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Operation Manual for the C2000-CRC Controller

(v2.14C or higher)

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ABOUT THIS MANUAL

This manual was designed to introduce the C2000 CRC Controller, to explain its functions and how it operates, and to assist the operator with programming procedures. It will also enable the operator to detect error codes and perform basic troubleshooting procedures. If further assistance is needed, please call the manufacturer at (800) 837-5561 or (419) 867-4858.

When calling for assistance, you must have the CONTROLLER SERIAL NUMBER and the VERSION of the Controller readily available. Please take the time to record this information in the spaces provided.

C2000 CRC SERIAL #_____

(Version) V_____

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I. INTRODUCTION

The Hamilton C2000 CRC was developed to allow owners to accept credit cards in their changers as payment for tokens. The C2000 CRC Controller makes operating a Bill Changer simple. The Controller monitors the inputs from the various components and controls the Validator, Stacker and Hopper(s). It also monitors the power supply for fluctuations in current and voltage.

When a customer inserts a bill or swipes a credit card, he will receive a set number of tokens. The number of tokens is determined by the payout scheme selected by the operator. In the event of a brief power failure, the Controller will retain in memory any uncompleted payouts. The Controller has an LED that is used to indicate the status of the changer, displaying error codes if necessary.

The C2000 CRC features a 20-character display that makes using the changer easier for customers. Up to 4 custom and preprogrammed Welcome Messages can be selected. The C2000 CRC also features audit capabilities.

The C2000 CRC uses a hand-held terminal for programming and viewing audits. The hand-held terminal uses a 4-line by 20-character LCD to display information. It also incorporates a 20-key keypad to accept input from the user. This system allows the user to tailor a change machine to meet specific needs.

The CRC hand-held terminal is portable, designed to carry from one machine to another. The hand-held terminal is not weather resistant. Temperature extremes, as well as moisture, can damage the terminal. When used with outdoor changers, the hand-held terminal should be removed after programming or viewing audits and stored in a dry place.

★ **Do not unplug the C2000 CRC without first exiting. The message "GOOD-BYE! OK TO DISCONNECT." should be on the display before disconnecting the hand-held terminal. If the hand-held terminal was disconnected before exiting, plug it back in and press "ESC". The main menu should appear. Press "EXIT" at the main menu to exit from the C2000 CRC.**

OPTIONS

The C2000 CRC Controller offers the following features as options:

- **Tokenotes® can be accepted to vend token coins. (Refer to the TOKENOTE® TRAINING GUIDE FOR CHANGERS.)**
- **$1 bills can be separated from $5, $10 and $20 bills when a Dual Stacker is installed. (Refer to the Dual Stacker Manual.)**

II. OPERATION

On the face of the C2000 Controller there is a white Computer Reset Button, a green LED, and a bank of 12 Vend Switches. On one side is the Card Edge Connector, which is where the main wiring harness of the changer connects. The Card Edge Connector is polarized to avoid reversing connections. On the inside of the Controller is another bank of 8 DIPswitches; these are the Configuration Switches.

VEND SWITCHES

In the C2000 CRC the Vend Switches are only used to enable or disable the use of the hand-held terminal. (Refer to the Programming section for more information.)

CONFIGURATION SWITCHES

Switch 2 (SW2) refers to the bank of 8 DIPswitches on the logic board. The logic board is the smaller piggybacked board on the underside of the Controller. THESE SWITCHES ARE SET AT THE FACTORY AND SHOULD NOT BE CHANGED These switches tell the Controller which type of Hopper(s) and coin mech are connected. Also, one of these switches configures the Controller to integrate with the Dual Stacker and the HVX Validator combination. (Refer to APPENDIX A for details of switch settings.)

LED

The green LED located on the face of the Controller near the Computer Reset Button indicates the status of the bill changer. When the LED is lit constantly, it is indicating that everything is normal and the Controller is running. When a fault is detected, the Controller automatically shuts the machine down. The green LED will begin a sequence of flashes, which indicates the appropriate error code. To read an error code, watch the flashing LED. Note that there is a series of flashes, a short pause, another series of flashes, then a long pause. After the long pause, count the number of flashes seen, wait while the LED pauses briefly, then count the next series of flashes. The sequence will continue until the Computer Reset Button is pressed.

Watch the flashing sequence several times to ensure the message is interpreted correctly.

RESETTING

The white Computer Reset Button is located on the face of the Controller. After an error has occurred, reset the computer by depressing the Computer Reset Button once. The LED will go out while the Controller resets. Once the Controller has reset, the LED will turn back on as a steady light.

The hand-held terminal can also be used to reset the Controller. (For more information, refer to the Programming and Error Codes sections.)

III. CREDIT CARD PROCESSING

When a customer swipes a credit card, the card reader sends the card information to the C2000 CRC. The C2000 CRC adds the amount to be charged to the card information and sends the transaction to the CRC Controller. At this time, the C2000 CRC displays the message "CHECKING CREDIT". The CRC Controller then attempts to call the credit card processor and get an authorization. Once the C2000 sends the transaction information to the CRC Controller, there are 3 possible ways the transaction will be completed. The C2000 display will switch from "CHECKING CREDIT" to one of the following messages to indicate how the transaction has been completed:

CREDIT ACCEPTED - If the transaction was authorized, this message will be displayed and the C2000 CRC will pay out the proper amount of tokens.

