



iPRO™ Series

Banknote Acceptor















Operation and Maintenance Manual

(Revision 3)



REVISION HISTORY		
Rev No.	Date	Reason for Update
A	4/27/12	Initial Version
1	12/18/14	Added Specifications and Graphics regarding the SH Cash Box, iPRO UH version Unit and iPRO-102 Unit.
2	10/9/18	Updated Precautions, Disposal Consideration and Structural Specification and Contact Information in Section 1. Added External Interface Connection Structure for ccTalk in Section 2. Updated Contact Information in Section 3. Updated EDP numbers, and added External Cable and Conversion Circuit Board EDP numbers in Section 7.
3	Mar. 15, 2021	Re-designed the Cover. Updated the compliance information. Corrected the standards of the country code in Section 1. Updated the contact information in Section 1 and 3. Updated Parts Lists in Section 7. Added specifications regarding the iPRO-103 model.
	Oct. 29, 2021	Added the UKCA mark to the International Compliance and added "Australia Office" to JCM American in Oceania in Section 1 and Section 3.

International Compliance

- RoHS Directive  or  or  or  or 
- UL & c-UL Marks        **E142330**
- CE Mark 
- UKCA Mark 
- CB Scheme **JP-11397-A1-UL (IEC 60950-1), JP-22215-UL (IEC 62368-1)**
- FCC Regulation

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 A digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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/>

Copyright © 2021 By JAPAN CASH MACHINE CO., LTD.

This product document (hereinafter referred to as "Manual") is fully covered by legal Copyrights owned by the JAPAN CASH MACHINE CO., LTD. (hereinafter referred to as "JCM") under Japanese laws and foreign countries. This Manual contains many copyrighted, patented or properly registered equipment items manufactured by JCM, that are prohibited and illegal to duplicate, replicate, or copy in whole, or in part, without the express authorization by JCM with the following exceptions:

1. When an authorized JCM agency or distributor duplicates the Manual for sales promotion and/or service maintenance of the product, or technical service personnel education as required; and
2. When an end user duplicates the Manual to maintain operation of the product or operate the product in general.

JCM retains all rights to amend, alter, change or delete any portion of this Manual in whole, or in part, or add items thereto without notice regarding the product or its related products.
JCM is a registered trademark of JAPAN CASH MACHINE CO., LTD. All other product names mentioned herein may be registered trademarks or trademarks of their respective companies. Furthermore, ™, ® and © are not always mentioned in each case throughout this publication.

iPRO™ Series

Banknote Acceptor

Table of Contents

	Page
1 GENERAL INFORMATION	1-1
Description	1-1
iPRO Unit Assembly	1-1
Model Descriptions	1-2
Type Descriptions	1-2
iPRO SH Version	1-2
iPRO SS/SU Version	1-2
iPRO UH Version	1-3
Software Descriptions	1-3
Precautions	1-3
User Cautions	1-3
Installation Cautions	1-3
Mounting, Dismounting & Transportation	1-4
Preventive Maintenance	1-4
Disposal Consideration	1-4
Banknote Fitness Requirements	1-4
Primary Features	1-5
Component Names	1-6
Specifications	1-7
Technical Specifications	1-7
Environmental Specifications	1-8
Electrical Specifications	1-8
Structural Specifications	1-8
Unit Dimensions	1-9
iPRO Unit Entire Outside Dimensions	1-9
iPRO Unit Clearance Dimensions	1-9
iPRO Cash Box Outside Dimensions	1-10
iPRO Cash Box Outside Dimensions (Continued 1)	1-11
iPRO UH Entire Outside Dimesions	1-11
Technical Contact Information	1-12
Americas	1-12
JCM American	1-12
Europe, Middle East, Africa & Russia	1-12
JCM Europe GmbH	1-12
UK & Ireland	1-12
JCM Europe (UK Office)	1-12
Asia and Oceania	1-12
JCM American (Australia Office)	1-12
JAPAN CASH MACHINE CO., LTD. (HQ)	1-12
2 INSTALLATION	2-1
Installation Process	2-1
Lock Installation	2-1
Unlock Procedure	2-2
DIP Switch Configurations	2-2

Table of Contents

	Page
Primary LED Indications	2-3
Connector Pin Assignments	2-4
Connector Pin Assignments (Continued 1)	2-5
Connector Pin Assignments (Continued 2)	2-6
Connector Pin Assignments (Continued 3)	2-7
Connector Pin Assignments (Continued 4)	2-8
iPRO Optional Conversion Circuit Boards	2-9
Connector Pin Assignments for the Optional Conversion Circuit Boards	2-9
Optional Conversion Circuit Board Installation Procedure	2-10
Optional Conversion Circuit Board External Interface Connection Structure	2-10
CPU Board DIP Switch Configurations	2-11
Preventive Maintenance	2-11
Retrieving Banknotes	2-11
Clearing a Banknote Jam	2-11
Opening the iPRO Centering Mechanism	2-12
Cleaning Procedure	2-12
Sensor Locations	2-13
Standard Interface Circuit Schematics	2-15
Standard Interface Circuit Schematics (Continued 1)	2-16
Standard Interface Circuit Schematics (Continued 2)	2-17
Standard Interface Circuit Schematics (Continued 3)	2-18
Standard Interface Circuit Schematics (Continued 4)	2-19
Operational Flowchart	2-21
Operational Flowchart (Continued 1)	2-22
3 COMMUNICATIONS	3-1
Americas	3-1
JCM American	3-1
Europe, Middle East, Africa & Russia	3-1
JCM Europe GmbH	3-1
UK & Ireland	3-1
JCM Europe (UK Office)	3-1
Asia and Oceania	3-1
JCM American (Australia Office)	3-1
JAPAN CASH MACHINE CO., LTD. (HQ)	3-1
4 DISASSEMBLY/REASSEMBLY	4-1
Tool Requirements	4-1
Transport Motor Encoder Board & Pull-Back Motor Removal	4-1
Stacker Motor Encoder Board Removal	4-2
Upper Sensor Board Removal	4-3
Cash Box Sensor Board Removal	4-3
Solenoid Removal	4-3
CPU Circuit Board Removal	4-4
Lower Sensor Board Removal	4-5
Centering Home Position Sensor Board Removal	4-5
Stacker Motor Removal	4-6
Centering Motor Removal	4-6
Transport Motor Removal	4-6

Table of Contents

	Page
Sponge Roller Removal	4-7
Barcode Sensor Removal	4-7
Rear Transport Unit Timing Belt Removal	4-7
Ø15 Drive Roller Removal	4-8
Front Transport Unit Timing Belt Removal	4-8
Cash Box Unit Timing Belt Removal	4-9
O-Ring Seal Removal	4-10
5 WIRING DIAGRAMS	5-1
iPRO-100/103 System Wiring Diagram	5-1
iPRO-101/102 System Wiring Diagram	5-2
6 CALIBRATION AND TESTING	6-1
Download, Installation and Workbench Tool Requirements	6-1
Application Software Installation	6-1
Part 1 - JCM Tool Suite Installation	6-1
Part 2 - USB Drivers Installation	6-2
JCM Tool Suite Standard Edition Mode	6-3
Software Download Tool Requirements	6-3
Software Download Procedures	6-3
Download the Upgrade Program	6-3
Downloading the Program First Time	6-5
Calibration	6-6
When to Calibrate	6-6
Calibration Tool Requirements	6-6
iPRO Reference Papers	6-6
Placing Each Reference Paper	6-7
Placing Reference Papers	6-7
Calibration Program	6-7
Validation Sensor Calibration	6-7
Validation Sensor Calibration Preparation	6-7
Validation Sensor [D/A Value, non-Paper] Calibration	6-8
Validation Sensor/Bar Sensor [with the Reference Paper] Calibration	6-8
UV (Reflection) Sensor with Paper Calibration	6-9
UV (Transmissive) Sensor with Paper Calibration	6-9
Validation & UV (Transmissive) Sensor non-Paper Calibration and Saving	6-10
Positioning Sensor Calibration	6-11
Positioning Sensor Calibration Preparation	6-11
Positioning Sensor Calibration & Saving Calibration Values	6-11
Model Information Confirmation	6-12
Reading the Model Information	6-12
Reading the iPRO Calibration Tool Version	6-13
Performance Tests	6-13
Performance Test Tool Requirement using a PC	6-13
Performance Tests Using PC Procedures	6-13
Performance Test	6-14
Sensor ON/OFF Test	6-14
DIP Switch Test	6-14
Denomination Test	6-14

Table of Contents

	Page
Operation Test Mode	6-15
Acceptance Tests	6-16
Aging Test	6-16
Device Function Test	6-17
Motor Test	6-18
Motor Speed test	6-18
Sensor Test	6-19
DIP Switch Test	6-20
Performance Test Tool Requirement without PC	6-20
DIP Switch Settings for Performance Test without a PC	6-21
Performance Test without a PC Procedures	6-22
DIP Switch Test	6-22
Sensor Test	6-22
iPRO Utility Tools	6-23
ICB Setting Tool Requirements	6-23
ICB Setting Change Preparation	6-23
ICB Function Settings	6-23
Setting ICB Enable/Disable Functions	6-23
Enable Screen Button Activation	6-24
Disable Screen Button Activation	6-24
ICB Current Status Screen Button	6-24
Setting the M/C #	6-25
ICB Function Operational Condition	6-25
7 EXPLODED VIEWS AND PARTS LISTS	7-1
Entire iPRO Unit Exploded View	7-1
Entire iPRO Unit Parts List	7-2
iPRO Upper Unit Exploded View	7-3
iPRO Upper Unit Parts List	7-4
iPRO Transport Unit 1 Exploded View	7-5
iPRO Transport Unit 1 Parts List	7-6
iPRO Transport Unit 2 Exploded View	7-7
iPRO Transport Unit 2 Parts List	7-8
iPRO Transport Unit 3 Exploded View	7-9
iPRO Transport Unit 3 Parts List	7-10
iPRO Transport Unit 4 Exploded View	7-11
iPRO Transport Unit 4 Parts List	7-12
iPRO Transport Unit 5 Exploded View	7-13
iPRO Transport Unit 5 Parts List	7-13
iPRO Transport Unit 6 Exploded View	7-14
iPRO Transport Unit 6 Parts List	7-15
iPRO Transport Unit 7 Exploded View	7-16
iPRO Transport Unit 7 Parts List	7-17
iPRO Transport Unit 8 Exploded View	7-18
iPRO Transport Unit 8 Parts List	7-19
iPRO SS/SU and UH Frame Unit Exploded View	7-20
iPRO SS/SU and UH Frame Unit Parts List	7-21
iPRO 1200 Cash Box Frame Unit Exploded View	7-22

Table of Contents

	Page
iPRO 1200 Cash Box Frame Unit Parts List	7-22
iPRO Optional Key Exploded View	7-23
iPRO Optional Key Parts List	7-23
iPRO External Cables	7-24
iPRO External Cables List	7-24
iPRO Optional Conversion Circuit Boards List	7-25
8 INDEX	8-1
A TROUBLESHOOTING	A-1
Introduction	A-1
Troubleshooting Overview	A-1
Fault Table Listings	A-1
Standard and ICB Error and Reject Code Conditions	A-4
Standard Error Code Conditions	A-4
ICB Error Code Conditions	A-6
LED Flash Reject Error Code Conditions; Banknotes	A-6
LED Flash Reject Error Code Conditions; Barcode Coupons	A-8
Calibration Error	A-9
Calibration Program Error Codes	A-9
Calibration Error Codes; Positioning Sensor	A-10
Calibration Error Codes; Validation Sensor	A-11
Calibration Error Codes; Barcode Sensor	A-12
Maintenance Equipment	A-12
iPRO Maintenance Equipment	A-12
Reference Paper Handling	A-13
B GLOSSARY	B-1

THIS PAGE INTENTIONALLY LEFT BLANK

iPRO™ Series

Banknote Acceptor

List of Figures

		Page
Figure 1-1	iPRO-10x Unit Assembly	1-1
Figure 1-2	Precautionary Symbols	1-3
Figure 1-3	Unacceptable Banknotes	1-5
Figure 1-4	iPRO Series Component Names	1-6
Figure 1-5	iPRO Banknote Acceptor Outside Dimensions	1-9
Figure 1-6	iPRO Banknote Acceptor Clearance Dimensions	1-9
Figure 1-7	iPRO Banknote Acceptor 500 Note Cash Box Outside Dimensions	1-10
Figure 1-8	iPRO Banknote Acceptor 900 Note Cash Box Outside Dimensions	1-10
Figure 1-9	iPRO Banknote Acceptor 1200 Note Cash Box Outside Dimensions	1-11
Figure 1-10	iPRO Banknote Acceptor UH Version Outside Dimensions	1-11
Figure 2-1	M4 Screw Locations (Right & Left)	2-1
Figure 2-2	Flat Head Screws Locations (Back)	2-1
Figure 2-3	Key Hole Location	2-1
Figure 2-4	Key Hole Dimension & Cylinder Length	2-2
Figure 2-5	Key Lock Rotation Requirement	2-2
Figure 2-6	Installing Optional Circuit Board	2-2
Figure 2-7	Installing Optional Circuit Board	2-10
Figure 2-8	24V/13.5V Converter and RS232C Conversion Board External Interface Connection Structure	2-10
Figure 2-9	ccTalk Conversion Board External Interface Connection Structure	2-10
Figure 2-10	CPU Board Switch Locations	2-11
Figure 2-11	Retrieving Banknotes	2-11
Figure 2-12	Clearing an Entrance Banknote Jam	2-11
Figure 2-13	Opening Centering Mechanism	2-12
Figure 2-14	Sensor Cleaning	2-12
Figure 2-15	iPRO Sensor Cleaning Locations	2-13
Figure 2-16	iPRO USB Interface Schematic Diagram	2-15
Figure 2-17	iPRO RS232C Interface Schematic Diagram	2-16
Figure 2-18	iPRO ccTalk Interface Schematic Diagram	2-17
Figure 2-19	iPRO Photo-Coupler Interface Schematic Diagram	2-18
Figure 2-20	iPRO Bezel LED Schematic Diagram	2-19
Figure 2-21	iPRO Operational Flowchart (Initialize)	2-21
Figure 2-22	iPRO Operational Flowchart (Validation)	2-22
Figure 2-23	iPRO Operational Flowchart (Stacking)	2-22
Figure 4-1	Primary Unit Separation	4-1
Figure 4-2	Left Transport Cover Removal	4-1
Figure 4-3	Transport Motor Encoder Board & Pull-Back Motor Removal	4-2
Figure 4-4	Right Transport Cover Removal	4-2
Figure 4-5	Stacker Motor Encoder Board Removal	4-2
Figure 4-6	Top Cover Removal	4-3
Figure 4-7	Upper Sensor Board Removal	4-3
Figure 4-8	Box Sensor Board Removal	4-3
Figure 4-9	Tie Wrap Removal Locations	4-3
Figure 4-10	Solenoid Base	4-4

List of Figures

	Page
Figure 4-11 Solenoid Removal	4-4
Figure 4-12 Right Side Connector Removals	4-4
Figure 4-13 Left Side Connector Removals	4-4
Figure 4-14 Connector Removals	4-5
Figure 4-15 CPU Circuit Board Removal	4-5
Figure 4-16 Right Transport Cover Removal	4-5
Figure 4-17 Drive Gear Removals	4-5
Figure 4-18 Centering Home Position Sensor Board Removal	4-5
Figure 4-19 Stacker Motor Removal	4-6
Figure 4-20 Centering Motor Removal	4-6
Figure 4-21 Transport Gear Cover & Encoder Removal	4-6
Figure 4-22 Transport Motor Removal	4-6
Figure 4-23 Roller Drive Gear Removal	4-7
Figure 4-24 Sponge Roller Removal	4-7
Figure 4-25 Barcode Sensor Removal	4-7
Figure 4-26 Upper & Lower Shaft Removal	4-8
Figure 4-27 Rear Timing Belt Removal	4-8
Figure 4-28 Ø15 Drive Roller Removal	4-8
Figure 4-29 Centering Guide Removal	4-8
Figure 4-30 Centering Guide Installation	4-9
Figure 4-31 Front Timing Belt Removal	4-9
Figure 4-32 Pusher Mechanism Removal	4-9
Figure 4-33 Pusher Plate Screw Removals	4-9
Figure 4-34 Pusher Plate Removal	4-9
Figure 4-35 Pusher Mechanism Guide Removal	4-9
Figure 4-36 Roller Removals	4-10
Figure 4-37 Pusher Drive Gear Removal	4-10
Figure 4-38 Cash Box Timing Belt Removal	4-10
Figure 4-39 Timing Belt Reinstallation Path	4-10
Figure 4-40 O-Ring Seal Removal	4-10
Figure 5-1 iPRO-100/103 System Wiring Diagram (Centering Type)	5-1
Figure 5-2 iPRO-101/102 System Wiring Diagram (Fixed Type)	5-2
Figure 6-1 Workbench Tool Requirements	6-1
Figure 6-2 USB Cable Type Requirement	6-1
Figure 6-3 Setup.exe	6-1
Figure 6-4 InstallShield Wizard Screen	6-1
Figure 6-5 Destination Folder Screen	6-2
Figure 6-6 Ready to Install the Program Screen	6-2
Figure 6-7 Installation Completion Screen	6-2
Figure 6-8 Installation Auto-start Screen	6-2
Figure 6-9 Installation Completion Screen	6-2
Figure 6-10 Normal Mode Selection	6-3
Figure 6-11 Test Mode Selection	6-3
Figure 6-12 Required Software Download Tools	6-3
Figure 6-13 DIP Switches All OFF	6-3
Figure 6-14 JCM Tool Suite Standard Edition Screen 1	6-4
Figure 6-15 JCM Tool Suite Standard Edition Screen Pull-Down Menu 1	6-4

List of Figures

	Page
Figure 6-16 Browse Screen Button Location	6-4
Figure 6-17 iPRO Software Program Selection	6-4
Figure 6-18 Download Progress Screen 1	6-4
Figure 6-19 Download Completed Screen 1	6-4
Figure 6-20 DIP Switches 6, 7, & 8 ON	6-5
Figure 6-21 JCM Tool Suite Standard Edition Screen 2	6-5
Figure 6-22 JCM Tool Suite Standard Edition Screen Pull-Down Menu 2	6-5
Figure 6-23 Browse Screen Button Location	6-5
Figure 6-24 iPRO Software Program Selection	6-5
Figure 6-25 Download Progress Screen 2	6-5
Figure 6-26 Download Completed Screen 2	6-6
Figure 6-27 Workbench Tool Requirements	6-6
Figure 6-28 Reference Paper Setting 1	6-7
Figure 6-29 Reference Paper Setting 2	6-7
Figure 6-30 Reference Paper Setting 3	6-7
Figure 6-31 DIP Switch Settings 1	6-7
Figure 6-32 JCM Tool Suite Standard Edition Screen 3	6-8
Figure 6-33 iPRO Calibration Ver.X.XX Screen	6-8
Figure 6-34 DIP Switch Settings 1	6-8
Figure 6-35 Validation Sensor non-Paper Calibration Screen 2	6-8
Figure 6-36 Validation Sensor/Bar Sensor with Paper Calibration Screen 1	6-8
Figure 6-37 Validation Sensor/Bar Sensor with Paper Calibration Screen 2	6-9
Figure 6-38 UV (Reflection) Sensor with Paper Calibration Screen 1	6-9
Figure 6-39 UV (Reflection) Sensor with Paper Calibration Screen 2	6-9
Figure 6-40 UV (Transmissive) Sensor with Paper Calibration Screen 1	6-9
Figure 6-41 UV (Transmissive) Sensor with Paper Calibration Screen 2	6-10
Figure 6-42 Auto Sensors Calibration and Save Screen 1	6-10
Figure 6-43 Auto Sensors Calibration and Save Screen 2	6-10
Figure 6-44 Calibration Completed Screen	6-10
Figure 6-45 DIP Switch Settings 2	6-11
Figure 6-46 Calibration Selection Screen 1	6-11
Figure 6-47 Calibration Selection Screen 2	6-11
Figure 6-48 Positioning Sensor Calibration Preparation Screen	6-11
Figure 6-49 Positioning Sensor Calibration Screen	6-11
Figure 6-50 Calibration Completed Screen	6-11
Figure 6-51 Serial No. Screen Button Location	6-12
Figure 6-52 Model Information Saving Screen 1	6-12
Figure 6-53 Model Information Saving Screen 2	6-12
Figure 6-54 Model Information Saving Completed Message Screen	6-12
Figure 6-55 Serial No. Screen Button Location	6-12
Figure 6-56 Loading Model Information Screen 1	6-12
Figure 6-57 Loading Model Information Screen 2	6-13
Figure 6-58 Version Information Screen 1	6-13
Figure 6-59 Version Information Screen	6-13
Figure 6-60 Performance Test Tool Requirements	6-13
Figure 6-61 DIP Switch Settings 3	6-13
Figure 6-62 JCM Tool Suite Standard Edition Screen 3	6-14

List of Figures

	Page
Figure 6-63 Performance Test Selection Screen 1	6-14
Figure 6-64 Performance Test Selection Screen 2	6-14
Figure 6-65 Sensor ON/OFF Test Selections	6-14
Figure 6-66 DIP Switch Test Selection Screen 1	6-14
Figure 6-67 Denomination Update Screen	6-14
Figure 6-68 Performance Test Tab Selection	6-16
Figure 6-69 Denomination Tab Selection	6-16
Figure 6-70 Aging Test Screen Button Location	6-16
Figure 6-71 Performance Test Stop Screen Button Location	6-16
Figure 6-72 Device Function Test Screen Button Location	6-17
Figure 6-73 Performance Test Tab	6-18
Figure 6-74 Performance Test Tab Selection	6-18
Figure 6-75 Motor Speed Test Screen	6-18
Figure 6-76 Sensor ON/OFF Test Selection Screen 1	6-19
Figure 6-77 Sensor ON/OFF Test Selection Screen 2	6-19
Figure 6-78 DIP Switch Test Selection Screen 1	6-20
Figure 6-79 DIP Switch Test Screen 2	6-20
Figure 6-80 Performance Test Tool Requirements	6-20
Figure 6-81 DIP Switch Settings 4	6-22
Figure 6-82 DIP Switch Settings 6	6-22
Figure 6-83 DIP Switch Settings 5	6-22
Figure 6-84 ICB Setting Tool Requirements	6-23
Figure 6-85 JCM Tool Suite Standard Edition	6-23
Figure 6-86 iPRO Utility Tool Version X.XX for Suite Edition Screen 2	6-23
Figure 6-87 Disable Setting Completion	6-23
Figure 6-88 IICB Expansion Circuit Board and DIP Switch Block Location	6-24
Figure 6-89 Enable Setting Completion Dialog	6-24
Figure 6-90 Disable Setting Completion Dialog	6-24
Figure 6-91 ICB Current Status Screen	6-24
Figure 6-92 Machine Number Setting Screen	6-25
Figure 6-93 Machine No. Setting Complete Dialog Screen	6-25
Figure 6-94 Machine Number Indication Screen	6-25
Figure 7-1 Entire iPRO Unit Exploded View	7-1
Figure 7-2 iPRO Upper Unit Exploded View	7-3
Figure 7-3 iPRO Transport Unit 1 Exploded View	7-5
Figure 7-4 iPRO Transport Unit 2 Exploded View	7-7
Figure 7-5 iPRO Transport Unit 3 Exploded View	7-9
Figure 7-6 iPRO Transport Unit 4 Exploded View	7-11
Figure 7-7 iPRO Transport Unit 5 Exploded View	7-13
Figure 7-8 iPRO Transport Unit 6 Exploded View	7-14
Figure 7-9 iPRO Transport Unit 7 Exploded View	7-16
Figure 7-10 iPRO Transport Unit 8 Exploded View	7-18
Figure 7-11 iPRO SS/SU and UH Frame Unit Exploded View	7-20
Figure 7-12 iPRO 1200 Cash Box Frame Unit Exploded View	7-22
Figure 7-13 iPRO Optional Key Exploded View	7-23
Figure 7-14 iPRO External Cables	7-24
Figure A-1 Calibration Error Code Pop-Up Screen	A-9

List of Figures

	Page
Figure A-2 Additional Maintenance Equipment Requirements	A-12

THIS PAGE INTENTIONALLY LEFT BLANK

iPRO™ Series

Banknote Acceptor

List of Tables

		Page
Table 1-1	iPRO Model Number Specifications	1-2
Table 1-2	iPRO SH Type Specifications	1-2
Table 1-3	iPRO SS/SU Type Specifications	1-2
Table 1-4	iPRO UH Version Type Specifications	1-3
Table 1-5	iPRO Software Number Specifications	1-3
Table 1-6	iPRO Series Technical Specification	1-7
Table 1-7	iPRO Series Environmental Specification	1-8
Table 1-8	iPRO Electrical Specification	1-8
Table 1-9	iPRO Series Structural Specification	1-8
Table 2-1	iPRO Vend Denomination Setting Switches	2-2
Table 2-2	LED Color Pattern Indications	2-3
Table 2-3	iPRO USB Interface Pin Assignments	2-4
Table 2-4	iPRO RS232C Interface Pin Assignments	2-5
Table 2-5	iPRO ccTalk Interface Pin Assignments	2-6
Table 2-6	iPRO Photo-Coupler Interface Pin Assignments	2-7
Table 2-7	iPRO CN13 Bezel Pin Assignments	2-8
Table 2-8	CN2 Connector Pin Assignments	2-9
Table 2-9	Relay Connector Pin Assignments	2-9
Table 2-10	CPU Board Switch Configurations	2-11
Table 2-11	ICB and RC Selection Switch Configuration	2-11
Table 2-12	iPRO Sensor Type Cleaning Methods	2-13
Table 6-1	Reference Paper Types	6-6
Table 6-2	Contents and Calibration Order	6-7
Table 6-3	Operation Test Mode Items	6-15
Table 6-4	Device Function Test Item	6-17
Table 6-5	Motor Test Items	6-18
Table 6-6	Sensor Test Items	6-19
Table 6-7	DIP Switch Configurations	6-21
Table 6-8	Sensor Test DIP Switch Configuration	6-22
Table 6-9	ICB Setting Function Operational Condition	6-25
Table 7-1	Entire iPRO Unit Parts List	7-2
Table 7-2	iPRO Upper Unit Parts List	7-4
Table 7-3	iPRO Transport Unit 1 Parts List	7-6
Table 7-4	iPRO Transport Unit 2 Parts List	7-8
Table 7-5	iPRO Transport Unit 3 Parts List	7-10
Table 7-6	iPRO Transport Unit 4 Parts List	7-12
Table 7-7	iPRO Transport Unit 5 Parts List	7-13
Table 7-8	iPRO Transport Unit 6 Parts List	7-15
Table 7-9	iPRO Transport Unit 7 Parts List	7-17
Table 7-10	iPRO Transport Unit 8 Parts List	7-19
Table 7-11	iPRO SS/SU and UH Frame Unit Parts List	7-21

List of Tables

	Page
Table 7-12 iPRO 1200 Cash Box Frame Unit Parts List	7-22
Table 7-13 iPRO Optional Key Parts List	7-23
Table 7-14 iPRO External Cables List	7-24
Table 7-15 iPRO Optional Conversion Circuit Boards List	7-25
Table A-1 General Fault Conditions	A-1
Table A-2 Adjustment Fault Conditions	A-3
Table A-3 Communication Fault Conditions	A-3
Table A-4 Standard LED Error Codes	A-4
Table A-5 ICB LED Error Codes	A-6
Table A-6 LED Flash Reject Error Codes For Banknotes	A-6
Table A-7 LED Flash Reject Error Codes For Barcode Coupons	A-8
Table A-8 Calibration Program Error Codes	A-9
Table A-9 Positioning Sensor Calibration Error Codes	A-10
Table A-10 Validation Sensor Calibration Error Codes	A-11
Table A-11 Barcode Sensor Calibration Error Codes	A-12
Table A-12 Additional Maintenance Equipment Parts List	A-13

iPRO™ Series Banknote Acceptor

Section 1

1 GENERAL INFORMATION

Description



This section provides a general overview of the iPRO™ Series Banknote Acceptor (iPRO-10x) Unit pictured in Figure 1-1.

This section is designed to help the user navigate through this guide with ease. It includes the following information:

- iPRO Unit Assembly
- Model Descriptions
- Type Descriptions
- Software Descriptions
- Precautions
- Primary Features
- Component Names
- Specifications

- Unit Dimensions
- Technical Contact Information.

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

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

iPRO Unit Assembly



Figure 1-1 iPRO-10x Unit Assembly

Model Descriptions

Table 1-1 lists the Product Model Number Descriptions.

Table 1-1 iPRO Model Number Specifications

No	Model: iPRO - * * * - * * * *
	No (1) (2)(3)(4) (5)(6)(7)
(1)	Product Series Name
(2)	Validate Sensor 1 = World Wide Type 1 (Standard) 2 = World Wide Type 2
(3)	CPU Board 0 = Standard
(4)	Transport Unit Type 0 = Centering Type (World Wide Type) (Standard) 1 = Fixed Type (66mm) 2 = Fixed Type (76mm) 3 = Centering Type, Asia Commercial Model (with the "UVH" Belt)*
(5)	Optional Unit (Input Section) None = Standard
(6)	Stacker Type None = Transport Unit SH = Security Stacker Horizontal SS = Security Stacker SU = Security Stacker Upwards UH = Security Stacker Upper Horizontal
(7)	Cash Box Access None = Front Access Frame (Standard)

*. The iPRO-103 type is only available for the iPRO-RC. Refer to the iPRO-RC Series Banknote Recycler Operation and Maintenance Manual for the iPRO-RC.

Type Descriptions

iPRO SH Version

Table 1-2 lists the iPRO SH Version Product Type Number Descriptions.

Table 1-2 iPRO SH Type Specifications

No	Type: * * * - * * * - * * * *
	No (1)(2)(3) (4)(5)(6)(7)(8)(9)(10)
(1)	Cash Box Capacity C = 1200 notes (New Banknote)
(2)	Cash Box Type S = Metal
(3)	Cash Box Handle C = SH 1200 Cash Box Handle
(4)	Transport Section 0 = Standard
(5)	Transport Cover 0 = Standard (Black)
(6)	Bezel (Option) 0 = None 1 = Black/Green LED (UBA/iPRO Standard Bezel 85) 2 = Blue/Blue LED (UBA/iPRO Standard Bezel 85) 8 = Black/Green LED (UBA/iPRO Bezel 82) 9 = Smoke Blue/Blue LED (UBA/iPRO Bezel 82) A = Blue/Blue (2-Line) (UBA/iPRO Standard Bezel 85)
(7)	ICB (Option) 0 = Without ICB
(8)	Optional Conversion Circuit Board 0 = Standard (No Optional Board) 1 = 24V/13.5V Converter + RS232C Interface Conversion Board 2 = RS232C Interface Conversion Board 3 = cc-Talk Interface Conversion Board (ID-0E3)
(9)	Input/Output Signal P = Photo-Coupler Isolation R = RS-232C Protocol Operation
(10)	External Cable 0 = None 5 = Standard Harness (USB I/F) 6 = OEM Harness (USB I/F) 7 = 24V/13.5V Conversion Harness (Photo-Coupler I/F, USB I/F) 8 = 24V/13.5V Conversion Harness (RS232C I/F, USB I/F) 9 = cc-Talk I/F Conversion Harness (ID-0E3) A = 24V/13.5V Conversion Harness (USB I/F)

iPRO SS/SU Version

Table 1-3 lists the iPRO SS/SU Version Product Type Number Descriptions.

Table 1-3 iPRO SS/SU Type Specifications

No	Type: * * * - * * * - * * * *
	No (1)(2)(3) (4)(5)(6)(7)(8)(9)(10)
(1)	Cash Box Capacity 0 = No Cash Box 5 = 500 notes (Street Grade) 9 = 900 notes (Street Grade)
(2)	Cash Box Type 0 = Standard (Dark Green) S = Metal
(3)	Cash Box Handle 0 = Standard (Blue)
(4)	Transport Section 0 = Standard
(5)	Transport Cover 0 = Standard (Black)
(6)	Bezel (Option) 0 = None 1 = Black/Green LED (UBA/iPRO Standard Bezel 85) 2 = Blue/Blue LED (UBA/iPRO Standard Bezel 85) 8 = Black/Green LED (UBA/iPRO Bezel 82) 9 = Smoke Blue/Blue LED (UBA/iPRO Bezel 82) A = Blue/Blue (2-Line) (UBA/iPRO Standard Bezel 85)
(7)	ICB (Option)* 0 = Without ICB 1 = With ICB
(8)	Optional Conversion Circuit Board 0 = Standard (No Optional Board) 1 = 24V/13.5V Converter + RS232C Interface Conversion Board 2 = RS232C Interface Conversion Board 3 = cc-Talk Interface Conversion Board (ID-0E3)
(9)	Input/Output Signal P = Photo-Coupler Isolation R = RS-232C Protocol Operation
(10)	External Cable 0 = None 5 = Standard Harness (USB I/F) 6 = OEM Harness (USB I/F) 7 = 24V/13.5V Conversion Harness (Photo-Coupler I/F, USB I/F) 8 = 24V/13.5V Conversion Harness (RS232C I/F, USB I/F) 9 = cc-Talk I/F Conversion Harness (ID-0E3) A = 24V/13.5V Conversion Harness (USB I/F) 5U = SU Type Standard Harness (USB I/F) 6U = SU Type OEM Harness (USB I/F) 7U = Reserved 8U = Reserved

*. Refer to "ICB Setting Tool Requirements" on page 6-23 for more details on using this Option.

iPRO UH Version

Table 1-4 lists the iPRO UH Version Product Type Number Descriptions.

Table 1-4 iPRO UH Version Type Specifications

Nº	Type: *** - ** - ***** Nº (1)(2)(3) (4)(5)(6)(7)(8)(9)(10)(11)(12)
(1)	Cash Box Capacity 0 = No Cash Box 4 = 400 notes (New Banknote)
(2)	Cash Box Type 0 = Standard (Metal)
(3)	Cash Box Handle 0 = Standard
(4)	Transport Section 0 = Standard
(5)	Transport Cover 0 = Standard
(6)	Bezel (Option) 0 = None 1 = Black/Green LED (UBA/iPRO Standard Bezel 85) 2 = Blue/Blue LED (UBA/iPRO Standard Bezel 85) 8 = Black/Green LED (UBA/iPRO Bezel 82) 9 = Smoke Blue/Blue LED (UBA/iPRO Bezel 82) A = Blue/Blue LED (2-Line) (UBA/iPRO Standard Bezel 85) C = Black/Green LED (UBA/iPRO SU Bezel 85)
(7)	Bezel Spacer 0 = Without Bezel Spacer 1 = With Bezel Spacer
(8)	ICB (Option) 0 = Without ICB
(9)	Optional Circuit Board 0 = Standard (No Optional Board) 1 = 24V/13.5V Converter + RS232C I/F Conversion Board 2 = RS232C I/F Conversion Board 3 = ccTalk I/F Conversion Board (ID-0E3)
(10)	Input/Output Signal P = Photo-Coupler Isolation R = RS-232C Protocol Operation
(11)	External Cable 0 = None 5 = Standard (USB I/F) 6 = OEM Harness (USB I/F) 7 = 24V/13.5V Conversion Harness (Photo-Coupler I/F, USB I/F) 8 = 24V/13.5V Conversion Harness (RS232C I/F, USB I/F) 9 = cc-Talk I/F Conversion Harness (For ID-0E3) A = 24V/13.5V Conversion Harness (USB I/F) 5U = SU Specification Standard Harness (USB I/F) 6U = SU Specification OEM Harness (USB I/F) 7U = Reserved 8U = Reserved
(12)	Optional Unit Installation Plate* 0 = None 1 = OEM

*. Contact your local JCM Representative for details on the optional Unit Installation Plate.

Software Descriptions

Table 1-5 lists the Software Number Descriptions.

Table 1-5 iPRO Software Number Specifications

Nº	Software: iPRO-10x-(*)SS(*) *** - 0** - V* **
	Nº (A) (B) (C) (D)
(A)	Software Model Name
(B)	Denomination (Country Code)*
(C)	Interface Protocol Name
(D)	Software Version

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

Precautions

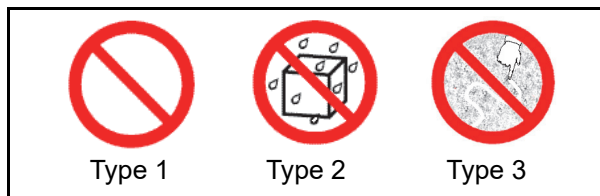


Figure 1-2 Precautionary Symbols

The Figure 1-2 symbols are defined as follows:

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

User Cautions

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

INSTALLATION CAUTIONS

The Installation Cautions are defined as follows:

- Do not allow the Unit to endure or operate at a high temperature, in high humidity and/or in a dusty environment.
- Do not install the Unit into an area where excessive vibration or shock is present.
- This equipment is not fully warranted for outdoor use. Be sure that the Host Machine contains enough protection to avoid wet or dusty conditions when installing it either an indoor or open-air space.
- Avoid exposing the Unit to direct Sunlight incandescent lamp illumination with a gradient angle of 15 degree or more, and an illumination index of 3,000 Lux or less.
- Ensure that the Host Machine is designed for daily operational access for maintenance and/or clearing a Banknote Jam.
- When installing the equipment, connect the Frame Unit to the Frame Ground of the Host Machine.
- Be sure to connect the Ground Wire of the Interface Connector to the Chassis Frame Ground.
- Make the Interface Harness connection to the Host Machine shorter than 9.85 feet (3 meters). If unused portions of the Interface Harness exists, cut these parts of the Harness short to avoid static electricity build-up or short circuit possibilities that can cause damage to the Unit.
- A "TR STAND PROTECTOR" is installed to protect the product in an Upward-direction Stacker Specification installation. Remove the Protector assembly from the Unit when using it in an another stacking direction.

- 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 & transporting the Unit:

- Be sure to turn the iPRO Unit's Power OFF before mounting or removing the Unit from its permanent location. Plugging or unplugging Connectors from their Receptacles while the Power is ON may cause damage to the Unit.
- When reassembling a disassembled Unit Section, ensure that each part is properly replaced into its correct location.
- 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 apart.
- Be careful not to use excessive outside pressure on the Unit, or subject it to excessive vibration during transportation.
- Be careful not to exert external pressure on the equipment without the Cash Box in place. Strong pressure on the Frame may cause it to become distorted.
- Check that the Transport Section does not drop off the Unit when pulling it forward after reassembling it.

PREVENTIVE MAINTENANCE

The preventive maintenance requirements are defined as follows:

- Be sure to turn the iPRO Unit's Power OFF before beginning a Maintenance Procedure. The equipment produces improper operating signals while in Maintenance Mode that may cause personal injury.
- When closing the Unit, ensure all Service Door Locks click back into place.
- To keep the iPRO Unit's performance stable, clean the Unit once a month and/or if the Validation Section or Sensors are dirty due to dust, foreign objects or other such debris adhering to it, the Banknote acceptance rate degrades, or an error occurs frequently, whichever comes earlier.
- Use a soft, lint-free, micro-fiber cloth, cotton swab or non-flammable compressed air spray to clean dust and debris from the Banknote transportation path.
- Perform cleaning and maintenance regularly when using the equipment in a place where excessive Automobile exhaust emission or Cigarette Smoke may exist.
- Be sure that the Guides or individual Unit Sections are placed in the proper locations after a maintenance procedure.
- Do not redesign or disassemble the Unit. Unauthorized use by inadequately trained

personnel, or use outside the original manufacturer's intent voids the warranty.



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



Caution: Make sure Interface Harness connections to the Host Machine are 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 Limited Power Source!



Design the Host Cabinet space to meet all local related safety standards.



Caution: Risk of explosion if battery is replaced by an incorrect type.

Disposal Consideration

The battery disposal requirements are defined as follows:

- Do not allow positive (+) and negative (-) battery terminals to touch each other.
- Use caution that batteries stored or transported together do not short circuit.
- Follow federal, state and local regulations for battery disposal.

Banknote Fitness Requirements

The following Banknote types may not validate correctly, or worse, can cause a Banknote jam and/or damage to the Unit's Transport Path. Banknotes exhibiting the following conditions illustrated in Figure 1-3 should be avoided:

- Torn
- Taped
- Excessive folds or wrinkles
- Dirty
- Wet

- Adhering foreign objects and/or oil

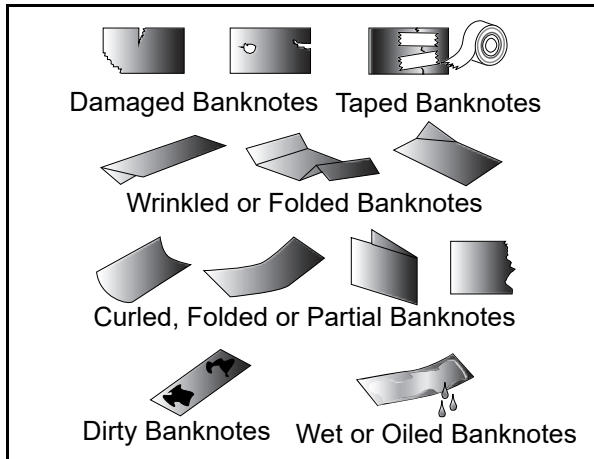


Figure 1-3 Unacceptable Banknotes

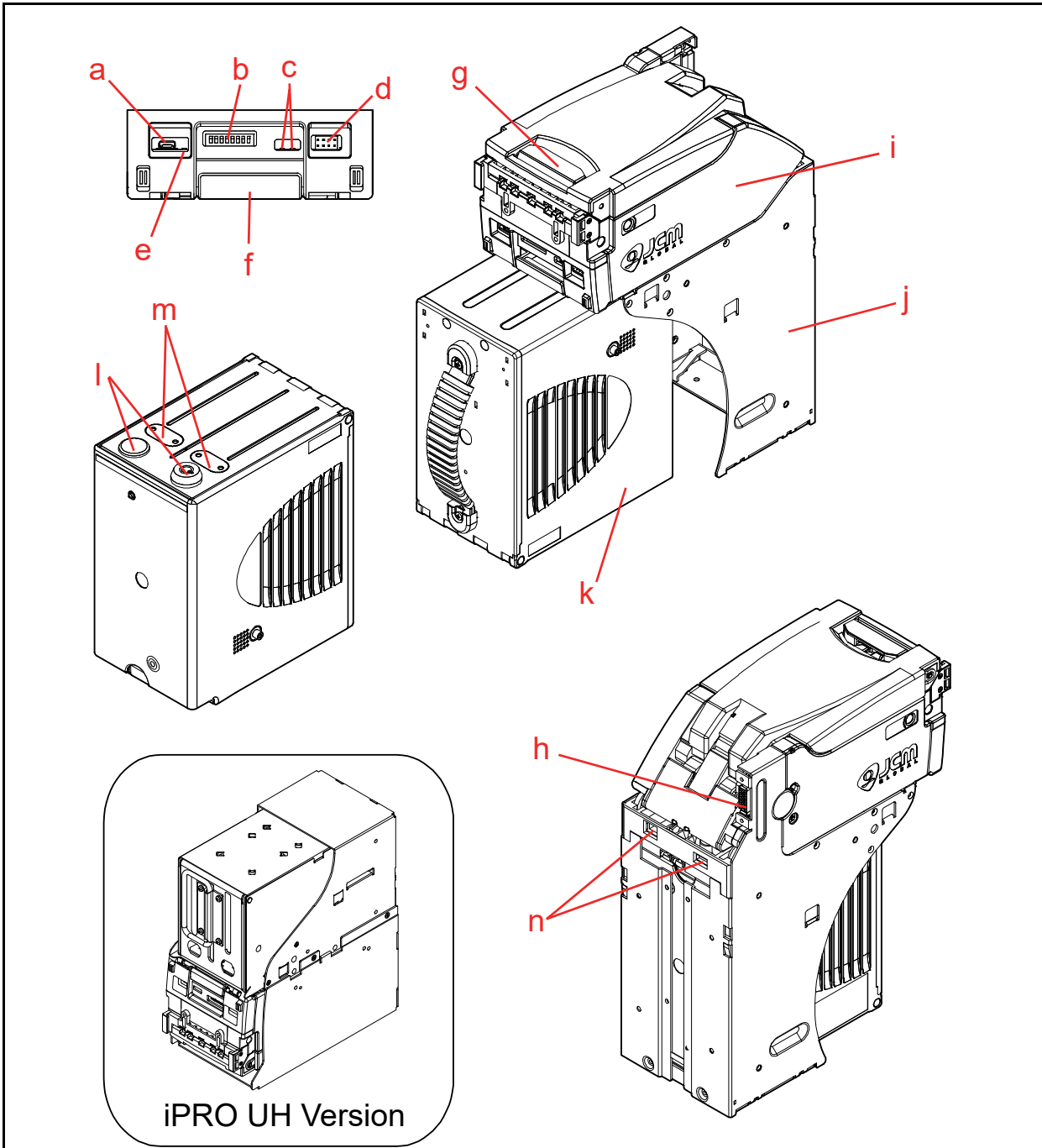
Primary Features

This iPRO Series Banknote Acceptor Unit contains the following primary features:

- The iPRO Series Units are compatible with all previous UBA Series Units. Upgrade of current UBA Series Unit's to the new iPRO Series Unit can be accomplished by just replacing the Transport Section of the Unit.
- The iPRO Series auto-centering capability is approximately 3% greater than the previous UBA-24 Model. Processing speed is also approximately 20% greater for the iPRO Series Units.
- By using high precision Sensors and the Automatic Centering Mechanism, for 62-85mm wide Banknotes, the iPRO ensures high Banknote acceptance.
- The high-speed validation capacity using the Fixed USA Style Mechanism (66mm Banknote Width) is a feature available on the iPRO-101 using its own high precision Sensors.
- The high-speed validation capacity using the Fixed JPN Style Mechanism (76mm Banknote Width) is a feature available on the iPRO-102 using its own high precision Sensors.

Component Names

Figure 1-4 illustrates the iPRO Component Names and Locations.



- | | |
|---|--|
| <ul style="list-style-type: none"> a) USB Mini-B Type Connector b) DIP Switch Block c) Status LEDs (Green & Red) d) Front Bezel Connector
(Connects the Optional Bezel Assembly to the Unit) e) Centering Guide Home Position Indication LED f) Transport Unit Release Lever g) Upper Guide Access Lever | <ul style="list-style-type: none"> h) Interface Connector (Connect Unit to the Host Machine) i) Transport Unit j) Frame Unit k) Cash Box l) Key Lock Holes (for User provided Locks) m) Last Note Dispute Resolving Windows n) Conversion Board Connectors (Optional) |
|---|--|

Figure 1-4 iPRO Series Component Names

Specifications

Technical Specifications

Table 1-6 iPRO Series Technical Specification

Acceptance Rate:	98% or greater Note: The following banknote types are excluded: <ul style="list-style-type: none"> • Banknotes with excess or poor magnetism or unclear graphics • Double (dual) Notes • Worn, dirty, wet, stained, torn or excessively wrinkled Banknotes • Banknotes having folded corners or edges • Banknotes having the wrong cut dimensions or printing displacement • Returned Banknotes because of incorrect or failed insertion.
Banknote Types Accepted:	iPRO SS/SU/SH Version <ul style="list-style-type: none"> • Long side: 120~165mm (4.72~6.49 in.) • Short side: 62~85mm (2.44~3.35 in.) iPRO UH Version <ul style="list-style-type: none"> • Long side: 120~170mm (4.72~6.69 in.) • Short side: 62~82mm (2.44~3.22 in.)
Barcode Coupon:	Standard Specification <ul style="list-style-type: none"> • Read code interleaved: 2 of 5 • Narrow Bar: 0.5mm-0.6mm (0.019-0.023 in.) • Wide Bar to Narrow Bar ratio = 3:1 • Characters: 18 Characters • Print Position: Middle (Divides a Coupon equally from the left, right, top and bottom of the Coupon's center) • Print Width: Wider than 10mm (0.39 in.)
Insertion Direction:	Banknote: Four-way Barcode Coupon: Two-way (Barcode facing Upward)
Processing Speed*:	iPRO-100/103 (Centering Type) <ul style="list-style-type: none"> • Approximately 2 seconds (from Banknote insertion to sending Vend Signal) • Approximately 5 seconds (from Banknote insertion to stacking completion) iPRO-101 (USA Fixed Type) and iPRO-102 (JPN Fixed Type) <ul style="list-style-type: none"> • Approximately 1 seconds (from Banknote insertion to sending Vend Signal) • Approximately 3 seconds (from Banknote insertion to stacking completion)
Validation Method:	Optical (6 Illumination, [Transmissive/Reflective]) and Magnetic
Diagnostic Indicators:	External LED (Green/Red)
Escrow:	1 Note
Anti-Pullback Mechanism:	Pull-Back (PB) Unit (Anti-pullback System - JCM Patented)
Cash Box Capacity:	Security Box: 400 (UH Version only), 500, 900, or 1200 notes ICB (Intelligent Cash Box): 500 and 900 notes (option)
Interface:	USB (USB Specification Rev. 2.0 Compliance) (Full Speed/12Mbps) Photo-Coupler Isolation RS232C cc-Talk

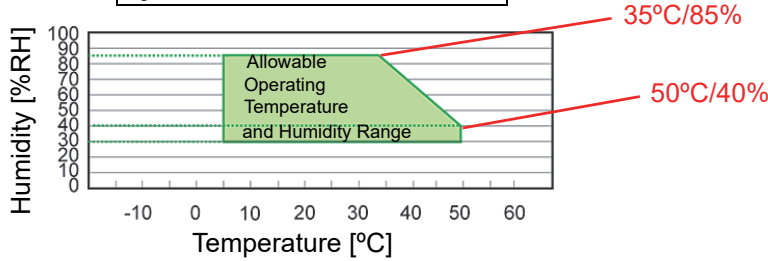
*. Excluded Host Communication time lag (Power Supply: +12V DC, Temperature: 25° C ±5° C).

Environmental Specifications

Table 1-7 iPRO Series Environmental Specification

Operating Temperature:	+5°C to +50°C (41°F to 122°F)
Storage Temperature:	-20°C to +60°C (-4°F to 140°F)
Relative Operating Humidity:	30% to 85% RH (non-condensed)
Relative Storage Humidity:	40% to 65% RH (non-condensed)
Visible Light Sensitivity:	Avoid contact with direct sunlight (Interior lighting must be incandescent with a Radiant Angle of 15 degree or more having an Illumination index of 3000 Lux or less)
Installation:	Indoors Only

Hydrothermal Condition Table



Electrical Specifications

Table 1-8 iPRO Electrical Specification

	iPRO-100/103 (Centering Type)	iPRO-101/102 (Fixed Type)
Supply Voltage:*	12V DC -5%, +15% (Greater than 4.0A) 24V DC ±5% (Option) (Greater than 2.7A)	
Current Consumption:	12.0V <ul style="list-style-type: none"> Standby = 160mA Operation = 1.4A Peak = 3.5A 24.0V† <ul style="list-style-type: none"> Standby = 120mA Operation = 1.0A Peak = 3.0A 	12.0V <ul style="list-style-type: none"> Standby = 140mA Operation = 1.2A Peak = 3.5A 24.0V† <ul style="list-style-type: none"> Standby = 110mA Operation = 0.8A Peak = 3.0A

*. Use a Limited Power Source.

†. When using a 24Volt to 13.5Volt Conversion Board.

Structural Specifications

Table 1-9 iPRO Series Structural Specification

Weight:	iPRO unit: Approximately 4kg (8.81lbs) iPRO unit with 400-notes Cash Box*: Approximately 5kg (11.02lbs) iPRO unit with 500-notes Cash Box: Approximately 5kg (11.02lbs) iPRO unit with 900-notes Cash Box: Approximately 5.3kg (11.681lbs) iPRO unit with 1200-notes Cash Box: Approximately 6kg (13.231lbs)
Mounting:	Horizontal
Outside Dimensions:	See "iPRO Unit Entire Outside Dimensions" on page 1-9 of this Manual.

*. iPRO UH version only.

Unit Dimensions

iPRO Unit Entire Outside Dimensions

Figure 1-5 illustrates a typical iPRO Unit's entire outside dimensions.

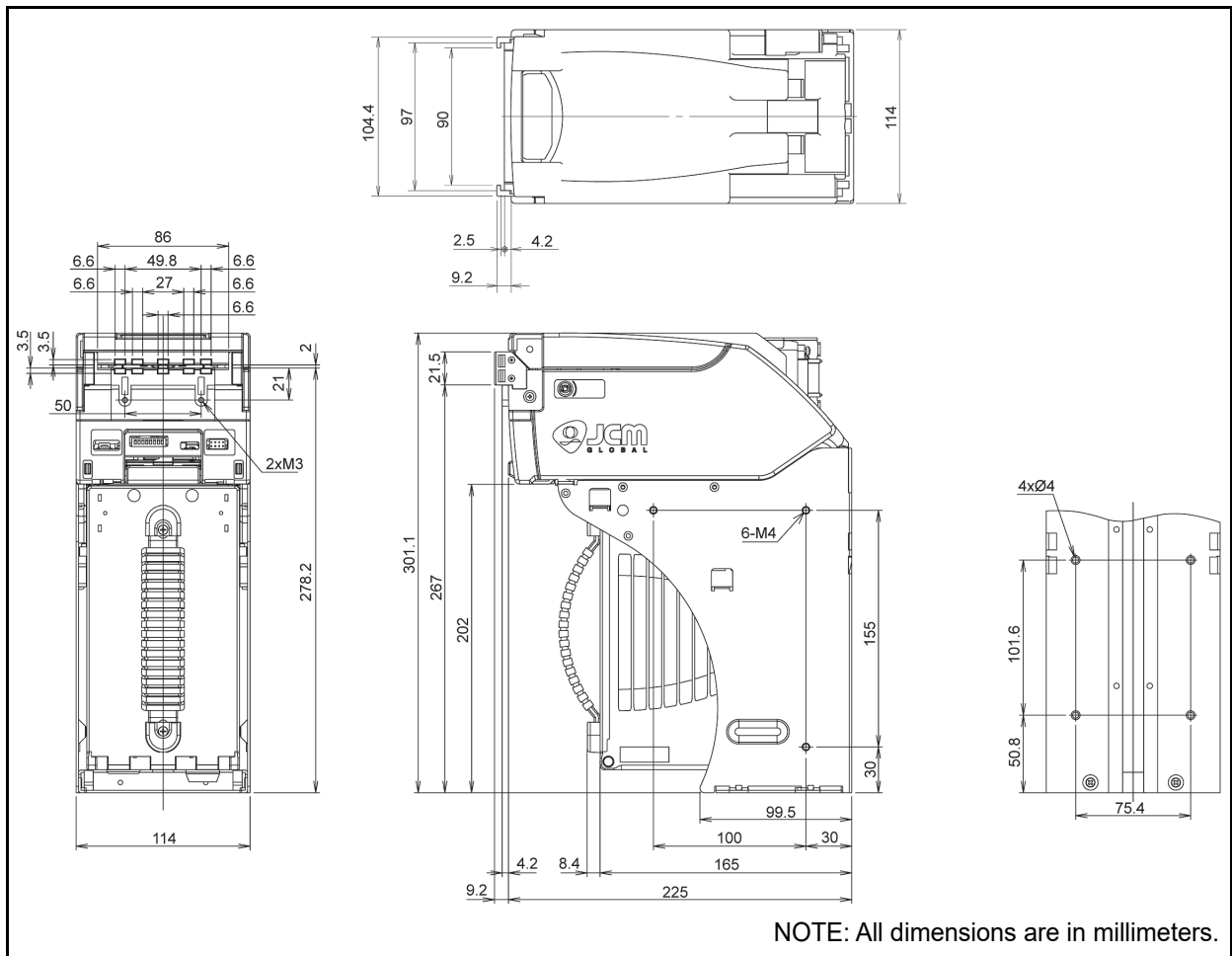


Figure 1-5 iPRO Banknote Acceptor Outside Dimensions

iPRO Unit Clearance Dimensions

Figure 1-6 illustrates the iPRO Unit's recommended open Acceptor clearance dimensions.

