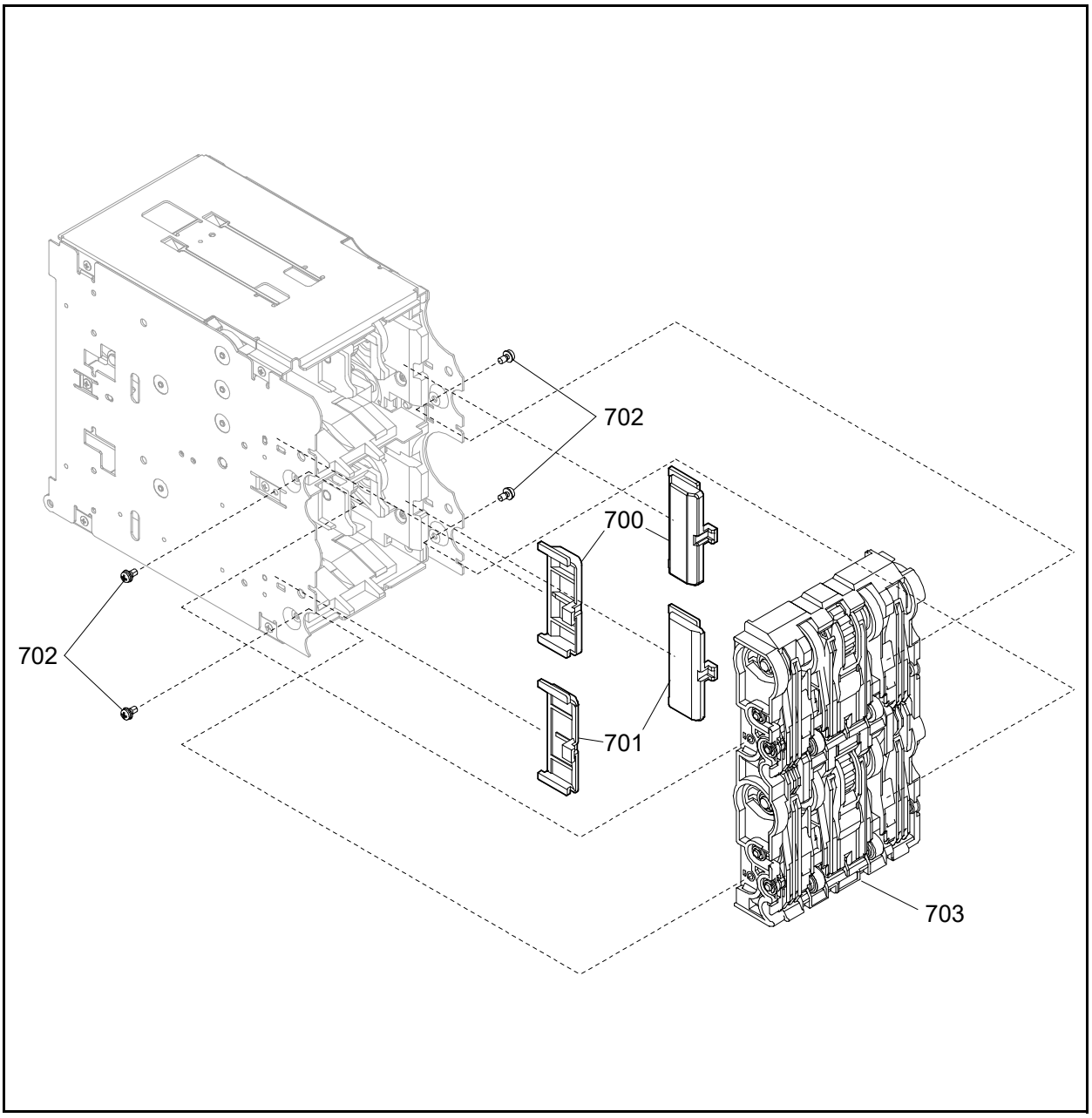


Figure 7-8 iPRO-RC Recycler Unit 2 Exploded View

iPRO-RC Recycler Unit 2 Parts List

Table 7-8 iPRO-RC Recycler Unit 2 Parts List

Ref No.	EDP No.	Description	Qty	Remark
700 and 701*	196465	Width Guide 67	2	**Red**
	196467	Width Guide 72	2	**Blue**
	196463	Width Guide 62	2	**Gray**
702	003609	3x6 Pan Head with W Washer (small)	4	
703	229876	UBA-RC COURSE ASSY	1	

*. Choose two of the three guides or no guide. Refer to the “Software Information Sheet” to choose appropriate guides for each currency.

iPRO-RC Recycler Unit 3 Exploded View

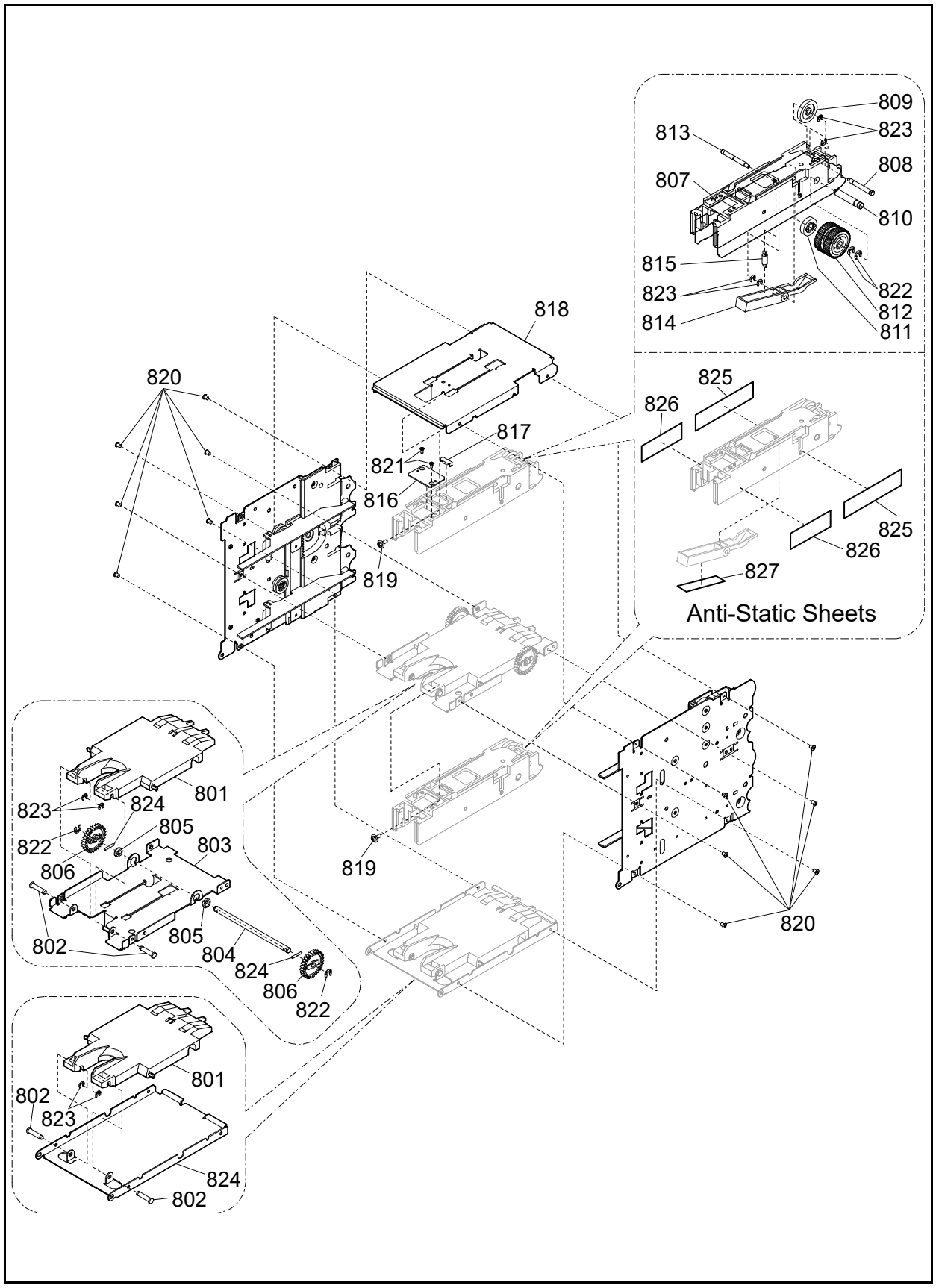


Figure 7-9 iPRO-RC Recycler Unit 3 Exploded View

iPRO-RC Recycler Unit 3 Parts List

Table 7-9 iPRO-RC Recycler Unit 3 Parts List

Ref No.	EDP No.	Description	Qty	Remark
800	195894	RC Base	1	
801	195913	Table	2	
802	195888	FULCRUM SH	4	
803	195893	RC Middle Base	1	
804	195887	RACK DRIVE SH	1	
805	033218	DDLF-850ZZ Bearing	2	
806	195875	RACK DRIVE GE	2	**Rack Drive Gear**
807	195909	RC CENTER GUIDE	2	
808	195884	RC IDLE SH	2	
809	195871	RC Idle Z21	2	
810	195885	PICK SH	2	
811	195872	RC PICK GE	2	**RC Pick Gear**
812	194075	Pick Roller	2	
813	195886	END LEVER SH	2	
814	195910	End Lever	2	
815	195923	END TS	2	**End Helical Extension Spring**
816	195898	Center Guide Cover	1	
	227351		1	**For P-Lock**
817	275844	Prism (C)	1	
818	195892	RC Upper Cover	1	
819	005520	3x8 Pan Head with W Washer (Large)	2	
820	195947	3x4 Super Low Head Screw AHN3-4 (Nyloc)	12	
821	142672	2x5 Phillips, Self Tightening, Flat Head P-TITE Screw	2	
822	003708	E-Ring ø4 SUS OCHIAI	6	
823	003707	E-Ring ø3 SUS	12	
824	082026	2x12 Parallel Pin SUS Hard	2	
825	221278	Anti-Static Sheet A	4	**For Anti-Static Specification Only**
826	221279	Anti-Static Sheet B	4	
827	221280	Anti-Static Sheet C	2	