CARD UNREADABLE - This message can have several meanings:

- **The transaction may have been declined by the processor.**
- **The CRC Controller may not be set up to accept the type of card used.**
- **The CRC Controller may not have been able to connect to the processor to get authorization.**
- **The card reader may be having trouble reading the credit card.**
- **The customer may have used the credit card in the changer more times than is allowed in a specified time period. (Refer to the MAX USES category in the Programming section on page 9.)**

TIMEOUT FROM PC - If the CRC Controller does not respond within 4 minutes, the C2000 CRC cancels the transaction and displays this message. (Refer to the Trouble Shooting section of the CRC Manual for information on diagnosing this message.)

For complete information on the credit process, refer to the CRC Manual.

IV. PROGRAMMING THE C2000 CRC

Before programming the C2000 CRC, check the switch settings on the Controller. Switches H and I should be set to the ON position. If these switches are set to the OFF position, you will not be able to program the Controller. The remaining switches can be set to either position.

When the C2000 CRC is plugged into the modular connector, you may hear a click. At this point, the display will be blank. Press the "ESC" button. The hand-held terminal will flash the following message:

CONNECTED TO C2000
C2000 V2.XXC
01-01-99 4:00 PM

If the C2000 CRC LED was flashing when the hand-held terminal was connected, indicating an error, the next message displayed will be a description of that error. For example:

{1, 3} HOPPER 3
EMPTY
PRESS ESC

The above message shows a 1.3 error code, indicating that Hopper 3 is empty. (For a more detailed description of error codes, refer to the Troubleshooting Guide.)

After pressing 'ESC' (or if there was no error), the display should now show the main menu:

1 – PROGRAM SYSTEM
2 – VIEW AUDITS
3 – CLEAR TEMP AUDITS
4 – ERROR HISTORY

Each of the above menu options is described in more detail on the following pages.

1 - PROGRAM SYSTEM

The Program System section allows programming of the Welcome Messages, the Date and Time, the Payouts, and Miscellaneous System Settings.

To access the Program System section, press Button 1 while at the main menu. At this time, you will be prompted to enter your password. If you have not yet programmed your password, use the default password, which is 123456. (You will be able to program a personal password once you reach the final screen in PROGRAM PAYOUTS. For more information, refer to page 11.)

Once you have entered a password, the LEFT and RIGHT AROW keys allow you to scroll through the programming categories. The RIGHT ARROW moves you to the next category and the LEFT ARROW key returns you to the previous category.

A - WELCOME MESSAGES

The C2000 CRC can display up to 4 Welcome Messages. There are 7 preprogrammed and 8 Custom Messages to choose from. The Preprogrammed Messages are factory set messages that cannot be edited. The Custom Messages are messages that the user programs.

After entering Program System, you will be in the Welcome Message section at Welcome Message #1. The display will show something similar to the following:

WELCOME MESSAGE #1
ENTER MESSAGE #(0-7)
WELCOME!

Line 3 may say "CUSTOM MESSAGE #" (# will be the number of the selected message) and line 4 depends on what message is currently selected. If line 4 says "-- NOT USED –", no message is currently selected for that Welcome Message. If you do not wish to change the current WELCOME MESSAGE, use the LEFT or RIGHT ARROW keys to go to another Welcome Message or programming category.

Welcome Messages are displayed in numeric order. For example, if all 4 Welcome Messages are programmed, Welcome Message #1 will be displayed first and then #2, #3 and #4. After the last programmed message has been displayed, the Controller cycles back to the first message. Any Welcome Message set to "-- NOT USED --" is skipped and not displayed.

TURNING OFF A WELCOME MESSAGE

To turn a Welcome Message off, press the 0 key. Line 4 will change to say "--NOT USED --". (Be sure you are not currently editing a Custom Message before pressing the 0 key.)

SELECTING PREPROGRAMMED MESSAGES

Before selecting a preprogrammed message, make sure that line 3 is blank, indicating that Custom Messages is turned off. If line 3 is not blank, press the F1 key (F1 turns Custom Messages ON and OFF). To select a preprogrammed message, press one of the number keys (1 through 7). The following table lists all the Preprogrammed Messages.

1	WELCOME!	
2	X TOKENS FOR	X = Number of Token Dispensed
3	$X.XX CREDIT	X.XX = Amount Charged
4	INSERT CREDIT CARD	
5	AND REMOVE QUICKLY	
6	01-01-01 1:00 AM	Current Date and Time
7	USE CASH OR CREDIT	

SELECTING CUSTOM MESSAGES

To select a Custom Message, line 3 must say "CUSTOM MESSAGE #" (# is the number of the currently selected CUSTOM MESSAGE). If line 3 is blank, indicating Custom Messages is turned off, press the F1 key.

Pressing the number keys (1 through 8) will select a Custom Message. If Custom Message has already been programmed, it will appear on line 4. If the selected Custom Message has not been programmed, "--NOT PROGRAMMED—" appears on line 4.

EDITING CUSTOM MESSAGES

To edit or create a new message, select the desired Custom Message number then press the F2 key. Line 3 on the hand-held display should now say "EDITING MESSAGE #" (# is the number of the currently selected CUSTOM MESSAGE).

Once in the editing mode, the cursor will appear at the left most position of line 4. If a message was not previously programmed, line 4 will be blank except for the cursor. Otherwise, the previously programmed message will still be on line 4.