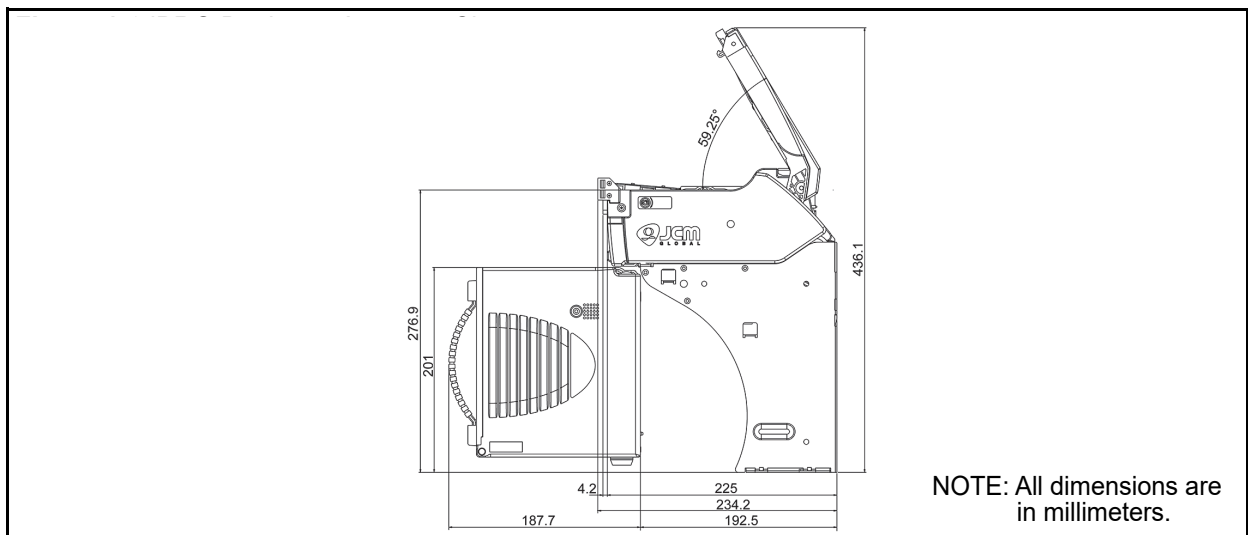


Figure 1-6 iPRO Banknote Acceptor Clearance Dimensions

iPRO Cash Box Outside Dimensions

Figure 1-7 illustrates the iPRO 500 Note Cash Box outside dimensions.

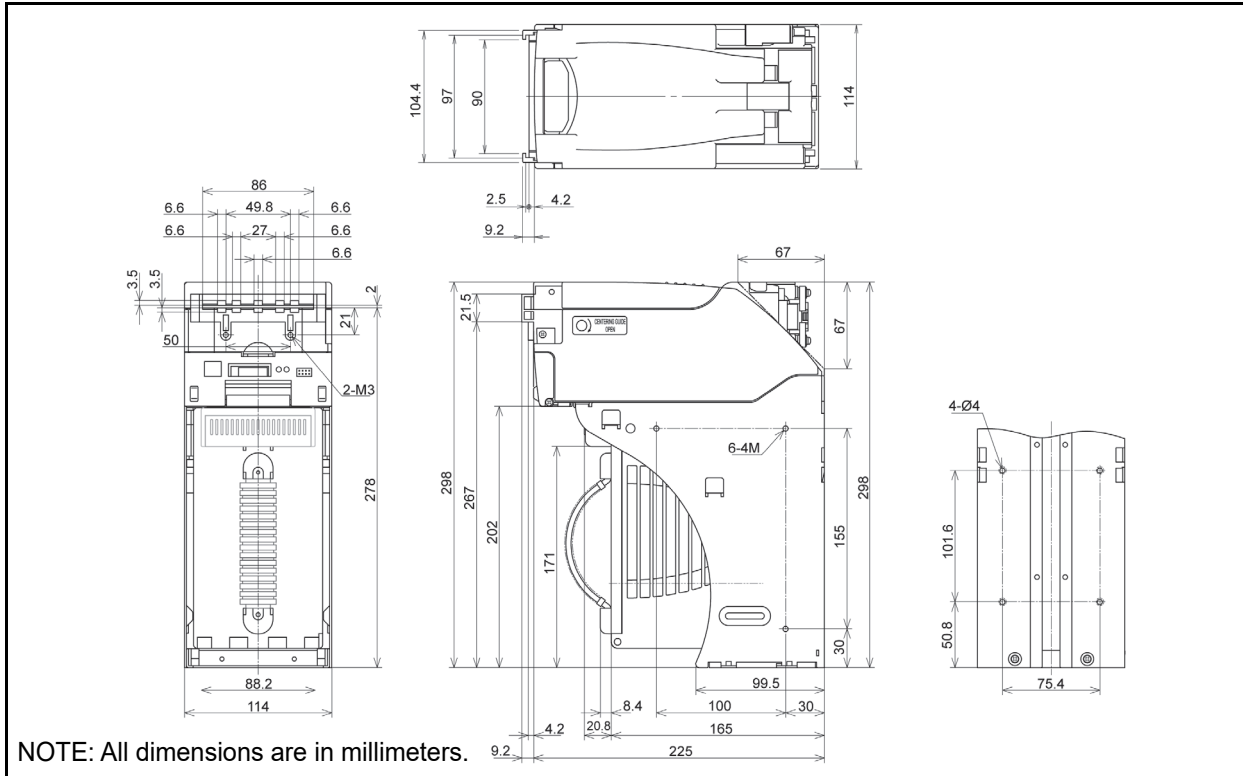


Figure 1-7 iPRO Banknote Acceptor 500 Note Cash Box Outside Dimensions

Figure 1-8 illustrates the iPRO 900 Note Cash Box outside dimensions.

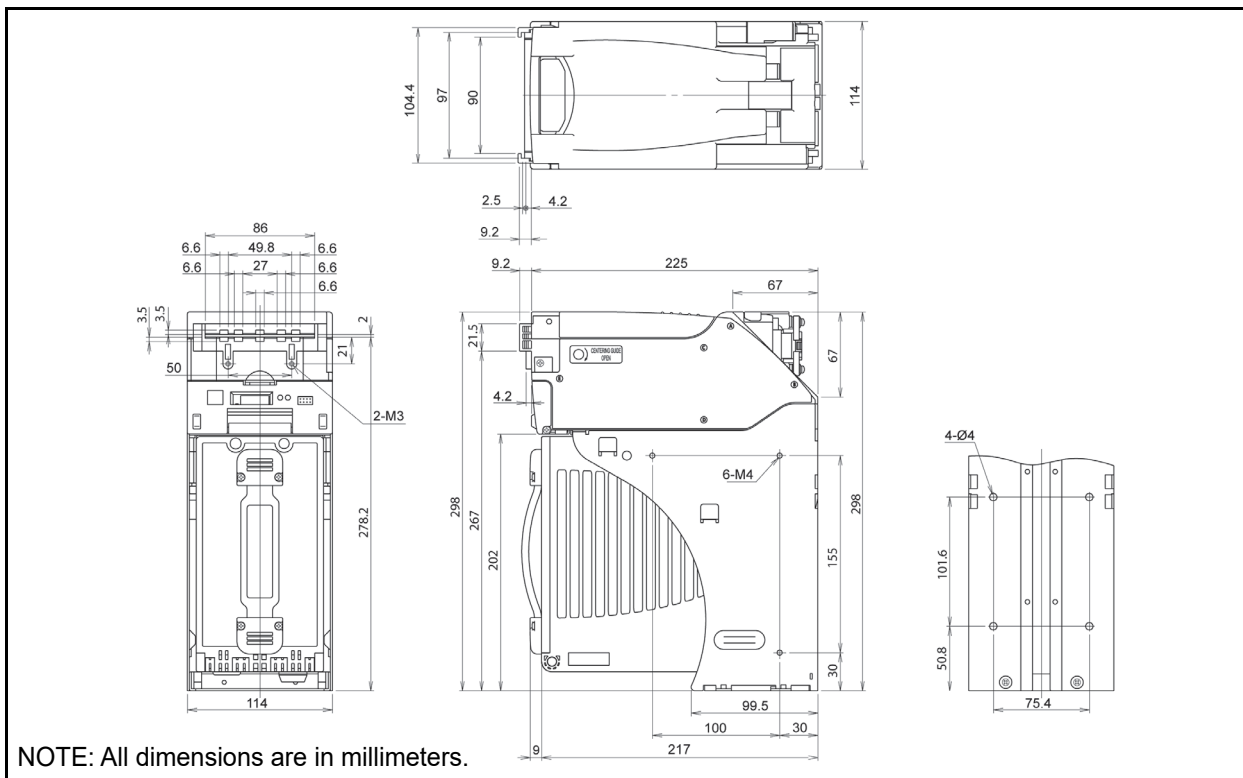


Figure 1-8 iPRO Banknote Acceptor 900 Note Cash Box Outside Dimensions

iPRO CASH BOX OUTSIDE DIMENSIONS (CONTINUED 1)

Figure 1-9 illustrates the iPRO 1200 Note Cash Box outside dimensions.

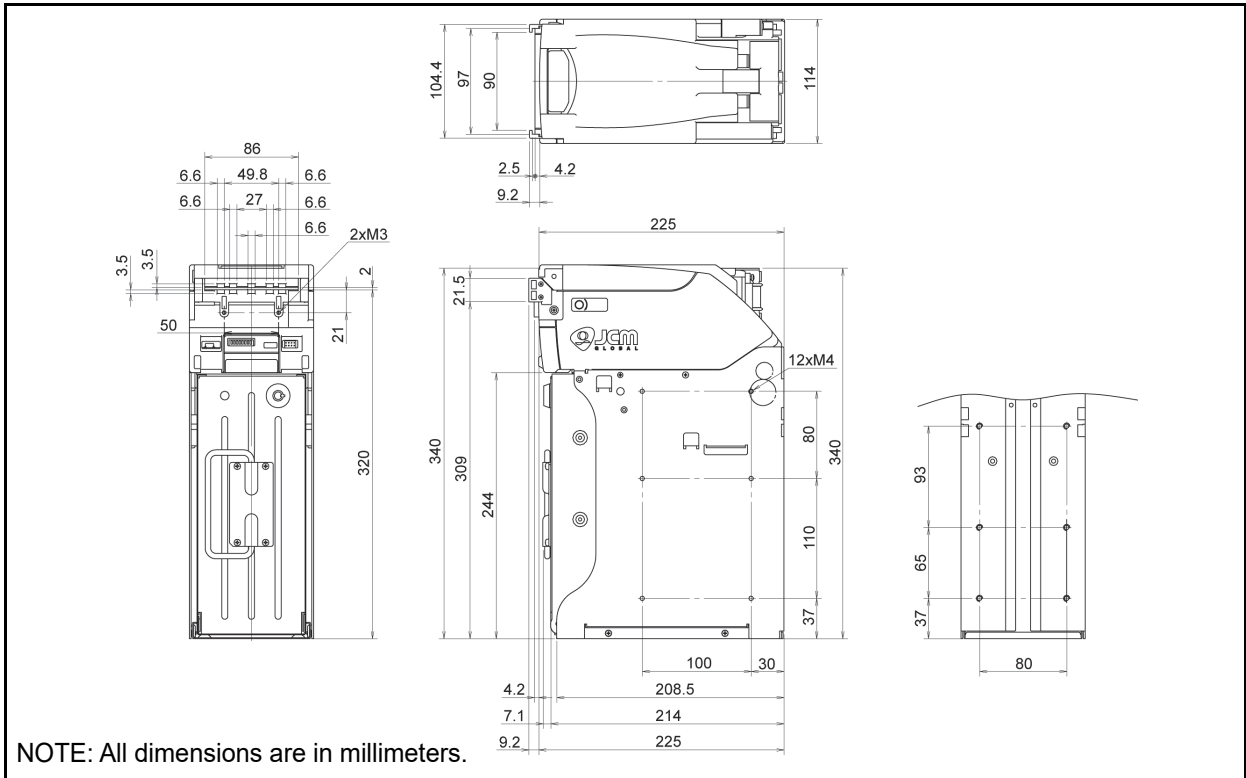


Figure 1-9 iPRO Banknote Acceptor 1200 Note Cash Box Outside Dimensions

iPRO UH Entire Outside Dimensions

Figure 1-10 illustrates the iPRO UH Version outside dimensions.

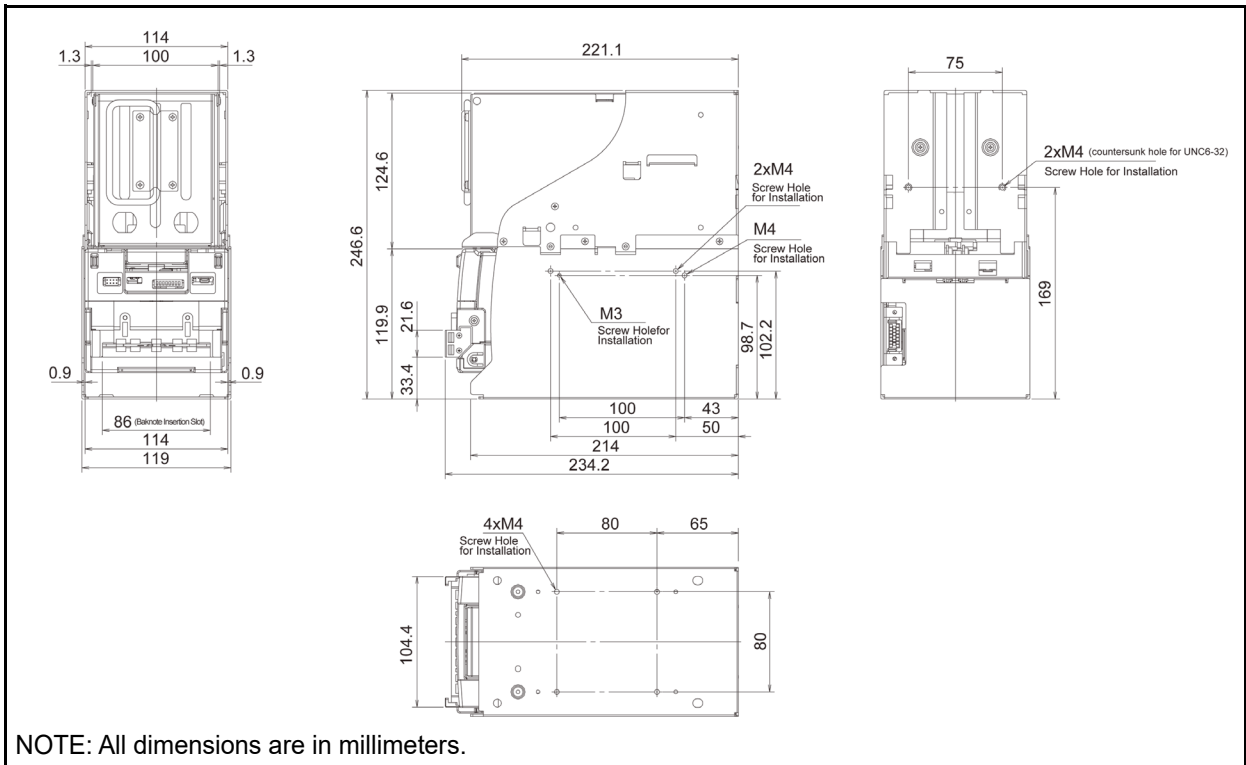


Figure 1-10 iPRO Banknote Acceptor UH Version Outside Dimensions

Technical Contact Information

To obtain further Technical Information regarding the iPRO Unit, please contact the closest office to your 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>

iPRO™ Series Banknote Acceptor

Section 2

2 INSTALLATION

This section provides installation and operating instructions for the iPRO™ Series Banknote Acceptor (iPRO-10x) Unit. The information within this Section contains the following features:


- Installation Process
- DIP Switch Configurations
- Connector Pin Assignments
- Optional Conversion Circuit Boards
- CPU Board DIP Switch Configurations
- Preventive Maintenance
- Sensor Locations
- Standard Interface Circuit Schematics
- Operational Flowchart

Installation Process

The iPRO Frame Unit provides installation holes for each surface.

Perform the following steps to install the iPRO Unit:

1. Place the iPRO Unit Frame in its intended mounting location.

 **NOTE:** The “Transport Stand Protector” is initially installed to protect the Product for the Up-direction Stacker Specification. Remove the Protector from the Unit when using it for another stacking direction.

2. Secure both right and left sides of the iPRO Frame into its intended location using six (6) M4 Screws (3 on each side) from the outside of the Frame when this mounting configuration is preferred (Figure 2-1).

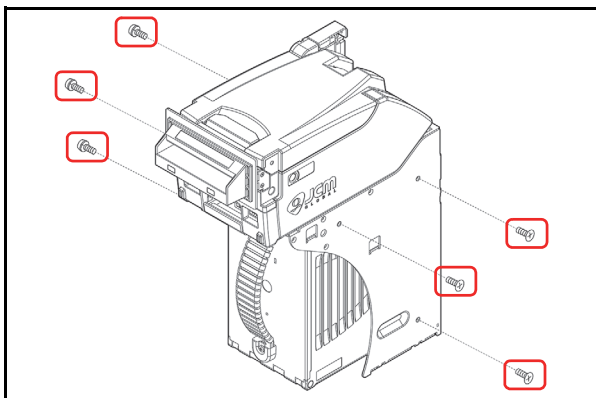


Figure 2-1 M4 Screw Locations (Right & Left)

3. Remove the Cash Box and bolt the back side of the iPRO Frame into its intended location using four (4) UNC6-32 Flat Head Screws from the inside of the Frame when this mounting configuration is preferred (Figure 2-2).

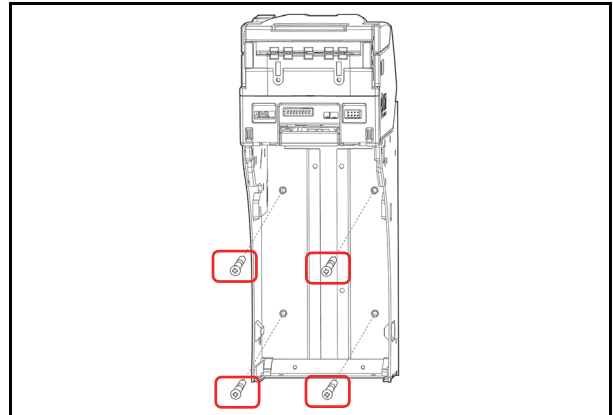



Figure 2-2 Flat Head Screws Locations (Back)

4. Install the iPRO Unit into the Host Machine. (See “Unit Dimensions” on page 1-9).

 **NOTE:** The length from Frame surface to the edge of the M4 Screws should be within 4mm in order not to puncture the plastic surface of the iPRO Frame when a side mounting configuration is preferred.

Lock Installation

One or two security locks can be installed onto a iPRO Cash Box. When installing a security lock, the following attachment accessories may be required:

- Two Key Spacers
- Plate Lock Keys
- Key Cap Attachment.

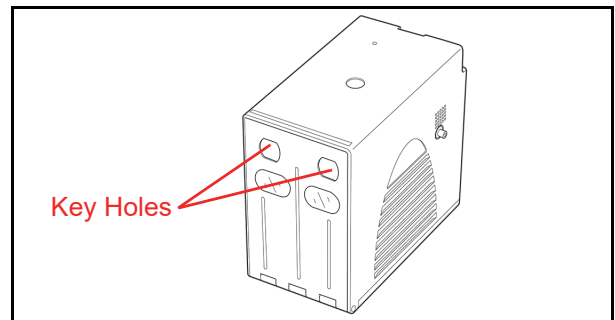


Figure 2-3 Key Hole Location

Choose a Lock that fits a standard 5/8”, 1-1/8” or 20.5mm hole dimension format (Figure 2-4). In

addition, when two locks are to be installed, both locks must be identical.

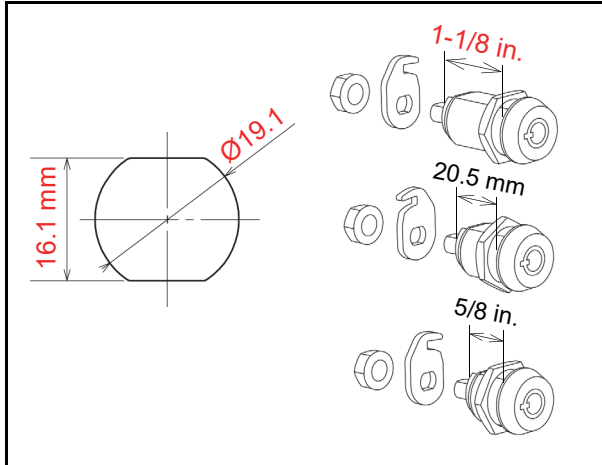


Figure 2-4 Key Hole Dimension & Cylinder Length

Unlock Procedure

Make sure lock(s) are installed and rotate in the correct direction(s).

NOTE: When two locks are installed, they must rotate in the same direction as illustrated in Figure 2-5.

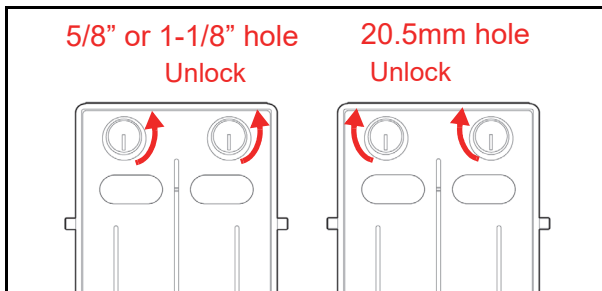


Figure 2-5 Key Lock Rotation Requirement

NOTE: When using only one lock, the remaining blank hole does not provide access to Cash Box contents. However, some regulatory authorities may require installation of a Key Cap.

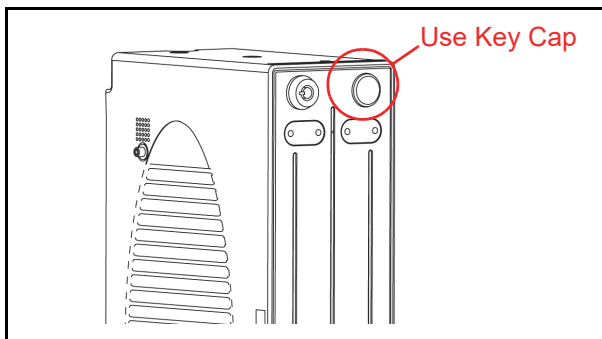


Figure 2-6 Key Cap Installation

NOTE: There are many lock designs, and Key Spacer washers may be required for some lock types. Locks vary greatly in price, security, keying policies, et cetera. The customer is responsible for selecting a Lock with performance that fits the intended purpose. JCM does not test or endorse any specific brand of Lock for its security characteristics.

DIP Switch Configurations

Table 2-1 lists the default DIP Switch configurations for the iPRO Front panel DIP Switch Block.

NOTE: DIP Switch settings may vary based on Software changes related to the specific Country using the iPRO Unit.

Table 2-1 iPRO Vend Denomination Setting 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	N/A*	OFF (Fixed)

*. Not Applicable (N/A). Never Switched to ON.

Primary LED Indications

The LED Color Pattern indications listed in Table 2-2 occur during various iPRO Unit operating and error conditions.

Table 2-2 LED Color Pattern Indications

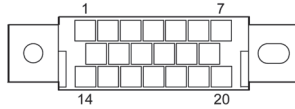
Red LED	Green LED	Sequence	Condition	Cause and Solution
Extinguished (Out)	Extinguished (Out)	● ●	Initial Movement	Initializing
Extinguished (Out)	Extinguished (Out)	● ●	Stand-by	Stand-by
Extinguished (Out)	Flashes	● ☀	Reject	Reject occurred (Refer to "LED Flash Reject Error Code Conditions; Banknotes" on page A-6 and "LED Flash Reject Error Code Conditions; Barcode Coupons" on page A-8)
Flashes	Extinguished (Out)	☀ ●	Error (Standard)	Standard error occurred (Refer to "Standard Error Code Conditions" on page A-4)
Flashes	Lit	☀ ●	Error (Boot Program Area)	Boot program area error occurred (Refer to "Standard Error Code Conditions" on page A-4)
Flashes	Extinguished (Out)	☀ ●	Error (ICB)	ICB error occurred (Refer to "ICB Error Code Conditions" on page A-6)
Lit	Lit	● ●	Performance Test (Stand-by)	Stand-by for a Performance Test
Extinguished (Out)	Lit	● ●	Download Stand-by	Stand-by for a Download
Lit	Extinguished (Out)	● ●		
Extinguished (Out)	Lit	● ●	Downloading	Downloading
Lit	Extinguished (Out)			
Lit	Lit			
Extinguished (Out)	Extinguished (Out)			
Flashes	Flashes	☀ ☀	Download Success	Download completed
Flashes	Extinguished (Out)	☀ ●	Download Failure	Download has Failed

Connector Pin Assignments

Table 2-3 through Table 2-7 list the iPRO Unit's Pin Assignments respectively.

Table 2-3 lists the iPRO Unit's USB Interface Pin Assignments.

Table 2-3 iPRO USB Interface 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)

Pin No.	Signal Name	I/O*	Function
1	+12V (Power)	-	+12V DC Power Supply
2	GND (Power)	-	0V DC Power Supply
3	M.RES	IN	Acceptor Reset Signal Line
4	-	-	No Connection
5	+12V (I/F)	-	Interface Power Supply (+12V)
6	-	-	No Connection
7	-	-	No Connection
8	Vbus	-	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	-	-	No Connection
12	GND (USB)	-	USB Communication Ground (0V DC)
13	-	-	No Connection
14	LED Power +	-	LED Drive Line (Anode)
15	-	-	No Connection
16	-	-	No Connection
17	-	-	No Connection
18	LED -	-	LED Drive Line (Cathode)
19	-	-	No Connection
20	SU SELECT	IN	SS/SU Selection†

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

†. No Connection = SS Version, Connected to any SG (Signal Ground) = SU Version.



NOTE: Refer to Table 2-10 CPU Board Switch Configurations on page 2-11 to determine the correct DIP Switch Interface settings on the Circuit Board.

Connector Pin Assignments (Continued 1)

Table 2-4 lists the iPRO Unit's RS232C Interface Pin Assignments.

Table 2-4 iPRO RS232C Interface Pin Assignments

Pin No.	Signal Name	I/O*	Function
1	+12V (Power)	-	+12V DC Power Supply
2	GND (Power)	-	0V DC Power Supply
3	M.RES	IN	Acceptor Reset Signal Line
4	TXD	OUT	Serial Communication Output Signal Line
5	+12V (I/F)	-	Interface Power Supply (+12V DC)
6	RXD	IN	Serial Communication Input Signal Line
7	GND (I/F)	-	No Connection
8	-	-	No Connection
9	-	-	No Connection
10	-	-	No Connection
11	-	-	No Connection
12	-	-	No Connection
13	GND	-	0V DC Power Supply
14	LED Power +	-	LED Drive Line (Anode)
15	-	-	No Connection
16	-	-	No Connection
17	-	-	No Connection
18	LED -	-	LED Drive Line (Cathode)
19	-	-	No Connection
20	SU SELECT	IN	SS/SU Selection†

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

†. No Connection = SS Version, Connected to any SG (Signal Ground) = SU Version.

Connector Pin Assignments (Continued 2)

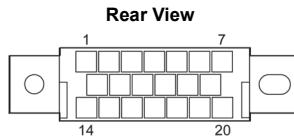
Table 2-5 lists the iPRO ccTalk Interface Pin Assignments.

Table 2-5 iPRO ccTalk Interface Pin Assignments

Pin No.	Signal Name	I/O*	Function
1	+12V (Power)	-	+12V DC Power Supply
2	GND (Power)	-	0V DC Power Supply
3	M.RES	IN	Acceptor Reset Signal Line
4	-	-	No Connection
5	+12V (I/F)	-	Interface Power Supply (+12V DC)
6	-	-	No Connection
7	GND (I/F)	-	No Connection
8	-	-	No Connection
9	-	-	No Connection
10	-	-	No Connection
11	-	-	No Connection
12	-	-	No Connection
13	GND	-	0V DC Power Supply
14	LED Power +	-	LED Drive Line (Anode)
15	-	-	No Connection
16	I-TTL2	IN/OUT	ccTalk Input/Output Communication Signal Line
17	-	-	No Connection
18	LED -	-	LED Drive Line (Cathode)
19	-	-	No Connection
20	SU SELECT	IN	SS/SU Selection†

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

†. No Connection = SS Version, Connected to any SG (Signal Ground) = SU Version.



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)

Connector Pin Assignments (Continued 3)

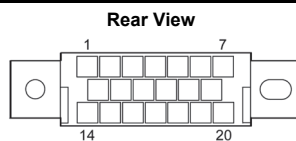
Table 2-6 lists the iPRO Photo-Coupler Interface Pin Assignments.

Table 2-6 iPRO Photo-Coupler Interface Pin Assignments

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

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

†. No Connection = SS Version, Connected to any SG (Signal Ground) = SU Version.



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)

Connector Pin Assignments (Continued 4)

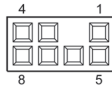
Table 2-7 lists the iPRO CN13 Bezel Pin Assignments.

Table 2-7 iPRO CN13 Bezel Pin Assignments

Pin No.	Signal Name	I/O*	Function
1	-	-	No Connection
2	-	-	No Connection
3	-	-	No Connection
4	-	-	No Connection
5	+12V (Power)	-	+12V DC Power Supply (from iPRO)
6	GND (Power)	-	0V DC Power Supply (from iPRO)
7	LED Power +	-	LED Drive Line (Anode)
8	LED -	-	LED Drive Line (Cathode)

*. I/O (input/output) is the terminal as viewed from outside the Banknote Acceptor.

Front View



Header: RF-H08 (07) 2SD-1110 (JST)

Contact: RF-SC2210 (JST)

Housing: PF-08 (JST)

Wire Type: Slit Wire UL1007 AWG#24-26

iPRO Optional Conversion Circuit Boards

An optional Conversion Board can be installed in a iPRO Unit.

Refer to “iPRO Optional Conversion Circuit Boards List” on page 7-25 for the available Optional Conversion Board Part Numbers.



NOTE: When installing the Optional Conversion Board into a iPRO Unit, set the CPU Circuit Board DIP Switches to select the Interface Type desired. Refer to Table 2-10 for proper Switch setting conditions for the Board.

Connector Pin Assignments for the Optional Conversion Circuit Boards

Table 2-8 lists the CN2 Connector Pin Assignment for the optional 24V/13.5V Converter + RS232C Interface Option Board and RS232C Interface Option Board.

Table 2-8 CN2 Connector Pin Assignments

Front View			
Header: 53103-0430 (JAPAN MOLEX) Contact: 50083-8014 (JAPAN MOLEX) Housing: 51030-0430 (JAPAN MOLEX) Wire Type: Slit Wire UL1007 AWG#24-26			
Pin No.	Signal Name	I/O*	Function
1	M.RES	IN	Acceptor Reset Signal Line
2	TXD	OUT	Output Signal Line from Acceptor to Controller
3	RXD	IN	Input Signal Line from Controller to Acceptor
4	GND (I/F)	-	Interface Power Supply (0V DC)

*. I/O (input/output) is the terminal as viewed from outside the Banknote Acceptor.

Table 2-9 lists the Relay Connector Pin Assignment for the optional 24V/13.5V Conversion Harness. (RS232C and Photo-Coupler)

Table 2-9 Relay Connector Pin Assignments

Front View			
Header: 51029-0310 (JAPAN MOLEX) Contact (Header Side): 50087-8014 (JAPAN MOLEX) or 70021-0004 (AMERICAN MOLEX) Housing: 51030-0330 (JAPAN MOLEX) Contact (Housing Side): 50083-8014 (JAPAN MOLEX) Wire Type: Slit Wire UL1007 AWG#24-26			
Pin No.	Signal Name	I/O*	Function
1	+24V (Power)	-	+24V DC Power Supply
2	+12V (Power)	-	+12V DC Power Supply
3	GND (Power)	-	0V DC Power Supply

*. I/O (input/output) is the terminal as viewed from outside the Banknote Acceptor.

Optional Conversion Circuit Board Installation Procedure

To install an Optional Conversion Circuit Board, proceed as follows:

1. Press down on the iPRO Acceptor's Front Release Latch and slide the Acceptor Unit forward off the Transport Unit Section.
2. Carefully position the Optional iPRO Conversion Board (Figure 2-7 b), and insert the M.2.6x6 Binding/Self Tapping Phillips Mounting Screws into the Transport Assembly Frame (Figure 2-7 a₁ & a₂).
3. Tighten each Mounting Screw using a Phillips Head Screw Driver to secure the Circuit Board (Figure 2-7 b) in place on the Transport Assembly.

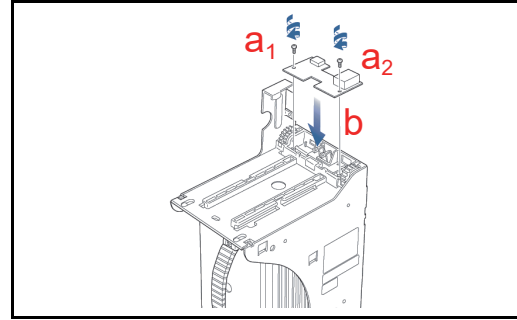


Figure 2-7 Installing Optional Circuit Board

Optional Conversion Circuit Board External Interface Connection Structure

Refer to Table 2-8 and Table 2-9 for the CN2 Connector (Figure 2-8 a) and Relay Connector (Figure 2-8 b) Pin Assignments respectively.

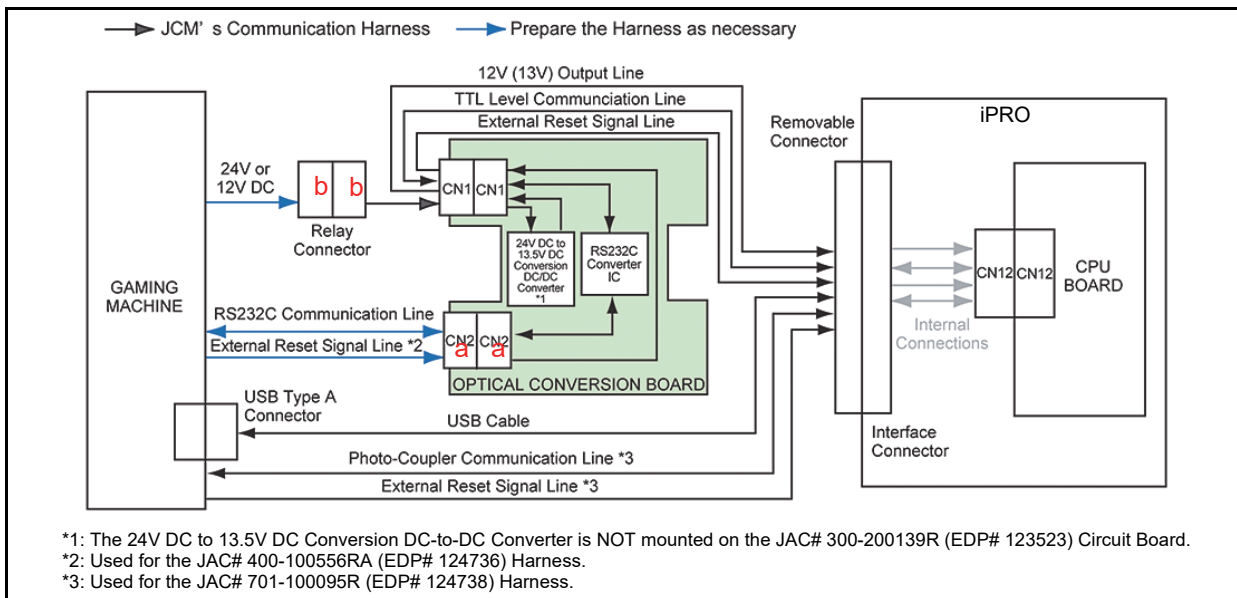


Figure 2-8 24V/13.5V Converter and RS232C Conversion Board External Interface Connection Structure

Figure 2-9 illustrates the External Interface Connection Structure for the optional ccTalk Interface Conversion Board.

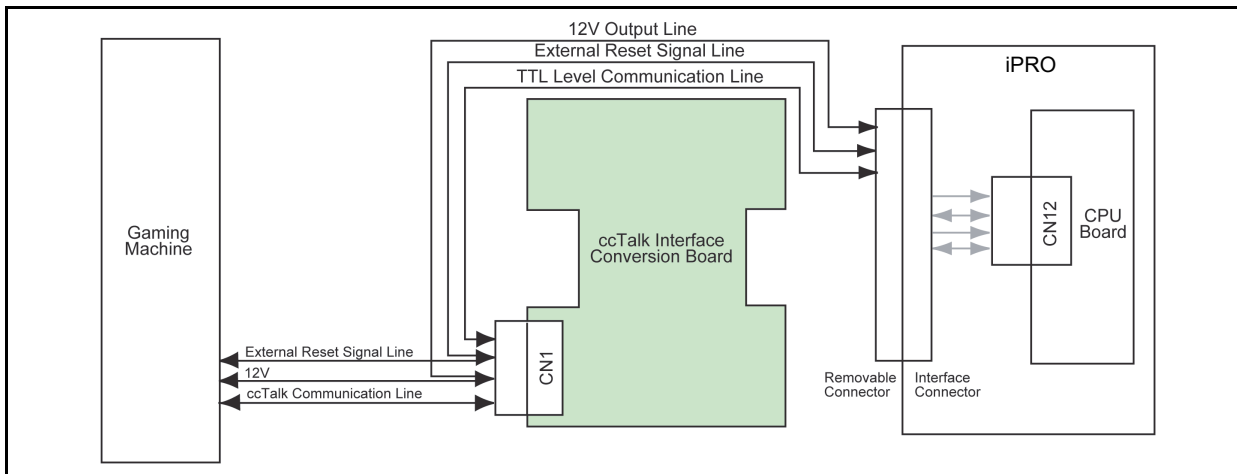


Figure 2-9 ccTalk Conversion Board External Interface Connection Structure

CPU Board DIP Switch Configurations

The CPU Circuit Board contains four (4) DIP Switches lying adjacent to one another on the Circuit Board (Figure 2-10).

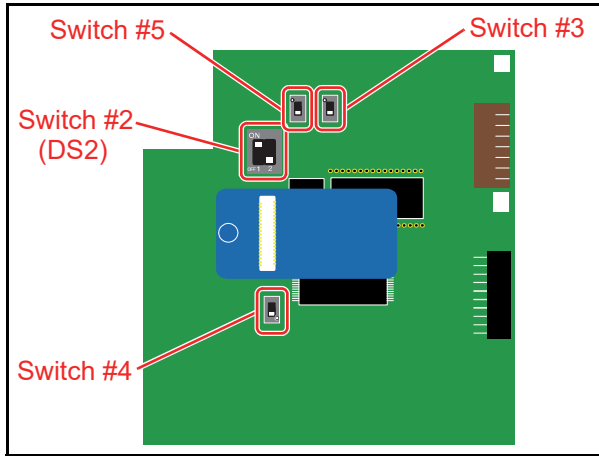


Figure 2-10 CPU Board Switch Locations

DIP Switches identify an RS232C, Photo-Coupler, or ccTalk configuration selection (Table 2-10). DIP Switches also select the ICB or Recycler options (Table 2-11).

Table 2-10 CPU Board Switch Configurations

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

Table 2-11 ICB and 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 *iPRO-RC Series Banknote Recycler Operation and Maintenance Manual* for details on DIP Switch settings using the RC unit.

Preventive Maintenance

Retrieving Banknotes

To retrieve Cash Box deposited Banknotes, perform the following steps:

1. Pull the Cash Box Handle to separate the Cash Box from the Frame Housing.
2. Press thumb on the Acceptor Head while pulling the Cash Box Handle forward to obtain better leverage during the Cash Box extraction.
3. When a lock is installed on a Cash Box, use the appropriate key to unlock the Cash Box first.
4. Open the Cash Box Door and retrieve the Banknotes as illustrated in Figure 2-11.

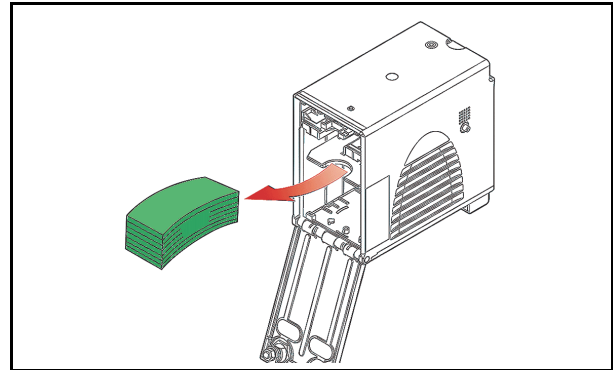


Figure 2-11 Retrieving Banknotes

Clearing a Banknote Jam

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

1. Pull out on the Tab located on the top of the Acceptor to open the Unit's Cover (Figure 2-12 a).
2. Remove the jammed Banknote (Figure 2-12 b₁ & b₂).
3. If the Banknote jam location is not evident, pull on the Cash Box Handle to remove it from the Frame (Figure 2-12 c).
4. Remove any jammed Banknote found there (Figure 2-12 d₁ & d₂).

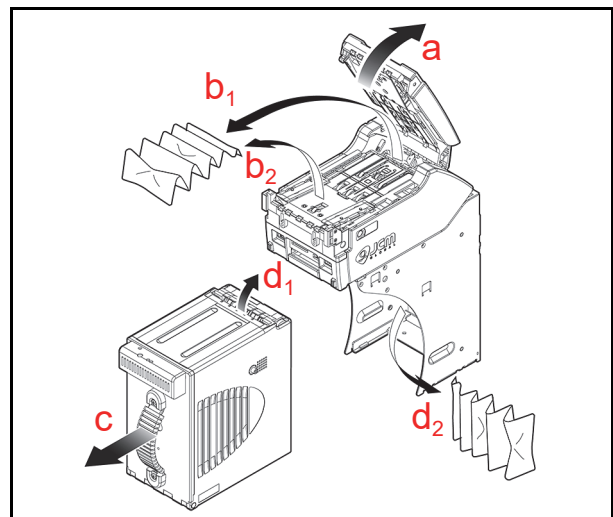



Figure 2-12 Clearing an Entrance Banknote Jam

Opening the iPRO Centering Mechanism

If a Banknote jam occurs in an iPRO-100/103 when the Centering Mechanism is closed, the Cover will not open. To un-jam the Unit when this occurs, recycle power to the Unit and allow it to reset.

 **NOTE:** For the iPRO-100/103 only, if recycling the power fails to clear a Banknote jam, use a 2.5mm Hex Nut Driver (JAC Part#501-000240R) to rotate the Centering Guides out of the way, then open the Top Cover and remove the jam (Figure 2-13*).

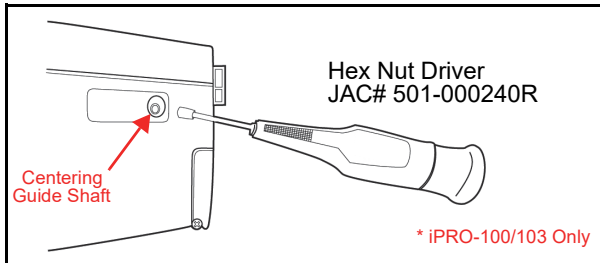


Figure 2-13 Opening Centering Mechanism


Cleaning Procedure


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


Do not use any Alcohol, solvents, Citrus based products or scouring agents that may cause damage to the Validation Section Sensors and/or Rollers.

To clean the iPRO Unit Sensors and Rollers, proceed as follows:

1. Turn the iPRO Unit and the Host Machine Power Supplies **OFF**.
2. Open the iPRO Units Upper Guide.
3. Clean the appropriate path and Lens of each Sensor (Figure 2-15 on page 2-13 areas “a” through “n” and view the corresponding descriptions listed in Table 2-12 to locate each Sensor that requires cleaning).

 **NOTE:** Refer to Figure 2-15 for Sensor location, and Table 2-12 for Sensor Cleaning Method.

 **NOTE:** Calibration is recommended after cleaning.

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

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

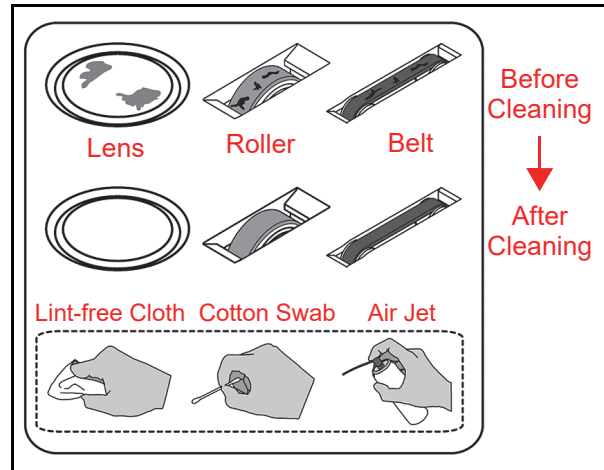


Figure 2-14 Sensor Cleaning

Sensor Locations

Figure 2-15 illustrated the various iPRO Unit's Sensor cleaning locations; and Table 2-12 respectively lists the iPRO Sensor Type Cleaning Methods.

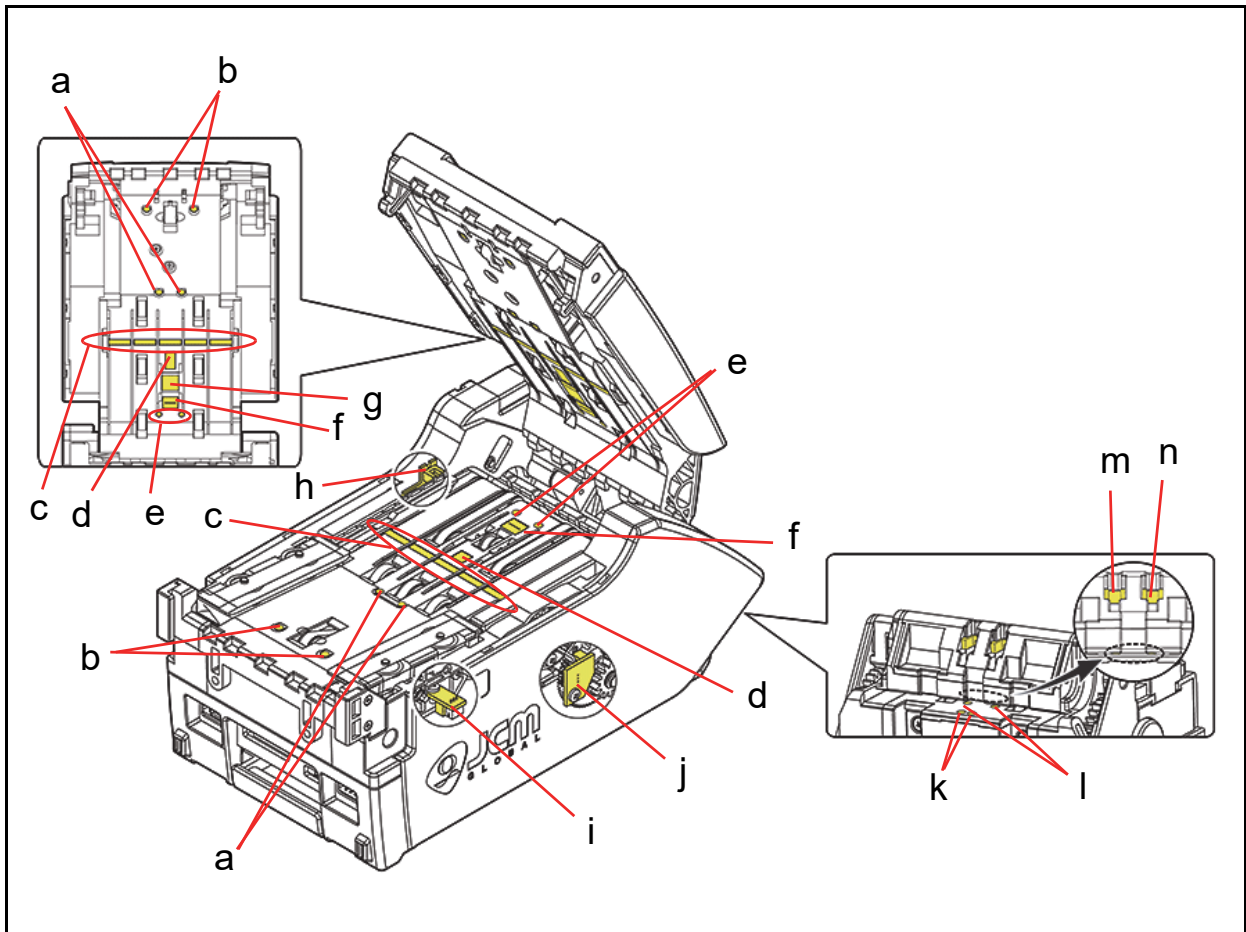


Figure 2-15 iPRO Sensor Cleaning Locations

Table 2-12 iPRO Sensor Type Cleaning Methods

Sym.	Sensor/Roller Type	Cleaning Method
a	Centering Guide Timing Sensor	Wipe clean using a lint free cloth or blow clean using Compressed Air.
b	Entrance Sensor	
c	Line Sensor	
d	UV Sensor	
e	Anti-Pullback Entrance Sensor	
f	Barcode Sensor	
g	Magnetic Sensor	
h	Transport Motor Encoder	
i	Centering Guide Home Position Sensor	
j	Stacker Motor Encoder	
k	Exit Sensor 1	
l	Exit Sensor 2	
m	Cash Box Sensor	
n	Stacker Home Position Sensor	

THIS PAGE INTENTIONALLY LEFT BLANK

Standard Interface Circuit Schematics

Figure 2-16 illustrates the iPRO USB Interface Schematic Diagram.

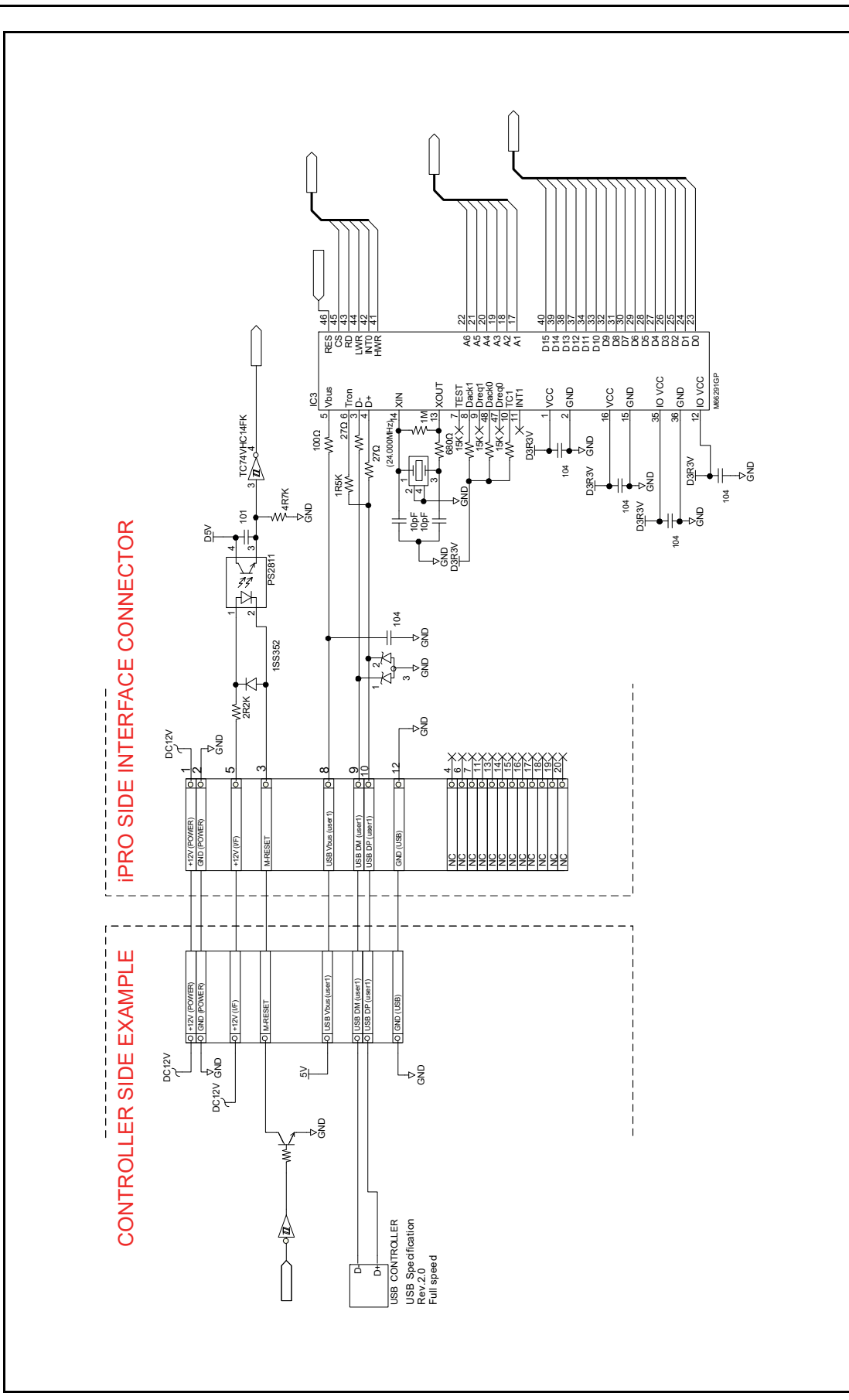


Figure 2-16 iPRO USB Interface Schematic Diagram

Standard Interface Circuit Schematics (Continued 1)

Figure 2-17 illustrates the iPRO RS232C Interface Schematic Diagram.

