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ECONOMY CHANGER

Installation & Instruction Manual

8M00352 REV12

RKU Standard, Inc. d/b/a Standard Change Makers

Two-Year Limited Product Warranty
MC, BX and BCX Machine Series

RKU Standard, Inc., d/b/a Standard Change Makers ("Manufacturer") warrants the machine provided by Manufacturer (the "Product"), excluding any component(s) not manufactured by Manufacturer ("Third Party Products"), to be free from defects in material and workmanship solely if the customer properly installed, has serviced and operated the Product in the ordinary course of business and in accordance with Manufacturer's instructions and manuals, which are accessible by the quick response barcode on the Product (the "Manuals"). **MANUFACTURER MAKES NO EXPRESS WARRANTIES WITH RESPECT TO, AND DISCLAIMS ANY IMPLIED WARRANTIES APPLICABLE TO, ANY THIRD PARTY PRODUCTS INCORPORATED INTO THE PRODUCT, INCLUDING, BUT NOT LIMITED TO, WARRANTIES AGAINST INFRINGEMENT, WARRANTIES OF MERCHANTABILITY AND WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE;** provided that manufacturer of Third Party Products may have a warranty for any such Third Party Product and a request may be made in writing to Manufacturer to provide warranty information for such Third Party Products, if any.

No other warranty (express or implied), promise, or affirmation of fact concerning the Product and no other description, sample or model of the Product shall be construed as augmenting, supplementing, or included in any manner whatsoever as part of this limited warranty, and this warranty may not be modified, supplemented, or changed in any way without the written consent of Manufacturer. The warranty period commences on the date the Product is sold by Manufacturer (whether sold to a distributor or directly to a third party) ("Sale Date") and automatically terminates twenty-four months after the Sale Date regardless of whether any owner purchased the Product after the Sale Date from a distributor or party other than Manufacturer.

During the first twelve months after the Sale Date, Manufacturer agrees to repair or replace (without charge to the owner) the Product, or any component thereof (except Third Party Products), if, in the sole discretion of Manufacturer, the Product has defect(s) in materials or workmanship.

During months thirteen to twenty-four after the Sale Date, Manufacturer agrees to repair or replace the Product, or any component or part thereof (except Third Party Products), if, in the sole discretion of Manufacturer, the Product has defects in materials or workmanship; provided that the owner shall pay all labor costs (and Manufacturer will pay for any replacement parts, except for Third Party Products).

1.0 MANUFACTURER SHALL ONLY BE OBLIGATED TO PERFORM WORK UNDER THIS WARRANTY IF THE PRODUCT, OR ANY COMPONENT OR PART THEREOF, IS RETURNED TO MANUFACTURER'S FACTORYAND TRANSPORTATION CHARGES ARE PREPAID BY THE OWNER.

Before shipping a Product to Manufacturer for work as permitted herein, the owner must be certain that the source of defects in material or workmanship could not be corrected by performing one or more of the procedures described in the Manuals. If Manufacturer finds, in its sole discretion, that defects in material or workmanship could have been corrected by following a procedure in a Manual, **OWNER SHALL BE RESPONSIBLE FOR ALL COSTS AND EXPENSES INCURRED IN CONNECTION WITH SUCH WORK.**

This limited warranty shall not apply for any of the following: (a) damages during transit, (b) repairs or replacements as a result of normal wear and tear, (c) damages because of the act or inaction of any person other than Manufacturer (regardless of whether misuse, neglect, accident, or otherwise), or (d) any Product that has been modified by any person other than Manufacturer. Manufacturer shall not be liable for any loss, damage, or expense (including, without limitation, the loss of money caused by inadvertent machine dispense or by the use of counterfeit or bogus money) caused from or related in any way to the use of the Product or from any other cause.

Manufacturer reserves the right to make additional and subsequent design and/or operational changes to its products without any obligation to notify owner or otherwise incorporate such changes into the Product sold to owner and covered under this warranty.

2.0 THIS LIMITED WARRANTY APPLIES ONLY TO PRODUCTS THAT INCLUDE AND DISPLAY A SERIAL NUMBER THAT UNIQUELY IDENTIFIES THE PRODUCT AND SUCH SERIAL NUMBER IS ON FILE WITH MANUFACTURER AND MATCHES THE SERIAL NUMBER ORIGINALLY DISPLAYED ON OR ASSIGNED TO THE PRODUCT AS SOLD TO THE ORIGINAL OWNER. THIS LIMITED WARRANTY

SUPERSEDES AND IS GIVEN IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES APPLICABLE TO THE PRODUCT (WHETHER ARISING UNDER STATUTE, COMMON LAW, CONVENTION OR TREATY), INCLUDING, BUT NOT LIMITED TO, WARRANTIES AGAINST INFRINGEMENT, WARRANTIES OF MERCHANTABILITY AND WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE. MANUFACTURER'S OBLIGATION TO REPAIR OR REPLACE ANY PRODUCT, OR ANY COMPONENT OR PART THEREOF, AS SET FORTH ABOVE SHALL BE IN LIEU OF ALL OTHER REMEDIES. IN NO EVENT SHALL MANUFACTURER BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, SPECIAL, OR PUNITIVE DAMAGES.

Effective September, 2021

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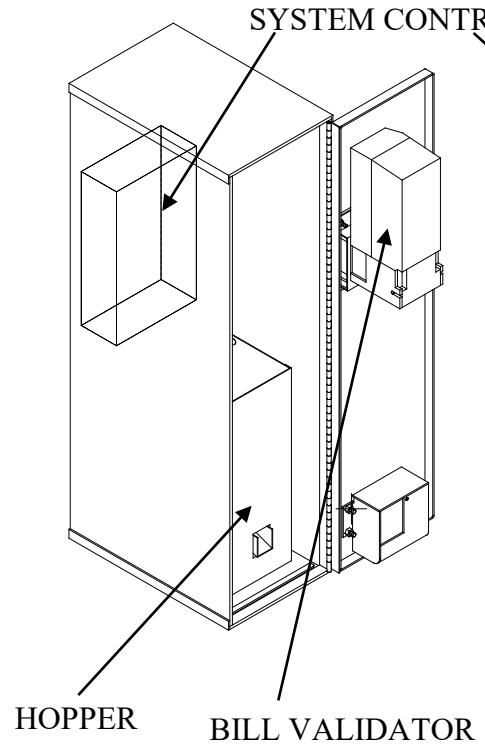
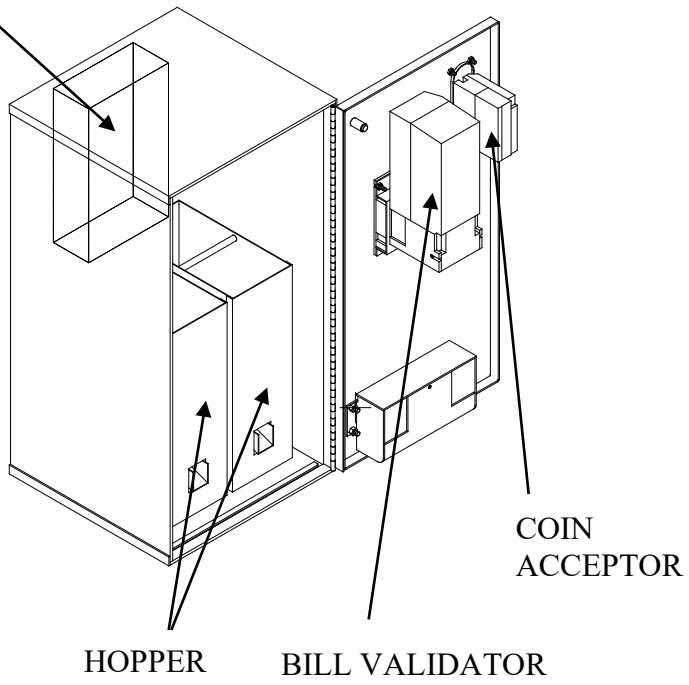
3.0 Economy Changer Description

