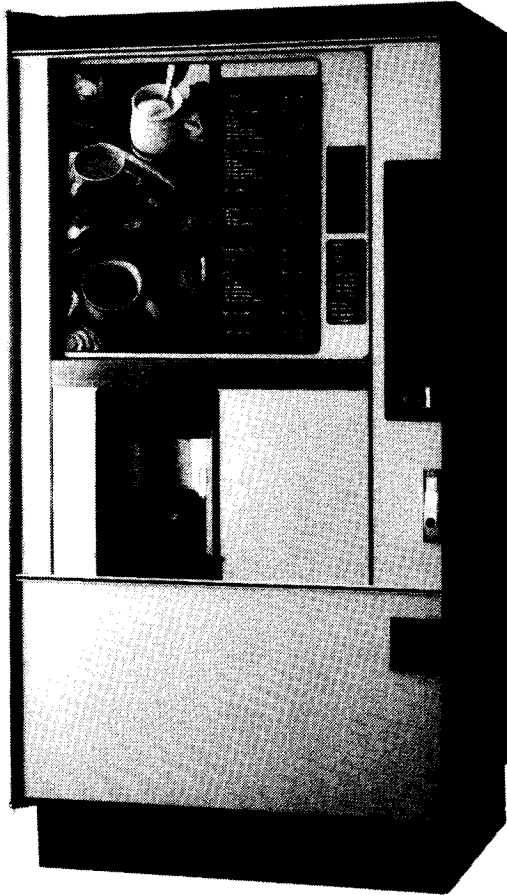# HotDrinkCenter

MODEL
623 - 625 - 627
Operators Guide

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CRANE- National Vendors

This machine has been engineered to our own rigid safety and performance standards. It has been designed to comply with sanitation and health guidelines recommended by the Automatic Merchandising Health-Industry Council (AMHIC) and it conforms with all other NAMA safety recommendations.

This machine has been manufactured in accordance with the safety standards of both Underwriter's Laboratories and the Canadian Standards Association. To maintain this degree of safety and to continue to achieve the level of performance built into this machine, it is important that installation and maintenance be performed so as to not alter the original construction or wiring and that replacement parts are as specified in the Parts and Service Manual. Your investment in this equipment will be protected by using this Operator's Guide and the Parts and Service Manual in your operation, service and maintenance work. By following prescribed procedures, machine performance and safety will be preserved.

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TABLE OF CONTENTS

SPECIFICATIONS

SPECIFICATIONS

Physical	
Height	72 inches (183 cm)
Width	38.12 inches (97 cm)
Depth	28.5 inches (72 cm)
Power Requirements	115 Volts, 60 Hz, 15 amps, single phase
Water Pressure	10 psi (minimum) 80 psi (maximum)
Cup Capacities (Approx.)	
7 oz cups (squat)	1150
8.25 oz cups	1050
9 oz cups (squat)	1100
10 oz cups	1000
12 oz cups	940
Canister Capacities (Approximate)	
Regular coffee beans	14 lbs
Ground coffee	13 lbs
Freeze dry coffee	2 lbs
Decaf coffee beans	9.5 lbs
Ground decaf coffee	9 lbs
Freeze dry decaf	2 lbs
Chocolate	10 lbs
Soup	6.7 lbs
Sugar	11 lbs
Lightener	4.5 lbs
Sugar substitute	4 lbs
Tea (freeze dry)	1.5 lbs
6th product (freeze dry)	6 lbs

SPECIFICATIONS

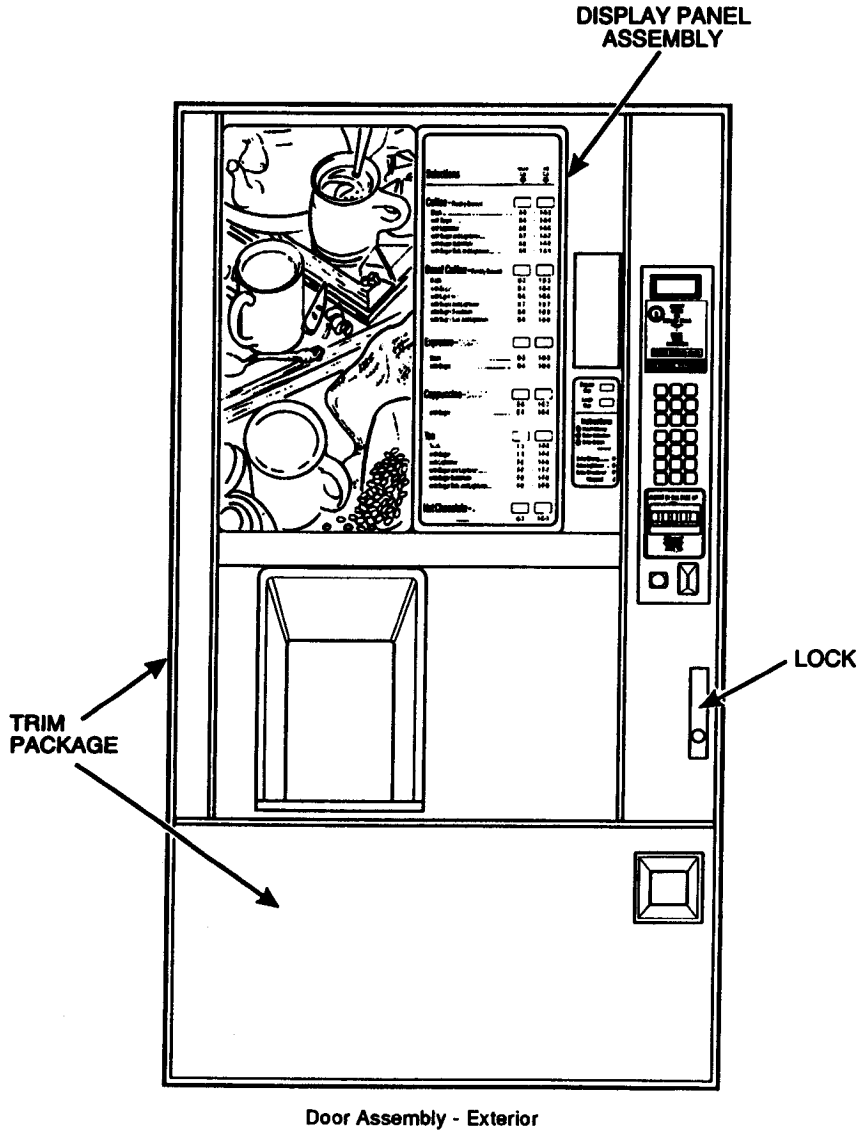|	
Product options	Available with:
Model 623 Fresh Brew	Up to eight selections of fresh brew regular and decaf coffee, freeze dried regular and decaf coffee, fresh brew and freeze dried tea, soup, chocolate, cappuccino and espresso.
Model 625 Freeze Dried	Up to eight selections of freeze dried regular coffee, decaf coffee, tea, soup, chocolate, cappuccino and espresso.
Model 627 Fresh Brew with Bean Grinder	Up to eight selections of fresh ground and brewed regular and decaf coffee, freeze dried regular and decaf coffee, fresh brew and freeze dried tea, soup, chocolate, cappuccino and espresso.
Options/Accessories	Coffee brewer filter paper (5000 vends per roll)
	Coin box lock
	Base grille kit
	Automatic delivery door
	Flex Ace door lock and key
	Van Door lock and key
	Sugar substitute kit
	6th product kit
	"Mugger" cup hold electronic switch kit
	Snap-on ingredient canister
	extension sleeves (4 tall)
	Everpure water filter kit
	Debit card validator
	Free vend keyswitch
	Data printer kit
	Ingredient rinse tray
Bill validators:	MARS VFM1 pulse
	MARS VFM3 serial
	MAKA pulse
Coin mechanisms:	MARS TRC-6000
	COINTRON 3000
	MARS TRC-6010 (24 V)

INITIAL SETUP

Initial Setup

The first thing you will do with a new merchandiser is set it up. This procedure is covered in Appendix A of this manual. On these two pages is a flow diagram which lists the various options in your merchandiser, and the steps you follow to get it up and running and serving your customers! Follow the flow diagram for the initial setup.
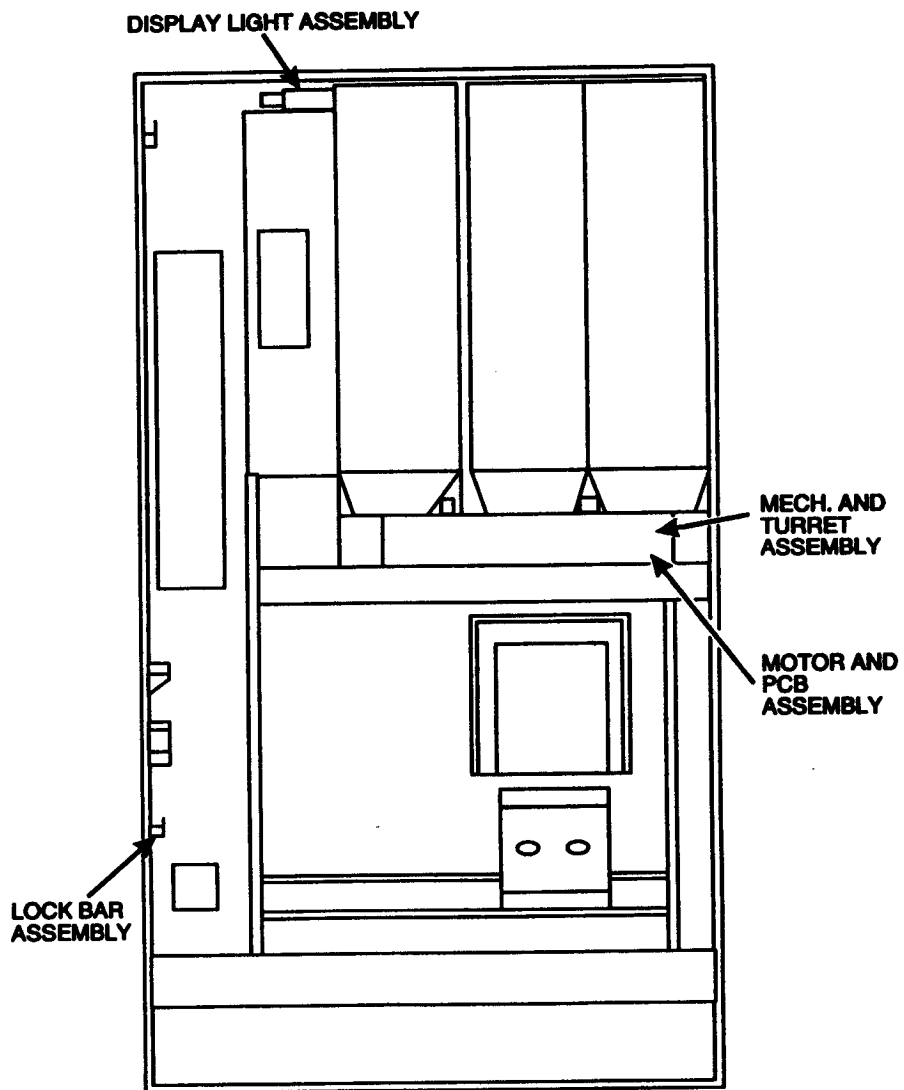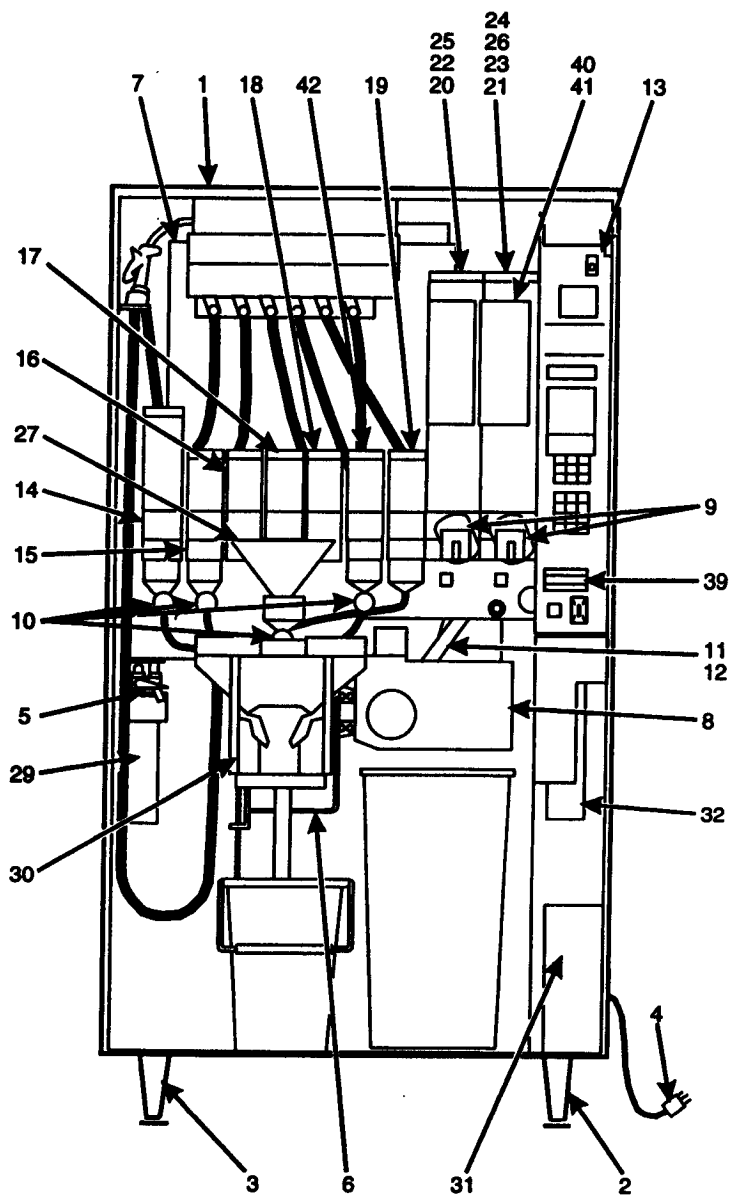
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│  COMPLETE    │────────>│     SEE      │
│  INITIAL     │         │  APPENDIX    │
│   SETUP      │         │     A        │
└──────────────┘         └──────────────┘
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┌──────────────┐         ┌──────────────┐
│   SET UP     │────────>│     SEE      │
│   COIN       │         │    PAGE      │
│  MECHANISM   │         │     18       │
└──────────────┘         └──────────────┘
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       v
     ╱ DO ╲
    ╱  YOU  ╲
   ╱ HAVE THE╲    YES    ┌──────────────┐    ┌──────────────┐
  ╱ COIN BOX  ╲─────────>│  INSTALL     │───>│     SEE      │
  ╲ LOCK OPTION╱         │  THE CASH    │    │    PAGE      │
   ╲    ?    ╱           │  BOX LOCK    │    │     20       │
    ╲      ╱             └──────────────┘    └──────────────┘
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│   LOAD       │────────>│     SEE      │
│   DRY        │         │    PAGE      │
│  PRODUCTS    │         │     25       │
└──────────────┘         └──────────────┘
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│  LOAD CUPS   │────────>│     SEE      │
│    AND       │         │    PAGES     │
│  ADJUST      │         │    22-24     │
│   CUP        │         └──────────────┘
│   RING       │
└──────────────┘
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┌──────────────┐         ┌──────────────┐
│   SET UP     │────────>│     SEE      │
│   MENU       │         │    PAGE      │
│  ASSEMBLY    │         │     26       │
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     ╱ DO ╲
    ╱  YOU  ╲
   ╱ HAVE THE ╲   YES    ┌──────────────┐    ┌──────────────┐
  ╱ FILTER PAPER╲───────>│   LOAD       │───>│     SEE      │
  ╲  OPTION    ╱         │  FILTER      │    │    PAGE      │
   ╲    ?     ╱          │  PAPER       │    │     28       │
    ╲       ╱            └──────────────┘    └──────────────┘
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│     PRODUCT      │─────────────▶│   PAGE   │
│  CONFIGURATION   │              │    38    │
│   PROGRAMMING    │              │          │
│      STEPS       │              └──────────┘
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┌──────────────────┐              ┌──────────┐
│     PERFORM      │              │   SEE    │
│   PRODUCT AND    │─────────────▶│  PAGES   │
│   WATER TEST     │              │  44-52   │
│     THROWS       │              │          │
└──────────────────┘              └──────────┘
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│  ADJUST WATER    │              │   SEE    │
│     VALVES       │─────────────▶│   PAGE   │
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│   AS NEEDED)     │              │          │
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│     PERFORM      │              │   SEE    │
│     MACHINE      │─────────────▶│   PAGE   │
│  CONFIGURATION   │              │    54    │
│   PROGRAMMING    │              │          │
│      STEPS       │              └──────────┘
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│     PERFORM      │              │   SEE    │
│      PRICE       │─────────────▶│   PAGE   │
│     SETTING      │              │    57    │
│   PROGRAMMING    │              │          │
│      STEPS       │              └──────────┘
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┌──────────────────┐              ┌──────────┐
│     PERFORM      │              │   SEE    │
│   TIME-OF-DAY    │─────────────▶│   PAGE   │
│   PROGRAMMING    │              │    61    │
│      STEPS       │              │          │
└──────────────────┘              └──────────┘
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│     PERFORM      │              │   SEE    │
│  TEST VENDS TO   │─────────────▶│   PAGE   │
│  VERIFY SETUP    │              │    68    │
└──────────────────┘              └──────────┘
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MAJOR PARTS

The diagrams on the following pages will acquaint you with the major parts of the Hot Drink Center. For more detailed information, please consult your PARTS MANUAL. If you do not have a PARTS MANUAL, contact National Vendors Parts Department.