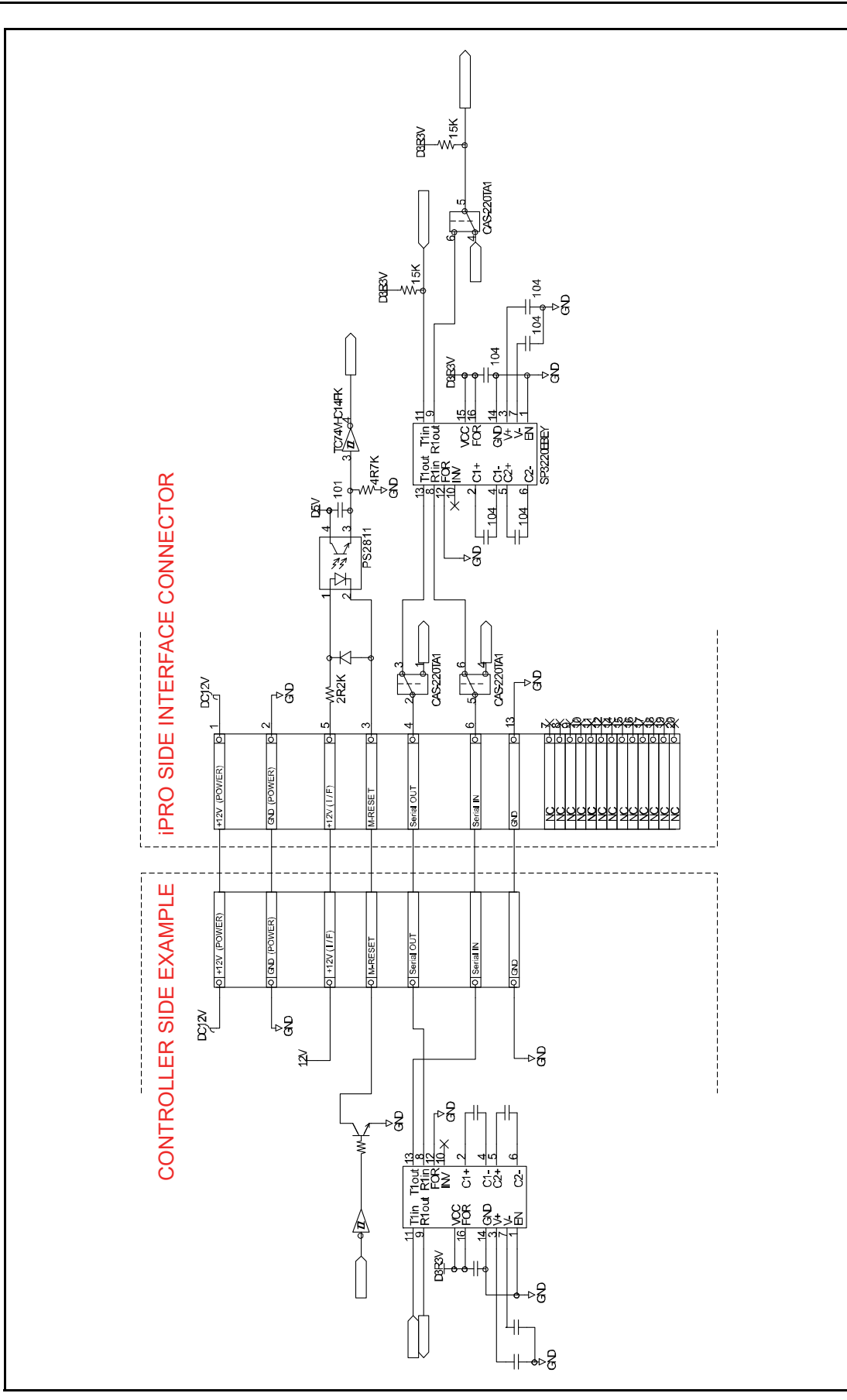


Figure 2-17 iPRO RS232C Interface Schematic Diagram

Standard Interface Circuit Schematics (Continued 2)

Figure 2-18 illustrates the iPRO ccTalk Interface Schematic Diagram.

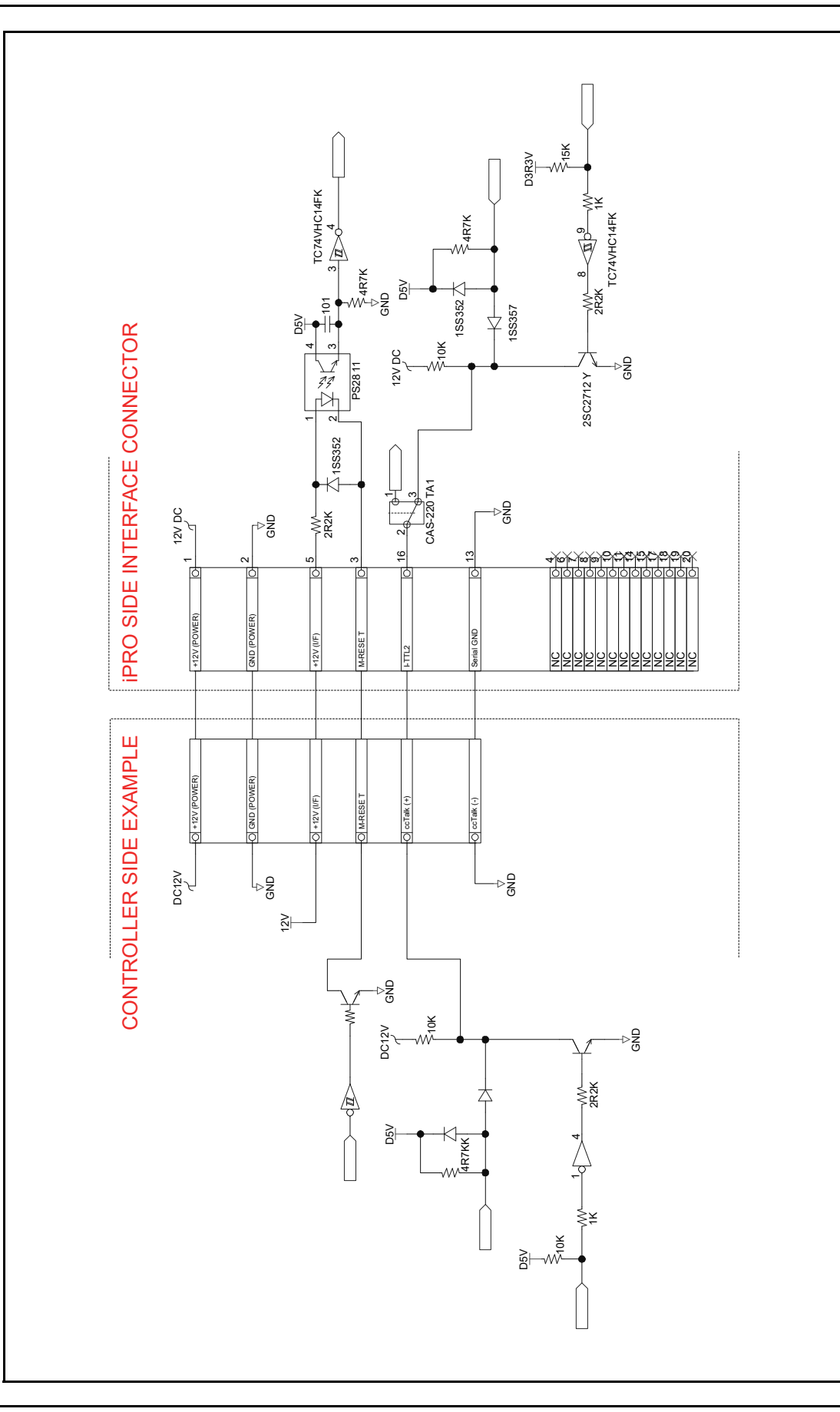


Figure 2-18 iPRO ccTalk Interface Schematic Diagram

Standard Interface Circuit Schematics (Continued 3)

Figure 2-19 illustrates the iPRO Photo-Coupler Interface Schematic Diagram.

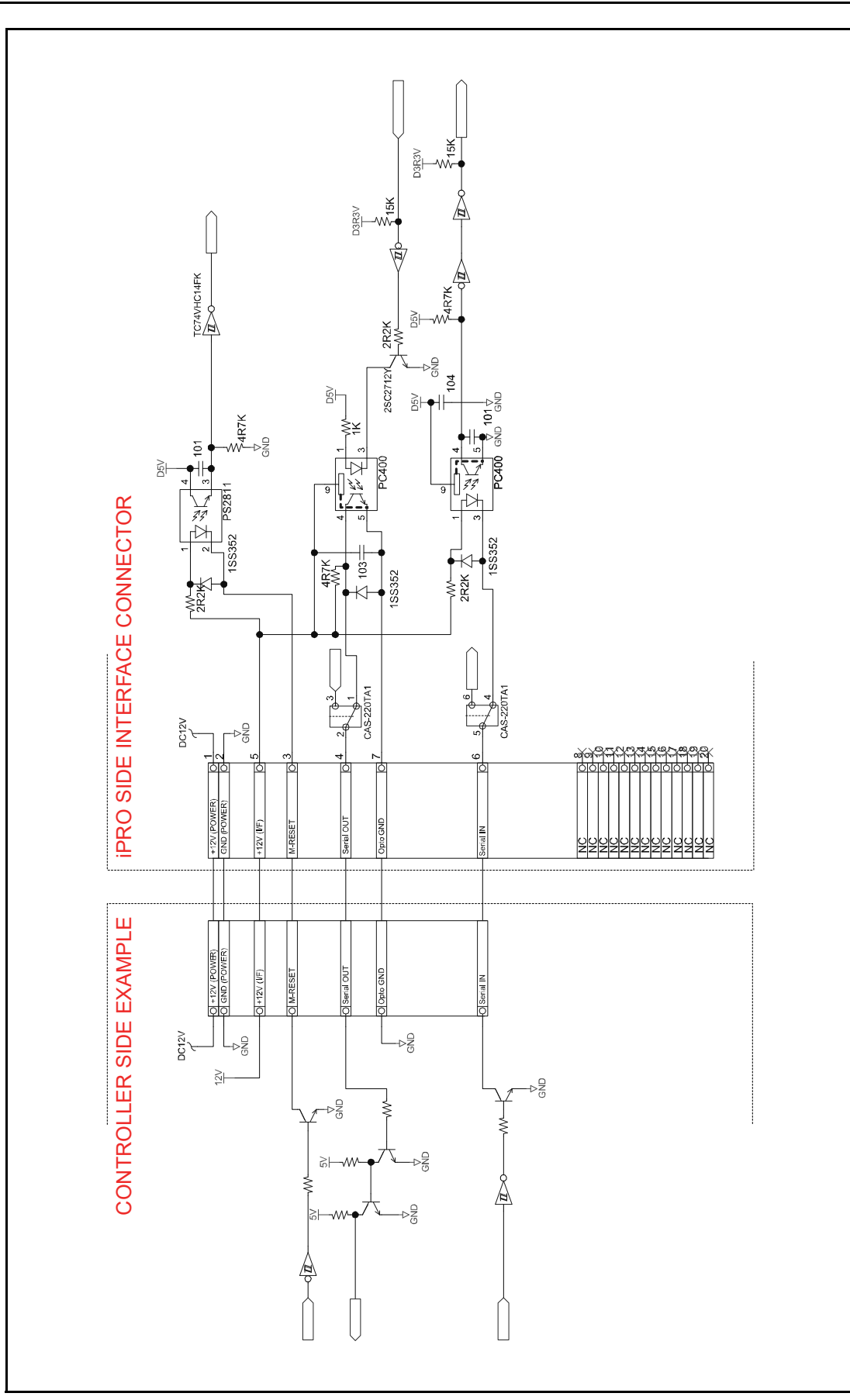


Figure 2-19 iPRO Photo-Coupler Interface Schematic Diagram

Standard Interface Circuit Schematics (Continued 4)

Figure 2-20 illustrates the iPRO Bezel LED Schematic Diagram.

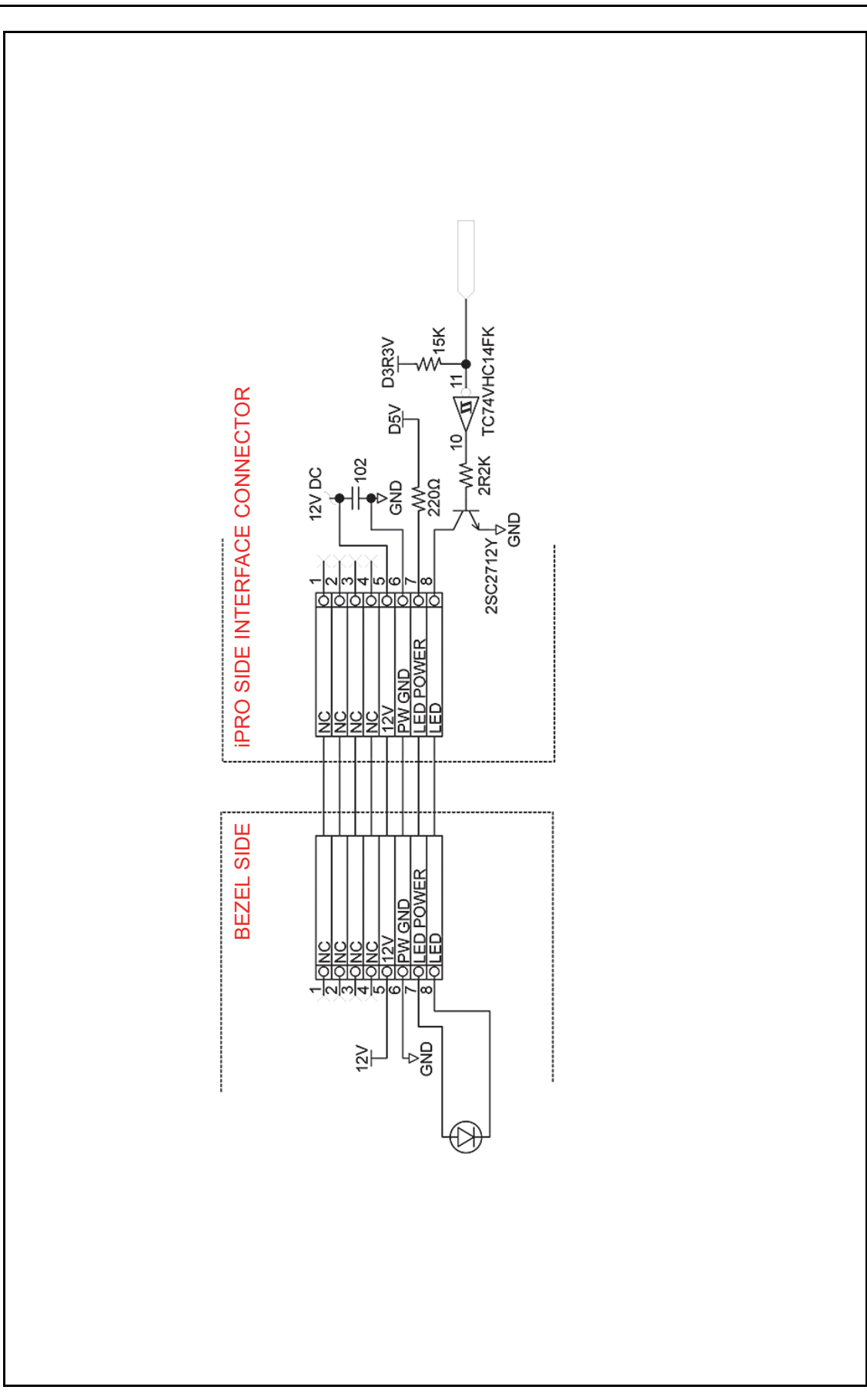


Figure 2-20 iPRO Bezel LED Schematic Diagram

THIS PAGE INTENTIONALLY LEFT BLANK

Operational Flowchart

Figure 2-21 depicts a typical iPRO Initialization Banknote acceptance flow process.

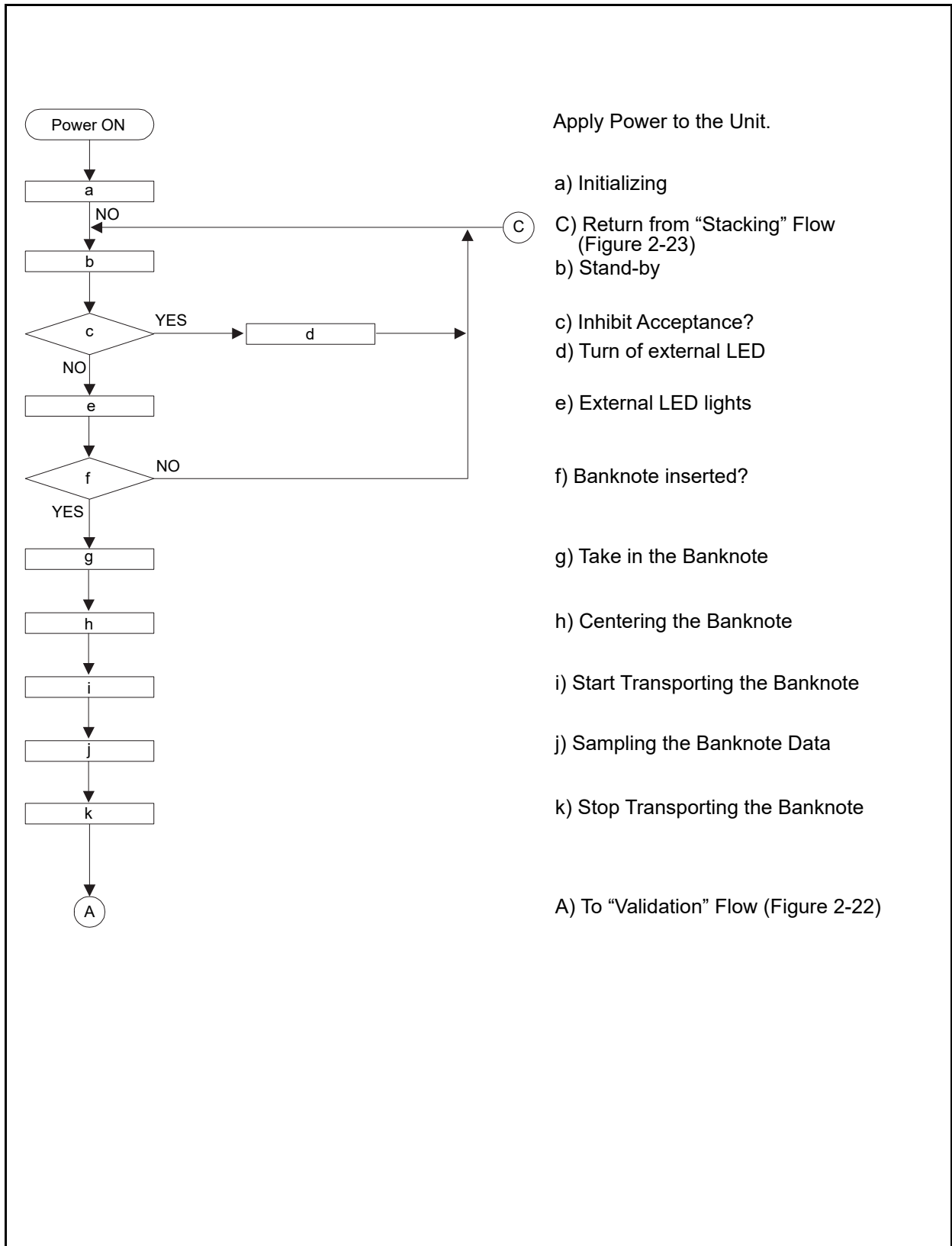


Figure 2-21 iPRO Operational Flowchart (Initialize)

Operational Flowchart (Continued 1)

Figure 2-22 depicts a typical iPRO Validation Banknote acceptance flow process.

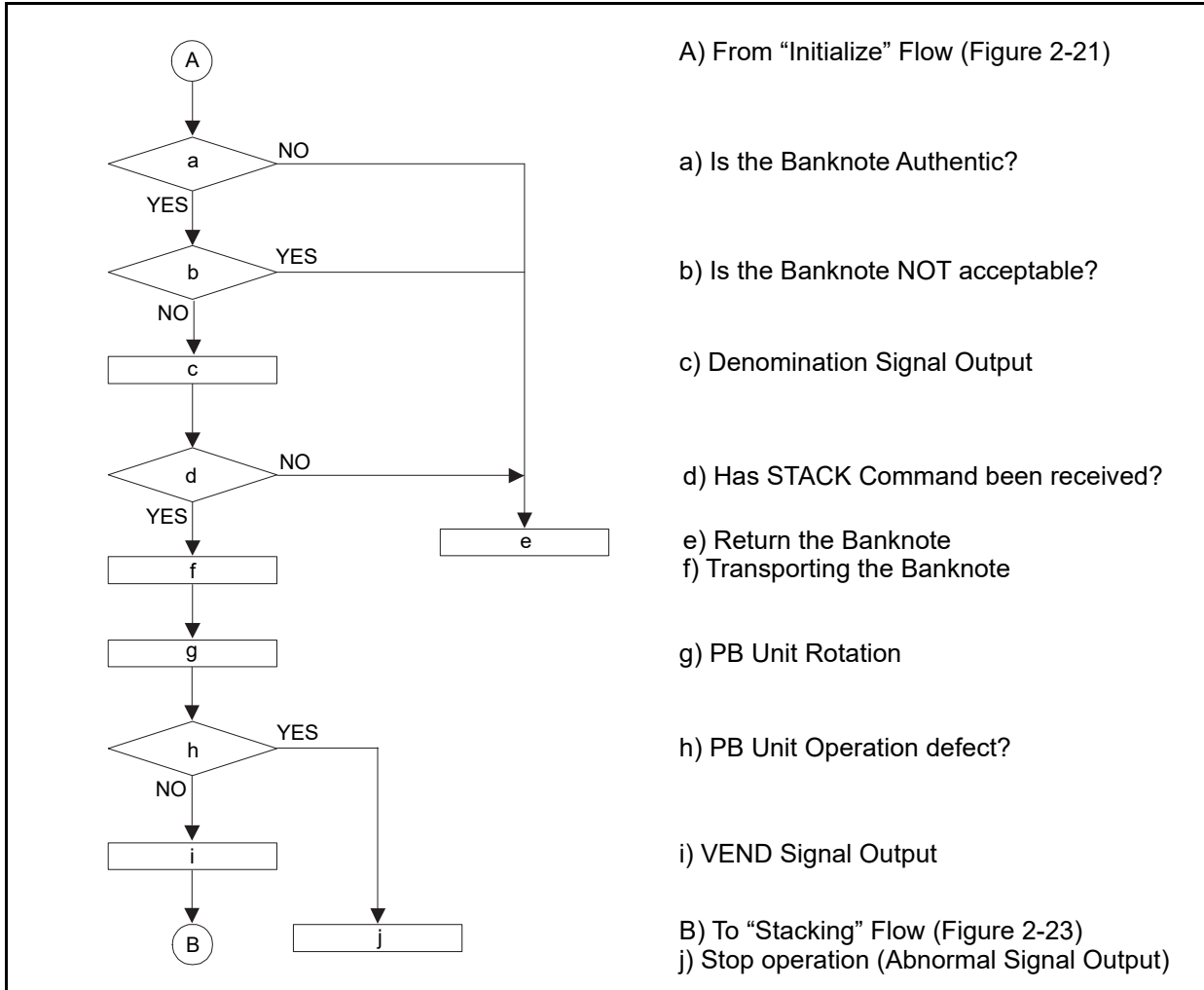


Figure 2-22 iPRO Operational Flowchart (Validation)

Figure 2-23 depicts a typical iPRO Stacking Banknote acceptance flow process.

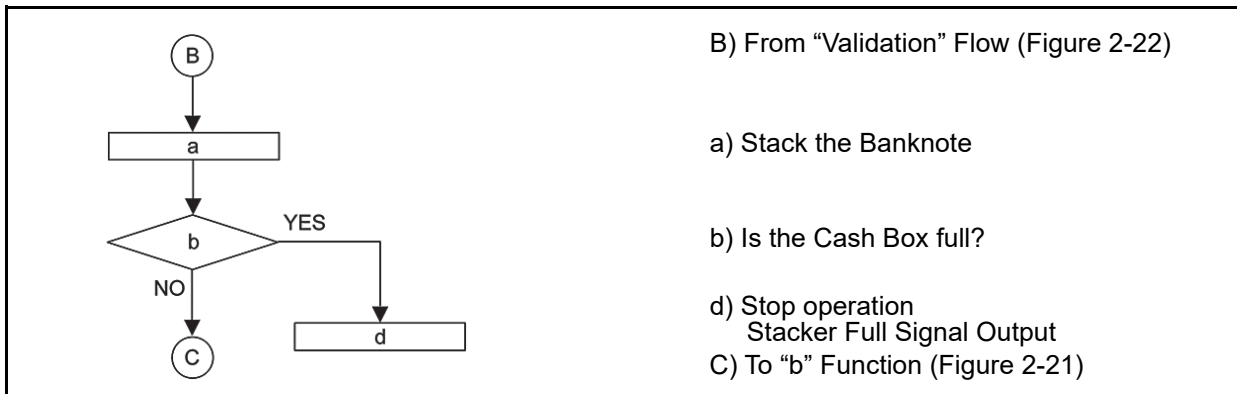


Figure 2-23 iPRO Operational Flowchart (Stacking)



NOTE: When an abnormal signal condition occurs, remove the suspect Banknote causing the malfunction, remove and reapply Power to the Unit, or send a Reset Command to the Banknote Acceptor. When a Stacker Full Signal occurs, remove the Banknotes from the Cash Box and reinstall it back into its fully seated position. The iPRO Unit will then automatically reinitialize itself.

iPRO™ Series

Banknote Acceptor

Section 3

3 COMMUNICATIONS

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

If this information is required, please contact the closest office location listed below:

Americas

JCM American

Phone: +1-702-651-0000

Fax: +1-702-644-5512

925 Pilot Road,
Las Vegas, NV 89119

E-mail: support@jcmglobal.com

Europe, Middle East, Africa & Russia

JCM Europe GmbH

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

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

Mündelheimer Weg 60 D-40472
Düsseldorf Germany

E-mail: support@jcmglobal.eu

UK & Ireland

JCM Europe (UK Office)

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

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

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>

THIS PAGE INTENTIONALLY LEFT BLANK

iPRO™ Series Banknote Acceptor

Section 4

4 DISASSEMBLY/REASSEMBLY

This section provides disassembly and reassembly instructions for the iPRO™ Series Banknote Acceptor (iPRO-10x) Unit. This section contains the following information:



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

- Tool Requirements
- Transport Motor Encoder Board & Pull-Back Motor Removal
- Stacker Motor Encoder Board Removal
- Upper Sensor Board Removal
- Cash Box Sensor Board Removal
- Solenoid Removal
- CPU Circuit Board Removal
- Lower Sensor Board Removal
- Centering Home Position Sensor Board Removal
- Stacker Motor Removal
- Centering Motor Removal
- Transport Motor Removal
- Sponge Roller Removal
- Barcode Sensor Removal
- Rear Transport Unit Timing Belt Removal
- Ø15 Drive Roller Removal
- Front Transport Unit Timing Belt Removal
- Cash Box Unit Timing Belt Removal
- O-Ring Seal Removal.

Tool Requirements

The following tools will be required to perform the iPRO disassembly and reassembly.

- #0 & #1 Phillips Screw Drivers
- #2, #3 and #4 E-Clip Holder
- Pliers
- Tweezers
- Phillips Jeweler’s Screwdriver
- Small Diameter Jeweler’s Screwdriver
- Slotted Screwdriver

Transport Motor Encoder Board & Pull-Back Motor Removal

To remove the Transport Motor Encoder Board and the Pull-Back Motor, proceed as follows:

1. Separate the Transport Unit (Figure 4-1 a), and the Cash Box Unit (Figure 4-1 b) from the Frame (Figure 4-1 c).

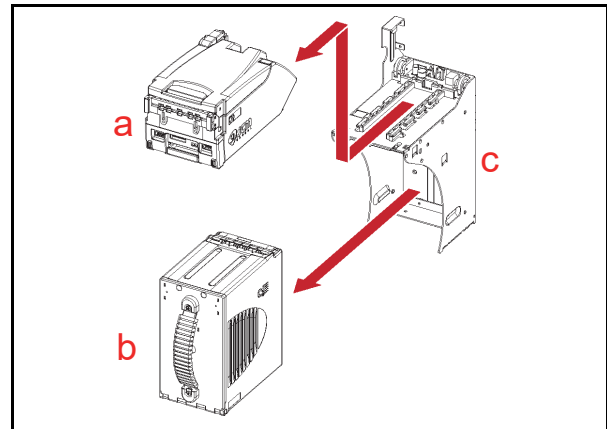


Figure 4-1 Primary Unit Separation

2. Open the Transport Unit Upper Guide (Figure 4-2 a).
3. Release the six (6) retainer Hooks (Figure 4-2 b₁ to b₆) of the Left Transport Cover by using a Slotted Screwdriver to carefully pry them up and loose, and remove the Left Transport Cover (Figure 4-2 c) from the Transport Unit’s left side.

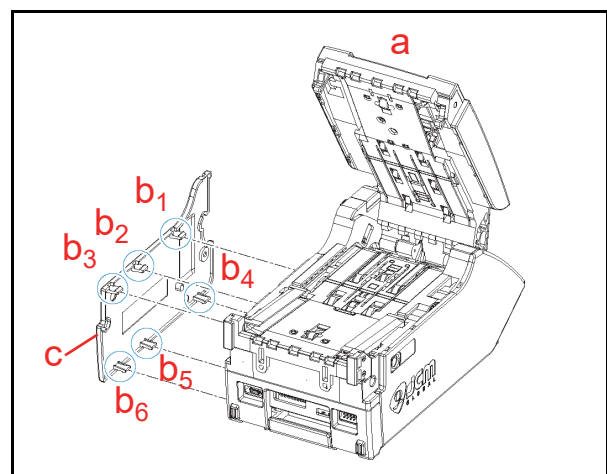



Figure 4-2 Left Transport Cover Removal

4. Remove the single (1) Mounting Screw (Figure 4-3 a) retaining the Transport Motor Encoder Board (Figure 4-3 b).
5. Remove the Transport Motor Encoder Circuit Board from the left side of the Transport Unit, and then unplug the single (1) Connector (Figure 4-3 c) from the Sensor Circuit Board.
6. Remove the single (1) Mounting Screw (Figure 4-3 d) retaining the Motor Bracket (Figure 4-3 e).
7. Unplug the single (1) Connector (Figure 4-3 f) from its recessed port and remove the Pull-Back Motor (Figure 4-3 g) from the left side of the Transport Assembly.
8. Remove the two Motor mounting (2) Screws (Figure 4-3 h₁ & h₂) by using a Phillips Jeweler's Screwdriver and remove the Pull-Back Motor from the Motor Bracket.
9. Remove the single (1) Gear (Figure 4-3 i) on the Pull-Back Motor.

 **NOTE:** When refitting the Gear onto the New Motor, align the flat faces of the Gear to the Motor Shaft when reassembling.

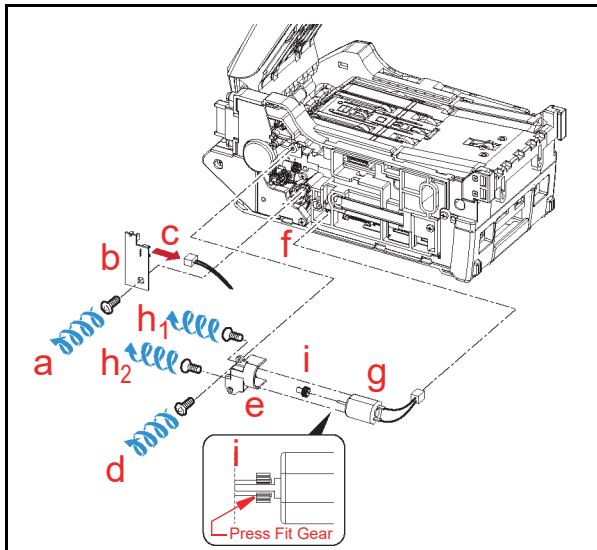


Figure 4-3 Transport Motor Encoder Board & Pull-Back Motor Removal

Stacker Motor Encoder Board Removal

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

1. Release the seven (7) retainer Hooks (Figure 4-4 a₁ to a₇) of the Right Transport Cover by using a Slotted Screwdriver to carefully pry them up and loose, and remove the Right Transport Cover (Figure 4-4 b) from the Transport Unit.

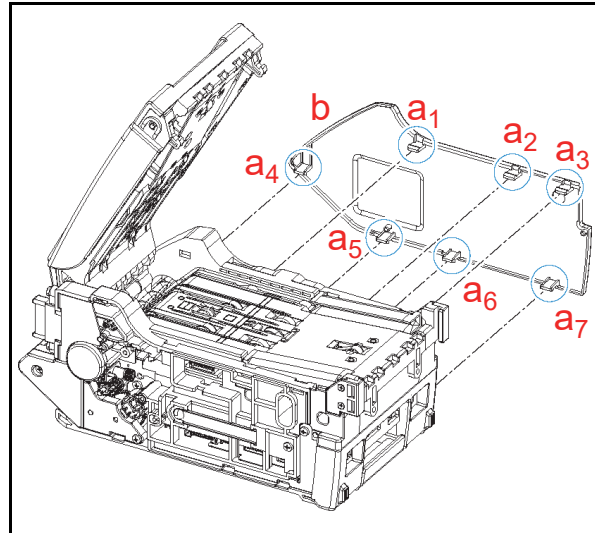


Figure 4-4 Right Transport Cover Removal

2. Remove the single (1) Mounting Screw (Figure 4-5 a) retaining the Stacker Motor Encoder Circuit Board in place.
3. Remove the Stacker Motor Encoder Circuit Board (Figure 4-5 b) from the right side of the Transport Unit, and unplug the single (1) Connector (Figure 4-5 c) from the Circuit Sensor Board.

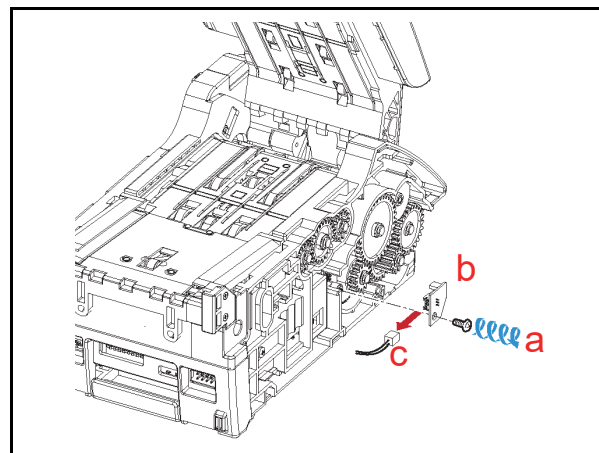


Figure 4-5 Stacker Motor Encoder Board Removal

Upper Sensor Board Removal

To remove the Upper Sensor Circuit Board, proceed as follows:

1. Release the eight (8) retainer Hooks (Figure 4-6 **a₁** to **a₈**) holding Top Cover (Figure 4-6 **b**) in place using a Slotted Screwdriver to pry them loose; then remove the Cover from the Transport Unit.

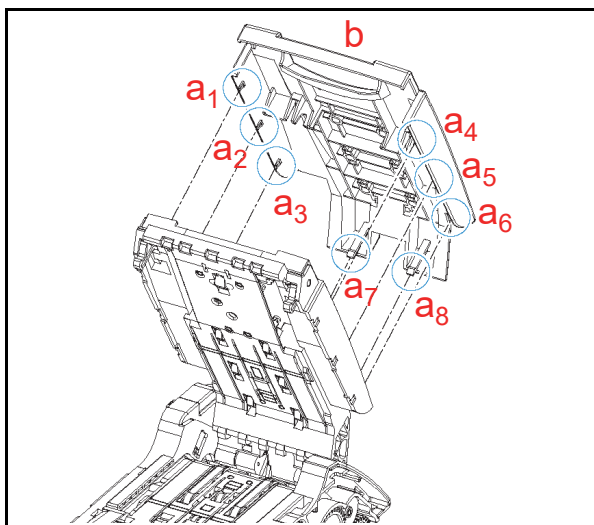




Figure 4-6 Top Cover Removal

2. Remove the six (6) Mounting Screws (Figure 4-7 **a₁** to **a₆**) retaining the Upper Sensor Circuit Board (Figure 4-7 **b**) in place; then unplug the single (1) Signal Connector (Figure 4-7 **c**), and lift the Upper Sensor Circuit Board up and off the top of the Transport Unit.

 **NOTE:** Remove the Sensor Circuit Board while pressing in on the Solenoid Lever (Figure 4-7 **d₁** & **d₂**).

 **NOTE:** If the Sensor Circuit Board can not be easily removed, unplug the Solenoid Harness first, and then remove the Sensor Circuit Board from the Assembly (See "Solenoid Removal" on page 4-3 of this Section).

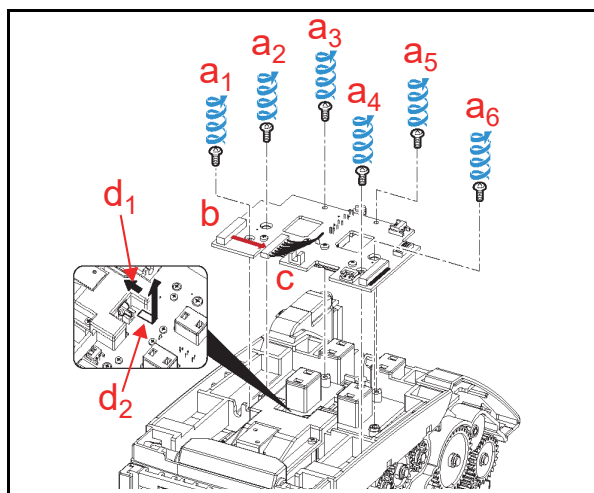



Figure 4-7 Upper Sensor Board Removal

Cash Box Sensor Board Removal

To remove the Cash Box Sensor Board, proceed as follows:

1. Carefully pry the Plastic Frame loose away from the four (4) Plastic Pins (Figure 4-8 **a₁** to **a₄**) retaining the Rear Cover (Figure 4-8 **b**) in place, and remove the Rear Cover off of the back side of the Transport Unit.

 **NOTE:** Ensure that the Cash Box Sensor Circuit Board Components (Figure 4-8 **e**) are not damaged when removing the Rear Transport Cover!

2. Remove the two (2) Mounting Screws (Figure 4-8 **c₁** & **c₂**) retaining the Cash Box present Sensor Circuit Board in place, and unplug the single (1) Signal Connector (Figure 4-8 **d**) from the Circuit Board; then remove the Box Sensor Circuit Board (Figure 4-8 **e**) from the back side of the Transport Unit.

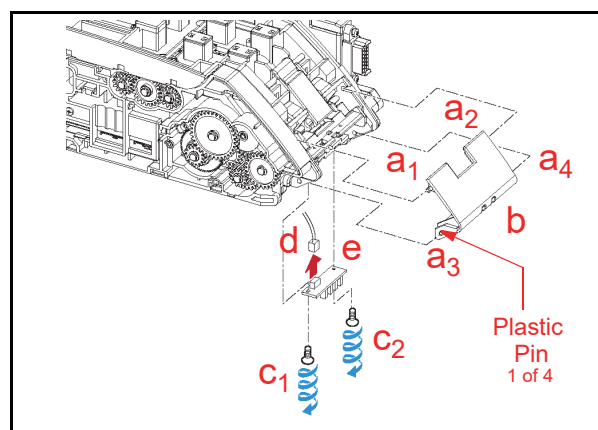


Figure 4-8 Box Sensor Board Removal

Solenoid Removal

To remove the Solenoid, proceed as follows:

1. Cut the two (2) Tie Wraps securing the two (2) tied positions of the Solenoid Harness (Figure 4-9 **a₁** & **a₂**).
2. Unplug the single (1) Solenoid Connector (Figure 4-9 **b**) from the Transport Unit.

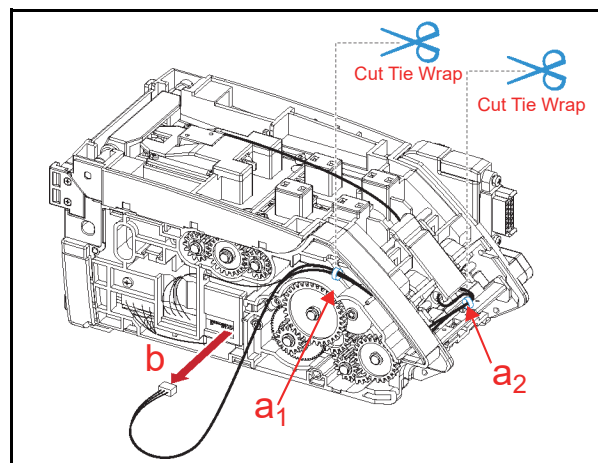



Figure 4-9 Tie Wrap Removal Locations

- Pull the Solenoid Harness (Figure 4-10 a) out of Wire Tunnel (Figure 4-10 b), and pull it through to the Solenoid's side of the Assembly (Figure 4-10 c).
- Remove the four (4) Mounting Screws (Figure 4-10 d₁ to d₄) retaining the Solenoid Base (Figure 4-10 e) in place, and take the Solenoid Base up and off the top of the Transport Unit.

 **NOTE:** Be careful that the four (4) related Springs (Figure 4-10 f₁ to f₄) are not lost when removing the Solenoid Base.

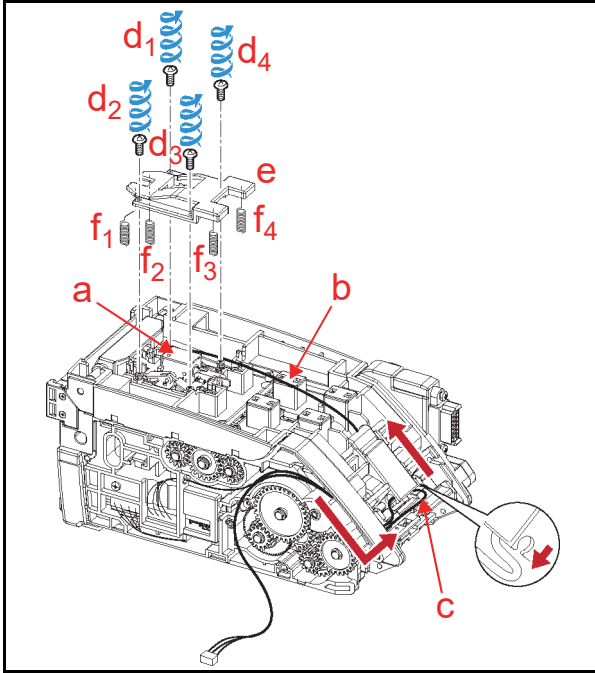


Figure 4-10 Solenoid Base

- Open the Upper Guide of the Transport Unit.
- Remove the two (2) Solenoid Mounting Screws (Figure 4-11 a₁ & a₂), and then remove the Solenoid (Figure 4-11 b) from the Transport Unit.

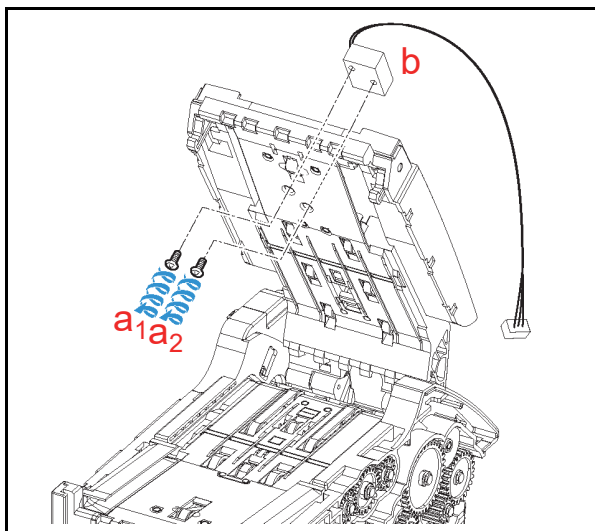


Figure 4-11 Solenoid Removal

CPU Circuit Board Removal

To remove the CPU Circuit Board, proceed as follows:

- Unplug the three (3) Signal Connectors (Figure 4-12 a₁, a₂ & a₃) from the right side of the Transport Unit.
- Remove the single (1) Mounting Screw (Figure 4-12 b) from the Transport Unit.

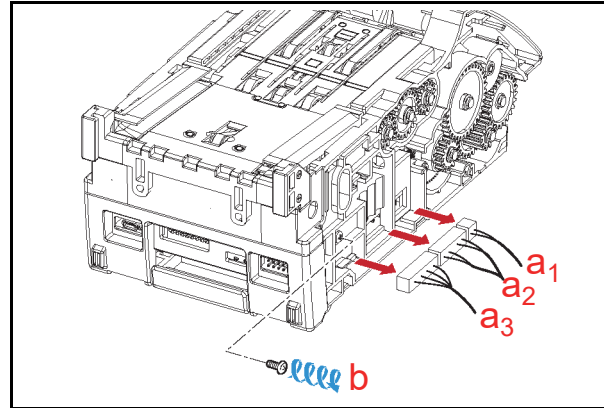


Figure 4-12 Right Side Connector Removals

- Remove the Push Rivet (Figure 4-13 a) by using a Slotted Screwdriver from the left side of the Transport Unit, and remove the Wire Cover Plate (Figure 4-13 b) retaining the Connectors onto the Transport Unit Frame.
- Unplug the three (3) Signal Connectors (Figure 4-13 c₁, c₂ & c₃) from the CPU Circuit Board.
- Remove the single (1) Mounting Screw (Figure 4-13 d) from the Transport Unit.

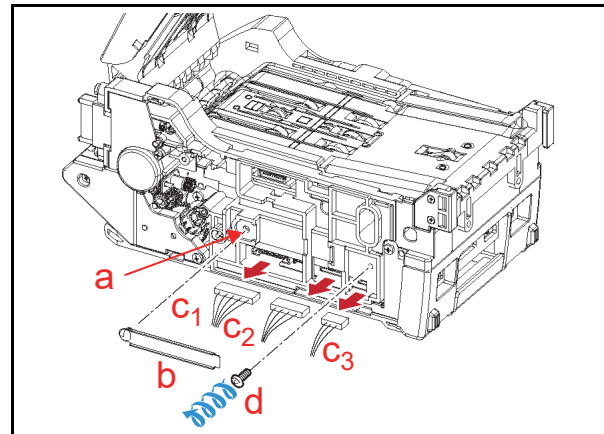



Figure 4-13 Left Side Connector Removals

- Remove the two (2) Mounting Screws (Figure 4-14 a₁ & a₂) retaining Additional Cover B (Figure 4-14 b) in place from the base side of the Transport Unit, and then slide Additional Cover B off of the Transport Unit.

 **NOTE:** A Prism is installed in Additional Cover B. Ensure that the Prism is not damaged when removing Additional Cover B from the Frame.

- Unplug the three (3) Signal Connectors (Figure 4-14 c₁, c₂ & c₃) from the CPU Circuit Board.

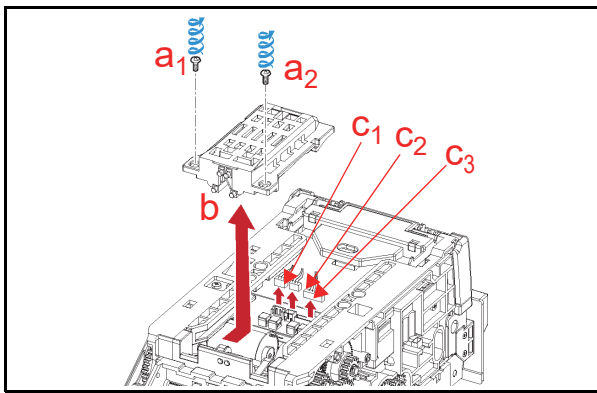


Figure 4-14 Connector Removals

8. Slide the Front Cover (Figure 4-15 a) out of the Transport Unit Assembly.
9. Remove the two (2) Mounting Screws (Figure 4-15 b₁ & b₂) retaining the CPU Circuit Board (Figure 4-15 c) in place, and separate the CPU Circuit Board from the Front Cover Assembly.

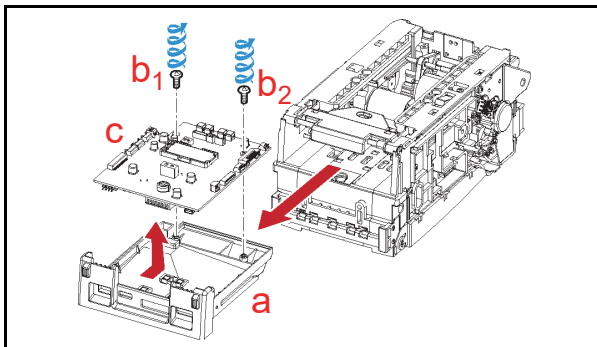


Figure 4-15 CPU Circuit Board Removal

Lower Sensor Board Removal

To remove the Lower Sensor Circuit Board, proceed as follows:

1. Remove the four (4) Circuit Board Mounting Screws (Figure 4-16 a₁ through a₄) from the base side of the Transport Unit Assembly.
2. Unplug the single (1) Signal Connector (Figure 4-16 b) and pull the Lower Sensor Board (Figure 4-16 c) out between the belts of the Transport Unit Assembly.

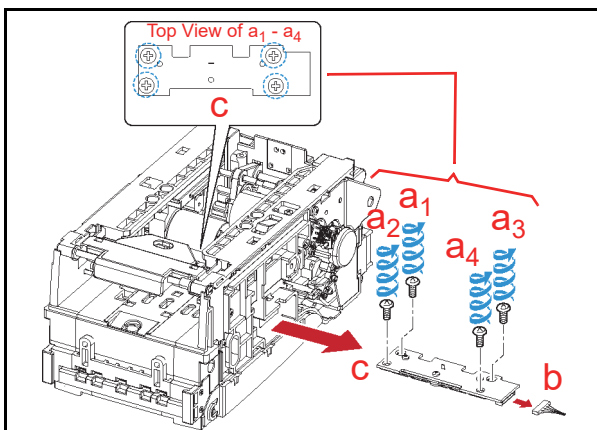


Figure 4-16 Lower Sensor Board Removal

Centering Home Position Sensor Board Removal

To remove the Centering Home Position Sensor Circuit Board, proceed as follows:

1. Remove the three (3) end retaining E-Rings (Figure 4-17 a₁, a₂ & a₃) from their shafts; then remove the three (3) Gears (Figure 4-17 b₁, b₂ & b₃) from their respective shaft ends.

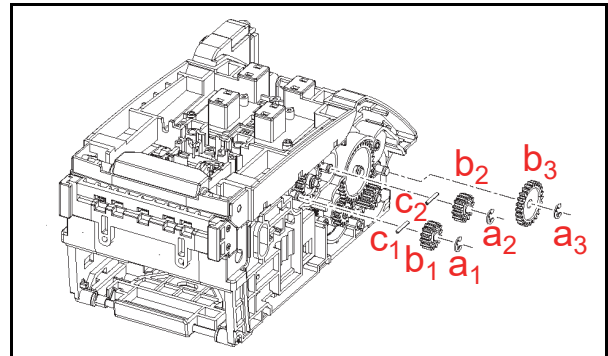


Figure 4-17 Drive Gear Removals

NOTE: Ensure that the two (2) Parallel Pins (Figure 4-17 c₁ & c₂) are not lost when removing the Gears from their Shafts.

2. Remove the five (5) Mounting Screws (Figure 4-18 a₁ to a₅) retaining the Transport Guide Assembly (Figure 4-18 b) in place, and lift the Transport Guide Assembly up and off the Transport Unit Assembly.
3. Remove the single (1) Mounting Screw (Figure 4-18 c) retaining the Centering Home Position Sensor Board (Figure 4-18 d) in place; remove the Centering Home Position Sensor Board from the Transport Guide Assembly, and then unplug the single (1) Signal Connector (Figure 4-18 e) from the Board.

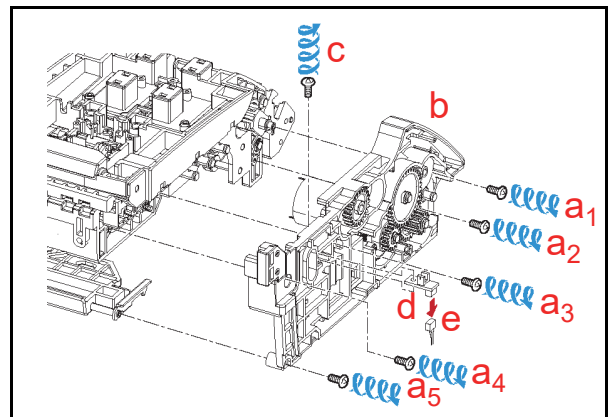


Figure 4-18 Centering Home Position Sensor Board Removal

Stacker Motor Removal

To remove the Stacker Motor, proceed as follows:

1. Remove the two (2) Motor Mounting Screws (Figure 4-19 **a₁** & **a₂**) retaining the Stacker Motor (Figure 4-19 **b**) in place, and remove the Stacker Motor from the Transport Guide A (Figure 4-19 **c**) Section of the Assembly.
2. Remove the single (1) Gear (Figure 4-19 **d**), from the Motor Shaft (Figure 4-19 **e**), and the Motor Spacer (Figure 4-19 **f**) and the Motor Filter (Figure 4-19 **g**) from the Stacker Motor itself.

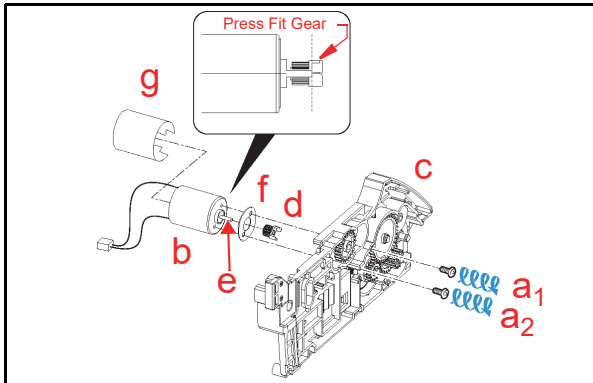



Figure 4-19 Stacker Motor Removal

 **NOTE:** When replacing the Gear onto the New Motor Shaft, ensure that the flat faces of the Gear and the Motor Shaft properly align.

Centering Motor Removal

To remove the Centering Motor, proceed as follows:

1. Remove the two (2) Motor Mounting Screws (Figure 4-20 **a₁** & **a₂**) retaining the Centering Motor (Figure 4-20 **b**) in place, and remove the Centering Motor from the Transport Unit Assembly.

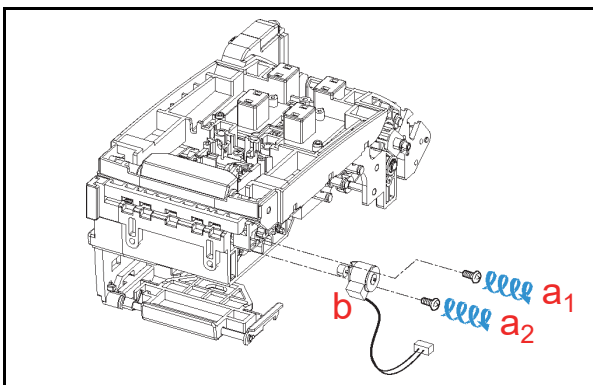


Figure 4-20 Centering Motor Removal

Transport Motor Removal

To remove the Transport Motor, proceed as follows:

1. Remove the two (2) Frame Mounting Screws (Figure 4-21 **a₁** & **a₂**) retaining the Transport Gear Cover (Figure 4-21 **b**) in place, and remove the Transport Gear Cover off the left side of the Transport Unit Assembly.
2. Carefully release the two (2) retainer Gear Hooks (Figure 4-21 **c**) from the Gear's inside area, and remove the Encoder Gear (Figure 4-21 **d**) from its Shaft location.