iPRO-RC Recycler Unit 4 Exploded View

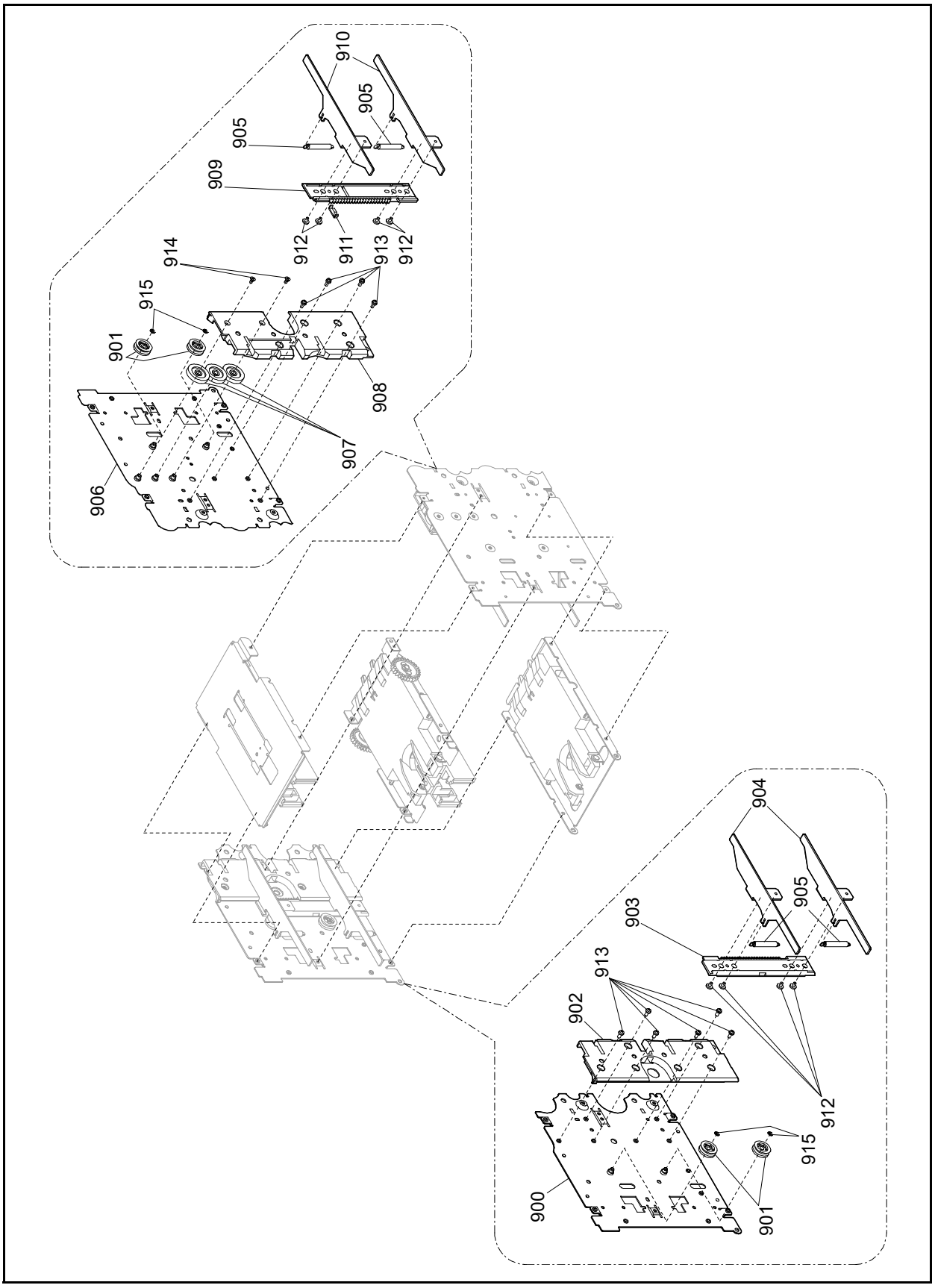


Figure 7-10 iPRO-RC Recycler Unit 4 Exploded View

iPRO-RC Recycler Unit 4 Parts List

Table 7-10 iPRO-RC Recycler Unit 4 Parts List

Ref No.	EDP No.	Description	Qty	Remark
900	195890	RC FRAME AS L	1	**RC Frame Assembly Left**
901	195880	RACK GUIDE RO	4	**Rack Guide Roller**
902	195911	SIDE GUIDE L	1	**Width Guide Left**
903	195876	RACK GE L	1	**Rack Gear Left**
904	195895	Lifter L	2	**Lifter Left**
905	195922	PICK TS	4	**Pick Helical Extension Spring**
906	195891	RC FRAME AS R	1	**RC Frame Assembly Right**
907	195873	IDLE GE Z20	3	
908	195912	SIDE GUIDE R	1	**Width Guide Right**
909	195877	RACK GE R	1	**Rack Gear Right**
910	195896	Lifter R	2	**Lifter Right**
911	275844	Prism (C)	1	
912	195946	3x4 Binding Nyloc	8	
913	005555	2.6x6 Pan Head with W Washer (Small)	10	
914	081564	2.6x5 Flat Head Screw with F-LOCK	2	
915	003705	E-Ring ø2 SUS OCHIAI	4	

iPRO-RC Recycler Unit 5 Exploded View

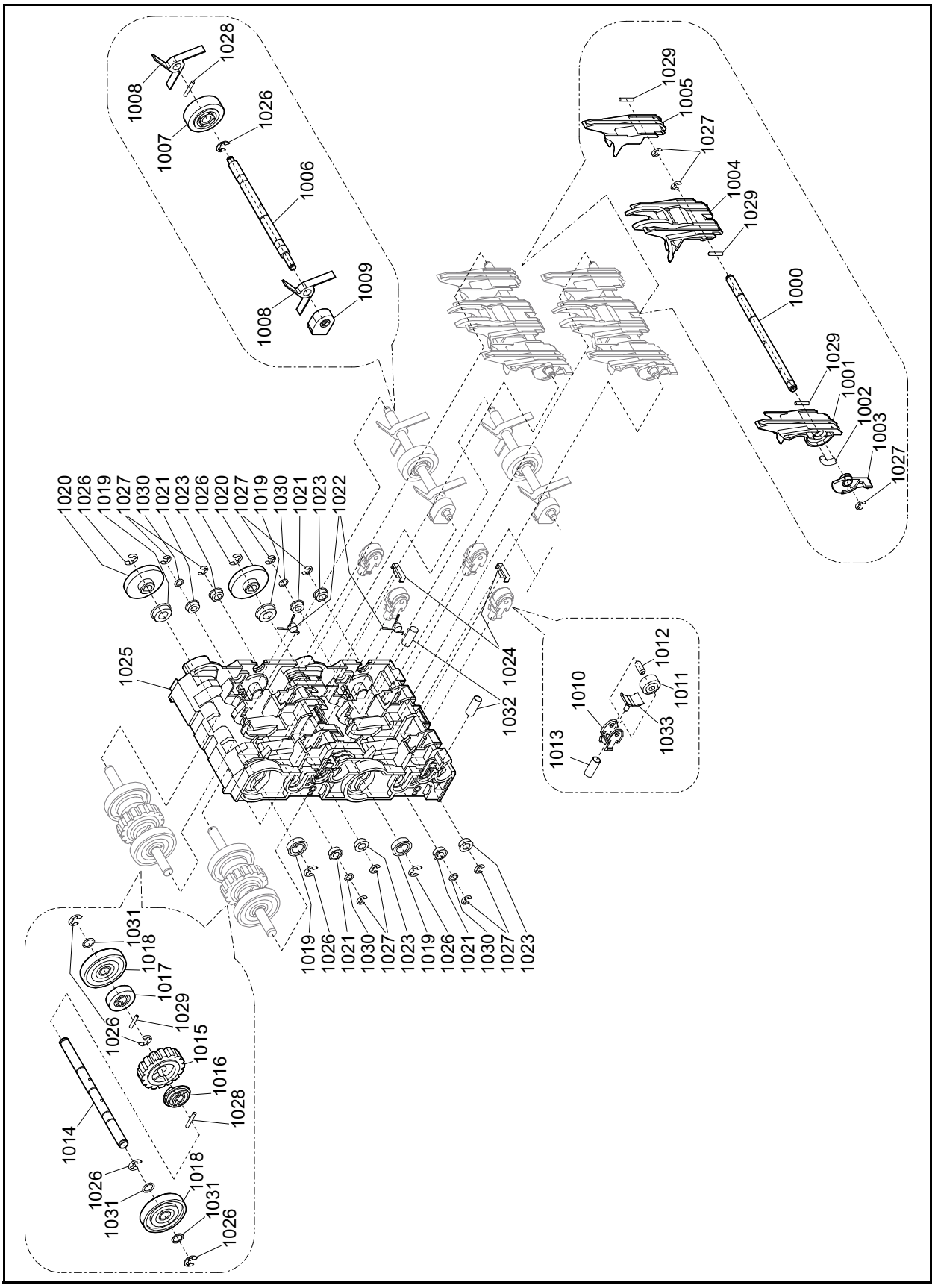


Figure 7-11 iPRO-RC Recycler Unit 5 Exploded View

iPRO-RC Recycler Unit 5 Parts List

Table 7-11 iPRO-RC Recycler Unit 5 Parts List

Ref No.	EDP No.	Description	Qty	Remark
1000	195883	RC FRAP SH	2	**RC Flapper Shaft**
1001	195905	FLAP R	2	**Flapper Right**
1002	195901	FLAP LEVER SP	2	**Flapper Lever SP**
1003	195906	FLAP CONNECTION LEV	2	**Flapper Connection Lever**
1004	195903	FLAP CENTER	2	**Flapper Center**
1005	195904	FLAP L	2	**Flapper Left**
1006	195882	RC DRIVEN SH	2	**Shaft**
1007	194074	STOP RO	2	**Stop Roller**
1008	194072	Impeller	4	
1009	195908	One Way Holder	2	
1010	195323	PINCH ROLLER HOLDER	4	
1011	195879	RC PR	4	**RC Pinch Roller**
1012	195935	BACK TRANS SHAFT 11	4	
1013	195899	PR SP	4	**Pinch Roller Spring**
1014	195881	RC DRIVE SH	2	**RC Drive Shaft**
1015	194073	Feed Roller	2	
1016	195907	FEED TIME LAG SPACER	2	
1017	195870	RC DRIVE GE2	2	
1018	195878	RC PULL RO	4	**RC Pull Roller**
1019	007500	DDLF-1260ZZ Bearing SMF126	4	
1020	195869	RC DRIVE GE1	2	
1021	010073	DDLF-840ZZ Bearing MF84ZZ	4	
1022	195924	STOP KS	2	**Stop Torsion Coil Spring**
1023	144584	Bearing	4	
1024	275844	Prism (C)	2	
1025	195317	RC Course	1	
1026	003708	E-Ring ø4 SUS OCHIAI	14	
1027	003707	E-Ring ø3 SUS	14	
1028	082026	2x12 Parallel Pin SUS Hard	4	
1029	038938	2x10 Parallel Pin SUS Hard	8	
1030	081297	4.1x6.5x0.5 Poly Slider	4	
1031	086007	6.1x8.0x0.5 Poly Slider	6	
1032	217805	FLAP SP	2	**Flapper Spring**
1033	288659	PINCH ROLLER SCRAPER	4	iPRO-103 Type