Door Assembly - Exterior

DISPLAY LIGHT ASSEMBLY

MECH. AND
TURRET
ASSEMBLY

MOTOR AND
PCB
ASSEMBLY

LOCK BAR
ASSEMBLY

INDEX	DESCRIPTION
1	Cabinet Assembly
2	Leg and Leveler Assembly
3	Leg, Hinge, and Leveler Assembly
4	Plate Assembly - Power Cord
5	Head Assembly - Filter and Valve
6	Filter Paper Assembly
7	Water Tank Assembly
8	Brewer Assembly
9	Grinder and Bracket Assembly - Bean
10	Whipper Assembly - Drink
11	Chute Assembly - Coffee Grounds
12	Chute Assembly - Preground Coffee (Not Shown)
13	Monetary Panel Assembly
14	Canister Assembly - Chocolate
15	Canister Assembly - Soup
16	Canister Assembly - Sugar Sub.
17	Canister Assembly - Lightener
18	Canister Assembly - Sugar
19	Canister Assembly - Tea, F/Dry
20	Canister Assembly - Decaf, F/Dry
21	Canister Assembly - Coffee, F/Dry
22	Canister Assembly - Decaf, F/Brew
23	Canister Assembly - Coffee, F/Brew
24	Canister Assembly - Tea, Leaf
25	Canister Assembly - Decaf, Bean
26	Canister Assembly - Coffee, Bean
27	Chute Assembly - 3 Ingredient
28	Chute Assembly - 2 Ingredient
29	Cartridge - Water Filter
30	Cup Delivery Assembly
31	Money Box Assembly
32	Coin Mechanism
33	Bracket Assembly - Exhaust Fan
34	Air Compressor Assembly
35	Brewer Drive Assembly
36	Overflow Switch Assembly
37	PCB Assembly - Main Controller
38	Panel Assembly - Power
39	Bill Acceptor
40	Window Assembly - Dual Bean
41	Window Assembly - Single Bean
42	Canister Assembly - 6th Product, F/Dry

INDEX	DESCRIPTION
1	Cabinet Assembly
2	Leg and Leveler Assembly
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18	Canister Assembly - Sugar
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21	Canister Assembly - Coffee, F/Dry
22	Canister Assembly - Decaf, F/Brew
23	Canister Assembly - Coffee, F/Brew
24	Canister Assembly - Tea, Leaf
25	Canister Assembly - Decaf, Bean
26	Canister Assembly - Coffee, Bean
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37	PCB Assembly - Main Controller
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40	Window Assembly - Dual Bean
41	Window Assembly - Single Bean
42	Canister Assembly - 6th Product, F/Dry

CONTROLS AND INDICATORS

Controls and Indicators

POWER PANEL. You may have one of three power panels, depending upon where you live. The controls are fundamentally the same, however.

Circuit Breakers and Fuses. Circuit breakers and fuses protect the merchandiser against failures in the power supply or any of the electrical components. If a circuit breaker trips and cannot be reset, or if a fuse repeatedly blows, consult your troubleshooting manual.

Main Power Switch. This is the main ON/OFF switch for the merchandiser.

WARNING
To protect against electrical shocks and possible damage to the machine, turn this switch *OFF* when performing any maintenance on the merchandiser.

15 AMP CIRCUIT BREAKER (MAIN)

1/2 AMP CIRCUIT BREAKER (ELECTRONICS)

1 AMP CIRCUIT BREAKER (WHIPPERS)

LABEL

MAIN POWER SWITCH
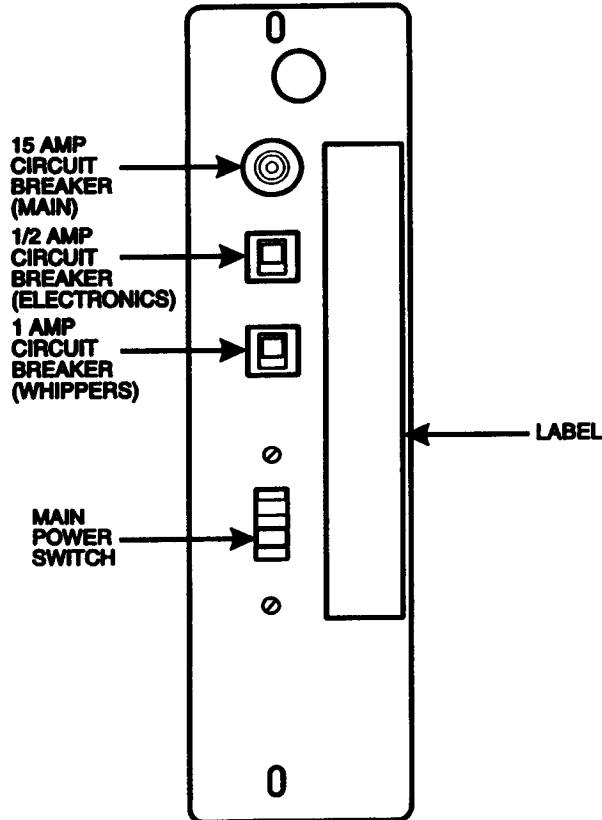
**POWER CONTROL PANEL
(U.S./CANADA)**

F1
(ELECTRONICS)

BLANK

POWER
SWITCH

F3 (WHIPPER)

F4 (VEND)

BLANK

LABEL

**POWER CONTROL PANEL
(U.K.)**

F1
(ELECTRONICS)

F2 (ELECTRONICS)

POWER
SWITCH

F3 (WHIPPER)

F4 (VEND)

F5/F6 (MAINS)

LABEL

**POWER CONTROL PANEL
(FRANCE/GERMANY)**

SERVICE KEYPAD

CABINET

MESSAGE DISPLAY

FREE VEND KEYSWITCH (OPTIONAL)

INSTRUCTION PLATE

LETTERS A-H, J

SELECTION SWITCH PANEL

NUMERALS 1-9, *,0,#

BILL ACCEPTOR INSERT (OPTIONAL)

MONETARY PANEL

COIN RETURN BUTTON

COIN INSERT

MONETARY PANEL

Message Display. This is how the merchandiser communicates with the outside world. Customers can see messages about how much money they have put into the merchandiser. The message display also tells customers when a selection is sold out and when vending is free, inhibited, or discounted. The message display shows you what you are doing when you program the merchandiser, and can show you what is wrong if there is a failure.

Free Vend Keyswitch. This allows someone (other than maintenance people) to set the merchandiser to free vend without opening the door.

Selection Switch Panel. The customer uses these switches to make selections. Also, maintenance people may use this switch panel during programming and other support modes.

Coin Return Button. Pressing this button returns any coins that have been paid into the merchandiser prior to a vend.

Bill Acceptor Insert (Optional). Accepts bills in various denominations, depending upon the type of bill validator, and how the machine is configured.

Service Keypad. The service keypad is located at the top of the monetary panel. It gives service personnel the means to program, retrieve data from, and view diagnostic information about, the merchandiser.
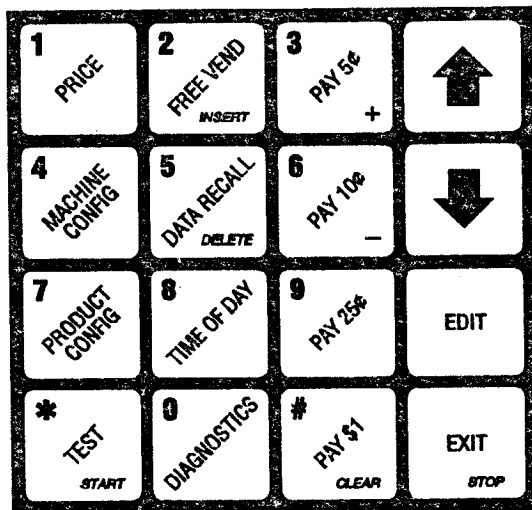
SERVICE KEYPAD
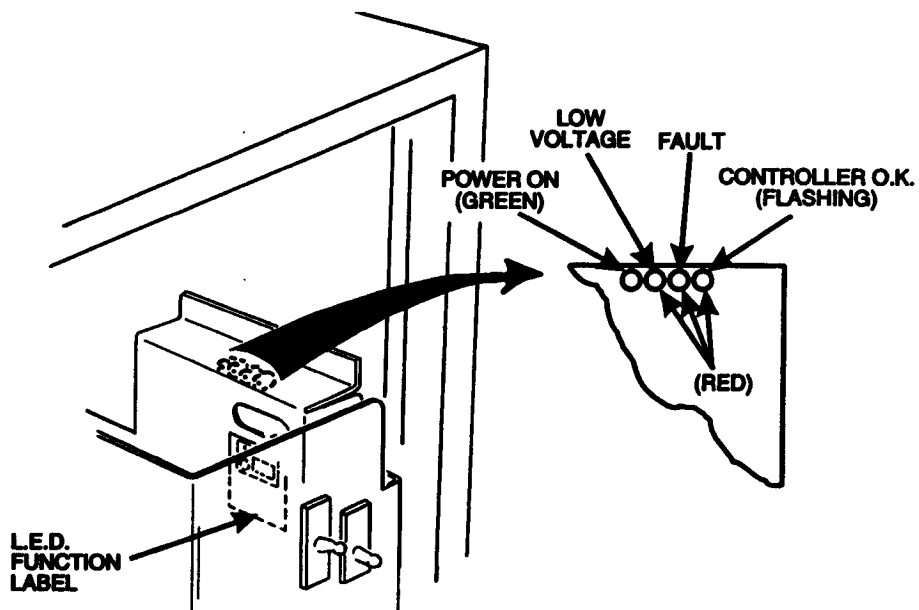
CONTROLLER CARD DISPLAY

Controller Card Display. This display consists of four light emitting diodes (LED) mounted on the controller card.

POWER ON	When lit, this green LED indicates electrical power is applied to the controller card.
LOW VOLTAGE	When lit, this red LED indicates there is insufficient electrical power for proper operation.
FAULT	When lit, this red LED indicates there is one or more faults in the merchandiser. This fault can be viewed on the message display.
CONTROLLER OK	When flashing, this red LED indicates that the controller card is active, and the software is operating.

> **NORMAL CONDITIONS:**
> When the merchandiser is operating normally, you should see a steady green **POWER ON** indicator and a flashing red **CONTROLLER OK** indicator. Refer to the maintenance manual if any other condition exists.

Pressure Adjust Control. This control determines the system pressure provided by the air compressor. Rotate the knob clockwise to increase pressure.

Pressure Gauge. This indicator shows the amount of air pressure in the system.

Recommended Pressure Settings

Coffee Beans	5-7 psig
Pre-ground Coffee	5-7 psig
Leaf Tea	3-4 psig
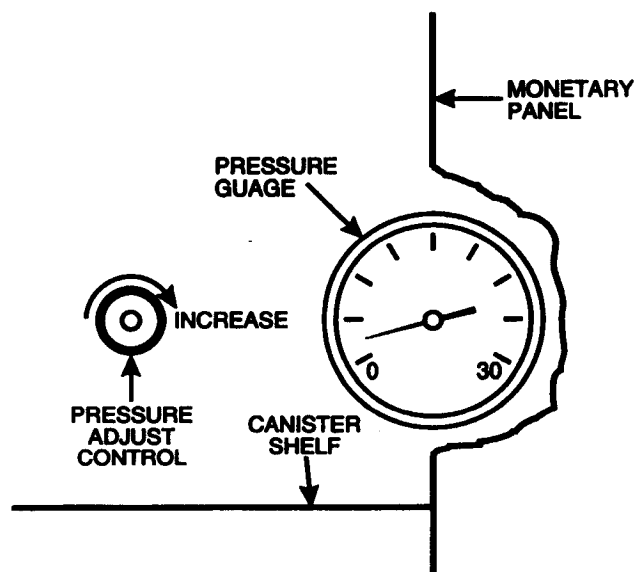
PRESSURE CONTROLS

ADJUSTMENTS AND MINOR MAINTENANCE

Adjustments and Minor Maintenance

SET UP THE COIN MECHANISM

Setting the Quarter Switch. If your coin mechanism is not a MARS TRC 6000, skip this procedure and begin LOADING THE COIN MECHANISM.
1. Flip down the front of the coin mechanism as shown, and set the quarter switch.

Loading the Coin Mechanism.
1. Open the cabinet door and the monetary door.
2. Insert coins into their respective tubes until each tube has been filled.
3. Inspect the tubes for shingled coins and correct if necessary.

HIGH QUARTER SWITCH

ON

EMPTY THE BILL STACKER

1. PUSH UP LATCH

2. PULL DOWN BILL STACKER

3. REMOVE BILLS
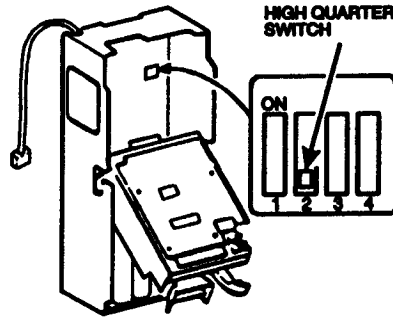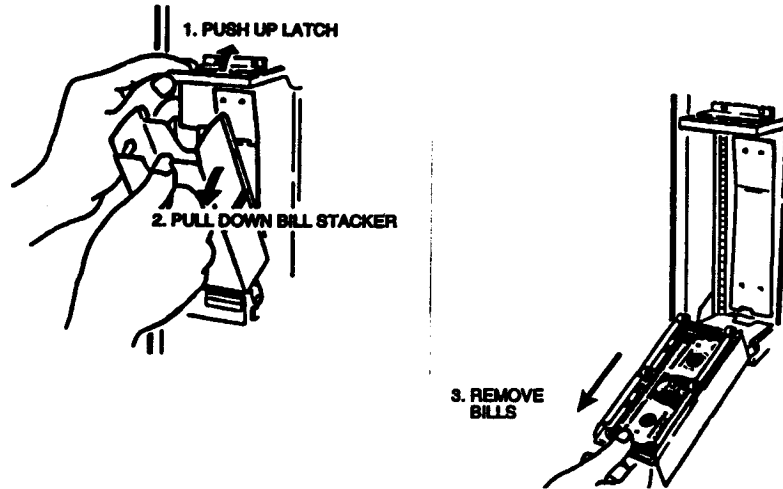
INSTALL THE WATER FILTER CARTRIDGE

IF YOUR MERCHANDISER HAS THE WATER FILTER OPTION, IT CANNOT BE OPERATED WITHOUT A PROPERLY INSTALLED WATER FILTER CARTRIDGE.

