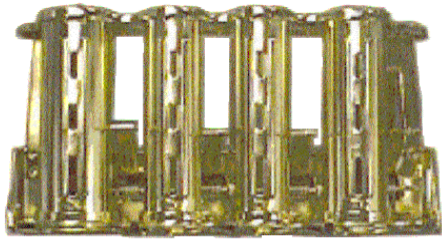


# BILL-TO-BILL SERIES CHANGERS – ARL Listed STD: UL756



Single Denomination	<b>AC7702</b>	<b>AC7705</b>
	<b>AC7712</b>	<b>AC7715</b>
Multi-Denomination	<b>AC7802</b>	<b>AC7805</b>
	<b>AC7812</b>	<b>AC7815</b>

## OPERATION MANUAL

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*FOR AMERICAN CHANGER SERVICE: A Return Material Authorization (RMA) number must be obtained before returning a unit for repair. A copy of invoices must accompany any and all warranty work.*

### SPECIFICATIONS

Operating voltage	120Vac +10/-15%
Power Consumption	Logic Board: 10W LG BDU: 120W max. Validator: 50W max.
Operating Temperature	32 – 130 degrees Fahrenheit
Interface to LG BDU	120Vac, RS-232
Interface to Validator	24Vdc, MDB

### WARRANTY

The MEI (Mars) and Coinco bill validators are under warranty for two (2) years from the date of purchase. The bill dispenser, coin hopper, and Main Logic Board are under warranty for one (1) year from the date of purchase.

#### **COVERED:**

- Defects in workmanship or materials

#### **NOT COVERED:**

- Damage caused by physical abuse, misapplication, or vandalism
- End user's attempt to repair item
- Cleaning / Maintenance - It is the End User's responsibility to follow the cleaning & maintenance procedures in this manual. Any unit coming in for repair requiring only a cleaning will be charged a flat rate of \$65.00 plus shipping and handling.

Revision 30A-56 9.14.07

## **UNCRATING AND SETUP**

Remove your Bill-to-Bill Series dispenser from the shipping box. Open the door (*the T-handle lock(s) screw-in to close, and must be turned at least 10 times counter-clockwise to open*). Inspect the interior for any connectors or components that may have been dislodged during shipping. The lock and keys for your Changer will be inside the manila envelope along with this manual. To install a lock, first put the key in it, and turn the key clockwise as far as it will go. Then, push the lock into the round hole in the middle of the T-handle until it stops. Rotate the lock and key together in the hole until you hear it "click", and it stops turning. Finally, turn the key counter-clockwise ½ turn, and remove it.

**NOTE: The only way to get a duplicate set of keys made is to save the tag that comes on the key ring. Write your Key ID# below for reference.**

**ALL KEY ORDERS TAKE 4-6 WEEKS!!!**

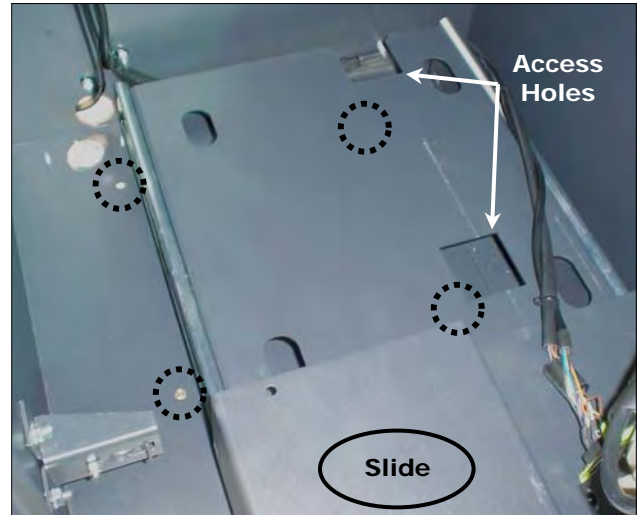
## **MOUNTING A BILL-TO-BILL SERIES CHANGER**

Front-Load models, which are the model numbers ending in "2", can be mounted either on a base (*sold separately*), or to a wall. Rear-Load models, which are the model numbers ending in "5", can only be mounted into a wall. The following section describes the steps necessary to mount your Bill-to-Bill Series Changer.

***IF YOU ARE UNSURE IN ANY WAY IN PROCEEDING WITH THE FOLLOWING STEPS, PLEASE HIRE A LOCAL PROFESSIONAL ELECTRICIAN TO MOUNT YOUR CHANGER FOR YOU!***

1. Disconnect any and all AC power going into the AC7700/AC7800 Series changer.
2. Remove the bill dispenser and coin hopper (*if installed*) from the cabinet – the coin hopper slides out, while the bill dispenser requires the removal of 6 screws on its underside.
3. Verify with the building code if it is allowable to plug the changer into a 3-prong grounded wall outlet. If not, there must be 120VAC run through a conduit to the changer. If this is not required, proceed to step #5. **NOTE: Do not use an extension cord unless allowed by the building electrical code!**
4. Let an electrician run the conduit, install the new breaker, run the wire, and help decide how the wiring will enter the changer (from the back or the bottom). This will affect the mounting location. After the conduit has been installed, proceed with the mounting.
5. *If using a base:* Make sure the base is securely attached to the ground through ***all***

***four*** mounting holes provided in its bottom. Inside the changer, pull the slide all the way forward, and locate the four holes in the bottom of the cabinet (see figure below). Carefully place the cabinet on top of the base, and line up the holes. Secure the cabinet to the base by tightening the four ¼" screws provided with the base unit down through the cabinet into the base. Proceed directly to step #11.



*If mounting to a wall:* Locate the four punch-outs on the back wall of the changer. Using a screwdriver and hammer, knock the punch-outs out by hitting them from the inside of the changer. Continue with step #6.

*If mounting into a wall:* You may either use the four mounting holes provided in the bottom of the cabinet, or drill your own in the bottom and/or sides. If creating new holes, measure and mark them carefully, and then drill them completely before proceeding. Continue with step #6.

6. Find an appropriate wall to bolt the changer into. The wall should be constructed of concrete, or at least have wooden studs. You may also be required to use a support brace under the changer. Consult a professional with any questions you may have.
7. For a studded wall, select the mounting points for the changer by using a stud finder. **NOTE: When choosing a height to mount the changer, keep in mind that a handicapped person in a wheelchair should still be able to insert a bill into the bill validator. (We recommend no higher than 4 feet above the ground.)**
8. Have someone hold the changer in place, in or against the wall, while someone else marks the holes. **CAUTION: THE CHANGER WEIGHS WELL OVER 100 POUNDS; DO NOT EXERT YOURSELF SO THAT YOU CAUSE AN INJURY. NOTE: Securing the Changer using less than all four holes or welded angle iron may be dangerous. The changer must be bolted securely to the wall. Mounting it in**

any other way may result in the changer being torn out or falling off of the wall, resulting in personal injury along with electrical shock.

9. Put the changer down, and drill the holes. **CAUTION: ENSURE THAT THERE ARE NO ELECTRICAL WIRES, TELEPHONE LINES, GAS, OR WATER LINES BEHIND THE WALL WHICH DISRUPTING MAY CAUSE PERSONAL INJURY OR LOSS OF LIFE!**
10. Hold the changer back in its final mounting place. Thread and tighten the bolts.
11. Verify that the machine is securely mounted, and then reinstall the bill dispenser and coin hopper (if installed).

## FUSE REPLACEMENT

**High voltage fuse:** This is the primary AC fuse for the main logic board, from which the validator and hopper (if installed) draw their power (refer to item #12 in the figure at left). Any direct short of the transformer, validator, or hopper will cause this fuse to blow. Replace this fuse with a 2-½ Amp, 250 Volt, size 5mm x 20mm, fast-acting fuse only. **NOTE: REPLACING THIS FUSE WITH ANYTHING OTHER THAN A 2-½ AMP FAST-ACTING FUSE MAY RESULT IN A FIRE OR AN UNSAFE WORKING CONDITION!**

## FILLING THE COIN HOPPER

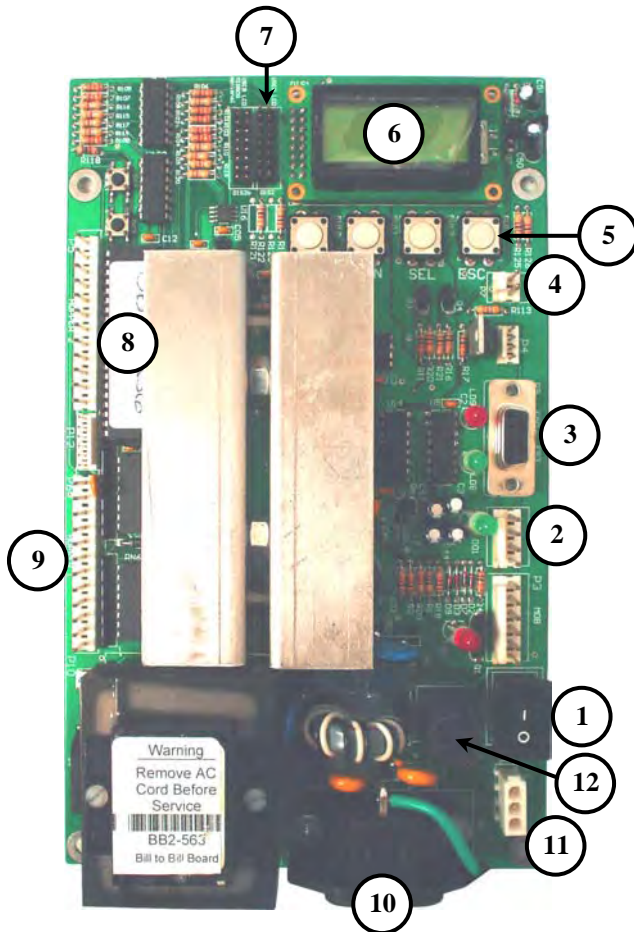
### Hopper Coin/Token Sizes:

The American Changer coin hopper will automatically adjust to dispense coins/tokens ranging in size from 21-30 mm in diameter and 1.25-3.5 mm in thickness. There are options available to dispense larger, up to 31 mm, and smaller, down to 16 mm, coins or tokens.

For reference, a nickel is 21.2mm, a quarter is 24.3mm, and Susan B. Anthony and Sacagawea Dollars are 26.5mm in diameter.

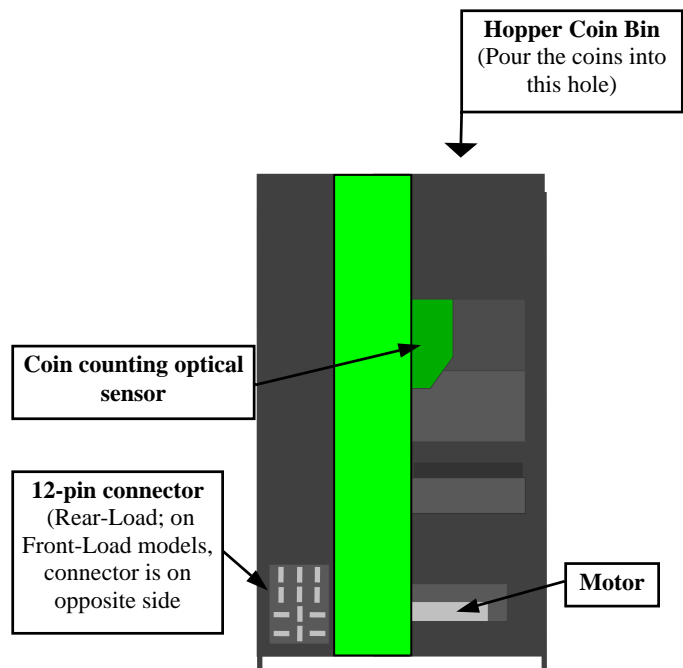
The American Changer hopper can hold up to 1600 quarters (\$400) without a hopper extension. With an American Changer hopper extension (*not available on some models*), an additional 800 – 1200 coins can be added, making the total 2400 – 2800 quarters (\$600 – \$700). The capacity for Dollar coins is 1900 – 2200 Susan B. Anthony or Sacagawea dollars with the extension, and 1250 without it.

### MAIN LOGIC BOARD



### Main Logic Board Parts:

1. ON/OFF Switch ('O' = OFF, 'I' = ON)
2. Validator Connector
3. Bill Dispenser Communication Connector
4. Out-of-Service LED Connector
5. Control Buttons (4)
6. Main LCD Display
7. External LCD Display Connector
8. Processor (Microcontroller)
9. Hopper Connector
10. AC Power Cord Connector
11. Bill Dispenser Power Connector
12. AC Fuse



### **Loading Coins/Tokens into the Hopper:**

1. Turn off the power to the Main Logic Board using the rocker switch on the bottom right side ('I' = ON, 'O' = OFF).
2. Remove the hopper from the cabinet by, first, sliding it free of the hopper plate, and then, lifting it out of the machine for access to the coin bin.
3. Pour the coins/tokens into the opening. *NOTE: There must be at least enough coins in the hopper to cover the two gold-color metal plates at the bottom of the Hopper Coin Bin for the machine to work (approximately 100 coins minimum).*
4. Slide the hopper back onto the hopper plate, making sure it goes all the way back. **Do not use excessive force!**
5. Verify that the hopper plate harness is plugged in to the correct connector on the Main Logic Board (refer to the figure on the previous page for the connector location).
6. Turn ON the power switch. After approximately 30 – 60 seconds, when the machine has completed its start-up procedure, the changer will be ready to use.

To change the amount of coins dispensed, refer to the "Setting the Payouts" section of this manual.

### **LOADING BILLS INTO THE BILL DISPENSER**

#### **LG ezCDM1000 Dispenser Specifications:**

- Cassette Capacity: New Bills = 850 max., Used Bills = 750 max.
- Reject Box Capacity: 100 Bills
- Dispensing Speed: 2 Bills per Second  $\pm 10\%$
- The following bill types should **NOT** be loaded into the dispenser:
  - Torn bills – whether or not the tear or cut goes all the way through the bill, these must be removed
  - Bills with any holes in them
  - Taped bills – if a bill has tape on it, it cannot be used
  - Extremely crumpled or soft/worn bills
  - Wet bills
  - Folded bills – flatten out any bills that are folded or dog-eared before use. If the bills cannot be straightened enough to regain their full size and fit into a neat stack, they must be removed.

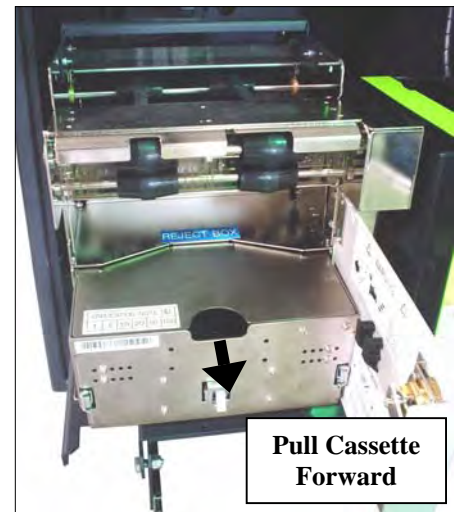
### **Loading the Bill Cassette(s):**

The LG bill dispenser contains either one or two Bill Cassettes that hold the bills – AC7700 Series contain one, while AC7800 Series contain two. Bills should be readied for loading by arranging them into a neat stack that is flush on all sides. Please take care to remove all abnormal bills as described in the aforementioned specifications.

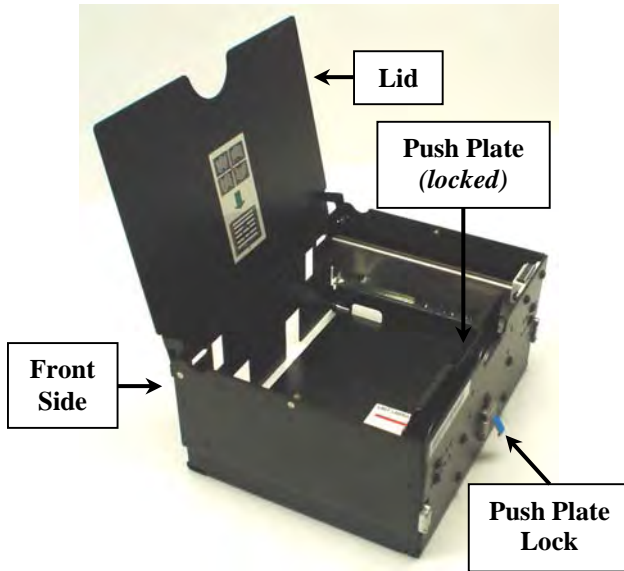
1. Unlock and open the cabinet door.
2. Rear-Load models only – pull the dispenser/hopper slide forward, grab the handle on top of the bill dispenser, and rotate the dispenser toward you on its hinges. **NOTE: This may create a tipping hazard, so make sure the cabinet is held securely in place!**



3. Unlock and open the door of the LG dispenser.
4. Grab the cassette by the notch, and slide it forward, out of the dispenser (the figure below shows a front-load model).



