

AUTOMATIC PRODUCTS international, Ltd.

OPERATING SYSTEM

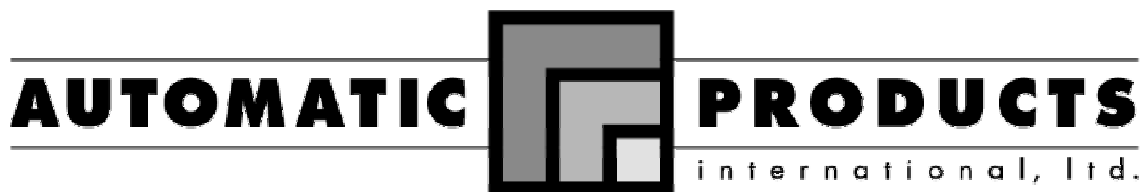
SERVICE MANUAL

MODEL 223

HOT BEVERAGE MERCHANDISER

PLEASE

**DO NOT REMOVE
MANUAL FROM
MACHINE**



75 West Plato Blvd, Saint Paul, MN 55107

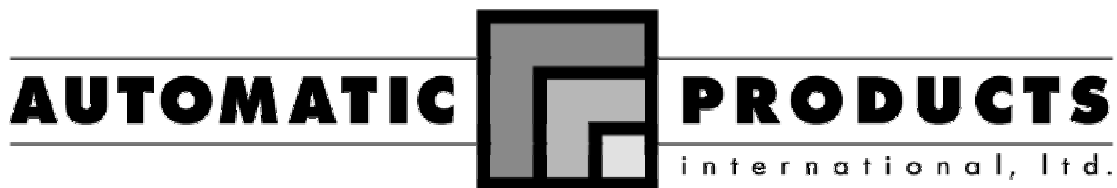
WARRANTY

Automatic Products international ltd. (APi) expressly warrants these automatic merchandisers (the "Unit"), manufactured by it, to be free under normal use and service from defects in material or workmanship for a period of two (2) years from the date of delivery of this Unit to the original purchaser. This warranty extends only to the original purchaser of the Unit. The exclusive remedy for this warranty is limited to the repair or replacement, at APi's sole option, of any part or parts of the Unit that are returned to APi or to the authorized dealer or distributor of APi from whom the unit was purchased with all transportation charges prepaid, and which, on APi's examination, shall, conclusively appear to have been defective. This warranty does not:

- a) extend to any Unit, or part thereof, that was subjected to misuse, neglect, or accident by other than APi after its delivery to the original purchaser;
- b) extend to any Unit, or part thereof, that was modified, altered, incorrectly wired or improperly installed by anyone other than APi or used in violation of the instructions provided by APi;
- c) extend to a Unit which has been repaired or altered by anyone other than APi or authorized dealer/ distributor;
- d) extend to a Unit which has had the serial number removed, defaced or otherwise altered;
- e) extend to plastic or glass windows, lamps, fluorescent tubes and water contact parts;
- f) extend to any unit used outdoors
- g) extend to accessories used with the Unit that were manufactured by some person or entity other than APi.

APi DISCLAIMS ALL OTHER WARRANTIES OF ANY KIND AS TO THE UNIT AND ALL WARRANTIES OF ANY KIND AS TO ANY ACCESSORIES. THIS DISCLAIMER OF WARRANTIES INCLUDES ANY EXPRESS WARRANTIES OTHER THAN THE LIMITED WARRANTY PROVIDED ABOVE AS TO THE UNIT AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AS TO THE UNIT AND ANY ACCESSORIES. UNDER NO CIRCUMSTANCES SHALL APi BE RESPONSIBLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES, LOSSES OR EXPENSES ARISING FROM OR IN CONNECTION WITH THE USE OF, OR THE INABILITY TO USE, THE GOODS FOR ANY PURPOSE WHATSOEVER. No representative of APi or any other person is authorized to assume for APi, or agree to on the behalf of APi, any other liability or warranty in connection with the sale of this Unit.

APi reserves the right to make any changes or improvements in its products without notice and without obligation and without being required to make corresponding changes or improvements in Unit theretofore manufactured or sold.



EC DECLARATION OF CONFORMITY

Machines manufactured by Automatic Products int'l Ltd. are tested on an annual basis to ensure conformity with required EC Directives and Applicable Harmonized Standards. Each machine manufactured is provided with a unique Declaration of Conformity that details the specific information for that machine. This document should be retained with the Service Manual in the envelope provided with each machine.

If the Declaration of Conformity is missing from the machine, the Machine Description, Machine Type, Serial Number, and other essential information can be found on the serial number decal. This decal is located inside the cabinet adjacent to the incoming power cord on the rear of the machine. The machine Serial number details the exact date of manufacture. See below to determine the date of manufacture contained in the serial number.



Serial Number Definition

Automatic Products int'l Ltd. has introduced a new serial numbering method to permit better tracking of machines, and any changes that occur. This information is being provided to you so that you understand the information contained in the serial number, and so that when you are making an inquiry about a specific machine, or require a warranty replacement, that you provide us with the complete serial number. The location of the serial number plate in the machines has not changed. The serial number plates are located inside the machine in the upper right hand corner of the cabinet, and adjacent to the power cord on the back of the cabinet.

It is essential that the complete serial number be reported when reporting any problems or claiming any warranty replacements.

The new serial number format is explained in the example below:

4	2	2	0	2	3	6	5	0	0	1
↑			↑		↑			↑		
					Numerical day of the year – Jan 1 st = 001, Dec 31 = 365.			Sequential build number Starts at 001 every day.		
			Year 02 – Last two digits of the year. 2002							
First digits indicates model, example shown is a 223 (Export Hot Beverage Merchandiser – The machine identification may contain up to six characters dependent upon the model.										

All equipment manufactured by Automatic Products intl. Ltd. is designed to work properly in a temperature range of 10° C to +38° C (50° F to 100° F) in still air (75% R.H. non-condensing). The unit is capable of being stored in a temperature range of -18° C to +68° C (0° F to 155° F). Provided proper precautions are taken for machines that contain a water system to prevent physical damage to components due to freezing, and that the machine is not stored in direct sunlight

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The Automatic Products int'l 223 Hot Beverage Merchandiser contains the state of the art in vending technology. The APi 223 is equipped with MasterVend™ Control System and the MasterMenu™ System. The MasterMenu™ System provides a text based user-friendly menu system that is used to set-up and configure the APi 223 Hot Beverage Machine. The simple operation and built-in flexibility of this system allows each user to customize the menu system to their preference. The system can be configured to display service and operational mode messages in any of eight different languages and support a variety of drink "recipes" and ingredient selections. Robust testing capability as well as extensive diagnostics and error reporting facilities are built into the APi 223 to provide ease of maintenance. The APi 223 includes a fully configurable front panel and internal inventory assignment, random free vend, four (4) levels of security, a real time clock, a variety of discount and pricing options, storage/retrieval of MIS information, and the Quick Select vending feature.

HOW TO USE THIS MANUAL

This manual is divided into five sections:

SECTION TOPIC

- 100 Features / Options**
- 200 Unpacking / Installation**
- 300 Components**
- 400 Operational Set-Up**
- 500 Machine Programming**
- 600 Service / Troubleshooting**

WATCH THROUGHOUT THE MANUAL FOR THIS SPECIAL “ ♦ “ DIAMOND MARK. THIS INDICATES A POINT OF SPECIAL INFORMATION OR HINT THAT WILL ASSIST YOU IN SETTING UP, OPERATING, OR TROUBLESHOOTING THE MACHINE



CAUTION: Certain procedures in both the operating section and the service section require that **voltage** be on in the machine. Only trained personnel should perform this function. Exercise extreme caution while performing these procedures. These procedures will be marked with the lightening bolt symbol as it appears at left.



CAUTION: Certain procedures in both the operating section and the service section requires a qualified trained technician to perform the particular task at hand. These procedures will be marked with the exclamation symbol as it appears at left.



NOTE: The APi 223 machine operates at a level of less than 75dba.

Features / Options

STANDARD FEATURES

- 15 or 10 Beverage Selections
- Up to four coffees, multiple blended drinks, soluble gourmet beverages, soup, tea, cocoas, and compliments.
- Consumer Friendly selection system utilizing tactile feel buttons and flashing buttons.
- Three programmable beverage strengths.
- Universal Swing-Out Hopper Assembly
- USE YOUR OWN CUP option with or without discount feature.
- Dual Adjustable Cup Dispensers.
- Brewer Assembly with programmable five speed motor & function delays
- Multi Drop Bus capabilities.
- Extensive Diagnostics capabilities.
- Friendly Text Based Interface.
- Configuration Upload and Download capabilities.
- User Programmable function keys.
- Cupwell Assembly: illuminating lamp, cup sensors, motorized two position spout and automatic vend door.
- MasterMenu ready
- Programmable Automatic Cleaning cycles
- Point of Sale window (Odyssey style)
- "Quick Select" numeric key pad with Braille buttons
- Four Program Security Levels.
- Six Programmable Languages.
- Machine Reset capability.
- Real Time Clock.
- Personal Computer Interface.
- Printer Interface.
- Chime
- Price line Accountability
- Global Pricing by Machine
- Pricing by Selection and Size
- Extensive Discounting capabilities.
- Shutdown capabilities.
- Programmable Winner Mode available as standard.
- Free Vend Feature.
- Forced Vend and Bill Escrow features.
- Upload and Download capabilities for Pricing and MIS.
- Programmable maximum payout.
- Extensive Accountability, including all Discounts and **SCROLLING DISPLAY**
- User-friendly scrolling display to help with the selection process and provide customer feedback.
- User programmable point of sale and operational messages.
- 20 Character Display.
- Stores three different Point of Sale Messages.
- User Settable After Sale and Out of Order messages Free Vends.

OPTIONS

- 10 Selection Button Panel
- Non-Back lit "C" Graphics
- Five Canister Rack Configurations
- Swing-Out Hoppers-from 1 to 3 compartments with varies Loose ground and grinder configurations
- Whipped Soluble Gourmet Coffee (SGC).
- Point of Sale Window (traditional style)
- MasterMenu Online Software hardware package.
- Rinse Drip Tray
- Kick Plate Asm.
- Transportable Memory Unit (TMU).
- All soluble machine with up to eleven canisters

SPECIFICATIONS

- Height – 72" (183cm)
- Width – 38" (97cm)
- Depth – 31" (78cm)
- Floor space required – 9.5 SQ. FT
- Shipping container size – 72.5 CU. FT.
- Shipping Weight (approximate):
 - All Soluble Unit = 460 lbs (209kg)
 - Loose Ground = 500 lbs (227kg)
 - Bean Grinder = 560 lbs (254kg)

ELECTRICAL REQUIREMENTS

Electrical: 120 VAC (+/-10) ; 60 Hz
20 Amp Dedicated Line
Maximum Operating Amperes – 16 amps

WATER REQUIREMENTS

- Potable Drinking Water
- Cold Tap Water
- 20 PSI minimum
- Minimum 3/8" O.D. water line recommended to machine.
- Manual shutoff within six feet of the machine

Features / Options

MODEL AND CAPACITIES

Ingredients measured in pounds unless specified.

Ingredients	1/3 Hopper	2/3 Hopper	3/3 Hopper	Ingredients	1 Level	2 Level	3 Level
Loose Ground Coffee	6 lbs	12 lbs	18 lbs	Soluble 'FD' Coffee	1.5	3.0	--
Loose Ground Decaf	6 lbs	12 lbs	18 lbs	Soluble 'FD' Decaf	1.5	3.0	--
Loose Ground Dark	6 lbs	12 lbs	18 lbs	Soluble 'FD' Tea	1.5	3.0	--
Fresh Bean Coffee	6 lbs	12 lbs	18 lbs	Sugar	4.0	8.0	--
Fresh Bean Decaf	6 lbs	12 lbs	18 lbs	Sugar Substitute	10 oz	--	--
Fresh Bean Dark	6 lbs	12 lbs	18 lbs	Whitener	2.0	4.0	6.0
				Chocolate	3.0	6.0	9.0
				SGC	2.5	5.0	7.5
				Soup	2.0	4.0	6.0

Note: above weights are approximate and can vary by (+/-) 1/2 pound

Note: above numbers are in ounces

Canisters may be expanded


Level = number of canister levels that includes the bottom base + extension sections.

RECOMMENDED CUP MODELS AND CAPACITIES:

Cup Size	Large Cabinet	Small Cabinet	Manufacturer Cup #
7 oz.	656	429	(Swt♥) PV577, (IP) SVR-0070
8¼ oz.	590	378	(Swt♥) PV588, (IP) SVR-0080 Conf Cup 210-2000AV
8 oz. insul	262	170	(Swt♥) V8X
9 oz.	552	356	(Swt♥) PV509, (IP) SVS-9
10 oz.	543	354	(IP) SVR-10 (IP) SMR-10
12 oz. tall	533	341	(IP) SVR-0120A
12 oz. squat	552	352	(IP) SVS-0120 (Swt♥) PV512T Conf Cup 355-2000AV
12 oz. squat	334	228	(ICC) HM1200
12 oz. squat	549	366	(Swt♥) PV512
12 oz insul tall-squat	240	158	(Swt♥) V12TX
12 oz. insul	321	203	(Swt♥) V12X
14 oz.			(IP) SRV-14
14 oz.			(ICC) HV1400

Cup Brand Indicators:

Swt ♥ = Sweetheart Cup
IP = International Paper Co.
ICC = International Cup Corp.



NOTE: IN MACHINE, THE PERIFERIALS BELOW SHOULD BE PAIRED TO THE SAME COMMUNICATION TYPE. EXAMPLE; MDB COIN MECH WITH MDB VALIDATOR. PULSE 24 VOLTS VALIDATER WITH 24VOLTS COIN MECH.

COMPATIBLE COIN MECHS & BILL VALIDATORS:

	Coin Mech Micro 24V 15 Pin	Bill Validator Pulse 24 Volts	Validator Harness #
MARS	TRC-6010XV	VN2502-U5E VFM1-L2-U4C VFM3-L2-U4C	680637 (APi)
COINCO	9302 LF USD-L701	BA32SA BA32R	680637 (APi)
CONLUX	USLX-001-01F		680637 (APi)
	MDB Coin Mechanism	MDB Bill Validator	Validator Harness
MARS	TRC-6510 TRC-6512 VN-4510	VN2502-U5M	26800008 (APi)
COINCO	9302-GX USD-L701	BA32A** BA32R	26800008 (APi)
CONLUX	USLZ-004-01F	USLZ-004-01F	26800008 (APi)

Features / Options

MASTERMENU ONLINE (MMOL) SOFTWARE Kit # 17500005

(MMOL) software gives you the capability of completely setting up any 223/423 Hot Beverage Merchandiser, 120 Series snack Merchandiser, 310 Control Module, or 320 Food Merchandiser machine on your personal computer (PC). (MMOL) also has the ability to load complete new logic board software revisions to a machine. To load complete new software into a machine the PC must be connected directly to the machine logic board via a cable P/N 56800022 and the DEX/UCS harness P/N 680509. These updates can be sent to you via e-mail or as a file on a floppy disk.

Personal Computer Minimum Requirements:

To install the MMOL Program you need:

- Personal or Multimedia computer with 486 or higher processor
- Microsoft Windows 95 operating system or later. (NT not compatible)
- 16 MB of RAM with Windows 95. Newer Widow systems requires more memory.
- 20MB of hard disk space required.
- VGA or higher resolution video adapter.
- Microsoft Mouse or compatible pointing device.
- RS232 -9 pin Com connection or USB to serial adapter.
- 3.5 inch floppy drive.

Touch Memory Button P/N 17500003

The Touch Memory Button (*also called **CHIP***) can be used to download or upload from any APi 120 / 320 / 223 Series

Machine. **CHIP** is capable of storing all settable data from a machine, with the exception of the time and date. Once **CHIP** is programmed; you can take it to as many machines as you wish to upload the information stored in **CHIP**. **CHIP** can be overwritten and reused as times as desired. **Chip** is mounted on a key chain holder. **CHIP** can be programmed from a machine that is already set up and then used to set up other machines that are to be programmed identically.

CHIP can also be programmed from (MMOL). (MMOL) is a software program that allows you to set up any of these machine on your personal computer (PC). This information can then be stored by filename in your PC and is always accessible for any changes you may want to make the machine in the future, including pricing. To load CHIP from your PC requires harness P/N 17500004, included in this package.

TOUCH MEMORY BUTTON (CHIP**) AND UPLOAD/DOWNLOAD HARNESS P/N 16800013**

The **CHIP** upload/download harness is attached to the Logic Board (CCB) on J1 (upper right hand corner) and the other end is mounted on the selector panel flange just below the free vend switch. Six of these harnesses included in the package.

Hosting APi 127 Expander

The Café Diem can host and operate a Model 127 add on snack/pastry machine. (must order harness # 26800068).

Unpacking / Installation

The APi 223 is assembled and packed so that a minimum amount of time is necessary for preparation to install it on location. The following steps are recommended to insure correct unpacking.

1. **SHIPPING DAMAGE:** Thoroughly inspect the exterior of the carton for damage, which may have occurred during shipment. If damage is present, remove shipping carton and plastic bag from vendor. Inspect exterior and interior of cabinet for damage. Report any damage to delivering carrier and follow their instructions.
2. Remove clip from lock handle and open front door. If machine is equipped with a lock, the keys will be in the cupwell. Inspect cabinet interior for evidence of damage.
3. Remove cardboard canister rack insert and all packing tape from coffee hopper swing out bracket, cup dispenser door, commodity trough and steam deflector, overflow and grounds waste bucket floats.

Warranty: The warranty card is attached to the cover of this manual. It must be filled out in full and mailed at once to insure coverage.

1. Remove all cartons from floor of machine. These Cartons may contain the kick plate, grinder swing out bracket, coffee or bean hoppers.

Location Site Requirements

This vendor requires an external source of water and electricity for operation. The minimum requirements for these utilities are as follows:



CAUTION: THIS MACHINE IS DESIGNED FOR INDOOR USAGE ONLY. ANY OTHER USAGE MAY VOID THE MANUFACTURERS WARRANTY

Water

The installation site must have a cold drinking water supply line that can be permanently coupled to the vendor. The water supply line should be 1/2 inch minimum diameter and be equipped with a manual shutoff within six feet of the machine. Water pressure should maintain 20 PSI minimum while the vendor is taking on water. If water pressure exceeds 90 PSI, a pressure regulator should be installed in the line. The standard plumbing connection shipped with the machine is a 1/2 inch male flare fitting.

◆ ENSURE THAT THE WATER SHUT OFF LEVER THAT'S ON THE INLET WATER FILTER HEAD ASM IN THE MACHINE IS CLOSED BEFORE HOOK UP OF WATER SUPPLY (TURN LEVER CCW).

Electricity



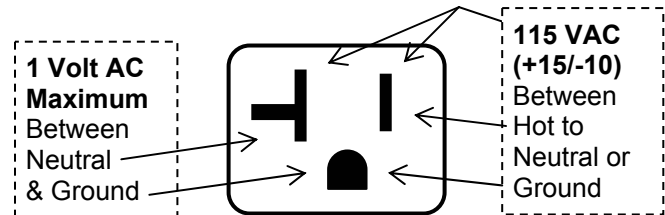
CAUTION: THE FOLLOWING PROCEDURE REQUIRES THAT THE MACHINE HAVE POWER APPLIED AND A POTENTIAL ELECTRICAL SHOCK HAZARD EXISTS

◆ IMPORTANT!

A dedicated grounded electrical outlet rated at 120 volts, 60Hz, single phase and capable of delivering 20 amperes must be available within six feet of the vendor. Only a receptacle that contains a right angle neutral should be used and the Hot Beverage Merchandiser should be the only unit connected to this outlet.

Voltage and Polarity Check

It is important that this machine is hooked up to proper voltage and polarity. Using a voltmeter, perform the following checks from the illustration below.



Operating Environment

This machine is designed to operate properly in a temperature range between 40F to 104F degrees in still air (75% R.H. on-condensing). This Unit is capable of being stored in a dry area within temperature range of 10F to 155F degrees.

At temperatures below freezing, the water tank and water lines must be drained from machine in order to prevent damage due to freezing. The machine should not be stored in direct sunlight

Location Set-Up Instructions



CAUTION: THE FOLLOWING PROCEDURE REQUIRES THAT THE MACHINE HAVE POWER APPLIED AND A POTENTIAL ELECTRICAL SHOCK HAZARD EXISTS

Set up the vendor at the location as follows:

1. On the power switch panel, located on right side wall, upper corner of cabinet, set all switches to the OFF positions.
2. **Leveling the Machine:** This step is very important for the proper function of machine. The four leveling screws in the legs are the means of leveling the machine. After positioning the machine, level machine in front to rear and right to left directions. After leveling, turn front right (lock side) leveling screw in about one-half turn to drop this corner slightly to make the door easier to close and lock.
3. If machine is not equipped with a large bean grinder, swing the coffee hopper out and install hopper. Be sure to engage auger driver with motor drive pin.
4. If machine is equipped with a bean grinder, swing out bracket assembly and hopper will be packed separately and placed on the floor of the machine. Install the grinder swing out asm on the hinge bracket and connect the electrical harness. Be sure to secure the sliding gate (located on the sloped surface of the bean hopper) in the fully open position to allow beans into the grinder(s). Push the swing out asm against brewer and verify that the spring lever latches itself.

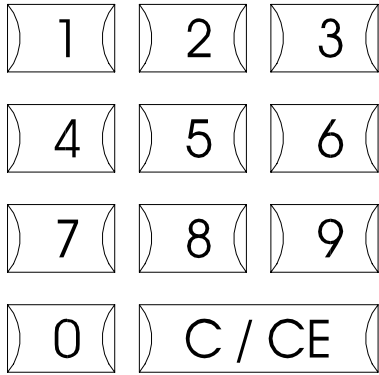
Unpacking / Installation

5. Install water filter cartridge (if so equipped) onto the filter head asm. Open the water line by turning the lever on the filter head fully clockwise.
 6. Remove all shipping screws and bottom shipping bracket from cup dispenser assemblies.
 7. Connect the vendor to the water supply line using 3/8" O.D compression fitting. We recommend using soft copper tubing. The tubing should be coiled one complete circle approximately three feet in diameter between the water supply line and vendor to allow movement of the vendor for cleaning and to reduce noise due to water pressure surges.
- ◆ ENSURE THE VENDOR MAINTAINS A SIX- INCH DISTANCE FROM BEHIND WALL. THIS IS NECESSARY FOR VENTALATION.
8. **Plug the machine into a 120 volts 60Hz, 20 Amps DEDICATED receptacle.** Set all power switches to the ON position. Check that the tank starts to fill and that there are no leaks. The cup spiral motor will run for thirty seconds and time out or if cups are installed, until the cup present switches are depressed.
 9. The machine will energize the water Inlet Valve to allow water into the tank. The machine is equipped with a 90 second safety feature - that if the inlet water valve is on for more than 90 seconds, it will put the machine out of order with a display message of "WATER LEVEL LOW". To complete the filling process, power the machine OFF/ON to reset the 90-second timer. It may be necessary to reset the 90-second timer twice in order to fill the tank completely.
10. Remove all packing material.
 11. Loosen the two screws holding the brewer grounds splashguard on the front of brewer. The shield is designed to be able to swing a little as the spent grounds fall against it.
 12. Place plastic bag liner into grounds bucket. Install grounds bucket behind front flange of rear splashguard. Be sure that the float is inside the bucket.
 13. Install overflow bucket under the cupwell assembly and position against and between guides. Be sure that the float and overflow hose are hanging over the bucket.
 14. Open cup dispenser doors and load with cups. Cup dispensers are factory set to cup sizes specified during ordering process. If other cup size is desired, refer to service section for Cup Dispenser Adjustments. Also in the program you will need to reset Drink Size under the "Beverage Definition" Menu.
 15. Install coin mechanism and bill Validator and connect to applicable harnesses. See decal on Coin Mechanism enclosure for list of acceptable coin mechanisms.
- ◆ *223 HBM. SUPPORTS THE EXECUTIVE AND MDB PROTOCOLS FOR COIN MECHS, VALIDATORS, AND CARD READERS.*

Components

Number-Keypad System

The keypad system used with the MasterVend™ Control System is different from all previous alphanumeric systems we have manufactured. The eleven digit selection panel (see Figure 2.1) is located on the front control bezel and consists of the numbers 0 through 9 and the letter C, which is defined as a clear button. The selection system used with the MasterVend™ Control System consists of a 15 or 10 selection panel and a numeric keypad to identify all the selections.



The Quick Select Keypad allows items to be selected when the machine is in Operational Mode. A Four (4) digit code can be entered via the **Quick Select Key Pad** rather than using the normal selection process. The Four (4) digit code will correspond to a unique drink in the machine. The numeric keys on the selector panel can also be used to enter numeric data any time it is required during setup or maintenance of the equipment.

MasterMenu™ Keypad

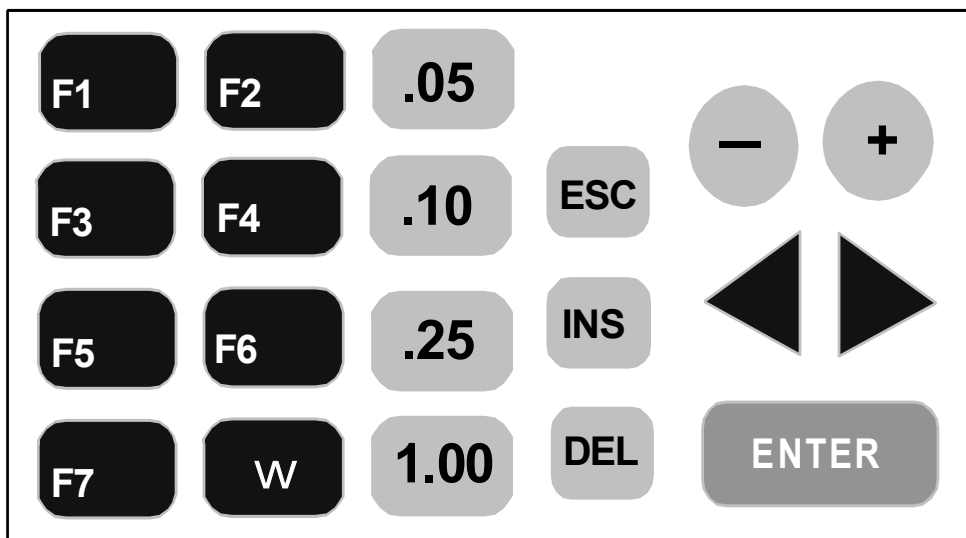
The MasterMenu™ keypad (see below) is located on the front of the machine directly to the right of the main selection keypad. The MasterMenu™ keypad is only active when the main door is open and the interlock switch is actuated, so even in the event of vandalism to the control bezel, no access to the control functions is permitted. The MasterMenu™ keypad consists of seven function buttons, a ★ key, four coin payout buttons and the eight keys used to operate the MasterMenu™ functions. The entire keypad becomes active once the machine door is opened.

Function Buttons

The seven MasterMenu™ function keys (F1-F7) are assigned to specific pre-determined functions, primarily for route service personnel. The MasterMenu™ function keys are also assigned to specific functions while in Beverage Definition / Recipe Definition to build a drink.

Pressing the ★ key along with one of the function keys [F1] through [F7] are specific to the second level of menu heading / items currently active. The ★ key can also be used for wildcarding in the pricing of all selections for the particular cup size.

NOTE: Upon Depressing the ENTER button, the MasterMenu System will then be in the enhanced program mode. At this point the 'F' button keys will not function. To reuse the 'F' buttons you will need to reinitialize the machine by depressing the door Service Switch.



Components

Coin Payout Buttons

The four coin payout buttons are used to pay coins out of a MDB or 24 Volt compatible US Coin Mech. The four coin payout buttons are **[.05]**, **[.10]**, **[.25]**, and **[1.00]**. The four coin payout buttons may also be used to enter pricing information while assigning prices. For example, to enter a price of \$.65, pressing the **[.25]** key twice, the **[.10]** Key once and the **[.05]** key once, would result in .65 appearing on the display. See the Price Setting section for additional information.

The **[ESC]** key is used for exiting the current menu without making any changes prior to commitment. Note: Closing the main cabinet door will have the same effect as if the user depressed the **[ESC]** key and causes the machine to exit the MasterMenu™ System and return to Operational Mode.

The **[ENTER]** key provides a dual-purpose operation. It provides a mechanism for choosing a menu heading. It also provides a means to commit insertions / modifications / deletions made in a menu item.

Note: Depressing a function key will not cause you to enter the MasterMenu™ System.

The **[+]** and **[-]** keys provided are used for increasing and decreasing the available choices in a menu.

Note: Anywhere in this manual that the **[+] and **[-]** keys are defined to sequence through numeric data, the front panel may be used as an alternate input source.**

The **[←]** and **[→]** keys have a dual-purpose operation. They provide a means to select the menu heading immediately to the left or right of the current menu heading. When inserting data within a menu, these keys also provide a means to move the cursor from its current position to the position directly to its left or right.

The **[DEL]** key is used to delete the character on the current cursor position, shifting all subsequent characters to the right of that position left by one.

The **[INS]** key provides a mechanism to insert a character to the left of the current cursor position, shifting all characters to the right of that position (including the current character) right by one. Or, down when inserting Recipe steps.

CONTROL SYSTEM AND BOARDS

The MasterVend™ Control System consists of up to three different boards, depending on the configuration. All 223 Models consist of the Logic control board (CCB) and the Coffee Driver Board (CDB). When a machine is equipped with a grinder unit the machine will have a third board. The third board is the Grinder Driver Board (GDB) located along the rear right wall of the cabinet.

Coffee Control Board (CCB)

The CCB controls the overall operation of the machine. It interfaces with the Coffee Driver Board, Display Board, Selector Panel, MasterMenu keypad, Coin Mech, Bill Validator and all other peripherals. The CCB also stores all the programming and MIS information. This circuit board is universal for all 20 series machines that includes the Models 120 Snack/Candy, 320 Food, and Café Diem Hot Beverage Machine. The board is mounted in a box attached to the right side of the Coin Mech housing box

Coffee Driver Board (CDB)

This circuit board is located on ceiling of the cabinet. It monitors and supplies power to all 24DC volt devices. It has it's own microprocessor that controls and monitors many of the machine functions.

The Coffee Driver Board contains all the inputs and outputs controlling all functions for machine motors, water valves, and pumps. The Coffee Driver Board communicates with the CCB via a 6 wire computer level interconnect harness called the MDB harness. The front of the CDB contains eight LED's and three momentary switches that are labeled. The status of the CDB can be determined by observing the LED's when the machine is in an operational standby condition:

- - LED is off during standby
- - LED is on during standby
- ◐ - LED is blinking in standby
- /● - LED can be Off or On during standby

Chiller comp.	Tank level low	Tank heater on	Cups needed	Spout home	Cupwell no obstacle	Motor power ready	MDB Status Heartbeat
○	○	○/●	○	●	●	◐	◐

Chiller Compressor

This LED should not be lit (○).

Tank level low

The LED is on (●) only when the tank water level is low

Tank Heater on

The LED is on (●) only when the heater is on. (on steadily means heater is on)

Cups needed

The LED flashes once (◐) one dispenser 1 is out or 2 flashes when dispenser 2 is out of cups.

Spout home

The LED is on (●) steadily in

standby.

Cupwell no obstacle

The LED is steadily on (●) until a cup is placed into cupwell.

Motor Power Ready

Flashing off/on (◐) in standby.

MDB Status Heartbeat

Flashing off/on (◐) in standby.

The three momentary switches serve as service test switches for the coffee and tea brewers. The push button switches are located to the right of the LED status indicator lights on the CDB.

The board is easily accessible by loosening the two outer thumb screws and tilting the board down from the panels hinges.

Components

Front Scrolling Display

The display board is capable of displaying 20 alpha-numeric characters. The supported character set includes:

- Upper case alphabetic characters "A" through "Z"
- Numeric characters "0" through "9"
- Special characters: (,), [,], ., ', -, =, \$, /, \, *, ^, +, ", ?,

The Chime

The chime will sound when the following events occur:

- Three times when an invalid key sequence is entered from either the front panel or the MasterMenu™ Keypad.
- Three times when the customer enters an invalid key sequence from the front panel.
- Five times when the customer has won a free vend due to WINNER MODE.
- A single time to indicate the acceptance of an action by the control system.

Power Supply

The APi 223 Hot Beverage Machine utilizes the incoming 115 VAC to power the heating elements, grinders, and fluorescent lamps. The Power Distribution Box located at rear top right corner of cabinet, houses the following power supply components: A transformer that converts the input 115 VAC voltage to 24 VAC and 8 VAC used by the Coffee Control Board, Coin Mechanism, and Bill Validator. A 24 VDC Power Supply Module is used to supply voltage to auger motors, whippers, valves, spout motor, brewer motor, and vend door motor.

Lighting System

In the APi Café Diem machine with back-lit graphics, there are four fluorescent lamps in the main door powered by one ballast. There are two lamps located in the top section of the front door, one along the left vertical side, and one in the bottom of the front door. These lamps are used to light up the front "C" shape graphic section. A Service light is located along the top front section of the cabinet. The service light will come on whenever the main door is opened causing the light switch to activate the lamp circuit.

Cup Dispenser Asm.

Every beverage sold through the 223 Cafe Diem hot beverage merchandiser requires a clean disposable cup. Inside the machine are two storage cabinets that house a large number of cups. There is a pair of adjustable cup separators (cup ring) to accommodate different size cups. The adjustable cup ring has been designed to dispense a wide variety of vending and non-vending cups. Each cup ring, after being properly adjusted, will dispense a single cup for each vend cycle of the machine. The cups are stored in between spiral that will index the stack of cups over to replenish the cup ring when low. Both cup dispensers are fully convertible by performing adjustments to accommodate cup sizes from 6 to 14 ounces. Special cup rings are available to dispense foam cups (red cams) or thick-rimmed cups (black cams).

SELECTION SYSTEM

Beverage Selector Panel

The selection system is available in a 10 or 15 button panel that utilizes tactile feel buttons. Beverage type labels are inserted behind these clear buttons. The plastic buttons push against micro switches located behind on a circuit board. Next to each micro switch is an LED to indicate when selected.

Complimentary Switches

The Complimentary Selection Switches are located to the right of the main selection switches. The complement board is used to select beverage strengths, sugar, lightener, & sugar substitute (optional).

Each commodity contains three variable strengths and flashing LED's. During the customer selection process, the LED's will flash to indicate available options. When custom chooses the button that is flashing, it will then stay lit indicating this option has been chosen.

Quick-Select Keypad

The Quick-Select Keypad allows the customer to select a coffee item for purchase when the machine is in Operational Mode by entering a four (4) digit code via the numeric keypad rather than using the normal selection process. The keypad is also used to enter settings in the program mode.

Door Service Switch

The Door Service Switch allows the MasterMenu Keypad to become ACTIVE when the front door is opened. This also puts the machine in the service mode. Closing the main door will press in the interlock switch and reinitialize the machine by scanning for devices to be home and ready to operate. The following devices are checked during the initialization scan: cups in the Cup Rings, Spout up & down home, Vend Door closed, and Brewer Motor homed. This switch is located on main door edge next to the coin mechanism box

Automatic Vend Door

The Cupwell Vend Door is an automatic motorized door. The doors main function is for safety and sanitary requirements. During a vend cycle, the cupwell door will remain closed and the cupwell lamp will be illuminated. At the end of the vend cycle, the cupwell door shall open and wait until the cup is removed before closing.

Canister Rack Asm.

The canister rack provides support for the entire dry product commodity system. Containers for the dry product are made of rugged translucent plastic. They are designed to dispense products on a first-in / first- out basis in order to insure fresh product delivery. All motors on the canister assembly are 24 Volt DC. The main canister rack will support up to seven canisters. On FDX models that vend all soluble, an extension rack takes the place of the brewer that support four additional canisters.

Components

The assembly consists of the following;

- A) Auger Motors that drive the canister spirals to dispense product. There are two different auger motors depending on speed of 180 and 51 RPM's.
- B) Canisters – There are several different assemblies depending upon capacity and product type. The canister capacity comprises of a base and maximum of three extensions high. The product type (i.e. Sugar, SGC, FD Tea, etc.) will determine what type canister is used with one of the following
- C) Components: agitating wheel, spiral coil, spout, and leaf spring agitator. The auguring system used to dispense the products runs in reinforced nylon bearings to ensure a long trouble-free life. The dispensing ends of the canister are direct flow spouts, some of which have louvers. These louvers help control sifting of product due to vibration. On the front side of the canisters, there are levels markings so that the service person can easily refill them to a pre-determined level. This type of control will reduce product waste and assure commodity freshness by the elimination overfilling.
- D) Mixing Bowls and Troughs are used to mix the powdered product with hot water. The troughs allow powdered product from two to four canisters to dispense into the same channel to mix with flow of water. This process is only used with products that do not cross contaminate with taste and rinse properly.
- E) Whippers used to whip, mix and create froth on finished drink.
- F) Exhaust System is used to help remove steam vapors from the hot water that flows into the bowls and troughs are controlled by this system. The steam vapors are exhausted behind the mixing bowls and trough before it raises into the cover chute and canister spouts. This prevents powdered product from sticking to surfaces and clogging. Uncontrolled steam in a vending machine will create severe problems through caking and hardening of the dry products. Such a condition will prevent proper dispensing. By moving low velocity air, in a high volume through area where steam is generated. The canister rack exhaust system consists of bowl covers, trough chute, exhaust box, two plastic exhaust hoses, exhaust fan asm (24VDC), and filter screen.

Water Tank

The water tank design is the latest in technology in providing a very high volume output at a stable temperature range to accommodate customer demand. The entire Tank assembly is designed to tilt down for ease of serviceability to access lid components. The water system in the tank is a gravity system thus requiring no pumps or compressors. There is an open-air break (1 1/2" minimum) between the tank inlet and water level for the prevention of water back flow, which is required by most local codes. There are two temperature control probes that maintain the water temperature at a settable point. It is recommended that the water temperature is set between 190F to 202F degrees for proper extraction of fresh brewed coffee (factory setting = 200F). The Water Tank is located on the back wall of the cabinet. The Water Tank is fitted with five commodity water valves and one brew water valve, two heating elements, two water / temperature probes, a rinse hose, and drain hose.

Brewer Unit

The heart of the APi 223 Hot Drink Merchandiser is the open cylinder brewer. It has been "time proven" and "experience improved". It is simple, lightweight, easy to clean and service. The brewer is capable of brewing from 6 to a 14 ounce cup (over 12 ounce requires add hot water). The basic function of this type Brewer is to push hot compressed water through the coffee ground then push compressed hot air through the coffee grounds in order to remove the excess moisture. The Brewer Unit is mounted to the upper right side of the back wall in cabinet. The brewer unit consists of a 24VDC motor with an optical positioning encoder and one cycle homing cam and switch. It is mounted on a hinge bracket so it could be swung out for service or easy removal. A latching pin on the right side of the brewer assembly allows swing-out function.

Cupwell Asm.

Used to stage and position a cup in order to receive liquid dispensing from spout The Cupwell Assembly consists of a stationary molded housing, spring loaded cup catch arms, removal grill and drain pan, spout assembly, metal cup chutes, and cup sensors. The housing is made of a black molded plastic that is mounting in the machine cabinet and remains stationary. The Cup Catch Arms swivel open to help position the cup directly under the dispensing spout. The grill and drain pan funnel liquid into the waste bucket. They both pull straight out for thoroughly cleaning. The spout assembly mechanically moves to the upper or lower position depending on the height of a cup. This helps prevent splatter from dispensing liquid into cup. The spouts other function is to stage a cup before it drops into the cup catch arms. This is performed by stopping the cup against the spout while in the down position then the spout raises and the cup drops into the cup catch arms at controlled speed. The left and right cup chutes are made of a heavy gauge stainless steel. The left chute is used for cups dropping from low capacity cup magazine and right for high capacity cup magazine. The cup sensors boards are located on the right and left outer side of the Cupwell housing mold. These boards are the same and have a transmitter and receiver sensor on each board. The boards are mounted 180 degrees across from each other to align the receiver with the transmitter. The lower sensors are designated as the cup present sensors. They are used to signal the control board that cup is present and to start the vend cycle. If a cup is not present, the vend cycle will not continue and the display will show "Try Again" or return credit. The upper sensors are used to determine whether the spout should vend in the lower or upper position depending on cup height.

Components

Power Distribution Box (PDB)

The **PDB** is located in the cabinet at the upper right top corner of machine and extends along the right side wall top corner. The **PDB** supplies power for components in the machine. Voltages supplied are 120VAC via the line cord, 24 VAC and 8 VAC via the Transformer. The **PDB** also consists of following: Power Switches, Line Filter, 24 VDC Power Supply Module, Three Relays (1 power and 2 heater), and Power Ready Board used to switch on the 24VDC.

Cup Catch Asm.

The two-cup catches are located in the cupwell assembly. Their main propose is to catch the cup sliding out of the cup chutes, prevent it from tipping, and to center under the spout nozzles ensuring proper alignment for liquid dispensing.

USE YOUR OWN CUP FEATURE

Customers may use their own cup by placing it into the cupwell. This is performed by A) sliding open the vend door (mechanical spout will move up), B) placing own cup onto center of grill in between cup catches, C) inserting credit, D) selecting beverage and pressing cup size. The bottom cup sensors will detect a cup already in the cupwell and disable the machines cup dispenser. If the cup inserted is a tall type, the upper sensors would detect this and keep the spout in the up position during the vend cycle. If the cup inserted is below the upper sensors, the spout will move back down during the vend cycle. The Use Your Own Cup Feature can also work in conjunction with the Discount feature if desired.

Hopper Swing-Out Asm.

Used to house Fresh Ground beans or Loose Ground coffee. This assembly functions in conjunction with a coffee brewer assembly. The coffee hopper is a universal container that can be configured from one to three compartments. This allows the ability to operate from one to three types of coffees; Regular, Decaf, and Gourmet (Dark) coffee. The hopper has two removable divider walls and output inserts to achieve convertible configurations using either beans or loose ground coffees.

Operational Set-Up

The Operational Set-Up section will instruct the installer how to quickly setup your machine to operate using configured factory settings. If you deviate from the configured factory settings, use the Machine Programming section starting on page 500 for additional instructions.

Rack Configuration Layout

Determine which canister rack layout is the factory set-up for your machine by viewing the configuration rack samples displayed on pages 404 through 411.

Placing Product into Canisters

Upon determining which canister rack layout you have. Place the flavored powdered products into each canister as described by the drawing for your canister rack setup. On all rack configurations, chocolate is always located on the far-left side and considered Auger #1. The next following auger motor to the right would be auger #2 and etc. When placing product into the canisters; lift the lid on the canister. Open the product bag and carefully pour product into the canister. When all desired levels of products have been reached wipe down exterior canister area.

Selection Button Labels

A 15 Selection button machine will have three vertical columns of selection buttons and a 10 Selection machine will have two columns of buttons. The selection buttons are in the numbered order described in below drawing.

Selection Panel Button Order

#1	#6	#11
#2	#7	#12
#3	#8	#13
#4	#9	#14
#5	#10	#15

The API 223 is factory programmed with 30 preset recipe selections. In the Beverage Definition Menu, under the "Recipe Definition" Menu, you can scan through all 30 Recipes to find the beverage flavor that is assigned to above selection buttons.

To identify which selection flavor labels goes where perform the following

1. Toggle the power switches in machine OFF then ON. Allow machine to scan & reinitialize (approx. 15 seconds).
2. Press & **Hold In** the ★ button and at the same time press the F3 button.
3. If displays shows; "RECIPE DIFINITION" press ENTER to display "R01 FG Coffee Sxx".

R01 = Recipe #1 (R01 through R31)



FG Coffee = the beverage name

Sxx = assigned selection number

4. Look at the selection number "Sxx" to see if that beverage name is assigned to a selection button number.

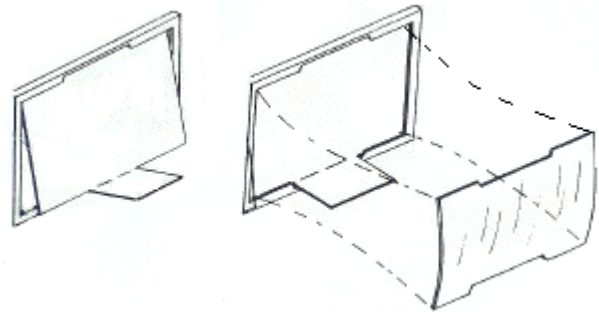
Example: "R01 FG Coffee S01"

This indicates that selection button #1 is set for "Fresh Ground Coffee".

5. With the cursor flasher on "R01", Press the  or  button to scroll through all 30 recipes to view which beverage name is assigned to which selection button. The "Sxx" indicates the number of the selection button on the front panel. (Note: The "Sxx" selection number displayed will also light the related button on the front selection panel).
6. Use the following Selection Log Table and write down the selection # next to all 30 beverage names.

NOTE: If you desire to rearrange or change the factory designated selection button names, see the Beverage Definition Menu in Section 500 under Machine Programming for instructions.

7. Insert beverage labels into buttons. Use the plastic clear retainer to hold in the label against the button. Bow the retainer so that the top and bottom edge are **all the way** into the upper and lower corners of the plastic button.



◆ SELECTION LOG TABLE on next page

Operational Set-Up

- ◆ With the cursor flashing on the Recipe #, press the or button and scroll through all 30 recipes. When a selection # appears (i.e. "S01") write this number in the Selection column.

SELECTION LOG TABLE

Recipe #	Beverage Name	Selection (Sxx is assigned to button on selection panel)	Drink Description
R01	"FG Coffee"		Fresh Ground Bean Coffee
R02	"FG Decaf"		Fresh Ground Dark Coffee
R03	"FG Dark Cof"		Fresh Ground Dark Coffee
R04	"FG Espresso"		Fresh Ground Espresso Coffee
R05	"LG Coffee"		Loose Ground Coffee
R06	"LG Decaf"		Loose Ground Decaf Coffee
R07	"LG Dark Cof"		Loose Ground Coffee
R08	"LG Espresso"		Loose Ground Espresso Coffee
R09	"FD Coffee"		Freeze Dried Soluble Coffee
R10	"FD Decaf"		Freeze Dried Decaf Coffee
R11	"FD DarkGour"		Freeze Dried Dark/Gourmet
R12	"FD Espresso"		Freeze Dried Espresso Coffee
R13	"FD Tea"		Freeze Dried Soluble Tea
R14	"Café Mocha"		[Blend] -Coffee & Coco
R15	"Decaf Mocha"		[Blend] -Coffee & Decaf Coffee
R16	"Café Latte"		[Blend]- Strong Coffee w/Fr-Vanilla <or> Frothy Topping
R17	"DeCafLatte"		[Blend]- Strong Decaf w/Fr-Vanilla <or> Frothy Topping
R18	"Bal Blend"		Balanced Blend - 50/50 Coffee & Decaf
R19	"CofCappcino"		Coffee Cappuccino [Blend]- Strong Coffee w/Fr-Vanilla & Cream Topping
R20	"VanillaNut"		[Blend]- French Vanilla SGC#1 & Hazelnut
R21	"Café-SGC#2"		[Blend]- Café + (name of product in SGC#2 canister) (Example: Café-Hazelnut)
R22	"Coco-SGC#2"		[Blend]- Coco & (name of SGC#2)
R23	"FrenchCoco"		[Blend]- French Vanilla SGC#1 & Coco
R24	"Café-SGC#3"		[Blend]- Coffee & (name of SGC#3)
R25	"FR-Vanilla"		SGC #1 – French Vanilla
R26	"SGC 2"		Soluble Gourmet Coffee #2
R27	"SGC 3"		Soluble Gourmet Coffee #3
R28	"SGC 4"		Soluble Gourmet Coffee #4
R29	"Soup"		Soup (soluble non-particle)
R30	"Chocolate" or "Creamy Coco"		Chocolate Creamy Chocolate (w/frothy topping)

Operational Set-Up

GRAM THROW INSTRUCTIONS

Ingredient Gram Throw Specifications

Examine your ingredient package for ingredient amounts. Use product manufacturer recommendations for ingredient throws. All gram throws below are approximations. Always take three test vends and average for best accuracy, except for products like chocolate where the product quantity exceeds scale capacity. Some lightener products are super fine and will clog louvers in spout. Soluble Gourmet coffees must use 180 RPM motors to deliver a sufficient amount of product during the allotted time. Prior to measuring product, ensure the gram scale is properly adjusted. To zero adjust the gram scale place a nickel on the scale and set weight for exactly five grams.

223 RECOMMENDED GRAM THROWS			
	8 oz Cups	10 oz Cup	12 oz Cups
Coffee	8 - 8.5	10 - 12	12 - 13
Lightener	2 - 2.5	3 - 4	4 - 5
Sugar	6.5 - 7	7 - 10	10 - 12
FD Coffee	1.5	2 - 2.5	2 - 3.5
FD Tea	1	1 - 1.5	1.5 - 2
FB Tea	2 - 3	3 - 3.5	4 - 4.5
Soup	4 - 5.	5 - 5.5	6 - 6.5
Chocolate	24 - 26	28 - 31	33 - 36
SGC	18 - 22	24 - 27	28 - 30

◆ 454 GRAMS = ONE POUND

NOTES:

- Different freeze-dried / instant coffees can have different flow characteristics. Remove louvers from spout or replace spout with louvers as necessary.
- Soluble Gourmet Coffees MUST USE 180 RPM MOTOR to deliver sufficient product during the allotted cycle time.
- Zero or Tare set you scale meter before starting – Tip: nickel weighs exactly 5 grams
- There are 30 pre-programmed Recipes from R-01 to R-30 (exclude R-31 for the Cleaning Recipe)
- The Gram settings are for Large Cups only. The duration times are for Large Cups only. The logic board automatically scales the small cups gram settings down.

