VALICHANGER
OPERATIONS MANUAL
SERIES AC500

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*CoinCo branches and Service Centers are
listed at the back of this manual (pg. 24).*

Rev. UNCG-1A-F06 6.17.05

Specifications

Operating voltage	120 VAC +10/-15 %
Power consumption	Controller: 10W, Hopper: 22W Max
	Validator: MAG=60W Max
Operating temperature	32 - 130 degrees Fahrenheit
Interface to Hopper	24Vdc, Pulse
Interface to Validators	24Vdc, MDB Protocol

Warranty
CoinCo MAGPRO Series Validators are under warranty
for two years from date of purchase.

COVERED
¥ Defects in workmanship or materials
NOT COVERED
¥ Damage caused by physical abuse
¥ Misapplication
¥ Vandalism
¥ End user's attempt to repair item on his own
¥ Cleaning & maintenance

*It is the End User's responsibility to follow cleaning &
maintenance procedures outlined on pages 21 and 22.
Any unit coming in for repair requiring only a cleaning will
be charged a flat rate of $65.00 plus shipping and handling.*

Dispensing System and Logic Board
The coin dispenser and logic board are under warranty for one
year from date of purchase.

COVERED
¥ Defects in workmanship or materials
NOT COVERED
¥ Damage caused by physical abuse
¥ Misapplication
¥ Vandalism
¥ End user's attempt to repair item on his own

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

Attention Please:

To ensure the most trouble-free machine operation, we recommend plugging all our machines into a DEDICATED AC outlet. (This means there are no other machines on location plugged into the same AC line.) A simple way to check if this is true is to turn off the breaker at the fuse box associated with our machine. No other machines on location should lose power or turn off.

If this is a concern for your area of business, we recommend purchasing a surge protector locally **NOTE: A POWER STRIP IS NOT A SURGE PROTECTOR**.

AC _____ S/N# _____

Tested By _____

Date _____

**Thank You,
American Changer Corp.**

UNCRATING AND SET-UP

Remove your AC500 Series changer from the shipping box. Open the door. (*The T-handle is a screw-in type and therefore, must be turned at least 10 times counter-clockwise until it opens*.) Inspect 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 the lock, insert the cylinder into the round hole in the middle of the T-handle and push until it stops. Now turn the key and lock until you hear it "snap." Turn the key counter-clockwise ¼ turn and remove the keys.

NOTE: The only way to get a duplicate set of keys made is to save the red tag that comes between the keys. This ID # starts with "ACC ####".
Write your Key # here "ACC_____".
ALL KEY ORDERS TAKE 4-6 WEEKS!!!

TEST:
Before permanently installing the changer, do a functional test to verify that there is no shipping damage to your new changer(s).

Plug the power cord into a *grounded 120vac outlet*. **The MLB programming is preset for a default 4 coin per dollar pay-out of the hopper, and the Bill validator is ready to accept $1, $5, and $10 dollar bills.**

Fill the hopper with at least 40 coins. On the Power Supply board turn the switch on the bottom right corner "ON". *The rocker switch has a "1" and "0" printed on it. When the "1" is pressed down the changer is "ON".*

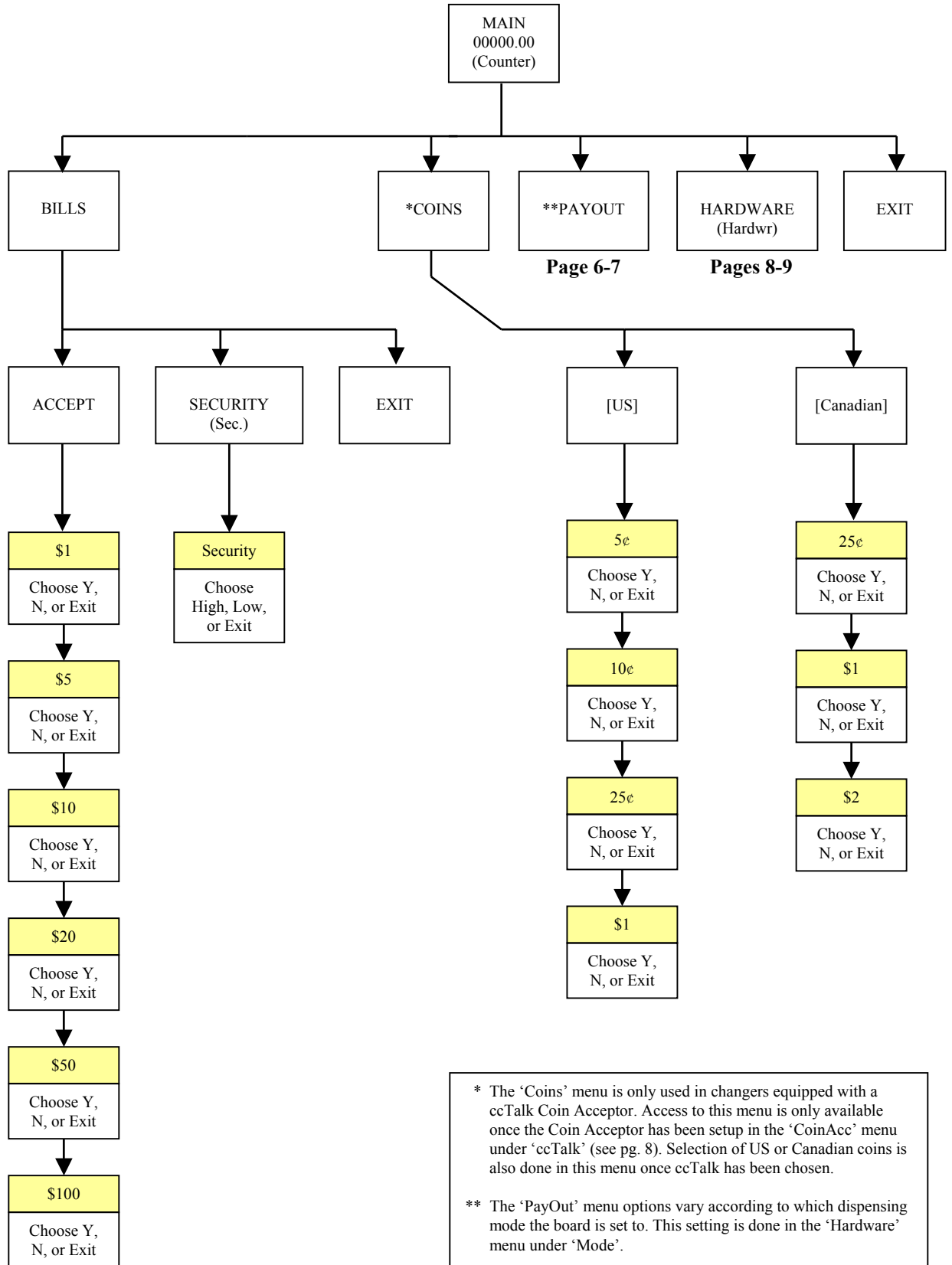### MOUNTING THE AC500 TO A WALL

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 to the series 500 changer. (Unplug AC Line cord from the Power Module Board and from the wall)
2. Slide the hopper out of the cabinet.
3. Note: You will need to verify with the building code to see if it is allowable to plug the changer into a 3 prong grounded outlet. If it is not, there must be 120VAC run through conduit or other means to meet local codes to the changer. If it is not required, proceed to step #6.
4. Let the electrician run the conduit, install the new breaker, wire and help decide how the wiring will enter the changer (from the back or the bottom). This will affect the mounting location.
5. After the conduit has been installed, proceed with the mounting.

6. Locate the 4 punch-outs on the back or side wall of the changer. Using a screwdriver and hammer knock the punch-outs out by hitting them from the inside of the changer.
7. Find an appropriate wall to bolt the changer into. The wall should have studs or be constructed of concrete. Consult a professional with any questions you may have.
8. *NOTE: HANGING THE CHANGER FROM LESS THAN THOSE HOLES PROVIDED MAY BE DANGEROUS. EACH HOLE NEEDS A BOLT THROUGH IT MOUNTED SECURELY TO THE WALL. MOUNTING THE CHANGER IN ANY OTHER WAY MAY RESULT IN THE CHANGER BEING TORN OFF OR FALLING OFF THE WALL RESULTING IN PERSONAL OR CUSTOMER INJURY ALONG WITH ELECTRICAL SHOCK.*
9. Choose a height to mount the changer keeping 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.)
10. Have someone hold the changer against the wall while someone else marks the holes. **CAUTION:** *THE CHANGER WEIGHS 37 POUNDS; DO NOT EXERT YOURSELF SO THAT YOU MAY CAUSE AN INJURY.*
11. *BEFORE DRILLING THE MARKED HOLES, ENSURE THAT THERE ARE NO ELECTRICAL WIRES, TELEPHONE LINES, GAS OR WATER LINES BEHIND THE WALL WHICH DISRUPTING MAY CAUSE A LOSS OF LIFE OR PERSONAL INJURY!*
12. Hold the changer back up to the wall. Thread and tighten bolts.
13. Verify that the machine is securely mounted.
14. If the changer is permanently connected through a conduit, proceed to step #16.
15. Feed the AC line cord out the bottom or the back of the changer by moving the 'L' bracket if necessary, and then perform the following.
    A. Plug the male end into the AC wall outlet. *Do not use an extension cord unless allowed by the building electrical code*.
    B. Installation is finished and you can proceed to the "Programming the Changer" section.
16. In order to continue you will need to purchase numerous electrical components. We highly recommend HIRING a qualified electrician to perform the following!
    A. Install the conduit box on the conduit entering the cabinet in the lower back or bottom of the cabinet.
    B. Secure the 3 wires (hot, neutral, and ground) to the AC wall outlet and the ground wire should also be directly attached to the cabinet ground terminal.
    C. Plug the male end into the AC outlet just installed.
    D. Properly fold the line cord to avoid sharp corners and any other damage.
    Proceed to the "Programming the Changer" section.

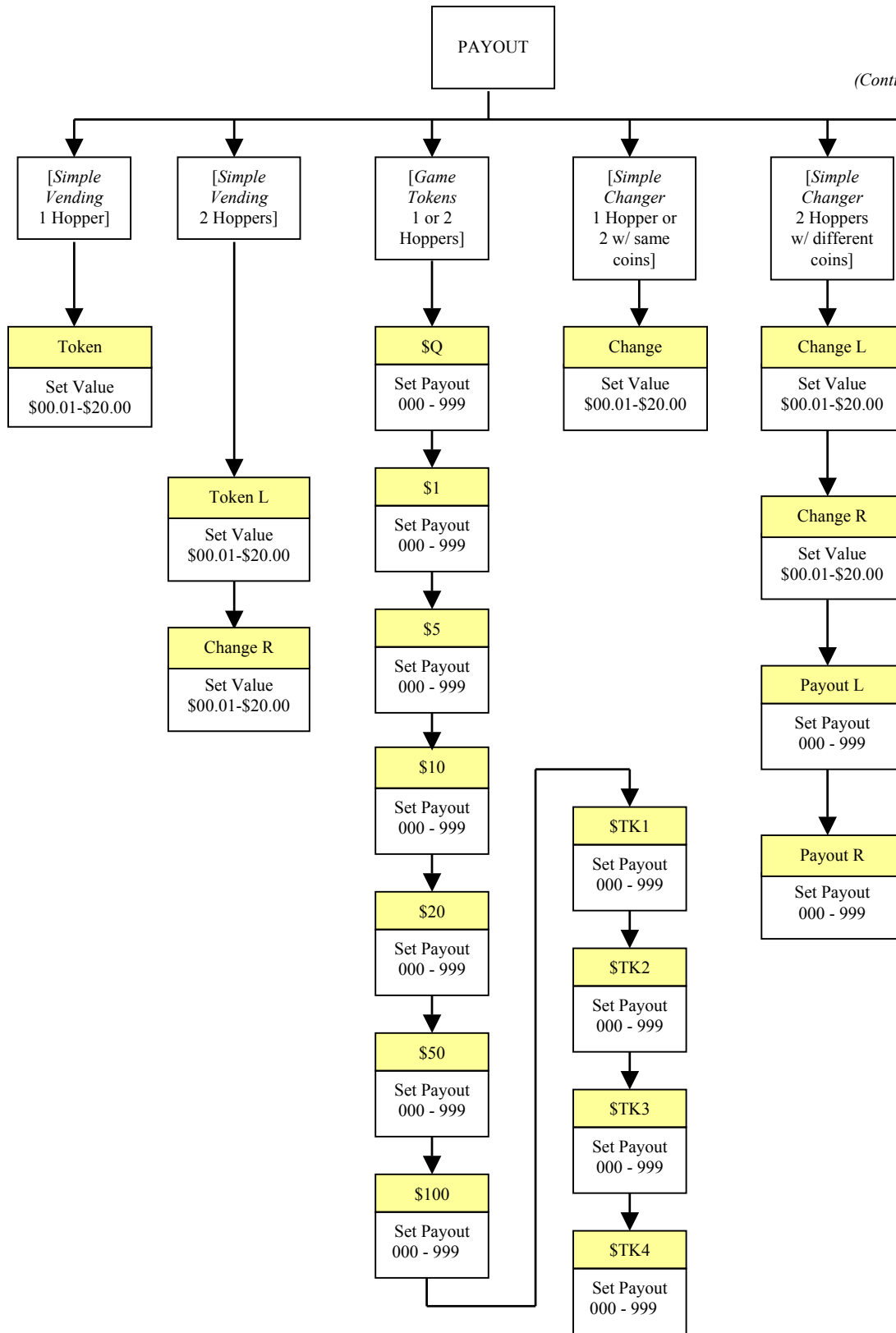# PROGRAMMING THE AC500 SERIES CHANGER

AC500 SERIES CHANGER PROGRAM FLOW CHART

```
                         ┌─────────────┐
                         │    MAIN     │
                         │  00000.00   │
                         │  (Counter)  │
                         └─────────────┘
```

BILLS	*COINS	**PAYOUT	HARDWARE (Hardwr)	EXIT
		Page 6-7	**Pages 8-9**	

ACCEPT	SECURITY (Sec.)	EXIT	[US]	[Canadian]

$1	Security		5¢	25¢
Choose Y, N, or Exit	Choose High, Low, or Exit		Choose Y, N, or Exit	Choose Y, N, or Exit

$5			10¢	$1
Choose Y, N, or Exit			Choose Y, N, or Exit	Choose Y, N, or Exit

$10			25¢	$2
Choose Y, N, or Exit			Choose Y, N, or Exit	Choose Y, N, or Exit

$20			$1	
Choose Y, N, or Exit			Choose Y, N, or Exit	

$50
Choose Y, N, or Exit

$100
Choose Y, N, or Exit

---

* The 'Coins' menu is only used in changers equipped with a ccTalk Coin Acceptor. Access to this menu is only available once the Coin Acceptor has been setup in the 'CoinAcc' menu under 'ccTalk' (see pg. 8). Selection of US or Canadian coins is also done in this menu once ccTalk has been chosen.