- Open the cassette lid, and push back the plastic Push Plate until it locks into place, indicated by an audible 'click'.

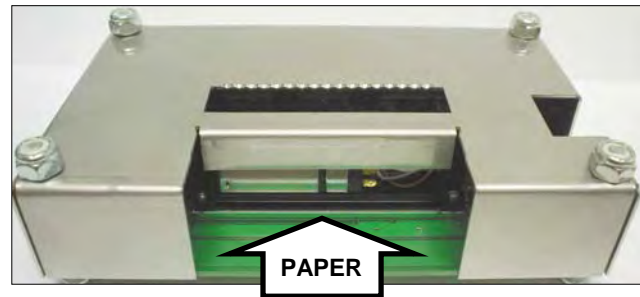


- If you are using brand new bills, remove the binding, and fan the bills multiple times to loosen any of them that are stuck together and dissipate any static electricity.
- Carefully load the stack of bills sideways into the cassette, maintaining their straight alignment.
- Touch the Push Plate Lock to release the Push Plate, which will press the bills against the front side of the cassette. **NOTE: make sure your fingers are out of the way!**
- Visually inspect that the inserted bills do not exceed the limit indicated by the red line and arrow on the bottom of the cassette. Recheck that the bills are correctly aligned.
- Close the cassette lid, and inspect the lower front side of the cassette for hanging bills (refer to the figure below). If any are found, pull them out, and reinsert them inside the cassette.



- Slide the cassette back into the dispenser, front side first, until you feel it lock into place. **NOTE: On AC7800 Series Multi-Denomination machines, insert the cassettes into the proper slots (upper or lower) based on the current software settings in the "Bill Dispenser Setup" menu (refer to pages 12-13).**

### **LOADING AUDIT PRINTER PAPER**



- Turn on the machine to power up the printer.
- Feed the end of a new paper roll into the top of the printer, as shown in the above figure. Keeping the paper pressed against the green circuit board, feed it into the small slot under the print mechanism until it cannot go any further.
- With the paper held in this position, use the pushbuttons on the board to enter the printer's 'Feed' menu (refer to page 15). Press and hold the SELECT button to advance the paper into the printer.
- Mount the new roll onto the holding bracket. **NOTE: Thermal printer paper can only be printed on one side, so make sure the paper roll is oriented as seen in the figure below.**

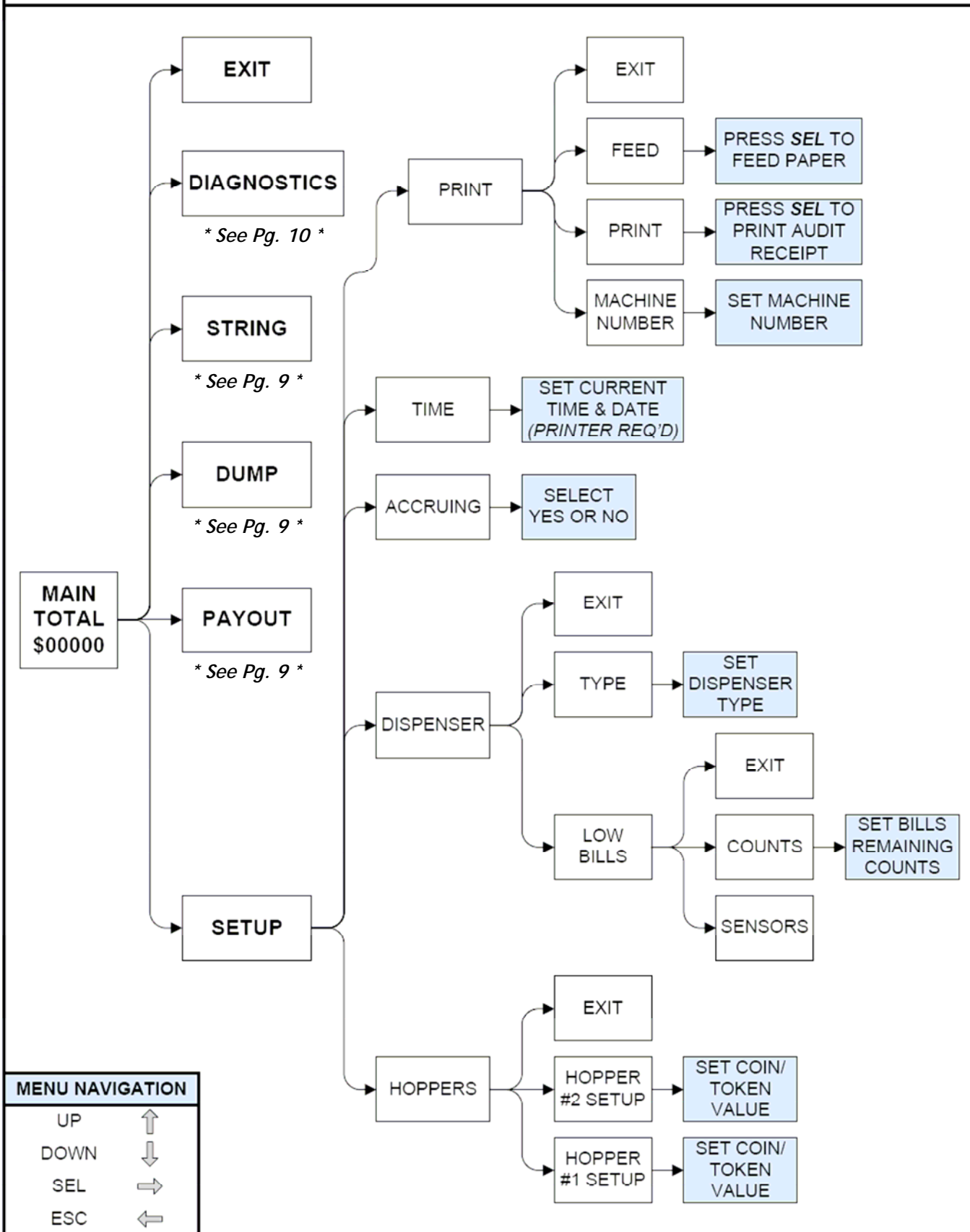


## **PROGRAMMING THE BILL-TO-BILL SERIES CHANGER**

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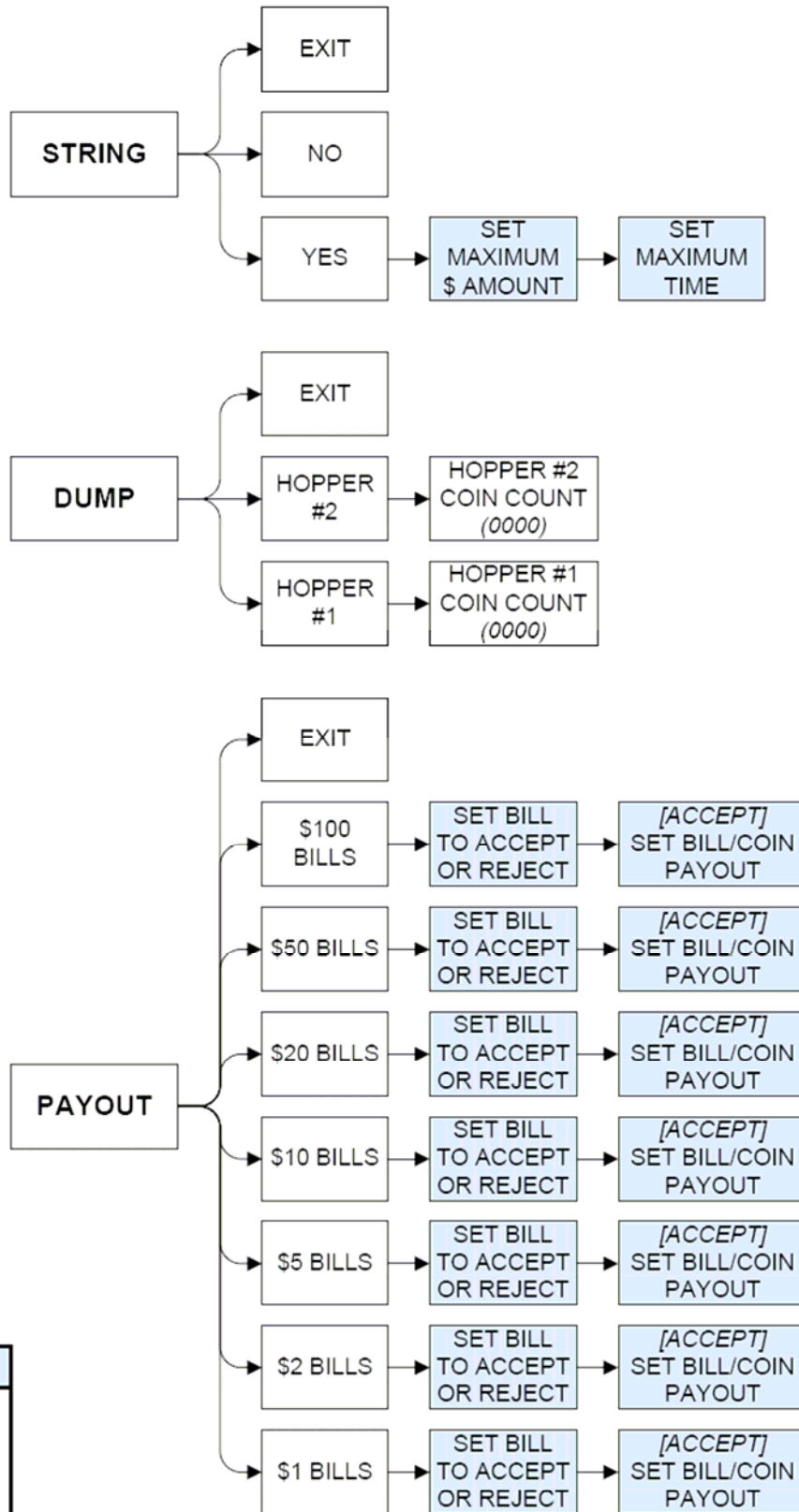
\* Full Audit Reports are printed from the 'Counts' menu in the 'Diagnostics' section.

# Bill-to-Bill Series Software Flow Chart



MENU NAVIGATION	
UP	↑
DOWN	↓
SEL	→
ESC	←

# Bill-to-Bill Series Software Flow Chart

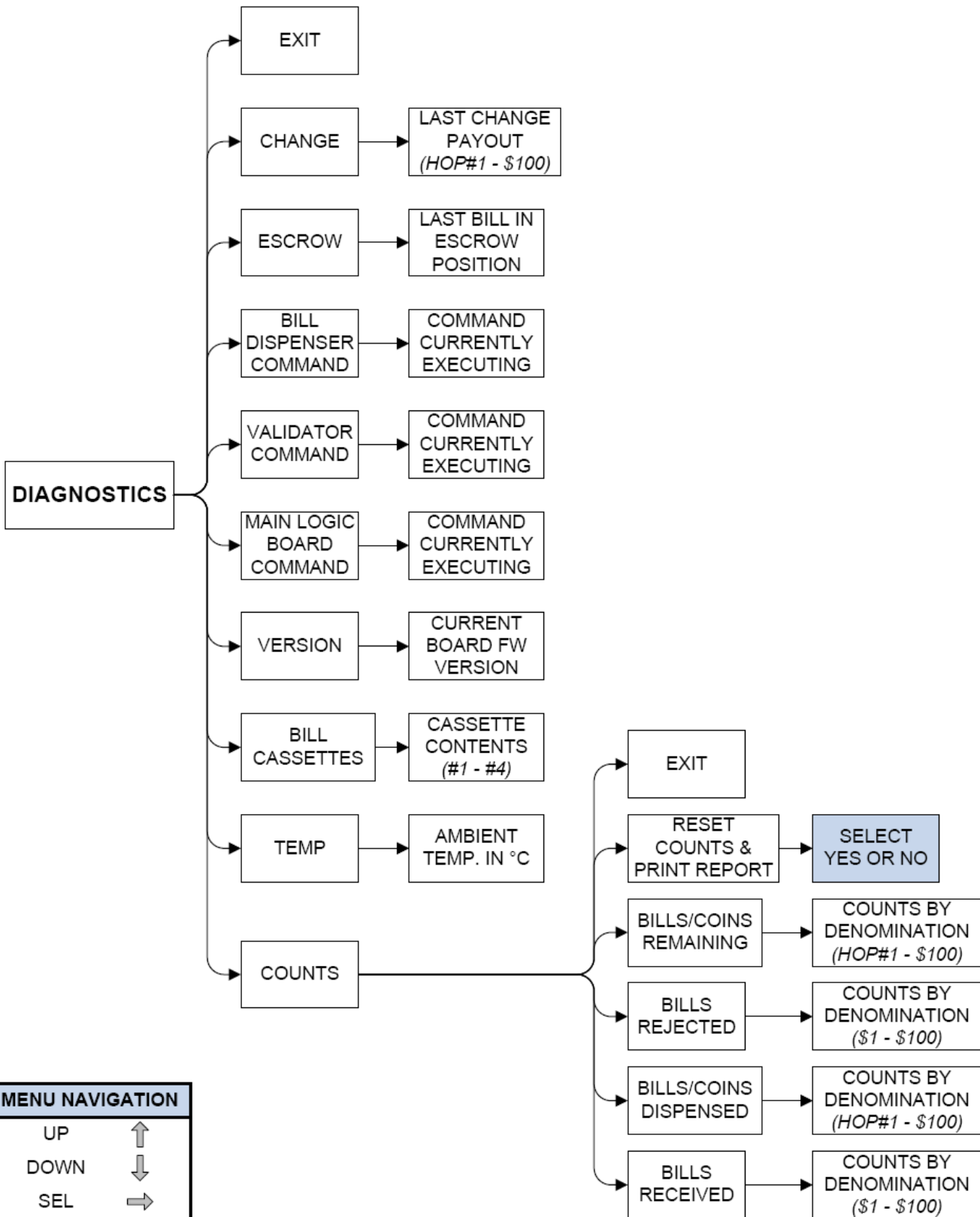


## MENU NAVIGATION

UP	↑
DOWN	↓
SEL	→
ESC	←



# Bill-to-Bill Series Software Flow Chart



## MENU NAVIGATION

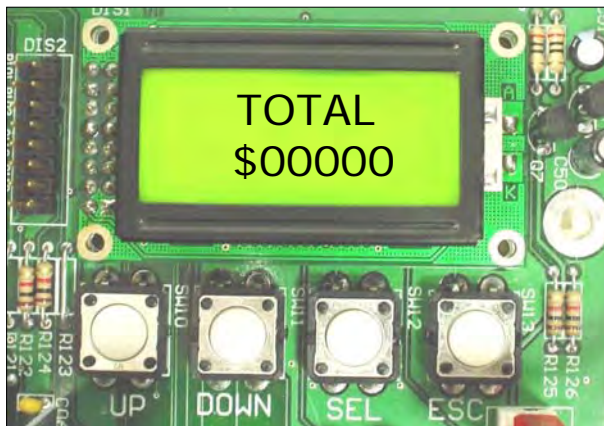
UP	↑
DOWN	↓
SEL	→
ESC	←

## **STANDBY OPERATION**

Power-ON the Main Logic Board (MLB), and allow it to run through its initialization procedure, which takes **up to a minute**. During this time, you may hear the bill dispenser and validator motors cycling as they are being initialized; this is normal. The board will reach its Standby state, ready to accept bills, once all motion has ceased, and all indicator lights are showing the following "Ready" conditions:

1. The main LCD display's green backlight will be ON continuously, and the screen will show the current count of total dollars changed by the machine (refer to the figure below).
2. The external LCD will show the message, "Please Insert Bill When Ready".
3. The validator's red indicator LED will be ON solid or blinking slowly, depending on the model installed. *Refer to your validator's Operation Manual.*

## **MENU NAVIGATION**



Navigation through the software's various menus is done using the LCD screen and the four pushbuttons located directly below it as an interface. Many things are accomplished within the software, including setting up the coin hopper and bill dispenser, setting the payouts, initiating the printing of an Audit Receipt (if a printer is installed), and accessing accounting and other diagnostic information.

