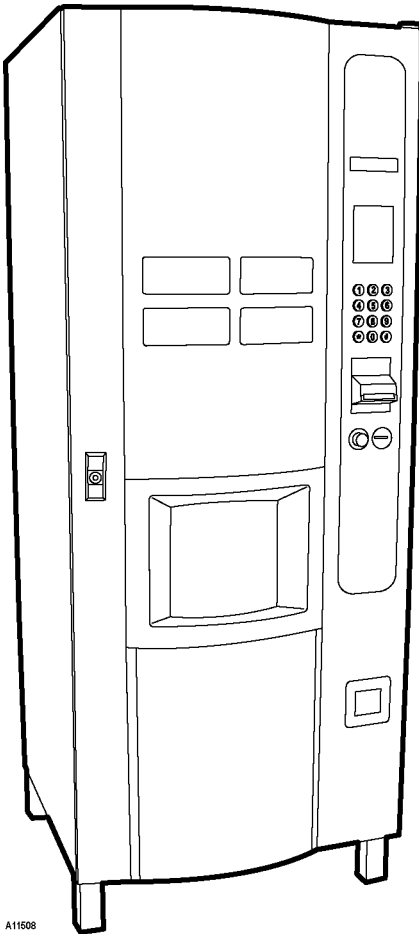




GENEVA HOT BEVERAGE MERCHANTISER



A11508

SERVICE MANUAL

MODELS

3205 FRESH BREW

3206 FREEZE DRIED

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The Model and Serial numbers are needed for you to obtain quick service and parts information for your machine. The numbers are given on the identification plate located on the back side of the cabinet of the machine.

MODEL NUMBER: _____

SERIAL NUMBER: _____

INTRODUCTION

1. The information contained in this service manual is applicable to the Hot Beverage Merchandiser. The Hot Beverage Merchandiser model consists of two types of coin-operated, microprocessor controlled, Hot Beverage Merchandiser that dispense a range of hot drinks in response to keypad selections.
2. Two versions of each model are available:
 - ▶ Instant (INST) - Instant Coffee and Tea
 - ▶ Fresh Brew (SFB) - Fresh Brew Coffee
3. This manual uses the SFB version as the basis for examples. Where significant differences between versions exist this will be highlighted in the main body of the document. Due to customer requirements, however, some features may vary from those described, e.g. extras fitted, variations in programming etc.
4. Cups from a cup drop mechanism are dispensed to contain the drinks.
5. Selection is made on a 12 button keypad and an LCD display panel shows status and drink selection information.
6. The status of the machine may be monitored and the configuration altered by accessing a menu of program options using both internal and external keypads. Each option comprises a number of sub-options, the settings of which can be altered.
7. A feature of the Hot Beverage Merchandiser is the mobile dispense head which moves the head to a parked position away from the cup port after each drink is vended, preventing the possibility of any residue from the previous drink dripping into the next one.
8. Hot Beverage Merchandiser machines require a single-phase 120V electrical mains supply from a domestic 12A outlet, and a cold water supply from the domestic cold water main. These services enter the machine at the rear of the cabinet.
9. Maintenance of the coffee machine must only be undertaken by personnel who are authorized and suitably qualified.
10. The contents of this publication are presented for informational purposes only, and while every effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. We reserve the right to modify or improve the designs or specifications of such products at any time without notice.

SPECIFICATIONS

DIMENSIONS

HEIGHT: 72 inches (1830 mm)
DEPTH: 26.8 inches (680 mm)
WIDTH: 27.6 inches (700 mm)

SHIPPING WEIGHT

360 lbs (163 kg) – Fresh Brew version

ELECTRICAL

120 Volts, 60 Hz, 9.2 Amps nominal
240 Volts, 50 Hz, 13 Amps

CUP CAPACITY

QUANTITY: Up to 400 (12 oz) cups
SIZES: 7 oz, 8 ¼ oz, 9 oz, 10 oz & 12 oz

OPERATING ENVIRONMENT

LOCATION: For indoor use only.
SOUND LEVEL: Produces less than 70dBA during normal operation
TEMPERATURE: 46°F (8°C) - 90°F (32°C)

SAFETY WARNINGS

1. **DISCONNECT OR UNPLUG POWER TO THE MACHINE BEFORE SERVICING.** Lethal voltages are exposed when any panel inside the cabinet is removed and power is supplied to the on/off switch.
2. Installation and maintenance of the Hot Beverage Merchandiser is only to be undertaken by trained personnel who are fully aware of the dangers involved and who have taken adequate precautions.
3. The Hot Beverage Merchandiser must be grounded (earthed). Do not tamper, modify or remove the ground pin from the power plug. Should the power cord or plug become damaged, a trained person from approved service agent must perform the replacement using only factory approved parts. Do not ground (earth) the machine to the mains water supply pipe.
4. Keep clear of the Brewer Unit when it is operating.
5. The Hot Beverage Merchandiser is a heavy item. Ensure that sufficient personnel are available for lifting and transporting of the machine. Use proper lifting procedures and equipment.
6. The water in the heater tank and the tank itself are hot enough to scald or burn even some time after the machine has been switched off. The water tank must be drained, filled with cold water and drained again before any attempt is made to handle it or any of its associated parts.
7. The Controller Board is fitted with a lithium battery. Abuse of this type of battery can lead to overheating, venting, explosion, release of potentially hazardous materials and spontaneous ignition.
The lithium battery **must not** be charged or connected to any other source of power. The battery **must not** be short-circuited or forced to discharge its stored energy. The battery **must not** be subjected to physical damage or overheating. If the Controller Board is to be replaced, it must be handled with care, taking all practical anti-static precautions.
8. Care must be taken to protect the Hot Beverage Merchandiser from frost. Do not attempt to operate the machine if it becomes frozen. Contact the nearest service agent immediately. Do not restore the machine to operation use until it has been checked and approved for use by the service agent.
9. Young children, the aged and the infirm should not be allowed to operate the Hot Beverage Merchandiser unsupervised, in order to protect them from the risk of being scalded by hot beverages.

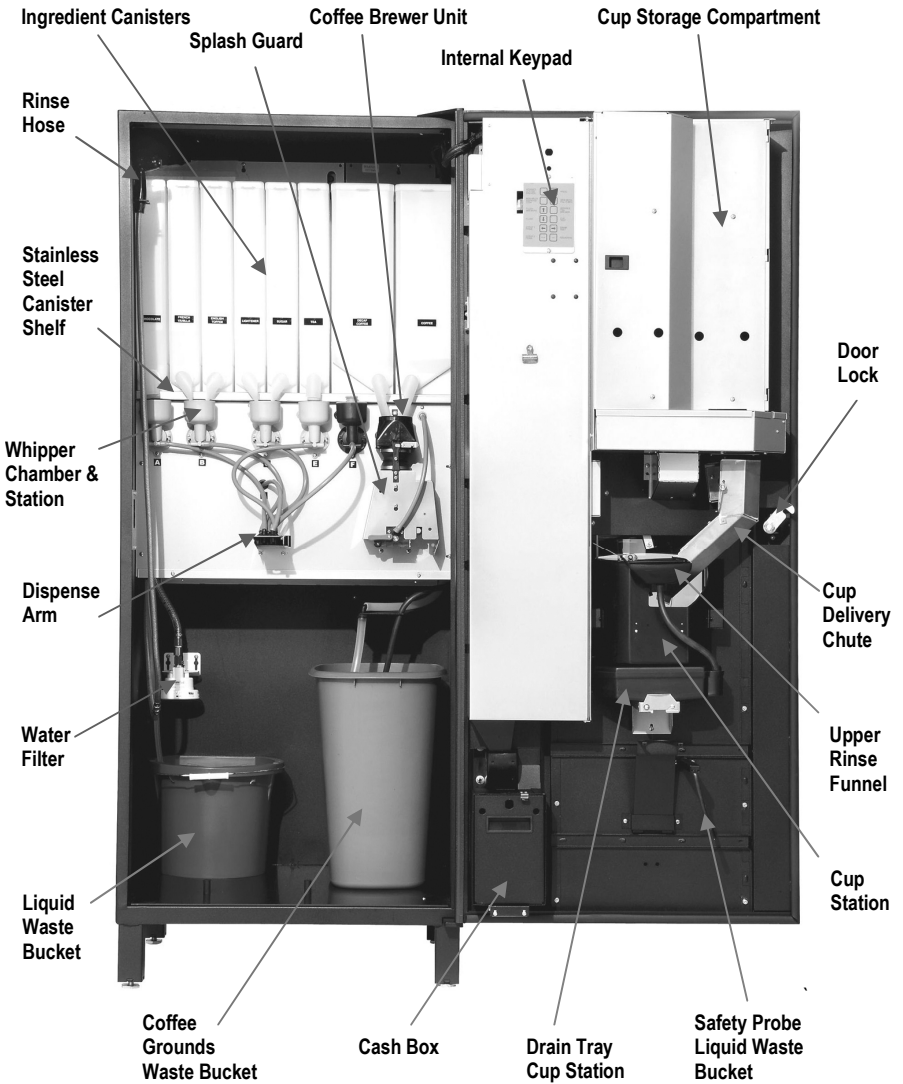
IMPORTANT: Please refer to the safety manual p/n 4206816 for additional safety information.

INSTALLATION

WARNING: Disconnect or unplug power to the machine before servicing.

1. Servicing personnel must be familiar with the SAFETY WARNINGS listed in this manual and the Safety Manual (P/N 4206816) before undertaking any installation or maintenance procedure on the Hot Beverage Merchandiser. Any procedure which is found to be impracticable, inadequate or inaccurate should be reported to the Management for further investigation.
2. The information given in this section covers installation and maintenance procedures for the Hot Beverage Merchandiser. Authorized personnel who are have knowledge or experience with the equipment using only the manufacturers' approved parts must carry out these procedures.
3. The requirements of proper hygiene in respect of food products must be ensured at every level of contact with the Hot Beverage Merchandiser and the ingredients associated with it.

MACHINE PARTS



REQUIREMENTS

ELECTRICAL SUPPLY

- 110V, 60Hz, 12A fused
- 240V, 50Hz, 13A fused

The electrical outlet and supply circuit must be dedicated and isolated before connecting the power to the machine. The electrical outlet must be within 6 ft (2 m) of the machine. Preferably, the switched outlet should be located behind the machine to prevent accidental damage or misuse.

WATER SUPPLY

The main water supply must have 15-116 psi (1-8 bar) pressure. The water outlet must have a shutoff valve to disconnect the water supply during servicing. It must have a long enough water supply hose with 1/2" female connector to reach the machine. If possible, the water outlet should be located behind the machine to prevent misuse.

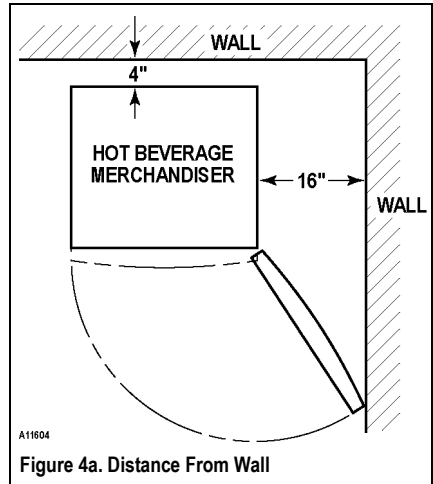
LOCATION

WARNING: The Hot Beverage Merchandiser is a heavy item. Ensure that sufficient personnel are available for lifting and transporting the machine. Use proper lifting procedures and equipment.

The Hot Beverage Merchandiser must be located close to the appropriate electrical and water outlets.

There must be a minimum of 4" inch (100mm) clearance between the rear of the cabinet and the wall to allow adequate ventilation. See **Figure 4a**.

If placing in a corner location, there must be at least 16" inches (406mm) of space to the right hand wall to allow for opening the door.



LEVELING

The Hot Beverage Merchandiser must be level for the machine to operate properly. Use a level as a guide and turn the machine's leg levelers as needed so that all levelers are touching the floor. If it is properly leveled, it should not "rock" or "teeter" on any of the levelers.

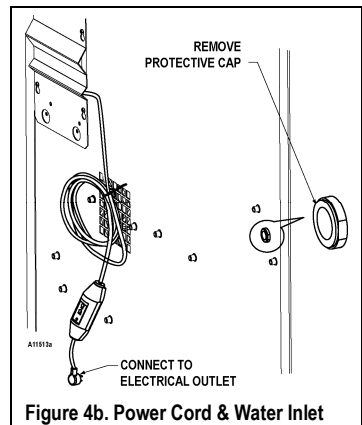
When the machine is level, the door can be opened to any position and not move by itself. Try the door at various open positions before deciding that the machine is leveled.

CONNECT WATER

Before connecting the water supply hose to the machine, flush the system via the shutoff valve to remove any impurities which may have accumulated in the water supply pipe or water hose.

Located on the back of the machine is the machine's water inlet – 1/4" NPT Fitting. Remove the plastic protective cap. See **Figure 4b**. There is also a 3/8" Flare Fitting supplied with the machine, if this is preferred.

Connect the water supply hose to machine water inlet and ensure that all fittings are tight. Turn on the water supply at the shutoff valve and check for leaks both behind and inside the machine.



CONNECT ELECTRICAL

The Hot Beverage Merchandiser power cord is fitted with a molded 12A fused plug and is connected as follows:

- ▶ GREEN or GREEN/YELLOW wire to EARTH terminal (E).
- ▶ WHITE wire to the NEUTRAL terminal (N).
- ▶ BLACK wire to the LIVE terminal (L).

Connect the mains cable plug to a switch 110V, 60Hz, 12A (240V, 50Hz, 13A) supply socket. With the plug fitted to the socket, ensure that the cable is not being stretched, distorted or fouled.

CHECKLIST

It is essential that the technician responsible for installing and commissioning the machine ensures the following:

1. All electrical and water supplies are correctly and safely connected.
2. All covers, panels or access doors are in place and secured, and the machine is left in a SAFE condition.
3. The Operator is familiar with the SAFETY PRECAUTIONS for the machine.
4. The importance of hygiene and regular cleaning is fully appreciated by the Operator.

With the water and electrical supplies available to the machine, check the operation of the water heater as follows:

1. Disconnect or unplug power to the machine.
2. Open the cabinet door and check that the on/off switch is in the OFF position.
3. Remove the ingredient canisters and back panels.
4. Ensure that the water heater overflow pipe is not trapped or pinched.
5. Restore the electrical supply to the machine.
6. Using the main switch, set to the ON position.
7. Check that the water heater fills with water and that the water supply cuts off when the correct level is reached, i.e. no water overflows into the waste bucket. Ensure that the waste level probe is located in the waste basket.
8. Set the main switch to the OFF position.

FILL PRODUCT CANISTERS

WARNING: FILL PRODUCT CANISTERS WITH POWDERED INGREDIENTS ONLY. DO NOT USE LIQUID INGREDIENTS.

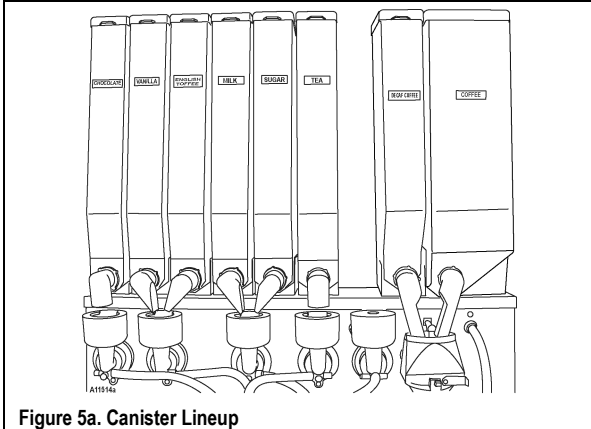


Figure 5a. Canister Lineup

1. Rotate the product chute so that it points up (loading position). See **Figure 5b**.
2. If installing the canisters for the first time, go to step 3. If refilling the canisters, hold the top and bottom of the canister and slowly lift it up so that the locator peg clears the peg hole. **Figure 5c**. Slowly slide the canister forward until it is out of the ingredient motor shaft. **Figure 5d**.
3. Place the canister on a sheet of paper or in a place that can be cleaned easily.
4. Remove the lid from the canister. **Figure 5e**.
5. Take the product bag that matches with the name on the Canister Label (where applicable) and open it according to the instructions on the bag.
6. Slowly pour the product into the canister until the canister is almost full. **Figure 5f**.
 - Product must be loose for product to dispense properly.
 - **DO NOT** tap the sides of the canister.
 - **DO NOT** compress or compact the product into the canister.
 - Leave a gap from the top of the product to the lip of the canister. **Figure 5g**.
7. Place the lid on the canister. **Figure 5e**.
8. Review the canister arranged as shown in **Error! Reference source not found.**. Hold the canister carefully at the bottom and top to prevent spilling. Gently place the filled canister back on the product shelf. **Figure 5d**.
9. Line up the hollow shaft behind the canister with the ingredient motor shaft. See **Figure 5d**.
10. Slowly slide the canister towards the motor shaft until the locator peg falls inside the hole on the product shelf. See **Figure 5c**.

