

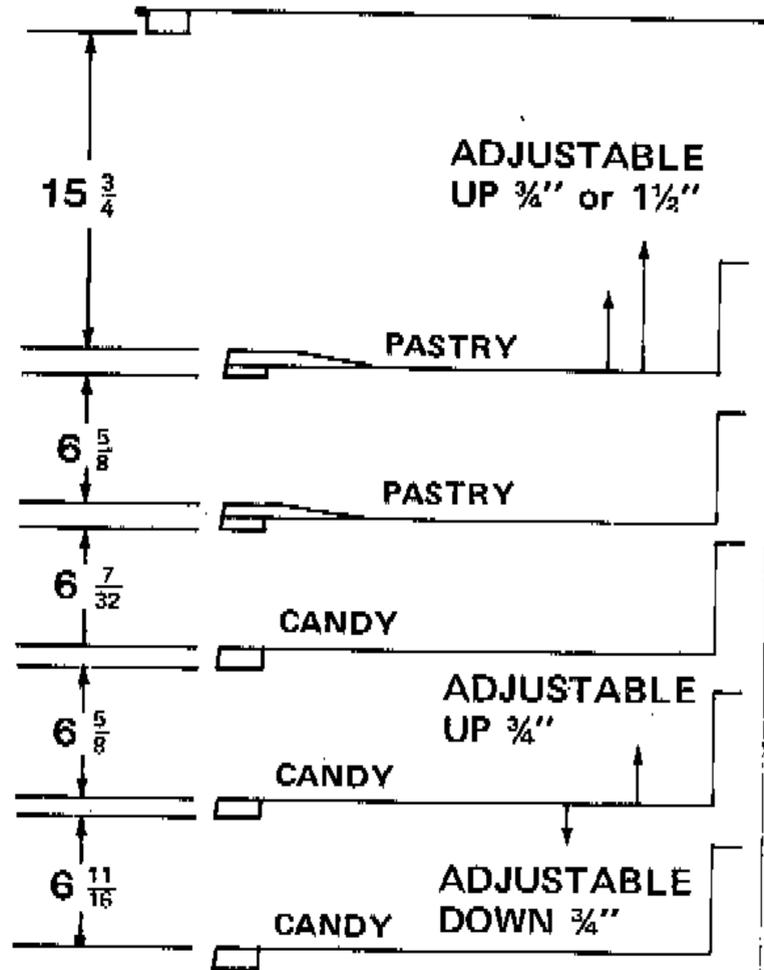
4900S & 4900JR
Single Board Version
Snack/Candy Vendors
5 or 6 Shelf
w/Bill Acceptor
Field Service Manual

With Coinco BA30 validator

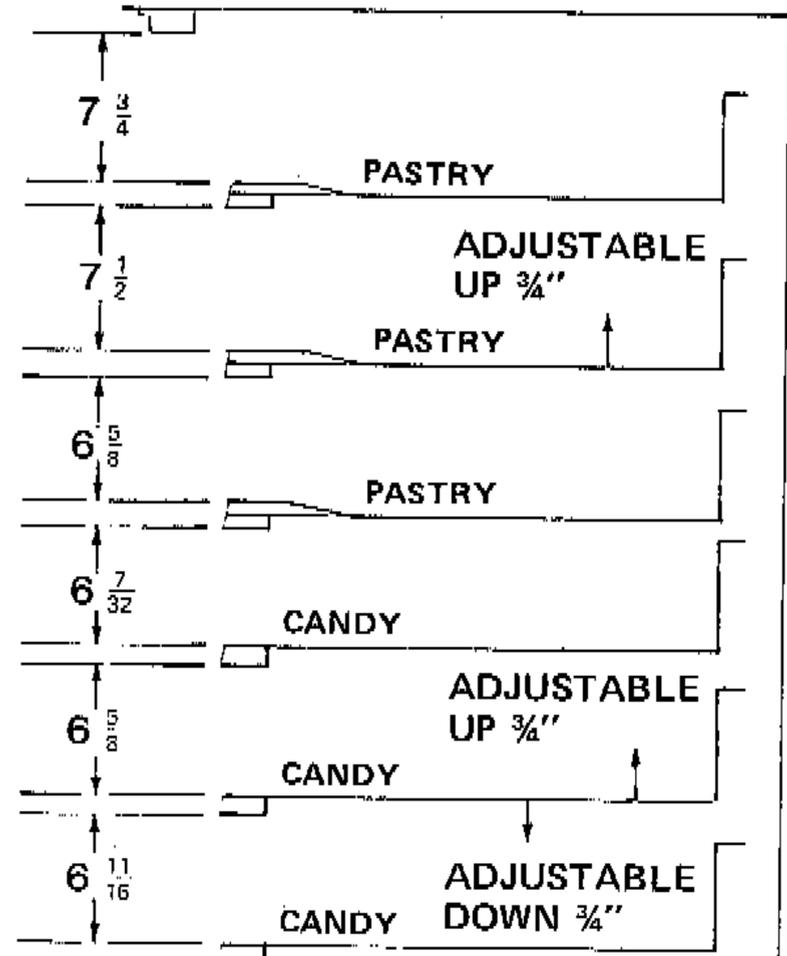


PART NO. 900-49020D
FOURTH EDITION

PRODUCT CLEARANCES



5 SHELF MODELS



6 SHELF MODELS

On both 5 Shelf and 6 Shelf Models the second shelf from bottom can be adjusted $\frac{3}{4}$ " higher or lower. There are three sets of rail mounting holes. On 5 Shelf Models the top shelf can be adjusted up $\frac{3}{4}$ " or $1\frac{1}{2}$ ". On 6 Shelf Models the fifth shelf from the bottom is adjustable up $\frac{3}{4}$ ". Note: Product used must not exceed 7" in height.

PRODUCT WIDTHS

4900JR — 4 SELECTION SHELVES
4900S — 5 SELECTION SHELVES

ITEM PER COMPARTMENT	HELIX PART NO.	MAX. PRODUCT THICKNESS	PRODUCT WIDTH
			(SEE NOTE)
10	490-34	2-1/16"	2-1/2/5-1/4
12	490-33	1-11/16"	2-1/2/5-1/4
15	490-32	1-5/16"	2-1/2/5-1/4

4900JR — 8 SELECTION SHELVES
4900S — 10 SELECTION SHELVES

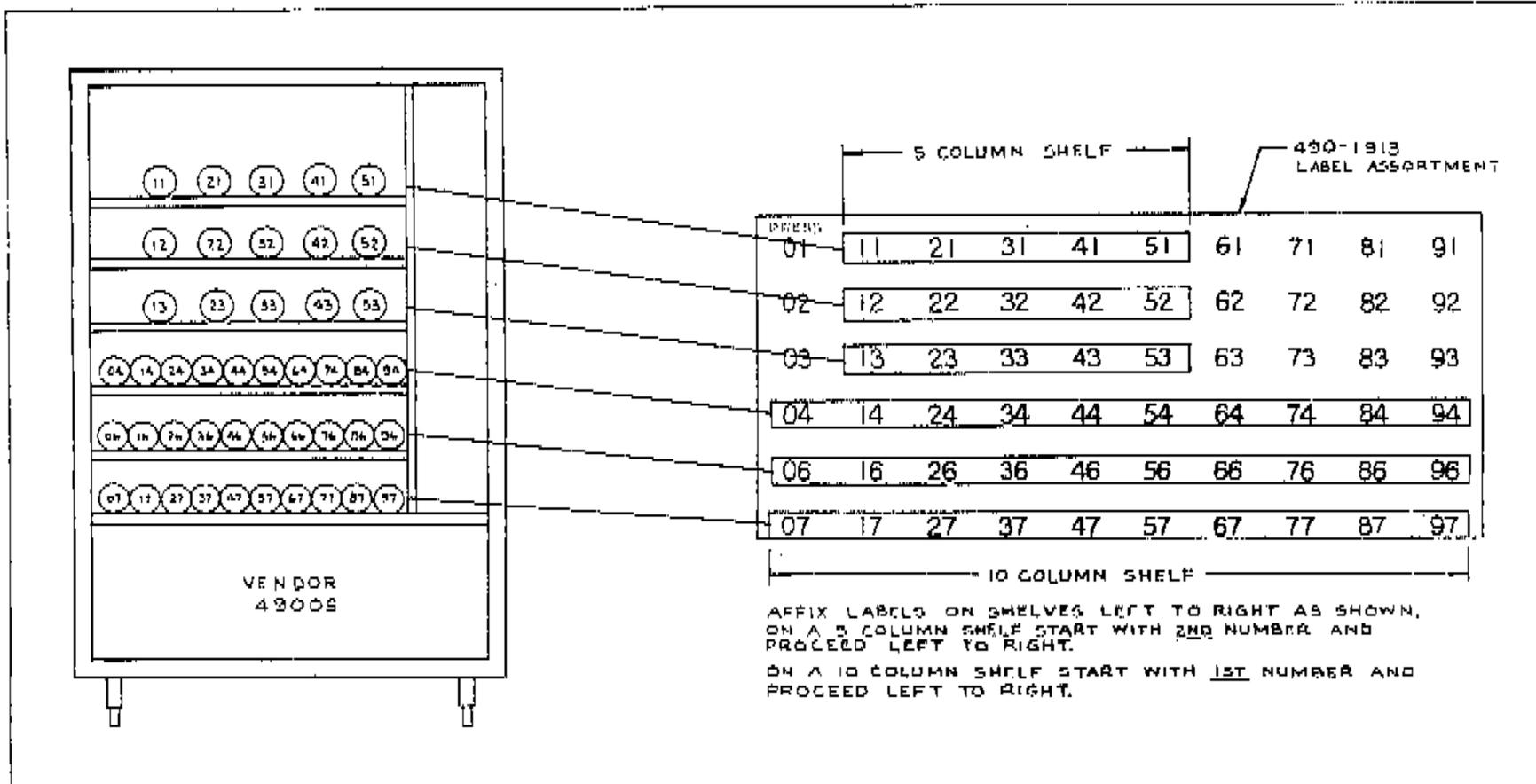
ITEM PER COMPARTMENT	HELIX PART NO.	MAX. PRODUCT THICKNESS	PRODUCT WIDTH
15	490-31	1-5/16"	1"-2-1/4"
18	490-30	1-1/16"	1"-2-1/4"
24	490-29	3/4"	1"-2-1/4"

NOTE:

