

JCM TRAINING OVERVIEW

UBA-10/11/14/24/25

Revision 3

IACET Industry Certified

JCM TRAINING LABS

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UBA 10/11/14/24/25

Revision 3

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Lecture Notes

OVERVIEW

UBA Component Locations

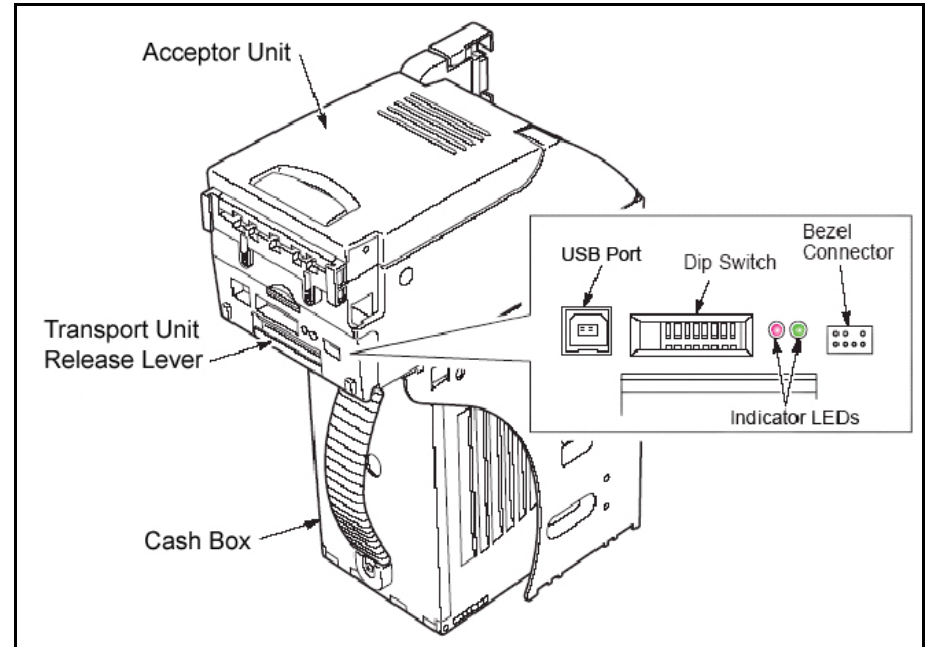


Figure 1 UBA Front & Right Side Primary Components

Lecture Notes

Lecture Notes

UBA Component Locations (Continued)

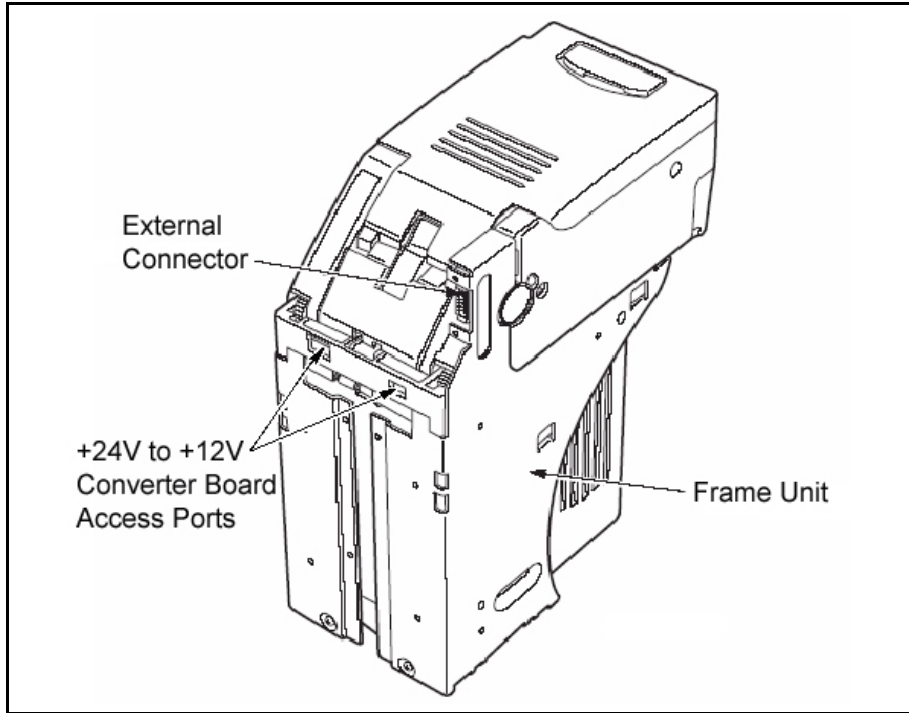


Figure 2 UBA Back & Left Side Primary Components

Lecture Notes

PERSONAL NOTES AND COMMENT AREA

Write any pertinent notes or comments regarding your particular installation here.

