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JCM TRAINING OVERVIEW WBA-1X



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WBA-1X PARTS LIST

Part Number - Description

- 550-100042 - PS15-006 Power Supply
- 400-100040 - WBA 10/11 Extension Cable
- 400-100110 - WBA 12/13 Extension Cable
- 400-100109 - Adapter Cable WBA 10/11 to WBA 12/13
- 501-000032 - WBA Calibration Paper
- TM0100 - WBA Manual
- 960-000027 - WBA Quick Reference Manual
- 950-100063 - Sentry Quick Reference Card
- 960-000014 - Parts Catalog CD
- 550-100013 - LED Assembly
- 501-000095 - Cash Box Adjustment Tool


Lecture Notes

SENTRY PERFORMANCE INDICATORS

Figure 3 illustrate the various operational performance LED indications that can appear on a Sentry control panel.



Figure 3 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

This training course addresses the following JCM WBA device versions:

Table 1 WBA-1X Versions

Device	Capacity
WBA-10	1 Meg Flash Memory
WBA-11	1 Meg EPROM
WBA-12/14	4 Meg Flash Memory
WBA-13/15	4 Meg EPROM

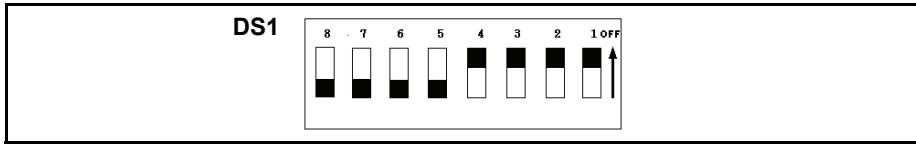
CLEANING THE HEADS

To clean the heads, follow these recommendations:

- Perform a preventative maintenance cleaning every 4-6 months
- Use only soap and water for cleaning
- Wipe the lenses, belts, rollers and bill path until clean
- Use the motor speed test to activate (move) 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 pick up dirt faster, increasing the PM schedule
- If you can see timing marks through the belts, or if they have frayed edges, replace them
- If 'O' rings are cracked, replace them
- Do not soak the unit
- Absolutely NEVER use solvents of any kind!!!


Lecture Notes

CALIBRATION MODE




The Auto Calibration Mode is entered by turning DS1 DIP Switches 5, 6, 7 and 8, to the “ON” position and powering up the unit.

- The unit will cycle once and stop to receive the White and Black reference papers
 - Insert the calibration paper black end first
- The unit will sample the White reference paper then the Black
 - It will do this 5 or more times and then return the calibration paper.

 *NOTE: The Test LED on power supply or Bezel Lamps will blink rapidly if the calibration was successful.*

- If calibration fails, the Test LED/Bezel Light will start to blink, then pause, blink then pause, etc. Count the number of blinks in between pauses, this number is the error code count (see the Calibration Errors Table on page 5 to identify the error).

 *NOTE: Use calibration paper part number 501-000032 for the WBA-1X.*

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 specific denomination light in green
 - Un-acceptable denomination lights are not lit
 - The last bill denomination received and validated will be displayed in orange following acceptance.

Lecture Notes

Lecture Notes

SENTRY BEZEL

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

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

Lecture Notes

CALIBRATION ERROR TABLE

Table 2 provides the Calibration Error LED Blink indications.

Table 2 WBA-1X Calibration Error Indications

Number of LED Blinks	Description	Possible Cause
1	Entrance Lever Error	Check the PLEV/FLEV Sensor
2	Solenoid Error	Check the Solenoid in the Transport
3	Feed Sensor Error	Check the Entrance Sensor in the Transport
4	Transport Jamming	Check the Entrance Sensor in the Transport
5	Gain Error (White level adjustment error)	If the reference paper was loaded correctly, change the Upper Sensor Board
6	Digital/Analog Error	If the reference paper was loaded correctly, change the Upper Sensor Board
7	Bar Sensor Error	Change the Upper Sensor Board
8	Acceptor Head Removed	Check condition of the 20 pin connector that connects head to the CPU Board
9	Magnetic Setting Error	Change the Upper Sensor Board
10	Write-in Error	Change the Upper Sensor Board
11	Black Level Error	Replace the Upper or Lower Sensor board

Lecture Notes

TEST MODE

- To enter the Diagnostic Mode perform the following steps:
 1. Set DIP Switch 8 on the CPU Board to **“ON”** and DIP Switches 1 thorough 7 to **“OFF”**.
 2. Apply power and observe that one of the following conditions occur:
 - The test LED/Bezel light blinks at a steady rate, indicating diagnostic mode is active
 - The WBA-1X does not enter diagnostic mode
 - The LED is constantly OFF (out) or ON (lit)
 - A CPU problem exists – Re-flash the unit (WBA 10/12/14) or change the EPROM (WBA 11/13/15).