To access the software menus, press any of the four pushbuttons while in the Standby state. These are, from left to right: UP, DOWN, SEL (Select), and ESC (Escape), and they can be seen in the above figure. The first menu option that appears is the 'Setup' menu. Use either the UP or DOWN pushbutton to move to a different menu option, or press SELECT to enter the 'Setup' menu. Pressing ESCAPE will take you back to the Standby state.

It may be helpful to follow along in the Software Flow Chart shown on pgs. 8-10 while you are navigating through the menus. The functioning of the four pushbuttons remains the same throughout the entire program. Their functions are: UP moves to the next menu item above the current one, or increases a value; DOWN moves to the next menu item below the current one, or decreases a value; SEL (Select) is like a computer's 'Enter' key in that it 'enters' the submenus (moves right on the Flow Chart), and saves values and selections into the board's memory; ESC (Escape) is used to go back one step to the previous menu (left on the Flow Chart).

*NOTE: Selecting any of the 'Exit' options located in various places throughout the software menus will immediately take the display out of the current submenu, back to the main total screen (standby).*

The following sections describe the various features available on the board, and how to use them. The writing shown in parentheses at the beginning of each section is the pushbutton sequence used to navigate to that specific menu option in the software.

## **COIN HOPPER SETUP**

### **(SELx2) HOPPERS:**

The 'Hoppers' menu is used to tell the controller board whether or not a hopper is going to be used, and if so, the value of the coins/tokens it will contain.

### **(SELx3) HOPPER #1:**

Press SELECT when the 'Hopper #1' menu option is displayed to set the value of the coins/tokens in Hopper #1 (Hopper #1 is the hopper connected to the lower hopper connector on the left side of the board). Use the UP and DOWN buttons to modify the displayed value, and then press SELECT to save it into memory. The possible coin/token values are 20 per \$1 – 1 per \$1, No Hopper, \$0.01, and \$0.25 - \$20.00 in \$0.25 increments.

*NOTE: If there is no Hopper #1 being used, select 'No Hopper'.*

### **(SELx3, ↑) HOPPER #2:**

Press SELECT when the 'Hopper #2' menu option is displayed to set the value of the coins/tokens in Hopper #2 (Hopper #2 is the hopper connected to the upper hopper connector on the left side of the board). Use the UP and DOWN buttons to modify the displayed value, and then press SELECT to save it into memory. The possible coin/token values are 20 per \$1 – 1 per \$1, No Hopper, \$0.01, and \$0.25 - \$20.00 in \$0.25 increments.

*NOTE: If there is no Hopper #2 being used, select 'No Hopper'.*

## **BILL DISPENSER SETUP**

### **(SELx2, ↑) DISPENSER:**

Enter the 'Dispenser' menu to make settings that involve the bill dispenser. These include the type of bill dispenser being used, the bill denomination to be dispensed, the low-bills detection method, and the number(s) of bills currently loaded in the bill dispenser, by denomination.

### **(SELx2, ↑, SEL) LOW BILLS DETECTION METHOD:**

Press SELECT when the 'Low Bills' menu option is being displayed to set the method that the controller board will use to determine when there is a low number of bills remaining in the dispenser. The board can either use the built-in sensors inside of the dispenser, or keep track of the exact count of remaining bills. There are pros and cons to both methods, which are described in the following sections.

### **(SELx2, ↑, SELx2) SENSORS:**

While the 'Sensors' menu option is displayed, press SELECT to utilize the bill dispenser's internal sensors to detect when the bills are low. The sensors are optical, and simply detect the size of the remaining stack of bills. The advantage of this method is its simplicity, because the bill counts do not have to be manually entered into the board. The disadvantage is that many bills, usually between 30 and 40, remain inside of the dispenser's cassettes when the sensors detect a low number of bills remaining, and send the machine out-of-service.

### **(SELx2, ↑, SELx2, ↑) COUNTS:**

Press SELECT and enter the 'Counts' menu to have the controller board keep track of the actual quantities of remaining bills to know when they run low. When 'Counts' is selected, the display will go immediately to the '\$1:' screen, where the \$1 bills count can be entered. Use the UP and DOWN pushbuttons to change the count to the *exact* quantity of \$1 bills that are currently loaded in the dispenser.

*NOTE: Each press of a pushbutton will increment or decrement the count by one. Hold the pushbutton down to increase or decrease the count rapidly.*

When the desired count has been reached, press SELECT to save the count into board memory, and move to the next bill denomination. The denominations appear in order: \$1, \$5, \$10, \$20, \$50, and \$100. Only the bill denomination(s) you will be dispensing need to be set; the rest may be ignored. Press SELECT to move through any counts not needed.

The advantage of the 'Counts' method is the low number of bills remaining when the machine goes out-of-service. Since the board maintains an exact

count of bills remaining, it will only go out-of-service when there are not enough remaining to make a single payout. Thus, depending on the set payout, as few as zero bills may be left inside of the dispenser. The disadvantage of the 'Counts' method is that the bill quantities must be manually entered into the controller board each time the machine is refilled.

*NOTE: When using the 'Counts' low-bills detection method, be careful to enter the exact quantity of bills in the dispenser. Incorrect counts may lead to high numbers of bills remaining inside the dispenser when the machine goes out-of-service, or, worse, incomplete payouts to customers!*

### **(SELx2, ↑, SEL, ↑) DISPENSER TYPE:**

Press SELECT when the 'Type' menu option is displayed to set the type of bill dispenser to be used. Use the UP and DOWN pushbuttons to scroll between the different bill dispenser options, which are LG, F53, and F50 w/ \$1 bills – F50 w/ \$100 bills. *NOTE: AC7700 and AC7800 Series machines use single and dual denomination bill dispensers, respectively, made by LG. The Fujitsu F50 and F53 dispensers are not installed in any new American Changer machines (they were previously used in AC7500 and AC7600 Series machines, respectively).*

When the 'LG' is displayed, press SELECT to save it into memory and proceed to setting the bill denominations in the cassette(s).

### ***Setting the bill denominations in the LG:***

1. Select 'LG' as the Dispenser Type in the Bill Dispenser Setup menu.
2. "LG HIGH" – *AC7700 Series users: this is where your single denomination is set. AC7800 Series users: this is where the denomination in the UPPER bill cassette is set.* Use the UP and DOWN pushbuttons to scroll through the denominations, \$1, \$5, \$10, & \$20, and press SELECT when the correct denomination is displayed to save it into memory.
3. Turn the board's power OFF, wait 10 – 20 seconds, and then turn it back ON.

*AC7700 Series users: You are finished, but please note: only after the board's initialization procedure is complete (30 – 60 seconds) can the bill payouts be set in the 'Payout' menu.*

*AC7800 Series users: Continue with step #4 after the board has completely initialized (30 – 60 seconds).*

4. Return to the Bill Dispenser Setup menu, and select 'LG' as the Dispenser Type.
5. "LG HIGH" – the correct denomination for the UPPER bill cassette should already be displayed, so press SELECT.
6. "LG MIDDLE" – this is where the denomination in the LOWER bill cassette is set. Use the UP and DOWN pushbuttons to scroll through the

denominations, \$1, \$5, \$10, & \$20, and press SELECT when the correct denomination is displayed to save it into memory.

*NOTE: the board's software automatically detects whether the connected bill dispenser has a single or dual bill cassettes. BUT, the LG dispenser must be completely initialized for the "LG MIDDLE" option to appear.*

7. Turn the board's power OFF, wait 10 – 20 seconds, and then turn it back ON. *NOTE: only after the board's initialization procedure is complete (30 – 60 seconds) can the bill payouts be set in the 'Payout' menu.*

### **ACCRUAL MODE**

AC7700 and AC7800 Series changers support an Accrual Mode, which may be used to add together the values of multiple bills as they are entered, in order to dispense a higher-priced coin or token from the coin hopper. When this mode is turned OFF, the machine functions normally as a bill changer, breaking bills into other lower-valued bills and/or coins. With the Accrual Mode ON, all bills entered into the machine go toward dispensing the higher-priced coin or token. Change, in the form of \$1.00 bills only, is dispensed when higher denomination bills are accepted.

The following are the specifications for the Accrual Mode:

1. The target coin *must* be dispensed from Hopper #1. Its value is set in the Hopper #1 Setup menu.
2. The target coin *must* be valued as a multiple of \$1.00.
3. Change *must* be in \$1 bills only. AC7800 Series users may load \$1 bills into both cassettes of the bill dispenser for change. If this is done, though, the low bills detection method *must* be set to SENSORS.
4. All of the Payout settings are ignored; the software only pays attention to the target coin's value.
5. The board will automatically accept all bill denominations; rejection of individual denominations must be set on the validator. *Refer to your validator's Operation Manual.*
6. The letter "A" will appear in the lower left corner of the Main display screen whenever the Accrual Mode is active.

### **(SELx2, ↑x2) ACCRUING:**

Press SELECT while the 'Accruing' menu option is displayed to enter the menu where the Accrual Mode can be activated or deactivated. Choosing 'Yes' will turn ON Accrual Mode, while choosing 'No' will turn OFF Accrual Mode. Use the UP and DOWN pushbuttons to scroll between the selections, and

press the SELECT pushbutton to save your selection into memory.

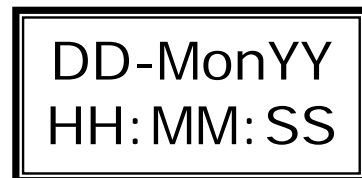
**Accrual Mode Example Setup:** To dispense a \$3.00 token with change, first go to the 'Hopper #1' Setup menu, and set the value to \$3.00. Then, in the 'Dispenser' Setup menu, set the bill denomination to \$1 (AC7800 Series – set both cassettes to \$1). Next, set the 'Low Bills' Detection method – AC7800 Series users *must* choose SENSORS, while AC7700 Series users may use either method. Finally, go to the 'Accruing' Setup menu, and select 'Yes', before cycling the Main Logic Board's power OFF/ON. Insert three \$1 bills, one after the other, and one token will be dispensed. Insert a \$5 bill, and one token will be dispensed, followed by two \$1 bills. Insert a \$1 bill and then a \$5 bill, and one token will be dispensed, followed by three \$1 bills.

### **PRINTER SETUP & CONTROL**

#### **(SELx2, ↑x3) TIME:**

*NOTE: This menu can only be entered if an Audit Printer is installed.*

Press SELECT and enter the 'Time' menu to set the current date and time. Once set, the date and time are maintained by the Audit Printer, and will be shown on every printout. The format for the date and time is as follows:



DD = Two-digit Day  
Mon = Three-letter Month  
YY = Two-digit Year  
HH = Two-digit Hours  
MM = Two-digit Minutes  
SS = Two-digit Seconds

When the above screen is displayed, one of the sections will be blinking, meaning it is "active", and may be modified. Use the UP and DOWN pushbuttons to adjust the displayed value, and then press SELECT to save it into memory and move to the next section. Each section, *except seconds*, will become active in turn as SELECT is pressed, until all have been set; then the cycle repeats itself. When you have finished, press ESCAPE to exit back to the 'Setup' menu.

*NOTE: The Time format used by the Audit Printer is the 24-Hour Clock, also known as "Military Time". Rather than 1-12 AM and 1-12 PM, this format uses the hours of 00-23, with 00:00 being equivalent to 12:00AM (Midnight), and 23:00 being equivalent to 11:00PM.*

**(SELx2, ↑x4) PRINT:**

Enter the 'Print' menu to access the rest of the menus used for printer setup and control, including the one for printing out a receipt.

**(SELx2, ↑x4, SEL) MACHINE NUMBER:**

The Machine Number is a unique three-digit number that can be assigned to each Bill-to-Bill Series changer with an Audit Printer installed. Serving as the changer's "name", the number is printed on the top of every Audit Receipt in order to identify which machine printed it. This is useful when more than one changer is owned by a single entity.

To set the Machine Number, press SELECT while the 'Machine#' menu option is being displayed. Then press the UP or DOWN pushbutton to increase or decrease, respectively, the displayed value by 1. Hold either of the pushbuttons down to change the value rapidly. When the desired Machine Number is reached, press the SELECT pushbutton to save it into memory.

**(SELx2, ↑x4, SEL, ↑) PRINT:**

Here is where the printing of an Audit Receipt may be initiated. Press SELECT while 'Print' is displayed to enter the menu and activate the control. When the screen shows "SEL >>>>", press the SELECT pushbutton to print out one standard Audit Receipt. To exit the menu, press ESCAPE.

(...continued)

25	
26	BILLS DISPENSED
27	Ones : 404
28	Fives : 213
29	Tens : 000
30	Twenties : 000
31	Fifties : 000
32	Hundreds : 000
33	
34	BILLS REJECTED
35	Ones : 001
36	Fives : 000
37	Tens : 000
38	Twenties : 000
39	Fifties : 000
40	Hundreds : 000
41	
42	Hopper1 : 1136
43	Hopper2 : 0000
44	
45	Cassette1: \$001
46	Cassette2: \$005
47	Cassette3: \$000
48	Cassette4: \$000

**Standard Audit Receipt**

1	AMERICAN CHANGER CORP
2	Machine #: 123
3	Sequence : 047
4	Date : 17-Apr-2007
5	Time : 15: 14
6	
7	BILLS RECEIVED
8	Ones : 044
9	Fives : 012
10	Tens : 019
11	Twenties : 073
12	Fifties : 000
13	Hundreds : 000
14	Sum : \$01754
15	
16	Total : \$04531
17	
18	BILLS REMAINING
19	Ones : 0037
20	Fives : 0112
21	Tens : 0000
22	Twenties : 0000
23	Fifties : 0000
24	Hundreds : 0000
25	

**Audit Receipt Description**

- Line 2* The Machine Number is a three-digit number, unique to each machine, and assigned by the user, that identifies which machine printed the receipt. Instructions on how to set the Machine Number can be found on pages 13-14.
- Line 3* The Sequence Number is a three-digit number that is used to keep track of the number of times the counts have been reset back to zero. The number is incremented by 1 whenever the counts are reset, and the full Audit Report printed.
- Lines 4-5* The Date and Time that the receipt was printed appears here. Instructions for setting the current Date and Time are on page 13.
- Lines 7-13* All bills that have been accepted by the changer (since the last count reset) are listed here, in quantities per denomination. Instructions for resetting the counts can be found on page 17.
- Line 14* The Sum shows the total of all of the money that has been accepted by the changer (since the last count

reset) as a dollar amount. It is calculated by multiplying the counts on lines 8-13 by their denominations, and adding the results together.

*Line 16* The Total is the non-resettable, dollar-amount total of all of the money that has been accepted by the changer. It is the same amount that is shown on the Main LCD display when the unit is in 'Standby'.

*Lines 18-24* The amounts of bills remaining in the bill dispenser inside the changer are shown here, per denomination. If the low-bills detection method is set to 'Counts', they will be shown as four-digit numbers. If the board is set to read the 'Sensors', though, the receipt will only show either "OK" or "LOW" beside each denomination.

*Lines 26-32* All of the bills dispensed by the changer (since the last count reset) are listed here, in quantities per denomination. Instructions for resetting the counts can be found on page 17.

*Lines 34-40* The numbers of bills rejected by the bill dispenser (since the last count reset) are listed here, in quantities per denomination. Instructions for resetting the counts can be found on page 17.

*Lines 42-43* The Hopper Counts are the quantity, not the value, of coins that have been dispensed from each of the coin hoppers (since the last count reset). Instructions for resetting the counts can be found on page 17.

*Lines 45-48* This part of the receipt shows the same information as the 'Bill Cassettes' option of the 'Diagnostics' menu (see page 17-18). The denomination set for a single dispenser (AC7700 Series) is shown in 'Cassette 1', while the denominations set for the dual dispenser (AC7800 series) are shown in 'Cassette 1' and 'Cassette 2'.

**(SELx2, ↑x4, SEL, ↑x2) FEED:**

Here is where feeding of the paper in the Audit Printer can be controlled. Press SELECT while 'Feed' is displayed to enter the menu and activate the control. When the screen shows "SEL >>>>", press the SELECT pushbutton to feed one blank line of paper out of the printer. Hold the SELECT pushbutton down to feed multiple lines. To exit the menu, press ESCAPE.

