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<u>CNV 145-148 Vending Machine Upgrade</u>

ARB-V25

Description

The CNV Vending Machine Upgrade provides a cost-effective method of upgrading old CNV 145/147/148 Vending machines. With this kit, CNV vending machines currently equipped with obsolete currency acceptors are upgraded to use new MDB currency acceptors, extending the life and increasing the reliability of these machines. The kit comprises a replacement control board, LCD display, cables, and optionally MDB Coin Changer and/or a MDB Bill Validator.

The new controller provides a number of innovative and unique features, placing it in the category of the most up-to-date vending equipment.

Features

- The controller uses the MDB protocol to communicate with the Coin Changer and Bill Validator.
- The replacement control board is installed on the mounting studs, and connected to the motor cable and power cord, of the original control board.
- The controller has a user-friendly programming menu. The menu is displayed on the front mounted LCD display and the front keypad is used for programming and menu navigation.
- The prices may be set individually, by shelf, or for the entire machine.
- Each motor may be tested individually
- The controller has three escrow modes: Neutral (escrow enabled), Force Vend (escrow disabled) and Change Machine.
- The controller has an easy to use Error Log, which lists motor failures, coin changer failures and bill acceptor failures, each with detailed error codes that specify the exact nature of the failure.
- Comprehensive visual audit system

Operation

When the machine is switched "ON", the message 'Wait' will appear on the display while the controller goes through the startup sequence. During the startup sequence the controller checks for, and initiates, communication with the attached devices. If an error occurs, either at startup or during operation, the controller will enter the error into the error log and disable the source of that error.

If the controller encounters an error with the coin changer, the machine will be disabled and the message 'Out of Service' will appear on the first line of the display, followed by 'CC' (Coin Changer) on the second line.

The machine will also go out of service if any of the keypad keys gets stuck 'ON'. When this happens, 'Out of Service' will appear on the first line followed by 'KP' (KeyPad) on the second line.

If there is no bill validator, or if the bill validator is not connected, the controller will continue to function using only the coin changer.

Additionally, if a bill validator error is encountered or communication with it fails, the controller will inhibit bill acceptance and the vending machine will continue to function using only the coin changer.

When a product is selected and paid for, but the product dispense motor does not function properly, the controller will log this motor failure, retain the credit and request that another selection be made.

Programming Guide

Setup Menu

To enter the setup menu, press and hold the 'PROG' button on the control board until the setup menu appears on the display. The setup menu will read:
'Price – 1', 'Option – 2' and 'Audit – 3'.

To select any of the menu options press the associated number key. To return to this menu from any sub-menu or menu item, simply press the '14' key on the keypad.

While in programming mode, if no keys are pressed for approximately 20 seconds the controller will exit the setup menu and return the vending machine to idle mode.

Another way to finish programming and exit the setup menu is to press the door switch button, or close the door; this will return the machine to idle mode.

Price Menu

The 'Price' is selected from the setup menu by pressing '1' on the keypad. The following menu will then appear: 'Individual – 1' on the first line of the display and 'Line – 2 All – 3' on the second.

Individual Prices

The 'Individual' menu selection allows the setting of prices for individual products. To do this, enter the individual product's location (e.g. A1), followed by the price.

Note: The price is entered as follows:
a) Enter up to two digits for the dollars ($99 max) using '1' through '9' on the keypad and '10' for '0'
b) Press 'D' to place the decimal point
c) Enter two digits for the amount of change.
d) Press 'E' to accept the price that was entered
At any time while entering the price, 'C' may be pressed to clear the entry and begin again.

The price must be greater than $0.00 and must be divisible by the scaling factor (5¢ in the US and Canada). When an invalid price is entered, 'Error' will be displayed on the screen for a few seconds followed by the cleared product location and price.

Line Prices

The 'Line' menu selection sets one price for an entire shelf (or row). To set one price for an entire row: enter the letter of that row (e.g. A), followed by the price, as specified above.

All Prices

The 'All' menu selection sets a single price for all the machine's products. When this selection is made, the display will only prompt for a price that is entered as above.

Option Menu

When 'Option' is selected from the setup menu, the following menu is displayed: 'TST: Motor – 1 DP – 2', and 'Escrow – 3 Erlog – 4'.

Motor Test

To test the motors select 1 from the 'Options' menu. The display will then prompt for a motor number (e.g. A1). Once a motor number is entered the controller will test that motor. If the motor experiences a problem, the controller will display 'Failure', followed by the appropriate error code (error codes are listed below), if it is functioning properly, it will display 'Ok'.

Escrow Modes

The 'Escrow' selection will display the following menu: 'Nutral – 1', 'FVend – 2' and 'Change Machine – 3'.

Neutral Escrow

The 'Nutral' selection sets the escrow to enable the changer to return the same denominations of coins as the customer deposited.