Lecture Notes

UBA-1X PARTS LIST

Part Number - Description

- 701-000148 – PS75-002 Power Supply
- 400-100110 – Extension Cable
- 950-100063 – Sentry Quick Reference Card
- 808-001035 – Plastic Cash Box with ICB
- 808-001036 – Plastic Cash Box without ICB
- 501-000180R – Cleaning Card
- 501-000131 – 2.5mm Hexagonal Nut Driver
- 960-000131 – UBA Flip Book
- 701-100086RA – Mag Tool Kit
- 701-100103R – UAC Kit (WBA/UBA/iVIZION)

Lecture Notes

TRAINING COURSE TARGETS

This training course addresses the following JCM UBA device versions:

Table 1 UBA-1X/2X Versions

Device	Capacity
UBA-10	8 Meg Flash Memory
UBA-11	8 Meg EPROM
UBA-14	16 Meg Flash, USB compatible, SS Configuration
UBA-24	16 Meg Flash, USB compatible, SU Configuration
UBA-25	16 Meg EPROM, USB compatible, SU Configuration

Lecture Notes

JUMPER CONFIGURATIONS

UBA-10/11 5.0V DC JUMPER CONFIGURATIONS

The required signal level can be selected by Plug Jumpers located on the UBA-10/11 CPU Board.

NOTE: The CPU Board needs to be removed from the Acceptor unit in order to change the Jumper settings!

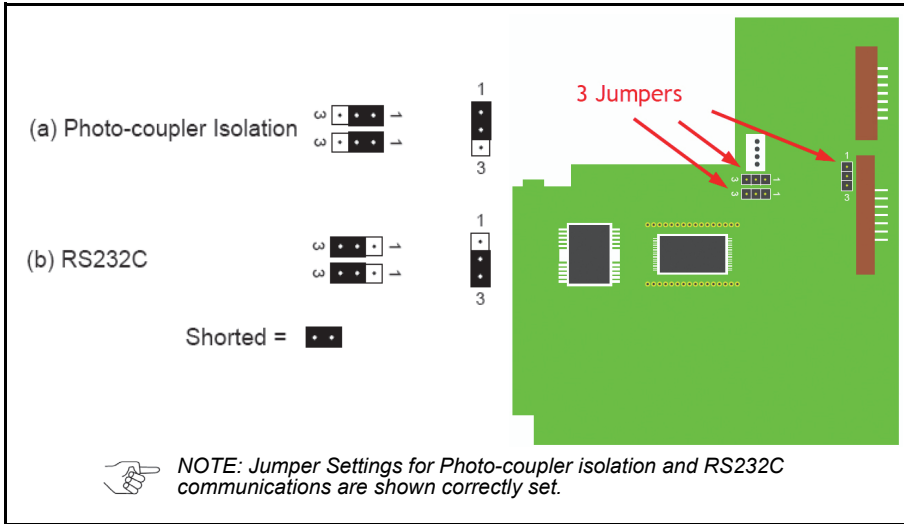


Figure 3 UBA-10/11 5.0V DC Jumper Configurations

NOTE: The UBA-14/24/25 does not contain Jumper provisions for selecting RS-232C Interface settings. An optional PCB must be installed to accommodate a RS232C Communications signal.

Lecture Notes

REJECT ERROR CODES

Table 10 lists the various UBA Reject Error Code conditions.

Table 10 Reject Error Code Table

RED LED Status	GREEN LED Flashes	Failure Condition	Possible Causes
OFF	1	Slant Banknote Insertion	Check Banknote Condition, Entrance Sensor and Validation Sensors - Re-Insert Banknote
OFF	2	Magnetic Sensor Pattern error	Clean Magnetic Head and Rollers or Replace Upper Sensor Board
OFF	3	Paper detected inside Acceptor at Standby	Clean ALL Transport Sensors - Check for debris in Transport Path
OFF	4	Optical Sensor Level error	Clean all Transport Sensors. Replace Upper & Lower Sensor Boards
OFF	5	Banknote Feed error (Timing)	Check and clean all Belts and Rollers - Check for debris in Transport Path
OFF	6	Banknote Identification error	Clean ALL Transport Sensor Lenses - Possible poor Banknote condition
OFF	7	Barcode Reading error	Clean Bar Code Sensor/Upper Sensor Board Error
OFF	8	Double Notes/Tickets detected	Clean Sensor Lenses - Check for double Banknotes
OFF	9	Inhibited Banknote	Clean all Transport Sensors. Check DIP Switch Settings and/or Game settings
OFF	10	Bill Return Command	Check DIP Switches for proper Settings. Bill inhibited by Host Machine
OFF	11	Reserved	N/A
OFF	12	Banknote Detection error	Clean ALL Transport path Sensors
OFF	13	Banknote Length error	Check and clean ALL Belts and Rollers
OFF	14	Photo Pattern Error	Check for dirty/clouded Lenses. Clean all Lenses.
OFF	15	UV Optical Sensor	Check and clean the UV Sensor and White Reflection Block in Transport

Lecture Notes

UBA OPERATIONAL MALFUNCTION ERRORS

Table 9 lists the possible UBA Operational Malfunction LED Flash Codes.

