AUTOMATIC PRODUCTS

HOT BEVERAGE MERCHANDISER

MODEL211E OPERATING SERVICE MANUAL

FOR USE WITH UNIVERSAL MDB LOGIC CONTROL BOARD USING VERSION 7, 8 OR 9 SOFTWARE WITH A LIGHT GREEN, RED OR ORANGE LABEL

PLEASE

DO NOT REMOVE MANUAL FROM MACHINE

AUTOMATIC PRODUCTS
A Crane Co. Company

PART # 27500006

Express 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.

AUTOMATIC PRODUCTS international, ltd.

300 Jacksonville Rd. ◆ Warminster, PA. ◆ 18974

TABLE OF CONTENTS

To achieve the most trouble-free operation from your AP211E Hot Drink Merchandiser, it is recommended that this service manual be thoroughly read and the instructions followed pertaining to installation, servicing and maintaining of the unit.
Should you have questions pertaining to this manual or the vendor, please contact your API distributor or write directly to:

Technical Service Dept.
Automatic Products intl ltd
300 Jacksonville Road
Warminster. PA 18974 USA

INTRODUCTION

The Automatic Products 211E Hot Drink Merchandiser is the state of the art in vending technology. The AP 211E combines the reliability, durability and simplicity of a time proven HOT/COLD drink brewing & delivery system with micro-electronics resulting in unsurpassed adaptability to satisfy both your and your customer's needs. The easy to understand, numerical touch pad selection panel provides two strengths of fresh brewed coffee plus a soluble decaffeinated and the availability of fresh brewed tea, each with two levels of lightener and sugar. Chocolate and soup selections are also available as options, which can provide positions for specialty products that may be desired. All selections can be individually priced using a Protocol A, MDB, or L+ coin mechanism. The translucent canisters and the open canister rack design allow for easy monitoring of product levels to maintain freshness, and ease of regular cleaning to provide your customer with the best possible hot beverage.

SOFTWARE

This manual is written to incorporate the current software which is identified as **VERSION 7 or 8** indicating that the software is an International Version, used for both export and domestic machines. The microprocessor on the logic board will be identified by a **LIGHT GREEN or RED** label. **VERSION 7 or 8** software (LIGHT GREEN or RED label) replaced IV 1.0.9 (PINK label) consolidating all of its functions. The Universal board now supports the ability to interface with a Multi Drop Bus system which utilizes new vending technology for connecting MDB peripherals. The software change enables the delivery of a cold water shot to the beverage cup when equipped with optional hardware. The other software change enables a multivend option. Multivend is a standard feature incorporated within the software and is program controlled. The software revision can be confirmed by checking the label on the microprocessor through opening in the rear cover of the master module - see page 2.04.

HOW TO USE THIS MANUAL

This manual is divided into three basic parts:

1. Introduction, features and installation
2. Electronic operation and mode and channel descriptions
3. Service, operation and adjustments

Each section contains in-depth descriptions of the material covered. Specific information that pertains only to Loose Ground (LG) will be identified with ***BOLD ITALICS.*** Each specific model has a configuration chart at the end of Section 2. These charts will aid you in determining the canister rack layout, channel assignments and label positions. Any reference to a number in a circle (i.e. ❶) indicates one of the buttons of the selection keypad.

◆ ◆
◆ **WATCH THROUGHOUT THE MANUAL FOR THIS** ◆
◆ **SPECIAL ♦ DIAMOND MARK. THIS INDICATES A** ◆
◆ **POINT OF SPECIAL INFORMATION OR A 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. 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 211E machine operates at a level of less than 75 dba

API 211E INSTALLATION AND SET-UP INSTRUCTIONS

INSTALLATION

Unpack the vendor:

1. Remove shipping carton and plastic bag from vendor. Inspect exterior of cabinet for damage.

2. Remove clip from lock handle and open front door. If machine is equipped with a lock, the keys will be in the cup well. Inspect cabinet interior for evidence of damage.

3. Remove packing tape from *coffee hopper swing out bracket*, cup dispenser door, commodity trough and steam deflector, overflow *and grounds* waste floats. Remove cardboard canister retainer over canisters.

♦ SAVE CANISTER RETAINER FOR REUSE IF MACHINE IS TO BE RESHIPPED.

4. Remove all cartons from floor of machine. These cartons will contain the *LG coffee hopper* & kickplate (if so equipped).

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 line should be one-half inch minimum diameter and be equipped with a manual shutoff within six feet of the machine. Water pressure should maintain 1.4 Bar (20 psi) minimum while the vendor is taking on water. If incoming water pressure exceeds 6 Bar (90 psi), a pressure regulator should be installed in the line. The fitting provided on the rear of the machine is a 3/8" female pipe thread.

ELECTRICITY

A grounded electrical outlet rated at 220 volts, 50Hz, (or 240 volts 13 amperes) single phase and capable of delivering 15 amperes must be available within two meters (6 ft) of the vendor.

♦ If the machine is to be used with 240 volts supply, then the two pin connector on the back of the power switch panel must connected to the correct connector. This change should be made only when power is off.

CAUTION: THE POWER CORD IN THIS MACHINE IS OF A TYPE Y ATTACHMENT. IF THE POWER CORD IS DAMAGED, IT MUST BE REPLACED BY THE MANUFACTURER, ITS SERVICE AGENT, OR A SIMILARLY QUALIFIED PERSON, IN ORDER TO AVOID A

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. Carefully level the vendor front to back and side to side.

2. ***Swing coffee hopper support bracket out and install hopper. Be sure to engage auger driver with motor drive pin.***

3. ***Align the coffee delivery chute on the swing out bracket and position for best possible delivery of grounds to brewer.***

4. Install water filter cartridge (if so equipped). Check that the water tank drain valve is shut.

   A. On filter head, shut the internal valve off by moving the lever fully counter clockwise. (Refer to Figure 1.1)
   B. On cartridge, write the date & current machine vend count on label in specified box.
   C. Locate the two opposing ears on the top metal section of the cartridge. Hold and position cartridge under the filter head and align one of these ears between the label on filter head. Insert the cartridge straight up as far as it will go. You should feel the two "O" rings snapping into place. Upon feeling this, turn the cartridge to the right turn until it stops (approx. 1/4 turn).

♦ IMPORTANT! WHEN REMOVING OR REPLACING WATER FILTER CARTRIDGE SEE PAGE 4.09 IN SERVICE SECTION.

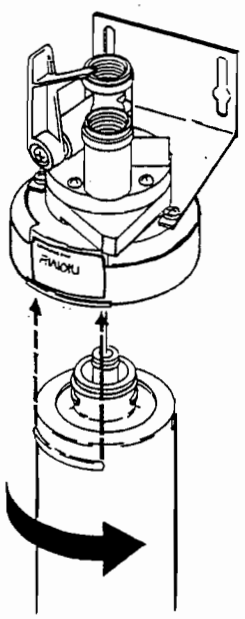


FIGURE 1.1

FEATURES OF API 211E HOT DRINK MERCHANDISER

FEATURES

STANDARD FEATURES

- USE YOUR OWN CUP option
- Protocol A (Executive) capability for coin mech
- L+ Coin Mech Capability
- Multi-Vend Option
- MDB Interface

SELECTION SYSTEM

- Four coffee selections, whipped or unwhipped
- Four strong coffee or Cafe Mocha
- Four espresso or tea selections
- Soup or Cappuccino
- Whipped chocolate
- Four Cold Drink Selections (Cold Unit Optional)
- Easy to understand numeric keypad for selections.
- Easy to change selection labels.

PRICING

- All selections individually priced.
- Free vend feature.
- On-board accountability that includes meters for: vend counter, cash total, free vend counter, and counter for each selection.
- Discount available for customers who "Use Your Own Cup"

OPTIONS

- Cold Drink Booth Unit
- Whipped soluble gourmet coffee (SGC)
- Fresh brewed tea
- Carafe key switch
- Free vend timer

MODELS AND CAPACITIES

CUP CAPACITY: 690 (180ml)

Ingredient:		LG Capacities kgs.	FD Capacities kgs.
Regular Ground Coffe		4.0	-
Freeze Dried Coffee		-	1.4
Tea	Leaf-Fresh brewed	1.1	1.1
	or Instant	0.7	0.7
Sugar		1.8	1.8
Whitener		1.8	1.8
Chocolate		5.4	5.4
Soup		2.3	2.3

Most canisters are expandable to match inventory to usage.

SPECIFICATIONS

DIMENSIONS:

Height: 1829mm	(72 inches)
Depth: 737mm	(29 inches)
Width: 737mm	(29 inches)

ELECTRICAL AND WATER REQUIREMENTS:

Electrical: 220-240 Volts; 50 Hz; 13 Amps

Water: Potable cold water, 1.4 Bar (20psi) minimum

SHIPPING WEIGHT

Freeze-dried	164 Kg (360 lbs.)
Loose ground	182 Kg (400 lbs.)

5. Remove shipping screw and nut from base of cup dispenser and remove screw from the cup dispenser latch at the top left side of the shadowbox.

6. Connect the vendor to the water supply line using 3/8" O.D. soft copper tubing (or similar plastic tubing) allowing one complete coil, approximately three feet in diameter, between the water supply line and vendor. This will allow movement of the vendor for cleaning and reduce noise due to water pressure surges.

7. Plug machine into a 220Vac 15A **DEDICATED** receptacle. Install bypass key into door interlock switch. Set all switches to the on position. Check that the tank starts to fill and that there are no leaks.

♦ DO NOT LIFT THE FLOAT ROD OR SWITCH WHILE THE TANK IS FILLING. THIS WILL SIGNAL THE HEATER CIRCUIT THAT THE TANK IS FULL AND THE HEATER WILL BE TURNED ON REGARDLESS OF THE LEVEL OF WATER IN THE TANK.

8. Remove the packing block from the coin return button.

9. Remove packing tie downs holding the humidity bar.

10. Loosen the two screws holding the brewer grounds splash guard on the front of brewer. The shield is designed to be able to swing a little as the spent grounds fall against it.

11. Install grounds bucket liner (supplied). Install grounds bucket behind front flange of rear splash guard. Be sure that the float is inside the bucket.

12. Install overflow bucket against guide on lower left corner of machine. Be sure that the float and overflow hose(s) are inside the bucket.

13. Fill canisters and hoppers with product.

14. If machine is equipped with a Cold Drink Booth Unit please refer to the Installation and Service Supplement contained in the machines manual packet.

15. Open cup dispenser door and load with cups.

16. Remove power and install correct coin mechanism. See page 2.02 for list of correct coin mechanisms. Connect all harnesses and restore power.

17. Lift latch at top of cup cabinet and swing cup cabinet open. Install selection labels through slots on right edge of menu panel. Specific positions for each label are not assigned, however normal practice places the selections alphabetically by selection from top to bottom. The top position is normally reserved for Automatic Products label. Labels required differ in each configuration - see configuration chart for your model.

18. Access the service mode and set prices for all selections. See page 2.05 for specific instructions on setting prices.

♦ SETTING PRICES TO 00 WILL SET A SELECTION TO FREE VEND.

♦ SETTING A PRICE ABOVE 99.95 OR BELOW 00 WILL DISABLE A SELECTION AND CAUSE A "d" TO APPEAR IN THE LED DISPLAY. WHEN THE SELECTION IS PRESSED THE "MAKE OTHER SELECTION" LED WILL LIGHT. THIS IS USEFUL FOR BLOCKING UNUSED SELECTIONS OR DISABLING A SELECTION WHEN IT IS OUT OF ORDER.

19. Access the service mode and set the ingredient times, configuration, and cup sensor function. See page 2.06 for specific instructions on how to set ingredient settings. Factory settings should be regarded as approximations, and we recommend that all ingredient throws be checked with a gram scale, because of variations in product and taste.

BREW WATER ADJUSTMENTS

♦ ***Setting the amount of water for brewed coffee selections is done by adjusting the duration (button #) of channel 1. If a soft water condition exists, then the addition of a separate add-water switch kit may be necessary. DO NOT ATTEMPT TO ADJUST THE FRONT CAM TO CHANGE THE AMOUNT OF BREW WATER!***

The method used to allow all of the brew water to be delivered directly into the brewer, is the addition of a relay, the **B**rewer **F**ill **R**elay (BFR), to the left side of the brewer. The coil of this relay is energized when the brewer valve has power applied to it via channel 1. The duration of channel 1 directly controls the length of time that the valve is open and delivering water into the brewer. The contacts of the BFR interrupt the voltage to the brewer motor to hold the brewer in the open position until all the required brew water is delivered. After all the water is in the brew cylinder, the BFR restores voltage to the brewer motor and it completes the cycle.

◆ PROCEED WITH THE FOLLOWING SET OF INSTRUCTIONS IF YOUR MACHINE IS EQUIPPED WITH A BOOTH COLD DRINK UNIT

20. Remove top cover to the booth unit. Fill Booth bath unit with **COLD WATER** until it flows from the overflow

◆ **IMPORTANT!** HOT WATER FROM THE WATER TANK WILL SERIOUSLY DAMAGE THE BOOTH UNIT AND MUST NOT BE USED.

21. A CO2 gas bottle is required, 3.5 or 7kg size is recommended, set at 3.4 bar (50 psi). Turn on CO2 gas and actuate the relief valve situated on top of the carbonator chamber for 3 to 5 seconds (This may be fitted to the front on certain types of modules).

22. Turn on the external water supply to the module. Ensure that the waste bucket is under the dispense nozzle. Switch on the electrical supply and dispense water from each of the still water dispense valves until water flows smoothly from the dispense nozzles and release.

◆ **IMPORTANT!** CONTINUOUSLY DRY RUNNING THE WATER PUMP CAN CAUSE DAMAGE TO THE SEALS.

23. Ensure that the CO2 regulator gauge reads 50 psi / 3.4 bar. The water fill pump will continuously fill the carbonator and stop automatically. Replace all connectors removed for testing and setting-up.
Place the syrup dip tubes or bag in the box connectors into the product containers being sure to put the correct flavors to the selections on the machine's selection panel. Prime all pumps by vending carbonated and still selections as required until all syrups are primed through to the dispense nozzle and flowing smoothly.

◆ **IMPORTANT!** IT IS ESSENTIAL THAT DRINK MANUFACTURERS PRODUCTS ARE SET TO THE CORRECT RATIO BY USING A BRIX CUP OR OTHER SUITABLE MEASURING DEVICE.

24. The Brix cup has been designed to make the correct setting of drinks both simple and foolproof. It is the only method recommended by APi.

25. Remove the dispense nozzle assembly from its mounting position. Slide out the water tube using a twisting motion. Position the Brix cup underneath the nozzle so that water goes into the large central vessel and syrup goes into one of the smaller side vessels according to the product being used.

26. Adjust the amount of carbonated water to give the proper drink size required through the machine's programming. Adjust the syrup throw by loosening the locknut and moving the adjusting screw located on the syrup pump.

ADJUSTING COMMODITY AND LIQUID AMOUNTS

Entering the service mode provides access to the channels which control the dispense times of all ingredients. The dispense time of each commodity and it's sequence in the vend cycle is controlled by the microprocessor. Precise time adjustments determine the exact amount of ingredients dispensed. This exact time sequence ability enables accuracy to 1/100 of a second.

Each channel (numbered 00 through 23) contains two separate settings within each channel. The settings are accessed by pressing the number one selection key followed by pressing keys number two or three. The two settings are START and DURATION. Each of these settings can be adjusted by increasing or decreasing the digits shown on the display by pressing the increment digit (#) or the decrement digit (*) buttons.

The START time of each channel indicates the time each function or commodity begins within each vend cycle. All times are permanently stored to guarantee the correct sequence of operation.

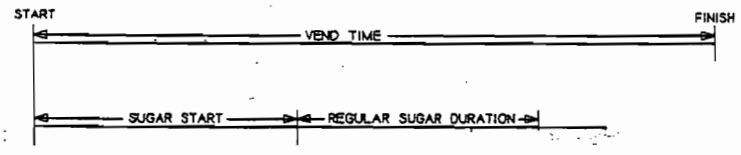
The DURATION determines the length of time within the vend cycle that each channel will operate. The amount of ingredient for a selection is controlled by adjusting the duration. After confirming that the duration for liquids are set correctly, cup levels should be set by adjusting the flow restrictor on the commodity valves (except the coffee brew valve).

It is important to remember all channel time changes (start / duration times) are automatically entered when exiting that specific channel.

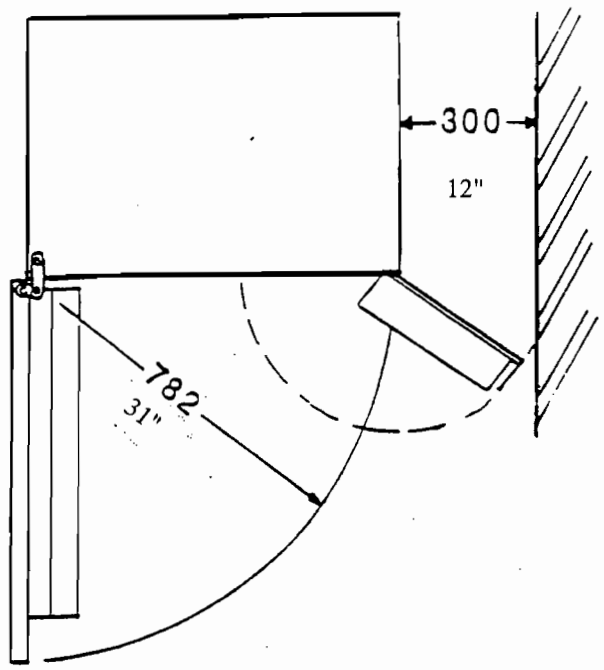
◆ Once the durations for the additives (lightener, sugar, and sugar substitute) have been set correctly for the brewed coffee channels, these duration times can be duplicated and entered into the channels for freeze dried product and tea selections to simplify the set up procedure.

◆ Certain channels may be used in different recipes to control different functions. Confirm that you are using the correct recipe list for your machine. Refer to page 3.01 for further information regarding configurations and charts.

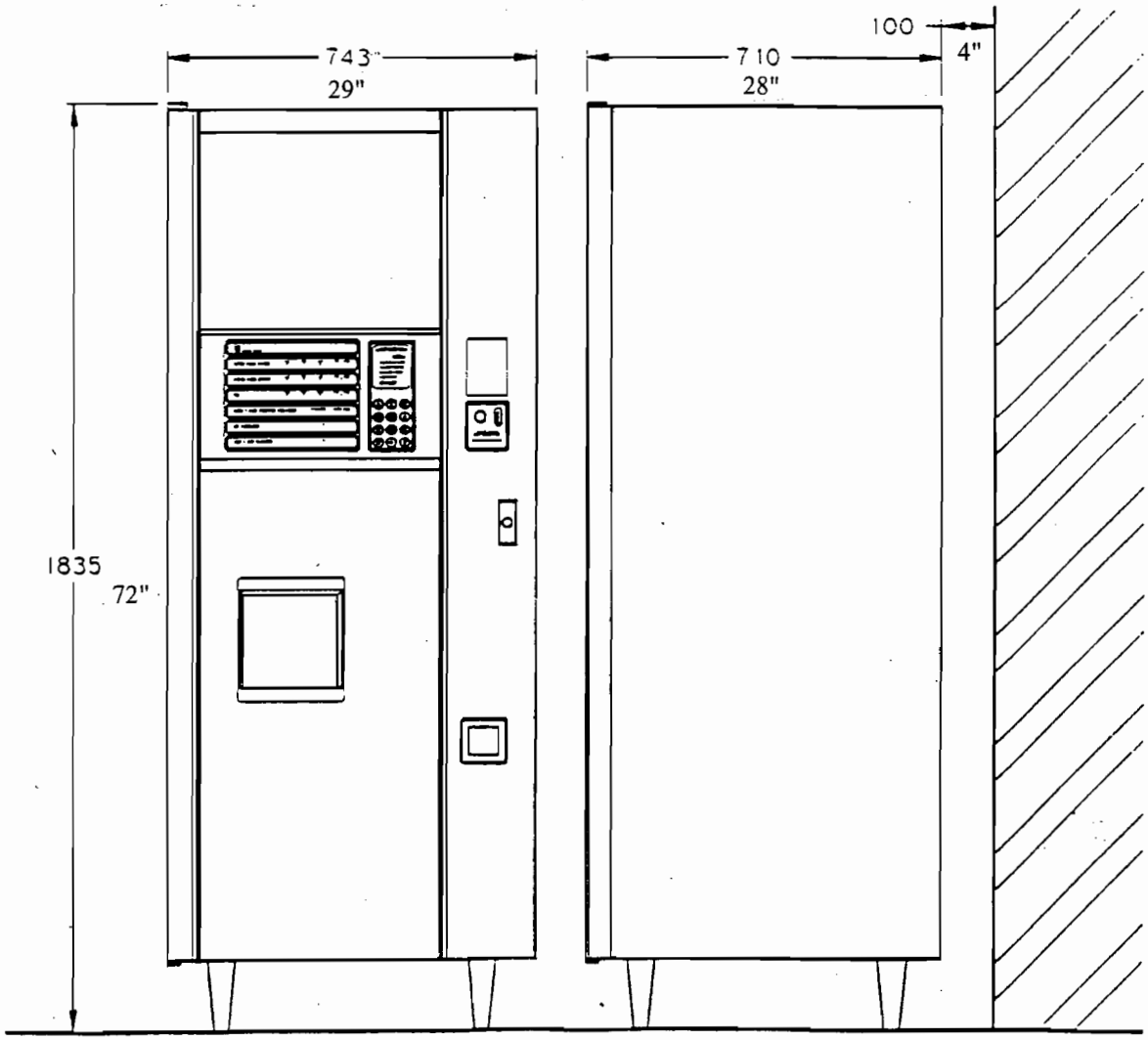
VEND CYCLE TIME LINE



MACHINE DIMENSIONS AND SPACE REQUIREMENTS



CLEARANCE REQUIRED FOR FRESH BREWED MACHINES ONLY



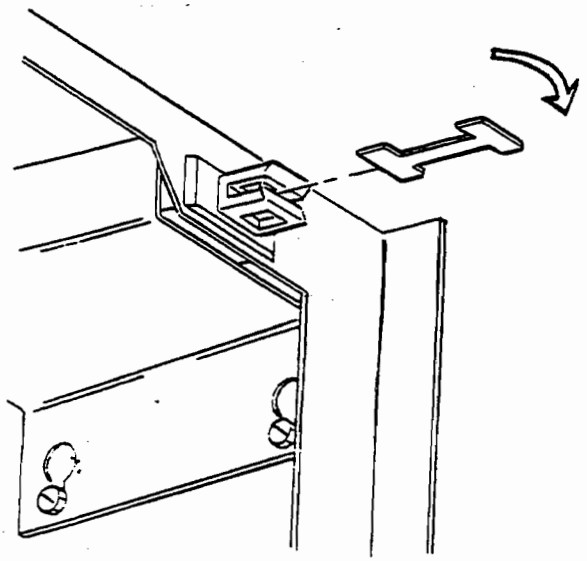
OPERATING SYSTEM

INTRODUCTION

The control system in the AP211E is comprised of two basic components: the Master Module and the relay board. The Master Module is located in the door and can be removed easily. The relay board is mounted on the rear wall of the cabinet directly above the canister rack. The two boards communicate via a 12 wire interconnect harness, which runs through the junction box, located in the upper left front corner of the cabinet, next to the door hinge.

POWER REQUIREMENTS & SUPPLY

The control system operates on 12 and 24Vac supplied to the logic board via the junction box. All the motors, inlet and outlet valves, exhaust system components and lamps operate on 105Vac. All of these reduced voltages are supplied by a large power transformer mounted on the rear wall of the cabinet, just below the canister rack. The only components in the machine that operate on the 220-240Vac supplied from the mains is the water tank heater element and the transformer primary. All power coming into the machine from the mains is routed through a dual pole door interlock switch, located in the top right corner of the cabinet.



DOOR INTERLOCK SWITCH & KEY

USE OF THE INTERLOCK KEY ENERGIZES THE MACHINE. THIS SHOULD BE DONE ONLY BY PROPERLY TRAINED PERSONNEL.

MASTER MODULE

The Master Module is comprised of the logic board, the keypad selection panel, the LED indicators and a four digit display to communicate with customers. If utilizing the Multi Drop Bus option, the control board must be P/N 37628 which can be identified by a large round shape capacitor that protrudes through the board cover. If the machine is equipped with fresh brew tea the master module will contain a solid state relay that controls the cycling of the tea brewer motor. In newer units this relay has been relocated to the shadow box panel. The master module is located on the door adjoining the left hand jamb of the shadow box and is accessed by swinging out the cup cabinet. The selector keypad portion of the module is mounted through a opening in the menu panel. The master module can be removed from the door by loosening four fasteners.

The logic board contains three switches which control the access to the service mode and payout of coins when using an L+ coin mech (see Figure 2.1). These switches can be accessed through an opening inside the cup cabinet. Pressing the mode switch once allows access to the Service Mode. The Service Mode controls four functions: price setting accountability, test vend, and access to the channels which control the dispense times of all ingredients. When using the L+ coin mech, pressing the top switch will payout nickels, pressing the middle switch will payout dimes, and pressing both of these switches together will allow quarters to be paid out.

The logic board contains the electronic components which control the functions of the machine during a vend. The information required to operate the machine during a vend is permanently stored by a device which combines a micro-processor and OTPROM (One Time Programmable Read Only Memory). The dispense time of each commodity and its sequence in the vend cycle is controlled by the micro-processor. Precise time adjustments determine the exact amount of ingredients dispensed. This exact time sequence ability enables accuracy to 1/10 of a second. These times are permanently stored on the board and do not require a battery to retain them even if power is removed from the machine.

Price setting is done by entering the service mode and pressing the selection whose price is being set. This will cause the current price to be displayed on the master module's display. The price can then be increased or decreased by pressing the # or * buttons respectively. See page 2.05 for specific information regarding price setting.

The channels numbered 01 through 23 control the ingredient settings, configuration, cup discount %, function of the cup sensor , multivend option and cold water shot option. Each channel has two separate settings within each channel. Channels are accessed by pressing the mode switch once, pressing button ❶ will step up through each channel in sequence. Channels 01 through 14 have two settings which are referred to as **START** and **DURATION.** Channels 15 through 23 each control specific functions according to the configuration of the machine. The channel settings are accessed by pressing button ❷ **(START)** or button ❸ **(DURATION)** on the selection keypad. Each of these settings can be adjusted by increasing or decreasing the digits shown on the master module display by pressing the increase digit (# button) or the decrease digit (* button - see Figure 2.2). The function of each channel is determined by the configuration of the machine. The configuration of the machine is set in channel 16 button ❸. See Chart 2.1 for additional information.

The **START** time of each channel indicates the exact time each function or commodity begins in each vend cycle. Each vend cycle starts at 0.0 upon pressing a selection. All times are permanently stored to guarantee the correct sequence of operation.

The **DURATION** determines the length of time within the vend cycle that each channel will operate. The amount of ingredient for a selection is controlled by adjusting the duration. After confirming that the duration for product and liquids are set correctly, cup levels should be set by adjusting the flow restrictor on the commodity valves.

- **The settings in the channels for ingredients should be regarded as approximations and we recommend that all ingredient throws be checked with a gram scale.**

CUSTOMER INFORMATION MESSAGES

The front side of the logic board has five LEDs and a four digit display positioned so that they are aligned with five customer information messages through windows on the master module label - see page 2.04. These five messages are:

CHECK PRICE	This LED will light for two seconds when a selection is made, but insufficient credit has been established. The correct vend price will also be displayed.
USE EXACT CHANGE	This LED will light when the coin mech signals the logic board that an insufficient number of coins are available for payback.
MAKE ALTERNATE SELECTION	This LED will blink for two seconds when a disabled selection, a non existent selection or a selection with a defective motor is chosen.
COFFEE BREWING	This LED will light when a hot drink vend is in progress.
COFFEE MACHINE "OUT OF SERVICE"	This LED will light when the coffee machine is in an Out of Order condition caused by a full waste ***and/or grounds buckets***, a low water condition in the heater tank or the absence of cupsin the cup cabinet.

Directly above the LEDs is a four digit display that will show both numbers and letters to correspond to all available selections and will display both prices and amount of any money deposited. On power up, all LEDs and all segments of the displays will be illuminated for 2 seconds indicating logic board is initializing and scanning peripherals.

ALPHA-NUMERIC SELECTION KEYPAD

The alpha-numeric keypad selection panel consists of the letters A,B,C and D and numbers 1 through 6 and additional keys marked # and ✱, see page 2.04. All selections are made with a letter/number combination (example A1,B3 etc.) and the # and ✱ buttons are used to add extra lightener and/or extra sugar respectively to a vend. The buttons also have additional functions within the service mode; for time setting for ingredients, the # button will increase the displayed number in .1 second increments, the ✱ button will decrease a displayed number by the same increment; for price setting # and ✱ will increase or decrease the price in 1 monetary unit increments.

- Pressing ❺ and ❻ will increase and decrease the price by units of 10 monetary units.

TEST VEND

An additional function included in the service mode, is the control system allows button ❹ to deliver a test vend **WITHOUT A CUP OR EXTRAS.** This returns you to the service mode after the test vend and can be used while setting up the ingredient throws.

- PRESSING ❹ WILL PROVIDE A **TEST VEND WITH OUT** A CUP OR EXTRA CREME OR SUGAR.

ACCOUNTABILITY

Accountability for a Universal Control board with international version software is internally contained in the nonvolatile memory on the logic board. This function was previously supported by external meters. This internal accountability now supports as individual readings: total vends, total cash, total vends for each selection, and total free vends in non-resettable electronic counters. Steps for retrieving accountability information can be found on page 2.07

CUP DISCOUNT PERCENTAGE SETTING

The Universal Control Board also provides a means to set a price reduction referred to as a cup sensor discount. The cup sensor discount provides a method to reward a customer for using their own cup or mug. This cup sensor discount is expressed as a percentage of the total vend price. This percentage is entered as a three digit number in Channel 18, ❷ . A machine with a cup sensor discount set to 00% would provide the customer with no discount for using their own cup, while one set to 100% would provide a free vend if a customer used their own cup. The steps for setting the cup sensor discount can be found on page 2.07.

RELAY BOARD

The relay board is mounted on the rear wall of the cabinet directly above the canister rack. This relay board converts the logic level information supplied by the logic board's 23 channels into activation of one or more of the eleven 105Vac output lines to produce a properly timed hot drink vend. The relay board also contains the logic level connections for the cup sensor, Vend Enable Relay, and free vend/carafe switch.

VEND ENABLE RELAY

The Vend Enable Relay (VER) is located directly below the relay board on the rear wall of the cabinet. The purpose of this relay is to provide an interface between the 105V circuit which runs through the sold out circuit (waste buckets, cup sold-out and heater safety/water level) and the logic level vend enable circuit. The coil of the relay is the input from the sold out circuit and when the switch of the relay is closed, the vend enable circuit is completed.

FREE VEND

Free vend for the entire machine is provided by a two wire harness located adjacent to the VER. These two wires are connected to a pushbutton switch mounted next to the VER. These two wires could also be connected to an external key switch or a timer assembly to further control the free vend function. If this switch is locked down by swinging the metal cover over the switch, the machine will be on continuous free vend.

THE FREE VEND FUNCTION IS CREATED BY A CLOSED CIRCUIT. DO NOT APPLY VOLTAGE TO THIS CONNECTOR!