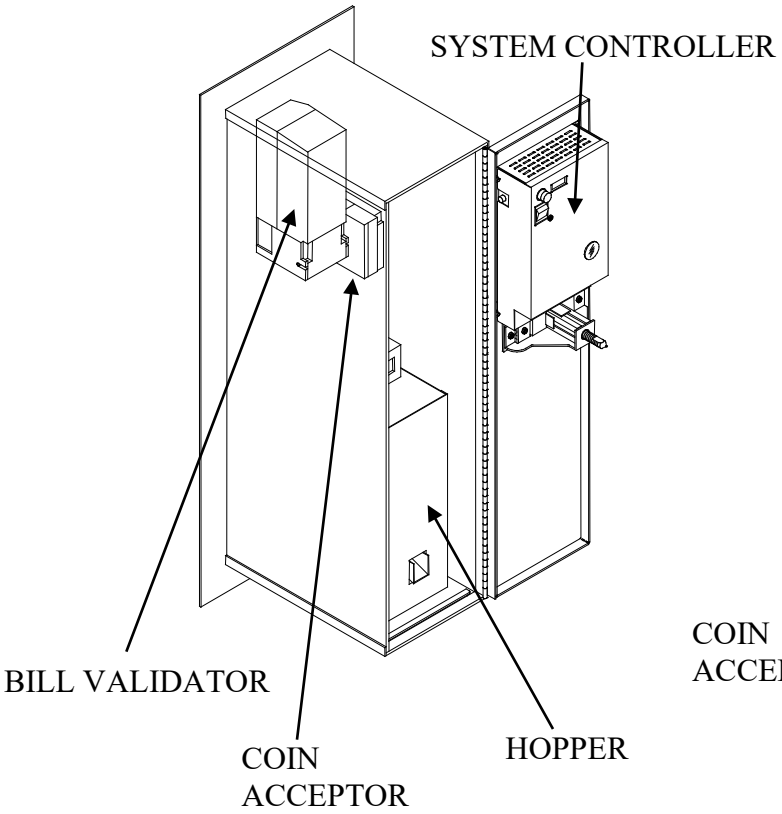
EC100



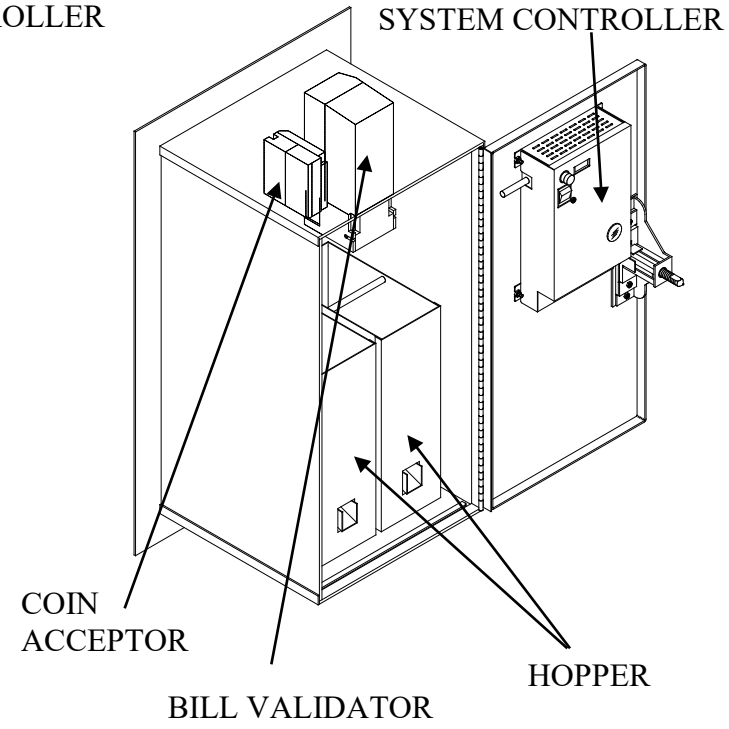
EC200



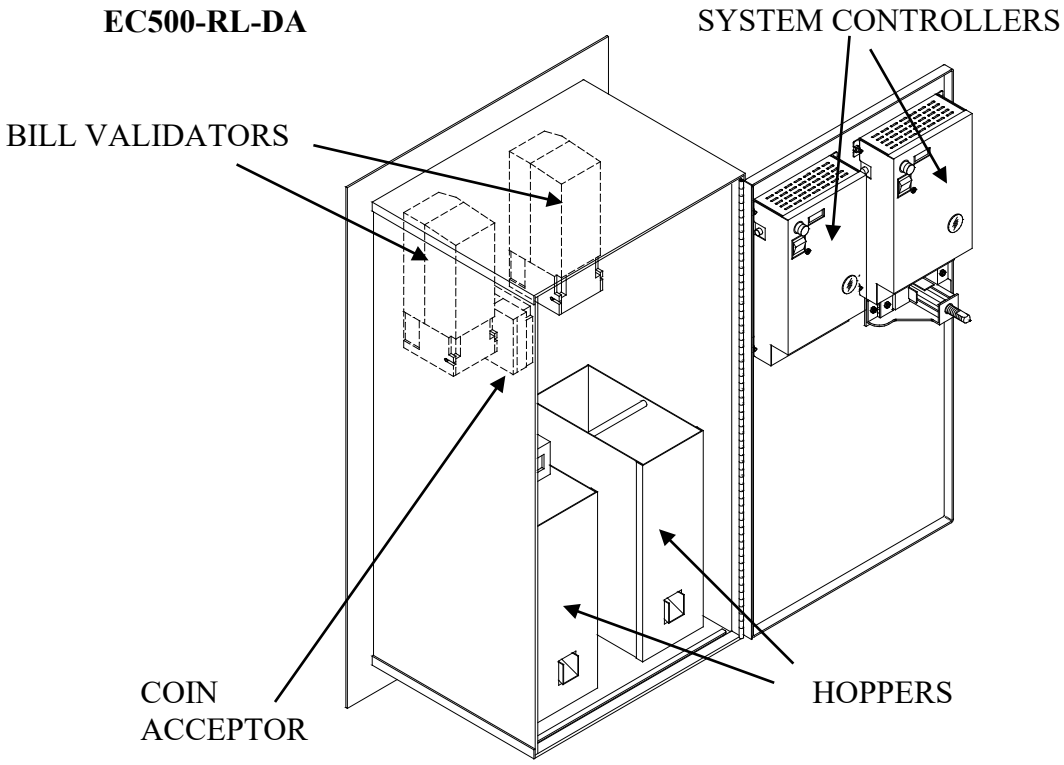
EC300-RL



EC400-RL



EC500-RL-DA



The Economy Changer Line uses OEM style bill and coin acceptors coupled with a highly reliable, large capacity coin dispenser. The Economy Changer models differ only to the extent that some models may have one hopper, others have two, some are equipped with coin acceptors and some are not.

All changers come preprogrammed from the factory to the machine owner's specifications. Programming can be easily changed by the owner using dip switches located on the system controller board.

3.1 Specifications

Operating Voltage	120 VAC +10/-15%
Power Consumption	180W
Operating Temperature	0 – 50 °C (32 - 122 °F)
Interface to Hoppers	See Hopper Section
Interface to Validators	See Validator Section

EC100 Dimensions

	Width	Height	Depth	Weight
Cabinet	8.5”	32”	13”	70 lbs
Base	8.5”	30”	13”	40 lbs
Header	8.5”	10”	13”	10 lbs

Header, Cabinet, and Base total height is 72”

EC200 Dimensions

	Width	Height	Depth	Weight
Cabinet	13.5”	26”	13”	106 lbs
Base	13.5”	30”	13”	51 lbs
Header	13.5”	16”	13”	15 lbs

Header, Cabinet, and Base total height is 72”

EC300RL Dimensions

	Width	Height	Depth	Weight
Cabinet	9”	32”	13”	90 lbs
Face Plate	13”	36”		

EC400RL Dimensions

	Width	Height	Depth	Weight
Cabinet	13.5”	28”	13”	131 lbs
Face Plate	17.5”	32”		

EC500RL-DA Dimensions

	Width	Height	Depth	Weight
Cabinet	18”	32”	13”	175 lbs
Face Plate	22.5”	36”		

4.0 Changer Installation and Setup

4.1 Cabinet Installation Instructions

Standard Change-Makers manufactures change machines in the following cabinet styles: 1) Free standing consoles, 2) Front loading wall mount, 3) Through-the-wall rear load and 4) Slim-line vending changer. Because physical locations vary, we do not suggest an exact method of installation. To assure proper operation of your Standard bill changer the following general guidelines should be observed:

4.2 Location of the Changer

The following points should be considered when locating a changer:

- Easily accessed by customers.
- Full swing of the door when open.
- Proper height from the floor. This will vary depending on the model of the changer. ANSI specifications for accessibility of the handicapped call for all controls, bill and coin insertion slots and coin cups to be no higher than 48 inches (1,220 mm) or no less than 15 inches (380 mm) from the floor.

4.3 Wall Mount Changers

Type of wall construction: For maximum security, it is recommended that the changer be installed on a wall made of cement block, brick or other type of masonry. A wooden stud wall is acceptable but will not provide the security or strength usually associated with masonry.

The mounting holes on the back of the changer will accommodate four 1/4-inch diameter bolts. See Appendix A for EC100 and Appendix B for EC200 mounting hole patterns

WARNING!
CHANGERS MOUNTED ON BASES ARE TOP HEAVY
The changer MUST be secured to a rigid vertical surface, as well as
to the stand to provide appropriate security, stability, and safety.

If the wall to which the changer will be mounted does not meet the construction standards above, we recommend using the Standard Change-Makers stand. The stands are provided with mounting holes on the top surface for mounting the changer and holes are also provided on the bottom for securing the stand to the floor. A drill template is included with each stand. When using the stand, we recommend that the changer be bolted to the wall as well as to the stand. This provides a highly secure installation. See Appendix C and D for the stand assembly diagrams.

CAUTION
We do not recommend welding the cabinet to any kind of mounting. This can cause
unwanted warping of the cabinet as well as internal component damage.

If the changer is to be mounted to a post, the post should be sunk in concrete for stability. It is also recommended that the post be filled with concrete for strength. A steel plate with approximately the same dimensions, as the changer should be welded to the post. Bolt the changer to the steel plate through the four 1/4-inch mounting holes drilled into the plate. Tack weld the heads of the mounting

bolts to prevent their removal. Four nuts and washers inside the changer can then secure the changer. If this method is not feasible, the bolts can be bent after installation to prevent removal.

4.4 Rear Load Changers

The rear load changer cabinets must slide through the hole in the wall. The stainless front plate, which extends 2 inches beyond the cabinet on both sides and top and bottom, will be tight against the wall surface. The cabinet is 13 inches deep. Its protrusion into the back room will be the difference between this depth and the thickness of your wall. Allow for proper door swing. A bead of caulking should be laid inside the front plate before installation to prevent moisture incursion.

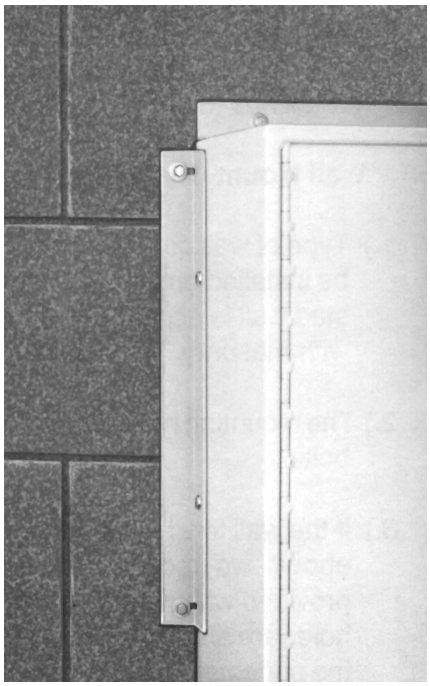


Figure2.4.1

Angle iron is provided for securing the changer in place. One side of the angle iron should be secured to the side of the cabinet while the other side of the angle iron secures against the inside of your wall. See figure 2.4.1

For rear load changers it may be necessary to temporally remove the power cord to make installation of the cabinet easier. To remove the cord, locate the cord retaining plate on the inside of the changer cabinet. Remove the two nuts securing the cord to the inside of the changer. Pull the cord into the inside of the changer. After installing the cabinet reverse the directions above to return the cord to its correct location.

4.5 Mounting the Changer Cabinet

If your machine was shipped with the hoppers in place, the hoppers should be removed before installation. If the hoppers have been shipped in separate carton(s), do not remove or disconnect any components.

Use four 1/4-inch diameter bolts for mounting.

CAUTION

Even the slightest uneven surface can cause cabinet distortion when mounting bolts are tightened. This can cause the doors to fit unevenly when closed. This distortion can occur even more easily on large cabinets. Should this occur, it may be necessary to shim one or more of the cabinet corners.

Make sure that the cabinet is level and the mounting surface is flat.

Be sure that the inside of the cabinet is free of metal shavings and other debris, which might have been introduced in the mounting process.

Remove all packing materials and shipping straps from the cabinet. Some items have yellow tags with removal instructions.

After installation, replace hoppers or, if they were shipped separately, remove them from their cartons and install them. Plug in all electrical connectors.

4.6 Electrical Hook-Up

The Economy Changer cabinet comes pre-wired. The changer need only be connected to a properly grounded electrical outlet. (3rd wire ground back to main service panel) We also recommend that the changer be wired on a dedicated line. A dedicated line is a circuit which has no other equipment connected on the same circuit breaker or fuse. The purpose of a dedicated line is to reduce the possibility of line interference, which may cause the changer to malfunction. Some models have several cut outs allowing alternate wiring inlets.

NOTE: An improperly connected machine may void your warranty

A WORD ABOUT GROUNDING

Please make sure your changer has a good ground. Improper grounding of the changer will cause erratic operation and is unsafe for the people using the changer.

4.7 Test the Machine Operation

When installation is complete, test each machine function for proper payout and operation. If you wish to change the programming of the machine, turn to section 5.0 and follow the instructions.

4.8 T-handle Lock Operation

The T-handle lock that the economy changer is equipped with provides quick and easy access to the interior of the changer with maximum security. To disengage the lock it is only to necessary to unlock the mechanism and turn the handle counter clockwise until it disengages from the interior lock mechanism (approximately five turns), then pull the door open. The lock handle must be parallel to the floor for the lock to disengage on EC100, EC200 and EC400RL cabinets; the lock must be perpendicular to the floor on the EC300RL and EC500RL-DA cabinet. To lock the door, turn the handle parallel to the floor then push the door closed. The lock will be automatically engaged as the door is closed. If the door is pushed all the way closed it will be only necessary turn the handle a couple of turns until the lock tightens. The lock handle can then be pushed into the recess of the door, securely locking the cabinet.

WARNING!

Do not placed lock keys inside the changer as they may be inadvertently locked inside.

SUGGESTION: Place a duplicate key to the changer in a safe place in the event it is needed at a later date.

5.0 Hopper Specifications

5.1 Filling the Hoppers with Coins

Filling the hopper is a simple task. The hoppers may be removed and filled outside the machine or they may be left in the machine and filled with coins. For coins contained in a bank bag, grasp the neck of the bank bag and twist it to choke the mouth of the bag. Invert the bag and insert the neck of the bag into the top of the hopper. Loosen your grip on the bag neck slowly, letting coins feed down into the hopper. Table 3.1.1 gives a convenient filling level for the various hoppers. When possible, you can turn your bank bags inside out and lesson the chance of small strings and threads from accumulating in your hopper. Clean coffee cans or plastic pails can also be used to fill hoppers.

Table 3.1.1

Type	No. of Coins	Value
Nickel Hopper	3,800	$190
Dime Hopper	7,800	$780
Quarter Hopper	3,200	$800
Dollar Hopper	2,400	$2,400

IMPORTANT

The correct coin must be poured into each hopper. The hoppers are marked to indicate which coin they will dispense. Never mix coins or allow foreign material to fall into the hoppers.