Table 9 UBA Operational Malfunction LED Flash Codes

Red LED Flashes	Green LED Status	Failure Condition	Possible Causes
1	OFF	Cash Box Full	Stacker Encoder Error or Full Cash Box
2	OFF	Stacker Pusher Mechanism fault, Transport Jam Type 1	Stacker Motor Failure, Stacker Encoder Failure and/or Stacker Jam
3	OFF	Transport Jam Type 2	Exit Sensor Board Failure or Banknote Jam at Exit Sensor
4	OFF	Stacker Encoder signal fault; Jam in the Acceptor	Acceptor Jam, Stacker Encoder Board fault and/or Harness misfits
5	OFF	Transport Motor speed too fast or slow	Transport Encoder Failure or Belt Jam
6	OFF	Transport Motor fault	Motor or CPU Board Failure
7	OFF	Sensor Failure	Check and/or Replace Upper & Lower Sensor Boards
8	OFF	Communications Error with CPU	Replace Upper Sensor Board or CPU Board
9	OFF	Anti-Pullback (PB) Unit Fault	PB Unit Jam, Anti-Pullback Home Sensor Failure or Lower Sensor Board Failure
10	OFF	Cash Box not seated or not present	Re-seat Cash Box or Cash Box Sensor Board Failure
11	OFF	ICB Module Communications Error	Missing or defective ICB Module
12	OFF	A Sensor detects movement in the wrong direction	Unit Cheated, Sensor blocked/ or out of sequence. Clean/check for debris
13	OFF	Centering Mechanism Solenoid fault	Clean Solenoid, Check linkage; possible Upper Sensor Board Error
14	OFF	Centering Mechanism fault	Jam in Centering Mechanism or Home Sensor Error
15	OFF	Reserved	N/A

Lecture Notes

UBA-10/11 3.3V DC JUMPER CONFIGURATIONS

The required signal level can be selected by Plug Jumpers located on the UBA-10/11 CPU Board.

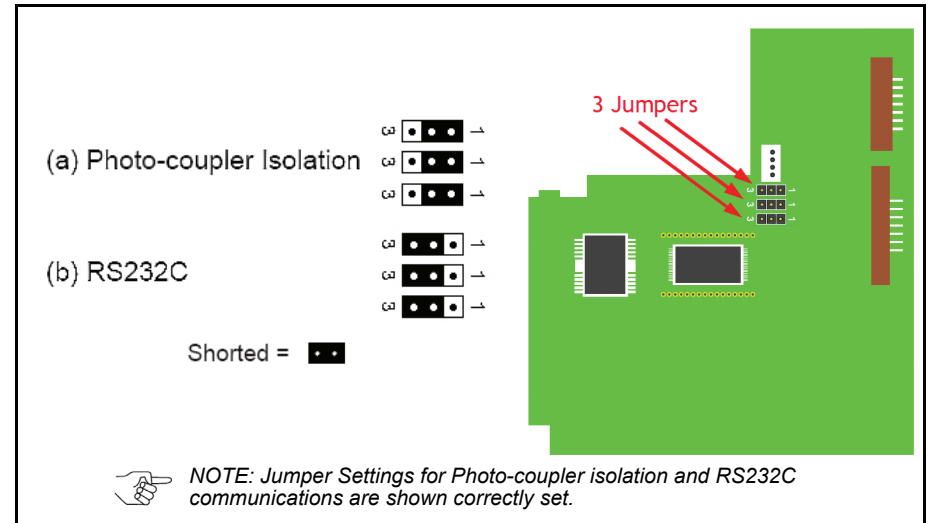


Figure 4 UBA-10/11 3.3V DC Jumper Configurations

Lecture Notes

UBA SERIES CONNECTOR PIN CONFIGURATIONS

To obtain the correct pin configurations for the UBA Series external 20-pin connector, refer to Section 2 of the latest UBA Operations and Maintenance Manual (JAC Part No. 960-000097R_Rev. 3).

UBA STARTUP MALFUNCTION ERRORS

Table 8 lists the possible UBA Startup malfunction LED Flash Codes.

Table 8 UBA Startup Malfunction LED Flash Codes

Red LED Flashes	Green LED Status	Failure Condition	Possible Causes
OFF	ON	Processor Malfunction	Replace CPU Board
1	ON	Boot ROM Failure	Replace CPU Board or EPROM on UBA-14/24 Unit
2	ON	Corrupted Program (Flash or EPROM)	UBA-10/14/24 - Reflash the UBA ROM or Replace the CPU Board. On UBA-11/25, Replace the EPROM.
3	ON	Internal RAM Failure	Replace CPU Board
4	ON	External RAM Failure	Re-Flash or Replace EPROM Memory
5	ON	Missing Boot EPROM (UBA-14/24)	Install a new Boot EPROM
3	OFF	ICB Error	ICB Disabled on Validator or Cash Box is Active *
5	OFF	No Calibration	New Processor PCB exists, or Calibration was not performed.
11	OFF	ICB Cash Box Communication Error (Failure Type 02)*	ICB Enabled UBA, but NO Communication or Power to Cash Box exists.
12	OFF	ICB Cash Box Check Sum Error (Failure Type 07)*	ICB Cash Box Checksum Error. Replace Cash Box with a "Cleared" Box
13	OFF	ICB Cash Box Installed in Wrong Machine (Failure Type 08)*	Wrong or Active Cash Box installed. Install a "Cleared" Cash Box
14	OFF	ICB Cash Box Data Not Initialized (Failure Type 09)*	Un-Initialized ICB/NO Box Serial Number. Install a "Cleared" Cash Box
15	OFF	ICB Module (Failure Type AF)*	ICB Module Failure. Replace GPU PCB.