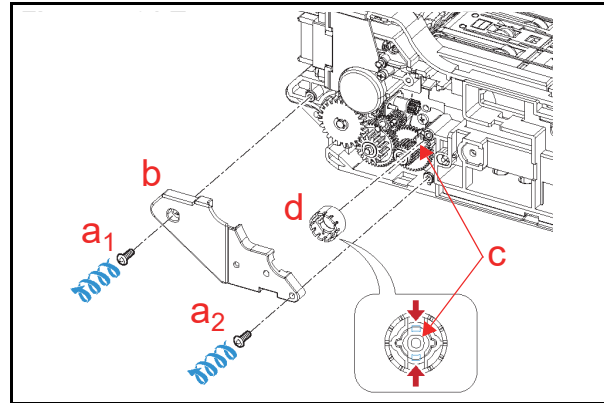




Figure 4-21 Transport Gear Cover & Encoder Removal

3. Remove the single (1) Drive Shaft (Figure 4-22 **a**) and the single (1) Drive Gear (Figure 4-22 **b**) from the left side of the Transport Unit Assembly.

 **NOTE:** When reinstalling the Shaft, ensure that the D-Cut Shaft surface and the Transport Guide B (Figure 4-22 **c**) sections align.

4. Remove the two (2) Motor Mounting Screws (Figure 4-22 **d₁** & **d₂**) retaining the Transport Motor (Figure 4-22 **e**) in place, and remove the Transport Motor from the left side of the Transport Motor Assembly.
5. Remove the single (1) Drive Gear (Figure 4-22 **f**) and the Motor Spacer (Figure 4-22 **g**) from the Transport Motor itself.

 **NOTE:** When replacing the Drive Gear onto the New Motor, ensure that the Gear and the Motor Shaft faces properly align.

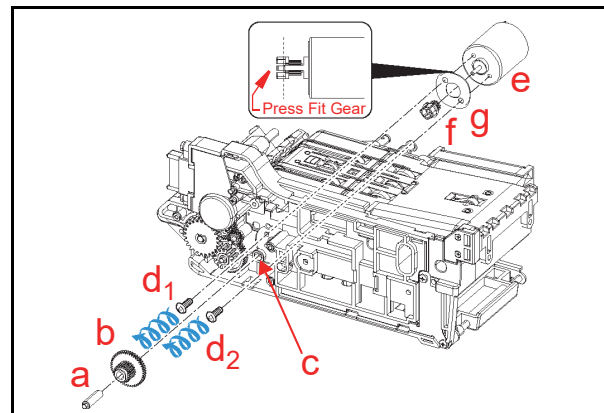



Figure 4-22 Transport Motor Removal

Sponge Roller Removal

To Remove the Sponge Roller, proceed as follows:

1. Remove the single (1) Shaft end retainer E-Ring (Figure 4-23 a), and remove the single (1) Drive Gear (Figure 4-23 b) off the Shaft from the left side of the Transport Unit Assembly.

 **NOTE:** Ensure that the related Parallel Pin (Figure 4-17 c) is not lost when removing the Gear.

2. Remove the single (1) Guide Mounting Screw (Figure 4-23 d) retaining Roller Guide Cap to the Assembly.
3. Rotate the Roller Guide Cap clockwise (Figure 4-23 e), and then remove it from the left side of the Transport Unit Assembly.
4. Remove the single (1) Gear (Figure 4-23 f) from the left side of the Transport Unit.

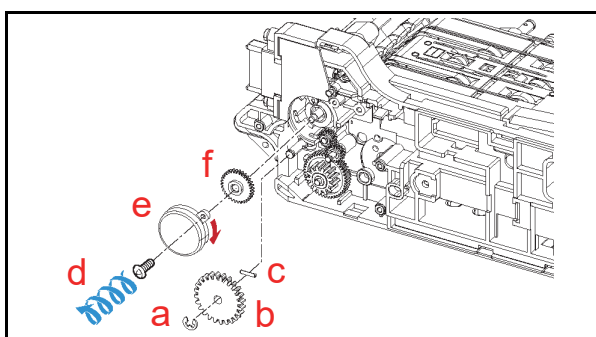


Figure 4-23 Roller Drive Gear Removal

5. Remove the five (5) Frame Mounting Screws (Figure 4-24 a₁ to a₅) retaining Transport Guide B (Figure 4-24 b) in place, and separate it from the Transport Unit Assembly.
6. Remove the single (1) Drive Shaft (Figure 4-24 c), and the two (2) Sponge Rollers (Figure 4-24 d₁ & d₂) from the left side of the Transport Unit Assembly.

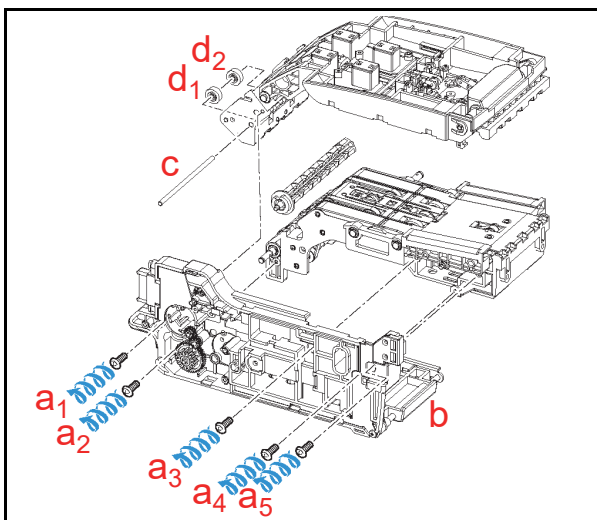


Figure 4-24 Sponge Roller Removal

Barcode Sensor Removal

To remove the Barcode Sensor Circuit Board, proceed as follows:

1. Remove the four (4) Shaft end retainer E-Rings (Figure 4-25 a₁ to a₄) holding the two (2) Sponge Rollers (Figure 4-25 b₁ & b₂) in place.
2. Push the Shaft (Figure 4-25 c) out of the Assembly by using a small diameter Jeweler's Screwdriver from the right side of the Transport Unit, and pull the Shaft completely out of the Assembly.
3. Remove the two (2) Circuit Board Mounting Screws (Figure 4-25 d₁ & d₂) retaining the Barcode Sensor Circuit Board (Figure 4-25 e) in place; unplug the single (1) Signal Connector (Figure 4-25 f) from the Board, and then remove the Barcode Sensor from the Transport Assembly.

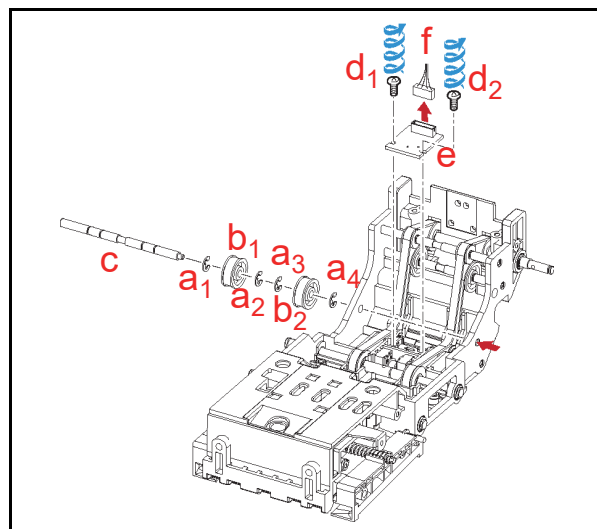


Figure 4-25 Barcode Sensor Removal

Rear Transport Unit Timing Belt Removal

To remove the rear Transport Timing Belt, proceed as follows:

1. Cut the Cable Tie Wrap (Figure 4-26 a) binding the Harness to the Upper Drive Shaft (Figure 4-26 b).
2. Remove the four (4) Shaft end retainer E-Rings (Figure 4-26 c₁ to c₄) holding the two (2) Rollers (Figure 4-26 d₁ & d₂) in place.
3. Push the Upper Shaft out of the Assembly by using a small diameter Jeweler's Screwdriver from the right side of the Transport Unit, and pull the Upper Shaft completely out of the Assembly.
4. Push the Lower Shaft (Figure 4-26 e), located behind the Barcode Sensor Circuit Board, by using a small diameter Jeweler's Screwdriver from the right side of the Transport Unit, and pull it completely out of the Assembly; then remove the two (2) Drive Rollers (Figure 4-26 f₁ & f₂) from the assembly.

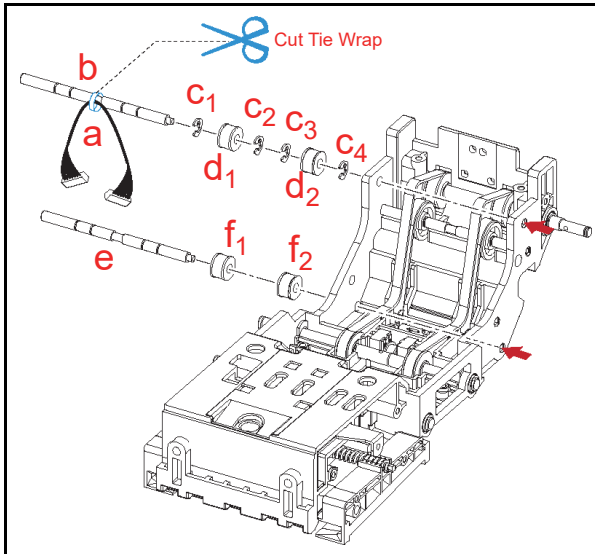




Figure 4-26 Upper & Lower Shaft Removal

- Remove the three (3) position retaining E-Rings (Figure 4-27 a_1 , a_2 & a_3), the single (1) Drive Shaft (Figure 4-27 b), the two (2) Rollers (Figure 4-27 c_1 & c_2) and the single (1) Bearing (Figure 4-27 d) from the assembly.

 **NOTE:** Ensure that the Parallel Pins (Figure 4-27 e_1 & e_2) are not lost when removing the Gear.

- Remove the two (2) position retaining E-Rings (Figure 4-27 f_1 & f_2), the single (1) Drive Shaft (Figure 4-27 g), the two (2) Rollers (Figure 4-27 h_1 & h_2) and the single (1) Bearing (Figure 4-27 i) from the assembly.

 **NOTE:** Ensure that the single Parallel Pin (Figure 4-27 j) is not lost when removing the Gear.

- Remove the two (2) Timing Belts (Figure 4-27 k_1 & k_2) from the assembly.

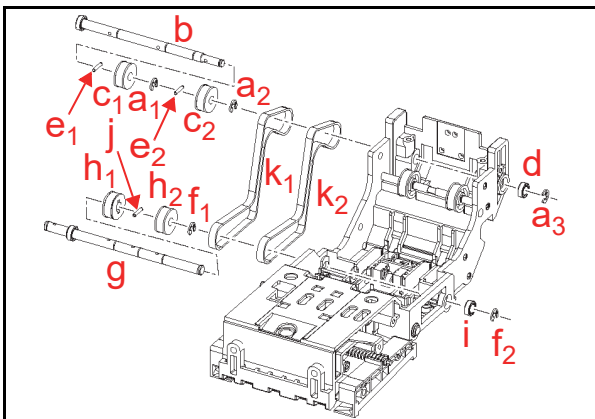


Figure 4-27 Rear Timing Belt Removal

Ø15 Drive Roller Removal

To remove the Ø15 Drive Roller, proceed as follows:

- Remove the three (3) Additional Cover Mounting Screws (Figure 4-28 a_1 , a_2 & a_3) retaining Additional Cover A (Figure 4-28 b) in place, and lift the Additional Cover up and off the Transport Unit Assembly.
- Remove the four (4) position retaining E-Rings (Figure 4-28 c_1 to c_4) and pull the single (1) Drive Shaft (Figure 4-28 d) completely out of the Transport Unit Assembly.
- Remove the two (2) Ø15 Drive Rollers (Figure 4-28 e_1 & e_2), the single (1) Pulley (Figure 4-28 f) and the single (1) Bearing (Figure 4-28 g) from the assembly.

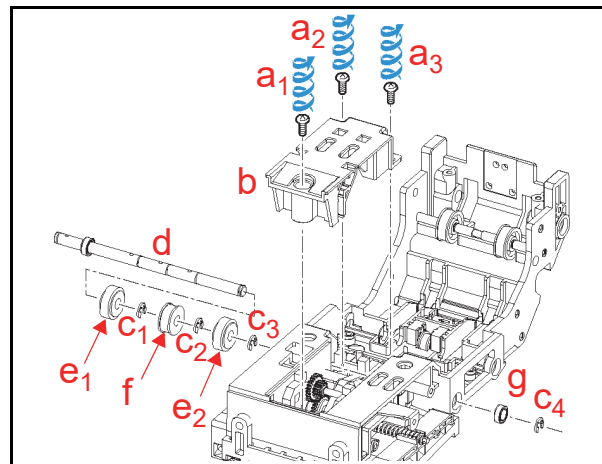


Figure 4-28 Ø15 Drive Roller Removal

Front Transport Unit Timing Belt Removal

To remove the Timing Belt, proceed as follows:

- Rotate the Centering Guide Screws (Figure 4-29 a_1 & a_2) in the direction indicated by the Red Circular Arrows, and remove the two (2) Centering Guides (Figure 4-29 b_1 & b_2) from both the left and right sides of the Transport Unit.

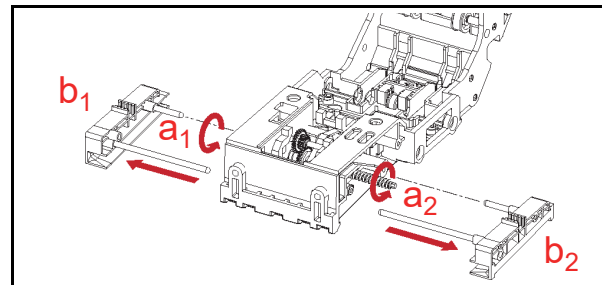



Figure 4-29 Centering Guide Removal

 **NOTE:** When reinstalling the Centering Guides (Figure 4-30 a_1 & a_2) into the Transport Unit, ensure their distance apart from one another is equally spaced (e.g., Figure 4-30 $b_1 = b_2$).

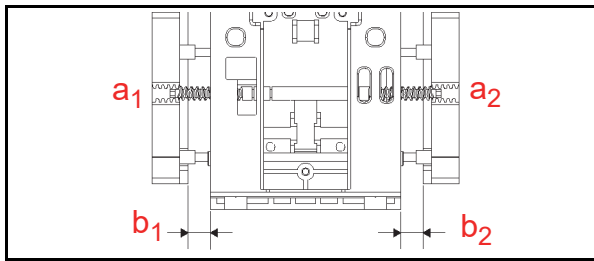



Figure 4-30 Centering Guide Installation

- Remove the two (2) E-Rings (Figure 4-31 **a₁** & **a₂**), Mover Screw (Figure 4-31 **b**), the single (1) Drive Gear (Figure 4-31 **c**) and the single (1) Bearing (Figure 4-31 **d**) from the assembly.

 **NOTE:** Ensure that the Parallel Pin (Figure 4-31 **e**) is not lost when removing the Gear.

- Remove the two (2) position retaining E-Rings (Figure 4-31 **f₁** & **f₂**) holding the single (1) Belt Drive Pulley (Figure 4-31 **g**) in place.
- Use a small diameter Jeweler's Screwdriver to push one end of the Drive Shaft (Figure 4-31 **h**) out of the right side of the Transport Unit, and pull the Shaft completely out of the assembly.
- Push the Shaft (Figure 4-31 **i**) out the assembly in the same manner as the Drive Shaft (See Step 4 above). Pull that Shaft completely out of the assembly.
- Remove the single (1) Belt Drive Pulley (Figure 4-31 **j**) from the Shaft.

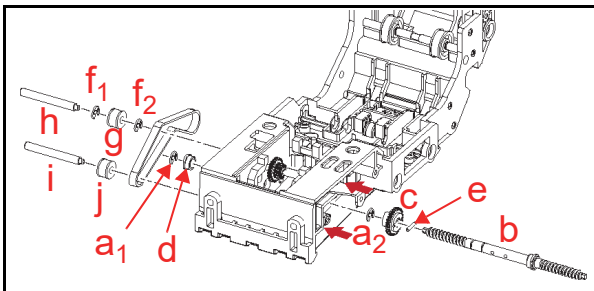


Figure 4-31 Front Timing Belt Removal

Cash Box Unit Timing Belt Removal

To remove the Cash Box Unit's Timing Belt, proceed as follows:

- Remove the two (2) Pusher Mechanism Mounting Screws (Figure 4-32 **a₁** & **a₂**) retaining it in place (Figure 4-32 **b**), and slide the Pusher Mechanism out of the Cash Box Unit.

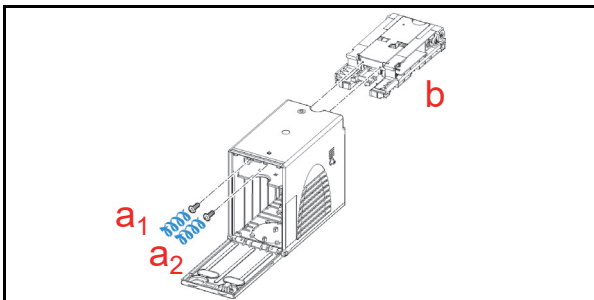


Figure 4-32 Pusher Mechanism Removal

- Remove the six (6) Pusher Plate Mounting Screws (Figure 4-33 **a₁** through **a₆**) retaining the Pusher Plate (Figure 4-33 **b**) in place, from both the left and right sides of the Pusher Mechanism Assembly.

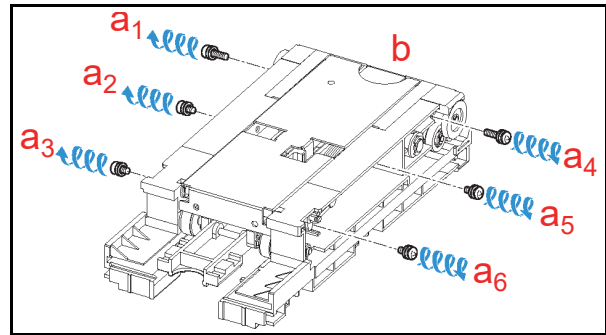


Figure 4-33 Pusher Plate Screw Removals

- Remove the Pusher Plate from the Pusher Mechanism by pressing it on the Pusher Plate's Blue Lever (Figure 4-34 **a** & **b**) and pushing down on the Pusher portion (Figure 4-34 **c**) of the assembly.
- Remove the Cover (Figure 4-34 **d**) protecting the Pusher Mechanism Assembly.

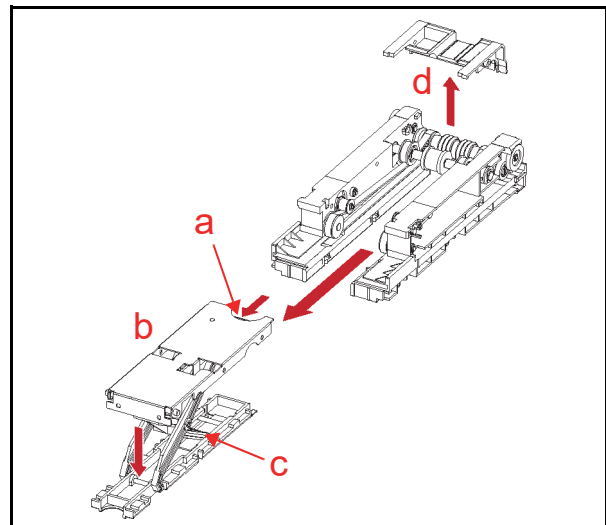


Figure 4-34 Pusher Plate Removal

- Remove the two (2) Screws (Figure 4-34 **a₁** & **a₂**) retaining both the left and right Pusher Mechanism Guide in place, and remove the Pusher Mechanism Guide (Figure 4-35 **b**) from the Pusher Mechanism Assembly.

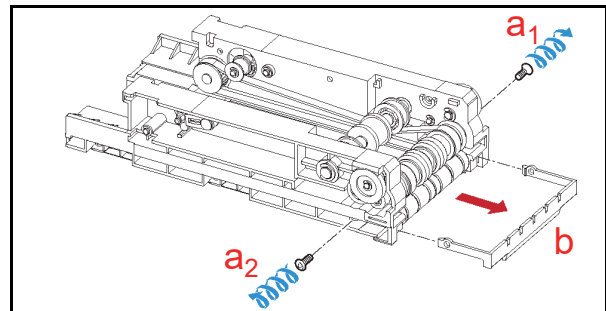



Figure 4-35 Pusher Mechanism Guide Removal

- Remove the two (2) Springs (Figure 4-36 a₁ & a₂) hooked onto the Shafts (Figure 4-36 b).

 **NOTE:** When replacing the Springs onto their respective Shafts, be sure to hook the Spring ends into their related holes on each Shaft and Frame Housing.

- Pull the Shaft out of the assembly and remove the four (4) thin Rollers (Figure 4-36 c₁ to c₄), and the four (4) thick Rollers (Figure 4-36 d₁ to d₄) from the Pusher Mechanism Assembly.

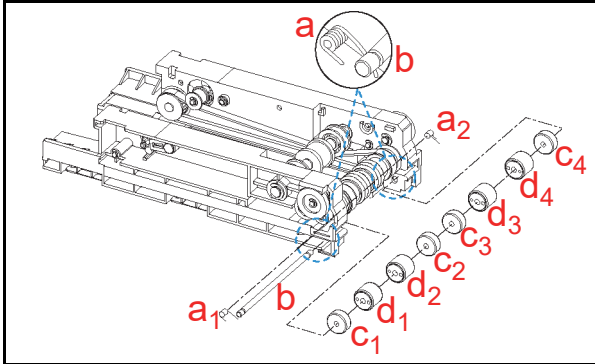



Figure 4-36 Roller Removals

- Remove the three (3) E-Rings (Figure 4-37 a₁, a₂ & a₃), the two (2) Drive Gears (Figure 4-37 b₁ & b₂) and the single (1) Bushing (Figure 4-37 c) from the assembly.

 **NOTE:** Ensure that the Parallel Pin (Figure 4-37 d) is not lost when removing the Gear.

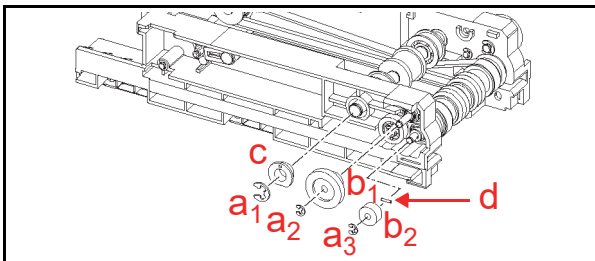


Figure 4-37 Pusher Drive Gear Removal

- Separate Box Guide A (Figure 4-38 a) from the Frame and remove the two (2) Timing Belts (Figure 4-38 b₁ & b₂) from the assembly.

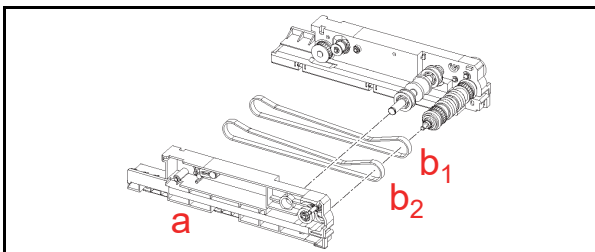


Figure 4-38 Cash Box Timing Belt Removal

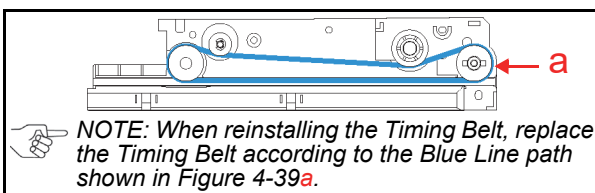



Figure 4-39 Timing Belt Reinstallation Path


O-Ring Seal Removal

To remove the O-Ring Seals, proceed as follows:

- Remove the single (1) Shaft end retainer E-Ring (Figure 4-40 a), the single (1) Drive Shaft (Figure 4-40 b) and the single (1) Bushing (Figure 4-40 c) from the assembly.
- Remove the single (1) inner Shaft E-Ring (Figure 4-40 d); then remove the single (1) small Drive Roller (Figure 4-40 e), the two (2) large Rollers (Figure 4-40 f₁ & f₂), the single (1) Drive Gear (Figure 4-40 g) and the single (1) Collar (Figure 4-40 h) from the Drive Shaft.

 **NOTE:** Ensure that the two (2) Parallel Pins (Figure 4-40 i₁ & i₂) are not lost when removing the Gear and the small Rollers.

- Remove the six (6) O-Ring Seals (Figure 4-40 j₁ through j₆) retaining the large Rollers and the two (2) small O-Ring Seals (Figure 4-40 k₁ & k₂) retaining the small Roller in place.

 **NOTE:** When reinstalling the Rollers, ensure that the rectangular cut-out sections of the Gear mates with the matching Tabs protruding from the large Roller (Figure 4-40 l & m).

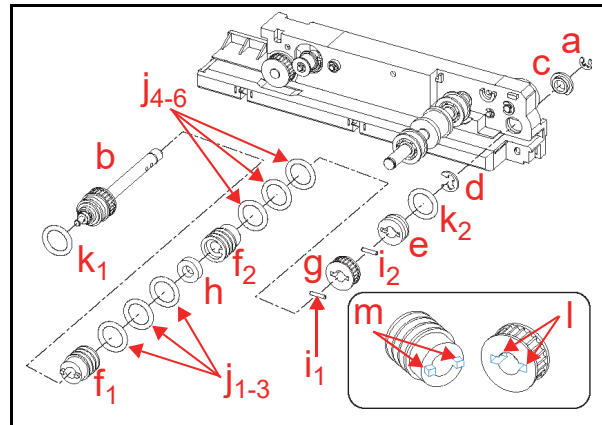


Figure 4-40 O-Ring Seal Removal

This completes the iPRO Disassembly/Reassembly procedure.

iPRO™ Series Banknote Acceptor Section 5

5 WIRING DIAGRAMS

This chapter provides the iPRO™ Series Banknote Acceptor (iPRO-10x) Unit Wiring Diagrams for the following items:

- iPRO-100/103 System Wiring Diagram
- iPRO-101/102 System Wiring Diagram.

iPRO-100/103 System Wiring Diagram

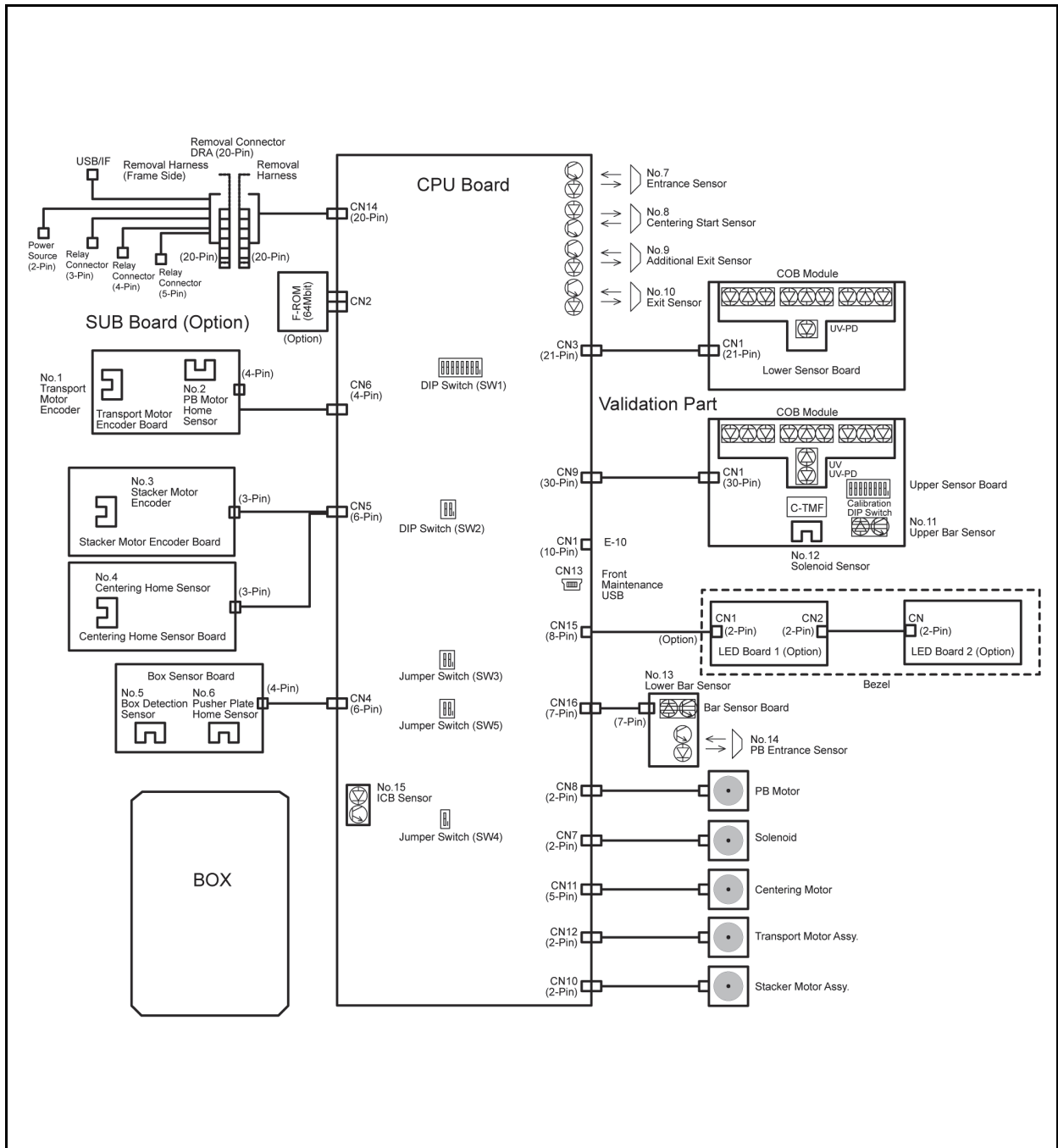


Figure 5-1 iPRO-100/103 System Wiring Diagram (Centering Type)

iPRO-101/102 System Wiring Diagram

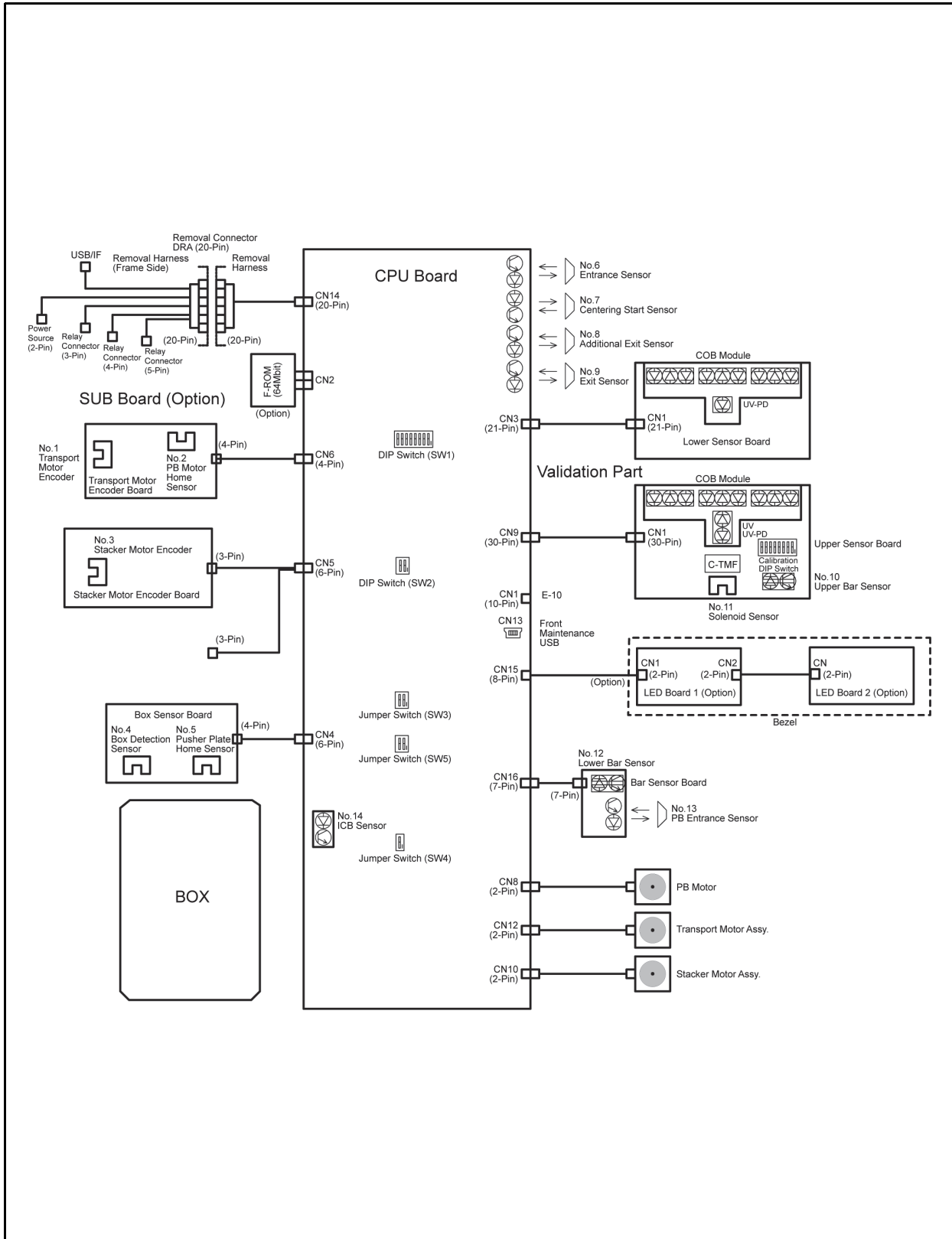


Figure 5-2 iPRO-101/102 System Wiring Diagram (Fixed Type)

iPRO™ Series Banknote Acceptor

Section 6

6 CALIBRATION AND TESTING

This section provides Calibration and Performance Testing instructions for the iPRO™ Series Banknote Acceptor (iPRO-10x) Unit. This section contains the following information:

- Download and Installation Workbench Tool Requirements
- Application Software Installation
- JCM Tool Suite Standard Edition Mode
- Software Download Procedures
- Calibration
- Performance Tests
- iPRO Utility Tools

Download, Installation and Workbench Tool Requirements

The various Tools and Cable listed in Figure 6-1 and Figure 6-2 are required to install the iPRO Drivers and download its Firmware Software Files.

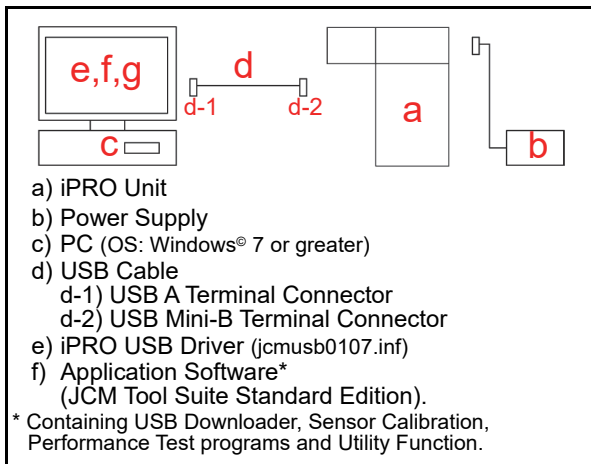


Figure 6-1 Workbench Tool Requirements

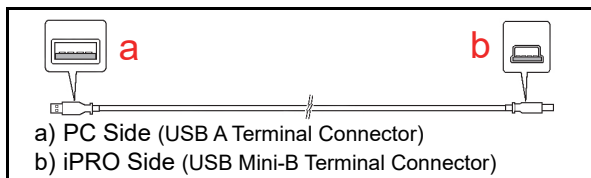


Figure 6-2 USB Cable Type Requirement

Application Software Installation

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

Part 1 - JCM Tool Suite Installation



NOTE: Uninstall the current version of the JCM Tool Suite application software installed on your PC before updating to a newer version.

1. Copy the “JCMToolSuiteStandardEdition.zip” Application Software and extract to the Desktop.
2. Open the Third Layer of the extracted Folder and Double-click on “Setup.exe” (Figure 6-3).

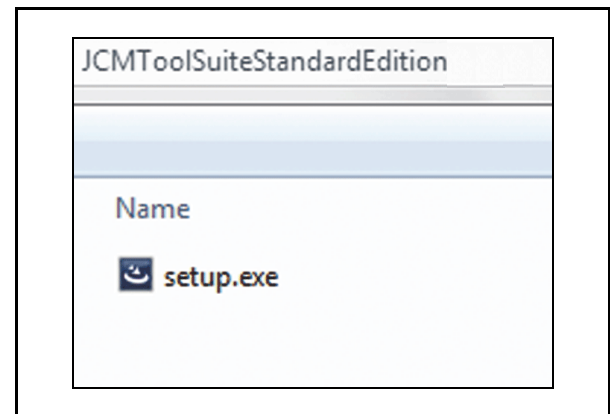


Figure 6-3 Setup.exe

3. The “JCM Tool Suite Standard Edition - InstallShield Wizard” Screen shown in Figure 6-4 will appear. Click the “Next>” Screen Button (Figure 6-4 a).

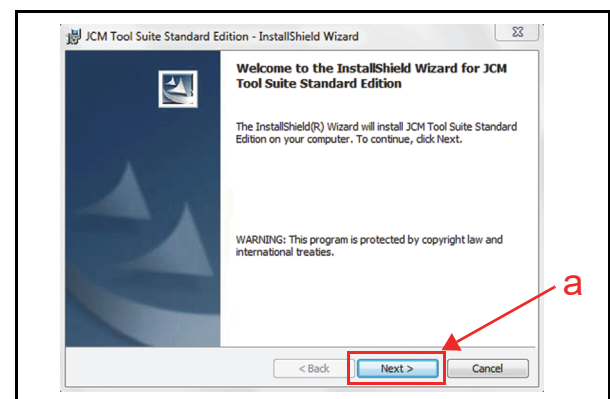


Figure 6-4 InstallShield Wizard Screen

- Click the “Next>” Screen Button (Figure 6-5 a), when the “Destination Folder” Screen shown in Figure 6-5 appears.

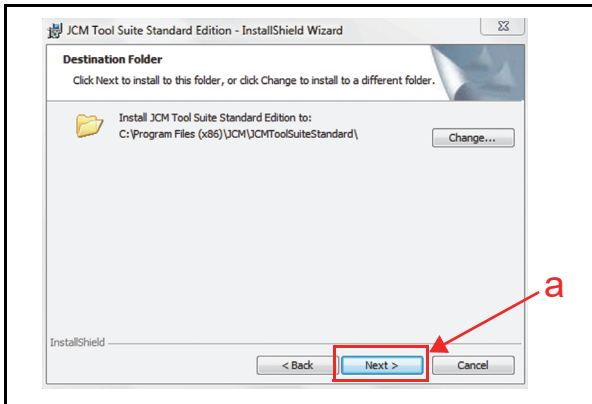


Figure 6-5 Destination Folder Screen

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

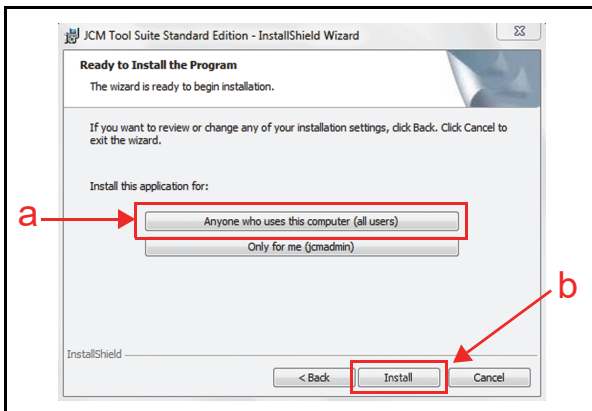


Figure 6-6 Ready to Install the Program Screen

- Verify that the “InstallShield Wizard Completed” Screen shown in Figure 6-7 appears when installation is complete.

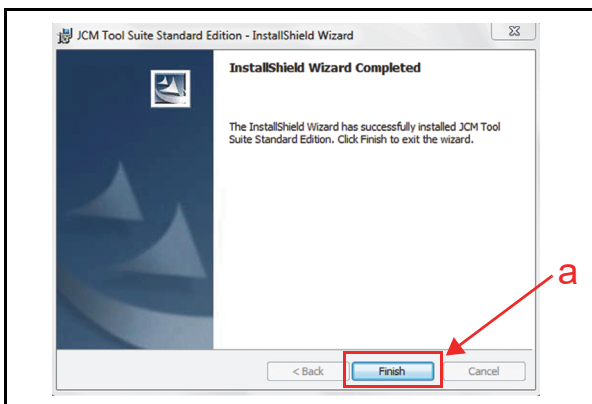



Figure 6-7 Installation Completion Screen

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

 **NOTE:** Copy a provided “JCM_COMPORFILE_REVxxx.INI” file into the C: Drive “Windows” folder if the file is not automatically generated.

Part 2 - USB Drivers Installation

Perform the following steps to install the iPRO USB Drivers:

- Connect the PC and the iPRO Unit together using the recommended USB Cable (Figure 6-1 and Figure 6-2). The USB Driver Installation Wizard screen shown in Figure 6-8 appears.

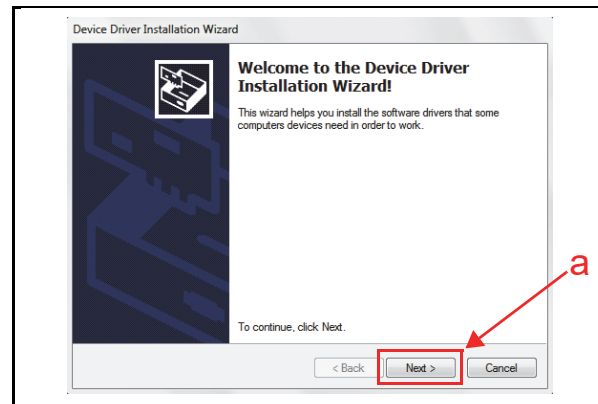


Figure 6-8 Installation Auto-start Screen

- Click the “Next>” Screen Button (Figure 6-8 a) to start the installation. Once installation is complete, the “Completing the Device Driver Installation Wizard” Screen shown Figure 6-9 appears.

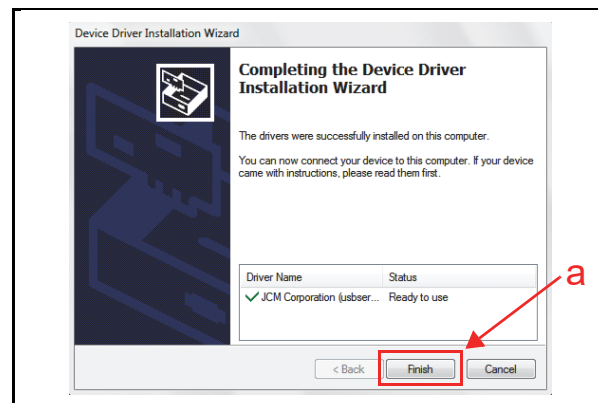


Figure 6-9 Installation Completion Screen

- Click the “Finish” Screen Button (Figure 6-9 a) to end the installation process. This completes the Application and USB Drivers installation procedure.

JCM Tool Suite Standard Edition Mode

The following two (2) Mode feature types exist in the “JCM Tool Suite Standard Edition” package:

- Normal Mode
- Test Mode.

“Normal Mode” is used to update iPRO software, check Statistics and access the Utility function while the iPRO is in the operating condition.

The “Service Mode” contains three (3) available choices in its Pull-down Menu shown in Figure 6-10a as follows:

- **Download** (for downloading software)
- **Statistics** (for observing log data)
- **Utility** (for setting ICB functions)

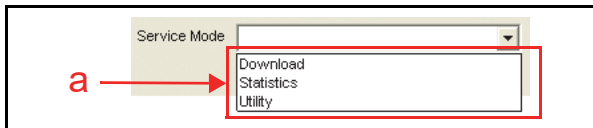


Figure 6-10 Normal Mode Selection

The “Test Mode” is a Mode designed to perform iPRO Calibration and Performance Testing.

The “Service Mode” contains five (5) available choices in its Pull-down Menu shown Figure 6-11a as follows:

- **Download** (for downloading software)
- **Statistics** (for observing log data)
- **Sensor Adjustment** (for calibration)
- **Performance Test** (for performance testing)
- **Utility** (for setting ICB functions)

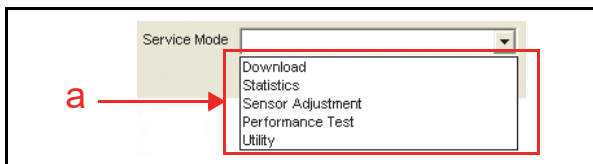


Figure 6-11 Test Mode Selection

Software Download Tool Requirements

The tools listed in Figure 6-12 are required to install the iPRO Operating Software.

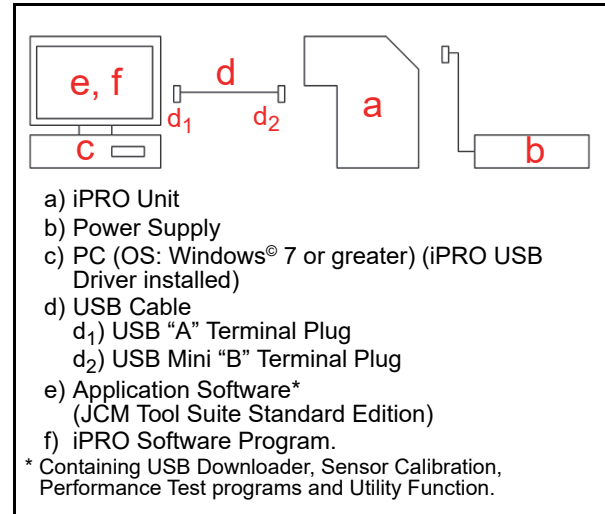


Figure 6-12 Required Software Download Tools

Software Download Procedures

The following two (2) types of download procedures exist, depending on the iPRO operating conditions:

- The iPRO contains the “iPRO Software Program already installed” (Upgrading)
- The iPRO is new and does not have the “iPRO Software Program installed” (e.g., contains a New CPU Circuit Board).

Download the Upgrade Program

To download the latest “iPRO Software Program” into a new iPRO, proceed as follows:

1. Remove electrical power from the iPRO Unit.
2. Set all of the 8-Position DIP Switches to **OFF** (Figure 6-13).



Figure 6-13 DIP Switches All OFF

3. Connect the USB Port located on the front side of the iPRO Unit to the PC using a USB “A” to “mini-B” Communications Cable (Figure 6-2).
4. Apply electrical power to the iPRO Unit.
5. Launch the “**JCM Tool Suite Standard Edition**” Application. The Screen shown in Figure 6-14 will appear when the application becomes activate.

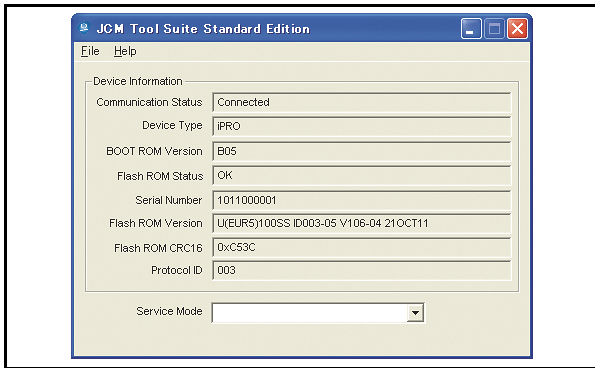


Figure 6-14 JCM Tool Suite Standard Edition Screen 1

- Click and hold-down the “Service Mode” Pull Down Menu, and select “Download” from within the Pull-Down Menu Selections. When selected it will highlight the selected Field Blue (Figure 6-15), and the Status LED will flash at a Green Color rate. Once selected, “Download” will occur, the “JCM Downloader Suite Edition Version X.XX” will automatically begin functioning, and the Screen shown in Figure 6-16 will appear.

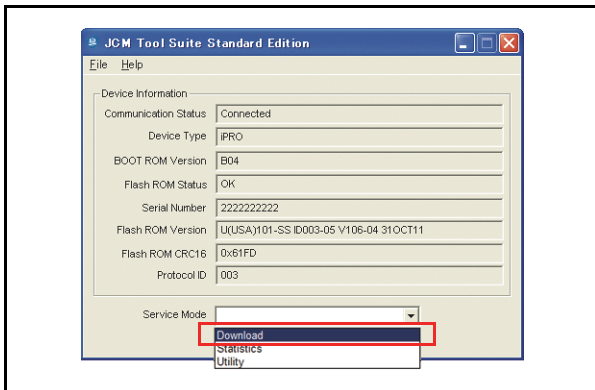


Figure 6-15 JCM Tool Suite Standard Edition Screen Pull-Down Menu 1

- Click the “Browse” Screen Button (Figure 6-16 a).

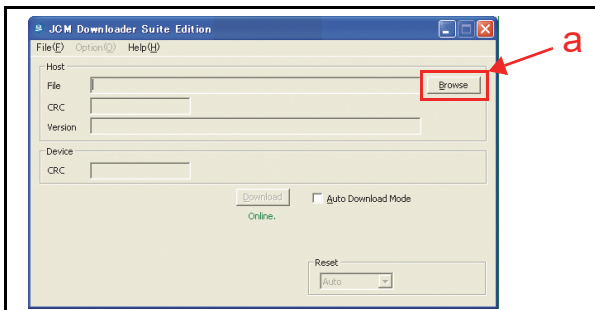
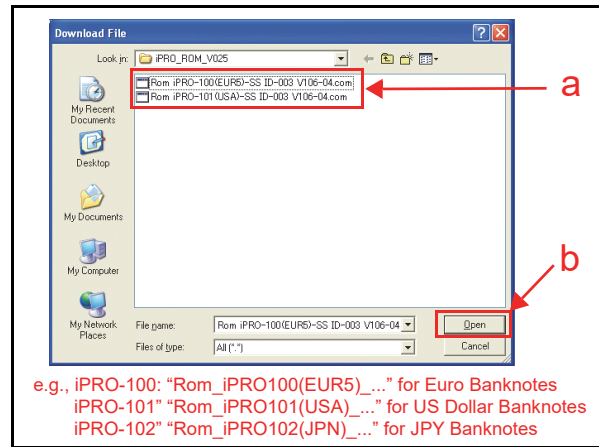


Figure 6-16 Browse Screen Button Location

- Select the Current iPRO Software Version File from the **Download File** Screen that appears.
- Click the “Open” Screen Button (Figure 6-17 b).



e.g., iPRO-100: “Rom_iPRO100(EUR5)...” for Euro Banknotes
iPRO-101” “Rom_iPRO101(USA)...” for US Dollar Banknotes
iPRO-102” “Rom_iPRO102(JPN)...” for JPY Banknotes

Figure 6-17 iPRO Software Program Selection

NOTE: Select the correct iPRO Firmware for the desired country.

- When the “JCM Downloader Suite” Screen reappears, click the center “Download” Screen Button (Figure 6-18 a) to begin the Software download into the iPRO Unit. The Download Screen will display a Progress Barograph during the download operation (Figure 6-18 b), and a Blue Text Line below the Download Screen Button will display the download Percentage as “Downloading : XX%” (Figure 6-18 c). The Status LED will alternately light Green and Red during this operation.

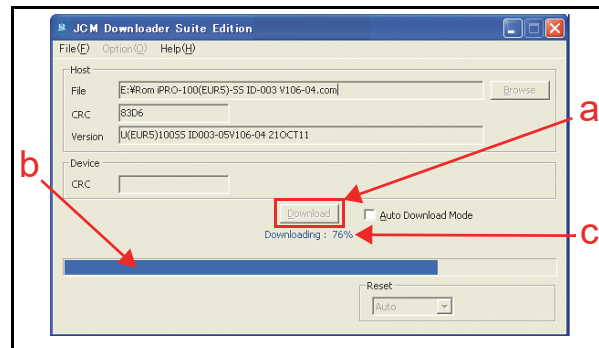


Figure 6-18 Download Progress Screen 1

- When the download is complete, the “Download Success. Reset Done. Waiting for USB Cable Disconnection.” Blue Text Line will appear (Figure 6-19 a).
- Confirm that the Host’s Checksum and the Device Checksum identically match each other (Figure 6-19 b).

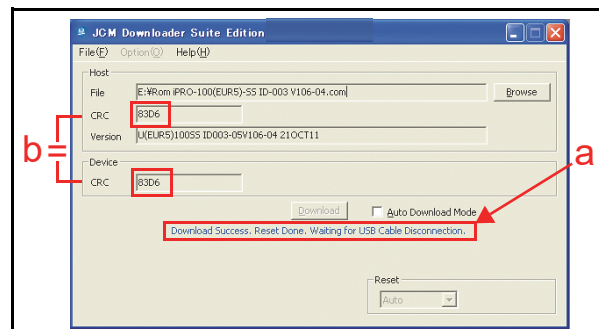


Figure 6-19 Download Completed Screen 1

Downloading the Program First Time

When the iPRO Software Program is not preinstalled (e.g., when changing the CPU Circuit Board), the download procedure for an “empty” Unit is slightly different from the Download and Upgrade Program procedures.

To download the “iPRO Software Program” into an “empty” iPRO for the first time, proceed as follows:

1. Remove electrical power from the iPRO Unit.
2. Set 8-Position DIP Switches #6, #7 and #8 to **ON** (Figure 6-20).



Figure 6-20 DIP Switches 6, 7, & 8 ON

3. Connect the USB Port located on the front side of the iPRO Unit to the PC using the “A”/”mini-B” USB Communications Cable (Figure 6-2).
4. Apply electrical power to the iPRO Unit. The Status LED will flash at a **Green Color** rate.
5. Launch the “JCM Tool Suite Standard Edition” Application. The Screen shown in Figure 6-21 will appear when the application is activate.

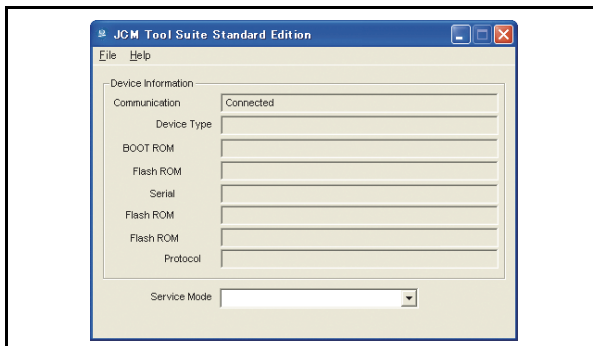


Figure 6-21 JCM Tool Suite Standard Edition Screen 2

6. Click and hold-down the “Service Mode” Pull-down Menu selection, and Slide-down the Menu to select “Download” from within the Menu Selections. When selected it will Highlight the selected Field Area **Blue** (Figure 6-22), and the Status LED will flash at a **Green Color** rate.