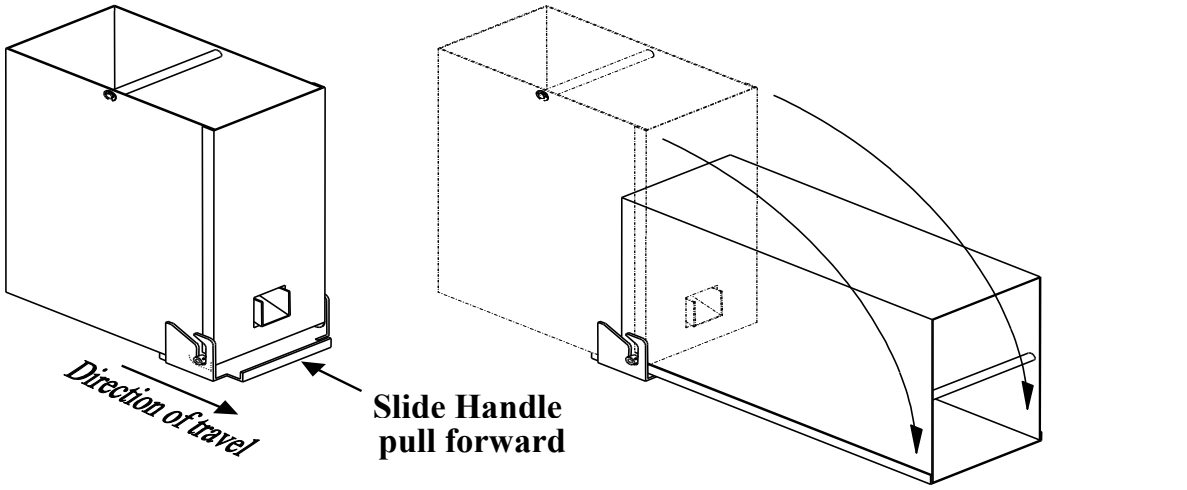
5.2 Removing the Coins from the Hopper "Bulk Dump Method"

To remove coins manually in an EC100 or EC200 cabinet - TURN POWER OFF then pull the hopper forward approximately 1 inch using the slide handle at bottom of the cabinet. Sliding the hopper forward will disengage the electrical connections and allow the hopper to be tilted forward for dumping the coins into a suitable container or bag. To tilt the hopper pull forward at the top edge of the hopper.

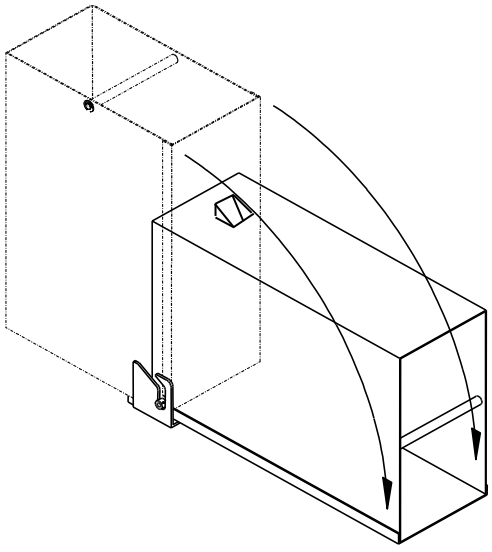
To remove coins manually in an EC300RL, EC400RL, or EC500RL-DA cabinet - TURN POWER OFF then pull the hopper power cable from the bottom of the hopper. The hopper power cable must be removed to prevent it from being damaged when the hopper is tilted out. Tilt the hopper back for dumping the coins into a suitable container or bag. To tilt the hopper pull back at the top edge of the hopper.

To remove the small number of coins that remain in the hopper, perform a "Sold Out" dump. See the next section for details.

Hopper Dump EC100 and EC200



Hopper Dump EC300RL, EC400RL, and EC500RL-DA



5.3 Removing the Coins from a "Sold Out" Hopper

CAUTION
Never place your fingers in or near the coin dispense chute of the hopper.

Press and release the button marked "RESET/DUMP HOPPER" located on the bottom of the controller box. After a 5 second time delay, the hopper will rotate to dispense the coins remaining in the hopper dispensing disc. The hopper will stop when all coins have been cleared.

5.4 Hopper Indicator Lights

The Hopper indicator lights show the status of the hopper.

Power (GREEN LED)
ON Power is connected to the hopper
OFF No Power

Error (MIDDLE RED LED)
FLASHING ERROR: hopper lockup, or any other hopper error see hopper flash code table.
OFF Normal operation

Hopper Flash code table:

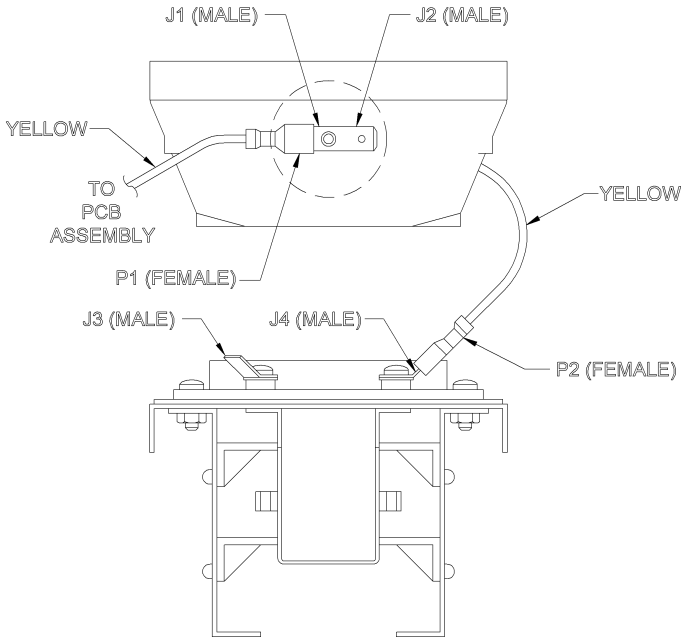
Flash code	Error
0	Normal Operation
1	Coin sensor blocked by coin or dirt
2	Hopper Lockup
3	Hopper Jackpot
5	Hopper Overpay
6	Coin sensor Blinded by excessive light

Coin (BOTTOM RED LED)
ON Normal - Flashes off when a coin passes through the interrupter

5.5 Optional Hopper Counter

The Optional Hopper Counter is a non-resetable counter that indicates the number of coins dispensed. One count equals one coin.

5.6 Hopper Soldout Configurations



NOTES:

Connections are shown as a standard hopper setup of a $20 soldout. To change connections remove the front cover plate from the hopper. The hopper must be empty before removing the cover plate.

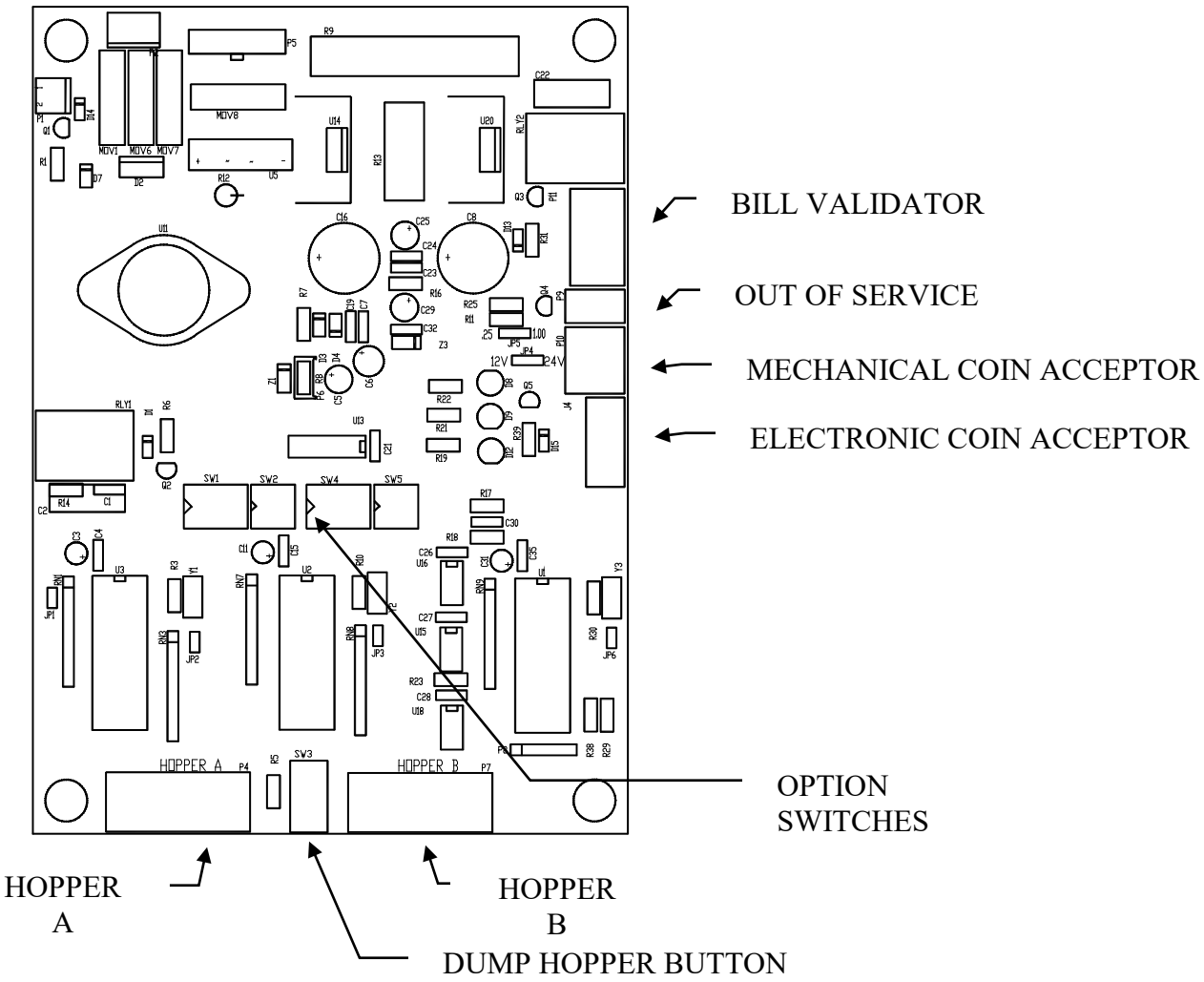
To set up for a $5 soldout condition, unplug P2 from J4 and connect P2 to J2.

To completely bypass the soldout contacts connect P1 to J3

6.0 Economy Changer System Controller

6.1 Description

The Economy Changer System controller interfaces the bill validator and/or the coin acceptor to the hoppers to form the complete changer. The system controller handles the payout options through a set of option switches. The system controller also keeps the total dollars accepted on a non-resetable counter.



6.2 Option Switches

The Economy Changer options are defined by the four sets of dip switches on the System Controller Board. The following pages have instructions for setting the option switches to your desired operation.

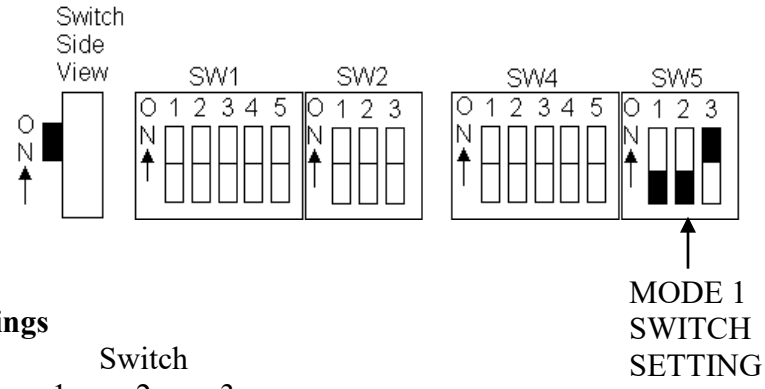
Use a small pointed object to move the switches to either ON or OFF position as needed.

IMPORTANT NOTE: After making any programming changes it is necessary to cycle power OFF then ON for the new programming to be implemented.

There are two program modes available in each model. To avoid any confusion, each program option is in a separate section of the manual. It is of the utmost importance that you choose the correct program, then set the switches from the corresponding instruction page. Option switches have different meaning depending on the programming modes. Note: if the option switches have been set to perform an illogical operation, an error will be displayed. See System Control Board Indicator Lights (section 4.8) for flash codes.

6.3 Programming Mode Switches

These switches determine if this is a change only machine (mode 1), or a token only machine (mode 2). Set these switches before proceeding to the next section. See the diagram below for the proper switch settings.