- IF THE MACHINE IS EQUIPPED WITH A PROTOCOL A (EXECUTIVE) COIN MECH HARNESS, **AND** A COIN MECH IS **NOT** INSTALLED, THE COIN MECH HARNESS MUST BE DISCONNECTED FROM THE LOGIC BOARD TO ALLOW THE FREE VEND FUNCTION TO OPERATE

MULTI-VEND OPTION

Multivend allows Multiple-vends, credit permitting without paying back change between vends. To enable the multi-vend option, set channel 22, button #❸, to a non-zero value (00.1). To disable the multi-vend option, set channel 22, button #❸, for zero (00.0).

COLD WATER SHOT (Optional)

A one ounce shot of cold water is dispensed into a hot drink to lower the temperature. An additional valve is connected to the water inlet assembly. The cold water shot is controlled through the logic control board and a solid state relay via channel 23 in the program.

- If cold water shot is added to the machine, all water channels must be adjusted to compensate for the extra volume of water supplied to each product.

CARAFE KEY OPTION

An option available on the AP211E is an externally mounted miniature key switch. This key switch acts as a carafe or jug switch that permits vending of a continuous number of the same vends. The carafe key is typically mounted in a panel directly above the coin insert area and is a normally open switch. For example, turning on the carafe key and pressing 4, followed by selection **A1** would vend four vends of black coffee. These vends will not be counted in the normal vend counter.

COIN MECHANISM

This machine requires the use of one of the following coin mechanisms:

PROTOCOL A

MARS (MDB)	MEI6510
MARS (MDB)	MEI4510
MARS	MEI1900
MARS (Micromech)	MEI6010XV
MARS (Micromech)	MEI4010XV
CoinCo (Micromech)	9302LF
CoinCo (Micromech)	USD-L701
CoinCO (MDB)	9302-GX
NRI	G26 Simplex 5

The control system also supports the CoinCo L+ protocol (controller type) and uses the payout switches on the control board to empty the coin tubes.

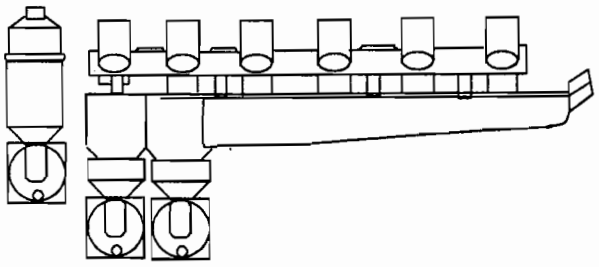
EXITING THE SERVICE MODE

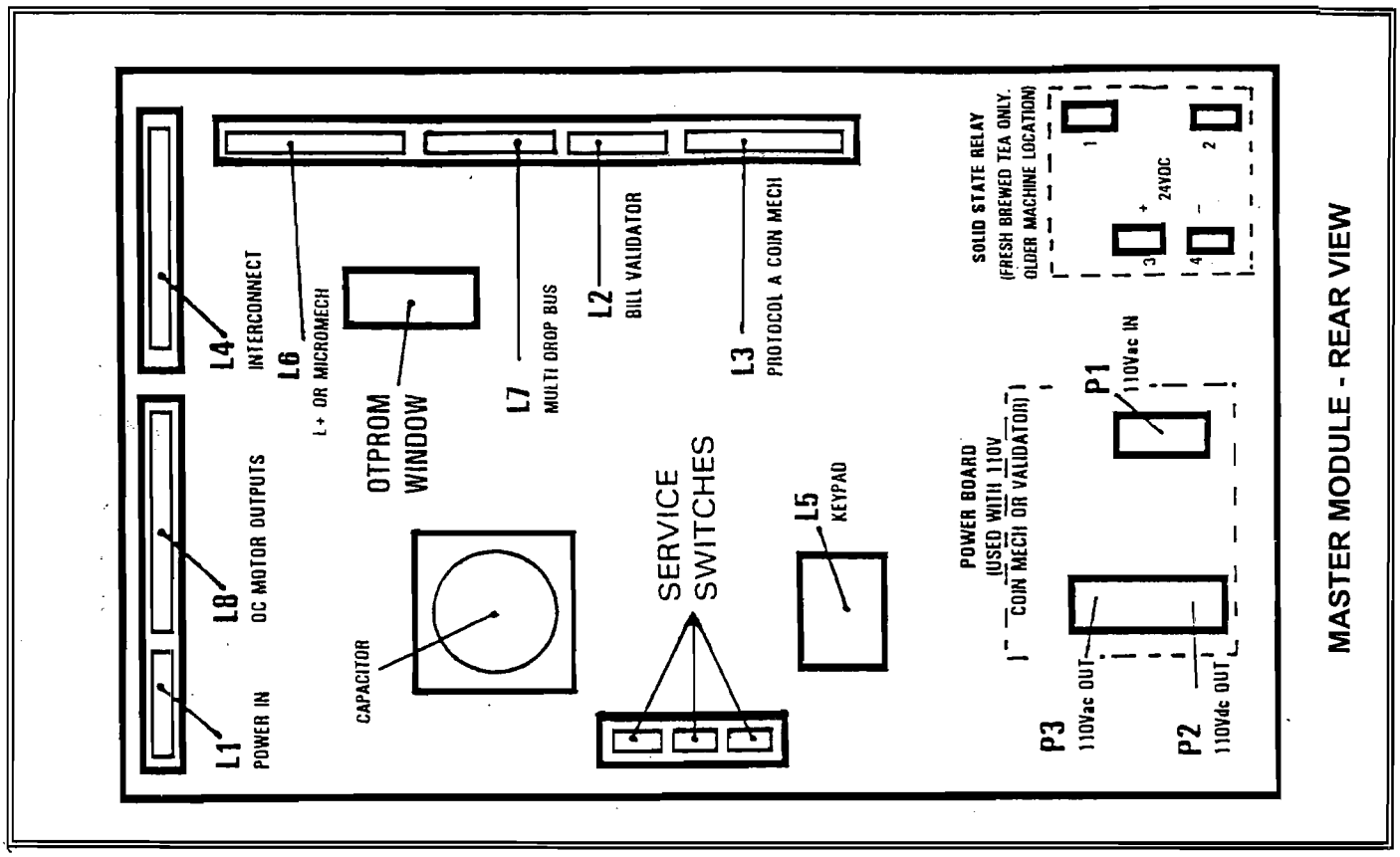
The service mode can be exited at any time by one of the following:

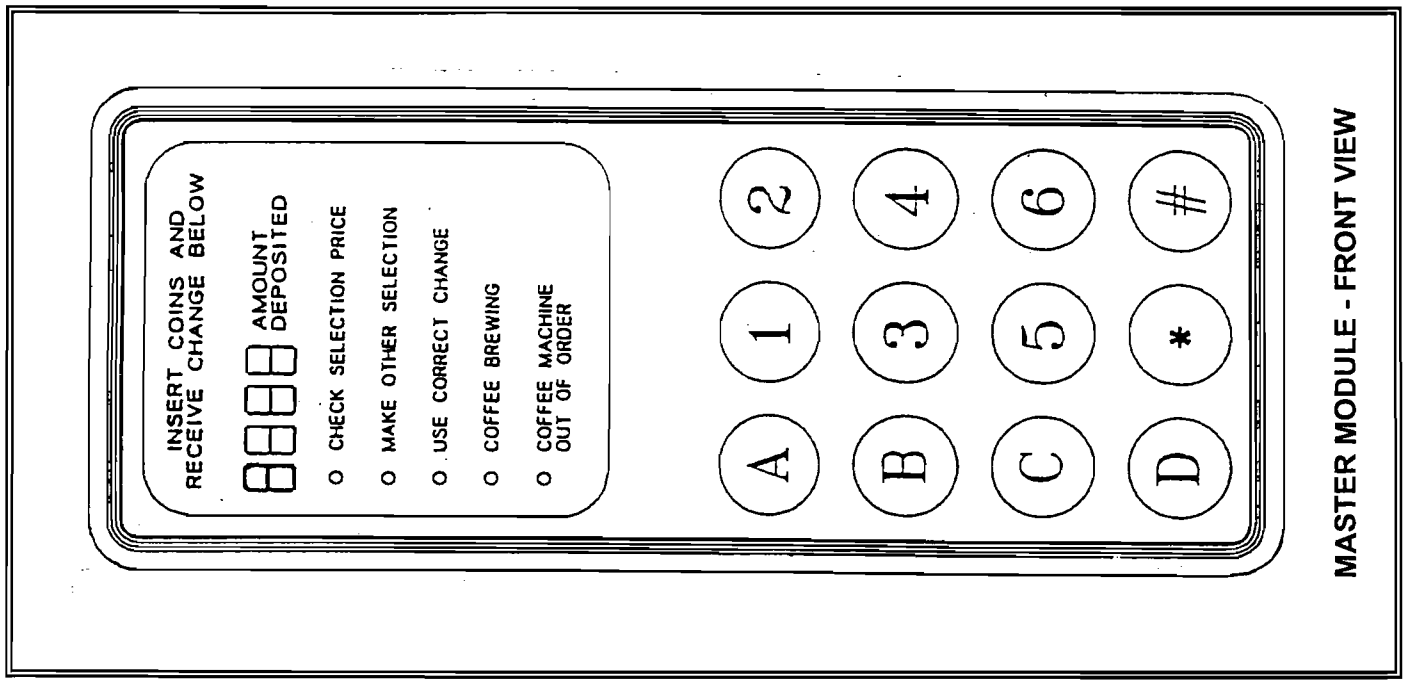
Depress **mode** switch once.
Remove and reapply power to machine or control board.
Leave the machine for 25 seconds without depressing any switches.

DEFINITION OF CANISTER RACK TROUGH LAYOUTS

The canister rack configurations are designated by a number that represents the number of mixing bowls or troughs, and the number of canisters in each section, reading the rack from left to right. An example would be a standard canister rack, from left to right: chocolate, soup, sugar, creme, sugar sub, soluble Decaf and tea. This would be represented as 1-1-5. The chocolate and soup each have their own mixing bowl, while the balance of the canisters are mixed along with the fresh brewed coffee in a common mixing channel. See figure below..
For additional canister rack configurations, see the index chart on page 3.01. This will also direct you to the correct configuration chart, recipes, label assignments and canister assignments.




L1
POWER IN
L8
DC MOTOR OUTPUTS
L4
INTERCONNECT
L6
L+ OR MICROMECH
OTPROM WINDOW
L7
MULTI DROP BUS
L2
BILL VALIDATOR
L3
PROTOCOL A COIN MECH
CAPACITOR
SERVICE SWITCHES
L5
KEYPAD
POWER BOARD
(USED WITH 110V COIN MECH OR VALIDATOR)
P3
110Vac OUT
P2
110Vac OUT
P1
110Vac IN
SOLID STATE RELAY
(FRESH BREWED TEA ONLY. OLDER MACHINE LOCATION)
24VDC
MASTER MODULE - REAR VIEW


INSERT COINS AND RECEIVE CHANGE BELOW
AMOUNT DEPOSITED
CHECK SELECTION PRICE
MAKE OTHER SELECTION
USE CORRECT CHANGE
COFFEE BREWING
COFFEE MACHINE OUT OF ORDER
A 1 2
B 3 4
C 5 6
D * #
MASTER MODULE - FRONT VIEW

SET PRICE AND CHECK PRICE

CAUTION: **THE FOLLOWING PROCEDURE REQUIRES THAT THE MACHINE HAVE POWER APPLIED AND A POTENTIAL**

1. Enter the service mode by pressing the mode switch on the control board once. Display will be blank.

2. Depress the desired selection (example A1), and the current price for that selection will appear on the display. This is the 'CHECK PRICE' function. Maximum price available is 99.95. Minimum price is 00. Scaling factor, actual value of coins required and position of decimal point are determined by the coin mechanism. If a "d" appears, then the selection is disabled.

♦ WHEN A SELECTION PRICE IS SET FOR ZERO, THE SELECTION WILL VEND FOR FREE.

3. To **increase** the current price, press and hold the "#" button until the desired price is reached.

   To **decrease** the current price, press and hold the "✱" button until the desired price is reached.
   To change a selection from disabled to active, increase or decrease the price until the desired price is obtained.

   To lock (enter) a price that has been changed, press ❶, ❷, ❸ or ❹ button or choose another selection.

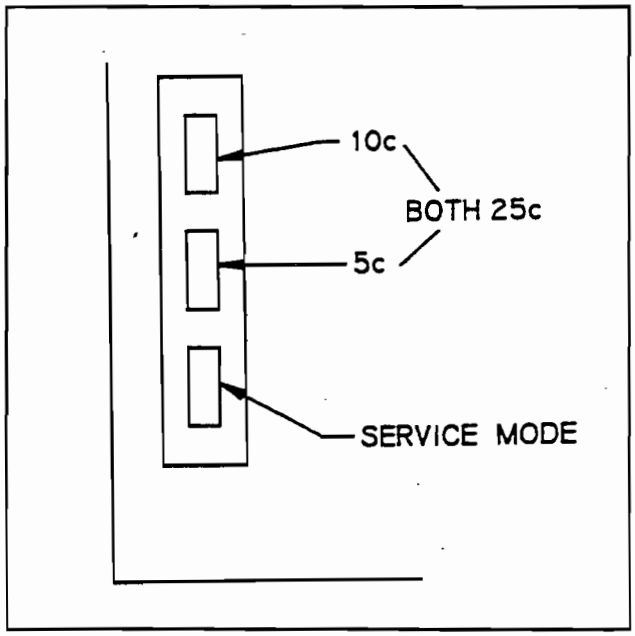
4. **SINGLE TEST VEND** - Enter the service mode by pressing the mode switch on the control board once. Display will be blank. Press ❹ and "- - - -" ✱ will be displayed. Enter the desired selection and the vend will begin regardless of the machine's status.

♦ PRESSING ❹ WILL PROVIDE A **TEST VEND WITHOUT** A CUP, EXTRA CREME, OR SUGAR.

♦ PRESSING ❹ WILL PROVIDE A TEST VEND WITH OUT A CUP OR EXTRA CREME OR SUGAR.

♦ SETTING A PRICE ABOVE 9995 OR BELOW 00 WILL DISABLE A SELECTION AND CAUSE A "d" TO APPEAR IN THE LED DISPLAY. WHEN THE SELECTION IS PRESSED THE **"MAKE OTHER SELECTION"** LED WILL LIGHT. THIS IS USEFUL FOR BLOCKING UNUSED SELECTIONS OR DISABLING A SELECTION WHEN IT IS OUT OF ORDER.

* For Version 2 board, an "F" will be displayed.



CONTROL BOARD SWITCH FUNCTIONS
FIGURE 2.1

SET TIME CHANNELS

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

1. Enter the service mode by pressing the mode switch on the control board once. Display will be blank.

2.♦ Review the configuration sheets starting on page 3.02 and find the timing chart with the selection panel and canister rack that matches your machine.

3. Access the desired channel by pressing button ❶. Pressing button ❶ repeatedly will increase the channel number shown in the LED display. See chart for definition of channels for appropriate models.

4. For channels 1 through 14, pressing button ❷ will display the **START** time for each specific channel. Pressing button ❸ will display the **DURATION** for each specific channel. Changing the duration will change the gram throw or amount of water for each channel. See accompanying charts for the specific function of the channels by model and/or configuration.

5. To increase the current time for either **START** or **DURATION**, press and hold the **#** button until the desired time is reached.
   To decrease the current time, press and hold the * button until the desired time is reached.
   To lock (enter) a time that has been changed, press ❶ , ❷ , ❸ or ❹ button.

♦ PRESSING BUTTON ❶ WILL ESTABLISH A TEST VEND (WITH NO CUP DELIVERED) AND ENTER ANY CHANGES TO A **START** OR **DURATION** TIME - THIS ALSO LEAVES THE MACHINE'S CONTROL SYSTEM IN THE SERVICE MODE WHICH ALLOWS YOU TO RETURN TO CHANNEL 1 WITHOUT PRESSING THE MODE SWITCH.

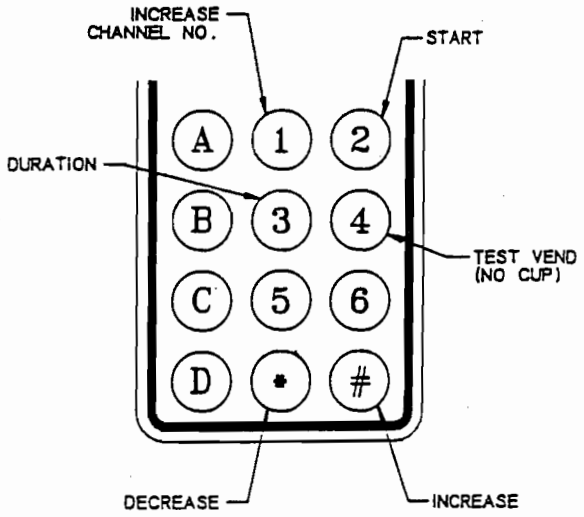
6. For channels 15 through 23† the ❷ and ❸ button set specific functions as defined in the chart below.

7. Machine configuration Channel 16 - button ❸ must be set correctly in order for the logic board to recognize which machine setup it will operate.

♦ CHANNELS 18-23 PRESENT ONLY IN UNIVERSAL MDB CONTROL BOARD W/SOFTWARE IV1.0.9 (PINK LABEL) OR HIGHER VERSION WITH A DASH NUMBER.

♦ CHANNELS 18-21 PRESENT ONLY IN UNIVERSAL BOARD W/SOFTWARE IV3.0.4 (YELLOW LABEL).

SELECTION PANEL



FUNCTION OF SELECTION SWITCHES IN SERVICE MODE
FIGURE 2.2

CHART 2.1
FUNCTIONS FOR CHANNELS 15 through 23

CHANNEL	BUTTON 2 FUNCTION	BUTTON 3 FUNCTION
15	COFFEE EXTRA LIGHTENER DURATION	EXTRA SUGAR DURATION
16	TEA EXTRA LIGHTENER DURATION	**MACHINE CONFIGURATION** 00.0 FD, LG WITH CAFE MOCHA 00.1 FD, LG (STANDARD) 00.1 FBC/ FDC, LG, LGT, 2 SGC (Soluble Gourmet Cof.) 00.2 FD, LG ESPRESSO / 5SGC (Soluble Gourmet Cof.) 00.3 FDD, LGD, FDT, LGT 00.4 FDDS, LGDS
17	**CUP DROP PULSE DURATION** STANDARD SETTING = 1.4	**CUP SENSOR CONFIGURATION** 00.0 STANDARD-WILL DELIVER CUP EVERY VEND 00.1 CUP SENSOR INSTALLED, WILL NOT VEND UNLESS CUP IS PRESENT
18	CUP DISCOUNT %	ESPRESSO WATER % (CONFIGURATION 0.2 ONLY)
19	CAFE MOCHA COFFEE WATER DURATION	CAFE MOCHA COFFEE AUGER DURATION
20	CAFE MOCHA CHOCOLATE START TIME	CAFE MOCHA CHOCOLATE AUGER DURATION
21	CAFE MOCHA CHOCOLATE START TIME	CAFE MOCHA CHOCOLATE WATER DURATION
22	CARAFE MODE 0.0=OFF 1.0=ON (Export Only)	MULTIVEND OPTION
23	COLD WATER SHOT START PULSE	COLD WATER SHOT DURATION

† CHANNELS 18-23 PRESENT ONLY IN UNIVERSAL (VERSION 3) BOARD OR HIGHER.

ACCOUNTABILITY

Accountability is now internally contained in the nonvolatile memory on the logic board. This function was previously supported by 3 external meters. This internal accountability now supports as individual readings: total vends, total cash, total vends for each selection, and total free vends in nonresettable counters. The steps for obtaining this information are:

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

1. Press service switch one time.

2. **TOTAL CASH:** Press ❺ the display will alternately show the left four digits followed by the right four digits of the total cash accepted including a decimal point.
   EXAMPLE: Press ❺ - display shows 0000
   then display shows 03.40
   This would represent a total of 3.40 total cash accepted.

3. **TOTAL VENDS:** Press ❺ followed by the letter A followed by D. The display will show **Ad**, and then the display will show the total vends for all selections.
   EXAMPLE: Press ❺ then A followed by D
   Display shows **Ad**
   Display will show **0000**
   then display shows **0053**
   This would represent a total of 53 total vends.

4. **TOTAL # OF VENDS:** Press ❺ followed by a selection code and the total number of vends for that selection will be displayed.
   EXAMPLE: Press ❺ then **A1**
   Display will show **0025**
   This would represent a total of 25 vends of selection A1. Step 4 can be repeated as many times as required with other selections.

5. Press ❻ and display will indicate the total number of free or executive (carafe) key vends.
   EXAMPLE: Press ❻ display will show **0000**
   then display will show **0019**
   This would represent a total of 19 free vends.

NOTE: Counters for vends by selection are limited to 4 positions and will reset to 0000 after 9999.

CUP DISCOUNT PERCENTAGE SETTING

The new Universal Control Board will also provide a means to provide a price reduction referred to as a cup sensor discount. This cup sensor discount is expressed as a percentage of the total vend price. This percentage is entered as a three digit number in Channel 18, ❷ . A machine with a cup sensor discount set to 00% would provide the customer with no discount for using their own cup, while one set to 100% would provide a free vend if a customer used their own cup. For example a percentage of 3% (.03) will equal a 1p discount over a range of 17p to 49p. The steps for setting the cup sensor discount are:

1. Press service switch one time.
2. Press ❶ and hold; The display will show the ingredient setting channels starting with channel 0 and increasing as the ❶ is held.
3. Advance the display until channel 18 is shown.
4. Press ❷ and use the ✱ or # key until the required % is displayed.

   To lock (enter) a discount % that has been changed, press ❶, ❸ or ❹ button.

◆ SEE TABLE BELOW FOR SETTING THE CORRECT PERCENTAGE BASED UPON VEND PRICE IN USE.

TO USE DISCOUNT % TABLE: *locate all the vend prices you have in use in the machine. By referring to chart, pick the shaded area that includes all your prices. Enter the percentage at the top of that column into channel 18,* ❷

DISCOUNT PERCENTAGE TABLE

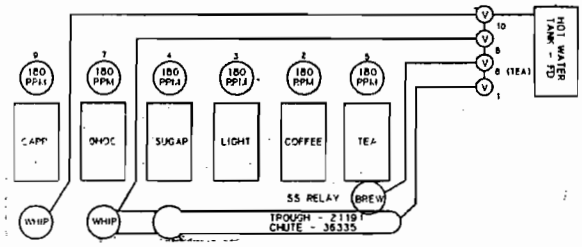
FOR 5¢ DISCOUNT PER CUP WHEN USING YOUR OWN CUP

PRICE	8%	9%	10%	12%	15%	17%
15¢	NO DISCOUNT					
20¢						
25¢						
30¢						
35¢						
40¢						
45¢						>10¢
50¢						

PRICE	8%	9%	10%	12%	15%	17
55¢						
60¢						
65¢						
70¢						
75¢						
80¢					10¢ OR GREATER	
85¢					DISCOUNT	
90¢						

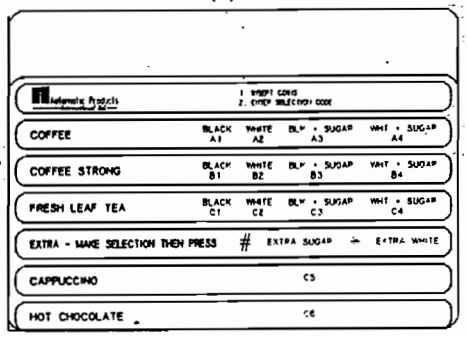
USING THE CONFIGURATION CHARTS

The pages included in Section 3 of this manual, starting with page 3.02, consist of configuration charts for each of the different arrangements available for this machine. Each configuration chart contains a drawing of the A) canister rack layout, B) the assignment of labels on the door, and C) a timing chart that displays the function and factory standard times of each of the channels in the machine. These charts will greatly assist in understanding and setting up your machine. Compare the canister rack (A) in your machine to the drawings on the configuration charts to identify which is yours. If you do not have all the canisters shown on the drawing, ignore the channels for those selections while setting up the machine.



SELECTION: COF/SG COF/CHOC/CAPP/FB TEA

(A)



(B)

CHANNEL NUMBER	TIMING CHART, 211FD EXPORT-MACHINE CONFIGURATION 00.1					
	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 2 LINE No.	KEY (BUTTON) NO. 2 VALUE	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 3 LINE No.	KEY (BUTTON) NO. 3 VALUE
0	LONG DELAY TIME	N/A	19.0 (SECONDS)	SHORT DELAY TIME	N/A	19.0 (SECONDS)
1	COFFEE WATER START	1	1.2 (SECONDS)	COFFEE WATER DURATION	1	7.3 (SECONDS)
2	COFFEE START	2	3.0 (SECONDS)	COFFEE DURATION	2	2.2 (SECONDS)
3	LIGHT START (COFFEE)	3	5.8 (SECONDS)	LIGHT DURATION (COFFEE)	3	0.8 (SECONDS)
4	SUGAR START (COFFEE)	4	5.4 (SECONDS)	SUGAR DURATION (COFFEE)	4	1.0 (SECONDS)
5	TEA START	5	2.0 (SECONDS)	TEA DURATION	5	1.0 (SECONDS)
6	TEA WATER START	6	0.7 (SECONDS)	TEA WATER DURATION	6	8.6 (SECONDS)
7	CHOCOLATE START	7	1.5 (SECONDS)	CHOC DURATION	7	1.0 (SECONDS)
8	CHOC WATER, WHIPPER START	8	0.0 (SECONDS)	CHOC WATER, WHIPPER DURATION	8	7.3 (SECONDS)
9	CAPPUCCINO START	9	1.5 (SECONDS)	CAPPUCCINO DURATION	9	4.4 (SECONDS)
10	CAPPUCCINO WATER, WHIPPER START	10	0.0 (SECONDS)	CAPPUCCINO WATER, WHIPPER DURATION	10	7.2 (SECONDS)
11	SUGAR START (TEA)	4	3.0 (SECONDS)	SUGAR DURATION (TEA)	4	0.8 (SECONDS)
12	STRONG COFFEE START	2	1.0 (SECONDS)	STRONG COFFEE DURATION	2	3.5 (SECONDS)
13	LIGHT START (TEA)	3	3.2 (SECONDS)	LIGHT DURATION (TEA)	3	0.8 (SECONDS)
14	TEA BREWER START	X	15.0 (SECONDS)	TEA BREWER DURATION	Y	2.8 (SECONDS)
15	EXTRA LIGHT DURATION (COFFEE)	3	0.2 (SECONDS)	EXTRA SUGAR DURATION	4	0.5 (SECONDS)
16	EXTRA TEA LIGHT DURATION	3	0.1 (SECONDS)	MACHINE CONFIGURATION CODE	N/A	0.1
17	CUP DROP DURATION	11	1.8 (SECONDS)	CUP SENSOR CONTROL	N/A	0.1
18	CUP DISCOUNT	N/A	00 (SECONDS)	ESPRESSO COFFEE WATER PERCENTAGE	1	70
19	CAFE MOCHA COFFEE WATER DURATION	1	3.9 (SECONDS)	CAFE MOCHA COFFEE AUGER DURATION	2	1.1 (SECONDS)
20	CAFE MOCHA CHOC AUGER START TIME	9	7.5 (SECONDS)	CAFE MOCHA CHOC AUGER DURATION	9	1.2
21	CAFE MOCHA CHOC WATER/WHIPPER START	10	8.5 (SECONDS)	CAFE MOCHA CHOC WATER/WHIPPER DURATION	10	2.4 (SECONDS)
22	CHUTE MODE 0.0=OFF/1.0=ON (EXPORT ONLY)	N/A	0.0 (SECONDS)	NOT USED	N/A	NOT USED
23	COLD WATER SHOT START PULSE	Y	1.7 (SECONDS)	COLD WATER SHOT DURATION	Y	1.7 (SECONDS)

(C)

All of the DURATION times in the configuration charts are settings for 8¼ oz cups. If 7oz cups are to be used, multiply the duration times on the chart by a scale down percentage of 85%.

Example: Sugar Duration Time 1.0 second for 8¼ oz cup
x .85 scale down % for 7 oz.
=0.85 seconds for 7 oz cup

Remember, factory standard times are a starting point and we always recommend that all ingredient throws be checked with a gram scale due to variations of product and customer preference.

INDEX FOR CONFIGURATION CHARTS 211E

INGREDIENT GRAM THROW SPECIFICATIONS

Examine your ingredient package for ingredient amounts. Use product manufacturers recommendations for ingredient throws. All gram throws above 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. The solution is to remove the louvers or replace the spout. Louvers must be removed when changing from "SANKA" to a no name FD coffee. 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.