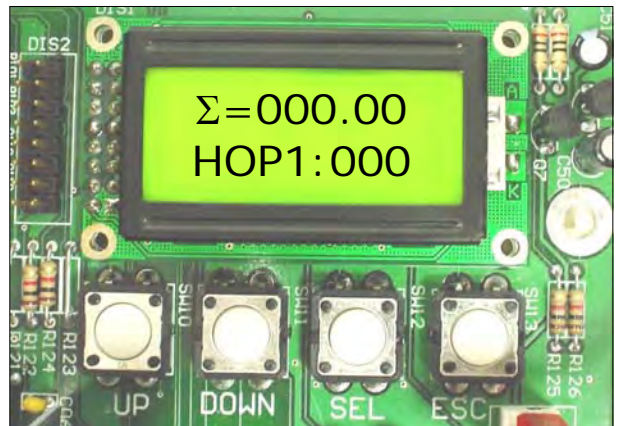
**SETTING THE PAYOUTS**

**(SEL, ↑) PAYOUT:**

Each input bill denomination has its own unique payout setting. Press SELECT while the 'Payout' menu option is displayed to enter a menu where the payouts can be set. Then, use the UP and DOWN pushbuttons to scroll through the list of input bill denominations, beginning with \$1 bills, and progressing through \$2, \$5, \$10, \$20, \$50, and finally \$100 bills. Navigate through the menu until the desired input bill denomination is being displayed, and then press SELECT.

The first setting to be made is whether the board will accept or reject the selected denomination. Use the UP and DOWN buttons to scroll through the options, pressing SELECT while 'Accept' is displayed to accept the bill, while 'Reject' is displayed to reject the bill, or while 'Exit' is displayed to exit the menu.

If 'Accept' is chosen, the next step is to set the combination of bills and/or coins that will be dispensed when that denomination is accepted. The first payout option that is displayed is the quantity of coins/tokens to be dispensed from Hopper #1. The following figure shows what the LCD screen should look like at this point, with "HOP1:" at the bottom indicating Hopper #1, and the three-digit number on the right indicating the quantity of coins/tokens to be dispensed.



Use the UP and DOWN pushbuttons to increase or decrease the quantity to be dispensed, and then press SELECT to save it into memory and move to the next payout option, Hopper #2. Set the payout from Hopper #2 in the same manner, followed by the payout of \$1 bills, then \$5 bills, \$10 bills, and so on. When a payout option is reached that is not currently available in the changer, the three-digit quantity on the right will be replaced by "XXX", and pressing UP or DOWN will have no effect.

The top line of the LCD screen displays a running total (Σ = sum) of the bill/coin combination that is set to pay out. This total is based on the selected

payout quantities and the bill/coin values, and is updated when SELECT is pressed.

After SELECT is pressed for the last payout option, saving it into memory, the display should return to the list of input bill denominations, so that another payout may be set directly. If this doesn't happen, and, instead, the display returns to the Hopper #1 payout setting, there is a problem with the payout quantities just set. The total value of the payout must equal the value of the input bill. Take a look at the total shown at the top of the screen ( $\Sigma$ ); it may give you a clue as to which setting is at fault.

**Example Payout:** In an AC7800 Series changer, to dispense three \$5's, four \$1's, and four quarters for a \$20, first enter the 'Payout' menu, press the UP button until you see the '\$20', and then press SELECT. Press SELECT when 'Accept' is displayed, and then, using the UP, DOWN, and SELECT buttons as described in this section, set the payouts as follows: "HOP1:004", "HOP2:XXX", "\$1:004", "\$5:003", and "\$10:XXX". Make sure you press SELECT after the final setting! AC7700 Series users would have to dispense all \$1's to go with the four quarters, so the payouts would be: "HOP1:004", "HOP2:XXX", "\$1:019", "\$5:XXX", and "\$10:XXX".

## **USING THE HOPPER 'DUMP' FEATURE**

### **(SEL, ↑x2) DUMP:**

Press SELECT to enter the 'Dump' menu if you would like to empty the coin hopper(s). Coin "dumping" is a convenient method of emptying all of the coins/tokens from a hopper without having to remove the hopper from the machine. Also, since the Main Logic Board is controlling the operation, the coins are counted as they are dispensed, so the user will know exactly how many were left inside the hopper.

### **(SEL, ↑x2, SEL) HOPPER #1:**

Navigate to this menu, 'Hopper #1', to dump the coins/tokens out of Hopper #1. Press SELECT to initiate the dispensing and display the coin count on the LCD screen. The hopper will run until it is completely empty, and will turn itself off automatically, with the final count remaining on the display. To stop the coin dump at any time before the hopper is empty, press the SELECT pushbutton. The count displayed will be the number of coins dispensed up to that point. Press ESCAPE to exit out of the hopper 'Dump' feature.

### **(SEL, ↑x2, SEL, ↑) HOPPER #2:**

Navigate to this menu, 'Hopper #2', to dump the coins/tokens out of Hopper #2. Press SELECT to initiate the dispensing and display the coin count on the LCD screen. The hopper will run until it is completely empty, and will turn itself off automatically, with the final count remaining on the display. To stop the coin dump at any time

before the hopper is empty, press the SELECT pushbutton. The count displayed will be the number of coins dispensed up to that point. Press ESCAPE to exit out of the hopper 'Dump' feature.

## **ANTI-STRINGING PROTECTION**

"Stringing" refers to a method of defrauding any machine that uses a bill validator using string or tape attached to the end of a bill. The bill is inserted into the machine, and is pulled back out using the string or tape attachment after the validator has credited the money. This results in the thief getting the bill back, in addition to the change or other item(s) dispensed by the machine. The board's Anti-Stringing Protection feature cannot completely prevent the machine from getting "strung", rather it is a method of limiting the amount of money and/or tokens the thief is able to steal.

### **(SEL, ↑x3) STRING:**

Press the SELECT pushbutton and enter the 'String' menu to either enable or disable the Anti-Stringing Protection feature.

### **(SEL, ↑x3, SEL) ANTI-STRINGING SETUP:**

Immediately inside of the 'String' menu, the first option displayed is 'Yes'. Press SELECT with 'Yes' displayed to enable the Anti-Stringing Protection feature, and to make the two settings that control the behavior of the protection.

The first setting is the 'Maximum Dollar Amount' setting. This option establishes the maximum dollar amount that can be accepted by the machine within the user-set time limit (next setting) before triggering the Anti-Stringing Protection, which puts the machine out-of-service. The dollar amount can be set anywhere between \$5 and \$500 in \$5 increments. Use the UP and DOWN pushbuttons to modify the amount, and then press SELECT to save it into memory and continue to the second setting.

The second setting is the 'Maximum Time' setting. Entered here is the time limit for accepting the user-set Maximum Dollar Amount (previous setting). If the changer accepts the Maximum Dollar Amount within the amount of time set here, the Anti-Stringing Protection feature will be triggered, and the machine will go out of service. The Maximum Time can be set to anywhere between 1 and 120 minutes in 1 minute increments. Use the UP and DOWN pushbuttons to set the time, and then press SELECT to save it into memory and return to the Standby screen.

### **(SEL, ↑x3, SEL, ↑) DISABLE PROTECTION:**

Navigate to this option, 'No', and press the SELECT pushbutton to disable the Anti-Stringing Protection feature. The display will return to the Standby state, and the machine will operate normally.

## SYSTEM DIAGNOSTICS

### (SEL, ↑x4) DIAGNOSTICS:

Enter the 'Diagnostics' menu to view various information about the board's current state of operation. The most important submenu inside the 'Diagnostics' menu is the 'Counts' submenu. There, all of the counts maintained by the Main Logic Board, including the received, dispensed, rejected, and remaining counts, may be viewed. The other submenus contain assorted diagnostic information, as described in the following paragraphs, designed for use in troubleshooting.

### (SEL, ↑x4, SEL) COUNTS:

Press SELECT when the 'Counts' menu option is being displayed to view the board's various counts. *NOTE: the counts may be viewed only, not modified, except to reset them to zero.*

### (SEL, ↑x4, SELx2) BILLS RECEIVED:

When the 'Received' menu option is displayed, press SELECT to view the quantities of bills received by the machine, by denomination. Use the UP and DOWN pushbuttons to scroll through each bill denomination to see its received count, starting with \$1 bills, and progressing through \$2, \$5, \$10, \$20, \$50, and finally \$100 bills. Press ESCAPE to exit the list.

### (SEL, ↑x4, SELx2, ↑) BILLS/COINS DISPENSED:

When the 'Dispensed' menu option is displayed, press SELECT to view the quantities of bills and coins dispensed by the machine, by denomination. Use the UP and DOWN pushbuttons to scroll through each count, starting with Hoppers #1 and #2, and progressing through \$1, \$5, \$10, \$20, \$50, and finally \$100 bills. Press ESCAPE to exit the list.

*NOTE: Hopper #1 and #2 are also counted by quantity, not dollar value. Their Dispensed Counts will NOT automatically reset if their values are changed in the Hopper Setup menu. They must be reset manually, along with all of the other counts, by selecting 'Reset & Print'.*

### (SEL, ↑x4, SELx2, ↑x2) BILLS REJECTED:

When the 'Rejected' menu option is displayed, press SELECT to view the quantities of bills rejected by the dispenser, by denomination. Bills are rejected by the LG bill dispenser for various reasons, including being crumpled, folded, or torn. These bills remain inside of the dispenser in a special compartment. Use the UP and DOWN pushbuttons to scroll through each bill denomination to see its rejected count, starting with \$1 bills, and progressing through \$5, \$10, \$20, \$50, and finally \$100 bills. Press ESCAPE to exit the list.

### (SEL, ↑x4, SELx2, ↑x3) BILLS/COINS REMAINING:

When the 'Remaining' menu option is displayed, press SELECT to view the quantities of bills and coins remaining in the machine. There are two ways for this information to be displayed, depending on the current method of Low Bills Detection. If 'SENSORS' is selected, the actual quantities will not be shown; only 'OK' or 'LOW' will be displayed beside each denomination. If 'COUNTS' is selected, the actual quantities will be shown. Use the UP and DOWN pushbuttons to scroll through each count, starting with Hoppers #1 and #2, and progressing through \$1, \$5, \$10, \$20, \$50, and finally \$100 bills. Press ESCAPE to exit the list.

*NOTE: The Hopper counts will always only show either 'OK' or 'LOW'.*

### (SEL, ↑x4, SELx2, ↑x4) RESET COUNTS & PRINT FULL AUDIT REPORT:

Press SELECT to enter the 'Reset & Print' menu option in order to reset three of the Logic Board's four counts to zero; these are the Received, Dispensed, and Rejected counts. Use the UP and DOWN pushbuttons to scroll between the two options, 'Yes' or 'No'. Press SELECT when 'Yes' is displayed to reset the three counts, or when 'No' is displayed to return to the 'Diagnostics' menu without resetting the counts.

If 'Yes' is chosen and the counts reset, the Audit Printer (if installed) will automatically print out a full Audit Report showing all of the final counts as they were just before being reset. The Audit Report is identical to the standard Audit Receipt (please refer to the 'Print' menu), except that it consists of two copies, one printed directly after the other, and both with the heading:

--COUNTS RESET--  
--AUDIT REPORT--

*NOTE: The Remaining counts can only be modified in the 'Setup' menu.*

### (SEL, ↑x4, SEL, ↑) AMBIENT TEMPERATURE:

Press SELECT when 'Temp' is being displayed on the LCD screen to view the current ambient temperature inside the cabinet. The temperature will be displayed in degrees Celsius (°C).

*NOTE: To convert degrees Celsius to degrees Fahrenheit (°F), multiply the Celsius number by 1.8, and then add 32.*

### (SEL, ↑x4, SEL, ↑x2) BILL CASSETTES:

Navigate to the 'Cass.' menu option inside the 'Diagnostics' menu, and press SELECT to view the current settings for the bill denominations inside the LG bill dispenser. The denominations are listed by cassette number, and only appear after the successful initialization of the bill dispenser.



Cassette #1 shows the denomination set for the single dispenser (AC7700 Series) or the UPPER cassette of the dual dispenser (AC7800 Series), while cassette #2 shows the denomination set for the LOWER cassette of the dual dispenser (AC7800 Series). Cassettes #3 and #4 are not currently used. Use the UP and DOWN pushbuttons to scroll between the cassette numbers.

**(SEL, ↑x4, SEL, ↑x3) FIRMWARE VERSION:**

Enter the software menu option 'Version' to view the board's current firmware version. The firmware version is also displayed temporarily when the board power is first turned ON.

**(SEL, ↑x4, SEL, ↑x4) MAIN LOGIC BOARD COMMAND IN EXECUTION:**

Enter the software menu option 'MLB CMD' to view the current Main Logic Board command in execution. The display shows the command, which is the specific operation or function that the MLB is performing, on the top line above a time-out period, in seconds, on the bottom.

**(SEL, ↑x4, SEL, ↑x5) VALIDATOR COMMAND IN EXECUTION:**

Enter the software menu option 'VAL CMD' to view the current bill validator command in execution. The display shows the command, which is the specific operation or function that the validator is performing, on the top line above a time-out period, in seconds, on the bottom.

**(SEL, ↑x4, SEL, ↑x6) BILL DISPENSER (BDU) COMMAND IN EXECUTION:**

Enter the software menu option 'BDU CMD' to view the current bill dispenser command in execution. The display shows the command, which is the specific operation or function that the dispenser is performing, on the top line above a time-out period, in seconds, on the bottom.

**(SEL, ↑x4, SEL, ↑x7) LAST BILL IN ESCROW:**

Press SELECT while the 'Escrow' menu option is being displayed to view the denomination of the bill most recently in the escrow position inside of the validator. The escrow position is fully inside the validator, but not yet stacked. A bill gets held in this position while the Main Logic Board decides whether to accept or reject it.

**(SEL, ↑x4, SEL, ↑x8) LAST CHANGE PAYOUT:**

While 'Change' is being displayed on the LCD screen, press SELECT to view the bill/coin combination that made up the most recent payout. Use the UP and DOWN pushbuttons to scroll through the list of denominations, beginning with Hoppers #1 and #2, and progressing through \$1, \$5, \$10, \$20, \$50, and finally \$100 bills. Listed beside the hopper numbers and bill denominations are their specific quantities that were a part of the payout.

**\*\* [End of Programming Section] \*\***

## **INDICATOR LIGHTS & DISPLAYS**

***Green LED (LD01):***

1. ON – The Main Logic Board is receiving power.
2. OFF – The Main Logic Board has a power issue. Please refer to the Troubleshooting Guide on pages 19-22 for more information.

***Red LED (LD7):***

1. BLINKING – This LED blinks a "heartbeat", indicating that the software on the board's processor is operating properly.
2. SOLID ON/OFF – If the LED is not blinking, regardless of whether it is ON or OFF, the software is not running. Please refer to the Troubleshooting Guide on pages 19-22 for more information.

***Out-of-Service LED:***

*The Out-of-Service LED is red in color, and is either mounted on the changer door (front-load), or on the stainless-steel faceplate (rear-load).*

1. OFF – The changer is operating normally.
2. BLINKING – The Main Logic Board has detected an error condition inside the changer, and has stopped its operation. When the changer is "out of service", an error message indicating the cause will be displayed on the LCD screen located on the Main Logic Board. Please refer to the Troubleshooting Guide on pages 19-22 for more information. NOTE: To clear an error, the board's power must be turned OFF.

***Main LCD:***

*The Main LCD is located on the Main Logic Board.*

1. NORMAL OPERATION – The Main LCD displays the non-resettable 'Total' count of all of the money that has been entered into the machine.
2. OUT-OF-SERVICE OPERATION – The Main LCD's backlight blinks, and error messages are printed on the screen. NOTE: To clear an error, the board's power must be turned OFF.

***External LCD:***

*The External LCD is mounted on either the changer door (front-load), or on the stainless-steel faceplate (rear-load), and can be read from the outside of the machine.*

1. NORMAL OPERATION – The External LCD keeps track of the user's money by displaying a "Balance" when a bill is entered that is decremented down to \$000.00 as money is dispensed from both the coin hopper and bill dispenser.
2. OUT-OF-SERVICE OPERATION – The External LCD alerts the user, in words, that the machine is "out of service". It also mirrors the error message displayed on the Main LCD, so that preliminary troubleshooting may be done without having to unlock and open the door. NOTE: To clear an error, the board's power must be turned OFF.