NOTE

Check the water filter installation record. There is a place to write the vend number on the cartridge. The cartridge is effective for a maximum of 26,000 7 oz. vends, 22,000 8 oz. vends, 20,000 9 oz. vends, or 15,000 12 oz. vends. Local conditions may require more frequent replacement.

Removal:
1. Turn the main power switch OFF.
2. Flip the lock lever UP (view A).
3. Rotate the locking collar to the left about 60 degrees until it drops to the filter receiving position.
4. Rotate the filter to the left until it drops free of the locking collar.

Installation:
1. Align the raised rib near the top of the filter cartridge with the ribless portion of the locking collar (view B).
2. Push the cartridge up into the filter head (view B).
3. Rotate the cartridge to the right until the lock lever engages the locking collar (view C).
4. Rotate the locking collar to the right until it moves up into the locking position (view D).
5. Push the lock lever DOWN (view E).

Do not flush the water filter cartridge.

The lock lever on the water filter head is used to open and close the water inlet to the merchandiser.

VIEW B   VIEW C   VIEW D   VIEW E

VIEW A
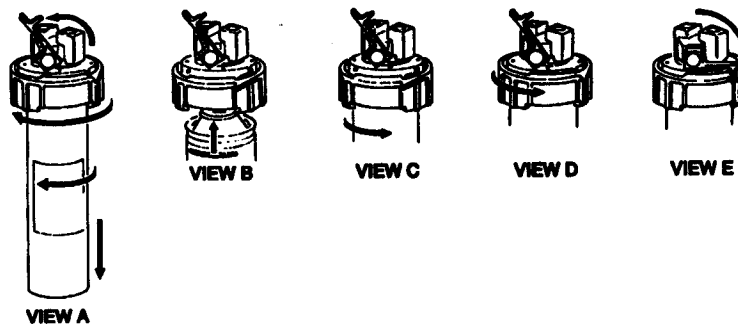
INSTALL THE OPTIONAL CASH BOX LOCK

1. Install the lock cylinder, washer, and nut in the order shown.
2. Tighten the nut.
3. Install the lock bar as shown, and secure with the screw.
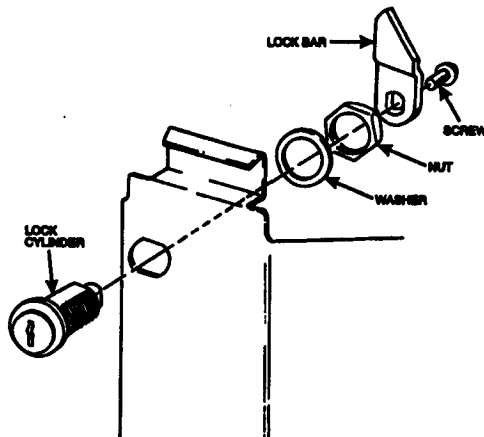
ADJUSTING WATER VALVES

Do this in conjunction with setting the factory default timers during the Product Configuration programming mode.

1. Using a slotted screwdriver, turn the adjustment screw clockwise to decrease the water flow rate.
2. Turn the adjustment screw counterclockwise to increase the water flow rate.
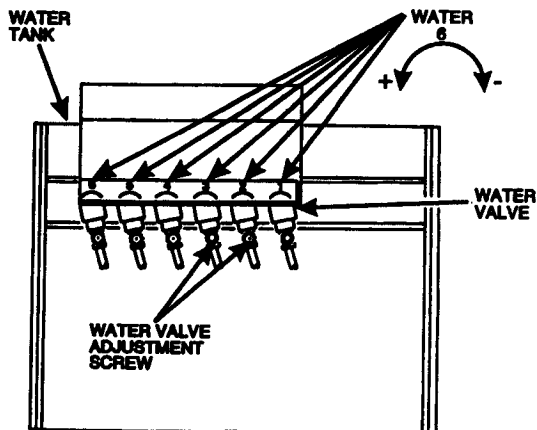
ADJUSTING THE GRIND

· A grind that is within the acceptable range will result in more controlled dispensing of grounds into the brew basket, and better extraction of coffee flavors.

· A grind that is too coarse results in poor extraction and spraying grounds in the brewer area.

· A grind that is too fine can overload the grinder motor as well as clog the screens in the brew basket and funnel.

· The degree-of-grind scale attached to the grinder motor represents an acceptable range of grinds. Do not set the grinder beyond the limits of this scale.

1. Push the locking collar toward the canister and turn the grinder motor.
2. Turn clockwise for a finer grind and counterclockwise for a coarser grind. A notch on the locking collar indicates the grind on the scale.

CAUTION
Do not turn the grinder motor too far in the clockwise direction. The grinder blades will come into contact and may be damaged.

3. Adjusting the grind may make it necessary to readjust the throw time. Proceed according to the directions in that section.

BEAN CANISTER

GRINDER MOTOR

CANISTER SHELF

LOCKING COLLAR
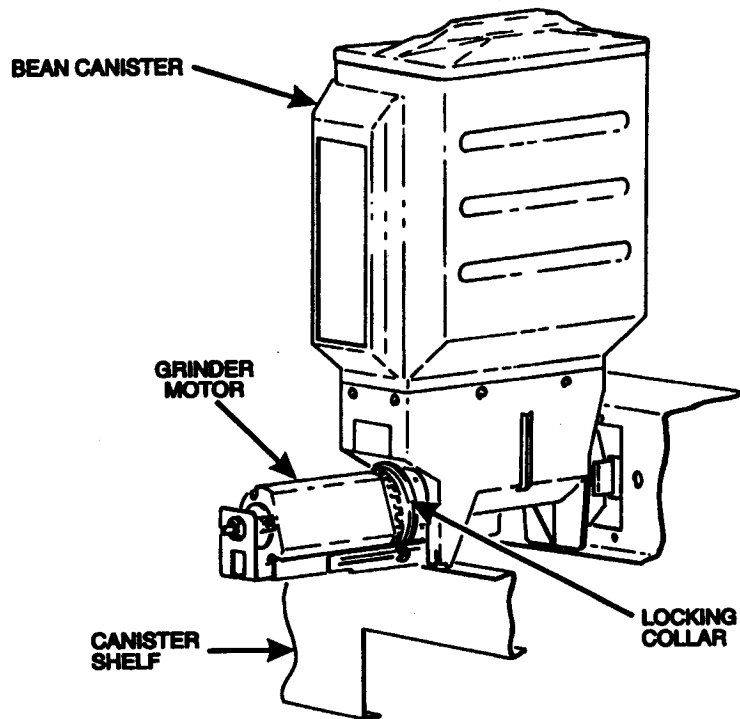
LOADING THE CUP MECHANISM

CAUTION
Use only cups which have been designed for use in a hot beverage vending machine.

Normally, regular size cups are loaded in turrets 1A and 1B, and large cups are loaded in turret 2. You may change this, depending upon sales at your location. For example, if more people buy large drinks, then you should load turrets 1A and 1B with large cups. **The size of cup you load, and its location, must agree with the cup size that you select during programming. Refer to the programming section for more information.**

1. Support the cup mechanism in the upright position.
2. Push the latch forward to release the cup mechanism. Continue to support the cup mechanism while you lower it into the loading position.
3. Remove the turret cover.

OBSERVE PROPER HYGIENE - DO NOT TOUCH THE CUPS!

4. Open the bottom of the wrapper on a stack of cups.
5. Insert the wrapped cups into the turret and pull the wrapper out.

DO NOT FILL CUPS ABOVE THE LEVEL MARKED ON THE OUTSIDE
OF THE CUP TURRETS OR ABOVE THE "FILL LINE" LABEL INSIDE
EACH TURRET.
USE ONLY THE SAME SIZE AND BRAND OF HOT DRINK CUPS IN

TURRET DESIGNATIONS

CUP STACK ROTATION

DOOR

2   1B   1A

CUP
MECHANISM   VIEW LOOKING DOWN

CABINET
DOOR

RETAINING
STRAP

LID

LOAD CUPS
HERE

CUP MECH
MOUNTING
BRACKET

CUP TURRET

LATCH

CUPS

TOP VIEW
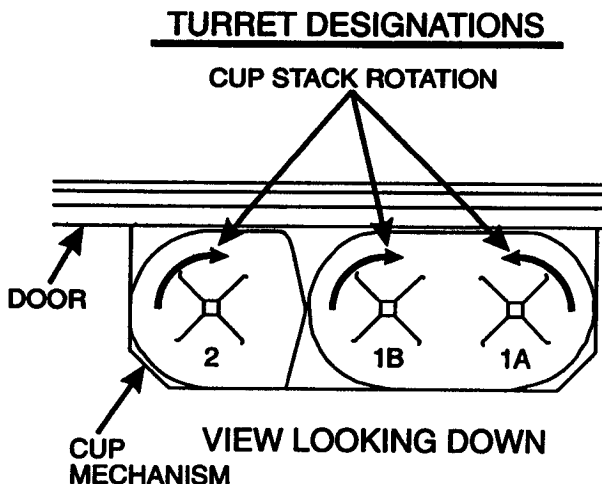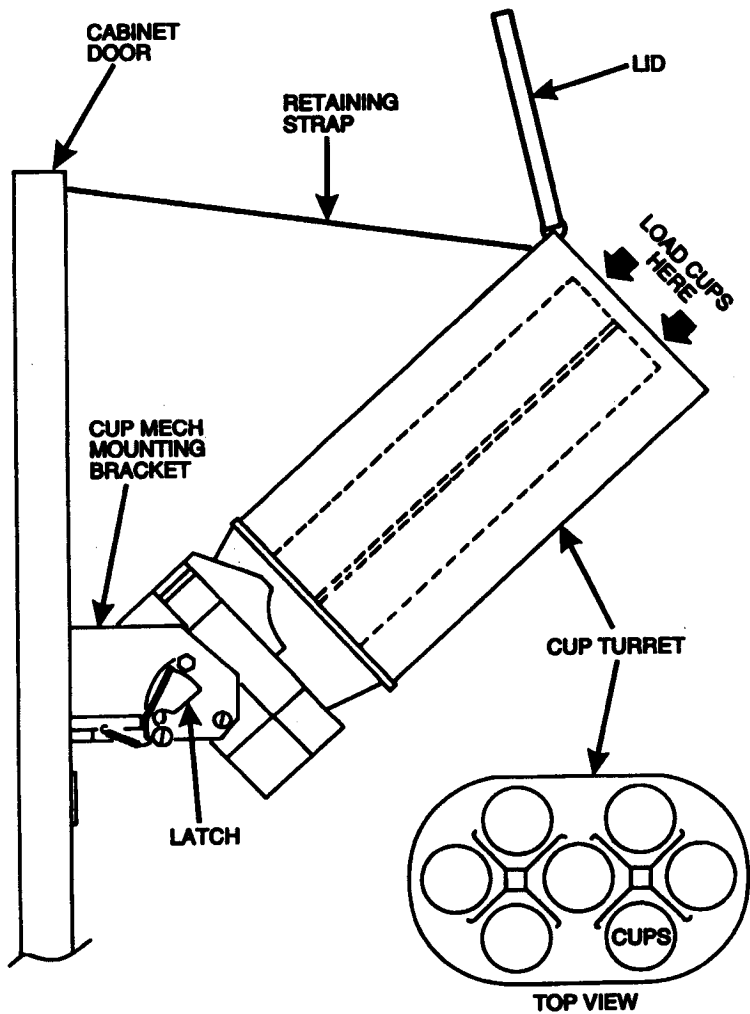
CUP MECHANISM ADJUSTMENT

1. Place seven cups in the cup ring.
2. Observe the clearance as shown in view B.
3. If necessary adjust by first loosening the adjustment arm screw (view A).
4. Move adjustment arm until correct clearance is achieved.
5. Hold adjustment arm in place and tighten adjustment arm screw.

CUP
MECHANISM

ADJUSTMENT
ARM

CUP CAM

ADJUSTMENT ARM
SCREW

CUP RING
#1

CORRECT
ADJUSTMENT

THIS SIDE SHOULD
BE SNUG AGAINST
THE CAM.

SET THIS SPACE JUST WIDE
ENOUGH TO ALLOW EJECTION
OF CUPS.

VIEW A

VIEW B

ADJUSTED
TOO TIGHT

ADJUSTED
TOO LOOSE
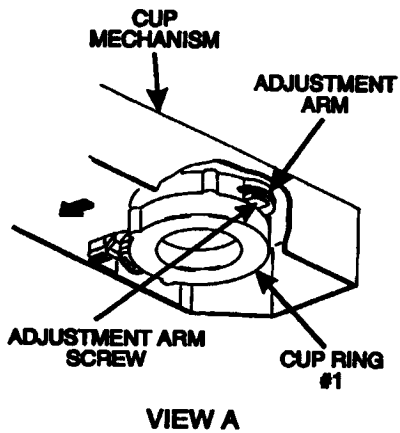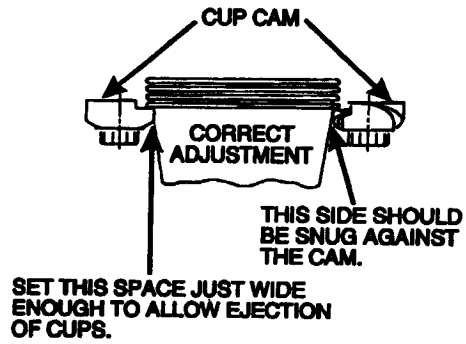
VIEW C
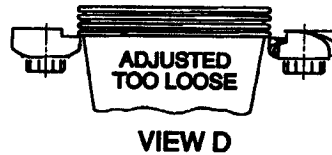
VIEW D

FILLING AND INSTALLING CANISTERS

Filling:

Open the lid as shown, and carefully pour product into the canister.

Installing:

1. Place the canister in position as shown.
2. Engage the pins on the motor shaft with the slots in the canister coupler.
3. Fit tabs on canister into the slots on the canister shelf.
4. To ensure canister is correctly engaged with the rear mounting bracket, gently push down on the front edge of the canister lid.

Canister Caps. The parts bag contains a number of red vinyl caps. Place these caps over the canister nozzle as shown to avoid spilling product when removing and replacing the canisters.