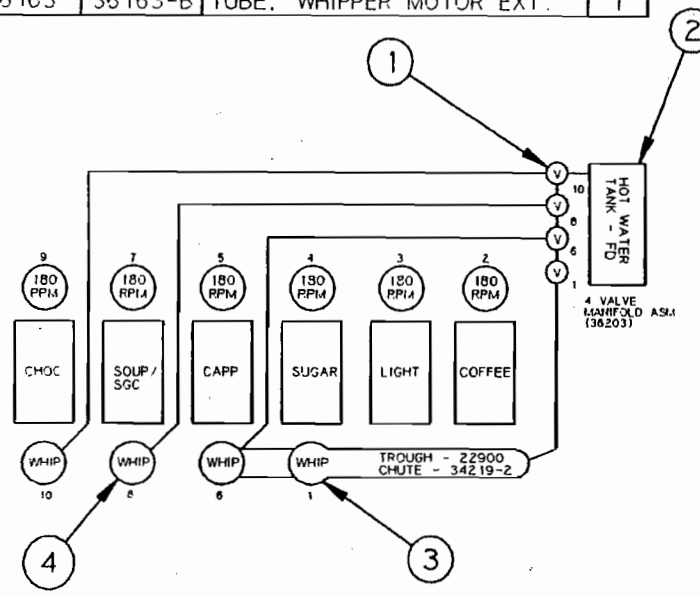
211 RECOMMENDED GRAM THROWS	7oz Cups	8¼ oz Cups
Coffee	7 - 7.5	8 - 8.5
Lightener	1.5 - 2	2 - 2.5
Sugar	5 - 5.5	6.5 - 7
FD Coffee	1.2	1.5
FD Tea	1.2	1.5
FB Tea	2.5	3 - 3.25
Soup	5 - 5.5	6 - 6.5
Chocolate	20 - 22	24 - 26
SGC	14 - 15	17 - 18

TIMING CHART, 211FD EXPORT-MACHINE CONFIGURATION 00.1

CHANNEL NUMBER	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 2 LINE No.	KEY (BUTTON) NO. 2 VALUE	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 3 LINE No.	KEY (BUTTON) NO. 3 VALUE
0	LONG DELAY TIME	N/A	12.0 (SECONDS)	SHORT DELAY TIME	N/A	12.0 (SECONDS)
1	COFFEE WATER START	1	1.2 (SECONDS)	COFFEE WATER DURATION	1	6.5 (SECONDS)
2	COFFEE START	2	3.0 (SECONDS)	COFFEE DURATION	2	1.7 (SECONDS)
3	LIGHT START (COFFEE)	3	5.6 (SECONDS)	LIGHT DURATION (COFFEE)	3	0.8 (SECONDS)
4	SUGAR START (COFFEE)	4	5.4 (SECONDS)	SUGAR DURATION (COFFEE)	4	1.0 (SECONDS)
5	CAPUCCINO START	5	1.5 (SECONDS)	CAPUCCINO DURATION	5	1.0 (SECONDS)
6	CAPUCCINO WATER START	6	0.0 (SECONDS)	CAPUCCINO WATER DURATION	6	6.1 (SECONDS)
7	SOUP/SGC AUGER START	7	1.5 (SECONDS)	SOUP/SGC AUGER DURATION	7	1.0/4.0 (SECONDS)
8	SOUP/SGC WATER, WHIPPER STAR	8	0.0 (SECONDS)	SOUP/SGC WATER, WHIPPER DURATIO	8	6.1 (SECONDS)
9	CHOCOLATE START	9	1.5 (SECONDS)	CHOCOLATE DURATION	9	4.4 (SECONDS)
10	CHOCOLATE WATER, WHIPPER START	10	0.0 (SECONDS)	CHOCOLATE WATER, WHIPPER DURATION	10	6.0 (SECONDS)
11	SUGAR START (TEA)	4	3.0 (SECONDS)	SUGAR DURATION (TEA)	4	0.8 (SECONDS)
12	STRONG START	1	3.0 (SECONDS)	STRONG DURATION	1	3.1 (SECONDS)
13	LIGHT START (TEA)	3	3.2 (SECONDS)	LIGHT DURATION (TEA)	3	0.8 (SECONDS)
14	XXXXXXXXXXXXXXXXXXXX		0.0 (SECONDS)	XXXXXXXXXXXXXXXXXXXXXX		0.0 (SECONDS)
15	EXTRA LIGHT DURATION (COFFEE)	3	0.2 (SECONDS)	EXTRA SUGAR DURATION	4	0.5 (SECONDS)
16	EXTRA TEA LIGHT DURATION	3	0.1 (SECONDS)	MACHINE CONFIGURATION CODE	N/A	0.1
17	CUP DROP DURATION	11	1.8 (SECONDS)	CUP SENSOR CONTROL	N/A	0.1
18	CUP DISCOUNT	N/A	00 (SECONDS)	ESPRESSO COFFEE WATER PERCENTAGE	1	70
19	CAFE MOCHA COFFEE WATER DURATION	1	3.9 (SECONDS)	CAFE MOCHA COFFEE AUGER DURATION	2	1.1 (SECONDS)
20	CAFE MOCHA CHOC AUGER START TIME	9	7.5 (SECONDS)	CAFE MOCHA CHOC AUGER DURATION	9	1.2
21	CAFE MOCHA CHOC WATER/WHIPPER START	10	6.5 (SECONDS)	CAFE MOCHA CHOC WATER/WHIPPER DURATION	10	2.4 (SECONDS)
22	CARAF MODE 0.0=OFF/1.0=ON (EXPORT ONLY)	N/A	0.0 (SECONDS)	NOT USED	N/A	NOT USED
23	COLD WATER SHOT START PULSE	Y	1.7 (SECONDS)	COLD WATER SHOT DURATION	Y	1.7 (SECONDS)

UNIQUE PART NUMBERS

ITEM	PART NO	DWG NO	DESCRIPTION	QTY
1	36616	NONE	TANK ASM EXPORT FD	1
2	36629	NONE	4 C\V MANIFOLD ASM	1
3	36322	36322-B	WHIPPER HARNESS	1
4	36163	36163-B	TUBE, WHIPPER MOTOR EXT.	1



SELECTION: WHP COF/ WHP ST COF/CHOC/SOUP/CAPP

Automatic Products — 1 INSERT COINS, 2 ENTER SELECTION CODE

COFFEE	BLACK A1	WHITE A2	BLK + SUGAR A3	WHT + SUGAR A4
STRONG COFFEE	BLACK B1	WHITE B2	BLK + SUGAR B3	WHT + SUGAR B4
EXTRA - MAKE SELECTION THEN PRESS	#	EXTRA SUGAR	*	EXTRA WHITE
SOUP	C6			
HOT CHOCOLATE	C5			
CAPPUCCINO	C1			

CAFE MOCHA	BLACK B1	WHITE B2	BLK + SUGAR B3	WHT + SUGAR B4

SGC	C6

NOTE:

1. Times for 7 oz cups only.
2. Disable C2, C3, C4.
3. For Cafe Mocha, use machine configuration 0.0. Cafe Mocha replaces Strong Coffee B1-B4. Also, a Soluable Gourmet Coffee may replace Soup.

LET	REVISION	BY	DATE	BG CHG#
A	RELEASED FOR SERVICE MANUAL	SRD	9/12/96	---

NAME TROUGH SETUP 1-1-1&3 W/ STRONG COFFEE/CAPP

DO NOT SCALE DRAWING

MODEL 211E

DRAWN SRD 9/12/96

APP.

Refreshment Machinery Industries
300 Jacksonville Road Warminster PA 18974

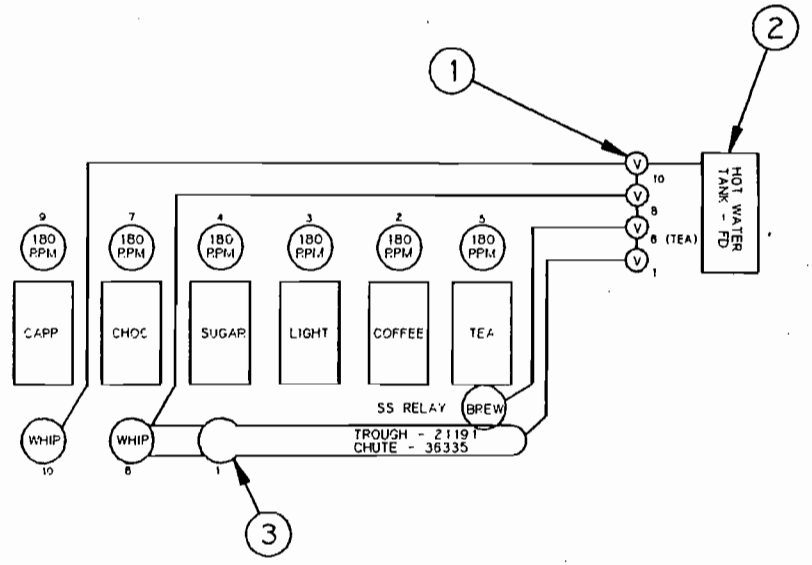
NUMBER SERVMN3 SIZE B REV A

TIMING CHART, 211FD EXPORT-MACHINE CONFIGURATION 00.1

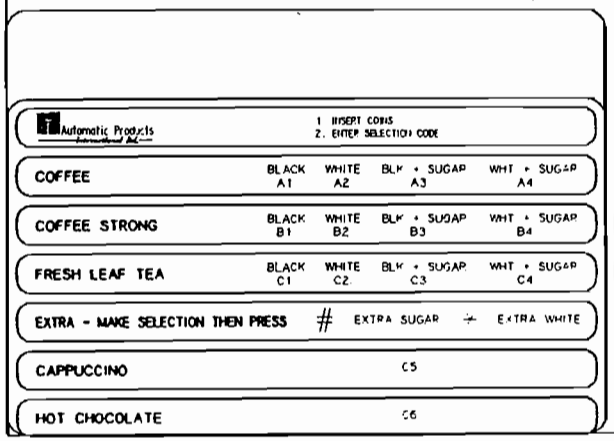
CHANNEL NUMBER	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 2 LINE No.	KEY (BUTTON) NO. 2 VALUE	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 3 LINE No.	KEY (BUTTON) NO. 3 VALUE
0	LONG DELAY TIME	N/A	19.0 (SECONDS)	SHORT DELAY TIME	N/A	19.0 (SECONDS)
1	COFFEE WATER STAPT	1	1.2 (SECONDS)	COFFEE WATER DURATION	1	7.3 (SECONDS)
2	COFFEE STAPT	2	3.0 (SECONDS)	COFFEE DURATION	2	2.2 (SECONDS)
3	LIGHT START (COFFEE)	3	5.6 (SECONDS)	LIGHT DUPATION (COFFEE)	3	0.8 (SECONDS)
4	SUGAR START (COFFEE)	4	5.4 (SECONDS)	SUGAR DURATION (COFFEE)	4	1.0 (SECONDS)
5	TEA START	5	2.0 (SECONDS)	TEA DURATION	5	1.0 (SECONDS)
6	TEA WATER START	6	0.7 (SECONDS)	TEA WATER DURATION	6	8.6 (SECONDS)
7	CHOCOLATE START	7	1.5 (SECONDS)	CHOC DURATION	7	1.0 (SECONDS)
8	CHOC WATER, WHIPPER START	8	0.0 (SECONDS)	CHOC WATEP, WHIPPER DURATION	8	7.3 (SECONDS)
9	CAPPUCCINO STAFT	9	1.5 (SECONDS)	CAPPUCCINO DUPATION	9	4.4 (SECONDS)
10	CAPPUCCINO WATER, WHIPPER START	10	0.0 (SECONDS)	CAPPUCCINO WATER, WHIPPER DURATION	10	7.2 (SECONDS)
11	SUGAR START (TEA)	4	3.0 (SECONDS)	SUGAR DURATION (TEA)	4	0.8 (SECONDS)
12	STRONG COFFEE STAPT	2	1.0 (SECONDS)	STRONG COFFEE DUPATION	2	3.5 (SECONDS)
13	LIGHT START (TEA)	3	3.2 (SECONDS)	LIGHT DURATION (TEA)	3	0.8 (SECONDS)
14	TEA BPEWER STAPT	X	15.0 (SECONDS)	TEA BPEWER DUPATION	X	2.8 (SECONDS)
15	EXTRA LIGHT DUPATION (COFFEE)	3	0.2 (SECONDS)	EXTRA SUGAR DUPATION	4	0.5 (SECONDS)
16	EXTRA TEA LIGHT DUPATION	3	0.1 (SECONDS)	**MACHINE CONFIGURATION CODE**	N/A	**0.1**
17	CUP DROP DUPATION	11	1.8 (SECONDS)	CUP SENSOR CONTROL	N/A	0.1
18	CUP DISCOUNT	N/A	00 (SECONDS)	ESPRESSO COFFEE WATER PERCENTAGE	1	70
19	CAFE MOCHA COFFEE WATER DURATION	1	3.9 (SECONDS)	CAFE MOCHA COFFEE AUGER DURATION	2	1.1 (SECONDS)
20	CAFE MOCHA CHOC AUGER START TIME	9	7.5 (SECONDS)	CAFE MOCHA CHOC AUGER DURATION	9	1.2
21	CAFE MOCHA CHOC WATER/WHIPPER START	10	6.5 (SECONDS)	CAFE MOCHA CHOC WATER/WHIPPER DURATION	10	2.4 (SECONDS)
22	CARAF MODE 0.0=OFF/1.0=ON (EXPORT ONLY)	N/A	0.0 (SECONDS)	NOT USED	N/A	NOT USED
23	COLD WATER SHOT START PULSE	Y	1.7 (SECONDS)	COLD WATER SHOT DURATION	Y	1.7 (SECONDS)

UNIQUE PART NUMBERS

ITEM	PART NO	DWG NO	DESCRIPTION	QTY
1	36629	NONE	4 C\V MANIFOLD ASM	1
2	36616	NONE	TANK ASM EXPORT FD	1
3	36094	36094-A	WHIPPER HARNESS	1



SELECTION: COF/SG COF/CHOC/CAPP/FB TEA



NOTE:

1. Times for 7 oz tall cups only.
2. For Cafe Mocha, use machine configuration 0.0. Cafe Mocha replaces Strong Coffee B1-B4.

CAFE MOCHA	BLACK B1	WHITE B2	BLK + SUGAR B3	WHT + SUGAR B4
TEA	BLACK C1	WHITE C2	BLK + SUGAR C3	WHT + SUGAR C4

3. Soluable Tea may replace Fresh Leaf Tea.

A	RELEASED FOR SERVICE MANUAL	SRD	9/12/96	---
LET	REVISION	BY	DATE	BG CHG#

NAME: TROUGH SETUP 1-1&4 W/ STRONG COFFEE

			DATE
DRAWN	SRD	9/12/96	
APP.			

DO NOT SCALE DRAWING

MODEL 211E

Refreshment Machinery Industries
300 Jacksonville Road Warminster PA 18974

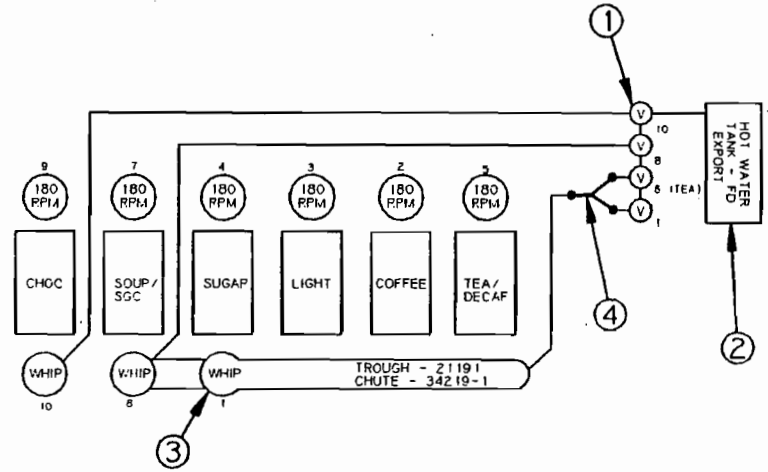
NUMBER SERVMN4 | SIZE B | REV. A

TIMING CHART, 211FD EXPORT-MACHINE CONFIGURATION 00.1

CHANNEL NUMBER	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 2 LINE No.	KEY (BUTTON) NO. 2 VALUE	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 3 LINE No.	KEY (BUTTON) NO. 3 VALUE
0	LONG DELAY TIME	N/A	12.0 (SECONDS)	SHORT DELAY TIME	N/A	12.0 (SECONDS)
1	COFFEE WATER START	1	1.2 (SECONDS)	COFFEE WATER DURATION	1	4.8 (SECONDS)
2	COFFEE START	2	3.0 (SECONDS)	COFFEE DURATION	2	1.7 (SECONDS)
3	LIGHT START (COFFEE)	3	5.6 (SECONDS)	LIGHT DURATION (COFFEE)	3	0.7 (SECONDS)
4	SUGAR START (COFFEE)	4	5.4 (SECONDS)	SUGAR DURATION (COFFEE)	4	1.0 (SECONDS)
5	TEA/DECAF START	5	2.0 (SECONDS)	TEA/DECAF DURATION	5	1.0 (SECONDS)
6	TEA/DECAF WATER START	6	0.0 (SECONDS)	TEA/DECAF WATER DURATION	6	6.1 (SECONDS)
7	SOUP/SGC AUGER START	7	1.5 (SECONDS)	SOUP/SGC AUGER DURATION	7	1.0/4.0 (SECONDS)
8	SOUP WATER, WHIPPER STAPT	8	0.0 (SECONDS)	SOUP WATER, WHIPPER DURATION	8	6.1 (SECONDS)
9	CHOCOLATE START	9	1.5 (SECONDS)	CHOCOLATE DURATION	9	4.4 (SECONDS)
10	CHOCOLATE WATER, WHIPPER START	10	0.0 (SECONDS)	CHOCOLATE WATER, WHIPPER DURATION	10	6.0 (SECONDS)
11	SUGAR START (TEA)	4	3.0 (SECONDS)	SUGAR DURATION (TEA)	4	0.8 (SECONDS)
12	STRONG ESPRESSO WATER START	1	3.0 (SECONDS)	STRONG ESPRESSO WATER DURATION	1	3.1 (SECONDS)
13	LIGHT START (TEA)	3	3.2 (SECONDS)	LIGHT DURATION (TEA)	3	0.8 (SECONDS)
14	XXXXXXXXXXXXXXXXXX	X	0.0 (SECONDS)	XXXXXXXXXXXXXXXXXXXX	X	0.0 (SECONDS)
15	EXTRA LIGHT DURATION (COFFEE)	3	0.2 (SECONDS)	EXTRA SUGAR DURATION	4	0.5 (SECONDS)
16	EXTRA TEA LIGHT DURATION	3	0.1 (SECONDS)	MACHINE CONFIGURATION CODE	N/A	0.2
17	CUP DROP DURATION	11	1.8 (SECONDS)	CUP SENSOR CONTROL	N/A	0.1
18	CUP DISCOUNT	N/A	00 (SECONDS)	XXXXXXXXXXXXXXXXXX	X	0.0 (SECONDS)
19	CAFE MOCHA COFFEE WATER DURATION	1	3.9 (SECONDS)	CAFE MOCHA COFFEE AUGER DURATION	2	1.1 (SECONDS)
20	CAFE MOCHA CHOC AUGER STAPT TIME	9	7.5 (SECONDS)	CAFE MOCHA CHOC AUGER DURATION	9	1.2
21	CAFE MOCHA CHOC WATER/WHIPPER START	10	6.5 (SECONDS)	CAFE MOCHA CHOC WATER/WHIPPER DURATION	10	2.4 (SECONDS)
22	CARAF MODE 0.0=OFF/1.0=ON (EXPORT ONLY)	N/A	0.0 (SECONDS)	NOT USED	N/A	NOT USED
23	COLD WATER SHOT START PULSE	1	1.7 (SECONDS)	COLD WATER SHOT DURATION	Y	1.7 (SECONDS)

UNIQUE PART NUMBERS

ITEM	PART NO	DWG NO	DESCRIPTION	QTY
1	36629	NONE	4 C\V MANIFOLD ASM	1
2	36616	NONE	TANK ASM EXPORT FD	1
3	36094	36094-A	WHIPPER HARNESS	1
4	16047	NONE	"Y" FITTING	1



SELECTION: WHP ESP/WHP ST ESP/CHOC/TEA/SOUP

Automatic Products — 1 INSERT COINS, 2 ENTER SELECTION CODE

ESPRESSO	BLACK A1	WHITE A2	BLK + SUGAR A3	WHT + SUGAR A4
STRONG ESPRESSO	BLACK B1	WHITE B2	BLK + SUGAR B3	WHT + SUGAR B4
TEA	BLACK C1	WHITE C2	BLK + SUGAR C3	WHT + SUGAR C4
EXTRA - MAKE SELECTION THEN PRESS	# EXTRA SUGAR	* EXTRA WHITE		
HOT CHOCOLATE	C5			
SOUP	C6			

NOTE:

1. Times for 7 oz cups.
2. Disable A5, A6, B5, B6, D1 & D2.
3. For Cafe Mocha, use machine configuration 0.0. Cafe Mocha replaces Strong Espresso B1-B4.

CAFE MOCHA	BLACK B1	WHITE B2	BLK + SUGAR B3	WHT + SUGAR B4
DECAF COFFEE	BLACK C1	WHITE C2	BLK + SUGAR C3	WHT + SUGAR C4

4. Decaffeinated Coffee may replace Tea and Soluable Gormet Coffee may replace Soup.

SGC	C6

LET	REVISION	BY	DATE	BG CHG#
A	RELEASED FOR SERVICE MANUAL	SRD	9/12/96	---

NAME TROUGH SETUP 1-1&4 W/ STRONG ESPRESSO

			DATE
DRAWN	SRD	9/12/96	
APP.			

DO NOT SCALE DRAWING

MODEL 211E

Refreshment Machinery Industries
300 Jacksonville Road Warminster PA 18974

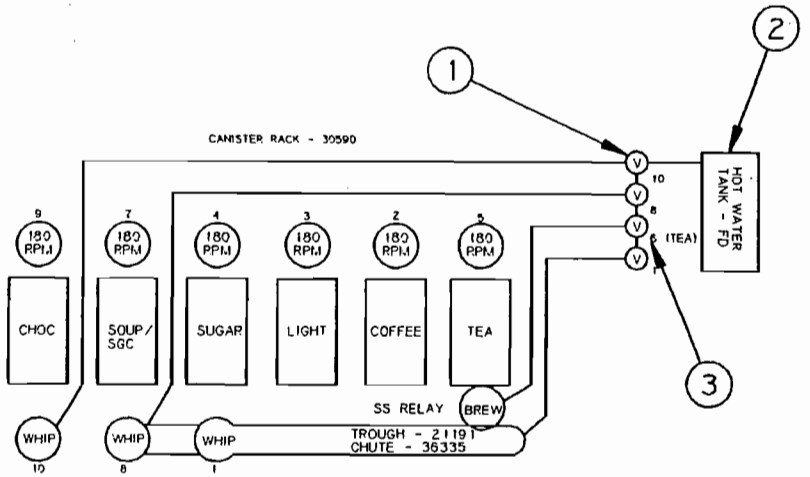
NUMBER	SIZE	REV.
SERVMN5	B	A

TIMING CHART, 211FD EXPORT-MACHINE CONFIGURATION 00.2

CHANNEL NUMBER	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 2 LINE No.	KEY (BUTTON) NO. 2 VALUE	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 3 LINE No.	KEY (BUTTON) NO. 3 VALUE
0	LONG DELAY TIME	N/A	19.0 (SECONDS)	SHORT DELAY TIME	N/A	19.0 (SECONDS)
1	COFFEE WATER START	1	1.2 (SECONDS)	COFFEE WATER DURATION	1	6.5 (SECONDS)
2	COFFEE START	2	3.0 (SECONDS)	COFFEE DURATION	2	1.7 (SECONDS)
3	LIGHT START (COFFEE)	3	5.6 (SECONDS)	LIGHT DURATION (COFFEE)	3	0.8 (SECONDS)
4	SUGAR START (COFFEE)	4	5.4 (SECONDS)	SUGAR DURATION (COFFEE)	4	1.0 (SECONDS)
5	TEA START	5	2.0 (SECONDS)	TEA DURATION	5	1.0 (SECONDS)
6	TEA WATER START	6	0.7 (SECONDS)	TEA WATER DURATION	6	8.6 (SECONDS)
7	SOUP/SGC AUGER START	7	1.5 (SECONDS)	SOUP/SGC AUGER DURATION	7	1.0/4.0 (SECONDS)
8	SOUP WATER, WHIPPER START	8	0.0 (SECONDS)	SOUP WATER, WHIPPER DUPATION	8	6.1 (SECONDS)
9	CHOCOLATE START	9	1.5 (SECONDS)	CHOCOLATE DURATION	9	4.4 (SECONDS)
10	CHOCOLATE WATER, WHIPPER START	10	0.0 (SECONDS)	CHOCOLATE WATER, WHIPPER DURATION	10	6.0 (SECONDS)
11	SUGAR START (TEA)	4	3.0 (SECONDS)	SUGAR DURATION (TEA)	4	0.8 (SECONDS)
12	ESPPESSO WATER START	1	0.0 (SECONDS)	ESPPESSO WATER DURATION	1	4.8 (SECONDS)
13	LIGHT START (TEA)	3	3.2 (SECONDS)	LIGHT DURATION (TEA)	3	0.8 (SECONDS)
14	TEA BREWER START	X	15.0 (SECONDS)	TEA BREWER DURATION	X	2.8 (SECONDS)
15	EXTRA LIGHT DURATION (COFFEE)	3	0.2 (SECONDS)	EXTRA SUGAR DURATION	4	0.5 (SECONDS)
16	EXTRA TEA LIGHT DUPATION	3	0.1 (SECONDS)	MACHINE CONFIGURATION CODE	N/A	0.2
17	CUP DROP DURATION	11	1.8 (SECONDS)	CUP SENSOR CONTROL	N/A	0.1
18	CUP DISCOUNT	N/A	00 (SECONDS)	ESPPESSO COFFEE WATER PERCENTAGE	1	70
19	CAFE MOCHA COFFEE WATER DURATION	1	3.9 (SECONDS)	CAFE MOCHA COFFEE AUGER DURATION	2	1.1 (SECONDS)
20	CAFE MOCHA CHOC AUGER START TIME	9	7.5 (SECONDS)	CAFE MOCHA CHOC AUGER DURATION	9	1.2
21	CAFE MOCHA CHOC WATER/WHIPPER START	10	6.5 (SECONDS)	CAFE MOCHA CHOC WATER/WHIPPER DURATION	10	2.4 (SECONDS)
22	CARAF MODE 0.0=OFF/1.0=ON(EXPORT ONLY)	N/A	0.0 (SECONDS)	NOT USED	N/A	NOT USED
23	COLD WATER SHOT START PULSE	Y	1.7 (SECONDS)	COLD WATER SHOT DURATION	Y	1.7 (SECONDS)

UNIQUE PART NUMBERS

ITEM	PART NO	DWG NO	DESCRIPTION	QTY
1	36629	NONE	4 C\V MANIFOLD ASM	1
2	36616	NONE	TANK ASM EXPORT FD	1
3	36094	36094-A	WHIPPER HARNESS	1



SELECTION: WHP COF/WHP ESP/CHOC/SOUP/FB TEA

Automatic Products — 1. INSERT COINS 2. ENTER SELECTION CODE

COFFEE	BLACK A1	WHITE A2	BLK + SUGAR A3	WHT + SUGAR A4
ESPRESSO	BLACK B1	WHITE B2	BLK + SUGAR B3	WHT + SUGAR B4
FRESH LEAF TEA	BLACK C1	WHITE C2	BLK + SUGAR C3	WHT + SUGAR C4
EXTRA - MAKE SELECTION THEN PRESS	# EXTRA SUGAR	* EXTRA WHITE		
HOT CHOCOLATE	C5			
SOUP	C6			

NOTE:

1. Times for 7 oz cups.
2. A Soluable Tea may replace Fresh Tea Leaf.

TEA	BLACK C1	WHITE C2	BLK + SUGAR C3	WHT + SUGAR C4

3. A Soluable Gourmet Coffee may replace Soup.

SGC	C6

LET	REVISION	BY	DATE	BG CHG#
A	RELEASED FOR SERVICE MANUAL	SRD	9/12/96	---

NAME: TROUGH SETUP 1-1&4 W/ ESPRESSO

DO NOT SCALE DRAWING

MODEL 211E

DRAWN SRD 9/12/96

APP

Refreshment Machinery Industries
300 Jacksonville Road Warminster PA 18974

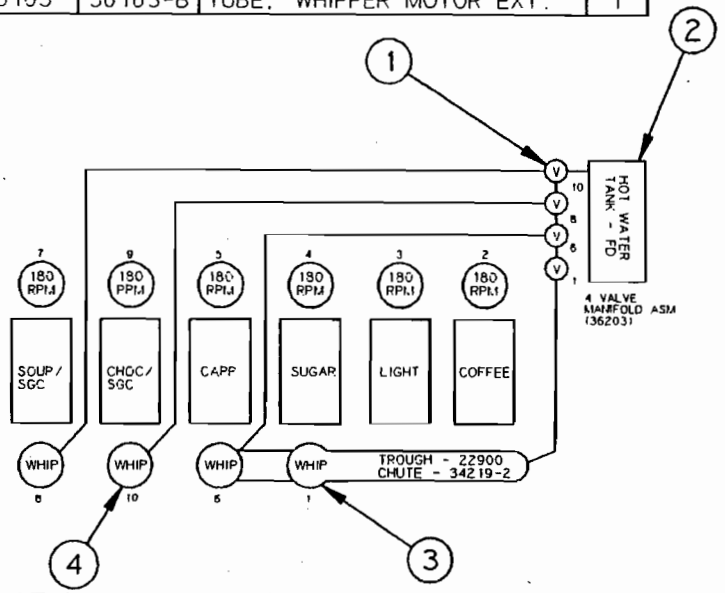
NUMBER SERVMN6 | SIZE B | REV. A

TIMING CHART, 211FD EXPORT-MACHINE CONFIGURATION 00.2

CHANNEL NUMBER	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 2 LINE No.	KEY (BUTTON) NO. 2 VALUE	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 3 LINE No.	KEY (BUTTON) NO. 3 VALUE
0	LONG DELAY TIME	N/A	12.0 (SECONDS)	SHORT DELAY TIME	N/A	12.0 (SECONDS)
1	COFFEE WATER START	1	1.2 (SECONDS)	COFFEE WATER DURATION	1	6.5 (SECONDS)
2	COFFEE START	2	3.0 (SECONDS)	COFFEE DURATION	2	1.7 (SECONDS)
3	LIGHT START (COFFEE)	3	5.6 (SECONDS)	LIGHT DURATION (COFFEE)	3	0.8 (SECONDS)
4	SUGAR START (COFFEE)	4	5.4 (SECONDS)	SUGAR DURATION (COFFEE)	4	1.0 (SECONDS)
5	CAPPUCCINO START	5	1.5 (SECONDS)	CAPPUCCINO DURATION	5	1.0 (SECONDS)
6	CAPPUCCINO WATER START	6	0.0 (SECONDS)	CAPPUCCINO WATER DURATION	6	6.1 (SECONDS)
7	SOUP/SGC AUGER START	7	1.5 (SECONDS)	SOUP/SGC AUGER DURATION	7	1.0/4.0 (SECONDS)
8	SOUP WATER, WHIPPER START	8	0.0 (SECONDS)	SOUP WATER, WHIPPER DURATION	8	6.1 (SECONDS)
9	CHOCOLATE/SGC APGER START	9	1.5 (SECONDS)	CHOCOLATE/SGC APGER DURATION	9	4.4 (SECONDS)
10	CHOCOLATE WATER, WHIPPER START	10	0.0 (SECONDS)	CHOCOLATE WATER, WHIPPER DURATION	10	6.0 (SECONDS)
11	XXXXXXXXXXXXXXXXXXXX	4	0.0 (SECONDS)	XXXXXXXXXXXXXXXXXXXX	4	0.0 (SECONDS)
12	ESPRESSO WATER START	1	0.0 (SECONDS)	ESPPESSO WATEP DURATION	1	4.8 (SECONDS)
13	XXXXXXXXXXXXXXXXXXXX	3	0.0 (SECONDS)	XXXXXXXXXXXXXXXXXXXX	3	0.0 (SECONDS)
14	XXXXXXXXXXXXXXXXXXX	Y	0.0 (SECONDS)	XXXXXXXXXXXXXXXXXXX	X	0.0 (SECONDS)
15	EXTRA LIGHT DUPATION (COFFEE)	3	0.2 (SECONDS)	EXTRA SUGAP DURATION	4	0.5 (SECONDS)
16	EXTRA TEA LIGHT DURATION	3	0.1 (SECONDS)	MACHINE CONFIGURATION CODE	N/A	0.2
17	CUP DROP DURATION	11	1.8 (SECONDS)	CUP SENSOR CONTROL	N/A	0.1
18	CUP DISCOUNT	N/A	00 (SECONDS)	ESPRESSO COFFEE WATER PERCENTAGE	1	70
19	CAFE MOCHA COFFEE WATER DURATION	1	3.9 (SECONDS)	CAFE MOCHA COFFEE AUGER DURATION	2	1.1 (SECONDS)
20	CAFE MOCHA CHOC AUGER START TIME	9	7.5 (SECONDS)	CAFE MOCHA CHOC AUGER DURATION	9	1.2
21	CAFE MOCHA CHOC WATER/WHIPPER START	10	6.5 (SECONDS)	CAFE MOCHA CHOC WATER/WHIPPER DURATION	10	2.4 (SECONDS)
22	CARAF MODE 0.0=OFF/1.0=ON (EXPORT ONLY)	N/A	0.0 (SECONDS)	NOT USED	N/A	NOT USED
23	COLD WATER SHOT START PULSE	Y	1.7 (SECONDS)	COLD WATEP SHOT DURATION	Y	1.7 (SECONDS)

UNIQUE PART NUMBERS

ITEM	PART NO	DWG NO	DESCRIPTION	QTY
1	36616	NONE	TANK ASM EXPORT FD	1
2	36629	NONE	4 C\V MANIFOLD ASM	1
3	36322	36322-B	WHIPPER HARNESS	1
4	36163	36163-B	TUBE, WHIPPER MOTOR EXT.	1