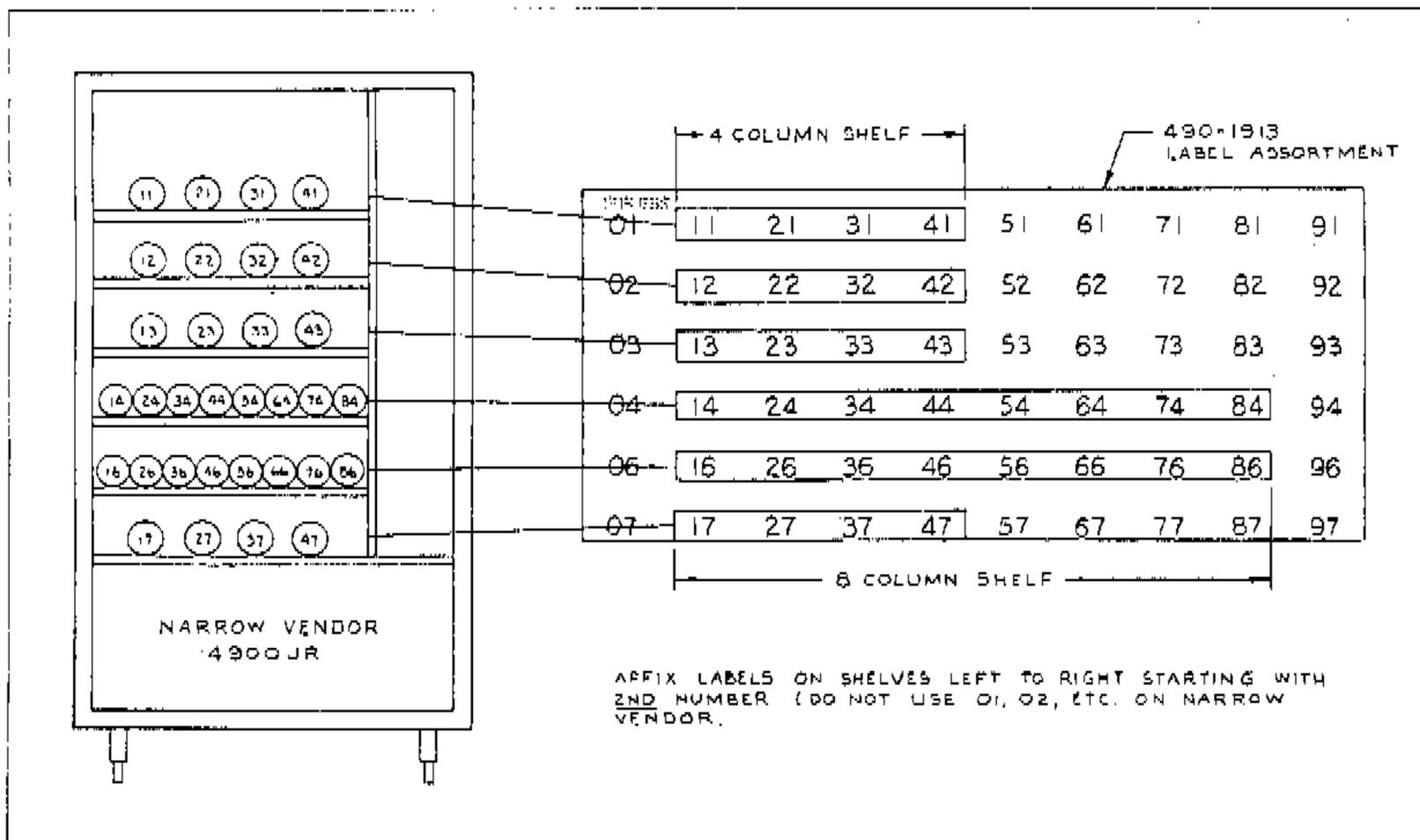
4900S — Partition in selection 4 can be moved to any of 4 locations altering width of selections 4 and 5. Maximum width of selection 4 can be 6 $\frac{3}{4}$ ", minimum width of selection 5 can be 3 $\frac{1}{2}$ ".

4900JR — Partition in selection 3 can be moved to any of 4 locations altering width of selections 3 and 4. Maximum width of selection 3 can be 6 $\frac{3}{4}$ ", minimum width of selection 4 can be 3 $\frac{1}{2}$ ".

4900S SELECTION IDENTIFICATION



4900JR SELECTION IDENTIFICATION



A One Dollar Bill Acceptor is available as an option. The Acceptor takes valid dollar bills and has single bill escrow. Combination purchases using a bill and coins are possible and change for the purchase is dispensed from the coin mech.

The Snack Vendor features 24-volt operation using a completely isolated power supply for safety. The display fluorescent lamp and optional exhaust fan operate at 120 VAC. The optional Coinco coin mech operates at 24 VAC, the Mars at 120 VAC.

SELECTION IDENTIFICATION

(SEE PAGE VI)

In order to eliminate any possible confusion on selection identity and price, the digits 5 and 0 are not used to identify selections.

Selection identification is as follows:

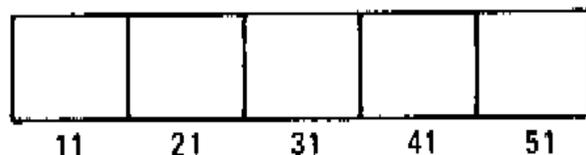
First digit identifies location of item on shelf. On 4 or 5 item shelves, the first item from the left is 1, second is 2, third is 3, etc. On 8 or 10 items shelves, the first item from the left is 0, the second item is 1, the third item is 2, the fourth item is 3, etc.

Second digit identifies shelf locations. Top Shelf is 1, second from top is 2, third from top is 3, fourth from top is 4, fifth from top is 5, sixth from top is 7. Gum and Mint selections are 8. In the case of a five shelf machine the first shelf is eliminated and the digit 1 is not used.

Examples:

Six Shelf Machine

Top Shelf – 5 Items



Second Shelf – 5 Items

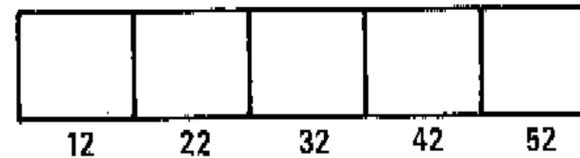


Third shelf – 10 Items

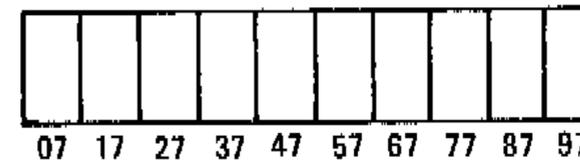


Five Shelf Machine

Top Shelf – 5 Items



Fifth Shelf – 10 Items



MAKING A SELECTION

To make a selection, the customer deposits the proper amount. Price is shown directly beneath each item. He then presses the two digits corresponding to the selection number shown beneath the product.

Purpose of the Reset button is to erase the first number if it is entered incorrectly. This can also be accomplished by pushing the coin return.

SELECTION BUTTONS

There are 10 selection buttons numbered from 1 to 0. There is also a reset button. These buttons are used by the machine patron to make a purchase from the vendor. They are used also by service personnel to perform certain functions covered in a later section.

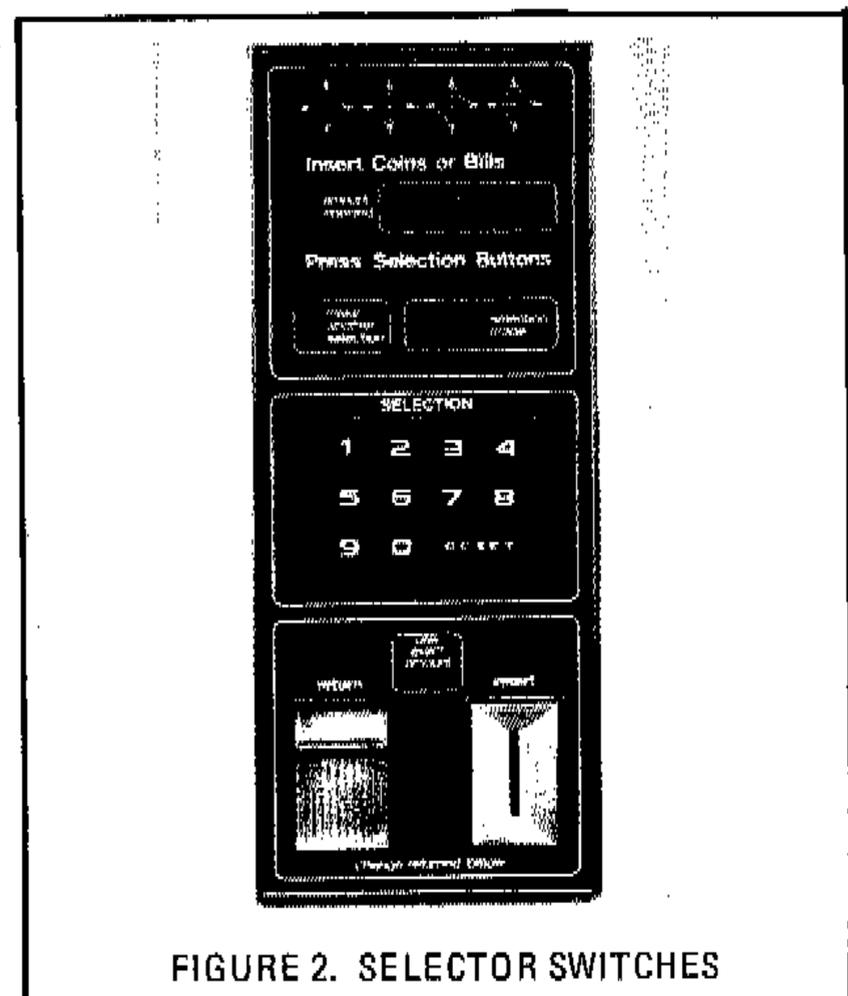
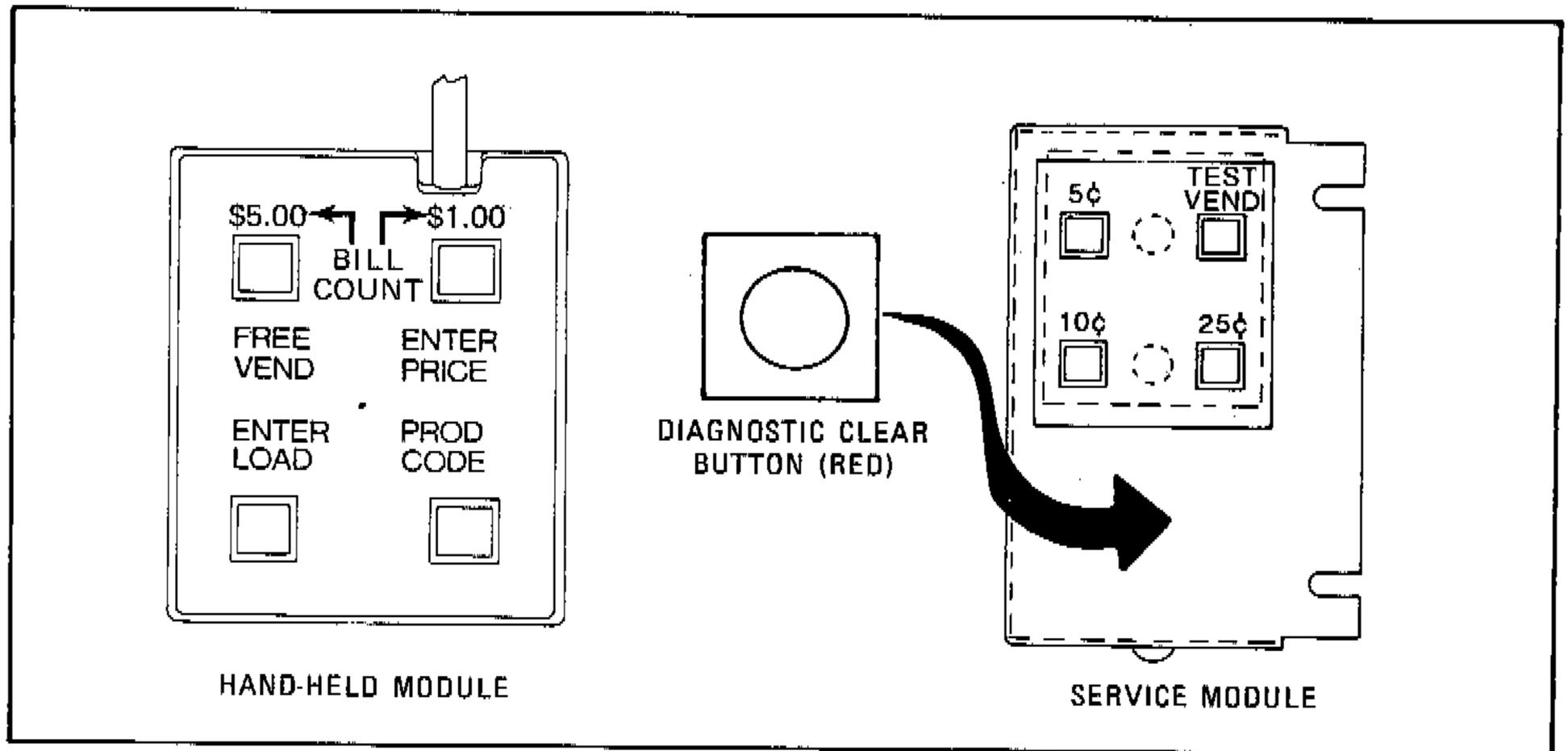