iPRO-RC Rear Transport Assembly 1 Exploded View

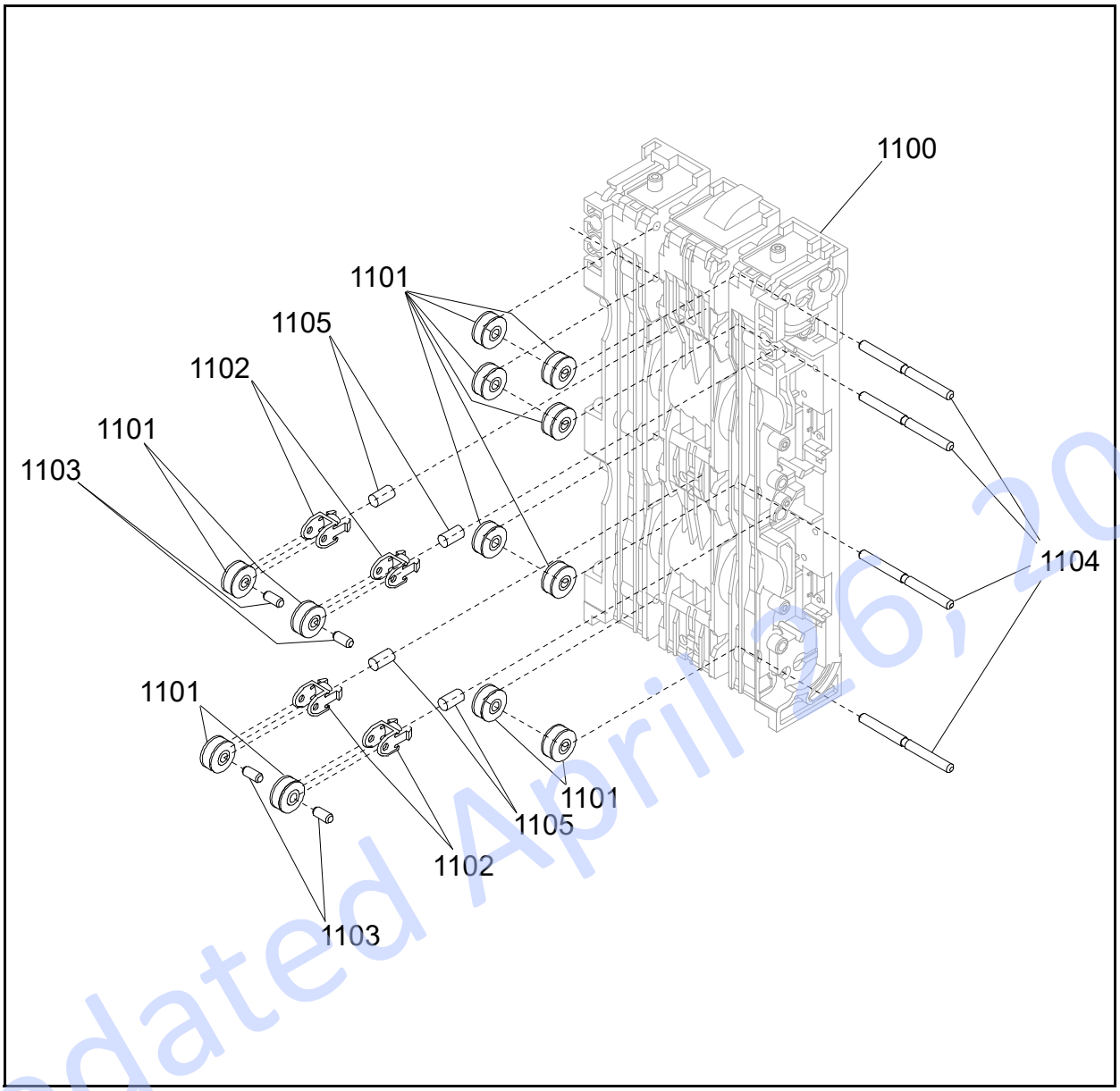


Figure 7-12 iPRO-RC Rear Transport Assembly 1 Exploded View

iPRO-RC Rear Transport Assembly 1 Parts List

Table 7-12 iPRO-RC Rear Transport Assembly 1 Parts List

Ref No.	EDP No.	Description	Qty	Remark
1100	279039	BACK TRANS MAIN FR	1	
1101	195937	BACK TRANS PULLEY 1	12	
1102	195323	PINCH POLLER HOLDER	4	
1103	195935	BACK TRANS SHAFT 11	4	
1104	279040	BACK TRANS SHAFT 4	4	
1105	195902	PINCH ROLLER SP	4	

iPRO-RC Rear Transport Assembly 2 Exploded View

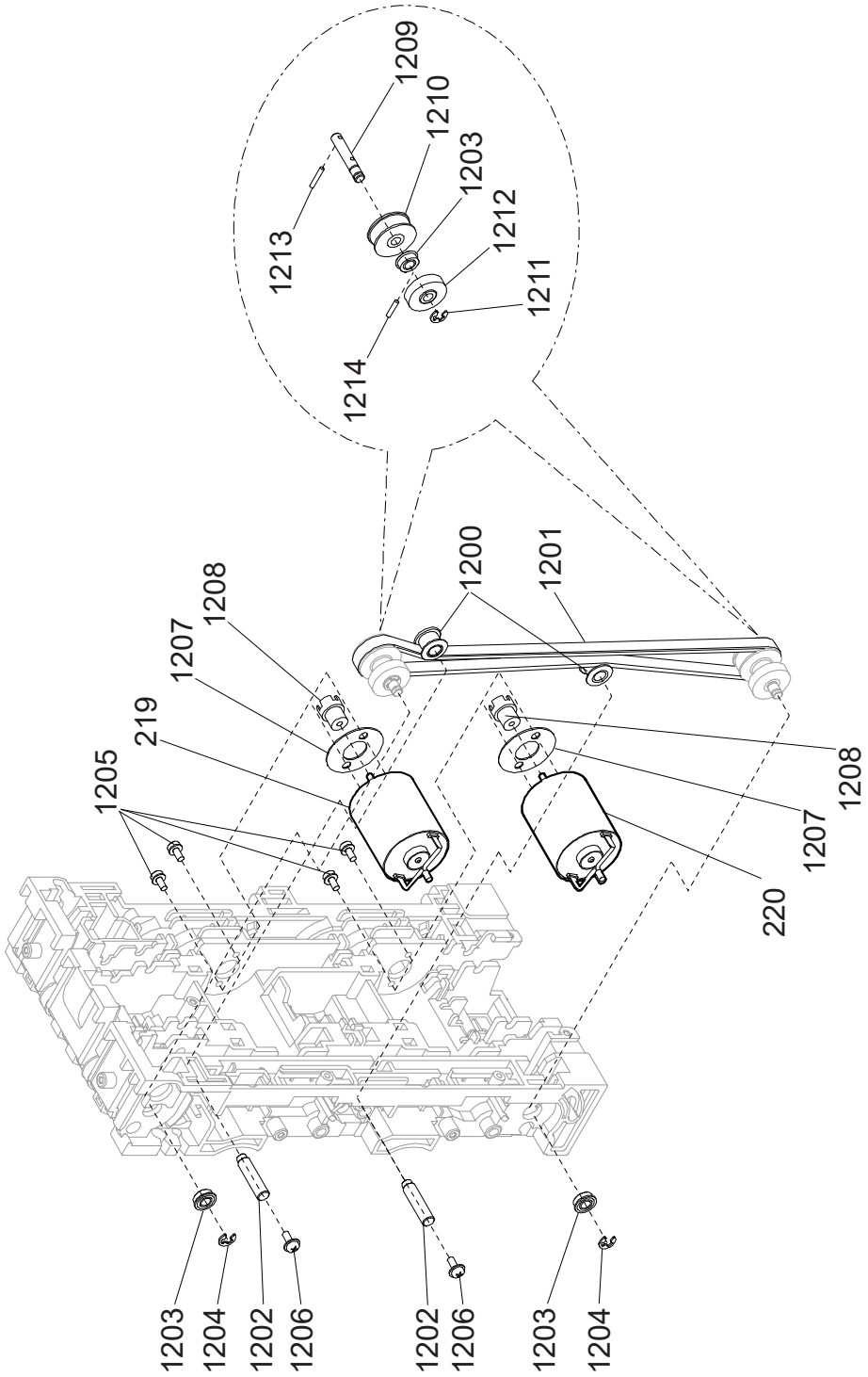


Figure 7-13 iPRO-RC Rear Transport Assembly 2 Exploded View

iPRO-RC Rear Transport Assembly 2 Parts List

Table 7-13 iPRO-RC Rear Transport Assembly 2 Parts List

Ref No.	EDP No.	Description	Qty	Remark
--	--	Rear Transport Main Frame	1	**Assy. 1**
1200	195442	BACK TRANS IDLER PULLEY 2	2	
1201	195759	50S3M417-ECO Belt	1	**Timing Belt**
1202	195930	BACK TRANS SHAFT 6	2	
1203	010073	DDLF-840ZZ Bearing MF84ZZ	4	
1204	003707	E-Ring ø3 SUS	2	
1205	005555	2.6x6 Pan Head with W Washer (Small)	4	
1206	195960	2.6x6 Phillips, Self Tightening, Washer Head	2	
1207	102989	Motor Spacer	2	
1208	102786	GEAR TR MOTOR	2	
1209	195927	BACK TRANS SHAFT 3	2	
1210	195938	BACK TRANS PULLEY 2	2	
1211	003707	E-Ring ø3 SUS	2	
1212	195942	BACK TRANS GEAR 2	2	
1213	137787	1.6X10 Parallel Pin SUS Hard	2	
1214	091515	1.6x8 Parallel Pin SUS Hard	2	
1215	003707	ø3 E-Ring	2	