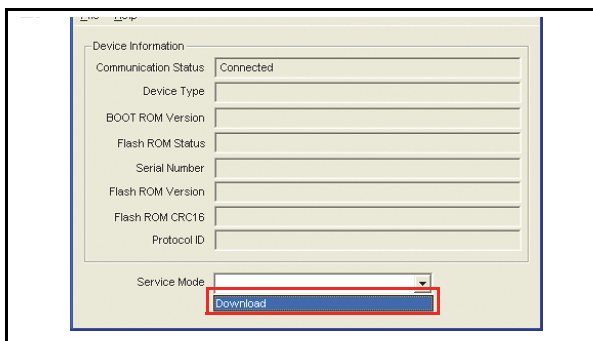


Figure 6-22 JCM Tool Suite Standard Edition Screen Pull-Down Menu 2

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

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

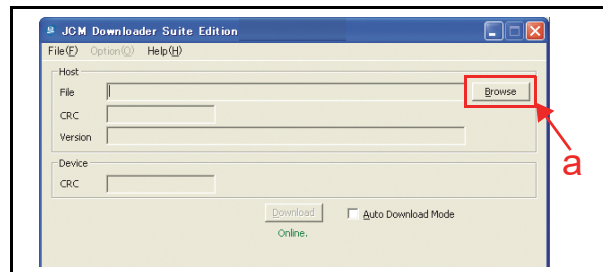


Figure 6-23 Browse Screen Button Location

8. Select the current iPRO Software Program Version from the **Download File** Screen that appears (Figure 6-24 a Example).
9. Click the “**Open**” Screen Button (Figure 6-24 b).

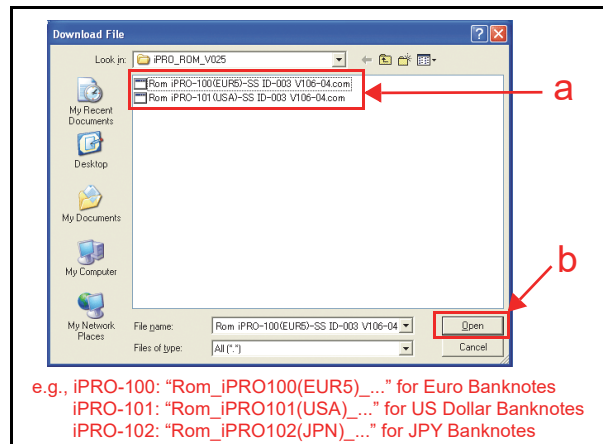


Figure 6-24 iPRO Software Program Selection

NOTE: Select the correct iPRO Firmware for the desired country.

10. When the “JCM Downloader Suite...” Screen reappears, click the center “**Download**” Screen Button (Figure 6-25 a) to begin downloading Software into the iPRO Unit. The Download Screen will display a Progress Barograph during the download operation (Figure 6-25 b), and a **Blue Text Line** below the Download Screen Button will display the download Percentage as “**Downloading : XX%**” (Figure 6-25 c). The Status LED will alternately light **Green** and **Red**.

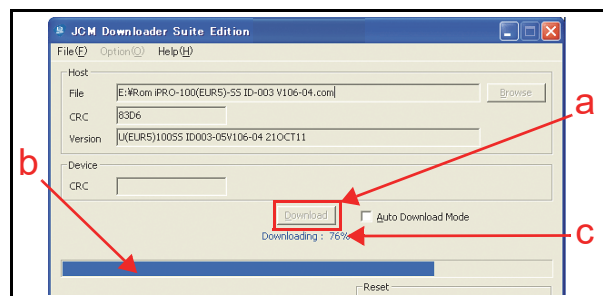


Figure 6-25 Download Progress Screen 2

11. When the download is complete, the “Download Success. Reset Done. Waiting for USB Cable Disconnection.” Blue Text Line will appear (Figure 6-26 a).
12. Confirm that the Host’s Checksum and the Device Checksums identically match each other (Figure 6-26 b).

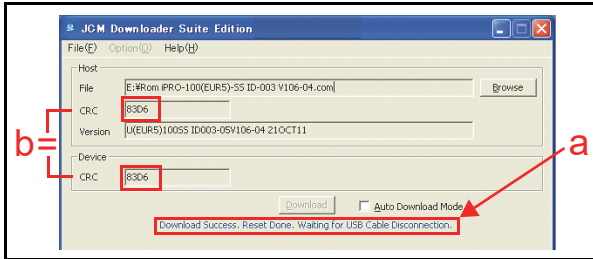


Figure 6-26 Download Completed Screen 2

This completes the iPRO Software Downloading Procedures.

Calibration

This section provides instructions for performing calibration of the Validation Sensors and the Positioning Sensors within the iPRO Unit. When performing calibration, the Status LEDs are always lit a steady Green and Red Color.


When to Calibrate

Calibration should be performed if the following conditions occur:

- When disassembling and then reassembling an iPRO unit.
- When removing and replacing the CPU Circuit Board, the Upper Sensor Circuit Board and/or the Lower Sensor Circuit Board
- When removing/replacing ANY Sensor.
- When dirt is found adhering to Sensors (Perform Calibration after cleaning the Sensors and the Rollers, See “Sensor Locations” on page 2-13 of this Manual).
- When the Banknote Acceptance Rate is drastically degraded.

Calibration Tool Requirements

Figure 6-27 illustrates and identifies the Tools and equipment interconnects necessary to calibrate the iPRO Unit away from its Host Machine.

 **NOTE:** When the “USB-A Terminal” is connected through a USB Hub, the iPRO may not perform correctly. Be sure the “USB-A Terminal” connects DIRECTLY to a USB Port of the PC.

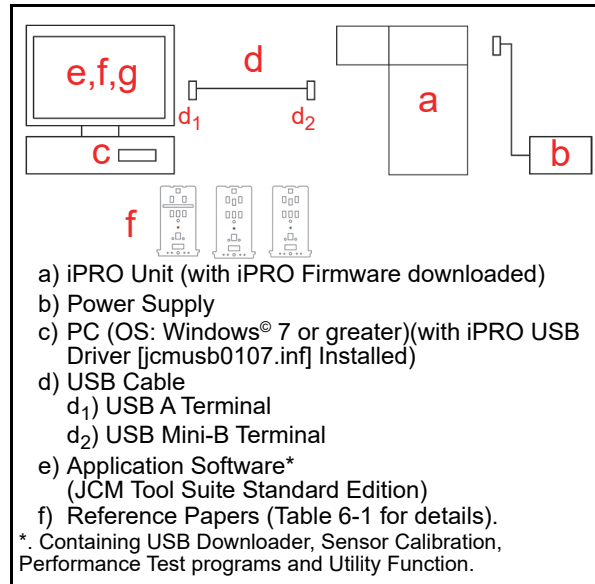
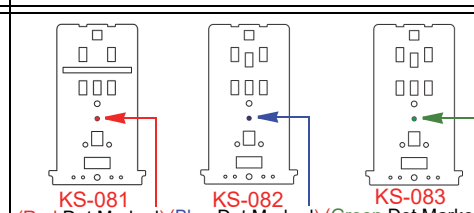
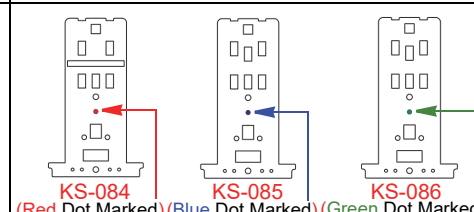
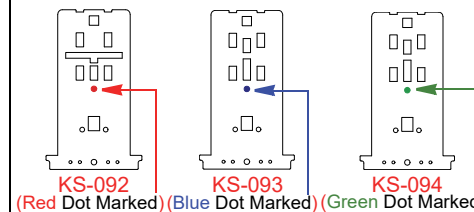


Figure 6-27 Workbench Tool Requirements

iPRO Reference Papers

The KS-081, KS-082 and KS-083 Reference Papers are intended for calibrating Centering Mechanism Type Units (Centering Type). The KS-084, KS-085, KS-086, KS-092, KS-093 and KS-094 Reference Papers are intended for calibrating non-Centering Mechanism Type Units (Fixed Type).

Table 6-1 Reference Paper Types

Product	Reference Paper
iPRO-100 iPRO-103 (Centering Type)	 <p>KS-081 (Red Dot Marked) KS-082 (Blue Dot Marked) KS-083 (Green Dot Marked)</p>
iPRO-101 (Fixed Type)	 <p>KS-084 (Red Dot Marked) KS-085 (Blue Dot Marked) KS-086 (Green Dot Marked)</p>
iPRO-102 (Fixed Type)	 <p>KS-092 (Red Dot Marked) KS-093 (Blue Dot Marked) KS-094 (Green Dot Marked)</p>

Placing Each Reference Paper

This portion provides information concerning each Reference Paper placement and treatment.

PLACING REFERENCE PAPERS

Perform the following steps to properly place a selected Reference Paper (KS-081/082/083/084/085/086/092/093/094) into the iPRO Unit.

1. Pull the iPRO Upper Guide Access Lever upward (Figure 6-28 a) and open the Upper Guide.

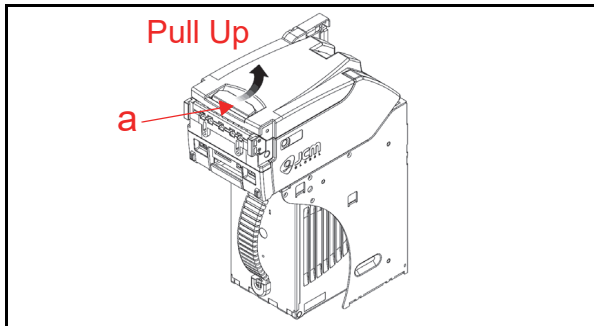


Figure 6-28 Reference Paper Setting 1

2. Slide the selected Reference Paper (Figure 6-29 b) into the Transport Unit until its Catch Edges evenly touch both the left and right side of the Frame (Figure 6-29 A).

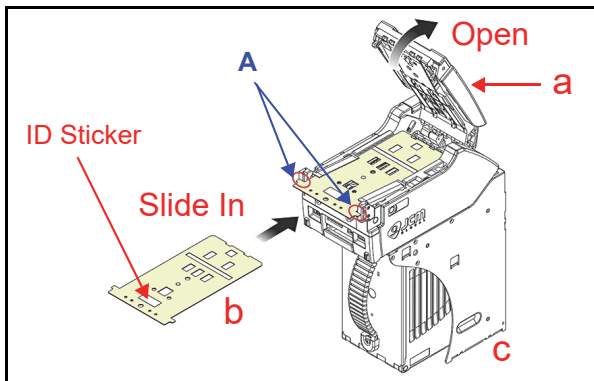



Figure 6-29 Reference Paper Setting 2

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

3. Firmly close the Upper Guide (Figure 6-30 a) until it “clicks” in place, and ensure that both sides are tightly closed and locked.

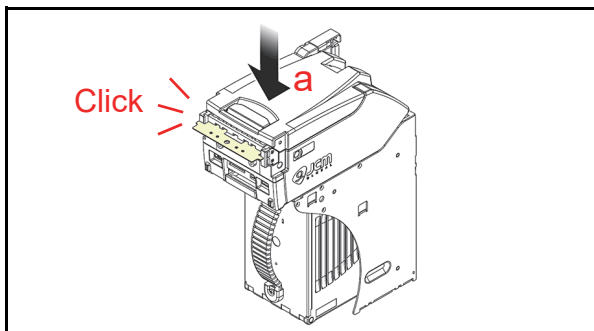



Figure 6-30 Reference Paper Setting 3

Calibration Program

This portion provides instructions for using the Sensor Adjustment (JCM Tool Suite Standard Edition) Configuration. The Calibration Tool Program contains the following three (3) functions:

- Validation Sensor Calibration
- Positioning Sensor Calibration
- Model Information Input Capability.

 **NOTE:** Each Calibration procedure can be performed individually.

Validation Sensor Calibration

This portion provides information for calibrating the Validation Sensors in the iPRO Unit.

Table 6-2 lists the function of each Reference Paper used to calibrate the iPRO Validation Sensors.

Table 6-2 Contents and Calibration Order

No.	Function	Reference Paper		
		iPRO-100 iPRO-103	iPRO-101	iPRO-102
1	Validation Sensor [D/A Value, non-Paper]	None	None	None
2	Validation Sensor [with Paper]	KS-081	KS-084	KS-092
	BAR Sensor [with Paper]			
3	UV (Reflection) Sensor [with Paper]	KS-082	KS-085	KS-093
4	UV (Transmissive) Sensor [with Paper]	KS-083	KS-086	KS-094
5	Validation Sensor [non-Paper]	None	None	None
	UV (Transmissive) Sensor [non-Paper]			
	Saving Calibration Value			

Validation Sensor Calibration Preparation

Perform the following steps to prepare the iPRO for Validation Sensor Calibration.

1. Remove electrical power from the iPRO Unit.
2. Set Switch # 8 on the 8-Position DIP Switch located on the front side of the Unit to **ON** (Figure 6-31).

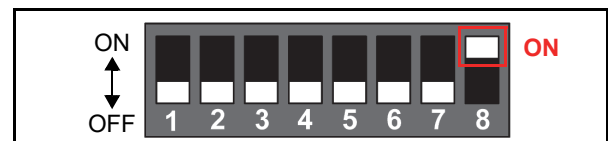


Figure 6-31 DIP Switch Settings 1

3. Apply electrical power to the iPRO Unit. The Status LEDs will light a steady **Green** and **Red** Color simultaneously (See “Component Names” on page 1-6 of this Manual).
4. Connect the PC and the iPRO Unit together using the recommended USB Cable (Figure 6-2).
5. Launch the “JCM Tool Suite Standard Edition” Application. The “JCM Tool Suite Standard Edition” Screen shown in Figure 6-32 will appear when the application becomes active.

- Click and hold-down the “Service Mode” Pull-down Menu Selection (Figure 6-32 a) and slide-down to select the “Sensor Adjustment” from the Pull-Down Menu selections (Figure 6-32 b).

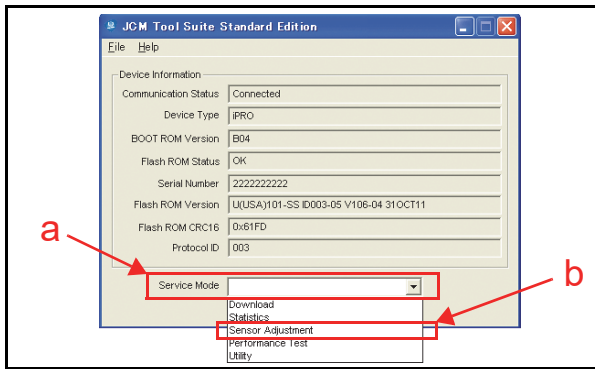


Figure 6-32 JCM Tool Suite Standard Edition Screen 3

Calibration Program “iPRO_AdjustmentService_SuiteEdition.exe” shown in Figure 6-33 will appear.

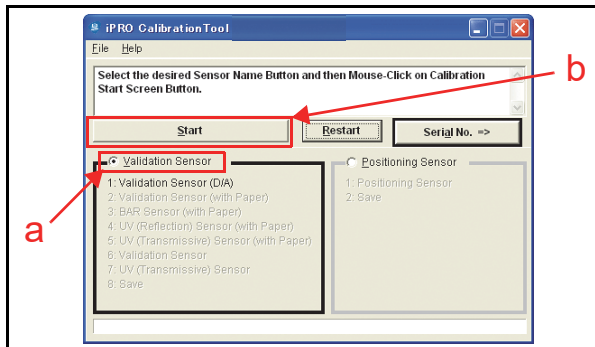


Figure 6-33 iPRO Calibration Ver.X.XX Screen

VALIDATION SENSOR [D/A VALUE, NON-PAPER] CALIBRATION

Perform the following steps to complete the Validation Sensor non-Paper Calibration Procedure Step.

- Click select the “Validation Sensor” Radio Button (Figure 6-34 a).
- Click the “Start” Screen Button (Figure 6-34 b). Message “(1) Validation Sensor [D/A Value, non-Paper] Calibration Preparation” will appear in the top row of the “Calibration Tool Validation Sensor Calibration” Text Field Screen (Figure 6-34 a).

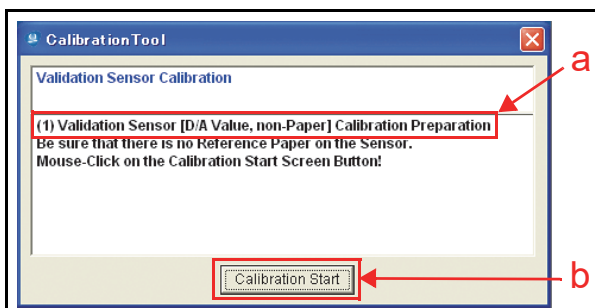


Figure 6-34 Validation Sensor non-Paper Calibration Screen 1

- Check that Reference Paper does not exist in the iPRO Transport path.
- Check that the Upper Guide is firmly closed (Figure 6-30 a).
- Click the “Calibration Start” Screen Button (Figure 6-34 b) located at the bottom of the “Calibration Tool” Screen to begin the iPRO Validation Sensor non-Paper Calibration Procedure.
- Calibration progress is indicated by the The Green Barograph at the bottom of the “iPRO Calibration Tool [Suite Edition]” Screen (Figure 6-35 a).

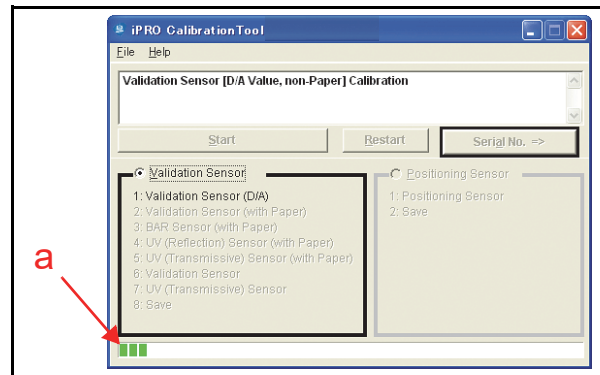


Figure 6-35 Validation Sensor non-Paper Calibration Screen 2

- When the message “(1) Validation Sensor [D/A Value, non-Paper] Calibration Completed” appears in the first row of the “Calibration Tool” Screen (Figure 6-36 a), the Validation Sensor non-Paper Calibration Procedure is complete.

VALIDATION SENSOR/BAR SENSOR [WITH THE REFERENCE PAPER] CALIBRATION

When the Validation Sensor non-paper Calibration Procedure is complete, perform the following steps to begin the next two Sensor (e.g., the Validation Sensor [with Paper] and the Bar Sensor [with Paper]) Calibration Steps:

- Check that the messages “(2) Validation Sensor [with the Reference Paper] Calibration Preparation” and “(3) Bar Sensor [with the Reference paper] Calibration Preparation” are in the second row of the “Calibration Tool” Text Field Screen (Figure 6-36 b).

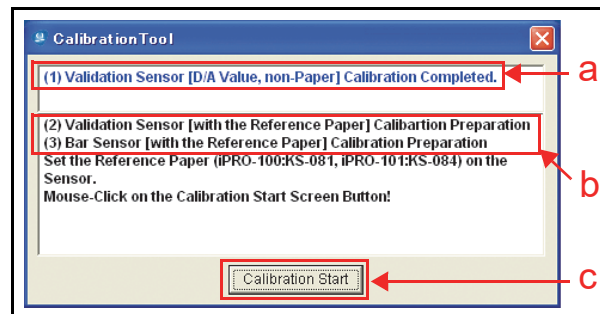




Figure 6-36 Validation Sensor/Bar Sensor with Paper Calibration Screen 1

- Put the KS-081 **Red** Dot marked Reference Paper in place for calibrating a Centering Type Unit; or, place the KS-084/KS-092 **Red** Dot marked Reference Paper for calibrating a Fixed Type Unit on to the Transport path (Refer to “Placing Each Reference Paper” on page 6-7 of this Section).
 - Click the “Calibration Start”  Screen Button (Figure 6-36 c) to begin the with Paper Validation Sensor Calibration Procedure.
-  **NOTE:** This calibration process takes approximately one (1) minute to complete.
- Calibration progress is indicated by the **Green** Barograph at the bottom of the “**iPRO Calibration Tool [Suite Edition]**” Screen (Figure 6-37 a).

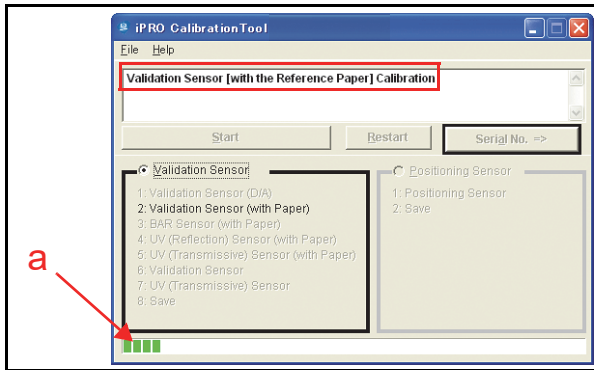


Figure 6-37 Validation Sensor/Bar Sensor with Paper Calibration Screen 2

- When the message “(2) Validation Sensor [with the Reference Paper] Calibration Completed” and “(3) Bar Sensor [with the Reference Paper] Calibration Completed” appear in the first row of the “**Calibration Tool**” Screen (Figure 6-38 a), the Validation Sensor and the Bar Sensor with Paper Calibration Procedure is complete.

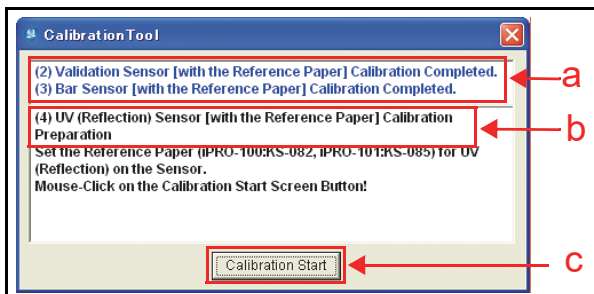



Figure 6-38 UV (Reflection) Sensor with Paper Calibration Screen 1

UV (REFLECTION) SENSOR WITH PAPER CALIBRATION

When the Bar Sensor with Paper Calibration Procedure is complete, perform the following steps to begin the UV (Reflection) Sensor with Paper Calibration Procedure Step:

- Check that the message “(4) UV (Reflection) Sensor [with the Reference Paper] Calibration Preparation” is in the second row of the “**Calibration Tool**” Screen (Figure 6-38 b).

- Remove the KS-081 **Red** Dot marked Reference Paper and place the KS-082 **Blue** Dot marked Reference Paper for calibrating a Centering Type Unit; or, remove the KS-084/KS-092 **Red** Dot marked Reference Paper and place the KS-085/KS-093 **Blue** Dot marked Reference Paper for calibrating a Fixed Type Unit (Refer to “Placing Each Reference Paper” on page 6-7 in this Section).
- Click the “Calibration Start”  Screen Button (Figure 6-38 c) to begin the with Paper UV (Reflection) Sensor Calibration.
- Calibration progress is indicated by the **Green** Barograph at the bottom of the “**iPRO Calibration Tool [Suite Edition]**” Screen (Figure 6-39 a).

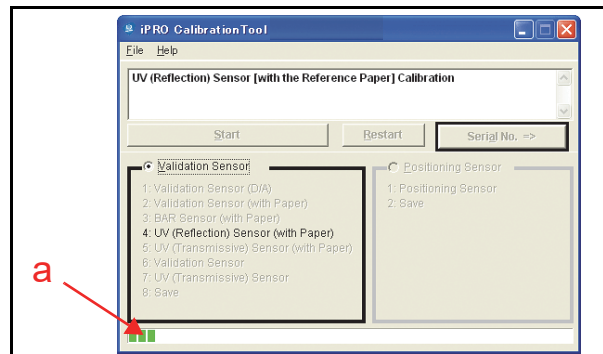


Figure 6-39 UV (Reflection) Sensor with Paper Calibration Screen 2

- When the message “(4) UV (Reflection) Sensor [with the Reference Paper] Calibration Completed” appears in the first row of the “**Calibration Tool**” Text Field Screen (Figure 6-40 a), the UV (Reflection) Sensor with Paper Calibration Procedure is complete.

UV (TRANSMISSIVE) SENSOR WITH PAPER CALIBRATION

When the with Paper UV (Reflection) Sensor Calibration Procedure is complete, perform the following steps to begin the UV (Transmissive) Sensor with Paper Calibration Procedure Step:

- Check that the message “(5) UV (Transmissive) Sensor [with the Reference Paper] Calibration Preparation” is in the second row of the “**Calibration Tool**” Text Field Screen (Figure 6-40 b).

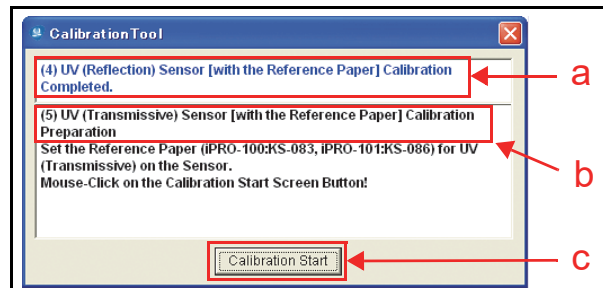



Figure 6-40 UV (Transmissive) Sensor with Paper Calibration Screen 1

- Remove the KS-082 **Blue** Dot marked Reference Paper and place the KS-083 **Green** Dot marked

Reference Paper for calibrating a Centering Type Unit; or, remove the KS-085/KS-093 Blue Dot marked Reference Paper and place the KS-086/KS-094 Green Dot marked Reference Paper for calibrating a Fixed Type Unit (Refer to “Placing Each Reference Paper” on page 6-7 in this Section).

3. Click the “Calibration Start”  Screen Button (Figure 6-40 c) to begin the UV (Transmissive) Sensor with Paper Calibration Procedure.
4. Calibration progress is indicated by the The Green Barograph at the bottom of the “iPRO Calibration Tool [Suite Edition]” Screen (Figure 6-41 a).

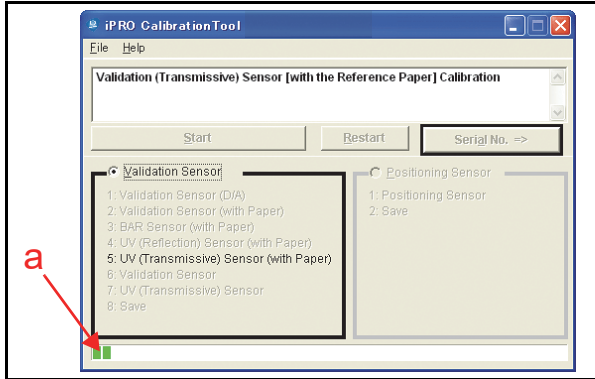


Figure 6-41 UV (Transmissive) Sensor with Paper Calibration Screen 2

5. When the message “(5) UV (Transmissive) Sensor [with the Reference Paper] Calibration Completed” appears in the first row of the “Calibration Tool” Text Field Screen (Figure 6-42 a), the UV (Transmissive) Sensor with Paper Calibration Procedure is complete.

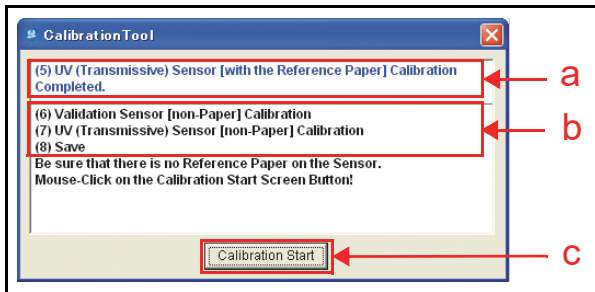



Figure 6-42 Auto Sensors Calibration and Save Screen 1

VALIDATION & UV (TRANSMISSIVE) SENSOR NON-PAPER CALIBRATION AND SAVING

When the with Paper UV (Transmissive) Sensor Calibration Procedure is complete, perform the following steps to begin the calibration set for each Sensor Type. The following Sensors are calibrated automatically in the following order, and the Calibration Values are then saved (Figure 6-42 b):

- Validation Sensor non-Paper Calibration
- UV (Transmissive) Sensor non-Paper Calibration
- Saving Calibration Values.

To begin these calibrations, proceed as follows:

1. Check that the messages “(6) Validation Sensor [non-Paper] Calibration”, “(7) UV (Transmissive) Sensor [non-Paper] Calibration” and “(8) Save” are in the second row of the “Calibration Tool” Text Field Screen (Figure 6-42 b).
2. Remove the KS-083 Green Dot marked Reference Paper for calibration of a Centering Type Unit; or, remove the KS-086/KS-094 Green Dot marked Reference Paper for calibration of a Fixed Type Unit (Refer to “Placing Each Reference Paper” on page 6-7 in this Section).
3. Click the “Calibration Start”  Screen Button (Figure 6-42 c) to begin the Validation Sensor Calibration non-Paper Procedure.
4. When the first Calibration Step is complete, the next Calibration Step will begin automatically. The Test’s progress will appear on the “iPRO Calibration Tool [Suite Edition]” Screen as indicated by the Figure 6-43a Green Barograph’s progress along with the related text message during the Calibration Procedure.

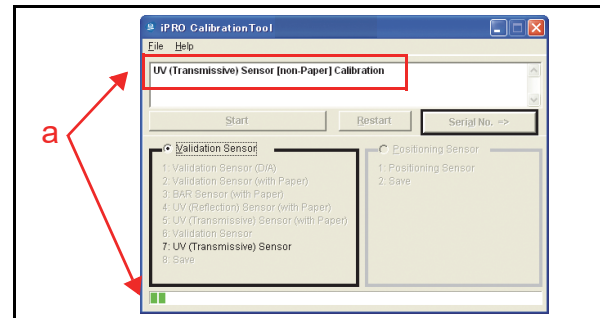


Figure 6-43 Auto Sensors Calibration and Save Screen 2

5. When the Calibration Values are saved, the message “Calibration Completed” will appear in a pop-up Dialog Box (Figure 6-44).

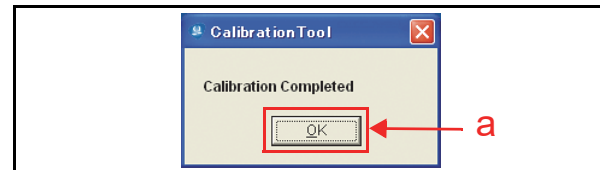


Figure 6-44 Calibration Completed Screen

6. Click the “OK”  Screen Button to end this procedure (Figure 6-44 a).

This completes the Validation Sensor Calibration Procedures.

Positioning Sensor Calibration

This portion provides information for calibrating the Positioning Sensor within the iPRO Unit.

POSITIONING SENSOR CALIBRATION PREPARATION

Perform the following steps to prepare the Positioning Sensor for Calibration.

1. Remove electrical power from the iPRO Unit.
2. Confirm the Upper Guide is firmly closed (See Figure 6-30).
3. Set Switch #8 on the front panel 8-Position DIP Switch of the Unit to **ON** (Figure 6-45).

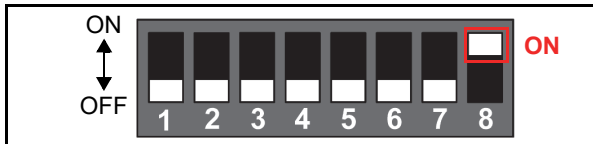


Figure 6-45 DIP Switch Settings 2

4. Apply electrical power to the iPRO Unit. The Status LEDs will light at a steady **Green** and **Red** Color simultaneously after few seconds (See “Component Names” on page 1-6).
5. Connect the PC and the iPRO Unit together using the recommended USB Cable (See Figure 6-2).
6. Launch Calibration Program “iPRO Calibration Tool” (Figure 6-46).

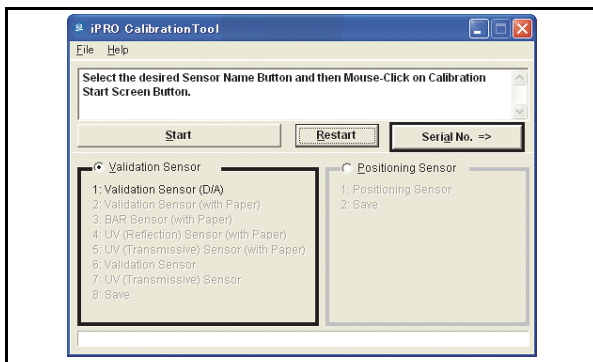


Figure 6-46 Calibration Selection Screen 1

POSITIONING SENSOR CALIBRATION & SAVING CALIBRATION VALUES

The Positioning Sensors are automatically calibrated in order and the Calibration Values are then saved.

Perform the following steps to begin the Positioning Sensor Calibration Procedure.

1. Click select the “Positioning Sensor” Radio Button (Figure 6-47 a).
2. Click the “Start” Screen Button (Figure 6-47 b).

NOTE: The iPRO Transport Unit must be installed in the Frame to perform the Positioning Sensor Calibration.

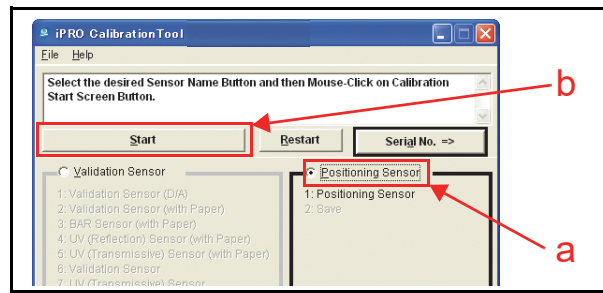


Figure 6-47 Calibration Selection Screen 2

3. The message “(1) Positioning Sensor Calibration Preparation” will appear in the top row of the “Calibration Tool” Text Field Screen shown in Figure 6-48a.

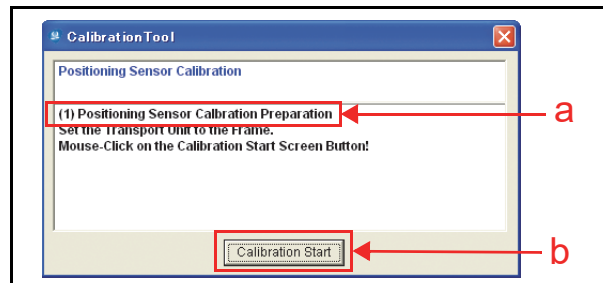


Figure 6-48 Positioning Sensor Calibration Preparation Screen

4. Click the “Calibration Start” Screen Button (Figure 6-48 b) to begin the iPRO Positioning Sensor Calibration Procedure.
5. The Test’s progress will appear on the “iPRO Calibration Tool [Suite Edition]” Screen as indicated by the Figure 6-49a **Green** Barograph’s progress during each of the multiple Calibration Procedures.

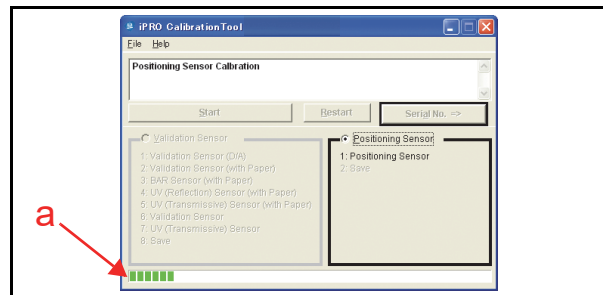


Figure 6-49 Positioning Sensor Calibration Screen

6. When the Transport Motor Test is complete, the Calibration Values are saved and the message “Calibration Completed” will appear in a pop-up Dialog Box (Figure 6-50).
7. Click the “OK” Screen Button to end this procedure (Figure 6-50 a).




Figure 6-50 Calibration Completed Screen

This completes the Positioning Sensor Calibration procedures.

Model Information Confirmation

Perform the following steps to confirm the iPRO Model Information or input the iPRO Unit’s Model Information if it does not exist:

1. On the “iPRO Calibration Tool [Suite Edition]” Screen, click the “Serial No. =>”  Screen Button (Figure 6-51 a).
2. Confirm the “Model Name” and the “Serial No.” of your Unit as shown in Figure 6-52.

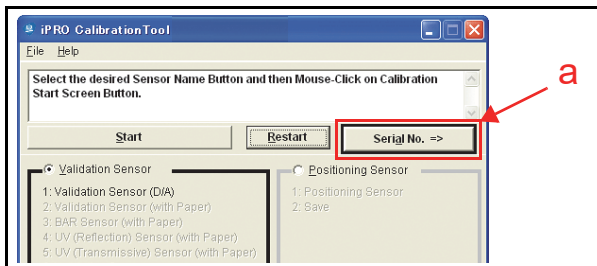



Figure 6-51 Serial No. Screen Button Location

NOTE: The Model Name (i.e. iPRO100) (Figure 6-52 a) and the Serial No. “0000000000” (Figure 6-52 b) are default settings for use in this “Saving the Model Information” Example.

3. Type in the required iPRO Model Name using a maximum of six (6) characters (Figure 6-53 a), and Serial No. containing a maximum of ten (10) characters (Figure 6-53 b) into each of the related Text Entry Fields; then click the “Saving the Serial Number”  Screen Button (Figure 6-53 c).

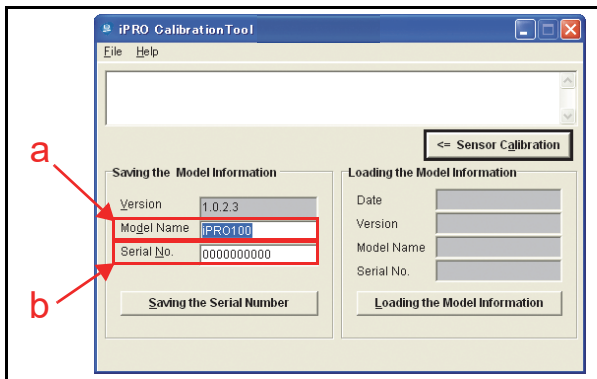


Figure 6-52 Model Information Saving Screen 1

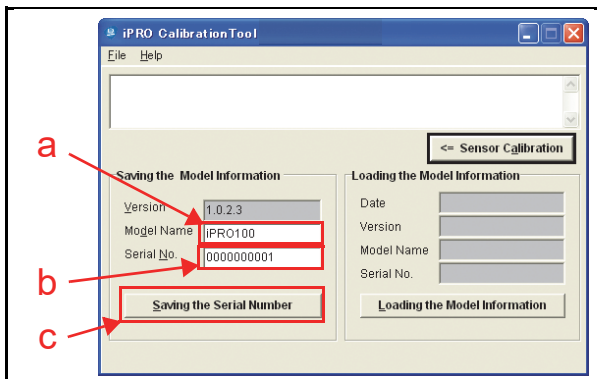



Figure 6-53 Model Information Saving Screen 2

4. Confirm that the message in the second row of the “Calibration Tool” Text Field Screen reads “Saving Completed” (Figure 6-54 a).
5. Click the “OK”  Screen Button to end this procedure (Figure 6-54 b).

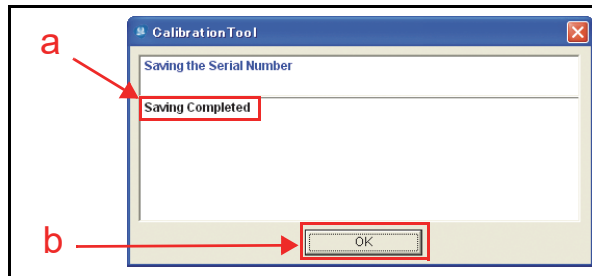



Figure 6-54 Model Information Saving Completed Message Screen

This completes the Model Information Saving Procedures.

Reading the Model Information

Perform following steps when reading an iPRO Unit’s Model Information using the “iPRO_AdjustmentService_SuiteEdition.exe” Application:

1. On the “iPRO Calibration Tool [Suite Edition]” Screen, click the “Serial No. =>”  Screen Button (Figure 6-55 a).
2. Confirm that the “iPRO Calibration Tool [Suite Edition]” Screen shown in Figure 6-56 appears.

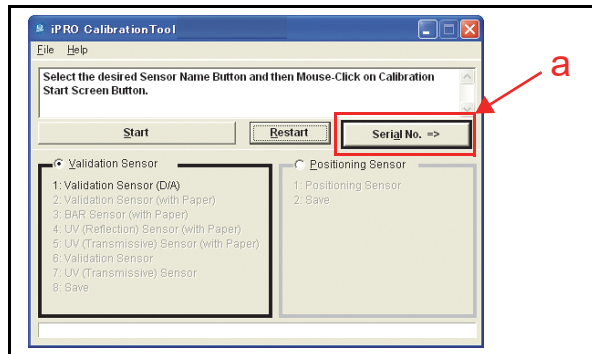



Figure 6-55 Serial No. Screen Button Location

3. Click the “Loading the Model Information”  Screen Button (Figure 6-56 a) located at the bottom of the “Loading the Model Information” data Field Column area.

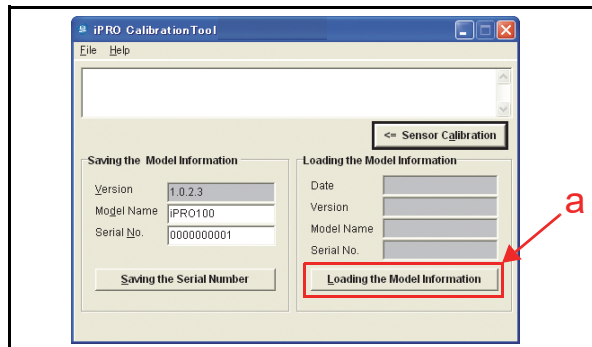
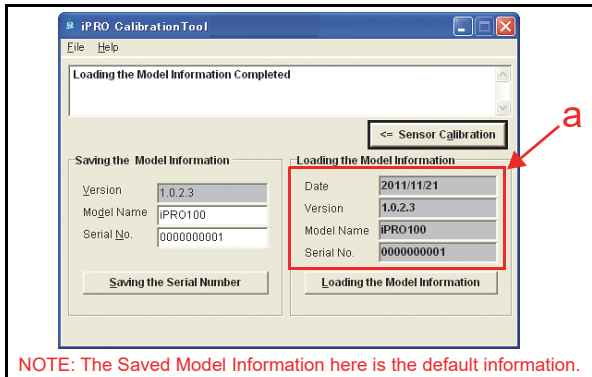


Figure 6-56 Loading Model Information Screen 1

- The current Model Information for the Date, Version, Model Name and Serial No. will appear in each related Cell Field located below in the “Loading the Model Information” area (Figure 6-57 a).



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

Figure 6-57 Loading Model Information Screen 2

This completes the Reading Model Information Procedures.

Reading the iPRO Calibration Tool Version

Perform following steps to read an iPRO Unit’s Software Version using the “iPRO_AdjustmentService_SuiteEdition.exe” Application:

- Click and hold-down on the “iPRO Calibration Tool [Suite Edition]” Tool Bar “Help”, pull-down Menu, and slide-down it to select “Version” (Figure 6-58 a).

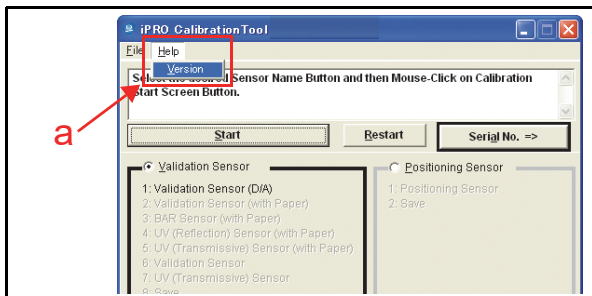


Figure 6-58 Version Information Screen 1

- The Version of the “iPRO_AdjustmentService_SuiteEdition.exe” Calibration Program Application information will appear in a **Calibration Tool Version** pop-up Dialog Screen on the PC. Each Version is indicated in an “X.X.X.X” Format (Figure 6-59 a).

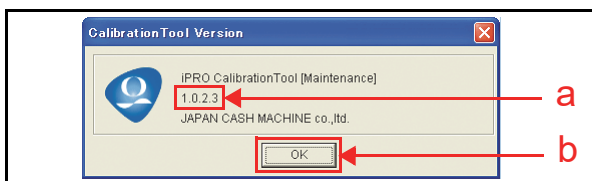


Figure 6-59 Version Information Screen

- Click the “OK” Button to accept the Version Status reported (Figure 6-59 b).

This completes the Reading Software Version Information Procedures.

Performance Tests

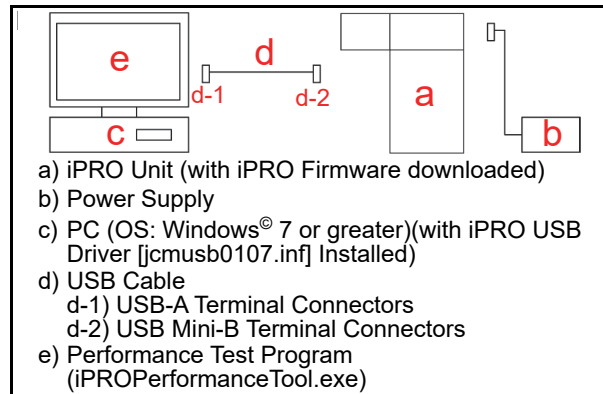
This portion explains the iPRO Performance Test Procedures. The following two (2) Performance Test methods exist:

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

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

Performance Test Tool Requirement using a PC

Figure 6-60 illustrates and identifies the Tools and Equipment interconnects necessary to perform an iPRO Performance Test using an PC.



- a) iPRO Unit (with iPRO Firmware downloaded)
- b) Power Supply
- c) PC (OS: Windows® 7 or greater)(with iPRO USB Driver [jcmusb0107.inf] Installed)
- d) USB Cable
- d-1) USB-A Terminal Connectors
- d-2) USB Mini-B Terminal Connectors
- e) Performance Test Program (iPROPerformanceTool.exe)

Figure 6-60 Performance Test Tool Requirements

PERFORMANCE TESTS USING PC PROCEDURES

The following five (5) iPRO Performance Tests are available when a PC is used for testing:

- Operation Test
- Device Function Test
- Motor Test
- Sensor Test
- DIP Switch Test.

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

- Remove electrical power from the iPRO Unit.
- Set Switch #8 on the front panel 8-Position DIP Switch of the Unit to **ON** (Figure 6-61).

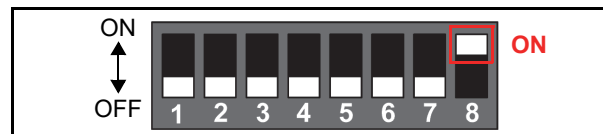


Figure 6-61 DIP Switch Settings 3

- Apply electrical power to the iPRO Unit. The Status LEDs will light a **Green** and **Red** Color simultaneously when the iPRO is in the Performance Test Mode.
- Connect the PC and the iPRO Unit together using the recommended USB Cable (See Figure 6-2).

5. Launch the “JCM Tool Suite Standard Edition” Application. The “JCM Tool Suite Standard Edition” Screen shown in Figure 6-62 will appear when the application becomes active.

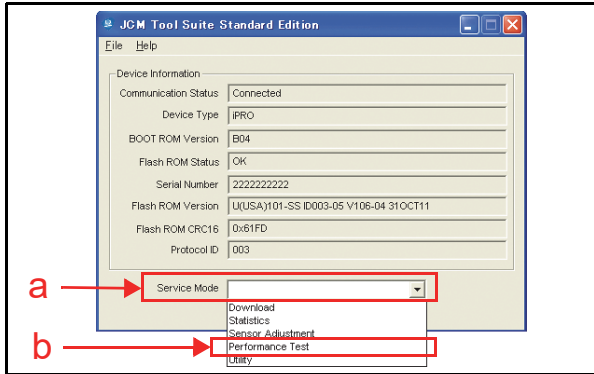


Figure 6-62 JCM Tool Suite Standard Edition Screen 3

6. Click the “Service Mode” Pull-down Menu (Figure 6-62 a), and select “Performance Test” (Figure 6-62 b) from the available selections.
7. Four (4) Tabs (Figure 6-63 a) will appear at the top of the Screen.

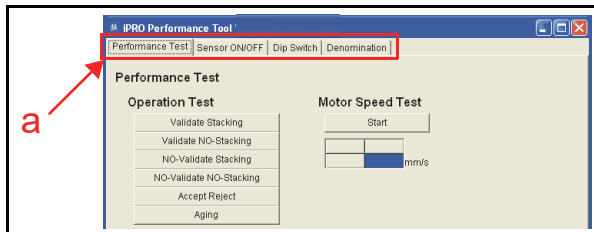


Figure 6-63 Performance Test Selection Screen 1

PERFORMANCE TEST

Select the “Performance Test” Tab (Figure 6-64 a) to perform one of the following four (4) Tests:

- Operation Test (Figure 6-64 b)
- Device Function Test (Figure 6-64 c)
- Motor Test (Figure 6-64 d)
- Motor Speed Test (Figure 6-64 e).

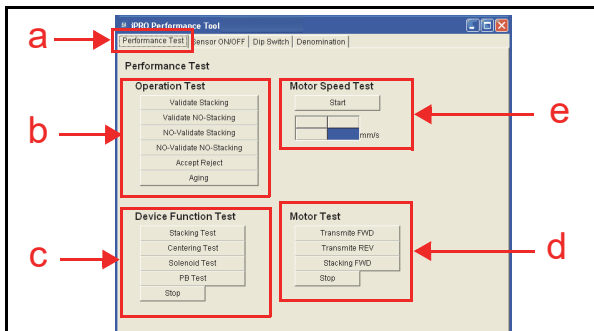


Figure 6-64 Performance Test Selection Screen 2

SENSOR ON/OFF TEST

Select the “Sensor ON/OFF” Tab (Figure 6-65 a) to perform one of 40 Sensor Tests.

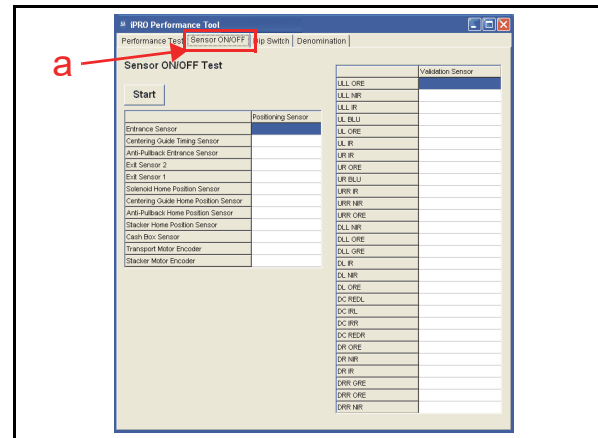


Figure 6-65 Sensor ON/OFF Test Selections

DIP SWITCH TEST

Select the “DIP Switch” Tab (Figure 6-66 a) to perform the DIP Switch Test.

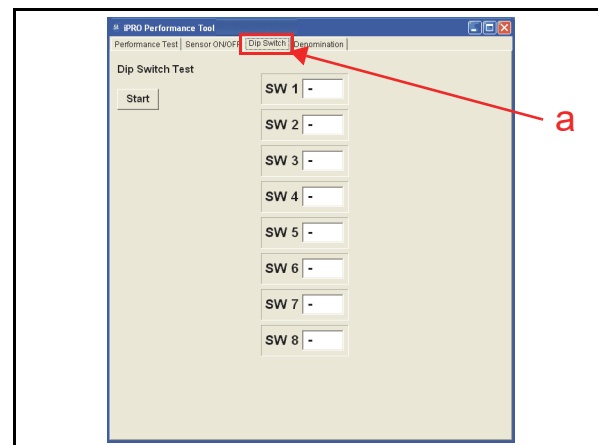


Figure 6-66 DIP Switch Test Selection Screen 1

DENOMINATION TEST

The “Denomination” Tab (Figure 6-67 a) is selected to confirm the Denomination Value used during a Validate Stacking Operation (Banknote Acceptance Test with Cash Box) or a Validate NO-Stacking Operation (Banknote Acceptance Test without Cash Box).

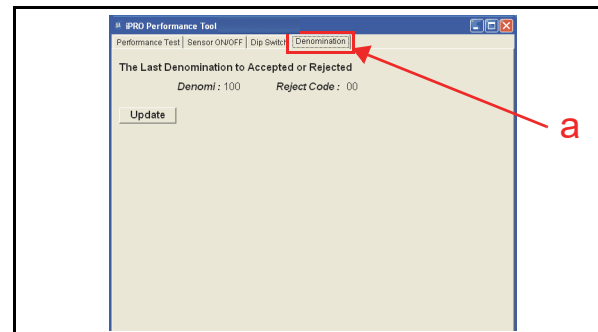


Figure 6-67 Denomination Update Screen

Operation Test Mode

Table 6-3 listed the iPRO Operation Test selections.

Table 6-3 Operation Test Mode Items

Test Item	PC Screen	Test Purpose	Status LEDs Conditions			
			Stand-by	Normal Operation	After Banknote Insertion*	Abnormal Indication†
Banknote Acceptance with Cash Box‡	Validate Stacking	Tests Banknote validation and stacking. Cash Box is installed.	Red Lit	Extinguished (Out)	Red/Green Flash \$1 = 1 time \$5 = 2 times \$10 = 3 times \$20 = 4 times \$50 = 5 times \$100 = 6 times	Red Flashes
			Green Lit			Green Flashes
Banknote Acceptance without Cash Box**	Validate NO-Stacking	Tests the Banknote Validation without stacking. Cash Box is not installed.	Red Lit	Extinguished (Out)		Red Flashes
			Green Lit			Green Flashes
Banknote Acceptance with Cash Box (No Validation)‡	NO-Validate Stacking	Tests Banknote transporting (no validation) and stacking. Cash Box is installed.	Red Lit	Extinguished (Out)		Red Flashes (1 time)
			Green Lit			Green Flashes (1 time)
Banknote Acceptance without Cash Box (No Validation)**	NO-Validate NO-Stacking	Test Banknote transporting (no validation) and no stacking. Cash Box is not installed.	Red Lit	Extinguished (Out)		Red Flashes (1 time)
			Green Lit			Green Flashes (1 time)
Banknote Reject‡	Accept Reject	Tests a Banknote's Reject Movement from the Escrow Position.	Red Lit	Extinguished (Out)	Green Flashes‡ (9 times)	Red Flashes
			Green Lit			Green Flashes
Aging††	Aging	Tests each moving part and sensor through aging movements	Red Lit	Extinguished (Out)	-	Red Flashes
			Green Lit			


*. The LED flashes one flash sets for each denomination value detected, and keeps flashing till next Banknote is inserted.

†. Refer to Error Type definition or the related Reject Code when any of these LED Color Errors occurs.

‡. This test is available when the Cash Box is correctly in place.

** This test is available when the Cash Box is NOT seated in place.

††. When an Aging Test cycle is complete, the next cycle will begin after a delay of approximate 30 seconds.