FIGURE 2. SELECTOR SWITCHES

SPECIAL FUNCTIONS

Four Special function buttons are located on a hand-held module located in a holding bracket inside the machine. A service module with other function

buttons is located behind and above the coin mechanism. A "diagnostic clear" button is located behind the service module.



Detailed explanation of the use of these modules is included in Section 2.

SECTION 2- INSTALLATION

INTRODUCTION

This section contains instructions for installing the vendor.

UNPACKING

The Snack Vendor is shipped in one carton with all major assemblies in place, ready for installation. Inspect the exterior and interior of the cabinet for evidence of damage. In case of damage, please notify the delivering carrier at once to call and examine the vendor regardless of the external condition of the carton. Under U.S. Regulations, damage claims must be collected by the consignee. Do not return shipping-damaged merchandise until after your claim has been established. Once your claim is established, damaged merchandise may then be returned to your Rowe Distributor for repair. The invoice for repair charges may then be collected from the carrier. Do not destroy packing material or boxes until the carrier's agent has examined them.

SET-UP INSTRUCTIONS

SPECIAL NOTE:

If it necessary to get through a narrow doorway, proceed as follows. The power cord anchoring plate can be dismantled from the rear wall allowing the power cord and plug to be pushed into the cabinet. Be certain to remount the anchoring plate to prevent damage to the power cord.

If more clearance is required it will be necessary to pivot the door hinges.

1. Open vendor door.
2. Remove door stop rod.
3. Disconnect door harness at plug located below the delivery box on the hinge side.
4. Disconnect bill acceptor harness at power box on cabinet floor if so equipped.
5. Open the main door far enough to expose the three counter sunk screws in the top hinge and block the door to support it's weight.

CAUTION

The door is heavy. Take appropriate precautions before proceeding.

6. Remove the 2 ½" hex head bolts from the cabinet side of the top hinge plate.
7. Remove the three counter sunk screws and nuts from the top hinge plate on the door.
8. Rotate the upper hinge assembly away from the door frame and lift the door straight "up" off the lower hinge point.

NOTE

Take care not to lose the bearing washer on the bottom hinge pin.

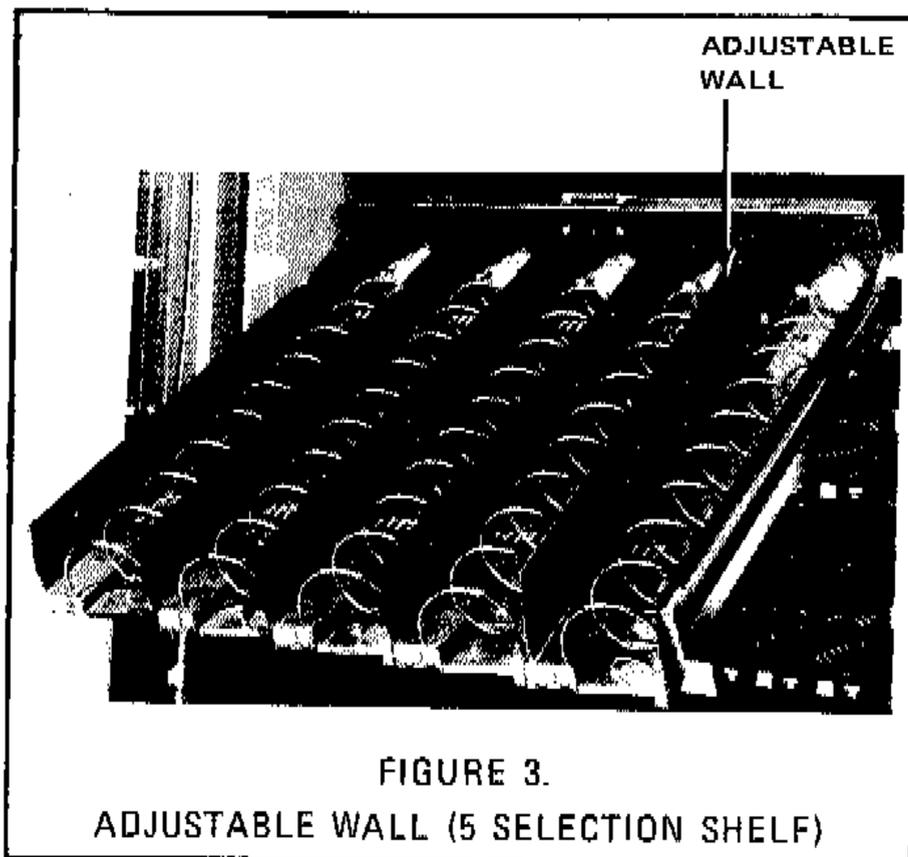
9. If additional clearance is required, the lower hinge can be pivoted by removing the FRONT ½" hex head bolt and loosening the rear bolt one turn. The security shield mounted on the left front edge of the cabinet is also removable if required.
10. After passing through the confined area, reassemble the door to the cabinet being certain to secure all parts and harnesses removed in the preceding steps.

Set up the vendor as follows:

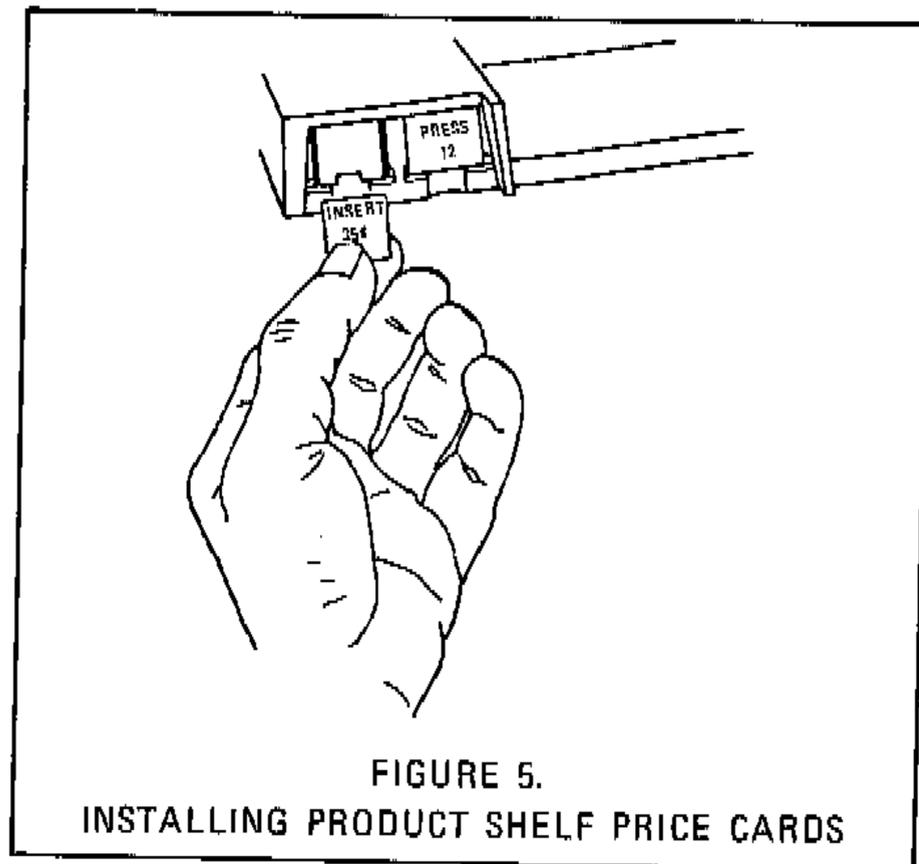
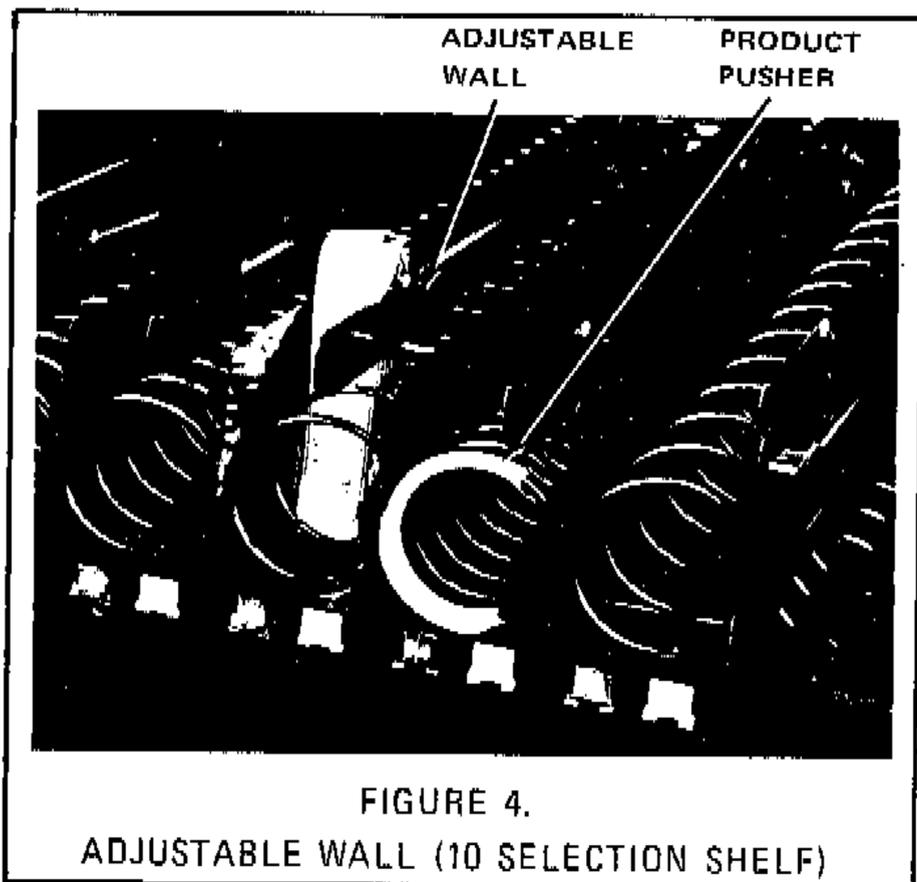
1. Open door all the way.
2. Set main switch OFF.
3. Level cabinet front to rear and side to side. All four cabinet legs are adjustable.
4. Check that fluorescent lamp is secure in its socket and that all electrical plugs are firmly seated in their sockets.
5. Plug the line cord into a 120 volt, 60 hertz grounded receptacle.
6. Set main switch to ON.