** The 'PayOut' menu options vary according to which dispensing mode the board is set to. This setting is done in the 'Hardware' menu under 'Mode'.

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AC500 SERIES CHANGER PROGRAM FLOW CHART

PAYOUT

[*Simple Vending 1 Hopper*]

[*Simple Vending 2 Hoppers*]

[*Game Tokens 1 or 2 Hoppers*]

[*Simple Changer 1 Hopper or 2 w/ same coins*]

[*Simple Changer 2 Hoppers w/ different coins*]

Token
Set Value
$00.01-$20.00

$Q
Set Payout
000 - 999

Change
Set Value
$00.01-$20.00

Change L
Set Value
$00.01-$20.00

Token L
Set Value
$00.01-$20.00

$1
Set Payout
000 - 999

Change R
Set Value
$00.01-$20.00

Change R
Set Value
$00.01-$20.00

$5
Set Payout
000 - 999

Payout L
Set Payout
000 - 999

$10
Set Payout
000 - 999

$TK1
Set Payout
000 - 999

Payout R
Set Payout
000 - 999

$20
Set Payout
000 - 999

$TK2
Set Payout
000 - 999

$50
Set Payout
000 - 999

$TK3
Set Payout
000 - 999

$100
Set Payout
000 - 999

$TK4
Set Payout
000 - 999

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AC500 SERIES CHANGER PROGRAM FLOW CHART

PAYOUT

[*Advanced Changer 2 Hoppers w/ different coins*]

Change L
Set Value $00.01-$20.00

Change R
Set Value $00.01-$20.00

$Q L
Set Payout 000 - 999

$Q R
Set Payout 000 - 999

$1 L
Set Payout 000 - 999

$1 R
Set Payout 000 - 999

$5 L
Set Payout 000 - 999

$5 R
Set Payout 000 - 999

$10 L
Set Payout 000 - 999

$10 R
Set Payout 000 - 999

$20 L
Set Payout 000 - 999

$20 R
Set Payout 000 - 999

$50 L
Set Payout 000 - 999

$50 R
Set Payout 000 - 999

$100 L
Set Payout 000 - 999

$100 R
Set Payout 000 - 999

[*Advanced Vending 1 Hopper or 2 w/ same tokens*]

Token
Set Value $00.01-$20.00

$1
Set Payout 000 - 999

$5
Set Payout 000 - 999

$10
Set Payout 000 - 999

$20
Set Payout 000 - 999

$50
Set Payout 000 - 999

$100
Set Payout 000 - 999

[*Advanced Vending 2 Hoppers: tokens L & coins R*]

Token L
Set Value $00.01-$20.00

Change R
Set Value $00.01-$20.00

$1 L
Set Payout 000 - 999

$1 R
Set Payout 000 - 999

$5 L
Set Payout 000 - 999

$5 R
Set Payout 000 - 999

$10 L
Set Payout 000 - 999

$10 R
Set Payout 000 - 999

$20 L
Set Payout 000 - 999

$20 R
Set Payout 000 - 999

$50 L
Set Payout 000 - 999

$50 R
Set Payout 000 - 999

$100 L
Set Payout 000 - 999

$100 R
Set Payout 000 - 999

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AC500 SERIES CHANGER PROGRAM FLOW CHART

```
                        ┌──────────────┐
                        │  HARDWARE    │
                        │  (Hardwr)    │
                        └──────────────┘
```

```
   ┌──────────┐         ┌──────────────┐         ┌──────────────┐
   │ Hoppers  │         │    Coin      │         │  Validator   │
   │          │         │  Acceptor    │         │   (Valid.)   │
   │          │         │  (CoinAcc)   │         │              │
   └──────────┘         └──────────────┘         └──────────────┘
```

ccTalk	Compact	Exit

MDB	Pulse	Exit

ccTalk#		MDB	
Select 1, 2, or Exit		Select 1, None!, or Exit	

ccTalk	Pulse	None!	Exit

1	None!	Exit

Currency	Enable
Select US, Canada, or Exit	Choose High, Low, or Exit

Enable
Choose High, Low, or Exit

AC500 SERIES CHANGER PROGRAM FLOW CHART

HARDWARE
(Hardwr)

(Continued from pg. 8)

String	Dump	Mode	Exit

Dump

Select Yes,
No, or Exit

Yes (Y)	No (N)	Exit

Max $

Set value
$020 - $200

Max Time

Set minutes
005 – 120

Shut Off

Set 15, 30,
45, 60 min.,
or Reset

Simple Vending (S Vend)	Game Tokens (GmeTkns)	Simple Changer (S Chngr)	Advanced Changer (A Chngr)	Advanced Vending (A Vend)	Exit

Tokens

Select One,
Many, or
Exit

Coins

Pick Same,
Different, or
Exit
[2 Hoppers]

Hoppers

Pick Same,
Different, or
Exit
[2 Hoppers]

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Figure 1 – Main Logic Board (MLB)

STANDBY OPERATION

Power-ON the changer, and allow it to run through its start-up procedure, which may take up to a minute or more, before attempting to change anything. During this time, you may hear the hopper(s) or validator motors cycling as the Main Logic Board (MLB) checks them; this is normal. Once all motion has ceased, and all indicator lights are showing a "Ready" condition, the changer is in its Standby state, ready to accept bills or coins. In this state, the MLB display's backlight will be on continuously, and the screen will show the current count of total dollars changed by the machine (00000.00). Additionally, the board's red LED will blink a heartbeat every second to indicate that the unit is getting power and functioning normally. (See Fig. 1)

ACCESSING THE PROGRAM MENUS

Your changer comes preset with default operational settings that are easily reprogrammed to meet your desired application. Programming is done using the three buttons and LCD display located on the Main Logic Board as an interface (See Fig. 1).

When the unit is in the Standby mode, pressing the 'SEL' (Select) button enters the Setup mode initially, and then it selects and saves your choices within the Setup mode menus that follow. Buttons #1 and #2 are used to move the cursor, and to increase or decrease user-set values. Many of the menus contain submenus, which may be accessed by pressing the Select

button when the appropriate menu item is displayed, or highlighted. Choosing 'Exit' in any menu will take the program out of Setup back to Standby mode. *Note: Many of the menu items contain a series of settings. For example, the 'Accept' submenu under 'Bills' contains six bill denominations to choose whether to accept or deny. These settings must be done in sequence all the way through for any changes to be saved. Choosing 'Exit' at any point in the middle of a series will return the program to Standby mode WITHOUT saving any changes. Also, after programming is complete and the changer is back in Standby mode, turn the MLB power OFF then back ON again before resuming operation.*

The following sections describe the various options available in the software, and should be used as a reference during initial setup and configuration. It may be helpful to follow along in the Program Flow Chart as you read through the menu descriptions.

SETTING BILL ACCEPTANCE

BILLS:
The first menu item contains settings that affect the bill validator.

Accept: This submenu is used to specify which bill denominations will be accepted by the validator. Choose whether to accept (Y) or deny (N) each bill denomination in sequence. *Note: The validator also has DIP switch settings for individual denomination acceptance. Both the validator and the Logic Board must be set to 'Yes' or 'Accept' for a bill to be accepted. Check the validator section in this manual for information on your particular validator (Factory settings from American Changer enable all bills on the validator's DIP switches, so they should*

not be changed; all settings can be made in the Main Logic Board). Not all validators can accept all bill denominations up to $100 bills.

Security: This setting applies to ALL bills. Set whether to use high or low security scanning of bills by the validator. High security scanning, basically, checks more bill parameters and makes it more difficult to pass a counterfeit bill. For this reason, though, high security may require a "crisper" or newer bill for acceptance, and may not accept an older "tissue-paper", yet legitimate, bill that low security might.

SETTING COIN ACCEPTANCE (OPTIONAL)

COINS:
This Menu item only shows up if a ccTalk Coin Acceptor is present and set up in the Hardware menu (Refer to pg. 13 for Coin Acceptor setup). Similar to setting bill acceptance, the 'Coins' menu is used to specify which coin denominations will be accepted. Denomination settings depend on whether US or Canadian coins were selected during Coin Acceptor setup. For US coins, choose to accept (Y) or deny (N) nickels through one-dollar coins. For Canadian coins, accept or deny 25 cent, one-dollar, and two-dollar coins. *Note: The Condor Plus uses pulse communication, NOT ccTalk.*

SELECTING AN OPERATING MODE

HARDWARE: MODE:
The changer can be selected to run in any one of five distinct operating modes. Mode selection is done in the sixth submenu of the 'Hardware' menu, 'Mode'. Which mode to select depends on how the changer is to be used. Please read through the following descriptions, and choose the one that matches the way you want your changer to be setup. *Mode selection should be made PRIOR to setting up the payouts in the 'Payout' menu, because the payout menu changes for different mode settings.*

Simple Vending (S Vend): Vend tokens only if machine has one hopper, or vend tokens from the left hopper and change from the right if the machine is equipped with two hoppers. If this mode is selected, the program prompts you to select the number of tokens to be dispensed, One or Many. For two hoppers, 'One' means that one token will be dispensed, and change will be made for the remaining balance, if any. 'Many' means that the hopper will dispense as many tokens as possible for the money denomination accepted, and change will be made for the remaining balance, if any. Token and change values are set in the 'Payout' menu. For one hopper, since no change is available, the changer defaults to 'Many', changing the full amount to tokens. Discounts or bonus payouts

are not possible using Simple Vending mode.

Game Tokens (GmeTkns): Select Game Tokens mode to vend tokens only. NOTE: This is the mode to use if you would like to make use of "Party Tokens", which can be user-set to pay out as many as 999 tokens. Payouts per money denomination, and up to 4 different "Party Tokens", can be set independently, giving the option of including discounts or bonuses for certain denominations at your discretion. *If changer is equipped with two hoppers, both should be filled with the same tokens.*

Simple Changer (S Chngr): This is the most basic changing mode. A coin or bill is fully changed into the denomination(s) of coins in the hopper(s) without discounts or bonus payouts. This mode can be used with one or two hoppers. If two hoppers are installed, they can each be filled with the same or different denomination coins to make change with. The program will prompt you to enter whether the coins in the hoppers are the same (Same) or different (Diff.) Payouts settings are <u>per dollar</u>. (Change values and payouts are set in the 'Payout' menu; see pgs. 12-13)

Advanced Changer (A Chngr): Advanced changing mode is designed for two hoppers only, each filled with different coins. This is the most configurable changing mode, as it allows independent changing options to be set for each coin and bill accepted. Individual payouts from both the left and right hoppers can be set for each money denomination, allowing for a broad variety in the types of payouts that can be set, including discounts for certain bills and bonuses, if desired.

Advanced Vending (A Vend): This mode is, basically, a further adjustable version of the Simple vending mode, adding the capability of setting individual payouts per each accepted money denomination. When two hoppers are used for this mode, unlike in Simple vending mode, you have the option of filling them with the same or different coins (select 'Same' or 'Diff.' after selecting this mode). If they are both filled with the same tokens, the changer works the same as with one hopper. If 'different' is selected, the left hopper should contain tokens, while the right should contain coins for change. All payouts are configurable for each accepted money denomination; you set how many tokens and how much change is paid out for each transaction (see pgs. 12-13 for 'Payout' menu instructions).

PAYOUT OPTIONS

PAYOUT:
There are a total of eight different ways that this menu can appear, as seen in the Program Flow Chart on pgs. 6-7 in the row of boxes under the 'Payout' box, depending on what Hardware Mode the unit is set to, the number of hoppers, and the type(s) of coins or tokens in the hopper(s). *If not already done, please select an operating mode for the changer PRIOR to completing the 'Payout' settings (Refer to the Selecting an Operating Mode section).*

Simple Vending Mode (1 Hopper): Press Up or Down (buttons #1 or #2) to set the value of the tokens in the hopper. A token's worth can be set to anywhere between 1¢ and $20. Press the Select button to save the value chosen.
Example: Set Token = $0.25 to pay out 4 tokens per dollar.

Simple Vending Mode (2 Hoppers): Select a value for the tokens in the left hopper ('Token L'), and enter the denomination of the coins in the right side hopper ('Change R'). Both can be set to values between 1¢ and $20.
Example: With the mode set to 'many', set Token L = $0.30, and Change R = $0.05 (fill the right hopper with nickels). Inserting a $5 bill will pay out 16 tokens ($4.80) and 4 nickels ($0.20). With the mode set to 'one', the payout will be 1 token ($0.30) and 94 nickels ($4.70) for the same $5 bill.