Line 4 on the hand-held terminal is 20 characters wide, which is the same as the Controller display. This means the message appears on the hand-held terminal exactly as it will appear on the main display. Editing or creating a message is achieved by moving the cursor to different positions and selecting the desired characters.

Once a desired message is obtained, press the EXIT key to save changes and quit the edit mode. When the edit mode is exited, the cursor will disappear and line 3 will go back to saying "CUSTOM MESSAGE #" (# will be the number of the selected message).

The following table summarizes the available editing keys. After the table is a detailed explanation of each key.

F1	**Inserts a space at the cursor. Characters from the cursor on are moved to the right 1 space. The character in the last position scrolls off the line and is lost.**
F2	**Deletes the character at the cursor. All characters to the right of the cursor are shifted left 1 space. A blank space is inserted in the last position.**
F3	**Deletes the character at the cursor and replace it with a space.**
F4	**Deletes the entire message and places the cursor at the beginning of the line. If the EXIT key is pressed immediately after the F4 key, the current Custom Message will be deleted from the programmable memory and "--NOT PROGRAMMED--" will be displayed.**
ESC	**Quits the edit mode without saving changes.**
EXIT	**Quits the edit mode and saves changes.**
2	**Scrolls through the available characters one at a time and in ascending order. Once the end of the list is reached the characters wrap back around to the beginning.**
0	**Scrolls through the available characters one at a time and in descending order. Once the beginning of the list is reached the characters wrap back around to the end.**
RIGHT ARROW	**Moves the cursor right 1 space.**
LEFT ARROW	**Moves the cursor left 1 space.**

B - DATE & TIME

Use the RIGHT ARROW key to scroll to the next category, DATE & TIME. Continue using the RIGHT ARROW key to scroll through each category until the time and date are set.

> **NOTE:** **it is important for the date and time to be set correctly in order for the Limit Use feature to function properly.**

ENTER DATE & TIME	
ENTER MONTH	1

Enter the number of the current month. For example, enter 1 for January or 12 for December. Press the RIGHT ARROW key.

ENTER DATE & TIME	
ENTER DAY	1

Enter today's date. For example, if today is March 1, 1995 enter 1 for the day of the month. Press the RIGHT ARROW key.

ENTER DATE & TIME	
ENTER YEAR	99

Enter the last two digits of the year. Then press the RIGHT ARROW key.

ENTER DATE & TIME	
ENTER HOUR	1

Enter the hour of the current time. For example, if it is 1:15 PM, enter 1. Press the RIGHT ARROW key.

ENTER DATE & TIME	
ENTER MINUTE	15

Enter the minutes of the current time. For example, if it is 1:15 PM, enter 15. Press the RIGHT ARROW key.

ENTER DATE & TIME
(0=AM / 1=PM)
ENTER AM/PM 1

Enter 0 for AM or 1 for PM. Then press the RIGHT ARROW key.

C - PAYOUTS

The PAYOUT category is used to determine the payout for each Hopper.

ENTER COIN TYPE (0-5)
HOPPER1 COINS
0 – HOPPER UNUSED

This screen specifies the contents of HOPPER 1. There are only two allowable choices, 0 or 4.

0 – Sets HOPPER 1 to UNUSED. (Use this setting if using a system with 1 or 2 Hoppers.)

4 – Sets HOPPER 1 to hold TOKENS.

Press the RIGHT ARROW key to scroll to the HOPPER 2 contents. If you are using a 1 Hopper change machine, HOPPER 2 COINS should be set to zero.

Press the RIGHT ARROW key again to scroll to the HOPPER 3 contents. If you are using a 1 Hopper change machine, do not press 0. This is the main Hopper of any change machine, therefore, 4 must be assigned to HOPPER 3. Once this is done, press the RIGHT ARROW key to scroll to the next setting.

The following screen will appear:

DEFAULT PAYOUTS Y/N
NO

When vending tokens, the DEFAULT PAYOUTS feature will not have any effect. Leave the DEFAULT PAYOUTS set to NO.

Press the RIGHT ARROW key to scroll to the next setting. The following screen will appear:

ENTER CREDIT AMOUT	
(IN CENTS)	
CENTS:	0

This is the amount that will be charged for each credit card swipe. The credit amount needs to be entered in cents. For example, if a payout is desired for $5.00 credit, enter 500. When you have entered the desired amount, press the RIGHT ARROW key to take you to the next screen.

HOPPER X COINS	
FOR (CENTS):	XXX
COINS:	0

This screen shows how many coins will dispense from HOPPER X when the credit card swipe has been authorized. Simply type in the number of coins that you wish to dispense from HOPPER X, then press the RIGHT ARROW key. The screen will automatically show the next Hopper. (If any Hoppers were labeled as "UNUSED" in the ENTER COIN TYPE screen, they will not show up here.) Continue until all of the Hoppers have been set, then press the RIGHT ARROW key to scroll to the next screen.

ENTER REPEAT USE	
TIME PERIOD	
(0 – 24 HRS)	
REPEAT TIME	XX

The C2000 CRC Controller has the ability to limit the number of times the same credit card can be used in a specified time period. Use this screen to set that time period. If you do not wish to limit the number of times a credit card can be used, enter 0. Press the RIGHT ARROW key to scroll to the next screen.

