



# **HBA12/14 HOT BEVERAGE MACHINE**

**CONVERTIBLE HOT BEVERAGE VENDOR**



**MODELS:**

**3156 HBA12**

**3178 HBA14**

**SERVICE  
MANUAL**

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Record the model number and serial number of your machine in the space provided below. The model and serial numbers are needed to obtain quick service and parts information for your machine. The numbers are available on the identification plate located on the backside of the cabinet of the machine.

**MODEL NUMBER** \_\_\_\_\_

**SERIAL NUMBER** \_\_\_\_\_

# 1 INTRODUCTION

This manual contains service and installation guidelines and instructions for the **HBA12/14 Hot Beverage Vendors** along with various optional equipment and accessories that are offered within the product line.

Each vendor is equipped with an electronic control system that includes a variety of features and functions that can be programmed and used by the customer as needs arise for specific locations. Some of the features are **Programmable Message Center, Cash and Vend Accountability** by selection and machine, programmable to offer each selection in two (2) ingredient strengths or portions for full customer satisfaction, **Multiple-Pricing** and **Free Vend** capabilities. Keyboard programming that allows changing programs and functions at the location.

Provisions for vending International Coffee Blends can be included as optional equipment when shipped from the factory. Kits are available for adding in the field if not included with original equipment. Details and functions of all features are defined throughout this manual.

The electronics within the controller will allow all selections to be priced separately at various vend prices, ranging from \$.00 to \$99.95 in five-cent (5¢) increments. All programming of the vend functions, pricing and features are done at the controller and changes to the different programs can be made, or information can be retrieved, without the need of any additional accessories or remote parts.

Service requirements and malfunctions are detected by the controller and stored in memory. **CALL FOR SERVICE** will be scrolled in the display when the machine becomes inoperable. Optional programming allows for the phone number to be included for notification of problems. The service required or malfunction will be displayed to the service person when the controller is placed in the **Service Mode**.

A model number and a specific serial number will identify each machine. These identification numbers will appear on the **Serial Number Plate** attached to the inside and rear of the vendor. Record these numbers for your records in the space provided on the inside front cover. All inquiries and correspondence pertaining to this vendor should reference the model number and serial numbers.

**It is recommended that this manual be read thoroughly** to familiarize the service person with the functions of all components along with the features that are available. The initial set-up of a machine is a very important step of insuring that the equipment operates in a trouble-free manner.

**Following the instructions at the initial installation of the machine will minimize set-up time, and service problems can be avoided.**

Should you have any questions pertaining to information in this manual, replacement parts, or the operation of the vendor you should contact your local distributor or **VendNet™**.

**VendNet™**  
165 North 10th Street  
Waukee, IA 50263  
United States of America

**International  
Service & Parts: 515-274-3641**

**USA & Canada  
Service: 800-833-4411  
Parts: 888-259-9965**

**Fax: 515-987-4447  
All Others: 888-VENDNET  
(888-836-3638)**

**Email: [vendnet@vendnetusa.com](mailto:vendnet@vendnetusa.com)**

**Web Site: [www.vendnetusa.com](http://www.vendnetusa.com)**

## 2 SPECIFICATIONS

MODEL		
3156	HBA12 FRESH BREW	
3178	HBA14 FREEZE DRIED	
MACHINE DIMENSIONS		
Height	72 inches	182.9 cm
Depth	32 inches	81.3 cm
Width	30 inches	76.2 cm
Net Weight	400 lbs.	181.4 kg
Shipping Weight	429 lbs.	194.6 kg
ELECTRICAL		
Power Supply	<b>Must be</b> a minimum 20 Amp isolated circuit	
Voltage Requirements	115 Volts AC, 60 Cycle 16 Amps	
Internal Transformer	117 Volts AC Primary, 24 Volts AC Secondary	
WATER		
Water Requirements	20 to 125 Lbs. P.S.I. - 3/8" Water Connection	
Internal Capacity	4.5 Gallon Hot Water Tank (1600 watt heater element)	
COIN MECHANISM		
Coinco	Model 9302L	
Mars	Model TRC6010	
	or equivalent	
PRICING		
	Individual Prices for each selection	
	Free Vend Capability	
	Lotto Capability	
CUP CAPACITY		
	523 - 7 Oz. Squat Cups	
	Can handle 7, 8 ¼, 9, & 12 Oz Cups	
PRODUCT CANISTER CAPACITY		
PRODUCT	HBA12 3156 FRESH BREW	HBA14 3178 FREEZE DRY
Coffee	7.5 Pounds**	36 Ounces
Decaf Coffee	2 Pounds**	36 Ounces
Creme	4 Pounds	4 Pounds
Sugar	7 Pounds	7 Pounds
Chocolate	7.5 Pounds	7.5 Pounds
Soup	3 Pounds	3 Pounds
Tea	24 Ounces	24 Ounces

\*\* For best performance of the Fresh Brew Unit it is recommended that a 17 Grind Vending Grade Coffee product be used.

## 2.1 COMPONENT IDENTIFICATION

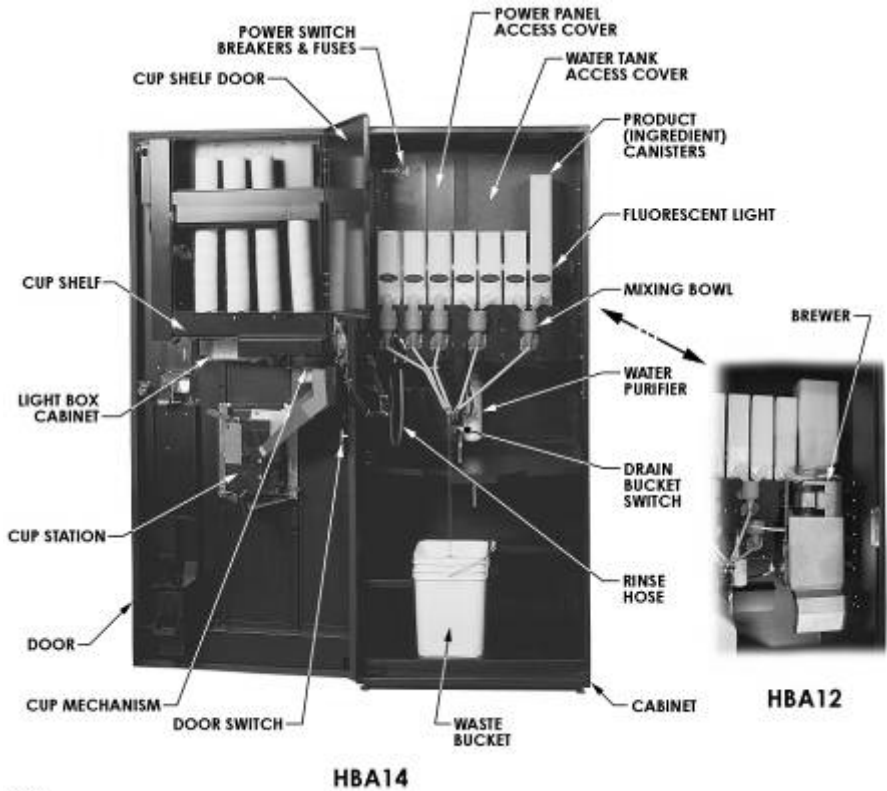


Figure 2.1 Component Identification

### 3 UNPACKING

This machine has been thoroughly inspected before leaving the factory and the delivering carrier has accepted this vendor as their responsibility.

Any damage or irregularities should be noted at the time of delivery and reported to the carrier. Request a written inspection report from the claims inspector to file any claim for damage. File the claim with the **carrier (NOT the manufacturer)** within 15 days after receipt of the machine.

Carefully remove the outside packing material in a manner not to damage the finish or exterior of the machine. Inspect the machine for concealed shipping damage. Report any damage hidden by the shipping material directly to the delivering carrier on a hidden damage report.

**Record the model number and serial number of the vendor for your records.** See space provided in the **inside front cover**. These numbers can be found on the **serial plate** located on the rear of the cabinet and/or inside the vendor. Refer to these numbers on all correspondence and inquiries pertaining to this vendor.

### 4 INSTALLATION

To minimize installation time and to avoid service problems due to improper installation, **read and follow the instructions in sequence as outlined in section 4 of this manual.**

#### CAUTION:

**Do not connect the water heater to the control box until the water tank has filled with water.**

#### 4.1 UNLOCKING, POSITIONING & LEVELING

**Unlock the door.** On machines furnished with the lock installed, the key will be taped inside the coin return cup. On machines furnished without a lock, press down on the upper leg of the Spring Clip and pull.

**Position the vendor** in its place of operation no further than 6 feet from the power outlet or receptacle and check that the door will open fully without interference. Leave at least six (6") inches of space between the back of the machine and any wall or obstruction for proper air circulation and exhaust.

**Level the vendor,** making sure all leg levelers are touching the floor. See **Figure 4.1**. The vendor **MUST** be level to obtain proper operation and proper acceptance of coins through the coin mechanism. When the vendor is level, the door can be opened to any position and not move by itself. Try the door half closed, straight out and in the wide-open position before deciding the vendor is level.



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**Figure 4.1 Leg Leveler**

## 4.2 INSTALL PACKAGED PARTS

Various parts are taped and packaged inside the machine for shipment to prevent damage in transit.

Identify all packaged parts and remove all packing material, shipping screws, shipping tags and tape from inside the vendor.

To try to operate the vendor without removing the tape from the moving parts may result in damage.

### 4.2.1 INSTALL WATER PURIFIER (FILTER)

The water filter will be shipped packaged in the waste bucket. Removal and Instructions are packaged with each cartridge. See **Figure 4.2**.

The cartridge reduces the lime scale build-up and protects the drink taste by filtering out fine particles.

Each cartridge should filter approximately 2,500 gallons of water, but this will vary depending on local water conditions. 2,500 gallons of water would provide 40,000 to 60,000 drinks per filter, depending on cup size. Since no feasible “test” of cartridge conditions is available, replacement frequency should be routine based on knowledge of local water conditions and number of units vended.



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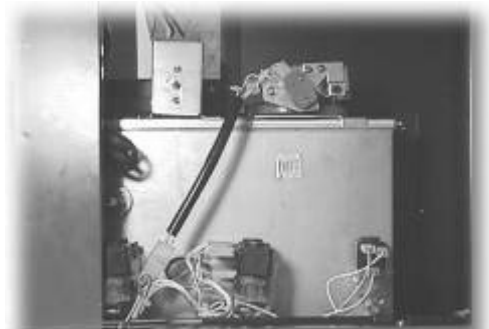
**Figure 4.2 Water Purifier**

## CAUTION

Leave the manual water valve in the UP (OFF) position until you are ready for the water tank to be filled.

### 4.2.2 INSTALL WATER TANK LID

The water tank lid assembly is shipped packaged in the waste bucket. Install the water tank lid and secure with two (2) thumb nuts. Connect the harness to the cabinet harness. See **Figure 4.3**.



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**Figure 4.3 Water Tank Lid**

### 4.3 CONNECT TO WATER SUPPLY

Located on the rear of the cabinet is a 3/8" standard pipe connection to be used for the water supply. To connect the water line to the pipe connection, use either a 3/8" pipe to flare fitting or a 3/8" pipe to compression fitting. See **Figure 4.4**. An installation kit, part number 1200137-133, is available from **VendNet™** parts department.