Sample Recipe: “R-30 Chocolate S15”

“Chocolate”		HOT CHOCOLATE						
Entry Step [< or >]	FUNCTION Press [< or >] (Do Not Press + or - unless changing recipe structure)	Ingredient Type [Press *]	DURATION TIME [Press F2]	Modifier [Press F3]	Water In Delay [Press F4]	Xtra- Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
1	VALVE-01	--	10.30	--	--	--	--	--
2	WHIPPER-01	--	11.78	--	--	--	--	--
3	WAIT	--	01.10	--	--	--	--	--
4	CHOCOLATE	P	05.55	10	--	--	--	--
5	END	--	01.00	--	--	--	--	--

- 1) Depress the **ENTER** key and depress the **▶** key until the Beverage Definition Menu is displayed.
- 2) When Beverage Definition is displayed depress **ENTER**. Depress the **▶** key until Recipe Definition is displayed and depress **ENTER**.
“R-01 FG COFFEE S01”
R-01 = Recipe Number
FG COFFEE = Beverage Name
S01 = Selection #1 on front panel
- 3) With the cursor at “R-01”, depress the **+ or -** key to view the desired recipe.
- 4) Depress the **ENTER** key. At this point you have entered the desired recipe.
- 5) Depress the **▶** key until the desired ingredient has been reached (i.e., LG Coffee, Chocolate, etc.).
- 6) Place the gram scale measuring device under the appropriate canister to be grammed.
- 7) Depress either cup switch on the front of the machine to dispense the product into the measuring device. Place the dispensed product onto the scale for weighing. If ingredient displayed needs to be increased or decreased; depress the **F2** key to view the duration time.
- 8) Depress the numeric keypad and enter the desired duration time and depress **ENTER**.
- 9) Follow step #7 & #8 as needed. These steps should be followed for all recipes.

Operational Set-Up

CUP CABINETS

- 1) Prepare the cup cabinets for the cups to be used.
- 2) Usually the cup cabinets are preset at the factory when the correct cup models are specified on the order spec sheet. Refer to the cup size and model sticker placed on the lock side of the cup cabinet.
- 3) If the cups are not set-up correctly please refer to the service manual for detailed information regarding complete cup cabinet set-up (i.e., cup ring, spirals, cup base assembly, and guide bar/rail).
- 4) Make sure the cups are programmed in the software correctly by performing the following steps:
 - a. Depress the **ENTER** key and depress the > key until the Beverage Definition Menu is displayed.
 - b. Depress the **ENTER** key and depress the > key until the set cup sizes sub-menu is displayed.
 - c. Depress the **ENTER** key and the following will be displayed: " SIZE S 1 12.0 "
 - d. S (cup size) 1 (cabinet #) 12 (fluid ounces for cup)
 - e. With the cursor flashing on the cup size (S or L). Depress the + or – key to toggle the cup size to determine where the cups are programmed.
 - f. Depress the > key to move the flashing cursor into the cabinet field. Depress + or – key in order to change the cup cabinet the cups are programmed for in the software. The following will be displayed 1 for cabinet 1 (smaller cup cabinet closest to the machine), 2 (front larger cup cabinet closest to the door), or 1+2 for both cup cabinets.
 - g. Depress the > key to move the flashing cursor into the fluid ounce field. Enter the actual cup volume size via the numeric keypad associated with steps d & e above.

SET PRICES

- 1) Press **F4** - Set Price Menu
- 2) Press **ENTER** to access Set Price menu.
- 3) *Sample Display:* "SEL-01 SIZE-S =00.50"
- 4) Press **▶** button to move cursor between Selection #, Cup Size & Price Setting.
- 5) Press **+** button to toggle the cup size between "S" (small) or "L" (large) to be priced (note: "R" setting is not use).
- 6) Press **▶** to move cursor to price setting. Use numbered keypad or "+" or "-" to set cup price.
- 7) Press **▶** to move cursor to selection number.
- 8) Press **(+ or -)** to choose the selection # to be priced at size indicated.
- 9) Press **ENTER** to register the setting for selection displayed. Repeat above steps to price other selections.
- 10) Press **ESC** to save in memory and exit this menu.

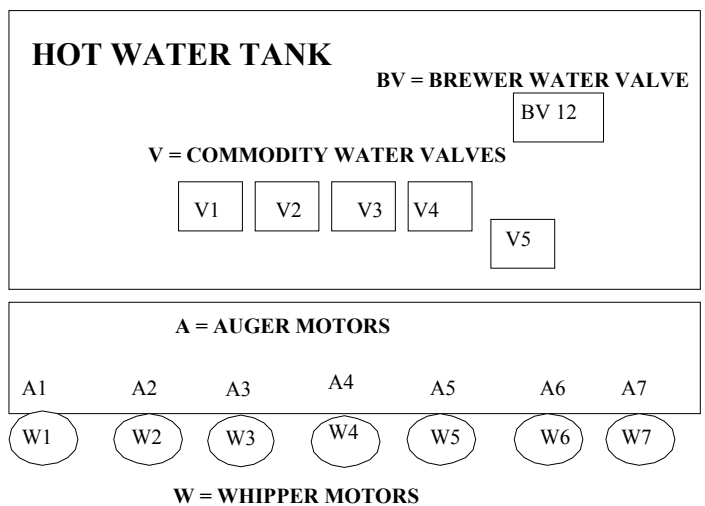
CHECK & ADJUST CUP LIQUID LEVELS

Check the non-blended drinks first such as; Chocolate, French Vanilla, SGC, etc. For these drinks, adjust the water levels by turning the metering screw on the corresponding water valve (see diagram below).

For all other drinks, the water levels must be set by the duration time in the corresponding drink recipe.

Motors and Valves are numbered from left to right:

- ◆ **Once the above steps are performed the machine is ready for operation.**



Operational Set-Up

RACK CONFIGURATION " B " (1-2- 4) Layout Drawing Instructions

Beverage Label Locations

The following instructions will guide you through the Recipe Definition Menu that contains all 30 pre-defined recipes with assigned button selection numbers.

It is recommended that you scroll through all thirty recipes and list the beverage names next to all 10 or 15 selection numbers assigned.

1. Toggle Power switches OFF then ON.
2. On MasterMenu Panel, press and hold the ★ button & press **F3** at same time.

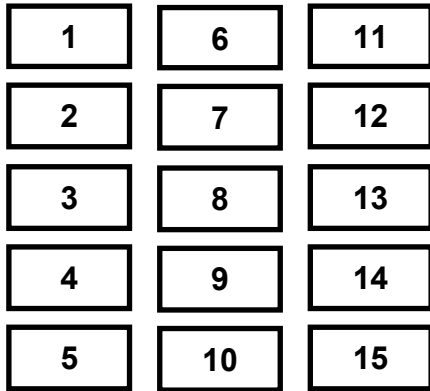
3. If "Recipe Definition" displays, press **ENTER**.
4. The following should display:

"R01 FG COFFE S##"

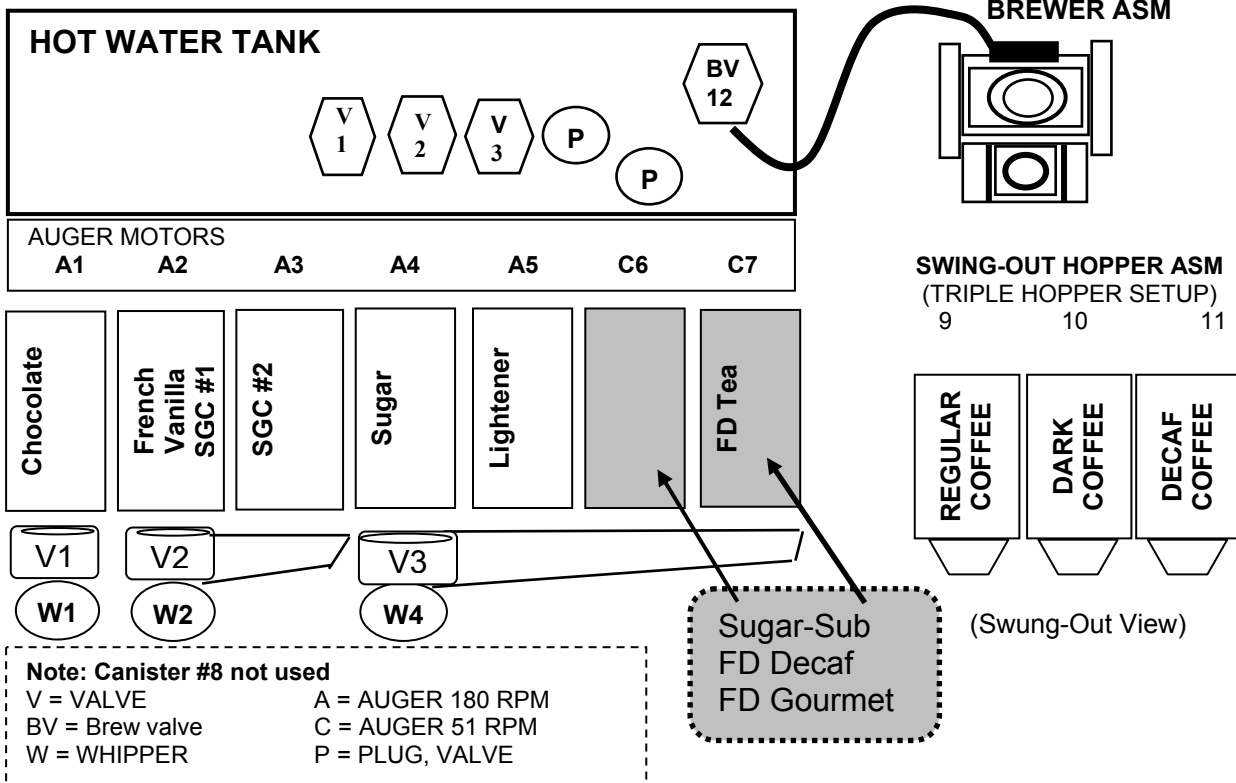
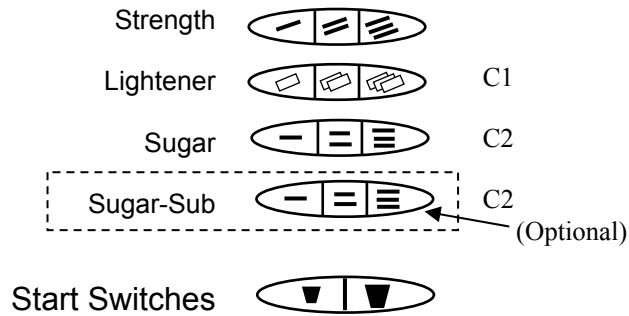
R01 = Recipe Number
FG Coffee = Beverage Name
S## = Selection Number

5. With cursor flashing on the "R" number, press the **+** or **-** button and scroll through all recipes to determine the selection number "S##" assigned to the factory set beverage type.

SELECTION BUTTONS



COMPLIMENT BUTTONS



Operational Set-Up

RACK CONFIGURATION "C" (1-1-2-3) Layout Drawing Instructions

Beverage Label Locations

The following instructions will guide you through the Recipe Definition Menu that contains all 30 pre-defined recipes with assigned button selection numbers.

It is recommended that you scroll through all thirty recipes and list the beverage names next to all 10 or 15 selection numbers assigned.

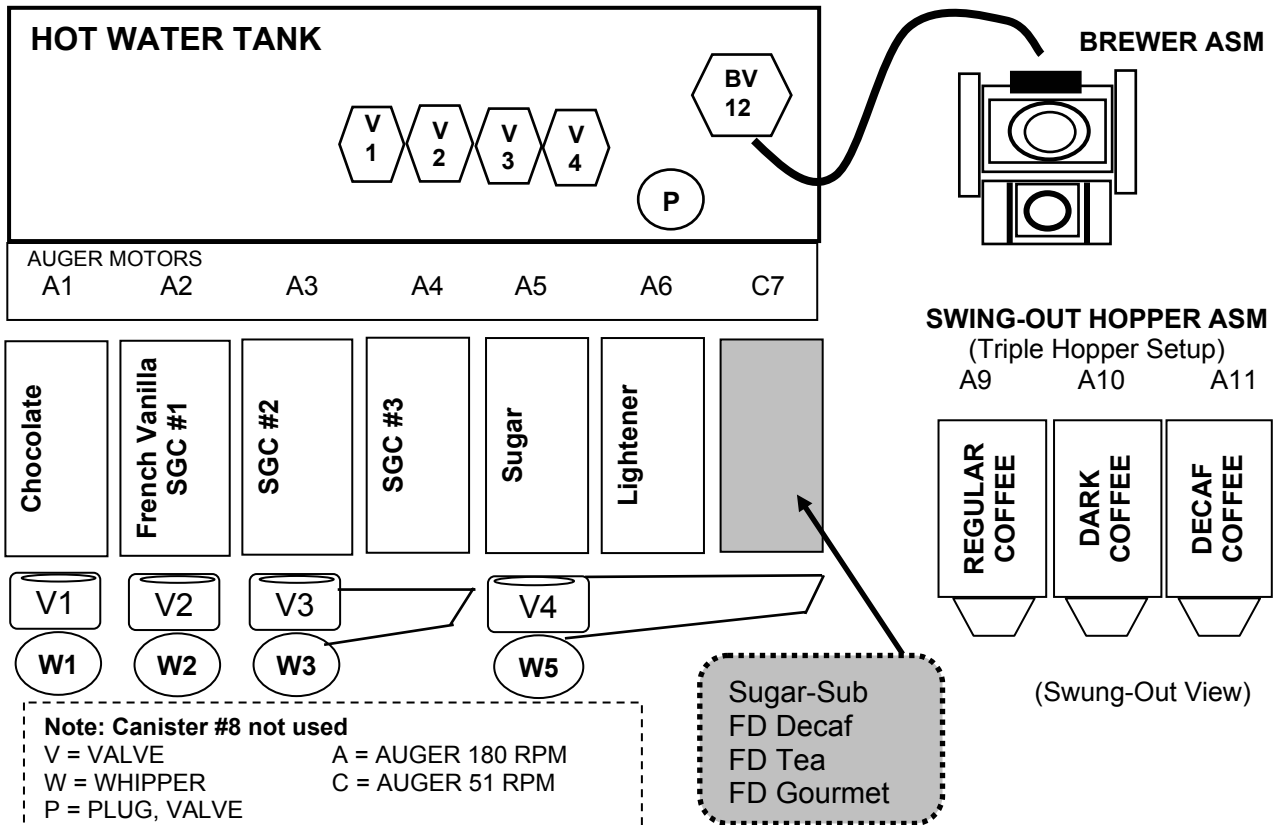
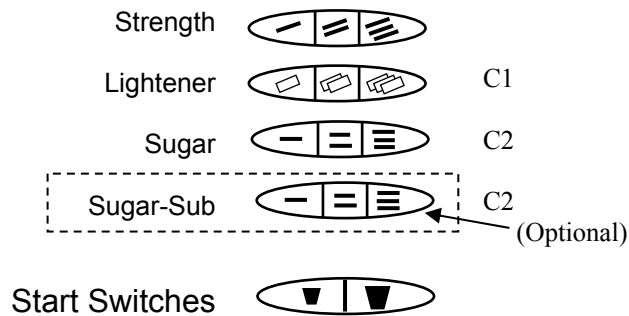
1. Toggle Power switches OFF then ON.
2. On MasterMenu Panel, press and hold the * button & press F3 at same time.

3. If "Recipe Definition" displays, press **ENTER**.
4. The following should display:
 - a) "R01 FG COFFE S##"
 - b) R01 = Recipe Number
 - c) FG Coffee = Beverage Name
 - d) S## = Selection Number
5. With cursor flashing on the "R" number, press the + or - button and scroll through all recipes to determine the selection number "S##" assigned to the factory set beverage type.

SELECTION BUTTONS

1	6	11
2	7	12
3	8	13
4	9	14
5	10	15

COMPLIMENT BUTTONS



Operational Set-Up

RACK CONFIGURATION "D" (1 - 2 - 2) Layout Drawing Instructions

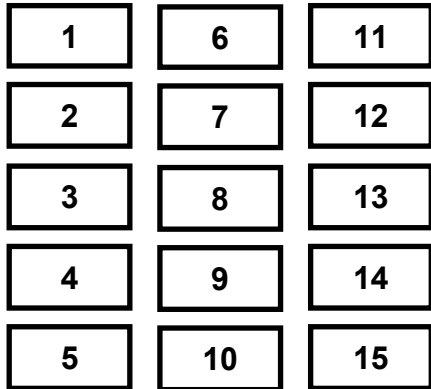
Beverage Label Locations

The following instructions will guide you through the Recipe Definition Menu that contains all 30 pre-defined recipes with assigned button selection numbers.

It is recommended that you scroll through all thirty recipes and list the beverage names next to all 10 or 15 selection numbers assigned.

1. Toggle Power switches OFF then ON.
2. On MasterMenu Panel, press and hold the ***** button & press **F3** at same time.
3. If "Recipe Definition" displays, press **ENTER**.

SELECTION BUTTONS



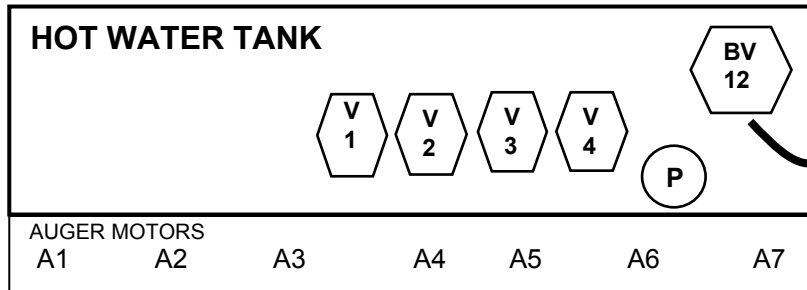
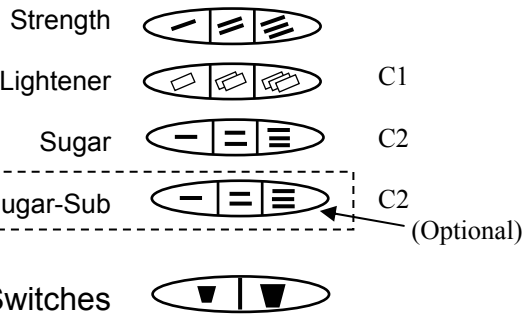
4. The following should display:

"R01 FG COFFE S##"

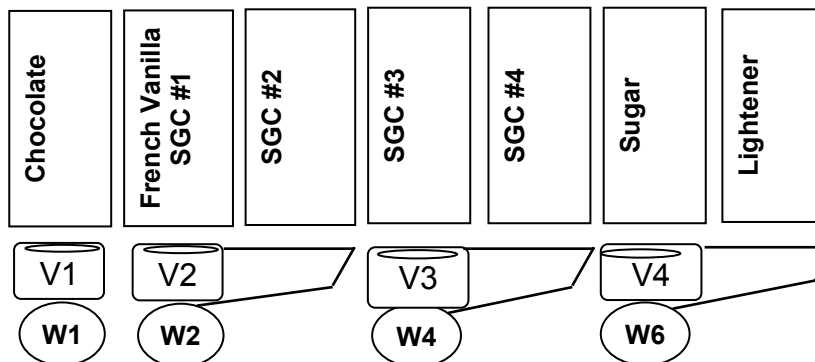
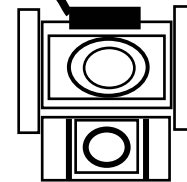
R01 = Recipe Number
FG Coffee = Beverage Name
S## = Selection Number

5. With cursor flashing on the "R" number, press the **+** or **-** button and scroll through all recipes to determine the selection number "S##" assigned to the factory set beverage type.

COMPLIMENT BUTTONS

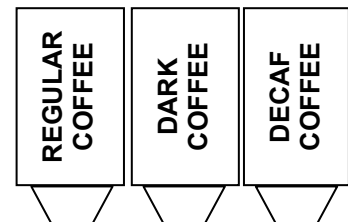


BREWER ASM



SWING-OUT HOPPER ASM

(Triple Hopper Setup)
A9 A10 A11



(Swung-Out View)

Note: Canister #8 not used

V = VALVE A = AUGER 180 RPM
 BV = BREW VALVE C = AUGER 51 RPM
 W = WHIPPER P = PLUG, VALVE

Operational Set-Up

RACK CONFIGURATION "E" (1-1-1-4) Layout Drawing Instructions

Beverage Label Locations

The following instructions will guide you through the Recipe Definition Menu that contains all 30 pre-defined recipes with assigned button selection numbers.

It is recommended that you scroll through all thirty recipes and list the beverage names next to all 10 or 15 selection numbers assigned.

1. Toggle Power switches OFF then ON.
2. On MasterMenu Panel, press and hold the ***** button & press **F3** at same time.
3. If "Recipe Definition" displays, press **ENTER**.

SELECTION BUTTONS

1	6	11
2	7	12
3	8	13
4	9	14
5	10	15

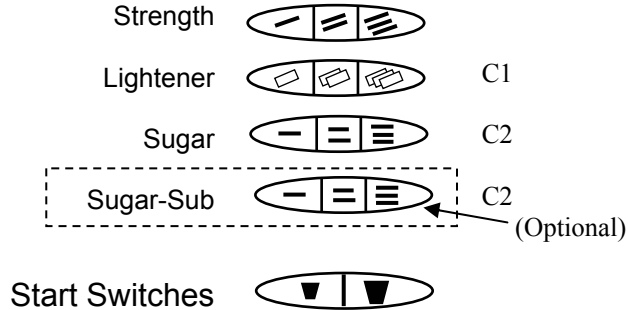
4. The following should display:

"R01 FG COFFE S##"

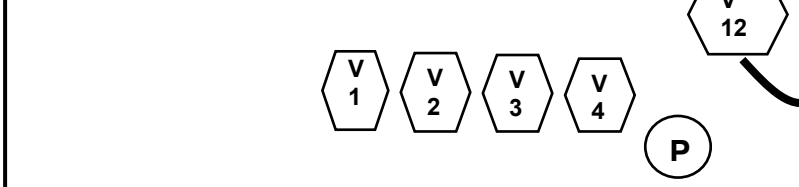
R01 = Recipe Number
FG Coffee = Beverage Name
S## = Selection Number

5. With cursor flashing on the "R" number, press the **+** or **-** button and scroll through all recipes to determine the selection number "S##" assigned to the factory set beverage type.

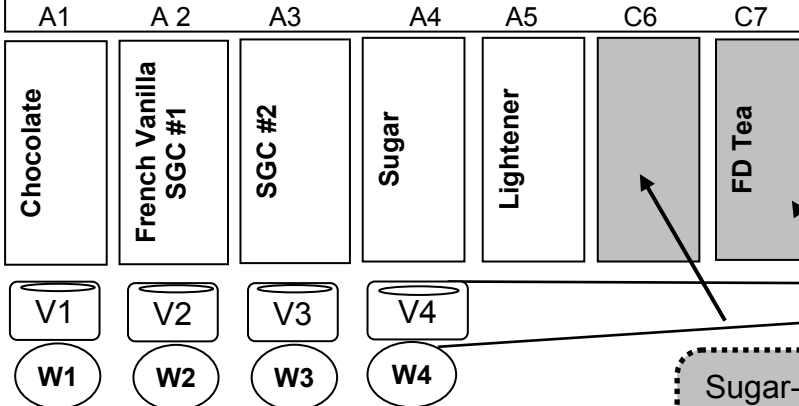
COMPLIMENT BUTTONS



HOT WATER TANK



AUGER MOTORS

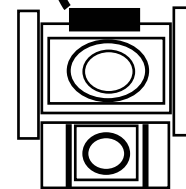


Note: Canister #8 not used

V = VALVE A = AUGER 180 RPM
 W = WHIPPER C = AUGER 51 RPM
 P = PLUG, VALVE

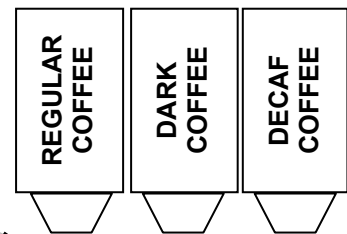
Sugar-Sub
 FD Decaf
 FD Gourmet

BREWER ASM



SWING-OUT HOPPER ASM

(Triple Hopper Setup)
 9 10 11



(Swung-Out View)

Operational Set-Up

RACK CONFIGURATION " F " (1-1-1-1- 3) Layout Drawing Instructions

Flavor Label Locations

The following instructions will guide you through the Recipe Definition Menu that contains all 30 pre-defined recipes with assigned button selection numbers.

It is recommended that you scroll through all thirty recipes and write down the flavor type next to every selection number assigned.

1. Toggle Power switches OFF then ON..
2. On MasterMenu Panel, press and hold the **★** button & press **F3** at same time.

3. If "Recipe Definition" displays, press **ENTER**.

4. The following should display:

"R01 FG COFFE S##"

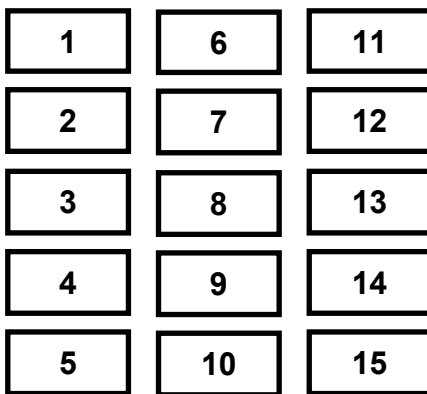
R01 = Recipe Number

FG Coffee = Flavor Type

S## = Selection Number

5. With cursor flashing on the "R" number, Press the **+** or **-** button and scroll through all recipes to determine the "S" selection number for factory assigned Flavor type.

SELECTION BUTTONS



COMPLIMENT BUTTONS

Strength

Lightener

Sugar

Sugar-Sub

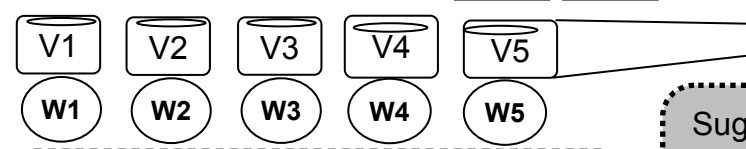
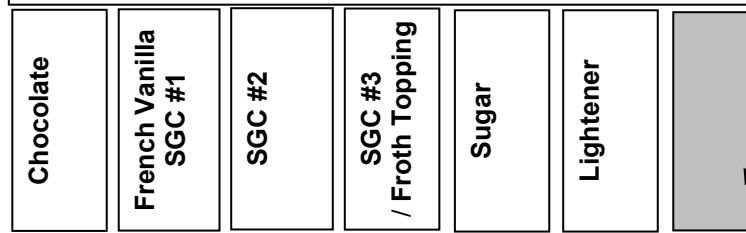
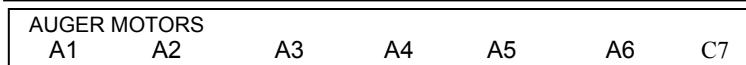
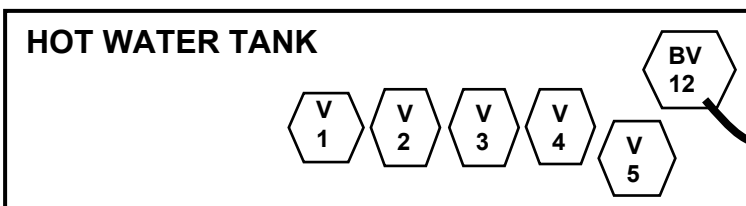
C1

C2

C2

(Optional)

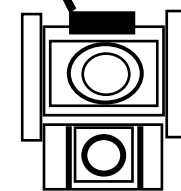
Start Switches



Note: Canister #8 not used
 V = VALVE A = AUGER 180 RPM
 BV = BREW VALVE C = AUGER 51 RPM
 W = WHIPPER P = PLUG, VALVE

Sugar-Sub
 FD Tea
 FD Decaf
 FD Gourmet

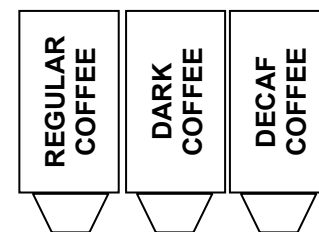
BREWER ASM



SWING-OUT HOPPER ASM

(Triple Hopper Setup)

A9 A10 A11



(Swung-Out View)

Operational Set-Up

RACK CONFIGURATION "G" (1-1-1-1-1-2) Layout Drawing Instructions

Beverage Label Locations

The following instructions will guide you through the Recipe Definition Menu that contains all 30 pre-defined recipes with assigned button selection numbers.

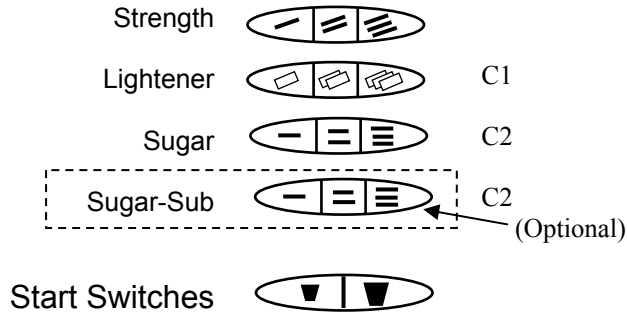
It is recommended that you scroll through all thirty recipes and list the beverage names next to all 10 or 15 selection numbers assigned.

1. Toggle Power switches OFF then ON.
2. On MasterMenu Panel, press and hold the ★ button & press **F3** at same time.
3. If "Recipe Definition" displays, press **ENTER**.

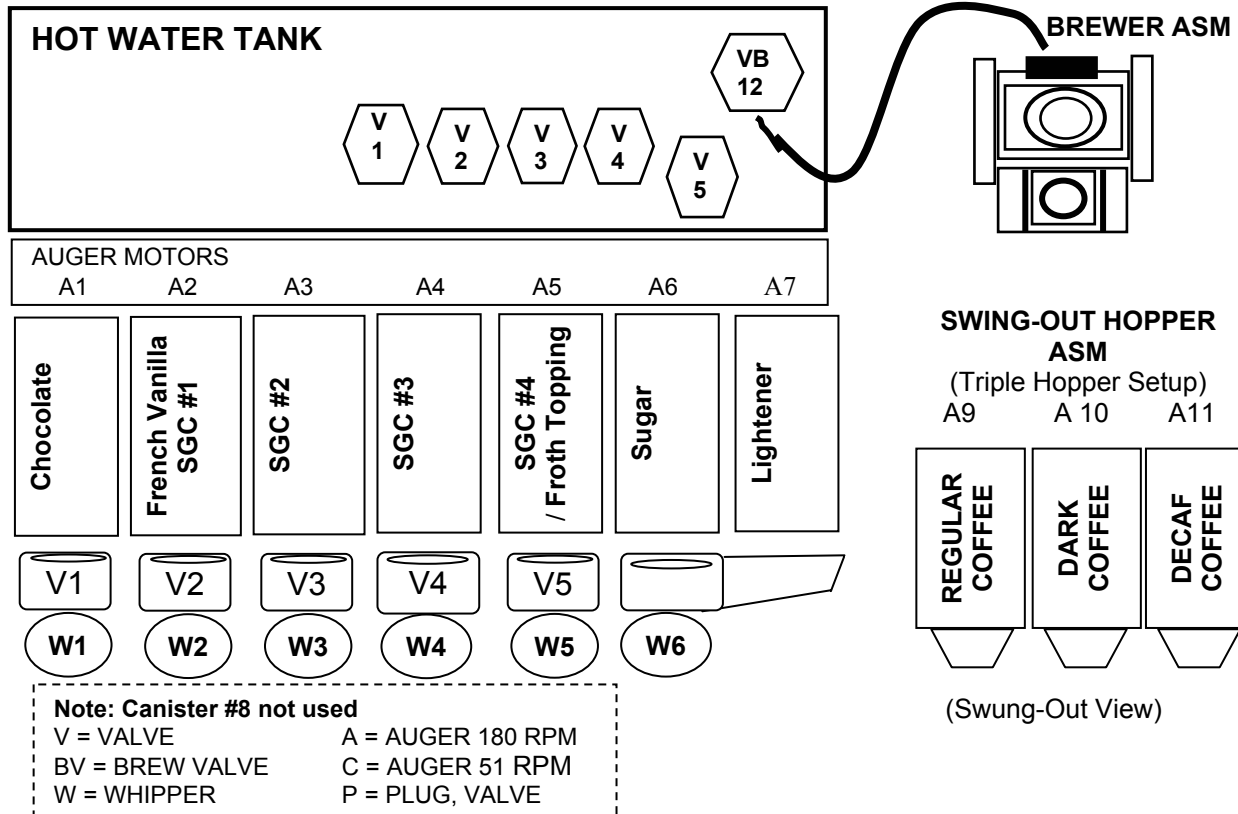
SELECTION BUTTONS

1	6	11
2	7	12
3	8	13
4	9	14
5	10	15

COMPLIMENT BUTTONS



4. The following should display:
"R01 FG COFFE S##"
R01 = Recipe Number
FG Coffee = Beverage Name
S## = Selection Number
5. With cursor flashing on the "R" number, press the or button and scroll through all recipes to determine the selection number "S##" assigned to the factory set beverage type.



Operational Set-Up

RACK CONFIGURATION "H" (1-1-1 -2 -2) Layout Drawing Instructions

Beverage Label Locations

The following instructions will guide you through the Recipe Definition Menu that contains all 30 pre-defined recipes with assigned button selection numbers.

It is recommended that you scroll through all thirty recipes and list the beverage names next to all 10 or 15 selection numbers assigned.

1. Toggle Power switches OFF then ON.
2. On MasterMenu Panel, press and hold the * button & press F3 at same time.

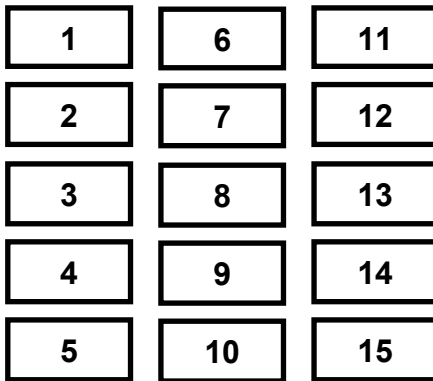
3. If "Recipe Definition" displays, press ENTER.
4. The following should display:

"R01 FG COFFE S##"

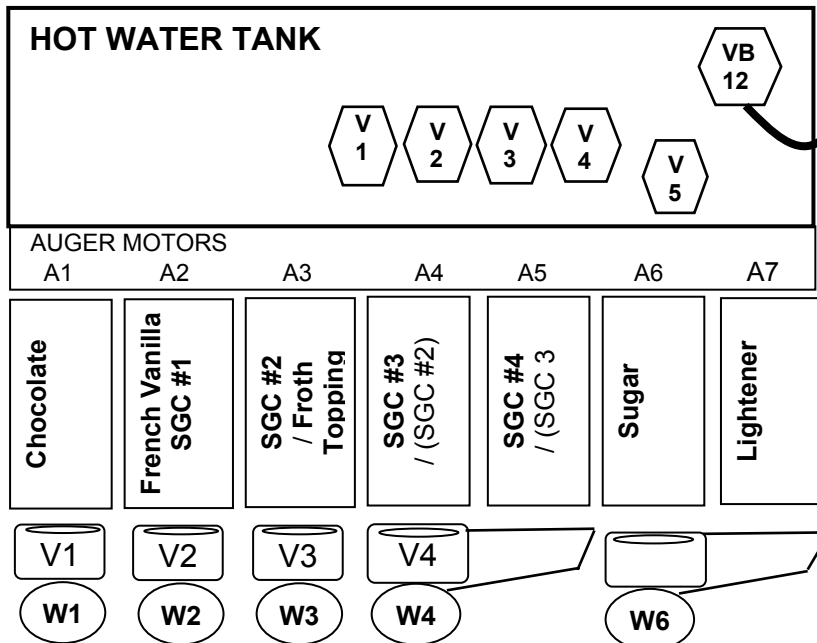
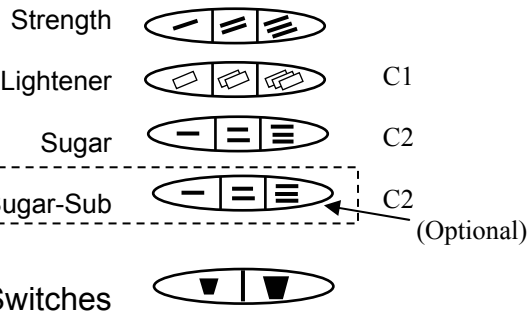
R01 = Recipe Number
FG Coffee = Beverage Name
S## = Selection Number

5. With cursor flashing on the "R" number, press the + or - button and scroll through all recipes to determine the selection number "S##" assigned to the factory set beverage type.

SELECTION BUTTONS



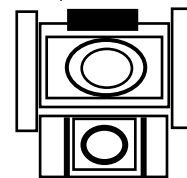
COMPLIMENT BUTTONS



Note: Canister #8 not used

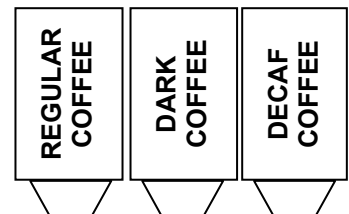
V = VALVE A = AUGER 180 RPM
 BV = BREW VALVE C = AUGER 51 RPM
 W = WHIPPER P = PLUG, VALVE

BREWER ASM



SWING-OUT HOPPER ASM

(Triple Hopper Setup)
A9 A10 A11



(Swung-Out View)

Operational Set-Up

RACK CONFIGURATION “ FDX “ FREEZE DRIED EXTENSION Layout Drawing Instruction

Beverage Label Locations

The following instructions will guide you through the Recipe Definition Menu that contains all 30 pre-defined recipes with assigned button selection numbers.

It is recommended that you scroll through all thirty recipes and list the beverage names next to all 10 or 15 selection numbers assigned.

6. Toggle Power switches OFF then ON.

7. On MasterMenu Panel, press and hold the ★ button & press **F3** at same time.

8. If “Recipe Definition” displays, press **ENTER**.
9. The following should display:

“R01 FG COFFE S##”

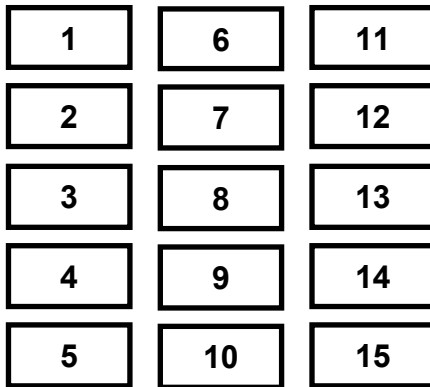
R01 = Recipe Number

FG Coffee = Beverage Name

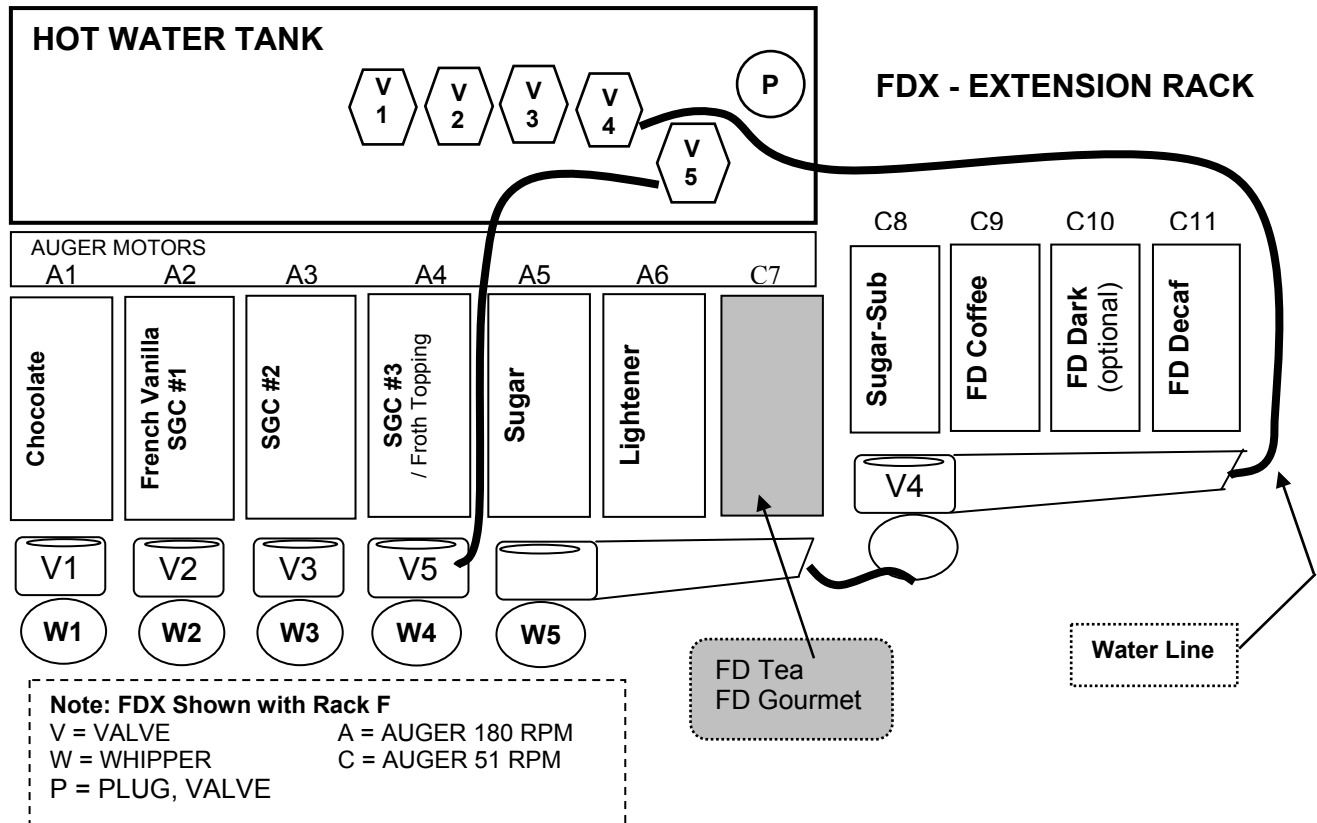
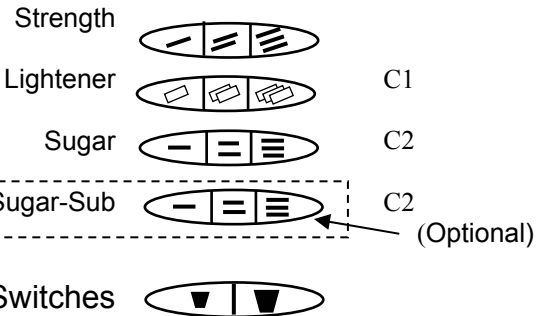
S## = Selection Number

10. With cursor flashing on the “R” number, press the **+** or **-** button and scroll through all recipes to determine the selection number “S##” assigned to the factory set beverage type.

SELECTION BUTTONS



COMPLIMENT BUTTONS



Machine Programming

Quick Set-Up Reference

The APi 223 Hot Beverage Machine is shipped with minimal preset recipes allowing the customer to determine which soluble gourmet coffees are to be used. Listed below is a quick setup reference guide required prior to installing the machine onto location:

NAME ASSIGNMENT

Press * and F2

Press **ENTER** to access device name

Press **+** or **-** to scroll through any of the device names with an assigned ingredient name.

Press **>** to move the cursor to the ingredient name that needs to be changed.

Press **+** or **-** to reassign an ingredient name to the device name displaying.

Press **ENTER** to register name change

Press **ESC** to exit this menu

RECIPE DEFINITION –

Press * and F3 at same time

Press **ENTER** to access device name (Displays: " R-01 FB Coffee S-## ")

The Recipe Number ("R-01"), Beverage Name and Selection Number ("S-02") will be displayed.

With cursor at "R-01", Press **>** to scroll to the Selection Number ("S-02").

Press **+** or **-** to assign the proper selection number to the proper recipe.

(Note: The Selection Number displaying will also light the related button on the customer selection panel.)

Press **ENTER** to register setting or **ESC** to step back.

Press **ESC** twice to save all changes in memory and to exit this menu.

SET DRINK SIZES

Press **ENTER** to access MasterMenu™.

Press the **>** until "BEVERAGE DEFINITION" appears on the display.

Press **ENTER** to access.

Press the **>** until "SET DRINK SIZES" appears on the display.

Press **ENTER** to access.

Displays: "SIZE S 1 8.0" ("1" = low capacity cup cabinet – "2" = High capacity cup cabinet)

Press **>** to scroll cursor from Cup Size (Size S) to Dispenser # (1) to Drink Volume (8.0).

Press **+** or **-** to toggle cup size, or to change dispenser # or to increase or decrease volume setting.

Press **ENTER** to register setting or **ESC** to step back.

Press **ESC** twice to save all changes in memory and to exit this menu.

SET PRICES

Press F4 - Set Price Menu

Press **ENTER** to access Set Price menu.

(Sample Displays: "08 CafeMocha 00.50")

Press **>** to move cursor between Selection #, Selection Name, & Price Setting.

Press **>** to move cursor to price setting. Use numbered keypad or **+** or **-** to set cup price.

Press **>** to move cursor to selection number.

Press **+** or **-** to choose the selection to be priced.

Press **ENTER** to register the setting for selection displayed. Repeat above steps to price other selections.

Press **ESC** to save in memory and exit this menu.

Machine Programming

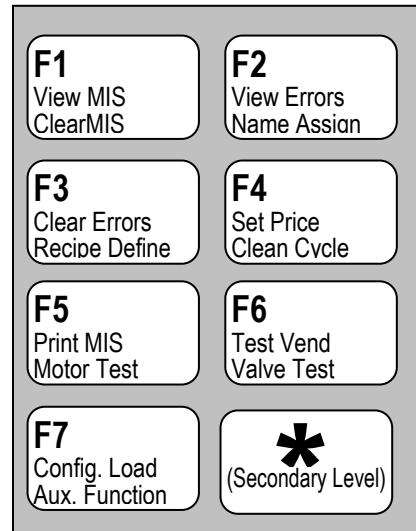
Function Keys

To access the following "F" function buttons, you should be in the enhanced program mode. This mode is automatically accessed when the main door is opened or can be accessed by depressing the Service Switch located on the main door. The display should be showing either;




"ENTER FOR MASTERMENU" or

"XX ERRORS"




Note: upon depressing the service switch, you may need to wait up to 15 seconds to allow for the initialization / scanning process to complete.






Press F1 - View MIS Menu (accountability)

- Press  or  to scroll through the MIS data.
- Press  to exit this menu.










Press F2 - View Errors Menu

- Press  to View for Errors. The most current error will appear first.
- Press  to scroll through the error list when reaching end of list, two audible beeps can be heard. Pressing **F2** when viewing an error will cause extended diagnostics to be displayed.
- Press  to exit this menu.






Press F3 - Clear Errors Menu

- Press  to toggle from "N" to "Y".
- Press  to clear Errors.
- Press  to exit.



Press F4 - Set Coffee Price Menu

- Press  to access Set Price menu. (Sample Displays: "01 FB TEA 00.50")
- Press  to move cursor to price setting. Use numbered keypad  or  or to set cup price.
- Press  to move cursor to selection number.
- Press  or  to choose the selection to be priced at size indicated.
- Press  to register the setting for selection displayed. Repeat above steps to price other selections.
- Press  to save in memory and exit this menu.











Press F5 - PRINT MIS DATA

- Press  twice to view "PRINT SHORT LIST"
- Press  or  to choose either "SHORT" or "FULL" list to print.
- Press  to start transmitting data.
- Press  to exit this menu.

Press F6 - Test Vend Menu

- Press to toggle between "N" and "Y".
- Press  and the front selection panel becomes active until main door is closed.
- Press  to exit this menu.

Press F7 - CONFIGURATION LOAD

- Press  then  or  to view "MASTERMENU ONLINE" "TMU UPLOAD" "TMU DOWNLOAD"
- Press  at the desired function above
- Press  or  to choose either Options, Recipes, or Languages to load.
- Press  to move courser to "N" position
- Press  to toggle from "N" to "Y".
- Press  to start process. Insert loading device into socket plug and hold until display indicates "TRANSFER COMPLETE".
- Press  to exit this menu

Machine Programming

Function Keys

The second level of Menu items can be accessed by pressing and holding in the key while pressing one of the function buttons F1 - F7.

Press * and F1 - Clear MIS Data

- Press **[+]** to toggle from "N" to "Y"
- Press **[ENTER]** to initiate MIS reset process
- Press **[ESC]** to exit

Press * and F2 - Name Assignments

- Press **[ENTER]** to access device name
- Press **[+]** or **[−]** to scroll through any of the device names with assigned ingredient names.
- Press **[>]** to move cursor to ingredient name that needs to be changed.
- Press **[+]** or **[−]** to reassign an ingredient name to the device name displaying.
- Press **[ENTER]** to register name change
- Press **[ESC]** to exit this menu

Press * and F3 - Recipe Definition

(Note: the following instructions are for checking or modifying duration times only.)

- Displays: "R- 01 FB COFFEE S-01 "

The Recipe Number ("R- 01"), Beverage Name and Selection Number ("S- 01") will display.

- With cursor at "R-01" Press **[+]** or **[−]** to scroll to the Recipe Name you wish to go into & check or modify a duration time.

(Note: The Selection Number displayed will also light the related button on the customer selection panel.)

- Press **[ENTER]** when at desired Recipe Name. You are now in the recipe timing steps for this beverage.

- Press **[>]** to move through the numbered recipe steps until reaching the device or ingredient name that the duration time is in.

(Note: ingredient names starting with alpha letters are as follows: A = Auger, V = Valve, W = Whipper, C = Coffee, LG = Loose Ground, and G = Grinder)

- Press **{F2}** to view duration time setting. Use numbered keypad to change setting.
- Press **[ENTER]** to register new setting or **[ESC]** to step back.
- Press **{F3}** to set modifier if applicable. Use numbered keypad to change setting.
- Press **[ENTER]** to register setting or **[ESC]** to step back.
- Press **[ESC]** twice to save all changes in memory and to exit this menu.