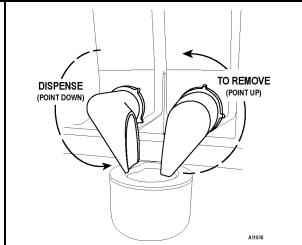


Figure 5b. Product Chute

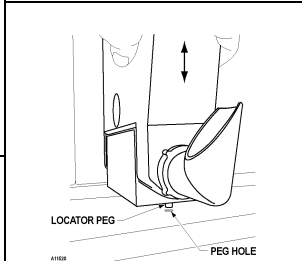


Figure 5c. Locator Peg

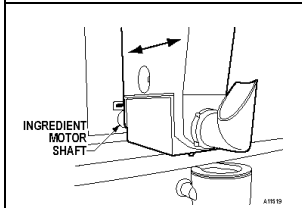


Figure 5d. Motor Shaft

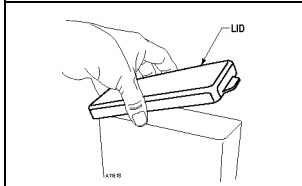


Figure 5e. Canister Lid

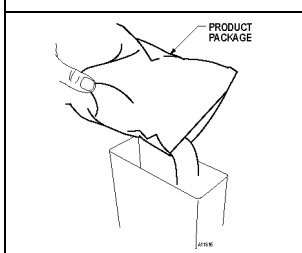


Figure 5f. Fill Canister

11. Rotate the product chute so that it points down (dispense position) to the whipper bowl. See **Figure 5e**.
12. Repeat above steps for all other canisters.

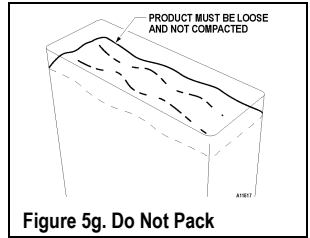


Figure 5g. Do Not Pack

CHANGE MENU SELECTION LABELS

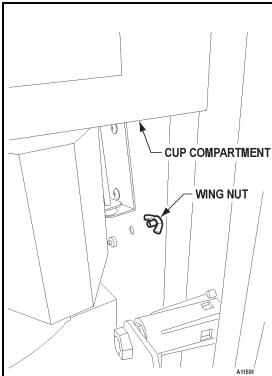


Figure 6a. Bottom Wing Nut

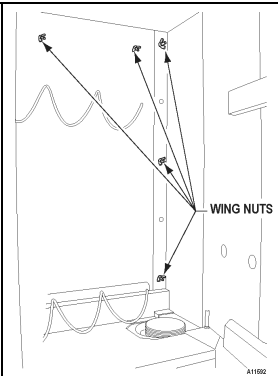


Figure 6b. Inside Wing Nuts

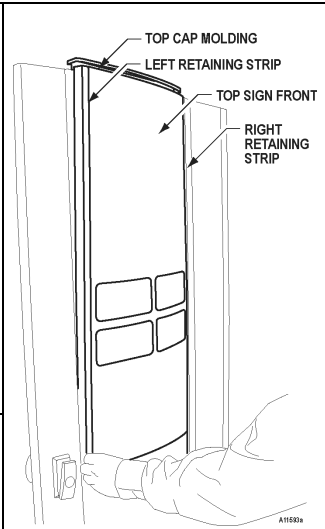


Figure 6c. Remove Top Sign Front

1. Remove and save the wing nut located on the right side below the cup compartment (as viewed from behind the door). See **Figure 6a**.
2. Open the cup compartment door. Remove and save the wing nuts located on the right corner of the cup compartment. Loosen the 2 wing nut holding Top Cap molding. See **Figure 6b**.
3. Go to the front of the cabinet door, lift Top Cap Molding and loosen the Retaining Strip located on the left side of the Top Sign Front. Remove and save the Retaining Strip and Top Sign Front. See **Figure 6c**.
4. Place the Top Sign Front on a clean and non-scratching surface.
5. Locate the menu selection label from behind the Top Sign Front. See **Figure 6d**. Carefully slide the menu selection label out of the pocket and slowly pull on the exposed tab.
6. Insert the new menu selection label through the slots. Check the front of the Top Sign Front to make sure that the menu selection labels are correctly aligned.
7. Insert the right edge of the Top Sign Front through the slot of the right side Retaining Strip. See **Figure 6c**.
8. Slip the left side Retaining Strip over the left edge of the Top Sign Front. Push the Retaining Strip back into place. See **Figure 6c**.
9. Reinstall and tighten the wing nuts from steps 1 and 2. See **Figure 6a** and **Figure 6b**.

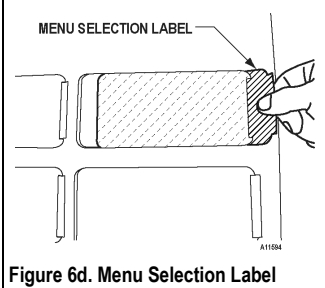


Figure 6d. Menu Selection Label

CUP SIZE ADJUSTMENT

The cup mechanism has been factory adjusted for 8.25oz cup. Follow the instructions below to adjust the cup (diameter) size.

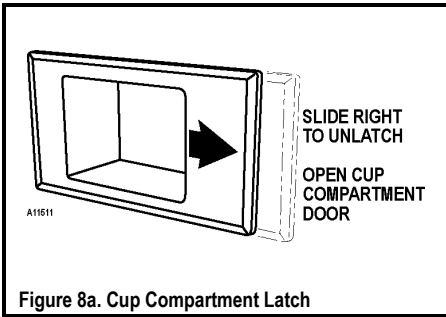


Figure 8a. Cup Compartment Latch

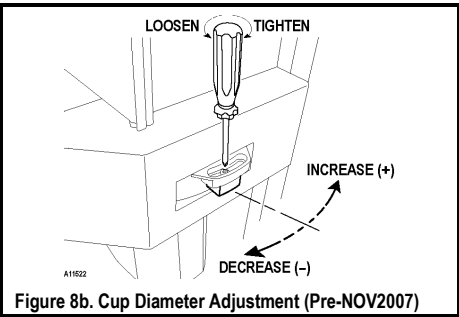


Figure 8b. Cup Diameter Adjustment (Pre-NOV2007)

1. Unlock the cup compartment door by sliding the plastic latch to the right. See **Figure 8a**. Open the cup compartment door.
2. Take a cup from the stack of cups that will be used in the machine and place the cup in the cup dispenser ring.
3. While facing the back of the door, find the cup dispenser adjustment screw located on the right side of the cup dispenser. Use a Phillips screwdriver to loosen the screw. DO NOT remove the screw. See **Figure 8c & 8c**.

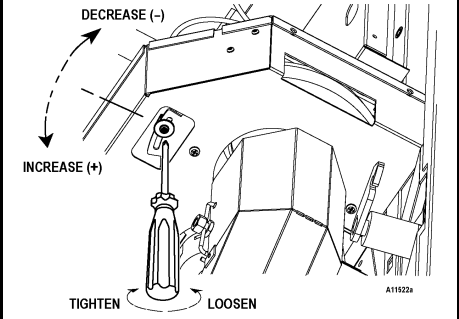


Figure 8c. Cup Diameter Adjustment (Post-NOV2007)

- 3a. Adjust the cup mechanism back and forth so that the cup lip rests on top of the circular cams of the cup dispenser mechanism. See **Figure 8d**.
- 3b. Push or tap the cup from the bottom end so that it moves up and down freely. If it does not move freely then go back to step 3a.
- 3c. Pull the cup from the bottom so that it does not easily slip through the circular cams. If it easily slips through then go back to step 3a.
- 3d. When steps 3a thru 3c are satisfied then tighten the screw. See **Figure 8c**.
4. Place a stack of cups to the left of the cup ring. Go to the internal keypad and press the cup test button. The entire cup stack should advance and fall into the cup ring. Pull on the bottom cup so that it does not easily slip through. If it easily slips through then the mechanism is not tight enough so go back to step 3.

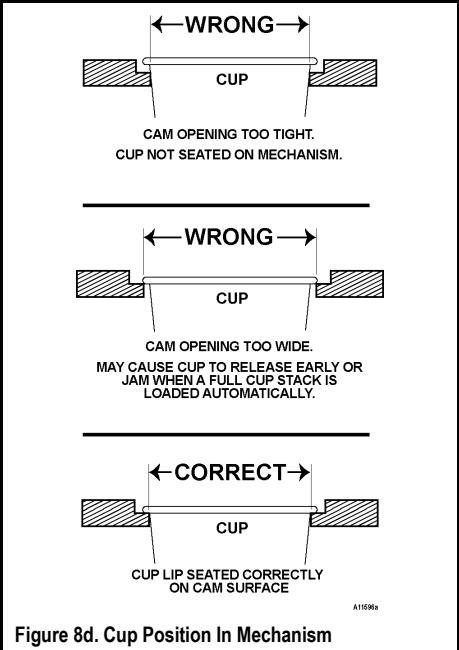


Figure 8d. Cup Position In Mechanism

SET PRICE FOR SINGLE DRINK VOLUME (LARGE)

The following instruction sets the price for the three (3) item types: filled small cup, cup only and a filled large cup. For additional information regarding Set Pricing Modes and Change Prices, please refer to the programming section of this manual.

| STEP | DISPLAY |
|--|----------------------------|
| 1. On internal keypad, press PROG | PLEASE ENTER ACCESS CODE |
| 2. On external keypad, enter code 1111 | SET PRICING MODE |
| 3. Press 2 or 8 . | CHANGE PRICES |
| 4. Press 0 . | LARGE PRICES |
| 5. Press 2 or 8 to scroll to SET ALL PRICES | SET ALL PRICES |
| 6. Press 0 | LARGE PRICES |
| 7. Press 0 to enter a new price | Price=\$0.00 |
| 8. Press 4 (move cursor left) or 6 (move cursor right), press 2 (increase value) or press 8 (decrease value). | |
| 9. Press 0 to accept the price for ALL LARGE PRICES | |
| 10. Press # (ESCAPE) | LARGE PRICES |
| 11. Press 2 or 8 to scroll to other price settings for LARGE PRICE NOTE: This is to set the prices for individual drinks different from the value set in STEP 9 | LARGE PRICE |
| 12. Press 0 to select the drink selection price to change | COFFEE Price= 000.00 |
| 13. Press 4 (move cursor left) or 6 (move cursor right), press 2 (increase value) or press 8 (decrease value). | |
| 14. Press 0 to accept the price | |
| 15. Repeat steps 11 to 14 to set prices for any other drinks | |
| 16. Press # (ESCAPE) | LARGE PRICES |
| 17. Press 2 or 8 to scroll to other selection price settings | CUP PRICE |
| 18. Press 0 to accept CUP PRICE Note: This is DISCOUNTED VALUE for using your own cup | CUP Price=\$0.00 |
| 19. Press 4 (move cursor left) or 6 (move cursor right), press 2 (increase value) or press 8 (decrease value). | |
| 21. Press 0 to accept the DISCOUNTED VALUE | |
| 22. Press # three times to exit the programming mode. | SELECT DRINK TO SHOW PRICE |

SET PRICE FOR DUAL DRINK VOLUMES (LARGE & REGULAR)

Dual Menu Label set is required to set this option. Order P/N 4214600 Dual Menu Label set.

| STEP | DISPLAY |
|--|----------------------------|
| 1. On internal keypad, press PROG | PLEASE ENTER ACCESS CODE |
| 2. On external keypad, enter code 1111 | SET PRICING MODE |
| 3. Press 2 or 8 . | CHANGE PRICES |
| 4. Press 0 . | LARGE PRICES |
| 5. Press 2 or 8 to scroll to SET ALL PRICES | SET ALL PRICES |
| 6. Press 0 | LARGE PRICES |
| 7. Press 0 to enter a new price | Price= \$000.00 |
| 8. Press 4 (move cursor left) or 6 (move cursor right), press 2 (increase value) or press 8 (decrease value). | |
| 9. Press 0 to accept the price for ALL LARGE PRICES | |
| 10. Press 2 or 8 to scroll to REGULAR PRICES | REGULAR PRICES |
| 11. Press 0 to enter a new price | Price= \$000.00 |
| 12. Press 4 (move cursor left) or 6 (move cursor right), press 2 (increase value) or press 8 (decrease value). | |
| 13. Press 0 to accept the price for ALL REGULAR PRICES | |
| 14. Press # (ESCAPE) | LARGE PRICES |
| 15. Press 0 to select the drink selection price to change NOTE: This is to set the prices for individual drinks different from the value set in STEP 9 for LARGE DRINKS | COFFEE Price= \$000.00 |
| 16. Press 4 (move cursor left) or 6 (move cursor right), press 2 (increase value) or press 8 (decrease value). | |
| 17. Press 0 to accept the price | |
| 18. Press 2 or 8 to scroll to REGULAR PRICES | REGULAR PRICES |
| 19. Press 0 to select the drink selection price to change NOTE: This is to set the prices for individual drinks different from the value set in STEP 13 for REGULAR DRINKS | COFFEE Price= \$000.00 |
| 20. Press 4 (move cursor left) or 6 (move cursor right), press 2 (increase value) or press 8 (decrease value). | |
| 21. Press 0 to accept the price | |
| 22. Press 2 or 8 to scroll to other selection price settings | CUP PRICE |
| 23. Press 0 to accept CUP PRICE Note: This is DISCOUNTED VALUE for using your own cup | CUP Price= \$000.00 |
| 24. Press 4 (move cursor left) or 6 (move cursor right), press 2 (increase value) or press 8 (decrease value). | |
| 21. Press 0 to accept the DISCOUNTED VALUE | |
| 22. Press # three times to exit the programming mode. | SELECT DRINK TO SHOW PRICE |

FILL CUP COMPARTMENT

The cup mechanism has been factory adjust for 8.25 oz. cup.
Follow the instructions below to adjust the cup diameter size.

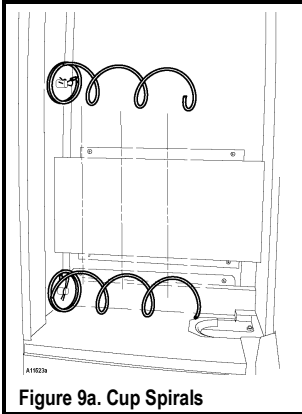


Figure 9a. Cup Spirals

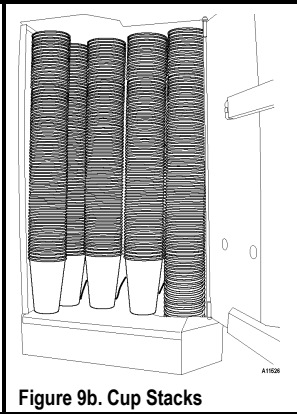


Figure 9b. Cup Stacks

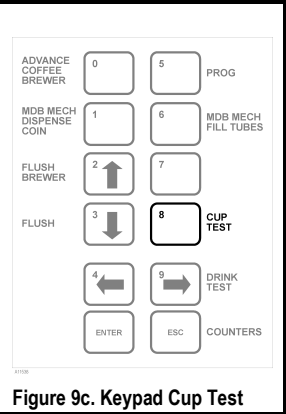


Figure 9c. Keypad Cup Test

1. Check that the top and bottom spirals are aligned with each other and have room for three (3) stacks of cups. See **Figure 9a**.
2. The cup compartment can have a total of five (5) cup stacks. Load the compartment with cups starting with the first stack in the cup dispenser mechanism followed by three (3) additional cup stacks. See **Figure 9b**. The cup-stack must be aligned with the top and bottom spirals. Add the fifth cup stack directly in front of the fourth cup stack and place it tight against the left side wall of the compartment.
3. Close and latch the cup compartment door.
4. Find the internal keypad on the left side of the door (as viewed from the rear of the door). Press the square marked "8" right next to "CUP TEST". See **Figure 9c**.
 - 4a. The cup should be dispensed via the stainless steel cup chute on and land squarely on the platform of the delivery compartment. See **Figure 9e**.
 - 4b. If the cup gets stuck at the counter-balance wire, then loosen the counterweight and slide it up to lessen the weight against the cup. See **Figure 9d**. Repeat step 4.

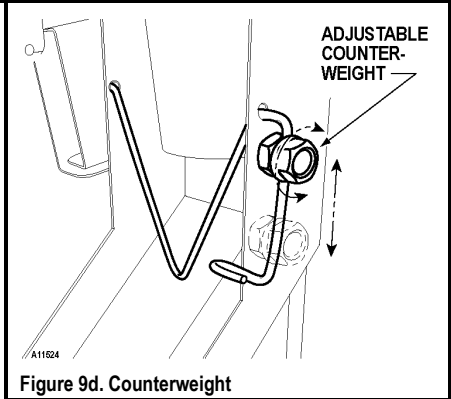


Figure 9d. Counterweight

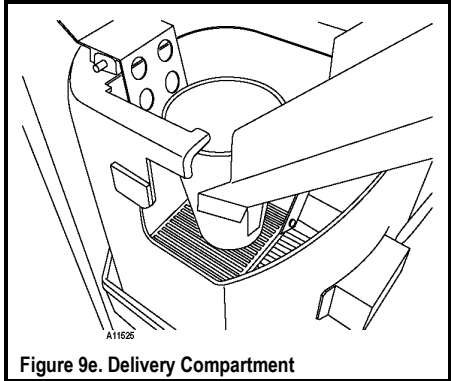


Figure 9e. Delivery Compartment

CUP SIZE ADJUSTMENT

The cup size/volume is factory set at 8.25 oz.