PINS ON MOTOR
SHAFT MUST ENGAGE
SLOTS IN CANISTER
COUPLER

FILL
CANISTER

CANISTER
CAP

CANISTER
SHELF
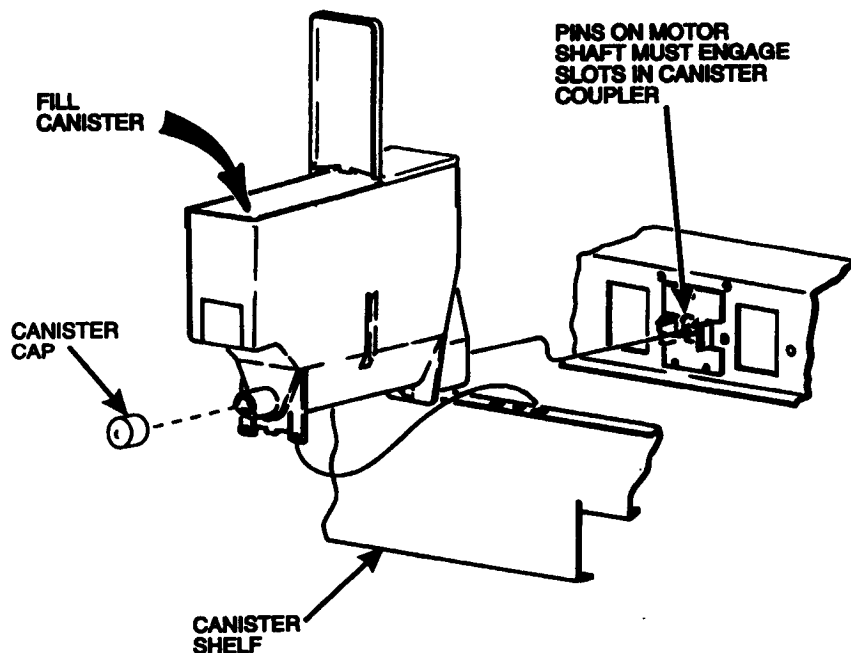
SETTING UP THE DISPLAY ASSEMBLY

DOOR

VIEW A

LARGE CUP OVERLAY SHIPPED TAPED TO BACK OF DISPLAY PANEL

SLIDE

MUG & WINNER LABELS (OPTIONAL)

DISPLAY LABEL PLATE

DISPLAY ASSEMBLY

THUMB SCREW

7 oz.
CUP SIZE LABEL

OPTIONAL LARGE CUP OVERLAY IN PLACE

WIN

MUG

50¢
PRICE LABEL

SELECTION INSERT

INSERT AS SHOWN

VIEW A
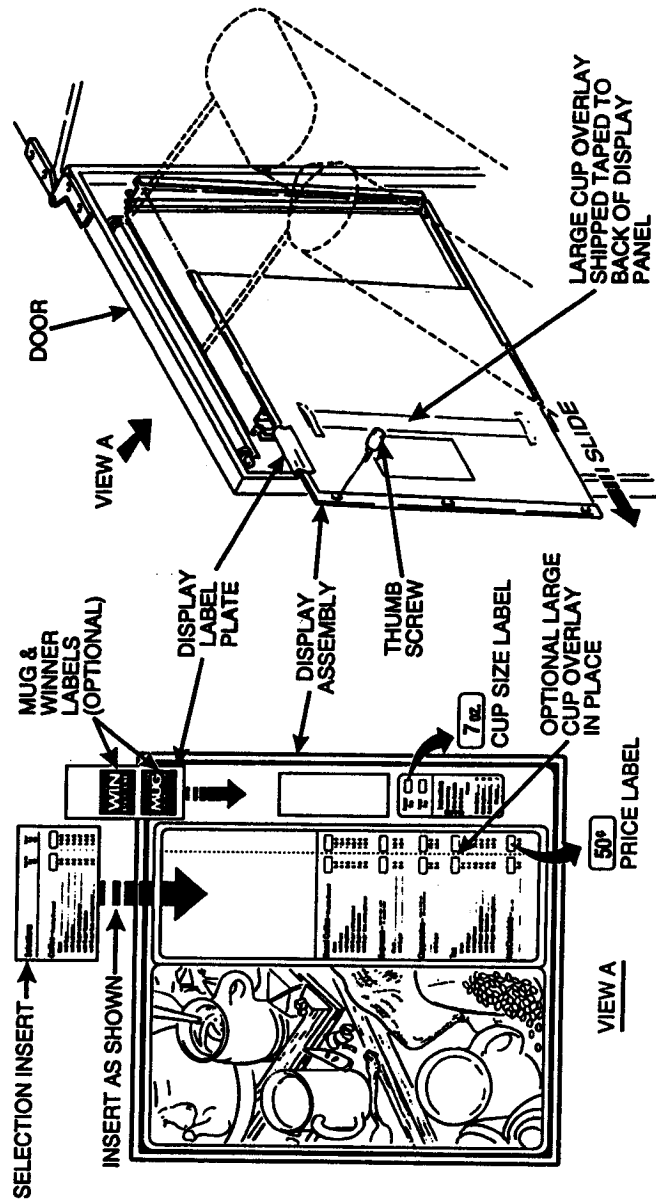
TO REMOVE THE DISPLAY ASSEMBLY:

1. Tilt the cup turrets away from the door.

2. Remove three thumbscrews and slide the display assembly out of the door.

3. Install the selection inserts appropriate to your machine configuration and the products you are vending.

4. Attach price labels and cup size labels as applicable.

5. Reinstall the display assembly in the door, making sure the right side of the display assembly is fully seated in the right side vertical mounting channel. Secure with three thumbscrews.

6. Return the cup turrets to their upright position.

LOADING OPTIONAL FILTER PAPER

1. Turn main power switch to the *OFF* position.
2. Remove the cup station and grounds bucket.
3. Feed paper over swing arm assembly and underneath pinion gear shaft.
4. Feed paper through paper guides.
5. Raise basket housing assembly and feed paper over lip of paper mechanism housing.
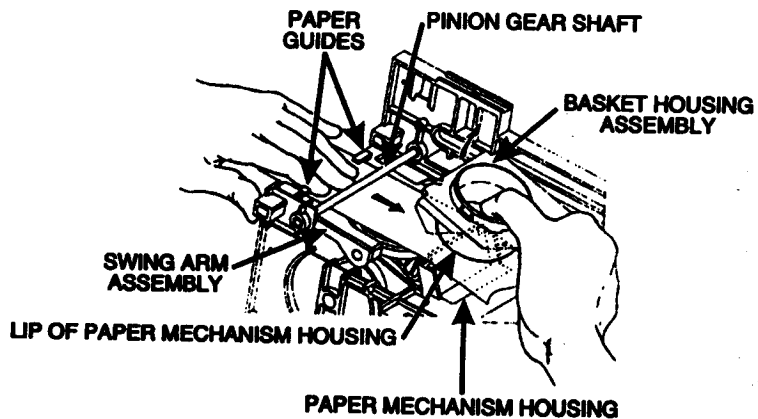
NOTE

It may be necessary to reach underneath brewer between paper mechanism housing and swing arm assembly to push paper over lip of paper mechanism housing.
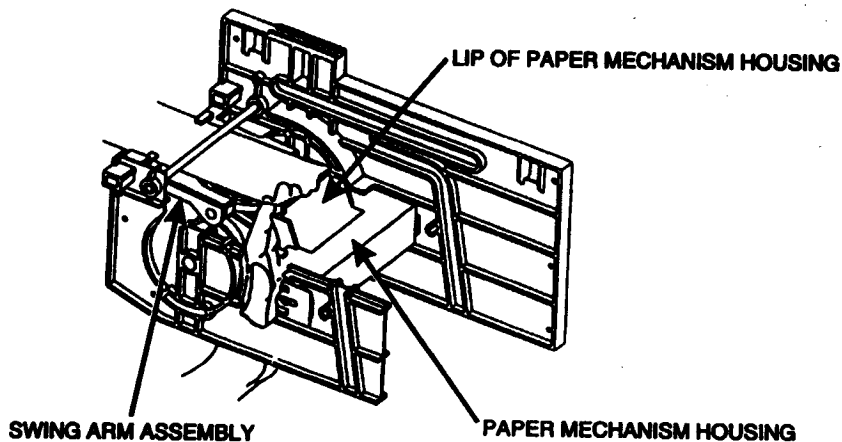
6. Reach underneath brewer between paper mechanism housing and basket housing assembly and push paper into top of paper mechanism housing between paper rollers.

BASKET HOUSING ASSEMBLY

PAPER MECHANISM HOUSING
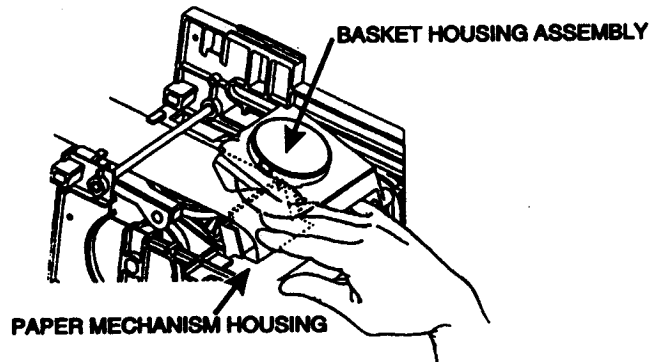
7. Reach underneath brewer and pull paper roller to right.
8. Pull paper down between paper rollers.
9. Release paper roller.

PAPER ROLLER
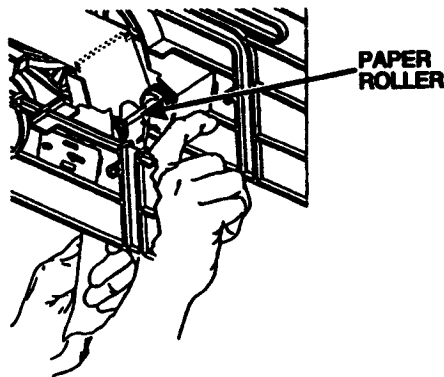
10. Place the main power switch in the *ON* position.
11. Enter *BREWR TEST* mode and cycle brewer to observe that paper feeds properly.
12. Replace the cup station and grounds bucket.

Programming The Hot Drink Center

PROGRAMMING THE HOT DRINK CENTER

GETTING AROUND

Getting around the Hot Drink Center software is pretty easy once you know the features that are available to you, and how to use them. The three main parts you will use are the SERVICE KEYPAD, the SELECTION SWITCH PANEL, and the DISPLAY.

The Service Keypad
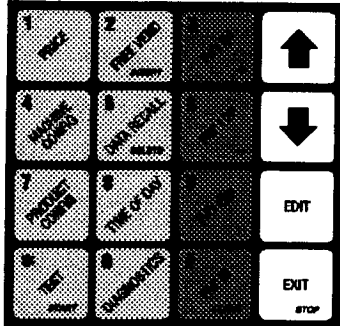
For most of your programming jobs, you will be using the service keypad, conveniently located on the monetary panel. The service keypad has 16 keys. The two lightly shaded columns on the left are the MODE keys. The more heavily shaded column contains the PAYOUT keys. The unshaded column contains the MOVEMENT keys. (The actual keypad keys are not shaded.)

The Selection Switch Panel
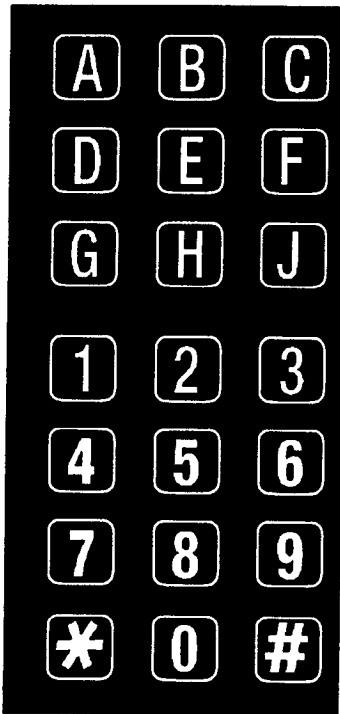
The selection switch panel is also located on the monetary panel. Unlike the service keypad, it is accessible when the cabinet door is closed. These are the keys the customer will use to make selections. You can also use these keys during programming procedures.

The Display

The 10-character gas fluorescent display performs two functions:

1. It shows the customer's selection and how much credit is in the machine.
2. It provides information and feedback to the service person during maintenance.

DISPLAY

The Keys

The MODE and PAYOUT keys on the service keypad can be used for up to three things:

THE PRIMARY PURPOSE
THIS IS THE MAIN JOB OF THE KEY. FROM THE STANDBY MESSAGE, IT WILL ALLOW YOU TO ENTER A PROGRAMMING MODE. IN THIS EXAMPLE, YOU CAN VIEW STORED SALES DATA.

THE NUMBER
YOU MIGHT BE ASKED TO ENTER A NUMERICAL VALUE. YOU CAN DO THIS IN TWO WAYS: PRESSING THIS KEY IS THE SAME AS PRESSING THE "5" ON THE SELECTION SWITCH PANEL.

5 DATA RECALL DELETE

THE SECONDARY PURPOSE
THIS IS THE KEY'S "SECOND JOB". THIS KEY CAN BE USED TO DELETE A CHARACTER WHEN YOU ARE EDITING CUSTOM MESSAGES.

The MOVEMENT keys on the service keypad let you move inside a mode, and back and forth between modes. To see how these keys let you move around, study the flow diagram on the next page.

↑ **↓**
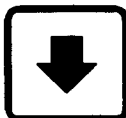
The up and down arrow keys are your "legs", which let you move up and down the list of tasks. These keys are what lets you continue from one step to the next in programming procedures.

EDIT

This is your "activate" or "choose" key. It lets you begin a programming task once you are inside of a mode. Sometimes, it is used to switch from one choice to another during a programming task.

EXIT
STOP

This is your "end" key. Pressing it one or more times will move you back to the start of the mode, or all the way back to the standby message.

(TO/FROM PREVIOUS DIS-
PLAY)

PRODUCT

EDIT

DRY. A X.XX

DRY. A+ X.XX

DRY. B X.XX

DRY. I X.XX

STANDBY
MESSAGE

SUGAR

(TO/FROM NEXT DISPLAY)
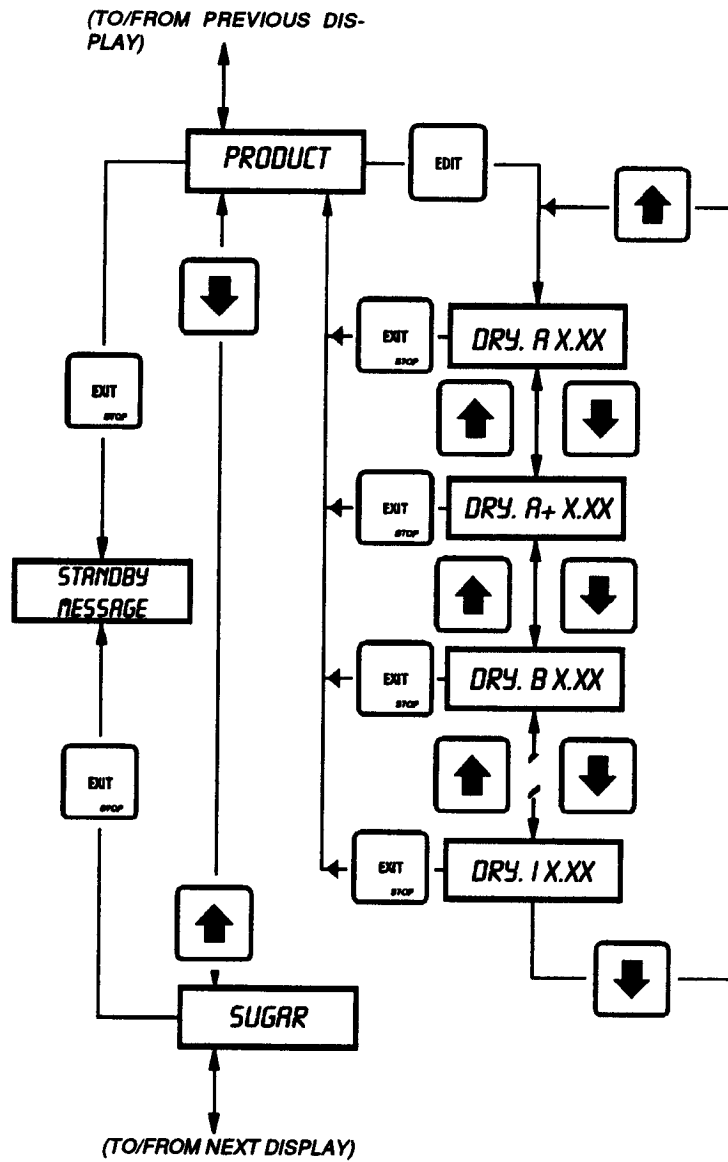
The diagram on the left is a picture of your path through a single task within the PRODUCT CONFIGURATION programming mode. Think of the diagram as if it were a house, with each display representing a room in the house. The EDIT key is a one-way front door, and the EXIT key is just that - a one-way exit. The arrow keys are doorways between the rooms, and you can go either way between them.