Game Tokens Mode (1 or 2 Hoppers): If changer is equipped with two hoppers, both should be filled with the same tokens for this mode. Here, set the number of tokens to be paid out per money denomination accepted, starting with the quarter and proceeding, in increasing order, all the way to the $100 bill (Only the denominations that have been set for acceptance in the 'Bill' and 'Coin' menus and on the validator will show up). Then, continue by setting the number of tokens to be paid out for up to 4 different "Party Tokens". Press Up or Down (buttons #1 or #2), then Select to set the payouts. Each number can be set to anywhere between 0 and 999 tokens.
Example: Set $Q = 1, $1 = 4, $5 = 22, and $TK1 = 100. This will pay out 4 tokens per dollar with a 2 token bonus for changing a $5 bill, and 100 tokens upon acceptance of "Party Token" #1.

Simple Changer Mode (1 Hopper, or 2 with same coins): Enter the denomination of coins in the hopper(s). This value can be set to anywhere between 1¢ and $20. Use the Up button to increase the value and the Down button to decrease it, and push the Select button to save.
Example: Set Change = $0.25 to pay out 4 quarters per dollar.

Simple Changer Mode (2 Hoppers with different coins): Begin by entering the denomination of coins in the left ('Change L') and right ('Change R') hoppers. These values can be set to anywhere between 1¢ and $20. Next, set the number of coins from each to be paid out <u>per dollar</u> for each changing operation. The left hopper is first ('Payout L'), then the right ('Payout R').
Note: The 'Payout' settings override the 'Change' value settings, so be sure to correctly enter how many of each coin you want dispensed per dollar.
Example: Set Change L = $0.25, Change R = $0.05, Payout L = 3, and Payout R = 5 to pay out 3 quarters and 5 nickels <u>per dollar</u>.

Advanced Changer Mode (2 Hoppers w/ different coins): First, enter the denomination of coins in both the left hopper ('Change L') and the right ('Change R'). These values can be set to anywhere between 1¢ and $20. Then, set the number of coins to be paid out of each hopper per money denomination, starting with the left hopper payout per quarter ('$Q L'), then the right hopper payout per quarter ('$Q R'), then left and right payouts per dollar, and so on up through payouts per $100 bill. Those denominations that are not enabled are skipped.
Note: The 'Payout' settings override the 'Change' value settings, so be sure to correctly enter how many of each coin you want dispensed per denomination.
Example: To pay out exactly 5 nickels per denomination, with the balance to be paid in quarters, the settings would be: Change L = $0.25, Change R = $0.05, $Q L = 0, $Q R = 5, $1 L = 3, $1 R = 5, $5 L = 19, $5 R = 5, $10 L = 39, $10 R = 5, etc…

Advanced Vending Mode (1 Hopper, or 2 with same tokens): Using the Up and Down buttons, set the value of the tokens in the hopper(s). They can be set to values between 1¢ and $20. Following this, enter the number of tokens to be dispensed for each accepted bill denomination starting with $1 and increasing, in sequence, to $100. Any number between 0 and 999 can be chosen for each, giving you the option of including discounts or bonus payouts starting at $1 bills.
Example: Set Token = $0.50, $1 = 2, $5 = 12, and $10 = 25 to pay out 2 tokens per dollar with a 2 token bonus for five dollar bills, and a five token bonus for ten dollar bills.

Advanced Vending Mode (2 Hoppers: Tokens L and Coins R): This mode requires that the left-side hopper contain tokens, and the right-side hopper contain coins for change. First, select the value of the tokens in the left hopper ('Token L'), and then enter the coin denominations in the right hopper ('Change R'). Then, in sequence, enter the desired number of each to be paid out for each bill value accepted by the validator. The program will prompt for each value starting with the token payout per one-dollar bill ('$1 L') and change given ('$1 R').

This is followed by the token and change payout per $2 bill (if enabled), and so on up through the payouts per $100 bill. *Note: The 'Payout' numbers override the 'Token' and 'Change' value settings, so be sure to correctly enter how many of each you want the changer to dispense per denomination.*
Example: To dispense two-dollar tokens and give some change in quarters for every bill accepted, set Token L = $2.00, Change R = $0.25, $2 L = 1, $2 R = 0, $5 L = 2, $5 R = 4, $10 L = 4, $10 R = 8, $20 L = 9, $20 R = 8, etc....

Once the payouts have been set, always run tests to be sure they are correct and how you want them before final installation of the changer. The settings can be programmed and reprogrammed as much as needed, and can be changed at any time to meet your requirements.

HOPPER SETUP

HARDWARE: HOPPERS:
The changer will arrive from the factory with this information already programmed, so this menu will only be needed if changes are to be made. To access the 'Hoppers' menu, first enter the 'Hardware' menu by highlighting it with the cursor, and pressing Select; it is the first submenu. Use this menu to tell the Logic Board what types of hopper(s) are installed inside the changer.

ccTalk: Select this option if using one or more hoppers with a ccTalk serial interface to the Main Logic Board (MLB). Once selected, enter the number of ccTalk hoppers, one or two, to be used in the changer. *Note: Each Logic Board has the capacity to control two ccTalk hoppers, left and right, but if only one is used, it must be plugged into the left-side connector (see Fig. 1 for the ccTalk device connections on the MLB). Further Note: If your model changer has two Logic Boards and two hoppers, then only one hopper will be controlled by each board; select '1' as the number of ccTalk hoppers on both boards.*

Compact: Highlight and Select this option if the machine has a Compact Hopper installed (see Fig. 1 for the compact hopper connection on the MLB).

COIN ACCEPTOR SETUP

HARDWARE: COINACC:
If the changer came from the factory with a coin acceptor already installed, this information will be preprogrammed into the MLB, so this menu will only be needed if changes are to be made. The second submenu inside the 'Hardware' menu is the Coin Acceptor setup menu ('CoinAcc'). Similar to the 'Hoppers' menu, this menu is used to configure the Logic Board for the use of a coin acceptor.

ccTalk: This option should be selected if the installed coin acceptor communicates with the Main Logic Board using ccTalk serial communication protocol (see Fig. 1 for the ccTalk device connections on the MLB; contact the coin acceptor's manufacturer or American Changer if help is needed). After choosing ccTalk, the program prompts for specification of the currency type that will be processed by the coin acceptor. Choose either US or Canadian coins.

Pulse: If the installed coin acceptor communicates with the Logic Board using pulse protocol, select 'Pulse' (the Condor Plus uses Pulse communication). Following this, the program will request specification of the logic level used to enable the coin acceptor, high (Hi) or low (Lo) (for the Condor Plus, select high). *Note: the Logic Board can only control one pulse device, so if a pulse validator is installed, a pulse coin acceptor cannot be (see Fig. 1 for the pulse device connection on the MLB).*

None!: Select this option only if the changer is not equipped with a coin acceptor.

VALIDATOR SETUP

HARDWARE: VALIDATOR:
The changer will arrive from the factory with this information already programmed, so this menu will only be needed if changes are to be made. Setup of the validator(s) is done using the third submenu, 'Valid.' inside the 'Hardware' menu. The Main Logic Board can control up to two validators, but only one of each type. The two types are distinguished by their use of either MDB or pulse communication protocols to communicate with the MLB. The settings in this submenu tell the Logic Board how many of each type of validator, if any, are installed in the changer.

MDB: Select 'MDB', and then enter how many MDB validators are installed in the changer, either one (1) or zero (None!) (see Fig. 1 for the MDB validator connection on the Main Logic Board)

Pulse: Select 'Pulse', and then choose either one (1) or zero (None!) to specify the number of pulse validators that are inside the unit. If '1' is chosen, then the program will further prompt for whether the validator is enabled using a logic-high (Hi) or a logic-low (Lo) signal; either must be chosen. *Note: the Logic Board can only control one pulse device, so if a pulse coin acceptor is installed, a pulse validator cannot be* (see Fig. 1 for the pulse device connection on the MLB).

ANTI-STRINGING PROTECTION

HARDWARE: STRING:
The fourth submenu inside the 'Hardware' menu is used for setting up or disabling options that help protect the changer from "stringing". Select 'String', and then choose either to enable stringing protection (Y), or to disable it (N). If Yes is chosen, there is a series of three settings that will follow, explained next, that together control the behavior of the changer with regard to stringing.

Max $: This setting is 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. The dollar amount can be chosen anywhere between $20 and $200 in $5 increments.

Max Time: The time entered here is the time limit for the changer accepting the user-set maximum dollar amount (previous setting). If the changer accepts the maximum dollar amount within the amount of time set here, anti-stringing protection will be triggered. The length of time can be set to anywhere between 5 and 120 minutes in 5 minute increments.

Shut Off: This setting controls the anti-stringing protection, which is the shutting down of the changer for the time specified here. The changer can be set to shut down for 15, 30, 45, or 60 minutes, or until the MLB is reset by turning the power off then back on ('Reset').

USING THE HOPPER DUMP FEATURE

HARDWARE: DUMP:
Enter this submenu to enable or disable the "dump" feature, which will automatically empty all of the contents of the hopper(s). After entering the 'Hardware' menu, scroll down and select 'Dump'. To enable the feature, choose Yes (Y), and to disable it, choose No (N). Note: choosing Yes will not initiate a coin dump; it will only enable them to occur.

Using the DUMP Feature: *The following will work only if the Dump feature is enabled in the 'Dump' menu.*
1. Open the changer door to give access to the MLB and the hopper(s).
2. Place a suitable container in front of the hopper to catch the dispensed coins. On rear load models, the coins may have to be scooped out of the coin cup as they are being ejected.
3. On the Main Logic Board, press and hold buttons #1 and #2 (Up and Down) simultaneously, until the hopper(s) begin to dispense their contents. They should only need to be held down for a few seconds.
4. Once the hopper(s) are emptying, they will continue to run until manually stopped by pressing the Select (SEL) button on the MLB. They may be stopped at any time, or allowed to run until empty.
5. A count of the number of coins being dispensed by each is displayed on the LCD display. If the hoppers are completely emptied, this count will show how many coins were in each before dumping commenced.

---[END PROGRAMMING SECTION]---

FUNCTIONAL DESCRIPTION OF THE AC500 SERIES CHANGER

To follow along with this walk-through of your changer, fill the hopper with coins and turn the changer on.

1. When power is applied the validator will cycle twice, and the red Out-of-Service light flashes then goes out. The LCD screen on the Main Logic Board (MLB) will display the Software version installed in the board's EEPROM, and its backlight will be ON continuously. The small red status LED above the display will begin to blink once per second in the Standby mode, waiting for something to happen.
2. During the power-up mode the Main Logic Board will communicate with the validator using MDB or pulse protocol. During this time the Display shows the current total dollars changed count. The MLB establishes what type of validator is installed, and communicates the current program settings and parameters that the validator needs to know in order to function (type of bills to accept, bill pulse value, etc.). The MLB then asks the bill validator if it's OK and ready to accept bills, or if it has errors. This process takes approximately 10-15 seconds.
3. Also during the power up sequence, the MLB, using ccTalk, communicates with the coin hopper. It is also setting up the same parameters and requests as the bill validator, but it is also informing the hopper what type of coins it will be paying (general

size and thickness). Since all coins we vend are from 20-30mm, this rarely changes.

4. When a bill is finally inserted into the validator bill slot, the bill will be pulled inside. The MLB display for the validator shows "**BUSY**" while the validator compares what the bill looks like to examples in memory. After the bill is accepted, the validator tells the MLB that it is OK to accept, and asks if it is OK to stack the bill. The MLB will then check the coin hopper status before sending an OK. The Validator stacks the bill, but the MLB waits until the Validator sends a code stating the bill has been stacked before proceeding.

5. Now that the bill type accepted is stored in the MLB flash memory, the program reads the settings for type and number of coins to be dispensed. The program then computes the payout using the received bill type and the coin type(s) selected by the user, and divides that number by the total coin hoppers functioning. This will be the payout for each hopper.

6. The program then sends secure DATA words to the hopper informing it of the amount of coins to dispense.

7. When the hopper is finished, it sends a different DATA word to the MLB. The MLB then turns off the "Busy" display, and the changer returns to the STANDBY mode, with the red LED flashing once per second, until another bill is inserted.

OUT-OF-SERVICE CONDITIONS

Out-of-Service conditions occur in the changer for the following reasons: blown fuses, validator faults, coin acceptor faults, or hopper faults

Blown Fuse: An AC power spike in line voltage or a bad transformer on the Power Supply board can cause a blown fuse. If the primary fuse blows, the indication is that the green LED on the power supply will not light.

1. Replace the fuse. If the green LED now lights then there was a spike.
2. If it does not light and the fuse blows again, disconnect the hopper and validator connectors and try again. If the green LED stays lit, reconnect each component one at a time until you find the one blowing the fuse.
3. If the fuse still blows with all components removed from the MLB, the power transformer is shorted. To test the transformer, use a multimeter set for ohms and measure across the primary (40ohms) and the secondary (1.5ohms).

Validator Faults: When a validator fault occurs, the validator's EEPROM shuts down the validator and sends an error code to the Logic Board's LCD display. The Out-of-Service light on the front of the machine will illuminate for a validator fault.

1. **Validat. Full –** The Bill Stacker is full of bills and should be emptied.
2. **Validat. Motor –** Motor failure. Either the Stacker or Transport motor has failed; replace the unit.