Lecture Notes

RETURN CODE ERROR TABLE

Table 10 lists the WBA-1X Return Error Codes.
Table 10 WBA-1X Return Code Table

Return Codes			
Error No.	Description	Possible Cause	Follow-up Test
1	Crooked Insertion	Entrance Sensors	Test #6- Entrance Sensors
2	Magnetic Pattern Error Center	Center MAG Sensor	None
3	Detected Bill in Pathway at Idle	HPL, HPR, HPC, or Transport Entrance Sensor	Test #6- Head Sensor, #7 Entrance
4	Data Amplitude Error	All IR Sensors (Possible power Supply)	Test #6- Head Sensor, #7 Transport
5	Timing Error; the Bill Did Not Reach the Sensor within the Specified Period of Time	HPL, HPR, HPC, Transport Entrance Sensor or Encoder Sensor	Test #6-Head Sensors, #7 Transport Entrance Sensor, Validator Encoder
7	Error in Photo Sensor	Clean and Calibrate	Test #6-Head Sensors, #7 Transport Sensors
8	Lever Error; the Bill was Unusually Dirty or Two Overlapping Bills Occurred	Entrance Sensors	Test #6- Head Sensor
9	Return Command by DIP Switch	Check DIP Switch Settings	None
10	Return Command by the Host	Check Machine Settings	None
11	Solenoid Lever Trouble	Solenoid Lever or Solenoid Sensor	Test #5-Solenoid test, #7 Solenoid Sensor
12	The Sensors Detect Movement in the Wrong Direction During Bill Transfer to the Cash Box	HPL, HPR, HPC, or Transport Entrance Sensor	Test #6- Head Sensor, #7 Transport Entrance Sensor
13	The Bill is of a Length other than Specified	HPL, HPR	Test #6- Head Sensor
14	Color Pattern Error	HPL, HPR, HPC (Red Component)	Test #6 - Head Sensors
15	Magnetic Pattern Error Left or Right	Left or Right MAG Sensor	None

Lecture Notes

TEST MODE 4 ONLY ERROR TABLE

Table 9 lists the WBA-1X Abnormal Operation Codes.

Table 9 WBA-1X Test Mode 4 Abnormal Operation Code Table

Abnormal Codes Test Mode 4 ONLY			
Error No.	Description	Possible Cause	Follow-up Test
2	Solenoid Lever Trouble	Solenoid Sensor or Lever Jam	Test #5-Solenoid, #7 Solenoid Lever Sensor
3	Blocked Head Sensor	Clean and Calibrate Head Sensor	Test #6-Acceptor Head Sensors
4	Blocked Transport Sensor	Transport Sensors	Test #7-Transport Sensor Test
5	Cash Box Full	Stacker Encoder	Test #3-Stacker Test, #7 Stacker Encoder Sensor
6	Pusher Unit Trouble in the Cash Box	Stacker Encoder or Pusher Home Sensor	Test #7-Stacker Encoder, #7 Stacker Home Sensor
7	Acceptor Head Detached, Not Calibrated or Wrong Type	Clean and Calibrate; Check All Head Sensors and Head Detached Test	Test #6-Head Sensors, #7 Acceptor Head Detached

Lecture Notes

FUNCTIONAL TEST

Table 3 provides a DIP Switch settings chart for performing WBA-1X functional tests.

Table 3 WBA-1X Functional Test DIP Switch Settings

	DIP Switch Positions							Functional Test	
	8	7	6	5	4	3	2		1
E/D*								X†	Transfer Motor Forward Rotation Test (test light OFF = motor speed OK)
E/D							X		Transfer Motor Reverse Rotation Test (test light OFF = motor speed OK)
E/D						X			Stacker Motor and Pusher Mechanism Test
E/D				X					Acceptor Head/Stacker Test (Use Error Table #9 only)
E/D				X				X	Acceptor Stacker Test without the head (Use Error Table #9 only)
E/D			X						Solenoid Test
E/D		X							Acceptor Head Sensor Test (PH06)
E/D	X								Transport Sensor Test (PH07)
E/D					X	X	X		Bill Acceptance Test without Cash Box and Frame (Error Table 8 or 10)
E/D				X	X	X	X		Bill Acceptance Test with Cash Box and Frame (Error Table 8 or 10)

* E/D = Enable/Disable

† X = ON

Lecture Notes

HEAD SENSOR TEST (PH06)

- Entering the Head Sensor Test
 - Enter diagnostic mode – DIP Switch 8, “ON”; apply power
 - Turn DIP Switch 6, “ON” and turn DIP Switch 8, “OFF”
 - This activates the Head Sensor Test
 - DIP Switch 6 will be used as the enable/disable switch for these tests.