SELECTION: WHP COF/WHP ESP/CHOC/SOUP/CAPP

Automatic Products — 1 INSERT COINS, 2 ENTER SELECTION CODE

COFFEE	BLACK A1	WHITE A2	BLK + SUGAR A3	WHT + SUGAR A4
ESPRESSO	BLACK B1	WHITE B2	BLK + SUGAR B3	WHT + SUGAR B4
EXTRA - MAKE SELECTION THEN PRESS	# EXTRA SUGAR		* EXTRA WHITE	
CAPPUCCINO	C1			
HOT CHOCOLATE	C5			
SOUP	C6			

SGC	C5
SGC	C6

NOTE:

1. Times for 7 oz tall cups only.
2. DISABLE C2, C3, C4

LET	REVISION	BY	DATE	BG CHG#
A	RELEASED FOR SERVICE MANUAL	SRD	9/12/96	---

NAME: TROUGH SETUP 1-1-1&3 W/ ESPRESSO

DRAWN: SRD 9/12/96 — APP — DATE

DO NOT SCALE DRAWING

MODEL 211E

Refreshment Machinery Industries
300 Jacksonville Road Warminster PA 18974

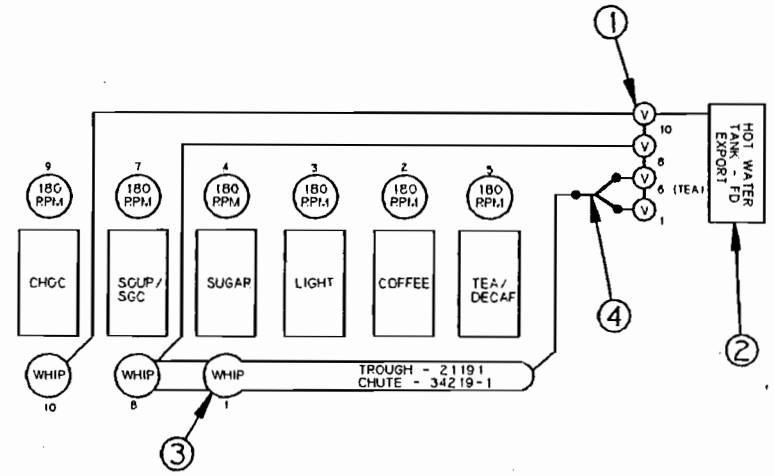
NUMBER SERVMN7 — SIZE B — REV A

TIMING CHART, 211FD EXPORT-MACHINE CONFIGURATION 00.2

CHANNEL NUMBER	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 2 LINE No.	KEY (BUTTON) NO. 2 VALUE	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 3 LINE No.	KEY (BUTTON) NO. 3 VALUE
0	LONG DELAY TIME	N/A	12.0 (SECONDS)	SHORT DELAY TIME	N/A	12.0 (SECONDS)
1	COFFEE WATER START	1	1.2 (SECONDS)	COFFEE WATER DURATION	1	6.5 (SECONDS)
2	COFFEE START	2	3.0 (SECONDS)	COFFEE DURATION	2	1.7 (SECONDS)
3	LIGHT START (COFFEE)	3	5.6 (SECONDS)	LIGHT DURATION (COFFEE)	3	0.8 (SECONDS)
4	SUGAR START (COFFEE)	4	5.4 (SECONDS)	SUGAR DURATION (COFFEE)	4	1.0 (SECONDS)
5	TEA/DECAF AUGER START	5	2.0 (SECONDS)	TEA/DECAF AUGER DURATION	5	1.0 (SECONDS)
6	TEA/DECAF WATER START	6	0.0 (SECONDS)	TEA/DECAF WATER DURATION	6	6.1 (SECONDS)
7	SOUP/SGC AUGER START	7	1.5 (SECONDS)	SOUP/SGC AUGER DURATION	7	1.0/4.0 (SECONDS)
8	SOUP WATER, WHIPPER START	8	0.0 (SECONDS)	SOUP WATEP, WHIPPER DURATION	8	6.1 (SECONDS)
9	CHOCOLATE START	9	1.5 (SECONDS)	CHOCOLATE DURATION	9	4.4 (SECONDS)
10	CHOCOLATE WATER, WHIPPER START	10	0.0 (SECONDS)	CHOCOLATE WATER, WHIPPER DURATION	10	6.0 (SECONDS)
11	SUGAR START (TEA)	4	3.0 (SECONDS)	SUGAR DURATION (TEA)	4	0.8 (SECONDS)
12	ESPPESSO WATER START	1	0.0 (SECONDS)	ESPRESSO WATER DURATION	1	4.8 (SECONDS)
13	LIGHT START (TEA)	3	3.2 (SECONDS)	LIGHT DURATION (TEA)	3	0.8 (SECONDS)
14	XXXXXXXXXXXXXXXXXX	X	0.0 (SECONDS)	XXXXXXXXXXXXXXXXXXX	X	0.0 (SECONDS)
15	EXTRA LIGHT DUPATION (COFFEE)	3	0.2 (SECONDS)	EXTRA SUGAR DUPATION	4	0.5 (SECONDS)
16	EXTRA TEA LIGHT DUPATION	3	0.1 (SECONDS)	MACHINE CONFIGURATION CODE	N/A	0.2
17	CUP DROP DURATION	11	1.8 (SECONDS)	CUP SENSOR CONTROL	N/A	0.1
18	CUP DISCOUNT	N/A	00 (SECONDS)	ESPRESSO COFFEE WATER PERCENTAGE	1	70
19	CAFE MOCHA COFFEE WATER DURATION	1	3.9 (SECONDS)	CAFE MOCHA COFFEE AUGER DUPATION	2	1.1 (SECONDS)
20	CAFE MOCHA CHOC AUGER STAPT TIME	9	7.5 (SECONDS)	CAFE MOCHA CHOC AUGER DURATION	9	1.2
21	CAFE MOCHA CHOC WATER/WHIPPER START	10	6.5 (SECONDS)	CAFE MOCHA CHOC WATER/WHIPPER DURATION	10	2.4 (SECONDS)
22	CAPAF MODE 0.0=OFF/1.0=ON (EXPORT ONLY)	N/A	0.0 (SECONDS)	NOT USED	N/A	NOT USED
23	COLD WATER SHOT START PULSE	Y	1.7 (SECONDS)	COLD WATER SHOT DURATION	Y	1.7 (SECONDS)

UNIQUE PART NUMBERS

ITEM	PART NO	DWG NO	DESCRIPTION	QTY
1	36629	NONE	4 C\V MANIFOLD ASM	1
2	36616	NONE	TANK ASM EXPORT FD	1
3	36094	36094-A	WHIPPER HARNESS	1
4	16047	NONE	"Y" FITTING	1



SELECTION: WHP COF/WHP ESP/CHOC/TEA/SOUP

Automatic Products — 1. INSERT COINS 2. ENTER SELECTION CODE

COFFEE	BLACK A1	WHITE A2	BLK + SUGAR A3	WHT + SUGAR A4
ESPRESSO	BLACK B1	WHITE B2	BLK + SUGAR B3	WHT + SUGAR B4
TEA	BLACK C1	WHITE C2	BLK + SUGAR C3	WHT + SUGAR C4
EXTRA - MAKE SELECTION THEN PRESS	# EXTRA SUGAR	* EXTRA WHITE		
HOT CHOCOLATE	C5			
SOUP	C6			

DECAFFEINATED COFFEE	BLACK C1	WHITE C2	BLK + SUGAR C3	WHT + SUGAR C4
SGC	C6			

NOTE:

1. Times for 7 oz cups.
2. Decaffeinated Coffee may replace Tea and Soluable Gormet Coffee may replace Soup.

LET	REVISION	BY	DATE	BG CHG#
A	RELEASED FOR SERVICE MANUAL	SRD	9/12/96	---

NAME: TROUGH SETUP 1-1&4 W/ ESPRESSO

DO NOT SCALE DRAWING

MODEL 211E

DRAWN SRD 9/12/96

APP.

Refreshment Machinery Industries
300 Jacksonville Road Warminster PA 18974

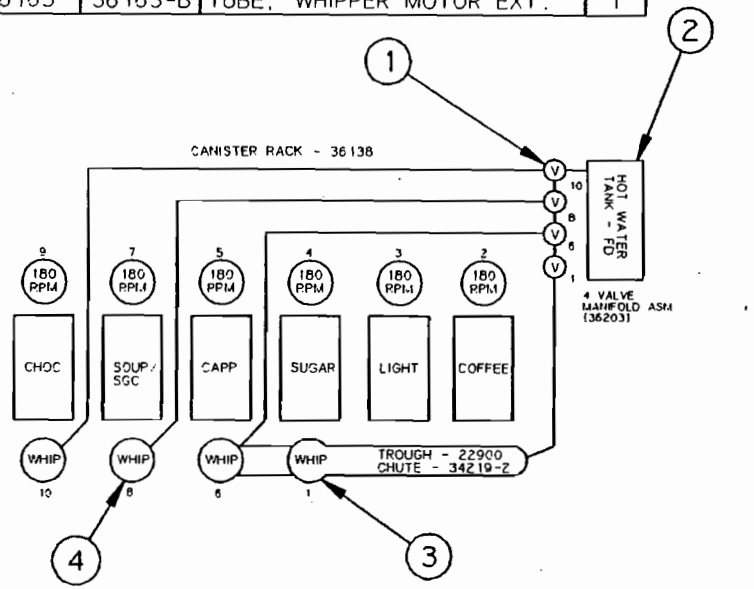
NUMBER SERVMN8 SIZE B REV A

TIMING CHART, 211FD EXPORT-MACHINE CONFIGURATION 00.2

CHANNEL NUMBER	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 2 LINE No.	KEY (BUTTON) NO. 2 VALUE	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 3 LINE No.	KEY (BUTTON) NO. 3 VALUE
0	LONG DELAY TIME	N/A	12.0 (SECONDS)	SHORT DELAY TIME	N/A	12.0 (SECONDS)
1	COFFEE WATER START	1	1.2 (SECONDS)	COFFEE WATER DURATION	1	6.5 (SECONDS)
2	COFFEE START	2	3.0 (SECONDS)	COFFEE DURATION	2	1.7 (SECONDS)
3	LIGHT START (COFFEE)	3	5.6 (SECONDS)	LIGHT DURATION (COFFEE)	3	0.8 (SECONDS)
4	SUGAR START (COFFEE)	4	5.4 (SECONDS)	SUGAR DURATION (COFFEE)	4	1.0 (SECONDS)
5	CAPPUCCINO START	5	2.0 (SECONDS)	CAPPUCCINO DURATION	5	1.0 (SECONDS)
6	CAPPUCCINO WATER START	6	0.0 (SECONDS)	CAPPUCCINO WATER DURATION	6	6.1 (SECONDS)
7	SOUP/SGC ARGER START	7	2.0 (SECONDS)	SOUP/SGC ARGER DURATION	7	1.0/4.0 (SECONDS)
8	SOUP WATER, WHIPPER START	8	0.0 (SECONDS)	SOUP WATER, WHIPPER DURATION	8	6.1 (SECONDS)
9	CHOCOLATE START	9	2.0 (SECONDS)	CHOCOLATE DURATION	9	4.4 (SECONDS)
10	CHOCOLATE WATER, WHIPPER START	10	0.0 (SECONDS)	CHOCOLATE WATER, WHIPPER DURATION	10	6.0 (SECONDS)
11	XXXXXXXXXXXXXXXXXXXX		0.0 (SECONDS)	XXXXXXXXXXXXXXXXX		0.0 (SECONDS)
12	ESPPRESSO WATER START	1	0.0 (SECONDS)	ESPRESSO WATER DURATION	1	4.8 (SECONDS)
13	XXXXXXXXXXXXXXXXXXXX		0.0 (SECONDS)	XXXXXXXXXXXXXXXXX		0.0 (SECONDS)
14	XXXXXXXXXXXXXXXXXXXX		0.0 (SECONDS)	XXXXXXXXXXXXXXXXX		0.0 (SECONDS)
15	EXTRA LIGHT DURATION (COFFEE)	3	0.2 (SECONDS)	EXTRA SUGAR DURATION	4	0.5 (SECONDS)
16	EXTRA TEA LIGHT DURATION	3	0.1 (SECONDS)	MACHINE CONFIGURATION CODE	N/A	0.2
17	CUP DROP DURATION	11	1.8 (SECONDS)	CUP SENSOR CONTROL	N/A	0.1
18	CUP DISCOUNT	N/A	00 (SECONDS)	ESPRESSO COFFEE WATER PERCENTAGE	1	70
19	CAFE MOCHA COFFEE WATER DURATION	1	3.9 (SECONDS)	CAFE MOCHA COFFEE AUGER DURATION	2	1.1 (SECONDS)
20	CAFE MOCHA CHOC AUGER START TIME	9	7.5 (SECONDS)	CAFE MOCHA CHOC AUGER DURATION	9	1.2
21	CAFE MOCHA CHOC WATER/WHIPPER START	10	6.5 (SECONDS)	CAFE MOCHA CHOC WATER/WHIPPER DURATION	10	2.4 (SECONDS)
22	CARAF MODE 0.0=OFF/1.0=ON (EXPORT ONLY)	N/A	1.0 (SECONDS)	NOT USED	N/A	NOT USED
23	COLD WATER SHOT START PULSE	Y	1.7 (SECONDS)	COLD WATER SHOT DURATION	Y	2.4 (SECONDS)

UNIQUE PART NUMBERS

ITEM	PART NO	DWG NO	DESCRIPTION	QTY
1	36616	NONE	TANK ASM EXPORT FD	1
2	36629	NONE	4 C\V MANIFOLD ASM	1
3	36322	36322-B	WHIPPER HARNESS	1
4	36163	36163-B	TUBE, WHIPPER MOTOR EXT.	1



SELECTION: WHP COF/WHP ESP/CHOC/SOUP/CAPP

Automatic Products — 1. INSERT COINS 2. ENTER SELECTION CODE

COFFEE	BLACK A1	WHITE A2	BLK + SUGAR A3	WHT + SUGAR A4
ESPRESSO	BLACK B1	WHITE B2	BLK + SUGAR B3	WHT + SUGAR B4

EXTRA - MAKE SELECTION THEN PRESS # EXTRA SUGAR * EXTRA WHITE

SOUP	C6
HOT CHOCOLATE	C5
CAPPUCCINO	C1
SGC	C6

NOTE:

1. Times for 7 oz tall cups only.
2. Disable A*, A#, B*, B#, C2, C3, C4, C*, C#, D* and D#.
3. Soluble Gormet Coffee may replace Soup

LET	REVISION	BY	DATE	BG CHG#
A	RELEASED FOR SERVICE MANUAL	SRD	9/12/96	---

NAME: TROUGH SETUP 1-1-1&3 W/ ESPRESSO

DO NOT SCALE DRAWING

MODEL 211E

DRAWN SRD 9/12/96

APP.

THE INFORMATION ON THIS DRAWING IS CONFIDENTIAL. UNAUTHORIZED USE IS PROHIBITED.

Refreshment Machinery Industries
300 Jacksonville Road Warminster PA 18974

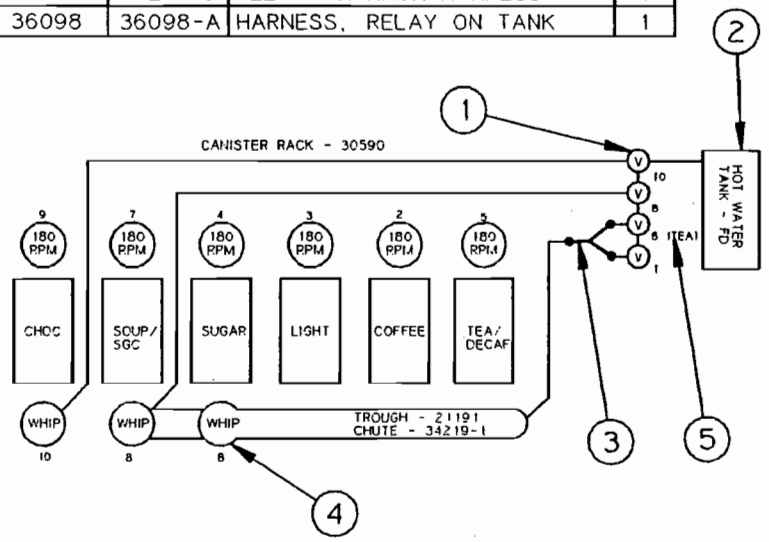
NUMBER SERVMN11 SIZE B REV A

TIMING CHART, 211FD EXPORT-MACHINE CONFIGURATION 00.5

CHANNEL NUMBER	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 2 LINE No.	KEY (BUTTON) NO. 2 VALUE	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 3 LINE No.	KEY (BUTTON) NO. 3 VALUE
0	LONG DELAY TIME	N/A	19.0 (SECONDS)	SHORT DELAY TIME	N/A	19.0 (SECONDS)
1	COFFEE WATER START	1	1.2 (SECONDS)	COFFEE WATER DURATION	1	6.2 (SECONDS)
2	COFFEE START	2	3.0 (SECONDS)	COFFEE DURATION	2	3.2 (SECONDS)
3	LIGHT START (COFFEE)	3	5.6 (SECONDS)	LIGHT DURATION (COFFEE)	3	0.8 (SECONDS)
4	SUGAR START (COFFEE)	4	5.4 (SECONDS)	SUGAR DURATION (COFFEE)	4	1.0 (SECONDS)
5	TEA/DECAF AUGER START	5	2.0 (SECONDS)	TEA/DECAF AUGER DURATION	5	1.0 (SECONDS)
6	TEA/DECAF WATER START	6	0.0 (SECONDS)	TEA/DECAF WATER DURATION	6	6.1 (SECONDS)
7	SOUP/SGC AUGER START	7	1.5 (SECONDS)	SOUP/SGC AUGER DURATION	7	1.0/4.0 (SECONDS)
8	SOUP/SGC WATER, WHIPPER START	8	0.0 (SECONDS)	SOUP/SGC WATER, WHIPPER DURATION	8	6.2 (SECONDS)
9	CHOCOLATE START	9	1.5 (SECONDS)	CHOCOLATE DURATION	9	3.9 (SECONDS)
10	CHOCOLATE WATER, WHIPPER START	10	0.0 (SECONDS)	CHOCOLATE WATER, WHIPPER DURATION	10	6.1 (SECONDS)
11	SUGAR START (TEA)	4	3.0 (SECONDS)	SUGAR DURATION (TEA)	4	0.8 (SECONDS)
12	COFFEE WHIPPER START	8	1.3 (SECONDS)	COFFEE WHIPPER DURATION	8	5.1 (SECONDS)
13	LIGHT START (TEA)	3	3.2 (SECONDS)	LIGHT DURATION (TEA)	3	0.8 (SECONDS)
14	XXXXXXXXXXXXXX	X	0.0 (SECONDS)	XXXXXXXXXXXXXX	X	0.0 (SECONDS)
15	EXTRA LIGHT DURATION (COFFEE)	3	0.2 (SECONDS)	EXTRA SUGAR DURATION	4	0.3 (SECONDS)
16	EXTRA TEA LIGHT DURATION	3	0.1 (SECONDS)	MACHINE CONFIGURATION CODE	N/A	0.5
17	CUP DROP DURATION	11	1.8 (SECONDS)	CUP SENSOR CONTROL	N/A	0.1
18	CUP DISCOUNT	N/A	00 (SECONDS)	ESPRESSO COFFEE WATER PERCENTAGE	1	70
19	CAFE MOCHA COFFEE WATER DURATION	1	3.9 (SECONDS)	CAFE MOCHA COFFEE AUGER DURATION	2	1.1 (SECONDS)
20	CAFE MOCHA CHOC AUGER START TIME	9	7.5 (SECONDS)	CAFE MOCHA CHOC AUGER DURATION	9	1.2
21	CAFE MOCHA CHOC WATER/WHIPPER START	10	6.5 (SECONDS)	CAFE MOCHA CHOC WATER/WHIPPER DURATION	10	2.4 (SECONDS)
22	CARAF MODE 0.0=OFF/1.0=ON(EXPORT ONLY)	N/A	0.0 (SECONDS)	NOT USED	N/A	NOT USED
23	COLD WATER SHOT START PULSE	Y	1.7 (SECONDS)	COLD WATER SHOT DURATION	Y	1.7 (SECONDS)

UNIQUE PART NUMBERS

ITEM	PART NO	DWG NO	DESCRIPTION	QTY
1	36629	NONE	4 C\V MANIFOLD ASM	1
2	36616	NONE	TANK ASM EXPORT FD	1
3	16047	NONE	"Y" FITTING	1
4	36200	36200-B	RELAY ON RACK HARNESS	1
5	36098	36098-A	HARNESS, RELAY ON TANK	1



SELECTION: COF/WHP COF/CHOC/SOUP/TEA

Automatic Products	1. INSERT COINS 2. ENTER SELECTION CODE			
COFFEE	BLACK A1	WHITE A2	BLK + SUGAR A3	WHT + SUGAR A4
COFFEE WHIPPED	BLACK B1	WHITE B2	BLK + SUGAR B3	WHT + SUGAR B4
TEA	BLACK C1	WHITE C2	BLK + SUGAR C3	WHT + SUGAR C4
EXTRA - MAKE SELECTION THEN PRESS	# EXTRA SUGAR	* EXTRA WHITE		
HOT CHOCOLATE	C5			
SOUP	C6			

DECAFFEINATED COFFEE	BLACK C1	WHITE C2	BLK + SUGAR C3	WHT + SUGAR C4
SGC	C6			

NOTE:

1. Times for 7 oz cups.
2. Decaffeinated Coffee may replace Tea, and Soluble Gormet Coffee may replace Soup.

LET	REVISION	BY	DATE	BG CHG#
A	RELEASED FOR SERVICE MANUAL	SRD	9/12/96	---

NAME: TROUGH SETUP 1-1&4 W/ WHIPPED COFFEE

DO NOT SCALE DRAWING

MODEL 211E

DRAWN SRD 9/12/96

APP.

Refreshment Machinery Industries
300 Jacksonville Road Warminster PA 18974

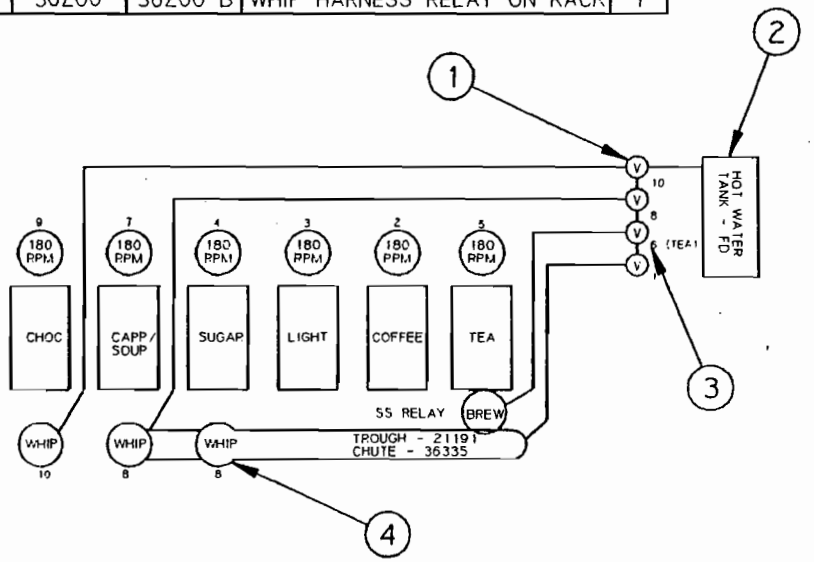
NUMBER SERVMN12 | SIZE B | REV. A

TIMING CHART, 211FD EXPORT-MACHINE CONFIGURATION 00.5

CHANNEL NUMBER	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 2 LINE No.	KEY (BUTTON) NO. 2 VALUE	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 3 LINE No.	KEY (BUTTON) NO. 3 VALUE
0	LONG DELAY TIME	N/A	19.0 (SECONDS)	SHORT DELAY TIME	N/A	19.0 (SECONDS)
1	COFFEE WATER START	1	1.2 (SECONDS)	COFFEE WATER DURATION	1	6.2 (SECONDS)
2	COFFEE AUGER START	2	3.0 (SECONDS)	COFFEE AUGER DURATION	2	3.2 (SECONDS)
3	COFFEE LIGHT AUGER START	3	5.6 (SECONDS)	COFFEE LIGHT AUGER DURATION	3	0.8 (SECONDS)
4	COFFEE SUGAR AUGER START	4	5.4 (SECONDS)	COFFEE SUGAR AUGER DURATION	4	1.0 (SECONDS)
5	TEA AUGER START	5	2.5 (SECONDS)	TEA AUGER DURATION	5	1.0 (SECONDS)
6	TEA WATER START	6	0.7 (SECONDS)	TEA WATER DURATION	6	7.2 (SECONDS)
7	CAPPUCCINO/SOUP AUGER START	7	1.5 (SECONDS)	CAPPUCCINO/SOUP AUGER DURATION	7	4.0/1.0 (SECONDS)
8	CAPP/SOUP WATER/WHIPPER START	8	0.0 (SECONDS)	CAPPUCCINO/SOUP WATER/WHIPPER DURATION	8	6.2 (SECONDS)
9	CHOCOLATE AUGER START	9	1.5 (SECONDS)	CHOCOLATE AUGER DURATION	9	3.9 (SECONDS)
10	CHOCOLATE WATER/WHIPPER START	10	0.0 (SECONDS)	CHOCOLATE WATER/WHIPPER DURATION	10	6.1 (SECONDS)
11	TEA SUGAR AUGER START	4	3.0 (SECONDS)	TEA SUGAR AUGER DURATION	4	0.8 (SECONDS)
12	COFFEE WHIPPER START	8	1.3 (SECONDS)	COFFEE WHIPPER DURATION	8	5.1 (SECONDS)
13	TEA LIGHT AUGER START	3	3.2 (SECONDS)	TEA LIGHT AUGER DURATION	3	0.8 (SECONDS)
14	TEA BREWER START	X	15.0 (SECONDS)	TEA BREWER DURATION	X	2.8 (SECONDS)
15	EXTRA COFFEE LIGHT DURATION	3	0.2 (SECONDS)	EXTRA SUGAR DURATION	4	0.3 (SECONDS)
16	EXTRA TEA LIGHT DURATION	3	0.1 (SECONDS)	MACHINE CONFIGURATION	N/A	0.5
17	CUP DROP DURATION	11	1.8 (SECONDS)	CUP SENSOR CONTROL	N/A	0.1
18	CUP DISCOUNT	N/A	00	ESPRESSO COFFEE WATER PERCENTAGE	1	70
19	CAFE MOCHA COFFEE WATER DURATION	1	3.9 (SECONDS)	CAFE MOCHA COFFEE AUGER DURATION	2	1.1 (SECONDS)
20	CAFE MOCHA CHOC. AUGER START TIME	9	7.5 (SECONDS)	CAFE MOCHA CHOC. AUGER DURATION	9	1.2 (SECONDS)
21	CAFE MOCHA CHOC. WATER/WHIPPER START	10	6.5 (SECONDS)	CAFE MOCHA CHOC. WATER/WHIPPER DURATION	10	2.4 (SECONDS)
22	CAFAF MODE 0.0=OFF/1.0=CAFE/PORT ONLY!	N/A	0.0	NOT USED	N/A	NOT USED
23	COLD WATER SHOT START PULSE	1	1.7 (SECONDS)	COLD WATER SHOT DURATION	Y	1.7 (SECONDS)

UNIQUE PART NUMBERS

ITEM	PART NO	DWG NO	DESCRIPTION	QTY
1	36629	NONE	4 C\V MANIFOLD ASM	1
2	36615	NONE	TANK ASM EXPORT FD	1
3	36098	36098-A	HARNESS, RELAY ON TANK	1
4	36200	36200-B	WHIP HARNESS RELAY ON RACK	1



SELECTION: COF/WHP COF/CHOC/CAPP/FB TEA

Automatic Products — 1 INSERT COINS, 2 ENTER SELECTION CODE

COFFEE	BLACK A1	WHITE A2	BLK + SUGAR A3	WHT + SUGAR A4
COFFEE WHIPPED	BLACK B1	WHITE B2	BLK + SUGAR B3	WHT + SUGAR B4
FRESH TEA LEAF	BLACK C1	WHITE C2	BLK + SUGAR C3	WHT + SUGAR C4
EXTRA - MAKE SELECTION THEN PRESS	# EXTRA SUGAR	* EXTRA WHITE		
HOT CHOCOLATE	C5			
CAPPUCCINO	C6			

NOTE:

1. Times for 7 oz cups.
2. Soluable Tea may replace Fresh Tea Leaf.

TEA	BLACK C1	WHITE C2	BLK + SUGAR C3	WHT + SUGAR C4

3. A Soup may replace the Cappuccino.

SOUP	C6

LET	REVISION	BY	DATE	BG CHG#
A	RELEASED FOR SERVICE MANUAL	SRD	9/12/96	---

NAME: TROUGH SETUP 1-1&4 W/ WHIPPED COFFEE

DO NOT SCALE DRAWING

MODEL 211E

DRAWN SRD 9/12/96

APP.