Follow the example below to change the cup size setting to 12 oz.

| STEP | DISPLAY |
|--|-------------------------------|
| 1. On <i>internal</i> keypad, press PROG | PLEASE ENTER ACCESS CODE |
| 2. On <i>external</i> keypad, enter code 3333 | INGREDIENT TIMES |
| 3. Using 2 or 8 Scroll to CONFIGURE MC | CONFIGURE MC |
| 4. Press 0 | 8.25 oz |
| 5. Using 2 or 8 Scroll to 12 oz | 12 oz |
| 6. Press 0 to confirm selection | 12 oz |
| 7. Press # to exit programming mode | SELECT DRINK TO SHOW PRICE |

FLUSH HEATER TANK, BOWL & BREWER

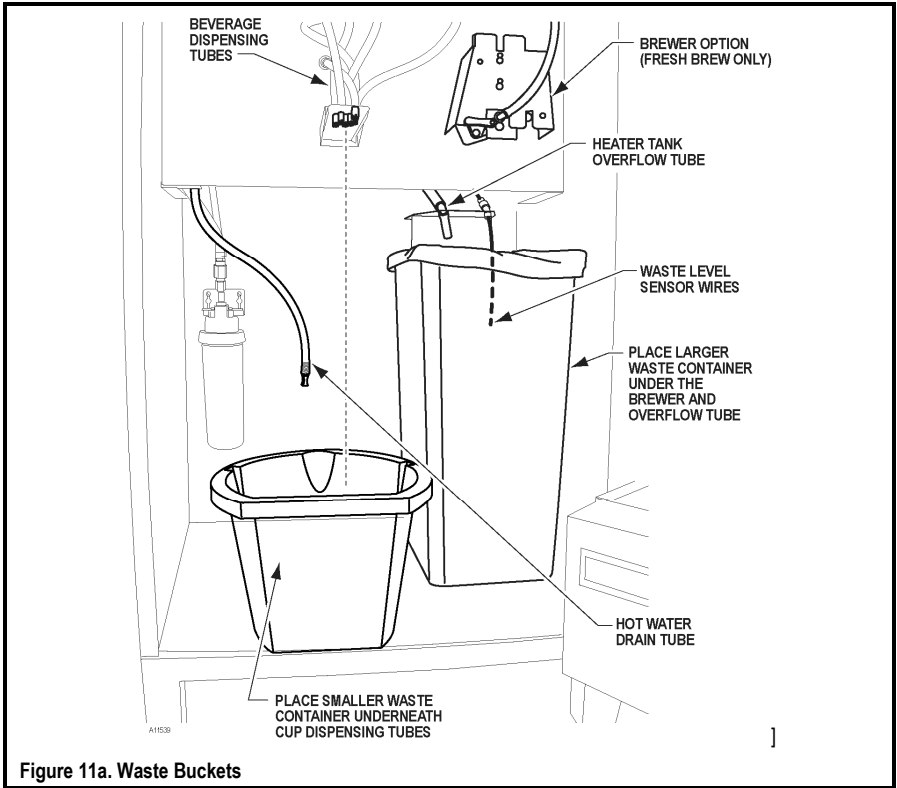


Figure 11a. Waste Buckets

INSTALL WASTE CONTAINERS

1. Place a trash liner (10 Gal) inside the large waste container. Place the waste container under the heater tank overflow tube and the brewer.
2. Place the small bucket under the cup dispensing tubes. See Figure 11a.

FLUSH WHIPPER BOWLS & BREWER

1. Go to the internal keypad, press the square next to FLUSH to clean the whipper bowls. See Figure 11b.
2. In a Fresh Brew Machine, after step 3, press the square next to FLUSH BREWERS to clean the brewer and filter. See Figure 11b

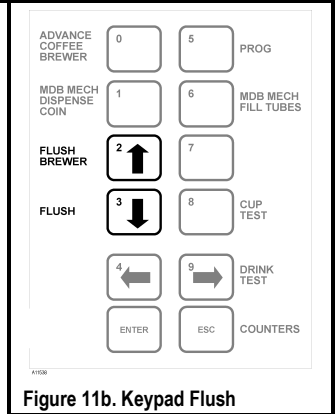


Figure 11b. Keypad Flush

FLUSH HOT WATER TANK

1. Turn off the Power Switch and shut off the main water valve to the machine. Remove the plug from the hot water tank drain tube and empty the tank contents into the drain bucket. See Figure 11b.
2. Reinstall the plug to the drain tube. Open the main water valve to the machine and turn on the Power Switch.

DRIP CATCHER

Place a cup on the Drip Catcher Holder to catch any remaining liquid in the base of the cup station from dripping onto the floor when the door is opened during servicing.

1. The Drip Catcher is located on the back of the door underneath the Cup Station.
2. Place a 7 oz or 8.25 oz cup on the Drip Catcher Cup Holder. See **Figure 12a**.
3. **IMPORTANT:**
Place the Overflow Bucket Sensor inside the drain bucket before closing the door. See **Figure 12b**.

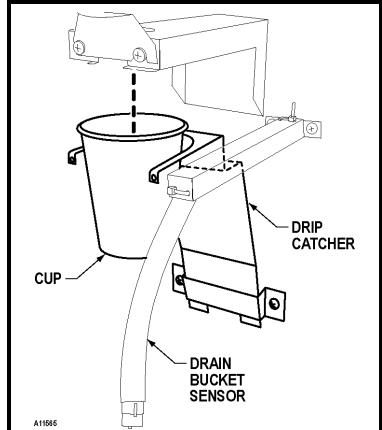


Figure 12a. Drip Catcher

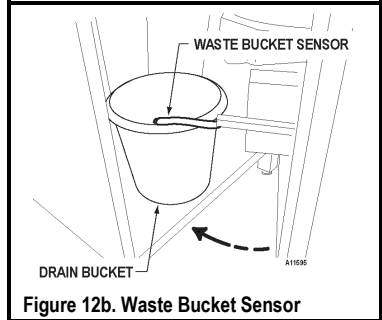


Figure 12b. Waste Bucket Sensor

GENERAL DESCRIPTION

The operational components which form a Hot Beverage Merchandiser are housed in a metal enclosure, access to which is gained by a swivel door secured by a key operated locking mechanism. Turning the key in the lock released a door handle, which allows a three or single point locking mechanism to move to the unlocked state and the door to be opened. With the door open the mains isolation switch for ON/OFF operation of the machine is visible in the top left corner of the machine (above and behind the product canisters).

Equipment inside the cabinet is arranged in two sections: front and rear. On opening the door, the Operator is immediately faced with those items of equipment to which he or she requires access, e.g. Ingredient Canisters, Cup Compartment, Coin Mechanism, Waste Buckets, etc. The remaining items of equipment, e.g. Water Heater, Valves, Electrical and electronics components, etc, to which specifically the Engineer requires access (and from which the Operator must be shielded) are located behind the Ingredient Canisters and Whipper Motor and Dispense Head Assembly panel, at the rear of the cabinet.

CABINET FRONT

The Cup Drop Assembly, Coin Mechanism, Controller Board and Cup Station are fitted to the rear of the door. The Customer's keypad is fitted to the front panel and is connected to the Controller board via a cable assembly.

Ingredient canisters are located on a shelf approximately half way up the cabinet. At the front of the shelf is a duct assembly to which an extractor fan is connected. The fan pulls air from the extract duct, which in turn removes steam/moist air from the mixing systems, which are located on a vertical panel below the canister shelf. The moving dispense head protrudes through and is fastened to this vertical panel and in the case of the fresh brew versions this vertical panel also provides the mounting for the fresh brew units.

On the fresh brew version a large plastic waste bucket is located underneath the Brewer Unit, in addition to the small one placed at the front of the cabinet, beneath the Cup Station (when the door is closed). Water heater overflow pipes, and a water level probe, are directed into the smaller bucket. When the waste liquid in the bucket(s) reaches the level sensor probe, the water supply inlet is shut off and the machine is rendered inoperable.

CABINET REAR

Access to the components and equipment in the rear section of the cabinet is obtained by removing the ingredient canisters and the relevant back panel.

Cold water enters the cabinet through an aperture in the rear panel and connects to a twin chamber inlet valve for the hot water supply. A length of tubing takes the water supply from the inlet valve into the water heater and then to the water heater tank located at the top of the cabinet. Hot water in the correct quantity is then directed from the tank to the appropriate mixing bowl via a solenoid operated dispense valve. A dispense valve is associated with each ingredient. Any overflow from the tank is directed into the waste bucket via an overflow tube. Fitted to this tube is a high temperature cut-out switch, when operated, cuts off the electrical supply to the heater in the tank. The cut-out must then be reset to restore the supply. Another length of tubing facilitates draining of the heater.

A level probe is fitted to the rear of the cabinet door and a similar device is located in the fresh brew waste container. When the door is closed these devices act as contact probes allowing the units control system to monitor the liquid level in the waste containers.

Two printed circuit boards are fitted to the top right hand side of the cabinet rear panel; the DC Remote Input/Output Board (DC RIO) and the Power Supply Unit (PSU). The DC RIO Board provides the high current drives to operate the output devices (valves, motors etc) in response to signals from the Controller Board.

A solid-state relay, located beneath the printed circuit boards, pulses current to the heater in response to signals from the DC RIO Board. The DC RIO board receives signal from the Controller via an I²C link. The temperature of the water in the boiler is measured by the Controller Board using an NTC thermistor mounted at the end of a stainless steel probe immersed in the hot water tank.

WATER SYSTEM

The cold water mains supply enters the machine via double-solenoid operated inlet valve at the rear of the cabinet. This valve controls the flow of water to the unit's hot water tank via a water filter.

HOT WATER SYSTEM

Water is supplied via the Hot Inlet valve to the heater tank via a water filter where it is heated to the required temperature by a heating element in the tank. Water temperature is controlled by a combined temperature and level probe assembly in the tank which causes the supply to the heater to be removed when the preset

temperature is reached. The probe assembly also acts as a level sensor, causing the Hot Inlet valve to open when the water in the tank falls below a preset level. The probe (i.e. the input device) is monitored by the Controller Board, and the water heater and Hot Inlet valve (i.e. the output devices) are controlled by the DC RIO Board in response to signals from the Controller Board.

Depending on the type of hot drink selected, hot water from the heater tank is fed via solenoid operated dispense valves to the appropriate mixing bowl or Brewer Unit container. Ingredients and water are mixed in exact quantities in the mixing bowl or Brewer Unit container. Ingredients and water are mixed in exact quantities in the mixing bowl and then directed to the dispense head. Similarly, water and ingredient are brewed in exact amounts in the Brewer Unit and then directed to the dispense head.

A resettable cut-out sensor, mounted on the boiler lid, cuts off the electrical supply to the tank heater circuit if the water in the tank starts to boil. Additionally, if the fluid level in the overflow waste bucket rises above the preset level, it is detected by a level probe and reported to the Controller Board, which responds by closing the inlet valve via the DC RIO Board and rendering the machine inoperable.

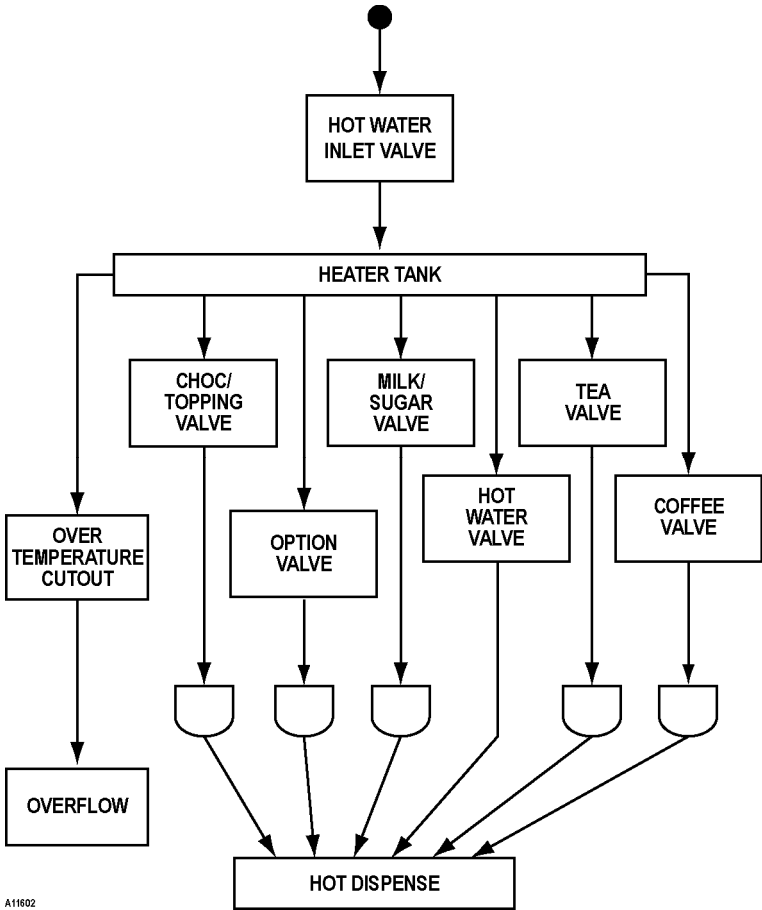
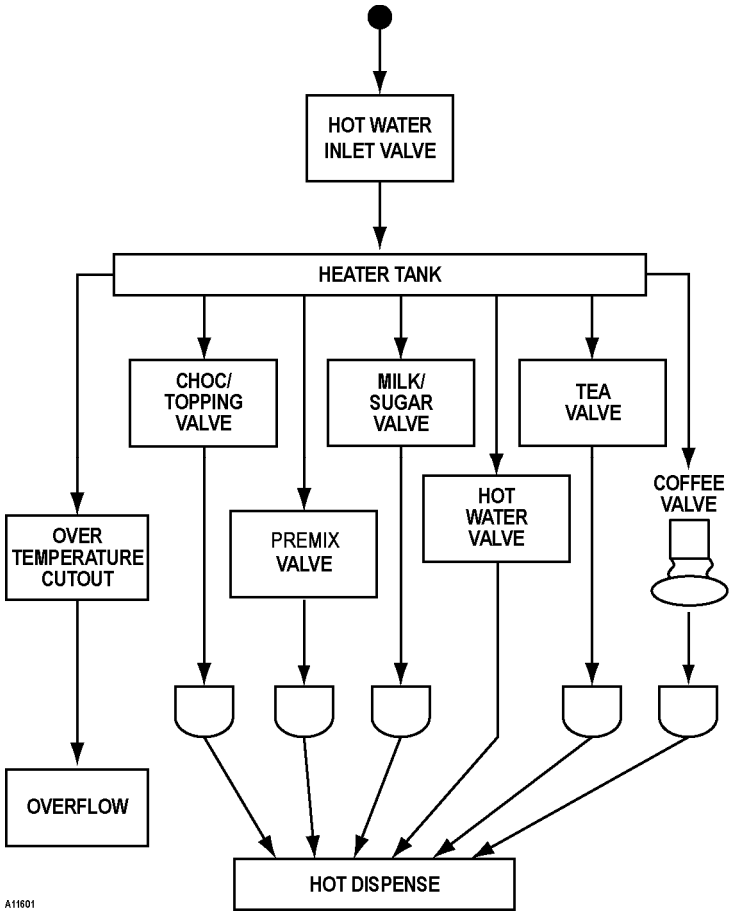


Fig 1.1A Water System Diagram - Instant



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Fig 1.1B Water System Functional Diagram –Fresh Brew

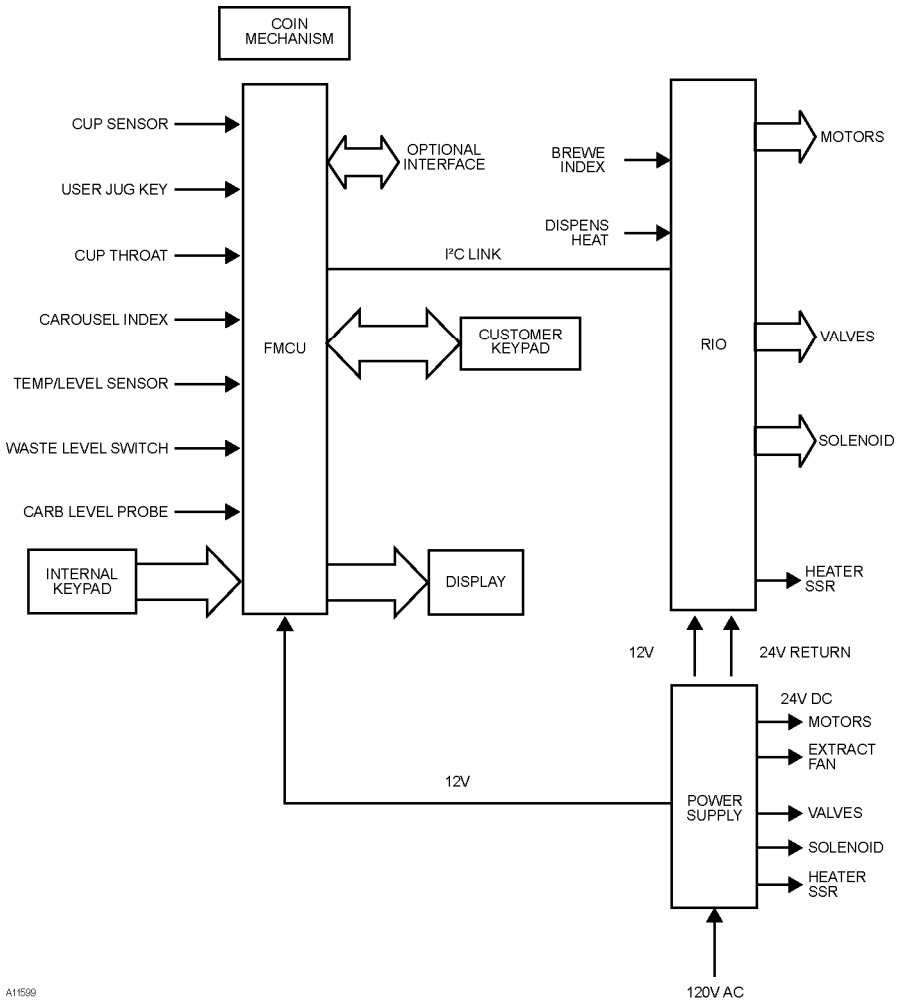
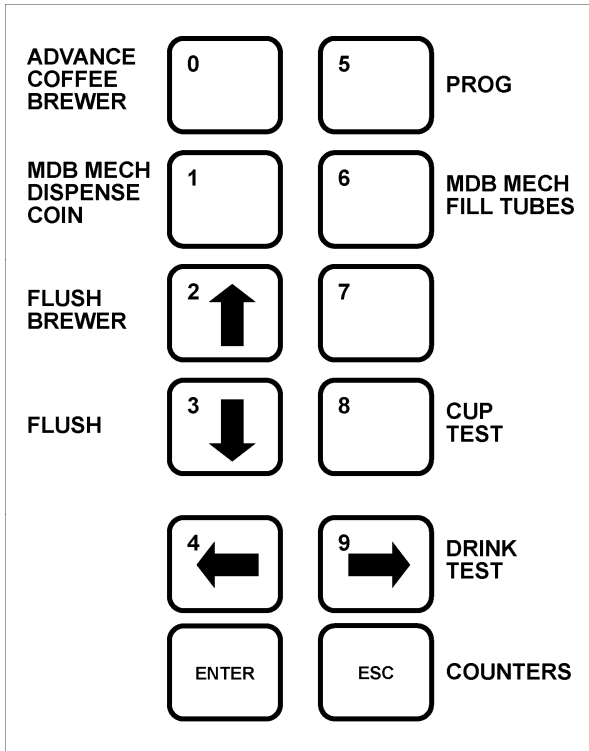


Fig 1.3 Electrical & Electronic System – Functional Diagram

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INTERNAL KEYPAD FUNCTIONS



A11538

Fig 2.1

The internal keypad provides the facility to carry out a number of frequently required machine functions without the necessity to enter any of the user programs.