NOTE: Use the test LED/Bezel light to check the status of the sensor being tested, either blocked or un-blocked. The LED will light when the light path of the sensor is interrupted (blocked).

ABNORMAL ERROR CODE TABLE

Table 8 lists the WBA-1X Abnormal Operation Codes.

Table 8 WBA-1X Abnormal Operation Code Table

Abnormal Codes			
Error No.	Description	Possible Cause	Follow-up Test
1	Cash Box Full	Stacker Encoder	Test #3-Stacking, #7 Transport Sensors
2	Stacker Jam or Pusher Unit Trouble	Stacker Encoder or Pusher Home Sensor (S1)	Test #3-Stacking, #7 Transport Sensors
3	Transport Cover Open or Solenoid Lever Trouble	Transport Entrance Sensor or Solenoid Lever Sensor	Test #7-Transport Sensors
4	Blocked Bill Path Sensor	All Head and Transport Sensors	Test #6-Head Sensor, Test #7 Transport Sensors
5	The Acceptance Head Detached, not Calibrated or Incorrect Type	Clean and Calibrate; Check All Head Sensors and Head Detached Test	Test #6-Head Sensor, Test #7 Acceptance Head Detached
6	Transport Motor Trouble or the Signal is NOT being sent from the Encoder	Transport Motor or Transport Encoder	Test #1-Transport Motor, Test #7 Validator encoder Sensor
8	Solenoid Lever Trouble	Lever Assembly, Lever Sensor	Test #5-Solenoid Test, Test #7 Solenoid Lever Sensor
10	Cash Box NOT Fully Seated	Cash Box Sensor (S2)	Test #7 Cash Box Sensor

Lecture Notes

Lecture Notes

PC DOWNLOADING

Perform the following steps to initiate a PC Download:

1. Load PC Download program DOWNLOAD PROGRAM.EXE and the corresponding Validator data file into a common directory.
2. Connect the Validator to a PC COM Port using the 9-pin cable connected to the PS15-006 Power Supply.
3. Set the DIP Switches for the appropriate download speed.
4. Connect the Power Supply to the Validator.



NOTE: The two LEDs on the WBA Processor board should be alternately flashing.

5. Run DOWNLOAD PROGRAM.EXE.
6. Use the **BROWSE** function to select the program data file to be loaded into the WBA.
7. Select the download speed to match the DIP Switch setting of the WBA.
8. Press **"Start Download"**.
9. When the download is complete, **"Download Successful"** will display on the PC Screen.



NOTE: The WBA/DBV200 Download Application is available on the JCM Web Site using the Product Support/Software/Software Applications pull down menu (<http://www.jcm-american.com/products/software/apps.asp>).

Lecture Notes

HEAD SENSOR TEST DIP SWITCH SETTINGS

Table 4 provides a DIP Switch settings chart for performing the WBA-1X Head Sensor Tests.

Table 4 WBA-1X Head Sensor Test DIP Switch Setting Chart

DIP Switch Setting							Sensor Being Tested	
8	7	6	5	4	3	2		1
		E/D†					X†	PLEV
		E/D				X		Not Used
		E/D			X			PT 1 (IR, Left entrance)
		E/D		X				PT 2 (IR, Right entrance)
		E/D	X					HPL (Red, IR - Left Sensor)
		X						HPR (Red, IR -Right Sensor)
	X	E/D						HPC (Red, IR - Center Sensor)
	X	E/D					X	Not Used

† E/D = Enable/Disable

† X = ON

Lecture Notes

HEAD SENSOR LOCATIONS

Figure 1 illustrates the Head Sensor Locations.