It is always advisable to install a water supply cut-off valve in the external water supply line.



Figure 4.4. Water Supply

### 4.4 CONNECT TO POWER SUPPLY

#### 4.4.1 115 VOLT AC, 20 AMP SERVICE

The electrical power supply for this vendor must be a minimum 20 Amp isolated circuit. The power cord for the vendor is equipped with a 20 amp molded, polarized and grounded plug.

To verify that a receptacle is properly grounded and polarized, use a voltmeter or test light as shown in . Insert one probe of the test device in the receptacle ground terminal and the other probe in the nearest "single slot" or "hot" terminal. (The double slot or "cross" terminal should be "neutral"). You should read 115 volts on the volt-meter or the light should light. See **Figure 4.5**.

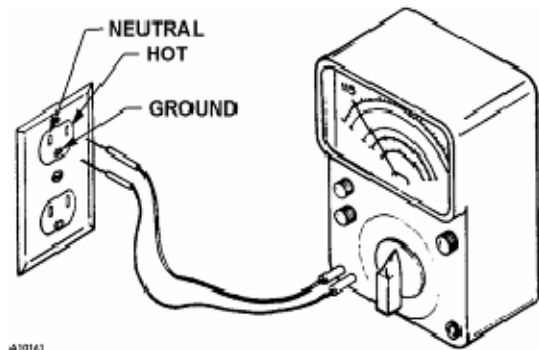


Figure 4.5. Grounded Receptacle

If these requirements are not met you should contact a licensed electrician to properly polarize and/or ground the power source to insure proper operation. **Consult local, state and federal codes for compliance before installation of the vendor.**

### 4.5 FILL WATER TANK

When the water and power have been turned "ON" the water tank should fill automatically since the float mechanism will detect an empty water tank. See **Figure 5.2** on page 13.



## 4.6 CONNECT WATER HEATER

The **water tank** will continue to fill with water until the **float mechanism** shuts it off. When the **water tank** is filled, then connect the **water heater harness** to the **AC Driver Board**. See **Figure 5.1** on page 12.

### CAUTION:

Do not connect the water heater to the control box until the water tank has filled with water to prevent possible damage to the heater element.

## 4.7 PRESET WATER TEMPERATURE CONTROL

The Temperature Control has been preset at the factory to keep the water temperature at approximately 195° F (90.5° C) but **may be reset if needed**. See section **5.1.5 Water Temperature Control** on page 15 for adjustments and additional information.

### CAUTION

The water in the tank should not boil. 1/4 turn of the adjustment screw will change the temperature approximately 25° F (14° C).

## 4.8 INSTALL COIN MECHANISM

This vendor is designed to use **Coinco Model 9302L** or **Mars TRC6010** coin changers or equivalent. To install the changer, remove the acceptor (upper) portion from the coin mechanism. Position the three (3) "keyhole" slots in the back of the coin mechanism over the screws on the door panel and tighten the screws. Replace the acceptor and plug the changer in the coinage receptacle on the door harness.

The controller circuitry is designed to receive signals from the coin mechanism as the coins are accumulated and the controller maintains all totals. When proper credit has been established, the controller will allow a vend to be made.

The controller controls the acceptance of coins through the coin mechanism. The coin mechanism should refuse to accept coins when:

1. Vendor is out of cups.
2. Water supply absent or insufficient.
3. Water Waste Bucket full.
4. Credit equal to or exceeding highest vend price.

When the coin mechanism is disabled by either the **Sold Out Switch**, **Low Level Switch** or the **Waste Bucket Switch**, the controller will disable all vend circuits and the message **CALL FOR SERVICE** will be displayed.

Load the coin changer coin tubes with nickels, dimes and quarters. (See **Table 4-2 Coin Tube Capacity** and **Figure 4.6** on page 8) After a few seconds the credit display will begin to scroll the **Point of Sales (POS.)** Message.

**Table 4-1 Option Switch Settings**

SW	DESCRIPTION	POS.	FUNCTION
1	USA/CAN	ON	U.S. & Canadian coins will be accepted.
		OFF*	Canadian coins will be rejected.
2	LO 25¢	ON	Quarters are diverted to cash box when the change tube has inventoried approximately eight (8) quarters.
		OFF*	Quarters are diverted to change tube until the change tube is full.
3	\$ ACCEPT	ON	Dollar coins will be accepted.
		OFF*	Dollar coins will be rejected.

\*Changer option switch factory settings.

**Table 4-2 Coin Tube Capacity**

COIN TUBE	5¢	10¢	25¢ OPTION	
			HI 25¢	LOW 25¢
FULL	68 - 69	98 - 99	66 - 67	9 - 10
LOW	7 - 8	10 - 11	8 - 9	9 - 10

**NOTE**

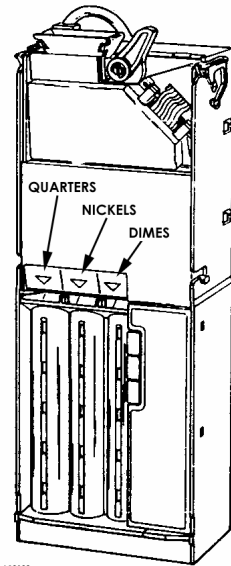
Obtain service manuals and operational functions of the coin changer from the coinage manufacturer.

**4.9 SET PRICES**

Vend prices are controlled by the controller and must be programmed into the controller memory.

The controller must be placed in the **Service Mode** to alter any programming and establish new programs. Vend prices are programmed into the controllers memory using the Selection Keypad.

Refer to section **6.8 Set Price Mode** on page 28. Continue with section **4.10 Install Price Labels** on page 9 after setting prices.



**Figure 4.6 Coin Tubes**

## 4.10 INSTALL PRICE LABELS

Price labels are provided with the machine to display the vend prices of each selection. Instructions for changing **price labels** are as follows:

1. Open vendor door. Turn off power.
2. Locate light box hold-down screws located on the left edge of the **light box** assembly. See **Figure 2.1** on page 3.
3. Remove light box hold-down screws and swing **light box** cabinet open.
4. Remove the **Menu Front** from the door assembly by carefully sliding it up.
5. Place **Menu Front** on a non-scratchy tabletop or work surface. Protect the **Menu Front** from getting scratched.
6. Carefully pull price labels from the back of the **Menu Front** to remove them.
7. Carefully insert new price labels to appropriate selection. Check, align and adjust as needed.
8. Re-install the **Menu Front** back to door assembly.
9. Turn on power and check label alignment from front.
10. If satisfied with price label alignment, then re-install hold-down screws and close door.

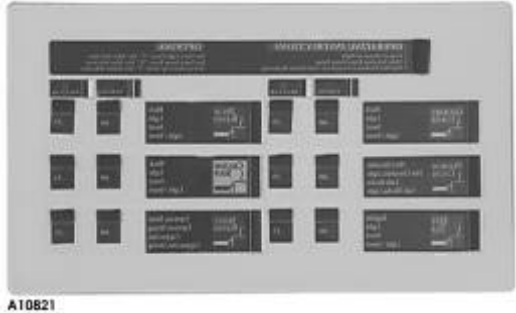


Figure 4.7 Menu Front (rear view)

### IMPORTANT

**Check vend prices of each selection to make sure the price label located on the menu label agrees with the price programmed into the controller.**

**With the controller in the *Sales Mode*, the vend price will be displayed when a selection is made without adequate credit established.**

If desired, the following features should be programmed into the controller. Details and functions of these features are described in section **6 CONTROLLER PROGRAMMING** on page 21.

- **Set Multi-Vend Feature**
- **Set Lotto Option**
- **Set Force Vend Feature**
- **Set Discount for Vend Without Cup**
- **Edit Sales & Service Message**

## 4.11 LOAD PRODUCT

Product canisters should be installed in locations shown in **Figure 4.8**.

When installing the canisters make certain the Motor Drive Spline engages with the Canister Drive Coupling (see **Figure 4.9**).

A label to indicate the product to be loaded identifies each product canister. Load the appropriate quantity of product in each canister.

**Do not** strike the side of the canisters to enable you to put in a little more ingredient. **Avoid overfilling** to prevent ingredient packing.

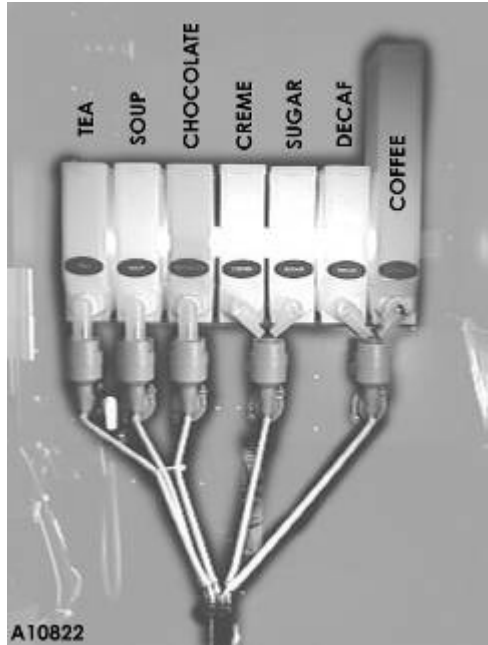


Figure 4.8 Product Canisters

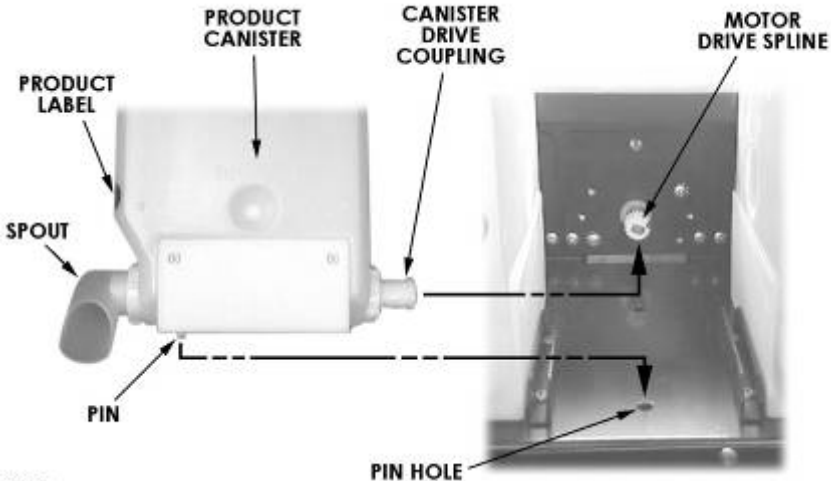


Figure 4.9 Product Canister Installation

## 4.12 LOAD CUPS

Open the **cup shelf door** and load the cups. Up to four stacks of cups can be loaded. See **Figure 4.10**. Close door when cup loading is finished and proceed to section **4.13 Installation Checklist**.

If changing cup sizes or for additional information see section **5.5 Cup Mechanism** on page 18.

## 4.13 INSTALLATION CHECKLIST

1. All packing material and tape removed from moving parts?
2. All loose parts properly installed?
3. Water filter, electrical and water connections properly installed?
4. Vend Prices and vend options programmed and price labels set?
5. Product canisters properly loaded?
6. Cups loaded in Cup Mechanism?
7. Adequate change in Changer pay-out tubes?
8. Water Heater Harness connected to Power Box.
9. Scrolling message should be displayed in the digital read-out.