In most cases a single press of the key initiates the function associated with each button. If a further key press is necessary to end the action it will be the ESC (escape) key.

The functions available from the internal keypad are as follows:

- ADVANCE COFFEE BREWER** - If a coffee brewer is fitted, a single depression of this key will cause the brewer unit to index to its next position in the cycle. The purpose of this function is to allow the brewer to be locked prior to a flush cycle so that cleaning agents can be added.
- MDB MECH DISPENSE COIN** - This key provides a method to empty the change tubes of an MDB coin mechanism, which does not itself possess the necessary buttons to do so. On pressing the key the external display will change to:

| |
|--|
| EMPTY TUBE \$0.05 ↑, ↓ ENTER OR ESC |
|--|

The currency value shown will be that of the lower value coin tube in the coin mechanism. The function of the EXTERNAL keys will change as described in section 3 to allow actions to be performed on either the internal or external keypad. Pressing ENTER will cause a coin to be dispensed from the currently selected tube. Pressing the ↑ or ↓ select the next/previous coin tube. Repeated use of the ↑, ↓ & ENTER keys enables all tubes to be emptied. Pressing the ESC (escape) key ends the process.

- BREWER FLUSH** - This key provides the means to initiate a flush cycle of the fresh brew units. A single press of this key will initiate a cleaning cycle for all brewers fitted to the machine simultaneously. In the case of the instant version this function is redundant.

- d) **PROG** - This key activates the code entry sequence required to access the protected levels of the machine control programs. See section 2b.
- e) **MDB MECH FILL TUBES** - If an MDB coin mechanism is fitted this function allows the change tubes to be filled. On pressing the key the external display will change to:

| |
|------------------------|
| INSERT FLOAT \$0.00 |
|------------------------|

As coins are inserted the value displayed will reflect the total value of the money inserted. Pressing ESC (escape) will cause the machine to return to normal operation and zero the credit.

- f) **CUP TEST** - Causes a cup to be dispensed by the cup drop mechanism. The cup spiral will not index unless a selection is made or a cup test performed.
- g) **DRINK TEST** - Allows the next selection to be taken as a free vend.
- h) **COUNTERS** - Pressing the counters key places the machine in manual audit mode. Audit data is accessed via a series of menus. The chart below shows the menu headings in bold text while the key presses required to navigate the menu are shown in *italics*. While in this mode the functions of the EXTERNAL keypad change to allows the menus to be accessed from the same side of the door as the display – see section 3 paragraph 5 for button function in this mode.

VIEWING COUNTER & EVENT RECORDS

Press the COUNTERS key on the internal keypad and using a combination of the display and the user keypad to navigate (see USER KEYPAD above), the following records can be viewed:

Heading Menu's List:

- DRINKS COUNTERS: The total number of each primary drink selection
- TOTAL VEND COUNT: The grand total of all drinks vended (includes those vends with use of 'own' cup)
- VENDED CUP COUNT: The number of cups vended
- INGREDIENT COUNTERS: The weight in grams of each primary ingredient
- EVENT LOG: A diagnostic log of events, the description, time and date are recorded
- FINANCIAL AUDIT: A range of sub-menus giving monetary values

Available Sub-menu's:

- DRINKS COUNTERS Upon pressing ENTER scroll down/up the list of each primary drink selection
- TOTAL VEND COUNT Upon pressing ENTER the grand total is displayed
- VENDED CUP COUNT Upon pressing ENTER the total number of cups dispensed is displayed
- INGREDIENT COUNTERS Upon pressing ENTER scroll down/up the list of each primary ingredient throw weight (in grams): Note: This needs to be set-up in SERVICE MODE to function.
- EVENT LOG Upon pressing ENTER scroll down/up the list recorded events for diagnostic purposes (see table below or more details)
- FINANCIAL AUDIT Upon pressing ENTER the following sub-menus are available:
 PERMANENT COUNTERS – Giving PAID, TEST & FREE Vend values
 TUBE CONTENTS – Each change tube value can be viewed
 RESETTABLE COUNTERS – Giving PAID, TEST & FREE Vend values

EXAMPLE: To obtain the 'Total Paid Vend Value'

| STEP | DISPLAY |
|---|---|
| 1. On <i>internal</i> keypad, press COUNTERS | DRINK COUNTERS |
| 2. Using 2 or 8 Scroll to FINANCIAL AUDIT | FINANCIAL AUDIT |
| 3. Press 0 | PERMANENT CTRS |
| 4. Press 0 | PAID VEND VALUE \$ XX.XX |
| 5. Press # four times to exit programming mode | SELECT DRINK TO SHOW PRICE |

TAKING A TEST VEND

Press the DRINK TEST key on the internal keypad once and then make a drink selection on the external keypad.

If more than one test vend is required, repeat the above procedure.

DIAGNOSTIC LOG

| Displayed Message | Explanation of Condition |
|-------------------|--|
| KEY STUCK | A key on the user keypad has been closed continuously for >15 seconds |
| WATER LEAKAGE | The hot inlet valve has had to be switched on > 30 times since the last vend was taken |
| NO CUPS | Comes into force after 2 unsuccessful attempts to drop a cup |
| DISPENSE ARM | The arm has not operated the position/limit switches within the designated time allowed |
| ELECTRONICA | Internal serial communication failure between the control board and the RIO board |
| IO CONFIG ERR. | Board has not been initialized using the ENG LINK |
| WASTE TRAY FULL | Either the Liquid or Coffee ground waste bucket is full of water |
| HEATER INHIBITED | The heater tank has not filled within the 3.5 minute time limit |
| PLACE OWN CUP | Sold-out of cups |
| FILLING BOILER | Comes into force 15 seconds after starting to fill the heater tank with water. Indication of a slow rate of fill |
| C BREWER FAULT | Brewer unit is not cycling correctly – a motor or cycle-switch fault |
| NEW FILTER REQD | Filter belt warning (if activated) – comes into force after air pressure seen to be present after 7 seconds |
| FILTER BROKEN | Brewer Fault – comes into force after air pressure has seen to be present after 20 seconds during a vend |
| DOOR FAULT | Cup door mechanism is not cycling correctly - a motor or cycle-switch fault |

NOTES:

- 1) The event log will only record events that persist for two or more consecutive event log checks. Event log checks take place once every 60s, so in the worst case scenario an event may have to be in force for almost 120s before it is recorded.
- 2) The event log does not handle concurrent events. If two (or more) fault conditions are active, only the first occurrence will be recorded.

PROGRAMMING

The Hot Beverage Merchandiser has a comprehensive configuration program to allow the behavior and function of the machine to be changed to meet a customer's requirement. There are three levels of access to the configuration functions of the machine. Access to each level is protected by means of a four-digit code. The facilities available at each level are shown below:

1. Operator level access
 - ▶ Access to price related features only.
 - ▶ Factory default Code 1111.
2. Manager level access
 - ▶ Access to Price related features.
 - ▶ Inhibit selections
 - ▶ Limited range modification of recipes.
 - ▶ Change Operator level access code.
 - ▶ Factory default Code 3333.
3. Engineer level access
 - ▶ Full access all features
 - ▶ Factory default code 4444.

ACCESSING THE USER PROGRAMS

The programs are accessed by pressing key 5 (PROG) on the INTERNAL keypad. The EXTERNAL display will then prompt for input of a four-digit entry code. The code is input using the numbers printed on the keys of the INTERNAL keypad.

- ▶ After pressing the PROG key the display will change to:

| |
|-----------------------------|
| PLEASE ENTER ACCESS CODE |
|-----------------------------|

- ▶ Use the numbered keys on the keypad to enter the correct code. It is not necessary to press ENTER. The code will be checked on entry of the fourth digit. Three attempts are allowed before the PROG key must be pressed again. On entry of a valid code the display will change to the menu heading appropriate to the level of access. While in programming mode the functions of the external keypad change to facilitate navigation of the program using the EXTERNAL keypad.

In the event that the code has been lost or when fitting an un-programmed replacement board it is necessary to complete the circuit between the two pins of the two pin header labeled ENG LINK on the Control board. This bypasses the entry of the four-digit code, giving engineer level access immediately upon processing PROG key. **If the ENG LINK is left in place during power up, the machine will boot straight into the engineers program with full access.**

- ▶ Note Regarding Power Up Problems

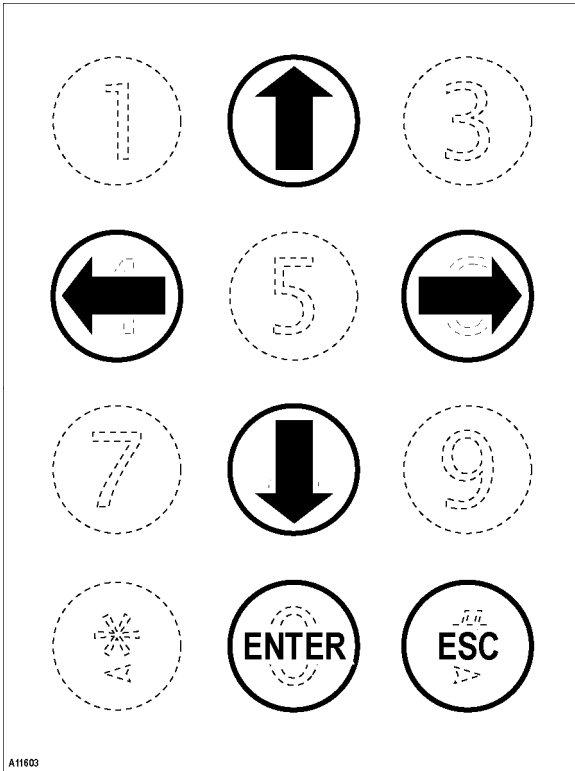
The Hot Beverage Merchandiser electronics control system has two major elements. These are the Control board and the DC RIO board. The two boards communicate via a three wire Inter Integrated Circuit bus (I²C bus). Some faults affecting the I²C bus or Control board configuration can result in persistent system resets. To allow recovery/diagnosis from such situations the control system provides an Access Window to a special 'safe mode' shortly after power is switched on. It is possible to enter engineer's mode during this window.

Some configuration faults related to initialized boards do not allow the system to get even this far through start up, in which case it is necessary to insert the ENG LINK before switching the power on. In this case the machine will boot straight into the engineer's program.

In both cases the I²C bus linking the electronics boards is disabled. Without communication between the DC RIO board and the Control board the OUTPUT TEST facility is ineffective and the state of some inputs will be misreported in the INPUT TEST routines. As a reminder to this effect the sound associated with a key press is truncated to a very short pip rather than a beep.

USER KEYPAD

Having entered a valid code, the keys on the USER keypad are used to navigate and use the functions of the user programs. In programming mode the keys assume the following alternative functions:



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| KEY | FUNCTION |
|-------|--|
| ↑ | Move UP a list of menu options or increment a number. |
| ↓ | Move DOWN a list of menu options or decrement a number. |
| ← | Move the cursor LEFT . |
| → | Move the cursor RIGHT . |
| ESC | ESCAPE - move to previous menu option or reject values entered. |
| ENTER | ENTER the menu option displayed or accept the changes made. |

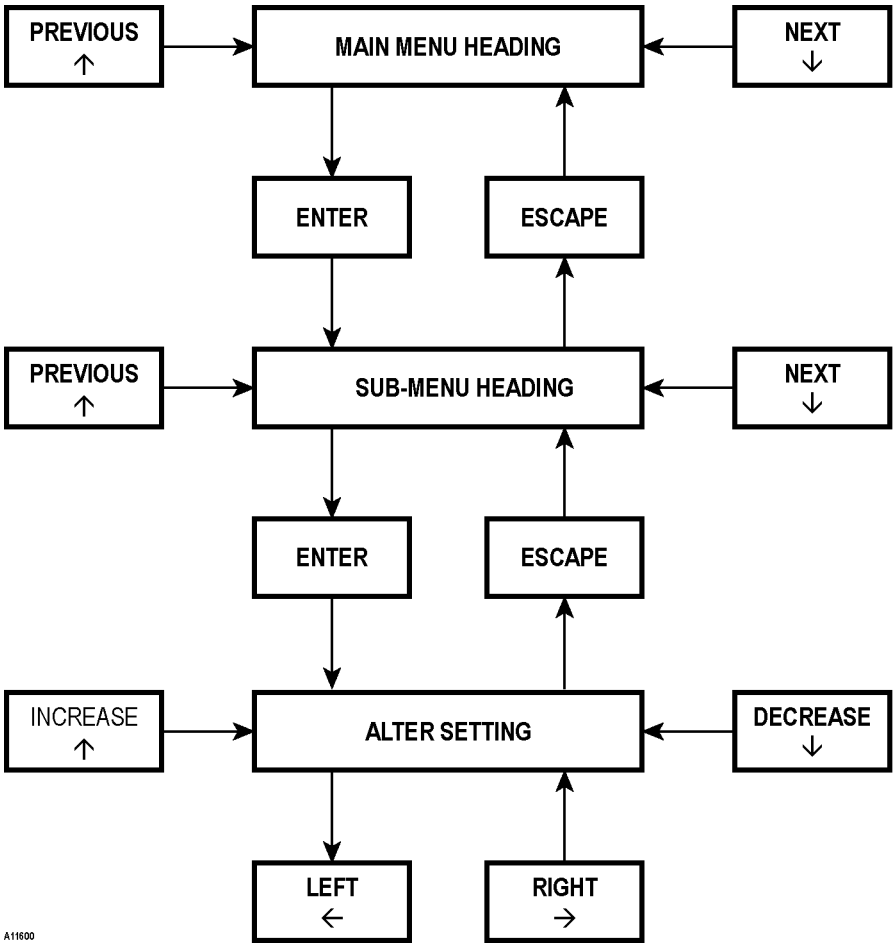
PROGRAM FUNCTIONS

The following table shows the functions available and the access level required to use them within the Hot Beverage Merchandiser configuration program:

| FUNCTION | ACCESS LEVEL REQUIRED | | |
|--------------------|-----------------------|---------------|----------|
| | OPERATOR | MANAGER | ENGINEER |
| Ingredient Times | - | YES (limited) | YES |
| Set Date/Time | - | YES | YES |
| Set Pricing Mode | YES | YES | YES |
| Change Prices | YES | YES | YES |
| Inhibit Drink | - | YES | YES |
| Alter Drink Name | - | YES | YES |
| Timed Activities | - | - | YES |
| Temp Settings | - | - | YES |
| Output Test | - | - | YES |
| Input Test | - | - | YES |
| Set Product Consts | - | - | YES |
| Machine Status | - | - | YES |
| Set Dry Vend Mode | - | - | YES |
| Serial Number | - | - | YES |
| Configure Machine | - | YES (limited) | YES |
| MDB Config | - | - | YES |
| EVA-DTS Config | - | - | YES |
| Product Codes | - | - | YES |
| Operator's Code | - | YES | YES |
| Manager's Code | - | - | YES |
| Engineer's Code | - | - | YES |
| Free Drink Code | | YES | YES |
| Edit Drink Map | - | - | YES |
| Card Actions | - | - | YES |
| Editable Text | - | - | YES |
| Depressurize CBR | - | YES | YES |

PROGRAMMING SEQUENCE OF OPERATIONS

The method of navigating the menu structure is consistent throughout the program. The ↑ and ↓ keys are used to index through the headings in a particular level or increment/decrement value. Pressing ENTER will select a submenu or confirm a change while ESC (escape) will reject a change or return to the previous menu level. The sequence for accessing a menu option and the accessing a submenu within that option and finally selecting and changing a parameters value, is shown diagrammatically in Fig 3.1.



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Fig 3.1 Accessing An Option Setting – Flow Diagram

MENU OPTIONS

INGREDIENT TIMES

Ingredient Times provides access to a set of submenus, which allow modification of the parameters controlling the recipe and dispensing of individual drinks. The actual content of the sub-menu is dependent on the configuration of the machine. That is for example an Instant Hot version will have different drinks in its **Ingredient Times** sub menu to a **Double Fresh Brew** version fitted with a carbonator. In general the entries of the Ingredient Times menu will consist only of the drinks available on that particular configuration of machine. The Hot Beverage Merchandiser range has a number of pre-defined configurations. For each configuration each selection button is associated with a particular drink. This association is fixed for each configuration. For example if the top left button in a given configuration provides an instant coffee drink then the Coffee entry in the Ingredient sub menu will allow adjustment of a limited number of parameters relating to a coffee selection, it is not possible to reprogram the button to behave as a completely different drink e.g. an **Espresschoc**.