# AC7700 & AC7800 Bill-to-Bill Changers

## TROUBLESHOOTING GUIDE

*Use this guide to help diagnose problems with changer operation. Locate your symptom(s) on the left side, and then follow the suggestions on the right. If the presented solutions do not solve your problem, or if your specific problem is not described in this guide, please contact our Service Dept. for assistance.*

<b>Problem:</b>	<b>Cause &amp; Solutions:</b>
<p>The changer is completely “dead” (the green LED on the Main Logic Board is not lit).</p>	<p>The Main Logic Board’s is either not receiving or not producing any power.</p> <ul style="list-style-type: none"> <li>♦ Make sure the changer is plugged in.</li> <li>♦ Verify that the ON/OFF switch is set to the ON (‘I’) position.</li> <li>♦ Unplug the female end of the line cord from the Main Logic Board AC connector, and then plug it in again tightly.</li> <li>♦ Make sure AC power is present at the outlet by measuring the voltage with a multimeter, or by plugging in another item. If no power is present, check the circuit breaker.</li> <li>♦ Inspect the AC line cord for cuts or abrasions that may cause a short circuit.</li> <li>♦ Check the condition of the fuse on the Main Logic Board. If the fuse is blown, perform the following steps:               <ol style="list-style-type: none"> <li>1. Replace the fuse. If the green LED now lights, then the cause may have been a voltage spike.</li> <li>2. If it does not light, and the fuse blows again, unplug the hopper and validator connectors and try again. If the green LED stays lit, reconnect one at a time until you find the one blowing the fuse.</li> <li>3. If the fuse still blows with both the hopper and validator disconnected from the board, the transformer may be shorted. Use a multimeter to measure the resistance of the primary and secondary windings, which should be in the range of 40 ohms and 1.5 ohms, respectively.</li> </ol> </li> <li>♦ Replace the line cord.</li> <li>♦ Repair or replace the Main Logic Board.</li> </ul>
<p>The green LED on the Main Logic Board is lit, but the red “heartbeat” LED is not blinking.</p>	<p>The Main Logic Board’s firmware is not operating properly.</p> <ul style="list-style-type: none"> <li>♦ Inspect closely to make sure the processor (microcontroller) chip is securely plugged into its socket.</li> <li>♦ Verify if the upper-left mounting nut holding the Main Logic Board in place is made of metal or nylon. If it is metal, remove it.</li> <li>♦ Loosen the four mounting nuts holding the Main Logic Board in place, and pull the board away from the rear of the cabinet. A pin on the board’s rear may be touching the cabinet, creating a short circuit.</li> <li>♦ Replace the processor (microcontroller) chip.</li> <li>♦ Repair or replace the Main Logic Board.</li> </ul>
<p>The bill validator will not pull in any bills (it is disabled), but the “Out-of-Service” LED is not lit.</p>	<p>Either the LED itself has failed, or the Main Logic Board is unable to initialize the bill dispenser.</p> <ul style="list-style-type: none"> <li>♦ If the Main and/or External LCD displays <u>are</u> blinking and showing error messages, then the “Out-of-Service” LED is not working properly.               <ol style="list-style-type: none"> <li>1. Check the LED’s harness to make sure it is securely attached at both ends – the board connector, and the LED’s two spade connectors (brown wire connects to black wire, and orange wire connects to red wire).</li> <li>2. If the harness is OK, then replace the LED.</li> </ol> </li> </ul>

	<ul style="list-style-type: none"> <li>♦ Check the External LCD. If it is showing the “Welcome” message, then the bill dispenser is not initializing correctly. <ol style="list-style-type: none"> <li>1. Verify that the bill dispenser power harness is securely connected to both the dispenser and Main Logic Board.</li> <li>2. Verify that the bill dispenser communication harness is securely connected to both the dispenser and Main Logic Board. Additionally, if your harness is two pieces, verify that both halves are securely connected to each other.</li> <li>3. Verify that in the ‘Setup’ menu, the bill dispenser ‘Type’ is set to “LG”. Refer to pages 12-13 for details.</li> </ol> </li> </ul>
<p>The bill validator pulls in the bill, but rejects it every time.</p>	<p>The bill denomination may not be enabled, or the validator may be experiencing an error.</p> <ul style="list-style-type: none"> <li>♦ Make sure that the bill validator’s DIP switches are set to the “Factory Default” positions shown in the table for your model validator (see page 25 for MEI, or page 29 for Coinco).</li> <li>♦ Reprogram the ‘Payout’ settings in the Main Logic Board’s software. The first setting for each bill denomination is whether to ‘accept’ or ‘reject’ it – select ‘accept’ (refer to pages 15-16).</li> <li>♦ The validator may be flashing an error code. Open the changer door, and check the validator’s LED indicator. Error codes and their descriptions are located on page 26 for MEI, and page 30 for Coinco, and, in most cases, are printed on the back of the bill box itself.</li> <li>♦ Pull out the validator’s lower housing, and inspect for something obstructing the bill path, i.e. gum, paper, tickets, coins, etc.</li> <li>♦ Clean the validator by following the instructions listed in the section of this manual for your model validator.</li> </ul>
<p>The changer is giving the wrong payouts.</p>	<p>Incorrect software setup.</p> <ul style="list-style-type: none"> <li>♦ Inside the bill dispenser ‘Setup’ menu, reset the ‘Type’ setting to “LG”, and select the bill denomination(s) you will be dispensing (refer to pages 12-13).</li> <li>♦ <u>AC7800 Series</u>: the cassettes may be reversed; swap the upper with the lower.</li> <li>♦ Reset all of the ‘Payout’ settings in the Main Logic Board software (refer to pages 15-16).</li> </ul>
<p>In the ‘Payout’ menu, the amount of bills/coins to be dispensed cannot be set (“XXX” appears instead of “000”)</p>	<p>Incorrect hardware/software setup.</p> <ul style="list-style-type: none"> <li>♦ Wait until the Main Logic Board has completed its full initialization procedure before making software settings.</li> <li>♦ Review the current software settings for the bill dispenser and/or the coin hopper in the ‘Setup’ menu.</li> <li>♦ Make sure the bill dispenser’s power and communication harnesses are securely attached to both the bill dispenser and Main Logic Board connectors.</li> <li>♦ Make sure the coin hopper is connected properly to the hopper plate, and the hopper harness to the Main Logic Board.</li> <li>♦ Repair or replace the coin hopper.</li> <li>♦ Repair or replace the bill dispenser.</li> </ul>
<p>The LCD display (Main and/or External) is showing garbled or nonsense characters, or is blank.</p>	<p>There is a fault in the LCD assembly hardware.</p> <ul style="list-style-type: none"> <li>♦ Perform the following steps to check the External LCD: <ol style="list-style-type: none"> <li>1. Turn the Main Logic Board’s power OFF</li> <li>2. Disconnect the External LCD’s harness from the connector on the Main Logic Board (refer to page 4 for its location).</li> <li>3. Turn the Main Logic Board’s power back ON. <ul style="list-style-type: none"> <li>➔ If the Main LCD is still garbled, the problem is not the External LCD; skip steps 4 – 7.</li> <li>➔ If the Main LCD looks good, continue with step 4.</li> </ul> </li> </ol> </li> </ul>

	<ol style="list-style-type: none"> <li>4. Turn the Main Logic Board's power OFF again.</li> <li>5. Carefully inspect the External LCD harness where it connects to the back of the LCD. Make sure all 16 pins are connected, and the wires leave the connector downwards.</li> <li>6. Carefully reconnect the External LCD harness to the Main Logic Board (a flashlight may be required). <ul style="list-style-type: none"> <li>➔ Front-load machines: the connector should be oriented so that the ribbon harness leaves the connector towards the left (away from the Main LCD).</li> <li>➔ Rear-load machines: the connector should be oriented so that the <u>black</u> wire is on the bottom right.</li> </ul> </li> <li>7. Turn the Main Logic Board's power ON again. If the LCD(s) become garbled again, with the harness properly connected, replace the External LCD.</li> </ol> <ul style="list-style-type: none"> <li>♦ Loosen the four mounting nuts holding the Main Logic Board in place, and pull the board away from the rear of the cabinet. A pin on the board's rear may be touching the cabinet, creating a short circuit.</li> <li>♦ Repair or replace the Main Logic Board</li> </ul>
<p>The Main LCD is displaying the error message: <b>HOPPER 1 LOW</b></p>	<p>The Main Logic Board detected that the coin hopper is low on coins.</p> <ul style="list-style-type: none"> <li>♦ Determine the amount of coins remaining in the coin hopper. There should be at least enough coins to cover the two gold-colored metal plates at the bottom of the Coin Bin (100 coins minimum).</li> <li>♦ Ensure that the hopper is pushed all the way back on the hopper plate, so that its 12-pin connector is making full contact with the connector on the back of the hopper plate.</li> <li>♦ The hopper harness may be loose or unplugged; inspect the harness from the hopper plate to the board.</li> <li>♦ Make sure the hopper harness is plugged into the proper connector on the Main Logic Board (refer to page 4).</li> <li>♦ Clean both gold-colored metal plates at the bottom of the Coin Bin with steel wool or fine sandpaper.</li> <li>♦ Check the electrical continuity of the wires in the hopper harness from the 12-pin connector back to the MLB connector.</li> <li>♦ Replace the hopper harness.</li> <li>♦ Repair or replace the coin hopper.</li> </ul>
<p>The Main LCD is displaying the error message: <b>LOW BILLS</b></p>	<p>The Main Logic Board detected that the bill dispenser is low on bills.</p> <ul style="list-style-type: none"> <li>♦ Determine the amount of bills remaining in the bill dispenser's bill cassette(s). <ul style="list-style-type: none"> <li>➔ If there are fewer than 30 – 40 remaining, refill the cassette.</li> <li>➔ If the bills are <u>not</u> low, check the software setting for 'Low Bills Detection'. If using COUNTS, the count may have been entered wrong. If using SENSORS, make sure it is set to that.</li> </ul> </li> <li>♦ Repair or replace the Low Bills Sensor on the LG Bill Dispenser.</li> </ul>
<p>The Main LCD is displaying the error message: <b>VALID 5 RESETS</b></p>	<p>The bill validator had to be reset five times – this indicates a problem with it.</p> <ul style="list-style-type: none"> <li>♦ Make sure the bill validator's harness is connected properly. Make sure it is securely plugged into the side of the validator, and onto the Main Logic Board connector. Also, it is in two pieces, so ensure that both halves are securely connected to each other.</li> <li>♦ Make sure that the bill validator's DIP switches are set to the "Factory Default" positions shown in the table for your model validator (see page 25 for MEI, or page 29 for Coinco).</li> </ul>

	<p>changer door, and check the validator's LED indicator. Error codes and their descriptions are located on page 26 for MEI, and page 30 for Coinco, and, in most cases, are printed on the back of the bill box itself.</p> <ul style="list-style-type: none"> <li>◆ Replace the validator harness.</li> <li>◆ Repair or replace the bill validator.</li> </ul>
The Main LCD is displaying the error message: <b>CASH BOX</b>	<p>The Main Logic Board detected that the bill validator's bill (cash) box is removed.</p> <ul style="list-style-type: none"> <li>◆ Replace the bill (cash) box. <i>NOTE: This error only occurs for the MEI validator, not the Coinco.</i></li> <li>◆ Repair or replace the bill validator.</li> </ul>
The Main LCD is displaying the error message: <b>INC. PAY -\$000.00</b>	<p>The Main Logic Board detected that the previous payout was not completed. <u>The dollar amount indicates how much money was <b>not dispensed, and is therefore owed, to the previous customer.</b></u></p> <ul style="list-style-type: none"> <li>◆ Read the Main LCD display. <ul style="list-style-type: none"> <li>➔ If this error message is alternating with an "LG Error" message, then the bill dispenser was the cause of the mispay. Locate the two-digit numerical code shown on the screen in the table on pages 40-42 for more information.</li> <li>➔ If the error message is unchanging, the coin hopper was the cause of the mispay.</li> </ul> </li> </ul>
The Main LCD is displaying the error message: <b>DISPENS COMMUNIC</b>	<p>The Main Logic Board is unable to communicate with the bill dispenser – after a successful initialization.</p> <ul style="list-style-type: none"> <li>◆ Make sure the bill dispenser's power and communication harnesses are securely attached to both the bill dispenser and Main Logic Board connectors.</li> <li>◆ Repair or replace the bill dispenser.</li> </ul>
The Main LCD is displaying the error message: <b>SW ERROR</b>	<p>A calculation error has occurred in the Main Logic Board's software.</p> <ul style="list-style-type: none"> <li>◆ Enter the 'Payout' menu, and reprogram all of the machine's payouts. <i>NOTE: The amount of money input must equal the amount of money in the payout.</i></li> <li>◆ Check the hopper's coin value setting in the 'Setup' menu.</li> <li>◆ Replace the processor (microcontroller) chip.</li> <li>◆ Repair or replace the Main Logic Board.</li> </ul>
The Main LCD is displaying the error message: <b>HOPPER 1 JAM</b>	<p>The coin hopper's exit sensor was blocked continuously for longer than one second.</p> <ul style="list-style-type: none"> <li>◆ Examine the coin hopper's Coin Exit slot for something blocking it, whether it be a jammed coin or a foreign object that accidentally fell into the coin bin.</li> <li>◆ Ensure that the hopper harness is securely attached to the Main Logic Board connector.</li> <li>◆ Replace the hopper harness.</li> <li>◆ Repair or replace the coin hopper.</li> </ul>

# MEI AE2602 & MEI AE2832



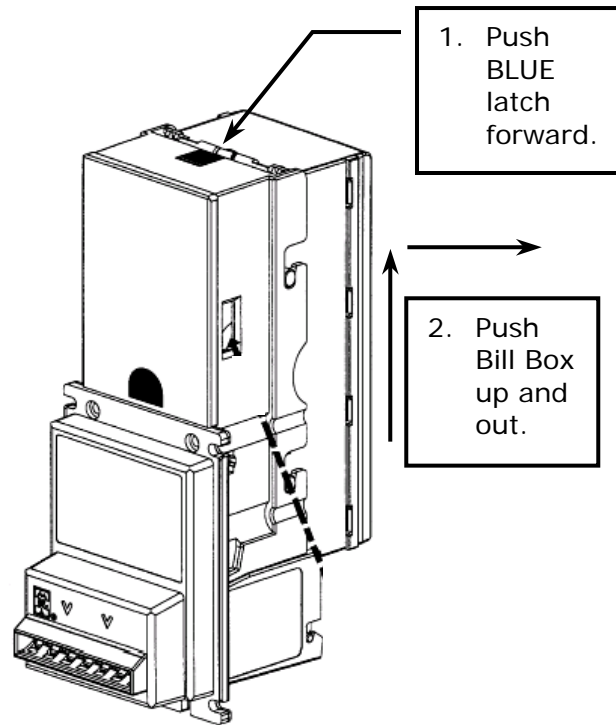
## MEI (MARS) VALIDATOR GUIDE

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Setting the Bill Types Accepted	25
Cleaning & Maintenance	26
Troubleshooting & Error Codes	26

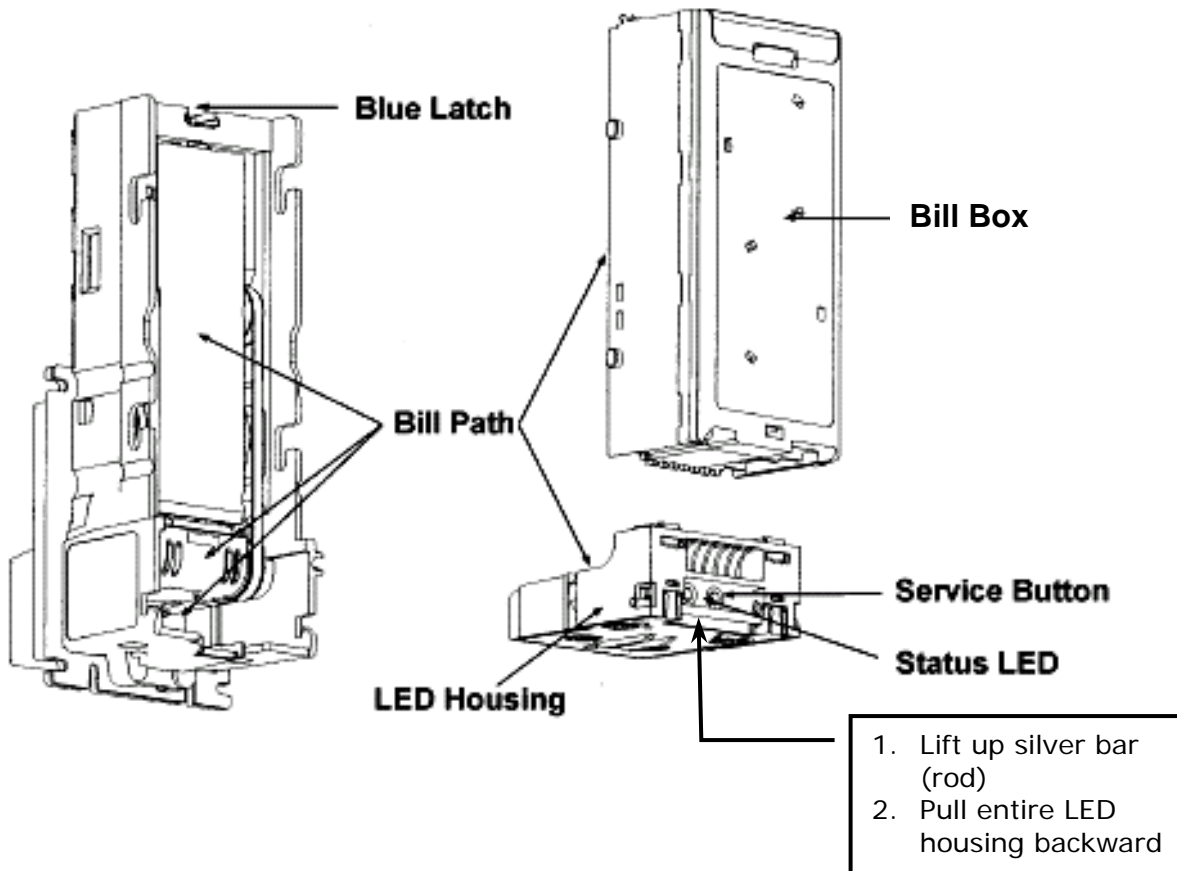
## BILL ACCEPTOR

24VDC, MDB, \$1-\$20 or \$1-\$100

## Removing the Bill Box



## Clearing a Bill Jam



## AC2602

Setting the DIP Switches		AE2602	AE2832	Factory Default *
Switch 1	Switch 2			
ON	OFF	1 Way Bill Acceptance		
OFF	ON	2 Way Bill Acceptance		
ON	ON	4 Way Bill Acceptance		X
<b>Switch 3</b>				
OFF	High Security			X
ON	High Acceptance			
<b>Switch 4</b>				
OFF	Accepts \$2 Bills	Accepts \$50 Bills		X
ON	Rejects \$2 Bills	Rejects \$50 Bills		
<b>Switch 5</b>				
OFF	Accepts \$20 Bills	Accepts \$100 Bills		X
ON	Rejects \$20 Bills	Rejects \$100 Bills		
<b>Switch 6</b>				
OFF	Harness Enable			X
ON	Always Enable			
<b>Switch 7</b>				
OFF	1 Pulse Per Dollar			X
ON	4 Pulses Per Dollar			
<b>Switch 8</b>				
OFF	Gaming/Retail Interface			X
ON	Vending Interface			

\* NOTE: Factory Default settings are ALL switches set to "OFF"! Placing any switch ON will override the above options, and the unit will operate according to the labels shown at right.