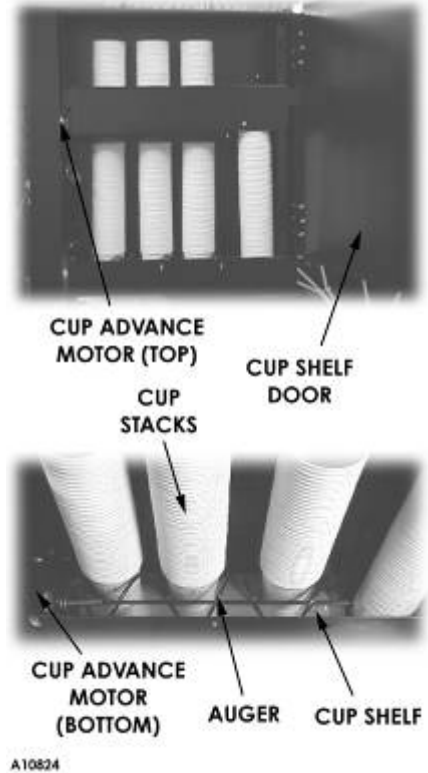
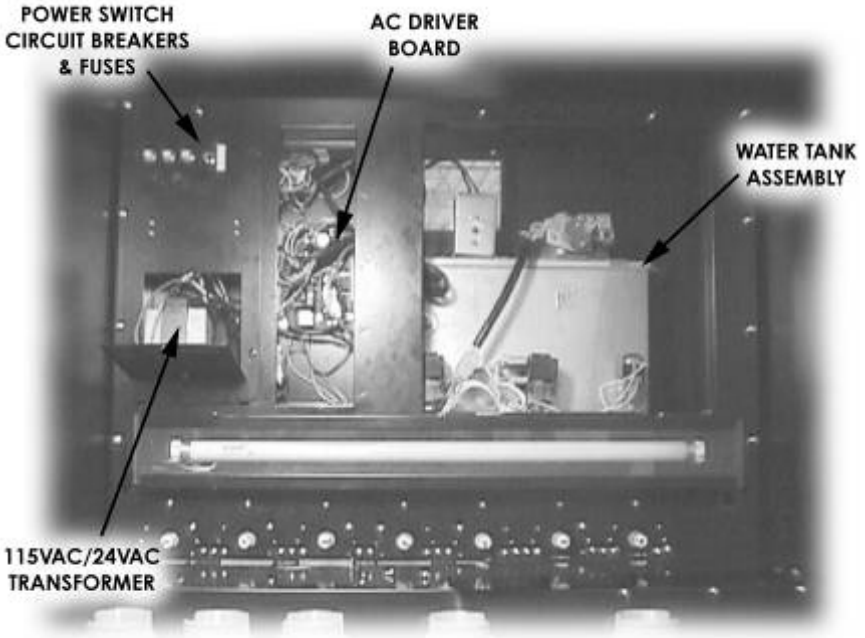


Figure 4.10 Load Cups

# 5 OPERATING INSTRUCTIONS

Should the vendor require servicing or maintenance, components are accessible behind access covers located on the cabinet back panel (behind the product canisters). Remove the product canisters taking note of their sequence and placement. See **Figure 5.1**.

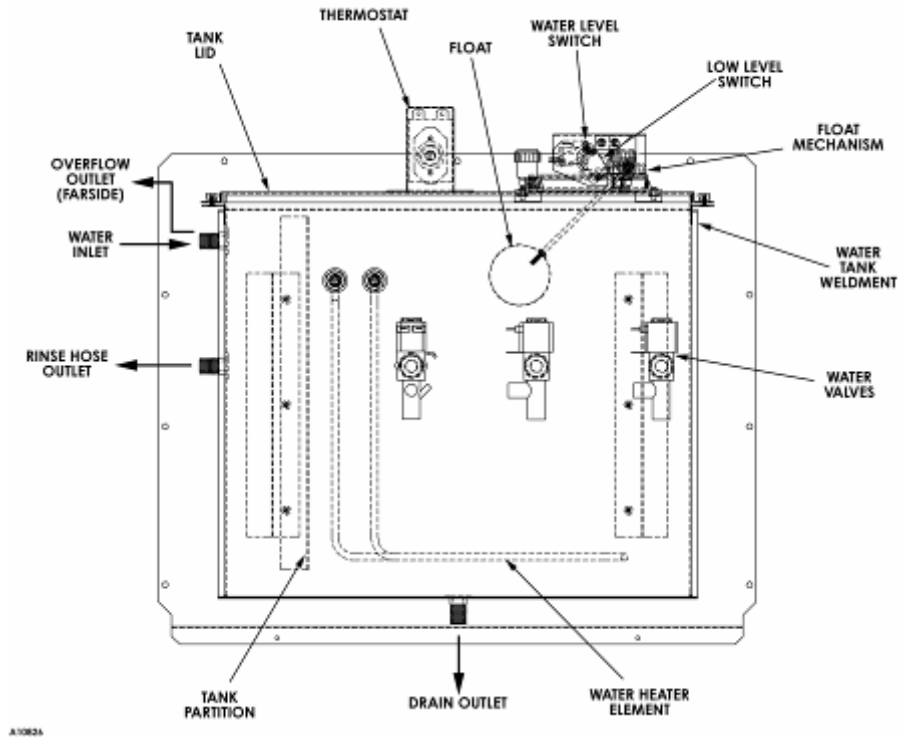


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**Figure 5.1 Access Covers**

## 5.1 WATER TANK ASSEMBLY

Refer to **Figure 5.2** for component identification. Additional detailed operational descriptions are contained within this section of the manual.



**Figure 5.2 Water Tank Assembly**

### 5.1.1 WATER TANK

The water tank is stainless steel and has a capacity of 4.5 gallons. Water enters the tank through the port in the top of the tank. Water to all drinks is supplied (by gravity force) through solenoid operated water valves mounted to the top front of the water tank. An overflow (open to the atmosphere) is provided to route excess water to the liquid waste bucket. A spray hose is also provided for cleaning and servicing the vendor.

## 5.1.2 TANK LID

A float mechanism with two (2) switches (**water level switch** and **low level switch**) mounted on the water tank lid control the water level in the tank.

If the water level drops to trigger the **low level switch**, then the inlet water valve opens to fill the tank. If the water level rises to trigger the **water level switch** then the water valve closes to stop filling the tank. The **water level switch** must be set so that the water level is maintained below the overflow outlet.

If for any reason water is not available to the tank (waste bucket full or water supply shut off), the coin mechanism will be disabled and the message: **CALL FOR SERVICE** will scroll on the display to alert the customer and the machine will not function.

## 5.1.3 LOW LEVEL SWITCH

The **low level switch** is adjustable by loosening its mounting screws. Follow the following procedure to check and adjust the low level switch:

1. Using the **rinse hose**, slowly drain water from the tank until the **CALL FOR SERVICE** message is displayed.
2. Place the controller in the **Service Mode** and test vend Selection **G0**. Water should still be available.
3. If little or no water is available, adjust the **low level switch**.
4. Turn the water inlet valve at the filter cap to the "ON" position.

## 5.1.4 WATER LEVEL SWITCH

The **water level switch** is not adjustable. If the water level in the tank is not correct, check the following:

1. Check the float condition. Look for leaks or corrosion build-up.
2. Check the float pivot rod to be sure it moves freely.
3. If the above conditions are good, reform the float rod to obtain the correct water level.

## CAUTION

Always check the low level switch adjustment if the float rod has been reformed.



### 5.1.5 WATER TEMPERATURE CONTROL

The Temperature Control is pre-set at the factory to keep the temperature of the water in the water tank at approximately 195°F (90.5°C). The drink temperature in the cup should be 155°~160°F (68°~71°C) even under casual conditions (30 minutes or more between drinks). The temperature of repeated drinks will vary from 160° to 175°F (71° - 79°C) as the lines and bowls absorb heat.

To check the water temperature in the tank to determine if the thermostat is operating within the range, insert a thermometer through the self-closing grommet port at the top of the water tank.

To change the water temperature, rotate the thermostat adjusting screw, clockwise to raise, or counter clockwise to lower the temperature.

Adjusting the thermostat to a higher setting will not accelerate heating of the water in the tank. The thermostat's function is to maintain a constant water temperature.

## CAUTION

**One-fourth (1/4) turn of this screw changes the temperature approximately 25° F. If this thermostat is set too high it will cause the water to boil creating an excess amount of steam or moisture within the cabinet area which may cause the ingredients to pack or harden.**

If it becomes necessary to replace a thermostat, be sure the sensing bulb is inserted correctly. It is important that no portion of the capillary tube touches the water tank. See **Figure 5.2** on page 13.

### 5.1.6 WATER HEATER ELEMENT

The heating element for the water tank is a 1600 watt immersion heater mounted through the front of the tank and secured in place by two (2) hex nuts. The grommet is part of the heater assembly and is mounted on the "inside" of the tank. See **Figure 5.2** on page 13.

### 5.1.7 WATER VALVES

There are five (5) water valves mounted on the front of the water tank which supply the liquid for the various drinks. The valves are solenoid operated with the power being supplied by the controller. The water volume or drink level is determined by the amount of time the controller supplies power to the solenoid. Refer to section **6.10 Set Dispense Time** on page 30.

The water flow or volume can also be altered by the needle valve adjusting screw on the front of the water valve. If this becomes necessary, the dispense time programmed in the controller will have to be changed accordingly.

Periodic replacement of the O-Ring and Diaphragm may be necessary to prevent leaks.

## 5.2 INGREDIENT CANISTERS

The Ingredient Canisters used on both Freeze Dry and Fresh Brew Models are identical. Each has a rotary actuator to prevent bridging of the product.

When removing or installing any canisters, the drive spline on the canister and ingredient motor drive coupling must be positioned correctly as shown on **Figure 4.8** and Error! Reference source not found. (on page 10) for proper engagement. To remove a canister, lift front end up so that the tab clears the hole and slowly pull forward.

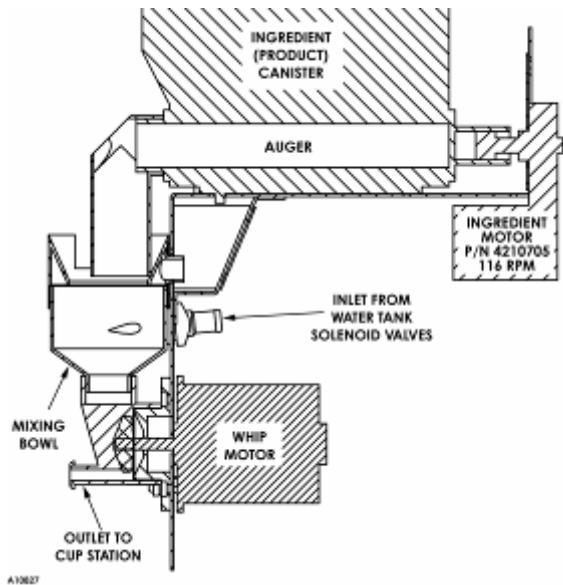
### 5.2.1 PREVENTATIVE MAINTENANCE SUGGESTIONS

- Be sure that the exhaust system is clean and clear of obstruction and that the exhaust motor is running.
- Be sure all canister lids are properly replaced after servicing.
- Do not strike sides of canisters to enable you to put in a little more ingredient. The normal "load" of ingredient should be more than enough to last until the next service. Proper loading keeps fresh products available and prevents ingredient "packing" and "bridging" in the canisters.