For each selection a user with Manager level access is granted a limited range adjustment on a subset of the parameters. This allows the site-based personnel to perform minor taste profile modifications without the need to call an engineer. The limited range adjustment is implemented as a multiplying scale factor of between 75% and 125%. In **manager's mode** the limited range of adjustment permitted is displayed as a signed value between -25% and +25% and can be changed in 5% increments. For example the limited range strength control for the coffee ingredient of an Espresschoc selection, which has had its coffee ingredient increased by 5% would appear to a manager level user as:

| |
|-----------------------|
| OP: Coffee Mod +5% |
|-----------------------|

When viewed with engineers level access this would appear as:

| |
|-----------------------|
| OP: Coffee Mod 105 |
|-----------------------|

In each case the same parameter is being viewed.

The following tables describe the parameters that can be adjusted for each drink, and indicate the parameters visible at the different access levels. The drinks available in each configuration are described in Table 14.b later in this Section.

FRESH BREW RECIPE CHARTS (SOFTWARE REV 29E)

| FRESH BREW COFFEE | | | 12oz | 12 oz | 10 oz | 10 oz | 9 oz | 9 oz | 8 1/4 oz | 8 1/4 oz | 7 oz | 7 oz |
|--------------------------|--|---------------|---------|-------|---------|-------|---------|-------|----------|----------|---------|-------|
| Parameter Name | Function | Units | Regular | Large | Regular | Large | Regular | Large | Regular | Large | Regular | Large |
| INFUSION TIME | Delay after coffee and water are added to brew chamber before brewer closes | .1s | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| COFFEE START TIME | Delay before the Coffee ingredient is dispensed | .1s | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| CWTR START TIME 1 | Delay before the 2nd shot of Coffee Water is dispensed | .1s | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| CWTR START TIME 2 | Delay before the 1st shot of Coffee Water is dispensed | .1s | 29 | 39 | 24 | 33 | 22 | 29 | 20 | 27 | 17 | 23 |
| WATER TIME | Coffee brewer dispense valve open duration. The water time is split into 2 equal shots of water | .1s | 71 | 95 | 59 | 79 | 53 | 71 | 49 | 65 | 41 | 55 |
| M&S WATER TIME | Milk & Sugar valve opening time | .1s | 22 | 26 | 18 | 22 | 17 | 20 | 15 | 18 | 13 | 15 |
| VALVE FACTOR | Balancing factor to account for difference in flow rate between Milk/Sugar valve and brewer valve. If white/sugar drink is smaller than black version increase VAL FACTOR and vice versa. Range 8-14.v | Ratio x 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| COFFEE ING TIME | Coffee Ingredient Auger Control (30 = 12.5 - 13g) | .1s | 21 | 28 | 19 | 25 | 17 | 23 | 16 | 21 | 14 | 18 |
| SUGAR TIME | Auger run time for Optional ingredient if selected | .1s | 17 | 22 | 14 | 19 | 13 | 17 | 11 | 15 | 10 | 13 |
| SUGAR ADJUSTMENT | Increment applied to sugar auger run time when extra sugar selected | .1s | 13 | 17 | 11 | 14 | 10 | 13 | 9 | 12 | 8 | 10 |
| MILK TIME | Auger run time for Optional ingredient if selected | .1s | 18 | 24 | 15 | 20 | 14 | 18 | 12 | 17 | 10 | 14 |
| MILK ADJUSTMENT | Increment applied to milk auger run time when extra milk selected | .1s | 4 | 6 | 3 | 5 | 3 | 5 | 3 | 4 | 2 | 3 |
| PUMP 1 DURATION | Duration of first air pump operation | .1s | 35 | 41 | 29 | 34 | 25 | 31 | 24 | 28 | 20 | 24 |

| | | | | | | | | | | | | |
|------------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| PUMP 1 DELAY | Inactive period following first air pump operation | .1s | 60 | 65 | 50 | 54 | 45 | 49 | 41 | 45 | 35 | 38 |
| PUMP 2 DURATION | Duration of second air pump operation | .1s | 50 | 59 | 41 | 49 | 38 | 44 | 34 | 40 | 29 | 34 |
| PUMP 2 DELAY | Inactive period following second air pump operation | .1s | 40 | 47 | 33 | 39 | 30 | 35 | 28 | 32 | 23 | 27 |
| MIXER TIME | Run time for coffee mixer motor referenced to the beginning of the first air pump activity | .1s | 20 | 24 | 17 | 20 | 15 | 18 | 14 | 17 | 12 | 14 |
| HOT WATER TIME | Adds hot water directly to cup | .1s | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BLACK DRAIN TIME | Idle time before head retracts following dispense of selection with no optional components | .1s | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| WHITE DRAIN TIME | Idle time before head retracts following dispense of selection where milk or sugar have been selected | .1s | 20 | 20 | 22 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| OP: Sugar Mod | Manager level control applied to SUGAR TIME. The actual sugar auger run time will be SUGAR TIME x OP: Sugar Mod/100 | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

| WHIPPED COFFEE (FRESH BREW) | | | 12oz | 12 oz | 10 oz | 10 oz | 9 oz | 9 oz | 8 1/4 oz | 8 1/4 oz | 7 oz | 7 oz |
|------------------------------------|----------------|-------|---------|-------|---------|-------|---------|-------|----------|----------|---------|-------|
| Parameter Name | Function | Units | Regular | Large | Regular | Large | Regular | Large | Regular | Large | Regular | Large |
| MIXER TIME | Coffee Whipper | .1s | 75 | 100 | 62 | 83 | 56 | 75 | 52 | 69 | 44 | 58 |

| WHIPPED DECAF (FRESH BREW) | | | 12oz | 12 oz | 10 oz | 10 oz | 9 oz | 9 oz | 8 1/4 oz | 8 1/4 oz | 7 oz | 7 oz |
|-----------------------------------|----------------|-------|---------|-------|---------|-------|---------|-------|----------|----------|---------|-------|
| Parameter Name | Function | Units | Regular | Large | Regular | Large | Regular | Large | Regular | Large | Regular | Large |
| MIXER TIME | Coffee Whipper | .1s | 75 | 100 | 62 | 83 | 56 | 75 | 52 | 69 | 44 | 58 |

| FRESH BREW DECAF COFFEE | | | 12oz | 12 oz | 10 oz | 10 oz | 9 oz | 9 oz | 8 1/4 oz | 8 1/4 oz | 7 oz | 7 oz |
|--------------------------------|---|---------------|---------|-------|---------|-------|---------|-------|----------|----------|---------|-------|
| Parameter Name | Function | Units | Regular | Large | Regular | Large | Regular | Large | Regular | Large | Regular | Large |
| INFUSION TIME | Delay after coffee and water are added to brew chamber before brewer closes | .1s | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| COFFEE START TIME | Delay before the Coffee ingredient is dispensed | .1s | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| CWTR START TIME 1 | Delay before the 2nd shot of Coffee Water is dispensed | .1s | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| CWTR START TIME 2 | Delay before the 1st shot of Coffee Water is dispensed | .1s | 29 | 39 | 24 | 33 | 22 | 29 | 20 | 27 | 17 | 23 |
| WATER TIME | Coffee brewer dispense valve open duration. The water time is split into 2 equal shots of water | % | 71 | 95 | 59 | 79 | 53 | 71 | 49 | 65 | 41 | 55 |
| M&S WATER TIME | Milk & Sugar valve opening time | 0 | 22 | 26 | 18 | 22 | 17 | 20 | 15 | 18 | 13 | 15 |
| VALVE FACTOR | Balancing factor to account for difference in flow rate between Milk/Sugar valve and brewer valve. If white/sugar drink is smaller than black version increase VF and vice versa. Range 8-14. | Ratio x 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| COFFEE ING TIME | Coffee Ingredient Auger Control (30 = 12.5 - 13g) | .1s | 21 | 28 | 19 | 25 | 17 | 23 | 16 | 21 | 14 | 18 |
| SUGAR TIME | Auger run time for Optional ingredient if selected | .1s | 17 | 22 | 14 | 19 | 13 | 17 | 11 | 15 | 10 | 13 |
| SUGAR ADJUSTMENT | Increment applied to sugar auger run time when extra sugar selected | .01s | 13 | 17 | 11 | 14 | 10 | 13 | 9 | 12 | 8 | 10 |
| MILK TIME | Auger run time for Optional ingredient if selected | .01s | 18 | 24 | 15 | 20 | 14 | 18 | 12 | 17 | 10 | 14 |
| MILK ADJUSTMENT | Increment applied to milk auger run time when extra milk selected | .1s | 4 | 6 | 3 | 5 | 3 | 5 | 3 | 4 | 2 | 3 |
| PUMP 1 DURATION | Duration of first air pump operation | .1s | 35 | 41 | 29 | 34 | 26 | 31 | 24 | 28 | 20 | 24 |

| | | | | | | | | | | | | |
|------------------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| PUMP 2 DURATION | Duration of second air pump operation | .1s | 50 | 59 | 42 | 49 | 38 | 44 | 34 | 41 | 29 | 34 |
| PUMP 2 DELAY | Inactive period following second air pump operation | .1s | 40 | 47 | 33 | 39 | 30 | 35 | 28 | 32 | 23 | 27 |
| MIXER TIME | Run time for coffee mixer motor referenced to the beginning of the first air pump activity | .1s | 20 | 24 | 17 | 20 | 15 | 18 | 14 | 17 | 12 | 14 |
| HOT WATER TIME | Adds hot water directly to cup | .1s | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BLACK DRAIN TIME | Idle time before head retracts following dispense of selection with no optional components | .1s | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| WHITE DRAIN TIME | Idle time before head retracts following dispense of selection where milk or sugar have been selected | .1s | 20 | 20 | 22 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| OP: Sugar Mod | Manager level control applied to SUGAR TIME. The actual sugar auger run time will be SUGAR TIME x OP: Sugar Mod/100 | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| OP: Milk Mod | Manager level control applied to MILK TIME. The actual milk auger run time will be MILK TIME x OP: Milk Mod/100 | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| OP: Coffee Mod | Manager level control applied to COFFEE TIME. The actual sugar auger run time will be COFFEE TIME x OP: Coffee Mod/100 | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| OP: Water Mod | Manager level control applied to WATER TIME. The actual milk auger run time will be WATER TIME x OP: Water Mod/100 | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

| ESPRESSO (FRESH BREW COFFEE) | | | 12oz | 12 oz | 10 oz | 10 oz | 9 oz | 9 oz | 8 1/4 oz | 8 1/4 oz | 7 oz | 7 oz |
|-------------------------------------|---|-------|---------|-------|---------|-------|---------|-------|----------|----------|---------|-------|
| Parameter Name | Function | Units | Regular | Large | Regular | Large | Regular | Large | Regular | Large | Regular | Large |
| INFUSION TIME | Delay after coffee & water are added to brew chamber before brewer closes | .1s | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| COFFEE START TIME | Delay before the Coffee ingredient is dispensed | .1s | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CWTR START TIME 1 | Delay before the 2nd shot of Coffee Water is dispensed | .1s | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| CWTR START TIME 2 | Delay before the 1st shot of Coffee Water is dispensed | .1s | 15 | 20 | 13 | 17 | 11 | 15 | 10 | 14 | 9 | 12 |
| WATER TIME | Coffee brewer dispense valve open duration. The water time is split into 2 equal shots of water | .1s | 38 | 50 | 31 | 42 | 28 | 38 | 26 | 34 | 22 | 29 |
| M&S WATER TIME | Milk & Sugar valve opening time | .1s | 18 | 24 | 15 | 20 | 14 | 18 | 12 | 17 | 11 | 14 |
| SUGAR TIME | Auger run time for Optional ingredient if selected | .1s | 17 | 22 | 14 | 19 | 13 | 17 | 11 | 15 | 10 | 13 |
| SUGAR ADJUSTMENT | Increment applied to milk auger run time when extra milk selected | .1s | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MILK TIME | Auger run time for Optional ingredient if selected | .1s | 15 | 20 | 12 | 17 | 11 | 15 | 10 | 14 | 9 | 12 |
| MILK ADJUSTMENT | Increment applied to milk auger run time when extra milk is selected | .1s | 3 | 5 | 2 | 4 | 2 | 4 | 2 | 3 | 2 | 3 |
| COFFEE ING TIME | Coffee Ingredient Auger Control (30 = 12.5 - 13g) | .1s | 17 | 22 | 14 | 18 | 12 | 17 | 11 | 15 | 10 | 13 |
| VALVE FACTOR | Balancing factor to account for difference in flow rate between Milk/Sugar valve and brewer valve. If white/sugar drink is smaller than black version increase VALVE FACTOR and vice versa. Range 8-14. | ratio | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| PUMP 1 DURATION | Duration of first air pump operation | .1s | 20 | 24 | 17 | 20 | 15 | 18 | 14 | 17 | 12 | 14 |

| | | | | | | | | | | | | |
|------------------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| PUMP 1 DELAY | Inactive period following first air pump operation | .1s | 40 | 47 | 33 | 39 | 30 | 35 | 28 | 32 | 23 | 27 |
| PUMP 2 DURATION | Duration of second air pump operation | .1s | 15 | 18 | 13 | 15 | 11 | 14 | 10 | 12 | 9 | 11 |
| PUMP 2 DELAY | Inactive period following second air pump operation | .1s | 30 | 35 | 25 | 29 | 23 | 26 | 21 | 24 | 18 | 20 |
| MIXER TIME | Run time for coffee mixer motor referenced to the beginning of the first air pump activity | .1s | 60 | 71 | 50 | 59 | 45 | 53 | 51 | 59 | 35 | 41 |
| HOT WATER TIME | Run time for hot water directly into cup | .1s | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BLACK DRAIN TIME | Idle time before head retracts following dispense of selection with no optional components. | .1s | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| WHITE DRAIN TIME | Idle time before head retracts following dispense of selection where milk or sugar have been selected | .1s | 20 | 20 | 22 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| OP: Sugar Mod | Manager level control applied to SUGAR TIME. The actual sugar auger run time will be SUGAR TIME x OP: Sugar Mod/100 | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| OP: Milk Mod | Manager level control applied to MILK TIME. The actual milk auger run time will be MILK TIME x OP: Milk Mod/100 | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| OP: Coffee Mod | Manager level control applied to COFFEE TIME. The actual sugar auger run time will be COFFEE TIME x OP: Coffee Mod/100 | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

| CAFÉ MOCHA (FRESH BREW COFFEE) | | | 12oz | 12 oz | 10 oz | 10 oz | 9 oz | 9 oz | 8 1/4 oz | 8 1/4 oz | 7 oz | 7 oz |
|---------------------------------------|---|-------|---------|-------|---------|-------|---------|-------|----------|----------|---------|-------|
| Parameter Name | Function | Units | Regular | Large | Regular | Large | Regular | Large | Regular | Large | Regular | Large |
| COFFEE TIME | Coffee Ingredient Auger Control | 1.0s | 17 | 22 | 14 | 18 | 12 | 17 | 11 | 15 | 10 | 13 |
| COFFEE START TIME | Delay before the Coffee ingredient is dispensed | .1s | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CWTR START TIME 1 | Delay before the 2nd shot of Coffee Water is dispensed | .1s | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CWTR START TIME 2 | Delay before the 1st shot of Coffee Water is dispensed | .1s | 23 | 30 | 19 | 25 | 17 | 23 | 15 | 21 | 13 | 18 |
| COFFEE WATER | Coffee brewer dispense valve open duration. The water time is split into 2 equal shots of water | 0.1s | 38 | 50 | 31 | 42 | 28 | 38 | 26 | 34 | 22 | 29 |
| COFFEE MIXER TIME | Run time for coffee mixer motor referenced to the beginning of the first air pump activity | 0.1s | 70 | 82 | 58 | 68 | 53 | 62 | 48 | 56 | 41 | 48 |
| TOPPING TIME | Auger run time for ingredient | 0.1s | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CHOCOLATE TIME | Auger run time for ingredient | 0.1s | 23 | 35 | 19 | 29 | 17 | 26 | 16 | 24 | 13 | 20 |
| CHOC WATER TIME | Choc/Topping dispense valve open duration | 0.1s | 38 | 50 | 31 | 42 | 28 | 38 | 26 | 34 | 22 | 29 |
| CHOC MIXER TIME | Run time for choc/topping mixer motor | 0.1s | 45 | 60 | 38 | 50 | 34 | 45 | 31 | 41 | 26 | 35 |
| BREWER START | Brewer cycle start time | 0.1s | 80 | 94 | 66 | 78 | 60 | 71 | 55 | 65 | 47 | 55 |
| PUMP 1 DURATION | Duration of first air pump operation | 0.1s | 35 | 41 | 29 | 34 | 26 | 31 | 24 | 28 | 20 | 24 |
| PUMP 1 DELAY | Inactive period following first air pump operation | 0.1s | 50 | 59 | 42 | 49 | 38 | 44 | 34 | 41 | 29 | 34 |
| PUMP 2 DURATION | Duration of second air pump operation | 0.1s | 40 | 47 | 33 | 39 | 30 | 35 | 28 | 32 | 23 | 27 |
| PUMP 2 DELAY | Inactive period following second air pump operation | 0.1s | 40 | 47 | 33 | 39 | 30 | 35 | 28 | 32 | 23 | 27 |
| SUGAR TIME | Auger run time for Optional ingredient if selected | 0.1s | 17 | 22 | 14 | 19 | 13 | 17 | 11 | 15 | 10 | 13 |
| SUGAR WTR TIME | Sugar valve opening time | 0.1s | 30 | 35 | 25 | 29 | 23 | 26 | 21 | 24 | 18 | 20 |
| SUGAR MIXER TIME | 0 | 0.1s | 40 | 47 | 33 | 39 | 30 | 35 | 28 | 32 | 23 | 27 |