 **NOTE: The LED flash count is for US Currency. For details on LED flashes for other countries currency, contact your local JCM Representative.**

ACCEPTANCE TESTS

To perform each Acceptance Test, proceed as follows:

1. Click the “**Performance Test**” Screen Tab (Figure 6-68 a).
2. Click the desired Test Item Screen Button to begin each Test (Figure 6-68 b).
3. The Text information will appear in **Red** at the bottom of the Performance Test Tab Screen as each Test is running (Figure 6-68 c).
4. When the iPRO is ready to accept a Banknote, the Status LEDs are lit a steady **Red** and **Green** Color (Table 6-3).
5. Start the test by inserting a Banknote.
6. The following two (2) methods exist to confirm a Banknote’s Denomination Value.

a) By LED: Count the number of LED flashes to confirm the Banknote Denomination Value. The LED flashes once for each denomination value detected (Table 6-3), and repeats the Flash sequence till the next Banknote is inserted.

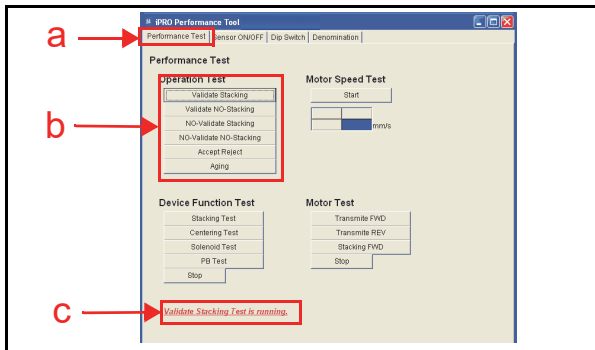


Figure 6-68 Performance Test Tab Selection

b) By Denomination Tab: Click the “**Denomination**” Tab (Figure 6-69 a) to reveal the Denomination Screen; then click the “**Update**” Screen Button (Figure 6-69 b) AFTER the Banknote insertion. The denomination value will appear next to “**Denomi: XXX**” (Figure 6-69 c).

NOTE: If the Banknote is not validated, the denomination value will not appear.

When performing an “Accept Reject” Test, the tested Banknote will be returned (Table 6-3).

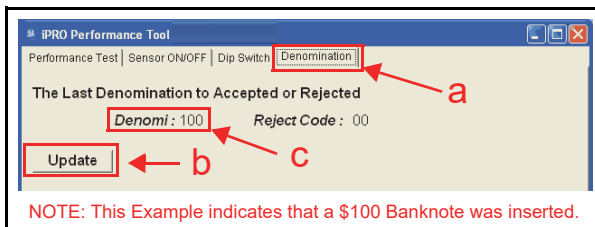


Figure 6-69 Denomination Tab Selection

NOTE: If the intent is to perform other tests, close all of the Screens on the PC, and remove electrical power from the iPRO, then reapply electrical power again, and start the Performance Test Procedures again.

AGING TEST

To perform an Aging Test, proceed as follows:

1. Click the “**Performance Test**” Tab (Figure 6-70 a).
2. Click the “**Aging**” Screen Button (Figure 6-70 b) to begin the Aging Test.
3. Perform a one cycle movement and check that the Status LEDs are extinguished (Table 6-3) during the operational test.
4. Click the “**Stop**” Screen Button to end the Aging Test (Figure 6-71 a).

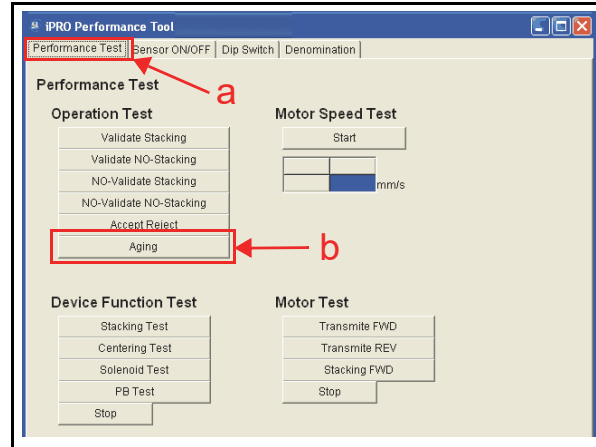


Figure 6-70 Aging Test Screen Button Location

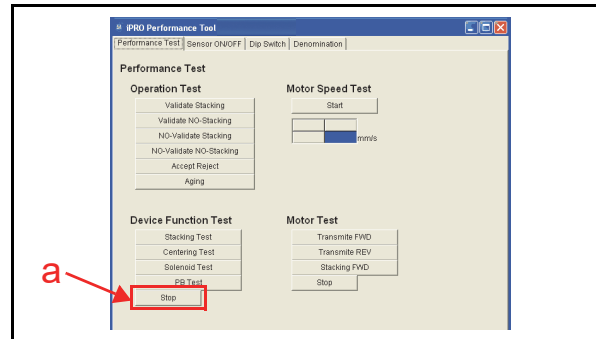


Figure 6-71 Performance Test Stop Screen Button Location

DEVICE FUNCTION TEST

There are four (4) test items in the Device Function Test.

Table 6-4 lists the Device Function Test Items.

Table 6-4 Device Function Test Item

Test Item	PC Screen	Test Purpose	Status LEDs	
			Stand-by	Performing Normally
Stacking Movement*	Stacking Test	Test the Stacker Pusher Plate and stacking movement.	Red Lit	Extinguished (Out)
			Green Lit	
Centering Mechanism Movement†	Centering Test	Test the Centering Mechanism movement.	Red Lit	When the Centering Mechanism is in the home position, the Green LED will be lit, Otherwise the Green LED will be extinguished.
			Green Lit	
Solenoid Movement†	Solenoid Test	Test the Solenoid movement.	Red Lit	When the Solenoid positions is in the home position, the Green LED will be lit, Otherwise the Green LED will be extinguished.
			Green Lit	
Pull-Back Unit Movement	PB Test	Test the Pull-Back Unit movement.	Red Lit	When the Pull-Back Unit is in the home position, the Green LED will be lit, Otherwise the Green LED will be extinguished.
			Green Lit	

*. This test is available when the Cash Box is seated correctly.

†. This test is available for only the iPRO-100/103 Centering Type Unit.



NOTE: Error detection is not available during the Device Function Test.

To perform Device Function Test, proceed as follows:

1. Click the “**Performance Test**” Screen Tab (Figure 6-72 a).
2. Click a desired test Screen Button to begin the desired Test (Figure 6-72 b).
3. Check that the Status LEDs are lit as shown in Table 6-4 during the Test.
4. Click the Device Function Test “**Stop**” Screen Button (Figure 6-72 c) to end the Test.

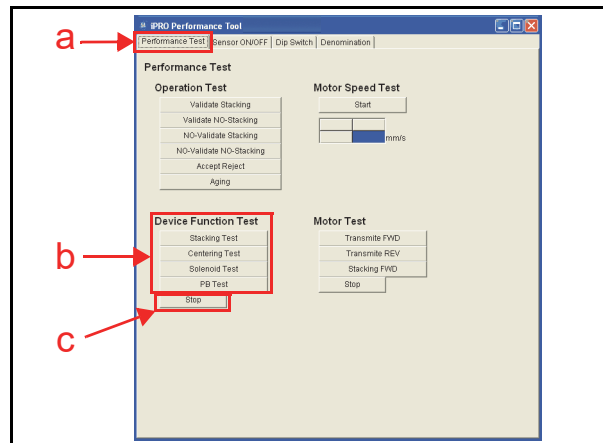


Figure 6-72 Device Function Test Screen Button Location

MOTOR TEST

There are three (3) test functions available in the Motor Test.
Table 6-5 lists the iPRO Motor Test items.

Table 6-5 Motor Test Items

Test Item	PC Screen	Test Purpose	Status LEDs		
			Stand-by	Performing (Normal)	Abnormal Indication*
Transport Motor Forward Rotation†	Transmite FWD	Test the Transport Motor Forward Rotation movement and confirm the Transport Motor Forward Rotation speed.	Red Lit	Green Lit	Red Flashes
			Green Lit		
Transport Motor Reverse Rotation†	Transmite REV	Test the Transport Motor Reverse Rotation movement and confirm the Transport Motor Reverse Rotation speed.	Red Lit	Green Lit	Red Flashes
			Green Lit		
Stacker Motor Rotation‡	Stacking FWD	Test the Stacker Motor Rotation movement.	Red Lit	Extinguished (Out)	Red Flashes
			Green Lit		

*. Refer to Error or Reject Code when an error occurs.

†. The LED flashes three times at a Red Color rate. If the Motor speed is too slow (less than approximately 200mm/s), and the LED flashes two times at a Red Color rate, or if the Motor speed is too fast (more than approximately 550mm/s).

‡. This test is available when the Cash Box is NOT seated. Remove the Cash Box before performing the Stacker Motor Rotation Test.

To perform the Motor Tests, proceed as follows:

1. Click the “**Performance Test**” Tab (Figure 6-74 a).
2. Click the desired Test Item Screen Button to begin each Test (Figure 6-74 b).
The Cash Box will need to be removed when the “Stacking FWD” test is selected. When the “(1) Remove the Cash Box. (2) Mouse-Click on the OK Button!” message pop-up Dialog Box appears, remove the Cash Box from the Frame and click on the “OK” Screen Button (Figure 6-73 a).

3. Confirm that the Status LEDs are lit a steady **Green** and **Red** Color (Table 6-5). Click the Motor Test “Stop” Screen Button to end the Motor Test (Figure 6-74 c).

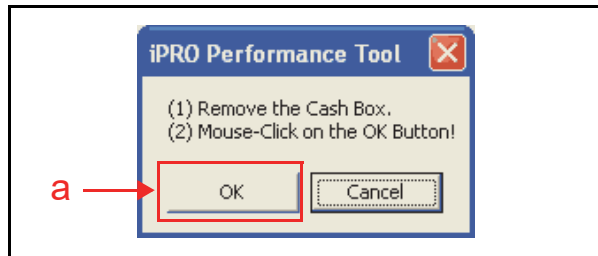


Figure 6-73 Performance Test Tab

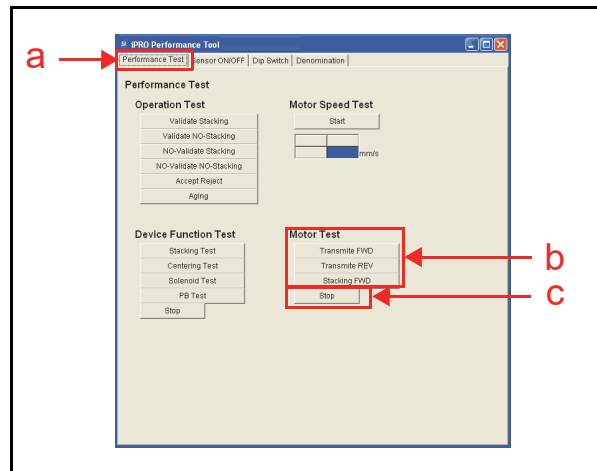


Figure 6-74 Performance Test Tab Selection

MOTOR SPEED TEST

The Motor Speed Test measures the Motor’s rotational speed. To perform a Motor Speed Test, proceed as follows:

1. Perform the Motor Test (See There are three (3) test functions available in the Motor Test. of this Section).
2. During the Motor Test, click the “Start” Screen Button (Figure 6-75 a).
3. Confirm that the Feed Motor rotates in the specified direction and the motor speed is in within the acceptable range (Forward Rotation: approximately 200mm/s to 550mm/s, Reverse Rotation: approximately 200mm/s or faster).

The measured speed will appear in the **Blue** Colored Cell (Figure 6-75 b).

4. Click the “Stop” Screen Button to finish the Motor Speed Test.

NOTE: If another Tab is clicked during a Motor Speed Test, the Test will automatically terminate.

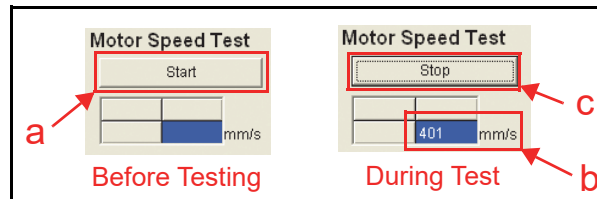


Figure 6-75 Motor Speed Test Screen

SENSOR TEST

Twelve (12) Tests exist within the Sensor Test Menu. Table 6-6 lists each Sensor Test Item function.

Table 6-6 Sensor Test Items

Sensor Names	Sensor Purpose*	PC Screen		Status LEDs	
		Detected	NOT Detected	Stand-by	Performing
Entrance Sensor	Detect a Banknote existence on the Entrance Sensor.	ON	OFF	Red Lit	Red Lit
				Green Lit	Green Lit
Centering Guide Timing Sensor	Detect a Banknote existence on the Centering Guide Timing Sensor.	ON	OFF	Red Lit	Red Lit
				Green Lit	Green Lit
Anti Pull-Back Entrance Sensor	Detect a Banknote existence on the PB In Sensor.	ON	OFF	Red Lit	Red Lit
				Green Lit	Green Lit
Exit Sensor 2	Detect a Banknote existence on the Exit Sensor 2.	ON	OFF	Red Lit	Red Lit
				Green Lit	Green Lit
Exit Sensor 1	Detect a Banknote existence on the Exit Sensor 1.	ON	OFF	Red Lit	Red Lit
				Green Lit	Green Lit
Solenoid Home Position Sensor†	Detect that the Solenoid correctly positions at home position.	ON	OFF	Red Lit	Red Lit
				Green Lit	Green Lit
Centering Guide Home Position Sensor †	Detect that the Centering Guide correctly positions at home position.	ON	OFF	Red Lit	Red Lit
				Green Lit	Green Lit
Anti Pull-Back Home Position Sensor	Detect that the PB Unit correctly positions at home position.	ON	OFF	Red Lit	Red Lit
				Green Lit	Green Lit
Stacker Home Position Sensor‡	Detect that the Pusher Plate in the Cash Box correctly positions at home position.	ON	OFF	Red Lit	Red Lit
				Green Lit	Green Lit
Cash Box Sensor	Detect that the Cash Box is correctly seated.	ON	OFF	Red Lit	Red Lit
				Green Lit	Green Lit
Transport Motor Encoder**	Detect the Transport Motor correctly moves.	ON	OFF	Red Lit	Red Lit
				Green Lit	Green Lit
Stacker Motor Encoder**	Detect the Stacker Motor correctly moves.	ON	OFF	Red Lit	Red Lit
				Green Lit	Green Lit

*. Refer to See "Sensor Locations" on page 2-13 of this Manual.

†. This test is available for only the iPRO-100/103 (Centering Type) Unit.

‡. This test is available when the Cash Box is seated.

** .A text indication of "ON" may appears while the Motor is not operating. This is a normal condition.

To perform the Sensor Test, proceed as follows:

1. Click the **"Sensor ON/OFF"** Screen Tab (Figure 6-76 a).
2. Click the **"Start"** Screen Button (Figure 6-76 b) to begin the Test.
3. Confirm that the **"Sensor Timer running"** Red Text Line appears next to the **"Stop"** Screen Button (Figure 6-77 a). The Sensor detection condition indicates **"ON"** or **"OFF"** in the **"Positioning Sensor"** Blue Column Box area, and **"Validation Sensor"** Column (Figure 6-77 b). Refer to Table 6-6 "Sensor Test Items" on page 6-19 of this Section for details regarding the meaning of each **"ON"** and **"OFF"** indication.

4. Click the **"Stop"** Screen Button (Figure 6-77 c) to finish the selected Sensor ON/OFF Test.

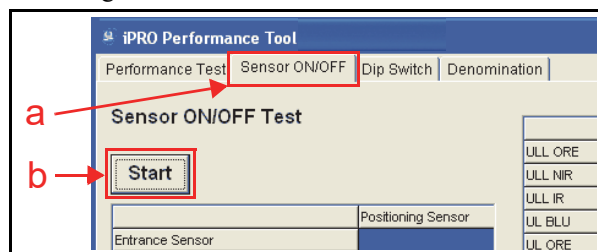


Figure 6-76 Sensor ON/OFF Test Selection Screen 1

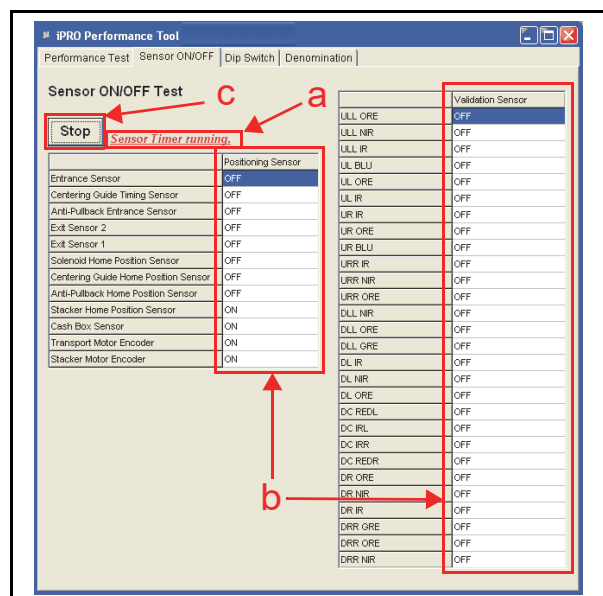


Figure 6-77 Sensor ON/OFF Test Selection

DIP SWITCH TEST

To perform the 8-Position DIP Switch Block Test located on the front side of the Unit, proceed as follows:

1. Click the “Dip Switch” Screen Tab (Figure 6-78 a).
2. Click the “Start” Screen Button (Figure 6-78 b) to begin the Test.
3. Confirm the DIP Switch ON/OFF operational condition for each Switch (Figure 6-79 a).

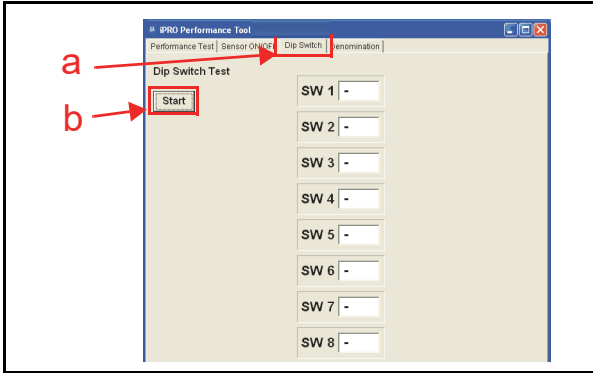


Figure 6-78 DIP Switch Test Selection Screen 1

4. Click the “Stop” Screen Button (Figure 6-79 b) to finish the DIP Switch Test.

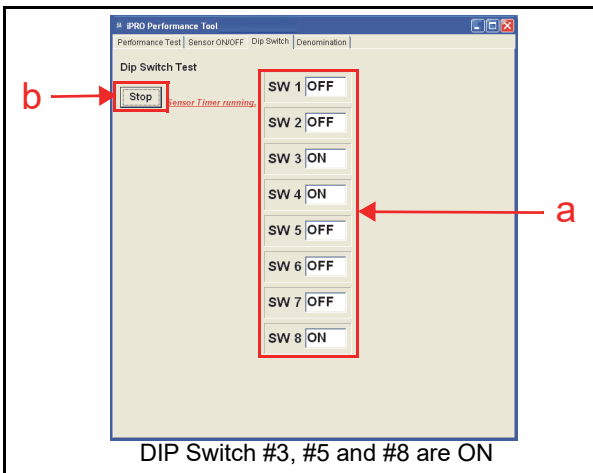


Figure 6-79 DIP Switch Test Screen 2

Performance Test Tool Requirement without PC

Figure 6-80 illustrates and identifies the tools and equipment interconnects necessary to perform the iPRO Performance Test without a PC.

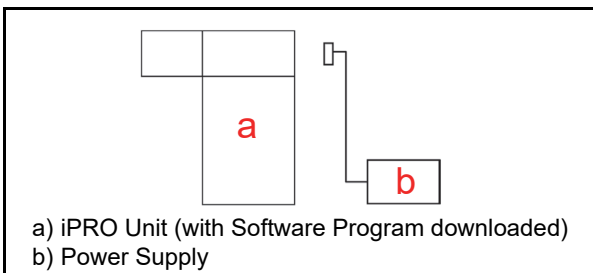


Figure 6-80 Performance Test Tool Requirements

DIP SWITCH SETTINGS FOR PERFORMANCE TEST WITHOUT A PC

Table 6-7 lists the DIP Switch Settings for the iPRO Performance Test without using a PC for testing.

Table 6-7 DIP Switch Configurations

No.	Test Item	DIP Switch Settings								Status LEDs Conditions			
		1	2	3	4	5	6	7	8	Stand-by	Performing	After	Abnormal
1	Banknote Acceptance with the Cash Box*	ON	ON	ON	ON	-	-	-	ON/OFF	Red Lit	Extinguished (Out)	Red/Green Flashes \$1= 1 time \$5= 2 times \$10= 3 times \$20= 4 times \$50= 5 times \$100= 6 times	Red Flashes
										Green Lit			Green Flashes
2	Banknote Acceptance without the Cash Box†	ON	ON	ON	-	-	-	-	ON/OFF	Red Lit	Extinguished (Out)		Red Flashes
										Green Lit			Green Flashes
3	Banknote Acceptance non-Validation with a Cash Box*	ON	ON	ON	ON	-	ON	-	ON/OFF	Red Lit	Extinguished (Out)	Red/Green Flashes (1 time)	Red Flashes
										Green Lit			Green Flashes
4	Banknote Acceptance non-Validation without a Cash Box†	ON	ON	ON	-	ON	-	-	ON/OFF	Red Lit	Extinguished (Out)	Red/Green Flashes (1 time)	Red Flashes
										Green Lit			Green Flashes
5	Banknote Reject*	ON	ON	ON	ON	ON	-	ON	ON/OFF	Red Lit	Extinguished (Out)	Green Flashes (9 times)	Red Flashes
										Green Lit			Green Flashes
6	Aging*	-	-	-	ON	-	-	-	ON/OFF	Red Lit	Extinguished (Out)	-	Red Flashes
										Green Lit			
7	Stacking Movement*	-	-	ON	-	-	-	-	ON/OFF	Red Lit	Extinguished (Out)	-	-
										Green Lit			
8	Centering Mechanism Movement‡	ON	-	-	-	ON	-	-	ON/OFF	Red Lit	Green Lit (at Home Position)**	-	-
										Green Lit			
9	Solenoid Movement‡	-	ON	-	-	ON	-	-	ON/OFF	Red Lit	Green Lit (at Home Position)††	-	-
										Green Lit			
10	Pull-Back Unit Movement‡	-	-	-	-	ON	-	-	ON/OFF	Red Lit	Green Lit (at Home Position)‡‡	-	-
										Green Lit			
11	Transport Motor Forward Rotation	ON	-	-	-	-	-	-	ON/OFF	Red Lit	Green Lit (in normal operation)***	-	Red Flashes
										Green Lit			
12	Transport Motor Reverse Rotation	-	ON	-	-	-	-	-	ON/OFF	Red Lit	Green Lit (in normal operation)***	-	Red Flashes
										Green Lit			
13	Stacker Motor Rotation†	ON	-	ON	-	-	-	-	ON/OFF	Red Lit	Extinguished (Out)	-	Red Flashes
										Green Lit			
14	Sensor Test	-	-	-	-	-	-	ON	ON/OFF	Red Lit	Red Lit	-	-
										Green Lit	Green Lit		
15	DIP Switch Test	ON	ON	ON	ON	ON	ON	ON	ON/OFF	Red Lit	Red Lit	-	-
										Green Lit	Green Lit		

*. This test is available when the Cash Box is correctly seated.

†. This test is available when the Cash Box is NOT seated.

‡. This test is available for iPRO-100/103 Centering Type Unit's only.

** .When the Centering Mechanism is located at its Home Position, the Green LED is lit. If the Centering Mechanism is positioned at any other position, the LED is extinguished (OUT).

††.When the Solenoid is located at its Home Position, the Green LED is lit. If the Solenoid's location is at any other position, the LED is extinguished (OUT).

‡‡.When the Pull-Back Unit is located at its Home Position, the Green LED is lit. If the Pull-Back Unit is located at any other position, the Status LEDs are extinguished (OUT).

***.When the Transport Motor is performing normally, the Green LED is lit.



NOTE: The LED flash count is for US Currency. For details on LED flashes for other countries currency, contact your local JCM Representative.

Performance Test without a PC Procedures

Perform the following steps to perform iPRO Performance Tests No.1 through 13 without a PC.

1. Remove electrical power from the iPRO Unit.
2. Set Switch #8 on the front panel 8-Position DIP Switch of the Unit to **ON** (Figure 6-81).



Figure 6-81 DIP Switch Settings 4

3. Apply electrical power to the iPRO Unit.
4. Set the desired DIP Switch on the 8-Position DIP Switch Block to **ON** (Table 6-7) to select the desired performance Test.
5. Set 8-Position DIP Switch #8 to **OFF** in order to start each Test.
6. Set the DIP Switch #8 to **ON** in order to end the test. The iPRO will revert to Stand-by Mode Status following each test.

NOTE: If the intent is to perform other Tests following Acceptance Test No.1 to No.5, close all of the Screens on the PC and remove electrical power from the iPRO; then, reapply electrical power again, and start the Performance Test Procedures all over again.

7. Return to Step 4 of this procedure if necessary to perform another Test using the DIP Switches.

DIP SWITCH TEST

Perform the following steps to test the iPRO DIP Switch Block without using a PC.

1. Remove electrical power from the iPRO Unit.
2. Set Switch #8 on the front panel 8-Position DIP Switch of the Unit to **ON** (Figure 6-82).

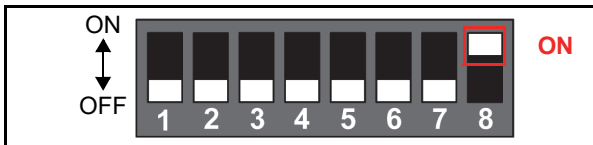


Figure 6-82 DIP Switch Settings 6

3. Apply electrical power to the iPRO Unit.
4. Set Switches #1, #2, #3, #4, #5, #6 and #7 on the 8-Position DIP Switch Block to **ON** (Table 6-7).
5. Set 8-Position DIP Switch #8 to **OFF** in order to start the DIP Switch Test.
6. When DIP Switches #2, #4 and #6 on the 8-Position DIP Switch Block are set to **OFF**, the LED will be lit a steady **Green** Color.
7. When DIP Switches #1, #3, #5 and #7 on the 8-Position DIP Switch Block are set to **OFF**, the LED will be lit a steady **Red** Color.

This completes the DIP Switch Test procedures.

SENSOR TEST

Perform the following steps to test the iPRO Sensors without using a PC.

1. Remove electrical power from the iPRO Unit.
2. Set Switch #8 on the front panel 8-Position DIP Switch of the Unit to **ON** (Figure 6-83).



Figure 6-83 DIP Switch Settings 5

3. Apply electrical power to the iPRO Unit.
4. Set Switch #7 on the 8-Position DIP Switch **ON** for the Sensor Test (See Table 6-7).
5. Set 8-Position DIP Switch #8 to **OFF** in order to ready the Sensor Test.
6. Set the DIP Switches as shown in Table 6-8 to select a pair of sensors to test.

Table 6-8 Sensor Test DIP Switch Configuration

No.	DIP Switch	Test Item
1	#1 & #7 ON	When blocking the Entrance Sensor, the LED lights Green . If blocking the Centering Guide Timing Sensor, the LED lights Red .
2	#2 & #7 ON	When blocking the PB In Sensor, the LED lights Green . When blocking the Exit Sensor 1, the LED lights Red .
3	#3 & #7 ON	When the PB Unit positions at the Home Position, the LED lights Green . When the Centering Mechanism positions at the Home Position, the LED lights Red .
4	#4 & #7 ON	When blocking the Transport Motor Encoder, the LED lights Green . When blocking the Stacker Motor Encoder, the LED lights Red .
5	#5 & #7 ON	When the Pusher Plate in the Cash Box positions at the Home Position, the LED lights Green . When the Cash Box is seated in the Frame, the LED lights Red .
6	#6 & #7 ON	When blocking the Exit Sensor 2, the LED lights Green . When the Solenoid positions at the Home Position, the LED lights Red .


This completes the Sensor Test without using a PC.

iPRO Utility Tools

This portion provides information regarding each iPRO Utility setting procedure.

ICB Setting Tool Requirements

The Tools listed in Figure 6-84 are required to set or change each iPRO ICB Setting.

 **NOTE:** The ICB Function Status is initially set to "INHIBIT". To activate the iPRO ICB function use the JCM Tool Suite Utility option to "ENABLE" ICB. Refer to the JCM ICB Operation and Maintenance Manual for details of enabling and using ICB.

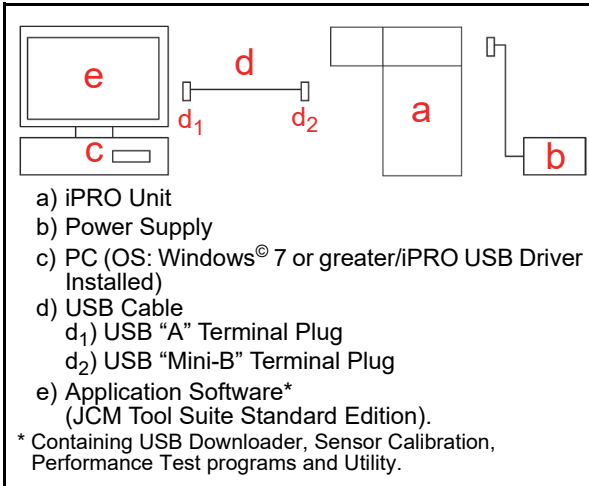


Figure 6-84 ICB Setting Tool Requirements

ICB Setting Change Preparation

Perform the following steps to set or reset the ICB Functions:

1. Apply electrical power to the iPRO unit.
2. Launch the "JCM Tool Suite Standard Edition" Application. The Figure 6-85 Screen will appear when the Application becomes activate.

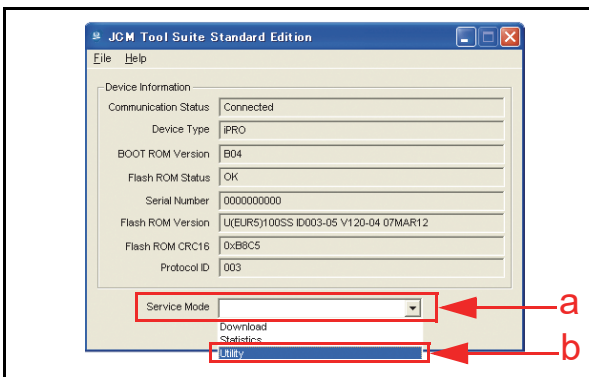


Figure 6-85 JCM Tool Suite Standard Edition

3. Select and hold-down on the "Service Mode" selection Pull-down Menu (Figure 6-85 a), and Slide-down to select "Utility" from the Pull-Down Menu Sections (Figure 6-85 b).

The "iPRO Utility Tool Version X.XX for Suite Edition" Application Menu selection Screen shown in Figure 6-86 will automatically appear.

ICB Function Settings

This portion provides information about each Screen Button located on the "ICB Function" Screen shown in Figure 6-86.

The following two (2) setting types are available for use with the ICB Functions:

- Setting the ICB Enable/Disable Function
- Setting the Machine Number

SETTING ICB ENABLE/DISABLE FUNCTIONS

The following portion explains each ICB setting when activated:

1. Click the "**1) ICB SETTING**"  Screen Button (Figure 6-86 a) located on the "iPRO Utility Tool" Screen.

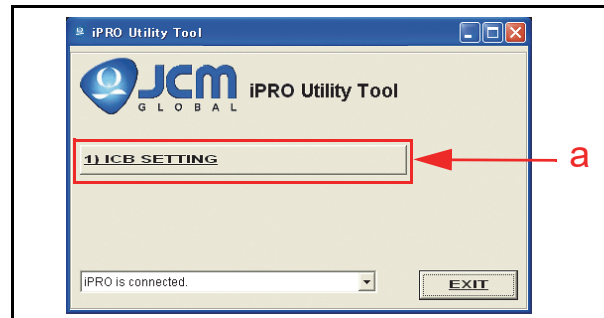


Figure 6-86 iPRO Utility Tool Version X.XX for Suite Edition Screen 2

2. Confirm that the "ICB Function" Screen shown in Figure 6-87 appears. Five (5) Screen Buttons exist on this Screen.

To begin using the "ICB Function" Screen Buttons, select the ICB "Enable" or "Disable" Function desired by first clicking on the appropriate Screen Button (Figure 6-87 a or b).

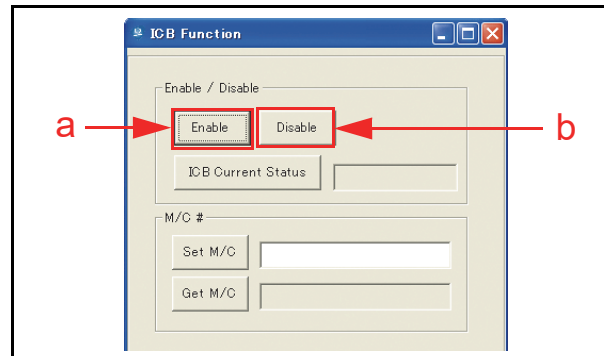


Figure 6-87 Disable Setting Completion

ENABLE SCREEN BUTTON ACTIVATION

Set the ICB “Enable” Function when an Expansion Circuit Board (Figure 6-88 a) exists on the iPRO Unit and DS2 Switch #1 is ON (Figure 6-88 b).

Figure 6-88 IICB Expansion Circuit Board and DIP Switch Block Location

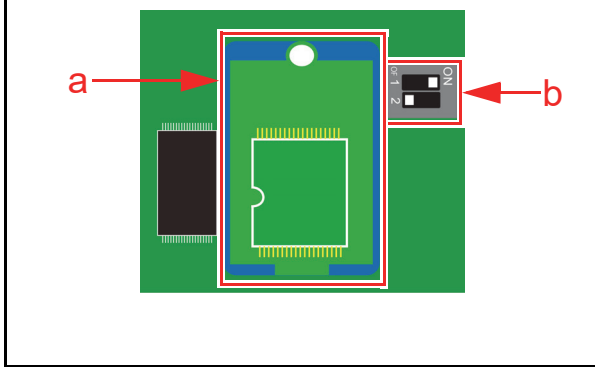


Figure 6-88 IICB Expansion Circuit Board and DIP Switch Block Location

To set ICB Enable proceed as follows:

1. Click the “Enable” Screen Button (Figure 6-87 a) to activate the ICB Function.
2. When the ICB Function is correctly enabled, the “ICB Successfully Enabled.” pop-up Dialog Message Screen shown in Figure 6-89 will appear.
3. Click the “OK” Screen Button (Figure 6-89 a) to accept the reported message.

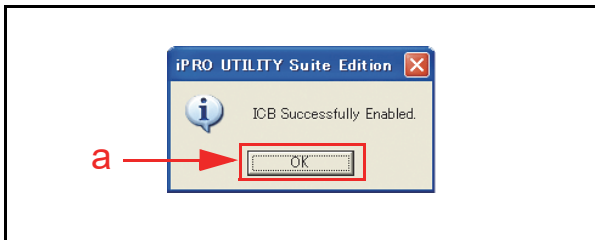


Figure 6-89 Enable Setting Completion Dialog

DISABLE SCREEN BUTTON ACTIVATION

Set the ICB “Disable” Function when an Expansion Circuit Board exists on the iPRO Unit.

To set ICB Disable proceed as follows:

1. Click the “Disable” Screen Button (Figure 6-87 b) to inhibit the iPRO’s ICB Function.
2. When the ICB Function is correctly disabled, the “ICB Successfully Disabled” pop-up Dialog Message Window shown in Figure 6-90 will appear.

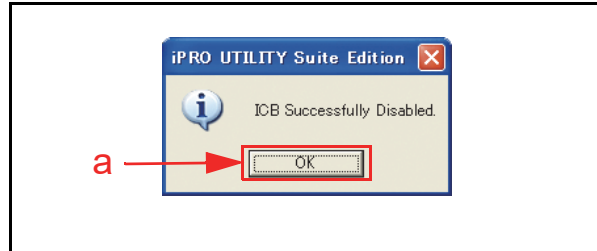


Figure 6-90 Disable Setting Completion Dialog

3. Click the “OK” Screen Button (Figure 6-90 a) to accept the reported message.

ICB CURRENT STATUS SCREEN BUTTON

To check the current ICB Enable/Disable Setting Status proceed as follows:

1. Click the “ICB Current Status” Screen Button (Figure 6-91 a).
2. The Current ICB Enable/Disable Status will appear in a Field Window next to the “ICB Current Status” Screen Button (Figure 6-91 b).

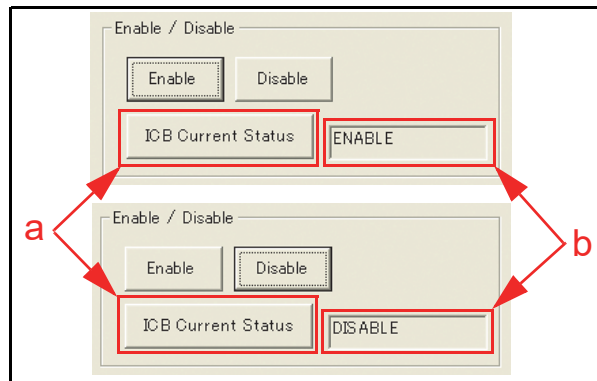




Figure 6-91 ICB Current Status Screen

SETTING THE M/C

This setting allows the individual fourteen (14) digit Machine Code Number on the iPRO Unit to be entered. The Machine Number helps to identify to which Game Machine the iPRO belongs, and avoids and prevents the use of an assigned Cash Box in another Game Machine.

To enter and set a Machine Code Number, proceed as follows:

1. Type the fourteen (14) Machine Code Number in the Text Field Window located next to the “Set M/C”  Screen Button (Figure 6-92 b).
2. Click the “Set M/C”  Screen Button (Figure 6-92 a) to set the Machine Number just entered.

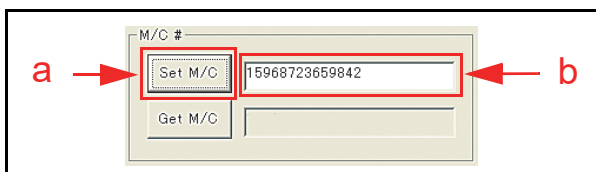



Figure 6-92 Machine Number Setting Screen



NOTE: When the Machine Code Number is less than fourteen (14) digits in length, add extra Zeros “0” to the head of the Machine Number in order to create a recognizable 14 digit Code Number.

3. When the Machine Number is correctly set, the “M/C# Set Successfully” pop-up Dialog Message Window shown in Figure 6-93 will appear.
4. Click the “OK”  Screen Button (Figure 6-93 a) to accept the reported message.

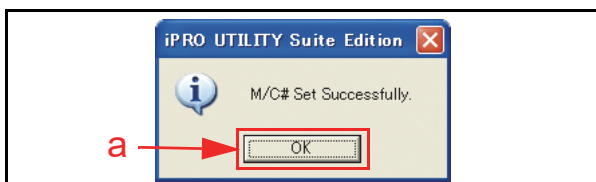




Figure 6-93 Machine No. Setting Complete Dialog Screen

To retrieve the current Machine Code Number set in an iPRO Unit proceed as follows:

1. Click the “Get M/C”  Screen Button (Figure 6-94 a).
2. The existing fourteen (14) Machine Code Number will appear in the Text Field Window located next to the “Get M/C”  Screen Button (Figure 6-94 b).

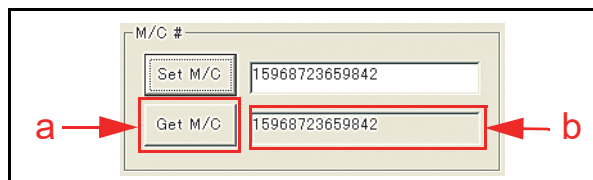


Figure 6-94 Machine Number Indication Screen

ICB Function Operational Condition

Table 6-9 lists various functional combinations available for the iPRO Unit, ICB Expansion Circuit Board, Cash Box and ICB Functional Settings (Refer to “Standard and ICB Error and Reject Code Conditions” on page A-4 of Appendix A in this Manual for more details concerning each error type listed).

Table 6-9 ICB Setting Function Operational Condition

ICB Expansion Circuit Board Installed	DS2 Switch #1	Cash Box Initialized	Installed the same Machine	Installed another Machine	Checksum Errors
No	OFF	Non-ICB Model Operation			
	ON	Inhibit Setting (Stop Operation)			
Yes	OFF	Non-ICB Model Operation			
	ON	OK	OK	NG	NG

THIS PAGE INTENTIONALLY LEFT BLANK

iPRO™ Series Banknote Acceptor

Section 7

7 EXPLODED VIEWS AND PARTS LISTS

This section provides product exploded views and parts lists for the iPRO™ Series Banknote Acceptor (iPRO-10x and iPRO-200) Unit. This section contains the following information.

- Entire iPRO Unit Exploded View
- iPRO Upper Unit Exploded View
- iPRO Transport Unit Exploded View
- iPRO SS/SU and UH Frame Unit Exploded View
- iPRO Standard Cash Box Unit Exploded View
- iPRO Large Cash Box Unit Exploded View
- iPRO Pusher Mechanism Unit Exploded View
- iPRO 1200 Cash Box Frame Unit Exploded View
- iPRO 1200 Cash Box Exploded View
- iPRO Optional Key Exploded View
- iPRO External Cables List
- iPRO Optional Conversion Circuit Boards List

Entire iPRO Unit Exploded View

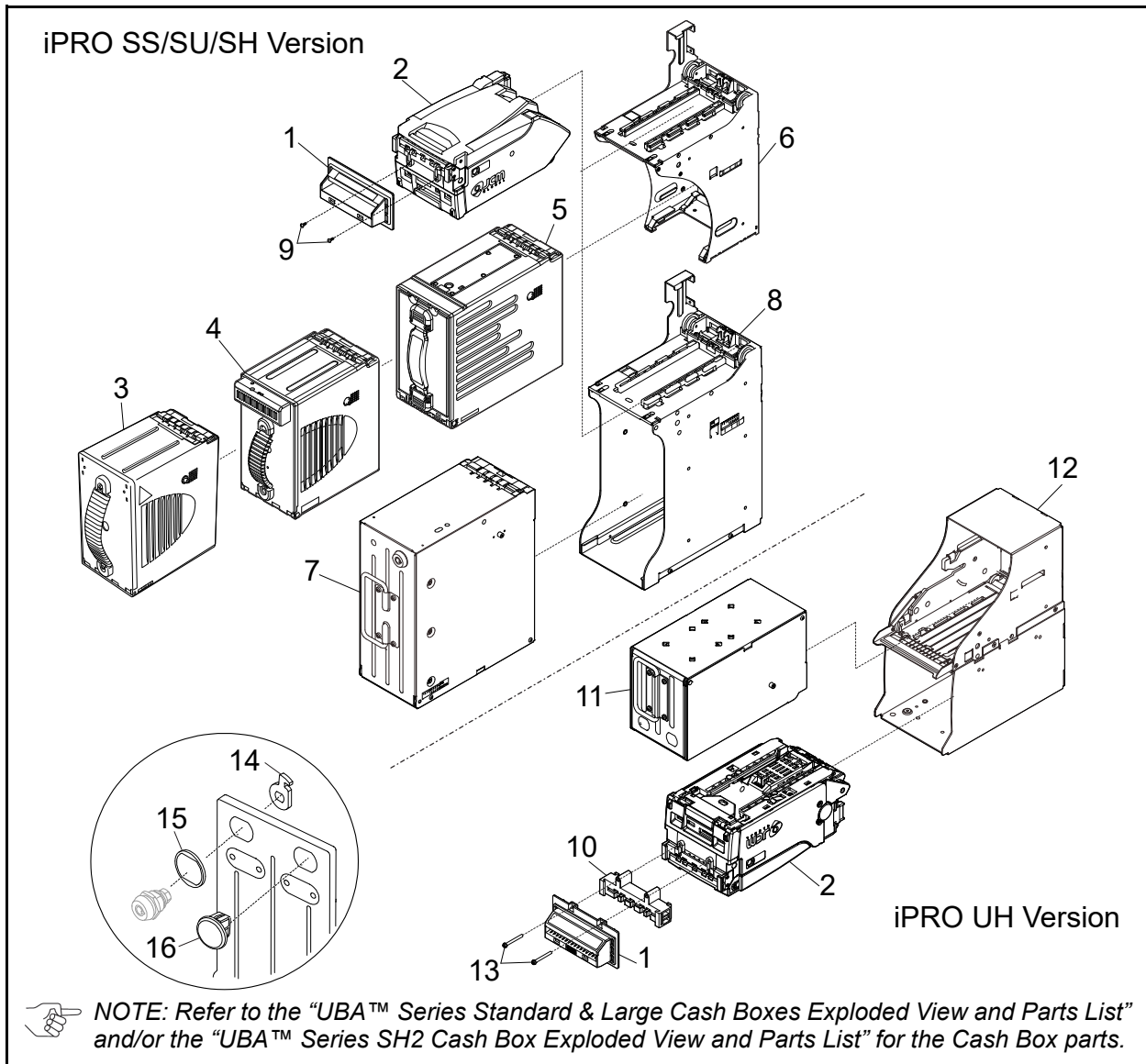


Figure 7-1 Entire iPRO Unit Exploded View

Entire iPRO Unit Parts List

Table 7-1 Entire iPRO Unit Parts List

Ref No.	EDP No.	Description	Qty	Remark
1	202272	UBA Bezel SS 1 R (85mm, Black, Green LED)	1	For Standard (SS) installation No Relay Harness
	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
	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
	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 Staking Up (SU) installation No Relay Harness
	212987	UBA Bezel SS Metal M1 T (85mm, Gold (Metal), Green LED)	1	For Standard (SS) installation No Relay Harness
	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	
2	282063	iPRO-100 Transport Unit TD	1	
	236850	iPRO-100 Transport Unit OEM	1	
	207617	iPRO-101 Transport Unit	1	
	232348	iPRO-102 Transport Unit	1	
	288662	iPRO-103 Transport Unit	1	
	210726	iPRO-200 Transport Unit	1	
3	280826	UBA-SS CASH BOX MP6 PH	1	500 notes
4	280825	UBA-SS CASH BOX IT MP6 PH	1	500 notes
5	280824	UBA CASH BOX L TD	1	900 notes
	128875	UBA CASH BOX L (IT)	1	900 notes
6	280537	UBA FRAME UNIT PH	1	For iPRO SS and SU Version
7	233884	UBA CASH BOX 1200 SP	1	For iPRO SH Version, 1200-note Cash Box With the Shipping Container
8	222081	UBA FRAME UNIT 1200	1	For iPRO SH Version 1200-note Cash Box Frame
9	006481	3x16 W Washer (Small)	2	
10	198102	Bezel Spacer	1	
11	280942	WBA-SH2 Cash Box Unit (PH)	1	For iPRO UH Version, 400-note With the Shipping Container
12	238361	iPRO UH Frame Unit	1	
13	199082	3x35 Pan Head W Washer (Small)	2	For Bezel Spacer
14	052505	TANG B R	2	For Metal Box Type, WBA-SH2
			4	For Metal Box Type, iPRO SH, 1200-note
	121682	Plate, Locking Tang	1	For Plastic Box Type
	130356	Plate, Locking Tang (Narrow)	1	For Plastic Box Type
15	059086	Key Spacer R	1	
16	075245	C-30-SG-18A	1	For Metal Box Type
	108824	Cap, Key	1	For Plastic Box Type
-	222083	UBA CASH BOX 1200 + FRAME UNIT 1200	1	1200-note Cash Box + Frame Unit With the Shipping Container

iPRO Upper Unit Exploded View

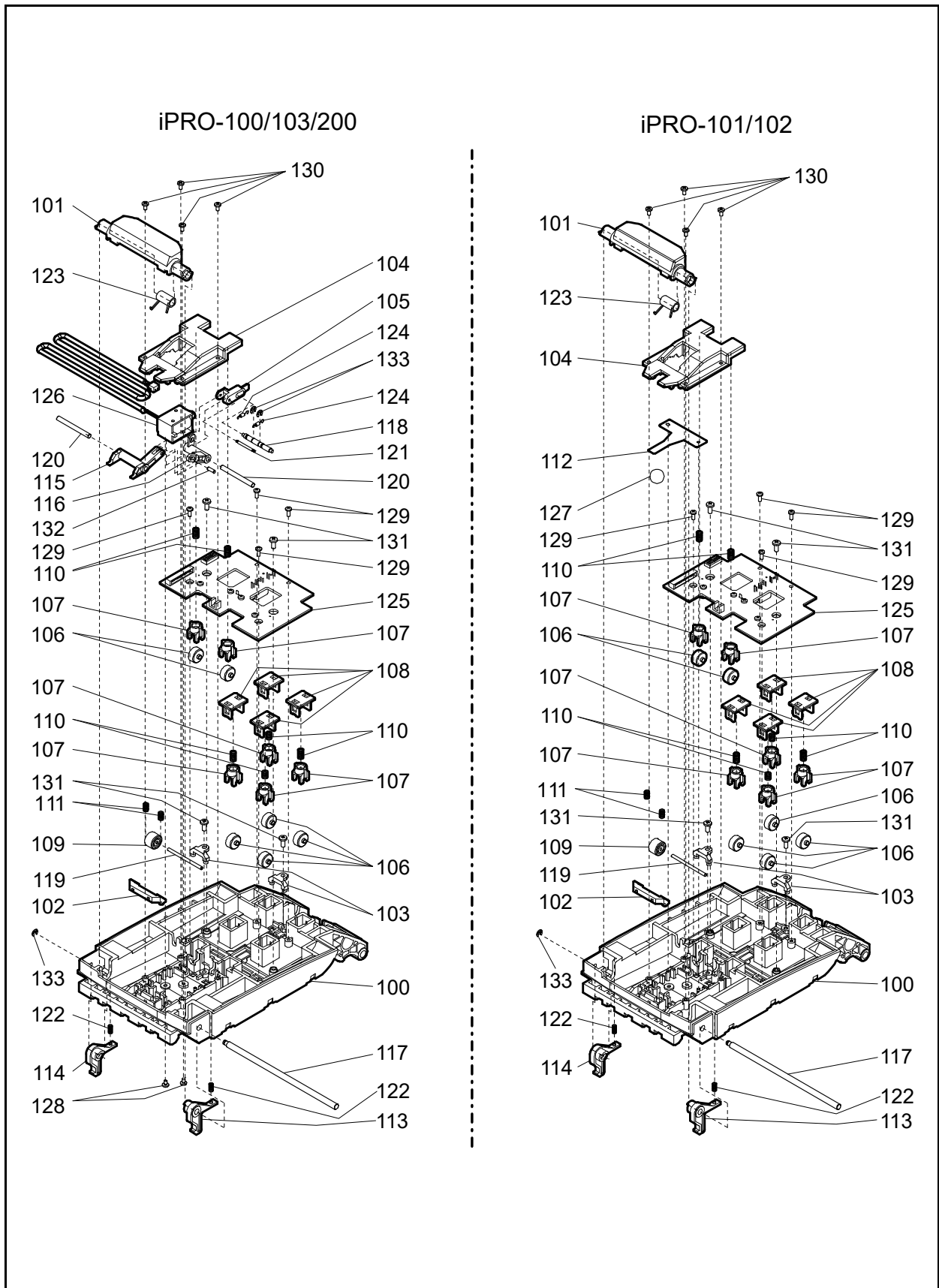


Figure 7-2 iPRO Upper Unit Exploded View

iPRO Upper Unit Parts List

Table 7-2 iPRO Upper Unit Parts List

Ref No.	EDP No.	Description	Qty	Remark
100	195210	TR GUIDE URF	1	
101	195219	OPEN LEVER URF	1	
102	195224	Prism URF A	1	
103	195225	Prism URF B	2	
104	195226	SOL BASE URF	1	
105	195228	RO SLIDE URF	1	iPRO-100/103/200 Only
106	195230	TR RO URF	6	
107	195231	TR RO BRKT	6	
108	195232	TR RO CAP	4	
109	195247	SL ROLLER	1	iPRO-100/102/103/200 Only
110	195291	TR SP 120	6	
111	195292	TR SP 60	2	iPRO-100/103/200 Only
	236481	TR SP SL 76	2	iPRO-102 Only
112	195289	BALL SP PT	1	iPRO-101 Only Ball Spring Plate
113	102771	OPEN LATCH R	1	
114	102770	OPEN LATCH L	1	
115	102756	ROLER UP LEVER	1	iPRO-100/103/200 Only
116	102755	SOL LINK LEVER	1	iPRO-100/103/200 Only
117	102993	OPEN LATCH SHAFT	1	
118	102995	Slider Shaft	1	iPRO-100/103/200 Only
119	102996	Mover Roller Shaft	1	iPRO-100/103/102 Only
120	102998	SOL LEVER SHAFT	2	iPRO-100/103/200 Only
121	103013	MOVE S BEAM	1	iPRO-100/103/200 Only
122	103016	OP LATCH SPRING	2	
123	213071	LATCH SP UP	1	
124	103022	SOL SPRING	2	iPRO-100/103/200 Only
125	246406	4089-3430-06-02E-01	1	
	246407	4089-3430-06-02E-02	1	iPRO-200 Only
126	195117	TDS-05B 4015	1	iPRO-100/103/200 Only
127	148029	POM Ball 3/8INCH	1	iPRO-101 Only
128	104043	2X3 Binding Head Screw With F-LOCK Blue	2	iPRO-100/103/200 Only
129	138053	2x5 Phillips, Self Tapping, Binding Screw *	4	
130	101172	2x6 Phillips, Self Tapping, Binding Screw *	4	
131	055413	2.6x6 Phillips, Self Tapping, Binding Screw (Black)*	4	
132	104288	Ø2x6 Parallel Pin	1	iPRO-100/103/200 Only
133	003705	E-Ring Ø2 SUS OCHIAI	3	For iPRO-100/103/200
	104034	E-Ring Ø2 SUS (TAIYO)	1	For iPRO-101/102

*. P-TITE is recommended.