3. **Validat. Sensor –** One of the sensors inside the validator has failed. Check for a jammed bill; if that is not the cause, repair or replace the validator.
4. **Validat. Checksum –** Checksum failure. The validator's Logic Board programming has been corrupted; repair or replace the validator.
5. **Validat. CashBox –** The Bill Stacker has been removed from the validator and should be replaced.
6. **Validat. NoComm –** There is a communication failure between the changer's Main Logic Board (MLB) and the validator. This may be a temporary condition while one of them is completing some task, or the cable harness may be loose or unplugged, or the validator may need to be repaired or replaced.
7. **Validat. Disabled –** The MLB cannot enable the validator, due to an internal error inside of the validator. This may be a communication issue, and may be temporary.
8. **Validat. String –** The changer's Anti-Stringing protection has shut down the machine's operation. Basically, more money has been paid out in less time than allowed by the system's settings (see pg. 14 for Anti-Stringing protection setup). Wait the allotted time, or reset the MLB to resume operation.
9. **Validat. Pulse –** The pulse validator being used has been disabled. Check the unit and repair or replace as necessary.
10. **Busy –** This message is displayed whenever the validator is in the process of validating (accepting) or stacking a bill.

Coin Acceptor Faults: *The following Coin Acceptor faults are only for changers equipped with a Money Controls SR3 Coin Acceptor using ccTalk serial communication protocol.* The Out-of-Service light on the front of the machine will NOT illuminate for a Coin Acceptor fault, but the error message will be displayed on the LCD display.

1. **CoinAcc. NoComm –** There is a communication failure between the changer's Main Logic Board (MLB) and the coin acceptor. This may be a temporary condition, or the cable harness may be loose or unplugged, or the coin acceptor may need to be repaired or replaced.
2. **CoinAcc. EEPROM –** The EEPROM on the coin acceptor's logic board has an error. Repair or replace the unit.
3. **CoinAcc. Coils –** There is a general fault in the unit's inductive coils. Check the coin path, or "flight deck", for dirt or an obstruction. If nothing is found, unit may need servicing or replacement.
4. **CoinAcc. CreditS –** The coin acceptor's Credit Sensor is either blocked or faulty. Check for a jammed coin on the "credit"

side, or else the unit may need repair or replacement.

5. **CoinAcc. Piezo –** The coin acceptor's Piezo Sensor is experiencing a fault. Unit may need repair or replacement.
6. **CoinAcc. RejectS –** The coin acceptor's Reject Sensor is either blocked or faulty. Check for a jammed coin on the "reject" side, or else the unit may need repair or replacement.
7. **CoinAcc. TempS –** The coin acceptor's Temperature Sensor is experiencing a fault. Unit may need repair or replacement.
8. **CoinAcc. TempHigh –** The operating temperature of the coin acceptor is above specified limits. Locate the cause of the high temperature and remedy the situation. If nothing is found, the temperature sensor may have failed, or the unit may need servicing or replacement.

Hopper Faults: Hopper faults occur for a variety of reasons, but the most common in any coin machine is always low coins. Any of the hopper faults will cause the Out-of Service light on the front of the machine to illuminate. For the following, if two hoppers are installed in the machine, X = L (left) or R (right).

1. **HopperX NoComm –** The changer's Main Logic Board is unable to communicate with the hopper. This may be a temporary condition, or the cable harness may be loose or unplugged, or the hopper may need to be repaired or replaced. *Note: If using only one hopper, it must be plugged into the left-side connector (see Fig. 1).*
2. **HopperX NoPay –** This code signifies that a payout signal was sent to the hopper, but the hopper did not dispense any coins/tokens. Check the hopper for a possible coin jam, exit blockage, or other mechanical fault. If nothing can be found, have the unit repaired or replaced. *Note: If using two hoppers and one of them fails to pay out, the other hopper will make up the difference, if it can.*
3. **HopperX OptoBlkd –** An optical sensor near the exit window is being blocked. The exit path may be obstructed, or the Optic Board may be bad. Repair or replace.
4. **HopperX Current –** The maximum current level for the hopper is being exceeded. Inspect for a jammed coin preventing the coin Elevator Track from moving, or a stalled or shorted motor. Repair or replace the hopper.

5. **HopperX Fraud –** The changer may be being defrauded. Inspect for a jammed coin or other obstruction near exit window; repair or replace the hopper.
6. **HopperX TimeOut –** The coins/tokens were not dispensed from the hopper in the specified time. Check the hopper for any coin jams or mechanical obstructions preventing coins from exiting. Also check that the compact hopper harness is securely connected to the correct MLB connector (refer to fig. 1 on pg. 10) on one side, and to the white 4-pin connector, located under the coin chute on the bottom front of the Compact Hopper, on the other. Have the unit repaired or replaced.
7. **HopperX Low –** This is the most common error; it signals Low Coins in the hopper. Refill the hopper with coins or tokens. If you have enough coins in the hopper to cover the gold low-level sensing plates and you are still getting this message, try the following:
   A. Ensure the coins have not bridged in the extension on top of the hopper preventing them from falling down into the hopper.
   B. Clean the bottom gold plates of the hopper with EMERY cloth or fine sandpaper. Refill the hopper and try again.
   C. Using an ohmmeter, check the continuity of the hopper harness from the 12-pin connector back to the logic board. You should get 0 ohms for each line.
   If none of this works, the unit may need repair or replacement.

EQUIPMENT INDICATOR LIGHTS

Main Logic Board:
1. Red LED
   A. Heartbeat – 24, 5, and 3.3Vdc present; the changer is operating normally.
2. LCD Display Backlight
   A. ON Steady – Normal operation; this applies to both Standby and Programming modes.
   B. Blinking – Error condition present; the backlight blinks synchronously with the Red LED (see pgs. 15-16 for error message descriptions).

Validator logic board:
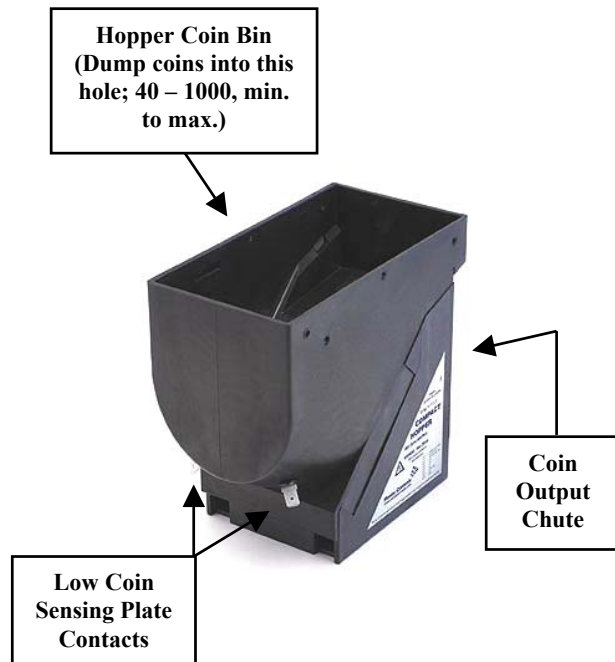1. LED
   A. On Steady - Standby Mode, waiting for bill insertion.
   B. Flashing - Error mode, see page 17 or 24 for error code information.
   C. Off - The changer "Out-of-Service" LED is lit.

HOPPER COIN/TOKEN SIZES

Compact Hoppers can be configured to pay out coins in the diameter range 16.25 – 31.00mm and within the thickness range 1.25 – 3.2mm. However, each coin needs to be qualified on an individual coin basis.

A nickel is approximately 21 mm, a quarter is approximately 25mm, a new $1 coin is approximately 26.5 mm, and a Susan B. Anthony dollar is approximately 28mm in diameter.

American Changer offers Compact Hoppers that will dispense quarter-size coins and ones that will dispense $1-coin-size coins. Contact American Changer with any questions, or to order a different Hopper configuration.

**Hopper Coin Bin
(Dump coins into this hole; 40 – 1000, min. to max.)**

Coin Output Chute

Low Coin Sensing Plate Contacts

MAIN LOGIC BOARD CONNECTOR PIN DEFINITIONS

MDB Validator harness:
Connector J12
Pin #1 - +24 VDC
Pin #2 - Ground
Pin #3 - Data Pin, Master Transmit
Pin #4 - Data Pin, Master Receive

ccTalk Device Harnesses:
Left Side (Single Hopper) – J3
Right Side – J8
Pin #1 - Ground
Pin #2 - +24 VDC
Pin #3 - +5 VDC
Pin #4 - No Connection
Pin #5 - Data Line (Tx & Rx)
Pin #6 - Select (+24VDC) **Right Only**
Pin #7 - Ground

Compact Hopper harness:
Connector J1
Pin #1 - Motor Ground
Pin #2 - Motor Power (+24VDC)
Pin #3 - Chassis Ground
Pin #4 - Sensor A
Pin #5 - Low Coin Sensor

Pulse Device harness:
Connector J11
Pin #1 - +24VDC
Pin #2 - Bill In
Pin #3 - Fail
Pin #4 - Enable
Pin #5 - Ground
Pin #6 - Ground

"Out-of-Service" Light harness:
Connector J2
Pin #1 - +24 VDC
Pin #2 - Ground

COINCO MAG52SA SERIES ERROR CODES

Flash codes 1-18 may appear during normal servicing of the MAG52. If more than one error or condition exists, the lower number flash code will appear until its respective error or condition is corrected. The left and right sensors referenced below are given viewing the MAG52 from the front.

of Flashes   Description of Flash Codes
1   Bill Box Full
2   N/A
3   Check Bill Path
4   All Bill Accept Switches are OFF
5   Check Optical Sensors
6   Stacker Motor/Home Sensor
7   Transport Motor/Encoder Sensor
8   N/A
9   EEPROM Check Sum Error
10   RAM or ROM Check Sum Error
11   Center Optic Sensor
12   Right Optic Sensor
13   Left Optic Sensor
14   N/A
15   Right Position Sensor
16   Left Position Sensor
17   Lower Board Anti-Stringing Lever Sensor
18   N/A

MAG
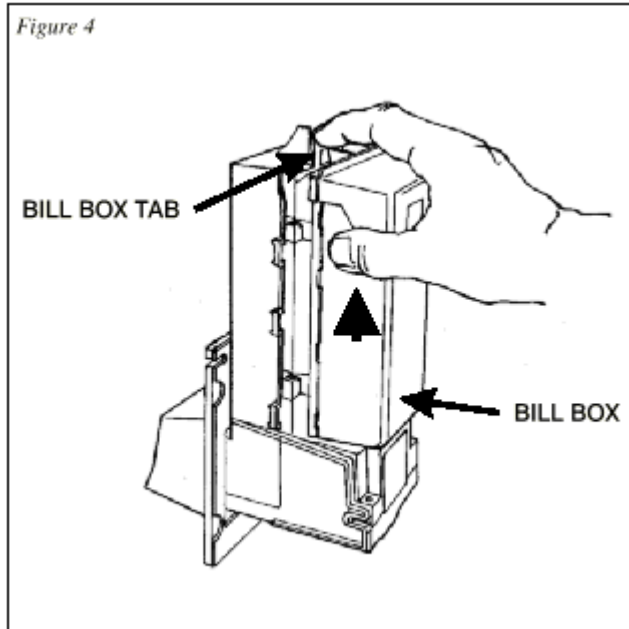## BILL ACCEPTOR

Operation and Service Manual

COINCO.

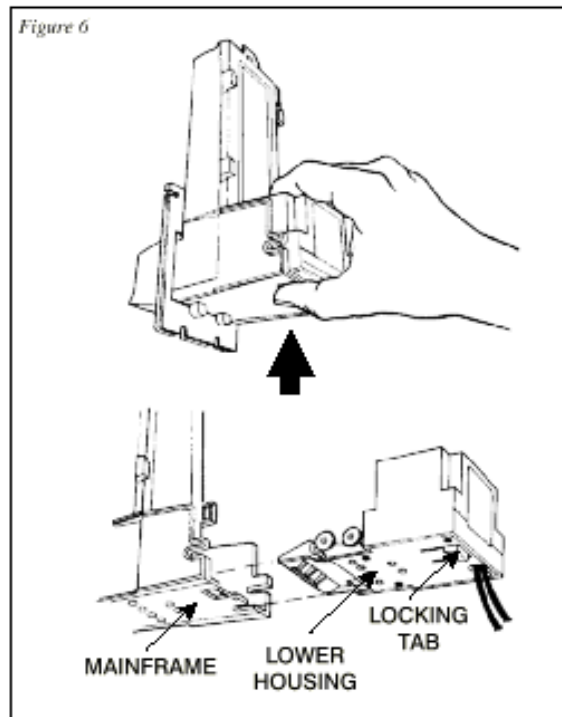# COINCO MAG52SA VALIDATOR SECTION

Removing the bill box.

To remove the 500 bill stacker from the CoinCo validator, follow the picture below.