| | | | | | | | | | | | | |
|-----------------|--|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| MILK WTR TIME | 0 | 0.1s | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MILK MIXER TIME | 0 | 0.1s | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| OP: Topping Mod | Manager level control applied to TOPPING TIME. The actual topping auger run time will be TOPPING TIME x OP: Topping Mod/100 | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| OP: Choc Mod | Manager level control applied to CHOCOLATE TIME. The actual chocolate auger run time will be CHOCOLATE TIME x OP: Choc Mod/100 | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

| CAPPUCCINO (FRESH BREW COFFEE) | | | 12oz | 12 oz | 10 oz | 10 oz | 9 oz | 9 oz | 8 1/4 oz | 8 1/4 oz | 7 oz | 7 oz |
|---------------------------------------|---|-------|---------|-------|---------|-------|---------|-------|----------|----------|---------|-------|
| Parameter Name | Function | Units | Regular | Large | Regular | Large | Regular | Large | Regular | Large | Regular | Large |
| MILK START | Start time topping & sugar components. Referenced to t=0 | .1s | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| INFUSION TIME | Delay after coffee & water are added to brew chamber before brewer closes | .1s | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| COFFEE START TIME | Delay before the Coffee ingredient is dispensed | .1s | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CWTR START TIME 1 | Delay before the 2nd shot of Coffee Water is dispensed | .1s | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CWTR START TIME 2 | Delay before the 1st shot of Coffee Water is dispensed | .1s | 23 | 30 | 19 | 25 | 17 | 23 | 15 | 21 | 13 | 18 |
| WATER TIME | Coffee brewer dispense valve open duration. The water time is split into 2 equal shots of water | .1s | 38 | 50 | 31 | 42 | 28 | 38 | 26 | 34 | 22 | 29 |
| MILK/SUGAR WATER TIME | Topping dispense valve open duration | .1s | 30 | 40 | 25 | 33 | 23 | 30 | 21 | 28 | 18 | 23 |
| COFFEE ING TIME | Coffee Ingredient Auger Control | .1s | 21 | 28 | 17 | 23 | 16 | 21 | 14 | 19 | 12 | 16 |
| COFFEE MIXER TIME | Run time for coffee mixer motor referenced to the beginning of the first air pump activity | .1s | 30 | 40 | 25 | 33 | 23 | 30 | 21 | 28 | 18 | 23 |
| MILK MIXER TIME | Run time for milk mixer motor | .1s | 60 | 65 | 50 | 55 | 45 | 50 | 40 | 45 | 40 | 45 |
| SUGAR TIME | Auger run time for Optional ingredient if selected | .1s | 17 | 22 | 14 | 19 | 13 | 17 | 11 | 15 | 10 | 13 |
| SUGAR ADJUSTMENT | Increment applied to sugar auger run time when extra sugar selected | .1s | 13 | 17 | 11 | 14 | 10 | 13 | 9 | 12 | 8 | 10 |
| MILK TIME | Auger run time for Topping Ingredient | .1s | 40 | 54 | 33 | 45 | 30 | 41 | 28 | 37 | 23 | 31 |
| PUMP 1 DURATION | Duration of first air pump operation | .1s | 35 | 41 | 29 | 34 | 26 | 31 | 24 | 28 | 20 | 24 |
| PUMP 1 DELAY | Inactive period following first air pump operation | .1s | 50 | 59 | 42 | 49 | 38 | 44 | 43 | 41 | 29 | 34 |
| PUMP 2 DURATION | Duration of second air pump operation | .1s | 40 | 47 | 33 | 39 | 30 | 35 | 28 | 32 | 23 | 27 |
| PUMP 2 DELAY | Inactive period following second air pump operation | .1s | 40 | 47 | 33 | 39 | 30 | 35 | 28 | 32 | 23 | 27 |

| | | | | | | | | | | | | |
|----------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| HOT WATER TIME | Run time for hot water directly into cup | .1s | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| OP: Sugar Mod | Manager level control applied to SUGAR TIME. The actual sugar auger run time will be SUGAR TIME x OP: Sugar Mod/100 | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| OP: Milk Mod | Manager level control applied to TOPPING TIME. The actual topping auger time will be TOPPING TIME x OP: Milk Mod/100 | % | 100 | 100 | 22 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| OP: Coffee Mod | | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| OP: Water Mod | Manager level control applied to water times. The actual dispense valve open times will be <TIME> x OP: Water Mod/100 | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

| CAFÉ LATTE (FRESH BREW COFFEE) | | | 12oz | 12 oz | 10 oz | 10 oz | 9 oz | 9 oz | 8 1/4 oz | 8 1/4 oz | 7 oz | 7 oz |
|---------------------------------------|---|-------|---------|-------|---------|-------|---------|-------|----------|----------|---------|-------|
| Parameter Name | Function | Units | Regular | Large | Regular | Large | Regular | Large | Regular | Large | Regular | Large |
| COFFEE ING TIME | Coffee Ingredient Auger Control | .1s | 21 | 27 | 17 | 23 | 15 | 21 | 14 | 19 | 12 | 16 |
| INFUSION TIME | Delay after coffee & water are added to brew chamber before brewer closes | .1s | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| COFFEE START TIME | Delay before the Coffee ingredient is dispensed | .1s | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CWTR START TIME 1 | Delay before the 2nd shot of Coffee Water is dispensed | .1s | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CWTR START TIME 2 | Delay before the 1st shot of Coffee Water is dispensed | .1s | 23 | 30 | 19 | 25 | 17 | 23 | 15 | 21 | 13 | 18 |
| WATER TIME | Coffee brewer dispense valve open duration. The water time is split into 2 equal shots of water | .1s | 38 | 50 | 31 | 42 | 28 | 38 | 26 | 34 | 22 | 29 |
| PUMP 1 DURATION | Duration of first air pump operation | .1s | 31 | 41 | 26 | 34 | 23 | 31 | 21 | 28 | 18 | 24 |
| PUMP 1 DELAY | Inactive period following first air pump operation | .1s | 44 | 58 | 36 | 49 | 33 | 44 | 30 | 40 | 26 | 34 |
| PUMP 2 DURATION | Duration of second air pump operation | .1s | 35 | 46 | 29 | 39 | 26 | 35 | 24 | 32 | 20 | 27 |
| PUMP 2 DELAY | Inactive period following second air pump operation | .1s | 35 | 46 | 29 | 39 | 26 | 35 | 24 | 32 | 20 | 27 |
| HOT WATER TIME | Run time for hot water directly into cup | .1s | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| COFFEE MIXER TIME | Run time for coffee mixer motor referenced to the beginning of the first air pump activity | .1s | 45 | 60 | 38 | 50 | 34 | 45 | 31 | 41 | 26 | 35 |
| MILK START | Start time topping & sugar components. Referenced to t=0 | .1s | 103 | 137 | 86 | 114 | 77 | 103 | 71 | 94 | 60 | 80 |
| MILK TIME | Auger run time for Topping Ingredient | .1s | 40 | 54 | 33 | 45 | 30 | 41 | 28 | 37 | 23 | 31 |
| MILK/SUGAR WATER TIME | Topping dispense valve open duration | .1s | 30 | 40 | 25 | 33 | 23 | 30 | 21 | 28 | 18 | 23 |
| SUGAR TIME | Auger run time for Optional ingredient if selected | .1s | 17 | 22 | 14 | 19 | 13 | 17 | 12 | 15 | 10 | 13 |
| SUGAR ADJUSTMENT | Increment applied to sugar auger run time when extra sugar selected | .1s | 13 | 17 | 11 | 14 | 10 | 13 | 9 | 12 | 8 | 10 |

| | | | | | | | | | | | | |
|-----------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| MILK MIXER TIME | Run time for milk mixer motor | .1s | 45 | 60 | 38 | 50 | 34 | 45 | 31 | 41 | 26 | 35 |
| OP: Sugar Mod | Manager level control applied to SUGAR TIME. The actual sugar auger run time will be SUGAR TIME x OP: Sugar Mod/100 | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| OP: Milk Mod | Manager level control applied to TOPPING TIME. The actual topping auger time will be TOPPING TIME x OP: Milk Mod/100 | % | 100 | 100 | 22 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| OP: Coffee Mod | Manager level control applied to COFFEE ING TIME. The actual coffee auger run time will be COFFEE ING TIME x OP: Coffee Mod/100 | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| OP: Water Mod | Manager level control applied to water times. The actual dispense valve open times will be <TIME> x OP: Water Mod/100 | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

| FRENCH VANILLA CAPP. | | | 12oz | 12 oz | 10 oz | 10 oz | 9 oz | 9 oz | 8 1/4 oz | 8 1/4 oz | 7 oz | 7 oz |
|-----------------------------|--|-------|---------|-------|---------|-------|---------|-------|----------|----------|---------|-------|
| Parameter Name | Function | Units | Regular | Large | Regular | Large | Regular | Large | Regular | Large | Regular | Large |
| PREMIX TIME | Auger run time for ingredient | .1s | 60 | 80 | 50 | 67 | 45 | 60 | 41 | 55 | 35 | 47 |
| WATER TIME | Water dispense valve open duration | .1s | 100 | 130 | 84 | 109 | 76 | 98 | 68 | 90 | 59 | 76 |
| SUGAR TIME | Auger run time for Optional ingredient if selected | .1s | 17 | 22 | 14 | 19 | 13 | 17 | 11 | 15 | 10 | 13 |
| SUGAR ADJUSTMENT | Increment applied to sugar auger run time when extra sugar selected | .1s | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SUGAR WATER | Increment applied to milk auger run time when extra milk selected | .1s | 25 | 29 | 21 | 24 | 19 | 22 | 17 | 20 | 15 | 17 |
| SUGAR START | Referenced to the start of water time above | .1s | 40 | 47 | 33 | 39 | 30 | 35 | 28 | 32 | 23 | 27 |
| MIXER TIME | 0 | .1s | 110 | 140 | 94 | 119 | 86 | 108 | 78 | 100 | 69 | 86 |
| MIXER START | 0 | .1s | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| OP: Sugar Mod | Manager level control applied to SUGAR TIME. The actual sugar auger run time will be SUGAR TIME x OP: Sugar Mod/100 | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| OP: Milk Mod | Manager level control applied to MILK TIME. The actual milk auger run time will be MILK TIME x OP: Milk Mod/100 | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| OP: Tea Mod | Manager level control applied to TEA TIME. The actual tea auger run time will be TEA TIME x OP: Tea Mod/100 | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| OP: Water Mod | Manager level control applied to WATER TIME. The actual dispense valve open time will be WATER TIME x OP: Water Mod/100. | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

| ENGLISH TOFFEE | | | 12oz | 12 oz | 10 oz | 10 oz | 9 oz | 9 oz | 8 1/4 oz | 8 1/4 oz | 7 oz | 7 oz |
|-----------------------|---|-------|---------|-------|---------|-------|---------|-------|----------|----------|---------|-------|
| Parameter Name | Function | Units | Regular | Large | Regular | Large | Regular | Large | Regular | Large | Regular | Large |
| Incred. TIME | Auger run time for ingredient | .1s | 60 | 80 | 50 | 67 | 45 | 60 | 41 | 55 | 35 | 47 |
| WATER TIME | Water dispense valve open duration | .1s | 100 | 130 | 84 | 109 | 76 | 98 | 68 | 90 | 59 | 76 |
| MIXER START | Mixer start time | .1s | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| MIXER TIME | Mixer motor run time | .1s | 110 | 140 | 94 | 119 | 86 | 108 | 78 | 100 | 69 | 86 |
| OP: Chocolate Mod | Manager level control applied to CHOCOLATE TIME. The actual chocolate run time will be CHOCOLATE TIME x OP: Chocolate Mod/100 | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| OP: Water Mod | Manager level control applied to WATER TIME. The actual dispense valve open time will be WATER TIME x OP: Water Mod/100 | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

| TEA | | | 12oz | 12 oz | 10 oz | 10 oz | 9 oz | 9 oz | 8 1/4 oz | 8 1/4 oz | 7 oz | 7 oz |
|------------------|--|---------------|---------|-------|---------|-------|---------|-------|----------|----------|---------|-------|
| Parameter Name | Function | Units | Regular | Large | Regular | Large | Regular | Large | Regular | Large | Regular | Large |
| TEA TIME | Auger run time for tea ingredient | .1s | 12 | 15 | 10 | 12 | 9 | 11 | 8 | 10 | 7 | 9 |
| TEA ADJUSTMENT | Increment applied to Tea auger run time when strong selected | .1s | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| WATER TIME | Tea water dispense valve open duration | .1s | 87 | 116 | 79 | 97 | 65 | 87 | 60 | 80 | 51 | 68 |
| WATER SPLIT | Fraction of total water time, above, to be allocated to the milk sugar valve if mil or sugar is selected | % | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| SUGAR TIME | Auger run time for Optional ingredient if selected | .1s | 17 | 22 | 14 | 19 | 13 | 17 | 11 | 15 | 10 | 13 |
| SUGAR ADJUSTMENT | Increment applied to sugar auger run time when extra sugar selected | .1s | 13 | 17 | 11 | 14 | 10 | 13 | 9 | 12 | 8 | 10 |
| MILK TIME | Auger run time for Optional ingredient if selected | .1s | 20 | 26 | 17 | 20 | 15 | 19 | 14 | 17 | 12 | 15 |
| MILK ADJUSTMENT | Increment applied to milk auger run time when extra milk selected | .1s | 5 | 5 | 5 | 5 | 4 | 4 | 4 | 4 | 3 | 3 |
| VALVE FACTOR | Compensating variable to account for differing flow rates between milk/sugar and tea valves. If white/sugar drink is bigger than black version decrease, if bigger increase. | Ratio x 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| OP: Sugar Mod | Manager level control applied to SUGAR TIME. The actual sugar auger run time will be SUGAR TIME x OP: Sugar Mod/100 | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| OP: Milk Mod | Manager level control applied to MILK TIME. The actual milk auger run time will be MILK TIME x OP: Milk Mod/100 | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| OP: Tea Mod | Manager level control applied to TEA TIME. The actual tea auger run time will be TEA TIME x OP: Tea Mod/100 | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| OP: Water Mod | Manager level control applied to WATER TIME. The actual dispense valve open time will be WATER TIME x OP: Water Mod/100. | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

| CHAI TEA / LATTE | | | 12oz | 12 oz | 10 oz | 10 oz | 9 oz | 9 oz | 8 1/4 oz | 8 1/4 oz | 7 oz | 7 oz |
|-------------------------|---|--------------|----------------|--------------|----------------|--------------|----------------|--------------|----------------|--------------|----------------|--------------|
| Parameter Name | Function | Units | Regular | Large | Regular | Large | Regular | Large | Regular | Large | Regular | Large |
| TEA TIME | Auger run time for tea ingredient | .1s | 38 | 50 | 31 | 42 | 28 | 38 | 26 | 34 | 22 | 29 |
| WATER TIME | Tea water dispense valve open duration | .1s | 87 | 116 | 79 | 97 | 65 | 87 | 60 | 80 | 51 | 68 |
| MIXER START | Chocolate mixer start time | .1s | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| MIXER TIME | Chocolate mixer motor run time | .1s | 90 | 120 | 80 | 100 | 70 | 90 | 60 | 80 | 50 | 70 |
| OP: Tea Mod | Manager level control applied to TEA TIME. The actual tea auger run time will be TEA TIME x OP: Tea Mod/100 | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| OP: Water Mod | Manager level control applied to WATER TIME. Dispense valve open time will be WATER TIME x OP: Water Mod/100. | % | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

IMPORTANT NOTE:

If the tea selection is to be substituted with a Chai Tea Latte or a similar product, the mixing station will need to be 'whipped', in which case the following parts & modification will be required:-

Parts required:

- a) 1217354.001 Whipper Motor Assembly - Beige
- b) 4214445 Impellor disc
- c) 4214449 Shaft Seal - Red

Electrical wiring modification:

There is no electrical provision to drive a whipper motor for the 'Tea' mixing station. It will therefore be necessary to run a pair of wires from the 'E' hot water delivery solenoid valve (5th valve from left) to operate the whipper motor; such that the Red/White wire connects to the '+' terminal and the Gray/Orange wire to the '-' terminal of the whipper motor.

SET DATE AND TIME

Entering SET DATE & TIME provides access to a sub-menu consisting of SET DATE and SET TIME.

Set Date

The SET DATE option allows the programmer to change the displayed date.

Set Time

The SET TIME option allows the programmer to change the displayed time.

The battery fitted to the FMCU control board has an open circuiting link to prevent discharge during extended periods of storage. When commissioning a new board the links labeled CLOCK BAT on the control board must be fitted otherwise the board will not maintain the time when power is removed.

The FMCU control board contains a lithium battery. Care should be taken to dispose of this in an appropriate manner should a board be scrapped. The board should not be disposed of by burning.

SET PRICING MODE

Entering SET MODB PRICING allows the programmer to select one of the following Pricing modes:

- ▶ Prices Apply
- ▶ All Drinks Free

The selected mode becomes the default setting to which the machine will return after timed activities.

CHANGE PRICES

Entering CHANGE PRICES provides access to the following sub-menu:

- ▶ LARGE PRICES
- ▶ REGULAR PRICES
- ▶ SET ALL PRICES
- ▶ CUP PRICE (DISCOUNT)

Entering LARGE PRICES (Single Cup) or REGULAR PRICE provides access to a list of drinks with corresponding prices. For Large drink, the price of a displayed drink can be changed by pressing ENTER, altering the value shown, and pressing ENTER again.

NOTE: CUP PRICE (DISCOUNT)

Entering CUP PRICE allows the programmer to select a discount. The value entered here is deducted from the normal price of a drink when there is no requirement for a dispensed cup, i.e. when customers' own cups or mugs are used.