iPRO Transport Unit 1 Exploded View

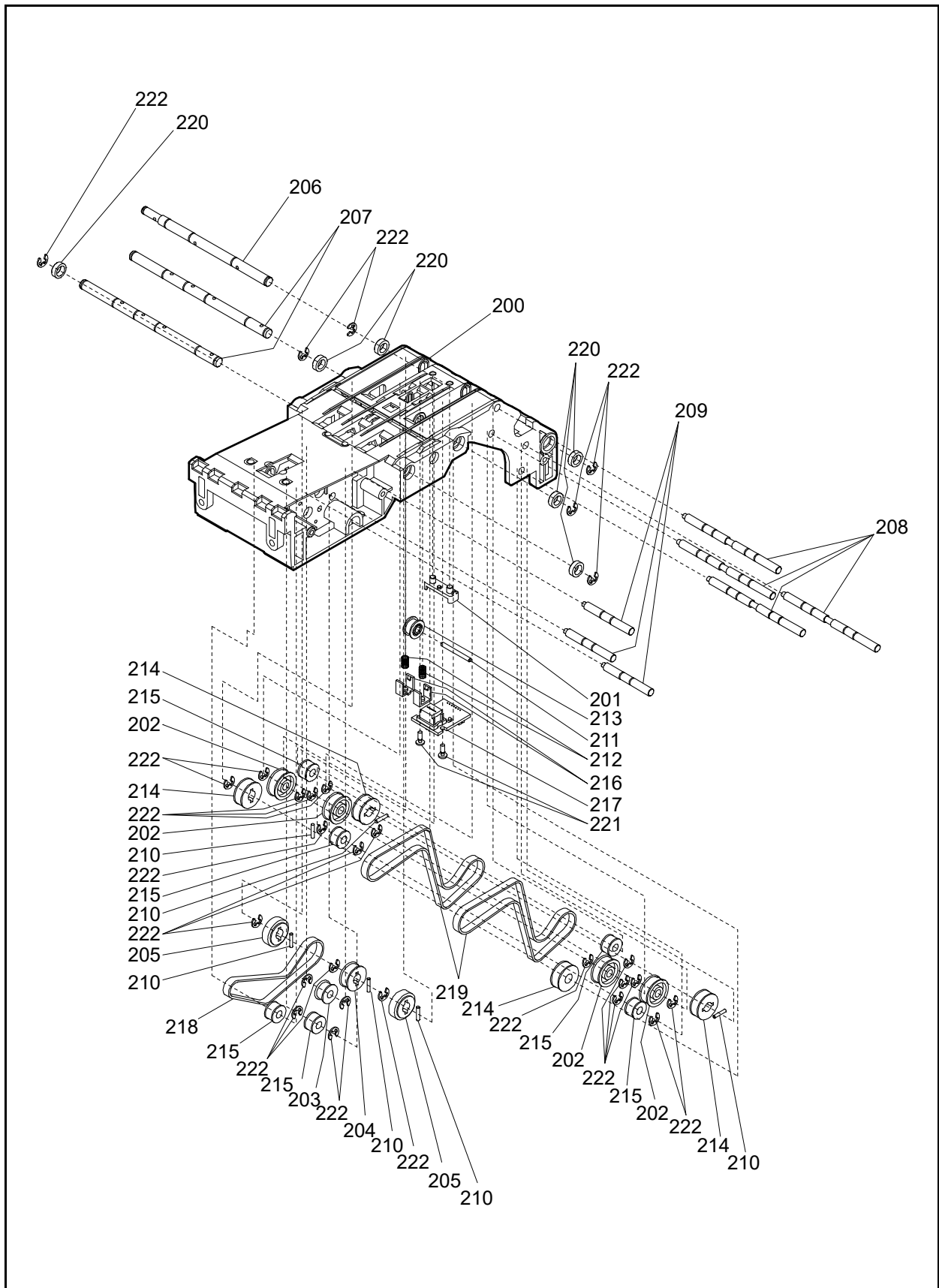


Figure 7-3 iPRO Transport Unit 1 Exploded View

iPRO Transport Unit 1 Parts List

Table 7-3 iPRO Transport Unit 1 Parts List

Ref No.	EDP No.	Description	Qty	Remark
200	195209	TR GUIDE URF C	1	
201	195223	SNSR CVR URF	1	
202	195245	Ø14 Idler	4	
203	204159	Ø9 Idler	1	
204	204161	TR PULLY Z26	1	
205	195325	φ15 DRIVE RO	2	
	288656	φ15 DRIVE RO SI	2	iPRO-103 Type
206	195273	TR DR SH A	1	
207	195274	TR DR SH B	2	
208	195275	PU SH URF A	4	
209	195277	PU SH URF B	3	
210	208478	PULLY PIN	6	
211	208477	MAG RO SH	1	
212	151799	MAG SP	2	
213	119303	ROLLER MG R	1	
214	091168	PULLEY D R	4	
215	091169	PULLEY TR R	6	
216	119330	Spring Lock MG	2	
217	195113	KR2120-JC03LF	1	
218	204160	40S1.5M158UVE Timing Belt	1	
	288655	40S1.5M158UVH Timing Belt	1	iPRO-103 Type
219	195251	40S1.5M252UVE Timing Belt	2	
	288654	40S1.5M252UVH Timing Belt	2	iPRO-103 Type
220	148032	850ZZ Bearing	6	
221	101172	2x6 Phillips, Self Tapping, Binding Screw *	2	
222	003707	E-Ring Ø3 SUS	26	For iPRO-100/103/200
	104035	E-Ring Ø3 SUS (TAIYO)		For iPRO-101/102

*. P-TITE is recommended.

iPRO Transport Unit 2 Exploded View

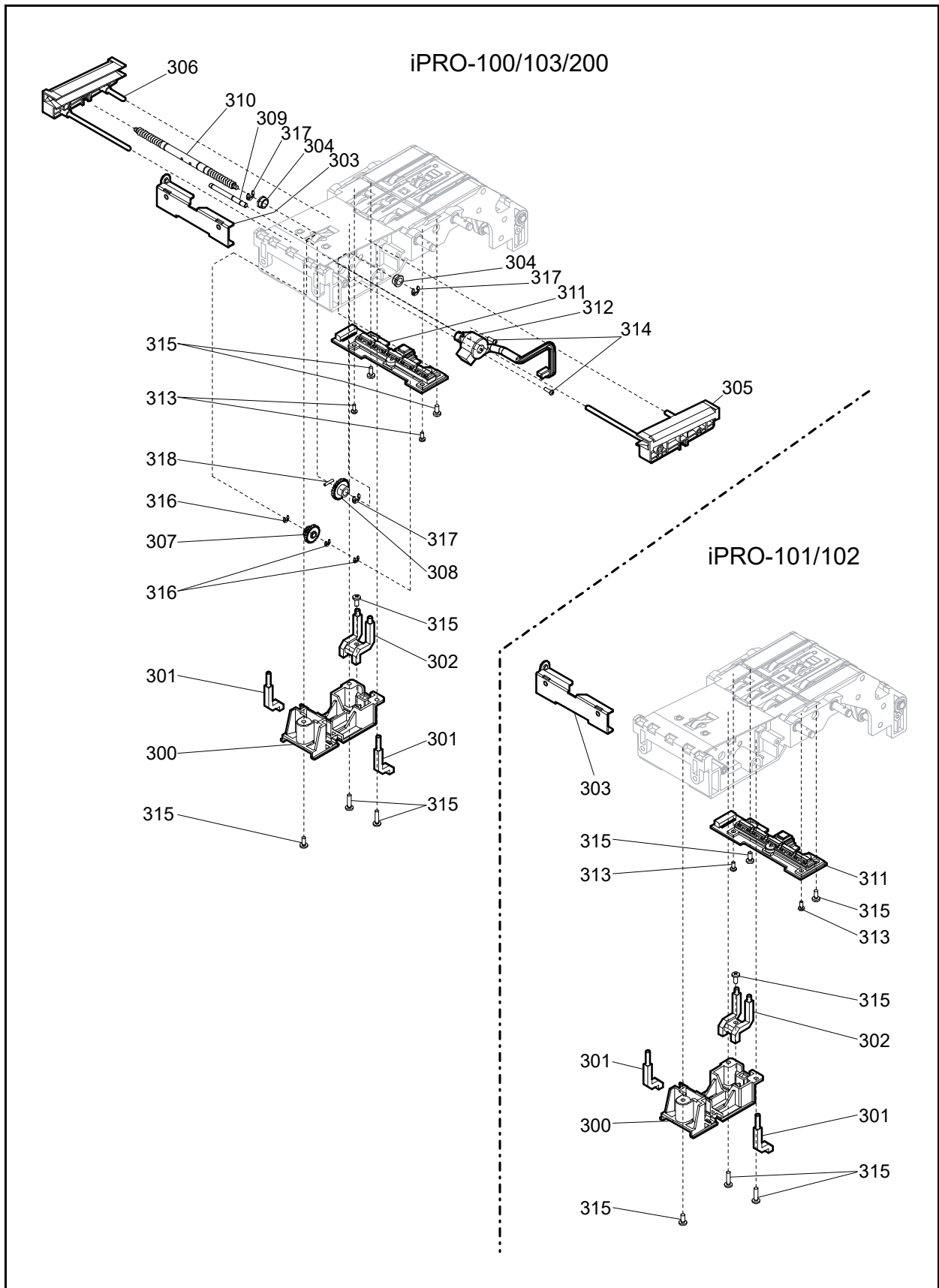


Figure 7-4 iPRO Transport Unit 2 Exploded View

iPRO Transport Unit 2 Parts List**Table 7-4** iPRO Transport Unit 2 Parts List

Ref No.	EDP No.	Description	Qty	Remark
300	195212	AD COVER A	1	
301	195214	LG URF A	2	
302	195215	LG URF B	1	
303	195285	BEZEL PLATE URF	1	
304	119306	Bearing Mover	2	iPRO-100/103/200 Only
305	102763	MOVE GUIDE UBA 1	1	iPRO-100//103/200 Only
306	102762	MOVE GUIDE UBA 2	1	iPRO-100//103/200 Only
307	102969	GEAR MOVE 2ND UBA	1	iPRO-100/103//200 Only
308	102970	GEAR MOVE FINAL	1	iPRO-100//103/200 Only
309	102999	MOVE GEAR SHAFT	1	iPRO-100//103/200 Only
310	103983	MOVE SCREW	1	iPRO-100//103/200 Only
311	246408	4089-3430-06-03A-01	1	Lower Sensor Board
	246409	4089-3430-06-03A-02	1	iPRO-200 Only Lower Sensor Board
312	195115	PM15S-020-JAK1	1	iPRO-100/103/200 Only Centering Motor
313	138053	2x5 Phillips, Self Tapping, Binding Screw*	2	
314	104149	2x6 PS-TITE, Phillips, Self Tapping, Pan Head #0 Type 2*	2	iPRO-100/103/200 Only
315	055413	2.6x6 Phillips, Self Tapping, Binding Screw (Black)*	6	
316	003705	E-Ring Ø2 SUS OCHIAI	3	iPRO-100//103/200 Only
317	003707	E-Ring Ø3 SUS	3	iPRO-100//103/200 Only
318	208478	PULLY PIN	1	iPRO-100//103/200 Only

*. P-TITE is recommended.

iPRO Transport Unit 3 Exploded View

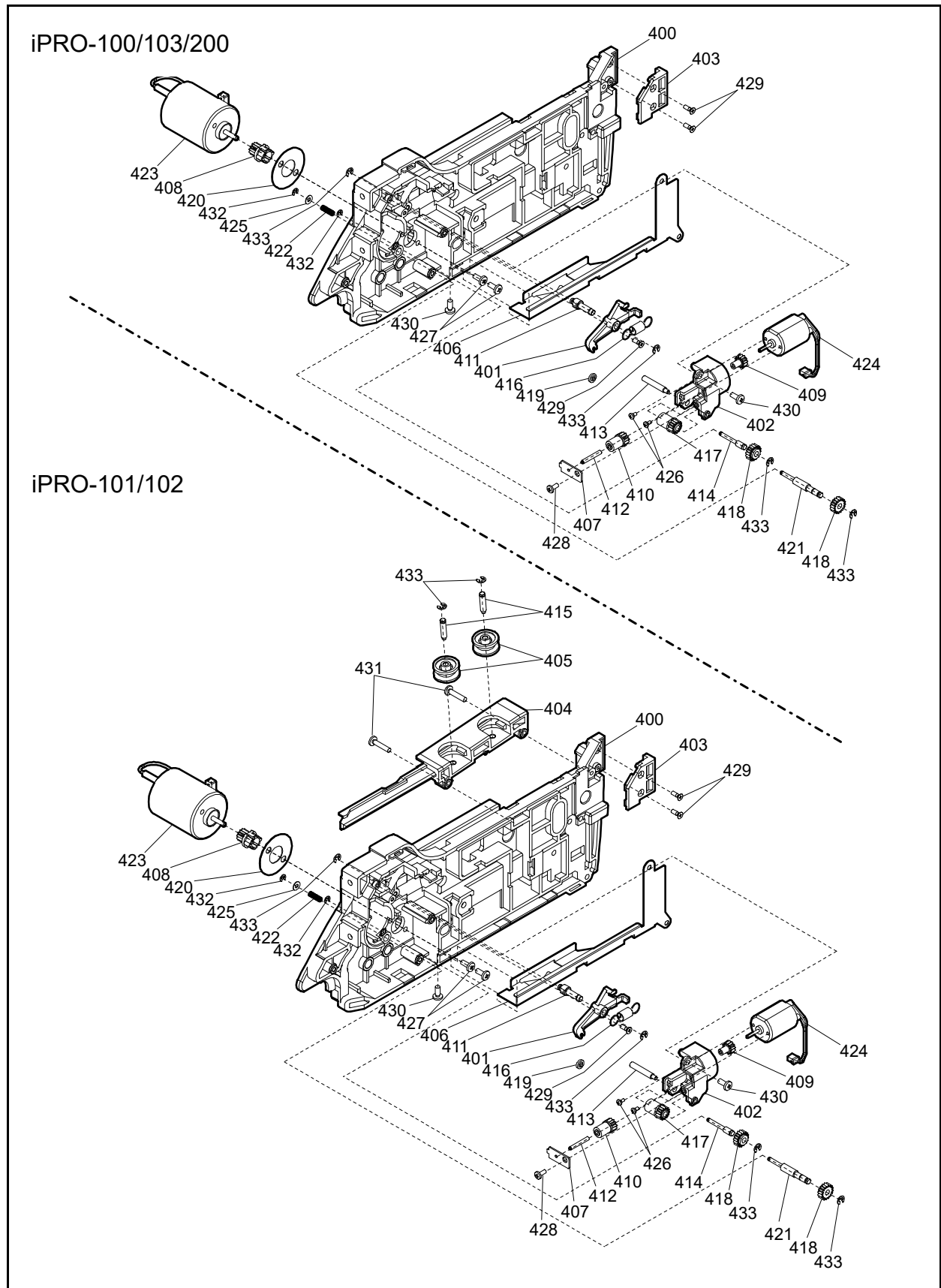


Figure 7-5 iPRO Transport Unit 3 Exploded View

iPRO Transport Unit 3 Parts List**Table 7-5** iPRO Transport Unit 3 Parts List

Ref No.	EDP No.	Description	Qty	Remark
400	195208	TR GUIDE URF B	1	
401	195229	PB ARM URF	1	
402	195242	PB MO BRKT URF	1	
403	195244	BZL HOLDER URF B	1	
404	195249	SL66 Guide L	1	iPRO-101 Only
	231073	SL76 GUIDE L	1	iPRO-102 Only
405	195250	Guide Roller 66	2	iPRO-101 Only
406	195283	FG PLATE URF	1	
407	195287	PB GE PLATE	1	
408	273868	TR GE URF 1	1	
409	195312	PB GE URF 1	1	
410	195313	PB GE URF 2	1	
411	195255	RO LEV SH URF	1	
412	195266	PB GE SH A	1	
413	195268	PB GE SH B	1	
414	195270	PB GE SH C	1	
415	195278	GUIDE RO SH	2	iPRO-101 Only
416	103023	PB LEVER SPRING	1	
417	238674	GEAR ROLL 2ND UBA	1	
418	102972	GEAR ROLL CLUTCH	2	
419	102976	ROLL G HOME ROLLER	1	
420	102989	Motor Spacer	1	
421	103002	PB CLUTCH SHAFT	1	
422	103017	PB CLUTCH SPRING	1	
423	197945	4089-3430-05-10-01 Transport Motor Assembly	1	Transport Motor Harness Assy.
424	195116	CN16-04103(IPRO)	1	Pull Back Motor
425	104218	2.5x5x0.3 Flat Washer	1	
426	195301	1.7x4 Pan Head Screw with W Washer (Small)	2	
427	189529	2.6x6 Binding Screw with F-LOCK	2	
428	101172	2x6 Phillips, Self Tapping, Binding Screw*	1	
429	058834	2x6 Phillips, Self Tapping, Flat Head Screw*	3	
430	055413	2.6x6 Phillips, Self Tapping, Binding Screw (Black)*	2	
431	195302	2.6x12 Binding Head Screw	2	iPRO-101/102 Only
432	003704	E-Ring Ø1.5 SUS OCHIAI	2	
433	003705	E-Ring Ø2 SUS OCHIAI	4	For iPRO-100/103/200
	104034	E-Ring Ø2 SUS (TAIYO)	6	For iPRO-101/102

* P-TITE is recommended.

iPRO Transport Unit 4 Exploded View

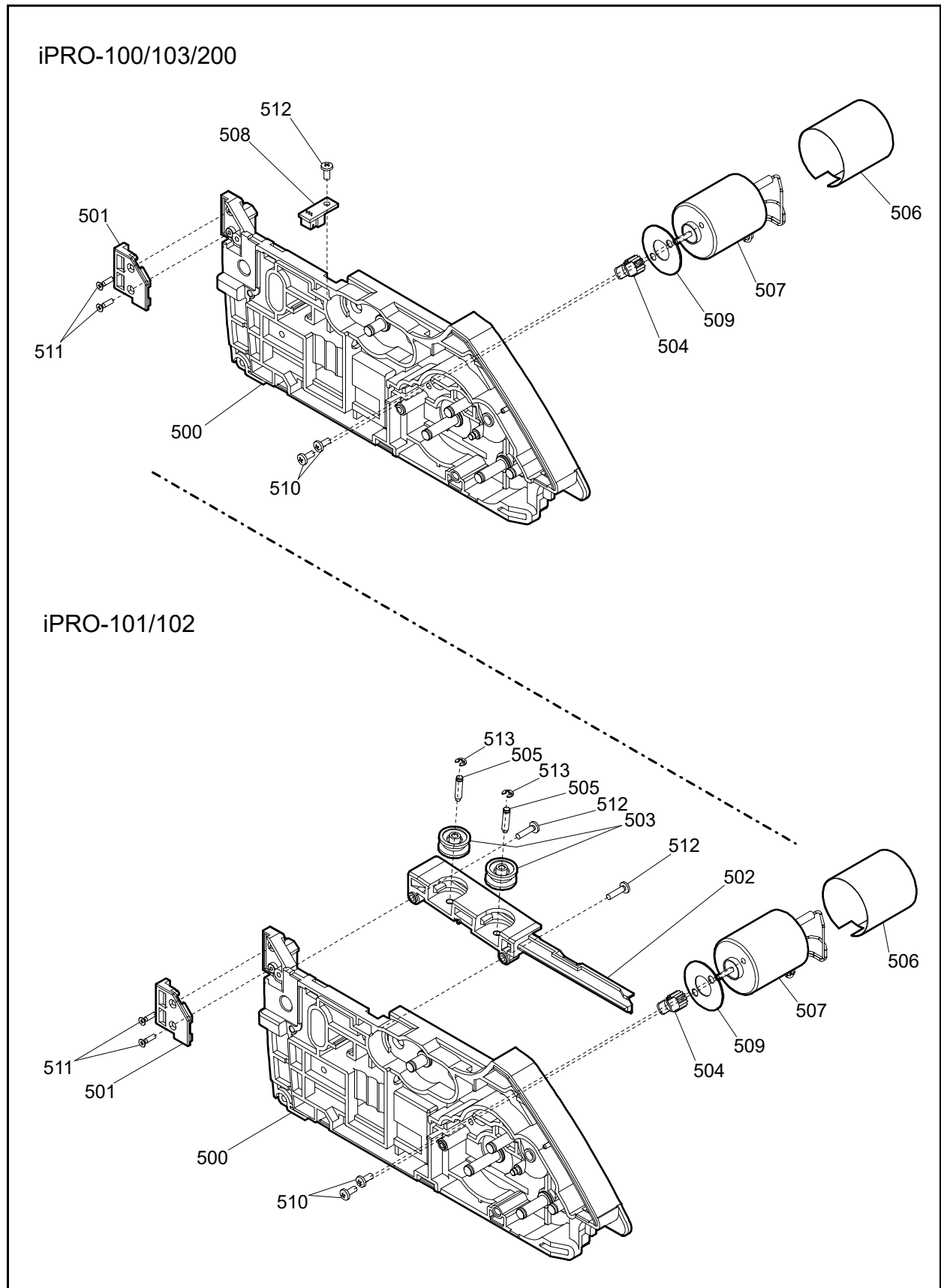


Figure 7-6 iPRO Transport Unit 4 Exploded View

iPRO Transport Unit 4 Parts List**Table 7-6** iPRO Transport Unit 4 Parts List

Ref No.	EDP No.	Description	Qty	Remark
500	195206	TR GUIDE URF A ASSY	1	
501	195243	BZL HOLDER URF A	1	
502	195248	SL66 Guide R	1	iPRO-101 Only
	231072	SL76 GUIDE R	1	iPRO-102 Only
503	195250	Guide Roller 66	2	iPRO-101 Only
504	253634	ST GE URF 1(PPS)	1	
505	195278	GUIDE RO SH	2	iPRO-101/102 Only
506	256539	Motor Filter	1	
507	197944	4089-3430-05-06-01 Stacker Motor Assembly	1	Stacker Motor
508	116208	4033-3240-06-08B-01 R	1	iPRO-100/103/200 Only Centering Home Position Sensor Board
509	195283	Motor Spacer	1	
510	189529	2.6x6 Binding Screw with F-LOCK	2	
511	058834	2x6 Phillips, Self Tapping, Flat Head Screw*	2	
512	055413	2.6x6 Phillips, Self Tapping, Binding Screw*	1	For iPRO-100/103/200
			2	For iPRO-101/102
513	104034	E-Ring Ø2 SUS (TAIYO)	2	iPRO-101/102 Only

*. P-TITE is recommended.

iPRO Transport Unit 5 Exploded View

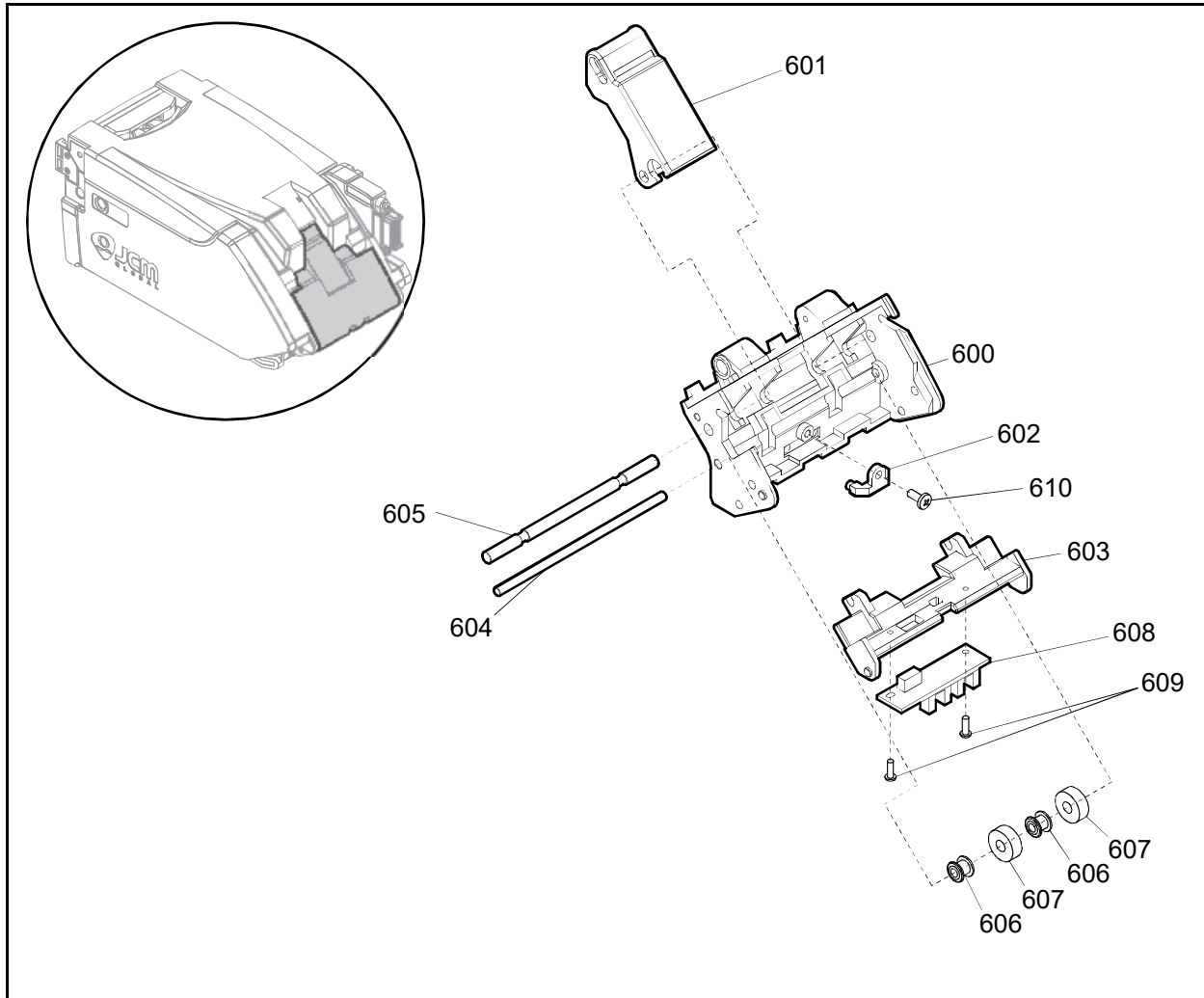


Figure 7-7 iPRO Transport Unit 5 Exploded View

iPRO Transport Unit 5 Parts List

Table 7-7 iPRO Transport Unit 5 Parts List

Ref No.	EDP No.	Description	Qty	Remark
600	195211	TR GUIDE URF E	1	
601	195221	Wire Tunnel URF	1	
602	195225	Prism URF B	1	
603	195237	B BOAD BLK URF	1	
604	195280	BG RO SH URF	1	
605	195281	BG SP SH URF	1	
606	147966	TR ROLLER CORE	2	
607	147767	Sponge Roller	2	
608	116206	4033-3240-06-07C-01 R	1	Box Sensor Board
609	104149	2x6 PS-TITE, Phillips, Self Tapping, Pan Head #0 Type 2*	2	For iPRO-100/103/200
	104150			For iPRO-101/102
610	055413	2.6x6 Phillips, Self Tapping, Binding Screw (Black)*	1	

*. P-TITE is recommended.

iPRO Transport Unit 6 Exploded View

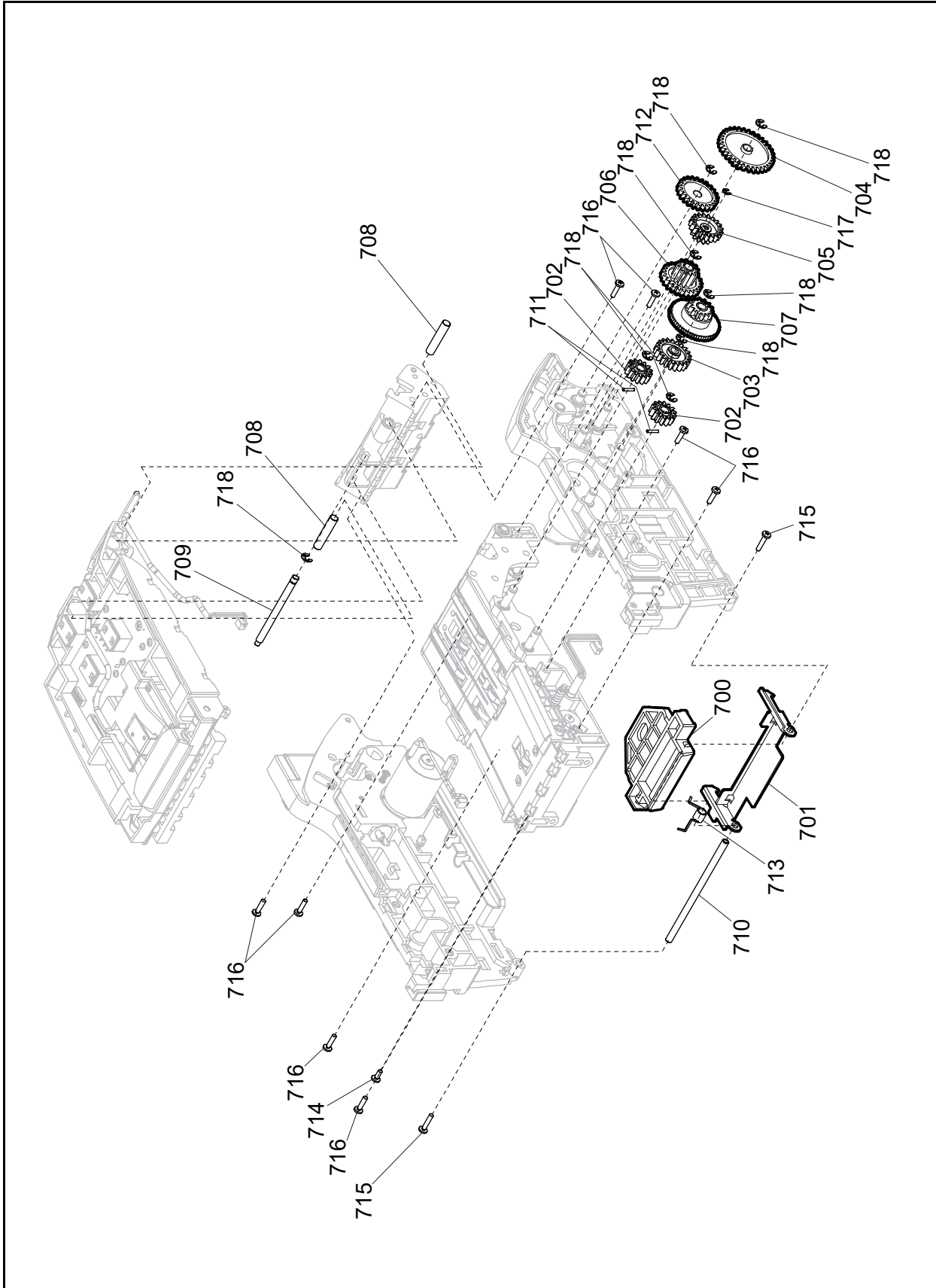


Figure 7-8 iPRO Transport Unit 6 Exploded View

iPRO Transport Unit 6 Parts List**Table 7-8** iPRO Transport Unit 6 Parts List

Ref No.	EDP No.	Description	Qty	Remark
700	195235	TR RELEASE LEV	1	
701	195282	TR LATCH URF	1	
702	195306	TR GE URF 4	2	
703	195307	TR GE URF 5	1	
704	195309	ST GE URF 2	1	
705	195310	ST GE URF 3	1	
706	195311	ST GE URF 4	1	
707	195314	TL GEAR	1	
708	195279	GE F PIN URF	2	
709	195253	TUNNEL SH URF	1	
710	195276	F DOOR SH URF	1	
711	208478	PULLY PIN	2	
712	102968	GEAR ST FINAL	1	
713	103021	TR LATCH SPRING	1	
714	055413	2.6x6 Phillips, Self Tapping, Binding Screw (Black)*	1	
715	195302	2.6x12 Binding Head Screw	2	
716	071182	2.6x10 Phillips, Self Tapping, Binding Screw*	8	
717	003705	E-Ring Ø2 SUS OCHIAI	1	For iPRO-100/103/200
	104034	E-Ring Ø2 SUS (TAIYO)		For iPRO-101/102
718	003707	E-Ring Ø3 SUS	8	For iPRO-100/103/200
	104035	E-Ring Ø3 SUS (TAIYO)		For iPRO-101/102

*. P-TITE is recommended.

iPRO Transport Unit 7 Exploded View

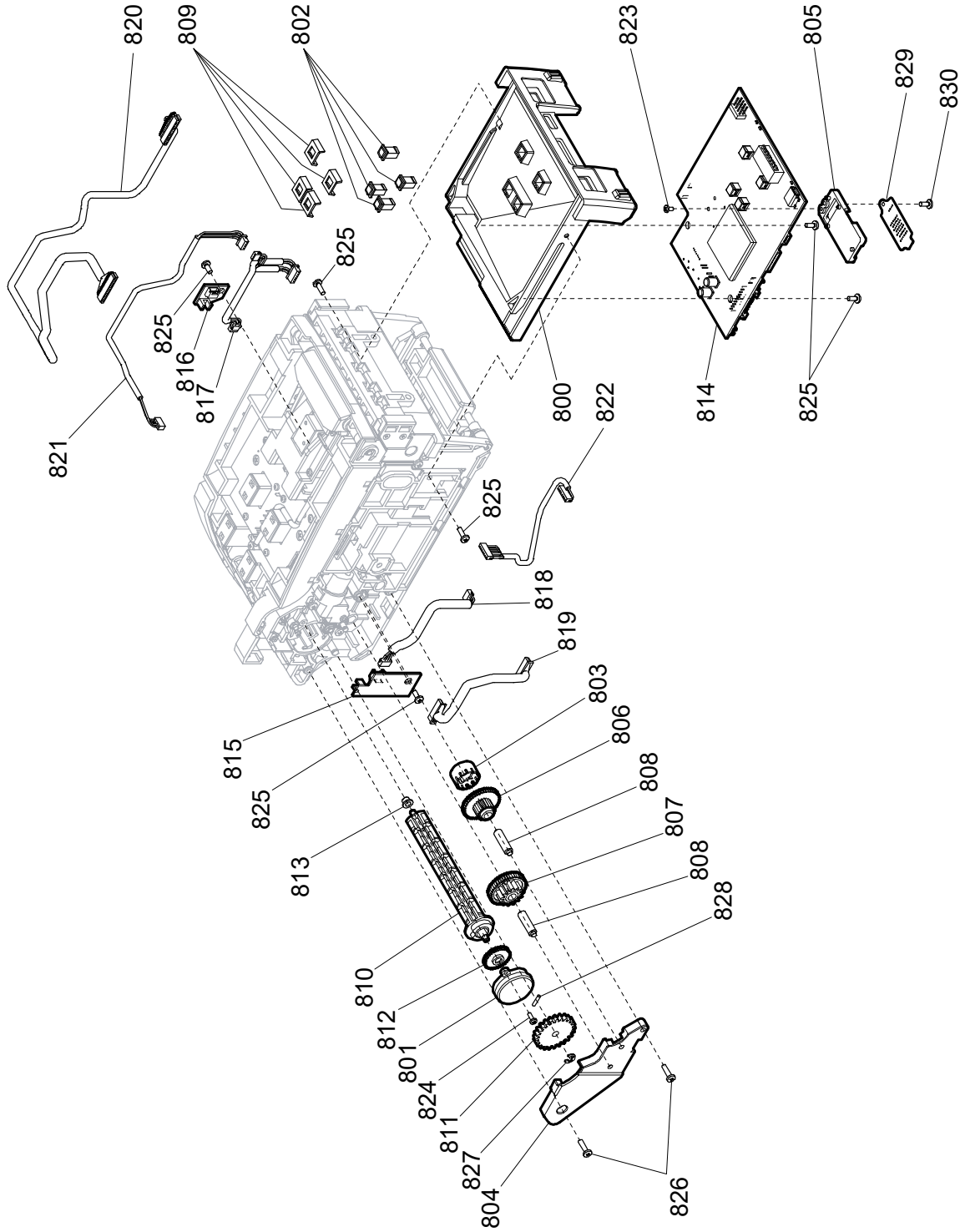


Figure 7-9 iPRO Transport Unit 7 Exploded View

iPRO Transport Unit 7 Parts List**Table 7-9** iPRO Transport Unit 7 Parts List

Ref No.	EDP No.	Description	Qty	Remark
800	195220	Front Cover URF	1	
801	195238	RO GUIDE CAP URF	1	
802	195239	LG URF E	4	
803	195240	TR MO ENC	1	
804	195241	TR GEAR COVER	1	
805	195246	NJ BOAD BRKT	1	
806	195304	TR GE URF 2	1	
807	195305	TR GE URF 3	1	
808	195254	TR RO SH	2	
809	208467	Sponge Sheet	4	
810	102765	ROLL GUIDE UBA	1	
811	102790	GEAR TR FINAL	1	
812	102973	GEAR ROLL GUIDE	1	
813	102979	BEARING ROLL G UBA	1	
814	246405	4089-3430-06-01D-02	1	iPRO-101/102 Standard (with ICB) CPU Circuit Board
	246404	4089-3430-06-01D-01	1	iPRO-100/103/200 Standard (with ICB) CPU Circuit Board
815	194985	4089-3430-06-05-01	1	Transport Motor Encoder Board
816	194996	4089-3430-06-06-01	1	Stacker Motor Encoder Board
817	195118	3430-05-01A	1	Stacker Motor Encoder Harness
818	195119	3430-05-02	1	Transport Motor Encoder Harness
819	195120	3430-05-03A	1	Lower Sensor Board Harness
820	195121	3430-05-04B	1	Upper Sensor Board Harness
821	195122	3430-05-05A	1	Box Sensor Harness
822	195124	3430-05-07	1	Bar Sensor Harness
823	101172	2x6 Phillips, Self Tapping, Binding Screw*	1	
824	104149	2x6 PS-TITE, Phillips, Self Tapping, Pan Head #0 Type 2*	1	For iPRO-101/102
	104150			
825	055413	2.6x6 Phillips, Self Tapping, Binding Screw (Black)*	6	
826	071182	2.6x10 Phillips, Self Tapping, Binding Screw*	2	
827	003707	E-Ring Ø3 SUS	1	For iPRO-100/103/200
	104035	E-Ring Ø3 SUS (TAIYO)		For iPRO-101/102
828	097663	1.6x6 Parallel Pin SUS (Hard)	1	
829	216284	4089-3380-06-10-01 ICB	1	Option ICB Expansion Circuit Board
830	138053	2x5 Phillips, Self Tapping, Binding Screw*	1	For optional ICB Expansion Circuit Board

*. P-TITE is recommended.

iPRO Transport Unit 8 Exploded View

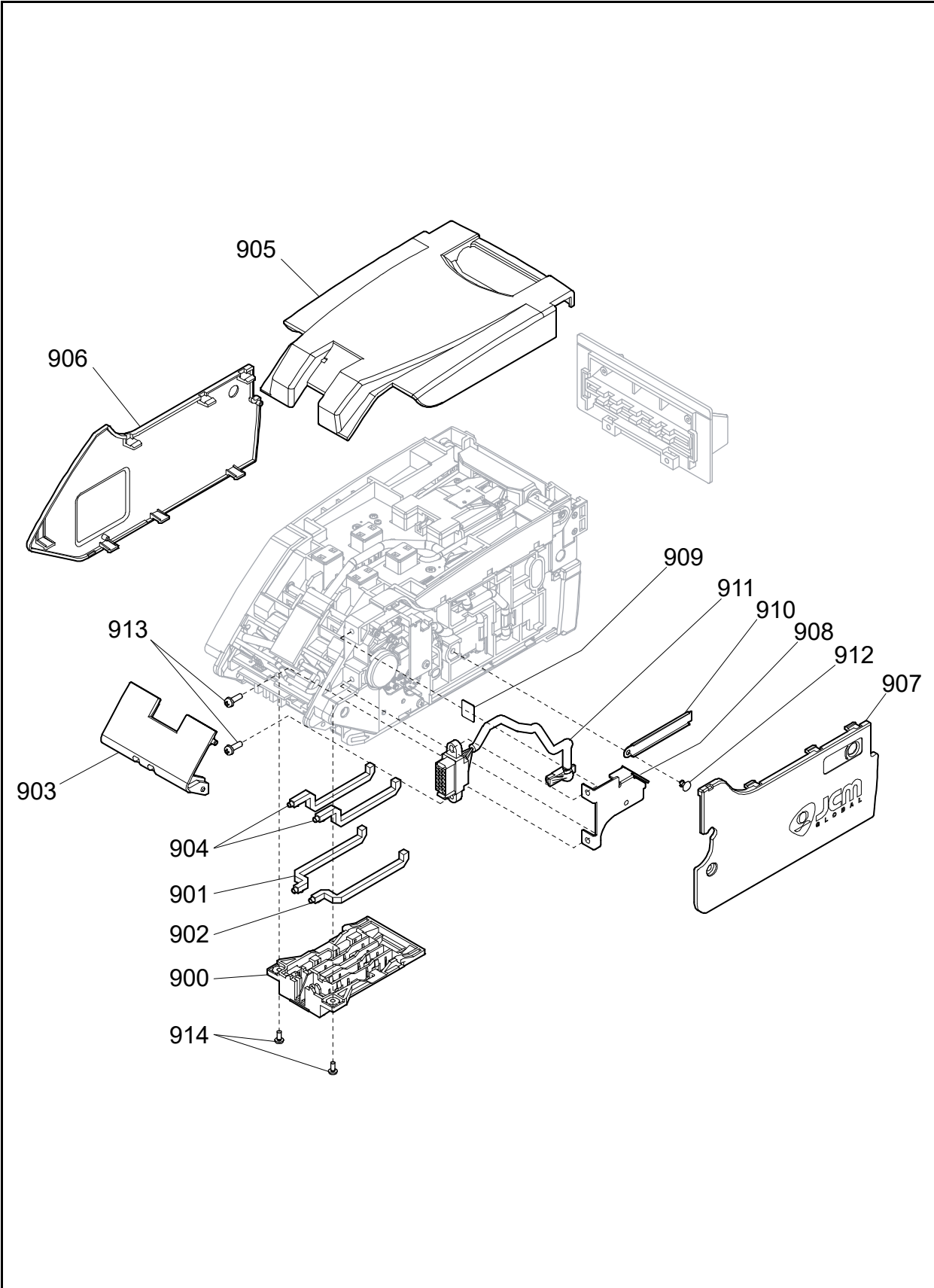


Figure 7-10 iPRO Transport Unit 8 Exploded View

iPRO Transport Unit 8 Parts List**Table 7-10** iPRO Transport Unit 8 Parts List

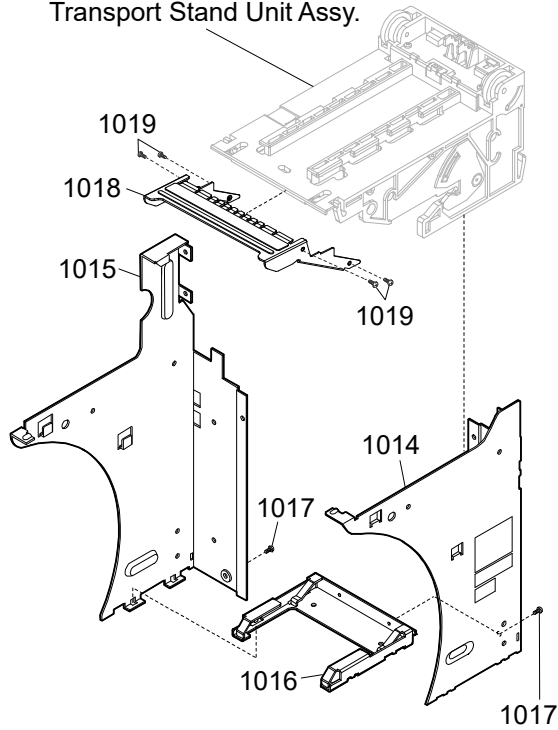
Ref No.	EDP No.	Description	Qty	Remark
900	195213	AD COVER B	1	
901	195216	LG URF CR	1	
902	195217	LG URF CL	1	
903	195218	BACK COVER URF	1	
904	195222	LG URF D	2	
905	195227	Top Cover URF	1	
906	195233	TR COVER R	1	
907	195234	TR COVER L	1	
908	239097	CN BRA URF	1	
909	195286	Anti Wire Plate	1	
910	195288	WIRE HOLD PLATE	1	
911	195125	3430-05-08A	1	Removable Harness
	236849	3441-05-04A	1	Removable Harness for OEM
912	103109	NP-304 Push Rivet	1	
913	006037	3x12 Pan Head Screw with W Washer (Small)	2	
914	055413	2.6x6 Phillips, Self Tapping, Binding Screw (Black)*	2	

*. P-TITE is recommended.

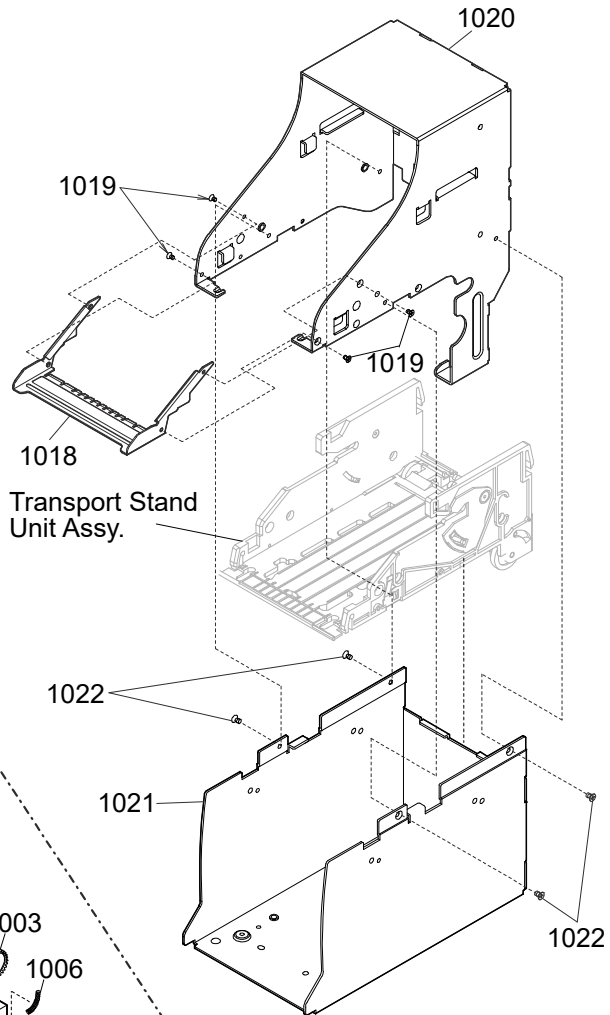
iPRO SS/SU and UH Frame Unit Exploded View

iPRO SS/SU

Transport Stand Unit Assy.



iPRO UH



Transport Stand Unit Assy.

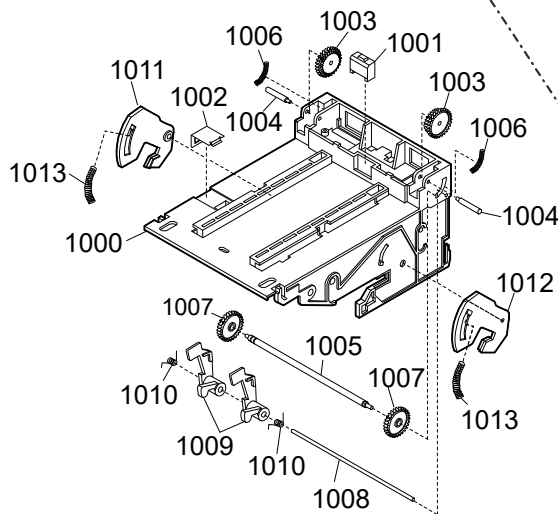


Figure 7-11 iPRO SS/SU and UH Frame Unit Exploded View

iPRO SS/SU and UH Frame Unit Parts List**Table 7-11** iPRO SS/SU and UH Frame Unit Parts List

Ref No.	EDP No.	Description	Qty	Remark
1000	280947	TR STAND UBA	1	
1001	102988	Stand Prism	1	
1002	106067	STAND GD PLATE	1	
1003	102986	STAND GEAR UBA 2	2	
1004	103011	STAND GEAR SHAFT	2	
1005	052620	GEAR SHAFT	1	
1006	052648	FG SPRING	2	
1007	108810	STAND GEAR SUS	2	
1008	103012	STAND LEVER SHAFT	1	
1009	102987	CASH BOX S LEVER	2	
1010	052650	FL SPRING	2	
1011	102983	Cash Box Holder A	1	
1012	102984	Cash Box Holder B	1	
1013	052649	BL SPRING	2	
1014	128210	UBA Frame A	1	
1015	128212	UBA Frame B	1	
1016	143211	FRAME BASE UBA2	1	iPRO SS/SU Versions Only
1017	003609	3x6 Pan Head Screw with W Washer (Small)	2	iPRO SS/SU Versions Only
1018	127827	TR STAND PROTECTOR	1	iPRO SU/UH Versions Only
1019	127828	2.6x5 Flat Head Screw (Nyloc)	4	iPRO SU/UH Versions Only
1020	238353	TOP FRAME	1	iPRO UH Version Only
1021	238355	UNDER FRAME	1	iPRO UH Version Only
1022	128427	3x5 Flat Head Screw (F-LOK)	4	iPRO UH Version Only

iPRO 1200 Cash Box Frame Unit Exploded View

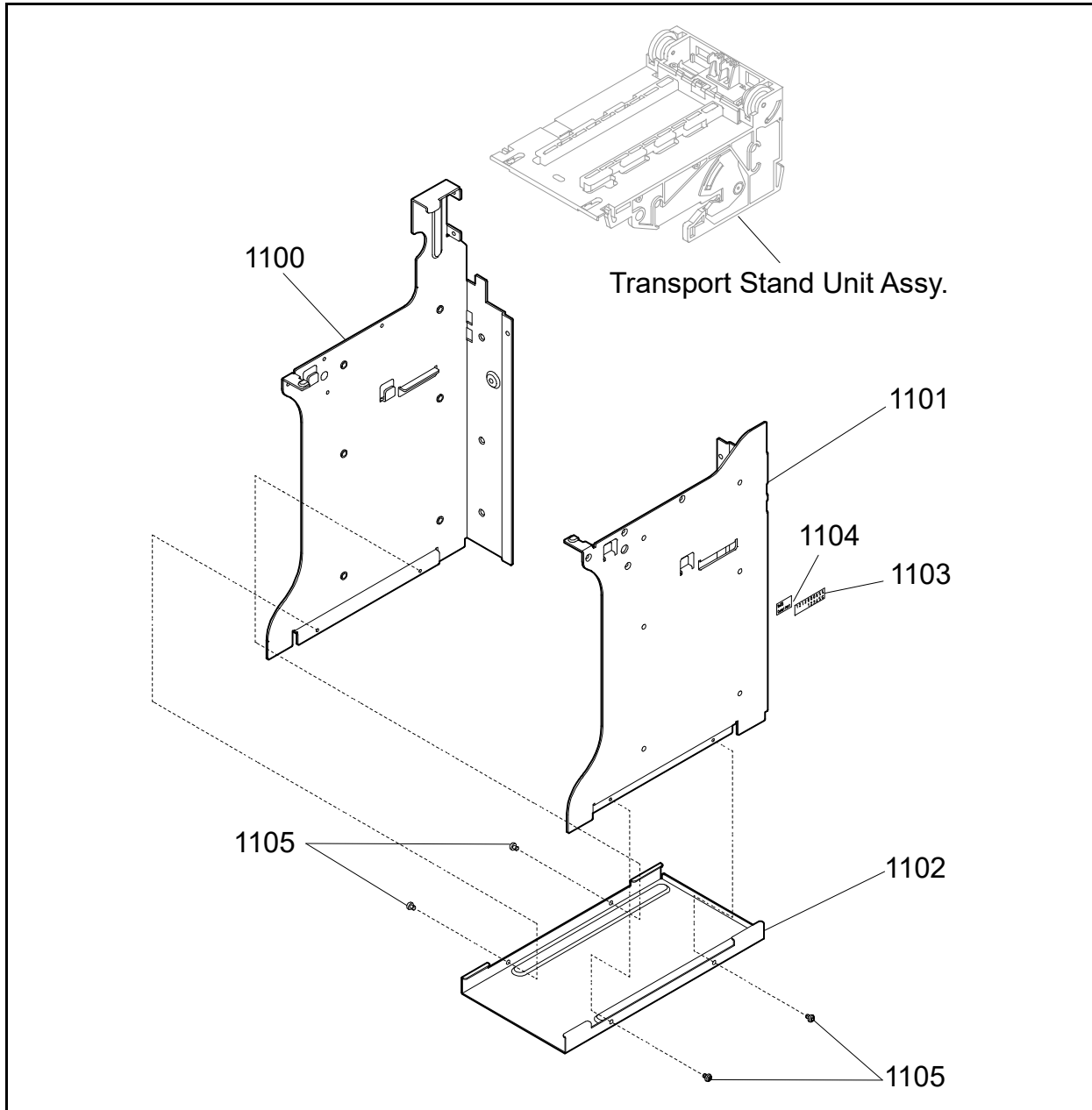


Figure 7-12 iPRO 1200 Cash Box Frame Unit Exploded View

iPRO 1200 Cash Box Frame Unit Parts List

Table 7-12 iPRO 1200 Cash Box Frame Unit Parts List

Ref No.	EDP No.	Description	Qty	Remark
1100	222076	1.2K FRAME L	1	
1101	222077	1.2K FRAME	1	
1102	064384	FREAME BASE R	1	
1103	112269	Box Serial Label	1	
1104	123438	RoHS Label	1	
1105	006036	3x4 Pan Head Screw with Washer	4	

iPRO Optional Key Exploded View

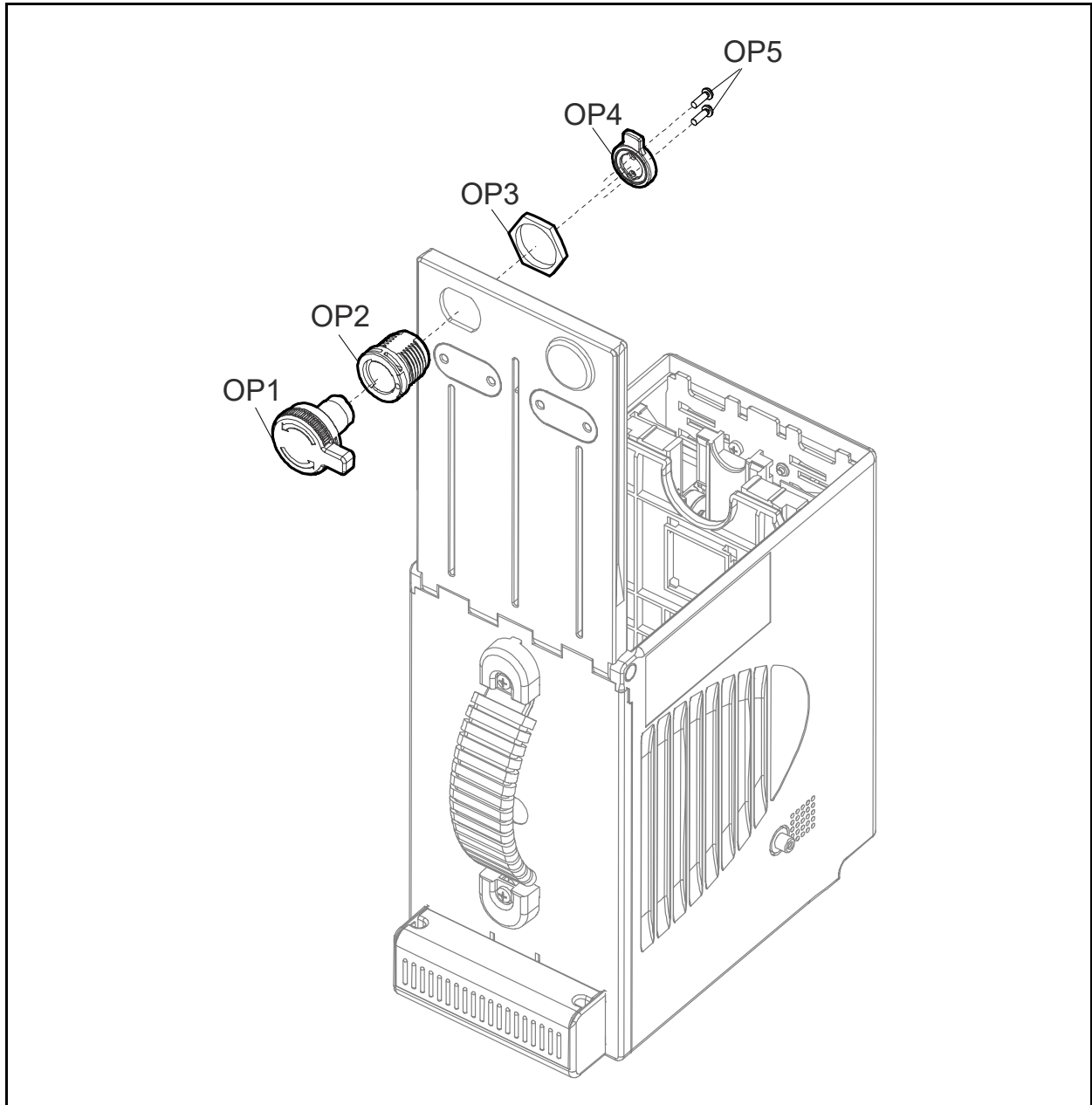


Figure 7-13 iPRO Optional Key Exploded View

iPRO Optional Key Parts List

Table 7-13 iPRO Optional Key Parts List

Ref No.	EDP No.	Description	Qty	Remark
OP1	219641	THUMB TURN A DB	1	
OP2	135328	Thumb Turn B	1	
OP3	135329	Thumb Turn Nut	1	
OP4	135330	Thumb Turn Cam	1	
OP5	056165	2.6x8 Phillips, Self-Tapping, Binding Screw *	2	
-	135472	THUMB LOCK FOR CASH BOX	1	The set of OP1 through OP5.