Forced Vend Escrow

The 'Fvend' selection disables escrow so that the customer must buy a product.

Change Machine Escrow

The 'Change Machine' selection enables the "Change Machine Mode" and enters the change machine setup menu. In Change Machine Mode, when the machine accepts certain bills it will change the bill and pay out change from the Coin Changer.

The change machine menu appears as follows: '$5 – 1' with a 'Y' or 'N' after the $5, '$10 – 2' with a 'Y' or 'N' after the $10 and '$20 – 3' with a 'Y' or 'N' after the $20. To enable/disable allowing the changing of each bill, press the associated number. When the number is pressed, 'Y'/'N' will change, 'Y' indicating that if enough change is available, change will be given for that bill. Please note, that the $20 bill will not be changed unless the coin changer has a $2 tube.

Error Log Menu

The 'ERLOG' selection allows a service person to examine a log of errors that have occurred since the log was last viewed.

When this menu item is selected the controller will display the following menu: 'MOT – 1', 'CC – 2' and 'BA – 3".

Selecting 'MOT – 1' will present the service person with 'MOTOR XX CAUSE YY' in the first line of the display. The 'XX' indicates the motor number (e.g. A1) which is faulty and the 'YY' is an error code representing the cause (see the table below). If there have not been any motor errors, all of the Xs and Ys are blank. If more than one motor has caused an error, 'Next – 1' will be present on the second line. To view the next motor error simply press '1', when you reach the last error the second line is blank. The Error Log will be cleared when the user quits the programming mode.

Audit Menu

When 'Audit' is selected from the main menu the audit menu is entered. Please note that audit data collection is presently only visual.

The audit menu is as follows: 'Individual –1', 'Total – 2', 'Other – 3' and 'Reset – 3'

Individual Product Audit

The auditing of individual products consists of four separate counters per product, two are resettable and two are non-resettable. There is one resettable and one non-resettable counter for both the amount of money collected and the number of vends. The resettable counter for the amount of money collected has a $999.95 maximum, while the counter for the number of vends has a 999 vend maximum. The non-resettable counter for the amount of money collected has a maximum of $60,000.00 while the counter for the number of vends has a 60,000 vend maximum. Once a counter reaches its maximum value it will roll-over to zero and begin again.

Total Sales Audit

The Total Sales are tracked by two non-resettable counters; one counts the total amount of money collected by the machine, while the other counts the total number of its vends.

Other Audit Menu

The "Other" audit menu consists of less frequently used audit items, some of which are tracked only by resettable counters while others are tracked by both types of counters.

The "Other" audit menu consists of:
"CBox – 1", "CC – 2", "MDisp – 3", "Bill – 4"

CBox (Coin Box) Audit

This selection will display the resettable counter that tracks the amount of money that has been routed to the coin box since the last reset.

CC (Coin Changer) Audit

This selection will display the resettable counter that keeps track of the amount of money that is currently in the Coin Changer tubes.

MDisp (Manually Dispensed) Audit

This selection will display the amount of money that has been manually dispensed since the last reset.

Bill Audit

The Bill Audit uses two counters for each bill denomination, one resettable and one non-resettable. Both counters track the number of bills of a specific denomination that have been accepted with a maximum of 60,000 bills per denomination. When this item is selected the display will show both counters for the $5 bill, with "Next – 1" in the top right corner. Pressing '1' on the keypad will proceed to the next bill denomination. Pressing '1' from the $20 bill will advance to the two counters (resettable and non-resettable) that track the total number of bills accepted regardless of denomination.

Reset Audit

This menu item sets all of the resettable counters to zero. To select the "Reset" item from the Audit menu, press the '4' key until the controller emits a long beep. After resetting all of the resettable counters, the controller will exit the setup menu and return to idle mode.

Error Codes

Motor Errors

Cause Code	Cause Description
MD	Motor Disconnected (no current through motor)

MJ	Motor Jammed (high current draw)
HP	Missing home position signal
SW	Motor switch error

Coin Changer Errors

Cause Code	Cause Description
03	No Credit – Coin recognized but no credit given
04	Defective Tube Sensor
06	Acceptor Unplugged – Changer detected without acceptor
07	Coin Tube Jam – Coin tube payout jammed
08	ROM Checksum Error – Internal checksum does not match calculated
09	Coin Routing Error – Coin did not go where intended
12	Coin Jam – Coin(s) have jammed in the acceptance path

Bill Validator Errors

Cause Code	Cause Description
01	Defective Motor
02	Sensor Problem
04	ROM Checksum Error – internal checksum does not match calculated
05	Validator Jammed – Bill(s) jammed in the acceptance path
08	Cash box out of position – Bill Magazine not detected
09	Unit Disabled