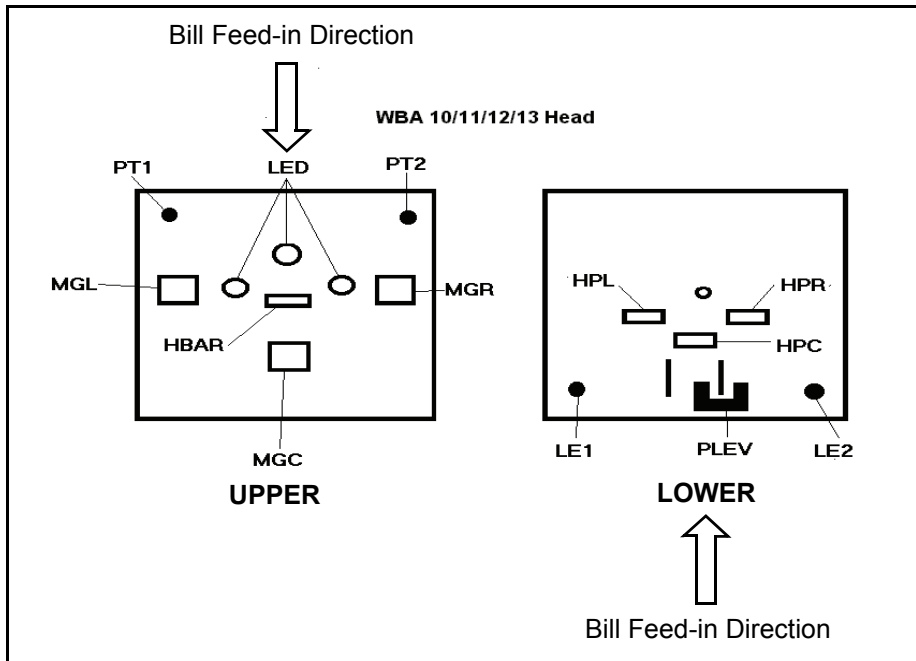


Figure 1 Head Sensor Location

Lecture Notes

DT-104 DOWNLOADING

Perform the following steps to initiate a DT-104 Download:


1. Connect the data cable to the WBA-1X.
2. Insert the proper Master EPROM into the DT-104 socket.
3. Power on the DT-104 (Part No. 701-000141).
4. Scroll the screen to **"SETUP"** and verify the correct download speed – change if needed.
5. Ensure multi-mode is **"OFF"**.
6. Press the Menu Button until **"Program Menu"** is displayed. One of the following conditions will occur:
 - CPU lights on the WBA-1X should be alternating
 - Press **"GO"**
 - If no error **"Device Ready"** will be displayed
 - Press **"Start"**
 - The WBA-1X will show a download LED sequence on the CPU LEDs
 - The display panel on the DT-104 will count-down from the highest memory location and **"Download Successful"** will display on the panel when the download is successfully complete.

Lecture Notes

DT-004 DOWNLOADING

Perform the following steps to initiate a DT-004 Download:

1. Connect the DT-004 (Part No. 501-000022) to the PS15-006 power supply (Part No. 550-100042).
 - Or at game use adapter harness (Part No. 400-100068 for a WBA 10 or Part No. 400-100069 for a WBA 12).
2. Install the appropriate master EPROM chip in the DT-004.
3. Connect the data harness to the WBA-1X and turn on the DT-004. The following conditions will occur:
 - The **Power** and **Ready** lights on the DT-004 will illuminate
 - The LEDs on the WBA-1X CPU will flash alternately
 - Press "**Start**"; the **Ready** light will start to flash indicating a download is in progress
 - The **OK** light will illuminate and the DT-004 will announce a beep when the download is complete
 - To verify the download completion, press **Reset** and **Version**.


 *NOTE:* The default speed for downloading a single unit is 19200 baud.

 *NOTE:* If the version between the EPROM and the WBA-1X verified, the OK LED will light.

Lecture Notes

TRANSPORT SENSOR TEST (PH07)

- Entering Transport Sensor Test
 - Enter diagnostic mode – DIP Switch 8, "**ON**" and apply power
 - Turn DIP Switch 7, "**ON**" and turn DIP Switch 8, "**OFF**"
 - This activates the transport sensor test
 - DIP Switch 7 will be used as the Enable/Disable Switch for these tests.

 *NOTE:* Use the test LED/Bezel to check the status of the sensor being tested, either blocked or un-blocked. The LED will light when the light path of the sensor is interrupted (blocked).

Lecture Notes

TRANSPORT SENSOR TEST

Table 5 provides a DIP Switch setting chart for performing the WBA-1X Transport Sensor Tests.

Table 5 WBA-1X Transport Sensor Test DIP Switch Setting Chart

DIP Switch Setting								Sensor Being Tested
8	7	6	5	4	3	2	1	
	E/D*						X†	Entrance Sensor
	E/D					X		Solenoid Lever Sensor
	E/D				X			Feed-Out Sensor
	E/D			X				Stacker Home Sensor (S1)
	E/D		X					Cash Box Sensor (S2)
	E/D	X						Validator Encoder Sensor
	X							Stacker Encoder Sensor
	E/D					X	X	Acceptor Head Detached

* E/D = Enable/Disable

† X = ON

Lecture Notes

FORCED DOWNLOAD MODE

Perform the following steps to initiate a Forced Download:

1. Select the appropriate download speed (see the Table 7 chart).
2. Connect the WBA-1X per the download tool requirement.
3. Power up the WBA-1X.