> **NOTE: If setting the REPEAT USE TIME PERIOD (above) to 0 to allow unlimited credit card use, ensure the MAX USES (below) is set to a none zero value.**

ENTER MAX USES IN	
REPEAT USE TIME	
(0 – 99)	
REPEAT USES	XX

This category sets the number of times the same credit card can be used in the time period specified in the REPEAT USE TIME PERIOD category. If at any time you wish to disable the credit card, set MAX USES to 0. The changer will then stop processing credit cards.

> **NOTE: Setting MAX USES to 0 disables credit card processing even if REPEAT USE TIME PERIOD is set to 0 for unlimited uses.**

If your changer is NOT equipped with a Validator and/or a coin mech, skip to section D, MISCELLANEOUS SYSTEM SETTING. To do this, keep pressing the RIGHT ARROW key until the MACHINE # category appears.

If your changer IS equipped with a Validator and/or a coin mech, press the RIGHT ARROW key once to scroll to the next setting. The following screen will appear:

ENTER TARGET INPUT 1
(IN CENTS)
CENTS: 0

This is the first target price. When a target price is reached, a payout will immediately follow. The amount of the target price needs to be entered in cents. For example, if a payout is desired for $2.00, enter 200. When you have entered the desired amount, press the RIGHT ARROW key to take you to the next screen.

HOPPER X COINS	
FOR (CENTS):	XXX
COINS:	0

This screen shows how many coins will dispense from HOPPER X when the target price of XXX has been reached. Simply type in the number of coins that you wish to dispense from HOPPER X, then press the RIGHT ARROW key. The screen will automatically show the next Hopper. (If any Hoppers were labeled as "UNUSED" in the ENTER COIN TYPE screen, they will not show up here.) Continue until all of the Hoppers have been set, then press the RIGHT ARROW key to scroll to the next TARGET INPUT screen.

EXAMPLE - To set the payout for the target price of $2.00, follow the steps below:

TARGET INPUT: To set a payout for $2.00, enter 200
HOPPER 1 COINS: To dispense 1 coin, enter 1.
HOPPER 2 COINS: To dispense 4 coins, enter 4.
HOPPER 3 COINS: To dispense 2 coins, enter 2.

You have now programmed the Controller to pay out 1 coin from Hopper 1, 4 coins from Hopper 2, and 2 coins from Hopper 3 whenever $2.00 is received as payment.

Up to nine different Target Inputs may be entered. Press the RIGHT ARROW key to scroll past all unused Target Inputs. Check to make sure that the unused Target Inputs are set to zero as you scroll past them.

Press the RIGHT ARROW key to view the following screen:

ENTER TIMED INPUT 1
(IN CENTS)
CENTS: 0

Timed inputs are generally used with systems incorporating all tokens. Token coins are paid back to a customer (instead of change) when a target price has not been reached. Therefore, a non-token Hopper is not needed.

There are four possible timed inputs that may be entered. After 9 seconds of inactivity, the timed inputs are checked. For example, three tokens are programmed to dispense upon receiving $2.00. However, a customer only deposits $1.00. A timed input was programmed for $1.00 to dispense one token. The Controller will wait 9 seconds for the customer to deposit another $1.00. If the customer does not do so, the Controller will dispense one token. To scroll through each of the four timed inputs, use the RIGHT ARROW key.

Press the RIGHT ARROW key to view the following screen:

TOKENOTE_ A
ENTER NUMBER OF
TOKENS DISPENSED PER
TOKENOTE: X

The Tokenote® category is used to program the number of token coins to be dispensed for each Tokenote®. (This is for audit purposes only. To actually set the payout values for each Tokenote®, you must program the Validator.) The AUDITPRO allows up to eight Tokenotes® to be programmed. These eight Tokenotes® are categorized as TOKENOTE_A through TOKENOTE_H. Audits are kept on the number of Tokenotes® received for each category. (Refer to the next section, VIEW AUDITS, for information on viewing these totals.)

If you have more than one Tokenote® programmed for the same amount of coins, there is no way to differentiate between them in the audits. For example, Tokenote 1 and Tokenote 2 are both trained to payout two tokens. The AUDITPRO is then programmed to keep audits of all two-token Tokenotes®. When the audits are viewed, the total of two-token Tokenotes® will include both Tokenote 1 and Tokenote 2. To view the total number of two-token Tokenotes® received, press Button 2 (for two tokens) on the AUIDTPRO.

D - MISCELLANEOUS SYSTEM SETTING

After programming all the payout categories, press the RIGHT ARROW key to view the following screen:

CLEAR TEMP TOTALS
AFTER PRINTOUT?
NO

If you wish to automatically clear all temporary totals after receiving a printout, press YES. If you do not wish to clear these totals immediately following a printout, press NO. Press the RIGHT ARROW key to scroll to the next screen.

MACHINE # 0

This screen allows you to assign a machine number, which will appear on the printout. This can be done for each machine, making it easier to keep track of totals. Up to three numbers can be used. Once you have entered the machine number, press the "ESC" key to return to the main menu.

To program a personal password or to change an existing password, press the RIGHT ARROW key while viewing the above screen. The following screen will appear:

TO CHANGE PASSWORD
ENTER OLD PASSWORD:

Enter the old password to view the following screen:

TO CHANGE PASSWORD
ENTER NEW PASSWORD:

You can use up to six numbers for your personal password. Please take the time to write this number in a safe place so that you will not forget it. Once you have entered the new password, the following screen will be displayed:

PASSWORD CHANGED!