## 5.3 INGREDIENT MOTORS

All ingredient motors are 115 volts AC, 50/60 cycle. The controller controls the total run time. Timing can be changed to vary the amount of ingredient throw.

As the motor turns, the drive link on the canister is engaged by the motor drive spline, turning the auger to dispense the product. As the auger is turning the agitator is engaged, which keeps the ingredient near the dispensing area loose to prevent "bridging" and "packing" to insure a constant volume of product.

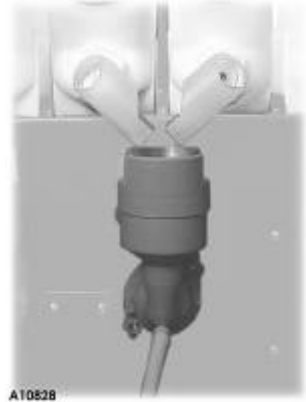


**Figure 5.3 Assembly Cross Section**

## 5.4 MIXING BOWLS

All selections have individual mixing bowls where the ingredients are mixed with water. See **Figure 5.4**. All products are routed directly to the cup station from their individual mixing bowls.

It is important that all hoses are properly routed or dressed in a manner to be free of restrictions and not “kinked” in any way to restrict the flow of water. Water should enter the mixing bowl at or before any ingredients are deposited. All start times are controlled by the controller and cannot be altered.



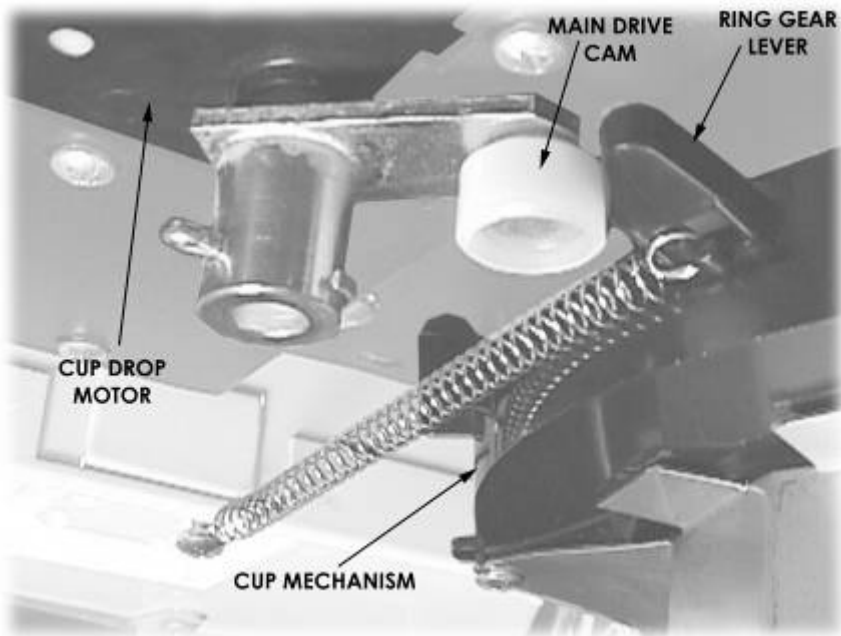
**Figure 5.4 Mixing Bowls**

## 5.5 CUP MECHANISM

A maximum of four (4) cup stacks (three on the shelf and one on the cup mechanism) can be loaded onto the Cup Drop Assembly. See section 4.12 Load Cups and Figure 4.10 on page 11.

The controller starts the **cup drop motor**, which rotates the **main drive cam**. This releases the spring-loaded dispensing **ring gear lever**, and rotates the six dispensing cams releasing a cup to the **cup station**. As the **main drive cam** continues to rotate 180° to home position, the dispensing ring gear is reset and the six cams rotate to separate and hold the bottom cup from the cup stack. The cup is ready for release. See Figure 5.7 and Figure 5.5.

If a low cup condition is sensed by the **cup sensor switch**, then it sends a signal to the controller, which then activates the two (2) **cup advance motors** [augers] to push the cup stacks towards the **cup mechanism** allowing a stack to drop from the shelf onto the remaining cups in the **cup mechanism**. See Figure 5.7 on page 19.



A10631

Figure 5.5 Cup Drop Motor

### 5.5.1 CUP SENSOR SWITCH

A **cup sensor switch** signals the controller when the cup mechanism stack level is low. If the **cup sensor switch** needs adjusting, the lock-down screw is located underneath the **cup drop assembly** near the **cup mechanism**. See **Figure 5.7**.

### 5.5.2 CUP DROP MOTOR

The **cup drop motor** is located underneath the **cup drop assembly** near the **cup mechanism**. See **Figure 5.5** on page 18.

### 5.5.3 CUP ADVANCE MOTORS

Two (2) **cup advance motors** are located on the left side of the **cup drop assembly**. See **Figure 4.10** on page 11.

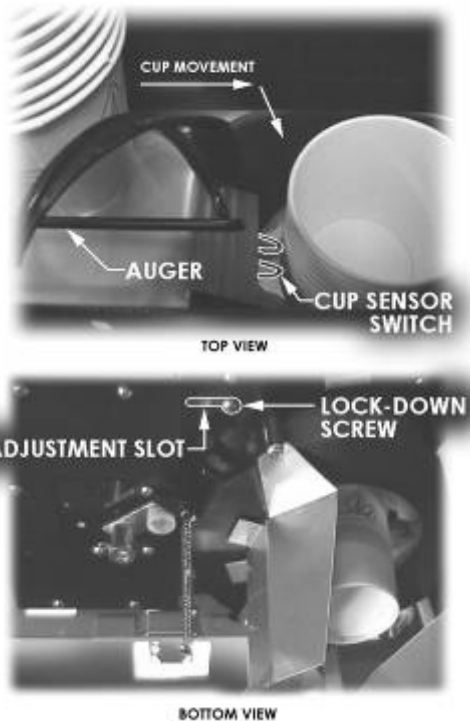


Figure 5.7 Cup Sensor Switch

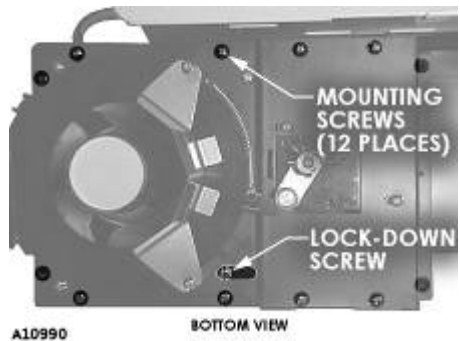


Figure 5.7 Mounting Screws

## 5.5.4 CHANGING CUP SIZE

Turn off power to vendor. Place new cup in **cup mechanism** and check for size and fit. The cup lip must rest evenly on all dispensing cams, while cup sides must have .01”-.03” (1/64~1/32) inch clearance with dispensing cams. See **Figure 5.9**. If these requirements are not true then adjust cup mechanism.

Remove all remaining old cups. Adjust the cup mechanism as follows:

1. Check that the [cup mechanism motor] **main drive cam** is in the normal home position, pushing the **ring gear lever** in the cocked position. See **Figure 5.5**.
2. Loosen the **cup size locking screw** located on the right side of the **cup mechanism**. Adjust the **cup mechanism** by turning it clockwise (viewed from the top) to its smallest cup size setting. See **Figure 5.9**.
3. Place new cup in cup mechanism. Adjust the cup mechanism counter-clockwise until the cup lip rests evenly on all dispensing cams, while the cup sides are snug against the dispensing cams. Turn **cup mechanism** an additional 1/32” inch (.03” inch) to allow clearance for cup size variations.
4. Tighten **cup size locking screw** to lock the new cup size setting.
5. Load a stack of cups onto the **cup mechanism** and check the cup sensor switch to make sure it activates when there is a low cup condition. If adjustment is needed, loosen the lock-down screw located underneath the cup drop assembly and slide the cup sensor switch to desired position. Tighten lock-down screw to set the adjustment. See **Figure 5.7** on page 19.
6. Check the **cup advance motor** to make sure that it is advancing the cup stack properly. Perform test vends.

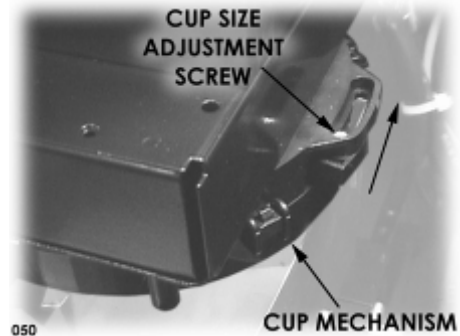


Figure 5.9 Cup Size Adjustment

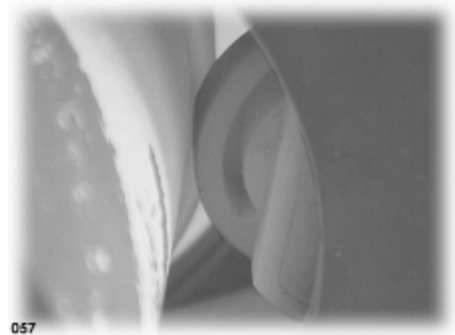


Figure 5.9 Dispensing Cam (bottom view)

# 6 CONTROLLER PROGRAMMING

The **controller** must be placed in the **Service Mode** to alter any programming, establish new programs, retrieve diagnostic information and other features.

The controller is located on the upper left corner of the door assembly. The service button is on the circuit board accessible through the controller box access hole. See **Figure 6.1**.



**Figure 6.1. Controller**

When the controller is placed in the **Service Mode**, **Service Diagnostic** information will be displayed if any failure or malfunction has occurred since the last time the controller was placed in the **Service Mode**. Any information displayed should be recorded immediately.

When in the **Service Mode**, the keys on the keypad perform different functions depending on the specific mode or requirements of the programs to be accomplished. The keypad functions are defined in detail under each mode description throughout this manual.

**Table 6-1** can be used as a quick reference for entering or changing programs. Complete details are outlined under each mode in this manual.