CAUTION

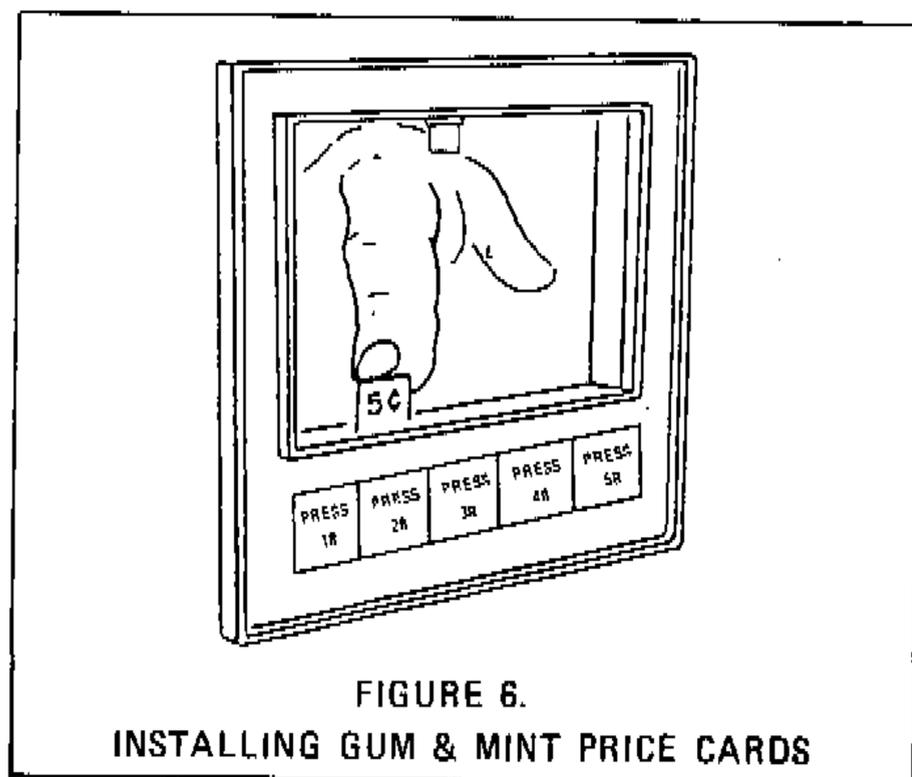
WHEN CHANGING, DISCONNECTING OR CONNECTING ANY ELECTRICAL COMPONENTS, MAIN SWITCH MUST BE IN THE "OFF" POSITION.

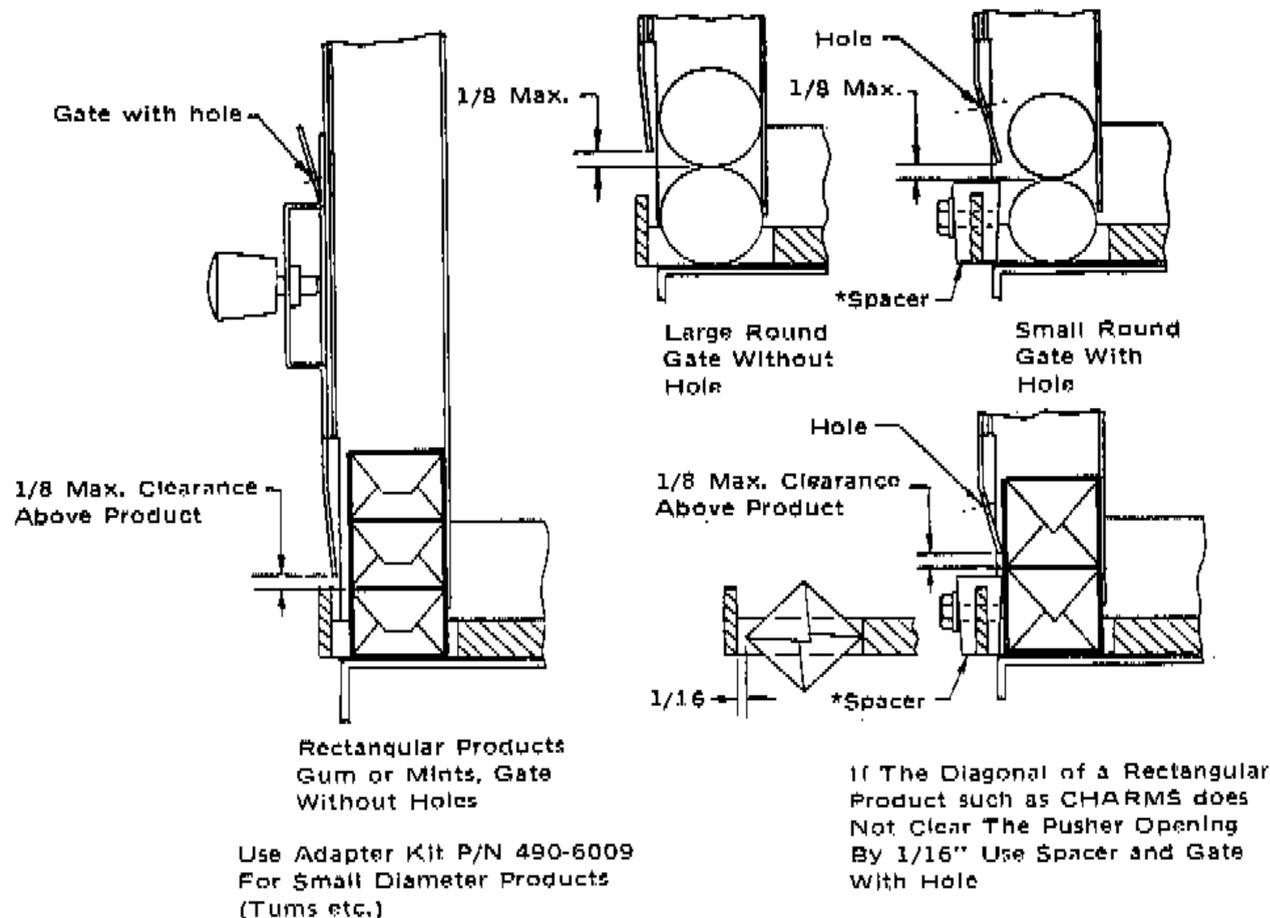


7. Set pricing. Refer to correct procedure under **PRICE SETTING** on Page 6.
8. Pull top product shelf out and lower to loading position. Load product in accordance with the specifications listed at the beginning of this manual on Page 1.
9. The 4 selection trays feature an adjustable wall located between the 3rd and 4th spirals. On 5 selection trays the adjustable wall is located between the 4th and 5th spirals. The wall can be installed in any one of the four slot positions in



- the bottom of the tray. After adjusting the wall for the desired width, check to be certain that the product moves freely forward when the selection on each side of the adjustable wall is vended. (See Figure 3.) Additional tray walls are shipped with each machine and can be installed in the pastry tray slots to accommodate the narrower items. On 8 or 10 selection trays, the adjustable wall swings out from the right side of the shelf wall. (See Figure 4.)
10. Install product pushers when required. The plastic product pusher is pushed onto the helix in the desired position to assure product delivery. (See Figure 4.) (10 count shelves only)





Column Width: (Three Right Hand Columns Only)
Lift Out Left Side of Chute and Replace in Proper
Slots to Give Product 1/16" Min. Clearance

*Spacer P/N 490-4005

FIGURE 7. PRODUCT GATE ADJUSTMENT

11. Install desired price cards for product shelves as shown in Figure 5.
12. To install price cards for Gum and Mint Unit, simply remove the display box from the inside of the door by lifting up and off. Insert desired price cards into the slots provided against the display glass. (See Figure 6.)

NOTE

Gum and Mint price cards are smaller than shelf price cards.

Check to make sure that the price cards correctly relate to the Gum and Mint products to be displayed. Replace the display box and visually check the display and prices from the outside of the door.

13. Pull out sliding panel assembly at right of vendor, load gum and mint columns. Adjust product gate on gum and mint as shown in Figure 7.
14. Lift out left side of chute and move to proper slots, giving product a minimum of 1/16 inch end clearance.
15. Deposit coins and test vend each selection. Check coin return operation.

VENDOR SET UP

When using a MARS MC5000 set Coin Control Switch No.2 on the back of the coin acceptor to the HI LEVEL position.

COIN MECH. SELECT (S1 SWITCH)

(See illustration on Page 20)

This set of switches determine which Coin Mechanism will be used in the 4900. These switches must be set correctly for the "Coin Mech" in use to function properly.

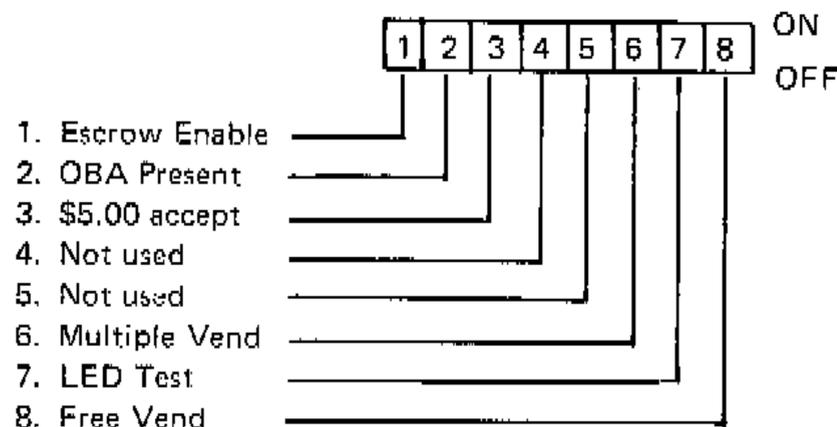
ON = YES/Device Selected
OFF = NO/Device not selected

S1/1	S1/2	S1/3	
OFF	OFF	OFF	Mars MC5000 Coin Mech w/Mars payout mode
ON	OFF	OFF	Coinco C300 Coin Mech
OFF	ON	OFF	Coinco C600 Coin Mech
ON	ON	OFF	Mars MS1600 Executive Coin Mech
OFF	OFF	ON	Mars MC5000 Coin Mech w/Coinco payout mode
ON	OFF	ON	not used
OFF	ON	ON	not used
ON	ON	ON	not used

OPTIONS SET UP (S2 SWITCH)

Switch position "ON" = YES (Enabled)

Switch position "OFF" = NO (Disabled)



See General Operation Section (DIP Switch S2 Options) for detailed explanation.