Bill Acceptance Switch		1	2
1 way	ON	OFF	
2 way	OFF	ON	
4 way	ON	ON	
Switch		3	
High Security	OFF		
High Acceptance	ON		
Switch		4	5
\$2	\$20		
Accept = OFF	Reject = ON		
ON	1		
←	2		
	3		
	4		
OFF	5		
→	6		
	7		
	8		
Switch		6	
Harness Enable	OFF		
Always Enable	ON		
Switch		7	
1 Pulse Per Dollar	OFF		
4 Pulse Per Dollar	ON		
Switch		8	
Gaming Interfaces	OFF		
Vending Interfaces	ON		

## AE2832

1	2	OFF	ON	ON	
Bill Acceptance 1 way	ON	ON	ON	ON	
Bill Acceptance 2 way	ON	ON	ON	ON	
Bill Acceptance 4 way	ON	ON	ON	ON	
Switch		3			
High Security	OFF	High Acceptance	ON		
Accept	OFF	Reject	ON	\$50	\$100
ON	1				
←	2				
	3				
OFF	4				
→	5				
	6				
	7				
	8				
Switch		6			
Harness Enable	OFF				
Always Enable	ON				
Switch		7			
One Pulse Per Dollar	OFF				
Four Pulse Per Dollar	ON				
Switch		8			
Gaming / Retail Interface	OFF				
Vending Interface	ON				



## Cleaning & Maintenance

### Cleaning

*NOTE: You can clean the bill acceptor while it is still mounted in the machine.*

1. Remove power from the machine.
2. Unlatch the Bill Box by pushing the blue latch (located on the top of the unit) toward the front of the unit.
3. Unhook and remove the Bill Box by holding the latch and lifting up and then back on the Bill Box.
4. Unlatch the LED Housing by lifting up on the metal bar (located below the Status LED).
5. Remove the LED Housing by holding the metal bar and pulling straight back on the LED Housing.
6. Refer to the drawing in the "Clearing a Bill Jam" section on page 18 to locate the Bill Path.
7. Clean the Bill Path using a soft cloth or brush. You may use only mild, non-abrasive, non-petroleum based cleaners if the dirt is particularly heavy. Apply the cleaner to the cloth or brush, not directly onto the validator. Pay special attention to the optical sensors, rollers, and belts located in the Bill Path.

### Status LED Error Codes

A Status LED provides assistance in diagnosing error conditions in the MEI AE2600 and AE2800 series validators. The following is a description of the LED codes, their meanings, and suggested remedial actions:

Signal	Meaning	Solution
<b>LED ON Solid</b>	Indicates that the unit is enabled and ready to accept a bill	No action necessary.
<b>LED OFF</b>	Indicates that the unit is not receiving power	Check to be sure that power is applied.
<b>1 Flash</b>	Indicates that something is obstructing the Bill Path	Remove the Bill Box and LED Housing; inspect for foreign material
<b>2 Flashes</b>	Indicates that the unit is not enabled	Verify the Main Logic Board's configuration. Check the Main Logic Board's display for any error messages that may be shown. NOTE: The validator is disabled whenever an error condition is present, such as low coins, low bills, etc.
<b>3 Flashes</b>	Indicates that the Bill Path needs cleaning for optimum performance	Remove the Bill Box and LED Housing, and follow the cleaning instructions on this page to clean the Bill Path.
<b>4 Flashes</b>	Indicates that something is obstructing the Bill Path	Remove the LED Housing, and look at the Bill Path on the housing and inside the unit for foreign material; clean as necessary.
<b>5 Flashes</b>	Indicates that the Bill Box is removed (the unit will not work without the Bill Box attached).	Reinstall the Bill Box.
<b>Continuous Slow</b>	Indicates that the unit is defective	Repair or replace the unit.
<b>Continuous Fast</b>	Indicates that the Bill Box is full of bills	Remove the bills from the Bill Box.

# COINCO MC2622 & COINCO MC2822



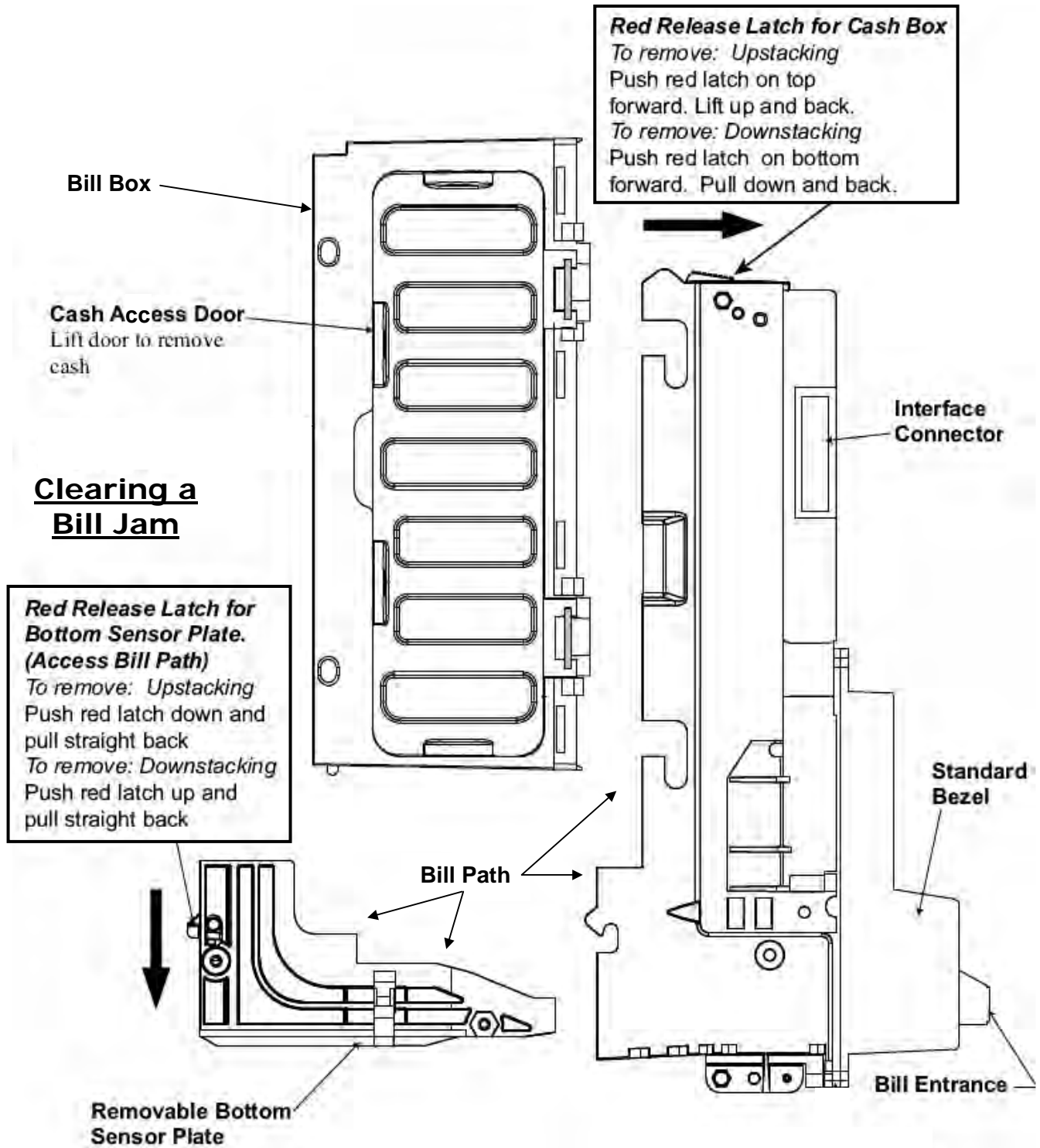
## COINCO VALIDATOR GUIDE

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## BILL ACCEPTOR

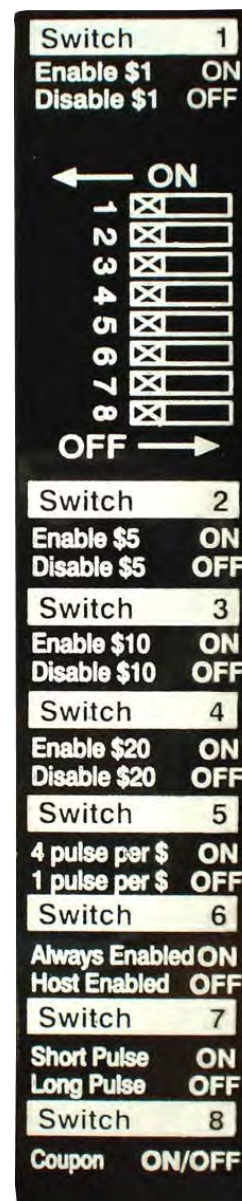
24VDC, MDB, \$1-\$20 or \$1-\$100

## Removing the Bill Box



**MC2622**

Setting the DIP Switches	MC2622	MC2822	Factory Default
<b>Switch 1</b>			
OFF	\$1 Disable	\$10 Disable	
ON	\$1 Enable	\$10 Enable	X
<b>Switch 2</b>			
OFF	\$5 Disable	\$20 Disable	
ON	\$5 Enable	\$20 Enable	X
<b>Switch 3</b>			
OFF	\$10 Disable	\$50 Disable	
ON	\$10 Enable	\$50 Enable	X
<b>Switch 4</b>			
OFF	\$20 Disable	\$100 Disable	
ON	\$20 Enable	\$100 Enable	X
<b>Switch 5</b>			
OFF	1 Pulse Per Dollar	1 Pulse Per Dollar	
ON	4 Pulses Per Dollar	4 Pulses Per Dollar	X
<b>Switch 6</b>			
OFF	Host/Harness Enabled	Host/Harness Enabled	X
ON	Always Enabled	Always Enabled	
<b>Switch 7</b>			
OFF	Long Pulse	Long Pulse	
ON	Short Pulse	Short Pulse	X
<b>Switch 8</b>			
OFF	Coupon Disable	Coupon Disable	
ON	Coupon Enable	Coupon Enable	X



## Cleaning & Maintenance

### Cleaning

*NOTE: You can clean the bill acceptor while it is still mounted in the machine.*

1. Remove power from the machine.
2. Unlatch the Bill Box by pushing the red latch (located on the top of the unit) toward the front of the unit.
3. Unhook and remove the Bill Box by holding the latch and lifting up and then back on the Bill Box.
4. Unlatch the Bottom Sensor Plate by pushing down on the red latch (located above the Status LED).
5. Remove the Bottom Sensor Plate by holding the red latch and pulling straight back on the Bottom Sensor Plate.
6. Refer to the drawing in the "Clearing a Bill Jam" section on page 22 to locate the Bill Path.
7. Clean the Bill Path using a soft cloth or brush. You may use only mild, non-abrasive, non-petroleum based cleaners if the dirt is particularly heavy. Apply the cleaner to the cloth or brush, not directly onto the validator. Pay special attention to the optical sensors, rollers, and belts located in the Bill Path.

### Status LED Error Codes

A red Status LED, located on the back of the Bottom Sensor Plate below the red latch, provides assistance in diagnosing error conditions in the Coinco MC2622 and MC2822 series validators. The following is a description of the LED codes, their meanings, and suggested remedial actions:

Signal	Meaning	Solution
<b>Normal Pulse Rate – 1 pulse per second</b>	Indicates that the unit is enabled and ready to accept a bill	No action necessary.
<b>Fast Pulse Rate – 3 pulses per second</b>	Indicates that the Bill Box is full of bills	Remove the bills from the Bill Box.
<b>LED OFF</b>	Indicates that the unit is not receiving power	Check to be sure that power is applied.
<b>LED ON Solid</b>	Indicates that the unit is defective	Repair or replace the unit.
<b>2 Flashes</b>	Indicates that the inserted bill is currently inhibited (disabled)	Check the DIP Switch settings on the validator. The switches corresponding to the bills to be accepted should be ON, while those corresponding to the bills to be rejected should be OFF.
<b>3 Flashes</b>	Indicates that the unit is not enabled	Verify the Main Logic Board's configuration. Check the Main Logic Board's display for any error messages that may be shown. NOTE: The validator is disabled whenever an error condition is present, such as low coins, low bills, etc.
<b>4 Flashes</b>	Indicates that something is obstructing the Bill Path	Remove the LED Housing, and look at the Bill Path on the housing and inside the unit for foreign material; clean as necessary.
<b>5 Flashes</b>	Indicates that the Bill Path needs cleaning for optimum performance	Remove the Bill Box and LED Housing, and follow the cleaning instructions on this page to clean the Bill Path.