**Table 6-1 Controller Functions While In Service Mode**

MODE KEY	CONTROLLER FUNCTION	KEY PAD INPUT
1	Coin Dispense	1
	Nickel Dispense	1 + A
	Dime Dispense	1 + B
	Quarter Dispense	1 + C
	Dollar Coin Dispense	1 + D
2	Security & Machine Config	2
	Security ID	2 + A + (ID number)
	Config – Freeze Dry	2 + B + 0
	Config – Fresh Brew	2 + B + 1
3	Vend Options	3
	Force Vend ON	3 + A
	Force Vend OFF	3 + A
	Multi Vend ON	3 + B
	Multi Vend OFF	3 + B
	Occurrence/Lotto ON	3 + C
	Occurrence/Lotto OFF	3 + C
	No Cup Discount	3 + D + (amount) + N
	Lotto Occurrence	3 + E + (number) + N

MODE KEY	CONTROLLER FUNCTION	KEY PAD INPUT
4	Message Edit	4
	English Only	4 + E
	Bilingual	4 + B
	Foreign	4 + F
5	Set Price	5 + (selection) + (price) + N
	Copy Price	5 + (selection) + (price) + L + (selection) + (selection) + N
6	Cash Accountability	6
	Total Vends	6 + A
	Total Cash	6 + B
	Vends/Selection	6 + C, REPEAT C
	Cash/Selection	6 + D, REPEAT D
	Occurrence/Lotto Value	6 + E
	Bills	6 + F
	Total No Cup Cash	6 + G
7	Set Dispense Time	7 + (selection) + (time) + N
8	Test Vend Selections	8
	Text Vend Product	8 + A + (selection)
	Test Vend Water Only	8 + B + (selection)
	Sanitize (Fresh Brew)	8 + C

## 6.1 SERVICE MODE

To place the controller in the **Service Mode** press the service mode button. See **Figure 6.1** on page 21.

Record any diagnostics that appear on the display. If no diagnostics are displayed, then the readout will display **STATUS OK** followed by **>** which indicates the controller is ready to receive service commands.

### NOTE

The controller will automatically exit the Service Mode and enter the Sales Mode in 25 seconds if no input or depression of the keypad is made during that time. Any depression or input will allow another 25 seconds before the controller times out.

## 6.2 COIN DISPENSE MODE

In the **Coin Dispense Mode**, coins that are stored in the coin mechanism payout tubes can be removed. To access the **Coin Dispense Mode** the controller must be placed in the **Service Mode** by depressing the service mode button.



Press Key **1** when at the **<** menu to place the controller in the **Dispense Coin Mode**. The display will show **DISPENSE \$**. Coins may be removed by pressing the following keys:

The controller will remain in the **Dispense Coin Mode** until another key entry is made. Holding a dispense key down will result in a coin payout rate of approximately 2 coins per second. Press **N** to exit **Coin Dispense Mode** and return to the “root” menu.

KEY	DESCRIPTION
<b>A</b>	Will dispense a coin of the lowest denomination (usually a Nickel in a US coin mech).
<b>B</b>	Will dispense a coin of the next higher denomination (usually a Dime in a US coin mech).
<b>C</b>	Will dispense a coin of the next higher denomination (usually a Quarter in a US coin mech).
<b>D</b>	Will dispense the next higher denomination if the coin mech has the capability of dispensing four (4) coins.

### 6.3 SET SECURITY CODE

If the Alarm option is to be used it is necessary to program a security code into the controller to de-activate the alarm circuit when servicing the machine. The security code must be entered prior to opening the outer door.

To set security code the controller must be placed in the **Service Mode** by depressing the service mode button on the control board.

Press key **2** when at the **<** menu to place the controller in the **Set Security Code Mode**. The display will flash **A** or **B**. Press **A**. The display will show **ID#**. A four (4) digit numeric code is to be entered. As the numbers are entered they are displayed. After the fourth character is entered all four characters will be flashed for five seconds. After that period the controller will revert to the “root” menu.

### 6.4 ALARM CONTROL

The controller is equipped with a circuitry to energize a relay or alarm device to sound an alarm.

Under normal operation conditions, with the power to the controller, the output to the alarm is turned off. If the door is opened without the correct four (4) digit numeric code being entered prior to opening the outer door, the output to the alarm will be turned on. If an alarm is connected, the alarm will sound. If the correct code is entered when the door is opened, the output of the alarm will be held in the “OFF” state for 30 minutes. The alarm will not sound. The alarm override number can be programmed in the **Service Mode**. See **6.3 Set Security Code** on page 23.

ALARM OUTPUT SPECIFICATIONS	
<b>Transistor Type</b>	Current sinking NPN
<b>Temperature Range</b>	0° to 50° C
<b>Maximum Current</b>	100 MA
<b>Maximum Voltage</b>	30 VDC

## 6.5 MACHINE CONFIGURATION MODE

Press key **2** when at the **<** menu in the **Service Mode**. The display will flash **A** or **B**. Press key **B** to place the controller in the **Machine Configuration Mode**. The display will show **FRESH BREW** or **FREEZE DRY** indicating in which mode the controller is currently set. To change the mode, enter the appropriate character.

CONFIGURATION MODES	
<b>0</b>	Freeze Dry
<b>1</b>	Fresh Brew

## 6.6 VEND OPTIONS MODE

Vend options are available that can be programmed into the controller. The options allow the machine to be programmed to function as a changer without making a purchase, make multiple selections with single deposits, make a **Free Vend** for the occurrence number assigned, or discount the price of any beverage selected when the customer uses their personal cup or mug.

VEND OPTIONS MODE	
<b>A</b>	Force Vend
<b>B</b>	Multi Vend
<b>C</b>	Lotto
<b>D</b>	Set Discount
<b>E</b>	Lotto Odds

Each time the individual modes are entered, the controller will first display the current condition, then alternate from the "ON" or "OFF" condition each time the specific alpha character is entered, or display the amount set for the **No Cup Discount** or to the number set for **Free Vend Occurrence**.

### 6.6.1 FORCE VEND OPTION

Press key **3** when at the **<** menu to place the controller in the **Vend Options Mode**. The display will read **V OPTIONS**. Press key **A** to enter the **Force Vend Option**. The display will show the present condition of the machine (**FV ON** or **FV OFF**). To change the condition, press key **A** again. The display will show the new condition. The condition will alternate from **ON** to **OFF** or from **OFF** to **ON** each time **A** is pressed. Press the **N** key when the condition desired is displayed. Waiting 5 seconds without pressing the **N** key, the controller will abort the **Force Vend Mode** and no program changes will be made.

When the **Force Vend On Mode** is selected, the controller will force the buying customer to make a purchase when a dollar bill is inserted, overriding the **Coin Return** command. Coin return of credit accumulated with coins only is not affected.

When the **Force Vend Off Mode** is selected, the controller will allow the buying customer to receive change from a dollar bill insertion when the coin return button is pressed. A purchase is not necessary.

When a validator that has an Escrow feature is used and the controller is placed in the **Force Vend Off Mode**, the bill will be returned.

## 6.6.2 MULTI VEND OPTION

Press key **[3]** when at the **[<]** menu to place the controller in the **Vend Options Mode**. The display will read **V OPTIONS**. Press key **[B]** to enter **Multi Vend Option**. The display will show the present condition of the machine (**MOV ON** or **MOV OFF**). To change the condition, press key **[B]** again. The display will show the new condition. The condition will alternate from **ON** to **OFF** or from **OFF** to **ON** each time **[B]** is pressed. Press the **[N]** key when the condition desired is displayed. Waiting 5 seconds without pressing the **[N]** key, the controller will abort the **Multi Vend Mode** and no program changes will be made.

When in the **Multi Vend On Mode**, if the vend price of a selection is smaller than the established credit and that selection is vended, the change will be retained for 20 seconds before a payout is made. The amount of credit and **MAKE SELECTION** will be alternately displayed in the digital readout. The buying customer can use the remaining credit to purchase other beverages, or push **Coin Return** to receive the balance. Multiple vends can be made as long as adequate credit is available. When in this mode, to receive change on an over-deposit, the **Coin Return** button must be pushed, or wait approximately 20 seconds for change to be returned.

When in the **Multi Vend Mode Off**, the controller is set in a **Single Selection Vend Mode**, or **Normal Operation**. Change will be returned immediately if the established credit exceeds the vend price each time a vend is completed.

## 6.6.3 LOTTO-OCCURRENCE PROGRAMMING

Press key **[3]** when at the **[<]** menu to place the controller in the **Vend Options Mode**. The display will read **V OPTIONS**. Press key **[C]** to enter **Lotto Programming Option**. The display will show the present condition of the machine (**LOTTO ON** or **LOTTO OFF**). To change the condition, press key **[C]** again. The display will show the new condition. The condition will alternate from **ON** to **OFF** or from **OFF** to **ON** each time **[C]** is pressed. Press the **[N]** key when the condition desired is displayed. Waiting 5 seconds without pressing the **[N]** key, the controller will abort the **Lotto Mode** and no program changes will be made.

When the **Lotto On Mode** is selected, upon reaching the pre set number of vends, the controller will return the money deposited for that vend. The display will flash **YOU WIN** five (5) times, the “beeper” will sound for 3 seconds.

To set the occurrence, press key **[3]** when at the **[<]** menu, press key **[E]** to place the controller in the **Occurrence Odds Mode**. The display will show **ODDS = XXXX** (XXXX denotes the last value set). The allowed occurrence range is 0000 to 9999. A new occurrence rate is entered and then stored by pressing the **[N]** key. The controller will revert to the “root” menu.

### NOTE

The **Lotto On Mode** must be set for the **Free Vend** to occur. If the controller is set in the **Lotto Off Mode**, the controller will not free vend regardless of the **Odds** value.

## 6.6.4 NO CUP DISCOUNT OPTION

This function gives the owner/operator the option to discount the vend price of the beverage when the buying customer uses his own personal cup or mug, thereby not requiring dispensing a cup. For the buying customer to receive the discount and to vend the beverage without dispensing the cup the **[J]** selection button must be pressed prior to inserting credit.

Press key **3** when at the **<** menu to place the controller in the **Vend Options Mode**. The display will read **V OPTIONS**. Press key **D** to enter **No Cup Discount Programming Option**. The display will scroll **SET DISCOUNT**; followed by the amount of discount currently programmed in the controller. The amount can be changed in .05¢ increments from 00.00 to 99.95. The vend price of the selected item will be reduced by the amount programmed. When the discount amount is changed, press the **N** key to store the new amount in memory.

## 6.7 MESSAGE EDIT/PROGRAMMING

The controller provides the owner/operator the capability to customize the **Point Of Sales Message**, display service phone number and program messages in Foreign or multiple languages.

The sales message can be changed on location by accessing the **Message Edit Mode**. Messages can include up to 130 characters including spaces.

While in the **Programming Mode** the keypad will function similar to a typewriter keyboard. (See Figure 6.2) A keypad overlay is furnished in the service packet that will identify the key functions while in this mode. By placing the overlay over the selection panel, the owner/operator can program the new message into the controller's memory.

All machines shipped from the factory will have the following point of sales message: **TREAT YOURSELF TO A TASTY HOT BEVERAGE NOW**

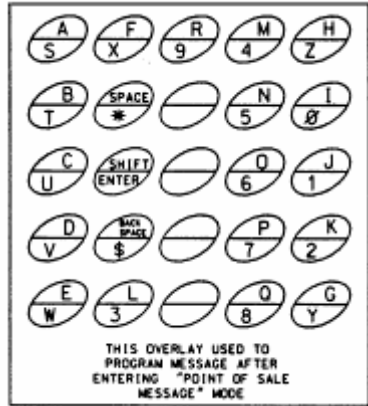


Figure 6.2. Keypad in Edit Mode

### CAUTION

When in the editing mode, if any of the characters in the messages are overwritten (even to correct a spelling error) the controller assumes that a new message is being written. The user must place the cursor past the end of the new message before exiting the message, since the entire message string beyond and including the cursor will be erased. If no characters have been overwritten, the message will not be changed regardless of the cursor position in the message.