Look at the example. From the *PRODUCT* display, you can press the down arrow key and set up the sugar throw. If you wanted to set up dry products, press the EDIT key. The first screen you see will let you adjust the throw time for the selection A dry product. Pressing the down arrow key takes you to the extra strong selection A dry product. Pressing the down arrow again takes you to the selection B product; pressing the up arrow key returns you to the previous display, and so forth. When you get to the last dry selection (in this case, it's I), pressing the down arrow moves you back to the top of the list. At any point, you can press the EXIT key and return to the *PRODUCT* display. Pressing the down arrow there takes you to the *SUGAR* display. From either *PRODUCT* or *SUGAR*, pressing EXIT gets you back to the standby message.

SHORTCUT:

When setting up selections, you can go directly to the selection you are interested in simply by pressing the appropriate letter key. Let's say you wanted to set up the throw time for the D selection dry product. Instead of repeatedly pressing the down arrow, you can press D, and you will immediately get the display for that selection.

SOME CONVENTIONS:

The pages that follow contain all the programming procedures for the Hot Drink Center merchandiser. The order they appear in is based upon the ones you would use to initially set up your machine. Most of the procedures have things in common, and here is a short guide to help you through these conventional presentations:

To begin each mode, press the key shown in the upper left corner of the procedure.

As mentioned earlier, you will normally use [↓] to go from one step to another, so we don't tell you this each time.

Text that looks like this: *DISPLAY* represents what you will see in the display on the monetary panel.

Definitions and helpful information will appear in shadow boxes: | *HELPFUL HINT* |

SUMMARY

This section lists all the major modes and all the procedures under them.

1 PRICE
- Set separate PRICES for each selection
- Set one PRICE for every selection in the machine
- Set one PRICE for all large cups and one for all regular cups
- Establish PRICE LINES

4 MACHINE CONFIG
- Select the LANGUAGE shown in the display
- Select and set up options for the COIN MECHANISM
- Select CHANGE return options
- Select and set up options for the BILL VALIDATOR
- Set up the WINNER option
- Set up the MUG DISCOUNT option
- Set up PRINTER options
- Set up SUPERVISOR options
  - Select whether to show or hide certain DATA items

7 PRODUCT CONFIG
- Temporarily INHIBIT selections not available for vending
- Select desired CUP SIZE
- Alter the THROW TIMES of selections, condiments, and water
- Set the delivery DOOR DELAY time
- Perform product TEST THROWS
- Set the water tank TEMPERATURE
- Set BOWL RINSE cycles
- Set BREWER RINSE cycles (if so equipped)
- Set the basic machine CONFIGURATION

* TEST START
- Perform TEST VENDS
- Test various machine functions:
  - Displays
  - Cup mechanism
  - Automatic delivery door
  - Whippers
  - Grinder(s) (if so equipped)
  - Air compressor (if so equipped)
  - Brewer (if so equipped)
  - Bowl rinse system
  - Brewer rinse system (if so equipped)
  - Mug sensor switch (if so equipped)
  - Freevend key switch
  - Water tank level switch
  - Waste pail switch
  - Cup ring switch

2 FREE VEND INSERT
- Start or stop FREE VENDING

5 DATA RECALL DELETE
- View resettable and non-resettable VEND AND SALES TOTALS
- CLEAR resettable vend/sales counters
- View and clear COIN BOX and BILL VALIDATOR totals
- View or set MACHINE ID

8 TIME OF DAY

- Set the correct TIME and DAY
- Set the DATE, month, and year
- Establish up to four special VENDING PERIODS for:
  - Inhibited vending
  - Free vending
  - Discount vending
- Enter up to eight CUSTOM MESSAGES to be used for:
  - Standby (normal customer message)
  - Out of service
  - Machine-wide free vending
  - Free vending period
  - Discount vending period
  - Inhibited vending period
- Set the scrolling speed for your messages

0 DIAGNOSTICS

- Allows you to see the following:
  - Fault or condition that may place the machine out of service
  - Software version number
  - Machine configuration
  - Selection configuration
  - Cup only setup
  - Whipper configuration
  - Automatic vend door configuration

3 PAY 5¢ +

- Pays one or more NICKELS

6 PAY 10¢ —

- Pays one or more DIMES

9 PAY 25¢

- Pays one or more QUARTERS

 # PAY $1 CLEAR

- Pays one or more DOLLAR COINS

SETTING THE SUPERVISOR PRIVILEGE LEVEL

The supervisor is allowed to do things that a normal user cannot, like controlling access to certain modes. The supervisor can lock out any of the programming modes to anyone who does not have the right "key". Once a supervisor enters the proper code, he or she will be able to:

- Change the supervisor access code
- Change the freevend keyswitch access code
- Lock out any or all of the service keypad modes
- Grant or deny access to data items during DATA RECALL
- Modify the machine configuration

1. Press and hold [EDIT]. The display shows: *ENTER CODE*. You must enter the four-digit supervisor code within 6 seconds to gain access.

NOTE
A new machine has a factory-set supervisor code of 0000.

When you have entered the right code, you will hear two beeps and see *SUPERVISOR* in the display.

2. After the standby message returns, press [4 MACHINE CONFIG], then [↑].
The display shows *SUPERVISOR* again.

3. Press [EDIT]. The display shows *SUPER XXXX*. The X's represent the current supervisor code. Enter a new code, if desired.

IMPORTANT!
If you enter a new code, be sure to keep a written record of it. There is no other way to access the SUPERVISOR mode.

4. The display shows *FREEV XXXX*. This is the current freevend code, and is treated just like the supervisor code.

5. The display shows either *X. LOCKED* or *X. UNLOCKED*. "X" refers to the number or character shown on the mode or payout key in question (1 through 9, # and *). To see if a key is locked or unlocked, press that key.

Press [EDIT] to change between locked and unlocked. When anyone other than the supervisor tries to enter a locked mode, the display shows *LOCKED*.

NOTE

The only mode key which cannot be locked out is [DIAGNOSTICS].

6. *P.LINE ON* or *P.LINE OFF* You can turn PRICE LINES on or off with [EDIT]. Depending upon which you select, you will either be using PRICE mode or PRICE mode with PRICE LINES.

7. *NR$ HIDE* (NR$ is the code for the nonresettable machine sales total.) In this example, that total is hidden from the non-supervisor.

NR$ SHOW The non-supervisor can view the nonresettable sales total.

NR$ CLEAR The non-supervisor can view the nonresettable sales total. (Since it is NONRESETTABLE data, it cannot be cleared. However, other data is clearable, and this option will enable the non-supervisor to clear it.)

Press [EDIT] to change the display. Press the up/down arrows to scroll through the following list of data items:

CODE	DEFINITION
NR$	Total accumulated dollar sales for the machine (nonresettable)
NR	Total accumulated vends for the machine (nonresettable)
TOT$	Total dollar sales since last reset
TOT	Total vends since last reset
CBX$	Total money in the cash box since last reset
DBV$	Total money in the bill stacker since last reset
FRV$	Total free vend "sales" since last reset
FRV	Total free vends since last reset
WIN$	Total winner "sales" since last reset
WIN	Total winners since last reset
DSC$	Total discounted vend sales since last reset
DSC	Total discounted vends since last reset
MUG$	Total mug vend sales since last reset
MUG	Total mug vends since last reset
TST	Total test vends since last reset

CAUTION

Selecting *CLEAR* for either NR$ or NR will allow the non-supervisor to clear ALL DATA, including items that are hidden! See DATA RECALL for more information.

PRODUCT CONFIGURATION

7 PRODUCT CONFIGURATION

1. *LK.ABCDEFGH* This is a list of selections which are locked. Press the appropriate selection letter to switch from locked to unlocked and back again. (Unlocked selections are not displayed.)

2. The next two displays are: *CUP1 X OZ* and *CUP2 Y OZ.* Refer to the TURRET DESIGNATIONS figure on page 22 to see where these cups normally go. This display indicates that the cups in turrets 1A and 1B (normally regular cups) are X ounces, and the cups in turret 2 (normally large cups) are Y ounces.

At each display, press [**EDIT**] until the desired cup size is displayed.

CAUTION
Make sure that the two sizes you selected will actually be vended from in your machine.

TO LOAD THE FACTORY DEFAULT THROW SETTINGS ...

for your cup size, press [***TEST START***] . *CLEARING* is displayed; keep holding the

key until you see *FINISHED* in the display.

3. The next seven displays are:

PRODUCT View and change the settings for the dry product throws

SUGAR View and change the settings for the sugar throws

LIGHTENER View and change the settings for the lightener throws

SUGAR SUB View and change the settings for the sugar substitute throws (if present)

WATER View and change the settings for the water throws

STEEP View and change the settings for the steep times

AIR View and change the settings for the air compressor running times

At any of those displays, you can press [**EDIT**] to alter the settings for that item. See **SETTING THROWS.**

4. **DELAY** This setting can delay the end of the vend (*THANK YOU* message and delivery door opening) to compensate for increased liquid flow times inside the machine. If you don't want to change the delay time, continue.

Press [EDIT] to change the delay time:

DLY.A X "X" is the delay time (in seconds) for the A selection. Enter a new value, if desired, between 1 and 99. Repeatedly pressing the down arrow will display the delay times for all selections.

5. **WHIPPERS** If you don't want to change the whipper options, continue. Press [EDIT] to change the whipper options:

WHP.A XXX "XXX" represents the whipper options as listed below. Press [EDIT] to change:

    ON-   The last 3 seconds of the drink is always whipped
    ON+   The whole drink is always whipped
    OFF   The drink is never whipped
    If J WHIP is selected (see VIEW SETUP option in DIAGNOSTICS):
    OPT- The last 3 seconds of the drink is whipped only when the J key is pressed
    OPT+ The whole drink is whipped only when the J key is pressed
    If J NO WHIP is selected (see VIEW SETUP option in DIAGNOSTICS):
    OPT- The last 3 seconds of the drink is whipped unless the J key is pressed
    OPT+ The whole drink is whipped unless the J key is pressed

Repeatedly pressing the down arrow will display the whipper options for all selections.

6. **RATIO XX** "XX" is the percentage of chocolate contained in a cappuccino drink.

<div align="center">OR</div>

RATIO OFF No ratio is selected. Pressing [EDIT] switches between these two displays.

This is a quick way to set up your cappuccino drinks. See table D2 to see the actual throw times/amounts for certain preset ratios. You can set a ratio close to your taste, turn ratio OFF, then alter the product throw.

<div align="center">NOTE</div>

Leaving this step with **RATIO OFF** displayed does not alter any previous settings for E and I selections. Leaving this step with a ratio set <u>will</u> alter those settings. The ratio automatically selects the times for water and dry product throw. The E and I selections no longer appear in the displays for those steps. If you desire greater control over your cappuccino drinks, leave ratio OFF.

7 PRODUCT CONFIG

... CONTINUED

7. *SET 202 °F* In this example, 202° is the water tank temperature setpoint in degrees Fahrenheit. Depending upon your LANGUAGE, the "F" may be replaced by a "C" (Celsius). If a decimal point appears next to the "F", the heater is on. If desired, enter a new setpoint. Accepted range: 149°-205° F (65°-96° C). The lower limit for vending is 10° below setpoint, up to a maximum of 180° F (82° C).

8. *RIN.HRS 2.5* This is how soon the machine rinses the bowls after a vend. In this example, bowl rinse takes place 2.5 hours after the last vend. Range: 2.0 - 12.5 hours, in .1 hour increments.

<div align="center">OR</div>

RIN.TIM 4.5 The time of day (in hours and half hours) the machine rinses the bowls. In this example, bowl rinse takes place at 4:30 am. Range: 0.0 - 23.9 in .1 hour increments.

<div align="center">OR</div>

RINSE OFF No bowl rinse takes place. Press [EDIT] to switch between these options, and the number keys to enter new values.

<div align="center">

NOTE

If 24 hours passes without a vend, no rinsing will take place. This eliminates unnecessary rinsing over a weekend or holiday.

</div>

9. *CONFIGURE* This display only appears if you had entered the supervisor code. If you do not want to edit configuration options, this mode is completed.

Press [EDIT] to edit configuration options.

A. *CONF XYZ* "XYZ" is the machine configuration code as explained below.

<div align="center">

6th Product (Selection C) Configuration

</div>

Enter for (X)	Definition
1	No 6th product
2	6th product present, but receives no condiments
3	6th product present, may receive condiments
4	Water only

Brewer Configuration

Enter for (Y)	Coffee Mix	Number of Brewers	Condiment Sets
1	Single brew	One	Single
2	Dual brew	One	Single
3	Dual brew	Two	Single
4	Single brew	One	Dual
5	Dual brew	Two	Dual
6	Freeze dry	None	Single
7	Freeze dry	None	Dual

Canister Mapping (See Figure Below)

Enter for (Z)	Menu Selection Letters for Canister Numbers		
	3 (Single condiment only)	2	1
1	F	B	A
2	F	A	B
3	B	F	A
4	B	A	F
5	A	F	B
6	A	B	F

A = Coffee   B = Decaf   F = Tea
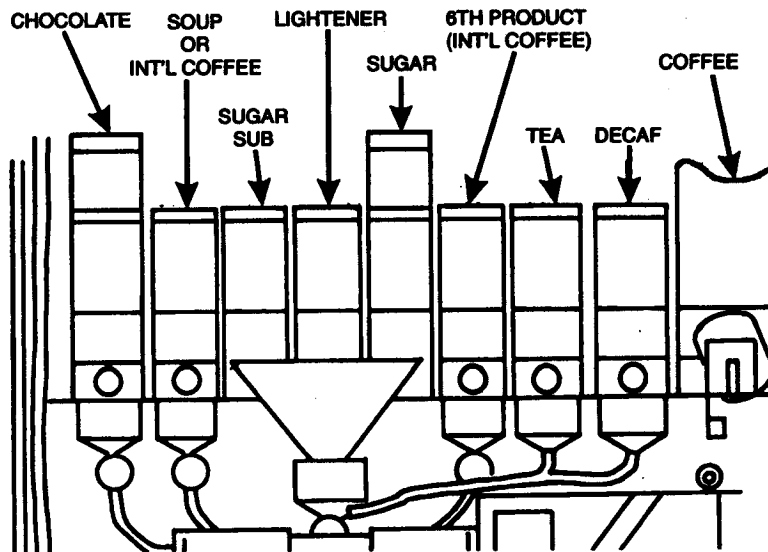
CANISTER MAPPING

7 **PRODUCT CONFIG**

... CONTINUED

B. The next two displays are: *0. ABCDEFGH* and *1. ABCDEFGH* These are the selections that are active for cup 0, the regular size cup, and cup 1 the large size cup. Any selection not shown will not appear in any other configuration step, and will return a *MAKE ANOTHER SELECTION* message if selected by a customer. Press the appropriate letter to turn selection availability ON or OFF.

NOTE

Selections not available because of machine configuration will not be shown in this list.

C. *CUPVND -/1* This allows you to set whether a customer can buy a cup only (no drink), and which types of cups will be vended. The example shows that the machine is set to vend a lage cup only. Press [EDIT] to switch between the following screens:

-/- = Cup only not allowed
0/- = Regular cup only vended
-/1 = Large cup only vended
0/1 = Both cup sizes vended

D. *J WHIP* Optionally whipped selections will be whipped when J is pressed.

OR

J NO WHIP Optionally whipped selections will be whipped unless J is pressed. Press [EDIT] to switch between these two displays.