AUDIT SWITCHES (S3 and S4)

S3 - Displays Total Accumulated Sales (non resettable)

S4 - Displays Total Resettable Accumulated Sales

See General Operation Section for detailed explanation.

PRICE SETTING

Setting up prices initially is fast and easy. The following procedure should be followed.

1. Open vendor Main Door.
2. Load product as previously described.
3. Install Product Shelf Cards.
4. Set prices for each selection as follows:
 - A. Enter first selection number on selector panel, a price will show in the Credit Display area.
 - B. To change the price, enter the new price using the selection numbers. Enter zero, zero first, then the most significant digit, then the second digit. For instance, if \$0.25 is desired, enter zero, zero then 2, then 5. The digits entered will shift into the Credit Display.
 - C. When the price shown in the Credit Display is correct, press the ENTER PRICE key on the Hand Held Module and the new price will be stored in the microprocessor's memory.
 - D. The selection number will automatically increment to the next selection in order and the price of the new selection will be shown in the Credit Display area. If the price is correct press the ENTER PRICE key and the selection number will increment again. If a price change is desired, proceed as in steps a, b, c, and d.

NOTE

If a selection motor is missing or inoperative, that selection must be set at zero.

At the conclusion of the initial price setting it is highly recommended that each selection price be checked again. This is easily accomplished as follows:

Press Reset Button. Enter first selection number (01 or 11). The first selection and its price will show in the display area. Simply pressing the ENTER PRICE key repeatedly will now increment the selection and its price.

HAND HELD MODULE

(See illustration on Page 9)

The Hand Held Module incorporates 4 buttons. These are ENTER PRICE, previously described, FREE VEND, ENTER LOAD and PRODUCT CODE.

FREE VEND

The FREE VEND button is for the convenience of the service person. It permits dispensing a product without depositing coins. This button will work only if a specific selection is made using the selector buttons.

ENTER LOAD and PRODUCT CODE buttons are not used unless the vendor is equipped with one of the MIS (Management Information Systems) options on the market. Instructions for their use will be provided with whatever system is selected.

SERVICE MODULE

(See illustration on Page 9)

TEST VEND

The TEST VEND button is located on the module above and behind the coin mechanism. It can be used in two different ways.

1. To test a specific selection --- enter selection number and press the TEST key.
2. Without a specific selection entered, pressing the TEST VEND key will test every selection motor in the vendor sequentially and automatically.

Additional explanation of the TEST VEND key is included in the General Operation section.

INVENTORY SWITCHES

5¢ - 10¢ - 25¢

These switches are used only with the MARS Coin Mech. and are for the purpose of inventorying the 5¢, 10¢ and 25¢ coin tubes.

If a Coinco Mech. is used, the inventory switches are on the coin mech. itself and the switches on the Service Module are not used.

Section- 3 Operating Description

INTRODUCTION

The text in this section is intended to present an overall operating description of the vendor under one heading in this manual. Using this section to gain an understanding of the correct operating characteristics in conjunction with the "Troubleshooting" section will be helpful when confronted with a service problem.

SPECIAL FUNCTION LED's

The Single Board 4900 has four "Special Function" LED's. The operation and description of each LED is as follows.

"USE EXACT CHANGE" LED

The operation of this LED is dependant upon which coin mechanism is present in the vendor. If a Coinco C-300 or C-600 is being used this LED will light immediately upon detection of a low coin tube and will remain "on" as long as any of the coin tubes indicate a low status.

If a Mars MC5000 is being used this LED may be selected to operate in one of two ways depending on the state of switches S1/3 (see description of switches on 4900 Controller Board). If the Mars payout mode of operation is selected this LED will light and blink only after a selection is made and only if the Coin Mech. does not contain enough coins to provide the required amount of change. This LED will continue to blink until another selection is made or the coin return is depressed at which time the inserted coins will be returned.

"USE EXACT CHANGE" LED - NON U.S.A. VENDORS

If an Executive Coin Mech. (MS1600) is used this LED will operate in the same manner as that described above when using a Mars MC5000 coin mech. with the Mars payout mode selected.

"MAKE ANOTHER SELECTION" LED

This LED will light and blink if a vend is not permitted by the Controller (sold out selection in Gum/Mint column or fault on tray selection drive motor etc.). It will continue to blink until another selection is made or the coin return is depressed.

"USE COINS ONLY" LED

The "Use Coins Only" LED is mounted on the front panel near the Bill Acceptor (OBA Unit) and its purpose is to provide a visual indication that the Bill Acceptor is faulty or simply cannot be used. If the OBA Unit happens to be faulty this LED AND

the "Error Indication" LED will both be lit and NOT blinking. If the Bill Acceptor IS operative but cannot be used this LED will blink. The "Use Coins Only" LED will blink under the following conditions.

1. If there is less than one dollar (\$1.00) in the Coin Mech. inventory tubes.
2. If a bill is being held in Escrow.

"ERROR INDICATION" LED

This LED is located to the upper left of the Credit Readout on the front panel and is NOT labeled. Also it is NOT VISIBLE unless it is turned "on". This LED will light whenever any fault condition exists within the vendor and will remain "on" until ALL diagnostic errors and/or fault conditions are cleared by pressing the Diagnostic Clear button. There are several fault conditions that may exist in the vendor, all of which are covered in detail in the section on "Error Codes" in the Troubleshooting Section.

VENDOR SETUP

Several switches within the 4900 are used to establish the proper operation of the vendor and which devices it will operate with. The following is a description of all the switches and their function.

DIP SWITCH S1 - COIN MECH. SELECT

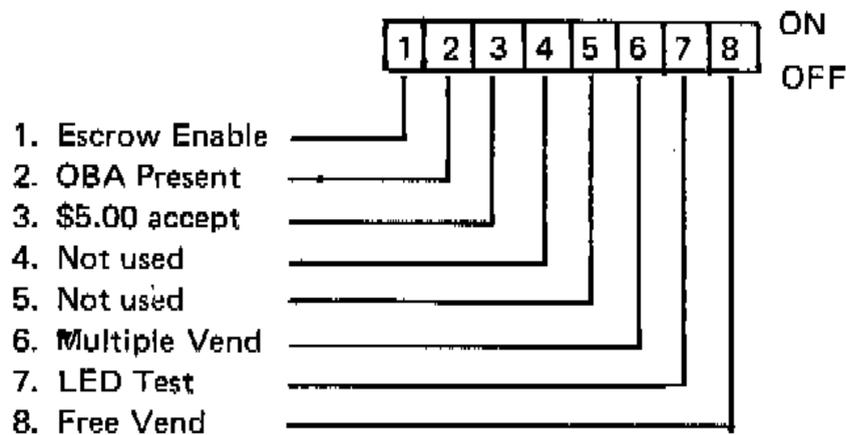
This set of switches determine which Coin Mechanism will be used in the 4900. These switches must be set correctly for the "Coin Mech" in use to function properly.

ON = YES/Device Selected
OFF = NO/Device not selected

S1/1	S1/2	S1/3	
OFF	OFF	OFF	Mars MC5000 Coin Mech w/Mars payout mode
ON	OFF	OFF	Coinco C300 Coin Mech
OFF	ON	OFF	Coinco C600 Coin Mech
ON	ON	OFF	Mars MS1600 Executive Coin Mech
OFF	OFF	ON	Mars MC5000 Coin Mech w/Coinco payout mode
ON	OFF	ON	not used
OFF	ON	ON	not used
ON	ON	ON	not used

DIP SWITCH S2

On = YES (Enabled)
OFF = NO (Disabled)



1. Escrow Enable Switch

If "ON", all bills validated by bill acceptor will be held in escrow until either a purchase is made or the coin return is pressed at which time the bill will be accepted and stacked or returned respectively. If "OFF" all bills will be immediately accepted and stacked following validation

NOTE:

The exceptions to this are:

1. *The maximum number of bills that will be accepted and stacked is limited by the amount of coins in the coin tube inventory.*

EXAMPLE: If the coin mech possesses \$2.25 in coins, the acceptor will only accept and stack two bills. A third bill, if inserted, will be held in escrow.

2. *The maximum number of bills that will be accepted and stacked is one bill less than the highest priced item.*

EXAMPLE: Highest vend price is \$1.50. The first bill inserted will be accepted and stacked. The second bill will be held in escrow until a selection is made.

NOTE:

Once a bill has been accepted and stacked, credit may only be returned in the form of coins.

OBA PRESENT SWITCH

This switch simply indicates to the Control system whether or not an OBA unit is present (switch = ON) or not present (switch = OFF). If the switch is "ON" and no OBA unit is present in the system a fault condition will be signalled by lighting the front panel fault LED. This will have no effect on the vendor with respect to normal operation aside from the fault LED being lit.

\$5.00 ACCEPT SWITCH

The OBA unit used with the 4900 is capable of accepting \$1.00 and \$5.00 bills. Unless a fault condition exists with the OBA to prevent it from operating properly it will always accept \$1.00 bills and only \$1.00 bills if this switch is in the

"OFF" position. If this switch is "ON" the bill acceptor will accept both \$1.00 and \$5.00 bills.

MULTIPLE VEND SWITCH

This feature when selected (switch = ON) allows a customer to purchase more than one item after inserting money in the vendor. As long as enough credit and coins (for change) exist to purchase a selected item, the vend will be made. The selected price will then be subtracted from the credit and another item may be purchased or the coin return may be pressed to receive the remaining credit. With this feature disabled (switch = OFF) normal operation of the vendor will be to vend a selected item and automatically return any remaining change.

LED TEST SWITCH

This feature is available for testing the condition of all LED's and 7 segment displays on the front panel of the vendor. (This test can only be done in service mode.) With the switch in the "ON" position all display segments and discrete LED's on the front panel will be lit.

FREE VEND SWITCH

Having this switch in the "ON" position will allow the vendor to operate in the free vend mode. In this mode no coins or bills will be accepted by the 4900. Since no purchases are allowed by the vendor when the door is open, this switch has no effect unless the door is closed. With the door closed and the Free Vend switch in the "ON" position the word FREE will appear in the credit display. Any item selected that has been priced will automatically be vended.

AUDIT SWITCHES (S3 and S4)

(Only functional with door open)

S3 - Displays Total Accumulated Sales (non resettable)

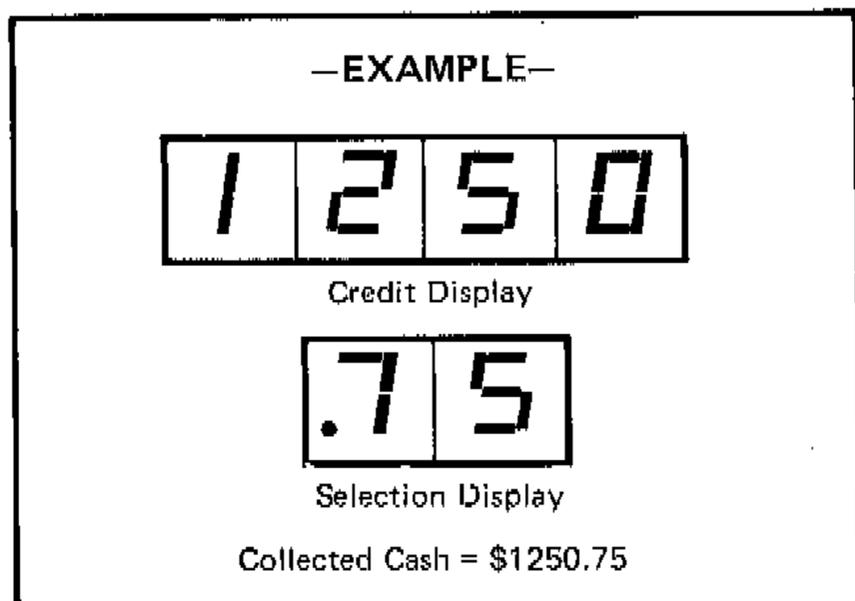
S4 - Displays Total Resettable Accumulated Sales

The 4900 electronically maintains two sales figures, Total Accumulated Sales and Total Resettable Accumulated Sales. The Total Accumulated Sales figure reflects the actual cash sales made by the vendor since it was put into operation. This figure is not resettable and is factory preset to zero. Simply press switch S3 on the 4900 main control board to display this figure on the front panel.