Press * and F4 - Cleaning Cycle

- Press **[ENTER]** to access Manual Cleaning Cycle
- Press **[+]** to change setting to "Y"
- Press **[ENTER]** to start cleaning process
- Press **[ESC]** to exit this menu

Press * and F5 - Motor Test

- Press **[ENTER]** to access settings.
- Press **[>]** to scroll to motor name testing.
- Press **[ENTER]** to start the test
- Press **[ESC]** to exit

Press * and F6 - Valve Test

- Press **[ENTER]** to access settings.
- Press **[>]** to scroll to valve name testing.
- Press **[ENTER]** to start test
- Press **[ESC]** to exit.

Press * and F7 - Auxiliary Functions

(NOTE: Used to check and test the following devices: Cup motors, spirals, cupwell spout, & vend door.)

- Press **[ENTER]** to access Auxiliary Functions test.
- Press **[>]** to scroll to the device functions to test
- Press **[ENTER]** to run the device function. When test is completed, the display will indicate; "TEST COMPLETE" or "TEST FAILED".
- Press **[ESC]** to exit.

Machine Programming

Operation System

Introduction

The APi MasterMenu System is user friendly and provides a common look and feel across all menu items. The system allows the user to move freely through the menus and provides ease of insertion, modification, and deletion of operational parameters and data. In addition, the system provides the user with status and diagnostics messages to aid in the use and service of the machine.

Operational Mode

The Operational mode provides the machine with the ability to vend products. The machine is in Operational Mode whenever the main cabinet door of the machine is closed. Upon opening of the main cabinet door, the machine will go into the Enhanced Operation Mode and will display "ENTER FOR MASTER MENU". The machine remains in Operational Mode until the **ENTER** key is depressed at which time it will enter the Service Mode. This allows for vends to occur while the main cabinet door of the machine is open and the user has not yet entered Service Mode by depressing **ENTER** the key. This is referred to as Enhanced Operational Mode that is different from Operational Mode in that the Function keys and Payout keys are active. If any key other than the **ENTER** key is depressed, it will perform its function and return the machine to Enhanced Operational Mode when complete.

The Service Menu provides access to all configurable items in the machine as well as retrieval of MIS information. The Service Menus shall only be available when the machine is in Service mode.

Service Mode

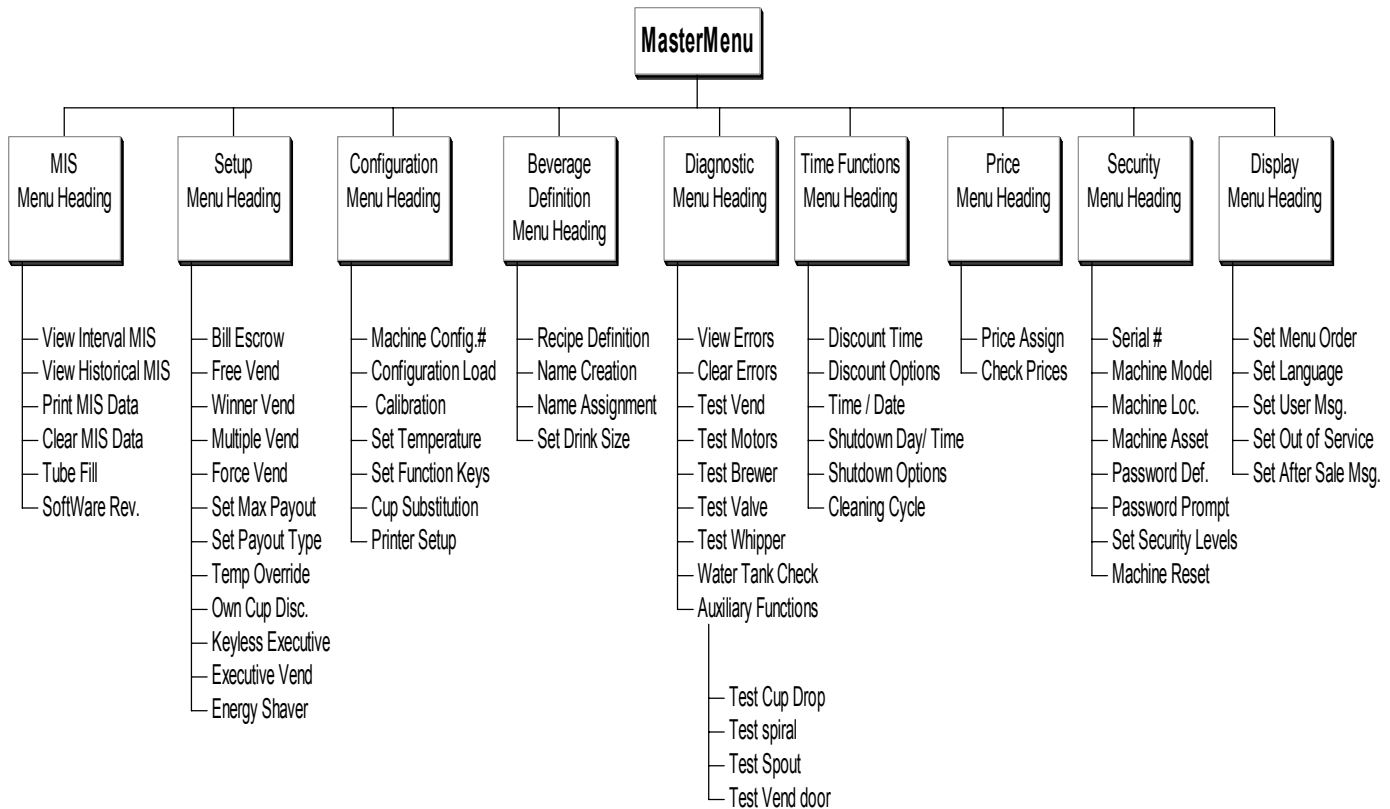
Service Mode provides the ability to configure the machine. When the main door is opened, the service switch will deactivate and "ENTER FOR MASTERMENU" will be displayed. If no errors have been logged, or "NNN ERRORS" in the case where errors exist ("NN" is the number of errors). Depressing the **ENTER** key will step you into the Service Mode and will display "MIS" for this menu. Depressing the **ENTER** key, the machine returns to Operational Mode whenever the main cabinet door is closed. When the main cabinet door is closed, the machine scans for all recipes configured in the program. If Recipe Mismatch is displayed; an error has been found in the recipe program. Entering into the diagnostics program will allow for the incorrect recipe number to be displayed.

Machine Programming

MasterMenu™

The MasterMenu™ System provides a set of text based Service Menus which allows interface to all functions of the machine. Menus appearing at the upper most level of the menu system are referred to as Menu Headings. Menus appearing under the Menu Headings are referred to as Menu Items.

MasterMenu™ Structure Diagram



Machine Programming

Quick Reference Directory for MasterMenu™

The following is a quick reference for the keys on the MasterMenu™ keypad.

F1 → **F7** Are the quick path Function Keys used when in the Enhanced Mode to perform and retrieve programming information through some of the most commonly used functions in the machine. When in the Recipe Definition Mode, these keys are used to perform recipe time settings.

* Depressing the (star) * key while depressing one of the function keys **F1** through **F7** are specific to the second level of menu heading/items currently active. The * key can also be used for wildcarding in the pricing of all the small or large size cups at the same price, thus saving time. This key also is used in the Recipe Definition Menu to set Ingredient type.

0 The four coin payout buttons are used to pay coins out of an L+ or a standard US (dummy mech). The four coin payout buttons are **.05**, **.10**, **.25**, and **1.00**. The four coin payout buttons may also be used to enter pricing information while assigning prices. For example, to enter a price of \$.65, pressing the **.25** key twice, the **.10** key once and the **.05** key once, would result in .65 appearing on the display. See the Price Setting section for additional information. The four coin payout buttons may also be used to enter pricing information while assigning prices.

ESC Used for exiting the current menu, escaping from menu functions without saving any changes if the **ENTER** Key was not depressed before **ESC** key.

ENTER Used to choose a menu heading and to commit to insertions/modifications/deletions made in a menu item.

< AND **>** Used to move the cursor from its current position to the position directly to its left or right also to select the menu heading immediately to the left of the current menu heading.

+ AND **-** Used for increasing and decreasing the available choices in a menu .

Note: Anywhere in this manual that the or keys are defined to sequence through numeric data, the front panel may be used as an alternate input source.

DELETE Used to delete the character on the current cursor position. Also used to remove a recipe step when editing a beverage recipe file.

INS Used to insert a character to the left of the current cursor position. Also used to insert a recipe step when editing a beverage recipe file.

Note: Depressing a function key will not cause you to enter the MasterMenu™ System.

Machine Programming

MIS Menu heading

MIS Description

The MIS menu Heading provides the ability to view MIS data collected during Operational Mode as well as data collected during specific Service Mode functions such as Test Vends. This menu also provides the ability to print the MIS data and download the data to the Transportable Memory Module or DEX/UCS hand held computer. MIS data is stored as both resettable and non-resettable with the exception of Machine Identification Number, Machine Serial Number, and Software Version Number, which are stored as non-resettable only. This menu also provides a means of clearing the resettable data. The chart below indicates which vend types will register for the following MIS data fields:

Vend Type								
Field	Normal	Discount	Token or Winner	Discount & Winner or Token	Executive	Test vend	Free vend	Token Vend
# VENDS	*	*	*	*	*		*	*
\$ VENDS	*	*		*	*			
# / SELECTION	*	*	*	*	*		*	*
\$ / SELECTION	*	*		*	*			
# / TEST VEND						*		
\$ / TEST VEND						*		
# / DISCOUNT		*		*				
\$ / DISCOUNT (Amount)		*		*				
# / WINNER			*	*				
\$ / WINNER (Sale Price)			*	*	*			
#/EXECUTIVE						*		
\$/EXECUTIVE						*		
# / FREE VEND							*	
\$ / FREE VEND							*	
# / TOKEN				*				*
\$ / TOKEN				*				*

* Indicates which field is updated for a given vend type.

(List Price - Discount Amount if any = Sale Price)

Note: \$Winner accumulates sale prices of Winners. If the Winner is also Discounted, the vend is counted in #Discount and the discount is accumulated in \$Discount.

View MIS Data Menu

Depressing the key when the MasterMenu™ indicates "VIEW MIS DATA" on the display will cause the display to be updated with the first MIS data item, "TOTAL CASH SALES". The and keys are used to sequence through the historical MIS data list defined in the following table:

FASTPATH

ENTER	To enter view MIS, the display will prompt the total cash sales.
< Or >	To next MIS data.
ESC ESC	To exit.

Depressing F1 will give you direct access to the View MIS menu without entering MasterMenu™.

Machine Programming

MIS Menu heading

Resettable and Non-Resettable MIS data in DEX format

NAME	DEX HEADER FIELD	DEX FIELDS	
		HISTORICAL (Non-Resettable)	INTERVAL (Resettable)
TOTAL VALUE OF SALES		VA101	VA103
# OF VENDS		VA102	VA104
VALUE OF DISCOUNTED PAID SALES		VA105	VA107
# OF DISCOUNTED PAID SALES		VA106	VA108
VALUE OF TEST VENDS		VA201	VA203
# OF TEST VENDS		VA202	VA204
# FREE VENDS ¹		VA302	VA304
VALUE FREE VENDS ¹		VA301	VA303
COIN MECH SERIAL NUMBER		CA101	
COIN MECH MODEL NUMBER		CA102	
COIN MECH FIRMWARE REVISION		CA103	
VALUE OF CASH SALES		CA201	CA203
# OF CASH SALES		CA202	CA204
VALUE OF BILLS STK'D		CA308	CA304
VALUE OF CASH IN		CA305	CA301
VALUE OF COINS TO TUBES		CA307	CA303
VALUE OF COINS ROUTED TO THE CASH BOX		CA306	CA302
VALUE OF CASH DISPENSED		CA403	CA401
VALUE OF CASH MANUALLY DISPENSED		CA404	CA402
VALUE OF DISCOUNT FOR DISCOUNTED VENDS		CA702	CA701
# OF DISCOUNTED VENDS		CA704	CA703
VALUE OF CASH OVERPAY		CA802	CA801
VALUE OF PAY VEND EXACT CHANGE		CA902	CA901
VALUE OF CASH FILLED		CA1002	CA1001
CURRENT VALUE OF COINS IN TUBES		CA1501	
MACH ID #		ID102	
MACH ASSET #		ID106	
MACH LOCATION		ID104	
MACH SERIAL #	SAME AS CB101 FOR NOW	ID101	
MACHINE VERSION #	AP120	ID103	
DECIMAL POINT POSITION		ID401	
TELEPHONE COUNTRY CODE		ID402	
CHANGER CURRENCY CODE		ID403	
SYSTEM DATE		ID501	
SYSTEM TIME		ID502	
BILL VALIDATOR SERIAL NUMBER		BA101	
BILL VALIDATOR MODEL NUMBER		BA102	
BILL VALIDATOR FIRMWARE REVISION		BA103	
CONTROL BOARD SERIAL NUMBER		CB101	
CONTROL BOARD MODEL NUMBER		CB102	
CONTROL BOARD FIRMWARE REVISION		CB103	
VALUE OF DISCOUNT FOR EXECUTIVE VENDS	MA501 = "EXECUTIVE"	MA502	MA504
# OF EXECUTIVE VENDS		MA503	MA505
VALUE OF DISCOUNT FOR KEYLESS EXECUTIVE VENDS	MA501 = "KEYLESS EXEC"	MA502	MA504
# OF KEYLESS EXECUTIVE VENDS		MA503	MA505
VALUE FREE VENDS ON SMALL CUPS ¹	MA501 = "FREE SMALL CUP"	MA502	MA504
# OF FREE VENDS ON SMALL CUPS ¹		MA503	MA505
VALUE FREE VENDS ON LARGE CUPS ¹	MA501 = "FREE LARGE CUP"	MA502	MA504
# OF FREE VENDS ON LARGE CUPS ¹		MA503	MA505
# OF WINNER VENDS	MA501 = "WINNER VENDS"	MA503	MA505
VALUE OF WINNER VENDS		MA502	MA504
# OF DISCOUNTED VENDS	MA501 = "DISC"	MA502	MA503
VALUE OF LARGE VOLUME DRINKS	MA501 = "LARGE VOLUME"	MA502	MA504
# OF LARGE VOLUME DRINKS		MA503	MA505
VALUE OF SMALL VOLUME DRINKS	MA501 = "SMALL VOLUME"	MA502	MA504
# OF SMALL VOLUME DRINKS		MA503	MA505
VALUE OF LARGE VOLUME NO CUP DRINKS	MA501 = "LARGE NO CUP"	MA502	MA504
DISCOUNT OF LARGE VOLUME NO CUP DRINKS			
# OF LARGE VOLUME NO CUP DRINKS		MA503	MA505
VALUE OF SMALL VOLUME NO CUP DRINKS	MA501 = "SMALL NO CUP"	MA502	MA504
DISCOUNT OF SMALL VOLUME NO CUP DRINKS			
# OF SMALL VOLUME NO CUP DRINKS		MA503	MA505
VALUE OF VEND TOKEN SALES		TA201	TA203
# OF VEND TOKEN VENDS		TA202	TA204
VALUE OF VALUE TOKEN SALES		TA205	TA207
# OF VALUE TOKEN VENDS		TA205	TA208
CASHLESS SERIAL NUMBER		DA101	
CASHLESS MODEL NUMBER		DA102	
CASHLESS FIRMWARE REVISION		DA103	
# OF CASHLESS VENDS		DA202	DA204
VALUE OF CASHLESS VENDS		DA201	DA203
VALUE CREDITED TO CASHLESS		DA401	DA401
VALUE OF CASHLESS DISCOUNTS		DA503	DA501
# OF CASHLESS DISCOUNTS		DA504	DA502
VALUE OF CASHLESS SURCHARGES		DA507	DA505
# OF CASHLESS SURCHARGES		DA508	DA506
VALUE OF VENDS BY CABINET	PA101 = (COFFEE or SNACK)	PA202	PA204
# OF VENDS BY CABINET		PA201	PA203
VALUE OF VENDS BY COFFEE SEL AND SIZE	PA101 = (COFFEE # X) (# = 1 TO 15) (X = S,L) PA102 = PRICE	PA202	PA204

Machine Programming

# OF COFFEE VENDS BY SELECTION AND SIZE	PA103 = PA101 SAME INFO FOR AB	PA201	PA203
# OF DISCOUNTED VENDS BY SELECTION		PA205	
VALUE OF DISCOUNTED VENDS BY SELECTION		PA206	
# OF FREE VENDS BY SELECTION NUMBER		PA401	PA403
VALUE OF FREE VENDS BY SELECTION NUMBER		PA402	PA404
TIME OF LAST COFFEE VEND BY SELECTION AND SIZE		PA501 (YYMMDD)	
VALUE OF SNACK VENDS BY SEL NUMBER	PA101 = (SNACK #) (# = 010 TO 089)	PA502 (HHMM)	
	PA102 = PRICE	PA202	PA204
	PA103 = (PRODUCT CODE #) (# = 0 - 80)		
# OF SNACK VENDS BY SELECTION NUMBER		PA201	PA203
# OF DISCOUNTED VENDS BY SELECTION		PA205	
VALUE OF DISCOUNTED VENDS BY SELECTION		PA206	
# OF FREE VENDS BY SELECTION NUMBER		PA401	PA403
VALUE OF FREE VENDS BY SELECTION NUMBER		PA402	PA404
TIME OF LAST VEND BY SELECTION NUMBER		PA501 (YYMMDD)	
DOOR HISTORY	EA101 = "EGS" LAST 5 OPENINGS	PA502 (HHMM) EA102 (YYMMDD) EA103 (HHMM) EA104 (MM)	
DOOR OPEN COUNT	EA201 = "EGS", EA205 = "1" IF CURRENTLY OPENED ELSE "0"	EA203	EA202
POWER FAILURE	EA101 = "ECA" LAST 5 POWER FAILURES	EA102 (YYMMDD) EA103 (HHMM) EA104 (MM)	
# OF MACHINE RESETS	EA201 = "MACH RES"	EA203	
NUMBER OF READS WITH INTERVAL DATA		EA301	
RESETS			
DATE OF READOUT		EA302	
TIME OF READOUT		EA303	
NUMBER OF READS		EA309	
NUMBER OF INTERVAL DATA RESETS		EA3010	
NUMBER OF POWER OUTAGES		EA701	EA702
RESET ALL INTERVAL DATA CONTROL		SD105	
RESET EVENT CONTROL		SD106	

Applicable MIS data shall be stored with product code information.

View MIS Data Menu

Depressing the **ENTER** key when the MasterMenu™ indicates **"VIEW MIS DATA"** on the display will cause the display to be updated with the first MIS data item, **"TOTAL CASH SALES"**. The **<** Or **>** keys are used to sequence through the historical MIS data list defined in the following table:

FASTPATH

ENTER

To enter view MIS, the display will prompt the total cash sales.

< Or **>**

To next MIS data.

ESC **ESC**

To exit.

Machine Programming

MIS Menu heading

Format of Displayed Data

NAME	DISPLAY FORMAT OF MAIN MENU ITEMS	DISPLAY FORMAT OF SUB MENU ITEMS
INTERVAL TOTAL VALUE OF SALES	ITOT SALES 000000.00	
INTERVAL # OF VENDS	I#VENDS 0000000	
INTERVAL # OF TEST VENDS	I# TEST VENDS 0000000	
# OF MIS RESETS	# MIS RESETS 0000000	
# OF MACHINE RESETS	# MACH RESET 0000000	
# OF DEX READS	# DEX READS 0000000	
VALUE OF BILLS STK'D	I\$ BILLS 000000.00	
VALUE OF COINS IN TUBES	I\$ TUBES 000000.00	
VALUE OF CASH DISPENSED	I\$ DIS 000000.00	
VALUE OF CASH MANUALLY DISPENSED	I\$ MAN DSP 000000.00	
VALUE OF CASH IN	I\$ CASH IN 000000.00	
# OF FREE VENDS	I# FREE 0000000	
VALUE OF FREE VENDS	I\$ FREE 000000.00	
# OF SMALL FREE VENDS	I# SM FREE 0000000	
VALUE OF SMALL FREE VENDS	I\$ SM FREE 000000.00	
# OF LARGE FREE VENDS	I# LG FREE 0000000	
VALUE OF LARGE FREE VENDS	I\$ LG FREE 000000.00	
# OF TOKEN VENDS	I# TOKEN 0000000	
VALUE OF TOKEN VENDS	I\$ TOKEN 000000.00	
VALUE OF COINS IN TUBES	\$ TUBES 000000.00	
VALUE OF COINS ROUTED	I\$ BOX 000000.00	
VALUE OF DISCOUNT FOR	I\$ OF DISC 000000.00	
VALUE OF DISCOUNT FOR	I\$ EXECUTIVE 000000.00	
# OF EXECUTIVE VENDS	I# EXECUTIVE 0000000	
VALUE OF DISCOUNT FOR KEYLESS	I\$ KLESS EXEC 000000.00	
# OF KEYLESS EXECUTIVE VENDS	I# KLESS EXEC 0000000	
# OF WINNER (FREE) VENDS	I# WINNERS 0000000	
VALUE OF WINNER (FREE) VENDS	I\$ WINNERS 000000.00	
# OF CARD VENDS	I# CARDS 0000000	
VALUE OF CARD VENDS	I\$ CARDS 000000.00	
VALUE OF LARGE VOLUME DRINKS	I\$ LG VOL 000000.00	
# OF LARGE VOLUME DRINKS	I# LG VOL 0000000	
VALUE OF SMALL VOLUME DRINKS	I\$ SM VOL 000000.00	
# OF SMALL VOLUME DRINKS	I# SM VOL 0000000	
VALUE OF LARGE VOLUME NO CUP DRINKS	I\$ L NC VOL 000000.00	
DISCOUNT OF LARGE VOLUME NO CUP DRINKS	I\$ L NC DISC 000000.00	
# OF LARGE VOLUME NO CUP DRINKS	I# L NC VOL 0000000	
VALUE OF SMALL VOLUME NO CUP DRINKS	I\$ S NC VOL 000000.00	
DISCOUNT OF SMALL VOLUME NO CUP DRINKS	I\$ S NC DISC 000000.00	
# OF SMALL VOLUME NO CUP DRINKS	I# S NC VOL 0000000	
VALUE/NUMBER OF COFFEE VENDS	I\$ /# BY SELECTION	01- 00000.00 000000
TIME OF LAST COFFEE VEND	TIME BY SELECTION	01- HH:MM DD/MM/YY
VALUE/NUMBER OF VENDS	I\$ /# BY CABINET	COF- 00000.00 000000
VALUE/NUMBER OF SNACK VENDS	I\$ /# BY SELECTION	010- 00000.00 000000
TIME OF LAST SNACK VEND	TIME BY SELECTION	010- HH:MM
DOOR HISTORY	DOOR OPEN HISTORY	1-MM HH:MM
SERIAL NUMBER OF MACHINE	S/N API 00000000000	
MODEL NUMBER OF MACHINE	MODEL NUM LCB223	
MACHINE LOCATION	MACH LOC: 0000000000	
MACHINE ASSET NUMBER	ASSET NUM 0000000000	
MACHINE FIRMWARE VERSION	P30 LXX.XX CXX.XX	

Machine Programming

MIS Menu heading

Print MIS Data Menu

Depressing the **ENTER** key when the display indicates "PRINT MIS" will cause the display to be updated with "PRINT SHORT LIST". Use the **+** AND **-** keys to toggle between SHORT LIST and FULL LIST. The FULL LIST is a complete list of the stored audit sales history. The SHORT LIST provides all sales data except for data for individual products and the door opening history.

Depressing the **ENTER** key when the SHORT LIST displayed will start the selected print and the display will be updated with "PRINTING IN PROCESS" if the printer is connected. "PRINTER DISCONNECTED" will be shown if a terminal is not physically or electrically connected. At the end of the transfer the display will indicate "PRINTING FINISHED" for three seconds and the display will return to "PRINT MIS". While printing data, if the terminal is physically or electrically disconnected, the printing will stop and the display will show "PRINTER DISCONNECTED" and beep three times.

**NOTE: TO CONFIGURE THE PRINT PARAMETERS GO TO THE CONFIGURATION MENU.
FASTPATH**

ENTER	To enter Print MIS data.
+ AND -	To desired information type.
ENTER	To print list.

MIS Menu heading

BELOW IS A COMPLETE LISTING OF THE PRINTABLE DATA

Keys: **S** = Short Printout, **F** = Full Printout, **(H)** = Historical Data, **(I)** = Interval Data

<u>PRINT FIELD</u>	<u>PRINT SIZE</u>	<u>DEFINITION</u>
ID101 1234567890	S	LCB Serial Number
ID102 LCB223	S	LCB Model Number
ID103 #####	S	LCB Software Revision
ID104 XXXXXXXXXXXXXXXXXXXXXXXX	S	Location of Machine
ID106 1234567890	S	LCB Machine (Asset) Number
VA101 #####	S	Value of all Paid Sales (H)
VA102 #####	S	Number of all Paid Sales (H)
VA103 #####	S	Value of all Paid Sales (I)
VA104 #####	S	Number of all Paid Sales (I)
VA202 #####	S	Number of Test Vends (H)
VA204 #####	S	Number of Test Vends (I)
VA301 #####	S	Value of Free Vends (H)
VA302 #####	S	Number of Free Vends (H)
VA303 #####	S	Value of Free Vends (I)
VA304 #####	S	Number of Free Vends (I)
TA203 #####	S	Value of Token (Free) Vends (I)
TA204 #####	S	Number of Token (Free) Vends (I)
TA205 #####	S	Value of Token (Free) Vends (H)
TA206 #####	S	Number of Token (Free) Vends (H)
CA301 #####	S	Value of Cash IN (I)
CA302 #####	S	Value of Cash to Cashbox (I)
CA303 #####	S	Value of Cash to Tubes (I)
CA304 #####	S	Value of Bills to Stacker (I)
CA305 #####	S	Value of Cash IN (H)
CA306 #####	S	Value of Cash to Cashbox (H)
CA307 #####	S	Value of Cash to Tubes (H)
CA308 #####	S	Value of Bills to Stacker (H)
CA401 #####	S	Value Of Cash Dispensed (I)
CA402 #####	S	Value Of Cash Manually Dispensed (I)
CA403 #####	S	Value Of Cash Dispensed (H)
CA404 #####	S	Value Of Cash Manually Dispensed (H)
CA701 #####	S	Value of Cash Discounts (I)
CA702 #####	S	Value of Cash Discounts (H)
DA201 #####	S	Value of Card Vends (H)

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DA203 #####	S	Value of Card Vends (I)
EA201 MIS RESET	S	Number of MIS Resets Header
EA203 #####	S	Number of MIS Resets (H)
EA201 MACH RESET	S	Number of Machine Resets Header
EA203 #####	S	Number of Machine Resets (H)
MA501 TUBE	S	Value of Coins in Tubes Header
MA502 #####	S	Value of Coins in Tubes(At Time of Transmission)
MA501 DISC	S	Number of Discounted Vends Header
MA502 #####	S	Number of Discounted Vends (H)
MA503 #####	S	Number of Discounted Vends (I)
MA501 EXECUTIVE	S	Discount for Executive Vends Header
MA502 #####	S	Value of Discount for Executive Vends (H)
MA503 #####	S	Number of Executive Vends (H)
MA504 #####	S	Value of Discounted Vends (I)
MA505 #####	S	Number of Executive Vends (I)
MA501 SMALL FREE	S	Small Free Vends
MA502 #####	S	Value of Small Free Vends (H)
MA503 #####	S	Number of Small Free Vends (H)
MA504 #####	S	Value of Small Free Vends (I)
MA504 #####	S	Number of Small Free Vends (I)
MA501 LARGE FREE	S	Large Free Vends
MA502 #####	S	Value of Large Free Vends (H)
MA503 #####	S	Number of Large Free Vends (H)
MA504 #####	S	Value of Large Free Vends (I)
MA504 #####	S	Number of Large Free Vends (I)
MA501 WINNER	S	Winner Vends
MA502 #####	S	Value of Winner Vends (H)
MA503 #####	S	Number of Winner Vends (H)
MA504 #####	S	Value of Winner Vends (I)
MA504 #####	S	Number of Winner Vends (I)
MA501 KEYLESSEX	S	Discount for Keyless Executive Vends Header
MA502 #####	S	Value of Discount for Keyless Executive Vends H)
MA503 #####	S	Number of Keyless Executive Vends (H)
MA504 #####	S	Value of Discounted Keyless Vends (I)
MA505 #####	S	Number of Keyless Executive Vends (I)
MA501 LG DRINK	S	Large Volume Drinks Header
MA502 #####	S	Value of Large Volume Drinks Vends (H)
MA503 #####	S	Number of Large Volume Drinks Vends (H)
MA504 #####	S	Value of Large Volume Drinks Vends (I)
MA505 #####	S	Number of Large Volume Drinks Vends (I)
MA501 SM DRINK	S	Small Volume Drinks Header
MA502 #####	S	Value of Small Volume Drinks Vends (H)
MA503 #####	S	Number of Small Volume Drinks Vends (H)
MA504 #####	S	Value of Small Volume Drinks Vends (I)
MA505 #####	S	Number of Small Volume Drinks Vends (I)
MA501 NO CUP LG	S	No Cup Large Volume Drinks Header
MA502 #####	S	Discount Value of No Cup Large Volume Drinks Vends (H)
MA503 #####	S	Number of No Cup Large Volume Drinks Vends(H)
MA504 #####	S	Discount Value of No Cup Large Volume Drinks Vends (I)
MA505 #####	S	Number of No Cup Large Volume Drinks Vends (I)
MA501 NO CUP SM	S	No Cup Small Volume Drinks Header
MA502 #####	S	Discount Value of No Cup Small Volume Drinks Vends (H)
MA503 #####	S	Number of No Cup Small Volume Drinks Vends(H)
MA504 #####	S	Discount Value of No Cup Small Volume Drinks Vends (I)
MA505 #####	S	Number of No Cup Small Volume Drinks Vends (I)
EA101 DOOR 1	S	Door History of Opening
EA102 YYMMDD	S	Year, Month & Day of Opening
EA103 HHMM	S	Hour & Minute of Opening
EA104 MM	S	Minutes of Opening
EA101 DOOR 2	F	Door History 2
EA102 YYMMDD	F	Year, Month & Day
EA103 HHMM	F	Hour & Minute
EA104 MM	F	Minutes
EA101 DOOR 3	F	Door History 3
EA102 YYMMDD	F	Year, Month & Day
EA103 HHMM	F	Hour & Minute
EA104 MM	F	Minutes

Machine Programming

EA101 DOOR 4	F	Door History 4
EA102 YYMMDD	F	Year, Month & Day
EA103 HHMM	F	Hour & Minute
EA104 MM	F	Minutes
PA101 COFFEE	S	Coffee Header
PA201 #####	S	Number of all Vends of Coffee (H)
PA202 #####	S	Value of all Vends of Coffee (H)
PA203 #####	S	Number of all Vends of Coffee (I)
PA204 #####	S	Value of all Vends of Coffee (I)
PA101 SNACK	S	Snack Header
PA201 #####	S	Number of all Vends of Snack (H)
PA202 #####	S	Value of all Vends of Snack (H)
PA203 #####	S	Number of all Vends of Snack (I)
PA204 #####	S	Value of all Vends of Snack (I)
PA101 SMALL COFFEE 01	F	Small Coffee Selection Number 01 Header *
PA201 #####	F	Number of all Small Vends for Selection 01 (H)
PA202 #####	F	Value of all Small Vends for Selection 01 (H)
PA203 #####	F	Number of all Small Vends for Selection 01 (I)
PA204 #####	F	Value of all Small Vends for Selection 01 (I)
EA101 TIME	F	Time of Last Small Vend for Selection 01 Header
EA102 YYMMDD	F	Year, Month & Day Last Small Vend for Selection 01
EA103 HHMM	F	Hour & Minute of Last Small Vend for Selection 01
PA101 LARGE COFFEE 01	F	Large Coffee Selection Number 01 Header *
PA201 #####	F	Number of all Large Vends for Selection 01 (H)
PA202 #####	F	Value of all Large Vends for Selection 01 (H)
PA203 #####	F	Number of all Large Vends for Selection 01 (I)
PA204 #####	F	Value of all Large Vends for Selection 01 (I)
EA101 TIME	F	Time of Last Large Vend for Selection 01 Header
EA102 YYMMDD	F	Year, Month & Day Last Large Vend for Selection 01
EA103 HHMM	F	Hour & Minute of Last Large Vend for Selection 01
PA101 SMALL COFFEE 02	F	Small Coffee Selection Number 02 Header *
PA201 #####	F	Number of all Small Vends for Selection 02 (H)
PA202 #####	F	Value of all Small Vends for Selection 02 (H)
PA203 #####	F	Number of all Small Vends for Selection 02 (I)
PA204 #####	F	Value of all Small Vends for Selection 02 (I)
EA101 TIME	F	Time of Last Small Vend for Selection 02 Header
EA102 YYMMDD	F	Year, Month & Day Last Small Vend for Selection 02
EA103 HHMM	F	Hour & Minute of Last Small Vend for Selection 02
PA101 LARGE COFFEE 02	F	Large Coffee Selection Number 02 Header *
PA201 #####	F	Number of all Large Vends for Selection 02 (H)
PA202 #####	F	Value of all Large Vends for Selection 02 (H)
PA203 #####	F	Number of all Large Vends for Selection 02 (I)
PA204 #####	F	Value of all Large Vends for Selection 02 (I)
EA101 TIME	F	Time of Last Large Vend for Selection 02 Header
EA102 YYMMDD	F	Year, Month & Day Last Large Vend for Selection 02
EA103 HHMM	F	Hour & Minute of Last Large Vend for Selection 02
PA101 SMALL COFFEE 15	F	Small Coffee Selection Number 15 Header *
PA201 #####	F	Number of all Small Vends for Selection 15 (H)
PA202 #####	F	Value of all Small Vends for Selection 15 (H)
PA203 #####	F	Number of all Small Vends for Selection 15 (I)
PA204 #####	F	Value of all Small Vends for Selection 15 (I)
EA101 TIME	F	Time of Last Small Vend for Selection 15 Header
EA102 YYMMDD	F	Year, Month & Day Last Small Vend for Selection 15
EA103 HHMM	F	Hour & Minute of Last Small Vend for Selection 15
PA101 LARGE COFFEE 15	F	Large Coffee Selection Number 15 Header *
PA201 #####	F	Number of all Large Vends for Selection 15 (H)
PA202 #####	F	Value of all Large Vends for Selection 15 (H)
PA203 #####	F	Number of all Large Vends for Selection 15 (I)
PA204 #####	F	Value of all Large Vends for Selection 15 (I)
EA101 TIME	F	Time of Last Large Vend for Selection 15 Header
EA102 YYMMDD	F	Year, Month & Day Last Large Vend for Selection 15
EA103 HHMM	F	Hour & Minute of Last Large Vend for Selection 15
PA101 SNACK 010	F	Snack Selection Number 010 Header *
PA201 #####	F	Number of all Vends for Selection 01 (H)
PA202 #####	F	Value of all Vends for Selection 01 (H)
PA203 #####	F	Number of all Vends for Selection 01 (I)
PA204 #####	F	Value of all Vends for Selection 01 (I)

Machine Programming

EA101 TIME	F	Time of Last Vend for Selection 01 Header
EA102 YYMMDD	F	Year, Month & Day Last Vend for Selection 01
EA103 HHMM	F	Hour & Minute of Last Vend for Selection 01
PA101 SNACK 011	F	Snack Selection Number 011 Header *
PA201 #####	F	Number of all Vends for Selection 02 (H)
PA202 #####	F	Value of all Vends for Selection 02 (H)
PA203 #####	F	Number of all Vends for Selection 02 (I)
PA204 #####	F	Value of all Vends for Selection 02 (I)
EA101 TIME	F	Time of Last Vend for Selection 02Header
EA102 YYMMDD	F	Year, Month & Day Last Vend for Selection 02
EA103 HHMM	F	Hour & Minute of Last Vend for Selection 02
PA101 SNACK 089	F	Snack Selection Number 089 Header *
PA201 #####	F	Number of all Vends for Selection 89 (H)
PA202 #####	F	Value of all Vends for Selection 89 (H)
PA203 #####	F	Number of all Vends for Selection 89 (I)
PA204 #####	F	Value of all Vends for Selection 89 (I)
EA101 TIME	F	Time of Last Vend for Selection 89 Header
EA102 YYMMDD	F	Year, Month & Day Last Vend for Selection 89
EA103 HHMM	F	Hour & Minute of Last Vend for Selection 89

Machine Programming

MIS Menu heading

Clear MIS Data Menu

When this menu is active, "-CLEAR MIS DATA-N" will be displayed. Depress the + and - keys to toggle the prompt between "N" and "Y". Depressing the ENTER key when the prompt is "Y" will cause all re-settable MIS data to be cleared. If the prompt is "N", depressing the ENTER key will have no effect. Depress the ESC to exit this menu item at any time prior to committing changes.

FASTPATH

ENTER To enter Clear MIS Data.

+ AND - To toggle Y/N.

ENTER To enter action.

Tube Fill Menu

When this menu item is active, "TUBE FILL" will be displayed. Depressing the ENTER key shall cause the display to show "T0= .00 Σ .00" will be displayed (where "T0" is the tube associated with the coin mech tube number, "00Σ" is the number of coins to be added to that tube, and ".00" is the value of coins to be added to that tube). Depress ← and → keys to move left or right between the tube number, coin number, and coin value fields. Depress the + and - keys to increase/decrease the tube number (the valid tube numbers are: "1", "2", "3", or "4" where "1" is the tube which contains the smallest valued coin and the coin value increases as the tube number increases) or to set the number of coins added to that tube or the value of the coins added. Depressing the ENTER key will cause the coin inventory of the tube specified to be increased by the coin number specified (In the case where the coin value can be specified, the coin number will be computed and displayed automatically). You also have the option to use the front panel keypad to enter data into the tube number, coin number, and coin value fields.

FASTPATH

ENTER To enter Tube fill Menu.

← AND → To move between tube number, coin number and coin value fields.

+ AND - To move Increase decrease the fields.

ENTER To enter the data.

Software Version Menu

When this menu item is active, "SOFTWARE REVISION" will be displayed. Depressing the ENTER key, will display

" P30 L0X.xx C0X.xx".

P30 is the revision of the software in the processor on the LCB, L0X.xx is the revision of software in the flash memory on the Logic Control Board, C0X.xx is the revision of software in the flash memory on the Coffee Driver Board.

Machine Programming

Set-Up Menu heading

Introduction

Depressing the **ENTER** key when the MasterMenu™ indicates "SETUP" on the display provides access to the Setup Menu Items.

Bill Escrow Menu

When this menu is active, "BILL ESCROW-N" will be displayed. The current state of Bill Escrow is displayed upon entering this menu. Toggle the prompt between "N", first bill or last bill by using the **+** and **-** keys. Depressing the **ENTER** key when the prompt is "N" disables Bill Escrow. In this condition all bills are stacked. If the coin return is depressed, change will be paid back. Depressing **ENTER** the key when the prompt is **First Bill**, will cause the first bill received by the Bill Acceptor to be held in escrow (i.e. not stacked) until the vend is complete, the machine will only accept one bill and all additional money added will need to be coins. If the coin return is depressed when bill escrow is set to **First Bill** the bill will be returned. Depressing the **ENTER** key when the prompt is **Last Bill**, will cause the Last Bill received by the Bill Acceptor to be held in escrow (i.e. not stacked) until the vend is complete, the machine will accept bills up to the highest price in the machine. If the customer depresses the coin return when bill escrow is set to "**Last Bill**", the last bill will be returned and all previous bills inserted will be returned in change.

FASTPATH

- ENTER** To enter Bill Escrow setting.
- +** or **-** To toggle between N/FIRST/LAST.
- ENTER** To commit to changes.

Free Vend Menu

When this menu is active, "FREE VEND-N" will be displayed. The current state of Free Vend is displayed upon activating this menu. Depress the **+** and **-** keys to toggle the prompt between "Y" and "N". Depressing the **ENTER** key when the prompt is "N" will disable Free Vend. Depressing the **ENTER** key when the prompt is "Y" will enable Free Vend. When Free Vend is enabled, the display indicates "ALL ITEMS ARE FREE" unless overridden by a custom Point Of Sale (POS) message previously programmed into the machine.

FASTPATH

- ENTER** To enter Free Vend setting.
- +** or **-** To toggle between Y/N.
- ENTER** To commit to changes.

Winner Vend Menu

When this menu is active, "-WINNER-500" will be displayed (where "500" is the frequency that free items are awarded). The frequency of winning ranges from 1 to 500 (i.e. setting the value to 500 defines that every 500 vends, a free item will be vended). The user also has the capability to disable **Winner Vend** by setting the frequency to "OFF" (This is the default setting). "OFF" appears on the display Between "WINNER-500" and "WINNER-1". Depress the **+** and **-** keys to increase or decrease the frequency of awarding a free item by one (1). Upon depressing the **ENTER** key the displayed frequency will be accepted by the MasterMenu™ system, overwriting the previous frequency.. When a customer wins an item, credit will be returned to the customer, the chime will sound five times, and the display will indicate "*** WINNER ***". *Note: Vends made when the machine is configured for free vend or test vend are not counted for the purposes of determining a winner.*

FASTPATH

- ENTER** To enter Winner Vend setting.
- +** or **-** To increase/decrease the frequency of winner.
- ENTER** To enter frequency of winner.

Machine Programming

Set-Up Menu heading

Multiple Vends Menu

When this menu is active, "**-MULTIPLE VEND-N**" will be displayed. Depress the + and - keys to toggle the prompt between "N" and "Y". Depressing the ENTER key when the prompt is "Y" will enable the multiple vend option. If the prompt is "N", depressing the ENTER key will disable the multiple vend option and change will be returned immediately after a selection is made. If you select "Y", the display will indicate "**TIMEOUT-20**" (where "20" is the time-out value in seconds from 5 seconds to 90 seconds). Use the + or - keys to increase/decrease the time-out period. Select the time-out period by depressing the ENTER key. The "TIMEOUT" period represents the number of seconds of inactivity allowed prior to returning change. In the case where "TIMEOUT" has been selected, the display will indicate "**CREDIT-00.00**" (where "00.00" indicates the remaining credit), allowing an additional selection as long as sufficient credit exists to purchase the lowest priced item in the machine. Additional credit can be established at any time when in this mode. If the Coin Return is depressed or the amount of available credit drops below the lowest priced item in the machine, change will be returned regardless of the state of Multiple Vend.

FASTPATH

- ENTER To enter Multi-vend setting
 - + or - To toggle between Y/N
 - ENTER To enter Y/N
 - + or - To increase /decrease the time-out period.
-

Force Vend Menu

When this menu is active, "**-FORCE VEND-N**" will be displayed. Depress the + or - keys to toggle the prompt between "N" and "Y". Depressing the ENTER key when the prompt is "Y" will enable the force vend option. If the prompt is "N", depressing the ENTER key will disable the force vend option. When the force vend option is enabled, once there is enough credit established to purchase the lowest priced item in the machine, a selection must be made prior to requesting remaining credit being returned. Force Vend overrides Bill Escrow enable. Force Vend does not apply when debit cards are used.

FASTPATH

- ENTER To enter Force Vend setting
 - + or - To toggle between Y/N
 - ENTER To enter Y/N
-

Set Max Payout Menu

When this menu is active, "**SET MAX PAYOUT - N**" will be displayed. Used to set the maximum value of coins the coin mechanism will return as credit. Use the + or - keys to toggle the prompt between "N" and "Y". Depressing the ENTER key when the prompt is "Y" will enable the Set Max Payout option. If the prompt is "N", depressing ENTER the key will disable the Set Max Payout option. If you select "Y", the display will indicate "**MAX PAYOUT - 00.00**" (where "00.00" is the maximum amount of change to be returned. Use the + or - keys to increase/decrease the maximum amount of change to be returned. Depressing the ENTER key will cause the maximum coin payout to be set to the value displayed.

FASTPATH

- ENTER To enter Set Max Payout setting.
- + or - To toggle the prompt between "N" and "Y".
- + or - To increase/decrease the value.
- ENTER To enter value.

Machine Programming

Set-Up Menu heading

Set Payout Type

When this menu is active, "PAYOUT - FEWEST" (Factory Default) will be displayed. There are 3 payback options when computing returned change. "LEVELING", " MDB LEVEL 3", and "FEWEST COINS" (for US changers only). Use the or keys to toggle between the payback options. The "FEWEST" algorithms make change using the fewest number of coins possible. The "LEVELING" algorithm attempts to keep the coin levels in all tubes the same. With MDB LEVEL 3 selected the MDB changer makes all the change making decisions based on how much money it thinks is in the tubes. Depressing the key will enable the payout currently on the display.

Temperature Override Menu

When this menu item is active, "TEMP OVERRIDE- N" will be displayed. Depress the or keys to toggle the prompt between "N" and "Y". When the Temperature Override Option is enabled, the APi 223 machine will vend product even if the temperature in the Hot Water Tank falls below the acceptable temperature set for vending (i.e. 180 F). Depressing the key when the prompt is "Y" will enable the Temperature Override Option. If the prompt is "N", depressing the key will disable the Temperature Override Option. Depress the to exit this menu item at any time prior to committing changes.

Own Cup Discount Menu

When this menu item is active, "OWN CUP DISC 00.00" will be displayed where "00.00" is the value of the discount applied to the price of a drink if a customer's cup is used. Depress the or keys to select the discount amount. When the desired discount amount is displayed, depress the key to set the discount amount. The Front Panel Keypad and the MasterMenu™ Keypad can be used to enter data. The display will be updated to indicate the new discounted price if the customer's cup is used. Depress the to exit this menu item at any time prior to committing changes.

Keyless Executive Menu

When this menu item is active, "KEYLESS EXECUTIVE Y" will be displayed. Depress the or keys to toggle between "N" and "Y". Depressing the key when "Y" is displayed will display "CODE 9XXXXX" where XXXXX are user definable digits. Depress the or keys to scroll through 0 -9 and the or keys to move left and right respectively from field to field. Data can be entered using the QuickSelect Keypad. Depress the key when the desired value is displayed. This feature will allow the user to obtain an Keyless Executive Vend by entering a six (6) digit code beginning with a nine (9) from the Front Panel Keypad. Depress the to exit this menu item at any time prior to committing changes.

Executive Vend Menu

When this menu item is active, "EXECUTIVE CARAFE" will be displayed (where "CARAFE" is the current state of the Executive Vend Option). Depress the or keys to toggle between "CARAFE", "SINGLE CUP" and "OFF". Depressing the key when the display indicates "CARAFE" shall cause the Executive Vend to operate in the Carafe Mode. In this mode, 1 - 10 vends can be made. To operate the Carafe Function, turn the key-switch on (part # 26800091). The display will change to "Enter Quantity", use the numeric keypad to enter the quantity, and choose the beverage including cream & sugar. Depress the **START** button, the display will provide a countdown as each serving is prepared, and it will allow you to cancel the subsequent vends if the Carafe will over flow. Depressing the key when "SINGLE CUP" is displayed will cause the Executive Vend to operate in the Single Cup Mode. In this mode, only a single vend can be made using either own cup/mug or obtaining one from the machine

Note: The Quick Select Keypad cannot be used to select a drink in 'Keyless Executive' mode.

Machine Programming

Set-Up Menu heading

Energy Shaver Menu

Energy Shaver (Power Saving) works in conjunction with machine shut down. There are 3 modes of operation for machine shutdown defined as follows;

MODE "1"- Vend Disable - Leaves the temperature of the tank in its operational state, however all vending and coin acceptance is shut down.

MODE "2"- Automatic Power Saving mode – When in a “Shutdown” period, and the machine has been idle for more than 1 (one) hour, the unit will back the temperature off to 176' F, and all coin acceptance will be rejected.

WHILE IN POWER SAVING MODE 2:

a) The display will scroll “STANDBY - PRESS START”

b) The indicator for the ‘START’ button will flash

c) No means of payment will be accepted

d) When the ‘START’ button is pressed, the water will be heated to operating temperature. The display will show “PLEASE WAIT”. Once reaching the operating temperature, the display will revert to normal standby message and payment will be accepted.

MODE "N"- Complete shutdown - The unit shuts down, disables coin acceptance/vending and shuts off the heater.

Energy Shaver Menu

When this menu item is active, "**ENERGY SHAVER - N**" will be displayed. Depress the + or - keys to toggle the prompt between "**N, MODE 1 AND MODE 2**". Depressing the ENTER key will enable the displayed Energy Shaver Option.

Note: Energy Shaver (Power Saving) works in conjunction with machine shut down.

Machine Programming

Configuration Menu heading

Introduction

Depressing the **ENTER** key when the MasterMenu™ System indicates "CONFIGURATION" on the display allows access to the Configuration Menu Items.

Machine Configuration #:

A four-digit configuration number is used by the logic board to determine which devices will be used in the machine. At "Machine Config #" press **ENTER**, then use the numbered keypad to enter the new four digit code.

Code #	Coffee Brewer	2 nd Heater secondary	2 nd Cup Cabinet	Small Cup Avail	Snack/Pastry Combo	Notes
4651	X	X	X	X		Normal setting with brewer
4650		X	X	X		All soluble machine
4751	X	X	X	X	X	Combo
4750		X	X	X	X	Combo / All soluble machine
4051	X		X	X		Only using primary heater
4050		X	X	X		All soluble machine
4251	X		X	X	X	Only using primary heater
4250			X	X		Only using primary heater & all soluble machine
4611	X	X	X			Both Cup Cabinets use same size cup
4010		X	X			All soluble / Both Cup Cabinets use same size cup
4711	X	X	X		X	Combo / Both Cup Cabinets use same size cup
4710	X	X	X		X	Combo / All soluble // uses same size cups

Configuration Load Menu:

Allows the uploading or downloading of information to or from the logic board. Depressing the **ENTER** key will update the display to MASTER MENU ONLINE. Use the **+** or **-** to toggle through MasterMenu Online, TMU **UPLOAD**, or **TMU DOWNLOAD**. "**MASTERMENU ONLINE**" selection is a method of configuration using a Personal Computer with API's exclusive MasterMenu™ Online software. The MasterMenu™ Online software allows both uploading and downloading information to and from the APi 233. TMU Upload allows you to upload programming information to a machine from a touch memory button (TMU Chip) that has already been programmed. TMU Download allows you to download the APi 223's programming information to a touch memory unit (TMU Chip).