*NOTE: The Bezel Light will quickly flash three (3) times when an ICB Error occurs.

Lecture Notes

Lecture Notes

SENTRY PERFORMANCE INDICATORS

Figure 12 illustrate the various operational performance LED indications that can appear on a Sentry control panel.

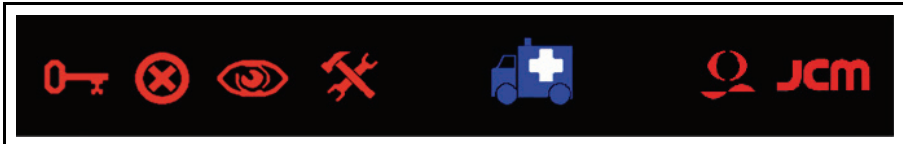


Figure 12 Sentry Performance Indicators

NOTE: Only one of these indicators will light at a time.

- Ambulance – **BLUE**
 - Validator shut down – communication loss or requires immediate attention
- Key – **RED**
 - Problem requires cash box access
- Crossed Circle – **RED**
 - ROM Verification error or jammed motor – shop repair required
- Eye – **RED**
 - Possible cheat attempt (Eye symbol will flash)
 - If eye lit only – multiple bill rejects in a short period of time
- Cross Hammer & Wrench – **RED**
 - Minor service required at the machine
- JCM Logo – **RED**
 - Cash Box full indicator.

Lecture Notes

REPAIR PROCESS FLOW CHART

Figure 5 illustrates Part 1 of the Repair Process Flow Chart..

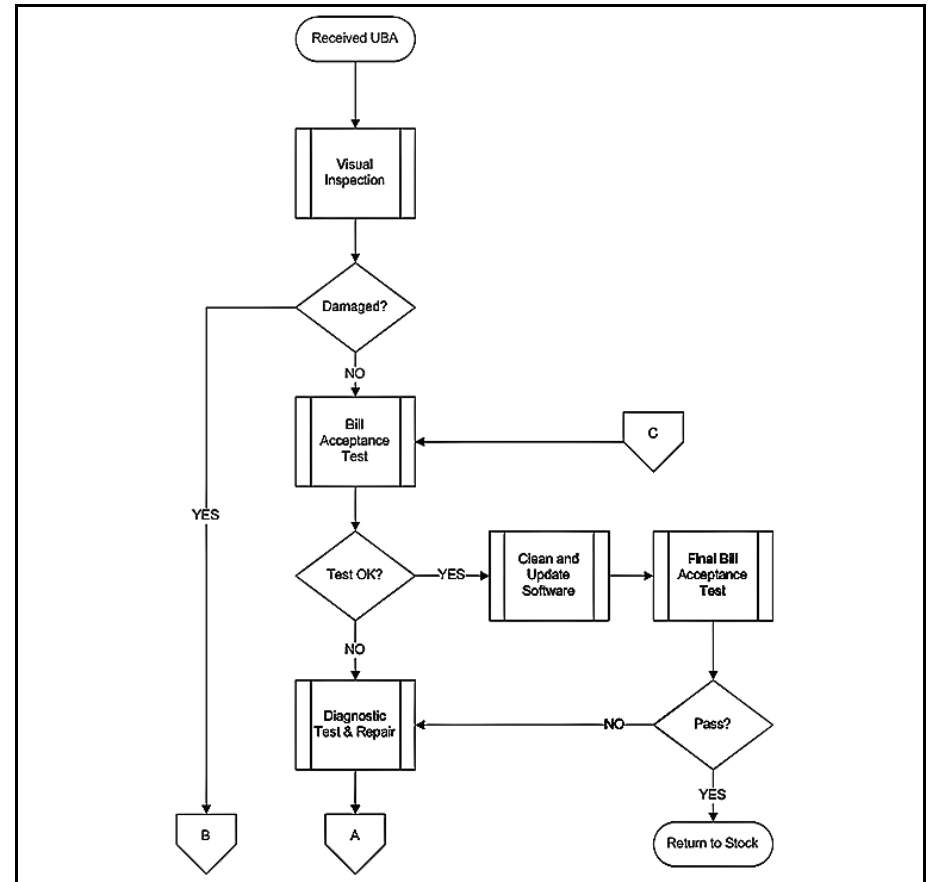


Figure 5 Repair Process Flow Chart (Part 1)

Lecture Notes

REPAIR PROCESS FLOW CHART (CONTINUED)

Figure 6 illustrates Part 2 of the Repair Process Flow Chart.