Figure 4

REMOVING A BILL JAM

From time to time a foreign object or ripped bill will become caught in the validator. Follow the picture below to remove the item.
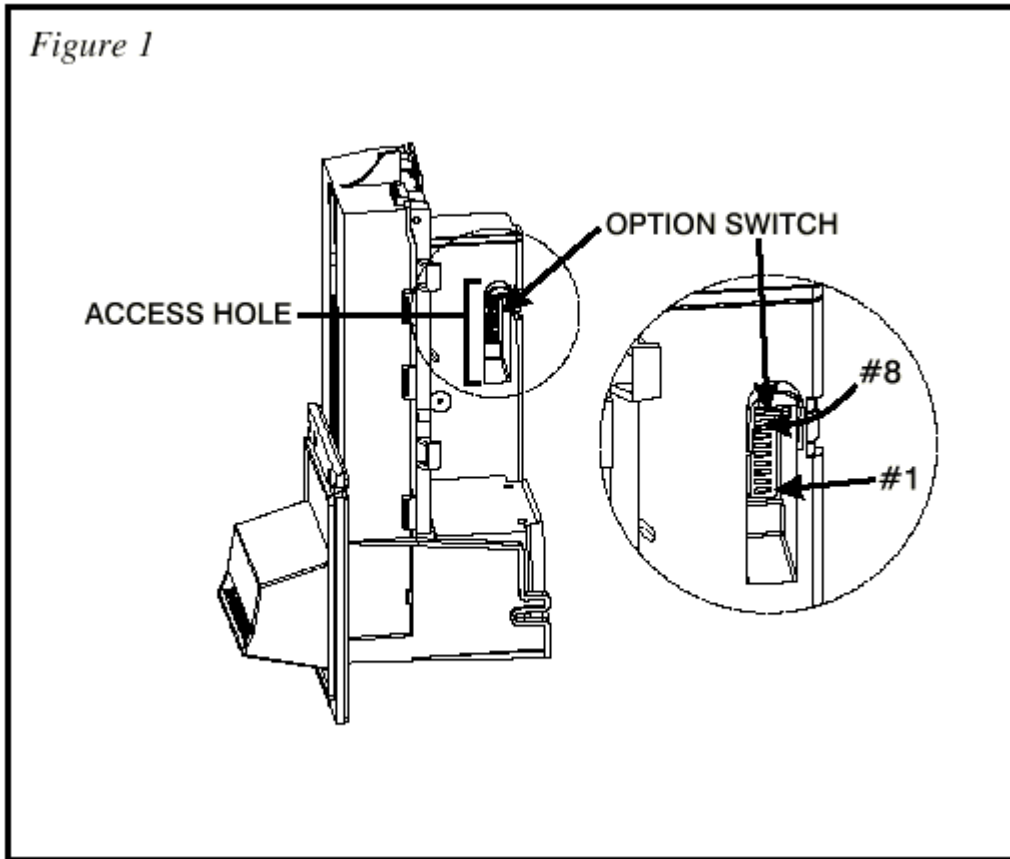

Figure 6
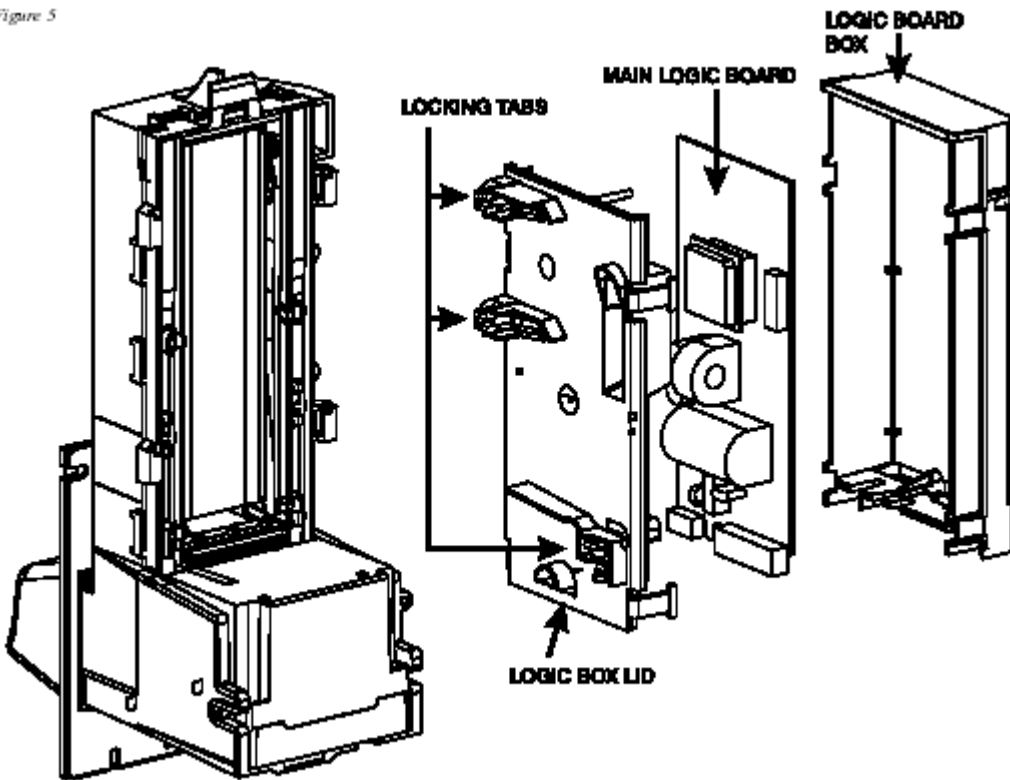
SETTING THE BILL ACCEPT DIP SWITCHES

Figure 1

OPTION SWITCH

ACCESS HOLE

#8

#1

Figure 5

LOCKING TABS

MAIN LOGIC BOARD

LOGIC BOARD BOX

LOGIC BOX LID

SWITCH	ON	OFF
1	High Security	Standard Acceptance
2	Accepts bills in one directions only (face up, green seal first)	Accepts bills in both directions (face up)
3	Serial or Parallel Interface	Pulse Interface
4	$20 Accept	$20 Reject
5	$10 Accept	$10 Reject
6	$5 Accept	$5 Reject
7	$2 Accept	$2 Reject
8	$1 Accept	$1 Reject
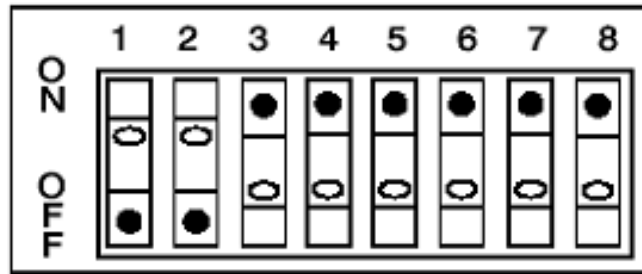
(FACTORY DEFAULT SETTINGS)

CLEANING THE BILL VALIDATOR

Refer to the pictures and the procedure on the next page to clean the bill validator every 4-6 months.
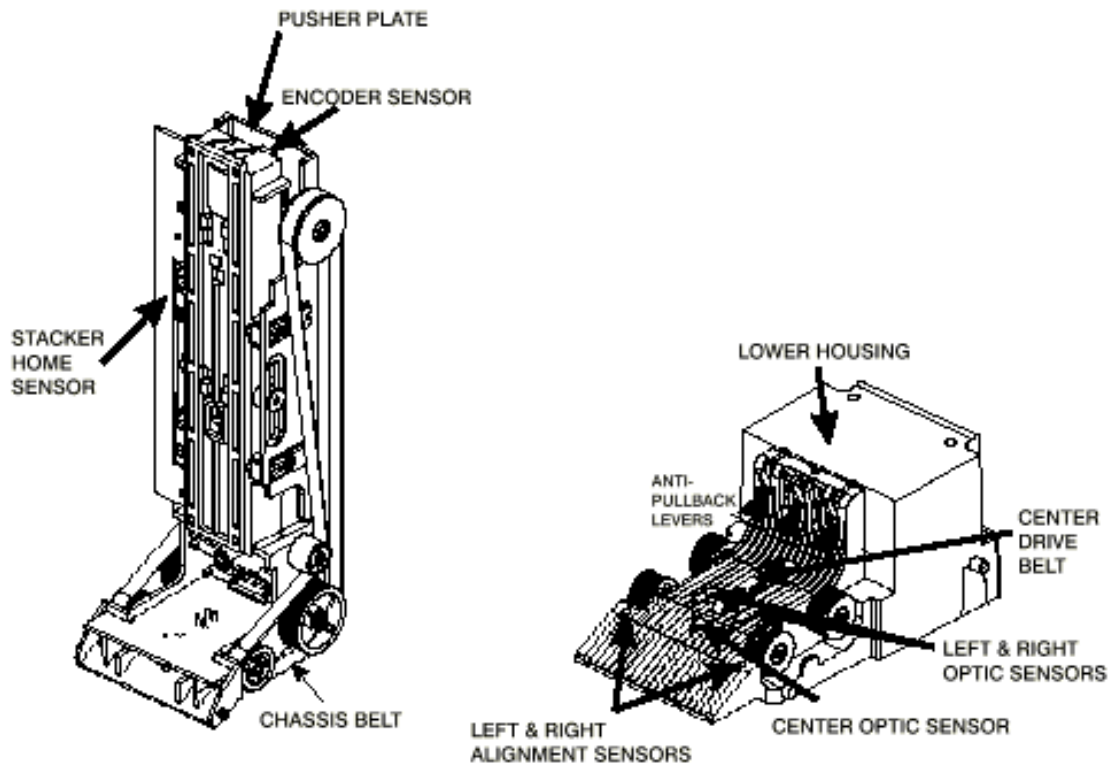
MAGPRO CLEANING: IF ANY OF THESE PROCEDURES ARE PERFORMED TO YOUR VALIDATOR AFTER IT IS RETURNED UNDER A WARRANTY REPLACEMENT, YOU WILL BE SUBJECTED TO A $65.00 LABOR FEE.

CLEANING AND MAINTENANCE:

Note: *Petroleum-based cleaners and freon-based propellants can damage plastic and some electronic components. Scouring pads and stiff brushes may harm the protective conformal coating on the circuit boards and can mar the plastic. These items should never be used when cleaning the MAGPRO bill acceptor.*

The MAGPRO should be cleaned every 7,000 bills or every 4 -6 months (or as needed, depending on the environmental conditions of the location). Dust can be removed with a soft brush or cloth or it can be blown out using compressed air.

Procedure:

1. Disconnect power from the bill acceptor.
2. Remove the bill box and use a soft cloth to wipe the dust from around the intermediate frame and stacker plate.
3. Remove the lower track.
4. Using compressed air or a soft brush, blow or brush the dust off of the optic sensors and out of the recessed sensor openings.
5. Remove dust from around the belts and wheels on the lower housing and the sensors on the upper sensor board. The upper sensors are located directly above the lower housing sensor when the lower housing is installed.
6. The bill path can be cleaned to remove further dirt and oil using a soft cloth moistened with a mild soap and water solution.
7. Clean the magnetic head using a swab and isopropyl alcohol.
8. Once the lower housing is dry, place it back into the mainframe so that the tab on the bottom locks into place.
9. Blow the dust out of the encoder wheel and its sensors. (It may be necessary to extend the stacker plate to access the encoder wheel. Supplying power to the unit momentarily can do this, so that the stacker plate extends.)
10. Remove dust from the transport belt areas and from any other places of build up.
11. Remount the bill box.
12. Apply power and insert bills to verify that the unit is functions property.

MAGPRO CLEANING PROCEDURE FOR SALT WATER POLLUTED UNITS:

Note: *Petroleum-based cleaners and freon-based propellants can damage plastic and some electronic components. Scouring pads and stiff brushes may harm the protective conformal coating on the circuit boards and can mar the plastic. These items should never be used when cleaning the MAGPRO bill acceptor.*

Procedure:

1. Remove power from the bill acceptor.
2. Remove the bill acceptor from the vending machine.
3. Open the bill box lid and verify that the stacker plate is in the stand-by/home position. If it is not in the home position, apply power and observe that the stacker plate returns home.

Warning: *If moisture is present, allow the unit to dry thoroughly before applying power to avoid possible shock hazard. If the stacker plate does not return to the home position, remove power and carefully remove the bill box to avoid damaging the bill box and/or stacker plate.*

4. Remove the lower housing.
5. Remove the bottom cover from the lower housing.
6. Run hot water (1101/4-1401/4F) over the lower housing from the top and bottom. Using a soft brush, gently clean any residual salt. Use a soft absorbent cloth to clean any residue off the lower housing. If the transformer gets wet, allow the unit to dry for 24 hours before applying power.
7. Remove the front mask. Using hot water and a soft brush, clean the front mask, upper sensor board, main frame anti-pullback levers and position sensor mount.

Caution: The motors are not protected from water, therefore the unit must be held in a manner that prevents water from running over the intermediate frame crossbar.

8. Remove the position sensor cover on the crossbar and carefully lift the LED from its mount. (Early models only.)

Caution: Protective coating on the LED leads should not be damaged. Clean all salt residue from the mount, sensor hole and detector area.

The detector can be seen through the sensor hole, and is located in the chassis. Replace the position sensor cover. (Early models only.)

9. Verify that the anti-pullback levers move freely and that the spring returns them to their open position.
10. Allow the unit to dry thoroughly.
11. Clean the magnetic head using a swab and isopropyl alcohol.
12. Replace the front mask
13. Replace the lower housing cover.
14. Replace the lower housing into the main frame.
15. Remount the bill box.
16. Apply power and insert bills to verify that the unit is functioning properly.

6 OR 7 ERROR CODE FLASHES

The cleaning procedure for this common occurrence is listed below. Just follow these steps.

1. If this code has occurred on a new machine or one that the validators DIP switches were just changed, Ensure that all the white plugs on the side of the validator board away from the red LED are plugged in securely.
2. Remove the bill box.
3. Turn the Changer ON then OFF in an attempt to stop the metal push plate so that it COASTS into the fully outward position.
4. Using an air compressor or a can of compressed air blow out the area behind the push plate until it is completely free of all dust and lint.
5. Turn the changer power back on so that the push plate returns to the inward position. If the same error code persists, repeat steps 1 - 3 concentrating on the top center area behind the plate.
6. Replace the bill box.