Depress the **<** or **>** keys to toggle the prompt through all data transfer methods. Depressing the **ENTER** key when the prompt is "**MASTERMENU ONLINE**", will change the display to indicate "**MASTERMENU ACTIVE**" if the RS232 cable is connected and the PC is communicating. If not, the display will indicate "**MASTERMENU INACTIVE**" until communications is established.

Depressing the **ENTER** key when the prompt is "**TMU UPLOAD**" or "**TMU DOWNLOAD**" will change the display to indicate either "**UPLOAD or DOWNLOAD -Options Y**". With the options flashing, Depress the **+** or **-** keys to toggle the prompt between "Options", "Recipes". Depressing the **ENTER** key when the prompt is "**Y**" shall update the display with "**UPLOAD IN PROGRESS**", if the TMU is connected and communicating. If the TMU is not connected, the display will indicate "**AWAITING UPLOAD**". At the conclusion of the data transfer the display will show "**TRANSFER COMPLETE**" for 3 seconds then beep 1 time, and then return to the "**CONFIGURATION LOAD**" menu selection. If an error is detected, the beeper will beep 3 times and the display will show "**TRANSFER ERROR**".

Machine Programming

Water Temperature Control Menu

This menu is used to set the water temperature tolerances in the full APi 223 installation. Depressing the **ENTER** key when the MasterMenu™ System indicates "SET TEMPERATURE" will display "TEMPERATURE 200 F" (where "200 F" is the temperature that the water in the tank is to be maintained). The temperature setting can be changed from 175°F to 210°F in increments of one (1) degree. The default temperature value for the tank will be 200°F. The control system will maintain the tank temperature to the value-specified +/-1°F. The temperature scale is either Celsius or Fahrenheit. The **<** and **>** keys moves the cursor left and right respectively through the temperature value, and temperature scale fields and use the **+** or **-** keys to increase or decrease the currently selected field. The currently selected field will flash while no other keyboard activity is detected. Depressing the **ENTER** key when the desired temperature value and temperature scale are displayed shall cause the water supply to be set to the displayed temperature. The data can be entered using the Front Panel Keypad to. Depress the **ESC** key to exit this menu item at any time prior to committing changes.

NOTE: During Operational Mode, water tank temperature is displayed in Celsius if the {C} key is depressed or Fahrenheit if the {0} key is depressed for three (3) seconds. The temperature will be display until the key is released.

Set Function Keys Menu

This menu item is used to assign one (1) of the forty (40) pre-defined functions supplied in the program to each of the fourteen (14) function keys ({F1} through {F7} and {*F1} through {*F7}) on an individual basis. When this menu item is active, the display will indicate "SET FUNCTION KEYS" on the display. Depressing the **ENTER** key shall cause "F1-VIEW MIS" to be displayed (where {F1} is the function key to be defined and "VIEW MIS" is the function to be assigned). At this stage the **<** and **>** keys perform a different role. The **<** is used to navigate across the menu headings, MIS, SETUP, CONFIGURATION in one direction only. The **>** is used to navigate down the list of fields under the menu heading. Under "MIS"> "VIEW INTERVAL MIS", > "ITOT SALES", etc.

NOTE: When using the **>** key to navigate down a menu list, do it slowly, if you go past the target field you will have to start again from the top of the list.

When you reached the target menu heading, Depress the **+** or **-** keys to select the desired function key. Depressing the **ENTER** key shall cause the displayed function to be assigned to the function key indicated. Table 5 below indicates the factory default settings for the Function Keys F1 thru *F7 and any of the other functions listed can be used to reassign a function.

Function Key Assignments

FUNCTION	FUNCTION KEY	FUNCTION	FUNCTION KEY
VIEW INTERVAL MIS	F1 (FACTORY DEFAULT)	SET TIME & DATE	OPEN
VIEW ERRORS	F2 (FACTORY DEFAULT)	SET DRINK SIZES	OPEN
CLEAR ERRORS	F3 (FACTORY DEFAULT)	PUMP TEST	OPEN
SET PRICE	F4 (FACTORY DEFAULT)	WHIPPER TEST	OPEN
PRINT MIS	F5 (FACTORY DEFAULT)	WATER TANK CHECK	OPEN
TEST VEND ACTIVE	F6 (FACTORY DEFAULT)	SET MAX PAYOUT	OPEN
CONFIGURATION LOAD	F7 (FACTORY DEFAULT)	SET PAYOUT TYPE	OPEN
CLEAR MIS DATA	*F1 (FACTORY DEFAULT)	DISCOUNT DAY / TIME	OPEN
NAME ASSIGNMENTS	*F2 (FACTORY DEFAULT)	DISCOUNT OPTIONS	OPEN
RECIPE DEFINITION	*F3 (FACTORY DEFAULT)	SHUTDOWN DAY / TIME	OPEN
CLEANING CYCLE	*F4 (FACTORY DEFAULT)	SHUTDOWN OPTIONS	OPEN
TEST MOTORS (AUGER)	*F5 (FACTORY DEFAULT)	NAME CREATION	OPEN
TEST VALVES	*F6 (FACTORY DEFAULT)	SERIAL NUMBER	OPEN
AUXILIARY TEST	*F7 (FACTORY DEFAULT)	EXECUTIVE VEND	OPEN
WINNER VEND	OPEN	SET USER MESSAGE	OPEN
MULTI VEND	OPEN	OUT OF SERVICE	OPEN
BILL ESCROW	OPEN	AFTER SALE MESSAGE	OPEN
FORCE VEND	OPEN	SET MENU ORDER	OPEN
CHECK PRICE	OPEN	SET TEMPERATURE	OPEN
TUBE FILL	OPEN	SERVICE	OPEN

Machine Programming

Configuration Menu heading

Cup Substitution Menu

This menu item is active, "CUP SUBSTITUTION - N" will be displayed. Depressing the + or - keys will toggle the prompt between "N" and "Y". Depressing the ENTER key when the prompt is "Y" enables this feature and updates the display with "NEXT SMALLER SIZE -N". Depress the + or - keys to toggle the substitution option field (between "NEXT SMALLER SIZE" and "OVERSIZED CUP") and the enable fields (between "Y" and "N"). When the "NEXT SMALLER SIZE" option is enabled, if a particular cup dispenser is out of cups, the control system will automatically dispense the next smaller sized drink. For example, if the machine is out of large cups, and a customer presses the Large Cup Size Start Button, the control system will dispense a Medium sized drink (if available) at the set price for a medium sized drink and returns the change. When the "OVERSIZED CUP" option is enabled, if a particular cup dispenser is out of cups, the control system will automatically dispense the drink size selected in the next larger cup size. For example, if the machine is out of small cups, and the customer presses the Small Cup Size Start Button, the control system will dispense a Small sized drink in a Medium sized cup.

NOTE: If both options are enabled, the "NEXT SMALLER SIZE" option will have priority over the "OVERSIZED CUP" option. The only case this would effect is when the Medium size cups are sold out in a machine with three (3) cup sizes. For example, if a cup dispenser is out of Medium size cups, and the customer presses the Medium Start Button, the control system will automatically dispense a Small Drink (i.e. Small cup, Small Volume, and price set for a Small size drink) and will return the change.

Depressing the ENTER key when the prompt is "CUP SUBSTITUTION - N" shall disable this feature. Should a particular cup dispenser be out of cups, the control system will disable the appropriate size Start Button and the display should be updated to indicate "NO CUPS THIS SIZE".

Printer Setup Menu

Depressing the ENTER key when the MasterMenu™ System indicates "SETUP PRINTER" on the display allows the printer parameters to be configured when a printer is connected to the machine. The display shall indicate "BAUD-9600 N-8-1". This is the default. Below are the available parameters:

"9600" = Baud Rate : "300", "1200", "2400", "9600", "19200"

"N" = Parity Bit: None "N", Even "E", Odd "O"

"8" = Data Bits: Eight "8", Seven "7"

"1" = Stop Bits: One "1", Two "2"

Depress the ← and → keys to move left and right respectively through the baud, parity, data bit, and stop bit fields and use the + or - keys to increase or decrease the selected field. When the desired baud, parity, data bits, and stop bits are being displayed, depress the ENTER key to accept the entry. Depress the ESC key to exit this menu item at any time prior to committing changes.

Machine Programming

Beverage Definition Menu heading

Introduction

Depressing the **ENTER** key when the MasterMenu™ System indicates "BEVERAGE DEFINITION" on the display allows access to the Beverage Definition Menu Items.

Recipe Definition Header Menu

This menu is used to create, view and modify beverage recipes that produce the desired beverages in your machine. Recipe default settings have already been established for all the beverage selections in the APi 223. Two Levels of access to the programming of recipes has been introduced, these being 'LOW' (L) & 'HIGH' (H).

In the 'LOW' level of access, it is possible to view the steps of the recipe as normal, but only the time's (F2) of throws & delays can be changed. It is not possible to inadvertently change the actual sequence of the recipe. In the 'HIGH' level of access, it is possible to make changes to the step functions or recreate new recipes.

When this menu item is active, the display shall indicate "**RECIPE DEFINITION**" on the display. Depressing **ENTER** will update the display to "**RECIPE DEF L**". Depress the **+** or **-** keys to toggle between the "**DEF L**" and "**DEF H**" field.

The programming method used in this machine is somewhat different from the concept used for our previous model the APi 223. Beverage & ingredient names are created in the Name Creation Menu and each beverage name will have a recipe timing chart assigned to it. The sequential order of the steps in the recipe dictates how the machine will function to produce the beverage selected.

The example below illustrates how the sequential order of recipe steps produce a hot chocolate drink:

Recipe	Function	
Step #	Description	Action
1	"VALVE-01"	Start chocolate water valve at beginning of vend cycle.
2	"WHIPPER-01"	Start chocolate whipper at beginning of vend cycle.
3	"WAIT"	Delay start of following step. (This allows time for water to reach the mixing bowl.)
4	"CHOCOLATE"	upon above delay setting, the chocolate auger will start dispensing.
5	"END"	When all steps above have timed out, this command will add extra delay for liquid drainage and completes the vend cycle

Theoretically, there is no start time setting, instead the program depends on the sequential order of delay commands to systematically; start, energize and stop items as they are produced from start to finish. Duration and delay times are set using the "F" keys on the MasterMenu™ Panel.

The following five delay commands are used in programming recipes:

NEXT: Allows all previous steps to time out and adds extra delay time before the next step starts. Steps defined in succession which are not separated by this delay setting shall be performed in parallel.

WAIT: Causes a timed delay to be inserted into the recipe sequence. Uses previous ingredient starting point and delays the start of the following recipe step.

INGREDIENT DELAY: This delay is time referenced back to the end time of the Extra Strong Delay associated with the brewer. This allows for a more precise dispensing time of the complement ingredients (i.e. sugar, lightener, sugar substitute).

TOPPING DELAY: Used to top off a beverage drink with another ingredient on the canister rack. This delay is time referenced back to the start time of the Pressure Relief Delay associated with the brewer.

END: This function represents the end of the recipe and also has a time delay associated with it. Causes a timed delay to be inserted to the end of the vend cycle, which allows for complete drainage of all liquid products.

{ F2 } DURATION TIME

This function key is used to set the duration time attribute. Depressing this key when a recipe step is being displayed shall cause the display to be updated in seconds i.e. "TIME – 03.45". The user shall use the **+** or **-** keys to increase/decrease the time field.

Machine Programming

Beverage Definition Menu heading

{ F3 } MODIFIER

This function key is used to set the modifier percentage attribute. Depressing this key when a recipe step is being displayed shall cause the display to be updated with the modifier percent of that ingredient, i.e. "MODIFIER - 25". The default modifier value is 25%.

Brewer Controls

The brewer has five (5) settings, the Water in Delay, Extra Strong Delay, Pressure Relief Delay, Modifier for Xtra Strong, and Brewer Speed. The following function keys (F4 thru F7) are used when at the recipe step for the Brewer operation. The Recipe step for brewer operation should be displaying: "C BREWER".

{ F4 } Water in Delay Time

This function key will access the Water in Delay Time used to delay the piston in the open position to allow the brew valve time to dispense all of the needed water into the clear cylinder. Depressing this key when at the C BREWER recipe step will updated the display with the duration time in seconds, i.e. "WATER IN DELAY – 2.55"

{ F5 } Extra Strong Delay

This function key will access the setting to increase or decrease the amount of steep time the hot water is in contact with the coffee grounds. Depressing this key when a recipe step is being displayed will update the display with the duration time in seconds, i.e. "EXTRA STRONG – 20-0.50". Where "20" is indicating the percent modifier, and ".50" is the delay time.

{F6 } Pressure Relief Delay

This function key will access the setting to increase or decrease the delay period when the brewer piston is at the bottom stroke position. This function allows time for excessive back pressure and coffee gases to bleed through the coffee grounds.

Depressing this key will updated the display in seconds with "PRESSURE RELIEF – 4.00" Depress the or keys to increase or decrease the time values. Depress the key to accept the entry.

{ F7 } Brewer Motor Speed

This function key will allow brewer motor speed to be set. Depressing this key when a recipe step is being displayed will update the display with "SPEED - 3" where "3" indicates the speed value. There are 5 available speeds, the default value is 3. Depress the or and keys to increase decrease the speed value. The following table describes the five different speeds.

Brewer Speeds:

Speed RPM

1	2.62	(slow)
2	2.89	
3	3.15	(default setting)
4	3.41	
5	3.67	(fast)

Machine Programming

Beverage Definition Menu heading

Setting Duration Times

This menu item is used to set the amount of time a recipe step will operate. For example, setting the chocolate auger for 10.2 seconds to dispense a desired gram throw. The { F2 } function key allows access into the duration times of Augers, Valves , Whippers and the delay functions (i.e. NEXT, WAIT, INGRED DLY, TOPPING DELAY, END). Please refer to **figure 5.2** below for an example of the APi 223 Vend Time Line.

FASTPATH

ENTER	at "BEVERAGE DEFINITION"
ENTER	at "RECIPE DEFINITION"
ENTER	at "RECIPE DEF L"

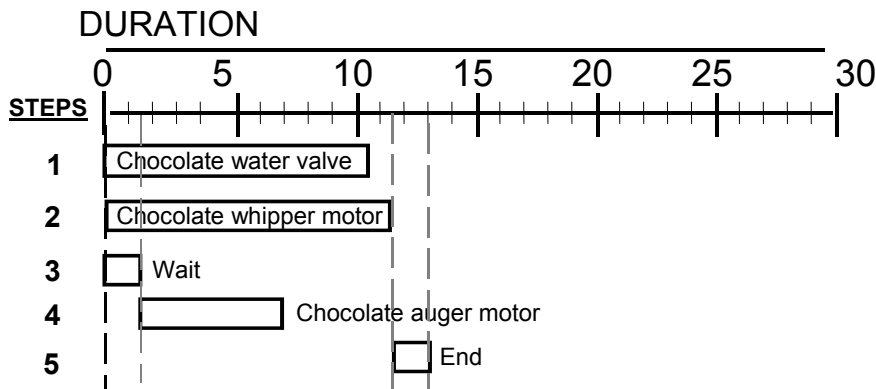
Displays: " **R- 30 CHOCOLATE S-15** " The Recipe Number = "R- 30", Beverage Name ="CHOCOLATE", and Selection Number = ("S- 15") is displayed.

- **+** or **-** or To scroll to the Beverage Name you wish to check or modify a duration time in.
- (Note: The Selection Number displaying will also light the related button on the customer selection panel.)
- **ENTER** - When at desired Beverage Name. You are now in the recipe timing steps for this beverage.
- **+** or **>** or To move through the numbered recipe steps until reaching the device or ingredient name that the duration time is in.

F2	To view duration time setting. Use numbered keypad to change setting.
ENTER	To register new setting or ESC to step back.
F3	To set modifier if applicable. Use numbered keypad to change setting.
ENTER	To register setting or ESC to step back.
ESC	Twice to <u>save all changes in memory</u> and to exit this menu.

Recipe 30 = Chocolate Beverage

The below Time Line indicates the relationship between the function steps and where they occur during the vend duration time.



Chocolate Vend Time Line

Machine Programming

R01 "FG Coffee"		Fresh Ground (Bean) Coffee							
Entry Step [< or >]	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]	
1*	G COF-BEAN (Large Grinder)	P	01.50	20	--	--	--	--	
1*	G COF-BEAN (Mini Grinder)	P	02.15	20	--	--	--	--	
2	NEXT	--	01.00	--	--	--	--	--	
3	COF-BREWER	--	--	00	02.75	01.00	03.20	3	
4	B VALVE-12 (Brewer Valve)	B	03.30	--	--	--	--	--	
5	ING DLY (Ingredient Delay)	--	02.40	--	--	--	--	--	
6	VALVE-XX (Add Hot Water)	--	01.00	--	--	--	--	--	
7	LIGHTENER	C1	01.15	25	--	--	--	--	
8	WAIT	--	00.50	--	--	--	--	--	
9	SUGAR	C2	01.90	30	--	--	--	--	
10	SUGAR SUB	C2	02.20	30	--	--	--	--	
11	END	--	02.00	--	--	--	--	--	

R02 "FG Decaf"		Fresh Ground (Bean) Decaffeinated Coffee							
Entry Step [< or >]	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]	
1*	G DECAF (Large Grinder)	P	01.50	20	--	--	--	--	
1*	G DECAF (Mini Grinder)	P	02.15	20	--	--	--	--	
2	NEXT	--	01.00	--	--	--	--	--	
3	COF-BREWER	--	--	00	02.75	01.00	03.20	3	
4	B VALVE-12 (Brewer Valve)	B	03.30	--	--	--	--	--	
5	ING DLY (Ingredient Delay)	--	02.40	--	--	--	--	--	
6	VALVE-XX (Add Hot Water)	--	01.00	--	--	--	--	--	
7	LIGHTENER	C1	01.15	25	--	--	--	--	
8	WAIT	--	00.50	--	--	--	--	--	
9	SUGAR	C2	01.90	30	--	--	--	--	
10	SUGAR SUB	C2	02.20	30	--	--	--	--	
11	END	--	02.00	--	--	--	--	--	

R03 "FG Drk Cof"		Fresh Ground (Bean) Dark Coffee							
Entry Step [< or >]	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]	
1*	G DARK COF (Large Grinder)	P	01.50	20	--	--	--	--	
1*	G DARK COF (Mini Grinder)	P	02.15	20	--	--	--	--	
2	NEXT	--	01.00	--	--	--	--	--	
3	COF-BREWER	--	--	00	02.75	01.00	03.20	3	
4	B VALVE-12 (Brewer Valve)	B	03.30	--	--	--	--	--	
5	ING DLY (Ingredient Delay)	--	02.40	--	--	--	--	--	
6	VALVE-XX (Add Hot Water)	--	01.00	--	--	--	--	--	
7	LIGHTENER	C1	01.15	25	--	--	--	--	
8	WAIT	--	00.50	--	--	--	--	--	
9	SUGAR	C2	01.90	30	--	--	--	--	
10	SUGAR SUB	C2	02.20	30	--	--	--	--	
11	END	--	02.00	--	--	--	--	--	

Machine Programming

R04 "FG Espresso"		Fresh Ground (Bean) Espresso						
Entry Step [< or >]	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
1*	G COF-BEAN (Large Grinder)	P	01.80	10	--	--	--	--
1*	G COF-BEAN (Mini Grinder)	P	02.40	10	--	--	--	--
1*	G DARK COF (Mini Grinder)	P	02.40	10	--	--	--	--
2	NEXT	--	01.00	--	--	--	--	--
3	COF-BREWER	--	--	25	02.25	04.90	04.00	1
4	B VALVE-12 (Brewer Valve)	B	02.55	--	--	--	--	--
5	ING DLY (Ingredient Delay)	--	01.00	--	--	--	--	--
6	WHIPPER-XX (Coffee Trough)	--	09.00	--	--	--	--	--
7	WAIT	--	00.50	--	--	--	--	--
8	LIGHTENER	C1	00.55	15	--	--	--	--
9	WAIT	--	00.25	--	--	--	--	--
10	SUGAR	C2	01.20	20	--	--	--	--
11	SUGAR SUB	C2	01.25	20	--	--	--	--
12	END	--	02.00	--	--	--	--	--

R05 "LG Coffee"		Loose Ground Coffee						
Entry Step [< or >]	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
1*	LG COFFEE (Loose Ground)	P	02.90	20	--	--	--	--
2	NEXT	--	01.00	--	--	--	--	--
3	COF-BREWER	--	--	00	02.75	01.00	03.20	3
4	B VALVE-12 (Brewer Valve)	B	03.30	--	--	--	--	--
5	ING DLY (Ingredient Delay)	--	02.40	--	--	--	--	--
6	VALVE-XX (Add Hot Water)	--	01.00	--	--	--	--	--
7	LIGHTENER	C1	01.15	25	--	--	--	--
8	WAIT	--	00.50	--	--	--	--	--
9	SUGAR	C2	01.90	30	--	--	--	--
10	SUGAR SUB	C2	02.20	30	--	--	--	--
11	END	--	02.00	--	--	--	--	--

R06 "LG Decaf"		Loose Ground Decaffeinated Coffee						
Entry Step [< or >]	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
1*	LG DECAF (Loose Ground)	P	02.90	20	--	--	--	--
2	NEXT	--	01.00	--	--	--	--	--
3	COF-BREWER	--	--	00	02.75	01.00	03.20	3
4	B VALVE-12 (Brewer Valve)	B	03.30	--	--	--	--	--
5	ING DLY (Ingredient Delay)	--	02.40	--	--	--	--	--
6	VALVE-XX (Add Hot Water)	--	01.00	--	--	--	--	--
7	LIGHTENER	C1	01.15	25	--	--	--	--
8	WAIT	--	00.50	--	--	--	--	--
9	SUGAR	C2	01.90	30	--	--	--	--
10	SUGAR SUB	C2	02.20	30	--	--	--	--
11	END	--	02.00	--	--	--	--	--

Machine Programming

R07 "LG Drk Cof"		Loose Ground Dark Coffee						
Entry Step [< or >]	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
1*	LG DARK COF (Loose Ground)	P	02.90	20	--	--	--	--
2	NEXT	--	01.00	--	--	--	--	--
3	COF-BREWER	--	--	00	02.75	01.00	03.20	3
4	B VALVE-12 (Brewer Valve)	B	03.30	--	--	--	--	--
5	ING DLY (Ingredient Delay)	--	02.40	--	--	--	--	--
6	VALVE-XX (Add Hot Water)	--	01.00	--	--	--	--	--
7	LIGHTENER	C1	01.15	25	--	--	--	--
8	WAIT	--	00.50	--	--	--	--	--
9	SUGAR	C2	01.90	30	--	--	--	--
10	SUGAR SUB	C2	02.20	30	--	--	--	--
11	END	--	02.00	--	--	--	--	--

R08 "LG Espresso"		Loose Ground Espresso Coffee						
Entry Step [< or >]	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
1*	LG DARK COF (Loose Ground)	P	03.40	10	--	--	--	--
2	NEXT	--	01.00	--	--	--	--	--
3	COF-BREWER	--	--	25	02.25	04.90	04.00	1
4	B VALVE-12 (Brewer Valve)	B	02.55	--	--	--	--	--
5	ING DLY (Ingredient Delay)	--	01.00	--	--	--	--	--
6	WHIPPER-XX (Coffee Trough)	--	09.00	--	--	--	--	--
7	WAIT	--	00.50	--	--	--	--	--
8	LIGHTENER	C1	00.55	15	--	--	--	--
9	WAIT	--	00.25	--	--	--	--	--
10	SUGAR	C2	01.20	20	--	--	--	--
11	SUGAR SUB	C2	01.25	20	--	--	--	--
12	END	--	02.00	--	--	--	--	--

R09 "FD Coffee"		Freeze Dried (Soluble) Coffee						
Entry Step [< or >]	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
1	VALVE-XX (Trough Valve #)	--	10.40	--	--	--	--	--
2	WAIT	--	00.80	--	--	--	--	--
3	FD COFFEE	--	03.90	20	--	--	--	--
4	WAIT	--	01.00	--	--	--	--	--
5	SUGAR	C2	01.90	30	--	--	--	--
6	SUGAR SUB	C2	02.20	30	--	--	--	--
7	WAIT	--	01.25	--	--	--	--	--
8	LIGHTENER	C1	01.20	25	--	--	--	--
9	END	--	03.00	--	--	--	--	--

Machine Programming

R10 "FD Decaf"		Freeze Dried (Soluble) Decaf						
Entry Step [< or >]	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
1	VALVE-XX (Trough Valve #)	--	10.40	--	--	--	--	--
2	WAIT	--	00.80	--	--	--	--	--
3	FD DECAF	--	03.90	20	--	--	--	--
4	WAIT	--	01.00	--	--	--	--	--
5	SUGAR	C2	01.90	30	--	--	--	--
6	SUGAR SUB	C2	02.20	30	--	--	--	--
7	WAIT	--	01.25	--	--	--	--	--
8	LIGHTENER	C1	01.20	25	--	--	--	--
9	END	--	03.00	--	--	--	--	--

R11 "FD DrkGour"		Freeze Dried (Soluble) Dark Gourmet						
Entry Step [< or >]	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
1	VALVE-XX (Trough Valve #)	--	10.40	--	--	--	--	--
2	WAIT	--	00.80	--	--	--	--	--
3	FD DARK	--	03.90	20	--	--	--	--
4	WAIT	--	01.00	--	--	--	--	--
5	SUGAR	C2	01.90	30	--	--	--	--
6	SUGAR SUB	C2	02.20	30	--	--	--	--
7	WAIT	--	01.25	--	--	--	--	--
8	LIGHTENER	C1	01.20	25	--	--	--	--
9	END	--	03.00	--	--	--	--	--

R09 "FD Coffee"		FDX - Freeze Dried (Soluble) COFFEE					(Coffee on Extension Rack)		
R10 "FD Decaf"		FDX - Freeze Dried (Soluble) DECAF COFFEE					(Coffee on Extension Rack)		
R11 "FD DrkGour"		FDX - Freeze Dried (Soluble) DARK COFFEE					(Coffee on Extension Rack)		
Entry Step [< or >]	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]	
1	VALVE-XX (Trough Valve #)	--	10.40	--	--	--	--	--	
2	WAIT	--	01.50	--	--	--	--	--	
3*	FD COFFEE	P	03.95	20	--	--	--	--	
3*	FD DECAF	P	03.95	20	--	--	--	--	
3*	FD DARK	P	03.95	20	--	--	--	--	
4	WAIT	--	00.50	--	--	--	--	--	
6	SUGAR SUB	C2	01.50	30	--	--	--	--	
	WAIT	--	02.00	--	--	--	--	--	
5	SUGAR	C2	01.90	30	--	--	--	--	
7	WAIT	--	01.00	--	--	--	--	--	
8	LIGHTENER	C1	01.15	25	--	--	--	--	
9	END	--	05.00	--	--	--	--	--	

Machine Programming

R12 "FD Espresso"		Freeze Dried (Soluble) ESPRESSO						
Entry Step [< or >]	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
1	VALVE-XX (Trough Valve #)	--	08.50	--	--	--	--	--
2	WHIPPER-XX (Coffee Trough)	--	12.00	--	--	--	--	--
3	WAIT	--	00.60	--	--	--	--	--
4*	FD DARK	--	04.70	20	--	--	--	--
4*	FD COFFEE	--	04.70	20	--	--	--	--
5	WAIT	--	01.00	--	--	--	--	--
6	SUGAR	C2	01.90	30	--	--	--	--
7	SUGAR SUB	C2	02.20	30	--	--	--	--
8	WAIT	--	01.25	--	--	--	--	--
9	LIGHTENER	C1	01.20	25	--	--	--	--
10	END	--	03.00	--	--	--	--	--

R13 "FD Tea"		Freeze Dried (Soluble) TEA						
Entry Step [< or >]	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
1	VALVE-XX (Trough Valve #)	--	010.45	--	--	--	--	--
3	WAIT	--	01.50	--	--	--	--	--
4	FD TEA	--	02.40	20	--	--	--	--
5	WAIT	--	01.00	--	--	--	--	--
6	SUGAR	C2	01.50	25	--	--	--	--
7	SUGAR SUB	C2	01.25	25	--	--	--	--
8	WAIT	--	01.20	--	--	--	--	--
9	LIGHTENER	C1	00.95	20	--	--	--	--
10	END	--	03.00	--	--	--	--	--

R14 "Café Mocha"		CAFÉ MOCHA (Custom Blend – Coffee + Coco)						
Entry Step [< or >]	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
1*	G COF-BEAN (Large Grinder)	P	01.40	20	--	--	--	--
1*	G COF-BEAN (Mini Grinder)	P	01.90	20	--	--	--	--
1*	G DARK COF (Mini Grinder)	P	01.90	20	--	--	--	--
1*	LG COFFEE	P	02.70	20	--	--	--	--
1*	LG DARK COF	P	02.70	20	--	--	--	--
2	NEXT	--	01.00	--	--	--	--	--
3	COF-BREWER	--	--	00	02.50	00.50	03.00	2
4	B VALVE-12 (Brewer Valve)	B	02.55	--	--	--	--	--
5	ING DLY (Ingredient Delay)	--	00.90	--	--	--	--	--
6	WHIPPER-XX (Coffee Trough)	--	10.00	--	--	--	--	--
7	WAIT	--	00.25	--	--	--	--	--
8	LIGHTENER	C1	00.75	20	--	--	--	--
9	WAIT	--	00.25	--	--	--	--	--
10	SUGAR	C2	01.65	25	--	--	--	--
11	SUGAR SUB	C2	01.25	25	--	--	--	--
12	TOPPIN DLY	--	00.10	--	--	--	--	--
13	VALVE -01	--	03.50	--	--	--	--	--
▼	CONTINUE NEXT PAGE							
14	WHIPPER-01	--	07.00	--	--	--	--	--
15	WAIT	--	00.80	--	--	--	--	--
16	CHOCOLATE	P	02.55	10	--	--	--	--
17	END	--	01.00	--	--	--	--	--

Machine Programming

R14 "Café Mocha"		CAFÉ MOCHA w/Froth Topping			(Custom Blend – Coffee + Coco + Topping)				
Entry Step [< or >]	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]	
1*	G COF-BEAN (Large Grinder)	P	01.40	20	--	--	--	--	
1*	G COF-BEAN (Mini Grinder)	P	01.90	20	--	--	--	--	
1*	G DARK COF (Mini Grinder)	P	01.90	20	--	--	--	--	
1*	LG COFFEE	P	02.70	20	--	--	--	--	
1*	LG DARK COF	P	02.70	20	--	--	--	--	
2	NEXT	--	01.00	--	--	--	--	--	
3	COF-BREWER	--	--	00	02.50	00.50	03.00	2	
4	B VALVE-12 (Brewer Valve)	B	01.65	--	--	--	--	--	
5	ING DLY (Ingredient Delay)	--	00.90	--	--	--	--	--	
6	WHIPPER-XX (Coffee Trough)	--	10.00	--	--	--	--	--	
7	WAIT	--	00.50	--	--	--	--	--	
8	LIGHTENER	C1	00.45	15	--	--	--	--	
9	WAIT	--	00.25	--	--	--	--	--	
10	SUGAR	C2	01.55	20	--	--	--	--	
11	SUGAR SUB	C2	01.25	20	--	--	--	--	
12	TOPPIN DLY	--	00.10	--	--	--	--	--	
13	VALVE -01	--	03.25	--	--	--	--	--	
14	WHIPPER-01	--	07.00	--	--	--	--	--	
15	WAIT	--	00.70	--	--	--	--	--	
16	CHOCOLATE	P	02.55	10	--	--	--	--	
17	WAIT	--	02.50	--	--	--	--	--	
18	VALVE-XX (Froth Valve)	--	02.05	--	--	--	--	--	
19	WHIPPER-XX (Froth Whipper)	--	05.00	--	--	--	--	--	
20	WAIT	--	00.60	--	--	--	--	--	
21	FRT-TOPPIN	P	01.80	00	--	--	--	--	
22	NEXT	--	02.00	--	--	--	--	--	
23	VALVE-XX (Froth Valve)	--	00.50	--	--	--	--	--	
24	WHIPPER-XX (Froth Whipper)	--	01.50	--	--	--	--	--	
25	END	--	01.00	--	--	--	--	--	

R15 "Decaf Mocha"		DECAF MOCHA			(Custom Blend – Decaf Coffee + Coco)				
Entry Step [< or >]	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]	
1*	G DECAF (Mini Grinder)	P	01.90	20	--	--	--	--	
1*	LG DECAF	P	02.70	20	--	--	--	--	
2	NEXT	--	01.00	--	--	--	--	--	
3	COF-BREWER	--	--	00	02.50	00.50	03.00	2	
4	B VALVE-12 (Brewer Valve)	B	02.55	--	--	--	--	--	
5	ING DLY (Ingredient Delay)	--	00.90	--	--	--	--	--	
6	WHIPPER-XX (Coffee Trough)	--	10.00	--	--	--	--	--	
7	WAIT	--	00.25	--	--	--	--	--	
8	LIGHTENER	C1	00.75	20	--	--	--	--	
9	WAIT	--	00.25	--	--	--	--	--	
10	SUGAR	C2	01.65	25	--	--	--	--	
11	SUGAR SUB	C2	01.25	25	--	--	--	--	
12	TOPPIN DLY	--	00.10	--	--	--	--	--	
13	VALVE -01	--	03.50	--	--	--	--	--	
14	WHIPPER-01	--	07.00	--	--	--	--	--	
15	WAIT	--	00.80	--	--	--	--	--	
16	CHOCOLATE	P	02.55	10	--	--	--	--	
17	END	--	01.00	--	--	--	--	--	

Machine Programming

R15 "Decaf Mocha"		DECAF MOCHA w/Froth Topping (Custom Blend – Decaf Coffee + Coco + Topping)						
Entry Step [< or >]	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
1*	G DECAF (Mini Grinder)	P	01.90	20	--	--	--	--
1*	LG DECAF	P	02.70	20	--	--	--	--
2	NEXT	--	01.00	--	--	--	--	--
3	COF-BREWER	--	--	00	02.50	00.50	03.00	2
4	B VALVE-12 (Brewer Valve)	B	01.65	--	--	--	--	--
5	ING DLY (Ingredient Delay)	--	00.90	--	--	--	--	--
6	WHIPPER-XX (Coffee Trough)	--	10.00	--	--	--	--	--
7	WAIT	--	00.50	--	--	--	--	--
8	LIGHTENER	C1	00.45	15	--	--	--	--
9	WAIT	--	00.25	--	--	--	--	--
10	SUGAR	C2	01.55	20	--	--	--	--
11	SUGAR SUB	C2	01.25	20	--	--	--	--
12	TOPPIN DLY	--	00.10	--	--	--	--	--
13	VALVE -01	--	03.25	--	--	--	--	--
14	WHIPPER-01	--	07.00	--	--	--	--	--
15	WAIT	--	00.70	--	--	--	--	--
16	CHOCOLATE	P	02.55	10	--	--	--	--
17	WAIT	--	02.50	--	--	--	--	--
18	VALVE-XX (Froth Valve)	--	02.05	--	--	--	--	--
19	WHIPPER-XX (Froth Whipper)	--	05.00	--	--	--	--	--
20	WAIT	--	00.60	--	--	--	--	--
21	FRT-TOPPIN	P	01.80	00	--	--	--	--
22	NEXT	--	02.00	--	--	--	--	--
23	VALVE-XX (Froth Valve)	--	00.50	--	--	--	--	--
24	WHIPPER-XX (Froth Whipper)	--	01.50	--	--	--	--	--
25	END	--	01.00	--	--	--	--	--

R14 "Café Mocha"		FDX – CAFÉ MOCHA (FD Coffee on Extension Rack + Chocolate)						
R15 "Decaf Mocha"		FDX –DECAF MOCHA (FD Decaf on Extension Rack + Chocolate)						
Entry Step [< or >]	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
1	VALVE-XX (Coffee Valve #)	--	06.75	--	--	--	--	--
2	WAIT	--	01.50	--	--	--	--	--
3*	FD COFFEE	P	03.95	20	--	--	--	--
3*	FD DECAF	P	03.95	20	--	--	--	--
3*	FD DARK	P	03.95	20	--	--	--	--
4	WAIT	--	00.50	--	--	--	--	--
5	WHIPPER-XX (Coffee Whipper #)	--	--	--	--	--	--	--
6	SUGAR SUB	C2	01.50	25	--	--	--	--
7	WAIT	--	02.00	--	--	--	--	--
8	SUGAR	C2	01.65	25	--	--	--	--
9	WAIT	--	00.50	--	--	--	--	--
10	LIGHTENER	C1	00.75	20	--	--	--	--
11	NEXT	--	00.10	--	--	--	--	--
12	VALVE -01	--	03.70	--	--	--	--	--
13	WHIPPER-01	--	07.00	--	--	--	--	--
14	WAIT	--	00.80	--	--	--	--	--
15	CHOCOLATE	P	02.45	10	--	--	--	--
16	END	--	02.00	--	--	--	--	--

Machine Programming

R16 "Café Latte" Creamer)		CAFÉ LATTE		(Custom Blend – Strong Coffee + Fr. Vanilla + Creamer)					
Entry Step	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]	
[< or >]									
	VALVE-02	--	02.25	--	--	--	--	--	
	WHIPPER-02	--	05.00	--	--	--	--	--	
	WAIT	--	00.60	--	--	--	--	--	
	SGC1-FrVAN	P	01.20	10	--	--	--	--	
1*	G COF-BEAN (Large Grinder)	P	01.50	20	--	--	--	--	
1*	G COF-BEAN (Mini Grinder)	P	02.10	20	--	--	--	--	
1*	G DARK COF (Mini Grinder)	P	02.10	20	--	--	--	--	
1*	LG COFFEE	P	03.10	20	--	--	--	--	
1*	LG DARK COF	P	03.10	20	--	--	--	--	
2	NEXT	--	01.00	--	--	--	--	--	
3	COF-BREWER	--	--	00	02.50	00.50	03.00	2	
4	B VALVE-12 (Brewer Valve)	B	02.70	--	--	--	--	--	
5	ING DLY (Ingredient Delay)	--	00.90	--	--	--	--	--	
6	WHIPPER-XX (Coffee Trough)	--	10.00	--	--	--	--	--	
7	WAIT	--	00.50	--	--	--	--	--	
8	LIGHTENER	P	02.15	00	--	--	--	--	
9	WAIT	--	00.50	--	--	--	--	--	
10	SUGAR	C2	01.75	25	--	--	--	--	
11	SUGAR SUB	C2	01.25	25	--	--	--	--	
17	END	--	01.00	--	--	--	--	--	

R16 "Café Latte"		CAFÉ LATTE w/Froth Topping		(Custom Blend – Strong Coffee + Froth Topping)					
Entry Step	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]	
[< or >]									
1	VALVE-XX (Froth Valve)	--	02.25	--	--	--	--	--	
2	WHIPPER-XX (Froth Whipper)	--	05.00	--	--	--	--	--	
3	WAIT	--	00.60	--	--	--	--	--	
4	FRT-TOPPIN	P	01.20	10	--	--	--	--	
5*	G COF-BEAN (Large Grinder)	P	01.50	20	--	--	--	--	
5*	G COF-BEAN (Mini Grinder)	P	02.10	20	--	--	--	--	
5*	G DARK COF (Mini Grinder)	P	02.10	20	--	--	--	--	
5*	LG COFFEE	P	03.10	20	--	--	--	--	
5*	LG DARK COF	P	03.10	20	--	--	--	--	
6	NEXT	--	01.00	--	--	--	--	--	
7	COF-BREWER	--	--	00	02.50	00.50	03.00	2	
8	B VALVE-12 (Brewer Valve)	B	02.20	--	--	--	--	--	
9	ING DLY (Ingredient Delay)	--	00.90	--	--	--	--	--	
10	WHIPPER-XX (Coffee Trough)	--	10.00	--	--	--	--	--	
11	WAIT	--	00.50	--	--	--	--	--	
12	LIGHTENER	C1	00.55	20	--	--	--	--	
13	WAIT	--	00.50	--	--	--	--	--	
14	SUGAR	C2	01.75	25	--	--	--	--	
15	SUGAR SUB	C2	01.25	25	--	--	--	--	
16	NEXT	--	00.10	--	--	--	--	--	
17	VALVE-XX (Froth Valve)	--	00.50	--	--	--	--	--	
18	WHIPPER-XX (Froth Whipper)	--	01.50	--	--	--	--	--	
19	END	--	01.50	--	--	--	--	--	

Machine Programming

R17 "Decaf Latte" DECAF LATTE (Custom Blend –Decaf Coffee + Fr. Vanilla + Creamer)								
Entry Step	FUNCTION (Do Not Press + or – unless changing recipe name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
[< or >]								
1	VALVE-02	--	02.25	--	--	--	--	--
2	WHIPPER-02	--	05.00	--	--	--	--	--
3	WAIT	--	00.60	--	--	--	--	--
4	SGC1-FrVAN	P	01.20	10	--	--	--	--
5*	G DECAF (Mini Grinder)	P	01.50	20	--	--	--	--
5*	LG DECAF	P	02.10	20	--	--	--	--
6	NEXT	--	01.00	--	--	--	--	--
7	COF-BREWER	--	--	00	02.50	00.50	03.00	2
8	B VALVE-12 (Brewer Valve)	B	02.70	--	--	--	--	--
9	ING DLY (Ingredient Delay)	--	00.90	--	--	--	--	--
10	WHIPPER-XX (Coffee Trough)	--	10.00	--	--	--	--	--
11	WAIT	--	00.50	--	--	--	--	--
12	LIGHTENER	P	02.15	00	--	--	--	--
13	WAIT	--	00.50	--	--	--	--	--
14	SUGAR	C2	01.75	25	--	--	--	--
15	SUGAR SUB	C2	01.25	25	--	--	--	--
16	END	--	01.00	--	--	--	--	--

R17 "Decaf Latte" DECAF LATTE w/Froth Topping (Custom Blend – Decaf Coffee + Froth Topping)								
Entry Step	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
[< or >]								
1	VALVE-XX (Froth Valve)	--	02.25	--	--	--	--	--
2	WHIPPER-XX (Froth Whipper)	--	05.00	--	--	--	--	--
3	WAIT	--	00.60	--	--	--	--	--
4	FRT-TOPPIN	P	01.20	10	--	--	--	--
5*	G DECAF (Mini Grinder)	P	02.10	20	--	--	--	--
5*	LG DECAF	P	03.10	20	--	--	--	--
6	NEXT	--	01.00	--	--	--	--	--
7	COF-BREWER	--	--	00	02.50	00.50	03.00	2
8	B VALVE-12 (Brewer Valve)	B	02.20	--	--	--	--	--
9	ING DLY (Ingredient Delay)	--	00.90	--	--	--	--	--
10	WHIPPER-XX (Coffee Trough)	--	10.00	--	--	--	--	--
11	WAIT	--	00.50	--	--	--	--	--
12	LIGHTENER	C1	00.55	20	--	--	--	--
13	WAIT	--	00.50	--	--	--	--	--
14	SUGAR	C2	01.75	25	--	--	--	--
15	SUGAR SUB	C2	01.25	25	--	--	--	--
16	NEXT	--	00.10	--	--	--	--	--
17	VALVE-XX (Froth Valve)	--	00.50	--	--	--	--	--
18	WHIPPER-XX (Froth Whipper)	--	01.50	--	--	--	--	--
19	END	--	01.50	--	--	--	--	--

Machine Programming

R16 "Café Latte"		FDX – Freeze Dried Extension – CAFÉ LATTE			(FD Coffee + French Vanilla + Whipped Creamer)				
R17 "Decaf Latte"		FDX – Freeze Dried Extension – DECAF LATTE			(FD Decaf + French Vanilla + Whipped Creamer)				
Entry Step [< or >]	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]	
1	VALVE-02	--	02.40	--	--	--	--	--	
2	WHIPPER-02	--	06.00	--	--	--	--	--	
3	WAIT	--	00.60	--	--	--	--	--	
4	SGC1-FrVAN	--	01.20	00	--	--	--	--	
5	NEXT	--	00.10	--	--	--	--	--	
6	VALVE-XX (Coffee Valve #)	--	07.30	--	--	--	--	--	
7	WAIT	--	01.50	--	--	--	--	--	
8*	FD COFFEE	P	04.20	20	--	--	--	--	
8*	FD DECAF	P	04.20	20	--	--	--	--	
8*	FD DARK	P	04.20	20	--	--	--	--	
9	WHIPPER-XX (Coffee Whipper #)	--	10.00	--	--	--	--	--	
10	WAIT	--	00.50	--	--	--	--	--	
11	SUGAR SUB	C2	01.25	20	--	--	--	--	
12	WAIT	--	02.00	--	--	--	--	--	
13	LIGHTENER	P	02.10	02	--	--	--	--	
14	SUGAR	C2	01.75	20	--	--	--	--	
15	END	--	04.00	--	--	--	--	--	

R18 "Bal Blend"		BALANCED BLEND COFFEE (Custom Blend – 50% Coffee + 50% Decaf)							
Entry Step [< or >]	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]	
1*	G COF-BEAN (Large Grinder)	P	01.00	20	--	--	--	--	
1*	G COF-BEAN (Mini Grinder)	P	01.10	20	--	--	--	--	
1*	G DECAF	P	01.10	20	--	--	--	--	
1*	LG DECAF	P	01.50	20	--	--	--	--	
2	NEXT	--	01.00	--	--	--	--	--	
3	COF-BREWER	--	--	00	02.75	01.00	03.20	3	
4	B VALVE-12 (Brewer Valve)	B	03.30	--	--	--	--	--	
5	ING DLY (Ingredient Delay)	--	02.40	--	--	--	--	--	
6	VALVE-XX (Add Hot Water)	--	01.00	--	--	--	--	--	
7	LIGHTENER	C1	01.15	25	--	--	--	--	
8	WAIT	--	00.50	--	--	--	--	--	
9	SUGAR	C2	01.90	30	--	--	--	--	
10	SUGAR SUB	C2	02.20	30	--	--	--	--	
11	END	--	02.00	--	--	--	--	--	

R18 "Bal Blend"		Freeze Dried - BALANCED BLEND COFFEE (50% FD Coffee + 50% FD Decaf)							
Entry Step [< or >]	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]	
1	VALVE-XX (Trough Valve #)	--	10.40	--	--	--	--	--	
2	WAIT	--	00.80	--	--	--	--	--	
3	FD COFFEE	--	01.90	20	--	--	--	--	
4	FD DECAF	--	--	20	--	--	--	--	
5	WAIT	--	01.00	--	--	--	--	--	
6	SUGAR	C2	01.90	30	--	--	--	--	
7	SUGAR SUB	C2	02.20	30	--	--	--	--	
8	WAIT	--	01.25	--	--	--	--	--	
9	LIGHTENER	C1	01.20	25	--	--	--	--	
10	END	--	03.00	--	--	--	--	--	

Machine Programming

R18 "Bal Blend"		FDX- Freeze Dry Extension – BALANCED BLEND			(50% FD Coffee + 50% FD Decaf)				
Entry Step	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]	
[< or >]									
1	VALVE-XX (Coffee Valve #)	--	10.40	--	--	--	--	--	
2	WAIT	--	01.50	--	--	--	--	--	
3	FD COFFEE	P	01.90	20	--	--	--	--	
4	WAIT	--	00.20	--	--	--	--	--	
5	FD DECF	P	01.90	20	--	--	--	--	
6	WAIT	--	00.50	--	--	--	--	--	
7	SUGAR SUB	C2	01.50	30	--	--	--	--	
8	WAIT	--	02.00	--	--	--	--	--	
9	SUGAR	C2	01.90	30	--	--	--	--	
10	WAIT	--	01.00	--	--	--	--	--	
11	LIGHTENER	C1	01.15	20	--	--	--	--	
12	END	--	04.00	--	--	--	--	--	

R19 "CofCappino"		COFFEE CAPPUCCINO (Custom Blend – Strong Coffee + French Vanilla)						
Entry Step	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
[< or >]								
1*	G COF-BEAN (Large Grinder)	P	01.80	20	--	--	--	--
1*	G COF-BEAN (Mini Grinder)	P	02.40	20	--	--	--	--
1*	G DARK COF (Mini Grinder)	P	02.40	20	--	--	--	--
1*	LG COFFEE	P	03.30	20	--	--	--	--
1*	LG DARK COF	P	03.30	20	--	--	--	--
2	NEXT	--	01.00	--	--	--	--	--
3	COF-BREWER	--	--	00	02.50	01.00	03.25	2
4	B VALVE-12 (Brewer Valve)	B	02.45	--	--	--	--	--
5	ING DLY (Ingredient Delay)	--	01.20	--	--	--	--	--
6	WHIPPER-XX (Coffee trough)	--	10.00	--	--	--	--	--
7	WAIT	--	00.50	--	--	--	--	--
8	LIGHTENER	C1	01.10	10	--	--	--	--
9	WAIT	--	00.50	--	--	--	--	--
10	SUGAR	C2	01.75	25	--	--	--	--
11	SUGAR SUB	C2	01.45	25	--	--	--	--
12	TOPPIN DLY	--	00.10	--	--	--	--	--
13	VALVE -02	--	03.40	--	--	--	--	--
14	WHIPPER-02	--	06.50	--	--	--	--	--
15	WAIT	--	00.60	--	--	--	--	--
16	SGC1-FrVAN	P	02.25	00	--	--	--	--
17	END	--	01.50	--	--	--	--	--