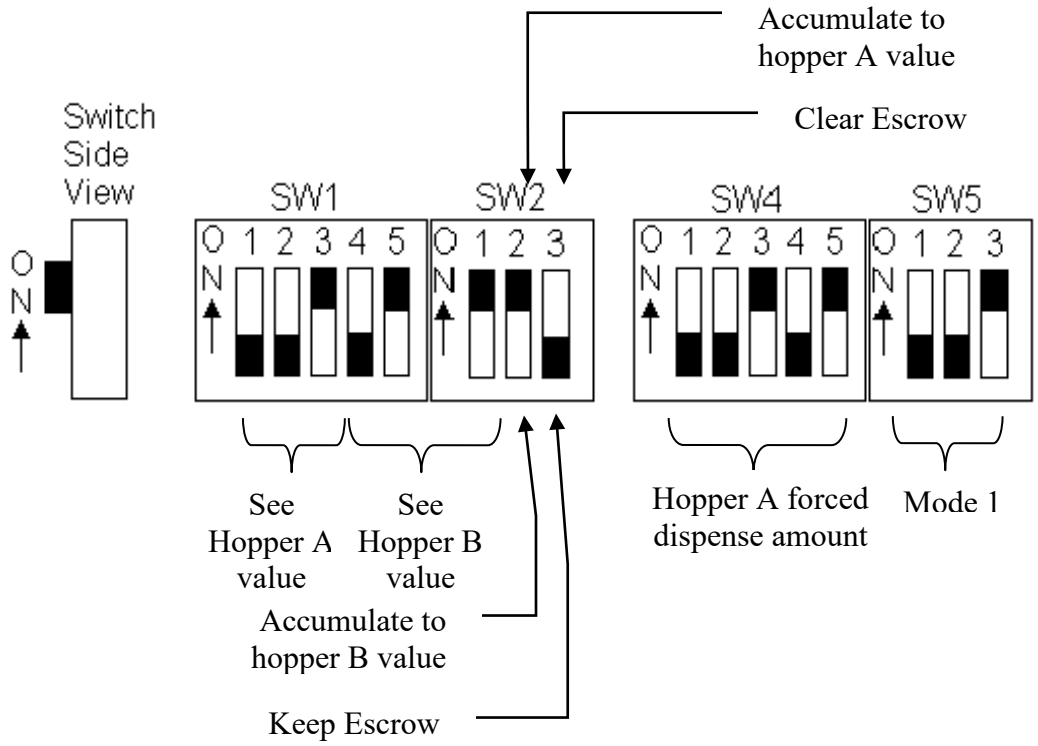


6.3.1 Mode Switch Settings

MODE	Switch 1	2	3
1 – Changer Mode	Off	Off	On
2 – Token Mode	Off	On	Off
3- Changer, Forced Dispense Override	Off	On	On

6.4 Programming Mode 1 (Change Machine Mode)

6.4.1 Programming Mode 1 Switch Diagram



6.4.2 Setting the Hopper Value

Each hopper must be valued so that the system control board will know how many coins to issue for each bill or coin accepted. If only one hopper is to be used, locate this hopper in position A and set the hopper B value to inactive. See the hopper value tables below to establish the hopper value settings. See the programming notes for special cases and additional information.

Hopper A Value Table

Value	SW1 Switch 1	SW1 Switch 2	SW1 Switch 3
Hopper Inactive	Off	Off	Off
$.05	Off	Off	On
$.10	Off	On	Off
$.25	Off	On	On
$1.00	On	Off	Off
$2.00	On	Off	On

Hopper B Value Table

Value	SW1 Switch 4	SW1 Switch 5	SW2 Switch 1
Hopper inactive	Off	Off	Off
$.05	Off	Off	On
$.10	Off	On	Off
$.25	Off	On	On
$1.00	On	Off	Off
$2.00	On	Off	On

Programming Notes:

The System Controller will report an illogical programming error if in a single hopper machine or a dual hopper machine all hopper values are set to $2.00, this is because it will not be possible to give change for a five dollar bill.

The maximum payout from any one hopper is 200 coins. This is done to limit the amount of coins dispensed if a system failure occurred.

Multiple hopper machines are equipped with an automatic hopper transfer feature. If one of the two hoppers cannot complete a vend for any reason, the remaining dispense amount is automatically transferred to the other hopper. This will continue until the second hopper becomes empty.

6.4.3 Setting the Accumulate Amount

The accumulate feature holds a customers deposits until they 'accumulate' to either the value of hopper A or hopper B. Once the value of the hopper has been reached a payout of one coin will occur from the selected hopper. See the following to set the accumulate hopper.

SW2 switch 2
ON – Accumulate value will be hopper A's coin value
OFF – Accumulate value will be hopper B's coin value

EXAMPLE: Hopper A value is set to $.25, hopper B value is set to $.05, and the accumulate amount is set to equal hopper A value. When the patron inserts a nickel and two dimes, one quarter will be paid out of hopper A. If three dimes are inserted payout will be 1 from hopper A and 1 from hopper B.

6.4.4 Escrow

Escrow is any amount still owed to the patron after a dispense is completed. This only applies to a transaction where the amount still owed does not equal at least the value of either hopper. This amount can be kept and applied to the value of the next transaction, or the change machine can clear and retain it after every coin dispense. See the following to set the Escrow.

SW2 switch 3
ON – Clear escrow amount from memory (overage is kept)
OFF – Keep the escrow amount in memory (overage is applied to the value of the next transaction)

EXAMPLE: Hopper A value is set to $.25 and hopper B value is set to $.25. The patron inserts three dimes. One quarter is paid out of hopper A. Since the patron inserted thirty cents the machine still owes them a nickel. The nickel is considered the escrow amount.

6.4.5 Setting the Hopper Dispense Amounts

If the same value coin is dispensed from the A and B hoppers, the pay out will be distributed equally from each hopper.

Example:
Hopper value settings:

- Hopper A =$.25
- Hopper B =$.25

$1 accepted: payout is 2 from hopper A and 2 from Hopper B.
$5 accepted: payout is 10 from hopper A and 10 from Hopper B.
$10 accepted: payout is 20 from hopper A and 20 from hopper B.
$20 accepted: payout is 40 from hopper A and 40 from hopper B.

6.4.6 Forced Dispense

If different valued coins are to be dispensed from hopper A and B, use SW4 to set the number of coins to be dispensed from hopper A. The remaining value will automatically be dispensed from hopper B. See the following table to set the hopper A forced dispense amount.

NOTE: if box is blank switch is OFF.

Hopper A Dispense amount	SW4 Switch				
	1	2	3	4	5
0					
1					On
2				On	
3				On	On
4			On		
5			On		On
6			On	On	
7			On	On	On
8		On			
9		On			On
10		On		On	
11		On		On	On
12		On	On		
13		On	On		On
14		On	On	On	
15		On	On	On	On

Hopper A Dispense amount	SW4 Switch				
	1	2	3	4	5
16	On				
17	On				On
18	On			On	
19	On			On	On
20	On		On		
21	On		On		On
22	On		On	On	
23	On		On	On	On
24	On	On			
25	On	On			On
26	On	On		On	
27	On	On		On	On
28	On	On	On		
29	On	On	On		On
30	On	On	On	On	
31	On	On	On	On	on

Example:
Hopper value settings:

- Hopper A = $.05
- Hopper B = $.25

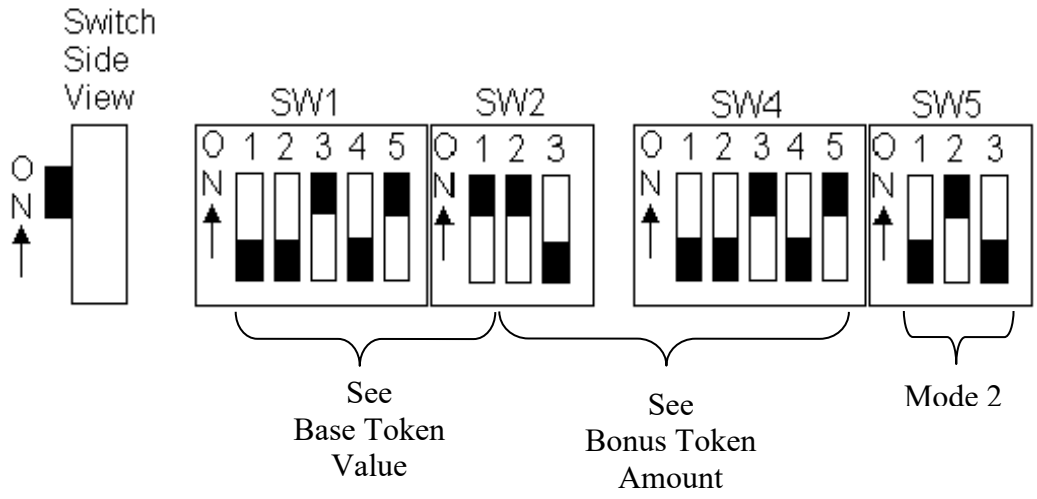
Hopper A dispense amount (SW4) = 5 (switch 3 – ON and Switch 5 – ON)
$1 accepted: payout is 5 from hopper A and 3 from Hopper B.
$5 accepted: payout is 5 from hopper A and 19 from Hopper B
$.25 accepted: payout is 5 from hopper A and 0 from Hopper B

Notes:

- If the hopper A dispense amount is set to zero the system controller will calculate the most efficient dispense amount (least number of coins) by vending as many of the highest valued coins, then vend the remaining balance from the lower valued hopper.
- In a single hopper machine, change is based on the value assigned to the hopper plugged in.

6.5 Programming Mode 2 (Token Machine Mode)

6.5.1 Programming Mode 2 Switch Diagram



6.5.2 Setting the Base Token Value

Use SW1 Switches 1-5 and SW2 switch 1 to set the base token value. (See Base Token Value Table) This is the value of a token. Bonus tokens are not considered during this step. In other words, if you sell one single token for twenty-five cents, the base value of the token is twenty-five cents. The extra tokens issued for larger bills are considered "Bonus" tokens.

When the Base Token Value is reached or exceeded, a payout will occur. Any money remaining after a dispense will be left in escrow for the next dispense. Escrow is any amount still owed to the patron after a dispense is completed. This only applies to a transaction where the amount still owed does not equal the base token value.

6.5.3 Setting the Bonus Token Amount

Use SW2 switches 2,3 and SW4 switches 1-5 to set the Bonus Token Amount. Bonus tokens are extra tokens paid for inserting larger denomination bills. To set the number of bonus tokens to be issued for each bill, find the desired amount in the bonus table and set the appropriate switches.

6.5.4 Base Token Value Table

NOTE: if box is blank switch setting is OFF

This table lists the most common settings. See Appendix E for other token values.

	SW1					SW2
Value	1	2	3	4	5	1
Hopper Inactive						
$.05						On
$.10					On	
$.25				On		On
$.50			On		On	
$1.00		On		On		
$2.00	On		On			

6.5.5 Bonus Token Amount Table

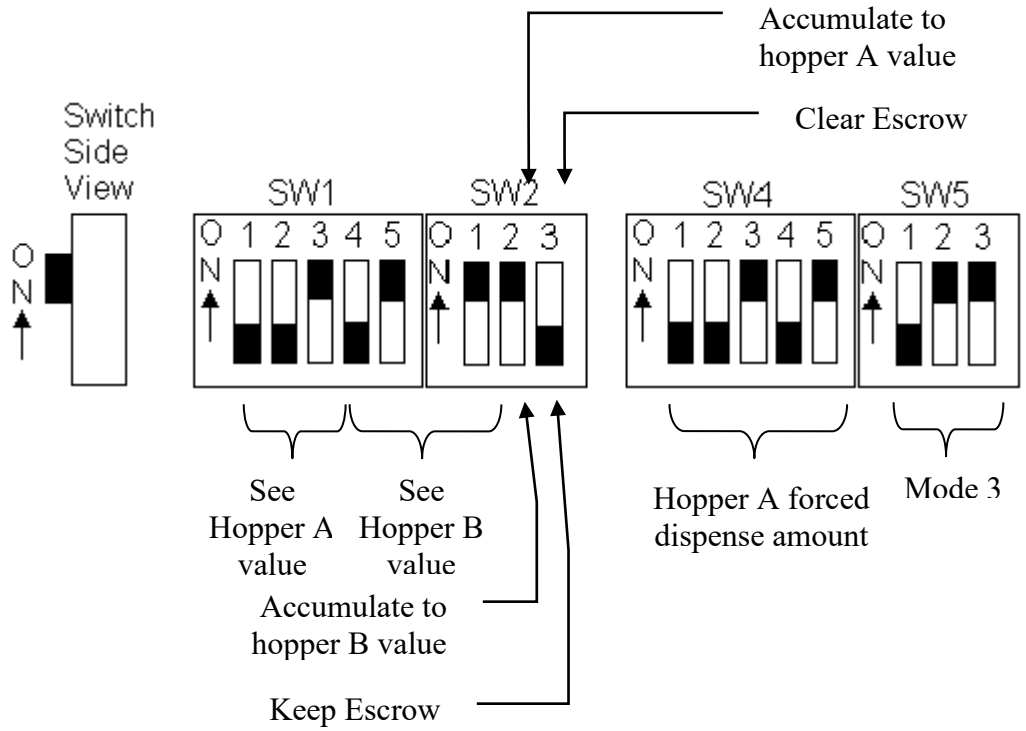
This table lists the most common settings. See Appendix F for other bonus dispense amounts.