iPRO-RC Rear Transport Assembly 3 Exploded View

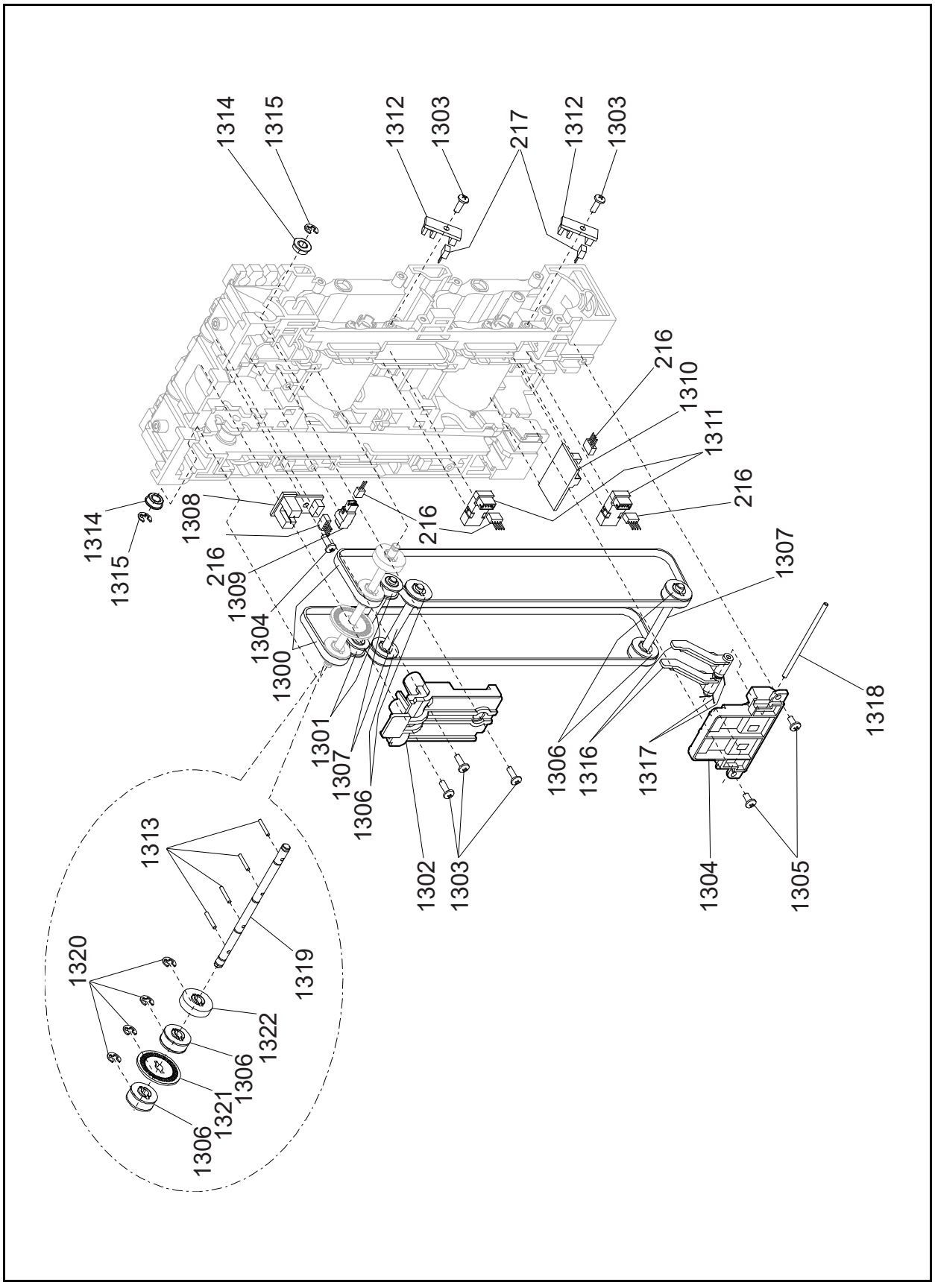


Figure 7-14 iPRO-RC Rear Transport Assembly 3 Exploded View

iPRO-RC Rear Transport Assembly 3 Parts List

Table 7-14 iPRO-RC Rear Transport Assembly 3 Parts List

Ref No.	EDP No.	Description	Qty	Remark
--	--	Rear Transport Main Frame	1	**Assy. 2**
1300	195758	40S1.5M480UVE Ultra Flex ECO Belt	2	**Timing Belt**
	288657	40S1.5M480UVH Timing Belt	2	**iPRO-103 Type**
1301	195441	BACK TRANS IDLER PULLEY 1	2	
1302	288658	BACK TRANS SCRAPER	1	
1303	144840	2.6x8 Phillips, Self Tightening, Binding P-TITE Screw, Black	5	
1304	265470	BACK TRANS CVR 2	1	
1305	063250	2.6x6 Phillips, Self Tightening, Binding P-TITE Screw	2	
1306	195937	BACK TRANS PULLEY 1	6	
1307	195931	BACK TRANS SHAFT 7	3	
1308	196558	4088-3440-06-04A-01 Transport Unit Encoder Board Assembly	1	
1309	196543	KB3290-JC23LF	1	**Double Note Detection Sensor PT**
1310	196559	4088-3440-06-03B-01 Cash Box Detection Board Assembly	1	
1311	196544	KP1651-AALF 2RANK	2	**Note Transaction Detection Sensor**
1312	196556	4088-3440-06-06-01 Recycler Encoder Board Assembly	2	
1313	091515	1.6x8 Parallel Pin SUS Hard	4	
1314	010073	DDLF-840ZZ Bearing MF84ZZ	2	
1315	003707	E-Ring ø3 SUS	2	
1316	195919	RC Cash Box Lever	2	
1317	052650	FL SPRING	2	**Frame Lever Spring**
1318	195932	BACK TRANS SHAFT 8	1	
1319	195926	BACK TRANS SHAFT 2	1	
1320	003707	E-Ring ø3 SUS	4	
1321	195920	TRANS ENCODER DOUSER	1	
1322	195942	BACK TRANS GEAR 2	1	

iPRO-RC Rear Transport Assembly 4 Exploded View

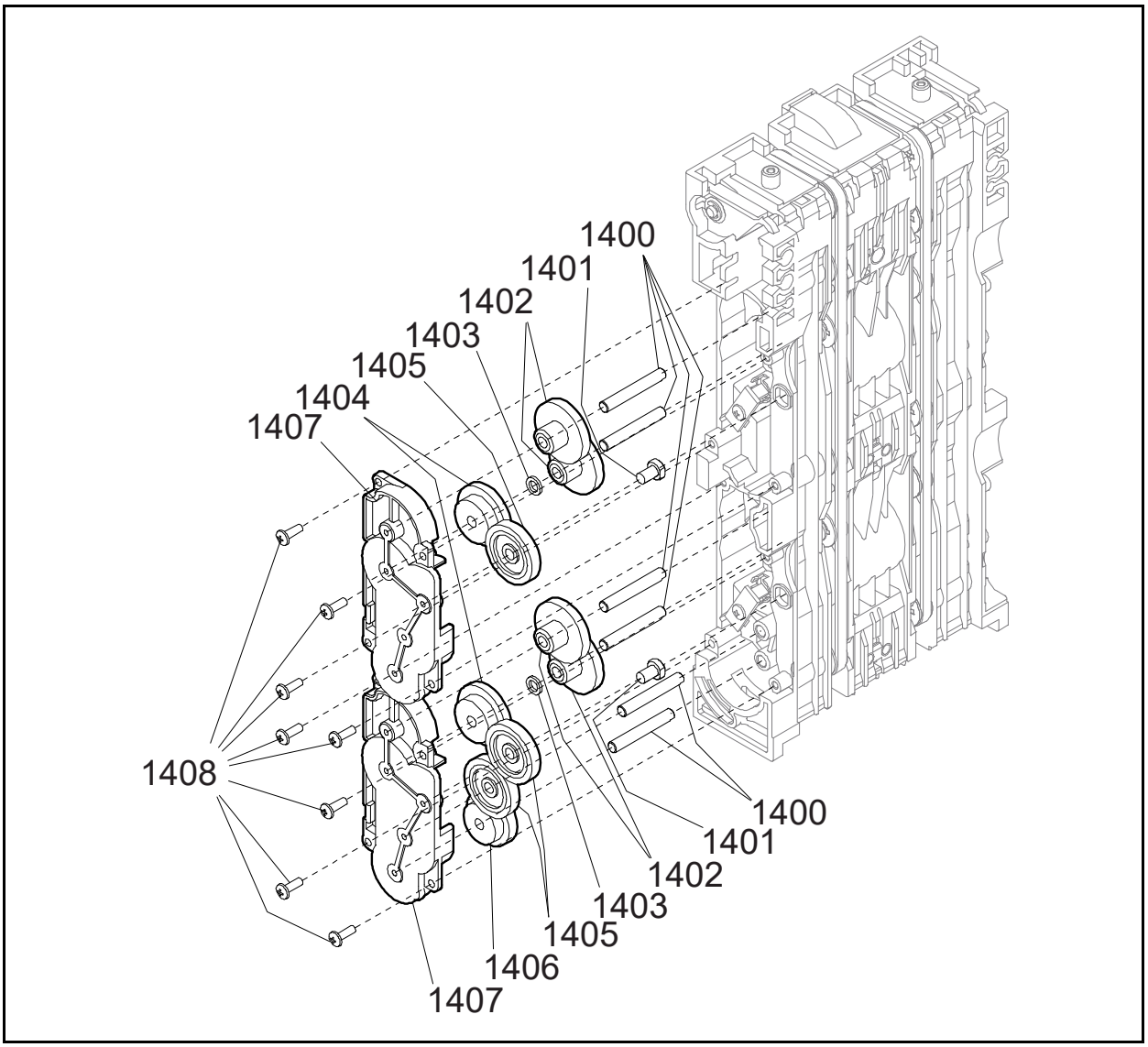


Figure 7-15 iPRO-RC Rear Transport Assembly 4 Exploded View

iPRO-RC Rear Transport Assembly 4 Parts List

Table 7-15 iPRO-RC Rear Transport Assembly 4 Parts List

Ref No.	EDP No.	Description	Qty	Remark
--	--	Rear Transport Main Frame	1	**Assy. 3**
1400	195929	BACK TRANS SHAFT 5	6	
1401	195934	BACK TRANS SHAFT 10	2	
1402	195943	BACK TRANS GEAR 3	4	
1403	195961	4.1x6.5x1.0 Poly Slider	2	
1404	195944	BACK TRANS GEAR 4	2	
1405	195873	IDLE GE Z20	3	
1406	195945	BACK TRANS GEAR 5	1	
1407	195320	BACK TRANS GEAR CVR	2	
1408	144840	2.6x8 Phillips, Self Tightening, Binding P-TITE Screw, Black	8	