R19 "CofCappino"		COFFEE CAPPUCCINO w/Froth Topping (Custom Blend – Strg Coffee + Fr. Vanilla + Froth Topping)						
Entry Step	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
[< or >]								
1*	G COF-BEAN (Large Grinder)	P	01.80	20	--	--	--	--
1*	G COF-BEAN (Mini Grinder)	P	02.40	20	--	--	--	--
1*	G DARK COF (Mini Grinder)	P	02.40	20	--	--	--	--
1*	LG COFFEE	P	03.30	20	--	--	--	--
1*	LG DARK COF	P	03.30	20	--	--	--	--
2	NEXT	--	01.00	--	--	--	--	--
3	COF-BREWER	--	--	00	02.50	01.00	03.25	2
4	B VALVE-12 (Brewer Valve)	B	02.10	--	--	--	--	--
5	ING DLY (Ingredient Delay)	--	01.20	--	--	--	--	--
6	WHIPPER-XX (Coffee trough)	--	10.00	--	--	--	--	--
7	WAIT	--	00.50	--	--	--	--	--
8	LIGHTENER	C1	00.35	10	--	--	--	--
9	WAIT	--	00.50	--	--	--	--	--
	CONTINUE ON NEXT PAGE							

Machine Programming

10	SUGAR	C2	01.75	25	--	--	--	--
11	SUGAR SUB	C2	01.45	25	--	--	--	--
12	TOPPIN DLY	--	00.10	--	--	--	--	--
13	VALVE -02	--	01.90	--	--	--	--	--
14	WHIPPER-02	--	05.00	--	--	--	--	--
15	WAIT	--	00.70	--	--	--	--	--
16	SGC1-FrVAN	P	01.60	00	--	--	--	--
17	WAIT	--	02.00	--	--	--	--	--
18	VALVE-XX (Froth Valve)	--	02.35	--	--	--	--	--
19	WHIPPER-XX (Froth Whipper)	--	05.50	--	--	--	--	--
20	WAIT	--	00.60	--	--	--	--	--
21	FRT-TOPPIN	P	02.25	00	--	--	--	--
22	NEXT	--	02.00	--	--	--	--	--
23	VALVE-XX (Froth Valve)	--	00.50	--	--	--	--	--
24	WHIPPER-XX (Froth Whipper)	--	01.50	--	--	--	--	--
25	END	--	01.50	--	--	--	--	--

R20 "VanillaNut"		VANILLA NUT			(French vanilla + Hazelnut)			
Entry Step	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
[< or >]								
1	VALVE-03	--	04.45	--	--	--	--	--
2	WHIPPER-03	--	06.50	--	--	--	--	--
3	WAIT	--	00.90	--	--	--	--	--
4	SGC #2	P	02.25	10	--	--	--	--
5	NEXT	--	00.10	--	--	--	--	--
6	VALVE-02	--	05.25	--	--	--	--	--
7	WHIPPER-02	--	08.00	--	--	--	--	--
8	WAIT	--	03.20	--	--	--	--	--
9	SGC1-FrVAN	P	01.90	10	--	--	--	--
10	END	--	01.50	--	--	--	--	--

R21 "Café-SGC#2"		CAFÉ (SGC #2)			(Coffee + SGC #2 - example: Café Amaretto)			
Entry Step	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
[< or >]								
1*	G COF-BEAN (Large Grinder)	P	01.50	20	--	--	--	--
1*	G COF-BEAN (Mini Grinder)	P	02.10	20	--	--	--	--
1*	LG COFFEE	P	03.10	20	--	--	--	--
2	NEXT	--	01.00	--	--	--	--	--
3	COF-BREWER	--	--	00	02.50	00.50	03.00	2
4	B VALVE-12 (Brewer Valve)	B	02.60	--	--	--	--	--
5	ING DLY (Ingredient Delay)	--	01.20	--	--	--	--	--
6	WHIPPER-XX (Coffee Trough)	--	10.00	--	--	--	--	--
7	WAIT	--	00.50	--	--	--	--	--
8	LIGHTENER	C1	00.75	20	--	--	--	--
9	WAIT	--	00.50	--	--	--	--	--
10	SUGAR	C2	01.75	25	--	--	--	--
11	SUGAR SUB	C2	01.25	25	--	--	--	--
12	TOPPIN DLY	--	00.10	--	--	--	--	--
13	VALVE -03	--	03.40	--	--	--	--	--
14	WHIPPER-03	--	07.00	--	--	--	--	--
15	WAIT	--	00.60	--	--	--	--	--
16	SGC #2	P	02.45	10	--	--	--	--
17	END	--	01.50	--	--	--	--	--

Machine Programming

R22 "Coco-SGC#2"		COCO SGC #2		(Chocolate + SGC#2 – example: Coco Hazelnut)				
Entry Step [< or >]	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
1	VALVE—01	--	04.85	--	--	--	--	--
2	WHIPPER-01	--	07.00	--	--	--	--	--
3	WAIT	--	00.80	--	--	--	--	--
4	CHOCOLATE	P	02.75	10	--	--	--	--
5	NEXT	--	00.10	--	--	--	--	--
6	VALVE-03	--	04.70	--	--	--	--	--
7	WHIPPER-03	--	08.00	--	--	--	--	--
8	WAIT	--	00.80	--	--	--	--	--
9	SGC #2	P	02.60	10	--	--	--	--
10	END	--	01.50	--	--	--	--	--

R23 "FrenchCoco"		FRENCH COCO		(French Vanilla + Chocolate)				
Entry Step [< or >]	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
1	VALVE—01	--	04.70	--	--	--	--	--
2	WHIPPER-01	--	07.50	--	--	--	--	--
3	WAIT	--	00.80	--	--	--	--	--
4	CHOCOLATE	P	03.25	10	--	--	--	--
5	NEXT	--	00.10	--	--	--	--	--
6	VALVE-02	--	04.50	--	--	--	--	--
7	WHIPPER-02	--	07.50	--	--	--	--	--
8	WAIT	--	00.70	--	--	--	--	--
9	SGC1-FrVAN	P	03.05	10	--	--	--	--
10	END	--	01.50	--	--	--	--	--

R24 "Café-SGC#3"		CAFÉ (SGC #3)		(Coffee + SGC #3 - example: Café Hazelnut)				
Entry Step [< or >]	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
1*	G COF-BEAN (Large Grinder)	P	01.50	20	--	--	--	--
1*	G COF-BEAN (Mini Grinder)	P	02.10	20	--	--	--	--
1*	LG COFFEE	P	03.10	20	--	--	--	--
2	NEXT	--	01.00	--	--	--	--	--
3	COF-BREWER	--	--	00	02.50	00.50	03.00	2
4	B VALVE-12 (Brewer Valve)	B	02.60	--	--	--	--	--
5	ING DLY (Ingredient Delay)	--	01.20	--	--	--	--	--
6	WHIPPER-XX (Coffee Trough)	--	10.00	--	--	--	--	--
7	WAIT	--	00.50	--	--	--	--	--
8	LIGHTENER	C1	00.75	20	--	--	--	--
9	WAIT	--	00.50	--	--	--	--	--
10	SUGAR	C2	01.75	25	--	--	--	--
11	SUGAR SUB	C2	01.25	25	--	--	--	--
12	TOPPIN DLY	--	00.10	--	--	--	--	--
13	VALVE --XX	--	03.40	--	--	--	--	--
14	WHIPPER-XX	--	07.00	--	--	--	--	--
15	WAIT	--	00.60	--	--	--	--	--
16	SGC #3	P	02.45	10	--	--	--	--
17	END	--	01.50	--	--	--	--	--

Machine Programming

R25 "Fr-Vanilla"		FRENCH VANILLA (SGC #1) (Soluble Gourmet Coffee)						
Entry Step	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
[< or >]								
1	VALVE=02	--	09.80	--	--	--	--	--
2	WHIPPER-02	--	12.50	--	--	--	--	--
3	WAIT	--	01.10	--	--	--	--	--
4	<i>SGC1-FrVan</i>	P	05.55	10	--	--	--	--
5	END	--	01.50	--	--	--	--	--

R25 "Fr-Vanilla"		FRENCH VANILLA w/Froth Topping (SGC #1 – Soluble Gourmet Coffee)						
Entry Step	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
[< or >]								
1	VALVE—02	--	08.10	--	--	--	--	--
2	WHIPPER-02	--	12.50	--	--	--	--	--
3	WAIT	--	00.80	--	--	--	--	--
4	<i>SGC1-FrVan</i>	P	05.55	10	--	--	--	--
5	WAIT	--	05.00	--	--	--	--	--
6	VALVE-XX (Froth Valve)	--	01.45	--	--	--	--	--
7	WHIPPER-XX (Froth Whipper)	--	05.00	--	--	--	--	--
8	WAIT	--	00.60	--	--	--	--	--
9	<i>FRT-TOPPIN</i>	P	01.25	00	--	--	--	--
10	NEXT	--	02.00	--	--	--	--	--
11	VALVE-XX (Froth Valve)	--	00.50	--	--	--	--	--
12	WHIPPER-XX (Froth Whipper)	--	01.50	--	--	--	--	--
13	END	--	01.50	--	--	--	--	--

R26 "SGC 2"		SOLUBLE GOURMET COFFEE #2 (SGC #2 – example: Hazelnut)						
R27 "SGC 3"		SOLUBLE GOURMET COFFEE #3 (SGC #3 – example: Amaretto)						
R28 "SGC 4"		SOLUBLE GOURMET COFFEE #4 (SGC #4 – example: Irish Cream)						
Entry Step	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
[< or >]								
1	VALVE—02	--	09.80	--	--	--	--	--
2	WHIPPER-02	--	12.50	--	--	--	--	--
3	WAIT	--	01.10	--	--	--	--	--
4	<i>SGC1-FrVan</i>	P	05.55	10	--	--	--	--
5	END	--	01.50	--	--	--	--	--

R26 "SGC 2"		SOLUBLE GOURMET COFFEE #2 w/Froth Topping (SGC #2 – example: Hazelnut)						
R27 "SGC 3"		SOLUBLE GOURMET COFFEE #3 w/Froth Topping (SGC #3 – example: Amaretto)						
R28 "SGC 4"		SOLUBLE GOURMET COFFEE #4 w/Froth Topping (SGC #4 – example: Irish Cream)						
Entry Step	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
[< or >]								
1	VALVE—02	--	08.10	--	--	--	--	--
2	WHIPPER-02	--	12.50	--	--	--	--	--
3	WAIT	--	00.80	--	--	--	--	--
4	<i>SGC1-FrVan</i>	P	05.55	10	--	--	--	--
5	WAIT	--	05.00	--	--	--	--	--
6	VALVE-XX (Froth Valve)	--	01.45	--	--	--	--	--
7	WHIPPER-XX (Froth Whipper)	--	05.00	--	--	--	--	--
8	WAIT	--	00.60	--	--	--	--	--
9	<i>FRT-TOPPIN</i>	P	01.25	00	--	--	--	--
10	NEXT	--	02.00	--	--	--	--	--
11	VALVE-XX (Froth Valve)	--	00.50	--	--	--	--	--
12	WHIPPER-XX (Froth Whipper)	--	01.50	--	--	--	--	--
13	END	--	01.50	--	--	--	--	--

Machine Programming

R29 "Soup"		SOUP						
Entry Step	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
[< or >]								
1	VALVE=XX	--	10.40	--	--	--	--	--
2	WHIPPER-XX	--	12.50	--	--	--	--	--
3	WAIT	--	01.10	--	--	--	--	--
4	<i>SOUP</i>	P	02.45	25	--	--	--	--
5	END	--	01.50	--	--	--	--	--

R30 "Chocolate"		HOT CHOCOLATE						
Entry Step	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
[< or >]								
1	VALVE=01	--	10.10	--	--	--	--	--
2	WHIPPER-01	--	12.50	--	--	--	--	--
3	WAIT	--	01.10	--	--	--	--	--
4	<i>CHOCOLATE</i>	P	05.75	10	--	--	--	--
5	END	--	01.50	--	--	--	--	--

R30 "CreamyCoco"		HOT CHOCOLATE w/Froth Topping						
Entry Step	FUNCTION (Do Not Press + or - unless recipe changing name)	Ingredient Type [Press ★]	DURATION TIME [Press F2]	Modifier % [Press F3]	Water In Delay [Press F4]	Xtra-Strong Delay [Press F5]	Pressure Relief Delay [Press F6]	Brewer Speed [Press F7]
[< or >]								
1	VALVE—01	--	07.80	--	--	--	--	--
2	WHIPPER-01	--	11.00	--	--	--	--	--
3	WAIT	--	00.80	--	--	--	--	--
4	<i>CHOCOLATE</i>	P	05.65	10	--	--	--	--
5	WAIT	--	05.00	--	--	--	--	--
6	VALVE-XX (Froth Valve)	--	02.05	--	--	--	--	--
7	WHIPPER-XX (Froth Whipper)	--	06.00	--	--	--	--	--
8	WAIT	--	00.60	--	--	--	--	--
9	<i>FRT-TOPPIN</i>	P	01.85	00	--	--	--	--
10	NEXT	--	02.00	--	--	--	--	--
11	VALVE-XX (Froth Valve)	--	00.50	--	--	--	--	--
12	WHIPPER-XX (Froth Whipper)	--	01.50	--	--	--	--	--
13	END	--	01.50	--	--	--	--	--

Machine Programming

Beverage Definition Menu heading

Name Creation Menu

This menu is used to view, change or create names that are part of a library bank of preset names used for identifying canisters, valves, whippers, pumps, grinders, brewers, and beverage selection names. When this menu item is active, the display shall indicate **"NAME CREATION"** on the display. This menu is used to create names for a particular ingredient or beverage selection if it does not already exist in the default list of names. The Name Assignment Menu (explained in the next section), uses the names that are available from the Name Creation Menu to identify which device will operate with that particular ingredient. The following alpha digits indicate the device type to be used with the ingredient name. The device type below should be set in front of the ingredient name.

A = Auger canister	(i.e. "LG DECAF" = Loose Ground Decaf coffee where "LG" is the device type and "DECAF" is the created name for that ingredient). The machine is factory defaulted with many of the product names and beverage recipes already set in the program.
V = Valve, on water tank	
W = Whipper, on canister rack	
G = Grinder, bean product	
LG = Loose Ground product	

" -- " = COMPLEMENT IDENTIFIER. Used to identify which complement buttons on the front selection panel will operate sugar, lightener, sugar substitute, or other additive ingredient. The following settings are available to identify which row the complement ingredient is to be located. **Note: It is recommended that Sugar and Sugar Sub both be assigned to C2 which causes row two and row three to function together allowing only sugar or sugar sub to be selected during a vend.**

C1 = Complement #1	(i.e. " C1 LIGHTENER") Where "C1" is the complement identifier, "Lightener" is ingredient name for additive.
C2 = Complement #2	(i.e. " C2 SUGAR") normally assigned to Sugar and Sugar-Sub Allows choice of Sugar or Sugar-Sub but not both in same drink.
C3 = Complement #3	(i.e. " C3 FLV Creamer") normally not used. For special additive to drink

Created Names are grouped in the following number fields:

1 thru 16 are coffee names	(i.e. " 06 -- LG COFFEE")
17 thru 71 are auger names on canisters rack	(i.e. "38 - SUGAR")
72 thru 84 are valve names	(i.e. "73 – VALVE-02")
85 thru 96 are whipper names	(i.e. "86 – WHIPPER-02")
97 thru 99 are beverage names	(i.e. "97 – COF-BREWER")
101 thru 130 are beverage names	(i.e. "114 – Fr-Vanilla").
131 is the factory pre-set for cycle cleaning recipe	(i.e. "131 ** CleanCycle").

FAST PATH

Depress the **ENTER** key to VIEW whether the ingredient type is registered in the name creation file, perform the following:

ENTER	To enter "BEVERAGE DEFINITION MENU"
< or >	Until "NAME CREATION" is displayed
ENTER	To enter beginning of name list
- or +	To sequence through field of names starting at 01 and up to 131.

Machine Programming

Beverage Definition Menu heading

Name Creation (continue)

If the ingredient name or beverage recipe name is not in this list, perform the following procedure:

Note: A maximum of ten (10) characters are permitted to assign a name.

FAST PATH

- or Depress the keys until you are at the first blank field number in the group you want to create.
(Note: (refer to previous page on table indicating number fields))
- or Move cursor to center of display (11th digit).
- or Choose character that indicates device type (i.e. "A" for auger, "V" for valve, etc.)
- or Insert a blank space between device type & name.
- or Scroll through list until desired character is found.
- or Moves to next digit to be set and repeat above step.
- Press when name created is complete.
- To register any changes and return to the "NAME CREATION" sub-menu.
- To return to "BEVERAGE DEFINITION" menu.

Name Assignment Menu

Used to assign ingredient names to certain devices in the machine. The devices named are the canister augers, valves, whippers, grinders, brewers and pumps. The program needs to know which device in the machine is to operate with what ingredient. The display shall indicate "NAME ASSIGNMENT" on the display when accessed. The canister rack layout and ingredient product location within the machine must be known prior to viewing and/or changing any of the settings in the Name Assignment Menu. Viewing the example drawing on page 206 of a particular configuration layout, you will notice the direction of the numbered devices from left to right. There are empty device locations that should not be assigned to any ingredient name. (i.e. valves # 6 & #7, whippers #6 & #7 on drawing).

Depressing the key will display "AUGER-1 A CHOC" (where "AUGER-1" is the device identifier and is assigned to ingredient name "A CHOC"). Depress or keys to scroll between the device identifiers. The valid device identifiers are "AUGER [1 thru 11]", "VALVE [1 thru 17]", "WHIPPER [1 thru 11]", "BREWER [1 & 2]". The control system will assume that all augers, whippers, valves, pumps and grinders are present. Should the user assign a name to an item that does not exist in the machine and uses that name in a recipe, the control system will assume that the item does exist and will attempt to turn that item ON. Upon exiting this menu item, the control system should check that no single user defined name is assigned to more than one (1) device identifier. Should this condition exist, the control system should beep three (3) times and the display will indicate "NAME MISMATCH". Depress the to exit this menu item at any time prior to committing changes.

FASTPATH

- When at "BEVERAGE DEFINITION"
- or To move to "NAME ASSIGNMENT"
- To enter into "NAME ASSIGNMENT"
- Displays: "AUGER-1 A CHOC"
AUGER-1 = device identifier
A CHOC = ingredient name
- or Scroll through all the device identifiers and ensure that the ingredient name assigned to it is correct.

Machine Programming

Beverage Definition Menu heading

Name Assignment Menu

Note: if a device identifier is not in use, the ingredient name location should be set to "**NULL**" (or blank space).

There are two brewer settings: The first, is a standard coffee brewer. The second, is an optional espresso brewer. The assigned peripheral name for brewers used are:

Standard = **"BREWER-1 C BREWER"**
Espresso = **"BREWER-2 E BREWER"**

- To view above brewer size setting of "12 oz" or "8oz".
- or To toggle between the size brewer equipped in machine.
- To register setting & continue to next step
- To exit this menu and retain new settings into memory.
If any of the device identifiers are assigned an incorrect name, perform following:
- or To move cursor next to ingredient name
- or To scroll through field of ingredient names

Note: If the ingredient name is not found, it must be created in the "NAME CREATION MENU" before it can be assigned in this menu.

Drink Size Definition Menu

Depressing the key when the MasterMenu™ System indicates "**SET DRINK SIZES**" will display: "**SIZE S 1 8.0**" (where "1" is referring to the low capacity cup cabinet, and "8.0" is the cup size used). Depress the or keys to toggle between cup size to Size **S** or Size **L**. Depress key to move right to the cup cabinet number field. Toggle between cup cabinet "1" low capacity cabinet or "2" high capacity cabinet or "1 + 2" to use the same size cup in both cabinets. Depress key to move cursor right to the cup size field. Depress the or keys to increase /decrease the change the cup size setting. Depress the key then depress the two times to accept the entry when the desired cup size and drink volume are displayed.

NOTE: All recipes duration times are for the largest cup setting. The smaller cup size times are automatically determine by a scale down factor in the program.

FASTPATH

- To access "BEVERAGE DEFINITION" Menu
- or To scroll to "SET DRINK SIZES"
- Displays shows "Size S 1 8.0"
- or To toggle cursor between cup size small (S) or large (L).
- or To move cursor to cup cabinet type: 1 = low capacity / 2 = high capacity
- or To toggle between Cup Cabinet #1 or Cup Cabinet #2.
- or To move cursor to volume size 8.0
- or To increase or decrease cup size.
- To register setting.
- To exit menu.

Machine Programming

Pricing Menu heading

Depressing the **ENTER** key when the MasterMenu™ System indicates "**PRICE**" on the display shall provide the user with access to the Price Menu Items.

Coffee Price Assignment Menu [F4]

Depressing the **ENTER** key when the MasterMenu™ System indicates "**COFFEE PRICE ASSIGNMENT**". Press the **ENTER** key to display; "SEL-01 SIZE-S = 00.65" (where "SEL 01" indicates top left #1 selection on customer selection panel, "SIZE S" indicates cup size small, and "00.65" indicates price setting for selection #1. Depress the **<** or **>** keys to move left and right respectively through the selection field, and the price field. Depress the **-** or **+** keys to increase or decrease the selection, size cup or price field. When the desired selection and price are displayed, depress the **ENTER** key to register the setting. The MasterMenu™ System will then be ready to accept the next item/price selection immediately. Perform the same procedure as defined above to set the price for the next selection.

Note: It is recommended that you set prices for all the small size cup first then repeat the process for the large cups.

The **Wildcard** feature allows the programmer to set all the selections prices at once for small or large cups. Follow the steps above except insert a **★** in the "selection field". This will set all selections for cup size shown to \$0.65. Depress the **ENTER** key to register the setting, or depress the **ESC** to exit this menu item at any time prior to committing changes.

FASTPATH

ENTER	At the "PRICES" Menu will display:	ENTER	To register setting.
	"COFFEE PRICE ASSIGNMENT"	ESC	To save in memory and exit this menu
ENTER	To access price setting display:	< or >	To move cursor
< or >	To move cursor to Selection, Size or Price	Note: to increment / decrement the price setting value, use the numbered keypad.	
- or +	To modify Selection Number, Size, or Price		

Wild Card Feature.

★	Insert the { ★ } key when the cursor is at the selection number field.
----------	---

Check Prices Menu Item

Depressing the **ENTER** key when the MasterMenu™ System indicates "**CHECK PRICES**" on the display; Press the **ENTER** key to display; "SEL-01 SIZE-S = 00.65" (where "SEL 01" indicates top left #1 selection on customer selection panel, "SIZE S" indicates cup size small, and "00.65" indicates price setting for selection #1. The "0.65" field cannot be entered changed only viewed to check if set to correct price. Depress the **-** or **+** keys to increase or decrease the selection number field . Verify that the price setting for all selections and cup size are correct. Depress the **ENTER** To exit the Check Price Menu. Depress the **ESC** to exit this menu item at any time prior to committing changes.

FASTPATH

ENTER	At the "PRICES" Menu
< or >	To scroll to "CHECK PRICES"
ENTER	To access the Check settings (Sample display: "SEL-01 SIZE S 00.65").
< or >	To move cursor to selection number or cup size
- or +	To scroll through selection numbers or toggle cup size and check view price settings..
ENTER	To exit the Check Price Menu.

Machine Programming

Diagnostics Menu heading

Introduction

Depressing the **ENTER** key when the MasterMenu™ indicates "DIAGNOSTICS" on the display provides access to the Diagnostic Menu Items.

View Errors Menu

Depressing the **ENTER** key when "VIEW ERRORS" is displayed; will display the first of any pending error messages. Depress the **<** or **>** or the **ENTER** keys to sequence through the error list. The error messages will be displayed in the order each error was detected by the machine. **Depressing the F2 key will cause extended diagnostic information to be displayed. This information will include the time and date on which the error occurred as well as an error code that provides the information necessary to identify where the error occurred internally to the machine.** Depressing the **ENTER** or **<** or **>** keys while viewing the extended diagnostic information will display the next/previous pending error. The machine will beep when the end of the error list has been reached.

FASTPATH

- ENTER** Depress enter when in Errors Menu, the first error will appear.
- <** or **>** To sequence through the error list.
- F2** Causes extended diagnostic information to be displayed.
- ENTER** Will cause the next pending error to be displayed.

Depressing F2 on the MasterMenu keypad will give you direct access to the View Errors menu without entering MasterMenu.

Clear Errors Menu

When this menu is active, "-CLEAR ERRORS-N" will be displayed. Depress the **-** or **+** keys to toggle the prompt between "N" and "Y". Depressing the **ENTER** key when the prompt is "Y" will clear all errors. If the prompt is "N", depressing the **ENTER** key will have no effect.

FASTPATH

- ENTER** To enter Clear Errors Menu.
- or **+** To toggle the prompt between "N" and "Y".
- ENTER** To enter the above action.

Depressing F3 on the MasterMenu keypad will give you direct access to the View MIS menu without entering MasterMenu™.

Test Vend Menu

When this menu is active, "-TEST VEND-N" will be displayed. Depress the **-** or **+** keys to toggle the prompt between "N" and "Y". Depressing the **ENTER** when the prompt is "Y" will initiate a test. The display will indicate "TEST VEND ACTIVE" and the front panel keys become active enabling a vend. Any error generated during this test will be displayed for three seconds and will halt the vend. If the prompt is "N", depressing the **ENTER** will have no effect. Closing the door will automatically turn off test vend.

FASTPATH

- ENTER** To enter the Test Vend Menu.
- or **+** To toggle the prompt between "N" and "Y".
- ENTER** Will cause the test to be initiated and the front panel keys become active.

Depressing F6 on the MasterMenu keypad will give you direct access to the Test Vend menu item without entering MasterMenu.

Machine Programming

Diagnostics Menu heading

Test Motors

When this menu is active, "TEST MOTORS" will be displayed. Depressing the **ENTER** key will provide the user with the ability to operate any of the Ingredient Motors manually by prompting the user for a motor name (the motors shall be selected by the name assigned to them in the Name Assignment Menu Item) and a duration time. The display shall indicate "CHOCOLATE 005.00" (where "CHOCOLATE" is the motor name and "005.00" is the amount of time to turn the motor in seconds. The maximum value that can be entered is 299.99, the default value will be 05.00 sec.). Depress the **<** or **>** keys to scroll through motor names. If a name is not specified, the control system shall display the peripheral identifier (i.e. auger 1, auger 2, ...). Depress the **-** or **+** keys to increase/decrease the duration time. When the desired motor name and duration time are being displayed, depress the **ENTER** key to begin turning the motor. The control system shall decrease the displayed time while the test is running. If the control system was able to run the selected motor, the control system will beep once and the display will display "TEST COMPLETE" for three (3) seconds.

FASTPATH

ENTER	When the "TEST MOTOR" is displaying.
< or >	To scroll through motor names
- or +	To increase/decrease the duration time
ENTER	To start timed test for duration time set.

Test Brewers

When this menu is active, "TEST BREWERS" will be displayed. Depressing the **ENTER** key will allow operation of any of the resident brewers. The display shall indicate "COF – BREWER- HOME. Depress the **<** or **>** keys to move left or right respectively between the COF BREWER HOME and COF BREWER –TEST,. When the desired brewer name and test type are being displayed, depress the **ENTER** key to begin running the brewer diagnostic. "TEST" goes through an entire brew cycle without any water or ingredients. "HOME" takes the brewer to its home position. If the brewer is already in the home position and the user wishes to home the brewer, the display will show "BREWER ALREADY HOME". The user will have the capability to stop the motor early by pressing the **ESC** key.

Test Valve

When this menu is active, "TEST VALVES" will be displayed. Depressing the **ENTER** key will provide the user with the ability to operate any of the valves. The display will indicate "VALVE 1 005.00" (where "VALVE 1" is the valve name and "005.00" is the defaulted amount of time to open the valve in seconds). Depress the **<** or **>** keys to scroll between valve names. Depress **-** or **+** keys to increase/decrease the duration time. When the desired valve name and duration time are being displayed, depress the **ENTER** key to open the valve. The Front Panel Keypad can be used to enter data into the time field. The **ESC** key can be depressed to stop the test early.

NOTE: Valve numbers are sequenced from left to right in the machine.

FASTPATH

ENTER	When the "TEST VALVE" is displaying.
< or >	To scroll through valve names
- or +	To increase/decrease the duration time
ENTER	To start timed test for duration time set.

Machine Programming

Diagnostics Menu heading

Test Whipper

When this menu is active, "TEST WHIPPERS" will be displayed. Depressing the **ENTER** key will provide the ability to operate any of the whipper motors. The display will indicate "WHIPPER 1 001.00" (where "WHIPPER 1" is the whipper motor name and "001.00" is the amount of time to run the whipper motor in seconds). Depress the **<** or **>** keys to scroll between the whipper motor names. Depress the **-** or **+** keys to increase/decrease the duration time. When the desired whipper motor name and duration time are being displayed, depress **ENTER** the key to begin running the whipper motor. The Front Panel Keypad can be used to enter data into the time field. The **ESC** key can be depressed to stop the test early.

FASTPATH

ENTER	When the " TEST WHIPPERS " is displaying.
< or >	To scroll through whipper names
- or +	To increase/decrease the duration time
ENTER	To start timed test for duration time set.

Water Tank Check

When this menu is active, "WATER TANK CHECK" will be displayed. Depressing the **ENTER** key will provide the ability to cycle the heater element "ON" and "OFF" and monitor the tank temperatures. The display will indicate "HEATER P ON 200" (where "P" the heater element and "200" is the current water tank temperature. Depress the **<** or **>** keys to move left or right respectively between the hot water tank, on/off fields. The temperature field shall indicate the temperature of the water tank and shall not be modifiable by the user. Depress the **-** or **+** keys to turn the heater "OFF" and "ON". Depress the **ESC** to exit this menu item. **NOTE: The heating element should only be turned ON if there is water in the tank and if no steam is detected.**

Auxiliary Functions Menu

When this menu is active, "AUXILLARY FUNCTIONS" will be displayed. Depressing the **ENTER** key will provide the ability to operate the auxiliary mechanical devices present in the APi 223. The display will indicate "TEST-CUP DROP 2". Depress the **<** or **>** keys to sequence through the auxiliary functions supported. These shall be "CUP DROP 1", "CUP DROP 2", "CUP DROP 3", "SPIRAL 1", "SPIRAL 2", "SPIRAL 3", "SPOUT IN", "SPOUT OUT", "OPEN DOOR", "CLOSE DOOR", "COMPRESSOR FAN", "COMPRESSOR", "AGITATOR MOTOR". When the desired function is displayed, depress the **ENTER** key to test the mechanical device specified. If the function failed to run it will be indicated on the display as "TEST FAILED". If the motor has a home position, the control system shall run the motor for one (1) cycle. For all other motors, the control system shall run the motor for a period of 10 seconds. The **ESC** key can be depressed to stop the test early.

FASTPATH

ENTER	When the " AUXILLARY FUNCTIONS " is displaying.
< or >	To scroll through motor names
ENTER	To start timed test for duration time set.
ESC	To exit this menu.

Machine Programming

Time Functions Menu heading

Time Functions Menu

Depressing the **ENTER** key when the MasterMenu™ indicates "TIME FUNCTIONS" on the display provides access to the Time Functions Menu Items.

Setting Discount Times Menu

When this menu item is active, "DISC 01 00:00-00:00" will be displayed. Depress the **<** or **>** keys move through the discount number, and time range fields and use the **-** or **+** keys or the selection buttons to increase or decrease the currently selected field. The discount period number field, "01", can be set from "1" to "10", allowing ten (10) different time periods per week. The time range field will indicate the time span for the discount period for the given day using a 24hr clock. When the desired period number and time range are displayed, depress the **ENTER** key to accept the entry and display the day selection field "01-S M T W T F S". Depress **<** or **>** keys to move through the day selection field (**NOTE:** the discount period number cannot be selected, it is displayed for clarity) and depress the **-** or **+** keys to toggle a given day ON (upper case) or OFF (lower case). When the desired days are displayed (all days are "ON" is the default), depress the **ENTER** key to accept the entry. When the period number and time range fields are being displayed, to clear a discount entry depress the **ESC** key when the period number to be cleared is being displayed.

FASTPATH

ENTER	To enter Set Discount Times Menu.
< or >	To move left and right through the period number and time range fields.
- or +	To increase or decrease the currently selected field.
ENTER	To accept the entry and move to days of week
< or >	To move left and right through the day selection field.
- or +	To toggle a given day on or off.
ENTER	To accept the entry.

Discount Options Menu

When this menu item is active, " **DISCOUNT 01 00.00 N**" will be displayed (where "01" is one of the discount numbers set as described in Setting Discount Time Menu. "00.00" is the value of the discount amount, and "**N**" is the state of the discount on/off). Depress the **<** or **>** keys to sequence through the discount number, discount amount, and state fields. Depress the **-** or **+** keys to cycle through the ten available discount numbers or to increase/decrease the discount amount, or toggle the state field (discount option to on or off). When the desired discount number, amount, and state are displayed; depress the **ENTER** key to select that entry. You do not have to change the discount amount prior to depressing the **ENTER** key if you only wish to add or modify the discount list. The display is then updated with the first item selection (01 NONE SEL-01). If no item selections have been applied, the display will show "NONE". Depress the **-** or **+** keys to view the list of selections that have the discount applied. To delete an item from the list depress the **DEL** key when the desired item is displayed. To insert an item into the list depresses the **INS** key. A "**INSERT-SEL-01**" will be displayed, depress the **-** or **+** keys to the desired selection and press **ENTER** to accept the entry. When the discount becomes active (i.e. the time of day falls within the range specified for the discount period), the display will scroll the message "SAVE \$.05 on Hot Chocolate."

FASTPATH

ENTER	To enter Discount Options Menu.
< or >	To move left and right through the discount number, discount amount, and state fields.
- or +	To sequence through the available discount numbers or increase/decrease the discount amount, or toggle the state field.
ENTER	To select that discount number, amount, and state.
- or +	To view the list of selections that have the discount applied.
DEL or INS	To delete or insert a selection from the list.
- or +	To select the selection
ENTER	To accept that entry.
ESC	To return to the scrollable list of items.

Machine Programming

Time Function Menu heading

Shutdown Options Menu

When this menu item is active, "SHUT 01 00:00-00:00 " will be displayed (where "01" is one of the 10 shutdown numbers available). . Depress the or keys move through the shut down number and time range. Use the or keys to increase or decrease the currently selected field. The shut down number field, "01", can be set from "1" to "10", allowing ten (10) different time periods per week. The time range field will indicate the time span for the shut down period for the given day using a 24hr clock. When the desired shut down number and time range are displayed, depress the key to accept the entry and display the day selection field "01-S M T W T F S". Depress or keys to move through the day selection field (**NOTE:** the discount period number cannot be selected, it is displayed for clarity) and depress the or keys to toggle a given day ON (upper case) or OFF (lower case). When the desired days are displayed (all days are "ON" is the default), depress the key to accept the entry. When the period number and time range fields are being displayed, to clear a discount entry depress the key when the period number to be cleared is being displayed.

FASTPATH

<input type="button" value="ENTER"/>	To enter Set Shutdown Times Menu.
<input type="button" value="←"/> or <input type="button" value="→"/>	To move left and right through the period number and time range fields.
<input type="button" value="−"/> or <input type="button" value="+"/>	To increase or decrease the currently selected field.
<input type="button" value="ENTER"/>	To accept the entry and move to days of week
<input type="button" value="←"/> or <input type="button" value="→"/>	To move left and right through the day selection field.
<input type="button" value="−"/> or <input type="button" value="+"/>	To toggle a given day on or off.
<input type="button" value="ENTER"/>	To accept the entry.

Set Cleaning Cycle

When this menu is active, "SET CLEANING CYCLES" will be displayed. Depressing the key will display "MANUAL CLEANING - N". Depress the key to change the "N" to a "Y" then depress the key will execute the manual cleaning cycle This consists of running the cleaning cycle recipe once. The cleaning cycle recipe will always be recipe number 31, which is called 'clean'.

Depressing the key when the display shows "MANUAL CLEANING - N will change the display to "SET CLEANING TIMES". Depressing the key will show "CLEAN 1 0 - 00.00". Depress the or keys to move left and right respectively through the cleaning period number, the cleaning cycle number and time range fields and depress the or keys to increment or decrement the currently selected field. The cleaning period number field, "1" can be set from "1" to "9", allowing nine (9) different times per week. The time field will indicate the start time for the cleaning cycle for the given day using a 24hr clock. "0" is the number of times the control system will run the cleaning cycle recipe and can be set from "1" to "5". When the desired cleaning period number, number of times to repeat the cleaning cycle recipe, and start time are displayed, then depress the key to accept the entry. "1 0 - S M T W T F S" will be displayed indicating the day selection field. Depress the or keys to move through the day selection field (Note: The cleaning period number and number of times to run the cleaning cycle recipe cannot be selected, it is displayed for clarity) and depress the or keys to toggle a given day ON or OFF. Upper case letters indicate that the day is active (ON) and lower case letters indicate that the given day is not active (OFF). When the desired days are displayed (all days ON is the default), depress the key to accept the entry. When the period and time fields are being displayed, the user shall be able to clear a cleaning entry by depressing the key when the period number to be cleared is being displayed. The Front Panel Keypad can be used to enter data into the cleaning period number, number of times to run the cleaning cycle recipe, and start time. Depress the to exit this menu item at any time prior to committing changes.

Machine Programming

Security Functions Menu heading

INTRODUCTION

Depressing the **ENTER** key when the MasterMenu™ indicates "**SECURITY**" on the display provides access to the Security Menu Items. Three (3) password locked levels of security exist, superuser, Level 1, and Level 2. The superuser shall be allowed full access to all functions of the MasterMenu™ system. Level 1, Level 2 and Level 3 security is defined by the superuser. One superuser definable password exists for each level of security except Level 3. Level 3 is the lowest security level and does not require a password for entry. To gain access to a menu heading or item, the user's security level must be greater than or equal to that menu's security level. The factory default is such that all security levels have access to all menu headings and items (level 3).

Serial Number Menu

When this menu is active, "**SERIAL NUMBER**" is displayed. Depressing **ENTER** the key will display 11 digits. Use the key pad to enter the serial number of the machine or depress the **<** or **>** keys to sequence through the 11 digits and the **-** or **+** keys to change the number. Depressing the **ENTER** key will accept the serial number.

Machine Model Menu

When this menu is active, "**MACHINE MODEL**" is displayed. Depressing **ENTER** the key will display the current Machine Model. The Machine Model may consist of up to 10 characters. Upon pressing the **ENTER** key the Machine Model number will be accepted.

Machine Location Menu

When this menu is active, "**MACHINE LOCATION**" is displayed. Depressing **ENTER** the key will display 10digits. Use the key pad to enter the Machine Location or depress the **<** or **>** keys to sequence through the 10 digits and the **-** or **+** keys to change the number or letter. Depressing the **ENTER** key will accept the Machine Location.

Machine Asset Menu

When this menu is active, "**MACHINE ASSET**" is displayed. Depressing **ENTER** the key will display 10digits. Use the key pad to enter the Machine Asset or depress the **<** or **>** keys to sequence through the 10 digits and the **-** or **+** keys to change the number. Depressing the **ENTER** key will accept the Machine Asset.

Password Definition Menu

When this menu is active, "**PASSWORD DEFINITION**" will be displayed. Depressing the **ENTER** key "PASSWORD 2-3333" will be displayed (where "2" is the security level {1, 2, S for superuser} and "3333" is the default currently set for that user). The superuser can depress the **<** or **>** keys to move through the security level and password fields. The **-** or **+** keys can be used to scroll through the 3 security levels or to increase or decrease the numbers for the passwords. A valid password will consist of 4 (four) numeric characters. Upon depressing the **ENTER** key the password will be accepted by the MasterMenu™ system. The factory default passwords are Level 1 = 4444, Level 2 = 3333, and level S = 5555 for Superuser. The front panel keypad can be used to enter numeric data into the password field.

Password Prompt Menu

When this menu is active, "**PASSWORD PROMPT-N**" will be displayed. Depress the **-** or **+** keys to toggle the prompt between "N" and "Y". Depressing the key when the prompt is "Y" will cause a password prompt to be displayed as soon as the main cabinet door of the machine is opened and the user attempts to enter MasterMenu™. If the prompt is "N", depressing the key will cause the machine not to display the prompt and no password is required.

Machine Programming

Security Functions Menu

Set Security Level Menu

When this menu is active, "SET SECURITY LEVEL" will be displayed. Depressing the **ENTER** key "MIS 3" will be displayed (where "3" would indicate that the MIS menu heading is currently set to the superuser security level). Depress the **-** or **+** keys to sequence through the four security levels. The superuser must depress the **ENTER** key to commit the security level for the menu heading/item displayed and cause the next menu heading/item in the MasterMenu™ to be displayed along with its security level. The **<** key allows the superuser to scroll through the menu headings and the **>** is used to sequence through all the item headings in the MasterMenu™ system. (Note: The View MIS Data Menu Item is followed in sequence by the MIS data elements themselves.) No change will be committed for any security level of any menu heading/item unless the superuser depresses the **ENTER** key. Thus the superuser may pass through menu headings/items without making changes to security levels by using the **<** or **>** keys. Higher security levels are supersets of lower security levels - i.e. Level 2 user security has access to all Level 3 menu headings/items, but not Level 1 or superuser menu headings / items. In turn, a Level 1 user has access to all Level 2 and Level 3 menus.

Note: The superuser will not be allowed to disable this menu item for the superuser security level.

FASTPATH

ENTER	To enter Set Security Level Menu
- or +	To sequence through the four security levels Security Levels Menu.
ENTER	To commit to security level.
<	Scroll through the menu headings
>	Sequence through all the item headings
ENTER	To commit to security changes.

Machine Reset Menu

When this menu is active, "MACHINE RESET-N" will be displayed. Depress the **-** or **+** keys to toggle the Yes/No field. If the **ENTER** key is depressed when the Yes/No toggle is "Y", "-RESET-MESSAGES" will be displayed. Depress the **-** or **+** keys to change the type of reset. The available types are "MESSAGES", "OPTIONS", "MIS DATA" and "ALL". For example, if the **+** key is depressed, "RESET-OPTIONS" will be displayed. When the desired reset type is being displayed, press the **ENTER** key to accept the entry. "ARE YOU SURE-N" will then be displayed. Depressed the **-** or **+** keys again to toggle the Yes/No field. If the **ENTER** key is depressed when the Yes/No toggle is "Y", the machine will be reset with the type of reset specified.

FASTPATH

ENTER	To enter Machine Reset Menu.	ENTER	The accept type of reset.
- or +	To toggle the Yes/No field.	- or +	To toggle to Y to confirm reset.
ENTER	When the Yes/No toggle is "Y".	ENTER	Machine will reset.
- or +	To change the type of reset.		

Machine Programming

Display Menu heading

Set Menu Order

When this menu is active, " **MENU1-MIS**" will be displayed (where MIS is the first heading displayed). Depress the **[+]** key to scroll through the defaulted heading order. To change the heading order depress the **[>]** key to move the cursor to the heading field (MIS), then depress the **[−]** or **[+]** keys to scroll through the list of heading fields, (i.e. "SETUP, CONFIGURATION, BEVERAGE DEFINITION"). Upon depressing the **[ENTER]** key the Menu Order is accepted by the MasterMenu™ System.

Alt Language

When this menu is active, " **ALT LANGUAGE - N**" will be displayed. Depress the **[+]** key to change the "N" to a "Y" then upon depressing the **[ENTER]** key the MasterMenu™ System will use the alternate language table.

Set User Messages Menu

When this menu is active, " **POS-F EDIT**" will be displayed (where "F" is the desired Point of Sale message and "EDIT" is the operation the user wishes to perform on that message). Depress the **[<]** or **[>]** keys to move between the POS identifier field and the operation field. Depress the **[−]** or **[+]** keys to increase/decrease the POS identifier field and toggle the operation field. The user is capable of programming three (3) 150 character Point of Sale messages into the machine, indicated by "A", "B", and "C" in the POS identifier field. You have the option of displaying one of these messages, the time and date (POS identifier "D"), or the factory default (the factory default will always be represented by POS identifier "F") on the display. Do this by toggling the operation field from "EDIT" to "SET", selecting the desired POS message in the POS identifier field and depressing the **[ENTER]** key to accept the change.

If you wish to add/modify a programmable POS message, depress the **[ENTER]** key when the POS identifier field indicates the desired POS message, and the operation field indicates "EDIT". This will cause the display to be updated with the desired POS message. Depress the **[<]** or **[>]** keys to move through the POS message characters and depress the **[−]** or **[+]** keys to cycle through the legal display characters for the selected POS message character. The currently selected character will flash while no other keyboard activity is detected. Depressing the **[INS]** key will insert a flashing blank space to the left of the currently selected (flashing) character and shift all characters (including the current character) to the right by one. Depressing the **[DEL]** key will remove the currently selected (flashing) character and shift all characters to the right of the deleted character to the left by one. The cursor position will then be on the character that was directly to the right of the one deleted. Upon depressing the **[ENTER]** key the POS message is accepted by the MasterMenu™ System.

FASTPATH

[ENTER]	To enter Set User Messages Menu.
[<] or [>]	To move between the POS identifier field and the operation field.
[−] or [+]	To increase/decrease the POS identifier field and toggle the operation field.
[ENTER]	Selects the desired POS message in the POS identifier field.

If you wish to add/modify a programmable POS message, do the following.

[ENTER]	When the POS identifier field indicates the desired POS message, and the operation field indicates "EDIT".
[<] or [>]	To move through the POS message characters.
[−] or [+]	To cycle through display characters for the selected POS message.
[INS]	Will insert a flashing blank space to the left of the currently selected (flashing) character.
[DEL]	Will remove the currently selected (flashing) character.
[ENTER]	The POS message is accepted by the MasterMenu™ System.

Machine Programming

Display Menu heading

Set Out of Service Menu

When this menu is active, "SET OUT OF SERVICE" will be displayed. Depressing the **ENTER** key will display a blank screen with the cursor in the left hand position. Although the factory Out of Service default message, ("*** OUT OF SERVICE ***") can't be changed you may add up to 80 additional display characters. Depress the **<** or **>** keys to move the cursor one place left or right, then depress **-** or **+** keys to cycle through the full list of characters for the additional message. The currently selected character will flash while no other keyboard activity is detected. Depressing the **INS** key will insert a flashing blank space to the left of the currently selected (flashing) character and shift all characters (including the current character) to the right by one. Depressing the **DEL** key will remove the currently selected (flashing) character and shift all characters to the right of the deleted character to the left by one. The cursor position will then be on the character, which was directly to the right of the one deleted. Upon depressing the **ENTER** key the additional message is accepted by the MasterMenu™ System.

This message is displayed only when the entire machine is out of service and the additional message will follow the defaulted messages.

FASTPATH

ENTER	To enter Set Out of Service Menu.
< or >	To move the cursor left and right.
- or +	To cycle through the display characters for the selected Out of Service message.
INS	Will insert a flashing blank space to the left of the currently selected (flashing) character.
DEL	Will remove the currently selected (flashing) character.
ENTER	The Out of Service message is accepted.

Note: You will not be allowed to delete the words "OUT OF SERVICE" from the message; but rather, append additional characters to the message.

Set After Sale Message Menu

When this menu is active, "SET AFTER SALE" will be displayed. Depressing the **ENTER** key will display a blank screen with the cursor in the left-hand position. Although the factory After Sale Message default, ("THANK YOU VERY MUCH") can't be changed you may add up to 80 additional display characters. Depress the **<** or **>** keys to move through the "After Sale" message characters and use the **-** or **+** keys to cycle through the display characters for the selected "After Sale" message character. The currently selected character will flash while no other keyboard activity is detected. Depressing the **INS** key will insert a flashing blank space to the left of the currently selected (flashing) character and shift all characters (including the current character) to the right by one. Depressing the **DEL** key will remove the currently selected (flashing) character and shift all characters to the right of the deleted character to the left by one. The cursor position will then be on the character, which was directly to the right of the one deleted. Upon depressing the **ENTER** key the "After Sale" message is accepted by the MasterMenu™ System.

FASTPATH

ENTER	To enter Set After Sale Message Menu.
< or >	To move left and right through the After Sale message characters.
- or +	To cycle through the display characters for the selected After Sale message characters.
INS	Will insert a flashing blank space to the left of the currently selected (flashing) character.
DEL	Will remove the currently selected (flashing) character.
ENTER	The After Sale message is accepted.

Service / Troubleshooting

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CAUTION: THE FOLLOWING PROCEDURES MAY REQUIRE THAT THE MACHINE HAVE POWER APPLIED AND A POTENTIAL SHOCK HAZARD EXISTS. THESE PROCEDURES WILL BE MARKED WITH THE LIGHTENING BOLT SYMBOL AS IT APPEARS AT THE LEFT.



CAUTION: CERTAIN PROCEDURES IN THE SERVICE SECTION REQUIRES A QUALIFIED TRAINED TECHNICIAN TO PERFORM THE PARTICULAR TASK AT HAND. THESE PROCEDURES WILL BE MARKED WITH THE EXCLAMATION SYMBOL AS IT APPEARS AT LEFT.



CAUTION – “VERY HOT WATER” : CERTAIN PROCEDURES IN THE SERVICE SECTION REQUIRES EXTREME CARE WITH ASSEMBLIES IN CONTACT WITH HOT WATER. THESE PROCEDURES WILL BE MARKED WITH THE EXCLAMATION SYMBOL AS IT APPEARS AT LEFT.

Service / Troubleshooting



CAUTION – “VERY HOT WATER”:
THE FOLLOWING PROCEDURES IN THIS SECTION REQUIRES EXTREME CARE TO AVOID CONTACT WITH HOT WATER FROM WATER TANK. WATER FLOWING FROM VALVES, HOSES, SPRAY NOZZLES, MIXING BOWLS AND TROUGHS IS HOT ENOUGH TO CAUSE PERSONAL INJURY.