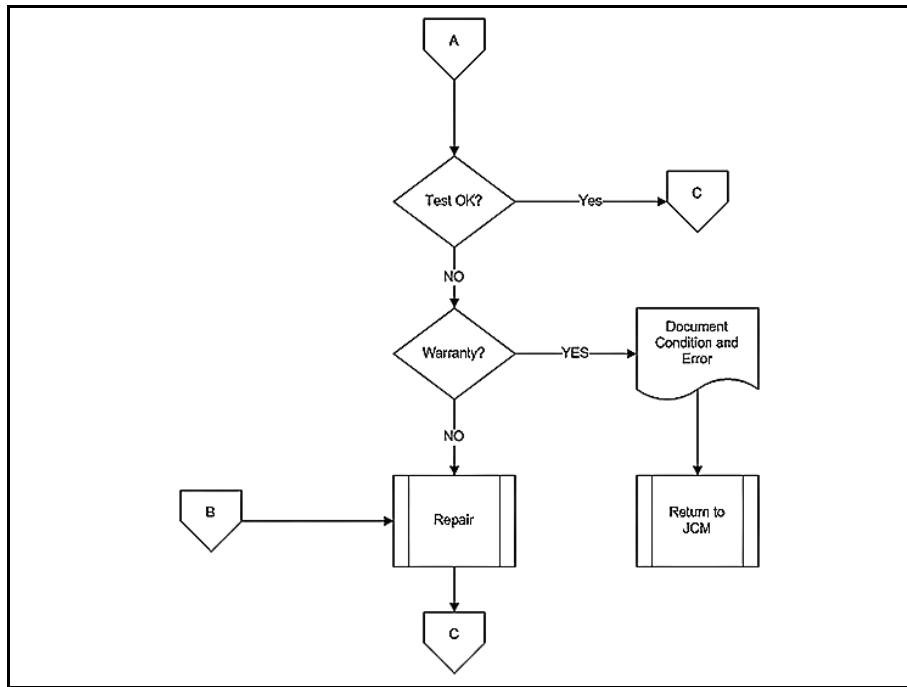


Figure 6 Repair Process Flow Chart (Part 2)

Lecture Notes

SENTRY BEZEL

The Sentry Bezel offers the following visual display of validator operations:

- Three indicator panels display information
 - Runway lights
 - Acceptable denominations and last bill inserted
 - Diagnostic Icons for troubleshooting.

SENTRY NORMAL OPERATIONS

- Runway Lights
 - Flashing in an insertion mode – ready to receive bill
 - Flashing side to side, bill inserted and being validated.
- Denomination lights
 - The denomination panel displays acceptable denominations by illuminating the denomination light in green
 - Denomination lights are not lit for bills not accepted
 - For the last bill denomination received and validated, the Denomination LED will be displayed in Orange.

Lecture Notes

CALIBRATION ERROR TABLES

Table 7 lists the UBA Calibration Errors that may occur during Calibration.

Table 7 Calibration Error Table

Error Code	Displayed Message	Description/Cause
4-A	Gain Error (Value over 4.3V)	Light receiving Adjustment Error. Check for dirty or wrong Calibration Paper use.
4-B	Adjustment Error	Sensor Light Quantity Adjustment Error. Replace either the Upper or Lower Sensor PCB.
4-C	Black Level Error	Sensor Light Quantity Adjustment Error. Ensure that the Black Reference Paper is properly inserted.
4-E	Gain Error	Light Receiving Adjustment Error. Clean Sensors. Replace Upper or Lower Sensor PCB.
4-G	Front/Back/Pbin/Width Level Error	Triggering Sensor Light Receiving Error. Clean the Sensor. Wrong Calibration Paper being used during UV Sensor Adjustment. Replace the Exit Sensor. NOTE: The UBA must in installed in a Frame during Calibration.
6-A	Offset Error	Light Receiver Circuit Abnormality. Clean Sensors. Replace either the Upper or Lower Sensor PCB.
6-B		
6-C		
MAG	Adjustment Error	Magnetic Sensor Adjustment Error. Replace the Upper Sensor PCB.
	Adjustment Error Under 0.74V	
No Code	Gain Max Limit Error	Sensor Abnormality. White Reference Paper not inserted correctly.
	Bar Gain Max Limit Over Error	Sensor Abnormality. For UBA 1x, replace the Upper Sensor PCB. For UBA 24, replace the Lower Sensor PCB
	UV Gain Max Limit Over Error	Sensor Abnormality. Clean UV Sensor and White Reference Block. Ensure UV Reference Paper is inserted with its Label up, covering the White Reference Block.
	A/D Data Level Error	Light Receiving Level Error. Ensure the White Reference Paper is inserted completely and correctly placed.
	PBin/Width D/A Error	Triggering Sensor Adjustment Error. Clean PB In-Sensor or Reference Paper is not inserted correctly.
	Motor Speed Error	Transport Motor Speed Error.
	EEPROM Write Error	Adjustment Value Writing Error. Replace the Processor PCB.

Lecture Notes

BILL ACCEPTANCE TEST

BILL ACCEPTANCE TEST MODES AVAILABLE

- Two Modes exist to run a UBA Bill acceptance test:
 - For just testing the Transport and Frame.
 - Transport must be installed in the Frame (no Cash Box installed).
 - The Transport and Frame with a Cash Box in place.
 - All Sensors and functions are tested including Cash Box functions.