iPRO-RC Rear Transport Assembly 5 Exploded View

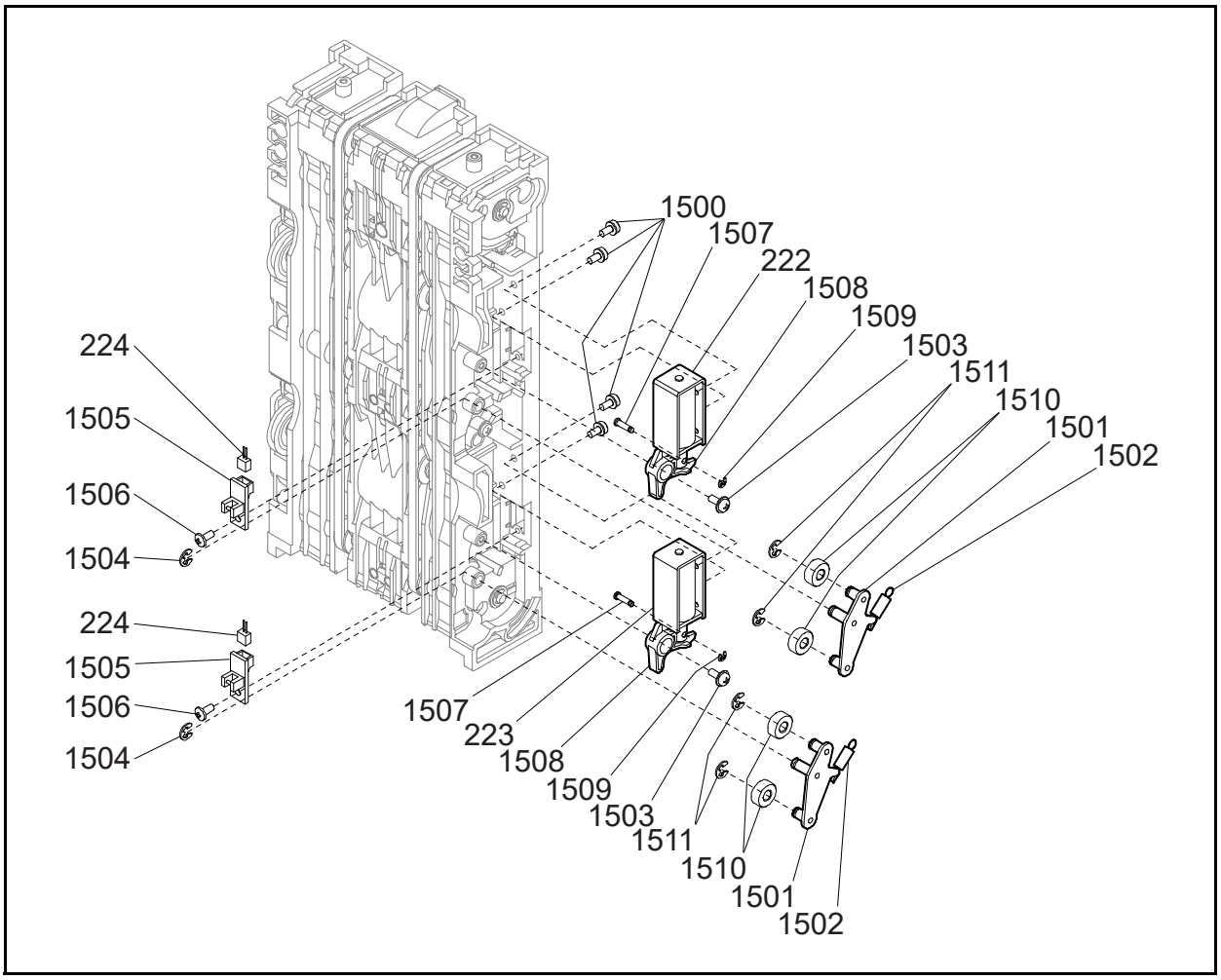


Figure 7-16 iPRO-RC Rear Transport Assembly 5 Exploded View

iPRO-RC Rear Transport Assembly 5 Parts List

Table 7-16 iPRO-RC Rear Transport Assembly 5 Parts List

Ref No.	EDP No.	Description	Qty	Remark
--	--	Rear Transport Main Frame	1	**Assy. 4**
1500	005555	2.6x6 Pan Head with W Washer (Small)	4	
1501	195959	FLAP PUSH BRACKET AS	2	
1502	195921	FLAP PUSH BRACKET SP	2	
1503	195960	2.6x6 Phillips, Self Tightening, Washer Head	2	
1504	003707	E-Ring ø3 SUS	2	
1505	196557	4088-3440-06-05-01 Flapper Open/Close Detection Board Assembly	2	
1506	063250	2.6x6 Phillips, Self Tightening, Binding P-TITE Screw	2	
1507	195933	BACK TRANS SHAFT 9	2	
1508	255582	FLAP PUSH LEVER	2	
1509	003704	E-Ring ø1.5 SUS OCHIAI	2	
1510	195962	FLAP PUSH ROLLER	4	
1511	003707	E-Ring ø3 SUS	4	

iPRO-RC Rear Transport Assembly 6 Exploded View

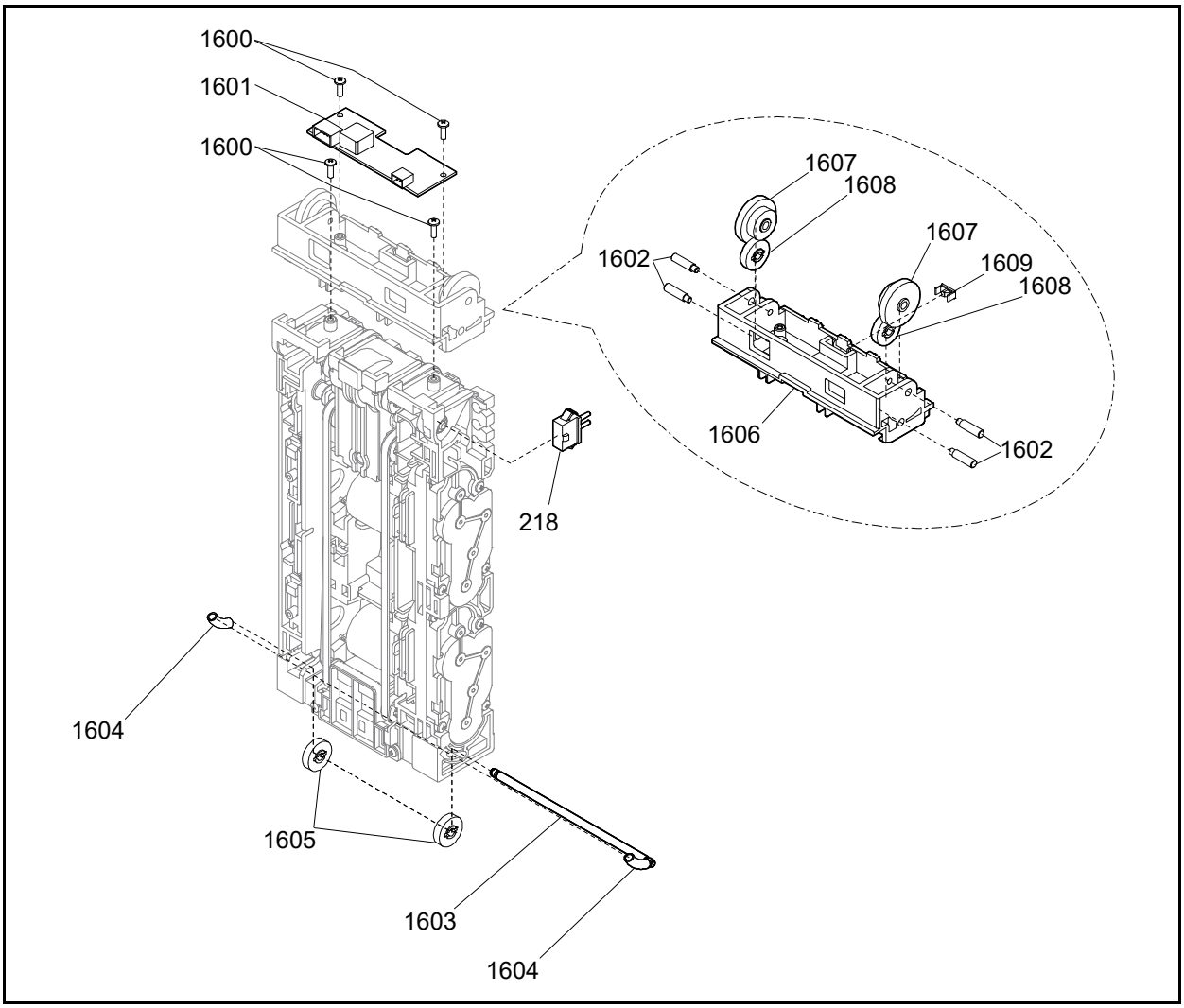


Figure 7-17 iPRO-RC Rear Transport Assembly 6 Exploded View

iPRO-RC Rear Transport Assembly 6 Parts List

Table 7-17 iPRO-RC Rear Transport Assembly 6 Parts List

Ref No.	EDP No.	Description	Qty	Remark
--	--	Rear Transport Main Frame	1	Assy. 5
1600	144840	2.6x8 Phillips, Self Tightening, Binding P-TITE Screw, Black	4	
1601	196560	4088-3440-06-02B-01 Power Board Assembly	1	
1602	195925	BACK TRANS SHAFT 1	4	
1603	052620	S GEAR SHAFT	1	
1604	052648	FG SPRING	2	
1605	108810	STAND GEAR SUS	2	
1606	195319	BACK TRANS UP FR	1	
1607	195941	BACK TRANS GEAR 1	2	
1608	195942	BACK TRANS GEAR 2	2	
1609	290344	Square Prism E30	1	
1610	195925	Rear Transport Shaft 1	4	