### NOTE

The upper characters in each block are accessed directly by depressing the desired key, while the bottom characters in each block can only be accessed by depressing the **SHIFT ENTER** key each time those characters are needed.

#### 6.7.1 MESSAGE EDITING

Press key **4** when at the **<** menu to place the controller in the **Edit Message Mode**. The display will scroll **EDIT MESSAGES**, then flash **E**, **F**, or **B**

MESSAGE EDITING	
<b>E</b>	English
<b>B</b>	Bilingual (English & Foreign)
<b>F</b>	Foreign only

If **[E]** is selected, only the **Point Of Sales** and the **Call for Service** messages may be modified. If **[B]** or **[F]** is selected both the **Sales Messages** and **Service Messages** can be edited. To move forward in any message without typing, hold down on the **[SHIFT ENTER]** key for 2 seconds. After 2 seconds, it will advance 1 character every 0.5 seconds. To move backward in the message the **[BACK SPACE]** key is used.

Press the **[SHIFT ENTER]** key twice to save the message as edited. This will advance you to the next message.

## WARNING

**It is important to remember that the controller's microprocessor has been programmed to display these messages at specific times during the normal operation of this vendor. This cannot be changed, so any messages altered will be displayed as changed when needed during the operation of the machine.**

The following is a list of messages that are programmed into the controller when shipped from the factory. The following messages will be displayed at various intervals or time while the vendor is in the normal sales or operating mode.

After editing and/or entering message 09, **You Win Mode**, the readout will alternately scroll **SERVICE?** **A=YES** & **B=NO**. Press **[A]** button to edit the messages displayed in the **Service Mode**. Press **[B]** to end the **Edit Message Program** and return to the root menu.

To exit the **Message Editing Mode** without changing any text or advancing through the editing program, press the service mode button to return to the **Sales Mode**. This will leave any unedited messages intact as stored in the controller's memory.

The following messages will be displayed at various intervals or time while the vendor is in the **Service Mode**.

OPERATING MODE MESSAGES	
00	<b>POINT OF SALES MESSAGE</b>
01	<b>CALL FOR SERVICE (PHONE NUMBER)</b>
02	<b>MAKE SELECTION</b>
03	<b>PREPARING BEVERAGE</b>
04	<b>REMOVE BEVERAGE</b>
05	<b>THANK YOU</b>
06	<b>USE CORRECT CHANGE</b>
07	<b>USE COINS ONLY</b>
08	<b>SELECT OTHER ITEM</b>
09	<b>YOU WIN</b>

SERVICE MODE MESSAGES	
10	<b>CUP DROPPER EMPTY</b>
11	<b>WASTE TANK FULL</b>
12	<b>WATER LEVEL LOW</b>
13	<b>BATTERY BACKED MEMORY FAILURE</b>
14	<b>STATUS OK</b>
15	<b>TOTAL CASH</b>
16	<b>TOTAL VENDS</b>
17	<b>CASH BY SELECTION</b>
18	<b>VENDS BY SELECTION</b>
19	<b>TOTAL LOTTO CASH</b>

## 6.8 SET PRICE MODE

Press service mode button to place the controller in the **Service Mode**.

When **<** appears in the display, press key **5** to place the controller in the **Set Price Mode**. The display will scroll **MAKE SELECTION** then display **??=SELECTION**. The **??** flashes. After a selection has been entered, the current vend price for that selection will be displayed. A new price can be set by direct entry. (**Note**: The character to the left flashes until an entry is made. Then the next character to the right flashes in succession until the price is set and stored in memory). To store the price, press the **N** key. The controller will scroll the **MAKE SELECTION** message in expectation of another price to be set. To return to the "root" menu, the **N** key must be entered while the **MAKE SELECTION** message is being scrolled.

### 6.8.1 AUTOMATIC COPY PRICE MODE

The controller automatically copies prices stored in certain selections to facilitate price setting as follows:

When selection "**AO**" is priced the same price will be copied and stored in the following selections

A1	C0	D2	F1	G1
A2	C1	D3	F2	G2
A3	D0	E0	F3	G3
B0	D1	F0	G0	H0

When selection "**A4**" is priced the same price will be copied and stored in the following selections

A5	C2	D6	F5	G5
A6	C3	D7	F6	G6
A7	D4	E1	F7	G7
B1	D5	F4	G4	H1

After the primary prices (**AO** & **A4**) have been set, individual selections in the automatic copy groups can be edited and set to a desired price by following the instructions outlined in the preceding paragraphs.

### 6.8.2 MANUAL COPY PRICE MODE

To copy a price from one selection to another, follow the above mentioned price setting procedure, but instead of storing the price, via the **N** key, press the **L** key which stores the price for that selection and places the controller in the **Copy Price Mode**. The readout will display **COPY PRICE** then scroll **MAKE SELECTION**, then display **??=SELECTION**. Selections may be entered one after the other. To store all of the copied selections and return to the "root" menu, press the **N** key.

## 6.9 ACCOUNTABILITY INFORMATION

Accountability information will be stored and will be accessible when the controller is in the **Service Mode**.

The controller will keep track of the **Total Vends and Sales** for all selections in the coffee machine. The controller will keep track of the **Total Cash Accumulated** as well as the **Total Lotto Paid Out** and **No Cup Discounts** for the vending machine.

Accountability information is never cleared from memory. This prevents accounting information from being lost if the accounting printout is not recorded.

### 6.9.1 ACCESS ACCOUNTABILITY

Press the **Service Mode Button** to place the controller in the **Service Mode**. When **>** appears, press key **6** to place the controller in the **Display Accountability Data Mode**. The following menu will be scrolled: **R=TOTAL VENDS**, **B=TOTAL CASH**, **C=VENDS BY SELECTION**, **D=CASH BY SELECTION**, **E=TOTAL LOTTO CASH**, **F=TOTAL BILLS COLLECTED**, **G=TOTAL NO-CUP CASH**.

### 6.9.2 TOTAL VENDS

Press key **A**. The display will scroll **Total Vends** followed by the number of vends recorded on the machine to date.

#### NOTE

When the total vends reach 99999 the number will reset to 0 when another vend is made.

### 6.9.3 TOTAL CASH

Press key **B**. The display will scroll **TOTAL CASH** followed by the amount of cash recorded on the machine to date.

#### NOTE

When the total vends reach \$99,999.95 the number will reset to \$00.00 when another vend is made.

### 6.9.4 VENDS BY SELECTION

Press key **C**. The display will scroll **VENDS BY SELECTION** followed by **RD XXXXX**, the number of vends made on selection **A0**. Press key **C** again to advance to selection **A1**. Each time key **C** is pressed the display advances through all selections available.

Repetitively pressing **C** will increment through all valid selections. The display will show the selection in the left two digits and the vend total in the five right digits. (Example: **RD 00631**).

### 6.9.5 CASH BY SELECTION

Press key **D**. The display will scroll **CASH BY SELECTION** followed by **RD XXXXX**, the cash accumulated by vends made on selection **A0**. Press key **D** again to advance to selection **A1**, cash accumulated. Each time key **D** is pressed, the display will advance one selection and display all selections available.

Repetitively pressing **[D]** will increment through all valid selections. The display will show the selection in the left two digits and the cash total in the seven right digits. (Example: **NO 0000995**).

### 6.9.6 TOTAL LOTTO CASH

Press key **[E]**. The display will scroll **TOTAL LOTTO CASH** followed by the amount of cash returned as a result of the lotto occurrence programmed into the controller.

### 6.9.7 TOTAL BILLS COLLECTED

Press key **[F]**. The display will scroll **TOTAL BILLS COLLECTED** followed by the number of bills collected in the bill validator.

### 6.9.8 TOTAL NO-CUP CASH

Press key **[G]**. The display will scroll **TOTAL NO-CUP CASH** followed by the value of cash returned as a result of **No-Cup Discount** refunds made.

## 6.10 SET DISPENSE TIME

Press the **Service Mode Button** to place the controller in the **Service Mode**. When **<** appears, press key **[7]** to place the controller in the **Set Dispense Time Mode**. The display will scroll **MAKE SELECTION**.

After a selection has been entered, available options will be displayed as you advance through the timing program. The current setting may be accepted by pressing the **[N]** key. The controller will increment through the program menu by repetitively pressing **[N]**. The controller will beep indicating the displayed time is stored. If the **[N]** key is not pressed, the time will not be changed. Available options will be displayed in the following format.

**INGREDIENT** will be displayed followed by the current dispense time in seconds and tenths of a second. A new dispense time can be entered by pressing the number digits on the keypad. The character to the left flashes until an entry is made. Then, the next character to the right flashes in succession until the time is set and stored in memory. To store the time, press the **[N]** key. The controller will then scroll **WATER** followed by the current water time in seconds and tenths of a second. A new dispense time can be entered by pressing the number digits on the keypad. To store the time, press the **[N]** key.

### NOTE

Extra sweet and extra light timing is programmed by pressing key **[L]** at the **MAKE SELECTION** prompt. The time displayed is a percent that is added to the regular sweet and/or light time programmed for each specific ingredient in the menu.

To return to the root menu, enter **[N]** while the **MAKE SELECTION** message is being scrolled.

Dispense time setting can be interrupted at any time by pressing the **Service Mode Button** to exit the **Service Mode**.

The timing charts (see Table 6-2, 1. C&S Water = water to light and sweet mixing bowl.

Table 6-3, Table 6-4, 1. C&S Water = water to light and sweet mixing bowl.

Table 6-5) indicates the factory recommended settings for the ingredients on various selections. It may be necessary to change certain settings to satisfy customer's taste.