Refreshment Machinery Industries
300 Jacksonville Road Warminster PA 18974

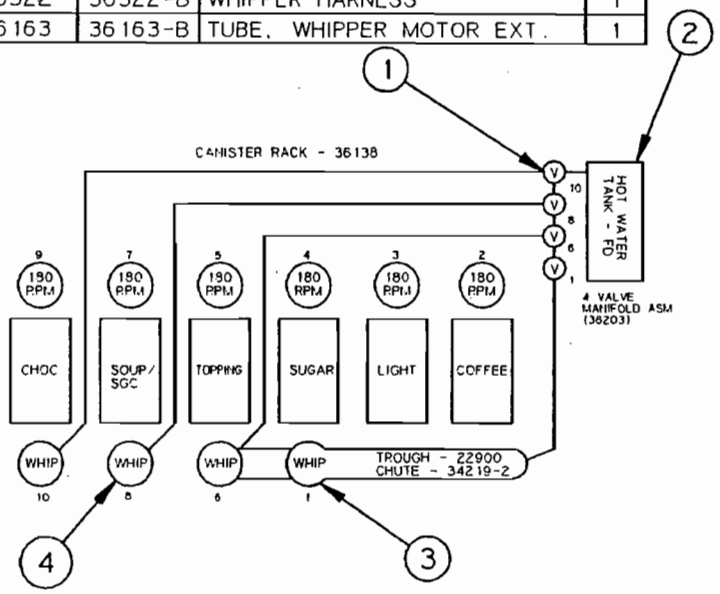
NUMBER SERVMN14 SIZE B REV A

TIMING CHART, 211FD EXPORT-MACHINE CONFIGURATION 00.7

CHANNEL NUMBER	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 2 LINE No.	KEY (BUTTON) NO. 2 VALUE	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 3 LINE No.	KEY (BUTTON) NO. 3 VALUE
0	LONG DELAY TIME	N/A	8.0 (SECONDS)	SHORT DELAY TIME	N/A	10.0 (SECONDS)
1	COFFEE WATER START	1	1.0 (SECONDS)	COFFEE WATER DURATION	1	5.0 (SECONDS)
2	COFFEE START	2	2.0 (SECONDS)	COFFEE DURATION	2	1.1 (SECONDS)
3	LIGHT START (COFFEE)	3	2.5 (SECONDS)	LIGHT DURATION (COFFEE)	3	1.2 (SECONDS)
4	SUGAR START (COFFEE)	4	2.7 (SECONDS)	SUGAR DURATION (COFFEE)	4	1.0 (SECONDS)
5	CAPPUCCINO WHITE AUGER START	5	0.9 (SECONDS)	CAPPUCCINO WHITE AUGER DURATION	5	1.5 (SECONDS)
6	CAPPUCCINO WHITE WATER/WHIPPER START	6	0.0 (SECONDS)	CAPPUCCINO WHITE WATER/WHIPPER DURATION	6	3.2 (SECONDS)
7	SOUP/SGC AUGER AUGER START	7	2.0 (SECONDS)	SOUP/SGC AUGER AUGER DURATION	7	2.5/4.0 (SECONDS)
8	SOUP/SGC WATER START	8	0.0 (SECONDS)	SOUP/SGC WATER DURATION	8	5.0 (SECONDS)
9	CHOCOLATE START	9	1.5 (SECONDS)	CHOCOLATE DURATION	9	5.5 (SECONDS)
10	CHOCOLATE WATER, WHIPPER START	10	0.0 (SECONDS)	CHOCOLATE WATER, WHIPPER DURATION	10	6.0 (SECONDS)
11	CAPPUCCINO WATER START	4	2.0 (SECONDS)	CAPPUCCINO WATER DURATION	4	2.5 (SECONDS)
12	ESPRESSO WATER START	1	1.5 (SECONDS)	ESPRESSO WATER DURATION	1	3.5 (SECONDS)
13	XXXXXXXXXXXXXXXXXXXXX	3	0.0 (SECONDS)	XXXXXXXXXXXXXXXXXXXXX	3	0.0 (SECONDS)
14	XXXXXXXXXXXXXXXXXXXXX		0.0 (SECONDS)	XXXXXXXXXXXXXXXXXXXXX		0.0 (SECONDS)
15	EXTRA LIGHT DURATION (COFFEE)	3	0.6 (SECONDS)	EXTRA SUGAR DURATION	4	0.5 (SECONDS)
16	EXTRA TEA LIGHT DURATION	3	0.0 (SECONDS)	MACHINE CONFIGURATION CODE	N/A	0.7
17	CUP DROP DURATION	11	1.7 (SECONDS)	CUP SENSOR CONTROL	N/A	0.1
18	CUP DISCOUNT	N/A	00 (SECONDS)	ESPRESSO COFFEE WATER PERCENTAGE	1	70
19	CAFE MOCHA COFFEE WATER DURATION	1	3.9 (SECONDS)	CAFE MOCHA COFFEE AUGER DURATION	2	1.1 (SECONDS)
20	CAFE MOCHA CHOC AUGER START TIME	9	7.5 (SECONDS)	CAFE MOCHA CHOC AUGER DURATION	9	1.2
21	CAFE MOCHA CHOC WATER/WHIPPER START	10	6.5 (SECONDS)	CAFE MOCHA CHOC WATER/WHIPPER DURATION	10	2.4 (SECONDS)
22	CARAF MODE 0.0=OFF/1.0=ON (EXPORT ONLY)	N/A	1.0 (SECONDS)	NOT USED	N/A	NOT USED
23	COLD WATER SHOT START PULSE	Y	1.7 (SECONDS)	COLD WATER SHOT DURATION	Y	1.7 (SECONDS)

UNIQUE PART NUMBERS

ITEM	PART NO	DWG NO	DESCRIPTION	QTY
1	36616	NONE	TANK ASM EXPORT FD	1
2	36629	NONE	4 C\V MANIFOLD ASM	1
3	36322	36322-B	WHIPPER HARNESS	1
4	36163	36163-B	TUBE, WHIPPER MOTOR EXT.	1



SELECTION: WHP COF/WHP ESP/CHOC/SOUP/CAPP (H.S. WHITE)

Automatic Products
1. INSERT COINS
2. ENTER SELECTION CODE

COFFEE	BLACK A1	WHITE A2	BLK + SUG A3	WHT + SUGAR A4
ESPRESSO	BLACK B1	WHITE B2	BLK + SUG B3	WHT + SUGAR B4
CAPPUCCINO	BLACK C1		BLK + SUG C3	
EXTRA - MAKE SELECTION THEN PRESS	# EXTRA WHITE		* EXTRA SUGAR	
HOT CHOCOLATE	C5			
SOUP	C6			
SGC	C6			

NOTE:

1. Times for 7 oz tall cups only.
2. Disable A5, A6, A*, A#, B6, B*, B#, C2, C4, C*, C#, D1, D2, D3, D4, D5, D6, D* and D#.
3. A Soluable Gourmet Coffee may replace Soup.

LET	REVISION	BY	DATE	EG CHG#
A	RELEASED FOR SERVICE MANUAL	SRD	9/12/96	---

NAME: TROUGH SETUP 1-1-1&3 W/ H.S. WHITE

DO NOT SCALE DRAWING

MODEL 211E

DRAWN SRD 9/12/96

APP.

Refreshment Machinery Industries
300 Jacksonville Road Warminster PA 18974

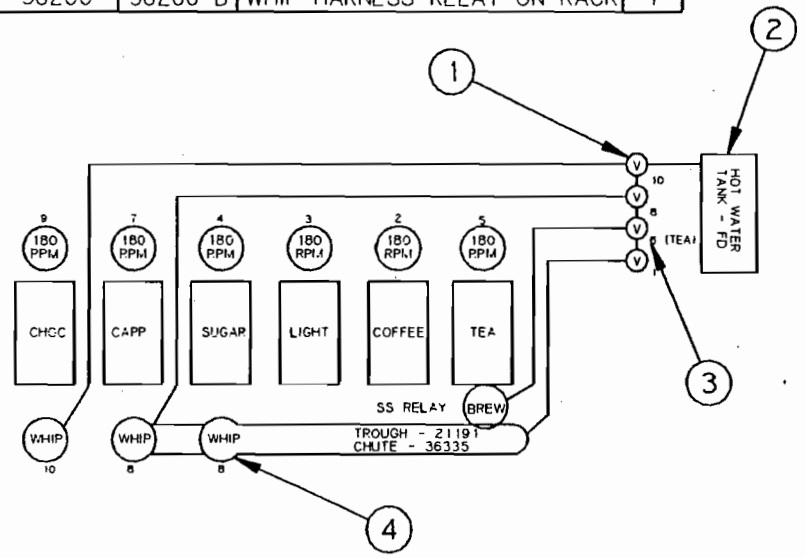
NUMBER SERVMN15 | SIZE B | REV A

TIMING CHART, 211FD -MACHINE CONFIGURATION 00.5

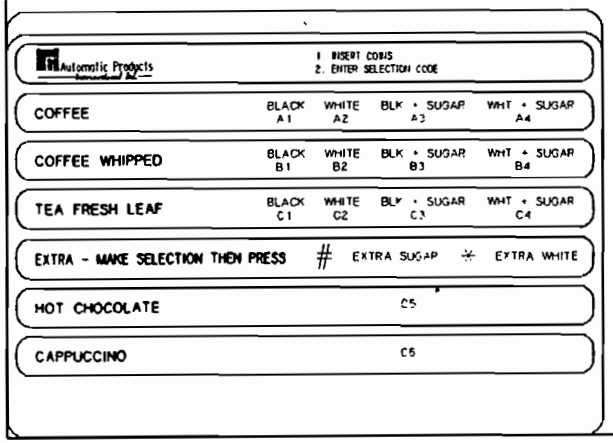
CHANNEL NUMBER	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 2 LINE No.	KEY (BUTTON) NO. 2 VALUE	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 3 LINE No.	KEY (BUTTON) NO. 3 VALUE
0	LONG DELAY TIME	N/A	19.0 (SECONDS)	SHORT DELAY TIME	N/A	19.0 (SECONDS)
1	COFFEE WATER START	1	1.2 (SECONDS)	COFFEE WATER DURATION	1	7.3 (SECONDS)
2	COFFEE START	2	3.0 (SECONDS)	COFFEE DURATION	2	3.7 (SECONDS)
3	LIGHT START (COFFEE)	3	5.6 (SECONDS)	LIGHT DURATION (COFFEE)	3	0.8 (SECONDS)
4	SUGAR START (COFFEE)	4	5.4 (SECONDS)	SUGAR DURATION (COFFEE)	4	1.0 (SECONDS)
5	TEA START	5	2.5 (SECONDS)	TEA DURATION	5	1.0 (SECONDS)
6	TEA WATER START	6	0.7 (SECONDS)	TEA WATER DURATION	6	8.6 (SECONDS)
7	CAPPUCCINO START	7	1.5 (SECONDS)	CAPPUCCINO DURATION	7	1.0 (SECONDS)
8	CAPP WATER, WHIPPER START	8	0.0 (SECONDS)	CAPP WATER, WHIPPER DURATION	8	7.3 (SECONDS)
9	CHOCOLATE START	9	1.5 (SECONDS)	CHOCOLATE DURATION	9	4.4 (SECONDS)
10	CHOCOLATE WATER, WHIPPER START	10	0.0 (SECONDS)	CHOCOLATE WATER, WHIPPER DURATION	10	7.2 (SECONDS)
11	SUGAR START (TEA)	4	3.0 (SECONDS)	SUGAR DURATION (TEA)	4	0.8 (SECONDS)
12	COFFEE WHIPPER START	8	1.3 (SECONDS)	COFFEE WHIPPER DURATION	8	5.5 (SECONDS)
13	LIGHT START (TEA)	3	3.2 (SECONDS)	LIGHT DURATION (TEA)	3	0.8 (SECONDS)
14	TEA BREWER START	X	15.0 (SECONDS)	TEA BREWER DURATION	X	2.8 (SECONDS)
15	EXTRA LIGHT DURATION (COFFEE)	3	0.2 (SECONDS)	EXTRA SUGAR DURATION	4	0.5 (SECONDS)
16	EXTRA TEA LIGHT DURATION	3	0.1 (SECONDS)	MACHINE CONFIGURATION CODE	N/A	0.5
17	CUP DROP DURATION	11	1.8 (SECONDS)	CUP SENSOR CONTROL	N/A	0.1
18	CUP DISCOUNT	N/A	00 (SECONDS)	ESPRESSO COFFEE WATER PERCENTAGE	1	70
19	CAFE MOCHA COFFEE WATER DURATION	1	4.6 (SECONDS)	CAFE MOCHA COFFEE AUGER DURATION	2	1.3 (SECONDS)
20	CAFE MOCHA CHOC AUGER START TIME	9	7.5 (SECONDS)	CAFE MOCHA CHOC AUGER DURATION	9	1.5
21	CAFE MOCHA CHOC WATER/WHIPPER START	10	6.5 (SECONDS)	CAFE MOCHA CHOC WATER/WHIPPER DURATION	10	2.8 (SECONDS)
22	CARAF MODE 0.0=OFF/1.0=ON(EXPORT ONLY)	N/A	0.0 (SECONDS)	NOT USED	N/A	NOT USED
23	COLD WATER SHOT START PULSE	Y	2.0 (SECONDS)	COLD WATER SHOT DURATION	Y	2.0 (SECONDS)

UNIQUE PART NUMBERS

ITEM	PART NO	DWG NO	DESCRIPTION	QTY
1	36629	NONE	4 C\V MANIFOLD ASM	1
2	36615	NONE	TANK ASM EXPORT FD	1
3	36098	36098-A	HARNESS, RELAY ON TANK	1
4	36200	36200-B	WHIP HARNESS RELAY ON RACK	1



SELECTION: COF/WHP COF/CHOC/CAPP/FB TEA



NOTE:

1. Times for 8 1/4 oz cups.

LET	REVISION	BY	DATE	E.C NO
A	RELEASED FOR SERVICE MANUAL	RWD	1/21/99	---

NAME TROUGH SETUP 1-1&4 W/WHIPPED COFFEE/CAPP

		DATE
DRAWN	RWD	1/21/99
APP.		

DO NOT SCALE DRAWING

MODEL 211E

THE INFORMATION ON THIS DRAWING IS CONFIDENTIAL. UNAUTHORIZED USE IS PROHIBITED.

Gross-Given Mfg.Co.
300 Jacksonville Road Warminster PA 18974

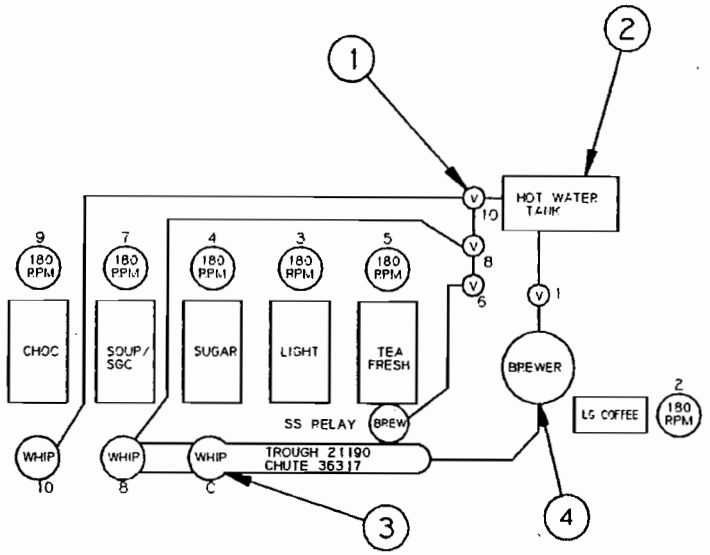
NUMBER SERVMN17 | SIZE B | REV A

TIMING CHART, 211LG EXPORT-MACHINE CONFIGURATION 00.1

CHANNEL NUMBER	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 2 LINE No.	KEY (BUTTON) NO. 2 VALUE	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 3 LINE No.	KEY (BUTTON) NO. 3 VALUE
0	LONG DELAY TIME	N/A	23.0 (SECONDS)	SHORT DELAY TIME	N/A	12.0 (SECONDS)
1	BREWER, WATER START	1	2.5 (SECONDS)	BREWER DURATION	1	5.7 (SECONDS)
2	COFFEE START	2	0.0 (SECONDS)	COFFEE DURATION	2	1.5 (SECONDS)
3	LIGHT START (COFFEE)	3	14.2 (SECONDS)	LIGHT DURATION (COFFEE)	3	0.8 (SECONDS)
4	SUGAR START (COFFEE)	4	13.7 (SECONDS)	SUGAR DURATION (COFFEE)	4	1.0 (SECONDS)
5	TEA START	5	2.0 (SECONDS)	TEA DURATION	5	1.0 (SECONDS)
6	TEA WATER START	6	0.7 (SECONDS)	TEA WATER DURATION	6	6.1 (SECONDS)
7	SOUP/SGC AUGER START	7	1.5 (SECONDS)	SOUP/SGC AUGER DURATION	7	1.0/4.0 (SECONDS)
8	SOUP/SGC WATER, WHIPPER START	8	0.0 (SECONDS)	SOUP/SGC WATER, WHIPPER DURATION	8	6.1 (SECONDS)
9	CHOCOLATE START	9	1.5 (SECONDS)	CHOCOLATE DURATION	9	3.9 (SECONDS)
10	CHOCOLATE WATER, WHIPPER START	10	0.0 (SECONDS)	CHOCOLATE WATER, WHIPPER DURATION	10	6.1 (SECONDS)
11	SUGAR START (TEA)	4	3.0 (SECONDS)	SUGAR DURATION (TEA)	4	0.8 (SECONDS)
12	STRONG COFFEE START	2	0.0 (SECONDS)	STRONG COFFEE DURATION	2	2.8 (SECONDS)
13	LIGHT START (TEA)	3	3.2 (SECONDS)	LIGHT DURATION (TEA)	3	0.8 (SECONDS)
14	TEA BREWER START	X	15.0 (SECONDS)	TEA BREWER DURATION	X	2.8 (SECONDS)
15	EXTRA LIGHT DURATION (COFFEE)	3	0.2 (SECONDS)	EXTRA SUGAR DURATION	4	0.5 (SECONDS)
16	EXTRA TEA LIGHT DURATION	3	0.1 (SECONDS)	MACHINE CONFIGURATION CODE	N/A	0.1
17	CUP DROP DURATION	11	1.8 (SECONDS)	CUP SENSOR CONTROL	N/A	0.1
18	CUP DISCOUNT	N/A	00 (SECONDS)	ESPRESSO COFFEE WATER PERCENTAGE	1	70
19	CAFE MOCHA COFFEE WATER DURATION	1	4.1 (SECONDS)	CAFE MOCHA COFFEE AUGER DURATION	2	1.1 (SECONDS)
20	CAFE MOCHA CHOC AUGER START TIME	9	15.0 (SECONDS)	CAFE MOCHA CHOC AUGER DURATION	9	1.2
21	CAFE MOCHA CHOC WATER/WHIPPER START	10	16.0 (SECONDS)	CAFE MOCHA CHOC WATER/WHIPPER DURATION	10	2.4 (SECONDS)
22	CARAF MODE 0.0=OFF/1.0=ON (EXPORT ONLY)	N/A	0.0 (SECONDS)	NOT USED	N/A	NOT USED
23	COLD WATER SHOT START PULSE	Y	1.7 (SECONDS)	COLD WATER SHOT DURATION	Y	1.7 (SECONDS)

UNIQUE PART NUMBERS

ITEM	PART NO	DWG NO	DESCRIPTION	QTY
1	36628	NONE	3 C\V MANIFOLD ASM	1
2	36617	NONE	TANK ASM EXPORT LG	1
3	36095	36095-A	HARNESS WHIP ADP 8/C 211E	1
4	36247	36247-A	JUMPER, BREWER WHIPPER CAM 211E	1



SELECTION: WHP COF/WHP ST COF/CHOC/SOUP/FB TEA

Automatic Products	1. INSERT COINS 2. ENTER SELECTION CODE			
COFFEE FRESH BREWED	BLACK A1	WHITE A2	BLK + SUGAR A3	WHT + SUGAR A4
STRONG FRESH BREWED	BLACK B1	WHITE B2	BLK + SUGAR B3	WHT + SUGAR B4
FRESH LEAF TEA	BLACK C1	WHITE C2	BLK + SUGAR C3	WHT + SUGAR C4
EXTRA - MAKE SELECTION THEN PRESS	+ EXTRA SUGAR	# EXTRA WHITE		
HOT CHOCOLATE	C5			
SOUP	C6			

NOTE:

1. Times for 7 oz. cups Only.
2. For Cafe Mocha, use machine configuration 0.0. Cafe Mocha replaces Strong Coffee B1-B4.

CAFE MOCHA	BLACK B1	WHITE B2	BLK + SUGAR B3	WHT + SUGAR B4
TEA	BLACK C1	WHITE C2	BLK + SUGAR C3	WHT + SUGAR C4

3. Soluable Tea may replace Fresh Leaf Tea and a Soluable Gourmet Coffee may replace Soup.

SOC	C6

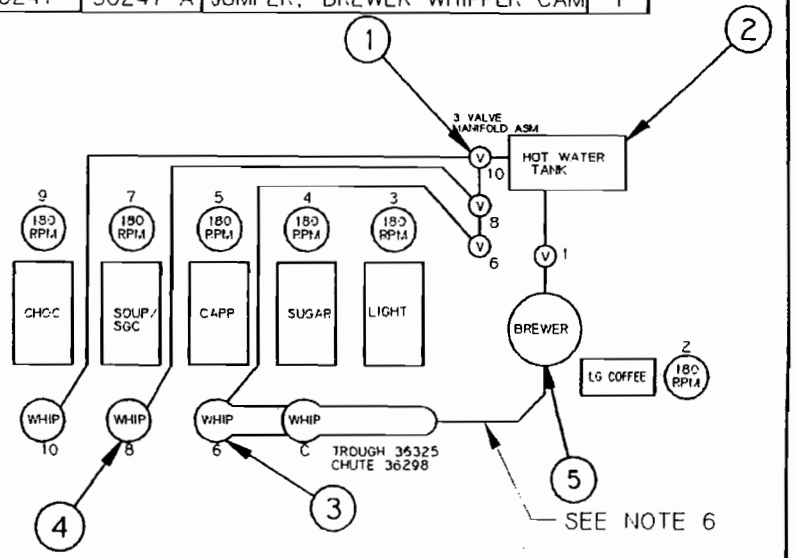
A	RELEASED FOR SERVICE MANUAL		SRD	9/12/96	---
LET	REVISION		BY	DATE	BG CHG#
NAME	TROUGH SETUP 1-1&3 W/ STRONG COFFEE				
					DATE
			DRAWN	SRD	9/12/96
DO NOT SCALE DRAWING	MODEL 211E		APP.		
	THE INFORMATION ON THIS DRAWING IS CONFIDENTIAL. UNAUTHORIZED USE IS PROHIBITED.				
Refreshment Machinery Industries 300 Jacksonville Road Warminster PA 18974			NUMBER SERVMN1	SIZE B	REV. A

TIMING CHART, 211LG EXPORT-MACHINE CONFIGURATION 00.1

CHANNEL NUMBER	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 2 LINE No.	KEY (BUTTON) NO. 2 VALUE	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 3 LINE No.	KEY (BUTTON) NO. 3 VALUE
0	LONG DELAY TIME	N/A	23.0 (SECONDS)	SHORT DELAY TIME	N/A	12.0 (SECONDS)
1	BREWER, WATER START	1	2.5 (SECONDS)	BREWER DURATION	1	5.4 (SECONDS)
2	COFFEE START	2	0.0 (SECONDS)	COFFEE DURATION	2	2.0 (SECONDS)
3	LIGHT START (COFFEE)	3	14.2 (SECONDS)	LIGHT DURATION (COFFEE)	3	0.8 (SECONDS)
4	SUGAR START (COFFEE)	4	13.7 (SECONDS)	SUGAR DURATION (COFFEE)	4	0.9 (SECONDS)
5	CAPPUCCINO START	5	1.5 (SECONDS)	CAPPUCCINO DURATION	5	1.0 (SECONDS)
6	CAPPUCCINO WATER START	6	0.0 (SECONDS)	CAPPUCCINO WATER DURATION	6	8.0 (SECONDS)
7	SOUP/SGC AUGER START	7	1.5 (SECONDS)	SOUP/SGC AUGER DURATION	7	1.0/4.5 (SECONDS)
8	SOUP/SGC WATER, WHIPPER STAR	8	0.0 (SECONDS)	SOUP/SGC WATER, WHIPPER DURATIO	8	6.1 (SECONDS)
9	CHOCOLATE START	9	1.5 (SECONDS)	CHOCOLATE DURATION	9	6.6 (SECONDS)
10	CHOCOLATE WATER, WHIPPER START	10	0.0 (SECONDS)	CHOCOLATE WATER, WHIPPER DURATION	10	10.0 (SECONDS)
11	XXXXXXXXXXXXXXXXXXXXX	4	0.0 (SECONDS)	XXXXXXXXXXXXXXXXXXXXX	4	0.0 (SECONDS)
12	STRONG COFFEE START	2	0.0 (SECONDS)	STRONG COFFEE DURATION	2	2.4 (SECONDS)
13	XXXXXXXXXXXXXXXXXXXX	3	0.0 (SECONDS)	XXXXXXXXXXXXXXXXXXXX	3	0.0 (SECONDS)
14	XXXXXXXXXXXXXXXXXXX	-	0.0 (SECONDS)	XXXXXXXXXXXXXXXXXXX	-	0.0 (SECONDS)
15	EXTRA LIGHT DURATION (COFFEE)	3	0.2 (SECONDS)	EXTRA SUGAR DUPATION	4	0.5 (SECONDS)
16	EXTRA TEA LIGHT DURATION	3	0.1 (SECONDS)	**MACHINE CONFIGURATION CODE**	N/A	**0.1**
17	CUP DROP DURATION	11	1.8 (SECONDS)	CUP SENSOR CONTROL	N/A	0.1
18	CUP DISCOUNT	N/A	00 (SECONDS)	ESPRESSO COFFEE WATER PERCENTAGE	1	70
19	CAFE MOCHA COFFEE WATER DURATION	1	4.1 (SECONDS)	CAFE MOCHA COFFEE AUGER DURATION	2	1.1 (SECONDS)
20	CAFE MOCHA CHOC AUGER START TIME	9	16.0 (SECONDS)	CAFE MOCHA CHOC AUGER DURATION	9	1.2
21	CAFE MOCHA CHOC WATER/WHIPPER START	10	15.0 (SECONDS)	CAFE MOCHA CHOC WATER/WHIPPER DURATION	10	2.4 (SECONDS)
22	CAFAF MODE 0.0=OFF/1.0=ON (EXPORT ONLY)	N/A	0.0 (SECONDS)	NOT USED	N/A	NOT USED
23	COLD WATER SHOT START PULSE	Y	1.7 (SECONDS)	COLD WATER SHOT DURATION	Y	1.7 (SECONDS)

UNIQUE PART NUMBERS

ITEM	PART NO	DWG NO	DESCRIPTION	QTY
1	36628	NONE	3 C\V MANIFOLD ASM	1
2	36617	NONE	TANK ASM EXPORT	1
3	36323	36323-A	HARNESS WHIP ADP 8/6/C 211E	1
4	36163	36163-B	TUBE, WHIPPER MOTOR EXT.	1
5	36247	36247-A	JUMPER, BREWER WHIPPER CAM	1



SELECTION: WHP COF/WHP ST COF/CHOC/SOUP/CAPP

Automatic Products — 1. INSERT COINS 2. ENTER SELECTION CODE

COFFEE FRESH BREWED	BLACK A1	WHITE A2	BLK + SUGAR A3	WHT + SUGAR A4
STRONG FRESH BREWED	BLACK B1	WHITE B2	BLK + SUGAR B3	WHT + SUGAR B4
EXTRA - MAKE SELECTION THEN PRESS	+ EXTRA SUGAR	# EXTRA WHITE		
CAPPUCCINO	C1			
HOT CHOCOLATE	C5			
SOUP	C6			

SGC C6

NOTE:

1. Times for 7 oz tall cups only.
2. Disable C2, C3, C4.
3. A Soluable Gourmet Coffee may replace Soup.

A	RELEASED FOR SERVICE MANUAL	SRD	9/12/96	---
LET	REVISION	BY	DATE	BG CHG#

NAME TROUGH SETUP 1-1-1&2 W/ STRONG COFFEE

DO NOT SCALE DRAWING

MODEL 211E

DRAWN SRD 9/12/96

APP.

Refreshment Machinery Industries
300 Jacksonville Road Warminster PA 18974

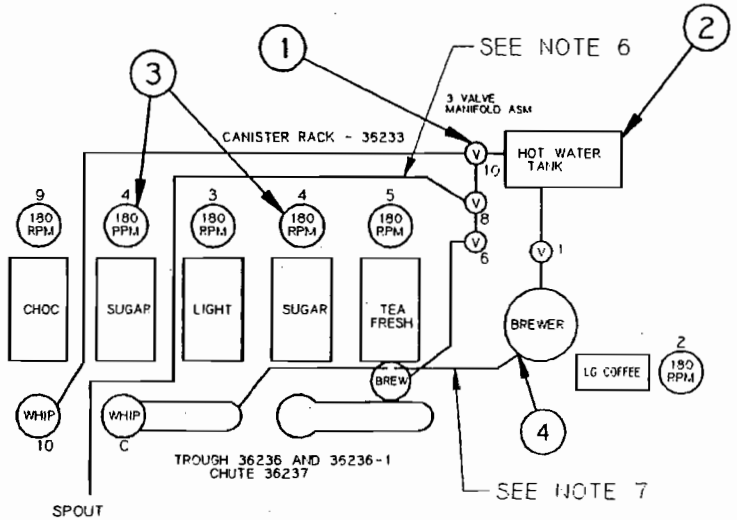
NUMBER SERVMAN2 SIZE B REV. A

TIMING CHART, 211LG EXPORT-MACHINE CONFIGURATION 00.2

CHANNEL NUMBER	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 2 LINE No.	KEY (BUTTON) NO. 2 VALUE	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 3 LINE No	KEY (BUTTON) NO. 3 VALUE
0	LONG DELAY TIME	N/A	23.0 (SECONDS)	SHORT DELAY TIME	N/A	19.0 (SECONDS)
1	BREWER, WATER START	1	2.5 (SECONDS)	BREWER DURATION	1	5.7 (SECONDS)
2	COFFEE AUGER START	2	0.0 (SECONDS)	COFFEE AUGER DURATION	2	1.5 (SECONDS)
3	COFFEE LIGHT AUGER START	3	13.7 (SECONDS)	COFFEE LIGHT AUGER DURATION	3	0.7 (SECONDS)
4	COFFEE SUGAR AUGER START	4	14.5 (SECONDS)	COFFEE SUGAR AUGER DURATION	4	1.0 (SECONDS)
5	TEA AUGER START	5	0.0 (SECONDS)	TEA AUGER DURATION	5	1.5 (SECONDS)
6	TEA WATER START	6	0.7 (SECONDS)	TEA WATER DURATION	6	6.1 (SECONDS)
7	XXXXXXXXXXXXXXXXXXX	7	0.0 (SECONDS)	XXXXXXXXXXXXXXXXXXX	7	0.0 (SECONDS)
8	HOT WATER START	8	0.0 (SECONDS)	HOT WATER DURATION	8	6.1 (SECONDS)
9	CHOCOLATE AUGER START	9	2.0 (SECONDS)	CHOCOLATE AUGER DURATION	9	3.9 (SECONDS)
10	CHOCOLATE WATER/WHIPPER START	10	0.0 (SECONDS)	CHOCOLATE WATER/WHIPPER DURATION	10	6.0 (SECONDS)
11	TEA SUGAR AUGER START	4	3.0 (SECONDS)	TEA SUGAR AUGER DURATION	4	0.8 (SECONDS)
12	ESPRESSO WATER START	1	4.0 (SECONDS)	ESPRESSO DURATION	1	4.8 (SECONDS)
13	TEA LIGHT AUGER START	3	4.0 (SECONDS)	TEA LIGHT AUGER DURATION	3	0.8 (SECONDS)
14	TEA BREWER START	X	15.0 (SECONDS)	TEA BREWER DURATION	7	1.5 (SECONDS)
15	EXTRA LIGHT DUPATION (COFFEE)	3	0.2 (SECONDS)	EXTRA SUGAR DURATION	4	0.5 (SECONDS)
16	EXTRA TEA LIGHT DURATION	3	0.1 (SECONDS)	MACHINE CONFIGURATION CODE	N/A	0.2
17	CUP DROP DURATION	11	1.7 (SECONDS)	CUP SENSOR CONTROL	N/A	0.1
18	CUP DISCOUNT	N/A	00 (SECONDS)	ESPRESSO COFFEE WATER PERCENTAGE	1	70
19	CAFE MOCHA COFFEE WATER DURATION	1	3.8 (SECONDS)	CAFE MOCHA COFFEE AUGER DURATION	2	1.1 (SECONDS)
20	CAFE MOCHA CHOC AUGER START TIME	9	12.8 (SECONDS)	CAFE MOCHA CHOC AUGER DURATION	9	1.2
21	CAFE MOCHA CHOC WATER/WHIPPER START	10	12.0 (SECONDS)	CAFE MOCHA CHOC WATER/WHIPPER DURATION	10	2.6 (SECONDS)
22	CARAF MODE 0.0=OFF/1.0=ON (EXPORT ONLY)	N/A	1.0 (SECONDS)	NOT USED	N/A	NOT USED
23	COLD WATER SHOT START PULSE	Y	2.0 (SECONDS)	COLD WATER SHOT DURATION	Y	2.0 (SECONDS)

UNIQUE PART NUMBERS

ITEM	PART NO	DWG NO	DESCRIPTION	QTY
1	36628	NONE	3 C\V MANIFOLD ASM	1
2	36617	NONE	TANK ASM EXPORT	1
3	36202	36202-B	RELAY ON RACK	1
4	36247	36247-A	JUMPER, BREWER WHIPPER CAM	1



SELECTION: WHP COF/WHP ESP/CHOC/FB TEA/HOT WATER

NOTE:

1. Times for 7 oz tall cups only.
2. Disable A*, A#, B*, B#, C2, C4, C*, C#, D* and D#.
3. A Soluable Tea may replace Fresh Tea Leaf.