E. *DOOR ON* or *DOOR OFF* You can disable the automatic delivery door (if so equipped). Press [EDIT] to switch between these two displays.

NOTE

DOOR OFF must be selected if your machine does not have an automatic delivery door.

SETTING THROWS

7 PRODUCT CONFIG

Except for where indicated, the procedures for setting dry product, sugar, lightener, sugar substitute, and water throws are identical. This example will take you through setting the throw for a dry product. The illustration shows a typical display with all possible elements present:

THE "1" MEANS THAT THIS SELECTION IS IN THE ALTERNATE SIZE CUP (CUP 1) FROM STEP 2 OF THE PRODUCT CONFIGURATION PROCEDURE. REMEMBER WHAT YOU SE-LECTED IN STEP 2 OF PRODUCT CON-FIGURATION. IF BOTH CUP SIZES ARE THE SAME, THIS "1" WILL NEVER APPEAR.

THE PLUS SIGN SHOWS THAT THIS IS FOR A STRONG DRINK.

DRY.1B+ 1.75

THIS INDICATES WHICH ITEM IS BEING EDITED. THE CHOICES ARE: DRY, SUG, LIT, SUB, OR WAT.

THIS IS THE SELECTION LETTER.

THIS IS THE ACTUAL THROW TIME, SHOWN IN SECONDS AND 100THS OF A SECOND.

1. **DRY. A X.XX** Enter a new throw time (represented by XXX) for the dry selection A product.

2. Subsequent displays will contain the various elements as shown above, depending upon your machine configuration.

SOME DIFFERENCES . . .

* Sugar, lightener, and sugar substitute will be used for both A and B (coffee) selections. Therefore, the A and B will not appear in the displays. The coffee selections are represented by ✱.
* Subsequent displays will show selection letters for all the remaining selections containing those items.
* All timers except DELAY timers are entered in .05 second increments. DELAY timers are entered in whole second increments.

COLLECTING DRY PRODUCT GRAM THROWS

Measuring the gram throw allows you to get the right amount of dry product or condiment into your hot drink. To do this, you need a container to catch the product throw and an accurate gram scale to measure its weight.

1. Make a measuring container by cutting down a paper cup until it fits under the canister spout as shown.
2. Weigh the measuring cup and zero the gram scale accordingly.
3. Make 5 test throws as instructed in the programming steps, then average the results.
4. Weigh the test throw.
5. Repeat steps 3 and 4 until you get the correct product or condiment weight.

Tables D1 and D2 show the factory default settings for the various dry products sold by the merchandiser. They are good starting points for you to use in setting up your machine. In the end, the amount of dry product or condiments you use in your drinks depends upon taste and manufacturers' recommendations. Recommended weights and times are for guidance only, and you do not have to adhere to them.

COLLECTING CONDIMENT THROWS

COLLECTING INGREDIENT THROWS
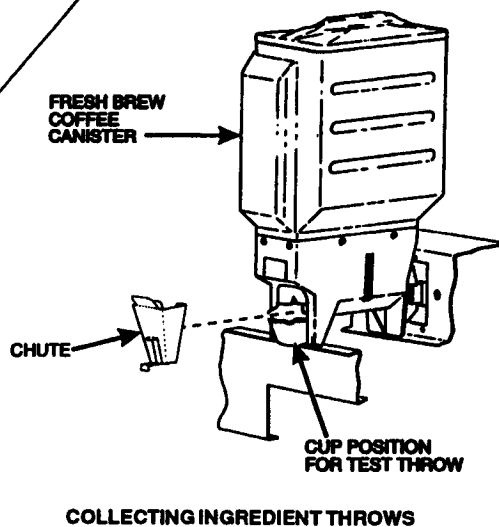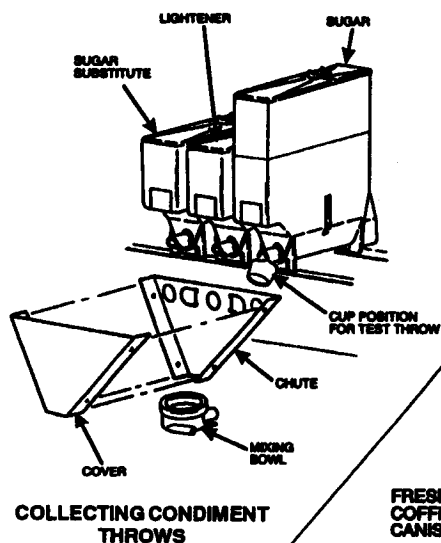
Table D1. Dry Product Weight and Throw Time Factory Default Settings

Selection		Weight (in grams) per size cup					
		Throw times (in seconds) per size cup					
		5 oz	7 oz	8 oz	9 oz	10 oz	12 oz
A	Fresh brew coffee	5.70 1.60	8.00 2.20	9.00 2.50	10.00 2.80	11.00 3.10	13.00 3.65
A	Freeze dry coffee	0.90 0.20	1.20 0.30	1.50 0.40	1.60 0.50	1.80 0.55	2.20 0.70
A	Strong freeze dry coffee	1.10 0.25	1.50 0.40	1.80 0.55	2.00 0.65	2.20 0.70	2.60 0.90
B	Fresh brew decaf	5.70 1.6	8.00 2.20	9.00 2.50	10.00 2.80	11.00 3.10	13.00 3.65
B	Freeze dry decaf	0.90 0.15	1.20 0.25	1.50 0.35	1.60 0.40	1.80 0.45	2.20 0.60
B	Strong freeze dry decaf	1.10 0.20	1.50 0.35	1.80 0.45	2.00 0.50	2.20 0.60	2.60 0.75
D	Fresh brew coffee ESPRESSO	5.70 1.60	8.00 2.20	9.00 2.50	10.00 2.80	11.00 3.10	13.00 3.65
D	Freeze dry coffee ESPRESSO	0.90 0.20	1.20 0.30	1.50 0.40	1.60 0.50	1.80 0.55	2.20 0.70
D	Strong freeze dry coffee ESPRESSO	1.05 0.25	1.50 0.40	1.80 0.55	2.00 0.65	2.20 0.70	2.60 0.90
E	Fresh brew coffee CAPPUCCINO	5.70 1.60	8.00 2.20	9.00 2.50	10.00 2.80	11.00 3.10	13.00 3.65
E	Freeze dry coffee CAPPUCCINO	0.90 0.20	1.20 0.30	1.50 0.40	1.60 0.50	1.80 0.55	2.20 0.70
E	Strong freeze dry coffee CAPPUCCINO	1.05 0.25	1.50 0.40	1.80 0.55	2.00 0.65	2.20 0.70	2.60 0.90
F	Instant tea	0.90 0.70	1.20 1.00	1.50 1.25	1.60 1.30	1.80 1.60	2.20 1.85
F	Strong instant tea	1.10 0.90	1.50 1.25	1.80 1.60	2.00 1.75	2.20 1.85	2.60 2.10
G	Chocolate	17.00 3.25	24.00 4.60	28.00 5.40	31.00 5.90	34.00 6.50	41.00 7.80
H	Soup	4.30 1.75	6.00 2.40	7.00 3.00	7.60 3.10	8.50 3.40	10.20 4.10

DRY PRODUCT WEIGHT AND THROW TIME FACTORY DEFAULT SETTINGS

Table D1. Dry Product Weight and Throw Time Factory Default Settings (Continued)

Selection		Weight (in grams) per size cup*					
		Throw times (in seconds) per size cup					
		5 oz	7 oz	8 oz	9 oz	10 oz	12 oz
I	Chocolate used in cappuccino	3.10 0.45	4.50 0.65	5.00 0.80	5.80 0.85	6.20 0.95	7.60 1.15
D	Sugar used in espresso	2.10 0.20	3.00 0.25	3.50 0.30	4.00 0.35	4.50 0.40	5.50 0.50
D	Extra sugar used in espresso	3.00 0.25	4.00 0.35	4.50 0.40	5.00 0.45	5.50 0.50	6.50 0.60
E	Sugar used in cappuccino	3.50 0.30	5.10 0.40	6.00 0.50	6.80 0.55	7.70 0.65	9.40 0.85
E	Extra sugar used in cappuccino	4.60 0.35	6.80 0.55	7.70 0.65	8.50 0.75	9.40 0.85	11.00 1.00
F	Sugar used in tea	4.20 0.40	6.00 0.50	7.00 0.60	8.00 0.70	9.00 0.80	11.00 1.00
F	Extra sugar used in tea	5.50 0.50	8.00 0.70	9.00 0.80	10.00 0.90	11.00 1.00	13.00 1.20
F	Lightener used in tea	1.20 0.70	1.50 0.85	2.00 1.15	2.50 1.45	3.00 1.70	4.00 2.25
F	Extra lightener used in tea	1.50 0.85	2.00 1.15	2.50 1.45	3.00 1.70	3.50 2.00	4.50 2.60
F	Sugar substitute used in tea	0.60 0.30	0.85 0.40	1.00 0.50	1.10 0.55	1.30 0.65	1.50 0.75
F	Extra sugar substitute used in tea	0.80 0.40	1.10 0.55	1.30 0.65	1.40 0.70	1.60 0.80	1.90 0.95
**	Sugar	4.20 0.40	6.00 0.50	7.00 0.60	8.00 0.70	9.00 0.80	11.00 1.00
**	Extra sugar	5.50 0.50	8.00 0.70	9.00 0.80	10.00 0.90	11.00 1.00	13.00 1.20
**	Lightener	1.20 0.70	1.50 0.85	2.00 1.15	2.50 1.45	3.00 1.70	4.00 2.25
**	Extra lightener	1.50 0.85	2.00 1.15	2.50 1.45	3.00 1.70	3.50 2.00	4.50 2.60
**	Sugar substitute	0.60 0.30	0.85 0.40	1.00 0.50	1.10 0.55	1.30 0.65	1.50 0.75
**	Extra sugar substitute	0.80 0.40	1.10 0.55	1.30 0.65	1.40 0.70	1.60 0.80	1.90 0.95

D = Espresso
E = Cappuccino
I = Chocolate times for cappuccino

* The actual gram weight of a product or condiment throw will vary depending upon the type of product or condiment used. The weights given are approximate based upon factory testing.

** Separate sugar, lightener, and sugar substitute timers are available for selections A/B/C, D, E, and F.

CAPPUCCINO

Cappuccino is made with various ratios of chocolate to coffee, according to taste. Lightener (E timer) is also used for cappuccino. Table D2 shows numerous different ways to make cappuccino for each size of cup in your machine. For example, the default chocolate-to-coffee ratio of 15/85 in a 7 oz. cup consists of the following:

- A chocolate throw (product I) lasting 0.65 seconds, providing 15% of the normal chocolate throw (approximately 4.5 grams*).
- A water throw for the chocolate (water I) lasting 2.65 seconds (chocolate product throw plus 2 seconds to ensure the mixing bowl is fully rinsed). The volume is about 56 ml, depending upon how the flow rate is adjusted.
- A throw for cappuccino coffee (product E) equal to a normal coffee (product A) throw.

- A water throw for the freeze dry coffee selection (water E) lasting for 5.50 seconds (101 ml).

OR

- A water throw for the fresh brew coffee selection (water E) lasting for 2.00 seconds (115 ml). In either case the water volume is enough to fill the remainder of the cup.

The actual mixing sequence is as follows:
1. The coffee portion of cappuccino is made using the same canister/valve combination as the normal (A) coffee.
2. After the coffee is completely in the cup, the chocolate portion is made with the selection G canister/valve combination. This gives the drink its traditional "layering".

> *** Chocolate weights will vary with different products.**

HINTS:

To "fine tune" your Cappuccino drink to your exact taste, set a ratio close to what you like (between 5% and 50%), then turn ratio OFF. Adjust the individual timers until you are satisfied. You may find it necessary to cut down on the amount of sweetener available to a cappuccino drink with a high ratio of chocolate, as the chocolate contains sweetener of its own.
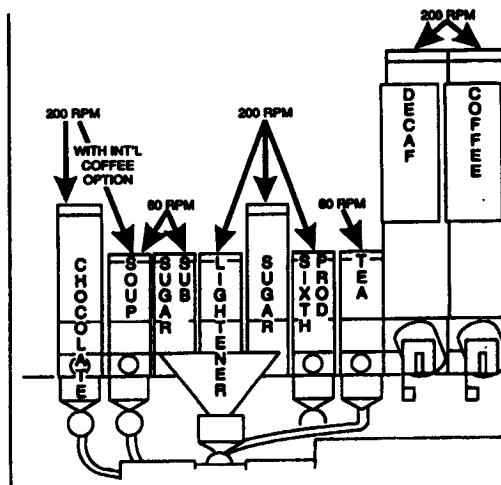
MOTOR SPEED BY LOCATION

Table D2. Dry Product Settings for Cappuccino (5 oz. cup)

CHOCOLATE		Water Settings	
Percent	Weight (gm)	Timing (sec)	Volume (ml)
15 (default)	3.10	0.45	52
20	4.10	0.65	54
25	5.00	0.80	56
30	5.80	0.95	59
35	6.70	1.10	61
40	7.60	1.30	63
45	8.40	1.45	66
50	9.30	1.60	68

FREEZE DRY COFFEE	Water Settings	
Percent	Volume (ml)	Timing (sec)
85 (default)	57	3.40
80	54	3.20
75	52	3.05
70	49	2.95
65	47	2.75
60	44	2.55
55	41	2.40
50	38	2.25

FRESH BREW COFFEE	Water Settings	
Percent	Volume (ml)	Timing (sec)
85 (default)	58	1.25
80	55	1.15
75	53	1.10
70	49	1.05
65	47	1.00
60	45	0.90
55	41	0.85
50	38	0.80

Table D2. Dry Product Settings for Cappuccino (7 oz. cup)

CHOCOLATE		Water Settings	
Percent	Weight (gm)	Timing (sec)	Volume (ml)
15 (default)	4.50	0.65	56
20	5.80	0.90	59
25	7.10	1.15	63
30	8.00	1.35	65
35	9.30	1.60	69
40	10.50	1.80	72
45	11.80	2.05	76
50	13.10	2.30	79

FREEZE DRY COFFEE	Water Settings	
Percent	Volume (ml)	Timing (sec)
85 (default)	101	5.50
80	97	5.25
75	92	5.00
70	90	4.80
65	86	4.55
60	81	4.35
55	77	4.10
50	72	3.85

FRESH BREW COFFEE	Water Settings	
Percent	Volume (ml)	Timing (sec)
85 (default)	115	2.00
80	110	1.90
75	104	1.80
70	102	1.75
65	96	1.65
60	92	1.60
55	87	1.50
50	83	1.40

Table D2. Dry Product Settings for Cappuccino (8 oz. cup)

CHOCOLATE

Percent	Weight (gm)	Water Settings	
		Timing (sec)	Volume (ml)
15 (default)	3.10	0.90	52
20	4.10	1.05	54
25	5.00	1.25	56
30	5.80	1.60	59
35	6.70	1.95	61
40	7.60	2.15	63
45	8.40	2.40	66
50	9.30	2.70	68

FREEZE DRY COFFEE

Percent	Water Settings	
	Volume (ml)	
85 (default)	57	
80	54	
75	52	
70	49	
65	47	
60	44	
55	41	
50	38	

FRESH BREW COFFEE

Percent	Water Settings	
	Volume (ml)	
85 (default)	58	
80	55	
75	53	
70	49	
65	47	
60	45	
55	41	
50	38	

Table D2. Dry Product Settings for Cappuccino (9 oz. cup)