REPLACING THE BELTS

Every 2-3 years the belts on the CoinCo will wear out. To replace them, remove the validator components down to the picture show. Refer to the parts diagram at the end of the manual for help getting to this point.
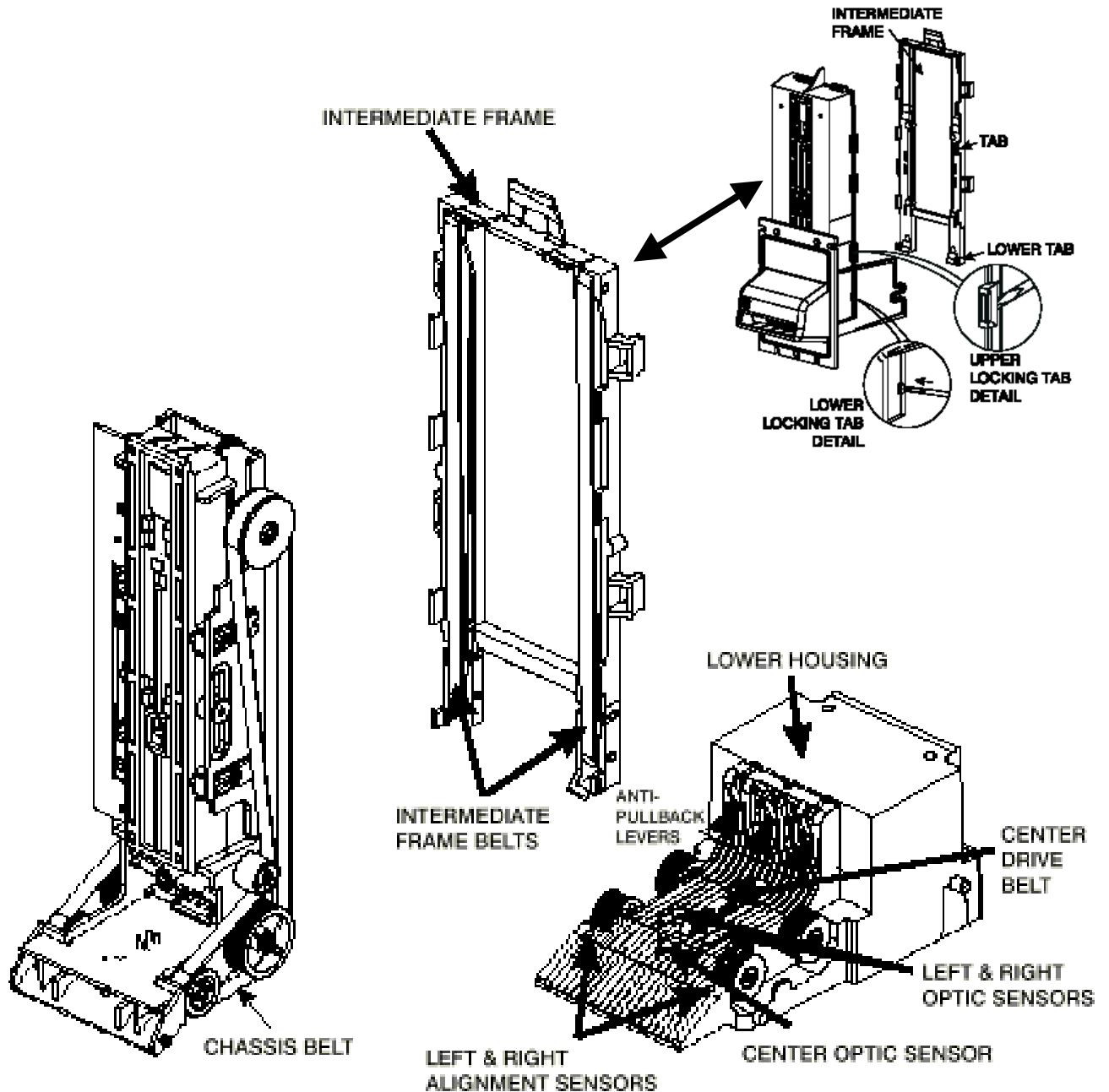
MAG TROUBLESHOOTING GUIDE

This Troubleshooting Guide is intended to help locate problems within the bill acceptor. If a bill acceptor cannot be repaired by following this guide, return the unit to American Changer or the nearest Coinco Service Center for repair along with a complete description of the problem you are having with the bill acceptor.

Logic troubleshooting minimizes the time spent in removing and replacing parts that are not defective. Some failures are caused by minor problems such as dirt or loose/faulty connections. Please check the following before replacing any parts:

- Clean any dirt or dust from the bill path.
- Coin changer inventory tubes are filled to their correct levels.
- Connectors are inserted correctly.
- Connector pins are not bent or broken.
- All wires are properly secured.

MAG DIAGNOSTIC CODES

Troubleshooting can be done by reading the number of flashes or blinks of light from the LED located inside the logic board cover. Since the red LED is normally ON, the number of flashes is the number of times it blinks OFF. These flashes can be seen on the side of the logic box.
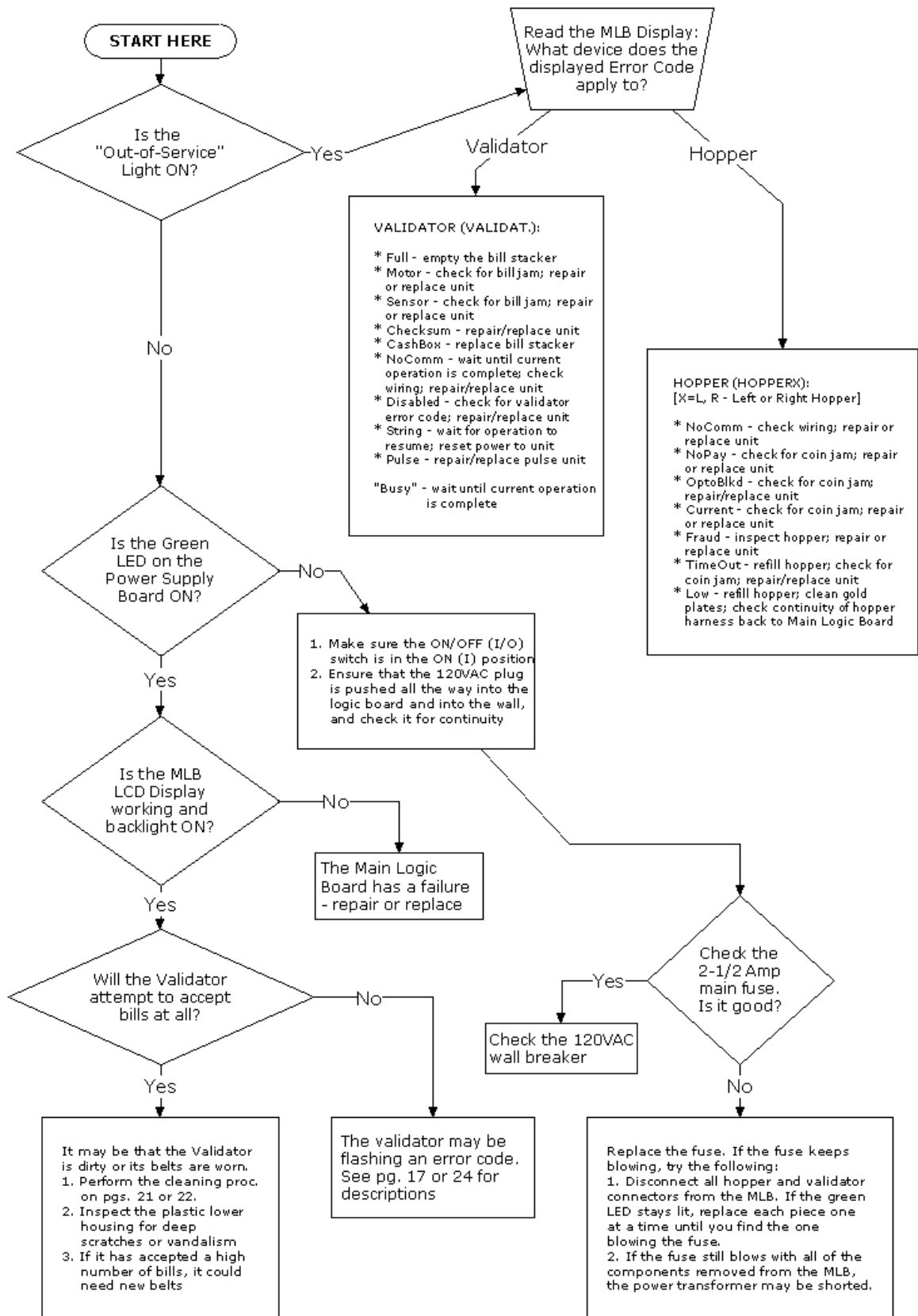
Diagnostic codes 2, 8, 14, and 18 are not used. Codes 1, 3, 4, 5, 15, and 16 may appear during normal servicing of the MAG. If the MAG is flashing a #5 code, turn off power to the MAG for 10 seconds. Reapply power to the MAG and diagnostic codes 6, 7, 9, 10, 11, 12, 13, and 17 will appear for approximately 30 seconds. After 30 seconds these codes will revert back to the #5 code. If more than one error exists, the lower number code will appear until its condition is corrected. The left and right sensors referenced in the code descriptions are given viewing the MAG from the front.

# Of Flashes	Description of Diagnostic Codes
1	Bill Box Full
2	(Not Used)
3	Check Bill Path
4	All Bill Accept Switches Are Off
5	Check Optical Sensors
6	Stacker Motor/Home Sensor
7	Transport Motor/Encoder Sensor
8	(Reserved for Future Use)
9	EEPROM Check Sum Error
10	RAM or ROM Check Sum Error
11	Center Optic Sensor
12	Right Optic Sensor
13	Left Optic Sensor
14	(Not Used)
15	Right position Sensor
16	Left Position Sensor
17	Lower Board Anti-Pullback Lever Sensor
18	(Not Used)

Figure 21

DIAGNOSTIC CODE FLASHES HERE
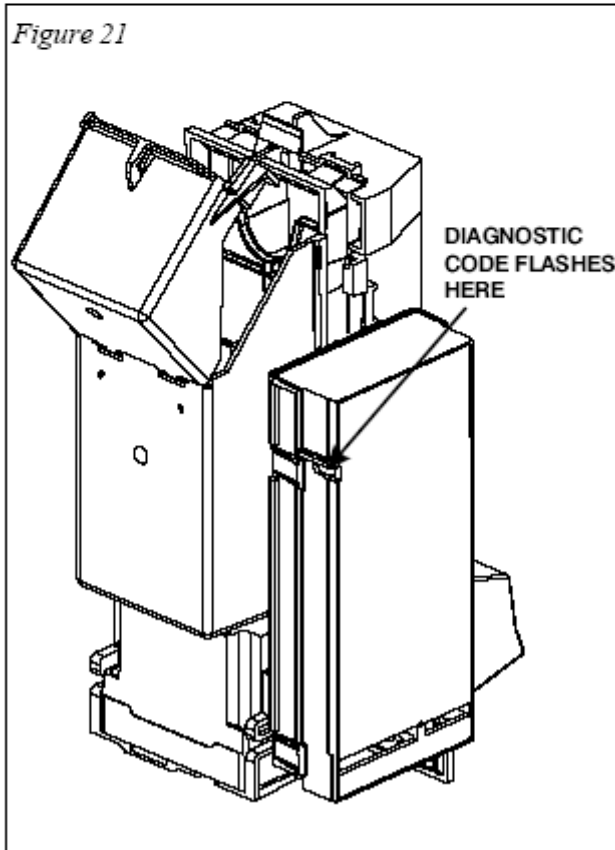
TECHNICAL FLOW DIAGRAM

Before starting this procedure, ensure the changer is plugged in, the ON/OFF switch is ON, the hopper is full of coins, and all wire harnesses are connected securely and correctly. The wires exiting the red connectors should point away from the board!

START HERE

Read the MLB Display; What device does the displayed Error Code apply to?

Is the "Out-of-Service" Light ON? — Yes

Validator

Hopper

VALIDATOR (VALIDAT.):

* Full – empty the bill stacker
* Motor – check for bill jam; repair or replace unit
* Sensor – check for bill jam; repair or replace unit
* Checksum – repair/replace unit
* CashBox – replace bill stacker
* NoComm – wait until current operation is complete; check wiring; repair/replace unit
* Disabled – check for validator error code; repair/replace unit
* String – wait for operation to resume; reset power to unit
* Pulse – repair/replace pulse unit

"Busy" – wait until current operation is complete

HOPPER (HOPPERX):
[X=L, R – Left or Right Hopper]

* NoComm – check wiring; repair or replace unit
* NoPay – check for coin jam; repair or replace unit
* OptoBlkd – check for coin jam; repair/replace unit
* Current – check for coin jam; repair or replace unit
* Fraud – inspect hopper; repair or replace unit
* TimeOut – refill hopper; check for coin jam; repair/replace unit
* Low – refill hopper; clean gold plates; check continuity of hopper harness back to Main Logic Board

No

Is the Green LED on the Power Supply Board ON? — No

1. Make sure the ON/OFF (I/O) switch is in the ON (I) position
2. Ensure that the 120VAC plug is pushed all the way into the logic board and into the wall, and check it for continuity

Yes

Is the MLB LCD Display working and backlight ON? — No

The Main Logic Board has a failure - repair or replace

Yes

Will the Validator attempt to accept bills at all? — No

Check the 2-1/2 Amp main fuse. Is it good? — Yes

Check the 120VAC wall breaker

Yes

No

It may be that the Validator is dirty or its belts are worn.
1. Perform the cleaning proc. on pgs. 21 or 22.
2. Inspect the plastic lower housing for deep scratches or vandalism
3. If it has accepted a high number of bills, it could need new belts

The validator may be flashing an error code. See pg. 17 or 24 for descriptions

Replace the fuse. If the fuse keeps blowing, try the following:
1. Disconnect all hopper and validator connectors from the MLB. If the green LED stays lit, replace each piece one at a time until you find the one blowing the fuse.
2. If the fuse still blows with all of the components removed from the MLB, the power transformer may be shorted.

TROUBLESHOOTING GUIDE
TO USE THE TROUBLESHOOTING GUIDE, MATCH UP THE PROBLEM, THEN FOLLOW THE SOLUTION SUGGESTIONS. After every step try operating the changer to see if the problem has been solved.