Automatic Products — 1. INSERT COINS 2. ENTER SELECTION CODE

COFFEE FRESH BREWED	BLACK A1	WHITE A2	BLK + SUGAR A3	WHT + SUGAR A4
ESPRESSO	BLACK B1	WHITE B2	BLK + SUGAR B3	WHT + SUGAR B4
FRESH LEAF TEA	BLACK C1		BLK + SUGAR C3	
EXTRA - MAKE SELECTION THEN PRESS	* EXTRA SUGAR	# EXTRA WHITE		
HOT CHOCOLATE	C5			
HOT WATER	C6			

TEA	BLACK C1	BLK + SUGAR C3

LET	REVISION	BY	DATE	BG CHG#
A	RELEASED FOR SERVICE MANUAL	SRD	9/12/96	---

NAME: TROUGH SETUP 1-2-2 W/ ESPRESSO/HOT WATER

DO NOT SCALE DRAWING — MODEL 211E — DRAWN SRD 9/12/96 — APP

Refreshment Machinery Industries
300 Jacksonville Road Warminster PA 18974

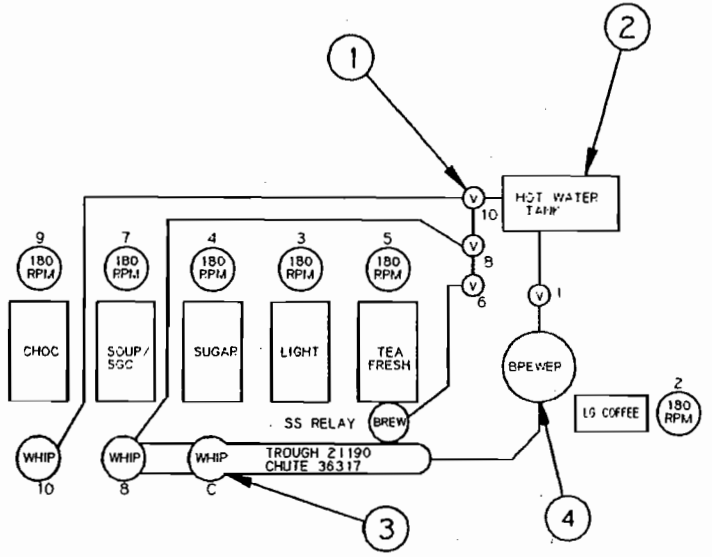
NUMBER SERVMN9 — SIZE B — REV A

TIMING CHART, 211LG EXPORT-MACHINE CONFIGURATION 00.2

CHANNEL NUMBER	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 2 LINE No.	KEY (BUTTON) NO. 2 VALUE	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 3 LINE No.	KEY (BUTTON) NO. 3 VALUE
0	LONG DELAY TIME	N/A	23.0 (SECONDS)	SHORT DELAY TIME	N/A	12.0 (SECONDS)
1	BREWER, WATER START	1	2.5 (SECONDS)	BREWER DURATION	1	5.7 (SECONDS)
2	COFFEE START	2	0.0 (SECONDS)	COFFEE DURATION	2	1.5 (SECONDS)
3	LIGHT START (COFFEE)	3	14.2 (SECONDS)	LIGHT DURATION (COFFEE)	3	0.8 (SECONDS)
4	SUGAR START (COFFEE)	4	13.7 (SECONDS)	SUGAR DURATION (COFFEE)	4	1.0 (SECONDS)
5	TEA START	5	2.0 (SECONDS)	TEA DURATION	5	1.0 (SECONDS)
6	TEA WATER START	6	0.7 (SECONDS)	TEA WATER DURATION	6	6.1 (SECONDS)
7	SOUP/SGC AUGER START	7	1.5 (SECONDS)	SOUP/SGC AUGER DURATION	7	1.0/4.0 (SECONDS)
8	SOUP/SGC WATER, WHIPPER START	8	0.0 (SECONDS)	SOUP/SGC WATER, WHIPPER DURATION	8	6.1 (SECONDS)
9	CHOCOLATE START	9	1.5 (SECONDS)	CHOCOLATE DURATION	9	3.9 (SECONDS)
10	CHOCOLATE WATER, WHIPPER START	10	0.0 (SECONDS)	CHOCOLATE WATER, WHIPPER DURATION	10	6.1 (SECONDS)
11	SUGAR START (TEA)	4	3.0 (SECONDS)	SUGAR DURATION (TEA)	4	0.8 (SECONDS)
12	ESP WATER START	1	3.1 (SECONDS)	ESP WATER DURATION	1	4.8 (SECONDS)
13	LIGHT START (TEA)	3	3.2 (SECONDS)	LIGHT DURATION (TEA)	3	0.8 (SECONDS)
14	TEA BREWER START	X	15.0 (SECONDS)	TEA BREWER DURATION	X	2.8 (SECONDS)
15	EXTRA LIGHT DURATION (COFFEE)	3	0.2 (SECONDS)	EXTRA SUGAR DURATION	4	0.5 (SECONDS)
16	EXTRA TEA LIGHT DURATION	3	0.1 (SECONDS)	**MACHINE CONFIGURATION CODE**	N/A	**0.2**
17	CUP DROP DURATION	11	1.8 (SECONDS)	CUP SENSOR CONTROL	N/A	0.1
18	CUP DISCOUNT	N/A	00 (SECONDS)	ESPRESSO COFFEE WATER PERCENTAGE	1	70
19	CAFE MOCHA COFFEE WATER DURATION	1	4.1 (SECONDS)	CAFE MOCHA COFFEE AUGER DURATION	2	1.1 (SECONDS)
20	CAFE MOCHA CHOC AUGER START TIME	9	15.0 (SECONDS)	CAFE MOCHA CHOC AUGER DURATION	9	1.2
21	CAFE MOCHA CHOC WATER/WHIPPER START	10	16.0 (SECONDS)	CAFE MOCHA CHOC WATER/WHIPPER DURATION	10	2.4 (SECONDS)
22	CARAF MODE 0.0=OFF/1.0=ON (EXPORT ONLY)	N/A	0.0 (SECONDS)	NOT USED	N/A	0.0
23	COLD WATER SHOT START PULSE	Y	1.7 (SECONDS)	COLD WATER SHOT DURATION	Y	1.7 (SECONDS)

UNIQUE PART NUMBERS

ITEM	PART NO	DWG NO	DESCRIPTION	QTY
1	36628	NONE	3 C\V MANIFOLD ASM	1
2	36617	NONE	TANK ASM EXPORT LG	1
3	36095	36095-A	HARNESS WHIP ADP 8/C 211E	1
4	36247	36247-A	JUMPER, BREWER WHIPPER CAM 211E	1



SELECTION: WHP COF/WHP ESP/CHOC/SOUP/FB TEA

Automatic Products	1. INSERT CORD 2. ENTER SELECTION CODE			
COFFEE FRESH BREWED	BLACK A1	WHITE A2	BLK + SUGAR A3	WHT + SUGAR A4
ESPRESSO	BLACK B1	WHITE B2	BLK + SUGAR B3	WHT + SUGAR B4
FRESH LEAF TEA	BLACK C1	WHITE C2	BLK + SUGAR C3	WHT + SUGAR C4
EXTRA - MAKE SELECTION THEN PRESS	+ EXTRA SUGAR	# EXTRA WHITE		
HOT CHOCOLATE	C5			
SOUP	C6			

NOTE:

1. Times for 7 oz. cups Only.
2. A Soluable Tea may replace Fresh Tea Leaf.

TEA	BLACK C1	WHITE C2	BLK + SUGAR C3	WHT + SUGAR C4

3. A Soluable Gourmet Coffee may replace Soup.

SGC	C5

LET	REVISION	BY	DATE	EC CHG#
A	RELEASED FOR SERVICE MANUAL	SRD	9/12/96	---

NAME: TROUGH SETUP 1-1&3 W/ ESPRESSO

DO NOT SCALE DRAWING

MODEL 211E

DRAWN SRD 9/12/96

APP

Refreshment Machinery Industries
300 Jacksonville Road Warminster PA 18974

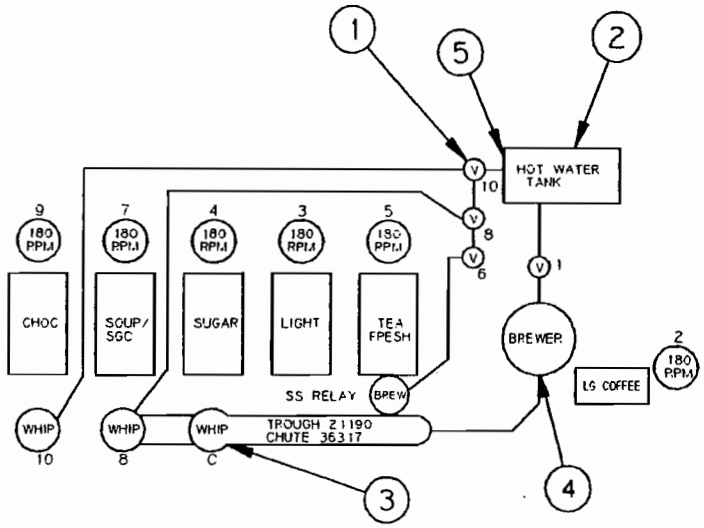
NUMBER SERVMN10 SIZE B REV A

TIMING CHART, 211LG EXPORT-MACHINE CONFIGURATION 00.5

CHANNEL NUMBER	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 2 LINE No.	KEY (BUTTON) NO. 2 VALUE	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 3 LINE No.	KEY (BUTTON) NO. 3 VALUE
0	LONG DELAY TIME	N/A	23.0 (SECONDS)	SHORT DELAY TIME	N/A	19.0 (SECONDS)
1	BREWER, WATER START	1	3.1 (SECONDS)	BREWER DURATION	1	5.7 (SECONDS)
2	COFFEE START	2	0.0 (SECONDS)	COFFEE DURATION	2	1.5 (SECONDS)
3	LIGHT START (COFFEE)	3	13.7 (SECONDS)	LIGHT DURATION (COFFEE)	3	0.8 (SECONDS)
4	SUGAR START (COFFEE)	4	14.2 (SECONDS)	SUGAR DURATION (COFFEE)	4	1.0 (SECONDS)
5	TEA START	5	2.5 (SECONDS)	TEA DURATION	5	1.0 (SECONDS)
6	TEA WATER START	6	0.0 (SECONDS)	TEA WATER DURATION	6	6.1 (SECONDS)
7	SOUP/SGC AUGER START	7	1.5 (SECONDS)	SOUP/SGC AUGER DURATION	7	1.0/4.0 (SECONDS)
8	SOUP/SGC WATER, WHIPPER START	8	0.0 (SECONDS)	SOUP/SGC WATER, WHIPPER DURATION	8	6.1 (SECONDS)
9	CHOCOLATE START	9	1.5 (SECONDS)	CHOCOLATE DURATION	9	3.9 (SECONDS)
10	CHOCOLATE WATER, WHIPPER START	10	0.0 (SECONDS)	CHOCOLATE WATER, WHIPPER DURATION	10	6.1 (SECONDS)
11	SUGAR START (TEA)	4	1.8 (SECONDS)	SUGAR DURATION (TEA)	4	0.8 (SECONDS)
12	COFFEE WHIPPER START	8	13.0 (SECONDS)	COFFEE WHIPPER DURATION	8	5.0 (SECONDS)
13	LIGHT START (TEA)	3	2.0 (SECONDS)	LIGHT DURATION (TEA)	3	0.8 (SECONDS)
14	TEA BREWER START	X	15.0 (SECONDS)	TEA BREWER DURATION	X	2.8 (SECONDS)
15	EXTRA LIGHT DURATION (COFFEE)	3	0.2 (SECONDS)	EXTRA SUGAR DURATION	4	0.5 (SECONDS)
16	EXTRA TEA LIGHT DURATION	3	0.1 (SECONDS)	MACHINE CONFIGURATION CODE	N/A	0.5
17	CUP DROP DURATION	11	1.8 (SECONDS)	CUP SENSOR CONTROL	N/A	0.1
18	CUP DISCOUNT	N/A	00 (SECONDS)	ESPRESSO COFFEE WATER PERCENTAGE	1	70
19	CAFE MOCHA COFFEE WATER DURATION	1	4.1 (SECONDS)	CAFE MOCHA COFFEE AUGER DURATION	2	1.1 (SECONDS)
20	CAFE MOCHA CHOC AUGER START TIME	9	16.0 (SECONDS)	CAFE MOCHA CHOC AUGER DURATION	9	1.2
21	CAFE MOCHA CHOC WATER/WHIPPER START	10	15.0 (SECONDS)	CAFE MOCHA CHOC WATER/WHIPPER DURATION	10	2.4 (SECONDS)
22	CAFAF MODE 0 0=OFF/1.0=ONE(EXPORT ONLY)	N/A	0.0 (SECONDS)	NOT USED	N/A	NOT USED
23	COLD WATER SHOT START PULSE	Y	1.7 (SECONDS)	COLD WATER SHOT DURATION	Y	1.7 (SECONDS)

UNIQUE PART NUMBERS

ITEM	PART NO	DWG NO	DESCRIPTION	QTY
1	36628	NONE	3 C\V MANIFOLD ASM	1
2	36617	NONE	TANK ASM EXPORT LG	1
3	36095	36095-A	HARNESS WHIP ADP 8/C 211E	1
4	36247	36247-A	JUMPER, BREWER WHIPPER CAM	1
5	36098	36098-A	HARNESS, RELAY ON TANK	1



SELECTION: COF/W COF/CHOC/SOUP/FB TEA

Automatic Products
1. INSERT COINS
2. ENTER SELECTION CODE

COFFEE FRESH BREWED	BLACK A1	WHITE A2	BLK + SUGAR A3	WHT + SUGAR A4
WHIPPED FRESH BREWED	BLACK B1	WHITE B2	BLK + SUGAR B3	WHT + SUGAR B4
FRESH LEAF TEA	BLACK C1	WHITE C2	BLK + SUGAR C3	WHT + SUGAR C4
EXTRA - MAKE SELECTION THEN PRESS	+ EXTRA SUGAR	, EXTRA WHITE		
HOT CHOCOLATE	C5			
SOUP	C6			

NOTE:

1. Times for 7 oz squat cups only.
2. A Soluable Tea may replace Tea. Also, A Soluable Gourmet Coffee may replace Soup.

TEA	BLACK C1	WHITE C2	BLK + SUGAR C3	WHT + SUGAR C4
SGC	C6			

LET	REVISION	BY	DATE	BG CHG#
A	RELEASED FOR SERVICE MANUAL	SRD	9/12/96	---

NAME TROUGH SETUP 1-1&3 W/ WHIPPED COFFEE

DO NOT SCALE DRAWING

MODEL 211E

DRAWN SRD 9/12/96

APP.

DATE

Refreshment Machinery Industries
300 Jacksonville Road Warminster PA 18974

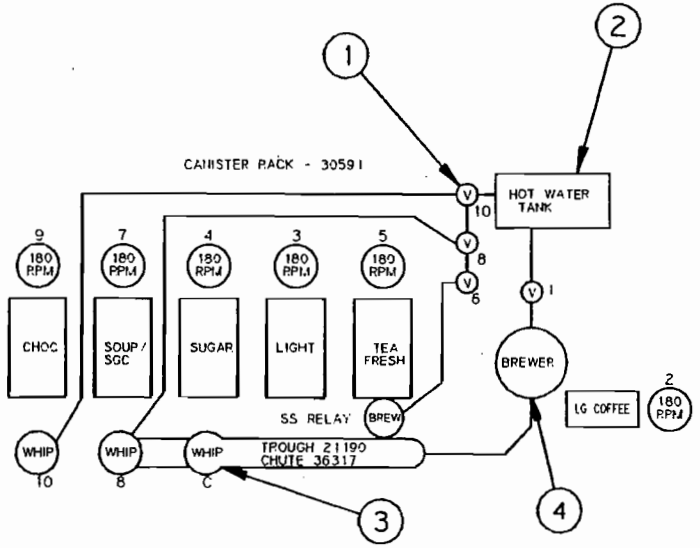
NUMBER SERVMN13 SIZE B REV. A

TIMING CHART, 211LG MACHINE CONFIGURATION 00.2

CHANNEL NUMBER	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 2 LINE No.	KEY (BUTTON) NO. 2 VALUE	CHANNEL DESCRIPTION	KEY (BUTTON) NO. 3 LINE No.	KEY (BUTTON) NO. 3 VALUE
0	LONG DELAY TIME	N/A	23.0 (SECONDS)	SHORT DELAY TIME	N/A	12.0 (SECONDS)
1	BREWER, WATER START	1	2.5 (SECONDS)	BREWER DURATION	1	5.7 (SECONDS)
2	COFFEE START	2	0.0 (SECONDS)	COFFEE DURATION	2	1.5 (SECONDS)
3	LIGHT START (COFFEE)	3	14.2 (SECONDS)	LIGHT DURATION (COFFEE)	3	0.8 (SECONDS)
4	SUGAR START (COFFEE)	4	13.7 (SECONDS)	SUGAR DURATION (COFFEE)	4	1.0 (SECONDS)
5	TEA START	5	2.0 (SECONDS)	TEA DURATION	5	1.0 (SECONDS)
6	TEA WATER START	6	0.7 (SECONDS)	TEA WATER DURATION	6	6.1 (SECONDS)
7	SOUP/SGC AUGER START	7	1.5 (SECONDS)	SOUP/SGC AUGER DURATION	7	1.0/4.0 (SECONDS)
8	SOUP/SGC WATER, WHIPPER START	8	0.0 (SECONDS)	SOUP/SGC WATER, WHIPPER DURATION	8	6.1 (SECONDS)
9	CHOCOLATE START	9	1.5 (SECONDS)	CHOCOLATE DURATION	9	3.9 (SECONDS)
10	CHOCOLATE WATER, WHIPPER START	10	0.0 (SECONDS)	CHOCOLATE WATER, WHIPPER DURATION	10	6.1 (SECONDS)
11	SUGAR START (TEA)	4	3.0 (SECONDS)	SUGAR DURATION (TEA)	4	0.8 (SECONDS)
12	STRONG COFFEE START	2	0.0 (SECONDS)	STRONG COFFEE DURATION	2	2.1 (SECONDS)
13	LIGHT START (TEA)	3	3.2 (SECONDS)	LIGHT DURATION (TEA)	3	0.8 (SECONDS)
14	TEA BREWER START	X	15.0 (SECONDS)	TEA BREWER DURATION	X	2.8 (SECONDS)
15	EXTRA LIGHT DURATION (COFFEE)	3	0.2 (SECONDS)	EXTRA SUGAR DURATION	4	0.5 (SECONDS)
16	EXTRA TEA LIGHT DURATION	3	0.1 (SECONDS)	MACHINE CONFIGURATION CODE	N/A	0.2
17	CUP DROP DURATION	11	1.8 (SECONDS)	CUP SENSOR CONTROL	N/A	0.1
18	CUP DISCOUNT	N/A	00 (SECONDS)	ESPRESSO COFFEE WATER PERCENTAGE	1	70
19	CAFE MOCHA COFFEE WATER DURATION	1	4.1 (SECONDS)	CAFE MOCHA COFFEE AUGER DURATION	2	1.1 (SECONDS)
20	CAFE MOCHA CHOC AUGER START TIME	9	15.0 (SECONDS)	CAFE MOCHA CHOC AUGER DURATION	9	1.2
21	CAFE MOCHA CHOC WATER/WHIPPER START	10	16.0 (SECONDS)	CAFE MOCHA CHOC WATER/WHIPPER DURATION	10	2.4 (SECONDS)
22	CARAF MODE 0.0=OFF/1.0=ON (EXPORT ONLY)	N/A	0.0 (SECONDS)	MULTIVEND 0.0=OFF/1.0=ON	N/A	0.0 (SECONDS)
23	COLD WATER SHOT START PULSE	Y	1.7 (SECONDS)	COLD WATER SHOT DURATION	Y	1.7 (SECONDS)

UNIQUE PART NUMBERS

ITEM	PART NO	DWG NO	DESCRIPTION	QTY
1	36628	NONE	3 C\V MANIFOLD ASM	1
2	36617	NONE	TANK ASM EXPORT LG	1
3	36095	36095-A	HARNESS WHIP ADP 8/C 211E	1
4	36247	36247-A	JUMPER, BREWER WHIPPER CAM 211E	1



SELECTION: WHP ESP/WHP ST ESP/CHOC/SOUP/FB TEA

Automatic Products
1. INSERT COINS
2. ENTER SELECTION CODE

ESPRESSO	BLACK A1	WHITE A2	BLK + SUGAR A3	WHT + SUGAR A4
STRONG ESPRESSO	BLACK B1	WHITE B2	BLK + SUGAR B3	WHT + SUGAR B4
FRESH LEAF TEA	BLACK C1	WHITE C2	BLK + SUGAR C3	WHT + SUGAR C4
EXTRA - MAKE SELECTION THEN PRESS	* EXTRA SUGAR	/ EXTRA WHITE		
HOT CHOCOLATE	C5			
SOUP	C6			

SGC C6

NOTE:

1. Times for 7 oz. cups only.
2. Soluble Gormet Coffee may replace Soup.

LET	REVISION	BY	DATE	BG CHG#
A	RELEASED FOR SERVICE MANUAL	RWD	1/21/99	---

NAME TROUGH SETUP 1-1&3 W/STRONG ESPRESSO

DO NOT SCALE DRAWING

MODEL 211E

DRAWN RWD 1/21/99

APP.

THE INFORMATION ON THIS DRAWING IS CONFIDENTIAL. UNAUTHORIZED USE IS PROHIBITED.

Refreshment Machinery Industries
300 Jacksonville Road Warminster PA 18974

NUMBER SRVMN16 SIZE B REV A

SANITIZING AND CLEANING PROCEDURES
FOR LG MACHINES - DO EVERYTHING
FOR FD MACHINES - SKIP BOLD ITALICS

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

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.**

EACH VISIT

1. Fill cup cabinet with cups to required level. Wipe interior and exterior of cup cabinet.
2. Replenish all canisters. Clean any spills. Wipe lids of canisters with a damp towel. Dry all damp surfaces.
3. ***Cycle the brewer to the dump position by pressing and holding the coffee brewer service switch on the switch & breaker bracket in the rear of the machine until the brewer reaches the forward dump position, then release the service switch. Remove splash guard from the front of the brewer. Using spray hose, rinse any loose grounds from brewer and splash guard. Replace splash guard and close swing out bracket to home brewer.***

3A. TEA BREWER - If machine is equipped with a fresh brewed tea brewer, press and hold the tea brewer cycle switch and allow the tea brewer carriage to move forward until the face of the carriage is aligned with the front face of the two pawls, and release the service switch. Grasp the carriage and pull the carriage forward to remove it. Using spray hose, rinse any loose grounds from brewer and waste chute. Slide the brew carriage back onto the brew base. Closing the machine door in an FD machine or ***closing the swing out bracket in an LG machine will home the brewer.***

4. Remove humidity bar (**CAUTION**-BAR IS HOT) and commodity chutes from the trough. Check all canister spouts and commodity chutes for blockages. Rinse commodity chutes and trough with spray hose to remove any residue. If necessary, the trough can be scrubbed with a damp cloth or a soft brush, followed with a hot water rinse from the spray hose. Do not scour the trough with any abrasive material! This can result in a poor wash of the trough and poorly mixed ingredients in a drink, or residue in the trough. Carefully dry commodity chutes and reinstall humidity bar and commodity chutes.
5. Using warm water and detergent, clean other interior surfaces, wipe with a damp cloth and wipe dry.
6. Remove cupwell, grate and vend door, clean with hot water and detergent. Rinse with clear water and dry with clean cloth or paper towel. Wipe inside of door, clean vend door guides. Replace cupwell, grate and vend door in machine.
7. ***Remove disposable bag containing spent coffee grounds and rinse bucket with hot water and replace liner.*** Empty and scrub waste bucket. Rinse with anti-bacterial solution. Do not rinse bucket after anti-bacterial solution is used- this will defeat its purpose. Clean floor of machine with hot water and wipe dry. Replace buckets in machine making sure both floats are hanging free and all hoses are in the buckets.
8. Set one test vend or coin test to check for proper operation. Lock vendor door, clean exterior of door and cabinet.

QUARTERLY

CAUTION: THE BELOW PROCEDURE SHOULD BE PERFORMED BY A QUALIFIED PERSON TRAINED IN A PREVENTIVE MAINTENANCE

1. ***Cycle brewer to the `dump' position, spray with rinse hose to remove any excessive grounds. Disconnect the brewer cable from the carriage by gently pushing the carriage to the rear and lifting the cable out of its slot. Lift the lower brewer assembly latch and remove the bottom half of the brewer. Place in a bucket of hot water to allow it to soak.***
2. Remove steam duct, exhaust hose, and metal screen between exhaust motor and mounting plate. Rinse clean with hot water. Dry with a clean cloth and return to position.
3. Disassemble chocolate whipper (and any additional whippers) housing and mixing bowl by spreading the wire clips and pulling the mixing chamber straight out. Clean parts with hot water. Clean and inspect the whipper base and impeller for wear. Reassemble making sure the large "O" ring is positioned correctly inside the whipper housing.
4. Disconnect all hoses from mixing bowls, channel and delivery spout and clean with hot water. Replace hoses.
5. ***Remove lower half of brewer from bucket and rinse well with hot water and inspect brew filter, screen and gasket for wear, rips or obstruction of the filter or screen. Replace if necessary. Return brew base assembly to brewer and reconnect cable.***
6. Remove tea brewer carriage, rinse brewer base, and replace tea brewer filter.
7. ***Clean coffee delivery chute with a dry cloth.***
8. Clean coin mechanism acceptor with a damp cloth and wipe dry.
9. Perform **EACH VISIT** procedure after completing. QUARTERLY sanitizing and cleaning procedure.

◆ **IMPORTANT:** IT IS HIGHLY RECOMMENDED THAT THE WATER VALVES ON THE HOT WATER TANK BE INSPECTED AND/OR REBUILT EVERY TWO YEARS (SEE PREVENTIVE MAINTENANCE SCHEDULE ON PAGE 4.02)

10. If machine contains a chiller unit, refer to page 5.04 of this service manual and to the Booth supplement for additional Set up and Sanitizing procedures for the chiller.

RECOMMENDED PREVENTATIVE MAINTENANCE SCHEDULE

for APi Hot Beverage Merchandiser with a Chiller Unit

SERVICE AT EACH INTERVAL LISTED X MONTHS OR VENDS WHICHEVER COMES FIRST	Months	Each	1	4	8	12	24	36
	Vends	Visit	2000	8000	16000	24000	48000	72000
BREWER ASM								
Filter screen, Coffee Brewer		Clean	Clean	Clean/Inspect	Replace			
Seal, Brew Chamber (Black)		Clean	Clean	Clean/Inspect				
Seal Ring, brew Filter Screen		Clean		Clean/Inspect				
Wiper Blade, Carriage				Clean/Inspect			Replace	
Brewer Carriage, Rods, Springs		Clean	Clean	Clean/Inspect		Lubricate	Lubricate	
Lubricate Brewer						Lubricate	Lubricate	
PRODUCT DELIVERY SYSTEM								
Mixing Troughs & Bowls		Clean	Clean	Clean/Inspect				Replace
Whippers		Clean	Clean	Clean/Inspect				Inspect
Exhaust System: Hose, Duct Screen		Clean	Clean	Clean/Inspect				
Liquid delivery hoses (Booth unit dispensing tubes)		Clean	Clean	Clean/Inspect	Clean/Inspect/Replace			
Coffee delivery chutes		Clean	Clean	Clean/Inspect				
Tea Brewer Filter		Clean	Clean	Replace				
MISCELLANEOUS								
Water Inlet Filter Cartridge						Replace	Replace	
Booth unit condenser and screen			Clean	Clean	Clean	Clean	Clean	Clean
Water Valves On Water Tank						Inspect	Rebuild	
Cupwell, Overflow & Grounds Buckets		Clean						
Coin Mech		Clean	Clean	Inspect				
Water Tank Interior (Booth bath unit)				Inspect / Clean			Inspect	Clean

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

CLEAN =Clean and sanitize per NAMA procedures

INSPECT =Inspect for wear, product build up or broken part. After inspection- repair, adjust, clean, rebuild or replace.

REPLACE =Recommended interval for replacement

REBUILD =Remove from machine, take apart, clean and replace worn or corroded parts.

LUBRICATE =Should be cleaned, inspected, and repaired before lubrication. Recommended lubricant is a food grade, light weight oil.

FUNCTION OF THE BREWER IN AN AP 211E

The heart of the AP 211E Hot Drink Merchandiser is the open cylinder brewer. It has been "time proven" and "experience improved". It is simple, lightweight, easy to clean and easy to service.

HOW THE BREWER WORKS

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

All AP 211E fresh brew machines have the brewer stopping at the same point. The brewer is stopped with the brew carriage aligned directly over the brew filter and under the coffee delivery chute. When a brewed coffee drink is selected, the ground coffee from the LG canister is delivered directly to the brew chamber via the stainless steel coffee delivery chute. This cycle may be interrupted if the cup sensor is activated and no cup is present in the cupwell.

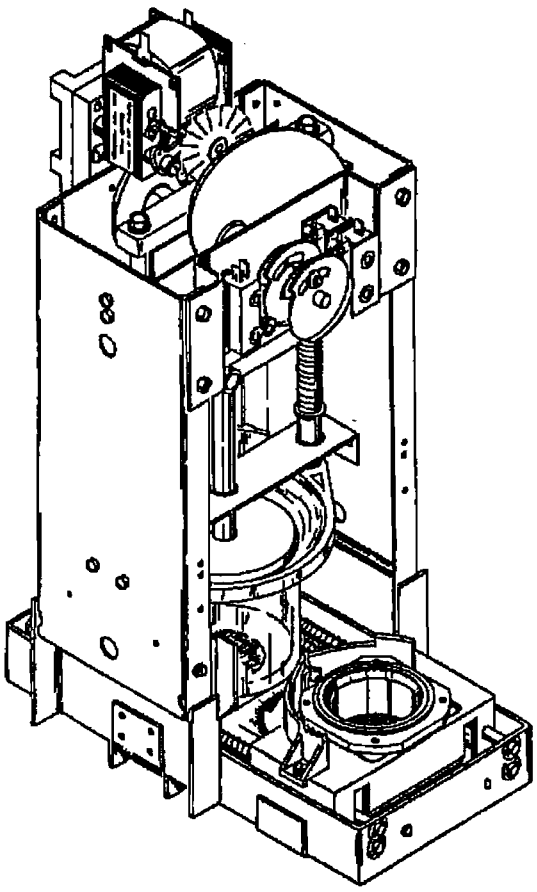


FIGURE 3.1

The brewer starts at the time determined by channel 1 (typically 3.00 seconds) after the coffee hopper has augured coffee into the brew chamber. When the brewer starts, the cable will begin to retract the brew carriage towards the rear of the base assembly. Once the right rear (brewer cycle) switch rides up on the high side of the rear cam, the brewer will continue to run until it falls back into the valley at the end of the cycle.