NOTE: If box is blank switch setting is OFF

Bonus Dispense amount for:						SW2		SW4				
$1	$2	$5	$10	$20		2	3	1	2	3	4	5
0	0	0	0	0								
0	0	0	0	10								On
0	0	0	5	10					On			
0	0	0	5	20					On			On
0	0	1	2	5					On		On	On
0	0	1	3	6					On	On		On
0	0	1	5	12				On			On	On
0	0	3	7	15				On		On		
0	0	5	8	10				On		On		On
0	0	5	20	40				On		On	On	
0	1	1	6	11				On		On	On	On
0	1	2	4	8				On	On			

6.6 Programming Mode 3 (Changer, Forced Dispense Override)

6.6.1 Programming Mode 3 Switch Diagram



6.6.2 Setting the Hopper Value

This mode is essentially the same as Mode 1. The only exception is that the value of the bill or coin is compared to the values of both hoppers. If that value matches a hopper value a dispense is made from that hopper. In this way the hopper value overrides the forced dispense amount.

Example:
Hopper value settings:

- Hopper A = $.05
- Hopper B = $1.00
- Forced Dispense = 20

$1 accepted: payout is 0 from hopper A and 1 from hopper B.
$5 accepted: payout is 20 from hopper A and 4 from hopper B.
$.25 accepted: payout is 5 from hopper A and 0 from hopper B.

6.7 Intentionally left blank

6.8 System Control Board Indicator Lights

6.8.1 ORANGE LED (D12) See figure 4.8.1 for location

Steady Flashing	Normal Operation	
Steady ON	Out of Service	Option switches set incorrectly.
Intermittent Flashing	Flash Code	(see Flash Code table)

Flash Code Table (number of times ORANGE LED flashes)

Flash Code	Problem	Flash Code	Problem
1	Illogical switch settings or switch settings not supported	10	Error hopper B[1]
2	Sold out hopper B	11	Error hopper A[1]
3	Sold out hopper A	12	Error both hoppers[1]
4	Sold out both hoppers	14	Overpay[1]
6	No payout hopper B[1]		
7	No payout hopper A[1]		
8	No Payout both hoppers[1]		

1. System control board must be reset if one of these errors occurs.

Note: The System Controller can only store and display one error at a time when clearing errors test changer before putting it back into service for other possible problems.

6.8.2 GREEN LEDS (D8, D9) See figure 4.8.1 for location

ON Power good normal operation

Off No regulated 24Volts (D8), No regulated 5Volts (D9), Power off or Blown fuse.

6.9 Resetting the System Control Board

To reset the system control board to a known state and clear any error and erroneous data, press and hold the "RESET/DUMP HOPPER" button while turning power ON.

6.10 System Control Board Counter

The non-resetable counter on the System Control Board Indicates the total number of dollars accepted by the changer. One count equals one dollar.

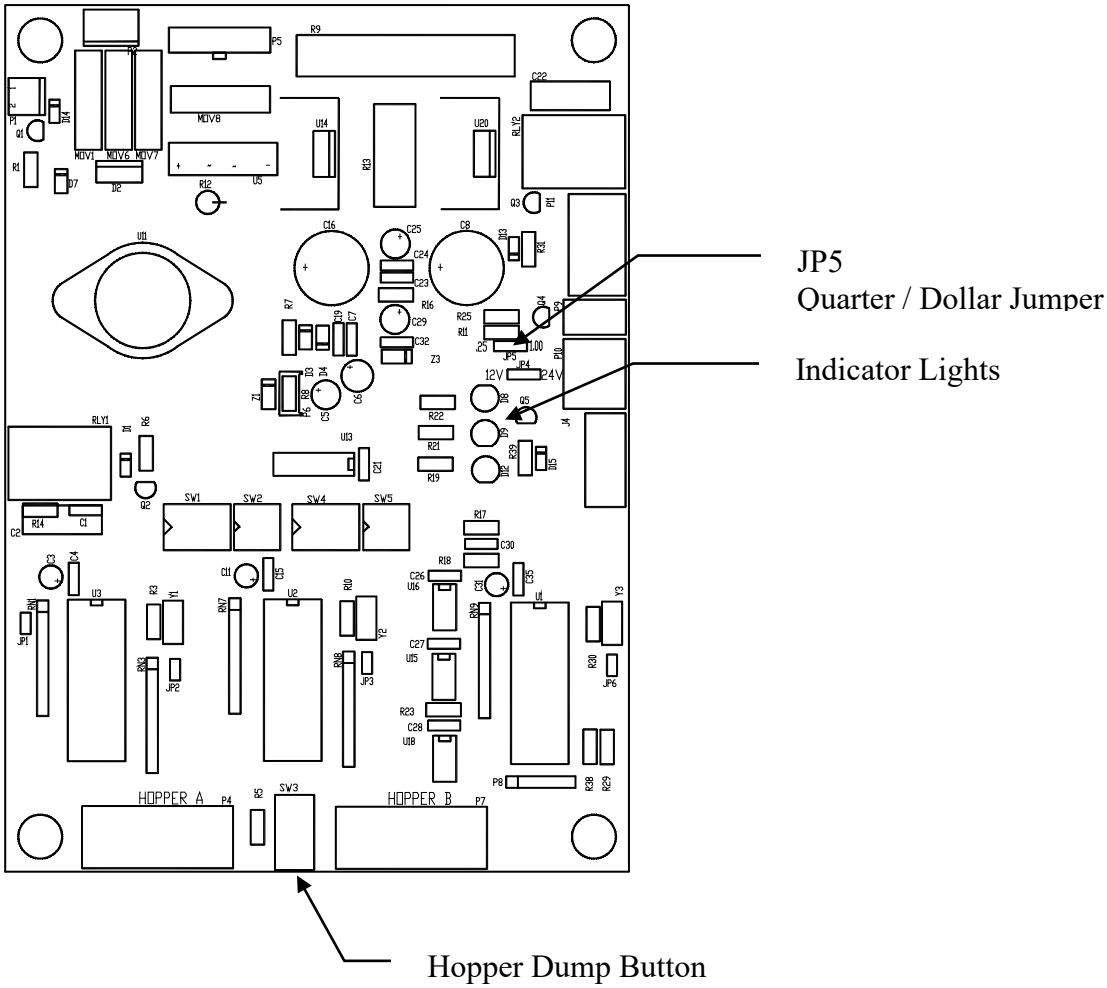
6.11 (JP5) Quarter / Dollar Jumper

Jumper JP5 is a factory set jumper when a mechanical coin acceptor is ordered with your machine. If a mechanical coin acceptor is ever field installed, this jumper must be set as follows. For a dollar coin only acceptor move the jumper to the right position. For a quarter only coin acceptor move the jumper to the left position. See figure 4.8.1 for jumper location. **Note:** The jumper has no effect if an electronic coin acceptor is installed or used.

6.12 System Control Board Fuse

The Primary AC fuse for both the controller board and the connected bill validator is located in the fuse holder located next to the power switch. **Be sure to disconnect AC power to the changer before changing the fuse.** Replace it with a 2 ampere 250V slow blow fuse.

Figure 4.8.1 System Controller diagram



7.0 Bill Validators

The Economy Changer is able to use most OEM style 110VAC pulse type bill validators. The pinouts for the cables supplied with Economy Changer are listed in Appendix G.

The following is list of Bill validators that will work in the Economy Changer:

Note: Some of these validators require power converters to work properly. Contact the bill validator manufacturer for a 110 VAC power converter.

Coinco	BA30B
	MAG50B
Cash Code	AMZ-USA-1100-UNV*
	AMZ-CAN-2100-UNV*
Mars	AL4 series*
	GL4 series*
	GL5 series*
	L005*
	VFM-1*
	VFM-2*
	VFM-3*
	VFM-4*
	VFM-5S*
Maka	NB-10*
	NB/NBE-20*
Dixie-Narco	USA-15*

* NOTE: These bill validators may require an optional universal interface cable kit SCM P/N 4K00304. The kit includes a multiplug cable and an 18-pin interface plug.

7.1 Coinco BA30 Information

BA30B Bill Acceptor
Installation & Operation Guide

With Multi-Drop Bus

General Information

This page contains general information on installing, operating and maintaining the BA30B Bill Acceptor. Taking time to read this information and becoming familiar with it will help you obtain the best performance from your BA30B.

The BA30B Bill Acceptor is designed to fit into existing standard openings established by change machine manufacturers. These mountings usually consist of four studs in the change machine to which the bill acceptor is mounted. If an additional mounting bracket and/or hardware is required, please contact your nearest Coinco office for additional kit information.

Installation and Operation

Before installing the BA30B bill acceptor into the changer, set the BA30B option switches, (if desired settings are different from those set at the factory.) The BA30B is currently set to accept all bills, face up in both directions. See "BA30B Option Switches" and "Setting Option Switches" sections for detailed information.

1. Always check that the door lock key(s) are not in the changer should you inadvertently lock the door.
2. Turn OFF change machine power.
3. Install the BA30B into mounting hole of change machine using the appropriate hardware.
4. Connect the BA30B power cable between the BA30B control box and the change machine.
5. Load the coin hopper(s) with coins.
6. Restore power to the change machine (BA30B stacker will cycle upon power-up).
7. Observe that power indicator light on back of BA30B control box is ON continuously. If light is off or blinking, check the following:

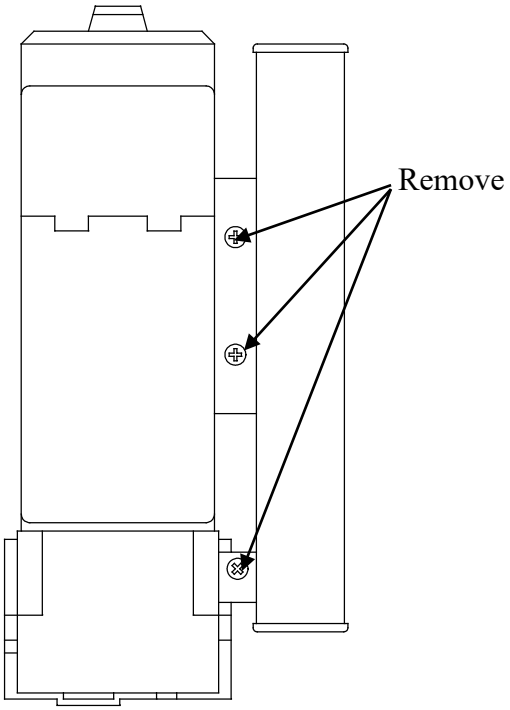
- Power to vendor.
- Coin dispenser levels.
- Changer does not have credit already established.

8. Close Door.
9. Insert a bill as shown on the front of the BA30B.
10. Bill will be accepted and stacked into the bill box.
11. Verify that the proper amount of change is returned.
12. Check the bill box to see that the bill is properly stored.

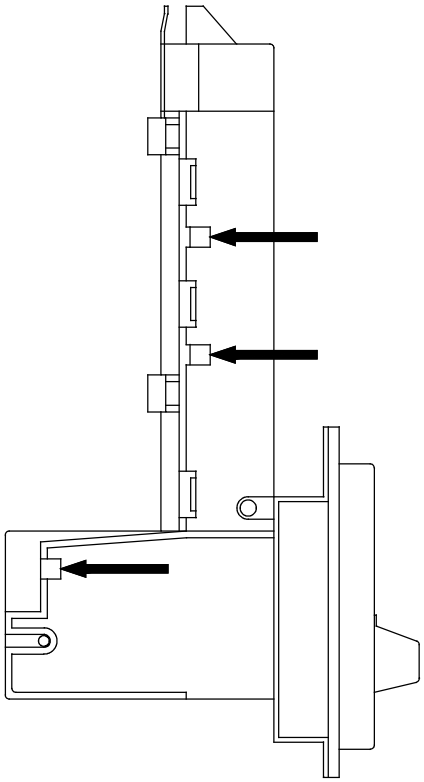
7.1.1 EC100 Installation

Note: On the EC100 model ONLY, the external CPU on the Coinco BA30B must be moved forward to allow the door to close properly. To do this first remove the three screws from the backside of the verifier holding the external CPU assembly on (step1). Next, reposition the external CPU assembly to the front side of the mounting holes and install the screws from the front side of the validator (step2). The Verifier can then be properly mounted to the cabinet door.