PROBLEM:	*SOLUTION:*
A. **The changer is completely dead.** (The green LED on the Power Supply Board is not lit.)	1. Ensure the changer is plugged in. 2. Ensure the ON/OFF switch is rocked to the ON (I) position (up). 3. Unplug the female end of the line cord from the main logic board AC connector and plug it in again tightly. 4. Measure the AC voltage at the outlet or check the breaker/fuse box. You can also plug another item into the AC wall outlet to ensure there is power present at the outlet. 5. Inspect the AC line cord for cuts or abrasions. 6. Check the fuse on the Power Supply Board. 7. Replace the line cord. 8. Replace the Power Supply Board.
B. **The "Out-of-Service" LED is lit.** The Main Logic Board is displaying a "HopperX Low" error message.	1. Ensure the hopper is not out of coins. (There should be enough coins in the hopper to cover the gold low-level contact plates. These plates are located at the bottom of the hopper where you pour the coins.) 2. Locate the Compact Hopper's wiring harness, and make sure that it is plugged all the way in to the correct Main Logic Board connector (refer to fig. 1 on pg. 10). 3. Ensure that the brown and white wires of the hopper harness are securely connected to the Low Coin Sensing Plate contacts. 4. Check the continuity of the hopper harness back to the Main Logic Board. You should get zero (0) ohms. 5. Clean the gold contact plates with steel wool or fine sandpaper. 6. Replace the hopper wire harness. 7. Replace the hopper.
C. **The "Out-of-Service" LED is lit.** The MLB is displaying any other error message.	1. Refer to the "Out-of-Service Conditions" section on pgs. 15-16 for a listing of all software error codes and common solutions.
D. The green LED on the Power Supply Board is lit, but there is no red "heartbeat" LED on the Main Logic Board.	1. Bad 5vdc or 3.3vdc regulator on the main logic board. 2. The hopper is shorted, or its motor is stalled. 3. Replace main logic board. 4. Fix the coin jam in the hopper; Repair or Replace hopper.
E. The bill validator will not pull in the bill and the "Out-of-Service" LED is not lit.	1. Ensure the orange and brown wires going to the "Out-of-Service" LED are connected fully to the LED and to the MLB connector. 2. Check for 24vdc on the orange and brown wires. If it is present, the LED is bad and needs to be replaced. 3. Replace the main logic board. 4. Replace the bill validator. 5. Replace the validator wire harness.
FOR TECHNICAL SERVICE OR TO OBTAIN A RETURN AUTHORIZATION NUMBER CALL (888) 741-9840	<u>**ANY REPAIR RETURNED WITHOUT A RETURN MATERIAL AUTHORIZATION NUMBER (RMA#) WILL BE REFUSED!!**</u>

TROUBLESHOOTING GUIDE
TO USE THE TROUBLESHOOTING GUIDE, MATCH UP THE PROBLEM, THEN FOLLOW THE SOLUTION SUGGESTIONS. After every step try operating the changer to see if the problem has been solved

PROBLEM:	SOLUTION:
F. The bill validator pulls in the bill, but rejects it every time.	1. Clean the validator (refer to pgs. 21 and 22). 2. Remove the lower housing of the bill validator. Ensure the center wheel spins freely. Push straight down on it slightly to loosen. 3. Make sure that the bill denomination being rejected is enabled by BOTH the validator AND in the Main Logic Board program. Refer to pgs. 20 and 21 for the validator, and pgs. 10-11 for the MLB. 4. The validator may be flashing an error code. Open the changer door and check the validator's LED indicator. Error codes and descriptions are listed on pgs. 17 and 24.
G. The changer is giving the wrong payouts.	1. The Main Logic Board's user-programmed settings for changer 'Mode' and/or 'Payout' are incorrect. Refer to the section "Programming the AC500 Series Changer" on pages 4-14 of this manual for detailed instructions on how to reprogram the changer's operation.
H. The bill validator's red status LED is on steady but it still will not accept the bill.	1. Pull out the lower housing, referring to pg. 19 for instructions, and look for something obstructing the bill path (i.e. gum, papers, tickets, coins, etc.). 2. Open up and look inside the plastic Logic Board box on the side of the bill validator. Ensure that all the wire harness plugs are plugged firmly into their white female sockets.
FOR TECHNICAL SERVICE OR TO OBTAIN A RETURN AUTHORIZATION NUMBER CALL (888) 741-9840	**<u>ANY REPAIR RETURNED WITHOUT A RETURN MATERIAL AUTHORIZATION NUMBER (RMA#) WILL BE REFUSED!!</u>**

MONEY CONTROLS COMPACT HOPPER PARTS LIST

X

4

2 **3**

5

7

6

1

B
Spring and
ejector
location

A
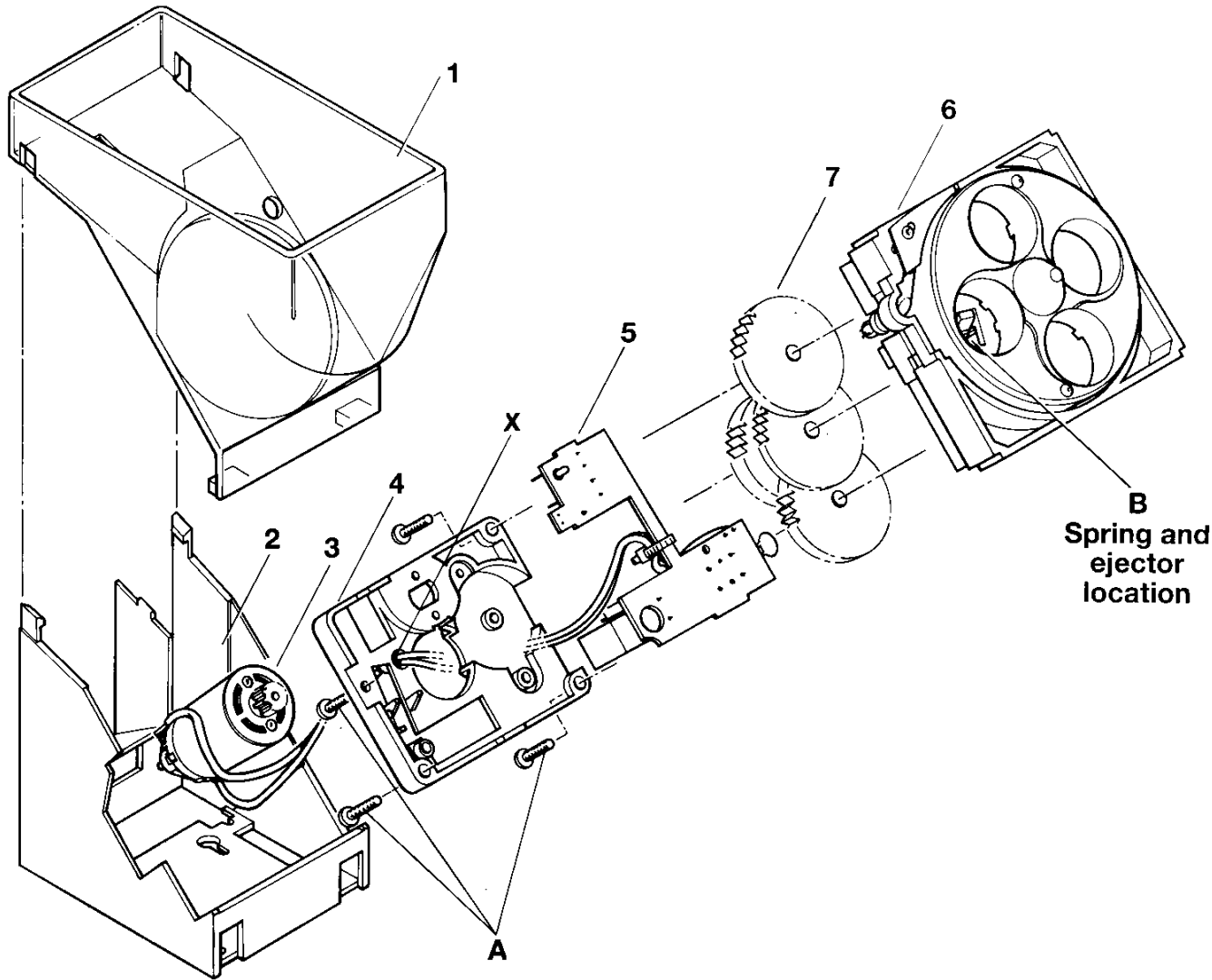
Parts List

1. Bowl

2. Base

3. Motor assembly

4. Gear box cover

5. PCB assembly

6. Disc bed assembly
   (state coinage)

7. Gear cluster -
   (Not serviceable item,
   illustrated for reference only)

*Note: When ordering motor
assembly, gearbox cover,
PCB assembly or disc bed
assembly, screws are
supplied separately.*

The parts listed are the only
user serviceable components
available. All units requiring
additional work should be
returned to a Coin Controls
group company or approved
service centre.

Tampering will invalidate the
warranty.

AC500 CABINET PARTS BREAKDOWN
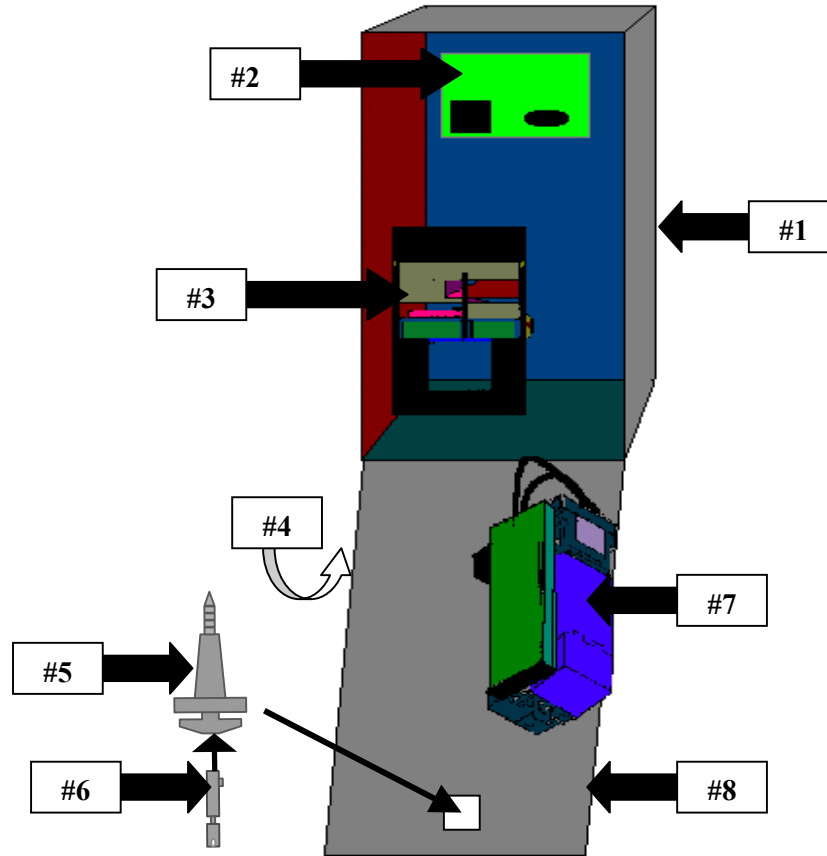
AC500 CABINET PARTS

#1 AC5010   - AC500 CABINET W/DOOR, LOCK NUT ASSY., & COIN CUP
#2 AC1065   - MAIN LOGIC BOARD W/ LCD DISPLAY
    AC1066   - AC-01 POWER MODULE BOARD
#3 AC5040.1   - MONEY CONTROLS COMPACT HOPPER
#4 AC5081   - AC500 FULL LEXAN FRONT STICKER
#5 AC5080   - SCREW-IN "T" HANDLE
#6 AC1093   - LOCK AND 2 KEYS
#7 AC9002   - COINCO MAG52SA (PRO) BILL VALIDATOR
#8 AC5010.1   - DOOR FOR THE AC500

OPTIONAL PARTS *(NOT SHOWN)*

AC1051   - TWO OUTLET SURGE PROTECTOR
AC1052   - FOUR OUTLET SURGE PROTECTOR
AC1091   - TILT ALARM ONLY
AC5070   - BASE / PEDESTAL
AC5075   - HEADER
AC5040.2   - COMPACT HOPPER FOR $1 COINS
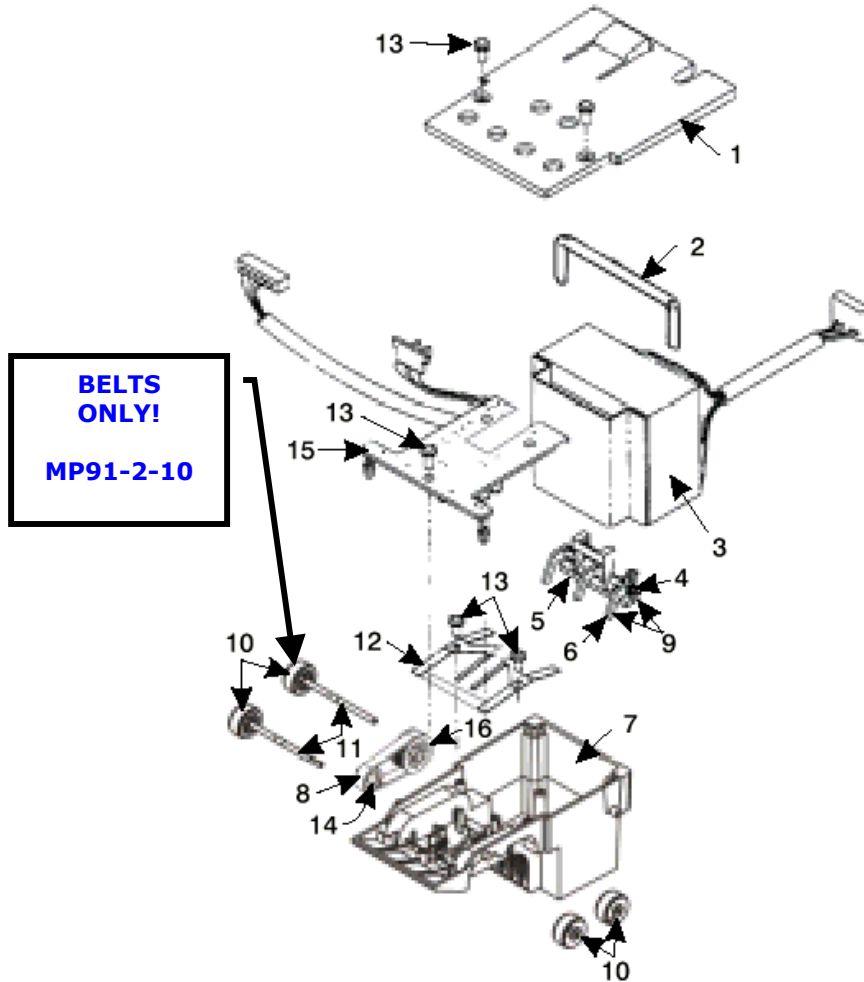
COINCO PARTS LIST