The Total Resettable Accumulated Sales figure reflects the actual cash sales made by the vendor since this figure was last reset to zero. To obtain the Resettable sales figure simply

press switch S4. This figure is also factory preset at zero but may be easily reset any time the door is open by pressing both S3 and S4 simultaneously.

NOTE: The maximum cash amount that can be displayed by either of these sales figures is six digits. The four most significant digits appear in the credit display and the two least significant digits appear in the selection display.



SWITCHES ON THE OBA CONTROL BOARD

Below is the configuration of these switches necessary for proper operation with the 4900. For a more detailed description see the O.B.A. section of this manual on page 39.

- Switch 1 - OFF (left is "off" position)
- Switch 2 - OFF
- Switch 3 - ON
- Switch 4 - ON

OPERATION OF THE 4900 SNACK VENDOR

GENERAL

The 4900 may operate in one of two modes, the Door Open mode or the Door Closed mode. Both modes of operation are discussed separately below.

DOOR OPEN

In the Door Open mode (also referred to as the service mode) all setup procedures and/or service requirements may be performed. To prevent currency from being deposited in the vendor in this mode, the coin mech and bill acceptor (if present) are disabled. The following is a list of functions available when the door is open accompanied by a detailed description of each.

1. View Error Code(s)
2. Clear Error Code(s)
3. Enter/View Price
4. Enter Product Code
5. Enter Load Count
6. Free Vend (On Hand Held Module)
7. Test Vend
8. Dispense Coin(s)
9. Extract Data Collection Information With:
 - a. InterRowegator
 - b. Coinco Data Probe
 - c. Mars Data Probe
10. Obtain Accumulated Sales Information
11. General Service Of Machine

1. VIEW ERROR CODE(s)

Whenever a fault condition exists within the 4900 the corresponding code will automatically be displayed on the front panel, as long as the vendor door is open. To view alternate fault codes, press the RESET key on the selection keyboard. Repeatedly pressing this key will sequentially display all existing error codes. Once all faults have been displayed they will be cleared from the display but still held in memory as long as the diagnostic clear button was not pressed. Clearing of the error codes in this way is not permanent and maybe viewed again by going into the Closed Door Mode and then back to Open Door Mode.

2. CLEAR ERROR CODE(s)

To clear error codes simply press the Diagnostic Clear Key provided on the sliding panel inside the 4900. However, caution should be exercised when pressing this key since this will cause ALL error codes to be erased leaving absolutely no record of what they were. Since these codes are provided to indicate problems and/or areas of the vendor requiring service, these codes should be recorded before being cleared. If the fault condition has not been corrected after all codes have been cleared the code will be regenerated if it is put into an error condition again.

NOTE: The display and keyboard will be completely disabled for any use other than displaying error codes while a fault condition exists until all of the error codes have been stepped through by hitting the reset key on the keyboard.

3. ENTER/VIEW PRICE

There is only one way to enter the price of a selection into the Controller, but there are two ways of viewing prices. To view the price of a selection, enter the selection number and the current price of that selection will

be displayed on the Credit Readout. At this point, pressing the Enter Price Key will cause the display to advance to the next selection and the current price of that selection to be displayed. In this fashion all prices may be viewed sequentially. The second way to view prices is by specific selection. i.e.: Enter selection number of price to be examined, examine price on display, press RESET key to clear display, and enter selection of next price to be examined. To change the price of a selection simply follow either of the two methods just mentioned to obtain a display of the current price. With the current price displayed enter new price starting with the most significant digit and ending with the least significant digit. EXAMPLE: Enter 0, Enter 0, Enter 2, Enter 5.

Displayed Price:

		.2	5
--	--	----	---

Price set for \$.25

When the desired price is displayed on the credit readout, press the "Enter Price" key to store the price in the Controller. Prices may be sequentially entered or may be entered by specific selection as described above. To verify that the new price(s) has been saved follow the steps mentioned previously for viewing prices.

NOTE: (U.S.A. Domestic only) The Controller detects erroneous price entries and prohibits an invalid price from being saved. If an invalid price is present on the display when the "Enter Price" key is pressed the price will be blanked and "Err" will be displayed in its place. The selection number will not change during this process. It is maintained to indicate the selection for which the error was generated. The price may be corrected and re-entered. Prices are only valid if they end in 0 or 5 and are in the range of \$.00 to \$99.95. Leading Zeros (0s) will never be displayed in the price.

4. ENTER PRODUCT CODE

The entire process for entering product codes is identical to that of entering prices, except the product codes cannot be examined on the credit display. The product code for a selection will only be visible on the credit display while it is being entered in and only until the Enter Product Code key is pressed at which time the display will advance to the next selection and the price of that selection will be displayed. Product code entries must be within the range of 0 to 255 to be valid. Any value outside this range will cause "Err" to be displayed

5. ENTER LOAD COUNT

The process for entering load count is the same in all respects as that of entering the product code. The range of valid entries is the only difference. Product load count is limited by the number of items that may be loaded into

a given selection. The maximum allowable load count is 50 for gum and mint and 30 for all other selections. Therefore only a load count within these specifications will be accepted. Any value outside these established limits will cause "Err" to be displayed.

6. FREE VEND (on hand held module)

The Free Vend feature is provided to allow any priced selection to be vended without establishing credit. A "Free Vend" can be initiated by entering the selection number and pressing the Free Vend Button on the hand held module.

7. TEST VEND

The Test Vend feature on the 4900 is provided to allow an operational test to be performed on either a single motor or all motors in the vendor. To perform a Test Vend on a single motor enter the selection number of the motor to be tested and press the Test Vend key mounted on the sliding panel inside the vendor. To test all motors press the RESET key on the selection keyboard until the display blanks and then press the Test Vend Key. This will initiate an operational test sequentially running all motors. The Controller monitors and maintains the status of every motor. If a motor does not operate a diagnostic error (see "Error Codes") will be generated and the price of that selection will be set to zero. If the cause of the error is corrected and a test vend is performed on that selection, assuming the motor functions properly, the price will return to its original setting. The diagnostic error code will remain until a Diagnostic Clear has been performed.

8. DISPENSING COIN(s)

The method for dispensing a coin(s) varies with the type of coin mech used in the vendor. All coin mech's compatible with the 4900 except the Mars model MC5000 have payout switches on the mech itself. To dispense coins from the MC5000 there are three payout buttons provided on the sliding panel. These buttons are clearly marked and pressing anyone of them will cause the corresponding coin to be dispensed.

9. EXTRACTING DATA COLLECTION INFORMATION

There are two devices available for obtaining Data Collection Information on the 4900. The Mars Data Probe and the Coinco Data Probe. The first



BA**B SERIES BILL ACCEPTOR

Installation & Operation Guide With Multi Drop Bus

General Information

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

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

NOTE: The BA**B requires one of the following power harnesses.

#407052-1 (8 Pin Jones Interface)

#407419-1 (4 Pin Interface)

#407420 (Multi Drop Bus Interface)

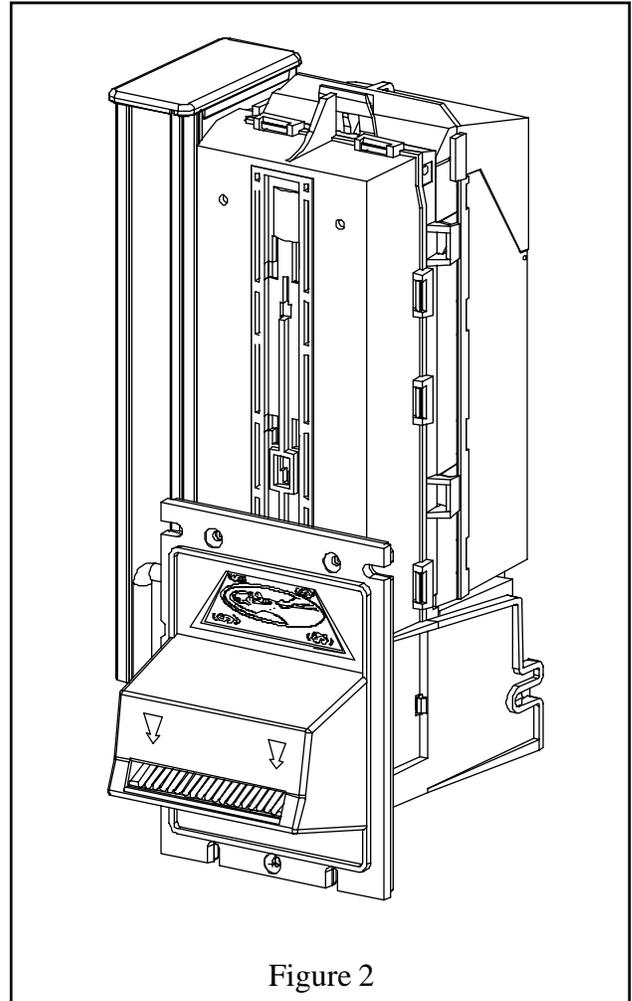
On most controller-type vending machines, the BA**B power cable interfaces directly to the vending machine electronic controller board through an additional vendor interface harness. Contact your nearest Coinco office for additional harness information.

Bill Box Size	Voltage
** = 30	0=110V
32	2= 24V
50	
52	
70	
72	
90	
92	

Figure 1

Installation and Operation

Before installing the BA**B series bill acceptor into the vendor, set the BA**B option switches, (if desired settings are different from those set at the factory.) The BA**B is currently set to accept one dollar bills only, face up in both directions. See "BA**B Option Switches: and "Setting Option Switches" sections for detailed information.



1. Turn OFF vending machine power.
2. Install the BA**B into mounting hole of vending.
3. Connect the BA**B power cable (not included) between the BA**B control box and the changer/ vending machine.
4. Install a Coinco coin changer or the equivalent into the vending machine according to the coin changer instructions.
5. Load the coin changer coin tubes with a minimum of ten coins in each tube making sure all coins lie flat.
6. Restore power to vending machine (BA**B stacker will cycle upon power-up).