STEP 1
BACKSIDE

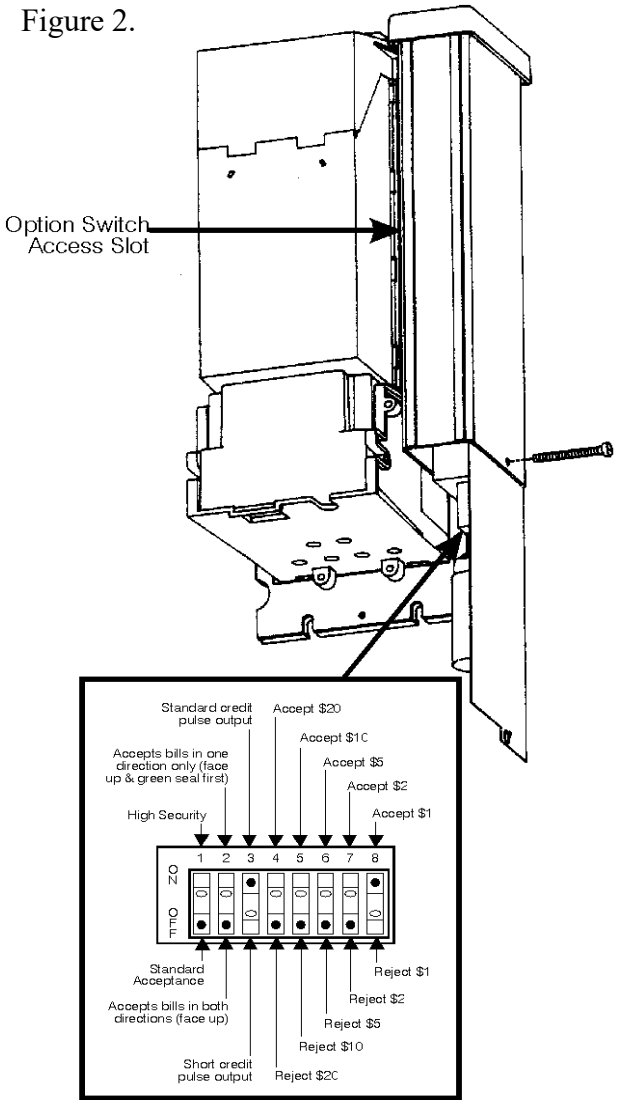


STEP 2
REASSEMBLY



BA30B Option Switches
The BA30B control board contains eight option switches. These switches allow the unit to be customized to the installation requirements. The BA30B option switches are pre-set at the factory and shipped with switches 3 and 8 set to the ON position. All other switches are off. When the top of the rocker switch is pushed in, it is set to the ON position. (See Figure 2 for option switch functions).

Figure 2.



Setting Option Switches
(See Figure 2)
Remove power to the BA30B. To access option switches, release control board and harness strain relief by removing retaining screw from bottom of cover. Carefully slide control board and strain relief from cover allowing strain relief to disengage from control board. Continue to slide control board from cover until option switches are accessible. Set option switches to desired settings and re-assemble unit in reverse order of disassembly.

Removing Accepted Bills
(See Figure 3)
Accepted bills may be removed from the BA30B by releasing the bill box lid exposing the bills for collection or by removing the bill box from the bill acceptor unit.

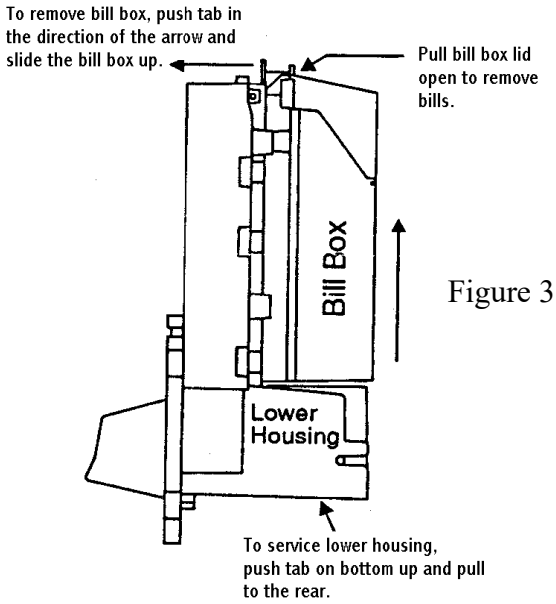


Figure 3.

Flash Codes
A steady light indicates normal operation.

1=Bill Box Full
2=Bill Box Off/Open
3=Check Bill Path
4=All Bill Accept Switches OFF
5=Bill Jam
6 or more=Reset or Service Required

Clearing Jams & Cleaning *(See Figure 3)*
Trapped bills/debris or dirt can result in poor bill acceptance or bill rejection. Remove bill box and lower housing to access bill path for clearing trapped bills or debris. Clean bill path plastic parts and belts with a cloth moistened with a mild soap and water solution. Clean the magnetic head and optic sensors using a swab and isopropyl alcohol. **Do not use any petroleum based cleaning solvents, scouring pads or stiff brushes for cleaning. The BA30B requires no lubrication at any time.**

7.2 Cash Code Brand Bill Validator Information

To interface to the Cash Code AMZ-USA-1100-UNV or the AMZ-CAN-2100-UNV validators, the following setting should be used for the "$1 = one Pulse" configuration. See the validator manual for full details. This verifier requires the cable SCM P/N 4C00230. The DIP switch settings should be:

8-Posistion Switch		4-position Switch	
1	on	1	off
2	on	2	off
3	on	3	off
4	on	4	off
5	off		
6	on		
7	off		
8	on		

Use the 4K00353 installation kit for the EC100, EC300RL and EC500RL.
Use the 4K00354 installation kit for the EC200 and EC400RL.
This verifier requires the cable SCM P/N 4C00230.
Also, specify a 600 or 1000 bill stacker for when ordering this verifier.

7.3 Mars AL4 and GL4 Bill Validator Information

To interface to the MARS AL4 or GL4 validators the following setting should be used for the "$1 = one Pulse" configuration. See the validator manual for full details. Requires optional universal interface cable kit SCM P/N 4K00304. The DIP switch settings should be:

8-Posistion Switch		4-position Switch	
1	on	1	off
2	on	2	off
3	on	3	off
4	on	4	off
5	on		
6	off		
7	on		
8	on		

7.4 Mars VFM-1 Bill Validator Information

To interface to the MARS VFM-1 validators the following setting should be used for the "$1 = one Pulse" configuration. See the validator manual for full details. Requires optional universal interface cable kit SCM P/N 4K00304. The DIP switch settings should be:

2-Posistion Switch
1 off
2 on

The 18-pin interface jumper plug should not be used.

The VFM-1 validator has different AC connections than other validators. To make it work the white/green neutral wire connected to pin 1 of the 9-pin connector must be cut. The top row of the connector consists of pins 1,2,and 3, the numbers are marked on the back of the connector. The wire colors are white/green, white/green, and white. TURN POWER OFF BEFORE CUTTING THE WIRING. The outlet might be wired reversed and the wire is actually hot. Cut the wire to pin 1 in the middle. That way the wire can be joined again if needed in the future. Put the supplied wire-nuts on cut ends of the wire to prevent them from shorting.

7.5 Mars VFM-2 Bill Validator Information

To interface to the VFM-2 validator the following setting should be used for the "$1 = one Pulse" configuration. See the validator manual for full details. Requires optional universal interface cable kit SCM P/N 4K00304. The DIP switch settings should be:

8-Posistion Switch
1 on
2 off
3 on
4 off
5 off
6 off
7 off
8 off

The 18-pin interface jumper plug should have all of the **BLACK** wires cut.

7.6 Mars VFM-3 and L005 Bill Validator Information

To interface to the VFM-3 or the L005 validator the following setting should be used for the "$1 = one Pulse" configuration. See the validator manual for full details. Requires optional universal interface cable kit SCM P/N 4K00304. The DIP switch settings should be:

8-Posistion Switch

1	off
2	off
3	off
4	off
5	off
6	on
7	on
8	off

The 18-pin interface jumper plug should have all of the **BLACK** wires cut and the **RED** wire cut.

7.7 Mars VFM-4 Bill Validator Information

To interface to the VFM-4 validator the following setting should be used for the "$1 = one Pulse" configuration. See the validator manual for full details. Requires optional universal interface cable kit SCM P/N 4K00304. The DIP switch settings should be:

8-Posistion Switch

1	on
2	off
3	on
4	on
5	on
6	off
7	off
8	off

The 18-pin interface jumper plug should have all of the **BLACK** wires cut.

7.8 Maka NB-10 Bill Validator Information

To interface to the Maka NB-10 validator the following setting should be used for the "$1 = one Pulse" configuration. Requires optional universal interface cable kit SCM P/N 4K00304. See the validator manual for full details.

The 18-pin interface jumper plug should not be used.

7.9 Maka NB/NBE-20 Bill Validator Information

To interface to the Maka NB/NBE-20 validator the following setting should be used for the "$1 = one Pulse" configuration. See the validator manual for full details. Requires optional universal interface cable kit SCM P/N 4K00304. The DIP switch settings should be:

6-Posistion Switch

1	on
2	on
3	off
4	off
5	off
6	off

The 18-pin interface jumper plug should have all of the **RED** wire cut.

7.10 Dixie-Narco USA-15 Bill Validator Information

To interface to the Dixie-Narco USA-15 validator the following setting should be used for the "$1 = one Pulse" configuration. See the validator manual for full details. Requires optional universal interface cable kit SCM P/N 4K00304.

The 18-pin interface jumper plug should not be used.

8.0 Part Ordering Information

To obtain service on a component or module please follow these instructions.

1. Locate the fault to a specific component or module.

2. Call your nearest Standard Change-Makers service center. You will need to give the service representative the following.

   MODEL NUMBER OF YOUR MACHINE
   SERIAL NUMBER OF YOUR MACHINE

3. If you cannot furnish these numbers it will be extremely difficult for the service department to help you. The serial number and model number is located on a label inside your machine. Service center phone numbers are given on the last page of this manual.

4. Turn OFF the AC power with the master switch located on the system controller box or at the fuse panel of your building. Remove the faulty component from the changer cabinet.

5. If the component is to be returned to the factory or service center, pack the component in the original packaging used when the unit was shipped from the factory. If the original packaging is not available, use a suitable substitute. Care should be taken to prevent damage to the components from electrostatic discharge and mechanical shipping damage.

NOTE: Please avoid the use of Styrofoam "peanuts" when packing. If peanuts are used, the component should be encased in a plastic bag to prevent clogging the mechanism.

8.1 Service Part Numbers

8.1.1 Interconnecting cables

Part Number	Description
4C00218	AC Power Cord 9’
4C00219	Controller to Hopper Cable
4C00228	Out Of Service cable
4C00224	Note Acceptor Cable (Standard)
4C00225	Note Acceptor Cable (Universal)
4C00227	Mechanical Coin Acceptor Cable
4C00196	Electronic Coin Acceptor Cable 60”
4C00229	18 Pin Interface Plug

8.1.2 Module Part Numbers

Part Number	Description
4E00292	System Controller PCB
5H00123	Quarter Hopper
5H00124	Dollar / Quarter Hopper
5C00126	ASAHI SEIKO Mechanical Coin Acceptor
5C00129	MARS Electronic Coin Acceptor
5V00203	COINCO Note Acceptor(US)
5V00204	MARS Note Acceptor(CANADIAN)

8.1.3 Coin Acceptor Kits

Kit includes coin acceptor, cable, and mounting hardware. Coin Acceptor Kit is for use with EC 200 models only.

Part Number	Description
4K00294	Mechanical Coin Acceptor (Asahi Seiko)
4K00295	Electronic Coin Acceptor (Mars)

8.1.4 Universal Note Acceptor Cable Kit

Kit includes a universal note acceptor cable and an 18-pin interface plug.