NOTE: For multiple WBA-1X downloads refer to the Multi-Download Adapter Kit Users Manual. (Part No. 701-000031).

Table 7 provides the DIP Switch settings for performing various Forced Download Modes.

Table 7 WBA-1X Forced Download Mode Table


WBA-1X Forced Download Mode DIP Switch Settings								
DIP Switch							Download Speed Selected	
8	7	6	5	4	3	2		1
X*	X							9,600 Baud - WBA 10 or WBA 12/14
X	X	X						19,200 Baud - WBA 10 or WBA 12/14
X	X	X					X	38,400 Baud - WBA 12/14

* X = ON

Lecture Notes

BILL IDENTIFICATION IN BILL ACCEPTANCE

- Bill identification is done by counting the LED flashes after a bill is validated as follows:
 - 1 flash = \$1
 - 2 flashes = \$2 (not programmed)
 - 3 flashes = \$5
 - 4 flashes = \$10
 - 5 flashes = \$20
 - 6 flashes = \$50
 - 7 flashes = \$100
 - 8 flashes = Bar Code Ticket.

 **NOTE:** Switch #1 needs to be turned OFF after the Bill Acceptance Test has started to enable Bar Code ticket reading (ID003 Software).

TRANSPORT SENSOR LOCATIONS

Figure 2 provides the WBA-1X Sensor Locations.

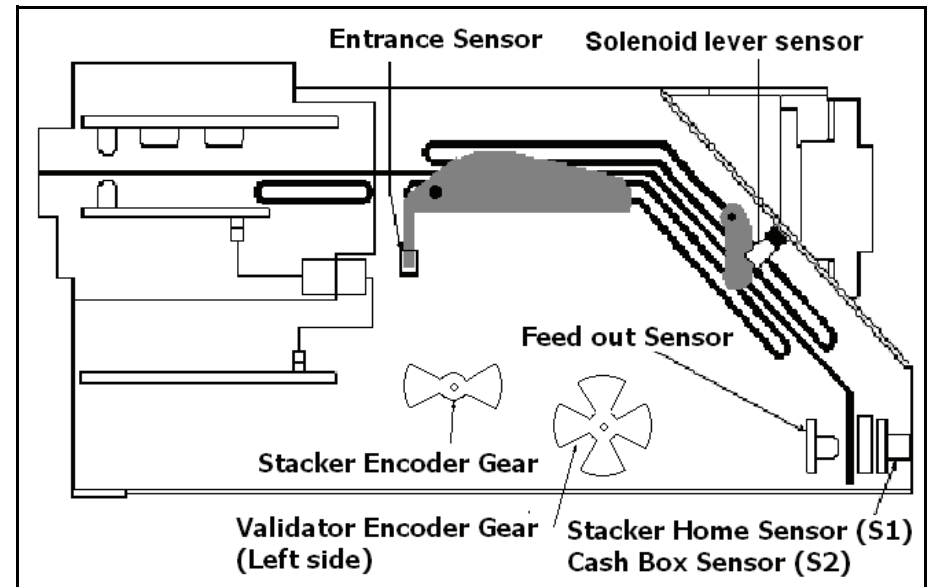


Figure 2 WBA-1X Transport Sensor Locations

Lecture Notes

Lecture Notes

BILL ACCEPTANCE TEST

There are two ways to run the Bill Acceptance Test:

1. Just with a head and transport.
 - The Cash Box Sensor (S2) and Stacker Home Sensor (S1) are disabled and not tested.
2. With a head and transport inserted into a frame containing a Cash Box.
 - All sensors and functions are tested.

BILL ACCEPTANCE TEST MODES

To Enter a Bill Acceptance mode:

1. Turn DIP Switch 8 "ON", apply power (diagnostic mode) and:
 - Turn the DIP Switches ON according to the Table 6 chart settings
 - The unit will cycle and be ready to accept and identify bills.

Table 6 provides the DIP Switch settings for performing the WBA-1X Bill Acceptance Tests.

Table 6 WBA-1X Bill Acceptance Test DIP Switch Setting Chart

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

* E/D = Enable/Disable

† X = ON

Lecture Notes

Lecture Notes