INHIBIT DRINK

Entering INHIBIT DRINK provides access to a sub-menu of drinks. The status of a displayed drink can be changed by pressing ENTER, altering the status by using the UP or DOWN keys, and pressing ENTER again. For example, COFFEE: STATUS=ON, makes coffee available for vending.

ALTER DRINK NAME

The ALTER DRINK NAME menu allows the name displayed when a particular drink is selected to be changed to one of a number or pre-defined alternatives.

To avoid confusion the drink retains its original name as this submenu. The alternative name will be used to reference that selection for all other display and audit activities. The reason for retaining the original reference to the name in this submenu is that for example it could be that both drinks are to be CHOCOLATE temporarily. Once the VANILLA CAPP. name has been changed to CHOCOLATE it would not be possible to tell the altered drink from the existing one when it came time to change it back again.

The list of alternative drink names is as follows:

| | | |
|----------------|----------------|---------------|
| PREMIUM COFFEE | VANILLA CAPP | CAFÉ MOCHA |
| INSTANT COFFEE | LEMON TEA | MUSHROOM SOUP |
| LG COFFEE | SOUP | CAPPUCCINO |
| FD COFFEE | WHIPPED COFFEE | BEEF SOUP |
| FRESH COFFEE | COFFEE | TOMATO SOUP |
| GROUND COFFEE | CHICKEN SOUP | VEG. SOUP |
| CHAI LATTE | EXPRESSO X2 | CHOC-O-CINO |
| TOFFEE CAPP | CAFÉ CREAME | |
| | ESPRESCHOCO | |

Note: Changing a drinks name does not affect the actual parameters that control the drink. It only affects the name displayed when the selection is chosen or audited. If the name of the chocolate selection is changed to VANILLA CAPP, the chocolate ingredient motor, valves, and mixer will still run while the selection is taken.

TIMED ACTIVITIES

The TIMED ACTIVITIES option allows the machine to be set to different states on a timed basis. The states currently available are as follows:

- Free – causes the machine to offer drinks free.
- Flush – causes the machine to flush itself.
- Shutdown – causes the machine to stop vending.
- Unused – timed activity slot not used, operate as normal.
- Flush Brewer – causes the machine to clean Brewer
- Economy – causes the machine to temporarily shutdown until a drink is requested. The water in the boiler is maintained at a reduced temperature and a message prompting potential users to press start and so cause the machine to heat and return to operation is displayed. After a period of inactivity the machine returns to low power mode.

Entering TIMED ACTIVITIES provides access to a sub-menu consisting of ten timed activities. Two types of timing routine, Daily and Block, are available for each activity.

- Daily

DAILY 0930 1730
MON>FRI REDUCED

The above display describes a timed activity where, between 9:30am and 5:30pm, Monday to Friday, the machine operates in a reduced price mode.

- Block

BLOCK 0930 MON>
1730 FRI REDUCED

The above display describes a timed activity where, between 9:30am on Monday and 5:30pm on Friday, the machine operates continually in the reduced prices mode.

When entering a FLUSH state into a daily routine, a comma will appear between the start and end times, indicating that flushing will occur at the two specified times and not between them. Where only one SELF CLEAN per day is required, the time entered in the second slot should be 1 minute later than the first. If both times entered are the same, flushing may not take place.

Note: The FLUSH state **must not** be entered in a block routine.

The displayed activity can be changed by altering the data using the LEFT, RIGHT, UP and DOWN keys. With the correct data entered, the ENTER key is pressed to move to the next activity or ESC (escape) pressed to leave.

TEMPERATURE SETTINGS

Entering TEMP SETTINGS provides access to the following sub-menu:

- DESIRED TEMP – allows the desired water heater temperature to be set.

- ▶ **MINIMUM TEMPERATURE** – allows the minimum temperature at which vending may commence to be set.

The above values are set in degrees Fahrenheit. The minimum possible temperature the control system can measure is 135°F (57°C), and it is not possible to set a desired temperature below this value. The value read by the analog to digital converter on the control board corresponding to the temperature set is displayed in parenthesis next to the °C value.

OUTPUT TEST

The OUTPUT TEST allows any of the output devices to be turned on and off to aid with diagnostics. On entering output test, the display will show the device name, a prompt indicating that ↑↓ and ENTER keys are active, and a number indicating the position of the device in the list. The arrow keys are used to scroll through the list of devices while the ENTER key will activate and de-activate the device.

Note 1: It should be noted that some specific devices specifically the SSR, Cup Spiral Motor and the Inlet Valves may not respond as anticipated to OUTPUT TEST. The software controlling these devices is constantly running and will quickly override the control action of the output test. The output test function for the dispense arm is another special case. If either of the dispense arm actuators (DISPENSE ARM or DISP. ARM FORWARD) is invoked in output test, the arm will advance to ready to vend position, and then return to the home position.

Note 2: The output test function will not work if the engineers program was entered when the machine was powered up with the ENG LINK in place. See section 3 paragraph 4.

INPUT TEST

The INPUT TEST function allows the state of the control board input signals to be examined. The input test menu is common to both versions of the Hot Beverage Merchandiser line and as such contains references to all possible input devices. The state of brewer position index inputs will be visible even if the brewers themselves are not fitted on a particular version.

On entering INPUT TEST, the display will show the device name of the first device in the list and logical state associated with the condition of its input. That is to say the meaning of the state of the input is displayed rather than a simple high or low value. Thus the values displayed for the waste probe are WET or DRY. The screen will dynamically reflect the condition of the input. The ↑↓ keys are used to step through each input in turn. The following input signals can be examined:

| INPUT DEVICE | STATE1 | STATE2 |
|--|-----------------|--------------------|
| Coffee brewer index | CBREWER HOME | CBREWER NOT HOME |
| | CUPS AVAILABLE | CUPS NOT AVAILABLE |
| | CUP DROP IN POS | CUP DROP OUT POS |
| Dispense arm 'forward-ready-to-Vend position' micro switch | IN V POS | NOT IN V POS |
| Dispense arm 'HOME position' micro switch | ARM NOT HOME | DISP ARM HOME |
| Boiler level probe | BOILER IS WET | BOILER IS DRY |
| Waste bucket probe | WASTE IS WET | WASTE IS DRY |
| User cup sensor | CUPSNS:NO CUP | CUPSNS: CUP PRES |
| Brewer pressure switch | NO PRESSURE | PRESSURE |
| Jug switch | 0 (Normal) | 1 (jug or free) |
| Free input (J6 pin 13) | OFF | ON |
| Security (J6 pin 10) | OFF | ON |

SET PRODUCT CONSTANTS

The Hot Beverage Merchandiser control system maintains a counter for the amount of each ingredient consumed. For these counters to work correctly, the throw rate in grams per second actually dispensed from each ingredients canister must be input. One way to determine the correct value is to catch the ingredient dispensed during ten

vends of a particular type and then divide the weight of ingredients so dispensed by the auger run time figures set for that vend. For this to work all scale factors must be set to 100.

If the ingredient counters are not required this facility can safely be ignored. The values entered are for audit purposes only and do not affect the drink formulations or machine operation in any way.

MACHINE STATUS

Entering MACHINE STATUS provides access to the status of the following machine features.

- ▶ TEMP STATUS
- ▶ MEMORY USAGE*
- ▶ I²C HEALTH
- ▶ SOFTWARE VERSION

TEMP STATUS

The display provides information relating to the heater control circuit. A power (PWR) level value and a graphical representation of the drive waveform to the heater are displayed. The temperature reading in degrees Fahrenheit derived from the thermistor probe in the water boiler is displayed along with the analog-to-digital converter value from which the temperature was calculated in parenthesis.

I²C HEALTH

This display provides information relating to the I²C serial link between the Controller and RIO Boards. A percentage "health" reading is given, indicating the success rate of communication of the link. A reading of less than 100% may indicate the presence of electrical noise. The number of negative acknowledgements (NACKS) is also recorded.

SOFTWARE VERSION

These displays indicate the version of the software installed on the Controller Board. (Program + EPROM = Firmware). The firmware version US-WIT-XX should be quoted when seeking advice.

SET DRY VENDS

Entering SET DRY VENDS provides access to the following sub-menu:

VENDS ARE WET

All vends are dispensed with water as normal.

VENDS ARE DRY

All vends are dispensed without water. This allows ingredients to be weighed. If a multi-ingredient drink is selected, only those ingredients will be vended.

SERIAL NUMBER

Entering SERIAL NUMBER accesses the following sub-menu:

M/C SERIAL NUMBER

The machine serial number consists of 8 digits and identifies the machine on audit trails.

M/C AUDIT NUMBER

The machine audit number indicates the number of audits carried out to date.

CONFIGURE MACHINE

Entering CONFIGURE M/C provides access to the following machine configuration sub-menu headings:

GENERAL SETTINGS

The GENERAL SETTINGS menu provides access to a number of diverse parameters controlling machine operation that do not naturally group with any of the other control variables.

| Parameter | Possible Values |
|----------------------|---|
| SILENT KEYS | 0 (default) – Sounds a beep. 1 – Keys are silent. |
| TOKEN ONLY | 0 (default) – Messages appropriate to coins/card system or free. 1 – Messages appropriate to token only operation. |
| CHIPPER/CHIPKNIP | 1 (default) – Suppress credit display if just card system fitted. 0 – Normal display of credit. |
| FLUSH ALARM | 0 (default) – Sound loud siren while flushing. 1 – Sound siren quietly while flushing. |
| WATER SHOT START | 0 (default) – Time after a fresh coffee dispense cycle ends that a grout clearing water shot starts. Consult factory before changing. |
| WATER SHOT DUR | 0 (default) – Duration in 1/100 seconds that the water shot described above lasts. Consult factory before changing. |
| EARLY WATER SHOT DUR | 15 (default) – Time in 1/10 seconds for the duration of the water shot before start of second air pump sequence |
| BELT WARN TIME | 700 (default) – Time, in 1/100 seconds, after the pressure sensor should have reported the coffee brew chamber depressurized but has not, that a “New filter belt” warning is displayed. |
| BELT FAULT TIME | 2000 (default) – Time, in 1/100 seconds, after the pressure sensor should have reported the coffee brew chamber depressurized but has not, that a “New filter belt” fault occurs. |
| ROTATION LIMIT | 100 (default) – Time, in 1/100 seconds, after the pressure sensor should have reported the coffee brew chamber depressurized but has not, that a flag is set to perform an extra rotation of the brewer at the end of the next brewer drink cycle. |
| NO BELT WARNING | 1 (default) - Do not display a message on the LCD when the filter needs changing. 0 – Display a message on the LCD when the filter needs changing. |
| ENG MODE TIMEOUT | 0 (default) – Do not automatically exit engineer’s mode. Factory default. 30 – Time in 1/10 seconds after which, if no key is pressed exit from the engineers program will commence. |
| MAX EXTRA CUPS | 2 (default) – Number of retries at dispensing a cup before a long delay until next cup occurs to deter theft. |
| SIMCARD LOCATION | 0 (default) J4 - Location of attached smart memory (simcard) to save configuration data. J6 - Location of attached smart memory (simcard) to save configuration data. |
| CURRENCY | 3 (default) – Controls The symbol printed on the LCD before monetary values. € \$ £ etc. |
| FREE INPUT | 0 (default) – Disable free input on J6 pin 13. 1 – Enable free input on J6 pin 13. (Disable/Enable exist because in the event of static damage machine can continue operation if this input is ignored) |
| SECURITY INPUT | 0 (default) – Disable security input on J6 pin 10. 1 – Enable security input on J6 pin 10. (Disable/Enable exist because in the event of static damage machine can continue operation if this input is ignored. Can be unrecoverable if set when damage has already |

| | |
|-------------------|--|
| | occurred.) |
| BREWER WATER CAP | 950 ((default) Maximum open time for brewer water valve 1/10s second. Stops the operator putting too much water in the brewer (if it is set correctly). |
| BREWER EXCESS FAC | 10 (default) This is a factor by which any excess water (>950) will be compensated by, i.e. the difference in the flow rates between 'Coffee Valve' and 'Hot Water' Valve. |
| BREWER ING. CAP | 300 (default) – Maximum run time for coffee motor 1/10s second. Stops the operator putting too much coffee in the brewer (if it is set correctly). |
| TEMP IN CELSIUS | 0 (default) = Fahrenheit 1 = Celsius |
| REGULAR SCALING | 100 (default) – When you press for regular you get the regular drink with this scale factor applied to its settings. This is now somewhat redundant and should be left at the value (170). Changes are best done to the actual drink settings. |
| LARGE SCALING | 100 (default) – When you press for large you get the large drink with this scale factor applied to its settings. This is now somewhat redundant and should be left at the value (170). Changes are best done to the actual drink settings. |

SET MACHINE TYPE

The SET MACHINE TYPE menu provides the means by which the control board software is configured to produce the desired menu and work with the appropriate combination of brewers and whippers present in the machine. This operation must be carried out when fitting a new or replacement board.

On selecting this option, the display will change to one of the following form:

| | |
|--------------|------|
| MACHINE TYPE | # nn |
| ABCD | |

Where ABCDEFGHI is an abbreviated description of the machine configuration and #nn is the number of the configuration for reference purposes. The ↑↓ keys are used to scroll through the list of possible configurations. Pressing ENTER selects the new configuration. While the set up process takes place, the LCD indicates the status of the procedure. On completion, the screen reverts to the SET MACHINE TYPE menu. In order to aid understanding the following table contains an explanation of the abbreviations used.

| Abbreviation | Type # | NO: | Explanation |
|---------------|--------|-----|--------------------------------|
| SFBC | 00 | 1 | Single Fresh Brew Coffee model |
| SFBC + CHLR | 01 | 2 | Not Used |
| INST | 02 | 3 | Instant Model |
| INST + CHLR | 03 | 4 | Not Used |
| INST E | 04 | 5 | Instant Economy |
| INST E + CHLR | 05 | 6 | Not Used |

NOTE: Care should be exercised when using this option, as all previous settings will be lost.

Table 1. Machine Configuration Matrix

| KEY | Config No. | Coffee | Whip Coffee | Tea | Decaf Coffee | Whip Decaf | Espresso | Cappuccino | Café Latte | Moccaccino | Chocolate | Hot Water | Vanilla Cappuccino | Toffee Cappuccino |
|---|------------|--------|-------------|-----|--------------|------------|----------|------------|------------|------------|-----------|-----------|--------------------|-------------------|
| • = instant coffee/tea ◆ = Fresh brew coffee | | | | | | | | | | | | | | |
| INSTANT | 3 | • | • | • | • | • | • | • | • | • | • | • | • | • |
| SFBC | 1 | ◆ | ◆ | • | ◆ | ◆ | ◆ | ◆ | ◆ | • | • | • | • | • |

SET CASH SYSTEM

This option in this sub-menu allows the type of credit device to be selected.

| Display Title | Description |
|-------------------|--|
| MDB PROTOCOL | Used for all standard MDB coin changers, bill validators & cashless systems |
| MDB (ZIP VARIANT) | Used for the European ZIP cashless system |
| MDB SLVE | Used when the coffee machine is to be a standard MDB Universal Satellite Device i.e. payment is made in its host machine |
| MDB SLAVE (SM6) | Used when the coffee machine is to be a MDB Universal Satellite Device where payment is made in its Snack Mart VI host machine |
| NO SYSTEM | Used when the machine has no payment system i.e. it is set for permanent 'FREE VEND' |
| DIGICARD | Not Used |

HARDWARE SETTINGS

This sub-menu allows some machine components to be disabled to allow limited functionality to be restored in the event of a failure. For example in the event that one of the cup sensor PCBs fails, it is possible to inform the control system that these are not fitted. Likewise in the event of a brewer failure setting the COFFEE BREWER to NO will allow any selections not reliant on the brewer to operate. While all possible system components are visible in this sub-menu, irrespective of the machine's configuration, it is only meaningful to ENABLE components that actually exist in the machine. Thus it makes no sense to set TEA BREWER to YES on all-instant machine and indeed will result in an IO MAPPING ERROR.

| Parameter | Function |
|---------------|---|
| CUP SENSORS | Enable/disable user cup sensors. Default is YES sensors fitted. |
| DISPENSE ARM | Enable moving the dispense head. Default is YES. Can be usefully disabled only for diagnostics. The machine cannot operate with this item deselected. |
| TEA BREWER | NOT USED |
| COFFEE BREWER | Enable Coffee Brewer – Default for double fresh brew configurations is YES. Instant and single fresh brew configurations NO. |
| COLD UNIT | NOT USED |
| NO CUP MECH | Allows a machine to operate without a cup unit fitted i.e. reliant on users providing their own cups. Default is NO i.e. there is a cup mechanism fitted. |
| VEND DOOR | YES – Default setting which enables the automatic vend door. NO – Disables the automatic vend door. |

MDB CONFIG

This menu provides the means to modify parameters related to MDB peripherals connected to the machine. At present these are limited to those associated with a change giving mechanism. However as support for additional peripheral is added so additional settings will be added as appropriate.