Part Number	Description
4K00304	Universal Note Acceptor Cable Kit

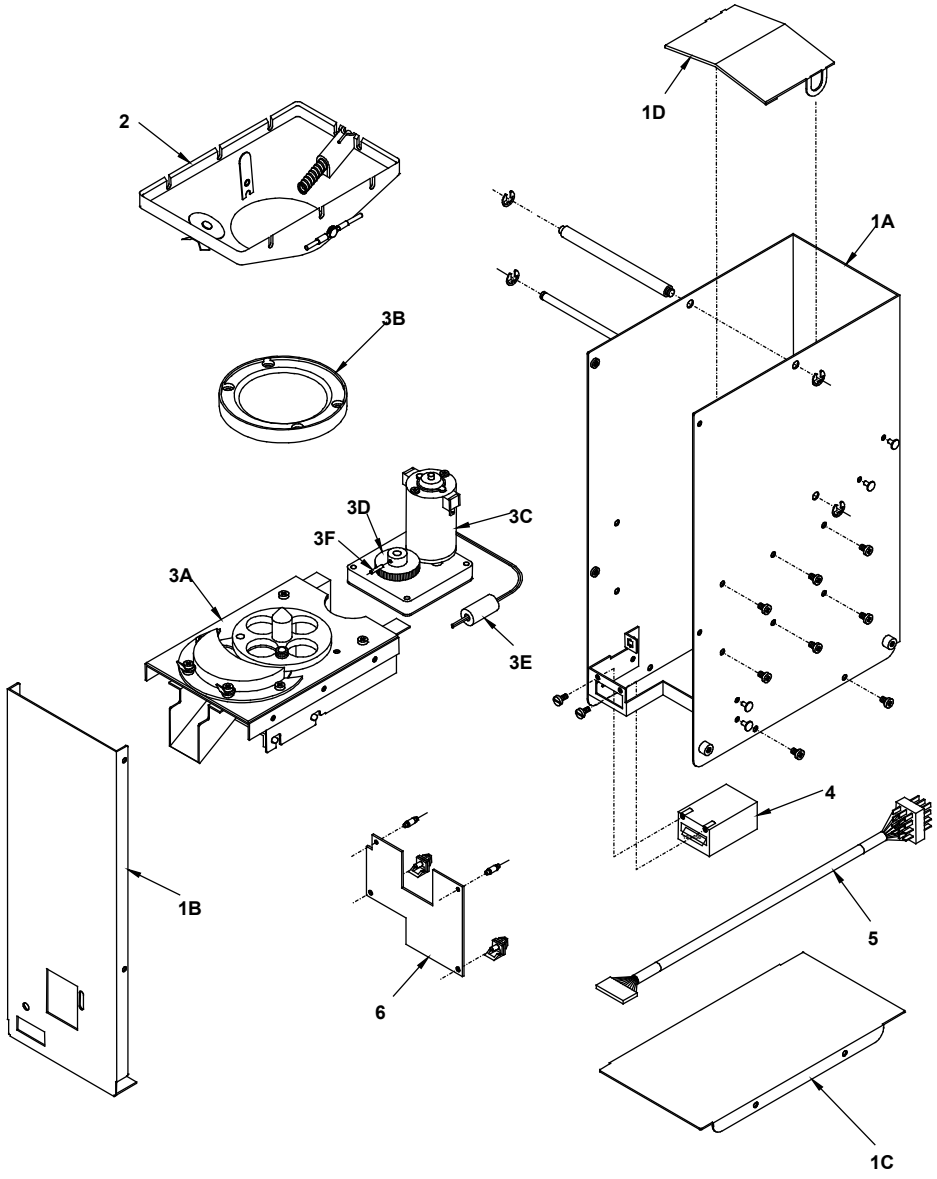
8.1.5 Miscellaneous Parts

Part Number	Description
1l00116	Out Of Service Lamp
1F00106	2AMP slow blow fuse

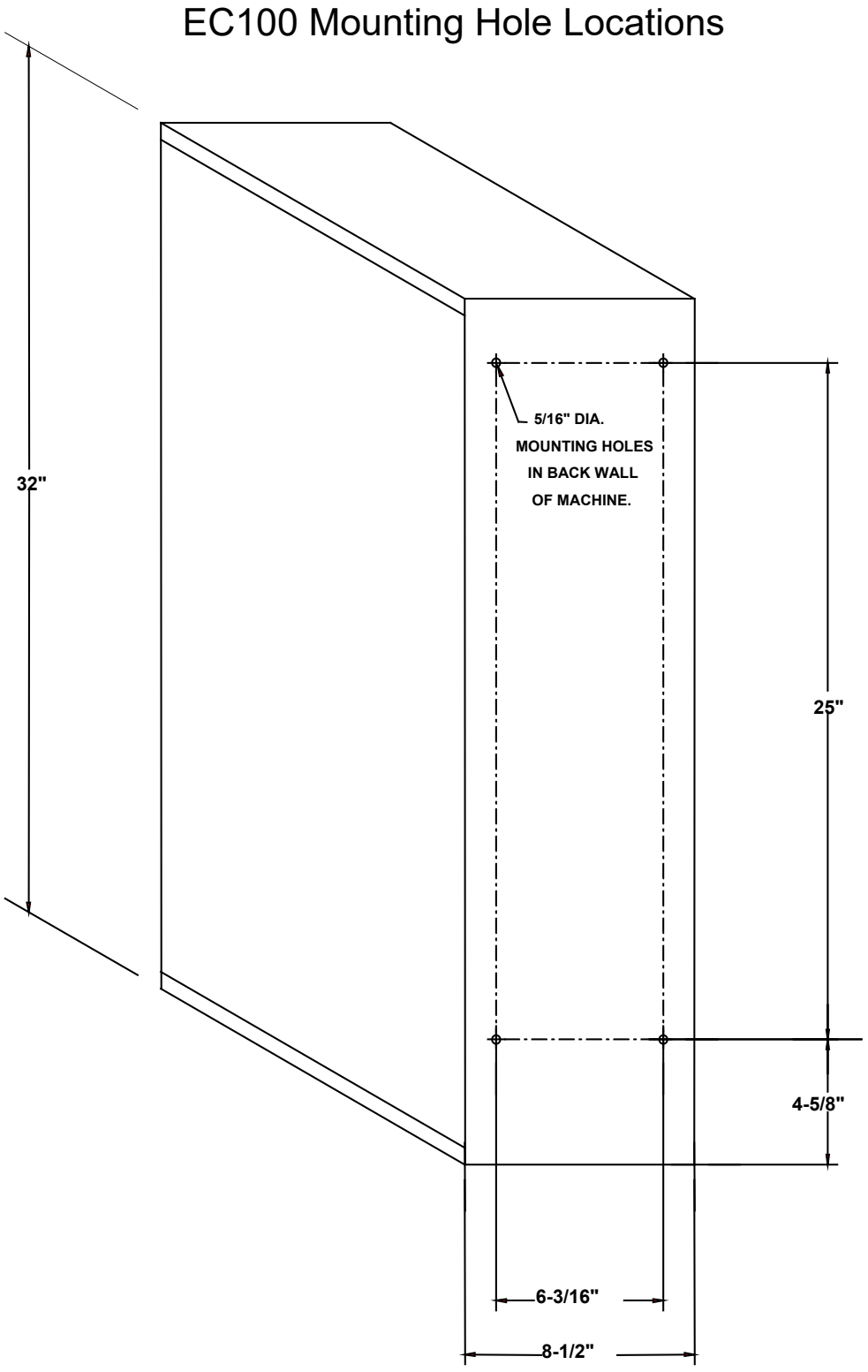
8.1.6 Hopper Part Numbers

Location	Part Number	Description
1A-1C	4M00533	Hopper Housing
2	4A00121	Hopper Funnel Assembly
Not shown	4C00221	Soldout Cable
3A	4M00533	Hopper Feed Mechanism – Quarter/Dollar*
3B	2P00105	Hopper Adapter Ring – Dollar*
3C	1M00112	Hopper Motor , DC
3D	2G00104	Motor Gear
3F	3P00102	Split Pin
3E	4C00220	Motor Harness
4	1E00110	Optional Counter
5	4C00217	Internal Hopper Cable
6	4E00287	Hopper PCB Assembly

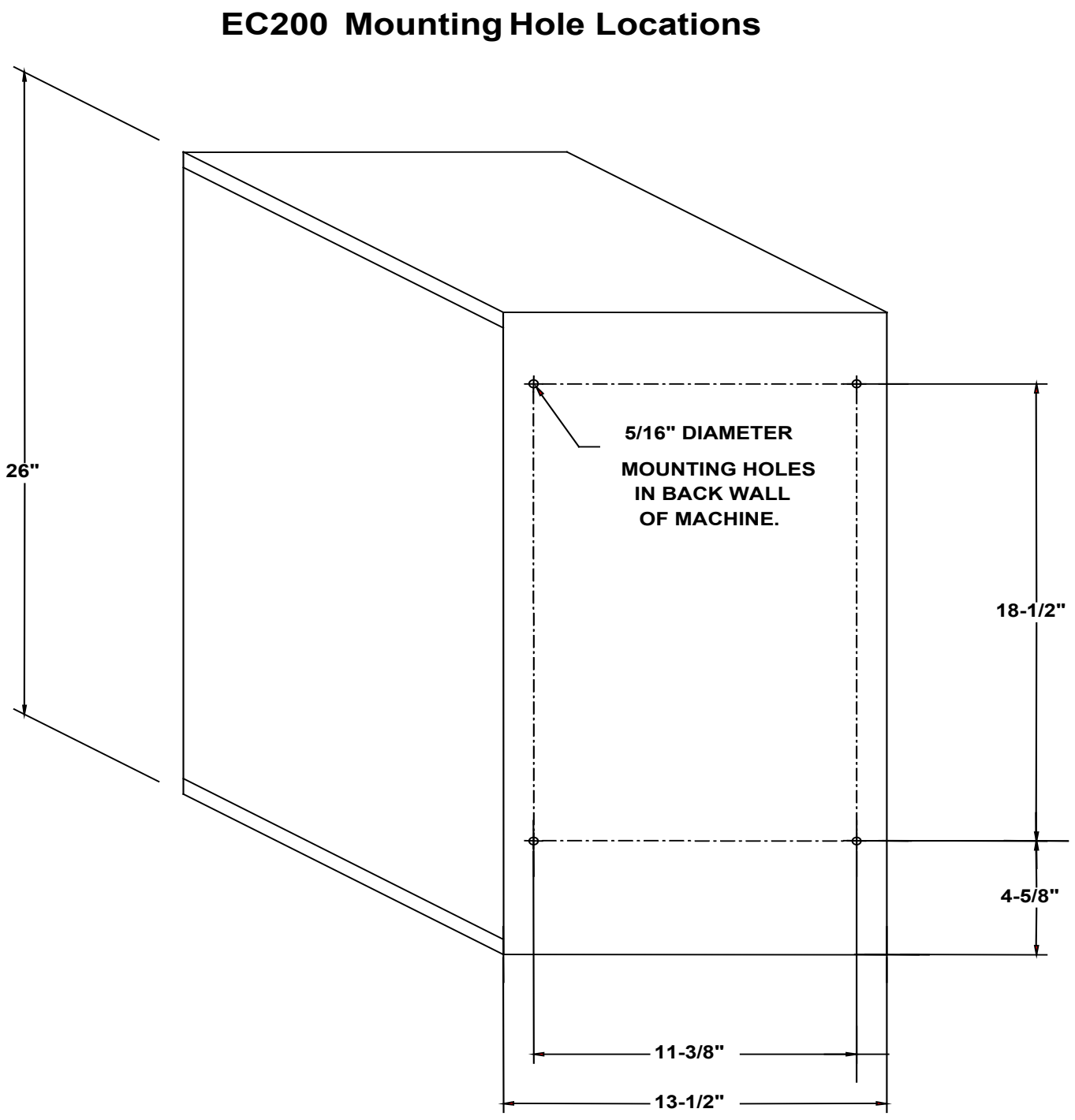
***For other dispense mechanical sizes all for correct order number.**