## 6.10.1 TIMING CHARTS

Table 6-2 Coffee & Decaf

SEL	PRODUCT CUP SIZE (OZ.)	FREEZE DRY TIME (SECONDS)				FRESH BREW TIME (SECONDS)			
		7.00	8.25	9.00	12.00	7.00	8.25	9.00	12.00
A0,D0	COFFEE, DECAF	00.7	00.8	00.9	01.2	02.3	02.5	03.5	04.5
	WATER	04.8	05.7	06.2	08.2	04.2	04.5	05.5	07.0
	BREW	-	-	-	-	04.0	04.0	04.0	04.0
	BLEND	05.8	06.8	07.5	09.9	06.0	05.0	06.0	06.0
A1-A3 D1-D3	COFFEE, DECAF	00.7	00.8	00.9	01.2	02.3	02.5	03.5	04.5
	WATER	03.3	03.9	04.2	05.7	03.6	04.0	04.5	05.5
	LIGHT	00.7	00.8	00.9	01.2	00.6	00.6	00.8	01.0
	SWEET	00.7	00.8	00.9	01.2	00.6	00.6	00.8	01.0
	C&S WATER <sup>1</sup>	01.5	01.8	01.9	02.6	01.0	01.5	01.5	02.0
	BREW	-	-	-	-	04.0	04.0	04.0	04.0
	BLEND	04.3	05.1	05.5	07.4	06.0	05.0	06.0	06.0
A4	COFFEE, DECAF	00.9	01.1	01.2	01.5	02.6	03.0	04.0	05.0
	WATER	04.8	05.7	06.2	08.2	04.2	04.5	05.5	07.0
	BREW	-	-	-	-	04.0	04.0	04.0	04.0
	BLEND	05.8	06.8	07.5	09.9	06.0	05.0	06.0	06.0
A5-A7 D5-D7	COFFEE, DECAF	00.9	01.1	01.2	01.5	02.6	03.0	04.0	05.0
	WATER	03.3	03.9	04.2	05.7	03.6	04.5	04.5	05.5
	LIGHT	00.7	00.8	00.9	01.2	00.6	01.0	01.0	01.0
	SWEET	00.7	00.8	00.9	01.2	00.6	01.0	01.0	01.0
	C&S WATER <sup>1</sup>	01.5	01.8	01.9	02.6	01.0	01.5	01.5	02.0
	BREW	-	-	-	-	04.0	04.0	04.0	04.0
	BLEND	04.3	05.1	05.5	07.4	06.0	05.0	06.0	06.0

1. C&S Water = water to light and sweet mixing bowl.

Table 6-3 Chocolate

SEL	PRODUCT CUP SIZE (OZ.)	FREEZE DRY TIME (SECONDS)				FRESH BREW TIME (SECONDS)			
		7.00	8.25	9.00	12.00	7.00	8.25	9.00	12.00
B0	CHOCO	03.5	04.1	04.5	06.0	03.5	03.5	05.5	07.5
	WATER	05.0	05.9	06.4	08.6	05.5	06.5	07.5	10.0
B1	CHOCO	03.5	04.1	04.5	06.0	03.5	03.5	05.5	07.5
	WATER	04.5	05.3	05.8	07.7	05.0	06.0	07.0	09.0
	LIGHT	00.7	00.8	00.9	01.2	00.6	00.6	00.8	01.0
	C&S WATER <sup>1</sup>	01.0	01.2	01.3	01.7	01.5	01.0	01.5	02.0
B2-B3	CHOCO	00.7	00.8	00.9	01.2	01.0	01.1	01.5	02.5
	WATER	01.5	01.8	01.9	02.6	01.0	01.9	02.0	03.0
	COFFEE	00.3	00.4	00.4	00.5	01.5	01.9	01.9	03.5
	WATER	03.0	03.5	03.9	05.1	03.0	03.5	04.0	04.5
	BREW	-	-	-	-	04.0	04.0	04.0	04.0
	BLEND	04.0	04.7	05.1	06.9	06.0	05.0	06.0	08.0
	LIGHT	00.4	00.5	00.5	00.7	00.6	00.6	00.8	01.0
	SWEET	00.4	00.5	00.5	00.7	00.6	00.6	00.8	01.0
C&S WATER <sup>1</sup>	01.0	01.2	01.3	01.7	01.5	01.0	01.5	02.0	
B4	CHOCO	04.0	04.7	05.1	06.9	03.9	04.5	06.0	08.5
	WATER	05.0	05.9	06.4	08.6	06.0	06.5	07.5	10.0
B5	CHOCO	04.0	04.7	05.1	06.9	03.9	04.5	06.0	08.5
	WATER	04.5	05.3	05.8	07.7	05.0	06.0	07.0	09.0
	LIGHT	00.7	00.8	00.9	01.2	00.6	00.8	01.0	01.0
	C&S WATER <sup>1</sup>	01.0	01.2	01.3	01.7	01.5	01.0	01.5	01.5
B6-B7	CHOCO	00.9	01.1	01.2	01.5	01.2	02.0	02.5	03.5
	WATER	01.5	01.8	01.9	02.6	01.2	02.0	02.5	03.5
	COFFEE	00.3	00.4	00.4	00.5	02.6	02.5	03.0	04.0
	WATER	03.0	03.5	03.9	05.1	03.0	03.5	04.0	05.0
	BREW	-	-	-	-	04.0	04.0	04.0	04.0
	BLEND	04.0	04.7	05.1	06.9	06.0	05.0	06.0	08.0
	LIGHT	00.4	00.5	00.5	00.7	00.6	00.6	01.0	01.0
	SWEET	00.4	00.5	00.5	00.7	00.6	00.6	01.0	01.0
	C&S WATER <sup>1</sup>	01.0	01.2	01.3	01.7	01.5	01.0	02.0	02.0

1. C&S Water = water to light and sweet mixing bowl.

**Table 6-4 Tea & Soup**

SEL	PRODUCT CUP SIZE (OZ.)	FREEZE DRY TIME (SECONDS)				FRESH BREW TIME (SECONDS)			
		7.00	8.25	9.00	12.00	7.00	8.25	9.00	12.00
C0,E0	TEA, SOUP	00.7	00.8	00.9	01.2	00.3	00.3	00.4	00.7
	WATER	04.8	05.7	06.2	08.2	07.2	07.5	09.0	12.0
C1-C3, E1-E3	TEA, SOUP	00.7	00.8	00.9	01.2	00.3	00.3	00.4	00.7
	WATER	03.3	03.9	04.2	05.7	05.1	07.0	07.5	10.0
	LIGHT	00.7	00.8	00.9	01.2	00.6	00.6	00.8	01.0
	SWEET	00.7	00.8	00.9	01.2	00.6	00.6	00.8	01.0
	C&S WATER <sup>1</sup>	01.5	01.8	01.9	02.6	01.5	01.0	01.5	02.0
C4, E4	TEA, SOUP	00.9	01.1	01.2	01.5	00.4	00.5	00.6	01.0
	WATER	04.8	05.7	06.2	08.2	07.2	07.5	09.0	12.0
C5-C7, E5-E7	TEA, SOUP	00.9	01.1	01.2	01.5	00.4	00.5	00.6	01.0
	WATER	03.3	03.9	04.2	05.7	05.1	07.0	07.5	10.0
	LIGHT	00.7	00.8	00.9	01.2	00.6	00.6	00.8	01.0
	SWEET	00.7	00.8	00.9	01.2	00.6	00.6	00.8	01.0
	C&S WATER <sup>1</sup>	01.5	01.8	01.9	02.6	01.5	01.0	01.5	02.0

1. C&S Water = water to light and sweet mixing bowl.

**Table 6-5 Special Settings (Strengths, Light & Sweet Variations)**

SEL	PRODUCT CUP SIZE (OZ.)	FREEZE DRY TIME (SECONDS)				FRESH BREW TIME (SECONDS)			
		7.00	8.25	9.00	12.00	7.00	8.25	9.00	12.00
F0	COFFEE	00.9	01.1	01.2	01.5	02.6	02.0	02.5	04.0
	WATER	01.6	01.9	02.1	02.7	03.0	03.0	03.5	05.0
	LIGHT	01.5	01.8	01.9	02.6	01.5	02.0	01.5	02.0
	SWEET	00.9	01.1	01.2	01.5	00.9	01.0	02.0	02.0
	C&S WATER <sup>1</sup>	04.0	04.7	05.1	06.9	02.0	03.0	03.0	02.5
	BREW	-	-	-	-	04.0	04.0	04.0	04.0
	BLEND	03.5	04.1	04.5	06.0	03.5	05.0	06.0	06.0
F1	COFFEE	00.9	01.1	01.2	01.5	02.6	04.1	04.0	05.5
	WATER	02.4	02.8	03.1	04.1	03.0	04.5	05.5	07.0
	BREW	-	-	-	-	04.0	04.0	04.0	04.0
	BLEND	03.5	04.1	04.5	06.0	03.5	05.0	06.0	06.0
F2-F3	COFFEE	00.9	01.1	01.2	01.5	02.6	02.0	02.5	04.0
	WATER	01.6	01.9	02.1	02.7	03.2	03.0	03.5	05.0
	LIGHT	01.5	01.8	01.9	02.6	01.5	02.0	01.5	02.0
	SWEET	00.9	01.1	01.2	01.5	00.9	01.0	02.0	02.0
	C&S WATER <sup>1</sup>	04.0	04.7	05.1	06.9	02.0	03.0	03.0	02.5
	BREW	-	-	-	-	04.0	04.0	04.0	04.0
	BLEND	03.5	04.1	04.5	06.0	03.5	05.0	06.0	06.0
F4	COFFEE	01.1	01.3	01.4	01.9	02.9	02.0	03.0	04.5
	WATER	01.6	01.9	02.1	02.7	03.2	03.0	03.5	05.5
	LIGHT	01.5	01.8	01.9	02.6	01.5	03.0	01.5	02.0
	SWEET	00.9	01.1	01.2	01.5	00.9	01.0	02.0	02.0
	C&S WATER <sup>1</sup>	04.0	04.7	05.1	06.9	02.0	03.3	03.0	02.5
	BREW	-	-	-	-	04.0	04.0	04.0	04.0
	BLEND	04.5	05.3	05.8	07.7	03.5	05.0	06.0	06.0
F5	COFFEE	00.6	00.7	00.8	01.0	02.9	04.5	04.5	06.0
	WATER	05.0	05.9	06.4	08.6	03.0	05.0	05.5	07.0
	BREW	-	-	-	-	04.0	04.0	04.0	04.0
	BLEND	03.5	04.1	04.5	06.0	03.5	05.0	06.0	06.0
F6-F7	COFFEE	01.1	01.3	01.4	01.9	02.9	02.0	03.0	04.5
	WATER	01.6	01.9	02.1	02.7	03.2	03.0	03.5	05.5
	LIGHT	01.5	01.8	01.9	02.6	01.5	03.0	01.5	02.0
	SWEET	00.9	01.1	01.2	01.5	00.9	01.0	02.0	02.0
	C&S WATER <sup>1</sup>	04.0	04.7	05.1	06.9	02.0	03.3	03.0	02.5
	BREW	-	-	-	-	04.0	04.0	04.0	04.0
	BLEND	04.5	05.3	05.8	07.7	03.5	05.0	06.0	06.0

1. C&S Water = water to light and sweet mixing bowl.

# 7 TEST VEND BY SELECTION

Press the **Service Mode Button** to place the controller in the **Service Mode**. When **<** is displayed, press key **8** to place the controller in the **Test Vend Mode**. The display will flash **A**, **B**, & **C**. Refer to **Table 7-1 Test Vend Mode**.

Press key **A**, the display will scroll **MAKE SELECTION**. Once the selection is entered, a vend will be made on that selection. A complete vend cycle will be performed and a beverage will be dispensed. If the vend fails, the "beeper" will sound three times. After a successful vend or a failed vend, the readout will scroll **MAKE SELECTION** in anticipation of another test vend.

Press key **B**, the display will scroll **MAKE SELECTION**. Enter selection. Only water will be dispensed for the time interval programmed for that selection.

The Accounting information recorded in the controller is not affected or altered during the test vend operations.

**Table 7-1 Test Vend Mode**

KEY	DESCRIPTION
A	Test Vend entire cycle: Cup Dropper plus product plus water
B	Rinse Cycle, Water Only
C	Sanitizer Cycle for Coffee Brewer

## 7.1 SANITIZER CYCLE

On machines configured as **Fresh Brew** vendors the sanitizer circuit can be activated to sanitize your coffee brewing system. Refer to **Section 9.3.1 Sanitizing The Brew Unit** on page 37 for instructions.

When at the **<** menu of the **Service Mode**, press **8** to advance to the **Test Vend Section**. Press key **C** to start the **Sanitizer Cycle**. The display will scroll **SANITIZING**. The sanitizer circuit provides the sequence of operation shown on **Table 7-2 Sanitizer Cycle**.