iPRO-RC Large Cash Box Frame Unit Exploded View

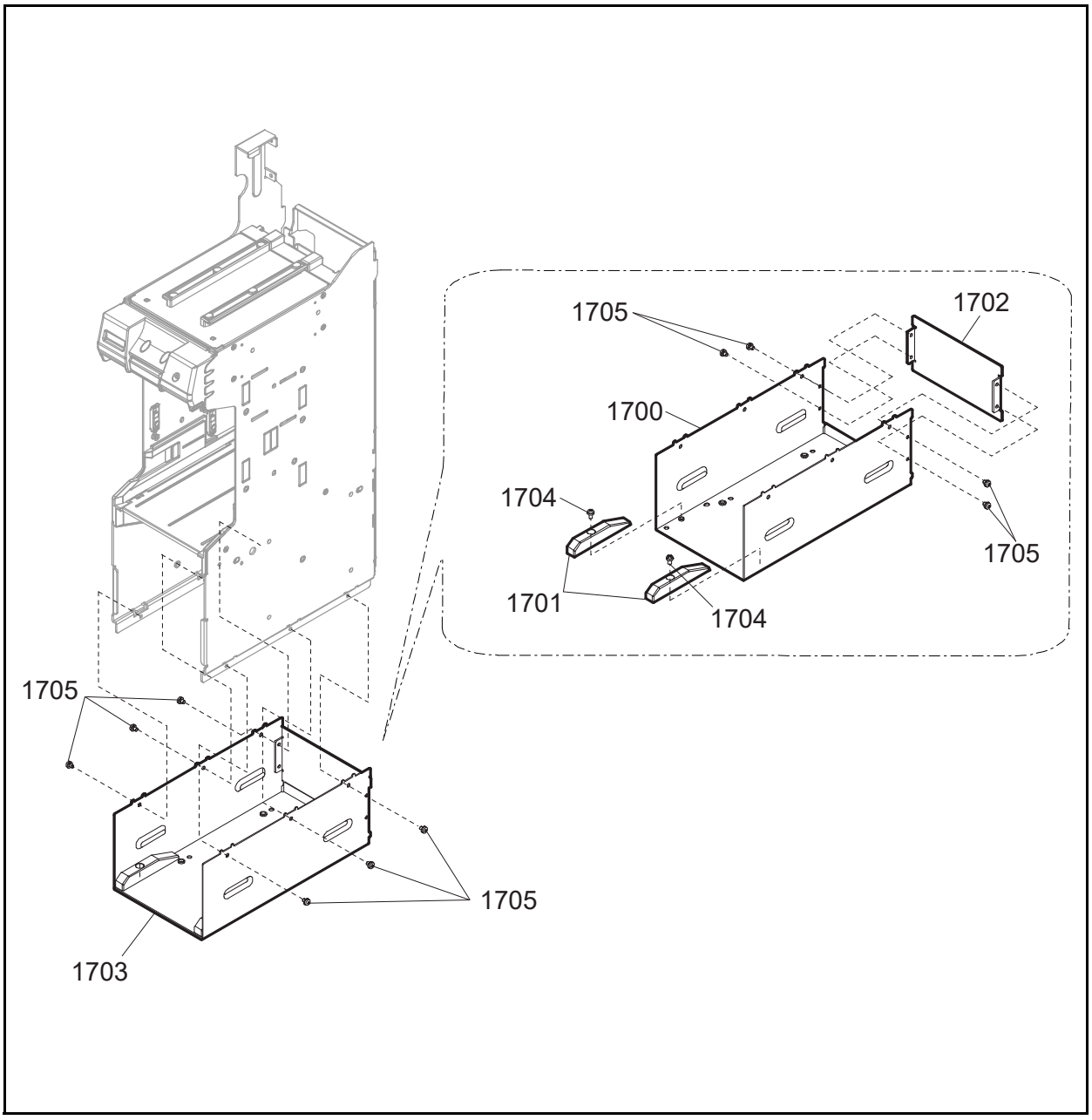


Figure 7-18 iPRO-RC Large Cash Box Frame Unit Exploded View

iPRO-RC Large Cash Box Frame Unit Parts List

Table 7-18 iPRO-RC Large Cash Box Frame Unit Parts List

Ref No.	EDP No.	Description	Qty	Remark
1700	278564	LARGEBOX BASE FRAME	1	
1701	204988	LARGEBOX BASE GUIDE	2	
1702	204985	LARGEBOX BACK FRAME	1	
1703	206443	LARGE BOX FRAME (UBA-RC)	1	
1704	003609	3x6 Pan Head with W Washer (small)	2	
1705	006036	3x4 Pan Head with Washer	10	

Optional Lock Unit Exploded View

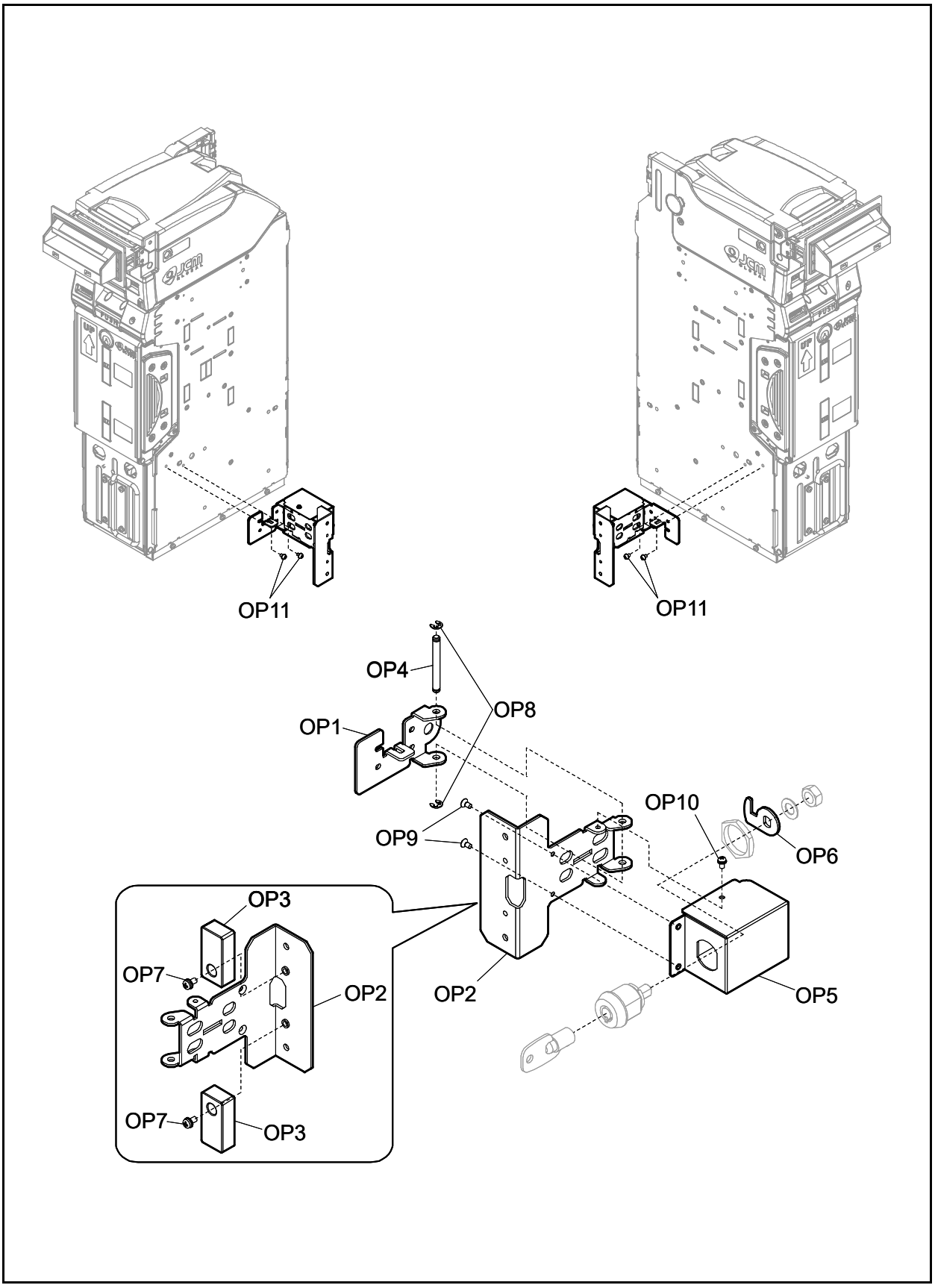


Figure 7-19 Optional Lock Unit Exploded View

Optional Lock Unit Parts List

Table 7-19 Optional Lock Unit Parts List

Ref No.	EDP No.	Description	Qty	Remark
OP1	204987	KEY BRACKET UBA-RC	1	
OP2	204986	KEY LEVER UBA-RC	1	
OP3	204989	Key Unit Block	1	
OP4	149984	Key Shaft	1	
OP5	149643	Key Cover	1	
OP6	149646	Key Tang	1	**The lock assy. is supplied by the user.**
OP7	003609	3x6 Pan Head with W Washer (small)	1	
OP8	003707	E-Ring ø3 SUS	2	
OP9	081564	2.6x5 Flat Head Screw with F-LOCK	2	
OP10	010377	2.6x5 Pan Head with W Washer (Small)	1	
OP11	001767	3x5 Pan Head with W Washer (Small)	2	

iPRO-RC™ Series
Banknote Recycler
Section 8

8 INDEX

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iPRO-RC™ Series
Banknote Recycler
Appendix A

A TROUBLESHOOTING

This section provides Troubleshooting instructions for the iPRO-RC™ Series Banknote Recycler Unit Assembly (iPRO-RC). This section contains the following information:

- Introduction
- LED Indicator Conditions
- iPRO-RC Recycler Unit Width and Length Guide Replacement Procedure
- Maintenance Equipment Requirements

Introduction

Most Banknote Recycler failures are due to minor causes. Before replacing any parts, ensure that all Assembly and Circuit Board Connectors are properly fitted and the Harness is properly connected.

Poor performance by the Recycler is often caused when dust or foreign objects adhere to the Sensors or the Transport Belts. Clean the Banknote Insertion Section first, then observe the operating state of the Recycler in detail 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 Disassembly/Reassembly in Section 4 of this Service Manual.

Troubleshooting Overview

This product allows the Operator to perform fault diagnosis by checking various fault Table listings against the symptom, 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 re-adjustment to complete the repair.

Malfunction LED Error Codes

The iPRO-RC Assembly contains an iPRO Transport Unit and an RC Unit featuring External LEDs to indicate various Error Codes when specific errors occur (e.g., a Banknote Jam inside the Unit). The Green and Red LEDs of the iPRO Transport Unit and the three (3) Multi-Color LEDs (Green/Red/Yellow) of the RC Unit indicate Error Status and Communication Error conditions via their flashing and extinguished lighting sequences.

LED Indicator Conditions

Table A-1 lists the Green and Red LED Status/ Error Code indications for the iPRO Transport Unit portion of the iPRO-RC Housing Assembly. Table A-2 lists the Red, Green or Yellow LED RC Unit Color Type Error Code Conditions.

Table A-1 iPRO Unit LED Code Conditions

Green LED	Red LED	Error Causes
Lit	Flashes 1 time	• When supplying power source: the boot program activates after power is applied, but is not written correctly, or not able to read. • While performing: Recycler Unit is empty.
	Flashes 2 times	• When supplying power source: the boot I/F area is not written correctly or not able to read. • While performing: Dispensed double banknotes, or detected an Abnormal Sensor condition.
	Flashes 3 times	• When supplying power source: Main Program is not written on the ROM or cannot read the program from the ROM. • While performing: the Recycler Unit is full.
	Flashes 5 times	• When supplying power source: Main Program is not written on the ROM or unable to read the program. • While performing: Abnormal Error occurred in the RC Unit (See Table A-2 “RC Unit LED Color Type Error Code Conditions” on page A-2, Table A-3 “Recycler Unit LED Code Conditions” on page A-3 and Table A-4 “Various Recycler Unit LED Flashing Error Code Conditions” on page A-3).
	Flashes 6 times	• When supplying power source: External SD-RAM Error is not read or written. • While performing: RC Unit Flash ROM is malfunctioning.
	Flashes 7 times	• When supplying power source: RAM is not read or written. • While performing: the Recycler Unit is not properly seated.