CHOCOLATE

Percent	Weight (gm)	Water Settings	
		Timing (sec)	Volume (ml)
15 (default)	5.8	0.45	60
20	7.6	1.15	64
25	8.8	1.35	68
30	10.5	1.75	72
35	12.3	2.05	77
40	13.9	2.35	82
45	15.3	2.65	85
50	17.1	2.95	90

FREEZE DRY COFFEE

Percent	Water Settings	
	Volume (ml)	
85 (default)	140	
80	134	
75	130	
70	125	
65	119	
60	113	
55	109	
50	105	

FRESH BREW COFFEE

Percent	Water Settings	
	Volume (ml)	
85 (default)	250	
80	155	
75	152	
70	144	
65	138	
60	133	
55	126	
50	124	

Table D2. Dry Product Settings for Cappuccino (10 oz. cup)

CHOCOLATE

Percent	Weight (gm)	Water Settings Volume (ml)	Timing (sec)
15 (default)	6.2	60	0.95
20	8.0	65	1.30
25	9.8	70	1.60
30	11.3	74	1.95
35	13.6	80	2.25
40	15.3	85	2.60
45	17.1	90	2.90
50	18.7	94	3.25

FREEZE DRY COFFEE

Percent	Water Settings Volume (ml)	Timing (sec)
85 (default)	166	8.70
80	161	8.35
75	155	8.05
70	150	7.70
65	143	7.40
60	137	7.05
55	131	6.75
50	126	6.40

FRESH BREW COFFEE

Percent	Water Settings Volume (ml)	Timing (sec)
85 (default)	185	3.05
80	178	2.95
75	172	2.90
70	167	2.75
65	159	2.70
60	152	2.45
55	144	2.35
50	138	2.25

Table D2. Dry Product Settings for Cappuccino (12 oz. cup)

CHOCOLATE

Percent	Weight (gm)	Water Settings Volume (ml)	Timing (sec)
15 (default)	7.6	64	1.15
20	9.8	70	1.55
25	11.8	76	1.95
30	13.9	82	2.30
35	16.1	87	2.70
40	18.2	93	3.10
45	20.4	99	3.50
50	22.3	105	3.90

FREEZE DRY COFFEE

Percent	Water Settings Volume (ml)	Timing (sec)
85 (default)	223	11.40
80	215	10.80
75	208	10.40
70	201	10.10
65	193	9.70
60	185	9.30
55	178	8.90
50	171	8.50

FRESH BREW COFFEE

Percent	Water Settings Volume (ml)	Timing (sec)
85 (default)	231	3.40
80	223	3.70
75	215	3.35
70	207	3.35
65	201	3.30
60	193	3.15
55	185	3.05
50	178	2.90

NOTES

COLLECTING WATER THROWS

National Vendors recommends the factory default times be used for water throws to ensure proper mixing. Table W1 gives the factory default water throw times for the various size cups and product selections.

```
WARNING
Water is HOT! Be careful.
```

For a non-brewed selection, collect the water throws as follows:

1. Place a cup in the cup delivery station.
2. Ensure the merchandiser is using the factory defaults for the cup sizes (refer to PRODUCT CONFIGURATION).
3. Initiate the water throw for a selection.
4. Remove the cup and pour the water into a graduated cylinder.
5. Refer to table W1 for the correct volume of water.
6. Adjust the water valve for that selection and repeat steps 3 through 5 until the correct volume of water is thrown.

For a brewed selection, collect the water throws as follows:

1. Remove water supply hose from the brewer as shown on the next page.
2. Place the end of the hose in a graduated cylinder.
3. Ensure the merchandiser is using the factory defaults per table W1 for the cup sizes (refer to PRODUCT CONFIGURATION).
4. Initiate the water throw for a selection.
5. Refer to table W1 for the correct volume of water.
6. Adjust the water valve for that selection and repeat steps 3 through 5 until the correct volume of water is thrown.

CUP FOR TAKING WATER THROWS

CUP DELIVERY STATION
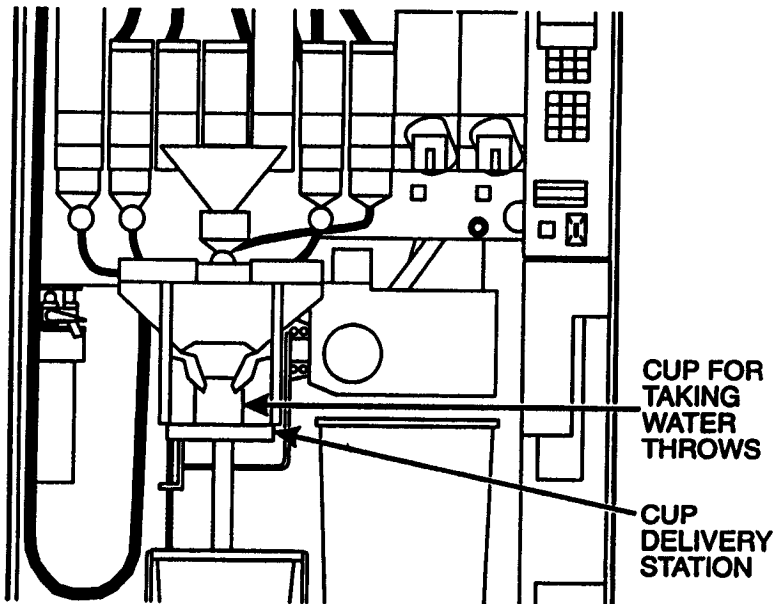
Table W1. Water Throw Default Times and Volumes

Selection		Time (in seconds) per size cup					
		Volume (in ml) per size cup					
		5 oz	7 oz	8 oz	9 oz	10 oz	12 oz
A	Fresh brew coffee	2.15 130	3.00 190	3.45 220	3.80 240	4.10 265	4.90 315
B	Fresh brew decaf	2.15 130	3.00 190	3.45 220	3.80 240	4.10 265	4.90 315
A	Freeze dry coffee	5.90 120	8.20 170	9.65 200	10.20 210	11.70 240	14.80 305
B	Freeze dry decaf	5.90 120	8.20 170	9.65 200	10.20 210	11.70 240	14.80 305
C	6th Product	5.90 100	8.20 140	9.65 170	10.20 180	11.70 200	14.80 240
D	Espresso	2.95 60	4.10 85	4.85 100	5.10 105	5.85 120	7.40 153
F	Tea	5.90 120	8.20 170	9.65 200	10.20 210	11.70 240	14.80 305
G	Chocolate	5.90 100	8.20 140	9.65 170	10.20 180	11.70 200	14.80 240
H	Soup	5.90 110	8.20 160	9.65 190	10.20 200	11.70 230	14.80 280

REMOVE THIS TUBE

GRADUATED CYLINDER

WATER THROW DEFAULT TIMES AND VOLUMES

MACHINE CONFIGURATION
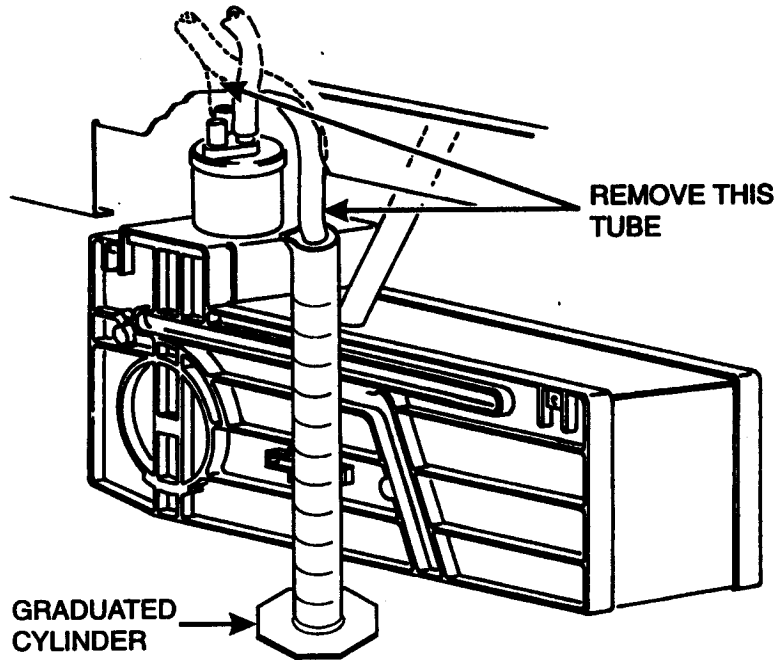
4 MACHINE CONFIGURATION

1. The current LANGUAGE is shown in the display. Your choices are: *ENGLISH US*, *ENGLISH UK*, *DEUTSCH*, *FRANCAIS*, or *ESPANOL*.

   Press [EDIT] to choose the desired language.

2. The current COIN MECHANISM is shown in the display. Your choices are: *DUMB MECH*, *DUMB/DEBIT*, *DEBIT ONLY*, *NO MECH*, *EXEC MECH*.

   Press [EDIT] to choose the desired coin mechanism.

NOTE
If you selected EXEC MECH in step 2, skip to step 7.

3. One of the following is displayed:

   CHANGE.$ 1.2.5 Change will be given for a $1, $2, or $5 bill without a selection.

   OR

   NO CHANGE.$ Depending upon the bill validator you have installed, one of two possibilities exist when the scavenger button is pressed:
   1. The customer's bill is returned.
   2. A selection must be made to receive change.

   Press [EDIT] to display the desired choice.

   If you selected *CHANGE.$ 1.2.5*, press the appropriate key(s) to display the bill(s) for which change will be given.

DECLINING BALANCE:	Once credit is established, multiple vends may occur until the credit is depleted below the price of the least expensive selection.

4. One of the following is displayed:

   DECLINE $$ More than one vend is allowed, with a declining balance.

   OR

   NO DECLINE A declining balance is not allowed.

   Press [EDIT] to display the desired choice.

5. One of the following is displayed:

   OK. $1.2.5.10.20 The bill validator will accept $1, $2, $5, $10, and $20 bills.

   OR

   NO VALIDTR NO bills will be accepted, or there is no bill validator installed. (In that case, skip to step 8.) Press [EDIT] to choose the desired option.

   If you selected *OK. $1.2.5.10.20*, press the 1, 2, 5, 6, or 7 key(s) to display the bill(s) which will be accepted.

6. One of the following is displayed (if validator is enabled):

   $ 1.ACC< 1.00 A $1 bill will be accepted when there is less than a dollar's change available. NOTE: Selecting this could cause a customer to be shortchanged.

   OR

   $ 1.INH< 1.00 Bills will not be accepted when less than a dollar's change is available. Press [EDIT] to display the desired choice.

   > **WINNER:** At pre-selected intervals, a customer may receive a refund for a selection. You can select the intervals and qualifying selections.

7. One of the following is displayed:

   WINNER OFF Winner function is disabled.

   OR

   WINNER ON Winners are allowed at certain intervals.

   Press [EDIT] to display the desired choice.

   If you selected *WINNER OFF*, skip to step 10.

8. *W. ABCDEFGH* The display shows which selections are allowed winners. Press the appropriate letter key(s) to display winning product selections.

9. *WIN XX* XX represents the number of vends which must occur per each winner vend. For example, an interval number of 50 means that a winner can happen any one time during the next 50 vends.

10. *MUG DSC XX* XX represents the discount customers will receive for using their own mugs or cups. Enter the amount with the number keys. Enter 0 for no discount.

4 *MACHINE CONFIG*

...CONTINUED

11. **PRINTER** Press | EDIT | to set up the printer function.

A. Your choices are: *BAUD 1200, BAUD 2400, BAUD 4800,* or *BAUD 9600.*

Press | EDIT | to select the appropriate baud rate. NOTE: This baud rate must match that of your printer, or it won't work properly.

B. One of the following is displayed:

XX SHOW The printer will print basic information (where XX is the data item - see definitions below).

OR

XX SHOW+ The printer will print basic information PLUS information broken down by selection.

OR

XX HIDE The printer will not print this information.

Press | ↓ | or | ↑ | to scroll through the following list of data items:

NR - Total accumulated sales and vends for the machine (not resettable).
TOT - Total sales and vends since last reset.
FRV - Total free vend sales and free vends since last reset.
WIN - Total winner sales and winner vends since last reset.
DSC - Total discount sales and discount vends since last reset.
MUG - Total mug sales and mug vends since last reset.
ALT - Total alternate sales and vends since last reset.
TST - Total test vends since last reset.
CBX - Total money in the cash box since last reset.
DBV - Total money in the bill validator since last reset.

At each data item, press | EDIT | to select its printing option. NOTE: In some cases, all options do not apply. For example, cash box information is no different for *SHOW* than for *SHOW+*.

PRESS | EXIT STOP | TO RETURN TO THE HIDE/SHOW/SHOW+ DISPLAY

12. **SUPERVISOR** This only appears if you have entered your SUPERVISOR code. See SETTING SUPERVISOR PRIVILEGE LEVEL for more information.

SET PRICES FOR INDIVIDUAL SELECTIONS

For this procedure, we will assume that the merchandiser is set up to vend two different VOLUMES of drink. (The same size cup is used for both, but one is not as full.) Also, the machine is configured to allow customers to vend a cup only (no drink). Here is an example of how to set prices for several different selections in this machine:

1. **SET PRICE** Press to scroll through the selection list, or go directly to the desired selection by pressing its letter. In this example, we will first set the price for the C selection. Press C, or scroll to the selection.

2. **PRC. C .55** The price for the C selection is currently at $0.55. Enter the new price using the number keys. Press D, or scroll to the selection.

3. **PRC. D .75** This is the D selection price, using the standard volume. We are going to set the price for the alternate volume for the D selection. Press .

4. **PRC. 1D .45** The price for the 1D selection (the "1" denotes the alternate volume) is currently at $0.45. Enter the new price using the number keys. Press until you see the following display:

5. **PRC. 2 .10** The price for a cup only is $0.10. Enter the new price using the number keys.

HELPFUL HINT

If most of the prices in your machine will be the same, set all the prices the same, then return to this procedure to set those prices which will be different.

SET ONE PRICE FOR THE ENTIRE MACHINE *(vertical, left margin)*

1 PRICE

SET ONE PRICE FOR THE ENTIRE MACHINE

1. *SET PRICE* Press [✱]

2. ✱✱ *.95 .45* The display shows the maximum ($0.95) and minimum ($0.45) prices currently set in the machine.

CAUTION
Setting all prices in the machine will **ERASE** currently set prices. If you are sure you want to do this, continue.

3. Press [EDIT]. The display shows ✱✱ *0.00* Enter a new price.

SET PRICES FOR ALL REGULAR CUPS

1. *SET PRICE* Press 0 on the selection switch panel.

2. *0* .95 .45* The display shows the maximum ($0.95) and minimum ($0.45) prices currently set for regular cups.

CAUTION

Setting all regular cup prices will ▮▮▮▮▮▮currently set prices. If you are sure you want to do this, continue.

3. Press [EDIT]. The display shows *0* 0.00* Enter a new price.

SET PRICES FOR ALL LARGE CUPS

SET PRICES FOR ALL LARGE CUPS

SET PRICES FOR ALL LARGE CUPS

1. *SET PRICE* Press 1 on the selection switch panel.

2. *1*.95.45* The display shows the maximum ($0.95) and minimum ($0.45) prices currently set for large cups.

CAUTION
Setting all large cup prices will ▮▮▮▮ currently set prices. If you are sure you want to do this, continue.

3. Press [EDIT] . The display shows *1* 0.00* Enter a new price.

SET PRICES USING PRICE LINES

> ***PRICE*** Groupings of selections with identical prices. Using price lines can
> ***LINES:*** save you time when there is a price change affecting several items that
> are the same price. For example, the A, B, and C selections are all
> assigned to a GROUP NUMBER that is priced at $0.45. Now the price
> goes up to $0.50. Instead of changing each individual price, you just
> change the price of the GROUP NUMBER assigned to those three
> selections. In addition, PRICE LINES provides you an easy way to
> group common items for sales and vend totals. See DATA RECALL
> for more information.