**Table 7-2 Sanitizer Cycle**

SEQUENCE	DESCRIPTION
1	Water valve opens. Time = setting for "A0".
2	Brew start circuit energized, cycle extended for 30 seconds through brew delay circuit. Delay circuit re-starts brew motor and exhausts fluid.
3	Water valve opens again.
4	Brew unit starts and runs normal cycle (15 seconds).
5	3 & 4 are repeated four (4) more times.
6	Sanitizing cycle ends.
7	Controller returns to the "root" menu.

### NOTE

The brew unit should be sanitized monthly for normal operation.

## 8 THE BREW CYCLE

When a coffee selection is made, the brewer motor will start to run (from a signal from the controller) lifting the strainer plate upward toward the bottom of the brewer cylinder causing the cylinder to close. In the same movement, the yoke attached to the brewer piston is lifted. This causes the piston to move up into the cylinder and the valve in the piston is opened so that water and coffee can be filled.

Coffee and water is deposited into the brew cylinder and is mixed on their way down into the cylinder.

The brewer motor continues to run moving the piston down into the cylinder. The valve located in the brewer piston will close. The brewing pressure is generated by the downward movement of the piston, pressing the coffee water through the grounds, through the strainer plate.

The piston will delay three (3) times on its downward travel. This allows the coffee bowl to adequately dispense before overfilling.

Air is generated by the movement of the piston and as pressed through the coffee grounds, dries the grounds making them easily removed.

The lifting fork and the strainer plate is moved downward out of the cylinder. The scraper slides forward and back across the face of the strainer plate scraping the grounds into the waste container completing the brewer cycle.

### 8.1 BREWING (BLEND) TIME

The blend time is the time during which coffee and water are in contact with each other in the brewer before the piston presses the coffee through the strainer. The infusion time, along with the ingredient/water volume determines the strength of the coffee.

Coffee and water are mixed together on their way down into the cylinder. The timing for the ingredients and water volumes has been factory preset for 7-ounce cup sizes. Timing will have to be changed if cups other than 7 ounces are used, or adjusted slightly to satisfy locations. Refer to section **6.10.1 Timing Charts** on page 31 for recommended settings.

## 9 CLEANING INSTRUCTIONS

Care should be taken when cleaning the interior of the vendor as high temperatures may be present on components and liquids.

### CAUTION

Always disconnect the power source before cleaning the vendor.

#### 9.1 CABINET EXTERIOR

Wash with mild detergent and warm water, rinse and dry thoroughly. Wax occasionally with a quality car wax. Plastic exterior parts may be cleaned with a quality plastic cleaner.

#### 9.2 CABINET INTERIOR

Use a clean bucket and create a cleaning solution using mild non-soapy detergent and warm or hot water. Adding baking soda or ammonia in the cleaning solution may help eliminate odors from parts being sanitized.

Use caution in using the hot water from the rinse hose. See **Figure 5.2** on page 13. Spots on stainless steel surfaces can be removed by using alcohol. When cleaning areas such as the mixing bowls, cup chute, etc., that come in contact with the cup or product, use only chemical sanitizers that are approved for use on food contact surfaces.

The following procedure should be used each time the vendor is serviced.

1. Unplug the vendor or turn the power switch to the "OFF" position.
2. Remove the product canisters as follows:
  - A. Rotate the product canister spout until it is pointed straight up.
  - B. Lift up the front end of the canister (so that the canister pin clears the shelf pin hole) then pull the canister forward. Refer to **Figure 4.9**.
  - C. Set the canisters aside. Clean and refill them prior to replacing them in the vendor. See step 10.
3. Clean around the ingredient drive motors and the cup mechanism with a small brush or with filtered compressed air if available.
4. Wipe the canister shelves with a clean damp cloth.
5. Clean the interior of the vendor including the top and side walls using a solution of mild non-soapy detergent and warm water.
6. Use the hot water from the rinse hose to rinse the brew cylinder and wiper blade area of the brewer.
7. Use the hot water from the rinse hose to rinse all mixing bowls and hoses thoroughly to remove any residue. Periodically remove mixing bowls and clean thoroughly using warm water and detergent. Rinse thoroughly before replacing bowls.
9. Clean the cup station, cup chute, grille and other areas that the cup might contact. Clean the vend door and vend door trim panel.
10. Clean each canister (full or partially filled) in the following manner:
  - A. With the cover in place on the canister, place the covered end of the canister against your chest with the dispensing spout up.
  - B. Set the canister upside down on a table with the cover still in place.

- C. Pull the spout off of the canister and let it soak in the bucket of cleaning solution. Clean the spout with a small brush or piece of clean terry cloth. Rinse the spout with tap water and dry with a clean towel before re-installing it to the canister.
  - D. Holding the canister upside down with the cover in place, shake the canister to loosen and aerate the ingredients.
  - E. Set the canister right side up on the table. Remove the cover. Fill the canister with product (ingredient) but do not pack products tightly into the canister. Do not tap the canister or slap the canister sides. Ingredients packed around the auger may jam the auger mechanism or create a product "bridge" around the auger; preventing product delivery.
  - F. Turn the auger to fill the spout to insure the proper amount of ingredient on the first vend.
  - G. Replace the canister to the canister shelf. The drive coupling must be aligned correctly over the motor drive spline, and the canister pin inserted into the pin hole. See Figure 4.9 on page 10. Rotate the spout so that it points downward.
11. Empty the waste bucket. Use cleaning solution to clean the waste bucket. Create an anti-bacterial solution in the waste bucket using 100 ppm Chlorine solution. The anti-bacterial solution can be created using two (2) teaspoons of household bleach (5% Chlorine) mixed with one (1) gallon of tap water to retard bacterial growth. Apply the anti-bacterial solution to the waste bucket. Do not rinse bucket after anti-bacterial solution is used, this will defeat the purpose. When replacing the waste bucket, make sure the float is hanging free and all hoses are in their proper location.
  12. Return the power to the vendor and operate the brew unit through at least one flush cycle.
  13. Clean the Brewer System. See section **9.3 Brewer System** on page 37.

## 9.3 BREWER SYSTEM

Disassemble the brewer for cleaning as illustrated in **Figure 9.1**. Put the disassembled parts into hot water or flush them. Remove possible coffee remnants from the brewer. Wipe plates and screens. Assemble the brewer in the same way as it was disassembled, but in reverse order.

1. Push the upper rail upwards and pull the vertical rod outward.
2. Use this hand position and push upward with your forefinger.
3. Grasp the cylinder, lift up the hasp, and take off the cylinder.
4. Tilt the filter plate so that the pins are free, lift and pull outwards.
5. Use these hand positions and pull outwards. The spring-loaded scraper can be removed.
6. Pull the piston a little upwards, lift up the upper rail, push the yoke aside, and the yoke is free.

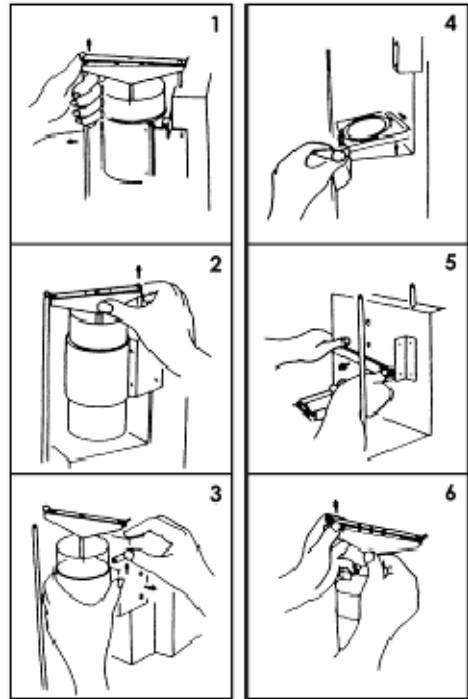



Figure 9.1 Brewer Cleaning

### 9.3.1 SANITIZING THE BREW UNIT

The brew unit should be sanitized monthly. Sanitize the **Fresh Brew Coffee System** using the automatic sanitizer:

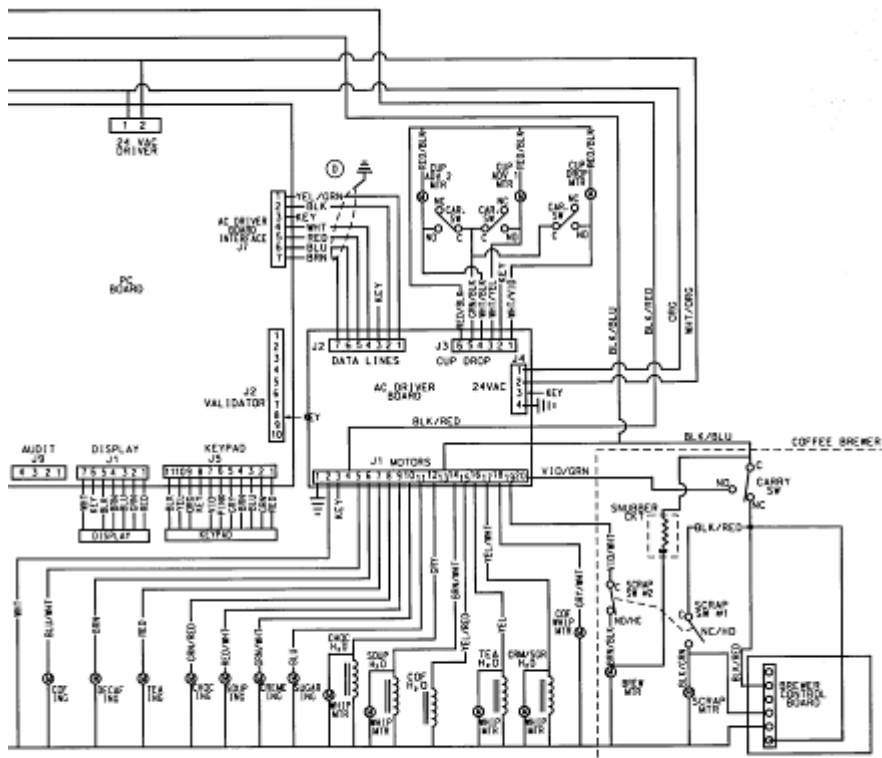
- A. Press the **Service Mode Button**. When  appears, press **8**, then **C**. The display will scroll **SANITIZING**.
- B. The sanitizing cycle continues for approximately thirty seconds. Five rinse cycles are then completed for a total sanitizing time of approximately two and one half minutes. Refer also to section **7.1 Sanitizer Cycle** on page 33.

Frequent cleaning of the machine increases its reliability in operation. Inspection should be made at suitable intervals, and the cup mechanism and ingredient canisters should be filled accordingly. Use hot water for cleaning and avoid soapy detergents. Spots on stainless steel surfaces can be removed by using alcohol.

**Always test the machine for proper operation before it is put into service.**







# NOTES

# NOTES

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**VendNet™**  
165 North 10th Street  
Waukee, Iowa 50263  
United States of America



	USA & Canada	International
Service	<b>(800) 833-4411</b>	<b>(515) 274-3641</b>
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Email	<b>vendnet@vendnetusa.com</b>	
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