This screen displays briefly before automatically wrapping to the beginning of PROGRAM PAYOUTS.

When programming is completed, press the "ESC" button to return you to the main menu.

2 - VIEW AUDITS

Press Button 2 at the main menu to view all audit information.

The order of the audits is as follows:

NICKEL => DIME => QUARTER => $1.00 => $2.00 => $5.00 => $10.00 => $20.00 => HOP1 => HOP2 => HOP3 => TOKENOTE_A => TOKENOTE_B => TOKENOTE_C => TOKENOTE_D => TOKENOTE_E => TOKENOTE _F => TOKENOTE_G => TOKENOTE_H

To better help you view the audit information, it is important to keep the following in mind. The LEFT ARROW key may be pressed at any time to go to the previous audit. When you

are at the last audit (TOKENOTE_H) and the RIGHT ARROW key is pressed, the audits wrap around to the beginning and the NICKEL audits are displayed. To leave the audits and return to the main menu, press the "ESC" button on the AUDITPRO.

It is also helpful to understand the difference between TEMP TOTALS and PERM TOTALS. TEMP TOTALS are the totals accumulated since the last time the audits were cleared. The PERM TOTALS are the non-resettable totals accumulated during the life of the Controller while in that machine.

The first group of information that appears in VIEW AUDITS is for the nickel. The screen should look like this:

NICKEL TOTAL	**XXX**
NICKEL VALUE	**$XX.XX**
PERM TOTAL	**XXXX**
PERM VALUE	**$XXX.XX**

- **NICKEL TOTAL is the total number of nickels taken in.**
- **NICKEL VALUE is the monetary value of those nickels. For example, if NICKEL TOTAL were 20, NICKEL VALUE would be $1.00. These two totals may be reset to zero by choosing Item 3 from the main menu.**
- **PERM TOTAL and PERM VALUE are the permanent (or non-resettable) nickel totals. These are the accumulated totals.**

Use the RIGHT ARROW key to scroll through the next seven audits (DIME, QUARTER, $1.00, $2.00, $5.00, $10.00, and $20.00).

The next three audits are dispensed coin totals (HOP1, HOP2, and HOP3). These show the number of coins that have been dispensed from each Hopper. The screen for HOP1 should look like this:

HOP1 TOTAL	**XXXXX**
HOP1 VALUE	**$XX.XX**
PERM TOTAL	**XXXX**
PERM VALUE	**$XXX.XX**

- **HOP1 TOTAL is the total number of coins that dispensed from Hopper 1.**
- **HOP1 VALUE is the monetary value of those coins. For example, if Hopper 1 holds quarters, and 80 coins dispensed, then the HOP1 VALUE would be $20.00.**
- **PERM TOTAL and PERM VALUE are the permanent (or non-resettable) totals. These are the accumulated totals.**

Press the RIGHT ARROW key to view the last eight audits, which are for Tokenotes® (TOKENOTE_A through TOKENOTE_H). The following screen will be displayed:

TOKENOTE_A	
TOKENS PER NOTE:	**X**
T-NOTE TOTAL	**X**
PERM TOTAL	**X**

In order to keep audits of Tokenotes®, you must first program the number of tokens assigned to each Tokenote®. (Refer to the PROGRAM PAYOUTS section.)

- **TOKENS PER NOTE: is a reminder of how many token coins were assigned to TOKENOTE_A.**
- **T-NOTE TOTAL is the total number of tokens dispensed (number of token coins per Tokenote®).**
- **PERM TOTAL is the non-resettable total. This is an accumulated total.**

Use the RIGHT ARROW key to view the remaining audits. To leave VIEW AUDITS and return to the main menu, press the "ESC" button on the AUDITPRO.

3 - CLEAR TEMP AUDITS

To reset the temporary audits on the AUDITPRO, press Button 3 while at the main menu. You will be prompted to enter your password. Once you enter your password, the following screen will be displayed:

CLEAR TOTALS?
ARE YOU SURE? (Y/N)

Pressing "Y" on the AUDITPRO will reset all of the temporary totals to zero and return you to the main menu. Pressing "N" on the AUDITPRO will return you to the main menu and leave the audit totals unaffected.

4 - ERROR HISTORY

To view the ERROR HISTORY information, press Button 4 while at the main menu. The following screen will be displayed:

{1,1} HOPPER 1	
EMPTY	
TOTAL:	XXX

This is the total number of times that the Controller has shut down due to a 1.1 error code (Hopper 1 empty). The RIGHT ARROW and LEFT ARROW keys may be used to scroll through all of the different error codes. To leave ERROR HISTORY and return to the main menu, press the "ESC" button on the AUDITPRO.

The ERROR HISTORY information will mainly be used by Hamilton's repair department to help diagnose and solve Controller problems. The user will most likely never need this information.

5 - EXITING

To exit from the C2000 CRC, press the "EXIT" button while at the main menu. The following screen will be displayed:

** WARNING! **
SWITCHES H&I SHOULD
BE TURNED BACK OFF.
* PRESS 'ESC' *

Once the 'ESC' key is pressed, the following screen will be displayed:

* IMPORTANT *
CARD READER MUST
BE RE-CONNECTED!
* PRESS 'ESC' *

The Controller will perform a reset and any changes that were made will be in effect. The C2000 Controller's green LED should go out for a couple of seconds and then come back on as a steady light. The changer is now ready to accept bills.