## ezCDM1000 Single Denomination



*[AC7700 Series]*

## ezCDM1000 Dual Denomination



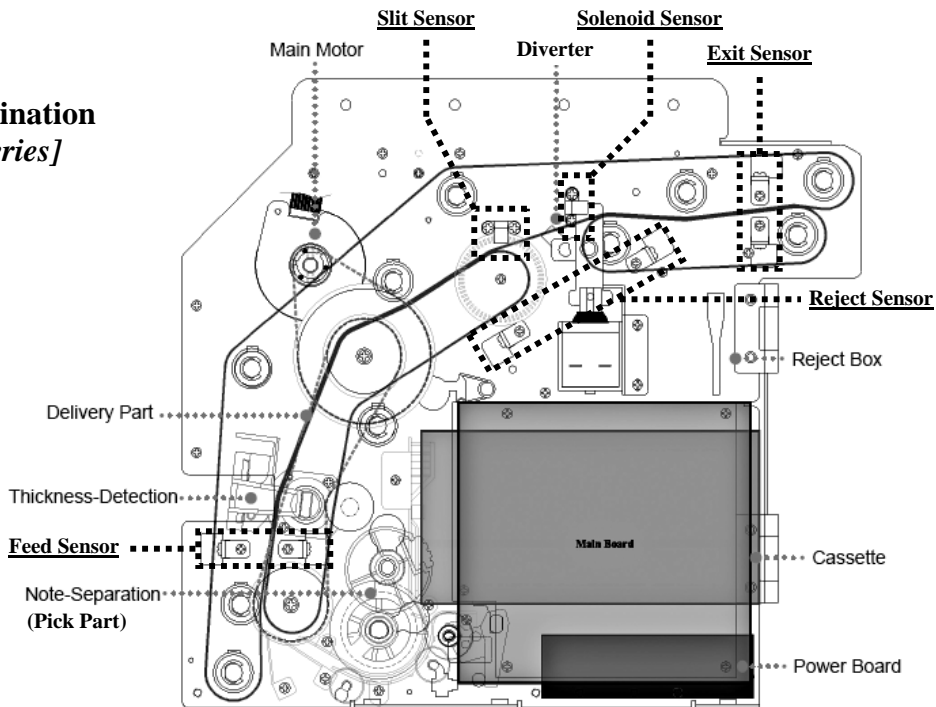
*[AC7800 Series]*

# LG BILL DISPENSER MANUAL

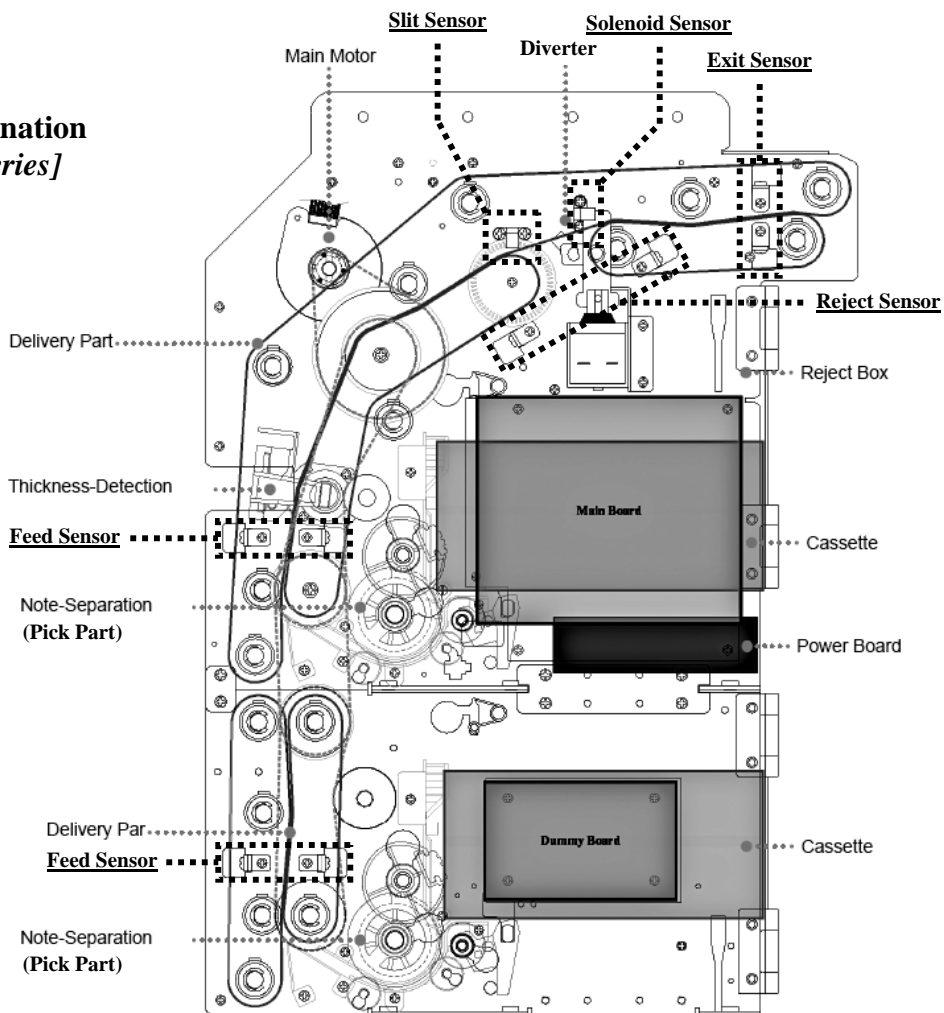
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Connections	39
Setting the DIP Switches	39
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## LG Dispenser Part Locations

### Single Denomination [AC7700 Series]

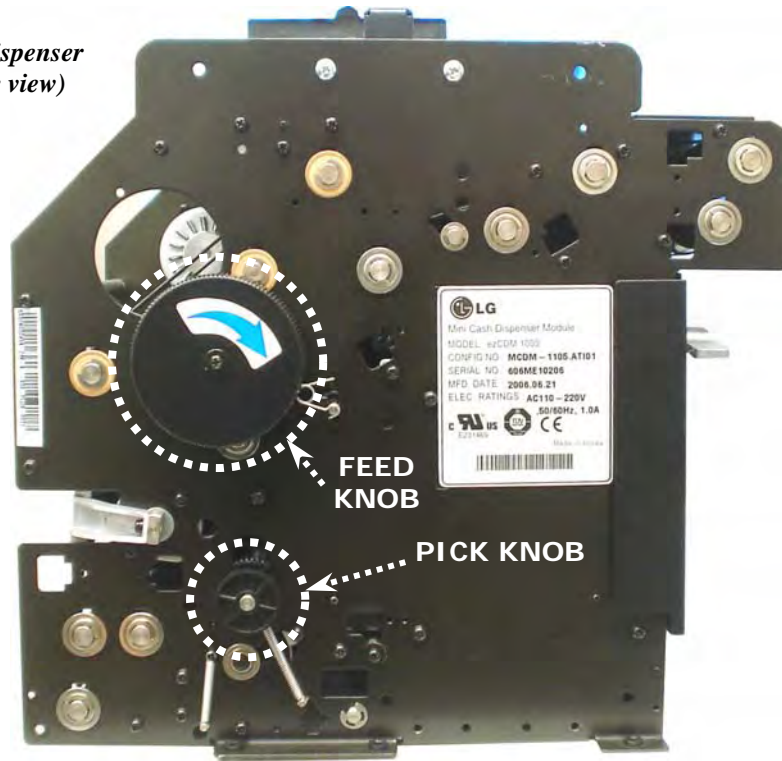


### Dual Denomination [AC7800 Series]



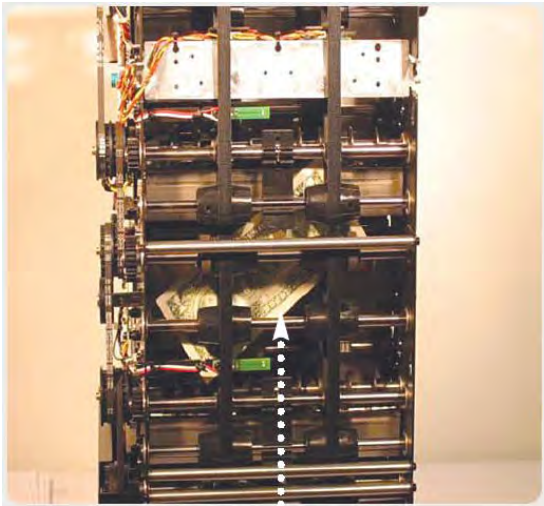
## Clearing a Bill Jam

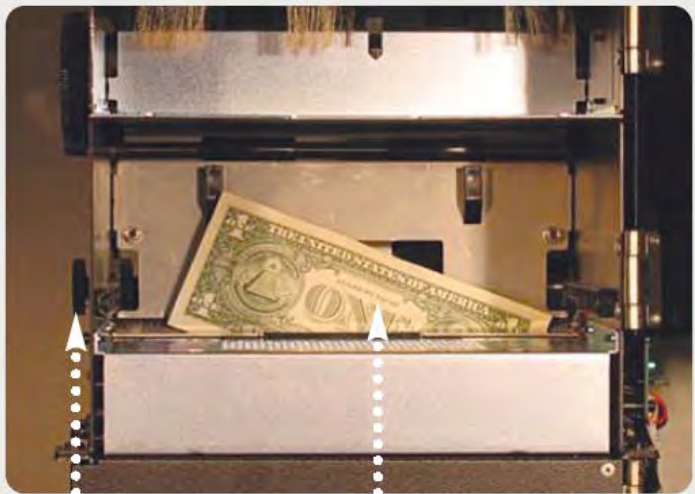
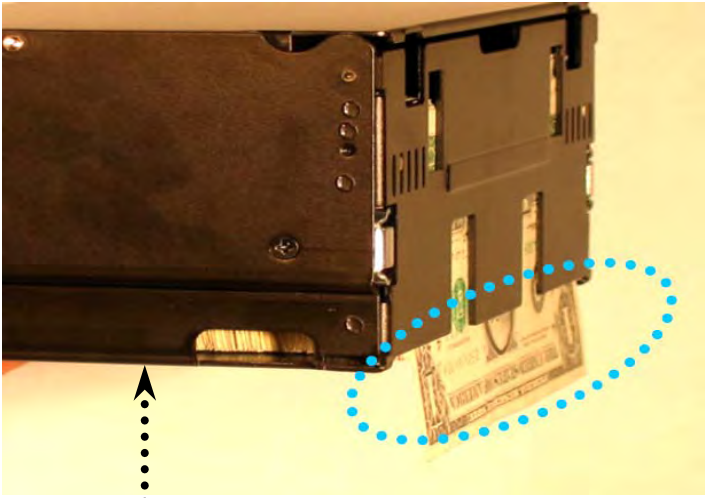
*LG Dispenser  
(side view)*



Location	Picture	Action
Diverter	<p style="text-align: center;">Diverter      Skew Jam</p>	<ol style="list-style-type: none"> <li>1. Rotate the Feed Knob counter-clockwise to free the bill from the Diverter.</li> <li>2. Using your hands, carefully remove the bill.</li> </ol> <p><i>Check:</i></p> <ul style="list-style-type: none"> <li>• <i>Feed Belts – make sure they are still correctly on the rollers</i></li> <li>• <i>Bill Path – remove any remaining bills</i></li> <li>• <i>Reject Box – remove any rejected bills</i></li> </ul>

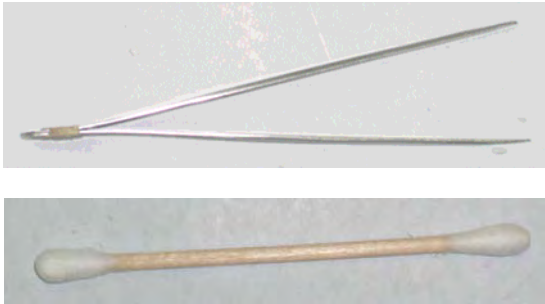



<p>Delivery Path</p>	 <p>Note Jam</p>	<ol style="list-style-type: none"> <li>Using your hands, carefully remove the bill.</li> </ol> <p><i>Check:</i></p> <ul style="list-style-type: none"> <li><i>Feed Belts – make sure they are still correctly on the rollers</i></li> <li><i>Bill path – remove any remaining bills</i></li> <li><i>Reject Box – remove any rejected bills</i></li> </ul>
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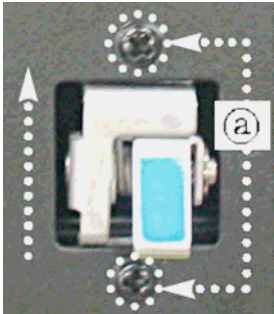
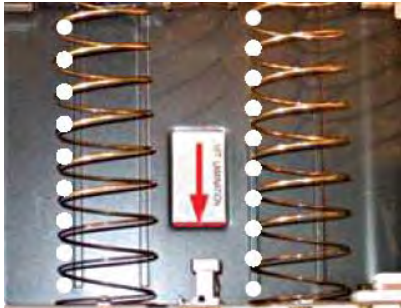
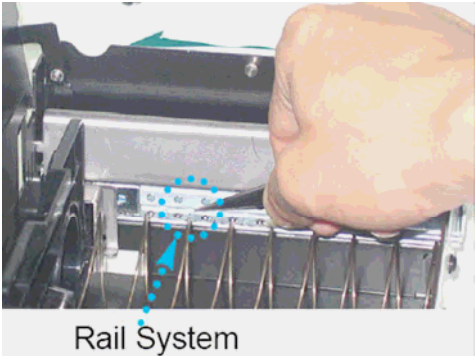
<p>Pick Mechanism</p>	 <p>Knob      Note Jam</p>  <p>Bill Cassette</p>	<ol style="list-style-type: none"> <li>Remove the bill cassette.</li> <li>Rotate the Pick Knob counter-clockwise to back the bill out of the Pick and Separator rollers.</li> <li>Carefully remove the bill.</li> </ol> <p><i>Check:</i></p> <ul style="list-style-type: none"> <li><i>Bill path – remove any remaining bills</i></li> <li><i>Bill Cassette – remove any hanging bills from the lower front side</i></li> </ul>
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## Cleaning & Maintenance

### **Tools Needed:**

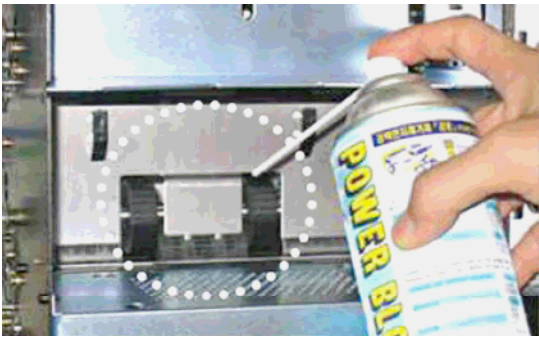
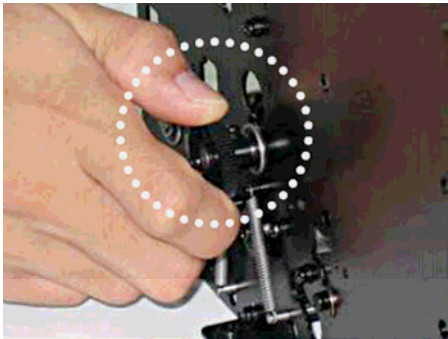
<ul style="list-style-type: none"> <li>▪ Small Tweezers</li> <li>▪ Q-tip(s)</li> <li>▪ Alcohol – Isopropyl or Denatured</li> <li>▪ Canned Air</li> <li>▪ Grease / Silicon Lubricant</li> </ul>		
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### **Bill Cassette:**

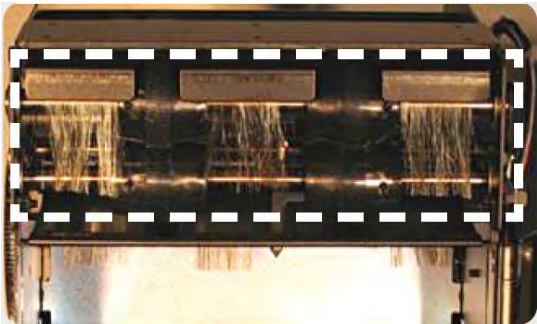
Location	Action	Interval
	<ol style="list-style-type: none"> <li>1. Check the operation of the Push Plate Lock. If it requires adjustment, loosen the two screws (a), adjust the lock upwards, and then re-tighten the screws.</li> </ol>	6 months
	<ol style="list-style-type: none"> <li>1. Remove all bills.</li> <li>2. Check that both internal springs are straight and hold the Push Plate tightly against the front side of the cassette. If they are compressed or bent, replace them.</li> </ol>	6 months
 <p style="text-align: center;">Rail System</p>	<ol style="list-style-type: none"> <li>1. Remove any dirt and debris inside the Push Plate's rails using the tweezers.</li> <li>2. Re-apply grease.</li> </ol>	6 months

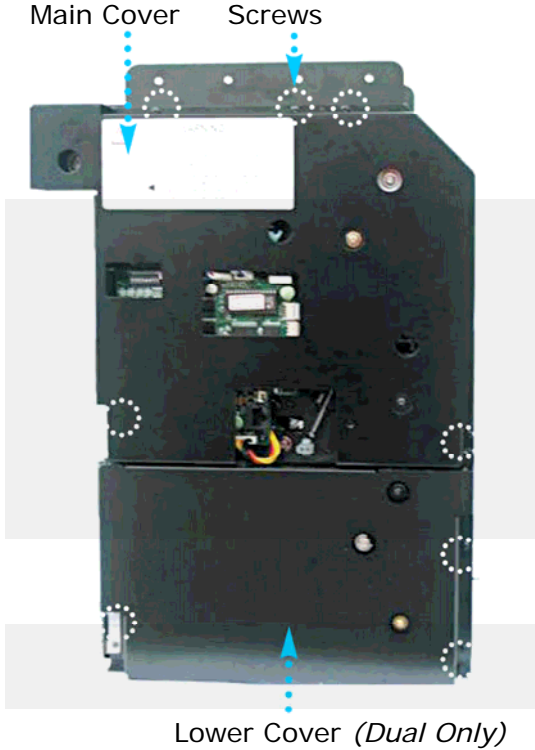


	<ol style="list-style-type: none"> <li>1. Move the Push Plate back and forth through its entire range of motion. Make sure it doesn't "catch" anywhere, and is operating smoothly.</li> </ol>	<p>6 months</p>
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**Pick/Separator Mechanism:**