ENTERING BILL ACCEPTANCE MODE

- Perform the following steps to enter Bill Acceptance Test Mode:
 1. Turn the UBA Power OFF.
 2. Turn DIP Switch #8 ON, and apply power to the UBA Unit (Test Mode).
 3. Turn on DIP Switches according to the desired test listed in the Table 2 Chart.
 4. Turn DIP Switch #8 OFF to start the selected Bill Acceptance Test. The unit will cycle and be ready to accept and identify Bills.

Table 2 provides DIP Switch settings for performing various Bill Acceptance Tests.

Table 2 UBA Bill Acceptance Test DIP Switch Setting Table

UBA Bill Acceptance Test DIP Switch Settings									
DIP Switch								Bill Acceptance Test Activated	
1	2	3	4	5	6	7	8		
X*	X	X						E/D†	Acceptance without a Cash Box
X	X	X	X					E/D	Acceptance with a Cash Box

* X = ON

† E/D = Enable/Disable

Lecture Notes

BILL IDENTIFICATION IN BILL ACCEPTANCE MODE

- Identification is done by counting the flashes on the Green LED after a Bill is validated.
- The following examples are listed for US Dollars:
 - 1 flash = \$1
 - 2 flashes = \$5
 - 3 flashes = \$10
 - 4 flashes = \$20
 - 5 flashes = \$50
 - 6 flashes = \$100
 - 16 flashes = Bar Code Ticket



NOTE: Visit www.jcmglobal.com/en/support/downloads/software_info.aspx, fill in the selection information and click SEARCH. This displays the Software Data Sheet containing the DIP Switch settings for your particular selection.

CALIBRATION

- Floor calibration is not required because the Sensors are self calibrating.
- The UBA Unit only requires calibration to reset the initial Sensor levels when a component (Sensor) Circuit Boards or the CPU Curcuit Board is replaced.
- The calibration process involves a PC based Program that adjusts the Sensors to factory levels and is done at a Repair Depot only. The required Calibration Program is included in the JCM Tool Suite Application available on the jcm-global.com Website.
- The MAG Tool Kit (JAC Part No. 701-1000086RA) includes all of the Reference Cards required for the Unit.



NOTE: The UBA must be installed in a Frame Assembly to perform calibration.

For additional information refer to the current version of the UBA Series, Universal Bill Acceptor (UBA-1x-SS) Operation and Maintenance Manual (JAC Part No. 960-000097).

Lecture Notes

Lecture Notes

PC DOWNLOADING



NOTE: This process assumes the down load application is already installed and the USB port drivers are installed.

- Connect the PC to the UBA USB port with a standard A=>B USB cable
- Apply Power to the UBA
- Start the UBA Download Application Vxxx.exe program



NOTE: This program can be obtained at the following JCM website location: <http://www.jcmglobal.com/support.aspx>.

- Click "Browse" and select the binary data file to be downloaded.
- Click on "Download" to begin the download
- The current download will be erased and the new program will be downloaded
- A percentage is reported to indicate progress of the download
- When complete (about 30 seconds) the screen will display "Target File Downloaded Successfully" to indicate the program has downloaded successfully.
- Disconnect the USB cable
- Return the DIP Switches to the operating position, if necessary
- Return the UBA to operation.



NOTE: The JCM Tool Suite Application can also be used to update the UBA Software.

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ENTERING TEST MODE

1. Set DIP Switch No. 8 to "ON".
2. Apply power to the UBA.
3. Check that both the RED and GREEN diagnostic LEDs illuminate.
 - This is the indication that test mode has been entered.
4. Set the DIP Switches for the test to be executed.
5. Set DIP Switch No. 8 "OFF" to activate the test.
 - Both the RED and GREEN LEDs will turn off.-
 - The test result will be shown by the RED or GREEN LED turning back on or blinking a code. Count the number of blinks between pauses to get the error code.
6. Set DIP Switch No. 8 "ON" to turn off (deactivate) the test.

Lecture Notes

TESTS

FUNCTIONAL TESTING

Table 3 provides a DIP Switch setting chart for performing UBA Functional Tests.

Table 3 UBA Functional Test DIP Switch Setting Chart

DIP Switch								Functional Test
1	2	3	4	5	6	7	8	
X [†]							E/D [†]	Motor Forward Rotation Speed Test
	X						E/D	Motor Reverse Rotation Speed Test
		X					E/D	Stacker Performance Test
			X				E/D	Run Test (Aging Test)
				X			E/D	Anti Pull-back (PB) Unit Test (Anti-String Mechanism)
X				X			E/D	Centering Mechanism Test
	X			X			E/D	Solenoid Test (Tension Roller)
						X	E/D	Sensor Test
X	X	X					E/D	Bill Acceptance Test (No Cash Box)
X	X	X	X				E/D	Bill Acceptance Test (Complete Unit)
X	X	X	X	X	X	X	E/D	DIP Switch Test

* X = ON

† E/D = Enable/Disable

Lecture Notes

FORCED DOWNLOAD MODE

Normally, the DIP Switches do not need to be set for downloading. However, the unit may need to be force downloaded if the current program becomes corrupted.

If the unit needs to be “Force Downloaded” select the appropriate download speed listed in Table 6.

Table 6 provides DIP Switch settings for performing a Forced Download.