Equipment Needed: **A)** Soft Scrub Brush **B)** Glass Cleaner **C)** Spray mist bottle with sanitizing solution (mixture ratio = 1/2oz bleach per gallon of water. Dish Detergent (anti-bacteria type) **D)** Vinyl / Plastic Cleaner **E)** Clean Towels. **F)** Heavy Duty Brush
NOTE: Do Not use abrasive cleaning materials.

◆ Use **FIGURE 1 & 2** on next page to specify items locations throughout this procedure..

EACH VISIT – ROUTE SERVICE

1. **Wash Hands** – Thoroughly wash hands prior to servicing and/or filling machine.
2. **Fill Cup Dispensers** – Cup stack must be above upper spiral. Check for defective or damaged cups.
3. **Add Ingredient Products to all Canisters-** Add ingredients to the canister as needed by projected usage. **Note:** Do Not overfill canisters with *Ingredients. Lengthy shelf time may result in stale & hardened product.*
4. **Wipe Exterior Canisters** – Use clean dry towel to wipe canister surfaces (Item-A).
5. **Clean & Rinse Troughs / Bowls** – Remove the Trough Chute Covers (Item-C) & Whipper Hoods (Item-D). Check for product buildup in all bowls and trough surfaces. Use a soft brush, dish detergent and hot water from spray hose to loosen and remove build-up residue. Thoroughly rinse the inner surfaces with hot water from the spray hose. Coat all inner surfaces with sanitizing solution.
6. **Whip Chute and Hood Covers** (Items C & D) - Use dry clean towel to wipe away any build-up residue. If build-up can not be removed with dry towel perform following; Use a soft brush & hot water from spray hose to loosen and remove build-up residue. Thoroughly rinse all inner surfaces with hot water from the spray hose. Coat all inner surfaces with sanitizing solution. **IMPORTANT! Do Not** wipe dry any food contact surface. *Shake off excess moisture and allow to air dry.*
7. **Wipe Canister Spouts-** Use clean dry towel to wipe away any product buildup on the inner and outer surfaces of Canister Spouts (Items-B). **Note:** Do Not wet spouts, dry clean only.
8. **Whip Swing-Out Hoppers & Chutes** - On the Swing-Out Hopper assembly (see Figure 1), use clean dry towel to clean off the Hoppers (Items-AA) & coffee Chutes (Items-BB).
9. **Clean Brewer Base & Funnel** – Use brewer test button on ceiling to cycle the Brew Carriage (Item-F) to the forward dump position. Use spray hose

to thoroughly rinse down the carriage, and filter screen area (Items-F). With clean dry towel, wipe clean the Grounds Funnel (Item-E).

10. **Clean Cupwell & Chutes** – Use hot water from spray hose, soft brush, and dish detergent to clean all interior surfaces (Item-G) of cupwell. Also include top surfaces of the metal cup chutes (Items-H). On bottom grill (Item-I), use scrub brush to loosen grime between grill openings. Carefully use spray hose to rinse clean all interior and top chute surfaces. Allow all surfaces to air dry.
11. **CAUTION:** *Do not saturate the cup sensor boards with the spray hose.*
12. **Run the Manual Auto Rinse Cycle** –
 - a. Press ***F4** » Press **ENTER** » Press **±**
 - b. » Press **ENTER**.
13. **Empty & Clean Waste Bucket** – Empty waste bucket (Item-J). Spray the bucket surface with detergent solution and use heavy duty brush to scrub clean, then rinse out. After cleaning, spray a coat of sanitizing solution in bucket. Do not rinse out this solution for it will help prevent bacteria buildup and eliminate odor.
14. **Empty & Clean Grounds Bucket** – When the grounds bucket becomes 3/4 full, remove and discard bagged grounds (Item-K). Perform cleaning procedure from Step-12 above. Replace plastic bag in grounds bucket. **Note:** *ensure that the bucket is located correctly behind the back plate and the float is hanging freely in bucket.*
15. **Clean Interior Cabinet** - Use clean towel with glass cleaner to wipe interior walls. On floor surface (Item-L), wipe up loose spilt product and then use cleaning solution & hot water to finish cleaning floor.
16. **Clean Interior Door** – use clean towel with glass cleaner to wipe clean all surfaces especially around the vend door bezel.
17. **Clean Exterior Door** – use a clean towel with glass cleaner on metal surfaces and a plastic/vinyl type cleaner for other surfaces.
18. **Clean Vend Door** – Use glass or plastic cleaner to clean front and back surface of door.

QUARTERLY – SERVICE MAINTENANCE



CAUTION: THE BELOW PROCEDURE SHOULD BE PERFORMED BY A QUALIFIED PERSON FAMILIAR WITH MACHINE & TRAINED IN PREVENTIVE MAINTENANCE!

1. **Brewer Base** – Inspect and thoroughly clean.
 - A) Swing the hopper assembly open. Remove the front splash cover from brewer base.
 - B) On the Coffee Driver Board, press the brewer button to cycle the brew carriage to the dump position.
 - C) Disconnect cable from the rear end of the slide carriage. Disconnect brew hose from the bottom funnel elbow.
 - D) Remove the coffee grounds funnel and loosen the two base latch brackets under it.

Service / Troubleshooting

- E) Pull the base assembly out & away from the upper brewer assembly.
 - F) Remove the filter screen & plastic platform mold.
 - G) In washtub, use dish detergent and soft scrub brush to thoroughly clean the entire base assembly and parts removed.
 - H) Inspect all components for wear. Replace if necessary.
 - I) Reassemble the filter components and reinstall base assembly to brewer. *Note: ensure that the cable is routed behind the rear roller.*
 - J) Lubricate the two carriage slide rods with mineral oil.
 - K) Spray & coat the entire base assembly with sanitizing solution & let air dry.
2. **Exhaust System** – Remove all of the trough cover chutes and bowl hoods. Pull out the exhaust box & clean with detergent & hot water. Remove both exhaust hoses & shake out product build-up from inside hose. Remove & clean the exhaust fan screen that slides down and out of fan box. Reinstall exhaust box, hoses and fan screen.
3. **Whippers / Bowls / Covers** – Remove, Clean, & Inspect the following items: Troughs, Chute Covers, Whipper- hoods, bowls, blades, housing covers & face plates. Place in washtub and clean all items thoroughly using soft scrub brush and dish detergent. Rinse all items thoroughly with warm water. Shake off all excess moisture and reassembling in machine.
- A) *Suggestion: Save Time! Purchase a duplicate set of above parts to replace dirty items. Use dishwasher to clean dirty parts for next rotation.*
4. **Coin Mechanism** – On coin mechanism, swing open the flight deck compartment and clean per manufacturer's instructions
5. **Cupwell Pan/Grill** - Remove grill and drain pan from cupwell asm. In washtub, clean & scrub items using soft brush and dish detergent, then rinse thoroughly with warm water.
6. **Canister Rack Cover** – Insert the red trap gates into all canister spouts. Remove all the canisters from the canister rack. Wipe the exterior surfaces of all canisters with a clean towel. On top surface of metal canister rack, remove loose spilt product then use hot water & detergent to clean stuck on grim. Dry off surface with clean towel.

See Scheduled Maintenance Chart in Service Manual for recommended service intervals.

FIGURE 601

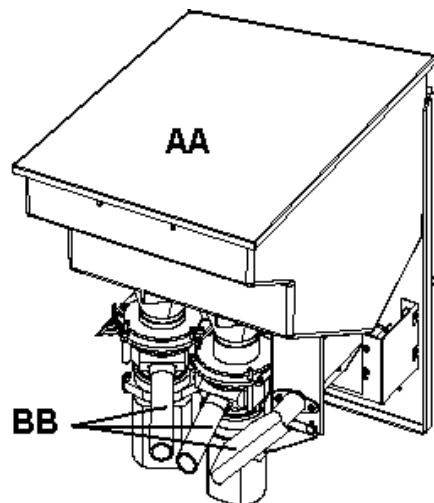
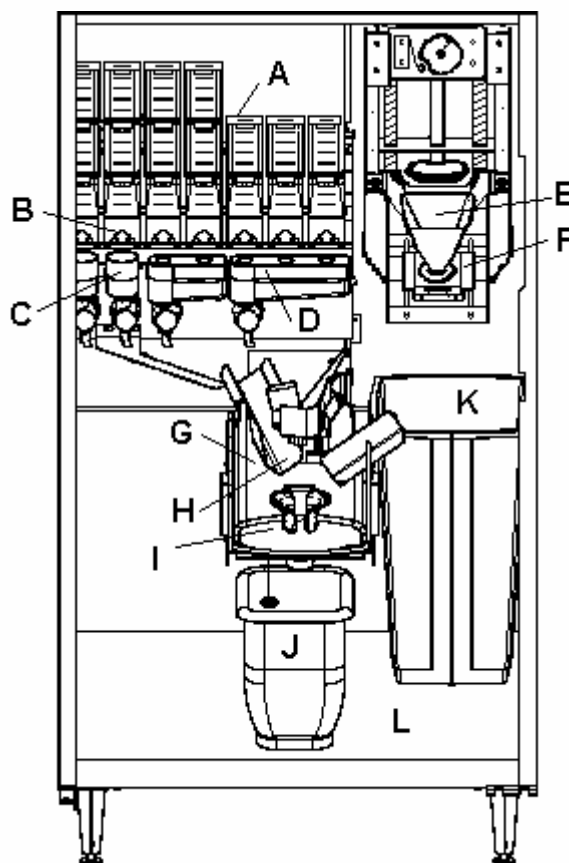


FIGURE 602



Service / Troubleshooting

PREVENTATIVE MAINTENANCE

SERVICE SCHEDULE

APi 223 Hot Beverage Merchandiser

Service Required At Each Interval Is Listed In Months or Total Vends Whichever Comes First	Interval By Months >>	Each Visit	3	12	24	36
	Interval By Vends >>		3000	12000	24000	36000
BREWER ASM						
Filter Screen & Seal		CLEAN	INSPECT	REPLACE		
Seal, Brew Chamber (black)		CLEAN		REPLACE		
Wiper Blade, Carriage				REPLACE		
Piston Rod, Compression Springs & Carriage Rods		CLEAN	CLEAN & LUBE	INSPECT & LUBE		
Upper Brewer Assembly				INSPECT & LUBE		
PRODUCT DELIVERY SYSTEM						
Mixing Troughs & Bowls		CLEAN	INSPECT			
Trough Chutes & Bowl Hoods		CLEAN	INSPECT			
Spouts (for all canisters)		CLEAN	INSPECT			
Whipper Chamber & Base Asm.		CLEAN	INSPECT			
Exhaust System; Screen, Hoses, Box			CLEAN			
Hoses, Liquid Delivery		CLEAN		INSPECT	REPLACE	
Coffee Delivery Chutes		CLEAN				
Coupling, Large Grinder					INSPECT	INSPECT
Cupwell Asm (interior plastic)		CLEAN		INSPECT		
Cup Chutes, Cupwell (metal)		CLEAN				
MISCELLANEOUS						
Water Filter Cartridge				REPLACE		
Water Valves (on water tank)				INSPECT	REBUILD	
Coin Mechanism			CLEAN			
Linkage Coin Mech				LUBE		
Water Tank (interior)					INSPECT (de-lime)	INSPECT (de-lime)

For each month of use past 36 months, repeat the schedule at each interval indicated.

THIS SCHEDULE SHOULD BE FOLLOWED IN ADDITION TO THE **EACH VISIT** AND **QUARTERLY** CLEANING RECOMMENDED IN THE SERVICE SECTION OF THIS MANUAL.

CLEAN -
INSPECT-

Clean and sanitize as per **Each Visit** procedure found on previous pages.
Inspect for wear, product built up or broken part. If necessary: remove, repair, adjust, clean, rebuild or replace.

REPLACE-
REBUILD-
LUBE

Recommended interval for replacement
Remove from machine, take apart, clean and replace worn or corroded parts.
Lubricate Item. First cleaned, inspected, and repaired before lubricating.
Recommended lubricant should be food grade, lightweight oil.

Service / Troubleshooting

BREWER FUNCTION

The heart of the APi 223 Hot Drink Merchandiser is the open cylinder brewer. It has been "time proven" and "experience improved". This mechanism is simple, lightweight, easy to clean and service. The brewer unit consists of a 24VDC motor with an optical positioning encoder and one cycle switch and cam. The Optical Encoder generates a singles to the CDB to indicate the speed of the brewer motor and position during the brew cycle. If the brewer motor is not in the home position upon power up, the brewer will automatically return to the home position.

The brewer's OPTICAL SENSOR controls the functions to start the compliments in the brew cycle (lightener, sugar & sugar sub). It also aids in the brewing process by causing delays throughout the brew cycle.

BREWER ASM

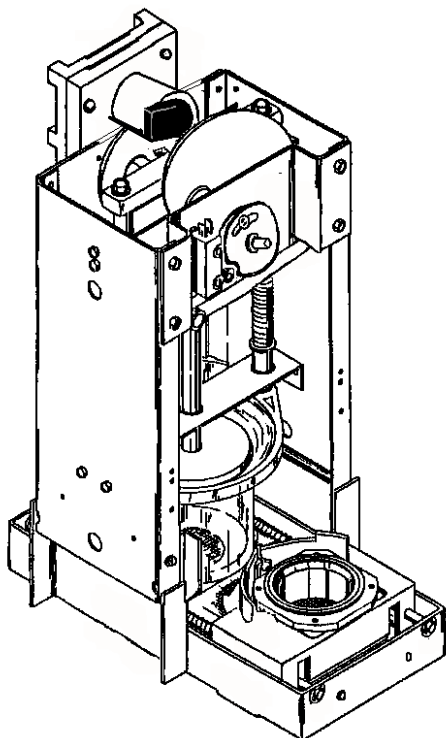


FIGURE 601

Brewer Delay Functions:

Fill Delay- When piston moves up out of cylinder, this delay de-energizes the brew motor to allow enough time for all the water to flow into the clear cylinder before the piston moves down to seal.

Extra Strong Delay – stops brew motor when piston move about one inch into clear cylinder. This delay allows just enough hot water to flow into the coffee grounds causing a steeping effect for better extraction.

Ingredient Delay – upon the extra strong delay period the Ingredient delay will signal when to start dispensing the compliments (Lightener, Sugar, Sugar-Sub).

Pressure Relief Delay – stops the brew motor at the bottom end of the piston stroke. This allows build up pressure to bleed off through the coffee grounds and also aids in drying the wet grounds.

Motor Speed - There are 5 variable brewer motor speeds to aid in the brewing process. The factory default speed for most selections is set to speed 3.

Speed

- 1 Slow
- 2
- 3 Normal (default setting)
- 4
- 5 Fast

FIXED FILTER BREW BASE

This base assembly controls the coffee grounds movement and filtering process.

The fixed filter brewer base asm is used in conjunction with the upper brewer assembly. The four insert pins on the base asm are used to install onto to upper brewer assembly. On the front side of brewer, the vertical left and right outer frame have latch brackets that secure the base assembly onto the upper brewer asm.

The carriage assembly houses the brew chamber that transports the coffee grounds over the filter screen and to the dump position during cycle. The brew chamber has a black "O" seal on top and the bottom has a sharp edge to seal against the filter "O" ring.

The filter design now combines a nylon filter mesh that is wrapped around a stainless steel support screen and captured between a rubber "O" ring seal.

The filter frame captures and holds the filter/seal assembly onto the elbow funnel. The plastic filter frame has long side latching tabs for ease of installation and removal.

The bottom funnel assembly has a larger surface that permits the filter seal to fit over it creating a tight seal to prevent leaks.

The spring-loaded wiper blade is located on back bottom side of carriage. The wiper blade under the carriage wipes off the surface of the filter screen during each cycle.

The plastic molded ramps are used to lift the brew chamber which is spring loaded, and snap the brew chamber downward to extract the spent coffee grounds into the grounds bucket.

HOW THE BREWER WORKS

The following steps will illustrate the step by step functions of the brewer during a vend cycle.

Note: The word "front" used in this description refers to the parts of the brewer nearest the observer, standing before the open cabinet.

Service / Troubleshooting

1. The brewer starts from the stand-by home position. At this position the Carriage and the Brew Chamber are positioned directly under the grounds funnel. The clear cylinder is the full up position. The piston is down inside the cylinder approximately 1 inch.

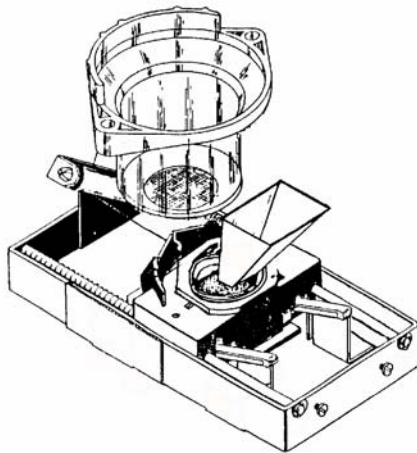


FIGURE 603

2. When the brewer unit starts, the cable will begin to retract the brew carriage towards the rear of the base assembly. The brew carriage will continue back until it is slightly behind the clear brew cylinder. When the brew cylinder starts its downward motion, the carriage cable is slackened slightly to allow the brew carriage to align under the clear cylinder aided by the shoulder guides on top of the carriage. The cylinder is pressed tightly against the brew chamber seal by the springs on the cylinder support rods. The bottom side of the brew chamber will also be sealed against the "O" ring around the filter screen.
3. As the cylinder clamps down on the brew chamber seal the red piston will also move up out of the cylinder simultaneously to allow for water fill. At this point the encoder on the brewer motor will identify that the brewer is at the **Fill Delay** position that stops the motor for a set period. The brew water valve will energize for a determined duration in the recipe program.

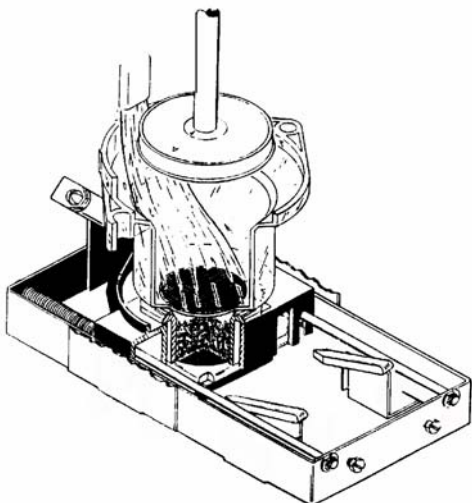


FIGURE 604

4. Upon the fill delay period the motor will start and move the piston about one inch into the clear cylinder and stop. This is now at the **Extra Strong Delay** position. A small amount of water is pushed into the brew chamber with the coffee grounds. This delay causes the coffee to steep in the water longer for extra extraction. (See Figure 605 below)
(Note: If the Extra Strong Delay is set too long it could cause over extraction by pulling out excess coffee oils resulting in a bitter cup of coffee.)
5. Upon the extra strong delay period, the motor starts and the **Ingredient Delay** period kicks in. This delay is used to initiate the start for the compliment ingredients such as sugar sugar-substitute or lightener. This method ensures that the brewer is flowing water into the trough while the sugar and lightener is dispensing.

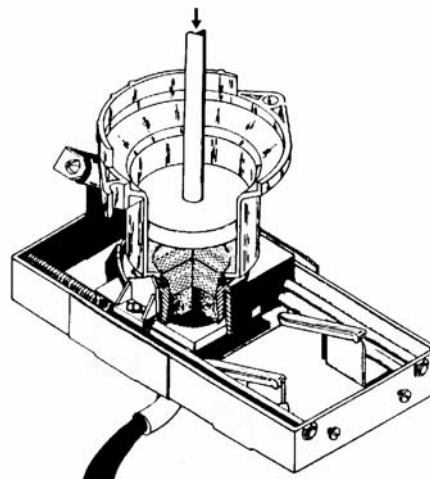


FIGURE 605

6. Air trapped between the piston and the water in the cylinder is quickly heated by the hot water and begins to expand. The downward motion of the piston, forces the water through the coffee grounds in the brew chamber and out through the delivery funnel to the trough. The heated compressed air (also known as the "Blast-Off Air") follows the water through the grounds forcing the remaining water out. It helps squeeze out the excess moisture from the coffee grounds leaving only moist grounds.

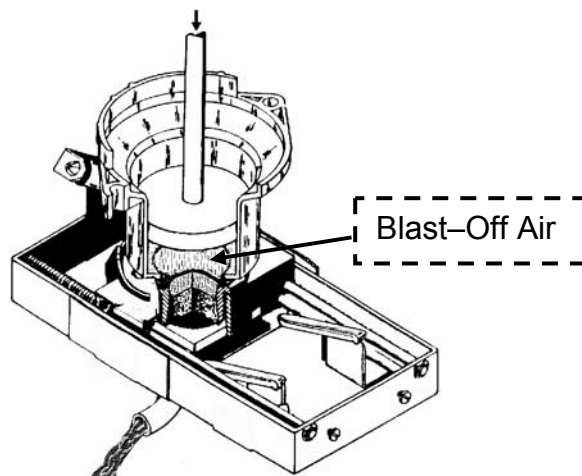


FIGURE 606

Service / Troubleshooting

7. When the piston reaches the bottom of cylinder position the brewer motor will stop running. The encoder on the brewer motor will identify that the piston is in the **Pressure Relief Delay** position. This settable delay allows time for built-up back-pressure from compressed air and coffee gases to dissipate through the bed of grounds also aiding in drying off the wet grounds. If this pressure is not relieved it could cause coffee grounds to blast out of the chamber and buildup on the top chamber seal.
8. Upon the pressure relief delay, the brewer starts the portion of the cycle that empties the spent grounds and resets the brewer back to the home position.
The brew carriage cable is tightened while the piston and cylinder is raised far enough to allow the brew carriage to move forward. The cable will unwind, controlling the forward motion of the brew carriage, which is being forced forward by the springs on the carriage rods. The coffee chamber slides the spent coffee ground off of the fixed filter screen followed by a spring loaded wiper that wipes the filter and platform. As the brew carriage passes over the two white pawls in the base assembly, the two ears on the sides of brew chamber lift the brew chamber evenly up over the pawls. As soon as the ears are free of the pawls, the brew chamber snaps downward, dislodging the spent grounds into the grounds bucket.

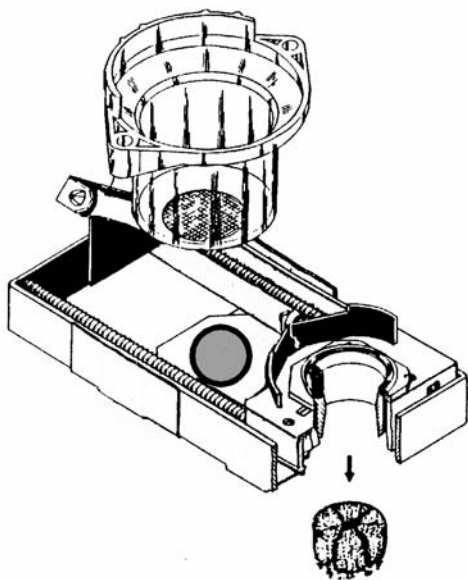
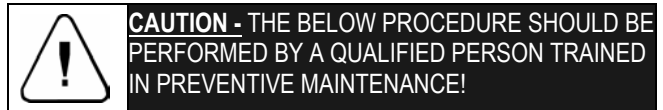


FIGURE 607

The cable will then begin to retract the brew carriage toward the rear of the base assembly until the brew chamber is directly over the filter frame and under the delivery funnel. At this point the Homing Switch lever will fall into the valley of the cam, signaling to remove power from brewer motor. At the homed position (see FIGURE 603) the machine is ready for the next vend

Brewer Home and Cable Adjustment



Brewer Home Adjustment

1. The brewer must be in the proper home position before following adjustments can be performed. Check for proper home position as follows:
 - A) In the Home position the piston rod between the top of the piston and bottom side of bridge should measure approximately 1 3/8 inches (see Figure 608 below).
 - a) If not, perform step B below.

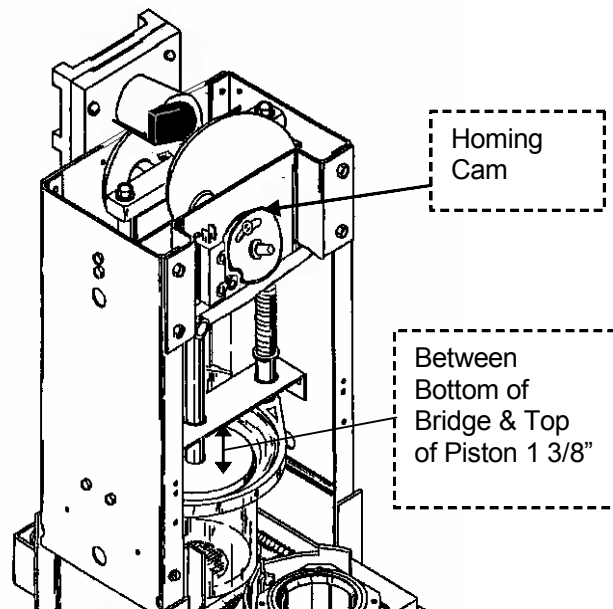


FIGURE 608

- B) The Homing Cam located on front side of brewer next to the Homing Switch will need to be adjusted. On the cam, loosen the two Allen screws attached to the shaft.
 - a) If measurement is longer than 1 3/8", rotate cam slightly counter clockwise then snug tighten.
 - b) If measurement is smaller than 1 3/8", rotate the cam slightly clockwise then snug tighten.
 - c) On the front side of the Coffee Driver Board, press and hold in the Brewer Test button to allow brewer to fully cycle until it stops on its own in the home position. Continue performing steps a) & b) until measurement of piston rod is 1 3/8" (see Figure 608).
2. **Cable Adjustment Check**
3. Operate the brewer through a complete cycle and observe that the following three steps are happening:
 - A) The alignment shoulder of the carriage moved slightly behind the rear vertical edge of the clear cylinder just as the cylinder starts down (see Figure 608).
 - B) The cable goes slightly slack just before the clear cylinder contacts the top surface of the brew chamber gasket.
 - C) Check that the bottom edge of the brew chamber is centered on the filter 'O' ring seal.

Service / Troubleshooting

D) After brewing process, the carriage should move forward slowly without hesitation until it reaches the dump position.

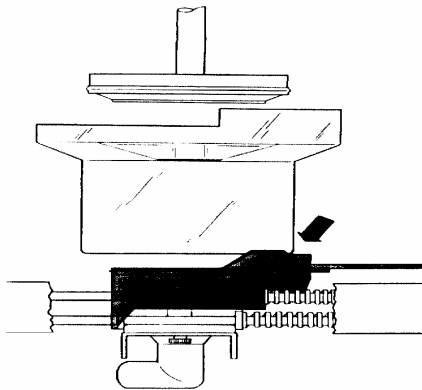


FIGURE 609

If all four of the above conditions are not met, then a cable adjustment should be performed using the following procedure:

6. Cable Adjustment Procedure:

- A) Before performing the cable adjustment the Brewer Home adjustment must be correct. (See previous section for Brewer Home Adjustment).
- B) In standby, measure the two carriage rods between the front side of the black carriage to beginning of front metal bar (see Figure 610). The two exposed rods should measure 2 3/8 inches. If not, perform following steps:

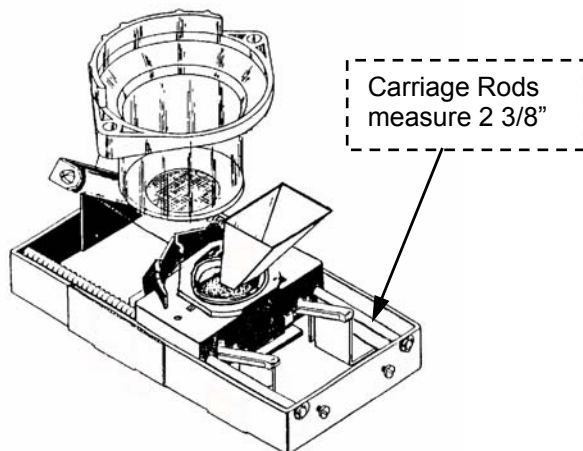


FIGURE 610

- C) Swing the coffee hopper out to allow clear access to the brewer. On the Coffee Driver Board (CDB) located at the top of the cabinet, depress the button labeled Coffee Brewer. Press the switch until piston comes out of the clear cylinder then release the button.
- D) Toggle OFF the Power switches in machine.
- E) Remove the splash panel from front side of brewer and disconnect the bottom hose from the funnel elbow.
- F) On the Canister Rack, remove the number six and seven canisters (left to right).

- G) On right backside of brewer, lift up the brewer latching pin and swing the entire brewer open to the left. (Note: remove brewer shipping bolt on Latching Pin assembly or shipping bracket located on left side hinge of brewer).
- H) Toggle ON the two power switches and allow the brewer to automatically re-home.

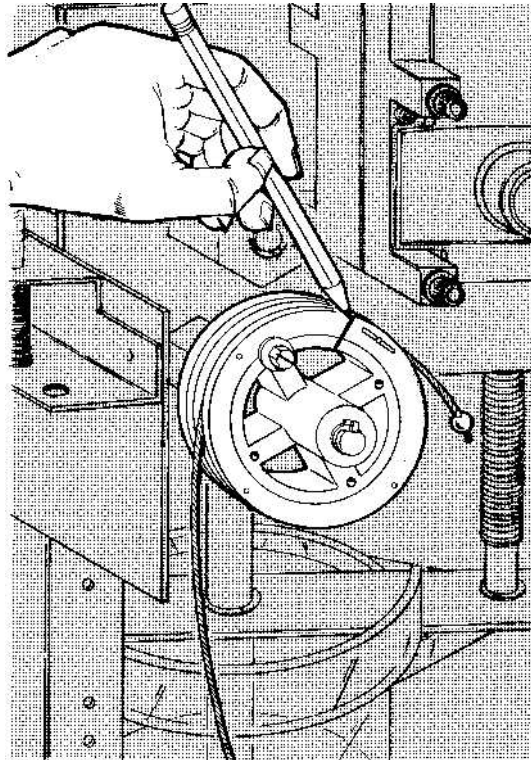


FIGURE 611

- I) With Pencil, draw a line between the inner and outer section of the cable spool to provide a reference mark (see Figure 611).
- J) Remove the screw & washer used to hold the inner and outer spool together.
- K) Carefully pull the outer section of the cable spool off and rotate it one tooth Clockwise or Counterclockwise. CW will cause the carriage to set back further in the base assembly and CCW will cause it to set forward.
 - a) (Note: ensure cable does not unwind from outer spool when reattaching).
 - b) Upon changing spool setting check measurement at carriage rod and continue this process until 2 3/8 inches is obtained (see Figure 610).
- L) When proper measurement is achieved reinstall the screw and washer removed in step J.
- M) Perform step 2 to verify the Cable Adjustment Check is correct.
- N) Latch brewer assembly back into normal position. Reattach brew Hose and reinstall product canisters back onto canister rack.

Service / Troubleshooting

WATER INTAKE SYSTEM

Source of water should be potable tap water with required water pressure of 20 PSI minimum.

There are two possible configurations in the intake system. The most common method provides for a water filter to be installed as a part of the original equipment. The filter housing includes a shut-off valve and twist-to-release filter head that accepts a cartridge type water filter. A less common method is a straight copper tube with a shut-off valve between the inlet fitting and the water inlet valve.

The 24VDC water Inlet valve provides the method for delivering the water into the water tank. The dual valve designed is use for back-up protection in case one valve fails. This valve is controlled by the CCB and CDB circuit boards. If the safety overflow circuit is activated the inlet valve will no longer energize. The following conditions will activate the safety overflow function:

1. The fill time exceeds 4 minutes.
2. Waste bucket switch is activated.
3. Grounds bucket switch is activated.
4. In stand-by state between vends, if inlet valve is energized for accumulative time of 75 seconds.

WATER TANK ASSEMBLY

The water tank design is the latest in technology in providing a very high volume output at a stable temperature range to accommodate customer demand. The entire tank assembly is designed to tilt down for ease of serviceability to access lid components. The water system in the tank is a gravity system thus requiring no pumps or compressors. There is an open-air break (1 1/2" minimum) between the tank inlet and water level for the prevention of water back flow, which is required by most local codes. There are two temperature control probes that maintain the water temperature at a settable point. It is recommended that the water temperature is set between 190F to 202F degrees for proper extraction of fresh brewed coffee (factory setting = 200F).

The water tank is constructed of stainless steel with three internal welded baffle walls. The hot water tank holds approximately 3 gallons of water. It has a removable lid that is sealed by a gasket. The tank has two 1500 Watt heaters that are on a priority system, controlled by the by the **Coffee Driver Board (CDB)** via the two Temperature / Level Probes (TWLP) mounted on the tank lid..

The water tank is partitioned into three sections; Primary, Secondary, and Water Fill section. The Primary section contains the commodity & brew water valves, one TWLP, one heater, drainpipe fitting, and a rinse hose fitting. The Secondary section contains one TWLP, one heater, an overflow feed wall to the primary section, an overflow tube to the water waste bucket, and one drainpipe fitting.

Temperature Control System

The Coffee Control Board (CCB) controls the temperature setting. The temperature is then monitored by the Coffee Driver Board (CDB) via the two Temperature Water Level probes (TWLP's) inserted into the top of the **Primary** and **Secondary Section** of the water tank. The two TWLP's are connected to the CDB at the P-10 connector. All standard fresh brew machines will be preset at a temperature of 200°F.

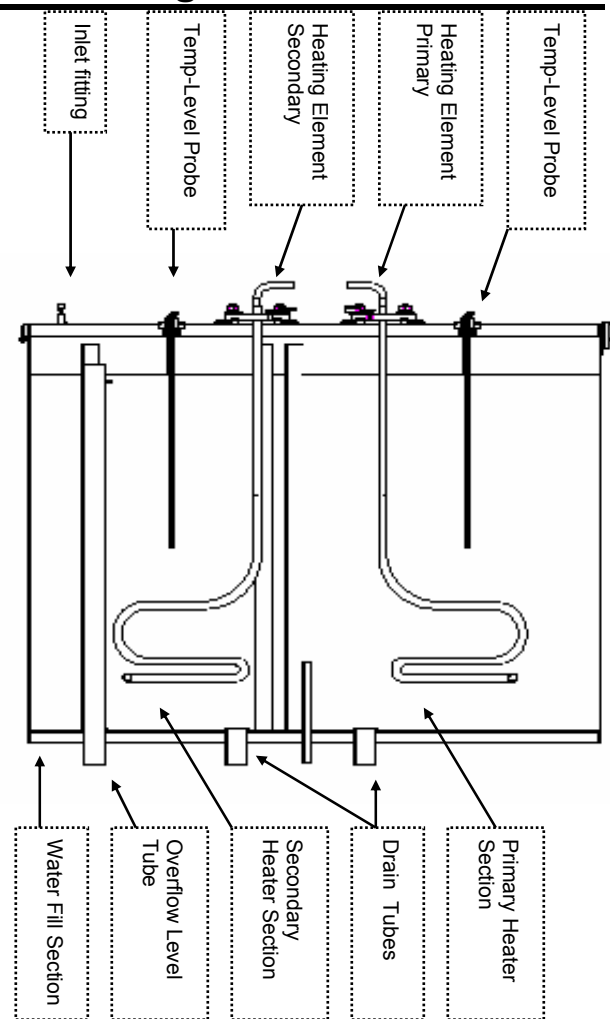


FIGURE 612

The **Primary Heater** is controlled by the TWLP located on the right side of water tank (primary section) and has priority over the secondary heater. The Primary TWLP senses the temperature of the water by extending down into the primary section of the water tank.

The **Secondary Heater** is controlled by the TWLP located on the left side of the water tank (secondary section). When the **Primary Section** is satisfied the CDB will transfer the heating responsibilities to the Secondary Heater which is then used to maintain the tank temperature. The secondary TWLP senses the temperature of the water by extending down into the secondary section of the water tank.

The CDB will energize a heating element within a +/- 2°F difference in temperature.

The water flow into the tank is directed as follows; cold tap water enters the tank into the top fill section and flows down to the bottom of the water tank into the secondary section. The cold water at bottom is heated and flows up to top of secondary section. The hot water then flows over into the dual divider baffle walls and flows to bottom of Primary section. This water is heated again and raises to the top area of the primary section where it then can flow out to the commodity and brew valves.

Service / Troubleshooting

Electronic Liquid Level Control

The Temperature Water Level Probe (TWLP) serves as a dual-purpose probe that is part Temperature and Level sensor. The lower section of the probe is the temperature sensor. The upper metal section of the probe is the water level sensor. The probes also serve to signal the logic board if a problem occurs. If the logic board senses that the probe circuit calls for water for more than 75 seconds, it disables the water inlet valve and turns off the heaters. This will also register a fatal error message in the program and must be cleared to re-enable the heater circuit again. Also, the logic board will not allow the heaters to turn on until the water level is satisfied and the "LOW WATER" lamp on the CDB is off.

Water Valve System

A maximum of six valves comprises the water delivery system, which are located in the primary section of the water tank. They are: the Coffee Brew Water Valve, and up to five commodity water valves used for Chocolate, FD Coffee/Tea Water, Soup, Soluble Gourmet Coffee, Sugar, Lightener, Froth Topping, etc.. Each of these valves will release water into its particular segment of a mixing trough or bowl depending on the beverage selected. The Brew Valve is located higher than the other valves

Valve Removal Instructions:

Toggle power switches OFF in machine. With spray hose, drain 1½ gallons of water into the waste bucket. Remove electrical connection and valve bracket from tank. Pull the valve straight out of the tank grommet. It is highly recommended that the rubber grommet be replaced before installing valve. This assures that there is a tight seal to prevent leaks.

♦ **IMPORTANT:** *it Is Highly Recommended that the water valves on the Hot Water Tank be inspected and/or rebuilt at least every Two Years (See the Preventive Maintenance Schedule chart. The Water Conditions can cause the internal parts of valves to malfunction if exposed to excessive mineral build up.*

Rinse Hose

A rinse hose is provided for convenience of maintaining the machine sanitation. It is long enough to reach each part of the machine that will normally require cleaning. To avoid any possibility of this hose leaking, a storage bracket has been provided, which holds the outlet of the hose above the normal water level in the tank. This hose also provides a means of partially draining the tank to allow for the removal of a commodity valve for maintenance.



CAUTION: VERY HOT WATER: use extreme care when removing water from the tank using the rinse hose or drain. Water is hot enough to cause personal injury.

Overflow System

The overflow level tube is located in the secondary section of the water tank (see Figure 612). Should the water level in the tank rise too high, regardless of the reason, the excess water will run over and into the overflow level tube, then down through the overflow tubing and directly to the liquid waste bucket. There

should be no kinks or low sections in this hose restricting water flow and air. The overflow tube and hose also allows the tank to breathe while displacement of water occurs thus preventing an air lock condition in upper section of the tank.

Overflow Safety

If an overflowing condition exists, the level in the waste bucket will rise and eventually lift the float until the overflow switch is activated. A signal to the CDB will shut off the water inlet valves and place the machine "OUT OF SERVICE". An error message will indicate "BUCKET FULL". In this state the 24 volt DC supply for all devices will be disabled including the 120 VAC heating circuit.

Over-Temp Sensor Safety

There are two Safety Over-Temperature Sensors. They are both located on a tube fitting on the overflow hose, under and behind the canister rack assembly. The upper sensor is an electronic type that signals the CCB at the first sign of boiling or overflowing hot water. A signal is sent to the CDB which in-turn shuts down the heating circuit and registers an error message "HEATER HI TEMP". The lower sensor is a re-settable sensor that has a button that will trip when the tank is overflowing hot water or if steam is detected for a short period of time. This sensor does not signal the circuit board but will open the 24 VDC circuit to the heater relays coils. The re-settable button must be pressed inward before the heater circuit will attempt to function again.



CAUTION - Main power to the machine should be turned off if it is necessary to reset the OVER TEMPERATURE safety thermostat.

Tank Drain

The tank drain hose is used to remove water from the tank for maintenance service or before transportation of machine. The drain hose is attached to two bottom output fittings on the tank. The left hose is connected to the secondary section and the right to the Primary section. Both hoses join together at a "T" fitting and one single hose extends down along the back wall of machine. At the end of this hose, there is a large hose plug.

Draining Instructions:



CAUTION: Hot Water - Please follow draining instructions below to avoid harm from very hot water.

The water tank holds approximately three gallons of water..

♦ **IMPORTANT NOTE -** *If using the waste bucket for this purpose, it will only hold about 2 ½ gallons. First use the spray hose to fill 1/2 of the waste bucket. Empty this bucket before proceeding then use the drain hose to completely empty tank into empty Waste bucket.*

Place the empty bucket on the machine floor. Hold the drain hose over the bucket and carefully pull out the hose plug to empty remaining water from tank.

Service / Troubleshooting

Tank Lid Assembly Access Instructions

These instructions allow the ability to service the Heaters, Temp/Level Probes, and Inlet Fitting.

1. **Power OFF the Machine** – use the two power switches located on upper right panel in cabinet.
 2. **Remove All Canisters** – use the red trap gates to block off the canister spouts to prevent spillage.
 3. **Empty Tank Water** – use spray hose to fill up an empty waste bucket located under the Cupwell Asm. Locate the drain hose hanging down near back wall of machine. Use drain hose with white push in plug on end plug.
4. **Remove Upper Cover Plate** – use socket tool to loosen the three mounting nuts (11/32") on ceiling.
 5. **Unplug Temp Probes** – locate the two probe harness connections at the cross panel on ceiling.
 6. **Unplug Heater Connections** – located on Power Distribution Box at rear upper right corner of cabinet.

NOTE: decal on box will indicate locations of primary and secondary heater connections.

7. **Disconnect Valve Harness** – from valves, follow wires to connection and unplug.
8. **Remove Tank Hold-Up Bracket to access Lid** – the "Z" Hold-Up bracket is located on the upper right side of the Tank Asm (see drawing below).
 - A) Hold and support the tank in the up position while removing the Hold-Up Bracket. Loosen the two mounting screws on bracket located at back wall of machine behind harnesses.
 - B) Slowly allow the tank assembly to tilt towards you until the stop wire supports tank weight.

NOTE: heater harnesses may need to be loosened further in order to swing the tank forward enough.

9. **To Remove Older Temp/Level Probe** –
 - a) Pull the probe straight up and out of the grommet.

10. **To Install New Temp/Level Probe** – insert probe end into the orange grommet. Push the probe down into grommet until it seats down about 1/8" of an inch from top of white cap (see figure below).

IMPORTANT: Hold grommet while pushing probe down. Grommet can be easily forced into tank

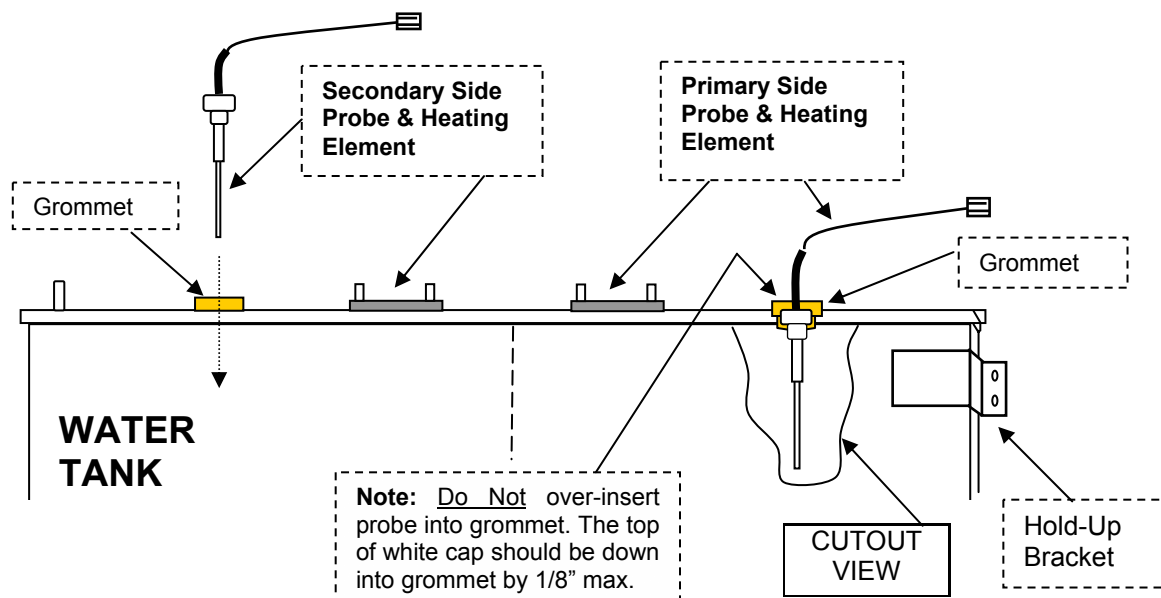
11. **To remove Heating Element** – unscrew mounting screws on the lid assembly. Remove Lid assembly from water tank. Replace heating element and reinstall back onto water tank.

IMPORTANT NOTES: ensure that the gasket is covering the entire top edge of the water tank correctly (no open seams).

Do not over-tighten the lid mounting screws. Tighten until snug then turn screw 1/2 turn more.

12. **Re-Install Hold-Up Bracket** – Swing the tank assembly back up against back wall and ensure all harnesses and cables do not get caught behind tank and cause interference. Reinstall the hold-up bracket.
13. **Reconnect Probe Plugs** – make sure probes are connected left side to left and right side to right.
14. **Reconnect Water Valve Harness** – Re-dress this harness between right side of tank & brewer.
15. **Reconnect Heater Connectors** – make sure that the secondary heater connector is plugged into the red connector on the Power Distribution Box.
16. **Power Up and Leak Check** – power up the machine and check the inlet fitting for leaks as tank refills. After two minutes the inlet water valve will time out. Reset machine power after every two minutes until the tank fills and the Tank Low Level lamp goes off on the Coffee Driver Board. Water temperature should reach proper setting within one hour. Press and hold the number "0" on keypad to view water temperature.
17. **Re-Install Upper Cover Panel and Canisters**

FIGURE 613



Service / Troubleshooting

REPLACEMENT OF WATER FILTER CARTRIDGE

The filter cartridge should be replaced periodically in accordance with the manufactures recommended capacity intervals to filter water. A clogged or expired cartridge can cause poor quality beverages and may effect the operation of the water tank by slowing the water fill rate.



CAUTION: High water pressure may be present in the filter head. You must perform the following steps to relieve line pressure before cartridge can be removed.

1. On the filter head (Everpure), close the inlet valve by moving the lever fully counter clockwise. For Hydrolife Filter, turn the valve clockwise to close.
2. With machine fully powered, drain water from spray hose until "LOW WATER" LED on the Coffee Driver Board illuminates.
3. Power OFF machine. Rotate cartridge to the left until it stops (approx. 1/4 turn). Pull cartridge downward and out of filter head.
4. On new cartridge, write the date & current machine vend count on usage label and record in your service log.
5. Reinstall in reverse.

CANISTER RACK ASM

Exhaust System

The exhaust system consist's of the Exhaust Box, two Hoses, and Exhaust Motor Assembly. The Exhaust Box is located in the canister rack behind the mixing bowls and troughs. The two hoses are attached between the exhaust box and the exhaust fan located on the back wall of the cabinet. This design utilizes a low volume air flow system that ventilates excess steam. The steam generated from the mixing bowls and mixing troughs is pulled into the exhaust box before it reached the canister spouts. This prevents moisture from reaching and causing powder to clog the openings of the canister output spouts.

Maintenance Instructions:

1. Toggle OFF the two power switches.
2. Remove screen from the Exhaust Fan and clean. This screen is removed and installed from the bottom section of the fan box and has a red frame.
3. On the Canister Rack, remove the trough cover and all of the whipper bowl hoods. Pull the exhaust box straight forward from the canister rack and clean (install in reverse).
4. On the Exhaust Fan Box, disconnect the two exhaust hoses and shake out any dried buildup into a waste container.

Note: ensure that the hose connections on the rear of the exhaust box did not come loose.

SWING-OUT COFFEE HOPPER ASM

Used to hold Fresh Ground Coffee (beans) or Loose Ground Coffee. The hopper functions in conjunction with a coffee brewer assembly. The coffee hopper is a universal container that can be configured from one to three compartments. This allows the ability to operate from one to three types of coffees; Regular, Decaf, and Gourmet (Dark) coffee. The hopper has two removable divider walls and output inserts to achieve convertible configurations using either beans or loose ground coffees.

Note: see 223 Parts Manual for hopper configurations drawings and parts for converting

LARGE GRINDER

The large grinder in a Model APi 223 Café Diem is a high torque, heavy duty, 1/5 Hp electric motor capable of repeated operations of short duration. The beans are gravity fed from the bean hopper into the inlet throat of the grinder. The beans are then forced to the cutter heads by a solid screw type auger. The beans are then ground by two hardened steel cutter heads with meshing teeth. The inner cutter head is fixed to the motor frame and the outer cutter head is turned by the shaft of the grinder motor. The double flat sided shaft of the grinder motor is connected to the outer cutter head by a polycarbonate coupling with a corresponding slot.

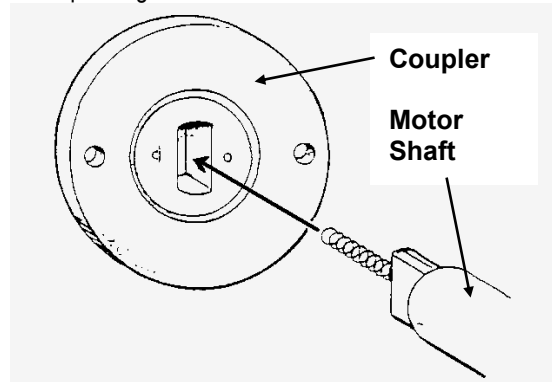



FIGURE 614

The coupling acts as a shock absorber and as protection for the grinder motor by shearing or rounding out if a foreign object becomes jammed between the cutter heads. Incorrect adjustment of the cutter heads or consistently grinding the coffee too fine can cause premature wear of the coupling. Correct adjustment of the cutter heads can be regained at any time by following the zero adjustment procedure. However, if an inconsistent grind is observed (chunks of un-ground beans and powdery dust in the same vend), then the grinder head should be disassembled and inspected for wear or damage to the coupling.