7. Observe that power indicator light on back of BA**B control box is ON continuously. If light is off or blinking, check the following:
 - Power to vendor
 - Coin changer tube levels
 - Vendor has product
 - Vendor does not have credit already established
8. With the vend price set below one dollar, insert a one dollar bill as shown on the front of the BA**B.
9. One dollar bill will be accepted and stacked into the bill box.
10. Verify one dollar credit has been established by making a vend and verifying that the proper amount of change is returned.
11. Check the bill box to see that the one dollar bill is properly stored.

BA**B Option Switches

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

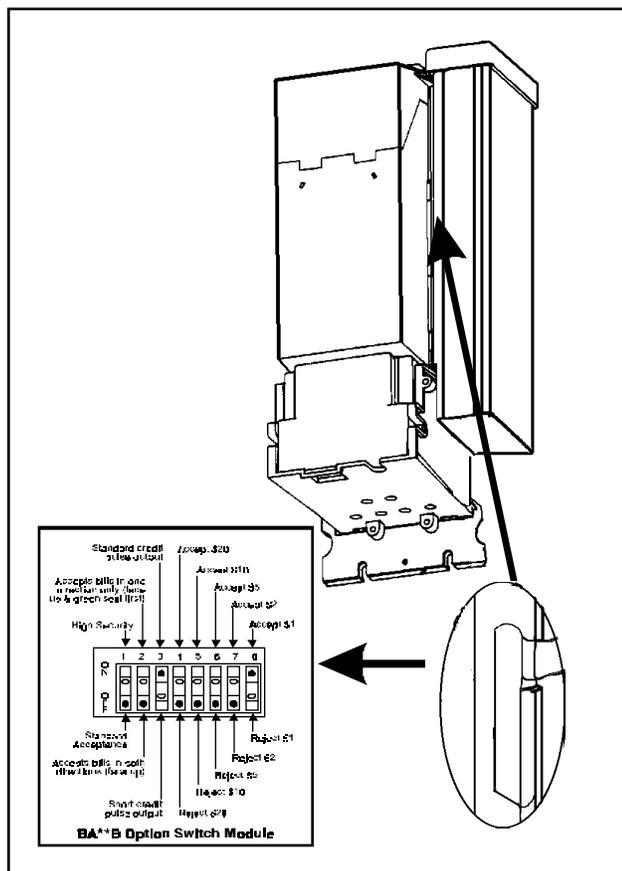


Figure 3

Setting Option Switches

(See Figure 3)

Remove power to the BA**B. To access option switches, remove the bill box to access the option switch access hole on the inner side of the logic board case. Remove the clear tape seal from the access hole. Using a small screwdriver, set the option switches as desired through the access hole. Replace the clear tape seal when completed.

Removing Accepted Bills

(See Figure 4)

Accepted bills may be removed from the BA**B by releasing the bill box lid exposing the bills for collection or by removing the bill box from the bill acceptor unit.

Clearing Jams & Cleaning

(See Figure 4)

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

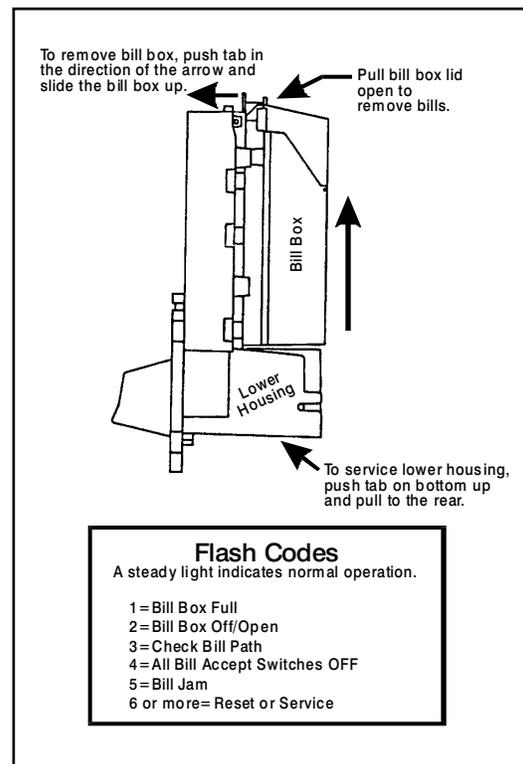


Figure 4

device available for extracting Data Collection information is the Coinco Data Probe. This device may be used with the 4900 when the door is open or closed. A magnetic sensor mounted on the front panel of the 4900 is used for sensing the presence of and transmitting data to the Coinco Data Probe. The Probe must be placed against this sensor to properly receive the Data Collection Information. When the Data Probe is activated it transmits a security code and then waits to receive data. The Controller must receive a valid security code before it will begin transmitting data. If the Controller receives an invalid security code five times it will signal a fault condition and then ignore any further attempts by the Data Probe to extract data for a period of one hour. If the security code sent by the Data Probe matches that maintained by the Controller, the Controller will proceed to send all Data Collection Information to the Data Probe. There are two indicators on the Coinco Data Probe to provide visual indication of operation. The red indicator will light when the Data Probe is sending its' security code and the yellow indicator will light during the time the Data Probe is receiving data. The yellow indicator will only light if the Data Probe is receiving data properly. The second device compatible with the 4900 for extracting Data Collection Information is the Mars Data Probe. This device operates via an infrared receiver and transmitter mounted on the front panel of the 4900. This Data Probe, like the Coinco Data Probe, also sends a security code when it is activated. If the Controller receives an invalid security code from a Mars Data Probe it will signal an error and ignore the Data Probe's request. Once the Controller receives a valid security code it will proceed to send all Data Collection Information to the Data Probe. There are indicators on the Mars Data Probe to aid in operating the device, an LED and an audible tone. If the Data Probe receives data properly it will blink it's LED (green in color) and beep rapidly. If the Data Probe detects an error in data transmission or malfunctions it will blink it's LED (red in color) and buzz at a constant rate. Any faults detected by the Controller will generate a fault code which may be viewed in the door open mode.

10. ACCUMULATED SALES INFORMATION

Two sales figures are electronically maintained by the 4900 for cash accountability. The "Total Accumulated Sales" figure represents a total of ALL cash sales made by the 4900. The "Resettable Accumulated Sales" figure represents a total of all cash sales made by the 4900 since the figure was last reset to zero. Refer to discussion of Audit Switches under Machine Setup for details concerned with obtaining these figures.

11. CURRENCY ACCEPTANCE INFORMATION

Pressing the "Free Vend/\$5.00 Count" button on the Hand Held Module with no selection number in the display will show the number of \$5.00 bills accepted since the last service. Pressing the "Enter Price/ \$1.00 Count" button with no selection number in the display will show the number of \$1.00 bills accepted since the last service. To clear the data, press S3 and S4 on the Main Controller simultaneously.

DOOR CLOSED

General:

In the Door Closed mode the 4900 will accept coins/bills, display credit, allow purchases, and return change. If, however, the Free Vend switch S2/8 (see discussion on switches under Machine Setup) is "ON" the 4900 will not accept any form of coins/currency but will allow free purchases. All a customer need do under a Free Vend situation is enter the selection number of an item and it will be vended. Since no money will be accepted under this condition the credit display will never display anything but the word "FREE".

Section- 4 Troubleshooting

CAUTION

WHEN CHANGING, DISCONNECTING OR CONNECTING ANY ELECTRICAL COMPONENTS, MAIN SWITCH MUST BE IN THE "OFF" POSITION.

INTRODUCTION

This section contains the schematics, a troubleshooting chart and illustrations showing various functions. Use this material in conjunction with removal and replacement instructions in Section 4 - Maintenance.

TROUBLESHOOTING PROCEDURES

It is important to troubleshoot logically. Many malfunctions are caused by minor defects such as loose connections or dirty contacts. Check the following before replacing any parts.

Check circuit breakers. These are located on the power supply assembly at the bottom L.H. side of the cabinet.

Check main power switch is ON – located directly above the power supply.

Check that all plugs are firmly seated in their receptacles.

Check that connector pins are not bent, broken or pushed through the back of the connector or receptacle when mated.

Check that wires are not broken at connector pins.

Check standby condition

MAIN CONTROLLER BOARD

Lit at all times - - Reset, +5VDC, +24VDC, InterRowegator LED's.

MAIN POWER SUPPLY

Lit at all times - - 110VPDC, 33VDC, 12VPDC, 5VDC LED's

O.B.A. CONTROL BOARD (in O.B.A. Section)

Lit at all times - - +5VDC, +24VDC LED's.

Additional Troubleshooting Information

A. Error Codes – See Error Code Chart.

Information on corrective action is included in the troubleshooting charts.

B. Testing LED Displays – Turn "ON" LED Test switch.

Procedure for locating and repairing defective motors.

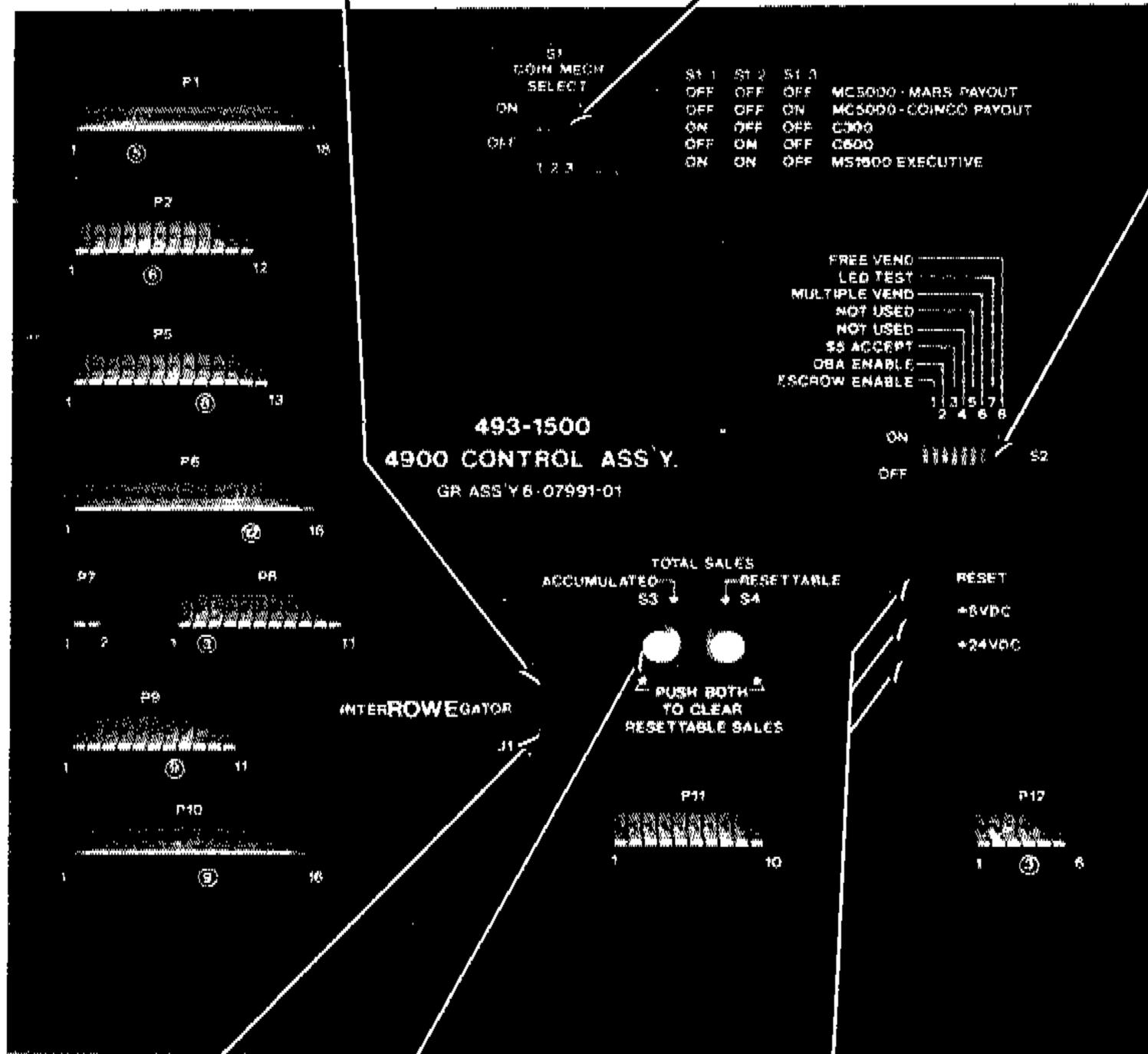
(Fault LED on Front Panel will be LIT)