Once the 'ESC' key is pressed, the following screen will be displayed.

GOOD-BYE !
OK TO DISCONNECT.

V. ERROR CODES

As described earlier in the OPERATION section, when a fault has been detected, the LED will flash an error code. An LED that remains off indicates no power or a major failure of the Controller. In the event that a malfunction occurs, the following pages provide assistance for diagnosis.

Always note the error code before attempting any service or before contacting Hamilton.

ERROR CODES	
1 FLASH, PAUSE, 1 FLASH	HOPPER 1 EMPTY
1 FLASH, PAUSE, 2 FLASHES	HOPPER 2 EMPTY
1 FLASH, PAUSE, 3 FLASHES	HOPPER 3 EMPTY
1 FLASH, PAUSE, 4 FLASHES	ALL ALTERNATING-DEFAULTING HOPPERS ARE EMPTY
2 FLASHES, PAUSE, 1 FLASH	HOPPER 1 JAMMED
2 FLASHES, PAUSE, 2 FLASHES	HOPPER 2 JAMMED
2 FLASHES, PAUSE, 3 FLASHES	HOPPER 3 JAMMED
3 FLASHES, PAUSE, 1 FLASH	NICKLE INPUT STUCK
3 FLASHES, PAUSE, 2 FLASHES	DIME INPUT STUCK
3 FLASHES, PAUSE, 3 FLASHES	QUARTER INPUT STUCK
3 FLASHES, PAUSE, 4 FLASHES	$1 INPUT STUCK
3 FLASHES, PAUSE, 5 FLASHES	$5 INPUT STUCK
4 FLASHES, PAUSE, 1 FLASH	HOPPER 1 COIN DROP STUCK
4 FLASHES, PAUSE, 2 FLASHES	HOPPER 2 COIN DROP STUCK
4 FLASHES, PAUSE, 3 FLASHES	HOPPER 3 COIN DROP STUCK
5 FLASHES, PAUSE, 1 FLASH	UNEXPECTED HOPPER 1 PAYOUT
5 FLASHES, PAUSE, 2 FLASHES	UNEXPECTED HOPPER 2 PAYOUT
5 FLASHES, PAUSE, 3 FLASHES	UNEXPECTED HOPPER 3 PAYOUT
6 FLASHES, PAUSE, 1 FLASH	STACKER BUSY TIMEOUT
6 FLASHES, PAUSE, 2 FLASHES	INVALID PAYOUT SWITCH SETTING
6 FLASHES, PAUSE, 3 FLASHES	MEMORY DATA ALTERED
6 FLASHES, PAUSE, 4 FLASHES	TIMEOUT FOR VALIDATOR TO ADVANCE BILL (DUAL STACKER)
6 FLASHES, PAUSE, 5 FLASHES	VALIDATOR SHUT DOWN ERROR
7 FLASHES, PAUSE, 2 FLASHES	POWER LOSS DURING VEND
7 FLASHES, PAUSE, 3 FLASHES	INVALID TOKENOTE CODE
8 FLASHES, PAUSE, 1 FLASHE	NO CREDIT CARD COM

***The following pages provide detailed definitions of error codes**.

ERROR CODE DEFINITIONS

COIN DROP STUCK

Since the coin count switch in the Hopper is NORMALLY CLOSED, a coin passing under the count switch OPENS the circuit. The Controller allows only a short time for a coin to pass under and open the switch and for a coin to drop. If the switch remains open for too long, the Controller will shut down the changer because it is unable to count dispensed coins accurately. This message could mean that the count switch is stuck, the count switch is broken, or there is a broken connection elsewhere in the circuit.

HOPPER JAMMED

If this message is displayed, the Controller has not detected any count signals from the Hopper or the counting circuit has remained closed. The Controller allows a specified amount of time to recognize a payout. If the Controller has not detected a payout, it "times-out". This message could mean that the count switch is out of adjustment or broken. It could also mean that the Hopper is jammed or unable to "pick-up" coins.

★ **The above two (2) errors cannot be detected until the Controller turns on the Hopper(s), and will not be detected on powerup or in standby mode.**

INPUT STUCK

An INPUT refers to a signal coming from the Validator or coin mech which notifies the Controller that money (coins or bills) has been inserted into the change machine. The INPUT STUCK message refers to each input type as being continuous, where a normal input is of only brief duration. This message points to a malfunction in the Validator or coin mech.

UNEXPECTED HOPPER PAYOUT

This message will appear if the Controller has detected a coin payout signal when the Hopper has not been "authorized" to run. The Controller has detected an unexpected open and close of the count circuit.

STACKER BUSY TIMEOUT

The Bill Stacker is part of a NORMALLY CLOSED circuit. When the circuit is opened, the Controller detects that the Stacker is in mid-cycle. The Controller acknowledges this by keeping the Validator disabled until the cycle is complete. A normal Stacker cycle lasts only a couple of seconds. If this cycle lasts too long (for example, if the Stacker was jammed), the computer shuts down. A broken connection in the Stacker busy circuit would also cause a shutdown.

HOPPER EMPTY

The Hopper has sensor strips that detect the level of coins. When the coin level falls below the strips, the circuit is open and the Hopper is considered empty. (This will occur even if there are some coins left in the Hopper.)