MOUNTING ASSEMBLY PARTS BREAKDOWN
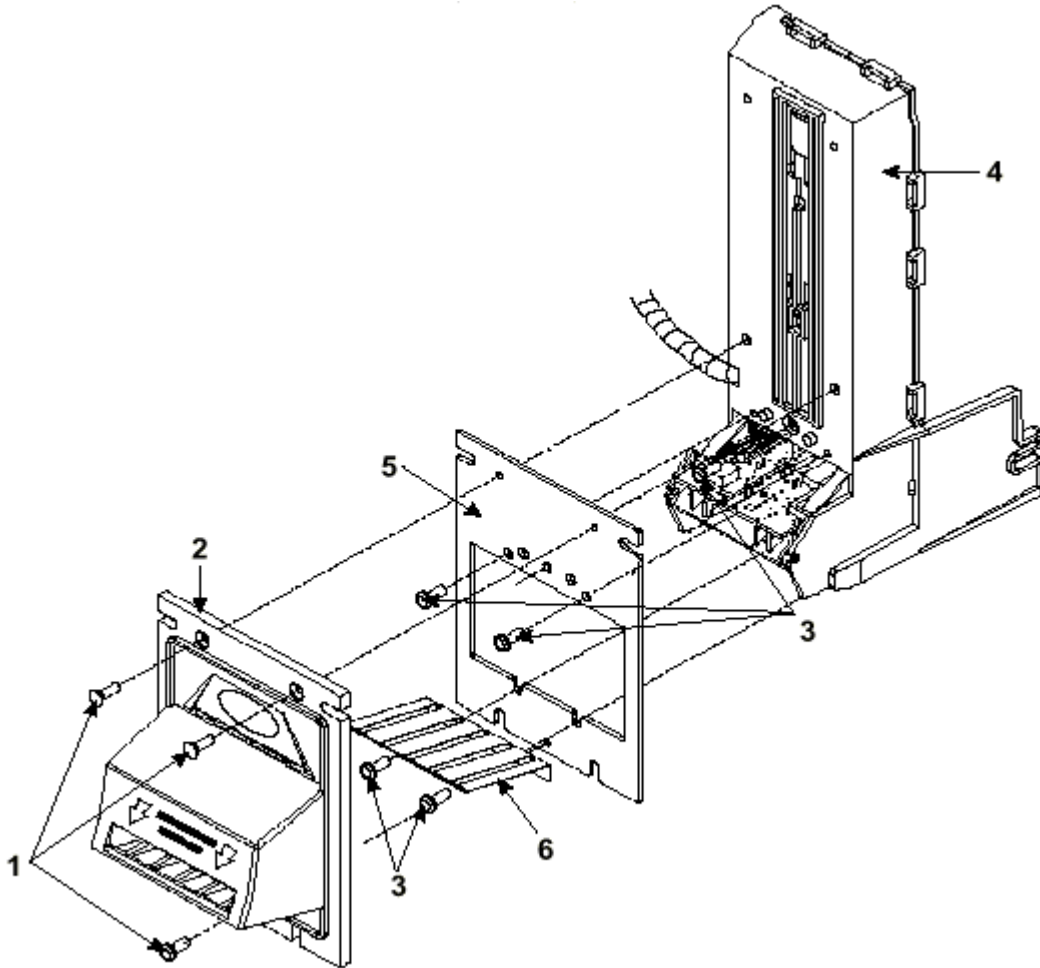
PICTURE #	PART #	DESCRIPTION
#1	MP90-1-1	Machine Screw
#2	MP90-1-2	"Snack Mask" Black Plastic
#3	MP90-1-3	Machine Screw
#4	MP90-1-4	Main Frame, Plastic
#5	MP91-1-5	Mask Gold Mounting Bracket
#6	MP90-1-6	Bill grounding spring
#7	MP91-1-7	Machine Nut

COINCO PARTS BREAKDOWN

BELTS ONLY!

MP91-2-10

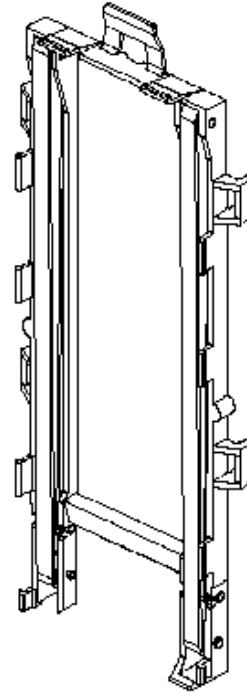| PICTURE #	PART #	DESCRIPTION
#1	MP90-2-1	Bottom Lower Housing Cover
#2	MP90-2-2	Transformer holding hose
#3	MP90-2-3	120VAC Transformer
#4	MP90-2-4	Lower Spring, Anti-Cheat Lever
#5	MP91-2-5	Lower Mounting, Anti-Cheat Lever
#6	MP90-2-6	Lower Anti-Cheat Lever
#7	MP90-2-7	Lower Housing Assembly, Complete
#8	MP90-2-8	Belt, Center
#9	MP90-2-9	Lower Anti-Cheat Assembly, Complete
#10	MP90-2-10	Plastic Wheels & Rubber Belts
#10	**MP91-2-10**	**Rubber Belts ONLY (Each)**
#11	MP90-1-11	Shaft, Drive
#12	MP90-2-12	Spring, MAG
#13	MP90-2-13	Screw, #4, Plastic
#14	MP90-2-14	Roller, Idler
#15	MP91-2-15	Sensor Board, Lower
#16	MP91-2-16	Pulley & Hub Assembly, Complete

COINCO PARTS BREAKDOWN
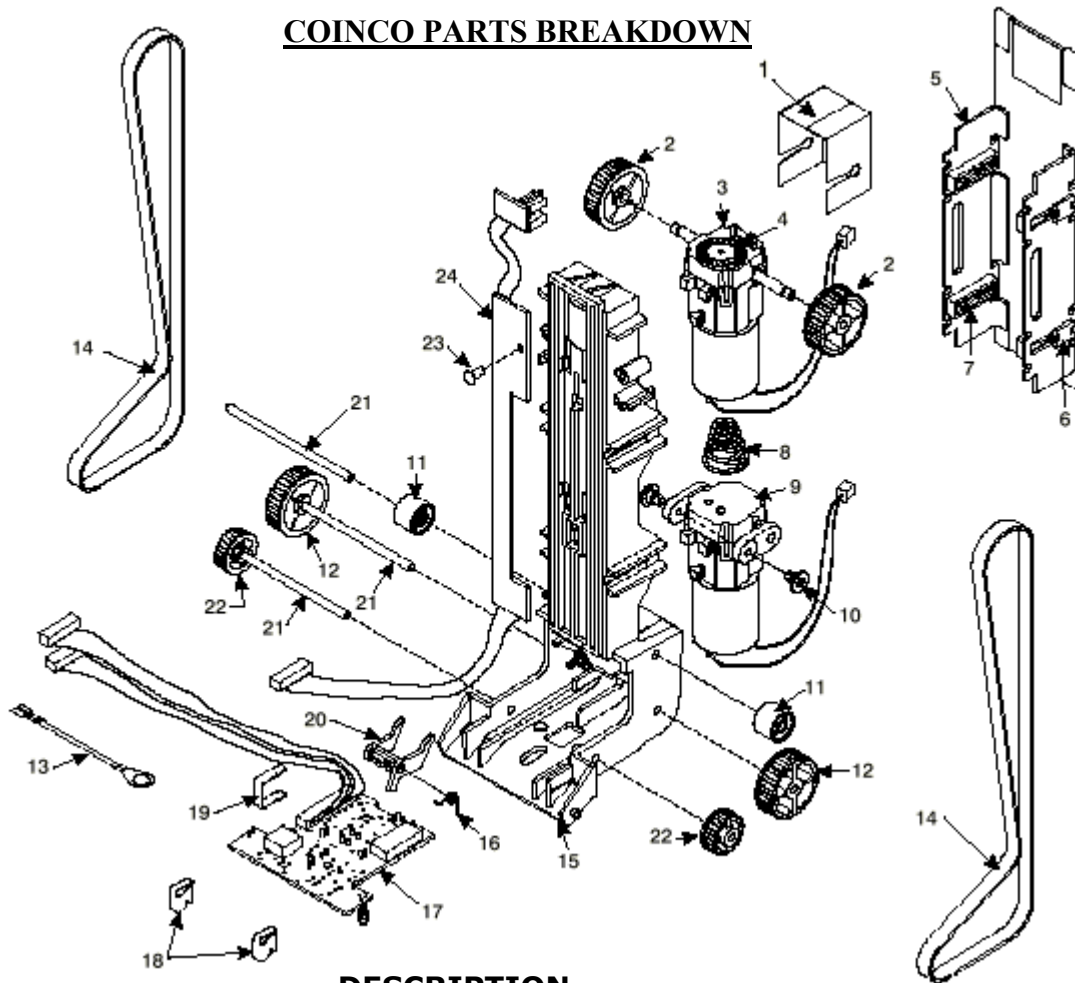
PICTURE #	PART #	DESCRIPTION
		Dust Cover
#1	MP90-3-1	Upper Transport & Hub Assembly, Complete
#2	MP90-3-2	Motor, Transport & Gear Assembly Complete
#3	MP91-3-3	Wheel, Encoder
#4	MP90-3-4	Stacker, Push-Plate Assembly
#5	MP90-3-5	Spring, Belt Tension
#8	MP90-3-8	Motor, Stacker Assembly Complete
#9	MP90-3-9	Pulley, Idler
#10	MP90-3-10	Lower Transport Pulley & Hub Assembly
#11	MP90-3-11	Belt, Upper Housing
#13	MP90-3-13	Frame, Upper Housing
#14	MP90-3-14	Sensor Board, Upper Housing
#15	MP91-3-15	Upper Board Clip
#16	MP90-3-16	Wire Clip
#17	MP90-3-17	Shaft, Pulley
#18	MP90-3-18	Shaft, Wheel
#19	MP90-3-19	Board, Stacker
#21	MP90-3-21	

COINCO PARTS BREAKDOWN
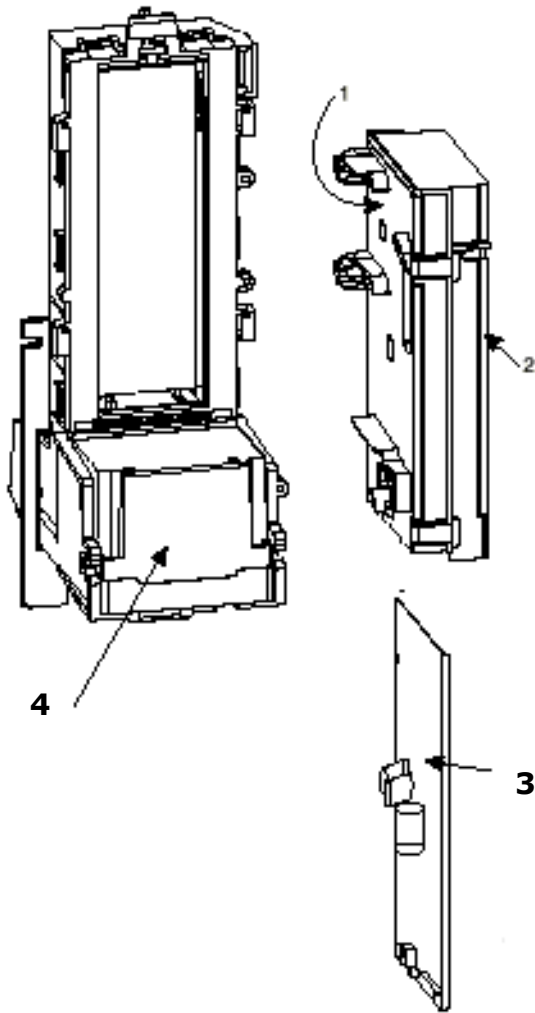
INTERMEDIATE RAME ASSEMBLY

MP90-4-IF

PICTURE #	PART #	DESCRIPTION
#1	MP90-4-1	Lid, Logic board Box
#2	MP91-4-2	Body, Logic board Box
#3	MP90-4-3	Main Logic Board
#4	MP90-4-4	Sticker, Serial Number / Warranty
#5	MP90-4-IF	Intermediate Frame with Bearings