Table 6 UBA Forced Download DIP Switch Setting Table

UBA Forced Download DIP Switch Settings								
DIP Switch								Selected Download speed
1	2	3	4	5	6	7	8	
					X	X	X*	USB Download Mode

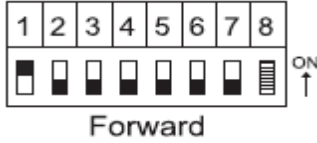
* X = ON

Lecture Notes

CLEANING THE UNIT

- Use only mild soap and water solution
- Wipe the lenses, belts, rollers and bill path until clean
 - Use the motor speed test to activate the belts
- If a lens is altered in any way it must be replaced (scratched, clouded etc.)
- Do not scratch the rollers because they will attract dirt faster, increasing PM scheduling
- If you can see timing marks through the belts, or if frayed edges are visible, replace the belts
- If ‘O’ rings are cracked, replace
- Absolutely NO solvents, Alcohol or Citrus Based cleaners should be used !!!
- JCM authorized Cleaning Cards are available and supported in all Software Versions.

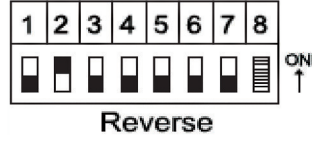
MOTOR SPEED TESTS



Forward

Forward Speed Test

- Enter “Test Mode”
- Set DIP Switch 1 “ON”
- Set DIP Switch 8 “OFF”
- Indications
 - Normal: Green LED = ON
 - Too Fast: Red LED Flashes 2x
 - Too Slow: Red LED Flashes 3x
- Set DIP Switch 8 “ON” to stop test



Reverse

Reverse Speed Test

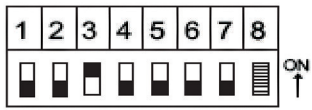
- Enter “Test Mode”
- Set DIP Switch 2 “ON”
- Set DIP Switch 8 “OFF”
- Indications
 - Normal: Green LED = ON
 - Too Fast: Red LED Flashes 2x
 - Too Slow: Red LED Flashes 3x
- Set DIP Switch 8 “ON” to stop test

Figure 7 Forward and Reverse Motor Speed Test Steps

Lecture Notes

Lecture Notes

STACKER TEST



- Enter "Test Mode"
- Set DIP Switch 3 "ON"
- Set DIP Switch 8 "OFF" to activate
- Indications
 - Normal: Green LED = ON
 - Stacker Full: Red LED Flashes 1x
 - Stacker Jam: Red LED Flashes 2x
 - Stacker Lock: Red LEDFlashes 4x
 - Cashbox Error: Red LED Flashes 10x
- Set DIP Switch 8 "ON" to stop test

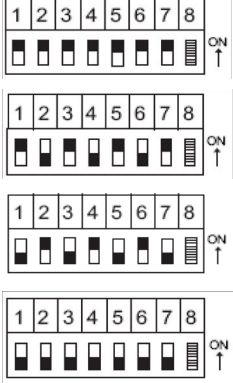
Figure 8 Stacker Test Steps

Lecture Notes

DIP SWITCH TEST

Table 5 provides a DIP Switch setting chart for performing a UBA DIP Switch Test.

Table 5 UBA DIP Switch Test Table



- Set all DIP Switches "ON"
- Apply power to the UBA
- Set DIP Switch 8 "OFF" to start test
 - Indications – Chart line #1
- Set DIP Switches 2, 4, 6 "OFF"
 - Indications – Chart line #2
- Set DIP Switches 2, 4, 6 "ON" and 1, 3, 5, 7 "OFF"
 - Indications Chart line #3
- Set DIP Switches all "OFF"
 - Indications Chart line #4

DIP Switch Pack #1								LED Status
1	2	3	4	5	6	7	8	
							X*	Green LED = OFF, Red LED = OFF
	X		X		X		X	Green LED = ON, Red LED = OFF
X		X		X		X	X	Green LED = OFF, Red LED = ON
X	X	X	X	X	X	X	X	Green LED = ON, Red LED = ON

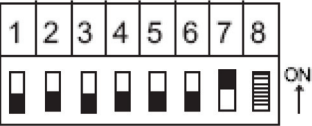
* X = OFF

Lecture Notes

TRANSPORT SENSOR TEST

Table 4 provides a DIP Switch setting chart for performing various Transport Sensor Tests.

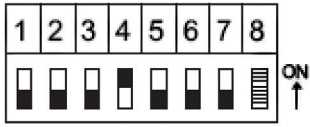
Table 4 Various Transport Sensor Tests



- Enter "Test Mode"
- Set DIP Switch 7 "ON"
- Set DIP Switch 8 "OFF" to activate
 - Indications – See chart below
- Set DIP Switch 8 "ON" to stop test

DIP Switch	Sensor Name	LED Color	LED "ON" Condition
1	Entrance Sensor	Green	Sensor Blocked
	Centering Mechanism Timing Sensor	Red	Sensor Blocked
2	PB-In (Anti Pull-Back -In) Sensor	Green	Sensor Blocked
	Exit Sensor	Red	Sensor Blocked
3	PB (Anti Pull-Back) Home Sensor	Green	Sensor Blocked
	Centering Mechanism Home Sensor	Red	Centering mechanism in home position
4	Transport Motor Encoding Sensor	Green	Detecting the encoder
	Stacker Motor Encoder Sensor	Red	Detecting the encoder
5	Pusher Home Sensor	Green	Pusher mechanism is NOT in the home position
	Cash Box Installed Sensor	Red	Cash Box is installed