1. Open Main Door, check Credit Display for Er 90 code.
2. Number in Selection Display indicates the motor that has failed to operate.
3. Record this number and press Reset Key to display any additional motor failures.
4. Continue in this manner until all failures have been displayed and recorded. (Credit and Selection Displays will be blank following the last failure)
5. Check all disabled selections for improper loading, jams, etc..
6. Enter Selection Number of first disabled selection (credit display will read .00) and press Test Vend Button.
7. If motor fails to operate, replace defective motor.
8. Run test vend on repaired selection. (Selection price will be restored to original amount)
9. Repeat procedure for all recorded failures.
10. Press Diagnostic Clear Button to erase all faults from memory.

InterROWEGator LED
Lit at all times
in standby

S1 Switches
Used to set Controller
to the Coin Mech. in use

S2 Switches
Used to select desired
features available



Data Collection
phono jack

Used to Display/Reset
Accumulated Cash Sales
(Total accumulated sales
(S3) is not resettable)

Voltage LEDs
Lit at all times

DIAGNOSTIC CODES

DIAGNOSTICS - SINGLE BOARD 4900 SNACK VENDOR

The Controller continually checks for faulty operation of all parts of the machine. If a fault is detected at any time the Controller will light the fault LED on the front panel display and display the error code generated for the particular fault when the door to the machine is opened. This section contains a listing and explanation of all error codes that may be generated within the 4900.

An error code may be generated by any of the following:

1. An internal self diagnostic fault.
2. A vendor malfunction.
3. Fault with any permissible Coin Mechanism.
4. Fault with any permissible Bill Acceptor.

Any time an error code is generated a fault LED, mounted on the front panel bezel, will be turned on. This LED will not be labeled so that the customers will not be aware that a fault exists.

Because the fault LED is activated whenever a fault condition exists it does not provide an indication as to whether a single fault or multiple faults exist. To determine the cause of the fault the 4900 must be put in the service mode (Door open). When in the service mode all fault conditions may be viewed on the front panel. To view multiple error codes other than the one displayed, press the RESET key on the selection keyboard. This will cause the other error codes to be successively viewed on the front panel display until the last error is displayed. Pressing the reset key following the last error code will blank out the display.

NOTE: Error codes may be viewed a second time by closing the main door and re-opening it.

To clear error codes, press the diagnostic clear button on the sliding panel. Since ALL error codes are cleared when this button is pressed, DO NOT press until error codes have been recorded unless no record of the codes is desired.

All error codes will be displayed in the following format:

Credit Display*

E	r	e1	e2
---	---	----	----

Selection Display**

X	Y
---	---

* e1, e2 indicates the fault condition.

** X, Y indicates the device that created the fault condition.

- E r 20 Bad price checksum. Check machine prices.
- E r 30 S1 switch settings are invalid (see Machine Setup for valid configurations).
- E r 35 Coin Mech operating improperly. Switch setting S1 may be incorrect. If switch settings are correct Coin Mechanism is probably defective.
- E r 40 Faulty battery or battery circuit on Control Board.
- E r 50 Fault condition with COINCO Data Probe
- X Y
- 0 1 Bad communication link, not receiving data properly from data probe. Probe may require recharging or may be faulty.
- 0 2 Unauthorized validation code received five times.
- 0 3 Incompatible Data Probe sensed. Incorrect communication protocol.
- 0 4 Data Probe did not acknowledge reception of data. Possible fault with transmission circuit.
- 0 5 One or more of the previous errors occurred simultaneously.
- E r 55 Fault condition with MARS Data Probe.
- 0 1 Controller not receiving START correctly from Data Probe needs to be recharged.
- 0 2 Data Probe is not receiving STACK (Start acknowledge) correctly. Problem could be with Data Probe receive circuit or controller transmit circuit.
- 0 3 Bad Security/Control Data received from Data Probe.
- 0 4 Controller received unauthorized validation code from Data Probe five times.
- 0 5 Controller received an error in the vending data.
- E r 60 Fault condition with MARS MC5000 Coin Mech.
- X Y
- 0 1 Jammed Strobe.
- 0 2 Defective sensor.
- 0 3 Not used.

0 4 Mars Coin Mech did not respond correctly to a power condition.

E r 70 Bad memory device on Control Board

A ROM A (IC Z10) is defective

B ROM B (IC Z4) is defective

C RAM (IC Z18) is defective

E r 80 Fault condition exists with Bill Acceptor

X Y

0 1 No response from Bill Acceptor. Check communication link (connector P7) for faulty connection.

0 2 Control board sending too many invalid messages, faulty control board.

0 3 Too many invalid messages received from OBA. Check OBA control unit for faults.

0 4 Cannot enable OBA to desired configuration. Check configuration of switches on OBA control unit and set as described under Setup in this manual.

41 }
44 } See OBA Troubleshooting Section
48 } for detail
49 }

E r 90 Defective selection motor or motor switch X indicates column, Y indicates row (shelf)

E r 95 Bad Column Driver. Must be repaired before machine will operate in closed door mode. Check power transistors Q23 through Q32 for short circuit.

E r 96 Bad Row Driver. The "r" signifies row and the corresponding row number will be displayed in place of "Y". Check power transistors Q16 through Q22 for short circuit.

EXAMPLE: E r 96 Shorted row one Driver (Q19)
 r 1

ERROR CODES
(Displayed on Front Panel)

	SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
1.	Er 20	Bad Price Check Sum	Perform Diagnostic Clear procedure. Reset ALL prices.
2.	Er 20 (cannot clear)	Defective Controller	Replace
3.	Er 30	S1 Switch incorrectly set	Set for Coin Mech in use
4.	Er 30 (cannot clear)	Defective Controller	Replace
5.	Er 35	S1 Switch incorrectly set	Set for Coin Mech in use.
6.	Er 35 (cannot clear)	Defective Coin Mech	Replace
		Defective Controller	Replace
7.	Er 40	Dead Battery	Replace Controller
8.	Er 60	Fault condition with Mars MC5000	See Diagnostic Codes for detail
9.	Er 70 -- "A", "B", "C"	Defective Controller	Replace
10.	Er 80 01	No communication from O.B.A. Controller	Check P7 on Main Controller. Check P4 on O.B.A. Controller
		Defective O.B.A. Controller	Replace
		Defective Main Controller	Replace
11.	Er 80 02	Defective Main Controller	Replace
12.	Er 80 03	Defective O.B.A. Controller	Replace

ERROR CODES (Continued)

	SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
13.	Er 80 0 4	Improper S2 switch setting on O.B.A. Controller.	Set S2 to proper configuration.
		Defective O.B.A. Controller	Replace
14.	Er 80 41, 44, 48, 49	O.B.A. Failure	See O.B.A. Troubleshooting Section
15.	Er 90 X Y	Defective Selection Motor (X Y indicates affected motor)	Check and Replace if necessary
		Entire Shelf inoperative	Check for either "open" or shorted (to chassis ground) selection motor or full cycle switch "return" wires. Refer to page 34A.
		Entire Column inoperative	Check for either "open" or shorted (to chassis ground) selection motor "drive" wires. Refer to page 34A.
16.	Er 95	Defective Main Controller	Replace
17.	Er 96 r Y	Selection Motor out of "Home" position on "Power Up"	Clear Diagnostic error and check to be certain diagnostic error does not reoccur on power up.
		Shorted (to chassis ground) Selection motor return wire.	Check motor return wire. Repair as necessary. Refer to page 34A.
		Defective Main Controller	Replace
18.	Er 97	Motor not "home" when selection was made.	Run Test Vend of that selection.
19.	Er 99	No prices set in vendor	Set prices and clear diagnostic code.

Note:

If Er 90 appears continually on a selection that has no vend motor perform the following procedure.

1. Put vendor in "Service Mode".
2. Shut "OFF" main line switch.
3. While holding the "Free Vend" button on the hand held module DOWN, turn the main line switch back "ON".
4. Reprogram ALL data (prices, product code, etc.) in the Main Controller.

TROUBLESHOOTING CHARTS
(Check Error Codes First)

CAUTION
WHEN CHANGING, DISCONNECTING OR CONNECTING ANY ELECTRICAL COMPONENTS, MAIN SWITCH MUST BE IN THE "OFF" POSITION.

	SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
1.	All Coins Deposited are rejected	Machine not level	Level Cabinet
		Vendor in "Service Mode"	Main Door open or Defective Door Interlock Switch.
		Defective Coin Mech	Replace
		Free vend switch on	Turn off
		Defective Controller Assembly	Replace
2.	Selection Motor fails to run	Insufficient Credit Established	Check to see that selection price is same as deposited amount.
		Defective Motor Assembly	Test vend bad motor. Replace if defective
		Defective Controller	Replace
3.	All selection Motors do not run (Test or Free Vend)	Defective Controller Assembly	Replace
4.	Selection Motor does not complete cycle	Defective Full Cycle Switch	Remove power. Check switch, replace if defective
		Defective Components on Motor PC Board Assembly	Replace Motor Assembly
		Defective Controller Assembly	Replace

	SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
5.	Selection Motor Continuously Cycles	Defective Full Cycle Switch	Remove Power; check switch -- replace if defective
		Defective Controller Assembly	Replace Controller Assembly
6.	Two Motors run simultaneously	Defective Controller Assembly	Replace
		Defective component in Gum and Mint Motor Circuit.	Locate and replace defective component
7.	Incorrect Change Dispensed	Vend Price not set to agree with Price Label	Check Vend Price
		Defective Coin Mechanism	Replace
		Defective Controller	Replace
8.	Voltage LED's on the Controller not lit (any)	Defective Power Supply	Check voltage LED's. If "OFF" - Replace Power Supply.
		Defective Controller	Replace
9.	Reset LED on Controller is not lit	Defective Controller	Replace
10.	Gum & Mint does not indicate sold out or always indicates sold out	Setting of Sold-Out Switches not proper	Set Sold-Out Switch Actuators as shown in Figure 14
11.	Vendor accepts coins -- will not vend (any selection)	Diagnostic Code E r 20 in display	Perform diagnostic clear procedure
		Defective Controller	Replace