Grinder Head Inspection Procedure

1. Open the grinder swing-out bracket. Locate the coffee interlock switch on right-side wall in cabinet behind slide rails. Pull out the plunger to the full out cheat position.
2. On the Hoppers, close off the slide gate to prevent beans from entering the grinder.
3. Completely empty the grinder of beans by following:
 - A) Depress the * and F6 at same time.
 - B) Depress the  button until either auger 9, 10, or 11 is selected.
 - C) Hold a cup under the grinder chute to catch the grounds and then press the **ENTER** button. Continue pressing the **ENTER** button until no more coffee grounds are dispensed. At this point there should be no more beans in the grinder.
4. After the grinder is empty, remove the two silver thumb nuts that secure the grinder adjustment dial and casting to the motor housing. Pull Off the entire grinder head assembly.
5. Remove and inspect the thrust bearing from the recess in the end of the coupling.
6. Remove the outer cutter head assembly by pulling straight out on the cutter head and coupling.

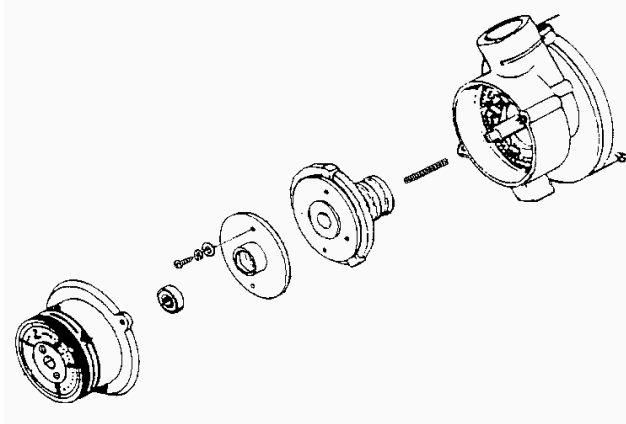



FIGURE 615

7. Inspect the drive slot in the coupling by holding the cutter head assembly up to a light (see Figure 614).
8. If the edges of the slot are worn or rounded out, then it will be necessary to replace the coupling by removing the two screws that secure the coupling to the auger assembly.
9. Clean the grinder of any ground coffee or beans with a small stiff brush. Check for any evidence of a foreign object that could be present.
10. Assemble the grinder in reverse order; Ensure that the bearing is placed in the recess of the coupling cutter head, the rectangular opening in coupling is aligned with shaft end (see Figure 614), and indicator pin is on top side (see Figure 616).
11. Perform Static Zero Adjustment for the Large Grinder in the following section. Anytime the grinder head is removed this procedure should be performed.

Static ZERO Adjustment For Large Grinder

If brewed coffee becomes weaker or a variation in strength is detected after a period of time and the gram throw, water temperature, etc. seems normal, it may be time to adjust the distance between the grinder plates. In order to maintain the consistency of the grind and the gram throw, a periodic zero adjustment may be needed for the best brewing results. Brewing efficiency can be regained by zero adjusting the grinder as outlined in the following steps.

1. Open grinder swing out bracket. Pull out plunger on interlock switch to maintain power to the grinder. Slide the gate on the bean hopper to prevent beans from entering the grinder.
2. Empty the grinder of beans and ground coffee. Grinder must be completely empty of beans before the zero adjustment can be made. The best method available to empty the grinder is as follows:
 - A) Depress the * and F6 at same time.
 - B) Depress the  button until either Auger 9, 10, or 11 is selected.
 - C) Hold a cup under the grinder chute to catch the grounds and then press the **ENTER** button. Continue pressing the **ENTER** button until no more coffee grounds are dispensed.
3. Make a copy of the paper gauge below (Figure 617) and then cut it out to use as an adjustment gauge for the following procedure:
4. After the grinder is emptied, turn the grind adjustment dial to the #1 position. The dial must be held in this position until the Zero adjustment procedure is completed.

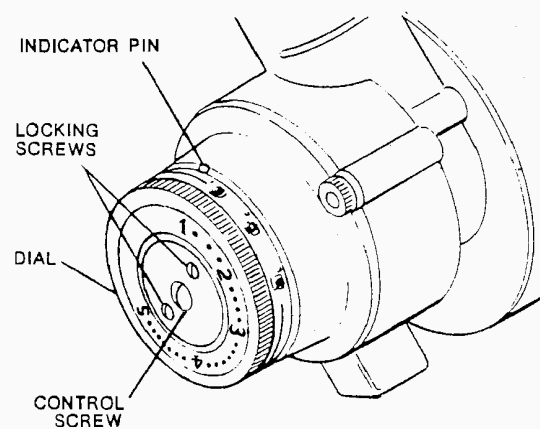
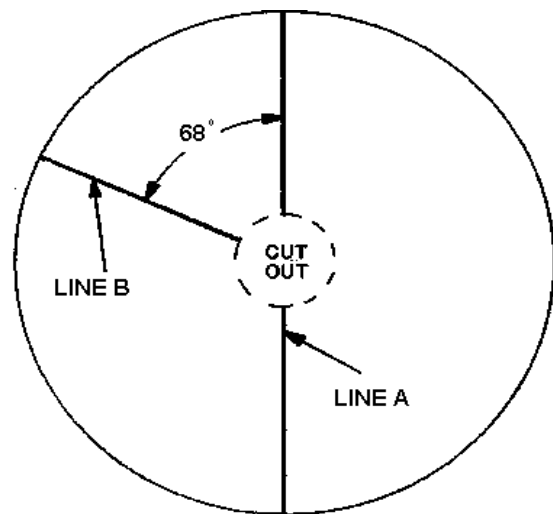


FIGURE 616

5. Loosen the two locking screws and turn the center Control Screw clockwise (facing the dial) until snug.
6. Place and hold the adjustment gauge on the dial with **LINE A** aligned with the slot of the Control Screw.
7. With screwdriver, turn the Control Screw counter-clockwise until the screw slot is aligned with **LINE B** on the gauge (68 degrees), remove the gauge and tighten the two Locking Screws.
8. Open the gate to allow beans back into the grinder. Replace the coffee delivery chute. Return the dial to your original setting (between 2 to 3 on dial) and run 3 or 4 fresh brew vends to refill and prime the grinder.
9. Check coffee gram throws by follow instructions in the Operational System section under Gramming.
10. Return the swing out bracket to the operating position and run three test vends of regular coffee. If the brew cycle seems normal with no strain on the motor and the spent grounds are not soaking wet, leave dial adjustment in its current position. If necessary to adjust the grind setting, recheck the gram throw.


**FIGURE 617
ZERO ADJUSTMENT GAUGE**



**GAUGE CAN BE COPIED
AND CUT OUT TO PERFORM
ZERO ADJ. PROCEDURE.**

Service / Troubleshooting

Static ZERO Adjustment For Mini-Grinder

1. If brewed coffee becomes weaker or a variation in strength is detected after a period of time and the gram throw, water temperature, etc. seems normal, it may be time to adjust the distance between the grinder plates. In order to maintain the consistency of the grind and the gram throw, a periodic zero adjustment may be needed for the best brewing results. Brewing efficiency can be regained by zero adjusting the grinder as outlined in the following steps.
2. Open grinder swing out bracket. Pull out plunger on interlock switch to maintain power to the mini-grinder. Slide the gate on the bean hopper to prevent beans from entering the Mini-Grinder.
3. Empty the Mini-Grinder of beans and ground coffee. Grinder must be completely empty of beans before the zero adjustment can be performed. Completely empty the grinder of beans by following:
 - A) Depress the * and F6 at the same time.
 - B) Depress the  button until either auger 9, 10, or 11 is selected.
 - C) Hold a cup under the grinder chute to catch the grounds and then press the **ENTER** button. Continue pressing the **ENTER** button until no more coffee grounds are dispensed.

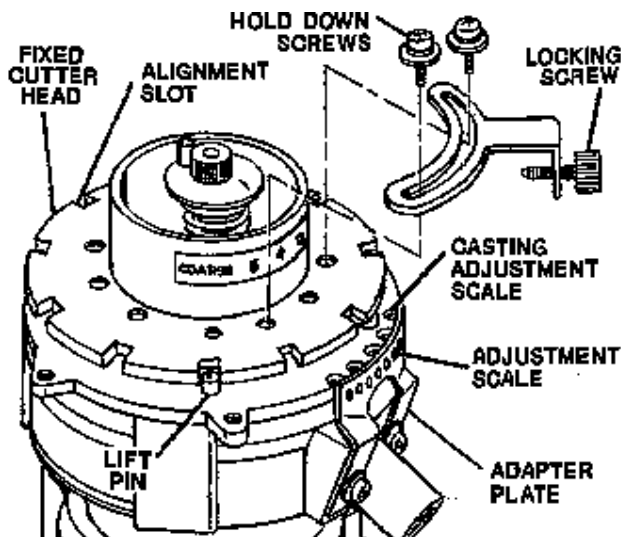


FIGURE 618

4. After the mini-grinder is empty, remove the locking device (pointer) & the locking screw from the top face of the fixed cutter head by removing the two screws and washers..
5. Turn the fixed cutter head of the mini-grinder counter-clockwise until hand tight.

TIGHTEN

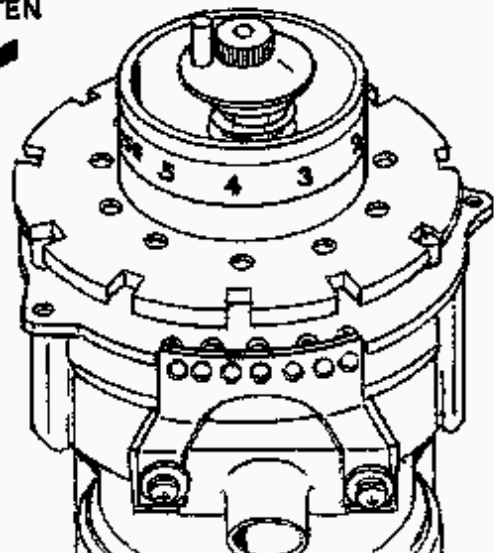


FIGURE 619

NOTE: This cutter head has a left hand thread.

6. Observe the relationship of the three spring-loaded lift pins and how they align with the ten slots on the outer edge of the fixed cutter head. If any of the three pins are aligned with any one of the 10 slots, skip to step c).
7. If none of the pins are aligned with any of the slots, slowly loosen the fixed cutter head clockwise until one pin is centered in any one of the ten slots on the outer edge of the fixed cutter head-proceed.
8. Continue turning the fixed cutter head clockwise until three more clicks of any pins become centered in any one of the ten slots. This should be the fourth time a pin is centered in a slot. This is the #1 grind position and the finest grind the grinder should ground.

LOOSEN

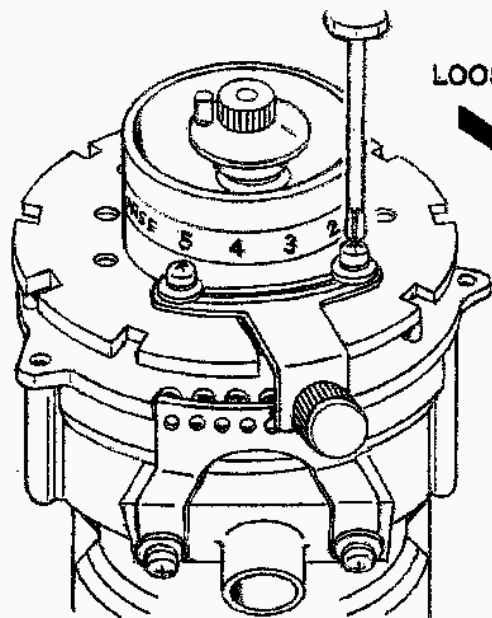


FIGURE 620

9. Reinstall the locking device removed in step 4 with the locking screw in the far right hole position on the adjusting scale (see Figure 618 & 620). Tighten the two screws securing the locking device to the top of the fixed cutter head.

Service / Troubleshooting

10. Move the locking screw to the center hole position on the adjustment scale. The adapter plate has 7 holes and the #4 hole will be the center position. Tighten the locking screw.

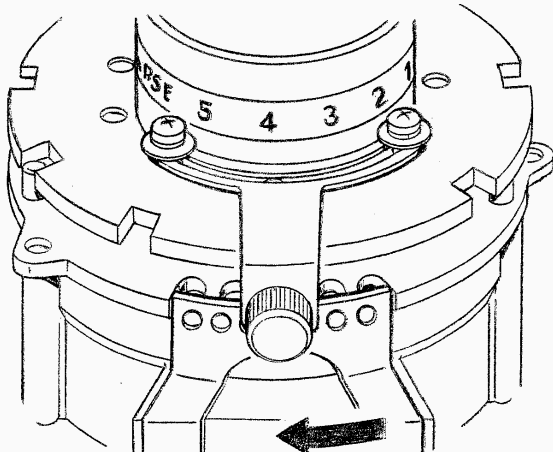


FIGURE 621

11. Open the slide gate to allow beans back into the grinder & test run the coffee selection three times to refill the grinder.
12. It is **IMPORTANT** that the gram throw is checked after the ZERO adjustment is performed. Follow instructions in the Operational System section under "Gramming".
13. Upon gramming, return the swing out bracket to the operate position and run three test vends of the coffee type in this grinder. If the brew cycle seems normal with no strain on the motor and has acceptable dry spent grounds, leave the locking device in its current position. If the grind setting is changed by moving the adjustment thumb screw, re-checking the gram throw will be necessary.

CUPWELL ASSEMBLY

Cup Catch Arm Assembly.

The two-cup catches arms are located in the cupwell assembly. Their main propose is to catch a cup sliding down from the cup chute, and helps center it under the spout nozzles ensuring proper alignment for liquid dispensing. It also prevent cup tipping in cupwell.

The catch arms are spring loaded and require periodic cleaning by spraying with hot water on the arm hinge in order to prevent the arms from sticking open or close.

To remove the catch arm assembly, unscrew the two thumb screws behind the black plastic cupwell assembly. When re-installing use a plies to ensure the thumb screws will not come loose.

◆ **Ensure that the catch arms are aligned so that they do not interfere with the bottom cup sensors beam path.**

POWER DISTRIBUTION BOX (PDB)

This assembly is located in the upper right corner of cabinet. It houses the following components: Transformer 110VAC – 24/8VAC, EMI Filter, Motor Power Board, (2) Heater Relays, (1) Power ON Relay, two Power Switches, Heater Lamps, Interior Lamp Door Switch, Power Supply 24VDC & Harnesses with connectors.

◆ **Note:** On newer machines, the 24 volt power module is located at bottom of the cabinet against the rear wall.

1. Machines built from S/N 22304001001 have a 24 Volt DC circuit board mounted in a box assembly on the back wall against bottom vent screen. Machines built before S/N above has a Meanwell Branded 24VDC power supply module mounted in the Power Distribution Box. Both types supply regulated DC power for all the motors, whippers, and valves in machine excluding grinder motors. The voltage level should range between 24 to 26 volts DC. The Meanwell type uses an internal fan that will automatically turn on when unit becomes too warm.
2. EMI Filter is used to help reduce electrical noise externally from Electro-Magnetic Induction. MOV devices attached to the EMI filter help clamp down any high electrical spikes.
3. Power Board is used as a safety circuit to switch on the 24 volt DC power to all mechanical devices. If the float circuit is opened this board will switch OFF the 24VDC

Power Distribution Box Removal Instructions

1. Power OFF the machine. Open the Coffee hopper Swing-Out bracket.
2. Remove the brewer assembly. Remove splash panel, unplug electrical connections and lift brewer up and out of its hinge attachment.
3. Remove the small ceiling panel located in front of the Power Distribution Box (PDB).
4. On the Power Distribution Box (silver box over the brewer), unplug all electrical connections.

Note: there is a green wire ground connection coming from the bottom of the Power Distribution Box and attached to the back wall of cabinet.

5. On the Service Lamp Box located on ceiling near front right edge of cabinet, disconnect the small two wire connector.
6. On the Power Distribution Box that extends over to the two power switches and the heater lamps, there is a mounting screw and nut. Remove this screw and nut.
7. At this point you should be able to tilt and pull out the entire PDB from the machine.
8. Reinstall PDB in reverse steps above.

CUP DELIVERY SYSTEM

The APi 223 has dual cup capability utilizing two cup cabinets. One is a high capacity and the other is low capacity. Each has an adjustable cup separator ring that can adjust from 6 to 14 ounce cups. The spirals will index over a new stack of cups replenishing the cup ring. There is a cup present switch located on the cup ring and a full cycle switch located by the cup motor. Every beverage sold through the 223 Cafe Diem hot beverage merchandiser requires a clean disposable cup. The adjustable cup ring has been designed to dispense a wide variety of cups. Each cup ring, after being properly adjusted, will dispense a single cup for each vend cycle of the machine.

Cup Cabinet

The cabinets are completely covered to protect the cups from accidental contamination. The entire cup cabinet may be swung out for easy access to the complement board, and selector switch board with access to the beverage labels.

Service / Troubleshooting

Cup Drop Mechanism

The cup separator (or cup ring) used in the 223 Cafe Diem Hot Beverage Merchandiser is a patented adjustable cup ring developed by Automatic Products int'l. The adjustable cup ring has been designed to dispense a wide variety of vending cups.

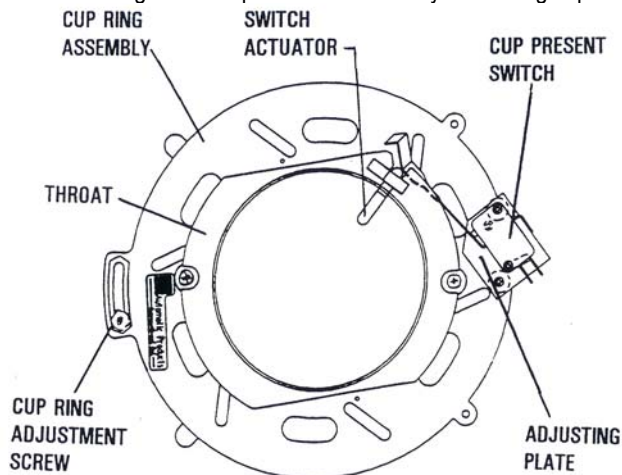


FIGURE 622

There are three different type adjustable cup rings available depending on type cup used. The difference can be identified by color of the six cams inside the ring assembly:

White Cams = standard paper cups, this rim, nested close

Black Cams = heavy gauge paper cups, with thick rims, and nest together wide.

Red Cams = for all insulated (foam) cups

A cup is separated and dropped from the rest of the cups in the stack by the action of the cams spinning in the cup ring. The rotary motion of the cup drop motor is converted to a push-pull motion by a two piece crank arm that drives the lever of the cup drop ring. The lever of the cup ring is part of a large external ring gear that spins each of the individual cams. The cup is then guided to the cupwell by one of the two delivery chutes that are part of the cupwell. As the cams returns to the starting position the next cup will be ready to drop for the next cycle. When the cup mechanism is in a standby position the lever of the cup ring is pushed against the lever of the cup motor cycle switch.

On top of each cup ring there is a Cup Present Switch. This switch signals the Coffee Driver Board when cups run out and if available to dispense. The Cup Present Switch is activated by a teardrop shaped actuator that pivots at the top of a collar mounted to the top of the cup ring. When cups drop below the cup present switch, the switch is released and sends a signal to the CDB to replenish with the next stack of cups. The machine will try indexing the next stack of cups for 15 seconds. If longer than 15 seconds, time the machine will consider this dispenser to be out of cups and will disable selections for this size cup. An error message will be posted when in Service Mode.

The cup dispenser motor and cup ring assembly is mounted on a separator bracket that can be easily removed to allow easy access to items on this assembly. The rear and front separator bracket assemblies are identical and used on either cabinet.

CUP DISPENSER ADJUSTMENTS




There is a total of five adjustments required for proper performance of the cup dispensing mechanism.

NOTE: See Following Figures For Item Locations.

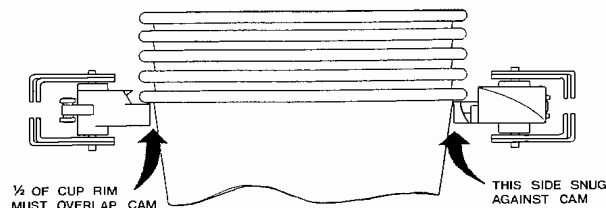
Cup Ring Adjustment

The cup ring assembly has six rotating cams that separate a cup from the stack and supports remaining above. The adjustment Screw/Lever used to move the six cams inward or outward in order to adjust the opening for the cup rim diameter to be used.

Perform the following procedure to check or adjust cup ring:

1. Remove all existing cups from the cup ring.
2. Locate the lever with single adjustment screw & nut on the left side of the cup ring (see Figure 622), and loosen the bottom screw 1/2 turn.
3. Place and hold one cup in the cup ring. Slide the adjustment lever in or out until the rim of the cup settles on all six cam shoulders.
4. Perform a fine adjustment of the cup ring by slightly sliding the adjustment lever to obtain a small amount of play when sliding cup horizontally in all directions. Check adjustment by sliding & holding cup against one of the cams and verifying that the cup rim at the opposite side is still covering that cam by approximately 1/2 the thickness of the rim (see drawing below).
5. Once the cup ring is correctly adjusted, Snug tighten the locking screw and load the cup ring with full stack of cups.
6. Perform Cup Test –
 - A) On Program Panel, press and hold the  button and at same time press **F7**. "Auxiliary Function " will appear on display.
 - B) Press **Enter**, "Test – Cup Drop # " will appear.
 - C) Press  or  scrolls between cabinet 1 or 2, press **Enter**.
 - D) Continue testing cups until entire stack of cups dispenses without a problem.

CORRECT ADJUSTMENT



INCORRECT ADJUSTMENTS

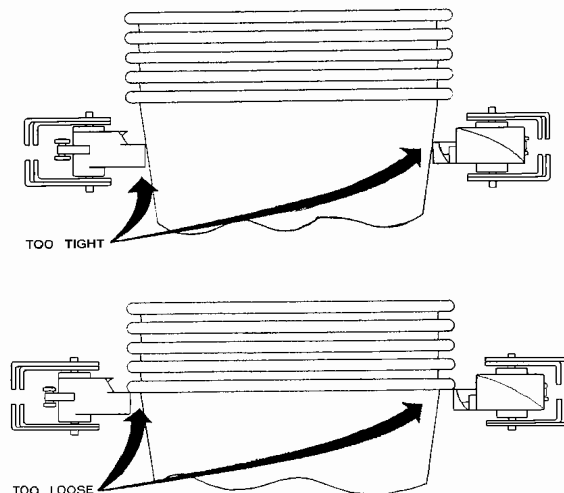


FIGURE 623

Service / Troubleshooting

Spiral Adjustment

The spirals are mounted through a slide plate located on both ends of the cabinet. Loosening the holding nuts on both sides of the cup cabinet will allow easy adjustment of the spiral positions to accommodate a large variety of cup sizes.

1. **Spiral Coil Alignment** - The spirals should all be coiled in the same direction [A5] so that when they turn they're in synchronization. The ends of the spirals should be all pointing in the same direction. If not, perform following:
 - A) loosen the mounting screws on the spiral motor [A10].
 - B) Manually turn the spiral that is out of sink and duplicate to others.
 - C) Push down on the spiral motor to snug the drive belt (not too tight) then tighten the motor mounting screws.
2. **Spiral Spacing** - Insert a stack of cups behind the spiral coils. Check that there is a 1/8" to 1/4" inch space between the cup stack and the center rod of spiral. If not, perform following:
 - A) On the left & right side of the cup cabinet, loosen the upper and lower holding nuts [A8]. Below or above each holding nut there is a cutout guide [A9] that is used to set spiral positions. Use the Cup Setting Chart on page XXX to find the cutout guide position for the cup type used. Look on page XXX to view a drawing of the spiral cutout guide to determine where the hole indicator should be set to. Align the hole indicator in all four spiral cutout guides and tighten the slide plate nuts.

Separator Bracket Adjustment

This adjustment is used to set the gap between the cups stack in the cup ring and the bottom spiral end. This function ensures that the bottom spiral indexes the replenishing stack of cups correctly into the cup ring opening.

1. Manually turn the bottom spiral by hand until the sharp angle corner [A5] at left end of spiral is pointing to the 9 o'clock position (towards door front).
2. Hold this stack of cups straight upright [B2] in cup ring.
 - A) If separator adjustment is correct the sharp angle corner of spiral should barely be touching the rims of the cups that are stacked in the cup ring. If not, perform steps C and D below.
3. Loosen the three mounting screws [A4] for cup separator assembly and on opposite side of this assembly loosen a nut attached to the support bracket.
4. Use the Cup Setting Chart on Page XX to find the position setting for the cup separator. Look on Page XX at sample guide to view where to position the mounting screws in the keyhole slots.

Guide Bar Adjustment

The Guide Bar [A6] has two functions; The First is used to take up the space between the contoured section of bottom cup and bottom spiral shaft. The Second important function helps guide the replenishing stack of cups into the center opening of the cup ring during the indexing function.

1. Use the Cup Setting Chart on page XX to find the number setting location for cup type used. Look on page XXX at sample guide to determine where to position the mounting screws on the Guide Bar. If cup type is not shown, perform following steps B) and C).
2. **Spacing Position** - On the guide bar [A6], the mounting 'C' slots [A7] have a horizontal lower or upper cutout. The upper horizontal slots will cause the guide bar to stick out further in

order to take up space between bottom of cup stack and rear wall. The lower horizontal slots are used when cup type doesn't have much of a contour. Ideally the space between the bottom spiral and cup should be between 1/4 to 1/8 of an inch.

3. **Guide Bar Alignment**- Loosen all the guide bar mounting screws. While holding stack of cups upright in cup ring, slide the guide bar [A6] left or right until the closest angle corner [A3] of guide bar is approximately 1/8" of an inch from the stack of cups.

Full Cycle Switch Adjustment

The Full Cycle Switch controls the cup drop motor [B5] by signaling the CDB to power off the cup drop motor at the homing position. If adjusted correctly the six cams should be homed in the proper stop position. Their shoulder surfaces should be fully exposed to accept and hold up the cup stack by the cup rims. The cams also have a top slicing edge that should be retracted away from the cup rims in stand-by (see Figure 624 below).

1. Check Adjustment - remove all cups from the cup ring. Look down at all six cams and verify that all the cam shoulder sections are facing to middle of cup ring opening. The left and right corner notches on the cams should be retracted back in stand-by as shown in Figure 624. If cams are out of position, perform following steps B & C:

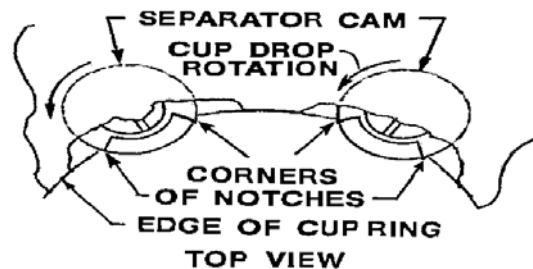


FIGURE 624

2. Locate the Full Cycle Switch [B4] on the cup separator assembly. This switch is attached to an adjustment bracket. On bottom of switch bracket, mark starting point with pencil. Loosen the two mounting screws on bottom side of the switch bracket. Slide bracket with switch slightly inwards or outwards then snug the screws.
3. Perform cup ring cycle test as follows:
 - A) On MasterMenu Panel, press and hold the * and F7 button at the same time, "AUXILLARY FUNCTIONS" should appear.
 - B) Press **ENTER**, press < or > buttons to scroll to (1) "TEST- CUP DROP 1 or 2".
 - C) Press **ENTER** to run a cup drop cycle. Repeat steps {a.} and {b.} until correct switch adjustment indicated in step-A above is achieved.

Cup Present Switch Adjustment

The Cup Present Switch [A3] is used to monitor cups in the cup ring [B2]. If cup level fall below switch level, the cup present switch will signal the CDB to energize the spiral motor on the next vend cycle. When a new stack of cup indexes over and falls into the cup ring the cup present switch is depressed causing the spiral motor to stop. If the switch is not activated within fifteen seconds the CDB will signal a cup sold out condition. This switch

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is mounted to an adjustable bracket that requires a 1/4" straight wrench to loosen for adjustment.

1. Switch OFF power in machine. Insert about 8 cups into the cup ring. If the stack of cups is being tilted due to the spring force of the switch actuator [B1], then the switch adjustment is too close into the cup ring. If so, loosen the two 1/4" nuts on switch and slightly slide the switch away from the cup ring.
2. Manually tilt the top of this cup stack in the opposite direction of the cup present switch and listen for the switch to deactivate. If the switch did not click, the switch is adjusted for worse case condition and should be OK. If switch is heard or felt, then the switch position needs to be adjusted further into the cup ring. If so, loosen the two 1/4 nuts on switch and slightly slide switch into the cup ring.

Cup Dispenser Test Procedure

Upon performing any of the adjustments, Perform following:

- A) Fully load cups into Cup Dispenser Assembly.
- B) On program panel, press and hold the * and F7 button at the same time.
Display shows "AUXILLARY FUNCTIONS".
- C) Press **ENTER**, then press **<** or **>** to scroll to: "TEST- CUP DROP 2" or "TEST- CUP DROP 1"
- D) Press **ENTER** to cycle out one cup at a time. Continue testing all cups in the cup drop until empty. Power the machine OFF then ON and verify that the next stack of cups index over and replenish the cup ring properly.

FIGURE 625

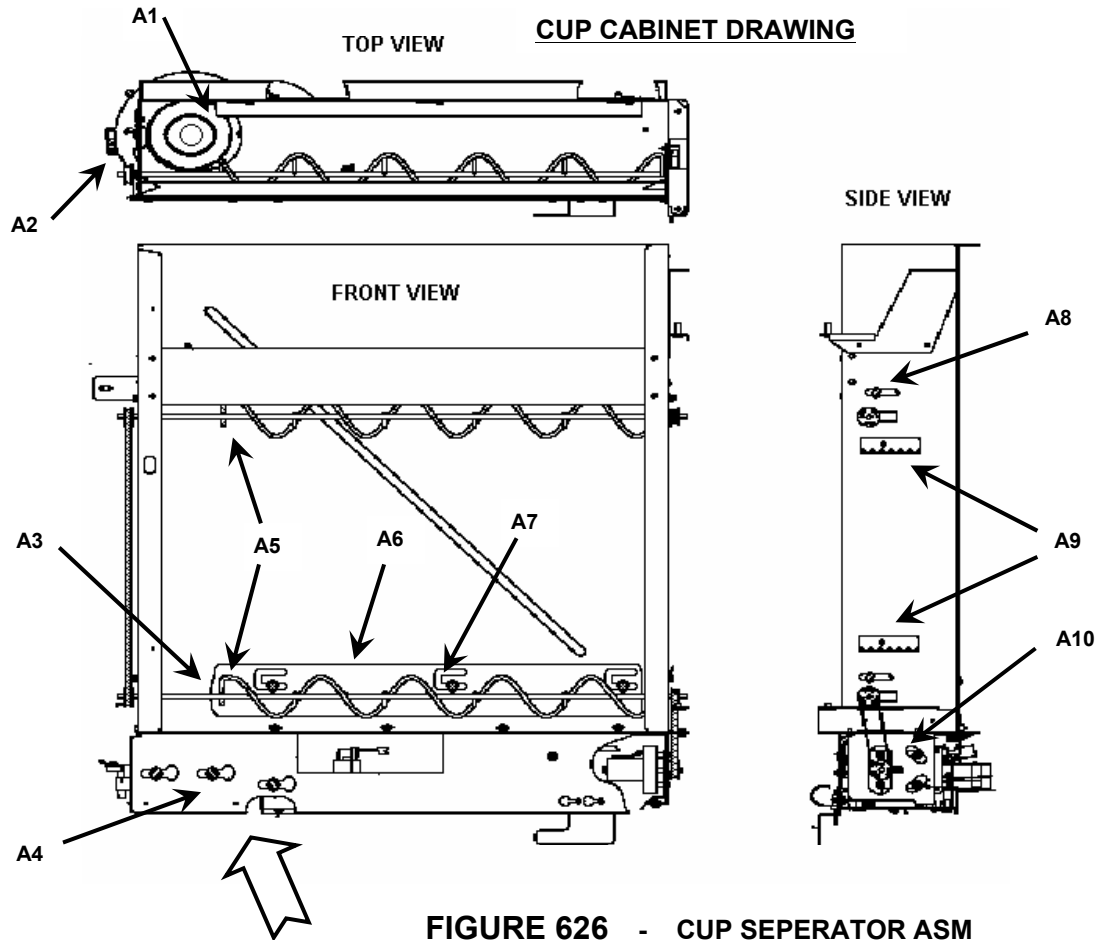
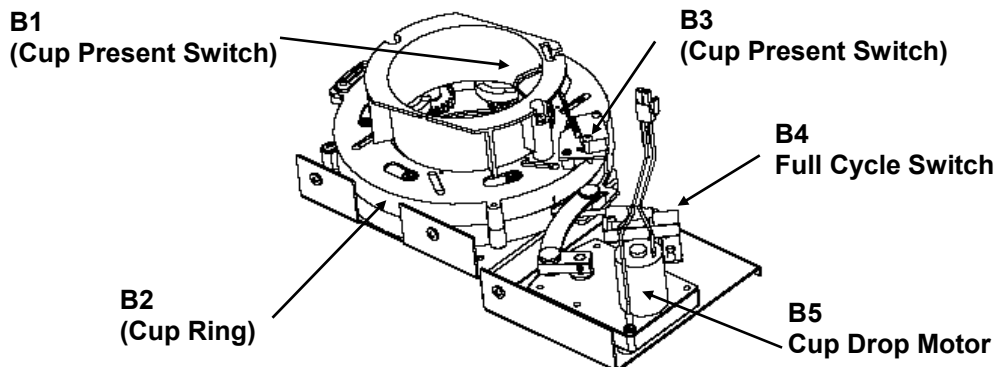


FIGURE 626 - CUP SEPERATOR ASM



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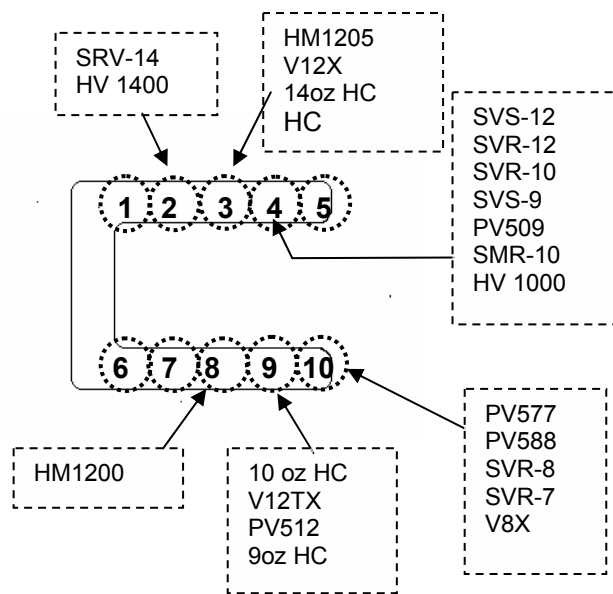
223 CUP CABINET ADJUSTMENT CHART

Recommended Cup Brands & Types	Cup Size	Cup Manuf. #	Spiral Notch #	Guide Bar Setting #	Separator Setting #	Cup Ring P/N	Ring Cam Color	Ring Gauge Part #
Sweetheart	7	PV577	3	10	Pos #3	38320	White	37663-08
International Paper	7	SVR-7	3	10	Pos #3	38320	White	37663-08
Sweetheart	8	PV588	3	10	Pos #3	38320	White	37663-08
International Paper	8	SVR-8	3	10	Pos #3	38320	White	37663-08
Sweetheart (Foam)	8	V8X	2 ½	10	Pos #2	38320-2	Red	
International Paper	9	SVS-9	4	4	Pos #2	38320	White	37663-02
Sweetheart	9	PV509	4	4	Pos #2	38320	White	37663-02
International Paper (Perfect 10)	10	SVR-10	3 ½	4	Pos #2	38320	White	37663-02
International Cup Corp. (ICC)	10	HV1000	4 ½	4	Pos #3	38320-1	Black	
Superior (AVI)	10	10oz HC	3 ½	9	Pos #1	38320-1	Black	
International Paper (thick rim)	10	SMR-10	5	4	Pos #1	38320-1	Black	
International Cup Corp. (ICC)	12	HV1205	4	3	Pos #2	38320-1	Black	
International Paper (Squat)	12	SVS-12	4	4	Pos #2	38320	White	37663-07
International Paper (Tall)	12	SVR-12	3 ½	3	Pos #2	38320	White	37663-03
Sweetheart (Foam Tall)	12	V12TX	5	9	Pos #2	38320-2	Red	37663-07
Sweetheart (Squat)	12	PV512	5 ½	9	Pos #1	38320	White	37663-09
Sweetheart (Foam Squat)	12	V12X	5 ½	3	Pos #1	38320-2	Red	37663-01
International Cup Corp. (ICC)	12	HM1200	6	8	Pos #1	38320-1	Black	
Superior (AVI)	14	14oz HC	6 ½	3	Pos #1	38320-1	Black	
International Paper (thick rim)	14	SRV-14	6 ½	2	Pos #1	38320-1	Black	
International Cup Corp. (ICC)	14	HV1400	5 ½	2	Pos #2	38320-1	Black	

NOTE: Company formal known as "Imperial Cup" is now International Paper Co. International Paper and International Cup Corp. are two different companies.

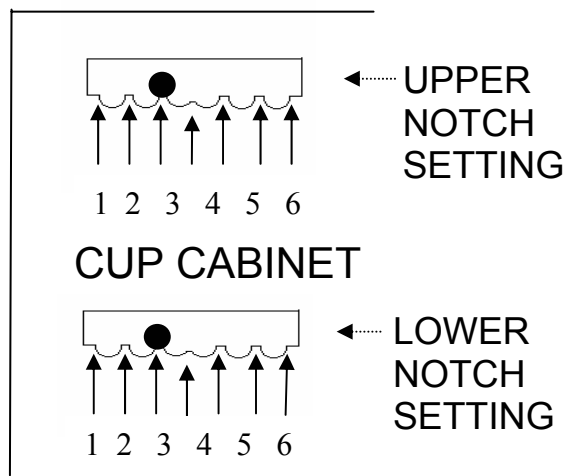
Guide Bar – 'C' Shaped Cutout Screw Location Setting:

FIGURE 627



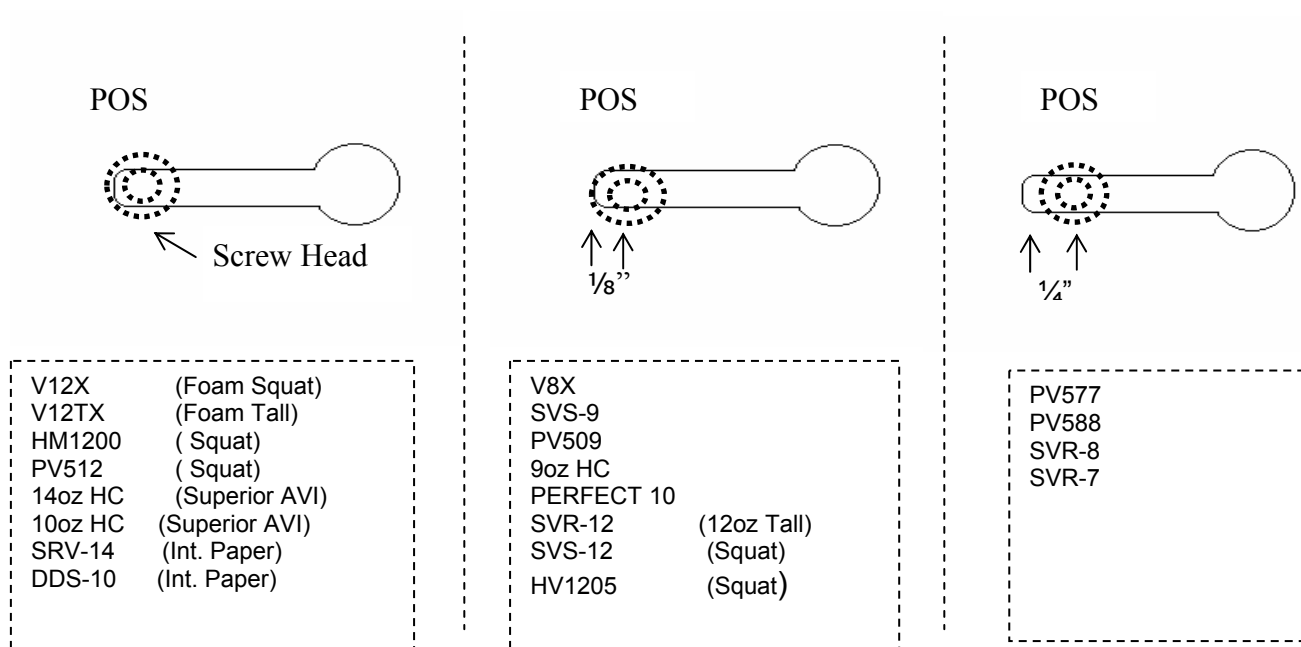
Spiral Adjustment Guide Hole Setting for Cup Width

FIGURE 628



Separator Assembly - Screw Locations in Key Slot:

FIGURE 629



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FIRMWARE REPLACEMENT INSTRUCTIONS FOR APi 223

Firmware:

P/N 23700001-Xxx *Flash Chip*, Coffee Control Board (CCB)

P/N 23700002-Xxx *Flash Chip*, Coffee Driver Board (CDB)

(Note: XXX = Firmware Version Number)

The *Flash Chip* for the CCB needs to be pre-programmed with machine configuration information. If ordering *Flash Chip* for particular machine, call Technical Service to determine the machine configuration code before ordering. On the CDB, the *Flash Chip* version number has to be paired with proper CCB *Flash Chip* version.

◆ **ALL CHIPS REPLACED MUST BE INSTALLED CORRECTLY OR THEY WILL BE DAMAGED.** APi recommends the purchase of AMP Chip Extractor P/N 821980-1 (APi P/N 23700003) to prevent damage of the socket or *Flash Chip*.

Replacing Flash IC on Coffee Control Board (CCB)

1. In MIS Menu, retrieve & record desired MIS information (Note: following steps will reset all MIS information)
2. On machine, press each selection and record price settings.
3. On machine, toggle OFF the power switches. Remove the cover panel from Coffee Control Board (CCB). On the Coffee Control Board, locate the *Flash Chip* with CCB printed on label (see drawing below). Unplug the MDB connector located on the upper right corner of board and unplug the battery.
4. Observing proper anti-static procedures (grounded wrist strap), remove *Flash Chip* from socket by carefully prying the *Flash Chip* part way out at each corner slot moving back and forth until fully out. This prevents damage to the socket.
5. On the Board, align the *Flash Chip* to notch corner and carefully lay onto socket so that all sides are square with opening. Press *Flash Chip* evenly into the socket.

(NOTE: Refer to the drawing below for correct orientation of the *Flash Chip*. Each chip being replaced has one corner notched to identify its correct orientation, and the socket has a corresponding notch & arrow.)

6. On the CCB, reconnect the MDB plug and battery. Reinstall the cover panel over the CCB housing box.
7. On machine, toggle ON the power switches. Verify that the heartbeat LED is flashing on the CCB & CDB boards.

If necessary use the Service Manual for reference to perform the following program steps:

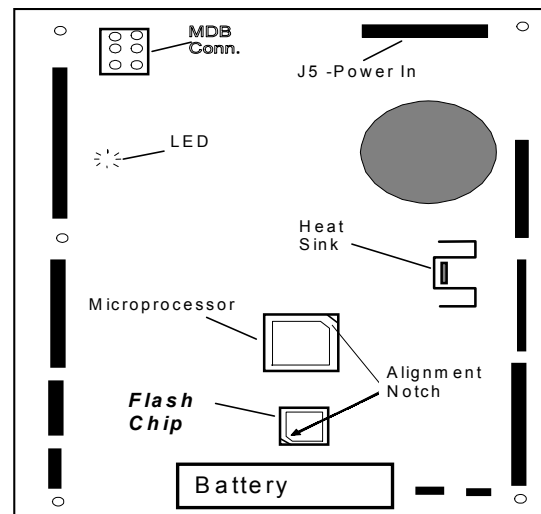
8. Perform a **MACHINE RESET** by the following sequence: Go to the "SECURITY" Menu \ press **Enter** \ press **▶** button until "MACHINE RESET- N" \ press + changes "N" to "Y" \ press **Enter** \ press + until "RESET- ALL" \ press **Enter** displays "ARE YOU SURE- N" \ press + changes "N" to "Y" \ press **Enter** \ wait until "Y" changes back to "N".
9. In Price Menu, check and reset beverage prices.
10. In Beverage Definition Menu, check cup size settings, or modify recipe time settings desired.
11. In Configuration Menu, perform a TMU Download procedure to save **Recipes** (not Options). This will store your new settings onto the TMU "CHIP" for memory backup.
IMPORTANT: Keep TMU Chip with machine!

12. On **Coffee Driver Board**, replace *Flash Chip* by performing steps 4 and 5 above.

PRODUCTION FIRMWARE COMPATIBLE VERSIONS

Coffee Control Board (CCB)		Coffee Driver Board (CDB)
6.1x	↔	6.1x
Custom Only >> 4.99	↔	4.98
4.96	↔	4.98 / 4.95
(Outdated) 4.53	↔	4.55
(Outdated) 4.22	↔	4.21
(Outdated) 4.11	↔	4.19

COFFEE CONTROL BOARD



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GROUND LOOP TEST PROCEDURES

Toggle **OFF** the two Power Switches in machine.

Setup your OHM Meter range to read from zero to above 500 K Ohms ("K" = x1000).

1. **DEX Jack Ground Test –**

- On the DEX Jack, place meter probes between its mounting nut < and > the Grounding Screw located on interior door (see picture below).
- If reading is below 1 K Ohms, perform following: On logic Board, unplug **J2** (DEX Jack harness) & re-check meter reading again.
- If meter reading is above 1 K Ohms, DEX Jack is OK and machine has no ground loop.
- If reading is below 1 K Ohms, the DEX plug is shorting out to the cabinet. Leave **J2** unplugged and order retrofit kit P/N 27500082 to isolate DEX Jack from cabinet ground.

2. **Machine Ground Loop Test –**

- With meter probes, make contact with outer metal of TMU Socket < to > Grounding Screw located on interior door (see picture below).
- If reading is above 400 K Ohms, there are no ground loops in the machine. *Test Complete*
- If meter reading is below 400 K Ohms, there is a ground loop in the machine. Perform following test procedures.

3. **Coffee Control Bd. (CCB) Circuit Ground Test**

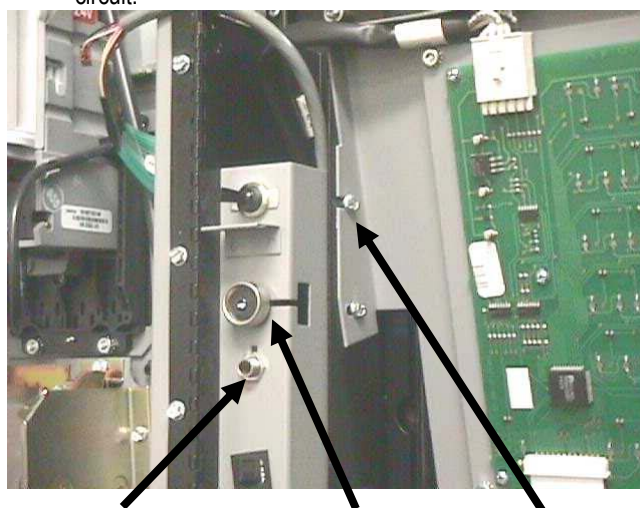
- On the CCB, unplug the 6-pin J8 MDB connector located on left side - top plug on board.
- With meter probes, make contact with outer metal of TMU Socket < to > Grounding Screw located on interior door (see picture below).
- If reading is above 400 K, ground loop is not in the CCB circuit. Skip to section "D)".
- If reading is still below 400 K, there is a ground loop in the Coffee Control Board Circuit. Perform the following steps:
- Unplug and recheck the meter reading after disconnecting each of the following devices: Coin Mech, Bill Validator, & Card Reader. Isolate and replace faulty device.
- If ground loop is still below 400 K perform following:
- On CCB, Unplug each connector one at a time and measure at TMU. (Note: leave J5 & J8 plugged in until last.)
- Replace defective harness or device that the harness is attached to.

4. **Coffee Driver Bd. (CDB) Circuit Ground Test**

- On the Coffee Control Board (on interior door), reconnect the P8 MDB plug.

(NOTE: Power switches must be OFF)

- With meter probes, make contact with outer metal of TMU Socket < to > Grounding Screw located on interior door (see picture below).
 - If reading is above 400 K Ohms, there are no ground loops. * TEST COMPLETE*
 - If meter reading is below 400 K Ohms, problem is in circuit side from Coffee Driver Board. Isolate the ground loop by unplugging the devices listed in the following sequence until 400 K Ohms or higher is reached.
- E) (NOTE: Do Not reconnect items below during this step.)
- Unplug the Brewer Motor.
 - Unplug the two cup Spiral Motors
 - Unplug the Cup Drop Motors.
 - Unplug the Vend Door Motor.
 - Unplug the Spout Motor.
 - Unplug motors on Swing-Out hopper
 - On CDB, unplug P2 that disconnects all Auger & Whipper Motors. If ground loop problem is here unplug each motor one at a time.
 - On CDB, unplug one connector at a time to find possible harness short.
 - If short is found by unplugging P17, the problem should be in the Power Distribution Box Asm.
- F) When reading is above 400 K, start reconnecting motors one at a time while rechecking meter reading. If re-connected device causes reading to fall below 400 K, leave it unplugged & continue checking remaining motors.
- G) On the faulty motors, cut the green ground wire connected on motor and isolate end with electrical tape. This will eliminate the ground loop from the machines electrical circuit.