RUN TEST (AGING TEST)



- Enter "Test Mode"
- Set DIP Switch 4 "ON"
- Set DIP Switch 8 "OFF" to activate
- Indications
 - Normal: BOTH LED = OFF
 - Stacker Full: Red LED Flashes 1x
 - Stacker Jam: Red LED Fashes 2x
 - Acceptor Jam: Red LED Flashes 4x
 - Motor Lock: Red LED Flashes 6x
 - Upper board set up error: Red LED Flashes 7x
 - PB Unit error: Red LED Flashes 9x
 - Cash Box error: Red LED Flashes 10x
 - Solenoid error (tension roller): Red LED Flashes 13x
 - Set DIP Switch 8 to "ON" to stop the test.

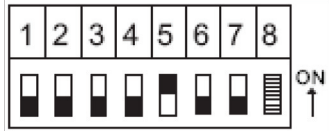
Figure 9 Run Test Steps

Lecture Notes

Lecture Notes

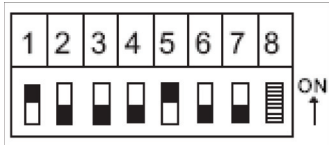
TRANSPORT TESTS

PB Unit Test (Anti-string mechanism)



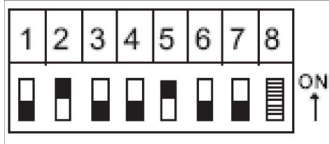
- Enter "Test Mode"
- Set DIP Switch 5 "ON"
- Set DIP Switch 8 "OFF" to activate
- Indications
 - Home position: Green = ON
 - Rotating: Green = OFF
 - PB Unit Error: Red LED Flashes 9X
- Set DIP Switch 8 "ON" to stop the test

Centering Mechanism Test



- Enter "Test Mode"
- Set DIP Switch 1 and 5 "ON"
- Set DIP Switch 8 "OFF" to activate
- Indications
 - Wide open: Green = ON
 - Other: Green = OFF
 - Centering Mechanism Error: Red LED Flashes 14X
- Set DIP Switch 8 "ON" to stop the test

Solenoid Test (Tension Roller)



- Enter "Test Mode"
- Set DIP Switch 2 and 5 "ON"
- Set DIP Switch 8 "OFF"
- Indications
 - Solenoid Sensor on: Green = ON
 - Solenoid Sensor off: Green = OFF
 - Solenoid Error: Red LED Flashes 13X
- Set DIP Switch 8 "ON" to stop the test.

Figure 10 Transport Test Steps

Lecture Notes

TRANSPORT SENSOR LOCATIONS

Figure 11 illustrates the UBA Sensor locations within the UBA Unit.

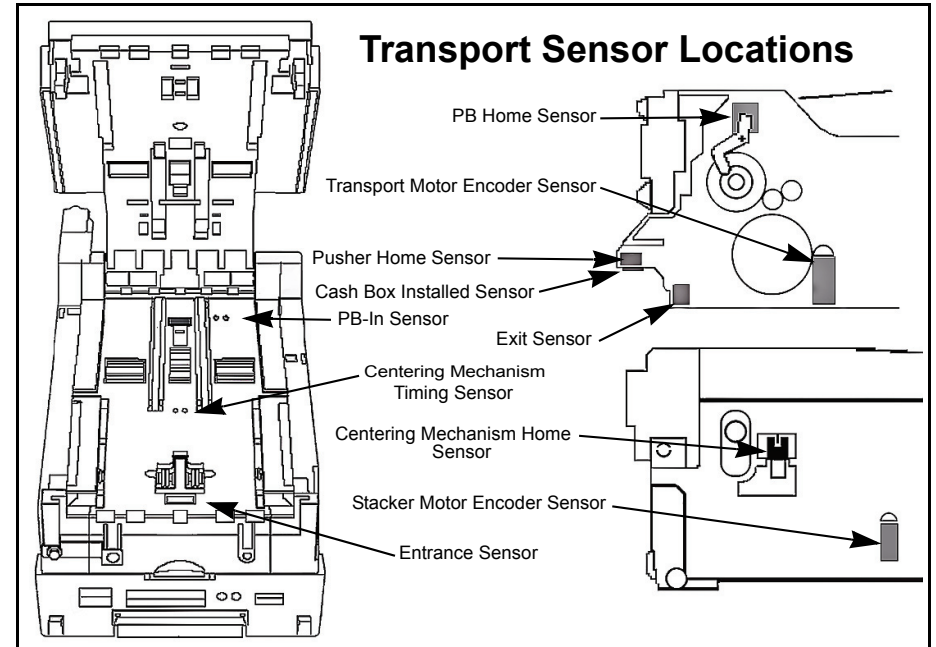


Figure 11 UBA Transport Sensor Locations

Lecture Notes