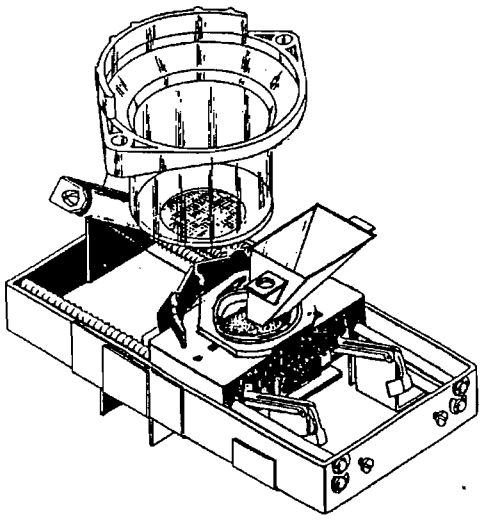


FIGURE 3.2

The brew carriage will continue back until it is slightly behind the clear brew cylinder when the brew cylinder starts its downward motion. At the proper time the cable is slackened slightly to allow the brew carriage to move forward and self-align with the cylinder. As the cylinder clamps down on the brew chamber seal, the roller of the front right switch should be entering the valley of the front cam and the switch will send voltage to the brew water valve and the Brew Delay Relay. The Brew Delay Relay (BDR) interrupts the voltage to the brewer motor to allow the brewer valve to deliver all the water required to the brewer. The brew water valve and the BDR are energized for the duration of channel 1. The cylinder is held against the brew chamber seal by the springs on the cylinder support rods. The water will flow into the cylinder down through the grate in the bottom of the cylinder into the coffee filled brew chamber. The grate in the bottom of the cylinder prevents the coffee grounds from floating up into the cylinder.

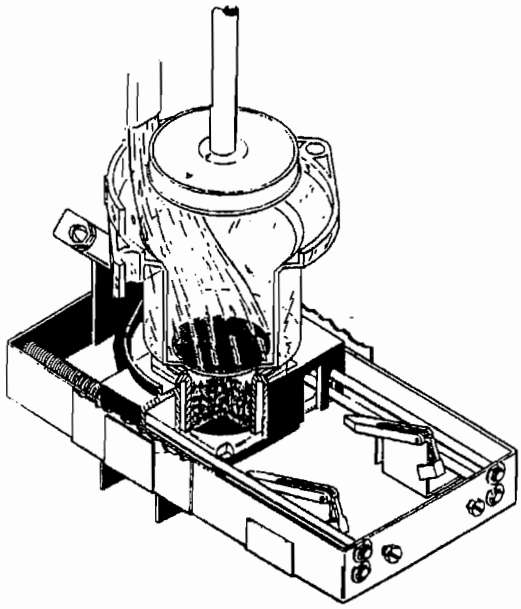


FIGURE 3.3

As the cycle continues, the piston is moved down into the cylinder by the large cam on the main shaft. 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, plus the pressure of the expanding air, forces the water through the coffee grounds in the brew chamber and out through the delivery funnel to the trough. The heated, compressed air follows the water through the grounds forcing the remaining water out of the grounds and drying the grounds.

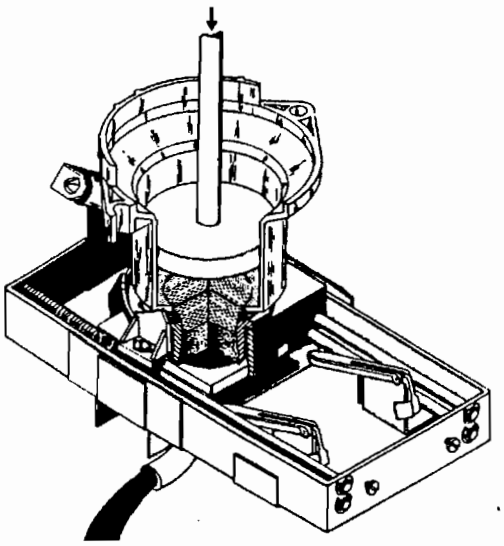


FIGURE 3.4

After the water has passed through the bed of grounds, the brewer starts the portion of the cycle that empties the brewer of spent grounds and resets the brewer for the next vend. The looseness in the brew carriage cable is removed and the piston and cylinder are raised far enough to allow the brew carriage to pass under the cylinder.

The cable is then slowly unwound, controlling the forward motion of the brew carriage, which is being forced forward by the carriage rod springs. 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 allowing it to ride up the pawls.

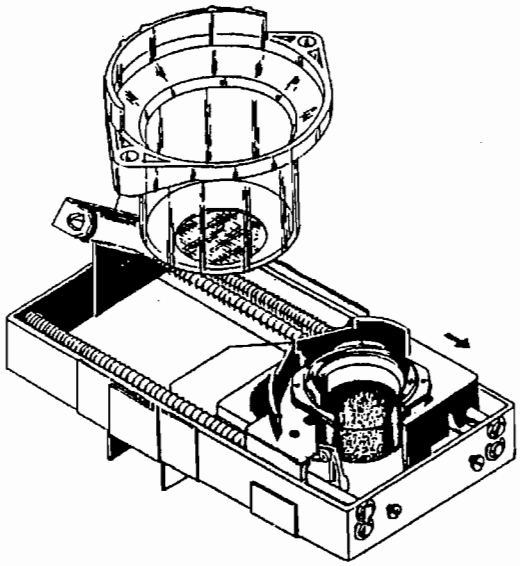


FIGURE 3.5

As soon as the ears are free of the support of the pawls, the brew chamber snaps downward, dislodging the spent grounds into the grounds bucket. 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 and under the delivery chute. At this point the roller of the right rear switch will fall into the valley of the rear cam, removing power from the brewer motor. This returns the brewer to the standby position and the brewer will remain in this position awaiting the next vend (see FIGURE 3.2).

- *THE STOPPING POSITION OF THE BREWER IS A CRITICAL ADJUSTMENT. MISALIGNMENT OF THE BREW CHAMBER AND THE FILTER IN THE STOPPING POSITION CAN CAUSE A LEAK BETWEEN THE BOTTOM OF THE BREW CHAMBER AND THE TOP OF THE FILTER. THE CORRECT STOPPING POSITION OF THE BREWER IS INDICATED BY THE CARRIAGE MOVING THE FILTER ASSEMBLY BACKWARDS APPROXIMATELY 1/8" AS THE BREWER COMES TO REST.*
- *IF YOU DESIRE TO RUN A FRESH BREWED COFFEE VEND TO CHECK FOR PROPER OPERATION, YOU MUST HAVE THE SWING OUT CLOSED OR OPEN THE SWINGOUT BRACKET AND PULL THE PLUNGER ON THE INTERLOCK SWITCH.*

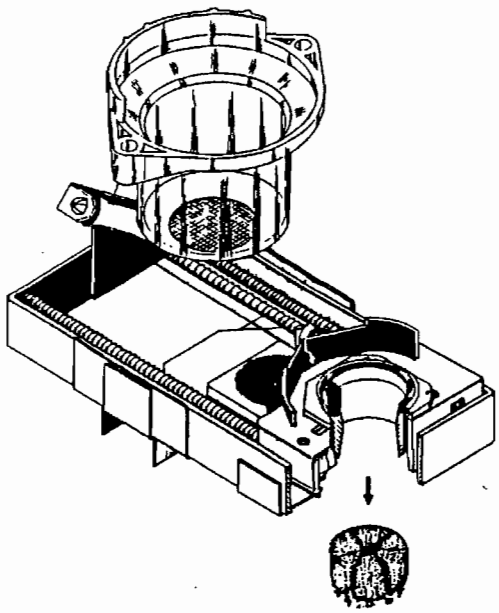


FIGURE 3.6

BREW CARRIAGE AND CABLE ADJUSTMENT

The horizontal movement of the carriage is caused by the springs in the base assembly. The action of the springs is controlled by the brew carriage cable assembly. The cable is wrapped on a spool and wound and unwound to move the carriage in synchronization with the other movements of the brewer. The cable spool is controlled by a gear segment driven by the rear cam of the main cam shaft assembly. The shape of the cam determines when the cable is wound and unwound.

When the cylinder is pressing down on the brew chamber, the cable should be slack. Just as the clear brew cylinder begins to raise, the cable tightens to prevent the carriage from jumping forward as the cylinder clears the alignment shoulder of the brew carriage. As soon as the cylinder is high enough to clear the carriage, the cable is unwound and the carriage moves forward to dump the spent grounds. After the spent grounds are dumped, the cable again winds on the outer spool and pulls the carriage to the stopping position.

The cable is attached to the outer section of the spool with a cotter pin. The inner portion of the spool is connected to a shaft and a small gear. The gear is rotated by a pivoting segment gear driven by a cam follower riding on the edge of the rear cam of the main shaft assembly. The inner and outer sections of the cable spool have matching teeth which provide a positive mesh, but allow for adjustment. When the two parts are assembled, they are secured by a screw and washer which prevent them from being disengaged.

ADJUSTMENT OF THE BREW CABLE

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

Operate the brewer through a complete cycle and observe that:

A. The alignment shoulder of the carriage is slightly behind the rear vertical edge of the brew cylinder just as the cylinder starts down.
B. The cable goes slightly slack just before the cylinder contacts the surface of the brew chamber gasket.
C. After brewing, the carriage moves forward slowly and evenly all the way to the dump position.

If all three of these conditions are not met, then a cable adjustment should be made using the following procedure:

1. Swing the coffee hopper out to allow clear access to the brewer. Depress the right rear switch on the top of the brewer and allow the brewer to cycle to the brew position. Turn off power.
2. Remove the two outside screws in the top bracket and one screw in the bottom brewer mounting brackets. Loosen the remaining mounting screws in the keyhole slots in the top and bottom mounting brackets.
3. Locate the wiring harness for the brewer and release the harness from the cable clamp on the rear wall of the cabinet so that the brewer harness is hanging free.
4. Lift the brewer to clear the keyholes and turn the brewer clockwise to access the cable spool on the rear of the brewer.

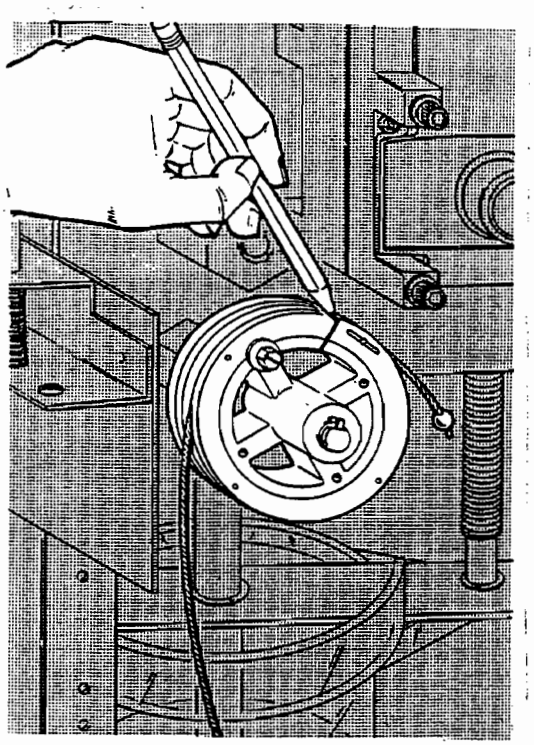


FIGURE 3.7

5. Mark the inner and outer section of the cable spool with a pencil line across both pieces to provide a reference mark.
6. Restore power and cycle the brewer to the dumping position and turn off the power.
7. If the carriage was not correctly behind the cylinder and is being forced back out of the way or the cylinder is resting on top of the alignment shoulder of the brew carriage (see FIGURE 3.9) and causing the brew water to leak from between the cylinder and the brew chamber, then an adjustment of only one or two teeth to shorten the cable is needed - go to step 12. If the original adjustment has been lost, then a `scratch' adjustment will have to be made - continue to step 8.

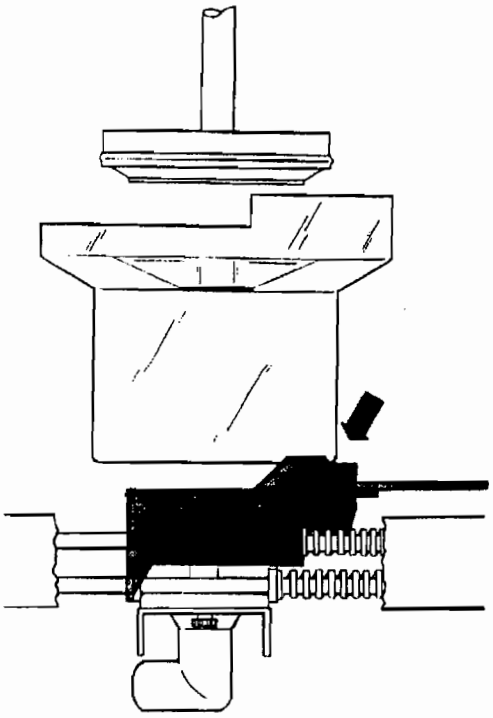


FIGURE 3.9

8. *Confirm that the cam follower is in the deepest valley of the rear cam (See Figure 3.11) by cycling the brewer to this position. This position of the cam and follower guarantees that the brewer is in the dump position.*
9. *Feed the cable down between the white roller and the support bracket and towards the front of the brewer. Slip the cable into the slot on the rear of the carriage.*
10. *Wind the cable clockwise on the outer spool until the carriage is pulled back from the inner face of the base assembly (See Figure 3.10) 1/8 to 3/16 inch.*

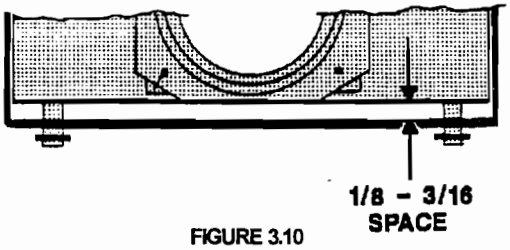


FIGURE 3.10

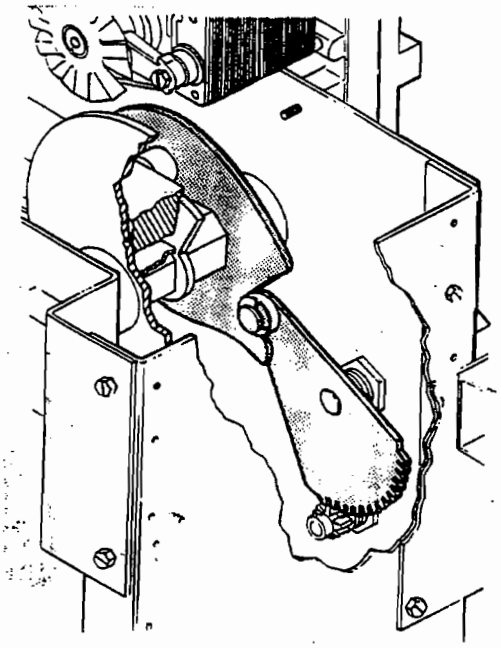


FIGURE 3.11

11. *While holding the follower in the valley of the cam, (see FIGURE 3.11) install the outer section of the cable spool over the inner section. Release the follower and spool and check that the clearance set above is maintained. If so, make a new reference mark across the spool and remove the outer section of the spool and rotate it counter-clockwise <u>one</u> tooth - proceed to Step 13.*
12. *Carefully pull the outer section of the cable spool off and rotate it one tooth clockwise to tighten the cable and replace the outer spool.*
13. *Restore power and cycle the brewer again, watching for the three conditions listed at the start of this procedure.*
14. *If the carriage is still not being drawn back far enough during the cycle, repeat Step 12.*
15. *After ensuring that the cable is adjusted correctly, replace the screw and washer that secure the two halves of the cable spool and cycle the brewer to the brewing position and turn off the power. Lift the brewer and turn brewer counter clockwise to its original position and replace the screws removed in Step 3 above and tighten the keyhole screws. Restore power and test vend.*

- *IF YOU DESIRE TO RUN A FRESH BREWED COFFEE VEND TO CHECK FOR PROPER OPERATION, YOU MUST HAVE THE SWING OUT CLOSED <u>OR</u> OPEN THE SWINGOUT BRACKET AND PULL THE PLUNGER ON THE INTERLOCK SWITCH.*

WATER SYSTEM

The water system is a gravity system (thus requiring no pumps or compressors) with an open air break at the tank inlet required by most local codes. The temperature control will maintain the water temperature near the boiling point. Coffee extraction requires hot water as close to boiling as possible. The thermostatic control system has been time proven as a very dependable, yet simple control method.

WATER INTAKE SYSTEM

There are two possible configurations in the intake system. The standard method is a straight tube with a shut-off value between the inlet fitting and the water inlet valve. The optional (and recommended) method provides for a water filter to be installed as a part of the original equipment. The filter housing includes the shut-off valve. To turn off the water at the filter, rotate the black handle counter clockwise.

The coils of the water inlet valve are activated by the float switch on the tank lid. This single top switch controls the intake of water into the water tank. This valve also functions as a safety overflow valve. If the safety overflow (bucket float) switch in the waste or used grounds bucket is open, the valve will not allow water into the water tank.

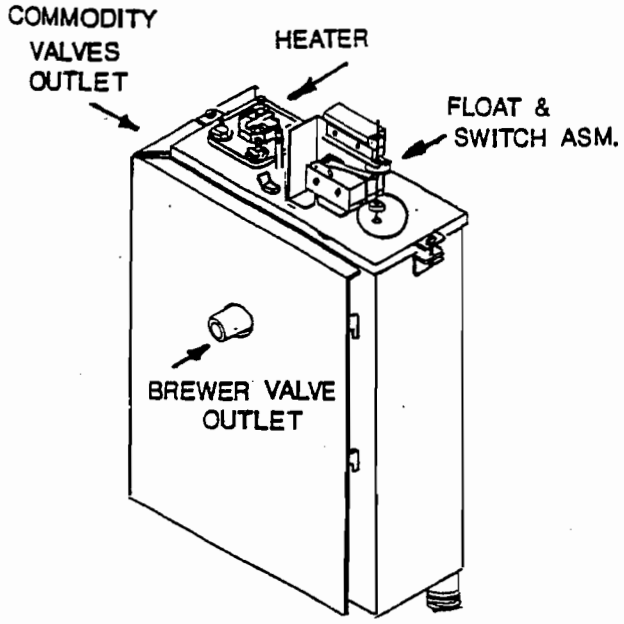
THE WATER TANK

The water tank for loose ground and the freeze-dried models use the same principles of operation, the only difference being the number and position of the outlets for valves or manifolds. The water tank is constructed of stainless steel and holds approximately 15 liters (4 US gallons) of water.

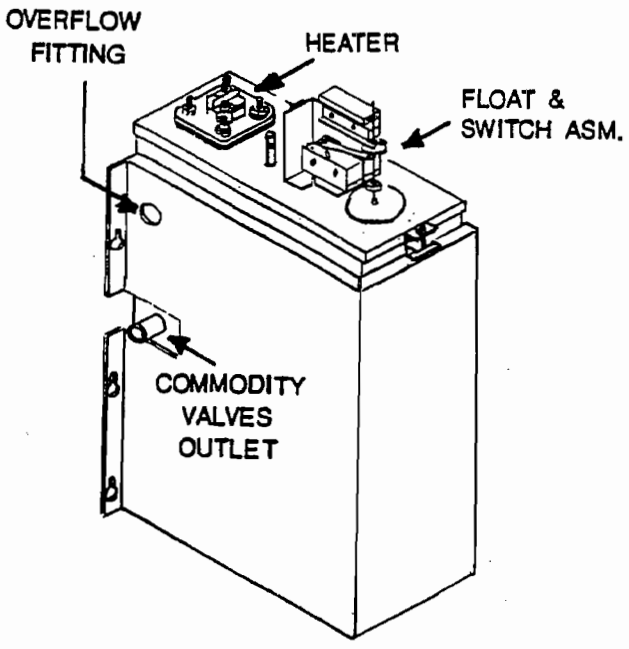
Both tanks have a removable lid that is sealed at the top of the tank with a gasket. Each tank has one 1500 Watt heater mounted through a hole in the tank lid, controlled by a thermostat mounted on the tank lid. The thermostatic control system consist of a thermodisc located on the lid of the tank that senses the temperature of the water via a copper sensor that extends down inside the tank. The thermodisc is mounted to the tank lid with spring loaded hold downs that will maintain a constant and even pressure on the thermodisc. ***The thermodisc for the LG water tank is rated at 90.5 °C (195 °F),*** while the thermodisc for the FD model is rated at 82°C (180°F).

WATER DELIVERY SYSTEM

A maximum of four electrically energized valves with an easily serviceable diaphragm comprise the water delivery system. The number, position and function of the valves change dependent upon the configuration of the machine. They are: ***the Coffee Brew Water Valve,*** the Chocolate Water Valve, the FD Coffee/Decaf/Tea Water Valve, the Fresh Brew Tea Water Valve, and the Soup/SGC Water Valve. Each of these valves will release water into its particular segment of the commodity mixing channels, depending on the beverage selected. The arrangement of the valves are dependent upon the model and the configuration of the machine. ***The standard position of valves in an LG model are a three valve manifold mounted on the left side of the heater tank and a brewed coffee valve located behind the brewer on the front face of the tank.*** The standard position of the valves in an FD model has a three valve manifold mounted on the left side of the heater tank.



FRESH BREW WATER TANK
FIGURE 3.12



FREEZE DRIED WATER TANK
FIGURE 3.13

THE COFFEE BREW WATER VALVE

This valve is mounted on the face of the water tank directly behind the brewer. The brew water valve is controlled by the right front switch on the brewer and the duration of channel 1.

CAUTION: ADDITIONAL WATER MUST BE RE-MOVED FROM THE WATER TANK VIA THE DRAIN BEFORE REMOVING THE BREWER VALVE FOR SERVICE!

TEA, SOUP, FRESH BREW TEA AND CHOCOLATE VALVES

These valves are mounted into a manifold on the left side of the water tank. Separate valves are essential because each beverage may require a different amount of water to brew the beverage properly, and each beverage is made and released from the machine through its own channels to avoid taste contamination. Each valve is controlled by at least one separate time channel on the logic board. Each of these valves is connected to the commodity rack by a flexible silicone hose.

TANK DRAIN

The tank drain is utilized to remove water from the tank for maintenance or transportation of the machine. The drain for the tank will use one of two methods. The older style has a small diameter shutoff valve in a fitting in the bottom of the tank. The newer and currently used method is a large diameter hose, fastened to a large outlet on the bottom of the tank. The end of the hose has large plug in the end of it. This change was to permit regular flushing of the tank to prevent an excessive buildup of minerals in the tank.

CAUTION: DO NOT REMOVE THE LARGE PLUG FROM THE END OF THE DRAIN HOSE UNTIL THE TANK IS PARTIALLY DRAINED USING THE RINSE HOSE, AND THE BUCKET IS EMPTIED AND REPLACED INTO MACHINE.

RINSE HOSE

A convenience feature is the rinse hose. This is provided for maintaining proper machine sanitation. It is long enough to reach each part of the machine which 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 HOSE

Both the fresh brew and freeze dried tanks have an overflow tube. The FD overflow is mounted on the upper left rear side of the water tank. *In the LG model tank, the overflow function is a standpipe located inside the tank. Water rising above the preset level will overflow down through the standpipe and into the waste bucket.* Should the water level in the tank rise too high, regardless of the reason, the excess will run out of the tube, through the overflow tubing and directly to the liquid waste bucket. There should be no kinks or low spots in this hose.

OVERFLOW SAFETY

If an overflow condition continues, the level in the waste bucket will rise and eventually raise the float of the safety overflow switch and disable the Vend Enable Relay (VER), placing the machine on a "OUT OF ORDER" status. When "OUT OF ORDER", any coins inserted will be returned. All 105 volt functions from the motor control board will be disabled including the water inlet valves.

OVER TEMPERATURE SAFETY THERMOSTAT

Two 65.5°C (150°F) manually resettable over temperature safety thermostats are inserted in the overflow hose below the canister rack. These safety thermostats sense any boiling condition that exceeds approximately 4 minutes and disables the heater circuit by opening either the neutral side or the hot side of the 220/240V mains.

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

The thermostats should be reset by pressing the small button in the center with a pencil eraser or similar non conductive object.

REMOVAL OF HEATER ELEMENT

In the event a heater element fails, and must be replaced, removal of the heater element is made less complicated by the addition of an access cover on the roof of the cabinet. This access cover is located in the right rear corner of the cabinet top, and is secured in place by a wingnut. Once the wingnut is loosened, the panel is pivoted clear of the opening in the top of the machine. The positioning of the opening allows the element to be removed from either a fresh brew tank or a freeze dried tank with a minimum of difficulty.

REPLACEMENT OF WATER FILTER CARTRIDGE

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

A. On filter head, shut the internal valve off by moving the lever fully counter clockwise.
B. With machine fully powered, drain water from water tank using the spray hose until water inlet valve can be heard energizing or until machine's "OUT OF ORDER" LED turns on.
C. Power OFF machine. Turn cartridge to the left until it stops (approx. 1/4 turn). Pull cartridge downward and out of filter head.
D. On new cartridge, write the date & current machine vend count on label in specified box.
E. Install new cartridge by first locating the two opposing ears on the top metal section of the cartridge. Hold and position cartridge under the filter head and align one of the ears between the label on filter head. Insert the cartridge straight up into the filter head as far as it will go. You should feel the two "O" rings snapping into place. Upon feeling this, turn the cartridge to the right until it stops (approx. 1/4 turn). (See Figure 1.1)
F. On the filter head, slowly move the valve lever clockwise until it stops. Power ON machine and check for any leaks.

THE CANISTER RACK

The canister rack provides support for the entire dry product commodity system and is of open construction design, with a minimum of horizontal surfaces to catch dust and spillage. The motors which drive the canister augers are all located behind and under the steel cover. Each motor may be removed, if necessary, by disconnecting the wires, loosening four screws and lifting it out. Water tubes, to direct the water to the mixing channel and whipper, are stainless steel and permanently attached to ensure proper alignment.

COMMODITY SYSTEM

Containers for the dry product which the hot beverage machine dispenses 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 at all times.

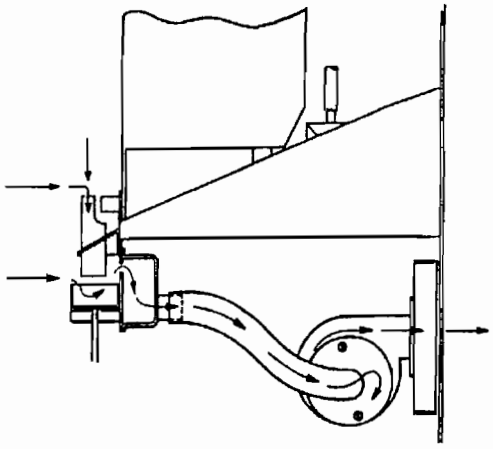
The augering system used to dispense the products runs in reinforced nylon bearings to ensure a long trouble-free life. The dispensing end of the canister have different spouts, some of which have louvers. These louvers control the accuracy of discharge so that proper mixing is assured for each drink. The translucent materials permit the service person to estimate the contents of the canister without having to open the canister. Commodity levels may be marked on the outside of the canister 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 of overfilling.

THE HUMIDITY BAR (OPTIONAL)

The humidity bar is integral part of the commodity system. It is a flat, electrically heated strip, and by provides a slightly higher temperature at the canister spouts, will prevent moisture from being absorbed by the dry products in areas where high humidity is present. If the machine is operated in a humid atmosphere without the humidity bar in operation, it is likely that the dry products will cake and not dispense properly. The tabs on the humidity bar fit into their respective slots in the commodity rack between the canisters. The humidity bar plugs into a harness on the left side of the cabinet.

THE STEAM EXHAUST CONTROL SYSTEM

Steam from the hot water needed to make the beverages is controlled by this system. 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 high volume through the areas where steam is generated, the steam is removed before it can reach the dry product dispensers. The steam laden air is moved by a squirrel cage blower, and discharges outside the machine cabinet. The steam is generated whenever the machine is activated to dispense a beverage. The hot water used to make coffee, tea or soup, passes through the main mixing channel as the dry products are dropped. Immediately behind the mixing channel is a vacuum duct which is connected to the exhaust motor by a round plastic hose. Directly over the mixing channel is the steam deflector and commodity chute. Lightener, sugar, tea and soup products are dropped into the moving liquid in the mixing channel directly from their respective canisters. The design of this deflector is such that a constant stream of dry air is pulled down through the commodity chutes of the deflector and actually helps delivery of the product to the mixing channel. At the same time this deflector effectively prevents the steam vapor from rising in the area of the commodity canister outlets.



STEAM EXHAUST FLOW

FIGURE 3.14

The components of the steam exhaust system: the mixing channel, the steam deflector, the steam duct, the hose to the blower, and the metal screen behind the exhaust fan assembly are all easily removed for cleaning. Cleaning is easily accomplished by rinsing in hot water. The mixing channel itself, which carries the beverage, should be sanitized according to the current industry practices.

REMOVAL OF STEAM EXHAUST DUCT

1. To remove the steam exhaust duct, pull the top down away from the front plate of the canister rack and lift from the bottom flange.
2. To install the steam exhaust duct, place the bottom lip of the duct on the bottom flange of the canister rack, behind the front plate.
3. Rotate the top of the exhaust duct towards the back of the front plate of the rack until it snaps securely in place.
4. Looking at the front of the rack, slide the duct left or right until the slots in the front plate properly line up with the ends of the exhaust duct.

See Figure 3.15

REMOVAL OF STEAM EXHAUST DUCT

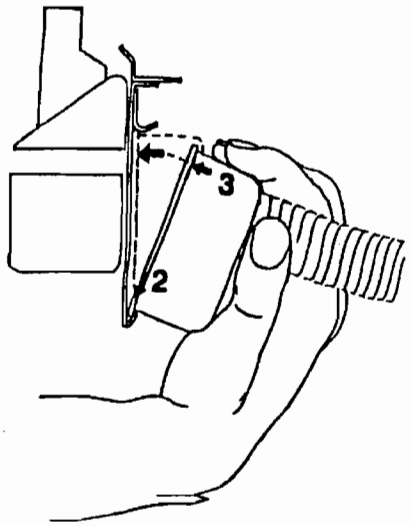


FIGURE 3.15

CHOCOLATE WHIPPER

The chocolate beverage is thoroughly mixed and made more attractive to the user by whipping it as it is delivered. There is a separate mixing system for chocolate. It does not pass through the same mixing system as coffee or other beverages. As soon as the water for chocolate is released the whipper motor, which runs at high speed, starts. The chocolate powder is dropped from its canister directly into the water in the mixing bowl and flows into the whipper chamber and then to the cup. The whipper parts are all of a food service approved plastic material, highly resistant to mechanical damage. They are easily removed, without tools, for sanitization. The mixing assembly is held together by spring clips.

MIXING CHANNEL AND ACCESSORIES

The use of specialty products may require the use of higher speed motors and/or additional whippers. Kits exist for the installation of additional whippers under the outlet of the soup mixing bowl and the channel mixing bowl. The harness for connecting the additional whipper for the soup position is included in the machine harness. Harnesses for
kits that add an additional whipper to the merchandiser are also available. Certain configurations also contain unique mixing troughs to provide separate dispensing areas to prevent taste contamination between drinks.