DEX Jack

TMU Socket

Ground Screw

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Troubleshooting Table & Error Messages

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ERROR MESSAGES

Error Type	Possible Cause	Remedy
<p>“BUCKET FULL”</p> <p>If error is active the Motor Power Ready LED on the CDB will <u>not</u> be lit. All devices using 24 VDC power will be disabled. The heating circuit will also be disabled.</p>	<p>A) Water level in the Waste or Grounds bucket is too high.</p> <p>B) Float is hung up or out of position</p> <p>C) Float Switch or Harness Connection</p> <p>D) Power Ready Board faulty</p> <p>E) Coffee Driver Board faulty</p>	<p>A) Empty Buckets</p> <p>B) Reposition floats so that they hang freely in each bucket.</p> <p>C) Power Off the machine. Check harness connections between float switches and CDB Plug 5. On the CDB, locate a 3 pin inter-connector plug with black & white wires hanging above CDB. Use OHM meter to measure across wire # 311 (WHT) & #312 (BLK). If reading is not close to Zero Ohms the problem is in the waste bucket switch or its wiring circuit. On the same plug, measure between wire #312 (BLK) & #313 (WHT). If reading is not close to “0” OHMS, the problem is the grounds bucket switch or its wire circuit.</p> <p>D) If the interior service lamp is lit, replace the Power Ready Board in the power Distribution Box. If the service lamp is not lit, see section on “No Power To All Motors”</p> <p>E) Replace Coffee Driver Board.</p>
<p>“DR OPEN TIME OUT” (Door Open Time Out)</p> <p>Vend Door will attempt to fully open 5 tries before registering this error.</p> <p style="text-align: center;">< OR ></p> <p>“DR CLOSE TIME OUT” (Door Close Time Out)</p> <p>Vend Door will attempt to fully close 5 tries before registering this error.</p>	<p>A) Obstruction / Interference / Rubbing Against Cupwell (left-side wall edge)</p> <p>B) Stop Bracket out of Position</p> <p>C) Track/Vend Door Alignment</p> <p>D) Motor Gear Alignment</p> <p>E) Motor or Connection Problem (Motor not energizing)</p> <p>F) Door Sensor is out of Alignment or faulty</p> <p>G) Defective Door Sensor</p>	<p>A) Open main door and check from inside to see if something is interfering with the vend door trying to opening. If so, remove or reposition the obstruction. Look for rub marks on the vend door. If so, adjust cupwell asm back further away from vend door. The cupwell bracket has horizontal mounting slots for adjustment. Cupwell main bracket (attached to back wall) may be out of alignment. Push bracket left or right to remold into alignment with vend door opening.</p> <p>B) The Stop Bracket used for the vend door is attached to the bottom of the Cup Dispenser Asm. This stop bracket prevents the vend door from coasting passed to open sensor. Check the stop bracket position and move mold it in or out to get door to stop in the proper open position.</p> <p>C) Switch OFF power. Vend door should hang vertically level. Between the of bottom bezel & bottom of vend door, there should be a gap from 1/16 to 1/8 inch wide. If not, realign the upper door track bracket.</p> <p>D) Switch OFF power. From inside machine manually slide the door fully open & close quickly. The door should slide easily without skipping a gear teeth. If not, loosen the vend door mounting bracket and reposition the motor gear against the door track. Leave small amount of play between the gear and track and snug mounting screws. (NOTE: do not over tighten mounting screws that could strip sheet metal).</p> <p>E) Check for 24 Volts DC across motor connector by depressing the service switch each time to activate the door motor. If 24Volts is present and door does not move, replace motor. If 24 Volts is not present, check harness from door motor to 15-pin inter-connector located in cabinet behind cover panel at left side upper corner of machine. Check from 15-pin inter-connector to CDB P15 plug.</p> <p>F) In “Diagnostic Mode”, go to “Auxiliary Functions” and test run the vend door to open & close. Adjust either the open or close magnetic sensor by re-mounting them closer to the center of door to obtain proper positioning of magnetic strip when door is fully opened or closed.</p> <p>G) Unplug the Open or Close sensor to test. With OHM meter, place & hold meter probes across the two wires pins from sensor. Place a magnet against the sensor. Reading should be open. Move magnet away from sensor, reading should be less than 1 Ohm. If not, replace sensor.</p>
<p>“DR HI CURRENT” (Vend Door High Current)</p>	<p>A) Vend Door Binding</p> <p>B) Door Motor faulty</p>	<p>A) (See error section above; “DR OPEN TIME OUT”.)</p> <p>B) Replace motor</p>

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ERROR MESSAGES

<p>“SPT UP TIME OUT” (Spout Up Time Out) Spout will attempt to fully move to up position at least 2 tries before registering this error</p> <p style="text-align: center;">< OR ></p> <p>“SPT DN TIME OUT” (Spout Down Time Out) Spout will attempt to fully move to down position at least 2 tries before registering this error</p> <p style="text-align: center;">< OR ></p> <p>“SPT LINE CUR TRIP” (Spout Line Current Trip) Spout motor is drawing too much current and/or shorted circuit.</p>	<p>A) On CDB, check Motor Power Ready LED. B) Broken Motor Gear and/or Gear Track C) Obstruction / Binding</p> <p>D) Liquid Spillage Into Inter-Connectors.</p> <p>E) Harness Connection</p> <p>F) Motor or CDB faulty (Motor will not energize)</p>	<p>A) If not lit or blinking, see “No Power to All Motors” under Electrical Conditions section of the Troubleshooting Table. B) Replace broken gear and/or track.</p> <p>C) Depress the Service Switch on edge of main door to cycle spout up and down. Check for and correct any obstruction. Check for loose screws and nuts on the spout assembly. Check motor gear to track alignment. On the spout motor, loosen the mounting screws and slide motor gear away from track. Manually lift spout up and down to feel for any restriction in the slide track. If so, pull spout slide out of the slide bracket and slightly spread open this slide bracket. Reassemble & lubricate the slide track with a silicone lubricant. Check tension between the motor gear to track engagement by loosening spout motor, engaging gears tightly together, & then backing motor gear away slightly.</p> <p>D) Remove the cover panel over the spout motor. Disconnect & inspect all inter-connection plugs in this area one at a time. Check for loose pins and for liquid residue on pins inside connector. Spray clean any dirty connector & pins with electrical contact cleaner. Prevent liquid spillage from entering connectors by tie wrapping them up high so liquid will not flow down into connectors.</p> <p>E) On the following connectors unplug and check for loose pins then reconnect each: Spiral Motor, Spout Sensor Switches, interconnect plug near spiral motor, inter-connector plugs routing up alongside of water tank and connector P12 on the CDB.</p> <p>F) Perform voltage test at motor two-pin connector. Depress Service Switch and within 30 seconds the meter should read 24 (+/-2) Volts DC. Replace motor if voltage is present. If voltage is not present, replace CDB.</p>
<p>“SPIRAL # HI CUR” (Spiral Motor # High Current)</p>	<p>A) Cups or Spiral Jam B) Harness Wire Short C) Spiral Motor faulty</p>	<p>A) Check for jammed cups or improper spiral adjustments. B) Check entire harness for exposed or pinched wire from spiral motor up to Plug 13 on the CDB. C) Replace spiral motor</p>
<p>“SPIRAL# TIME OUT” Cup Dispenser Spiral #1 or #2 Timed Out after 15 Seconds.</p> <p style="text-align: center;">< OR ></p> <p>“CUP SML SOLD OUT” (Cup Small Sold Out)</p> <p style="text-align: center;">< OR ></p> <p>“CUP LRG SOLD OUT” (Cup Large Sold Out)</p>	<p>A) Drive Belt Excessive Slippage</p> <p>B) Bad Connection</p> <p>C) Improper index of cup stack into Cup Ring</p> <p>D) Cup Present Switch out of adjustment (above cup ring)</p> <p>E) Cup Present Switch faulty.</p> <p>F) Spiral Motor or CDB faulty</p>	<p>A) Check the drive belt & gear on the spiral motor. On the spiral motor, loosen the large nut that is used to apply tension drag to the belt gear. Hand tighten this nut as hard as you can, then use wrench to turn clockwise additional ½ turn. If belt gear still slips, the slip spindle inside the belt gear has come loose from the motor shaft. Disassemble gear & tighten Allen screws on slip spindle that attaches to motor shaft. Reassemble & test.</p> <p>B) Check connections on all spiral motors, cup drop motors & switches. Check inter-connection plugs under panel located on left wall, upper corner in cabinet. Check connector P13 on CDB.</p> <p>C) Check or adjust position of the Spirals, Guide Bar, and Cup Present switch on cup ring. Insert only two cups in the cup ring and test the indexing function to ensure new stack of cups will fall into cup ring properly.</p> <p>D) Adjust switch closer or further from cups in cup ring. Perform indexing test by leaving only two cups in cup ring and depressing the service switch.</p> <p>E) Check the switch with OHM meter or replace.</p> <p>F) Perform voltage test at motor connector by following: Remove cups from cup ring & depress Service Switch. Within 30 seconds 24 (+/-2) Volts DC should be present. If voltage is present replace motor. If voltage is not present, replace CDB.</p>

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<p>“CUP DP # HI CUR” (Cup Drop # High Current) Cup drop motor for dispenser #1 or #2 is drawing too much current.</p>	<p>A) Motor Linkage Jammed B) Harness Wire Short C) Cup Drop Motor faulty</p>	<p>A) Check linkage between cup drop motor & cup ring. If binding, readjust motor mounting position. B) Check entire harness for exposed or pinched wire from cup drop motor up to Plug 13 on CDB. C) Replace cup drop motor</p>
<p>“CUP SENSE ERROR” (Cup Sensor Error)</p> <p>Problem Related to the Cup Sensor Boards in the Cupwell Assembly.</p>	<p>A) Partial Obstruction of Sensor Path. B) Connections or wet connector problem C) Sunlight Flooding Sensors D) Sensors Out of Alignment E) Sensor Board faulty</p>	<p>A) Check bottom sensors for interference by catch arms in cupwell. Loosen catch arm asm & reposition as high as possible. The right side cup chute has a small cutout on bottom edge to allow the upper sensor beam to pass through. Check upper sensor for clearance through this cutout. If cutout clearance is not sufficient, re-angle right chute to obtain maximum clearance. B) Check pin connections on following plugs: cup sensor boards, 15 pin inter-connector by spout motor, 15 pin inter-connector along right side of water tank, and P14 on the CDB. If wet, spray clean with contact cleaner and reposition connector away from moisture drips or splash. C) If sunlight is shining on sensors during day replace software with upgraded version CCB4.96 / CDB 4.95 or higher. D) Check for loose or misaligned mounting hardware on both sensor boards. Check plastic cupwell assembly for a twisting condition when main door is closed. If so, check or adjust cabinet and main door for leveling. Remold the entire cupwell bracket (attached to the rear wall) left or right to help align bottom of cupwell over the alignment bracket on the main door. Open and close door to check door to cupwell alignment. E) 1st try replacing the sensor board that has indicator LED lit. Then replace the other.</p>
<p>“TANK 1 LOW WATER”</p> <p>At initial fill <or> machine power-up <or> upon toggling float switches, the CDB will allow the inlet valves to energize for 4 minutes. If tank does fill within 4 minutes this error will post.</p> <p>Upon tank fill up, the CDB will monitor the water fill time and if it exceeds 75 seconds between vend cycles or while in standby the machine will go out of service and log this error message.</p>	<p>A) On the CDB, check Motor Power Ready LED. B) Low Water Pressure to Machine C) Low Water Flow to Tank D) Water Leak E) Cribbed Water Line F) Clogged Water Filter G) Temp/Water Level Probe Faulty H) Water Inlet Valve Faulty I) Coffee Driver Board Faulty</p>	<p>A) If not lit or blinking, see “No Power to All Motors” under Electrical Conditions section of this Troubleshooting Table. B) Check for specified water line size (3/8”) to machine & minimum water pressure of 20 PSI. Perform Water Pressure Test: - Close OFF the filter head and remove filter cartridge. - Place bucket under the filter head and turn filter head ON for 1 minute. - Measure the water in bucket > If <u>at least one gallon</u>. Flow pressure is OK. - If less than 1 gallon, the flow pressure at location is too low. C) Check for loose electrical connections on the Inlet Valve & Coffee Driver Bd. Perform Water Flow Test: - Power OFF the machine. With spray hose, drain 1/2 gallon of water into a container. - Power ON the machine and with a second hand watch, time how long the “LOW Water” lamp on the CDB stays lit. - If less than 1-minute, flow rate is OK at this time of the day. - If longer than 1 minute, flow rate is too low. Perform steps E,F,H. D) Check for water leak at valves, hoses, fittings, and around water tank weld assembly. If valve, replace or rebuild and also replace grommet plug with valve. E) Check the condition of the plastic water line from top of filter head to top of water tank. Replace if cracked or crimped. F) Replace Water Filter cartridge – recommended replacement schedule for filter is 18,000 vends or 1 year whatever comes first. G) On the CDB, If the “Low Water” LED <u>is lit</u> and the water continues to overflow; replace the primary Temp/Level Probe (right side). If the “Low Water” LED <u>is not lit</u>; replace the secondary side Temp/Level Probe. H) Power Machine OFF then ON & check for 24 Volts DC across the connector pins on the Inlet Valve. If power is preset, replace or rebuilt Inlet Valve. I) On the CDB, measure for 24 VDC on plug P5 across pins 1 & 2. Before measuring, power machine Off then On. If 24 VDC is present the problem is in the harness from CDB to inlet valve, repair or replace harness. If voltage is not present, replace CDB.</p>

Service / Troubleshooting

<p>“NO CDB” Control board is not communicating with the coffee</p>	<p>A) MDB Harness Connection between CCB & CDB B) Coffee Driver Board faulty</p>	<p>A) Check connections / pins between following: CCB plug J8 < to > Interconnection harness plug located under cover panel at left wall top corner of machine < to > CCD Plug P1. B) Replace CDB.</p>
<p>“HEATER 1 LOW TEMP” < OR > “HEATER 2 LOW TEMP” The CDB has monitored a temperature reading below 180 by the Temp/Level probes for a period of 75 to 90 minutes.</p>	<p>A) Connection Problem B) Heating Element faulty C) Temp Probe faulty D) Missing 24 Volt Power E) Coffee Driver Board faulty F) Power Distribution Box Connections or Heating Relay Faulty</p>	<p>A) Switch Off power. On Power Distribution Box, check the heating element harness pin connections on the primary and secondary plugs. Check for corroded or burnt wires on top of heating elements. If so, replace element with permanently attached harness. B) On the Power Distribution Box, unplug the primary & secondary plugs and check with Ohmmeter across the two other pins of each harness for 10 (+/-3) Ohms. If out of Ohm range, replace heating element. C) Clear error and allow machine to heat for 45 minutes. In Diagnostic Mode, perform Water Tank Check and monitor water temperature for the primary & secondary heater function. Replace the probe that is not responding to water temperature. D) See troubleshooting section; “No Power to All Motors” E) On the CDB, check the “Tank Heater On” LED to be lit. If not, clear errors and recheck. If still not, replace CDB. If the “Tank Heater On” LED is lit, perform following: On the CDB plug P8, measure across pins 1 & 3 and 2 & 3. There should be 24 VDC present across either one of these measurements. If not, replace the CDB. If voltage is present, check the 4 pin plug on the Power Distribution Box for loose pins. If not, the problem is in the Power Distribution Box, perform next step. F) Remove the PD Box Assembly from machine. Check all pin & terminal connections inside. If error message is “Heater 1 Low Temp” replace the primary relay located closest to silver box. If error message is “Heater 2 Low Temp” replace the secondary heater relay located between other two relays.</p>
<p>“HEATER 1 HI TEMP” < OR > “HEATER 2 HI TEMP” The CDB has monitored a temperature reading reaching 212F by one of the Temp Probes. The Electronic Over-Temp sensor has come in contact with hot water or steam.</p>	<p>A) Temperature Setting Set Too High Or High Altitude Condition. B) Connection Problem C) Electronic Over-Temp Sensor D) Temp Probe faulty E) Heater Relay faulty F) Coffee Driver Board faulty</p>	<p>A) In Configuration Mode, check temperature setting. Factory setting for sea level is 200 degrees ‘F’. If machine is in high altitude location above 5000 feet, lower the temperature setting between 180 to 195. B) On the Power Distribution Box, the label will indicate the locations of primary and secondary heater plugs. Check & verify that they are not switched around. On the CDB, check plugs P10 & P8 for pin connections. Check the pin connections between the Temperature probes & mating plug on ceiling. Look for loose or spread female pins. C) On the overflow hose from tank there are two over-temp sensors. The top one is an electronic Over-Temp Sensors that will signal the program that the tank is boiling or hot water is overflowing. The bottom is a mechanical reset Over-Temp Sensor. If there is any sign of steam or water dripping out of overflow hose (above waste bucket) the sensor is functioning correctly, move on to next step. If there is no sign of this, and the water temperature is Not Hot or has reached temperature setting but continues to give this error message, unplug the electronic sensor. If heating system now works, leave sensor unplugged until it can be replaced. D) Clear error message and allow machine to heat for 45 minutes. In Diagnostic Mode, perform Water Tank Check and monitor the water temperature for the primary & secondary tank. Replace the probe that is not responding or displaying incorrect water temperature. E) Remove the Power Distribution Box Assembly from machine. Check all pin & terminal connections inside. If error message is “Heater 1 High Temp” replace the primary relay located closest to silver box. If error message is “Heater 2 High Temp” replace the secondary heater relay located between other two relays. F) Replace Coffee Driver board.</p>

Service / Troubleshooting

<p>“SERIAL PORT ERROR” Data communication between the CCB, CDB or other device attached into the MDB data line was corrupted.</p>	<p>A) MDB harness connections between the CCB, CDB, Coin Mech, Bill Validator, or Card Reader.</p>	<p>A) Check for loose connections on the MDB harness. Start checking from CCB plug J8 to MDB connections to the Coin Mech and Validator. Check connections on MDB inter-connector harness under cover panel located on left side wall, upper corner. On CDB check plug P1.</p>
<p>“SW TRAP LCB” (switch trap on logic control board) The CCB has detected a software trap.</p>	<p>A) Ground Loop B) Coffee Control Board faulty</p>	<p>A) See Ground Loop Test procedures in Section 600. B) If this error continues to occur, replace the Flash Program IC on the CCB or replace the CCB.</p>
<p>“SW TRAP CDB” (Switch Trap On Coffee Driver Board) The CDB Has Detected A Software Trap.</p>	<p>A) Ground Loop B) Flash Program IC or Coffee Driver Board faulty</p>	<p>A) See Ground Loop Test procedures in section 600. B) If this error continues to occur, replace the Flash Program IC on the CDB or replace the CDB.</p>
<p>“BREWER C TIME OUT” (Brewer Coffee Timed Out) The CDB was not signaled by the homing switch within allotted time.</p>	<p>A) Electrical Connection problem B) Homing Switch Alignment or Cam loose C) Brewer Homing Switch faulty</p>	<p>A) Check harness pin connections from the brewer home switch to the two inter-connectors with six and nine pins. Check Harness between brewer home switch & P4 on the CDB. B) Adjust homing switch as close as possible to the silver cam. Press brewer test button on the CDB and verify switch lever makes and brakes as it slides completely around the silver cam. Check to ensure that cam is not coming loose from the shaft. C) Replace Homing Switch</p>
<p>“BREWER C HI CURRENT” (Brewer Coffee High Current)</p>	<p>A) Brewer Jam or Binding B) Brewer Motor faulty C) Coffee Driver Board faulty</p>	<p>A) On the CDB, press the brewer Test button and look for any signs of binding or jamming throughout the brewer cycle. With main door open, run a large extra strong coffee vend and observe brewer cycle for signs of binding or jamming. If so, repair or replace component on brewer causing problem. Select a strong coffee beverage like a large cup of espresso and check for excessive backup pressure. If so, check & correct following: filter screen is clogged, coffee grounds are too fine, inlet water is too soft, or excessive gram throw into brewer. B) Replace Brew Motor C) Replace CDB</p>
<p>“AUG # HI CURRENT” (Auger # High Current)</p>	<p>A) Recipe Violation B) Auger Motor faulty C) Coffee Driver Board faulty</p>	<p>A) No more than 3 auger motors should run at same time during vend cycle. Check recipe steps in all beverage selections that utilizes this Auger Motor. B) Replace Auger Motor. C) Replace CDB</p>
<p>“WHIP # HI CURRENT” (Whipper # High Current)</p>	<p>A) Product clogged in whipper housing. B) Recipe Violation C) Whipper Motor faulty D) Coffee Driver Board faulty</p>	<p>A) Clean out clogged product. Check all selections utilizing this whipper for proper product to water sequence during vend cycle. B) No more than 3 whipper motors should run at same time during vend cycle. Check recipe steps in all beverage selections utilizing this whipper motor. C) Replace Whipper motor. D) Replace CDB.</p>
<p>“VLV # HI CURRENT” (Valve # High Current)</p>	<p>A) Valve Faulty B) Coffee Driver Board faulty</p>	<p>A) Replace Valve B) Replace CDB</p>

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“INLET # HI CURRENT” (Inlet Valve # High Current)	A) Inlet Valve faulty	A) Replace Inlet valve
“TRY AGAIN”	A) Cup did not drop into cupwell and block lower cup sensor within 5 seconds.	A) Check and test cup drop functions on both cup dispensers
“PLEASE WAIT”	A) Machine is in the initializing Mode. B) Spout nozzle interference with upper cup sensors.	A) Upon closing main door, the machine will scan or run the following devices to their home position: the two Cup Dispensers, Spout Motor, Vend Door, and Brewer Motor. If device doesn't home within short period, the control board will log device error. B) On the spout up and down track asm, adjust the bottom sensor switch up higher by remounting the bracket plate the switch is on.
“RECIPE ## MISMATCH” Ingredient type in “Name Assignment” menu does not match name in “Recipe Definition” menu.	A) Recipe Violation in Beverage Definition Menu.	A) In Recipe Definition Menu, go to the recipe number listed with error message. Scroll through all recipe steps and look for the letter “E” at right end of display. This name is not the same as the one listed in the “Name Assignment” menu. Make recipe corrections where necessary.
“DISABLED” (Upon Pressing Selection Button)	In the Price Assignment Menu the Selection is Disabled	Go to the Price Assignment Menu. If price is set to 99.95 the selection will be disable. Re-price selections to remove disable feature.
“MAKE ANOTHER CHOICE” (Upon Pressing Selection Button)	A) Recipe Problem B) Device in recipe is faulty	A) Check the recipes of the selection numbers that are not working. In the recipe, check for missing step or ingredient name. Scroll through all recipe steps and look for the letter “E” at right end of display. If “E” is present, the step name is incorrect and does not match what is set in the Name Assignment Menu”. B) If a device such as a whipper motor is faulty, all beverages that use this whipper will be disabled and display ”Make Another Choice”. Determine what device is common in all the beverage selections that are not functioning and replace it.
OPEN		
OPEN		

Service / Troubleshooting

ELECTRICAL CONDITIONS		
Error Type	Possible Cause	Remedy
<p>No Front Door Lamps</p> <p>(Both power switches in the machine are ON)</p>	<p>A) Loose Connections</p> <p>B) Ballast, EMI Filter, or Harness faulty.</p>	<p>A) Check for loose pins or plugs on following: door lamp plugs, ballast module, EMI noise filter below ballast, and plug on the Power Distribution Box labeled Door Lights.</p> <p>B) Check for 120 VAC at following connections: On the topside of the EMI noise filter, measure across the White & Black wires. If voltage is present, replace ballast. On the bottom side of EMI noise filter, measure across White & Black wire. If Voltage is present, replace EMI filter. On the Power Distribution Box, measure across plug labeled Door Lights, If voltage is missing, the problem is possible a loose connection in the PD Box. If voltage is present, the problem is in the harness from PD Box plug to the plug on door that connects to the EMI filter.</p>
<p>No Power To All Motors</p> <p>(On CDB, the "Motor Power Ready" LED is not lit. This condition will also disable the heating circuit)</p>	<p>A) Bucket Float Circuit Open</p> <p>B) Harness connection between CDB Plug 17 & PD Box.</p> <p>C) Connection problem in Power Distribution Box.</p> <p>D) Power Supply Module faulty</p> <p>E) Coffee Driver Board faulty</p>	<p>A) See above error message section on "BUCKET FULL"</p> <p>B) Check connections between CDB Plug 17 (center plug on board) to the 12 pin plug on the Power Distribution Box.</p> <p>C) Remove Power Distribution Box from machine and check all internal pin and terminal connections.</p> <p>D) Place Power Distribution Box on floor of machine and connect the machines power cord to the AC input plug labeled "Main Power" on this assembly. On the 24 Volt Power Module, use meter to measure across the red and black wire on terminal strip. Reading should be between 24 to 28 VDC. If not, try adjusting the small metering screw on 24 Volt Power Supply Module. If still not, replace Power Supply Module.</p> <p>E) Replace CDB</p>
<p>Machine Lock-Up</p> <p style="text-align: center;">< OR ></p> <p>Vend Cycle Lock-Up</p> <p style="text-align: center;">< OR ></p> <p>Sporadic Symptoms</p> <p>(machine will operate upon powering OFF then ON)</p>	<p>A) Input AC Voltage is too Low or High or has Poor Ground.</p> <p>B) Not on Dedicated Line</p> <p>C) Ground Loop Problem</p> <p>D) Low 24 Volts or 24 Volts Power Supply Module faulty</p> <p>E) Coffee Driver Board faulty</p> <p>F) Coffee Control Board faulty</p>	<p>A) Spray water into waste bucket until Heater lamp comes ON. On the Power Distribution Box, measure voltage on the connector labeled "Door Lights".</p> <ul style="list-style-type: none"> - Black to White = 105 to 130 Volts AC (hot to neutral) - Black to Green = 105 to 130 Volts AC (hot to ground) - White to Green = Less than 1VAC (neutral to ground) <p>If any measurement above is out of range the wall socket or building ground circuit is bad. Have an Electrician check and repair.</p> <p>B) Machine should be plugged into a dedicated 20 Amp Voltage line.</p> <p>C) See Ground Loop Test procedures in Section 600.</p> <p>D) Swing CDB open and locate P17 (plug in middle of board). Measure across between any black and red wire. Reading should read 24 (+4/-2) Volts DC. If not, remove the Power Distribution Box from ceiling and lay on floor of machine. Connect the machines power cord to the AC input plug labeled "Main Power" on PD Box assembly. On the 24 Volt Power Module, use meter to measure across the red and black wire on terminal strip. Reading should be between 24 to 28 VDC. If not, try adjusting the small metering screw on this module. If still not, replace 24 Volt Power Supply Module.</p> <p>E) Replace CDB</p> <p>F) Replace CCB</p>

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CREDIT PERIPHERALS

<u>Error Type</u>	<u>Possible Cause</u>	<u>Remedy</u>
Cash Code Validator not Accepting all Bills	A price needs to be set to or above one dollar.	Set a least one selection price to \$1 or above. If all prices in machine must be lower \$1, set machine configuration code for Combo (snack companion machine) and set a phantom snack price over \$1.
Coin Mechanism (functionally dead) < OR > Bill Validator (functionally dead)	A) Loose Connection B) Coin Mechanism or Bill Validator faulty. C) Missing 27 Volts AC at Circuit Breaker or Transformer. D) Missing 24 Volts DC from Coffee Control Board.	A) Check harness connections between Coin Mech, Bill Validator, and Coffee Control Board. B) Replace Coin Mech or Bill Validator C) On CCB, check for input 27 Volts AC on J5 plug across the two yellow wires. If missing, follow the two yellow wires up to the 3 amp circuit breaker and check if tripped or has loose terminal connections. On the Power Distribution Box, check for 27VAC across the two yellow wires on the 6 pin connector. If missing, problem may be the transformer in the PD Box. If voltage is present, problem is in harness. Check under the harness panel located on left wall upper corner and look for plug with yellow wires. D) On CCB, check voltage on J8 plug (MDB) across white & black wire. If missing 24 VDC, replace CCB.

CUP DISPENSER ASSEMBLY

<u>Error Type</u>	<u>Possible Cause</u>	<u>Remedy</u>
Cup Not Dropping Out Of Cup Ring	A) Improper adjustment setting B) Defective cups or not suitable for vending machines. C) Improper Cup Ring	A) Readjust cup ring opening B) Inspect cup rims for uniformity - Check cup nesting by ensuring cups come apart from each other freely. - Check API Recommended Cup Usage Chart in Section 600. C) Check cup ring type by following: - White Cams – used for paper cups with thin rims - Black Cams - used for paper cups with thick rims - Red Cams – Used with all foam cups
Cups Drops Every Time You Close Main Door	A) Motor homing switch out of adjustment. B) Loose connections or pin C) Motor Homing Switch faulty	A) Readjust switch slightly closer to linkage arm. This switch is located by cup drop motor and can be adjusted by loosening the two bottom screws on switch bracket. B) Check pin connections on following: switch harness plug, Interconnect plug behind harness cover panel located on left side wall upper corner, and CDB plug P13. C) Replace Motor Homing Switch.

BREWER ASSEMBLY

<u>Error Type</u>	<u>Possible Cause</u>	<u>Remedy</u>
Grounds In Cup	A) Torn or ripped brew filter B) Residue scales in brew hose	A) Replace filter screen assembly B) Clean out or replace brew hose
Loose Ground Coffee In Hopper Tunneling	A) Agitator Broken B) Agitator Out of Shape C) Wheel Pins Needed	A) Use a cup to remove most of the coffee from hopper. Check or replace agitator if broken. B) Agitator should bounce hard off of the spiral wheel below when running. If not, remove agitator from hopper and remold angle to accomplish this. C) If coffee grounds are tunneling around spiral and wheel area, add roll pins to wheel.

Service / Troubleshooting

<p>Brewer Motor Not Operating</p> <p>(Other vend cycle functions work except for brew water, sugar & lightener)</p>	<p>A) Pin Connection or Wire problem B) Brewer is Jammed</p> <p>C) Recipe Step Missing</p> <p>D) Brew Motor or Coffee Driver Board faulty</p>	<p>A) Un-plug and check all harness wires and pin connections from brewer motor to CCB plug J4. B) Check for cracked piston. Check for loose component like motor mounting bolts. Check for bend component such as upper bridge for piston rod. C) In the "Recipe Definition" menu, go to the selected recipe with problem and check that the recipe step "COF-BREWER" is present and all time settings are present. D) On brewer motor, check for 24 VDC on harness connector between Black and Red wire. Press the brewer test switch on CDB while measuring voltage. - If missing voltage, replace the CDB. - If voltage is present, replace the brewer motor</p>
<p>Brewer Motor Continually Running</p>	<p>A) Pin Connection B) Home Switch faulty C) Check for Ground Loop problem D) Electrical Noise E) Brew Motor faulty F) Coffee Driver Board faulty</p>	<p>A) Check all pin connections between brewer motor plug up to CCB plug P4. B) Readjust brewer home switch closer to cam or replace. C) Perform Ground Loop Procedure located in Service section 600 in manual. D) Upgrade software with Version CCB 4.96 or higher & CDB 4.95 or higher. E) The Opto-Sensor on the motor may be defective, replace brew motor. F) Replace CDB.</p>
<p>Wet Grounds Dispensed From Brewer</p>	<p>A) Bad seal on brew chamber B) Brew chamber miss alignment C) Clogged brew filter D) Scored or cracked brew clear cylinder E) Worn or cracked piston or leaky piston seal F) Coffee grind size too fine</p> <p>G) Gram throw too high</p>	<p>A) Inspect or replace chamber seal B) Refer to Section 600 for procedure on cable adjustment. C) Replace filter screen assembly. D) Replace clear cylinder</p> <p>E) Replace piston and/or seal</p> <p>F) For bean coffee, check grinder setting should range between setting 2 to 3½. If grind texture is still too fine, perform Zero Adjustment procedure found in service section of manual. If equipped with loose ground coffee, the brand type should be approved for vending machine operation. G) Check gram throws for all coffee selections. Maximum gram throw should be no higher than 16 grams. Check the strength modifiers for maximum setting of 25%.</p>
<p>Grinder Not Functioning</p>	<p>A) Circuit breaker tripped</p> <p>B) Coffee grounds backing up in chute</p> <p>C) Loose Connection</p> <p>D) Inter-Latch Switch faulty E) Recipe problem</p> <p>F) Grinder Motor faulty</p> <p>G) Grinder Driver Board faulty</p>	<p>A) For a Mini Grinder, locate circuit breaker on bottom of box bracket attached between swing-out & grinder. Press in the yellow button. For a Large Grinder, press the brown button on the back of motor housing. Tripped breaker possible caused by next step below. B) Clean out the chute (Note: do not use scratch interior tube with sharp or abrasive object). Coffee grounds may still be too fine, change the grind setting to higher number. On the mini grinder, loosen the hose clamp and turn chute so that end cut is facing brewer funnel then retighten. C) Check plug and pin connections at Grinder Harness Plug, Inter-latch Switch, Grinder Driver Board, and on CDB Plug P3. D) Check swing-out inter-lock switch with OHM meter. If faulty, replace Inter-Latch switch E) In the Recipe Definition Menu, go to the beverage name that is using this grinder and check for proper recipe steps (see recipe charts in manual). Also check for duration time setting by pressing F2 at each step. F) In Diagnostic Mode, go to "TEST MOTORS " and run grinder in question. While test program is trying to send 110VAC power to grinder, measure across grinder harness connector. If voltage is present during test and motor is not running check for jam or bind inside grinder cutting head. Repair or replace grinder. G) Replace CDB</p>

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Swing-Out Loose Ground Motors Not Operating	A) Loose Connection	A) Check plug and pin connections at Grinder Harness Plug, Inter-latch Switch, Grinder Driver Board, and CDB Plug P3.
	B) Inter-Latch Switch faulty	B) Check switch with OHM meter. If faulty, replace Inter-Latch switch.
	C) Recipe problem	C) In the Recipe Definition Menu, go to the beverage name that is using this motor and check for proper recipe steps (see recipe charts in manual). Also check for duration time setting by pressing F2 at each step.
	D) Loose Ground Motor faulty	D) In Diagnostic Mode, go to "TEST MOTORS " and run motor in question. While test program is trying to send 24 Volts DC power to motor, measure across motor harness connector. If voltage is present during test and motor is not running check for bind or jam in hopper otherwise replace motor.
	E) Coffee Driver Board faulty	E) Replace CDB

CUPWELL & SPOUT ASSEMBLY

Error Type	<u>Possible Cause</u>	<u>Remedy</u>
Spout Motor Doesn't Move or Is In Wrong Position	A) Broken or misaligned gear or track	A) Realign gear & track. Replace if broken.
	B) Moisture in connector plug	B) Check for moisture inside connector plugs around spout motor area. Clean & dry connector pins. Re-route harness so that liquid does not get into connectors again.
	C) Loose connections from spout motor harness to CDB (P12).	C) Check for and repair any loose connections or pins from harnesses between spout motor to CDB (P12).
	D) Spout upper & lower sensors are connected in reverse.	D) Check for proper harness connections as follows: the top sensor should be plugged into harness with Black & Yellow wire and bottom sensor has White & Black wire.
	E) Left Chute blocking top sensors	E) Slightly re-angle the left metal cup chute so that cutout at bottom of chute is allowing for clearance of upper sensor path.
	F) Error Message- "SPT LINE CUR TRIP"	F) See Troubleshooting Chart section for Error Message.

Service / Troubleshooting

MAIN CANISTER RACK ASSEMBLY		
Error Type	Possible Cause	Remedy
Lightener and/or Sugar Not Selected But Appearing In Drink	<ul style="list-style-type: none"> A) Clogged Exhaust System B) Recipe Timing Incorrect 	<ul style="list-style-type: none"> A) Check steam exhaust system for proper operation on exhausting steam from mixing bowls & troughs. Clean product buildup in exhaust box, hoses, & fan screen. B) Check all beverage recipes that use lightener and sugar. Adjust recipe duration and delay times so that lightener and sugar starts dropping immediately after water is flowing under and stops soon enough to allow continues water flow for rinse down.
Product Clogging Up In Coffee Trough Chutes	<ul style="list-style-type: none"> A) Clogged Exhaust System B) Machine not level. 	<ul style="list-style-type: none"> A) Check steam exhaust system for proper operation on exhausting steam from mixing bowls & troughs. Clean product buildup in exhaust box, hoses, & fan screen. B) Place level on roof of machine and adjust leg levelers. Check level when positioned side to side and front to back of machine. With main door closed, check to see if the door outer edges are square with the cabinet. If not, adjust top hinge.
Whipper / Auger Not Operating	<ul style="list-style-type: none"> A) Recipe Problem B) Loose connection C) Motor faulty D) Coffee Driver Board faulty 	<ul style="list-style-type: none"> A) In the Recipe Definition Menu, go to the beverage name that is using this motor and check for proper recipe steps (see recipe charts in manual). Also check for duration time setting by pressing F2 for whipper and auger names. B) Check and repair loose connections on following: motor plug, inter-connect plugs located along right side of water tank, and on CDB plug P2. C) Switch harness connections between suspect motor and other motor next to it. In the Diagnostic Mode, go to TEST MOTORS or TEST WHIPPERS. Select and try running both motors. If suspect motor now works and other does not, the problem is in the harness or CDB. If the suspect motor does not work and the other works, replace suspect motor. D) Replace CDB.
Liquid Backup in Whipper & Mixing Bowl	<ul style="list-style-type: none"> A) Obstruction or sagging rubber tube to spout nozzle. B) Whipper blade slipping C) Possible wrong nozzle 	<ul style="list-style-type: none"> A) Remove hose and clean out blockage inside. Cut excessive tube length and re-route to eliminate sagging condition. B) Replace whipper blade. The whipper blade has a flat surface inside and mates to the flat side of the whipper shaft. C) The correct spout nozzle should have an ID opening of 1/4". If not replace.

Service / Troubleshooting

MAIN DOOR DEVICES		
Error Type	Possible Cause	Remedy
<p>Entire Selector Panel Not Functioning</p> <p>< OR ></p> <p>A Selection Button Is Not Functioning</p> <p>(no selection LED or beep)</p>	<p>A) Selection Button sticking</p> <p>B) Selection Board loose</p> <p>C) Ribbon cable loose or faulty</p> <p>D) Micro Switch or Board faulty</p> <p>E) Complement Board faulty</p>	<p>A) Manually depress the two upper corners of each selection button to find the one that's sticking. If caused by overlay decal, trim material away from around button. If plastic button is damaged replace it.</p> <p>B) Check or tighten the thumbscrews that mount this board against selector button panel.</p> <p>C) Replace the white ribbon cable if any damage found. Reseat the white ribbon cable into the selection and complement boards.</p> <p>- <i>NOTE: ribbon cable connector uses a locking collar that must be loosened before pulling or inserting cable.</i></p> <p>D) Replace micro switch or selector board.</p> <p>E) First check connections on this board & try selection button. Replace complement Board.</p>
WATER TANK ASSEMBLY		
Error Type	Possible Cause	Remedy
<p>Steam Escaping From Lid Assembly</p>	<p>A) Broken inlet fitting on lid.</p> <p>B) Tank Lid is loose or poor gasket seal between water tank and lid assembly</p>	<p>A) If lid assembly has plastic inlet fitting, replace with brass fitting Kit # 27500062.</p> <p>B) Loosen lid assembly from tank and check gasket condition. Inspect the lid for any defects or bowing in middle area and repair or replace as necessary. Inspect the gasket attached to tank top. Reposition or replace as necessary. When reinstalling lid onto tank, ensure that the gasket does not roll loose from tank edge. Allow tank to fully heat up and check for any sign of steam coming from top of tank.</p> <p><i>NOTE: do not over-tighten the left and right mounting screws. If tank lid starts to bow in center, back off on mounting screws.</i></p>
<p>Brew Valve Inconsistent Water Output</p>	<p>A) Water is back flowing into the black spout behind brewer.</p> <p>B) Brew Valve faulty</p>	<p>A) The rubber tube from brew valve to the brewer spout may be inserted too far into the spout opening. Pull hose out of brew spout and place tie wrap 1/2 " from end opening of hose. Reinsert tube into spout until it stops at tie wrap. New type brew spout eliminates this possibility and is now available by ordering P/N 26600440.</p> <p>B) Replace Brew Valve with attaching grommet</p>
<p>Tank Not Heating</p> <p>(On CDB, the "Heater On" LED is lit but not the Primary or Secondary Heater Lamp)</p>	<p>A) Loose Connection</p> <p>B) Steam or Overflowing water in the overflow hose.</p>	<p>A) Check all connection plugs on the Power Distribution Box and CDB.</p> <p>B) Check the Reset Steam Sensor located on overflow hose. If sensor is tripped, check that the Temp/Level Probes did not lift out of their grommets causing high tank level and overflowing</p>

Service / Troubleshooting

MISCELLANEOUS		
<u>Error Type</u>	<u>Possible Cause</u>	<u>Remedy</u>
Incomplete Vend Cycle (Not all devices energized during vend cycle or stopped prematurely)	A) Check error message B) Recipe Problem C) Device drawing high current	A) Press 'F2' to read error messages. Go to related section in this Troubleshooting Table to resolve. B) In "RECIPE DIFINITION" menu, check the recipe steps for selection with problem. C) To find the device that is drawing too much current and halting the vend cycle, perform following: For all devices used in this selection, start unplugging one device at a time and test run. When the selection fully finishes to entire vend cycle, the last device unplugged should be faulty. <i>Note: start with the whipper motors and then the water valves.</i>

Service / Troubleshooting

COFFEE CONTROL BOARD PIN-OUTS

P1 MEMORY UNIT

1 Data
2 No Connection
3 Key
4 Gnd

P2 RS232 SERIAL INTERFACE

1 Receive Data
2 Gnd
3 Transmit Data
4 Key
5 - 10 Volts
6 +5 Volts

P3 SERVICE

1 34VDC
2 Winner Relay
3 Lockout
4 Gnd
5 Key
6 Door Sw
7 Gnd

P4 TRC6010

1 -24 Vnfdc Ret
2 Key
3 +24 Vnfdc Hot
4 Key
5 Data
6 Interrupt
7 Accept Ed1able
8 Reset
9 Send
10 5VDC
11 Gnd
12 .05
13 .10
14 .25
15 \$1.00

P5 POWER

1 24 VAC
2 24 VAC
3 8 VAC
4 8 VAC
5 Key
6 Earth Ground

P6 DC MOTOR DRIVE

1 Row 1 +
2 Row 2 +
3 Row 3 +
4 Row 4 +
5 Row 5 +
6 Row 6+
7 Row 7 +
8 Row 8 +
9 Col 0 -
10 Col 1 -
11 Col 2 -
12 Key
13 Col 3 -
14 Col 4 -
15 Col 5 -
16 Col 6 -
17 Col 7 -
18 Col 8-
19 Col 9 -

P7 MASTER MENU SWITCH LINES

1 #1
2 #2
3 Key
4 #4
5 # 5
6 #6
7 #7
8 #8
9 #9
10 #10

11 #11
12 #12
13 #13

P8 MDB +

1 34VDC
2 Pwr Gnd
3 8 VDC
4 Master Rxd
5 Master Txd
6 Communication Common

P9 VALIDATOR

1 Escrow Enable High
2 \$1 Enable High
3 \$2 Enable High
4 \$5 Enable High
5 Escrow Enable Low
6 \$1 Enable Low
7 \$2 Enable Low
8 \$5 Enable Low
9 Cred1t
10 Key
11 Gnd
12 24 VAC Hot
13 24 VAC Neutral

P10 EXECUTIVE

1 Rcv +
2 Rcv -
3 Xmit -
4 Gnd
5 Xmit +
6 24 VAC
7 Key
8 24 VAC

P11 COFFEE KEYPAD

1 Data out
2 Data in
3 Clock
4 Load/strobe
5 Gnd
6 Key
7 8VDC
8 34VDC
9 Gnd

P12 DISPLAY

1 5 VDC
2 Rxd/to
3 Gnd

P13 BATTERY

1 Vbat
2 Gnd
3 Key
4 Gnd

Service / Troubleshooting

COFFEE DRIVER BD. (CDB)

PIN-OUTS

P1 MDB +

- 1 34VDC
- 2 Pwr Gnd
- 3 Key
- 4 8 VDC
- 5 Master Rxd
- 6 Master Txd
- 7 Communication Common

P2 MAIN CANISTER RACK

- 1 Auger 1
- 2 Auger 2
- 3 Auger 3
- 4 Auger 4
- 5 Auger 5
- 6 Auger 6
- 7 Auger 7
- 8 24VDC
- 9 Whipper 1
- 10 Whipper 2
- 11 Whipper 3
- 12 Whipper 4
- 13 Whipper 5
- 14 Whipper 6
- 15 Whipper 7
- 16 Auger 12 (Tea Brewer 3)
- 17 24VDC
- 18 Tea Brewer Home
- 19 Key
- 20 Ground

P3 EXTENSION RACK / SWING - OUT

- 1 Auger 8
- 2 Auger 9 / Grinder
- 3 Auger 10 / Grinder
- 4 Auger 11 / Grinder
- 5 24VDC
- 6 Whipper 8
- 7 Whipper 9
- 8 Whipper 10
- 9 Whipper 11
- 10 Key
- 11 24VDC
- 12 Hopper
- 13 Ground
- 14 Grinder
- Swing-out Switch

P4 COFFEE BREWERS

- 1 Brewer Motor 1 Drive
- 2 Brewer Motor 2 Drive
- 3 24VDC
- 4 Key
- 5 5VDC
- 6 Brewer Motor 1 Home
- 7 Brewer Motor 1 Position
- 8 Brewer Motor 2 Home
- 9 Brewer Motor 2 Position
- 10 Ground

P5 INLET WATER

- 1 Inlet Water Valve 1
- 2 Inlet Water Valve 2
- 3 24VDC
- 4 Key
- 5 Waste Bucket Full Float Switch 1
- 6 Ground
- 7 Waste Bucket Full Float Switch 2
- 8 Low Inlet Water Pressure Switch

P8 WATER HEATER

- 1 Water Heater Relay 1
- 2 Water Heater Relay 2
- 3 24VDC
- 4 Key
- 5 Key
- 6 Ground

P9 COMMODITY WATER VALVE

- 1 Commodity Water Valve 1
- 2 Commodity Water Valve 2
- 3 Commodity Water Valve 3
- 4 Commodity Water Valve 4
- 5 Commodity Water Valve 5
- 6 Commodity Water Valve 6
- 7 Commodity Water Valve 7
- 8 Commodity Water Valve 8
- 9 Commodity Water Valve 9
- 10 Key
- 11 Commodity Water Valve 10
- 12 Commodity Water Valve 11
- 13 Key
- 14 Commodity Water Valve 12
- 15 24VDC
- 16 Ground

P10 WATER TEMP. / LEVEL SENSOR

- 1 Ground
- 2 Temperature Sensor 1 (Water Temp)
- 3 Ground
- 4 Temperature Sensor 2
- 5 Ground
- 6 Temperature Sensor 3
- 7 Ground
- 8 Temperature Sensor 4 (Steam)
- 9 Ground
- 10 Temperature Sensor 5
- 11 Ground
- 12 Temperature Sensor 6

P10 WATER TEMP. / LEVEL SENSE (con't)

- 13 5 VDC
- 14 5 VDC
- 15 Key
- 16 Water Level Sense 1 Probe 1
- 17 Water Level Sense 1 Probe 2
- 18 Water Level Sense 2 Probe 1
- 19 Water Level Sense 2 Probe 2
- 20 Over Temperature Cutoff Switch
- 21 Ground

P11 SERVICE

- 1 Ground
- 2 Key
- 3 Free Vend Switch
- 4 Carafe Switch
- 5 Key

P12 SPOUT CONTROL

- 1 Spout Motor +
- 2 Spout Motor -
- 3 Key
- 4 Spout Lower Position
- 5 Spout Upper Position
- 6 Key
- 7 Ground

P13 CUP CONTROL

- 1 24VDC
- 2 Spiral Motor 1
- 3 Spiral Motor 2
- 4 Spiral Motor 3
- 5 Cup Drop Motor 1
- 6 Cup Drop Motor 2
- 7 Cup Drop Motor 3

- 8 Cup Soldout 5VDC
- 9 Cup Soldout Sensor 1
- 10 Cup Soldout Sensor 2
- 11 Cup Soldout Sensor 3
- 12 Cup Soldout Led 1
- 13 Cup Soldout Led 2
- 14 Cup Soldout Led 3
- 15 Cup Soldout Ground
- 16 Key
- 17 Cup Drop Motor 1 Home
- 18 Cup Drop Motor 2 Home
- 19 Cup Drop Motor 3 Home
- 20 Ground

P14 CUPWELL SENSOR

- 1 5VDC
- 2 Cupwell Emitter
- 3 Cupwell Sense Upper
- 4 Key
- 5 Cupwell Sense Lower
- 6 Key
- 7 Ground

P15 CUP DOOR

- 1 Cup Door Motor +
- 2 Cup Door Motor -
- 3 Key
- 4 Key
- 5 Cup Door Motor Open Switch
- 6 Cup Door Motor Close Switch
- 7 Ground

P16 CUP WELL LIGHT

- 1 24VDC
- 2 Cup Well Light
- 3 Key
- 4 5VDC
- 5 Key
- 6 Drink in Process Led (Red)

P17 POWER SUPPLY INPUT

- 1 Ground
- 2 Key
- 3 Ground
- 4 Ground
- 5 24VDC
- 6 Key
- 7 24VDC
- 8 24VDC
- 9 Chassis Ground