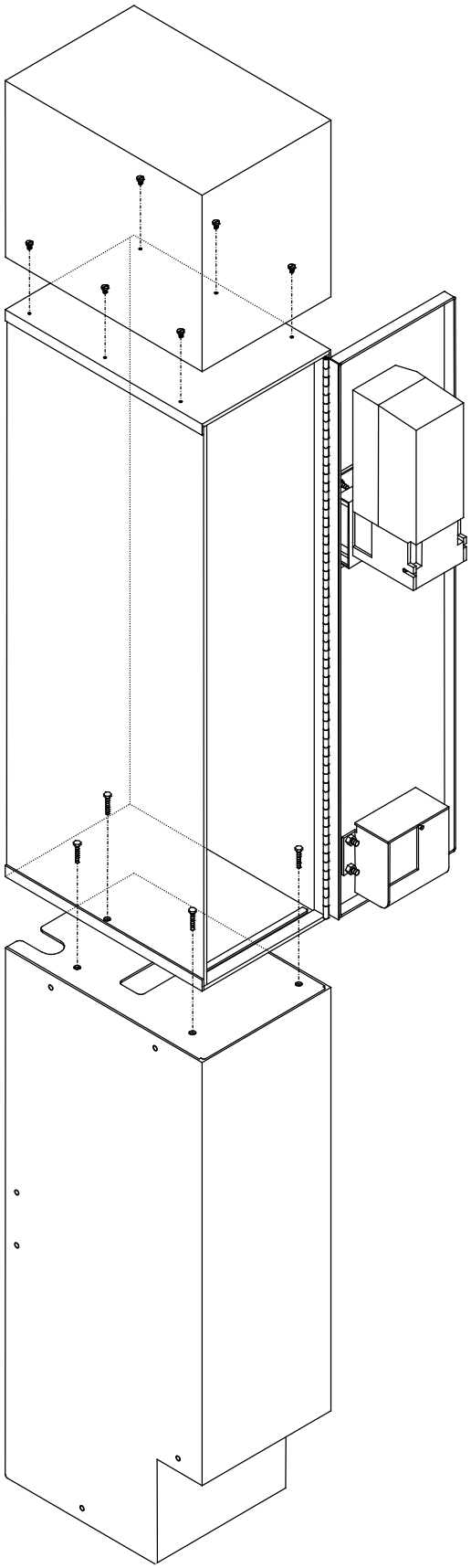
APPENDIX A: EC100 Cabinet Mounting Holes



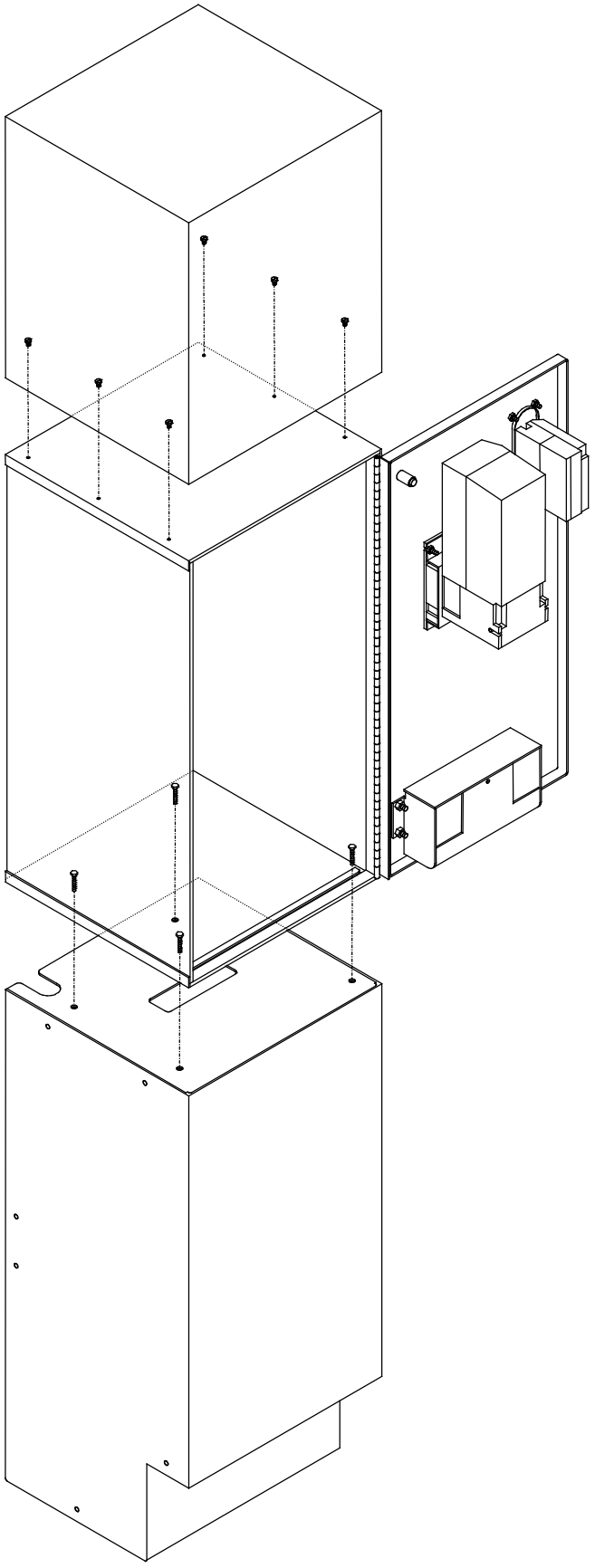
APPENDIX B: EC200 Cabinet Mounting Holes



APPENDIX C: EC100 Stand Assembly



APPENDIX D: EC200 Stand Assembly



APPENDIX E: Base Token Value Table

NOTE: if box is blank switch setting is OFF

			SW1			SW2
Value	1	2	3	4	5	1
Hopper Inactive						
$.05						On
$.10					On	
$.15					On	On
$.20				On		
$.25				On		On
$.30				On	On	
$.35				On	On	On
$.40			On			
$.45			On			On
$.50			On		On	
$.55			On		On	On
$.60			On	On		
$.65			On	On		On
$.70			On	On	On	
$.75			On	On	On	On
$.80		On				
$.85		On				On
$.90		On			On	
$.95		On			On	On
$1.00		On		On		
$1.05		On		On		On
$1.10		On		On	On	
$1.15		On		On	On	On
$1.20		On	On			
$1.25		On	On			On
$1.30		On	On		On	
$1.35		On	On		On	On
$1.40		On	On	On		
$1.45		On	On	On		On
$1.50		On	On	On	On	
$1.55		On	On	On	On	On
$1.60	On					
$1.65	On					On
$1.70	On				On	
$1.75	On				On	On
$1.80	On			On		
$1.85	On			On		On
$1.90	On			On	On	
$1.95	On			On	On	On
$2.00	On		On			

APPENDIX F: Bonus Token Amount Table

NOTE: if box is blank switch setting is OFF

Bonus Dispense amount for:						SW2		SW4				
$1	$2	$5	$10	$20		2	3	1	2	3	4	5
0	0	0	0	0								
0	0	0	0	10								On
0	0	0	1	2							On	
0	0	0	1	3							On	On
0	0	0	1	4						On		
0	0	0	2	4						On		On
0	0	0	2	5						On	On	
0	0	0	2	6						On	On	On
0	0	0	5	10					On			
0	0	0	5	20					On			On
0	0	1	2	4					On		On	
0	0	1	2	5					On		On	On
0	0	1	2	6					On	On		
0	0	1	3	6					On	On		On
0	0	1	3	7					On	On	On	
0	0	1	3	8					On	On	On	On
0	0	1	4	8				On				
0	0	1	4	9				On				On
0	0	1	4	10				On			On	
0	0	1	5	12				On			On	On
0	0	3	7	15				On		On		
0	0	5	8	10				On		On		On
0	0	5	20	40				On		On	On	
0	1	1	6	11				On		On	On	On
0	1	2	4	8				On	On			
0	1	2	5	10				On	On			On
0	1	2	5	11				On	On		On	
0	1	2	5	12				On	On		On	On
0	1	2	6	12				On	On	On		
0	1	2	6	14				On	On	On		On
0	1	2	6	15				On	On	On	On	
0	1	3	6	12				On	On	On	On	On
0	1	3	7	14			On					
0	1	3	7	15			On					On
0	1	3	7	16			On				On	
0	1	3	8	16			On				On	On
0	1	3	8	17			On			On		
0	2	5	10	20			On			On		On
0	2	5	10	21			On			On	On	
0	2	5	10	22			On			On	On	On
0	2	5	11	22			On		On			
0	2	5	11	23			On		On			On
0	2	5	11	24			On		On		On	
0	2	5	12	24			On		On		On	On
0	2	5	12	25			On		On	On		
0	2	5	12	26			On		On	On		On
0	2	6	12	24			On		On	On	On	
0	2	6	12	25			On		On	On	On	On
0	2	6	12	26			On	On				
0	2	6	14	28			On	On				On

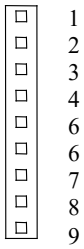
APPENDIX F Bonus Table Continued:

Bonus Dispense amount for:						SW2		SW4				
$1	$2	$5	$10	$20		2	3	1	2	3	4	5
0	2	6	14	29			On	On			On	
0	2	6	14	30			On	On			On	On
0	2	7	14	28			On	On		On		
0	2	7	14	29			On	On		On		On
0	2	7	14	30			On	On		On	On	
0	2	7	15	30			On	On		On	On	On
0	2	7	15	31			On	On	On			
0	2	7	15	32			On	On	On			On
0	2	7	15	33			On	On	On		On	
0	2	7	16	32			On	On	On		On	On
0	2	7	16	33			On	On	On	On		
0	2	7	16	34			On	On	On	On		On
0	2	7	16	35			On	On	On	On	On	
1	2	5	10	20			On	On	On	On	On	On
1	2	5	10	21		On						
1	2	5	10	22		On						On
1	2	5	10	23		On					On	
1	2	5	10	24		On					On	On
1	2	5	11	22		On				On		
1	2	5	11	23		On				On		On
1	2	5	12	24		On				On	On	
1	2	5	12	25		On				On	On	On
1	2	6	12	24		On			On			
1	2	6	12	25		On			On			On
1	2	6	13	26		On			On		On	
1	2	6	13	27		On			On		On	On
1	2	6	14	28		On			On	On		
1	2	7	14	28		On			On	On		On
1	2	7	14	29		On			On	On	On	
1	2	7	14	30		On			On	On	On	On
1	2	7	15	30		On		On				
1	2	7	15	31		On		On				On
1	3	6	12	24		On		On			On	
1	3	6	12	25		On		On			On	On
1	3	6	12	26		On		On		On		
1	3	6	12	27		On		On		On		On
1	3	6	14	28		On		On		On	On	
1	3	6	14	29		On		On		On	On	On
1	3	6	14	30		On		On	On			
0	0	0	10	20		On		On	On			On
0	0	0	12	24		On		On	On		On	

APPENDIX G: Cable Pinouts

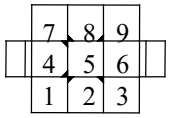
This appendix shows the connector pinout at the bill validator end of the Economy Changer cables. **Note:** Connectors are not on all cables.

Connector
Molex 09-50-3091



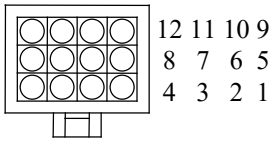
Pin	Wire Color	Function
1	Gray	Ground
2	Brown	Note acceptor pulse output
3		
4		
5	White/green	110VAC Neutral
6		
7		
8	White	Note acceptor Inhibit 110VAC HOT
9	Black	110VAC Hot

Connector
AMP 172161-1



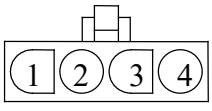
Pin	Wire Color	Function
1	White/green	110VAC Neutral
2	White/green	110VAC Neutral
3	White	Note acceptor Inhibit 110VAC HOT
4	White	Note acceptor Inhibit 110VAC HOT
5		
6	White/green	110VAC Neutral
7	Brown	Note acceptor pulse output
8	Gray	Ground
9		

Connector
AMP 172170-1



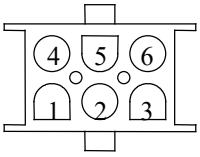
Pin	Wire Color	Function
1	Black	110VAC Hot
2	White/green	110VAC Neutral
3		
4	Brown	Note acceptor pulse output
5	Gray	Ground
6		
7	White	Note acceptor Inhibit 110VAC HOT
8	White/green	110VAC Neutral
9		
10		
11		
12		

Connector
Molex 19-09-1049



Pin	Wire Color	Function
1	Black	110VAC Hot
2	White/green	110VAC Neutral
3	White	Note acceptor Inhibit 110VAC HOT
4		

Connector
AMP 1-480705-0



Pin	Wire Color	Function
1	Brown	Note acceptor pulse output
2	Gray	Ground
3		
4		
5		
6		

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800-968-6955
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WEB: www.standardchange.com

Record these numbers here for use when ordering parts.

Serial #_____

Model #_____