Table A-1 iPRO Unit LED Code Conditions

Green LED	Red LED	Error Causes
Lit	Flashes 8 times	Communication Error occurred between the iPRO Transport Unit and the RC Unit.
	Flashes 9 times	RC Unit Software download failure.
	Flashes 10 times	Detected abnormal Banknote position during transportation.
	Flashes 12 times	Detected abnormal condition on the transport path.
	Flashes 14 times	Abnormal movement occurred in the iPRO Transport Unit.
	Flashes 15 times	Detected abnormal settings of the recyclable Banknote denomination.
Extinguished (Out)	Flashes 1 times	Detected banknote full while stacking the banknotes.
	Flashes 2 times	Detected that the Pusher Mechanism has not moved from/to the Home Position while stacking the banknotes.
	Flashes 3 times	Detected banknote transportation error within the Cash Box. The Sensor is not detected after passing regulation time or transportation amount.
	Flashes 4 times	Detected banknote transportation error while transporting/rejecting the banknotes. The Sensor is not detected after passing regulation time or transportation amount.
	Flashes 5 times	The Feed Motor pulse pitches are less than the rated value while initializing.
	Flashes 6 times	When the Feed Motor is running, the rated value is not detected at the proper time.
	Flashes 7 times	When the Stacker Motor is running, the rated value is not detected at the proper time.
	Flashes 8 times	EEPROM is not read or written.
	Flashes 9 times	PB (Pull-Back) Unit is not working properly.
	Flashes 10 times	Detected the Cash Box is detached.
	Flashes 12 times	The Sensor timing is abnormal.
	Flashes 13 times	Detected that the Intake Roller malfunctioned while transporting/rejecting the banknotes.
	Flashes 14 times	Detected that the Centering Guide is not moving.
Synchronized Flashing Sets of both Red and Green LEDs		Downloading of RC Unit Software.

Table A-2 RC Unit LED Color Type Error Code Conditions

Color	Error Causes
Red	Error occurred before sending a Vend Signal while storing the banknotes or after sending a Pay Valid Signal while dispensing the banknotes.
Yellow	Error occurred after sending a Vend Signal while storing the banknotes or before sending a Pay Valid Signal.
Green	Error occurred other than during a storing or dispensing condition.

Table A-3 and Table A-4 list the two (2) Tri-Color LED Status/Error Code indications for the Recycler Unit Assembly.

Table A-3 Recycler Unit LED Code Conditions

Left LED	Right LED	Causes
Extinguished (Off)	Flashes or lit a Red, Green or Yellow Color	While storing Banknotes, or during an error occurring when Banknotes are being stored. Count the flashes of the specific Color to define the error condition being indicated (see Table A-4 “Various Recycler Unit LED Flashing Error Code Conditions ” for more detail).
Flashes or lit a Red, Green or Yellow Color	Extinguished (Off)	While dispensing Banknotes, or during an error occurring when dispensing Banknotes. Count the flashes of the specific Color to define the error condition being indicated (see Table A-4 “Various Recycler Unit LED Flashing Error Code Conditions ” for more detail).
Flashes (Green)	Flashes (Green)	A Stand-by* Error occurred. Count the flashes of the specific Color to define the error condition being indicated (see Table A-4 “Various Recycler Unit LED Flashing Error Code Conditions ” for more detail).
Lit (Red)	Lit (Red)	An iPRO-RC Software booting error occurred.
Lit (Yellow)	Lit (Yellow)	Downloading iPRO-RC Software into the Unit.
Lit (Green)	Lit (Green)	A Reset was not performed after power was supplied.

*. This condition can exist when the iPRO-RC is not performing a Banknote storage, and an error has occurred.

Table A-4 Various Recycler Unit LED Flashing Error Code Conditions

LED Flashes	Error Causes
0	iPRO Transport Unit Performance Error.
1	iPRO-RC Motor Speed Error.
2	Unit disabled to confirm that the RC1 Space Transport Motor is performing correctly.
3	Unit disabled to confirm that the RC2 Space Transport Motor is performing correctly.
4	Unit disabled to confirm that the RC1 Flapper is performing correctly.
5	Unit disabled to confirm that the RC2 Flapper is performing correctly.
6	Unit disabled to confirm that the Lifter is performing correctly.
7	Banknote Jam occurred in the Transport Path when storing a Banknote into the RC1 Space.
8	Banknote Jam occurred in the Recycler Unit when storing a Banknote into the RC1 Space.
9	Banknote Jam occurred in the Transport Path when storing a Banknote into the RC2 Space.
10	Banknote Jam occurred in the Recycler Unit when storing a Banknote into the RC2 Space.
11	Banknote Jam occurred in the Transport Path when storing a Banknote in the Cash Box.
12	Banknote Jam occurred in the Cash Box when storing a Banknote to the Cash Box.
13	Banknote Jam occurred in the Transport Path when dispensing a Banknote from the RC1 Space.
14	Banknote Jam occurred in the Recycler Unit when dispensing a Banknote from the RC1 Space.
15	Banknote Jam occurred in the Transport Path when dispensing a Banknote from the RC2 Space.
16	Banknote Jam occurred in the Recycler Unit when dispensing a Banknote from the RC2 Space.
17	Unit disabled to access to the EEPROM, or the Sensors are not calibrated.
18	Double Note Detection Sensor Magnification Error.

iPRO-RC Recycler Unit Width and Length Guide Replacement Procedure

The iPRO-RC Width and Length Guides located in the Recycler Unit need to be replaced by a trained Engineer or Technician using the following Procedures:

Length Guide Replacement

To replace the Length Guide in the Recycler Unit, proceed as follows:

1. Use the supplied Key to unlock the Recycler Unit Door (Figure A-1 a) and open the Door.
2. Remove the four (4) Screws retaining the Length Guide in place (Figure A-2 a).

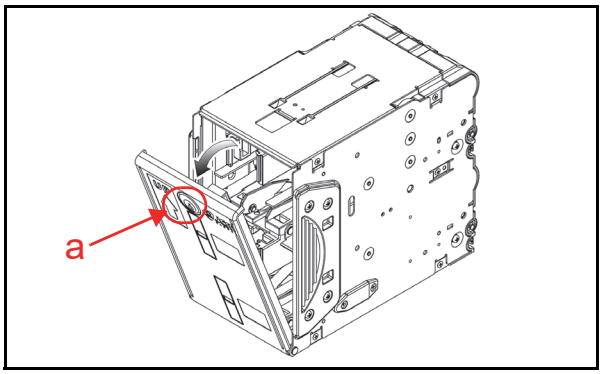

Figure A-1 Opening the Recycler Unit Door

3. Lift the Length Guide upward, as indicated by Graphic Arrow A in Figure A-2.
4. Slide the Length Guide in the direction indicated by Graphic Arrow B, as shown in Figure A-2.
5. Lift the Length Guide upward again, as indicated by Graphic Arrow C, and lift the Length Guide up and off of the Recycler Unit Door.
6. Remove the two (2) Screws (Figure A-2 d) from the removed RC Length Guide.

NOTE: Remove both RC1 (Figure A-2 b) and RC2 (Figure A-2 c) Length Guides during the same procedure.

NOTE: When installing the L Guide Assist Sheet, be sure that convex portions of the Length Guide fit into the holes provided for them on the right and the left sides of the L Guide Assist Strip (Figure A-2 f).

7. Remove the L Guide Assist Strip (Figure A-2 e) and install the Length Guide replacement.

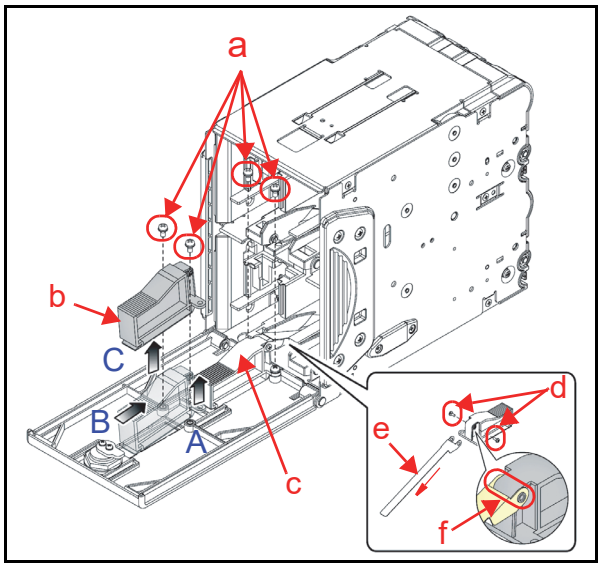

Figure A-2 Length Guide Removal

Length Guide Installation

To install a new Length Guide into the Recycler Unit, proceed as follows:

1. Place the new Length Guide in the direction indicated by Graphic Arrow A in Figure A-3a.
2. Slide the Length Guide in the direction indicated by Graphic Arrow B, and align it to the edge of the RC Recycler Door (Figure A-3 a).
3. Install the four (4) Length Guide Mounting Screws (Figure A-3 b) for re-assembly.

NOTE: When installing the RC2 Length Guide (Figure A-3 c), insert the L Guide Assist Strip onto the Door (Figure A-3 d), to complete this procedure.

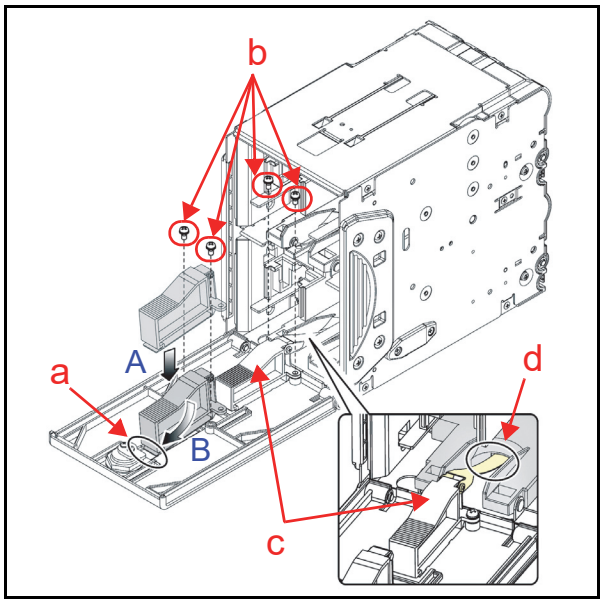

Figure A-3 New Length Guide Installation 1

Width Guide Replacement

To replace the Width Guide in the Recycler Unit, proceed as follows:

1. Remove the four (4) Mounting Screws from the right and left rear sides of the Recycler Unit (Figure A-4 a_1 to a_4).
2. Lift the RC Race upward and remove it up and off the Recycler Unit (Figure A-4 b).
3. Slide each Width Guide in the direction indicated by the small Arrows (Figure A-5 a_1, a_2 & b_1, b_2), then remove it off of the Recycler Unit.
4. Install the desired Width Guide by reversing the procedure in Steps 1 through 3 above.