INVALID PAYOUT SWITCH SETTING

As explained in the Operation section, the bank of 12 Vend switches located on the face of the Controller are used to select payout options. The switch positions should not need to be changed as they are preset. When the switches are set to a non-sense pattern, one that does not match an existing payout scheme, an INVALID PAYOUT SWITCH SETTING error will result.

TIMEOUT FOR VALIDATOR TO ADVANCE BILL

This occurs only when the Controller is configured to operate a Dual Stacker. The Controller signals the Validator that the Dual Stacker is in its down position. If the Validator does not advance the bill into the Stacker within a certain amount of time, this time-out error will occur. This error could be caused from improper switch settings. If a Dual Stacker is being used, switch 4 on the HVX Validator must be turned ON and switch 2 on the underside of the C2000 Controller (the configuration switches) must be turned ON. A malfunction in the Validator could also cause this time-out error.

VALIDATOR SHUT DOWN ERROR

If the Validator shuts down the Controller, this error will flash. For example, if a bill gets hung up on the rear sensor causing the bill to be stolen, the Validator will be inhibited and will shut down the C2000 Controller. If this error flashes, check the Validator display for an error message. (Refer to the Validator Manual for help.)

UNSTABLE 120 VAC (POWER LOSS)

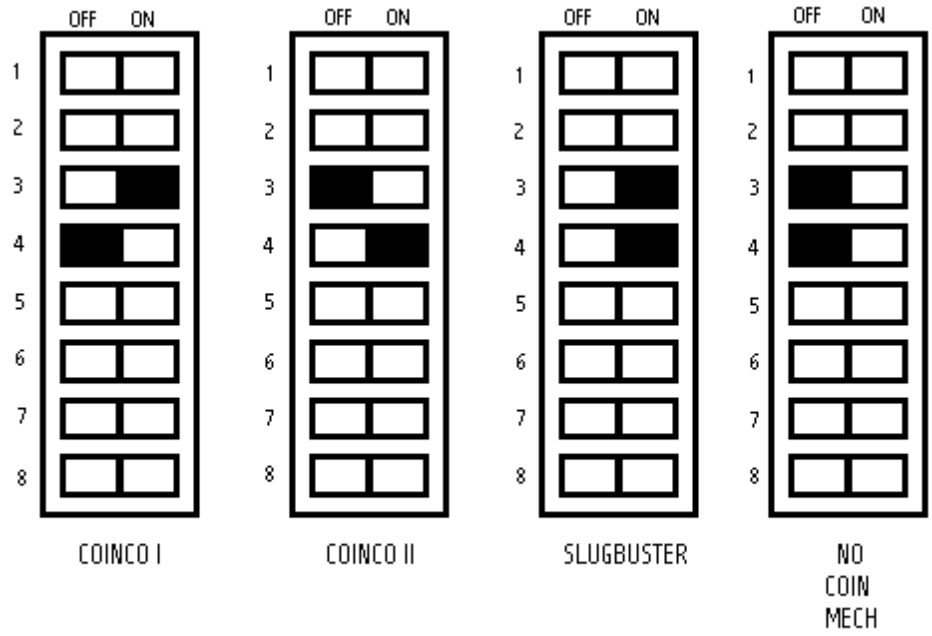
If the Controller detects an extreme voltage drop during payout, it will normally finish the correct payout. The Controller can recover and finish vending through several voltage drops during a payout. However, if there are too many voltage drops during one payout, the microprocessor considers the power source unusable and shuts the changer down. If this condition occurs repeatedly, consult an electrician or the power company.

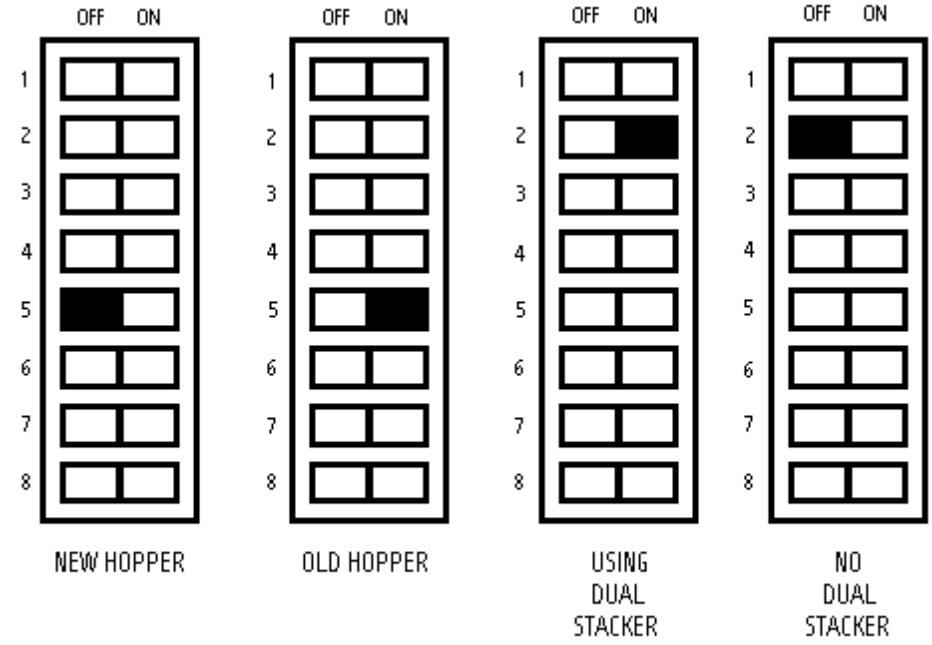
NO CREDIT CARD COM

If the CRC Controller does not respond to the C2000 CRC (indicated by displaying the message "TIMEOUT FROM PC") 3 times in a row, the C2000 CRC will set this error and go out of service. This condition can occur if the CRC controller is unable to post the day's transaction. (Refer to the CRC Manual for additional information.)