*. P-TITE is recommended.

iPRO External Cables

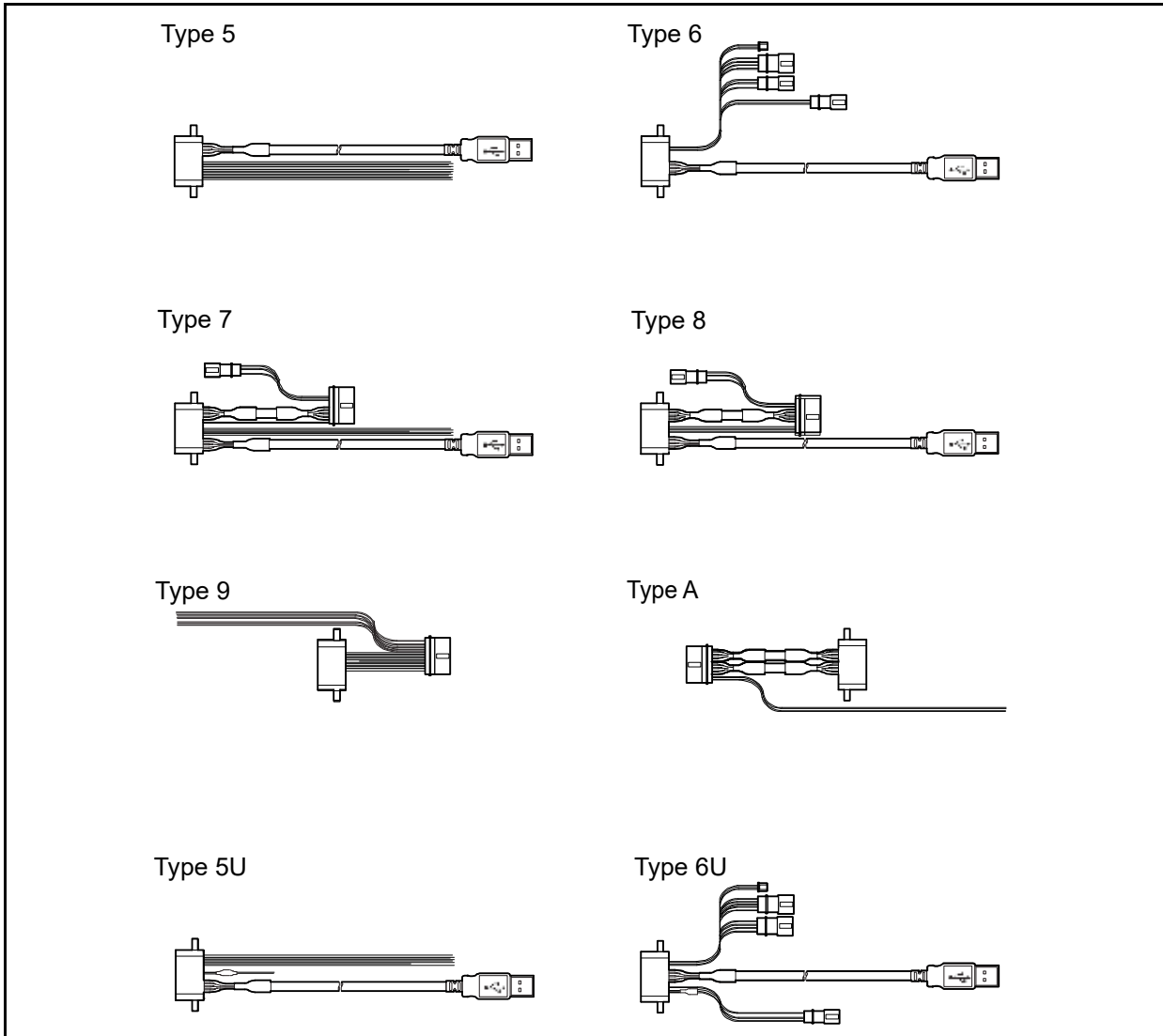


Figure 7-14 iPRO External Cables

iPRO External Cables List

Table 7-14 iPRO External Cables List

External Cable Type*	EDP No.	Description	Qty	Remark
Type 5	120120	3241-05-03C (USB I/F)	1	USB Standard Cable
Type 6	117623	3241-05-01D (USB I/F)	1	USB OEM Cable
Type 7	122469	3241-05-05C (Photo-Coupler I/F)	1	Photo-Coupler/USB 2.4/13.5V Conversion Cable For a iPRO Unit with an Optional Conversion Circuit Board
Type 8	122468	3241-05-04C (RS232C I/F)	1	RS232C/USB 2.4/13.5V Conversion Cable For a iPRO Unit with an Optional Conversion Circuit Board
Type 9	136305	3240-05-24 (ccTalk I/F)	1	cc-Talk Conversion Cable For a iPRO Unit with an Optional Conversion Circuit Board
Type A	137900	3241-05-07 UBA I/F	1	USB 2.4/13.5V Conversion Cable For a iPRO Unit with an Optional Conversion Circuit Board
Type 5U	217352	3242-05-05A	1	USB Standard Cable for SU Type
Type 6U	128075	3242-05-02A (USB I/F)	1	USB OEM Harness for SU Type

*. Refer to "Type Descriptions" on page 1-2 for the product description details.

iPRO Optional Conversion Circuit Boards List**Table 7-15** iPRO Optional Conversion Circuit Boards List

EDP No.	JAC No.	Description
122467	300-500007R	24V/13.5V - RS232C Conversion Board (4033-3240-06-13A-01) This Board will allow a 24V DC to 13.5V DC voltage conversion and RS232C Interface communications capabilities.
123521	-	2.4/13.5V-RS232C Conversion Board + Photo-Coupler/USB Conversion Cable Conversion Board and Cable Kit: 24V/13.5V Converter + RS232C Interface Conversion Board, 2.4/13.5V Conversion Cable for Photo-Coupler and USB.
123523	300-200139R	RS232C Conversion Board (4033-3240-06-13A-02) This board allows communication with an RS232C Interface.
123522	-	RS232C Conversion Board + RS232C/USB Conversion Cable Conversion Board and Cable Kit: RS232C Conversion Board, 2.4/13.5V Conversion Cable for RS232C and USB.
136243	-	cc-Talk Interface Conversion Board (for ID-0E3) (4033-3240-06-15-01) This Board allows communication with a cc-Talk Interface.

THIS PAGE INTENTIONALLY LEFT BLANK

iPRO™ Series

Banknote Acceptor

Section 8

8 INDEX

B

Banknote Jam
clearing a ...2-11

C

Calibration
Methods of ...6-6
Tool requirements for ...6-6

Cleaning
methods of, and equipment required for ...2-12

Communications
criteria regarding receipt of ...3-1

Contact Information
Address and Telephone Numbers for ...1-12

D

Dimensions
Cash Box clearance
illustrated drawing for ...1-10, 1-11
entire unit clearance
illustrated drawing for ...1-9

Disassembly/Reassembly
instructions for ...4-1

Download and Installation
Workbench Tool Requirements for ...6-1

Driver Installation
Instructions for performing ...6-2

E

Exploded View
illustrations of ...7-1

F

Faults
Table Listing of ...A-1

Flowchart
Operational
symbol language describing flow functions ...2-21

I

Installation
steps required for ...2-1

iPRO
photo of a ...1-1

M

Model Descriptions
Product Number Specifications of ...1-2

P

Performance Testing
instructions for ...6-1

Pin Assignments
Table Listing of ...2-4

Precautionary Symbols
types of ...1-3

Preventive Maintenance
cleaning material requirements ...2-11

Primary Features
iPRO-100/101/102/103/200
iPRO Product Series of ...1-5

S

Safety
pictographs indicating
1 to 3 symbols inside boxed area ...1-1

Software Descriptions
Software Specifications of ...1-3

Software Installation
Procedures for ...6-1, 6-3

Special Notes
italic text highlights
finger points to ...1-1

Specifications
Electrical
information regarding ...1-8
Environmental
information regarding ...1-8
Structural
information regarding ...1-8
Technical
information regarding ...1-7

Steps
sequential numbering of ...1-1

Symbols
Precautionally
definitions of ...1-3

System Wiring Diagram

Schematic diagram of ...5-1, 5-2

T

Tool Requirements

workbench & field ...6-1

Troubleshooting

Instructions for ...A-1

Type Descriptions

Product Type Specifications of ...1-2

W

Wiring Diagram

iPRO-100/103 system & individual primary parts ...5-1

iPRO-101/102 system & individual primary parts ...5-1

iPRO™ Series Banknote Acceptor

Appendix A

A TROUBLESHOOTING

This section provides Troubleshooting instructions for the iPRO™ Series Banknote Acceptor (iPRO-10x) Units. This section contains the following information:

- Introduction
- Troubleshooting Overview
- Fault Table Listings
- Standard and ICB Error and Reject Code Conditions
- Calibration Error
- Maintenance Equipment

Introduction

Most Banknote Acceptor failures are due to minor causes. Before replacing any parts, make sure that all assembly and Circuit Board Connectors are properly fitted and their Harnesses are properly connected.

Lower than expected Banknote acceptance by the Acceptor portion of the Unit is often caused when dust or Iron powder adheres to the Identification Sensor, Magnetic Sensor or Transport Belt. Clean the Acceptor section first, then observe the operating state of the Acceptor in detail when

reinitializing power. This observation is important in locating any failure causes and the possible fault area. If the Acceptor Head has to be repaired by disassembling it, always recalibrate the Sensors following a repair.

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

Troubleshooting Overview

This product allows the Operator to perform fault diagnosis by checking various fault Table listings against the symptom, and survey the cause(s) of any failure occurrences during the process.

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

Fault Table Listings

Table A-1 through Table A-3 lists the various possible fault conditions that can occur, and the necessary actions required to correct them.

Table A-1 General Fault Conditions

Symptoms/Error Messages	Possible Fault Causes	Corrective Action Required
Banknote Acceptor is not working (does not accept any Banknotes)	No external Power is applied to the Banknote Acceptor (+12VDC & GND)	Verify that the Power Supply +12V DC and Ground Cables are connected to their appropriate Pins on the main connector. NOTE: When lit and kept lighting on the iPRO-100/103 or lit and then extinguished on the iPRO-101/102 Unit, the Centering Guide Home Position Indication LED indicates that electrical power is properly supplied to the Banknote Acceptor if the Centering Mechanism is in Home Position. Otherwise, if the Centering Mechanism is in any other position, the LED is extinguished.
	Wrong or inappropriate connections	Verify that all Harness Connectors are properly seated. Check for any bent, missing or damaged Pins in the Connector Plugs and mating Receptacles.
	Corrupted Software.	Redownload the correct Software. Refer to the "Software Download Procedure" in Section 6 of this Manual for Software downloading instructions.
	CPU Board failure.	Refer to the "Performance Tests" in Section 6 of this Manual, and conduct an Initial Operational Test. If the test result is Negative (NG), replace the CPU Board. Make sure to recalibrate the Sensors after CPU Board is replaced.
Banknote jams occur often	Drive Belts are dirty or damaged.	Clean all Drive Belts and Pressure Rollers. Replace as necessary.
	A pressure Roller Spring is loose or missing.	Check all Pressure Roller Springs using a finger pressure test. Replace as necessary.

Table A-1 General Fault Conditions (Continued)

Symptoms/Error Messages	Possible Fault Causes	Corrective Action Required
Banknote jams occur often	A foreign object is lodged in the Transport path and/or inside the Cash Box.	Clean the Transport path and remove any foreign object discovered.
	The Acceptor Unit is not properly seated all the way into the Frame (the Acceptor Unit's Latch Release Levers are not locked onto the Frame).	Reseat the Acceptor Unit back into the Frame and confirm the Acceptor Unit Release Lever Latches securely lock onto the Frame.
	Banknote width out of specification	iPRO SS/SU/SH Version: A Banknote is wider than 85 mm or narrower than 62mm iPRO UH Version: A Banknote is wider than 82 mm or narrower than 62mm Use only Banknotes widths having the correct iPRO SS/SU/SH/UH Version size specifications.
Abnormal Acceptance rates	Dirt and/or stains on the Rollers, Belts and Lenses	Clean the Transport path. Refer to "Preventive Maintenance" in Section 2 of this Manual.
	The Unit has been disassembled and recalibration adjustments have not occurred following a reassembly.	Make sure to calibrate the Sensors after reassembling the iPRO Unit. Refer to the "Validation Sensor Calibration" on page 6-7 of Section 6 in this iPRO Operation and Maintenance Manual.
	The wrong Software or an old version of the Software is being used.	Make sure that the programmed Flash or EPROM Memory Software is the latest version, and it supports the Currency values for the specific Country.
	Software not designed to accept current Banknotes	Check the particular specifications for the required Banknote Type Acceptance, and make sure the Banknotes will be accepted by the Software loaded (e.g., check denomination/issuing year, etc.).
Upper Guide can not be opened	Centering Guides are not at the Home position.	Turn the Power OFF and ON again. The Host Machine should send a Reset Command to reinitialize the unit. If power cannot be applied, use a Hex Nut Driver to open the Upper Guide and manually reset the Guide.
All Banknotes being rejected	Incorrect software (different Currency type)	Download the correct Software for Currency being accepted. Refer to "Software Download Procedure" in Section 6 of this Manual regarding Software Downloading procedures.
	Banknotes are not being accepted by the Software.	Make sure the Banknote values required are included in the Software Specifications (e.g., denominations/issuing year, etc.) Refer to the "Forced Download Requirements" in Section 6 of this Manual.
	Incorrect DIP Switch settings	Enable all denominations by setting all DIP Switches to OFF.
	Banknote acceptance is being inhibited by a Host Controller command.	Enable Banknote acceptance with the required Host Command.
	Upper/Lower Sensor Board failure	Change the Upper or Lower Sensor Board with a known good Circuit Board. Refer to Section 4 of this Manual regarding Circuit Board Removal.
	Unit was disassembled and recalibration did not occur following reassembly.	Recalibrate all iPRO Sensors following reassembly.
Motor continues to run	Upper Guide is open.	Firmly reclose the Upper Guide.
	A foreign object or a jammed Banknote is stuck in the Transport path.	Open the Upper Guide, remove the foreign object or jammed Banknote, and reclose the Cover.
	Motor Driver failure	Refer to the Section 6 of this Manual regarding the Transport Motor Test and conduct a Forward/Reverse Motor Rotation Test.
Can not enter the TEST mode	Incorrect DIP Switch settings	Set DIP Switch No. 8 to ON, and reapply Power to the iPRO Unit.
	Dip Switch failure	Conduct a DIP Switch TEST to check if the specific DIP Switch Block contains a failure.
	CPU Board failure	Exchange the CPU Circuit Board with a known good Circuit Board. Refer to Section 4 of this Manual regarding Circuit Board Removal.

Table A-2 Adjustment Fault Conditions

Symptoms/Error Messages	Possible Fault Causes	Corrective Action Required
Can not start the iPRO Calibration Tool for iPRO_AdjustmentService_SuiteEdition.exe program by double-clicking on its Icon	PC Operating System (OS) is not compatible.	The current Adjustment program only supports the Windows 7 or greater Operating Systems.
	The Program Files are corrupted.	Request the correct programs from JCM.
Communication Error	Wrong or inappropriate connections	Check the PC Harness connections and the related Interface Connectors for damage. Check for any bent, missing or damaged Pins in the Connector Plug and/or Receptacle.
	DIP Switch settings are incorrect.	Reset the DIP Switches #1 through #7 to OFF, and set Switch #8 to ON. Recycle power to the iPRO Unit.
	DIP Switch failure	Refer to Section 6 of this Manual regarding DIP Switch settings and conduct a DIP Switch Test.
	CPU Board failure	Exchange the CPU Circuit Board with a known good Circuit Board. Refer to Section 4 of this Manual regarding Circuit Board Removal.
Adjustment Error	Incorrect Reference Paper type	Follow the instruction provided in the "iPRO Calibration Tool for iPRO_AdjustmentService_SuiteEdition.exe" Program and use the correct recommended Reference Paper.
	Upper/Lower Sensor Board failure	Change the Upper or Lower Sensor Board with a known good Circuit Board. Refer to Section 4 of this Manual regarding Circuit Board Removal.

Table A-3 Communication Fault Conditions

Symptoms/Error Messages	Possible Fault Causes	Corrective Action Required
Cannot communicate with the Host Machine	DIP Switch settings are incorrect.	Set all DIP Switches to OFF.
	Connectors are off or loosely connected.	Firmly reseat all of the Communication Connectors.
	Damaged Connector Pins	Check for any bent, missing or damaged Pins in the Connector Plugs and mating Receptacles.
	CPU Board is corrupted.	Exchange the CPU Circuit Board with a known good Circuit Board. Refer to Section 4 of this Manual regarding Circuit Board Removal.
	Incorrect Interface	Verify that the correct interface between the Host Machine and the Banknote Acceptor is being used.

Standard and ICB Error and Reject Code Conditions

The two (2) Status LEDs (Red and Green) indicates various combinations of solid or alternating Color light flashing conditions when any of the Standard and ICB Error Codes listed in Table A-4 and Table A-5 occur respectively.

Identify the cause and solution for an indicated error by comparing it against each Table A-4 and Table A-5 listing, and ensure that the relative

Assembles are properly connected and that all of the Unit's Sensors are clean before proceeding toward troubleshooting the error condition.

Standard Error Code Conditions

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

Table A-4 Standard LED Error Codes

Red LED Sequence	Green LED State	Error	Causes and Solutions
Red (1)	Green Lit	External Flash ROM Boot Program ROM Check Error	The Boot Program is not correctly written in ROM, or it cannot be read. [Solution] Check that the following parts are properly assembled and/or Harness are connected. [Relative Parts] CPU Circuit Board. If the error is not resolved, change the above related part or parts.
Red (2)	Green Lit	External Flash ROM Boot I/F Area ROM Check Error	The Boot Interface Area was not written correctly or cannot be read. [Solution] Redownload the Program. If the error is not resolved, check that the following parts are properly assembled and/or Harness are connected. [Relative Parts] CPU Circuit Board. If the error is not resolved, change the above related part or parts.
Red (3)	Green Lit	External Flash ROM Main Program ROM Check Error	The Main Operating Program is not written into the ROM correctly, or cannot be read. [Solution] Redownload the Program. If the error is not resolved, check that the following parts are properly assembled and/or Harness are connected. [Relative Parts] CPU Circuit Board. If the error is not resolved, change the above related part or parts.
Red (4)	Green Lit	Reserved	Contact your local JCM Representative if this error occurs.
Red (5)	Green Lit	CPU Internal RAM Check Error	RAM reading or writing was not properly performed. [Solution] Check that the following parts are properly assembled and/or Harness are connected. [Relative Parts] CPU Circuit Board. If the error is not resolved, change the above related part or parts.
Red (6)	Green Lit	External SD-RAM Error	External SD-RAM reading or writing was not properly performed. [Solution] Check that the following parts are properly assembled and/or Harness are connected. [Relative Parts] CPU Circuit Board. If the error is not resolved, change the above related part or parts.
Red (7)	Green Lit	External SRAM Error	SRAM reading or writing was not properly performed. [Solution] Check that the following parts are properly assembled and/or Harness are connected. [Relative Parts] CPU Circuit Board. If the error is not resolved, change the above related part or parts.
Red (1)	OFF	Cash Box Full	Sensors detected that the Cash Box is full. [Solution] Check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and Sensors. [Relative Parts] Pusher Mechanism, Stacker Motor, Stacker Home Sensor, Stacker Motor Encoder. If the error is not resolved, change the above related part or parts.
Red (2)	OFF	Pusher Mechanism Home Position Error	When stacking Banknotes, the Pusher Mechanism is not returning to the Home position. [Solution] Check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and Sensors. [Relative Parts] Pusher Mechanism, Stacker Motor, Stacker Home Sensor, Stacker Motor Encoder. If the error is not resolved, change the above related part or parts.
Red (3)	OFF	Banknote Jam (Cash Box)	When transporting a Banknote to the Cash Box, the Sensors are not detecting a Banknote present condition when the time interval is too long, or the number of the Banknotes stuck is greater than specified value for the function. [Solution] Check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and Sensors. [Relative Parts] Exit Sensor, Pusher Mechanism, Stacker Motor, Stacker Home Sensor, Stacker Motor Encoder. If the error is not resolved, change the above related part or parts.

Table A-4 Standard LED Error Codes (Continued)

Red LED Sequence	Green LED State	Error	Causes and Solutions
Red (4)	OFF	Banknote Jam (Transport Unit)	When transporting or returning a Banknote in the Transport Unit, the Sensors did not detect a Banknote present condition when the time interval was too long, or the number of the Banknotes stuck in path is greater than specified value for the function. [Solution] Check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and Sensors. [Relative Parts] Entrance Sensor, Centering Timing Sensor, Line Sensor, PB Entrance Sensor, Exit Sensor, Feed Motor, Feed Motor Encoder. If the error is not resolved, change the above related part or parts.
Red (5)	OFF	Feed Motor Speed Error	While Initializing, no pulse inputs exist greater than the specified value. [Solution] Check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and Sensors. [Relative Parts] Feed Motor, Feed Motor Encoder. If the error is not resolved, change the above related part or parts.
Red (6)	OFF	Feed Motor Lock-Up	While operating the Feed Motor, no pulse inputs occurred greater than the specified value. [Solution] Check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and Sensors. [Relative Parts] Feed Motor, Feed Motor Encoder If the error is not resolved, change the above related part or parts.
Red (7)	OFF	Stacker Motor Lock-UP	While operating the Stacker Motor, no pulse inputs occurred greater than the specified value. [Solution] Check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and Sensors. [Relative Parts] Stacker Motor, Stacker Encoder. If the error is not resolved, change the above related part or parts.
Red (8)	OFF	EEPROM Error	EEPROM reading, writing and/or saving was not properly performed. [Solution] Perform the Sensor Calibration procedure. If the error is not resolved, check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and related Sensors. [Relative Parts] CPU Circuit Board. If the error is not resolved, change the above related part or parts.
Red (9)	OFF	PB Unit Error	The Anti-Pullback (PB) Unit has not performed correctly. [Solution] Check that the following parts are properly assembled and/or Harness are connected. [Relative Parts] PB Unit, PB Home Position Sensor. If the error is not resolved, change the above related part or parts.
Red (10)	OFF	Cash Box Removal	The Cash Box has been removed. [Solution] Check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and Sensors. [Relative Parts] Box Sensor. If the error is not resolved, change the above related part or parts.
Red (12)	OFF	Fraud Detection	Sensors detect Banknotes occurring with abnormal timing. [Solution] Check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and Sensors. [Relative Parts] Exit Sensor 2, Line Sensor. If the error is not resolved, change the above related part or parts.
Red (13)	OFF	Solenoid Roller Abnormal	The Solenoid Roller has not performed correctly while transporting or returning the Banknote. [Solution] Check that the following parts are properly assembled and/or Harness are connected. [Relative Parts] Solenoid Roller Solenoid, Solenoid Sensor. If the error is not resolved, change the above related part or parts.
Red (14)	OFF	Centering Mechanism Abnormal	The Centering Guide has not moved. [Solution] Check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and Sensors. [Relative Parts] Centering Guide, Centering Motor, Centering Guide Home Sensor. If the error is not resolved, change the above related part or parts.

ICB Error Code Conditions

Table A-5 lists the various ICB LED Flash Error Code causes and solutions.

Table A-5 ICB LED Error Codes

Red LED Sequence	Green LED State	Error	Causes and Solutions
Red (3)	OFF	Incorrect ICB Settings	The ICB function is disabled on the iPRO Unit when the Intelligent Cash Box is used. [Solution] Change the ICB settings to be acceptable for use with the Cash Box.
Red (11)	OFF	ICB Communication Error	ICB unable to communicate. [Solution] Check that the ICB settings are properly set. [Relative Part] ICB Circuit Board, ICB Sensor, Cash Box, ICB Board. If the error is not resolved, change the above related part or parts.
Red (12)	OFF	ICB Checksum Error	ICB data is incorrect. [Solution] Initialize the ICB Cash Box data using Read Write Tool. [Relative Part] Cash Box ICB Module. If the error is not resolved, change the above related part or parts.
Red (13)	OFF	ICB Number Error	The Game Machine Number is different. [Solution] Initialize the ICB Cash Box data using Read Write Tool. [Relative Part] Cash Box ICB Module. If the error is not resolved, change the above related part or parts.
Red (14)	OFF	ICB Initialize Error	The Intelligent Cash Box has not been initialized. [Solution] Initialize the ICB Cash Box data using Read Write Tool. [Relative Part] Cash Box ICB Module. If the error is not resolved, change the above related part or parts.
Red (15)	OFF	ICB Module Error	While communicating to the ICB, the Intelligent Cash Box has been removed. [Solution] Check that the ICB settings are properly set and firmly reseal the Intelligent Cash Box

LED Flash Reject Error Code Conditions; Banknotes

Table A-6 lists the various LED Flash Reject Code causes and solutions for Banknotes.

Table A-6 LED Flash Reject Error Codes For Banknotes

Red LED State	Green LED Sequence	Error	Causes and Solutions
OFF	Green (1)	Skewed Insertion Error	The Banknote has been inserted in an incorrect/crooked direction. [Solution] Check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and Sensors. [Relative Parts] Centering Guide, Centering Sensor, Belts and Rollers. If the error is not resolved, change the above related part or parts.
OFF	Green (2)	Abnormal Magnetic Detection	The Magnetic Sensor detected an abnormal Banknote Type. [Solution] Check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and Sensors. [Relative Parts] Magnetic Sensor. If the error is not resolved, change the above related part or parts.
OFF	Green (3)	Remaining Banknotes Returned	While Initializing, Sensors detected that Banknotes remained in the iPRO Unit's Validation path. [Solution] Check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and Sensors. [Relative Parts] Centering Sensor, Line Sensor, Feed Sensor, Exit Sensor 2. If the error is not resolved, change the above related part or parts.
OFF	Green (4)	Magnification Abnormal	When adjusting Banknote data, Sensors detected an abnormal Banknote magnification condition. [Solution] Check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and Sensors. [Relative Parts] Line Sensor. If the error is not resolved, change the above related part or parts.
OFF	Green (5)	Banknote Transportation Abnormal	Sensors detected Banknotes remain in the validation path, or none existed during an abnormal timing interval. [Solution] Check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and Sensors. [Relative Parts] Entrance Sensor, Centering Sensor, Line Sensor, Feed Sensor, Exit Sensor 2, Transport Sensor. If the error is not resolved, change the above related part or parts.

Table A-6 LED Flash Reject Error Codes For Banknotes (Continued)

Red LED State	Green LED Sequence	Error	Causes and Solutions
OFF	Green (6)	Denomination Error	Contact your local JCM Representative if this error occurs.
OFF	Green (7)	Pattern Error	The Line Sensor detected an abnormal Banknote Type. [Solution] Check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and Sensors. [Relative Parts] Line Sensor. If the error is not resolved, change the above related part or parts.
OFF	Green (8)	Photo Level Error	While transporting a Banknote, transparent tape was detected. [Solution] Check that the following parts are properly assembled and Clean or adjust the following parts and Sensors. [Relative Parts] Line Sensor. If the error is not resolved, change the above related part or parts.
OFF	Green (9)	Inhibit Setting Abnormal	The Banknote Accept/Inhibit Setting was made by a Command from the Host Machine. DIP Switch settings are incorrect. [Solution] Check that the Commands from the Host Machine are correct or change the setting to be acceptable for use with the Unit.
OFF	Green (10)	Return Command Received	A Banknote has been returned via a Return Command from the Host Machine.
OFF	Green (11)	Reserved	Contact your local JCM Representative if this error occurs.
OFF	Green (12)	Fraud Detection	Sensors detected an incorrect set specification value. [Solution] Check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and Sensors. [Relative Parts] Line Sensor. If the error is not resolved, change the above related part or parts.
OFF	Green (13)	Banknote Length Abnormal	The Line Sensors calculated a Banknote length longer or shorter than the specified value. [Solution] Check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and Sensors. [Relative Parts] Line Sensor. If the error is not resolved, change the above related part or parts.
OFF	Green (14)	2-Color Margin Abnormal	The Line Sensors calculated that the 2-Color Banknote margin was greater than the specified value. [Solution] Check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and Sensors. [Relative Parts] Line Sensor. If the error is not resolved, change the above related part or parts.
OFF	Green (15)	Counterfeiting Banknote Action	The Banknote has been validated as a Counterfeit Banknote. [Solution] Check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and Sensors. [Relative Parts] Line Sensor. If the error is not resolved, change the above related part or parts.
OFF	Green (16)	3-Color Comparison Abnormal	The Line Sensors calculated a 3-Color comparison that was greater than the specified value. [Solution] Check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and Sensors. [Relative Parts] Line Sensor. If the error is not resolved, change the above related part or parts.

LED Flash Reject Error Code Conditions; Barcode Coupons

Table A-7 lists the various LED Flash Reject Code causes and solutions for Barcode Coupons

Table A-7 LED Flash Reject Error Codes For Barcode Coupons

Red LED State	Green LED Sequence	Error	Causes and Solutions
OFF	Green (1)	Unconfigured Barcode Coupon	Barcode Coupon information is not set. [Solution] Check that a proper Barcode Coupon is used and the Ticket (or Coupon) is not damaged or dirty.
OFF	Green (2)	Format Error	The format does not meet the Barcode Coupon's specification. [Solution] Check that a proper Barcode Coupon is used and the Coupon is not damaged or dirty. Check that the following part is properly assembled and/or Harness are connected. Clean or adjust the following Sensor. [Relative Parts] Bar Sensor. If the error is not resolved, change the above related part or parts.
OFF	Green (3)	Number Of Characters is less or more than its Settings	The number of Barcode Coupon's characters does not match its settings. [Solution] Check that a proper Barcode Coupon is used and the Coupon is not damaged or dirty. Check that the following part is properly assembled and/or Harness are connected. Clean or adjust the following Sensor. [Relative Parts] Bar Sensor. If the error is not resolved, change the above related part or parts.
OFF	Green (4)	Start Bit Detection Error	A start bit of a Barcode Coupon cannot be detected. [Solution] Check that a proper Barcode Coupon is used and the Coupon is not damaged or dirty. Check that the following part is properly assembled and/or Harness are connected. Clean or adjust the following Sensor. [Relative Parts] Bar Sensor. If the error is not resolved, change the above related part or parts.
OFF	Green (5)	Stop Bit Detection Error	A stop bit of a Barcode Coupon cannot be detected. [Solution] Check that a proper Barcode Coupon is used and the Coupon is not damaged or dirty. Check that the following part is properly assembled and/or Harness are connected. Clean or adjust the following Sensor. [Relative Parts] Bar Sensor. If the error is not resolved, change the above related part or parts.
OFF	Green (6)	Barcode Coupon Type Error	A Barcode Coupon Type does not match its settings. [Solution] Check that a proper Barcode Coupon is used and the Coupon is not damaged or dirty.
OFF	Green (7)	Abnormal Magnification	When adjusting Barcode Coupon data, Sensors detected an abnormal Barcode Coupon magnification condition. [Solution] Check that a proper Barcode Coupon is used, and the Coupon is not damaged or dirty. Check that the following part is properly assembled and/or Harness are connected. Clean or adjust the following Sensor. [Relative Parts] Bar Sensor. If the error is not resolved, change the above related part or parts.
OFF	Green (8)	Double Insertion Error	Two or more Barcode Coupons are inserted. [Solution] Insert a single Barcode Coupon.
OFF	Green (9)	Reserved	Contact your local JCM Representative if this error occurs.
OFF	Green (10)	Reserved	Contact your local JCM Representative if this error occurs.
OFF	Green (11)	Upside-Down Insertion	A Barcode Coupon is inserted upside-down. [Solution] Insert a Barcode Coupon in an proper direction
OFF	Green (12)	Reserved	Contact your local JCM Representative if this error occurs.
OFF	Green (13)	Barcode Coupon Length Abnormal	The Bar Sensors calculated a Barcode Coupon length longer or shorter than the specified value. [Solution] Check that the Banknote is the Coupon is not damaged or dirty. Check that the following part is properly assembled and/or Harness are connected. Clean or adjust the following Sensor. [Relative Parts] Bar Sensor. If the error is not resolved, change the above related part or parts.
OFF	Green (14)	ICB Enable/Disable Ticket read and/or Setting Error	ICB Enable/Disable Setting or Machine Number Ticket Setting doesn't match its setting, or a Ticket's printing was abnormal. [Solution] Check that the ICB Expansion Circuit is installed and its DIP Switch #1 is set to ON (ICB enabled).

Calibration Error

When Error occur during Calibration, the specific Error Codes will be shown in a pop-up window (Figure A-1 a).

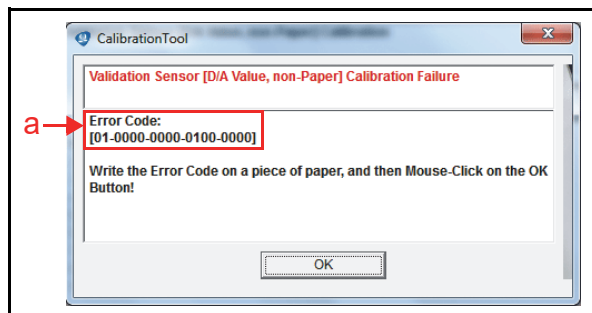


Figure A-1 Calibration Error Code Pop-Up Screen

Calibration Program Error Codes

Table A-8 lists the various Error Code causes and solutions for the Calibration Program.

Table A-8 Calibration Program Error Codes

Calibration Program	Error Code	Causes and Solutions
Validation Sensor [D/A Value, non-Paper]	01-YYYY-YYYY-YYYY-YYYY	Calibration Program process failed. [Solution] Check that a correct Reference Paper is placed in a proper direction (See "Placing Each Reference Paper" on page 6-7) and is not damaged or dirty (See "Reference Paper Handling" on page A-13). Check that the following part is properly assembled and clean the following Sensor. [Relative Parts] Line Sensor. If the error is not resolved, change the above related part or parts.
Validation Sensor with Paper	02-YYYY-YYYY-YYYY-YYYY	Calibration Program process failed. [Solution] Check that a correct Reference Paper is placed in a proper direction (See "Placing Each Reference Paper" on page 6-7) and is not damaged or dirty (See "Reference Paper Handling" on page A-13). [Relative Parts] Line Sensor. If the error is not resolved, change the above related part or parts.
Barcode Sensor	03-00-00-XX	Calibration Program process failed. [Solution] Check that a correct Reference Paper is placed in a proper direction (See "Placing Each Reference Paper" on page 6-7) and is not damaged or dirty (See "Reference Paper Handling" on page A-13). [Relative Parts] Barcode Sensor. If the error is not resolved, change the above related part or parts.
UV (Reflection) Sensor with Paper	04-00-00-00	Calibration Program process failed. [Solution] Check that a correct Reference Paper is placed in a proper direction (See "Placing Each Reference Paper" on page 6-7) and is not damaged or dirty (See "Reference Paper Handling" on page A-13). [Relative Parts] UV Sensor. If the error is not resolved, change the above related part or parts.
UV (Transmissive) Sensor with Paper	05-00-00-00	Calibration Program process failed. [Solution] Check that a correct Reference Paper is placed in a proper direction (See "Placing Each Reference Paper" on page 6-7) and is not damaged or dirty (See "Reference Paper Handling" on page A-13). [Relative Parts] UV Sensor. If the error is not resolved, change the above related part or parts.
Validation Sensor non-Paper	06-YYYY-YYYY-YYYY-YYYY	Calibration Program process failed. [Solution] Check that a correct Reference Paper is placed in a proper direction (See "Placing Each Reference Paper" on page 6-7) and is not damaged or dirty (See "Reference Paper Handling" on page A-13). [Relative Parts] Line Sensor. If the error is not resolved, change the above related part or parts.
UV (Transmissive) Sensor non-Paper	07-00-00-00	Calibration Program process failed. [Solution] Check that a correct Reference Paper is placed in a proper direction (See "Placing Each Reference Paper" on page 6-7) and is not damaged or dirty (See "Reference Paper Handling" on page A-13). [Relative Parts] UV Sensor. If the error is not resolved, change the above related part or parts.
Positioning Sensor	09-ZZ-ZZ-ZZ	Calibration Program process failed. [Solution] Check that a correct Reference Paper is placed in a proper direction (See "Placing Each Reference Paper" on page 6-7) and is not damaged or dirty (See "Reference Paper Handling" on page A-13). [Relative Parts] Positioning Sensor. If the error is not resolved, change the above related part or parts.

Calibration Error Codes; Positioning Sensor

Table A-9 lists the various Error Code causes and solutions for the Positioning Sensor.

Table A-9 Positioning Sensor Calibration Error Codes

Sensor/Error	Error Code	Causes and Solutions
Entrance Sensor	00-00-01	Calibration Program process failed. [Solution] Check that a correct Reference Paper is placed in a proper direction (See "Placing Each Reference Paper" on page 6-7) and is not damaged or dirty (See "Reference Paper Handling" on page A-13). [Relative Parts] Entrance Sensor. If the error is not resolved, change the above related part or parts.
Positioning Sensor	00-00-02	Calibration Program process failed. [Solution] Check that a correct Reference Paper is placed in a proper direction (See "Placing Each Reference Paper" on page 6-7) and is not damaged or dirty (See "Reference Paper Handling" on page A-13). [Relative Parts] Positioning Sensor. If the error is not resolved, change the above related part or parts.
Anti-Pullback Entrance Sensor	00-00-04	Calibration Program process failed. [Solution] Check that a correct Reference Paper is placed in a proper direction (See "Placing Each Reference Paper" on page 6-7) and is not damaged or dirty (See "Reference Paper Handling" on page A-13). [Relative Parts] Anti-Pullback Entrance Sensor. If the error is not resolved, change the above related part or parts.
Exit Sensor 2	00-00-08	Calibration Program process failed. [Solution] Check that a correct Reference Paper is placed in a proper direction (See "Placing Each Reference Paper" on page 6-7) and is not damaged or dirty (See "Reference Paper Handling" on page A-13). [Relative Parts] Exit Sensor 2. If the error is not resolved, change the above related part or parts.
Exit Sensor 1	00-00-10	Calibration Program process failed. [Solution] Check that a correct Reference Paper is placed in a proper direction (See "Placing Each Reference Paper" on page 6-7) and is not damaged or dirty (See "Reference Paper Handling" on page A-13). [Relative Parts] Exit Sensor 1. If the error is not resolved, change the above related part or parts.
EEPROM Read Error	00-01-00	EEPROM reading and/or saving was not properly performed. [Solution] Perform the Sensor Calibration procedure. If the error is not resolved, check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and related Sensors. [Relative Parts] CPU Circuit Board. If the error is not resolved, change the above related part or parts.
EEPROM Write Error	00-02-00	EEPROM writing and/or saving was not properly performed. [Solution] Perform the Sensor Calibration procedure. If the error is not resolved, check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and related Sensors. [Relative Parts] CPU Circuit Board. If the error is not resolved, change the above related part or parts.
EEPROM Error	00-04-00	EEPROM reading, writing and/or saving was not properly performed. [Solution] Perform the Sensor Calibration procedure. If the error is not resolved, check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and related Sensors. [Relative Parts] CPU Circuit Board. If the error is not resolved, change the above related part or parts.
	00-08-00	EEPROM reading, writing and/or saving was not properly performed. [Solution] Perform the Sensor Calibration procedure. If the error is not resolved, check that the following parts are properly assembled and/or Harness are connected. Clean or adjust the following parts and related Sensors. [Relative Parts] CPU Circuit Board. If the error is not resolved, change the above related part or parts.

Calibration Error Codes; Validation Sensor

Table A-10 lists the various Error Code causes and solutions for the Validation Sensor.

Table A-10 Validation Sensor Calibration Error Codes

Validation Sensor	Error Code	Causes and Solutions
dll_ore_ref	0000-0000-0000-0001	
dl_blu_ref	0000-0000-0000-0002	
dc_redl_ref	0000-0000-0000-0004	
dr_blu_ref	0000-0000-0000-0008	
drr_ore_ref	0000-0000-0000-0010	
dl_ir_ref	0000-0000-0000-0020	
dc_irl_ref	0000-0000-0000-0040	
dr_ir_ref	0000-0000-0000-0080	
dc_irr_ref	0000-0000-0000-0100	
dll_gre_ref	0000-0000-0000-0200	
dc_redr_ref	0000-0000-0000-0400	
drr_gre_ref	0000-0000-0000-0800	
ull_ore_ref	0000-0000-0000-1000	
ul_blu_ref	0000-0000-0000-2000	
uc_redl_ref	0000-0000-0000-4000	
ur_blu_ref	0000-0000-0000-8000	
urr_ore_ref	0000-0000-0001-0000	
uc_irl_ref	0000-0000-0002-0000	
uc_irr_ref	0000-0000-0004-0000	
ull_gre_ref	0000-0000-0008-0000	
ul_ir_ref	0000-0000-0010-0000	
uc_redr_ref	0000-0000-0020-0000	Calibration Program process failed while calibrating the Validation Sensor.
ur_ir_ref	0000-0000-0040-0000	[Solution] Check that a correct Reference Paper is placed in a proper direction (See "Placing Each Reference Paper" on page 6-7) and is not damaged or dirty (See "Reference Paper Handling" on page A-13).
urr_gre_ref	0000-0000-0080-0000	[Relative Parts] Line Sensor.
dc_redl_pen	0000-0000-0100-0000	If the error is not resolved, change the above related part or parts.
dll_nir_pen	0000-0000-0200-0000	
dl_ir_pen	0000-0000-0400-0000	
dc_irl_pen	0000-0000-0800-0000	
dr_ir_pen	0000-0000-1000-0000	
drr_nir_pen	0000-0000-2000-0000	
dll_ore_pen	0000-0000-4000-0000	
dl_nir_pen	0000-0000-8000-0000	
dc_irr_pen	0000-0001-0000-0000	
dr_nir_pen	0000-0002-0000-0000	
drr_ore_pen	0000-0004-0000-0000	
dll_gre_pen	0000-0008-0000-0000	
dl_ore_pen	0000-0010-0000-0000	
dc_redr_pen	0000-0020-0000-0000	
dr_ore_pen	0000-0040-0000-0000	
drr_gre_pen	0000-0080-0000-0000	
ull_ore_pen	0000-0100-0000-0000	
ul_blu_pen	0000-0200-0000-0000	
ur_blu_pen	0000-0400-0000-0000	
urr_ore_pen	0000-0800-0000-0000	
ull_nir_pen	0000-1000-0000-0000	
ul_ore_pen	0000-2000-0000-0000	
ur_ore_pen	0000-4000-0000-0000	
urr_nir_pen	0000-8000-0000-0000	

Calibration Error Codes; Barcode Sensor

Table A-11 lists the various Error Code causes and solutions for the Barcode Sensor,

Table A-11 Barcode Sensor Calibration Error Codes

Sensor	Error Code	Causes and Solutions
Upper Barcode Sensor	03-00-00-00	Calibration Program process failed while calibrating the Barcode Sensor. [Solution] Check that a correct Reference Paper is placed in a proper direction (See "Placing Each Reference Paper" on page 6-7) and is not damaged or dirty (See "Reference Paper Handling" on page A-13). [Relative Parts] Barcode Sensor. If the error is not resolved, change the above related part or parts.
Lower Barcode Sensor	03-00-00-01	Calibration Program process failed. [Solution] Check that a correct Reference Paper is placed in a proper direction (See "Placing Each Reference Paper" on page 6-7) and is not damaged or dirty (See "Reference Paper Handling" on page A-13). [Relative Parts] Barcode Sensor. If the error is not resolved, change the above related part or parts.

Maintenance Equipment

This portion provides product information for the iPRO™ Maintenance Equipment.

iPRO Maintenance Equipment

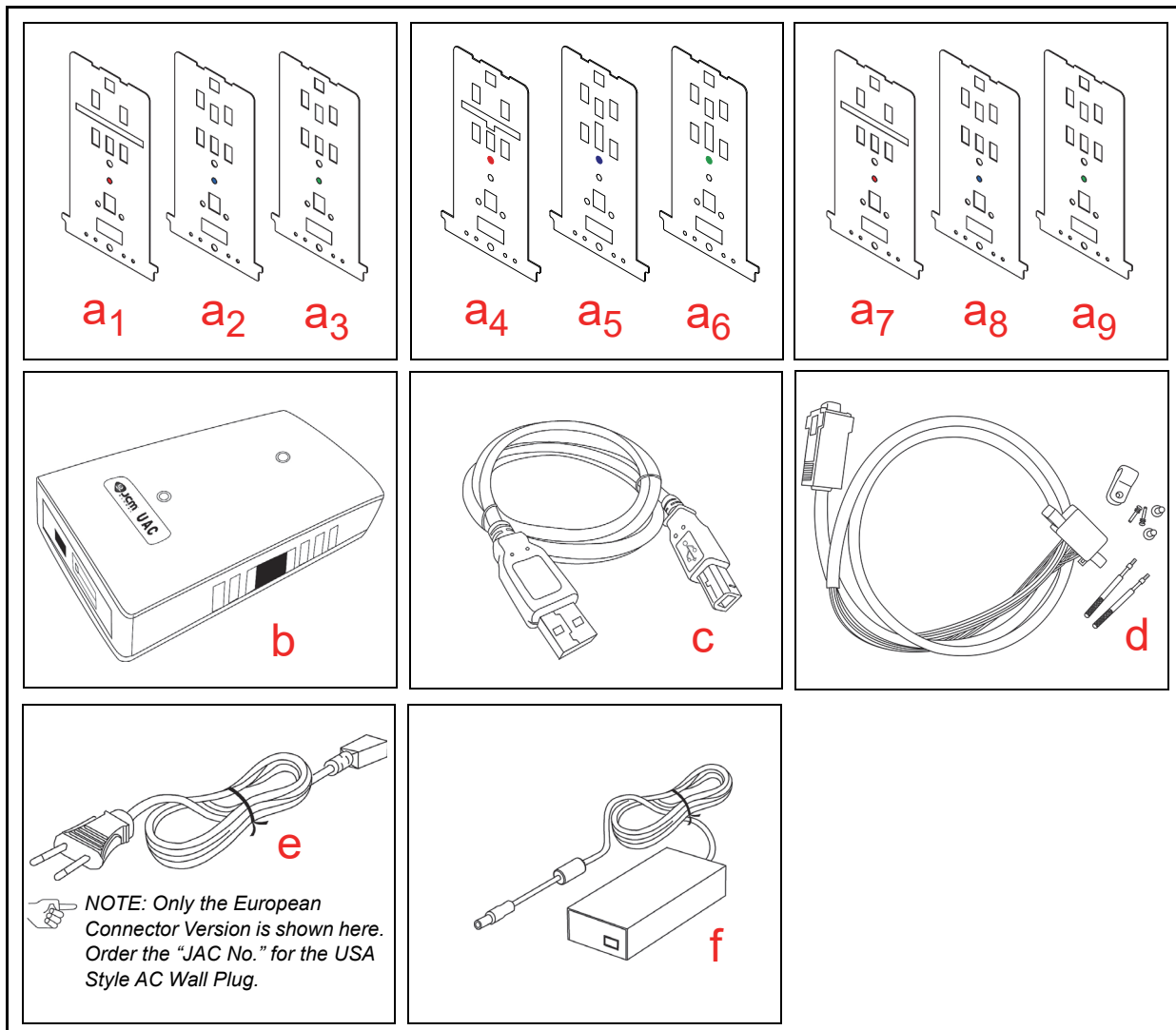


Figure A-2 Additional Maintenance Equipment Requirements

Table A-12 Additional Maintenance Equipment Parts List

Ltr.	EDP No.*	JAC No.	Description	Qty.	Remark
a ₁	199571	N/A	Reference Paper (KS-081)	1	For iPRO-100/103
a ₂	199573	N/A	Reference Paper (KS-082)	1	For iPRO-100/103
a ₃	199574	N/A	Reference Paper (KS-083)	1	For iPRO-100/103
a ₄	199575	N/A	Reference Paper (KS-084)	1	For iPRO-101
a ₅	199576	N/A	Reference Paper (KS-085)	1	For iPRO-101
a ₆	199577	N/A	Reference Paper (KS-086)	1	For iPRO-101
a ₇	234415	N/A	Reference Paper (KS-092)	1	For iPRO-102
a ₈	234416	N/A	Reference Paper (KS-093)	1	For iPRO-102
a ₉	234417	N/A	Reference Paper (KS-094)	1	For iPRO-102
b	G00205	-	UAC	1	
c	G00230	-	UAC USB Cable	1	
d	G00154	-	UBA/iPRO UAC Harness (ID003)	1	
e	G00213	-	Power Cord	1	For UAC
f	G00286	-	AC Adapter	1	For UAC
-	-	451-000127R	CUI Power Supply	1	Provides 12VDC at 5A
-	-	302-100002R	Cable, Power	1	
-	-	400-000249R	UBA Harness	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 into their shipping carton.
3. Do not use Reference Paper containing damaged areas that are worn, dirty, wrinkled, distorted and/or discolored.
4. Use new Reference Paper for every 400 Units being calibrated. Incorrect calibration errors may occur when using Reference Paper that has been used for calibrating more than 400 Units.

THIS PAGE INTENTIONALLY LEFT BLANK

iPRO™ Series Banknote Acceptor

Appendix B

B GLOSSARY

A

1 Acceptor

one of several devices used to validate and accept Banknotes, then communicate the acceptance results to Host Machine ... 1-1

2 Anti-Pullback Mechanism

a mechanism (optical, mechanical, or a combination of both designed) to prevent the unauthorized retrieving of Banknotes from a Cash Box ... 1-7

B

3 Bezel

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

C

4 Calibration

process performed on electronic equipment which ensures that all circuits are properly aligned and operating at optimum levels. For iPRO Unit, calibration is accomplished using a software based program which checks and sets the operational reference levels for sensors. This helps to ensure that the Unit operates with the highest Banknote acceptance rate possible. Calibration is recommended whenever the CPU Board, or one of the Sensor Boards are replaced ... 6-1

5 Checksum

a numerical value assigned to a data file or block of data (usually expressed in Hexadecimal notation). Checksum values are used to verify that the contents of a data file are not corrupted in any way during transmission or encryption. The Checksum values of both the original and duplicate files are compared to each other. If the values do not match, it is recommended that the file be copied (uploaded) again until the Checksums do match ... 6-4

D

6 DIP Switch Block

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

E

7 EEPROM

Electronically Erasable Programmable Read Only Memory. A form of non-volatile Read Only Memory (ROM) that can be written to and erased via electronic signals without being removed from its Circuit Board housing. EEPROMs are often used to store system command instructions and reference data sets that are accessed frequently, or when the equipment is first powered up ... A-5

H

8 Host Machine

a generic term for any electronic cabinet, equipment or platform where a iPRO Unit will be installed. The Host Machine supplies both the power and the communications interface necessary for proper operation of the iPRO Unit ... A-3

I

9 ICB

an acronym for Intelligent Cash Box - it is an optional system which tracks gaming assets and revenues. The ICB System standardizes and simplifies the revenue drop and soft count functions, by automating the cash collection process ... 1-2

J

10 JCM Tool Suite Standard Edition

a PC application software program that includes sub-routine programs for Downloading a File, Calibrating Sensors, examining Performance Metrics, testing Acceptor functions, Enabling and disabling the ICB feature, and viewing an image of the last Banknote accepted ... 6-1

L

11 LED

an acronym for Light Emitting Diode. An LED is Semiconductor Device which when turned on, emits a signal output in the visible light range. Available of colors, LEDs are cost effective and are commonly used as Indicator Lights in a variety of equipment devices. LEDs are also available in the invisible light range (i.e., ultraviolet, near-infrared etc.) making them useful as operational indicators for a variety of electronic equipment and applications, such as Banknote Validation Circuit in the iPRO Unit ... 2-3

12 Limited Power Source

an electronic circuit designed to prevent damage to a Power Supply in the event a short circuit occurs ... 1-4

P

13 Photo-Coupler Isolation

a method of increasing safety to both the equipment and personnel by isolated and routing transmitted data signals via Light Emitting Diode (LED) and Photosensitive Transistor combination circuit in various electronic equipment devices ... 2-11

14 Pictograph

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

15 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

R

16 RS232C

a common serial data communication standard protocol ... 2-11

S

17 Sensor

a Photosensitive Device and LED combination designed to detect timing and movement events ... 2-13

18 Special Notes

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

T

19 Transport Unit

the upper portion of an iPRO that moves a Banknote past the various Sensors present in the Unit ... 4-1

V

20 Validation

In Banknote Acceptors (such as the iPRO Unit), the process of drawing a Banknote into the Unit and then using various Sensors to read and determine the authenticity of the Banknote based on the comparison of collected readings to a set of reference data stored in memory ... 2-12

THIS PAGE INTENTIONALLY LEFT BLANK



a
RoHS
Compliant
Product



JCM

G L O B A L



Contains
RoHS
Compliant
Components

Issue #4089-SME-01-03