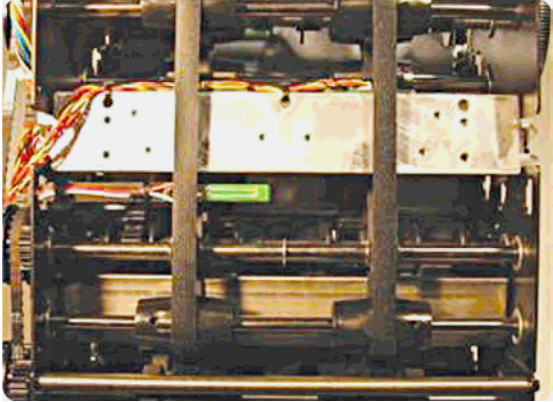
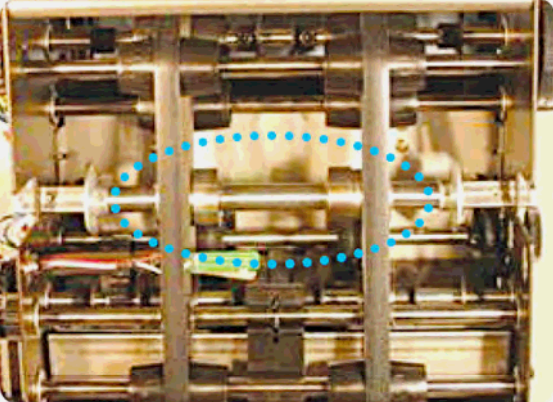
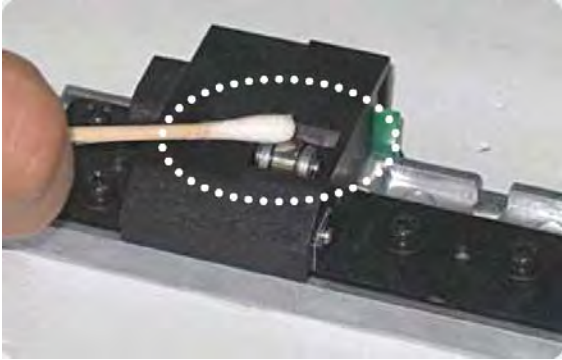
Location	Action	Interval
	<ol style="list-style-type: none"> <li>1. Remove the Bill Cassette</li> <li>2. Using the canned air, remove any dust or dirt on the surface of the Pick Rollers.</li> <li>3. If dirt remains, clean the rollers with the q-tip and alcohol, and then re-apply canned air.</li> </ol>	<p>6 months</p>
	<ol style="list-style-type: none"> <li>1. Remove the Bill Cassette</li> <li>2. Rotate the Pick Mechanism using the Pick Knob on the side of the dispenser. Check for abnormal or rough rotation, and listen for unusual noises.</li> </ol>	<p>6 months</p>

**Delivery Path:**

Location	Action	Interval
	<ol style="list-style-type: none"> <li>1. Inspect the condition of the Anti-Static Brush at the bill exit; replace if damaged</li> </ol>	<p>6 months</p>

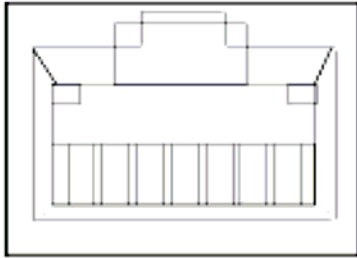
 <p>Main Cover    Screws</p> <p>Lower Cover (Dual Only)</p>	<ol style="list-style-type: none"> <li>1. Take off the Main Cover and Lower Covers (<i>AC7800 Series only</i>) by removing the screws circled in the figure to the left.</li> <li>2. Turn the Feed Knob and observe all of the belts.</li> <li>3. Inspect all belts for cracks or worn spots, and replace if necessary.</li> <li>4. Make sure the Feed Belts line up in the centers of the rollers.</li> <li>5. Inspect all of the wiring harnesses; make sure they are all connected properly to the circuit board(s).</li> </ol>	<p>6 months</p>
	<ol style="list-style-type: none"> <li>1. With the side covers off, inspect the condition of the Idle Springs (<i>1 pair for AC7700 Series; 2 pairs for AC7800 Series</i>). Replace them if they are loose or damaged.</li> </ol>	<p>6 months</p>
 <p>(Feed Sensors Shown)</p>	<ol style="list-style-type: none"> <li>1. With the side covers off, inspect <u>all</u> sensors (<i>refer to page 32 for sensors locations</i>).</li> <li>2. Remove dust and dirt using the canned air.</li> <li>3. If dirt remains, clean the sensors with the q-tip and alcohol, and then re-apply canned air.</li> </ol>	<p>3 months</p>

**Bill Thickness Detection Module:**

Location	Action	Interval
 <p>Thickness Detection Module</p>  <p>Datum Roller</p>  <p>Detection Roller</p>	<ol style="list-style-type: none"> <li>1. Unplug the Power Connector from the side of the dispenser.</li> <li>2. Carefully remove the Thickness Detection Module from the back of the dispenser (the Datum Roller can remain in-place).</li> <li>3. Using the canned air, remove any dust and dirt from the Datum Roller and Detection Module.</li> <li>4. Carefully clean the Datum and Detection Rollers using the q-tip and alcohol.</li> </ol>	<p>6 months</p>

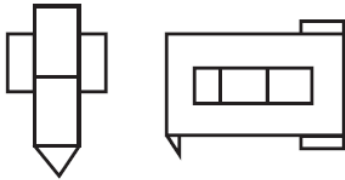
## LG Dispenser Connections & DIP Switch Settings

### Communication Connector:



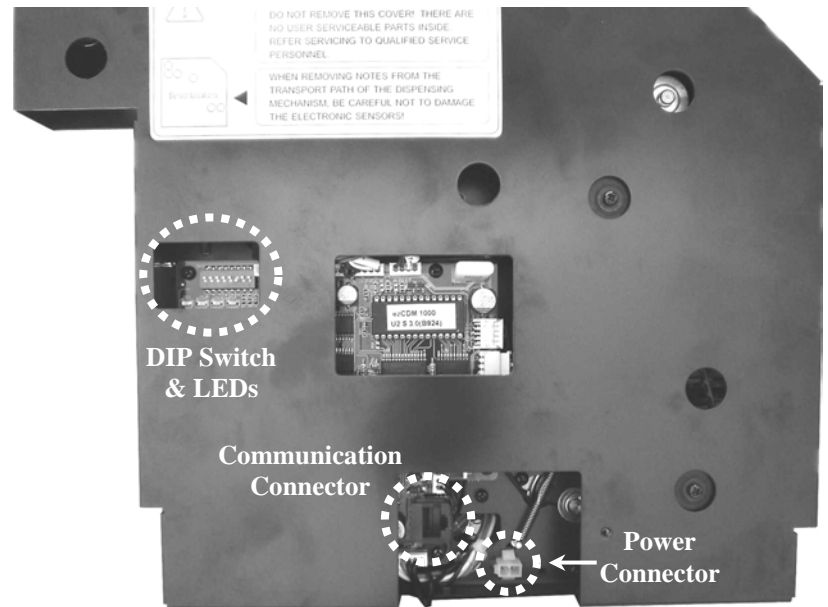
- ✦ Modular Jack (8-pin)
- ✦ RS-232C Serial Interface

### Power Connector:



- ✦ Molex 5559A-02 Connector
- ✦ Input Voltage: 110-240 VAC, 50/60 Hz, 1A
- ✦ Output Voltage (Internal): +24V DC @ 2.0A, +5V DC @ 1.0A

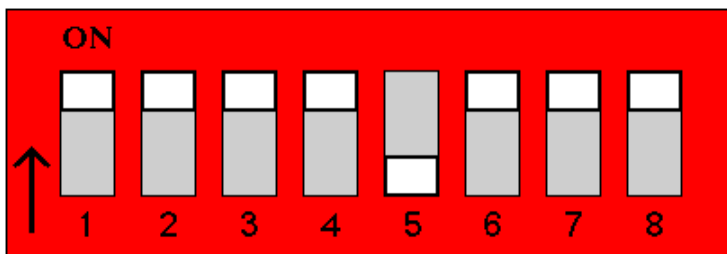
*LG Dispenser  
(side view)*



### DIP Switch Settings:

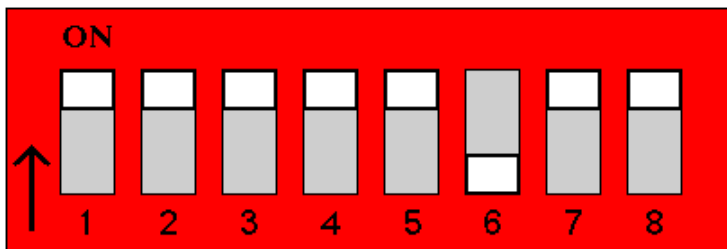
The LG Dispenser's DIP Switch has 8 individual switches on it, numbering 1 – 8 from left to right. These must be set according to the dispenser model being used (single or dual denomination), in order for the machine to function properly. The following diagrams show the correct settings for each model.

#### **Single Denomination (AC7700 Series Changers)**



*(#5 is DOWN; all of the rest are UP)*

#### **Dual Denomination (AC7800 Series Changers)**



*(#6 is DOWN; all of the rest are UP)*

## Troubleshooting and Error Codes

There are two ways to view Bill Dispenser error codes inside AC7700 and AC7800 Series Changers. First, if the machine goes out-of-service due to an LG Bill Dispenser error, a numerical code will be flashed on the Main Logic Board's main LCD screen. This "LG Error" code indicates what caused the dispenser to malfunction. Alternatively, there are four LEDs (DS1 – DS4) located on the side of the dispenser, adjacent to the DIP Switch, that also indicate the dispenser error. These LEDs indicate, by pattern of lighted and non-lighted, the same error codes shown on the board, but with less detail (*more than one numerical code is represented by each LED pattern*). The following two tables present the LG Error Codes, their meanings, and their causes.

### **Numerical Codes:**

<b>"LG Error" Code</b>	<b>Description</b>	<b>Possible Causes</b>
20	Normal Operation	Successful completion of each command
21	Pick Failure	Pick failure during bill dispensing <ul style="list-style-type: none"> <li>◆ Cassette is empty or not installed</li> <li>◆ Feed Sensor damaged</li> <li>◆ Clutch damaged</li> <li>◆ Bill jam in Pick/Separator Mechanism</li> </ul>
22	Bill Distance Error	Distance between bills in the delivery path is out of range <ul style="list-style-type: none"> <li>◆ Bills not lined up (flush) in the bill cassette properly</li> <li>◆ Prohibited bills loaded in the bill cassette</li> </ul>
24	Feed Sensor Error	Feed Sensor error <ul style="list-style-type: none"> <li>◆ Bill jam in front of the Feed Sensor</li> <li>◆ Feed Sensor damaged</li> </ul>
25	Delay at Eject Sensor	Eject Sensor error during bill dispensing <ul style="list-style-type: none"> <li>◆ Eject Sensor damaged</li> <li>◆ Bill delay at Eject Sensor during bill dispensing</li> <li>◆ Bills ejected count larger than bills picked count</li> <li>◆ Sensor electronic noise (incorrect connection, bad earth ground connection, etc.)</li> </ul>
26	Eject Sensor Error	Abnormal detection of bill at Eject Sensor after bills dispensed <ul style="list-style-type: none"> <li>◆ Bills are dispensed while error is occurring</li> <li>◆ Sensor electronic noise (incorrect connection, bad earth ground connection, etc.)</li> </ul>
2A	Slit Sensor (Wheel Counter) Error	Stepper Motor speed out of range <ul style="list-style-type: none"> <li>◆ Slit Sensor damaged</li> <li>◆ Wheel assembly error</li> <li>◆ Stepper Motor damaged or disconnected</li> </ul>
2B	Expansion Module (Lower Bill Cassette) Time-out Error	Bill delay between Lower Bill Cassette and upper delivery path <ul style="list-style-type: none"> <li>◆ Feed Sensor damaged</li> <li>◆ Bill Jam between the Lower Bill Cassette and the upper delivery path</li> </ul>

2C	Bill Thickness Detection Module Initialization Error	The initial value from the Bill Thickness Detection Module is out of range <ul style="list-style-type: none"> <li>♦ Module assembly error</li> <li>♦ Module's Datum and Detection Rollers are polluted by dust and/or dirt</li> </ul>
2D	Diverter Error	Diverter Solenoid error <ul style="list-style-type: none"> <li>♦ Diverter Solenoid assembly error</li> <li>♦ Diverter Solenoid Sensor damaged</li> <li>♦ Bill jam at Diverter</li> </ul>
2E	Count Error	Bills picked count does not equal bills ejected count <ul style="list-style-type: none"> <li>♦ Feed and/or Eject Sensors damaged</li> <li>♦ Sensor electronic noise (incorrect connection, bad earth ground connection, etc.)</li> </ul>
2F	Bill Thickness Detection Module Error	The value from the Bill Thickness Detection Module is out of range during bill dispensing <ul style="list-style-type: none"> <li>♦ Module assembly error</li> <li>♦ Module's Datum and Detection Rollers are polluted by dust and/or dirt</li> </ul>
30	Reject Rate Exceeded	More than eight bills were rejected during a single dispense transaction <ul style="list-style-type: none"> <li>♦ Incorrect currency settings in the software</li> <li>♦ Prohibited bills loaded in the bill cassette</li> <li>♦ Bills not lined up (flush) in the bill cassette properly</li> </ul>
31	Reject Sensor Error	Reject Sensor Error <ul style="list-style-type: none"> <li>♦ Reject Sensor damaged</li> <li>♦ Bill jam in front of the Reject Sensor</li> <li>♦ Abnormal detection of bill by Reject Sensor</li> </ul>
33	Eject Sensor Initialization Error	Eject Sensor Error <ul style="list-style-type: none"> <li>♦ Eject Sensor damaged or disconnected</li> </ul>
3A	Irregular Command	Irregular software command received from controller board <ul style="list-style-type: none"> <li>♦ Interface error between the bill dispenser and the controller board</li> <li>♦ Bill dispenser communication harness is loose or damaged</li> </ul>
3E	Purge Timeout Error	Timeout during a Purge operation <ul style="list-style-type: none"> <li>♦ Bill jam in the delivery path</li> <li>♦ Feed sensor damaged</li> </ul>
42	Currency-Set Error	The bill dispenser is missing the required currency settings. The controller board either did not or could not send the currency settings to the bill dispenser software.
43	Upper Feed Sensor Delay	Upper Feed Sensor error <ul style="list-style-type: none"> <li>♦ Bill delay at the upper Feed Sensor</li> </ul>



44	Upper Delivery Path Timeout Error	<p>Bill delay between upper Feed Sensor and either Eject or Reject Sensor</p> <ul style="list-style-type: none"> <li>◆ Bill Jam between the upper Feed Sensor and either the Eject or Reject Sensor</li> <li>◆ Upper Feed Sensor damaged</li> <li>◆ Eject Sensor damaged</li> <li>◆ Reject Sensor damaged</li> </ul>
70	Count Overflow	<p>An abnormal bill count is detected that is more than the maximum number of bills allowed per dispense transaction.</p> <ul style="list-style-type: none"> <li>◆ The following situations occurred at the same time: <ol style="list-style-type: none"> <li>1. Command received to dispense 50 bills</li> <li>2. Reject rate exceeded (more than 8 bills)</li> <li>3. Sensor error</li> </ol> </li> </ul>

**LED Codes:**

DS1 (Red)	DS2 (Green)	DS3 (Green)	DS4 (Green)	Error Code	Description
ON	OFF	OFF	OFF	-	Board Error or Process Error
ON	OFF	OFF	ON	24 31 26 25 33 2D 70	Feed Sensor Error Reject Sensor Error Eject Sensor Error Delay at Eject Sensor Eject Sensor Initialization Error Diverter Error Count Overflow
ON	OFF	ON	OFF	21 2B 3E 43 44	Pick Failure Expansion Module (Lower Bill Cassette) Time-out Error Purge Timeout Error Upper Feed Sensor Delay Upper Delivery Path Timeout Error
ON	OFF	ON	ON	30	Reject Rate Exceeded
ON	ON	OFF	OFF	2A 3A 42	Slit Sensor (Wheel Counter) Error Irregular Command Currency-Set Error
ON	ON	OFF	ON	2C 2F	Bill Thickness Detection Module Initialization Error Bill Thickness Detection Module Error
ON	ON	ON	OFF	22	Bill Distance Error
ON	ON	ON	ON	20	Normal Operation