NOTE: When installing a Width Guide, fit the Width Guide into the Recycler Unit indentations, as shown in Figure A-5c.

NOTE: A Width Guide may not be necessary, depending on the denomination value desired. Refer to the specific "Software Information Sheet" to confirm the Width Guide selection required for your Country's Currency.

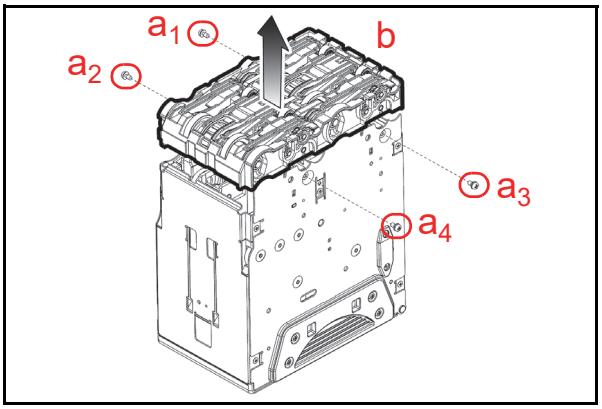

Figure A-4 New Width Guide Installation 2

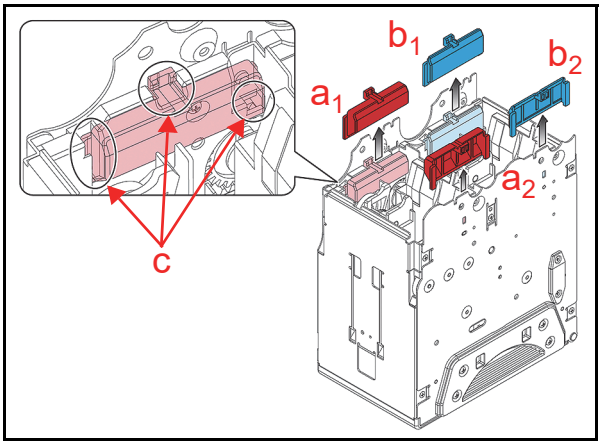

Figure A-5 New Width Guide Installation 3

5. Reassemble the RC Race (Figure A-6 a) onto the Recycler Unit.

NOTE: Ensure that no space exists where the RC Race curved area meets the Recycler Unit's indentations indicated by the circled area in Figure A-6b.

6. Install the four (4) Mounting Screws (Figure A-6 c) previously removed into both sides of the Recycler Unit.

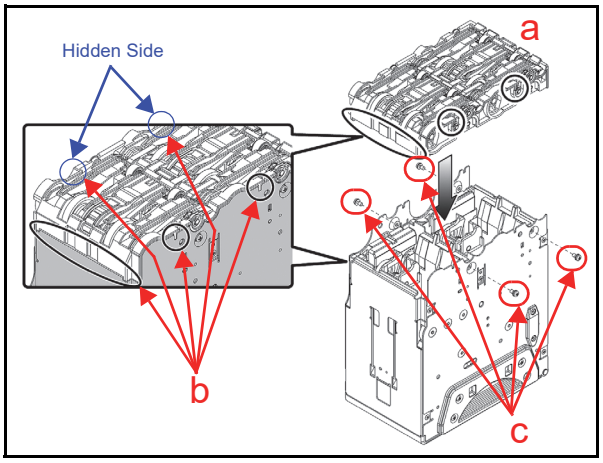

Figure A-6 New Width Guide Installation 4

This completes the iPRO-RC Troubleshooting Section.

NOTE: Refer to each country's "Software Information Sheet" when selecting the Banknote Guides for the iPRO-RC.

Maintenance Equipment Requirements

This section provides product information for obtaining the additional iPRO-RC Maintenance Equipment.

Additional iPRO-RC Maintenance Equipment

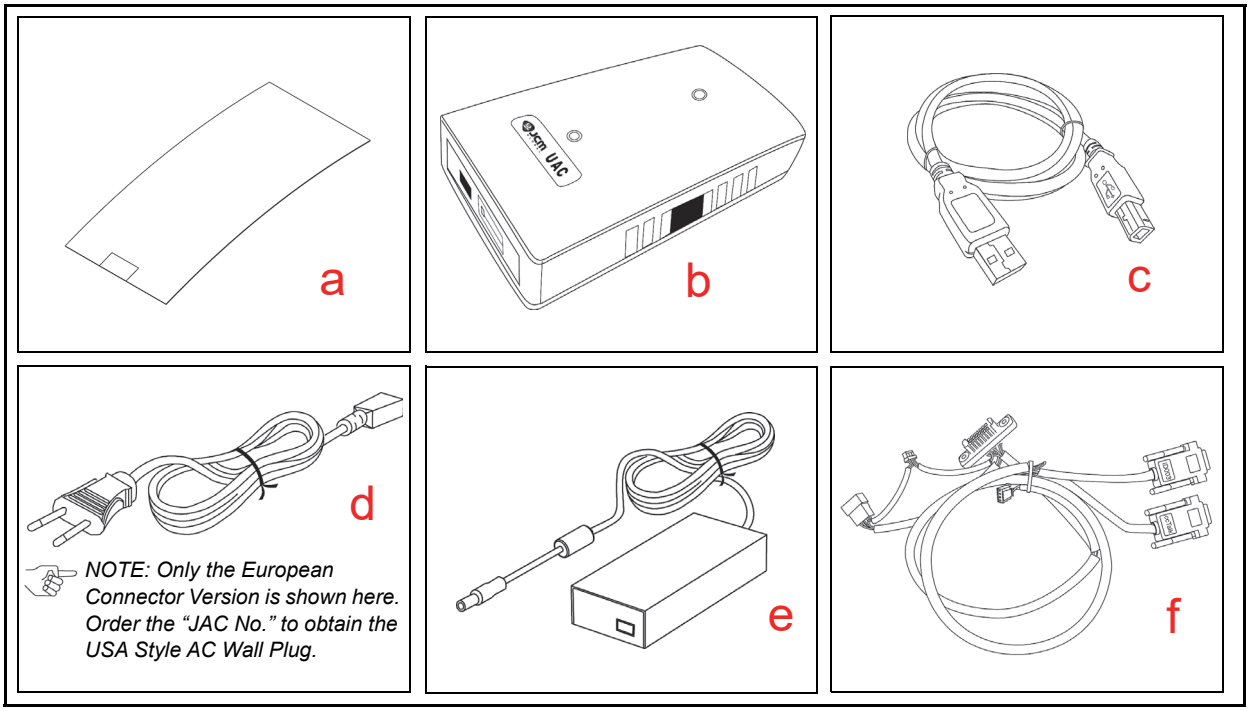

Figure A-7 Additional Maintenance Equipment Requirements

Table A-5 Additional Maintenance Equipment Parts List

Ltr.	EDP No.*	JAC No.	Description	Qty.	Remark
a	202366	Use EDP#	Reference Paper (KS-087)	1	
b	G00205	-	UAC Module	1	
c	G00230	-	UAC USB Cable	1	
d	G00213	-	Power Cord (Euro)	1	For UAC
e	G00286	-	AC Power Adaptor	1	For UAC
f	G00388	Use G#	iPRO-RC Harness	1	For ID003/ ccTalk
-	-	451-000125R	Power Supply	1	

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

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 back into their shipping carton.
3. Do not use Reference Paper containing damaged areas that are worn, dirty, wrinkled, distorted and/or discolored, etc.
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 calibration of more than 400 Units.

iPRO-RC™ Series
Banknote Recycler
Appendix B

B GLOSSARY

A

1 Anti-Pullback Mechanism
The rotating drum located in the rear portion of the transport to prevent a Banknote from being retrieved by an attached piece of string, wire or transparent tape ... 1-5

B

2 Banknote Guide
a specific length and width shim designed to center and limit a specific Country's Banknote size for proper transport through the Validator ... A-5

3 Bezel
a removable Plastic Assembly attached to the front of the Banknote Insertion Slot of an iPRO Unit. It features, a rectangular access 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 a different stacking configuration ... 1-2

C

4 Centering Mechanism
a mechanical assembly designed to center Banknotes that enter the Validator at skewed angle ... 1-5

5 Current Limiting Power Source
an electronic circuit designed to prevent damage to a Power Supply in the event a short circuit occurs ... 1-8

D

6 DIP Switch
an acronym for 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), which may be 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 ... 2-2

E

7 E-Clip
a semicircular retainer clip with center tab forming the letter "E" designed to fit into a shaft groove to retain a component in place, and having hole rings, at its ends for insertion of special expansion/removal/replacement tool tips ... 4-1

8 Encoder

a gear containing multiple protrusions (flags) used to interrupt an Optical Sensor to determine shaft rotation ... 4-1

F

9 Friction Roller System

a Roller assembly designed to separate closely placed Banknotes for entry into the Recycler Unit ... 1-7

H

10 Holographic image

a 3-Dimensional image created by using a technique that allows light scattered from an object to be recorded and later reconstructed so that when an imaging system (a Camera, CIS or a Human Eye) is placed in a re-constructed beam of light, an image of the object recorded will be seen even when the object is no longer present. The re-constructed image changes as the position and orientation of the viewing plane changes in exactly the same way as if the object were still present, thus making the image appear three-dimensional ... 1-5

J

11 JCM Tool Suite Standard Edition

a JCM PC Application Program that includes Sub- routine Programs for Downloading a File, Calibrating Sensors, examining Performance Metrics, testing Acceptor Functions, Enabling & Disabling the ICB Feature and viewing an image of the last Banknote accepted ... 6-1

P

12 Photo-Coupler Isolation

a method of increasing safety to both the equipment and personnel by isolating and routing transmitted data signals via Light Emitting Diode (LED) and Photosensitive Transistor combination circuit in various electronic equipment devices ... 1-7

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 ... 1-3

15 PT

acronym for a Photo Transistor ... 4-3

R

16 RC1 Bin Space/RC2 Bin Space
the specific Banknote storage areas in the Recycler portion of an iPRO-RC Unit ... 2-10

17 Recycler
The iPRO-RC, an optional add-on device for the iPRO Banknote Validator. The Recycler adds additional capability and functionality to the iPRO Unit by stacking, storing, and recycling Banknotes back to the customer on demand. These features are particularly useful during cash transactions and vending operations ... 1-1

18 RS232C
a common Serial Data communication standard Protocol ... 1-7

T

19 TTL
acronym for Transistor to Transistor Logic levels ... 1-7

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