FRESH BREWED TEA BREWER

The AP 211E also has the capability to deliver a cup of fresh brewed tea. The tea brewer assembly consists of three basic parts: the canister and auger motor assembly, the tea brewer and the spent tea chute and drip tray. The entire assembly occupies the extreme right position on the canister rack. The canister and motor assembly are secured to the top of the rear shelf of the canister rack by one fixed clamp that allows for easy removal. The brewer and drip tray snap into the canister rack using the same locating tabs as a normal canister. The spent tea chute clips into the front of the brewer and guides the spent leaves to the grounds bucket for disposal. All wiring for the tea brewer is already included in the merchandiser. It consists of a 6 pin plug which is inserted in a square hole in the rear face of the canister rack, and two wires for the canister motor, which are fed up through a hole in the top shelf of the canister rack.

The tea brewer has a gravity fed, open brew chamber, similar in operation to the coffee brewer, except that no piston is used. A fresh brewed tea selection, once selected, begins with the canister motor augering a small quantity of leaf tea (approximately 2 grams for an 180ml drink) into the open brew chamber. The separate brewed tea water valve then opens and delivers the water to the brew chamber via a tube mounted on the side of the canister motor mounting bracket. Best results are achieved by reducing the flow of the water by adjusting the metering screw on the valve to stretch the water flow out over the longest time possible. This allows the water and tea to steep for as long as possible before the brewed tea liquid flows out the delivery spout and into the mixing channel where lightener and sugar can be added. The lightener and sugar are controlled by channels separate from the coffee lightener and sugar. The tea leaves are prevented from following the liquid by a fine mesh filter that also acts as the bottom of the brew chamber. After the liquid has seeped through the tea, the brewer cycle switch receives a start pulse from the solid state relay located in the master module. This starts the brewer motor and its crank arm into the dump cycle. The crank arm moves the brew chamber and carriage forward as two ears on the side of the brew chamber contact two pawls that force the brew chamber up. As the ears of the brew chamber clear the support of the pawls, the four brew chamber springs snap the brew chamber down, ejecting the spent tea into the chute which guides it to the waste bucket. The brewer then cycles home to await the next vend.

The tea brewer can be cycled through its brew cycle by using the tea brewer service switch on the breakers & switch panel on the rear wall of the machine.

- **IF YOU DESIRE TO RUN A FRESH BREWED TEA VEND TO CHECK FOR PROPER OPERATION, YOU MUST PULL THE PLUNGER ON THE INTERLOCK SWITCH:**
  ON THE SWING OUT BRACKET FOR LG MACHINES.
  ON THE RIGHT HAND CABINET EDGE FOR FD MACHINES.

CUP DELIVERY SYSTEM

Every beverage sold through the AP 211E hot beverage merchandiser requires a clean disposable cup. Mounted on the inside of the door is the cup cabinet which is a storage area for a large number of cups and a device to separate and dispense a single cup for each cycle of the machine. Included in the throat of the cup delivery area are two switches which control the function of the cup cabinet and the machine. The switch mounted at the rear of the throat of the cup drop controls the function of the spirals in the cabinet. When this switch is clear of the top of the last 7-8 cups remaining in the cup drop ring, it will supply power to the spiral advance motor, which moves a stack of cups to refill the cup delivery position. The spiral advance motor will run only for the duration of the cup drop start pulse. The length of the cup drop start pulse is factory set at 2.0 seconds and a column of cups will require two vends to advance to the delivery position. This new stack of cups will depress the spiral advance switch and remove power from the spiral motor. The second switch, mounted so that it will activate when 3-4 cups remain in the cup drop throat, is the sold out or out of service switch and will disable the vend enable relay and light the "OUT OF ORDER" LED on the control panel.

CUP CABINET

Cups are stored in an inline flat magazine mounted on the inside of the vendor door. This magazine is completely covered to protect the cups from accidental contamination. The entire cup cabinet may be swung out for easy access to the control board, service switch and selection labels. The base of the cup cabinet holds the cup dispenser.

Cups are moved from the storage position to the dispensing mechanism (referred to as the "cup drop") as needed. When the stack of cups in the cup drop has been reduced to seven or eight cups the spiral advance switch is released which applies power to energize the cup spiral motor.

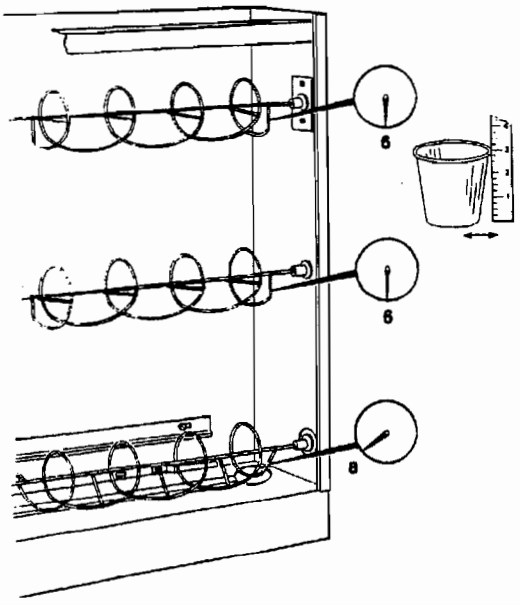


FIGURE 3.16

The cup spirals will turn simultaneously to advance the remaining stacks of cups on the base plate toward the cup drop opening.

When the stack of cups nearest the cup drop opening is advanced, it will drop into the remaining cups. The new cups will depress the spiral advance switch which removes power from the cup spiral motor. The cup spirals are designed so that a stack of standard vending cup will nestle between the turns. It is important that the spirals are properly oriented to each other so the stacks of cups will advance in a vertical position.

Figure 3.16 illustrates the relationship between the three spirals. When the spirals are correctly adjusted, the return wire at the end of the spirals will point as shown. When the upper two spirals (which should be identical) point to 6 o'clock, the bottom spiral should point to 8 o'clock. This is done because the bottom part of a cup is smaller in diameter than the top rim.
The spirals are properly set before the machine leaves the factory and should not require adjustment before being put in service. The synchronized movement of the three spirals is maintained by the toothed drive belts which connect the toothed gear on the end of each spiral rod and the cup spiral motor.

CUP DROP MECHANISM

The cup separator used in the AP 211E hot drink merchandiser is a Lisem separator. The rotary motion of the cup drop motor is converted to a push-pull motion by a crank arm which drives the lever of the cup drop ring. The cup to be dropped is separated from the rest of the cups in the stack by the cams of the cup ring. The cup is then guided to the cupwell by a delivery chute. As the cams return to the starting position the next cup in the stack is prepared to be dropped for the next cycle. When the cup mechanism is in a standby position the lever of the cup ring is pulled back against the arm of the cup motor cycle switch.

The correct stopping position of the cup drop ring is shown in Figure 3.17.

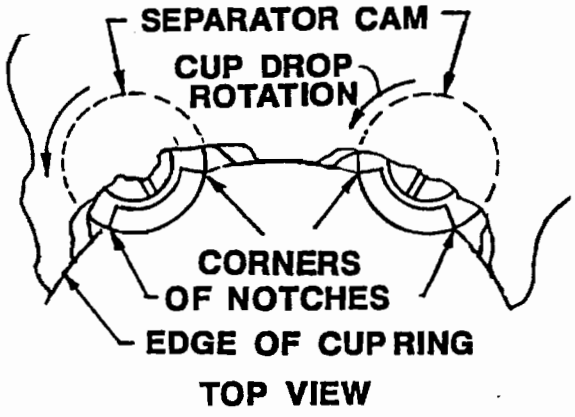


FIGURE 3.17

The leading and trailing edges of the cams should be hidden under the gray ring of the cup ring assembly. If an adjustment of the switch is necessary, slightly loosen the two mounting screws and reposition the switch until the correct stop position is achieved and then retighten the screws. However, the arm of the switch should not be bottomed against the body of the switch nor against the body of the cup ring.

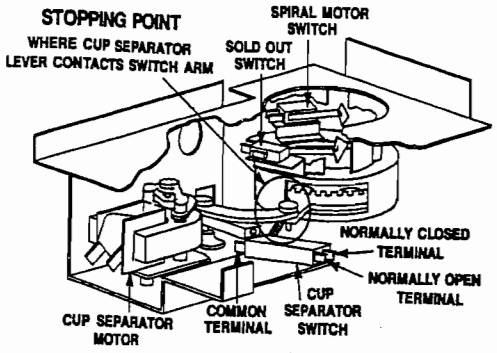


FIGURE 3.18

Starting voltage for the cup drop motor goes to the normally open (NO) contact of the cycle switch which is being held closed by the lever of the cup drop ring. This starting voltage is controlled by channel 17, button ❷. The running voltage for the cup drop motor is connected to the normally closed (NC) contact of the switch. The common of the switch is connected to the cup drop motor.

The running voltage remains on the NC contact of the switch for the duration of the vend. If the cup drop lever fails to interrupt the voltage due to incorrect switch adjustment or a faulty switch, the cup drop motor will run for the entire vend cycle and deliver multiple cups.

If the start voltage remains on the NO contact of the switch longer than one complete revolution of the crank arm, the motor will run a second time. The length of the start voltage is controlled by the setting of channel 17, button ❷ and is factory set to 2.1 seconds. This voltage also will energize the cup spiral motor if the spiral advance switch detects a low quantity of cups remaining in the throat of the cup drop. Because of the short duration of this pulse, it will typically take two vends to advance the next column of cups to the vend position. If a fixed quantity of cups are delivered every vend (i.e. 2,3 or 4 cups), then this cup motor start pulse may be set incorrectly.

"USE YOUR OWN CUP OPTION"

A standard feature available in the AP 211E detects the presence of a cup, mug or carafe in the cupwell and can disable the vend if a cup is not present. If the cup sensor configuration (channel 17, button ❸) is set to 0.00 then the cup delivery circuit will deliver a cup for every vend. If the cup sensor configuration (channel 17, button ❸) is set to 0.1, then the vend will not commence until a cup is present in the cupwell. This cup can be placed in the cupwell by the customer or delivered by the machine. If a cup is not being delivered correctly, the flowchart on page 3.16 will assist you in determining the cause of the problem.

SANITIZING PROCEDURE FOR BOOTH UNIT

- **IMPORTANT!** HOT WATER FROM THE HOT WATER TANK WILL SERIOUSLY DAMAGE THE BOOTH UNIT AND MUST NOT BE USED.

DAILY RECOMMENDED MAINTENANCE

1. Sanitize all dispensing tubes by removing the tubes and immersing them in luke warm water to remove any external deposits and brush clean.
2. Clean inside tubes and holder with a cleaning brush. Flush still water line with 0.5 litters of water (this should be done after any 24hr non use period).
2. Clean dip tubes for product containers on every occasion that a new container of product is fitted into the machine following the above procedure.

QUARTERLY RECOMMENDED MAINTENANCE

1. With the waste bucket in place, lift syrup tubes above liquid level in product container. Press primer switches to empty lines, then place in a container of clean water and prime through dispense nozzle.
2. Power machine off. Remove front and top covers from the booth unit. Empty the carbonator by operating the carbonated water solenoid valve manually.
3. Drain Ice bank through the fill aperture. If ice is present, fill bath unit with luke warm water and leave for fifteen minutes. Continue to drain bath unit.
4. Prepare a solution of proprietary sanitizing fluid. (i.e., diversal bx4a) and carefully follow the manufacturers instruction. A five liter syrup pump container is suitable for this operation.
   A) Disconnect the water pump by removing two purple three way connectors and pink two way connector (carb fill solenoid) from the distribution board).
   B) Power machine on. Place dip tubes into the container of sanitizing fluid and operate the syrup priming switches until the fluid pours from the dispense nozzle.
   C) Once all syrup lines are flushed and sanitized, reconnect all connectors to distribution board.
5. Ensure that the complete unit is clean, particularly around the edges of removable panels where spillage from ingredients may have entered, and especially where the unit stands.

- **IMPORTANT!** THOROUGHLY CLEAN THE CONDENSER OF THE BOOTH UNIT ONCE A MONTH WITH A SMALL STIFF BRUSH ACCESSING THROUGH FRONT AND LEFT SIDE PANELS AS WELL AS THE REAR.
- **DO NOT!!! POKE BETWEEN THE FINS WITH SCREWDRIVERS OR ANY OTHER SHARP OBJECTS THAT MAY PUNCTURE THE CONDENSER CAUSING LEAKAGE.**

211 TROUBLESHOOTING CHART

CAUTION: Certain procedures in the troubleshooting section require that voltage be on in the machine. Exercise extreme caution while performing these procedures to prevent injury.

PROBLEM	POSSIBLE CAUSE	REMEDY
No power-complete machine including fluorescent light and service outlet	Power cord unplugged	Plug in power cord
	Loose or broken wire in power cord	Repair or replace - See Caution on page 1.01
	Bad connections in power cord to EMI filter and switch panel	Check all terminals
	No voltage from mains wall outlet	Check outlet and supply circuit breaker. Contact a certified electrician
	Door Interlock switch or wiring defective or open	Repair or replace
"OUT OF SERVICE" Light on the front display steadily lit	Activated or defective switch for following: low float, cup sold out, overflow or grounds bucket	Check for normal conditions and correct, replace defective switch
	Vend enable Relay not energized	Check for 120vac through all above switches and to relay, replace relay.
Machine will not vend or accept money	Circuit breaker(s) tripped	Reset or replace
	Power transformer disconnected or defective	Repair or replace Check logic board L1-1&2,L1-3&5
	Incorrect coin mechanism installed	Check page 2.02 for list of correct coin mechanisms
	Defective coin mechanism	Replace or disconnect and test machine button ❹
	Check cup sensor operation	Set channel 17, button ❸ to 0.0 and test again
Excessive amount of liquid in overflow bucket	Float switch on heater tank lid defective or out of adjustment	Adjust or replace switch
	Hot water tank Float waterlogged	Replace float
	Commodity water valve leaking	Repair or replace
	Water inlet valve leaking	Repair or replace-check supply line for high pressure. Install pressure regulator to correct.
Lightener and/or sugar not selected but appearing in drink	Clogged exhaust system	Check steam exhaust (duct,hose,fan and humidity bar)-clean as needed
	Exhaust motor not running	Service or replace
	Scratched or defective trough causing poor wash	Replace
	Product dispensing too soon / late	Check for incorrect channel times
	Mixed products in canisters	Dump products and replace
Grounds in cup	Brewer dumping wet grounds	See wet grounds section
	Torn or ripped brew filter	Replace
	Missing funnel cover	Replace

211E TROUBLESHOOTING CHART

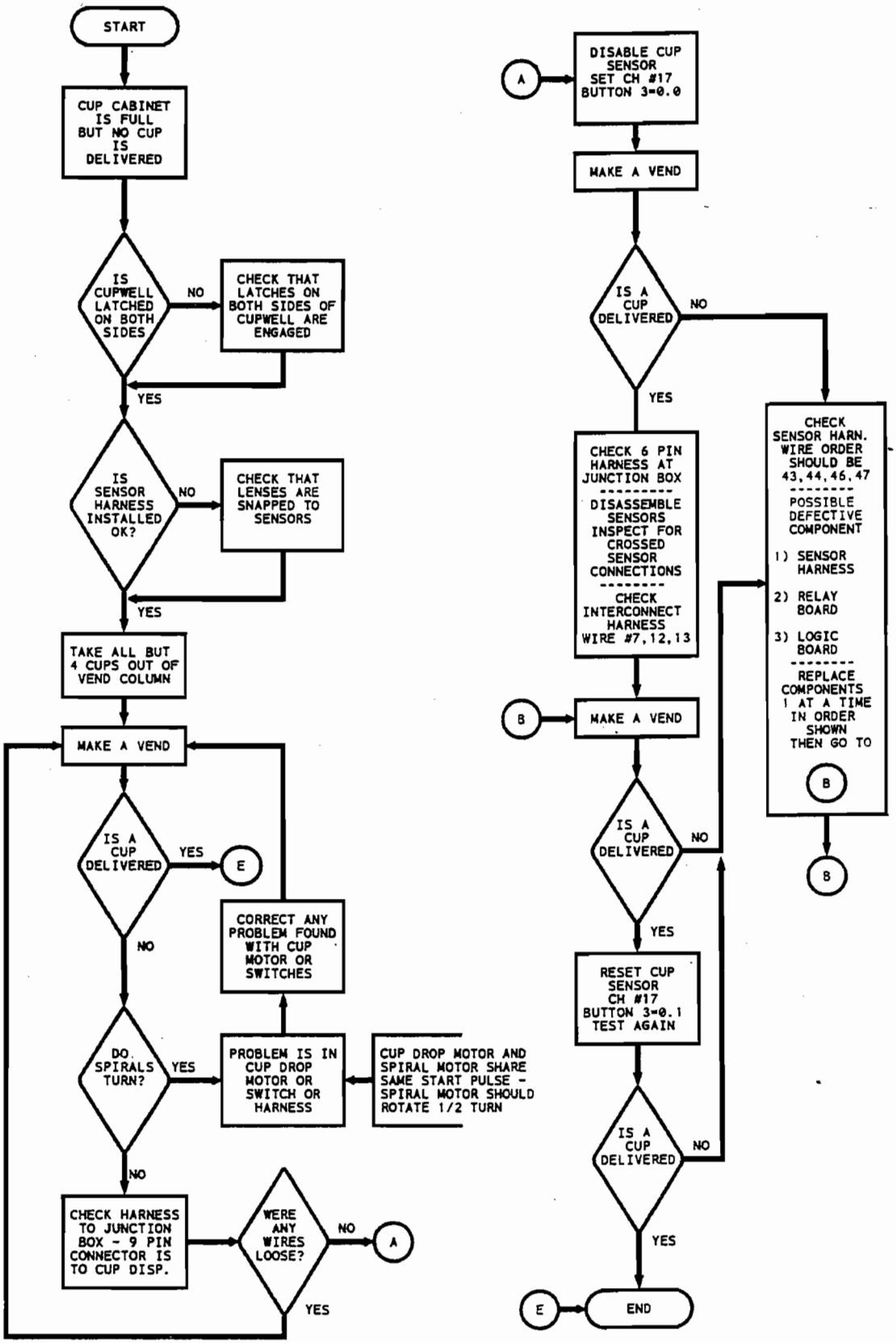
PROBLEM	POSSIBLE CAUSE	REMEDY
Weak and/or cold coffee	Check gram throws	Using gram scale, adjust correct channels
	Brew water valve leaking	Repair or replace valve
	Defective thermostat	Replace
	Over temperature safety thermostat tripped	Reset
	Defective heater	Replace
	Incorrect alignment of brew chamber and filter	Adjust stop position of brewer-check brewer motor brake arm for coasting
Cup occasionally not full (Short cup)	Excessive coffee in brew chamber	Using gram scale, adjust correct channels
	Float rod sticking or bent	Straighten or replace
	Water inlet switch sticking or defective	Replace
	Float rod access cover loose	Secure in proper position
	Water valves opening late due to mechanical defect or low voltage	Repair or replace valve Correct low voltage problem
	Brewer cable not adjusted properly causing brewer leak	Adjust cable
	Brewer stop position incorrect trapping grounds on seal or between chamber and filter	Adjust rear brewer cam or switch for correct stop position
	Check brew chamber seal for excessive grounds	Check for proper alignment of coffee delivery chute
	Clogged water filter	Replace
	Low water supply or damaged supply line	Change water supply or replace water supply line
	Overflow hose blocked or kinked	Check routing of hose to the overflow bucket
	Incorrect cylinder and carriage alignment	Check brewer cable adjustment
Wet grounds dispensed from brewer (coffee or tea)	Clogged brew filter	Replace
	Clogged filter support screen	Clean or replace
	Scored or cracked brew cylinder	Replace
	Worn or defective piston or seal	Replace
	Check gram throw	Using gram scale, adjust correct channels
	Soft water or coffee gases causing excessive pressure in brewer	Reduce brew water and install add water kit to reduce excessive pressure
Water only-No coffee	Carriage wiper binding on filter	Confirm that brew filter is seated correctly Clean brew base assembly
	Warped brew filter	Replace
	Bent filter support screen	Replace
	LG canister tunneling	Agitator defective or jammed Auger inoperative
	Faulty interlock switch or assembly	Adjust or replace
	No coffee in canister	Service
	Check channels in set up mode for correct times	See timing chart

211E TROUBLESHOOTING CHART

PROBLEM	POSSIBLE CAUSE	REMEDY
Water in grounds bucket	Brew water valve leaking	Repair or replace valve
	Defective piston seal (wet grounds)	Replace
	Incorrect cylinder and carriage alignment	Check brewer cable adjustment
Brewer leaking	Refer to brewer section in service manual	Soft water or coffee gases causing stalling or excessive pressure
	Excessive amount of coffee grounds on brew base assembly	Clean or service
	Cracked or damaged brew cylinder	Replace
	Special washers missing from between brew cylinder and cylinder rods	Replace
	Worn or damaged brew chamber seal	Replace
	Cracked or damaged brew chamber	Replace
	Worn filter or seal	Replace
	Cracked or damaged brew carriage	Replace
	Brew filter support bracket broken	Replace
	Improper brew cable adjustment	Adjust
	Funnel support brace bowed	Replace brew base frame
	Worn or broken delivery funnel	Replace
	Brew base assembly - parts worn or broken (springs, pawls,etc)	Replace parts
	Bent carriage or filter rods	Replace or straighten
No cups	Cups jammed together in cup cabinet	Adjust or replace spiral advance switch
	Wrong type cups or cup ring	Replace cups or cup ring
	Defective cup drop motor	Replace
	USE YOUR OWN CUP option not working	Cupwell not aligned correctly
		Sensors blocked or dirty
		Sensors or board malfunctioning
		Cup sensor configuration set wrong set channel 17 button ❸ to 0.0 to disable cup sensor
		See Cup Problem Flowchart, page 3.26
		See Service Section, page 3.12
Multiple or intermittent cups	Cup motor cycle switch out of adjustment, broken or defective	Adjust or replace
	Cup motor brake arm sticking on causing motor to coast	Check for rubber tip on brake arm-repair or replace
	Cup drop motor start pulse too long	Check channel 17 button ❷ for correct duration = 1.8 seconds
	Cup motor cycle switch wiring reversed	Correct wiring

CUP PROBLEM FLOWCHART

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



LOGIC BOARD PIN CONNECTIONS

L1-POWER SUPPLY
L1-1 24Vac hot
L1-2 Key - no connection
L1-3 24Vac neutral
L1-4 12Vac neutral
L1-5 12Vac hot

L2 $ VALIDATOR
L2-1 Credit input
L2-2 Enable
L2-3 Key
L2-4 Escrow
L2-5 Credit neutral
L2-6 Ground

L3 - EXECUTIVE COIN MECH INTERFACE
L3-1 24Vac return
L3-2 Key - no connection
L3-3 24Vac hot
L3-4 No connection
L3-5 Enable jumper to pin 6
L3-6 Enable jumper to pin 5
L3-7 No connection
L3-8 Receive + (RX+)
L3-9 Receive - (RX-)
L3-10 Transmit + (TX+)
L3-11 Transmit - (TX-)

L4 MAIN CONTROLLER INTERFACE
L4-1 Data
L4-2 Clock
L4-3 Latch
L4-4 Output enable
L4-5 Diagnostic out of service
L4-6 Free vend output
L4-7 Cup sense
L4-8 Key - no connection
L4-9 dc Common
L4-10 +12Vdc
L4-11 +5Vdc
L4-12 2Khz cup sense
L4-13 Cup present indicator

L5 KEYPAD SELECTION PANEL
Pin 8 is common for all combinations-each selection is a combination of pin 8 plus two other pins

A=	8+5+7	3=	8+3+4
B=	8+4+7	4=	8+2+4
C=	8+3+7	5=	8+2+3
D=	8+1+7	6=	8+1+4
1=	8+4+5	*=	8+1+3
2=	8+1+2	#=	8+1+5

L6 - COIN MECHANISM (MICRO-MECH OR L+)

L6-1	To coin mech pin #3	Send line
L6-2	To coin mech pin #6	Accept enable
L6-3	To coin mech pin #7	.25 dispense line
L6-4	To coin mech pin #8	.10 dispense line
L6-5	To coin mech pin #9	.05 dispense line
L6-6	To coin mech pin #11	Reset
L6-7	To coin mech pin #1	+5Vdc
L6-8	To coin mech pin #4	Interrupt line
L6-9	To coin mech pin #5	Data line
L6-10	To coin mech pin #2&13	dc ground
L6-11	Key - no connection	
L6-12	To coin mech pin #15	24Vdc hot

L7 - MULTI DROP BUS
L7-1 24VDC hot
L7-2 Key - no connection
L7-3 Common for transmit & receive
L7-4 Receive data (RXD)
L7-5 Transmit data (TXD)
L7-6 24VDC Ground
L7-7 No connection

L8 - OUTPUT OPTIONS
L8-1,2,3,5,6,8,11 No connections
L8-4 Tea Brewer Motor - Relay (24 VDC)
L8-7 Cold Water Shot - Relay (24VDC)
L8-9 Key - no connection
L8-10 Ground for pins 4 & 7

RELAY BOARD PIN CONNECTIONS

R1 VEND OUTPUTS
R1-1 Data
R1-2 Clock
R1-3 Latch
R1-4 Output enable
R1-5 Diagnostic out of service
R1-6 Free vend output
R1-7 Cup sense
R1-8 Key - no connection
R1-9 dc Common
R1-10 +12Vdc
R1-11 +5Vdc
R1-12 2Khz cup sense
R1-13 Cup present indicator

R2 MAIN CONTROLLER INTERFACE
R2-1
R2-2 Cup sensor led +
R2-3 Cup sensor led -
R2-4
R2-5 Cup sensor detector
R2-6 Cup sensor detector
R2-7
R2-8 Vend enable +
R2-9 Free vend (executive key) +
R2-10 Vend enable and free vend return

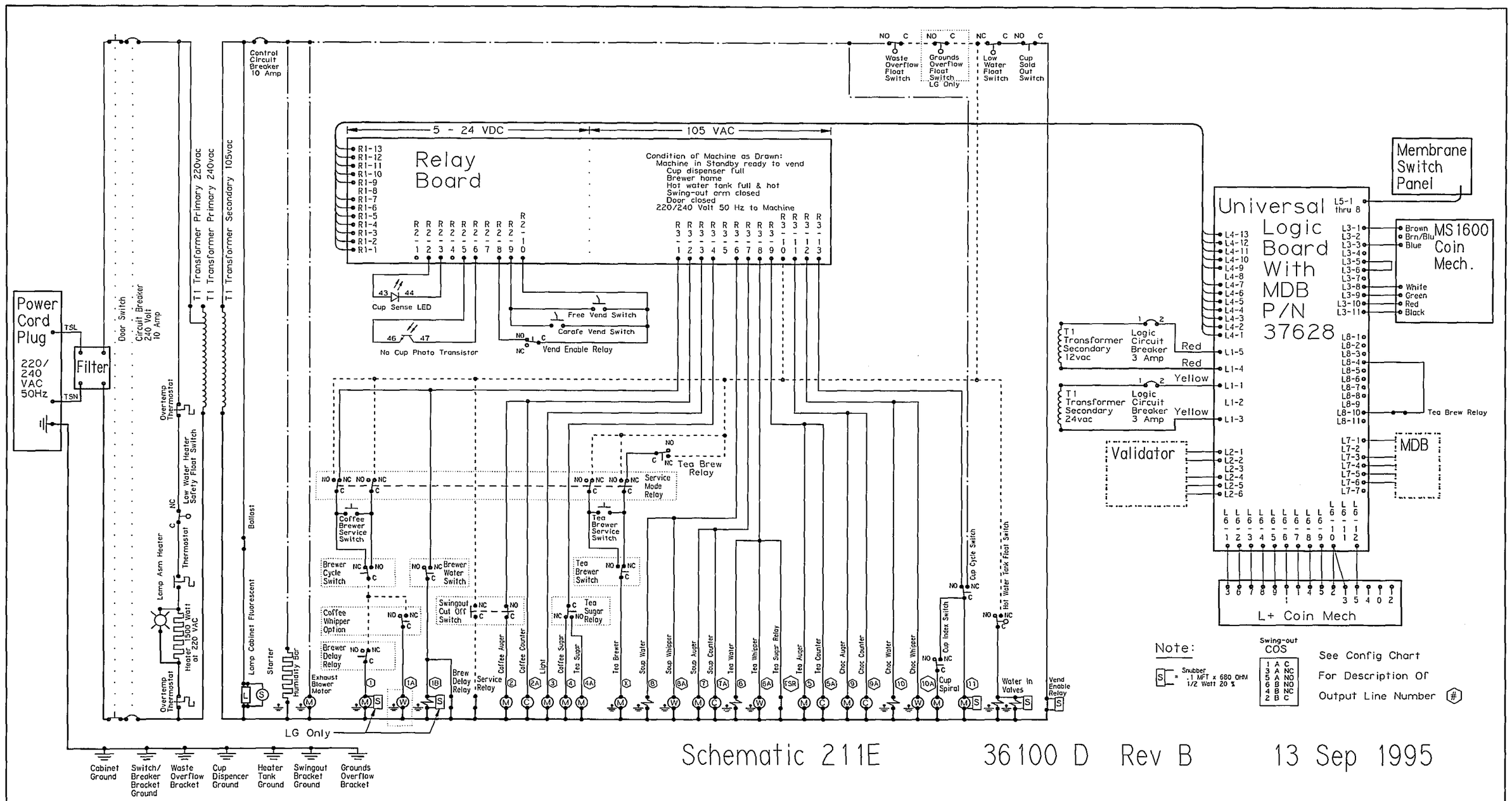
R3 CUP SENSE AND EXECUTIVE KEY		**CONTROLLED BY CHANNEL #**
R3-1	120Vac to brewer	1
R3-2	120Vac to coffee auger	2
R3-3	120Vac to lightener motor	3,13
R3-4	120Vac to sugar motor	4,15
R3-5	Key - no connection	
R3-6	120Vac to soup water & whipper	8
R3-7	120Vac to soup auger	7
R3-8	120Vac to tea water	6
R3-9	120Vac to tea auger	5
R3-10	120Vac constant (After bucket switches)	
R3-11	120Vac to chocolate auger	9
R3-12	120Vac to choc water and whipper	10
R3-13	120Vac to cup drop motor start	17

POWER BOARD CONNECTIONS

USED ONLY WITH 110V COIN MECH AND/OR VALIDATOR
P1-1 110V ac neutral in
P1-2 Key - no connection
P1-3 110V ac hot in

P2-1 110V dc ground to coin mech socket pin 10
P2-2 110V dc hot to coin mech socket pin 12
P2-3 Key - no connection
P2-4 No connection

P3-1 110V ac neutral to validator pin 6
P3-2 Key - no connection
P3-3 110V ac hot to validator pin 4



Schematic 211E 36100 D Rev B 13 Sep 1995

LET	REVISION	BY	DATE	E.C.NO.
B	Update To MDB Universal Board	KPH	09/13/95	95-183

NAME Schematic 211E 220/240V

MATERIAL	FINISH	SCALE	NONE	DATE
		DRAWN	KPH	02/01/92
DO NOT SCALE DRAWING	MODEL 211E	APP.		

THE INFORMATION ON THIS DRAWING IS CONFIDENTIAL. UNAUTHORIZED USE IS PROHIBITED.

TOLERANCES (EXCEPT AS NOTED) DECIMAL +/- .005 FRACTIONAL +/- .015 ANGLES +/- 1/2°

Gross-Given Mfg.Co.
300 Jacksonville Road Warminster PA 18974

NUMBER 36100 SIZE D REV. B