The following table lists the sub-menus and parameters that are configurable:

| Parameter | Function |
|------------------|--|
| EXACT CHANG LIM | \$2 (default) – This monetary value represents the value of coins remaining in the change tubes below which the EXACT CHANGE message is displayed. NOTE: For the audit system to work correctly it is important that all coins are inserted via the coin insert slot instead of being placed directly in the change tubes. |
| MDB USD ADDRESS | 40 (default) |
| VALIDATOR ESCROW | 000000000000011 (default) |

| | |
|--------------------|--|
| VEND BEFORE CHANGE | NO (default) – Possible values are YES and NO. When set to YES, change will not be given until a vend cycle has taken place. |
| CHANGER MODE | SINGLE VEND (default) - Possible values are SINGLE VEND and MULTI VEND. When set to MULTI VEND, change will only be paid in response to depression of the escrow lever. When set to SINGLE VEND, change will be given automatically following the vend cycle or in response to depression of the escrow lever. |
| MASK AUTO CONFIG | Runs a procedure to carry out automatic configuration of the coin mechanism acceptance masks. |
| EXACT CHG BILLS | 0000000000000000 (default) - Specifies which paper currency (bill or notes) the bill validator will accept. When there is no change present. |
| NORMAL BILLS | 0000000000000011 (default) - Specifies which paper currency (bill or notes) the bill validator will accept with change present. |
| EXACT CHG COINS | <p>0000000000001111 (default) - This variable controls which coins are accepted in circumstances where the exact change message would be displayed. The MDB protocol provides for up to 16 coins. For the purposes of enabling or disabling acceptance, the coins are represented by the letters A through P with A being the least value coin. The acceptance status of each coin is shown by a 1 or 0 below the corresponding letter. One indicates acceptance (1=accept) and zero indicates rejection (0=reject).</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;">PONMLKJIHGFEDCBA 000000000011111</p> </div> <p>Applied to a silver only changer with 5, 10, 20 & 50p coin tubes the above setting will enable acceptance of the 5, 10 & 20p coins.</p> |
| NORMAL COINS | 0000000000011111 (default) - This variable controls which of the coins that an attached changer is programmed to accept should actually be accepted in normal operation i.e. other than exact change mode. For the purpose of changing the coins to be accepted the procedure is the same as for Enable Coins Exact Change above. |
| MAX CREDIT | \$2.50 (default) – This monetary value defines the maximum amount that can be accepted by the mechanism. |

EVA-DTS CONFIG

The EVA-DTS configuration menu provides the means to modify parameters controlling the format and method of auditing the machine. At the time of writing, the machine supports EVA-DTS audit via DDCMP protocol IRDA transceiver or Direct connect. The sub-menus of this menu are:

PREVIOUS AUDIT

On selecting this option, the LCD screen will show a screen detailing the time and date of the last audit. The layout of the screen is as shown below:

NO: XXXX ID: YYYYYY
DD/MM/YY 00:00

Where

- ▶ XXXX represents the audit number maintained by the vending machine and incremented after each audit.
- ▶ YYYYYY represents the data carrier ID.
- ▶ DD/MM/YY is the date the audit took place.
- ▶ hh:mm is the time at which the audit took place.

METHOD OF AUDIT

| Parameter | Function |
|--------------|--|
| AUDIT METHOD | Possible values are: DDCMP - selects infrared or direct connect audit. DISABLED - turns off the audit system. DEX-UCS selects a DEX audit system. |

AUDIT CONFIG

| Parameter | Function |
|-----------------|---|
| SECURITY CODE | Default 0 – Any data carrier may audit the machine. The code is set by a data carrier. Once set by a carrier only a carrier with the appropriate code may access the machine. |
| PASS CODE | Default 0 – Any data carrier may audit the machine. The code is set by a data carrier. Once set by a carrier, only a carrier with the appropriate code may access the machine. |
| STATION ADDRESS | Default 7 – Identifies the unit as a VMC for audit purposes. |

PRODUCT CODES

EVA DTS product code for each selection can be set by the operator if they don't like the default values.

OPERATOR CODE

Use this menu to change the operator's access code. Also refer to PROGRAMMING on page 1.

MANAGER CODE

Use this menu to change the manager's access code. Also refer to PROGRAMMING on page 1.

ENGINEER CODE

Use this menu to change the engineer's access code. Also refer to PROGRAMMING on page 1.

FREE DRINK CODE

Use this menu to create a free drink code which can be used to obtain a 'FREE' vend without having to insert money or opening the door to use the internal keypad.

While the machine is in normal operation, press the 9 button twice on the external keypad followed by the four (4) digit code.

EDIT DRINK MAP

The Edit Drink map facility allows alternative drink recipes to be assigned to the selection buttons. For example the hot Tea selection can be substituted by a Chai Tea/Latte where there is no requirement for sugar & lightener additives. In this example the procedure is as follows:

1. Press the PROG key on the internal keypad
2. Go to the external keypad
3. Enter 4444
4. Scroll down using the '8' key to menu heading EDIT DRINK MAP
5. Display shows: DRINK NUMBER 1:
COFFEE
6. Scroll up using the '2' key to:
DRINK NUMBER 3:
TEA
7. Press 0 (ENTER)
8. The display shows: TEA
↑↓ ENTER OR ESC
9. Scroll down using the '8' key to CHAI LATTE
10. Press 0 (ENTER)

11. The display shows: DRINK NUMBER 3:
CHAI LATTE
12. Press # (ESC)
13. The display shows: COMMIT CHANGES
ENTER=YES, ESC=NO
14. Press 0 (ENTER)
15. The display momentarily shows: INITIALISING DEFAULTS
16. Make any further programming changes to set prices, set cup size etc. etc.

IMPORTANT NOTES:

1. When making any changes to the drink map, all other configuration settings will default to factory values. **ALWAYS MAKE ANY DRINK MAP CHANGES FIRST.**
2. In addition to making the programming recipe substitution the TEA station will also require a whipper motor adding, see details on Pg XX (At foot of Chai Tea recipe chart).

CARD ACTIONS

Available only if a smart card is inserted in the smart card reader. Allows config/audit data to be saved or read from the card.

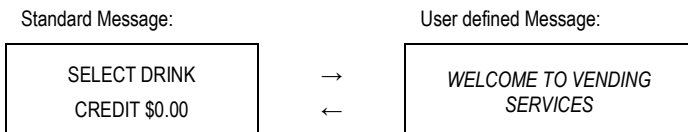
| Display Title | Description |
|---------------|--|
| INSERT CARD | No card present in reader unit, a prompt to insert a card |
| SAVE STRINGS | To download & save all the custom messages stored in the machine's controller memory to the smart card |
| SAVE EVENTS | To download & save all the TIMED ACTIVITIES stored in the machine's controller memory to the smart card |
| SAVE PRICES | To download & save all the DRINK PRICES stored in the machine's controller memory to the smart card |
| SAVE CONFIG | To download & save all the CONFIGURATION DATA stored in the machine's controller memory to the smart card |
| SAVE MACHINE | To download & save ALL the settings stored in the machine's controller memory to the smart card |
| DELETE DATA | To erase any previously stored data from the smart card |
| FORMAT CARD | Erases any previously stored data and reformats the smart card ready to receive data stored in the machine's controller memory. This is also required to format a new smart card before it can be used |
| LOAD STRINGS | To upload & save all the DRINK PRICES stored on the smart card to the machine's controller memory |
| LOAD EVENTS | To upload & save all the TIMED ACTIVITIES stored on the smart card to the machine's controller memory |
| LOAD PRICES | To upload & save all the DRINK PRICES stored on the smart card to the machine's controller memory |
| LOAD CONFIG | To upload & save all the CONFIGURATION DATA stored on the smart card to the machine's controller memory |
| LOAD MACHINE | To upload & save ALL the machine settings stored on the smart card to the machine's controller memory |

NOTE: The 'LOAD' options will not appear unless there the relevant data field has already been downloaded/stored on the smart card

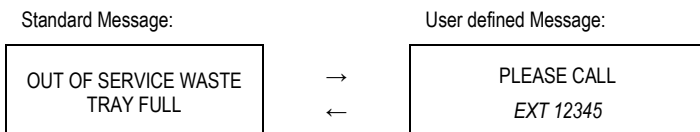
EDITABLE TEXT

1. The Geneva provides two user definable frames of text. These 'frames' are designated the 'Select Message' and the 'Error Message' respectively, are displayed at intervals whenever the machine is displaying the select drink or error screens respectively. Each message consists of 2 lines of 16 characters.

For example Standby Message could alternate between:



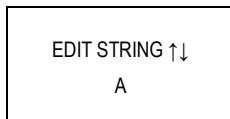
For example Out of Service Message could alternate between:



2. The EDITABLE TEXT menu contains the following sub menus, which can be accessed using the ↑↓ keys:

- a. Edit Select Msg

Allows the programmer to change the line of optional text displayed in the 'select drink' state. On pressing ENTER the display will change to one of the form shown below:



The ↑↓ keys are used to scroll through the available characters. The ← → keys can be used to move the cursor along the line of text.

NOTE: When the correct text has been entered, the ENTER key must be pressed to confirm the changes. Pressing the ESCAPE discards them.

- b. Edit Error Msg

Allows the programmer to change the optional text displayed when the machine is in a fault condition.

- c. Erase Select Msg

Allows the programmer to clear the optional select message text.

- d. Erase Error Msg

Allow the programmer to clear the line of optional Error message text.

DEPRESSURIZE COFFEE BREWER

In the event that the coffee brewer remains in a pressurized state and you wish to quickly depressurize the air remaining in the chamber, there is a facility which overrides the safety pressure switch. The sequence to do this is as follows:-

With DEPRESSURISE CBR showing on the display, press ENTER (0)

The display will show either:

COFFEE BREWER NOT PRESSURISED – in which case powering the machine down/up will cycle the brewer home.

OR

IS BREWER COVER IN POSITION? – This is a safety warning, opening the brewer under pressure will squirt any hot water & coffee grounds from the cylinder base! To proceed further confirmation is required by pressing ENTER (0) a 2nd time.

After pressing the enter key the brewer motor will be switched ON for a moment which will advance the brewer to marginally release the cylinder from the filter platform seal, allowing the pressure to escape. This will be repeated until the pressure switch changes state when the sequence will stop.

To return the brewer to its home position power the machine DOWN for a few seconds then UP again.

COFFEE BREWER

COFFEE BREWER OPERATION

1. The coffee brewer motor is driven a little way to clamp the base of brewing chamber to the surface of the filter platform to seal. This position is determined by the index roller switch and the 2nd dwell in the cam.
2. Water & ground coffee are dispensed into top mixing bowl of brewer unit
3. After the water delivery stops, the brew/fusion delay time starts
4. At the end of the brew/fusion time, the brewer motor drives for a moment to lift the top plunger in to seal off the top of the brewer chamber. This position is determined by the index roller switch and the 3rd dwell in the cam.
5. The 1st stage of the air pump starts and runs for the programmed duration to pressurize the chamber and push the brewed coffee out and into the coffee whipper station
6. At the end of the 1st pumping stage there is a programmed delay, this is to allow the pressure to drop and for the coffee whipper chamber to empty (i.e. not to overflow)
7. At the end of the 1st delay phase the 2nd stage air pump starts, after approximately 1 second it should be possible to hear air pass through into the coffee whipper chamber, having pushed all of the liquid out of the chamber. The remaining pumping time will dry the spent coffee grinds.
8. At the conclusion of the 2nd pumping stage there is a further programmed delay, to further assist the drying process.
9. At the conclusion of the 2nd stage pump delay the air pressure switch is checked, if there is no pressure present, the brewer motor is switched ON to drive the brewer back to its home position, in the process the brew chamber will be lifted above the level of the spent coffee grounds and the filter belt is driven to remove/discard the grounds.

However, if air pressure is still present a waiting/time-out period is started, the pressure switch is then checked at 1 second intervals up to 20 seconds. This is to prevent the chamber opening under pressure and making a mess.

If the pressure subsides at any point up to the 20 seconds, the brewer motor will be switched ON to drive home as normal.

If air pressure is still present after 20 seconds, then the coffee brewer is put out of action, and COFFEE BREWER FAULT is displayed.

A 'BREWER FAULT' condition can be reset by switching the machine OFF and back ON.

However, if the cause of the pressure remaining is not remedied, then the fault condition will be reinstated at some earl point.

TROUBLESHOOTING GUIDELINES

| Problem | Symptom | Remedy |
|---|---|--|
| No Coffee | COFFEE BREWER FAULT displayed – Upon power-up the coffee brewer completes one cycle as normal and stops in home position | The brewer fault condition has been triggered by a 20 second time-out, indicating that the air pressure inside the brewer cylinder is remaining after the vend: 1. Filter Belt Blocked – Replace (p/n 4215265.001) 2. Coffee Grinds are too fine, replace with 17 grind or greater |
| | | The air pressure switch is faulty and is not opening (normally operates to close switch at 4 psi) – Replace switch |
| | COFFEE BREWER FAULT displayed – Upon power-up the coffee brewer runs continuously for approximately 3 ¼ cycles and then stops off the home position | 1. The brewer index switch has failed - replace 2. The signal is not present at J6 of the RIO board – Check wiring/terminals and rectify |
| No Coffee | Coffee Brewer is stalled and is full of coffee grinds | Check that the brewer carriage is pushed fully back and locked into position. Check that belt is being driven correctly by using the 'ADVANCE COFFEE BREWER' key on the internal keypad |
| | | Coffee grinds are not being completely washed through the top mixing bowl. Flush to clear, then; 1. Check/adjust all coffee recipes to be sure the top chamber is rinsed clear 2. Is there a sufficient water swirl to clear the coffee –adjust or replace valve 3. If the water is unable to pass into the lower chamber quickly, then adjust the top seal in a downward direction by one half of a turn on the thread |
| | | The filter belt is slipping – 1. Check that the belt tension bar is not in the 'relaxed' position. 2. If the belt is tensioned and is still slipping, replace the filter belt (pn 4215265.001) 3. See section below related to wet/sloppy grinds |
| | | Coffee throw is too high, spent coffee grinds are left inside chamber when belt moves to clear, reduce throws to less than 13gms |
| Short level of Coffee in cup or Coffee Grounds in drink | The spent coffee grinds are wet/sloppy | Coffee belt is worn/choked, replace belt (Blue stitching pn 4215265.001 – 55 Micron) |
| | | Seal at base of brewing cylinder is damaged causing leakage – replace cylinder |
| | | Seal in filter platform damaged or missing causing leakage – replace seal/platform |
| | | The air pump has failed, or is failing intermittently, no pressure being produced – replace air pump (check with end of little finger to see if pump is producing pressure at the bulkhead connection, using the OUTPUT TEST to run the pump) |

| Problem | Symptom | Remedy |
|---|--|---|
| | When the chamber lifts towards the end of the vend cycle, water & coffee grinds come gushing out | The air pump is starting to fail, or is failing intermittently, insufficient pressure is being produced – replace air pump (check with end of little finger to see if pump is producing pressure at the bulkhead connection, using the OUTPUT TEST to run the pump) |
| The water and grounds are not passing from the top mixing bowl into the main brewing chamber before it is sealed-off at the top, hence when the chamber lifts at the end of the cycle the remaining water gushes from the cylinder. Note: This can be intermittent. Relax the sealing rod adjustment by ONE TURN ONLY to lower the seal position thus allowing the Water/Grounds to pass through more easily. | | |
| One of the air carrying tubes have come adrift – replace offending tube (check with end of little finger to see if pump is producing pressure at the bulkhead connection, use OUTPUT TEST to run the pump) | | |
| Airway into cylinder is blocked with coffee grinds or similar, remove cylinder and check/clear airway with paper clip. Invert cylinder and fill with water and check that water flows freely from air inlet port. | | |
| The rubber bellows joining the brewing cylinder sections is spilt causing leakage. Invert cylinder and fill with water to check for leaks whilst working bellows – replace cylinder assembly | | |
| Short level of Coffee | Water coming out of whipper funnel cap like a fountain/whale blow | Coffee canister empty, therefore water coming through too quickly – Fill canister Coffee whipper impellor to far forward on shaft blocking outlet due to being loose or not fitted correctly (flat not aligned) – replace impellor or fit correctly |

REPLACEMENT CONTROL BOARD SETUP

The FMCU Control Board (p/n 4214454) used in the Hot Beverage Merchandiser utilizes static sensitive components. Precautions for handling static sensitive devices should be observed when handling this item.

The Hot Beverage Merchandiser control board is programmable on two levels. At the lowest level the board's Flash memory (firmware), can be reprogrammed to enable a wide range of different machines to be controlled. This level of programming requires a PC and special interface equipment and is essentially a factory/main base activity. The firmware programmed into a board can be read from the label fitted to the component side of the board or if placed in a functioning machine using the Machine Status menu. Please refer to section 3 paragraph K.

The Hot Beverage Merchandiser software versions will typically be of the form "US_WIT_XX". "US_WIT" denotes the program and XX is a number defining the version. New versions will be generated to support customer specific configurations and behaviors. It is therefore important to check that the firmware programmed into a board is appropriate to the machine to which it is to be fitted, as older version may not support a particular machine type.

The second level of programming involves setting up the board to operate the correct predefined menu configuration for the machine to which it is fitted. This section details the procedure to achieve this:

1. Switch OFF machine
2. Place shorting jack across the 'ENG LINK'
3. Power-up, service mode is entered automatically ('INGREDIENT TIMES' displayed)
4. Press **2** (UP) or **8** (DOWN) on front keypad board repeatedly to reach "CONFIG MC"
5. Press **0** (ENTER) – "GENERAL SETTINGS"
6. Press **2** (DOWN) repeatedly to reach "SET MACHINE TYPE"
7. Press **0**
8. Select machine type required by pressing **2** (UP) or **8** (DOWN):

| | |
|---------------|----------------------|
| SFBC | :1 (FACTORY DEFAULT) |
| SFBC + CHLR | :2 |
| INST | :3 |
| INST + CHLR | :4 |
| INST E | :5 |
| INST E + CHLR | :6 |
9. Press **0** (ENTER) to confirm and wait for reinitializing process to complete
10. Select CUP SIZE required by pressing **2** (UP) or **8** (DOWN):

| |
|--------------------------------------|
| 7oz |
| 8 $\frac{1}{4}$ oz (FACTORY DEFAULT) |
| 9oz |
| 12oz |
11. Press **0** (ENTER) to confirm
12. Press **#** repeatedly until "REMOVE ENGINEERS LINK" is shown on display
13. Switch OFF and remove the shorting jack and park on a single pin
14. Board is now initialized.
15. Re-enter programming mode and set the time & date, prices etc.

NOTES

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