APPENDIX A

Configuration Switch Settings





LIMITED WARRANTY AGREEMENT

OF HAMILTON MANUFACTURING CORP.

Hamilton Manufacturing Corp., an Ohio Corporation, ("Seller") warrants to Purchaser that all new equipment shall be free from defects in material and factory workmanship for a period of one (1) year from the original shipping date. Hamilton Manufacturing Corp. further warrants if any part of said new equipment in Seller's sole opinion, requires replacement or repair due to a defect in material or factory workmanship during said period, Seller will repair or replace said new equipment. Purchaser's remedies and the liabilities and obligations of Seller herein shall be limited to repair or replacement of the equipment as Seller may choose, and Seller's obligation to remedy such defects shall not exceed the Purchaser's original cost for the equipment. Purchaser EXPRESSLY AGREES this is the EXCLUSIVE REMEDY under this warranty. There are no other express or implied warranties which extend beyond the face hereof. All warranty repair service must be performed by either a Factory Trained Service Representative or **HAMILTON MANUFACTURING CORP., 1026 Hamilton Drive, Holland, Ohio 43528 PHONE (419) 867-4858 or (800) 837-5561, FAX (419) 867-4867.**

The limited warranty for new equipment is conditioned upon the following:

1. The subject equipment has not, in the Seller's sole opinion, been subjected to: accident, abuse, misuse, vandalism, civil disobedience, riots, acts of God, natural disaster, acts of war or terrorism.
2. The Seller shall not be liable for any expense incurred by Purchaser incidental to the repair or replacement of equipment and Purchaser shall assume full responsibility for any freight or shipping charges.
3. The coverage of this warranty shall not extend to expendable parts.
4. Purchaser shall have a warranty registration card on file with Seller prior to any claim in order for warranty protection to apply.
5. No warranty coverage is applicable to any equipment used for currency other than that specified at the time of the purchase.
6. Seller expressly disclaims any warranty that counterfeit currency will not activate said equipment.
7. Seller expressly disclaims any warranty for any losses due to bill manipulation or theft or loss of cash under any circumstances.

Seller further warrants all repair or service work performed by a factory trained representative or Hamilton Manufacturing Corp. for a period of ninety (90) days from the date the repair or service work was performed. Purchaser's remedies and the liabilities and obligations of Seller herein shall be limited to repair or replacement of equipment as Seller may choose, and Seller's obligation to remedy such defects shall not exceed the Purchaser's depreciated value of the equipment. Purchaser EXPRESSLY AGREES this is an EXCLUSIVE REMEDY under this warranty. There are no other express or implied warranties on repair or service work performed by a factory trained representative or Hamilton Manufacturing Corp. which extend beyond the face hereof.

(See next page for additional provisions)

The limited warranty for repair and service work is conditioned upon the following:

1. The subject equipment has not, in the Seller's sole opinion, been subjected to: accident, abuse, misuse, vandalism, civil disobedience, riots, acts of God, natural disaster, acts of war or terrorism.
2. The Seller shall not be liable for any expense incurred by Purchaser incidental to the repair or replacement of equipment and Purchaser shall assume full responsibility for any freight or shipping charges.
3. The coverage of this warranty shall not extend to expendable parts.
4. Purchaser shall have a warranty registration card on file with Seller prior to any claim in order for warranty protection to apply.
5. No warranty coverage is applicable to any equipment used for currency other than that specified at the time of the purchase.
6. Seller expressly disclaims any warranty that counterfeit currency will not activate said equipment.
7. Seller expressly disclaims any warranty for any losses due to bill manipulation or theft or loss of cash under any circumstances.
8. No person or entity other than a factory trained representative or Hamilton Manufacturing Corp. has performed or attempted to perform the subject repair or service.

THIS AGREEMENT IS MADE WITH THE EXPRESS UNDERSTANDING THAT THERE ARE NO IMPLIED WARRANTIES THAT THE EQUIPMENT SHALL BE MERCHANTABLE, OR THAT THE GOODS SHALL BE FIT FOR ANY PARTICULAR PURPOSE. PURCHASER HEREBY ACKNOWLEDGES THAT IT IS NOT RELYING ON THE SELLER'S SKILL OR JUDGMENT TO SELECT OR FURNISH EQUIPMENT SUITABLE FOR ANY PARTICULAR PURPOSE AND THAT THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THAT WHICH IS DESCRIBED HEREIN.

The Purchaser agrees that in no event will the Seller be liable for direct, indirect, or consequential damages or for injury resulting from any defective or non-conforming new, repaired or serviced equipment, or for any loss, damage or expense of any kind, including loss of profits, business interruption, loss of business information or other pecuniary loss arising in connection with this Limited Warranty Agreement, or with the use of, or inability to use the subject equipment regardless of Sellers knowledge of the possibility of the same.

Hamilton Manufacturing Corporation

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