NOTE
The PRICE LINES function is only active if you have selected it through
the SUPERVISOR mode. See SETTING THE SUPERVISOR PRIVI-
LEGE LEVEL for more information.

1. **SET PRICE** Press to scroll through the selection list, or go directly to the desired
selection by pressing its letter. In this example, we will first set up the C selection. Press
C, or the down arrow until C is displayed.

2. **C P2 .85** This shows that selection C is assigned GROUP NUMBER P2, for a price
of $0.85.

ASSIGN A DIFFERENT GROUP NUMBER TO THE SELECTION:

Press [EDIT] until the group number you want is displayed (valid numbers are P2 through
P9).

CHANGE THE GROUP NUMBER'S PRICE:

Enter a new price using the number keys. The decimal point is automatically placed.

NOTE
*Changing a group number's price will affect all selections using that
group number*

TIME OF DAY

1. **TUES 9.13** The current day of the week and time of day.
   (This example is Tuesday at 9:13 am.)

   To change the day, press [EDIT] until the desired day is displayed. To change the time, just enter the time with the number keys (use a 24-hour format).

   NOTE
   The new day/time will be displayed, but not updated in the system until you press an arrow key or [EXIT STOP].

2. **JUNE 21-93** The month, date, and year. (This example is June 21, 1993.)

   To change the month, press [EDIT] until the desired month is displayed. To change the date and year, just enter them with the number keys. Be sure to use two digits for each entry: June 3, 1993 would be entered as June 03 93.

   > **CUSTOM TIME INTERVALS:** Times when normal vending is suspended in favor of special cases. For example, coffee could be discounted before working hours in the morning to favor early-arriving employees.

3. The next three displays show time intervals when custom vending can take place:

   INHIB 1234 Inhibited vending

   FREEV 1234 Free vending

   DISCT 1234 Discount vending

   You can turn these custom vending time intervals on and off any time of day. If an interval is not turned on, its number is replaced by a dash (-). The time intervals are all handled the same way. To edit a time interval, either press its number or [EDIT] to edit interval 1.

   See the time interval editing procedure on page 42.

> *STANDBY MESSAGE:* The message that is displayed during normal vending periods when there are no out-of-service faults on the machine.

4. The next three displays allow you to choose either a custom message or the standard factory-set message for certain conditions:

   STANDBY M1 This means that custom message number 1 is the standby message.

   SERVICE M2 This means that message number 2 is the out-of-service message.

   FREEVEND -- This means that the factory-set message will display when freevend is selected by the freevend key, or the freevend keyswitch.

   There are up to eight messages that you can enter, and any of the eight may be used by these three conditions. To select a message, just press the corresponding number. To display the factory-set message, press 0.

5. *EDIT MSG'S* This is where you can create and/or edit custom messages. See the Message Editing Procedure on page 43.

6. *PRESS +/- TO CHANGE SPEED* scrolls across the display. Press [PAY 5¢ +] to increase the message scrolling speed; press [PAY 10¢ −] to decrease it.

TIME INTERVAL EDITING *(vertical, left margin)*

TIME INTERVAL EDITING

You can select up to four times of day for each special vending period.

NOTE

If two or more of these time periods overlap, the interval with the highest priority will overrule the other(s). This order of precedence is:

1. INHIBIT
2. FREEVEND
3. DISCOUNT

For example, if a DISCOUNT time period is scheduled before the end of an INHIBIT time period, DISCOUNT does not begin until the INHIBIT interval has ended.

The time interval editing procedure is almost the same for the INHIBIT, FREEVEND, and DISCOUNT intervals. There is one difference for the DISCOUNT time interval, so we will use it in our example.

1. *DISCT 1234* Press the number of the time interval you want to edit, or [EDIT] to edit time interval 1 (we'll use interval 1 for this example).

2. *1.DISCT ON* or *1.DISCT OFF* This display tells you whether your time interval (represented by X) is on or off. Press [EDIT] to change the condition of the time interval.

NOTE

If you turn an interval ON, it must be edited. You can edit a time interval now, then turn it OFF until later.

3. *1.DSCT 25* This is the discount percentage for this period (25% for this example).

4. *1.STRT 15.30* Enter a start time (24-hour format) for this interval. The time (3:30 pm) is displayed.

5. *1.STOP 18.00* Enter a stop time (24-hour format) for this interval. The time (6:00 pm) is displayed. You have now established a 25% discount that starts at 3:30 and ends at 6:00.

6. *1.@ -M-W-F-* These are the days that this time interval is active. Pressing number keys 1 through 7 switches the days on/off. The discount interval is only active on Monday, Wednesday, and Friday.

7.   *1. RB---F-H* These are the selections affected by this time interval. Press the appropriate letter key to turn the selections on/off. NOTE Selections not vended by your machine will not be displayed. Selections **A, B, F,** and **H** are available for discounts.

8.   *1. MESG 3* This means that custom message 3 will be displayed during this time interval. Press the number key of the message (1 through 8) you want displayed. Pressing 0 turns the message OFF for this time interval.
(You can also press [EDIT] to scroll through the message list.)

CUSTOM MESSAGE EDITING

CUSTOM MESSAGE EDITING

1. *EDIT MSG'S* Press the number of the message you want to edit. *MESSAGE X* is displayed (X represents the message number you pressed).

2. Press [EDIT]. The message text is displayed with the first character flashing.

3. To view the message, press [* TEST START]. The message scrolls across the display. To stop the scrolling, press [EDIT].

4. When the character you want to change is flashing, either enter it directly, or use [3 PAY 5¢ +] and [9 PAY 10¢ −] to step through the character set until the desired character is displayed. Use the arrow keys to highlight different characters. See the section on the next page for an explanation of special keys and the character set.

> **SHORTCUT**
> Instead of stepping through the whole character set to enter a letter that is not on your keypad, enter one close to the one you want, then step to it. Example: If you want to enter an L, first press J on the selection switch panel. Then press [3 PAY 5¢ +] twice. Your L should now be displayed.

THE END OF MESSAGE CHARACTER

This is the most important character in your message, because it tells the machine when the message is ended. If you don't use this character, your message will be followed by a bunch of zeros. This character can be selected either from the character set or by a direct key entry (see the next page).

ENTERING YOUR MESSAGE

You will be using a combination of special keys and the keys on the selection switch panel to enter your message. Pressing the keys on the selection switch panel will enter the character shown on that key. Most of the keys on the service keypad have a special purpose to help you create and edit your messages:

Key	Function		Key	Function
1 PRICE	Inserts an R at the flashing character.		**2** FREE VEND INSERT	Inserts a space at the flashing character.
4 MACHINE CONFIG	Inserts an S at the flashing character.		**5** DATA RECALL DELETE	Deletes the current character and closes up the space.
7 PRODUCT CONFIG	Inserts a T at the flashing character.		**#** PAY $1 CLEAR	Deletes the current character and leaves the space.
0 TIME OF DAY	Repeats the letter to the left of the flashing character.		**9** PAY 25¢	Enters the special "end of message" character, which denotes the end of the message.
EDIT	"Pages" through the message, ten characters (one screen) at a time.			

↓ ↑	Steps forward and backward through the message, one character at a time.
3 PAY 5¢ + **6** PAY 10¢ −	Steps forward and backward through the character list, one character at a time.

THE CHARACTER SET

0	A	K	U	(
1	B	L	V	)
2	C	M	W	#
3	D	N	X	*
4	E	O	Y	+
5	F	P	Z	-
6	G	Q	(SPACE)	/
7	H	R	—	.
8	I	S	$	<
9	J	T	'	=

>
?
@
□
▨
/
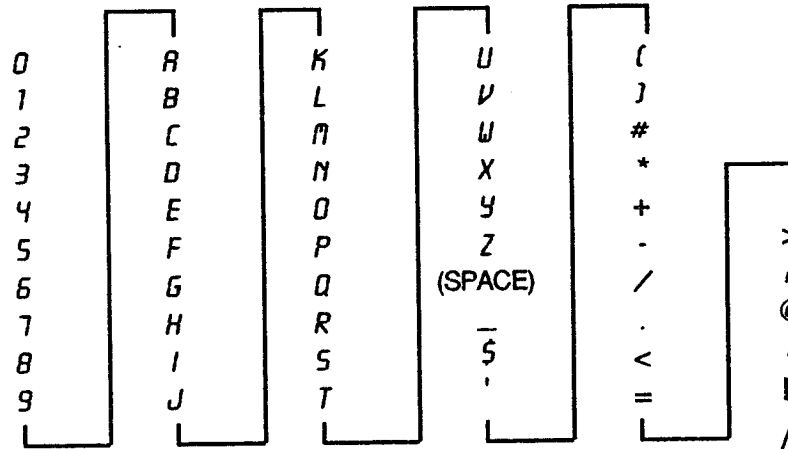
THIS IS THE END OF MESSAGE CHARACTER.

TEST MACHINE FUNCTIONS

TEST MACHINE FUNCTIONS

1. *TEST .00* You can test vend selections and verify credit added.

   To test vend selections <u>without</u> a cup, press **EDIT**. The display shows *TEST.NC .00*
   No cups will drop during the rest of your test vend session. If desired, you may place money
   in the machine. The zeros in the display will be replaced with the amount of the credit.

   ### NOTE
   You may make one more test vend if you close the door while still in TEST
   VEND mode.

2. *DSPLY TEST* Press [✱ TEST START] to test the display. All display segments light.

3. *CUP TEST* Press [✱ TEST START] to test the cup mechanism.

4. *DOOR TEST* Press [✱ TEST START] to test the automatic delivery door (if so equipped). The door

   will open, then close after one second.

5. *WHIP TEST* Press the whipper number (1=whipper below main condiment mixing bowl,
   2=soup whipper, or 3=chocolate whipper) you want to test. OR Press the letter of a selection
   containing a whipper. *WHIP X* is displayed ("X" is the number of the tested whipper.

6. *GRIND TEST* Test all grinders installed in your machine.

   ### WARNING
   Keep away from the grinder during this test. Do not test a grinder that is
   not mounted on its canister. Otherwise, you could be hurt.

   a. Press the grinder number on the selection switch panel or the service keypad
   - OR -
   b. Press a selection letter (a number is not needed) on the selection switch panel. The
   grinder associated with that selection will run.

In either case the display shows: *GRIND X* (X = grinder number) while the grinder is
running.

7. AIR TEST Press [START] to test the air compressor.

NOTE

If the brewer is in the BREW position at the start of this test, the compressor runs for 18 seconds. This allows you to evacuate a full brewer barrel. Otherwise, it runs for 2 seconds.

8. *BREW TEST* Press [START] to test each brewer position:

WARNING

Keep away from the brewer mechanism while it is operating. Coming into contact with moving parts could injure you.

a. *BREW'R BREW* The brewer is in the BREW position.

b. *BREW'R FLIP* The brewer is in the FLIP position.

c. *BREW'R HOME* The brewer is in the HOME position.

9. *BOWL RINSE* Press [START] to rinse all bowls. *RINSING* is displayed.

WARNING

Very hot water will be dispensed. Coming into contact with hot water will HURT!

10. *IN.KPLM12* Actuate each switch or sensor to test its function:

K = freevend keyswitch   M = mug/cup sensor (if equipped)
P = waste pail switch   1 = ring 1 cup sensor switch
L = water tank level switch   2 = ring 2 cup sensor switch

As you actuate each input, the display element representing that switch blinks off. Releasing the switch causes that element to light up again.

PAYOUT COINS

| 3 PAY 5¢ + | 6 PAY 10¢ − |
| 9 PAY 25¢ | # PAY $1 CLEAR |

1. Press the desired key to pay that coin. Holding the key pays multiple coins. The display shows *PAYING*.

FREE VEND

1. To enter the free vend mode, press [2 FREE VEND INSERT]. *FREE ON* is displayed for a short time, then the free vend message is displayed. All selections are free.

2. To leave the free vend mode, press . *FREE OFF* is displayed for a short time, then the normal message is displayed. All selections revert to their previous pricing.

VIEW DATA ITEMS (sidebar)

5 DATA RECALL / DELETE

VIEW DATA ITEMS

1. *NR$ .XX* "XX" is the accumulated value of sales for the entire machine.

   NR X "X" is the accumulated number of sales for the entire machine. **THESE COUNTERS ARE NOT RESETTABLE.**

OPTION
At this point, you can clear all resettable data at one time. Make sure one of the two previous displays is showing, then see **CLEARING DATA**.

The following displays appear in the order shown. *SOME DATA ITEMS MAY NOT APPEAR IF THEY WERE SET TO HIDE BY THE SUPERVISOR (See SETTING SUPERVISOR PRIVILEGE LEVEL.)* Each data item can be cleared when its display is shown. See CLEARING DATA. Individual selection data is not visible for some items. See **VIEWING INDIVIDUAL DATA**.

DISPLAY	DEFINITION	VIEW INDIVIDUAL DATA?
TOT$ .XX	"XX" is the total of machine sales since last reset.	Yes
TOT X	"X" is the total of vends since last reset.	Yes
CBX$ .XX	"XX" is the money present in the coin box since last reset.	No
DBV$ .XX	"XX" is the money present in the bill validator since last reset.	No
NOTE To help you in better record keeping, don't forget to clear these totals every time you remove the money from the coin box or bill validator!		
FRV$ .XX	"XX" is the total of free vend "sales" since last reset.	Yes
FRV X	"X" is the total of free vends since last reset.	Yes
WIN$ .XX	"XX" is the total of winner "sales" since last reset.	Yes
WIN X	"X" is the total of winner vends since last reset.	Yes
DSC$ .XX	"XX" is the total of discount sales since last reset.	Yes
DSC X	"X" is the total of discount vends since last reset.	Yes

5
DATA RECALL
DELETE

... CONTINUED

DISPLAY	DEFINITION	VIEW INDIVIDUAL DATA?
MUG$ .XX	"XX" is the total of mug sales since last reset.	Yes
ALT$ .XX	"XX" is the total of alternate vend sales since last reset	Yes
ALT X	"X" is the total number of alternate vends since last reset	Yes
TST X	"X" is the total test vends since last reset	Yes

2. *I.D. XXXXXX* This is the 6-digit machine ID number. **SUPERVISOR ONLY:** Enter a new ID number if you desire.

CLEARING DATA

CLEARING DATA

CAUTION
If you are keeping records, make sure you have recorded all values before you clear them! Therefore, you might want to view all the data prior to clearing.

NOTE
You may not be able to clear some or all of these counters if they were "hidden" by the supervisor. See **SETTING SUPERVISOR PRIVILEGE LEVEL.**

CLEARING ALL DATA COUNTERS AT ONCE...

From the machine total display (*NR$ .XX* or *NR X*), press and hold [⎘]. The display shows *CLEARING* for about one second, then *FINISHED*. All resettable data have been cleared.

CLEARING DATA COUNTERS...

In most cases, data is kept for individual selection transactions. See VIEWING INDIVIDUAL DATA. This subtotal data is available for view, but cannot be cleared individually.

From the main display of each counter, press [⎘]. The display shows *CLEARING* for about one second, then *FINISHED*. All data have been cleared from that counter.

VIEWING INDIVIDUAL DATA

Beginning at the first screen of the data item, you may view the individual selection data one of two ways:

1. Press [EDIT]. Data for the **A** selection is displayed. You may then scroll up and down the list of data for each selection by pressing the arrow keys.

2. A more direct approach is to press the letter key that corresponds to the data item you are interested in. That data is displayed without having to scroll through the whole list.

> NOTE
> If PRICE LINES are enabled, you will see individual data by price line instead of by selection.

DIAGNOSTICS (sidebar)

DIAGNOSTICS

1. If faults are present on your machine, they will appear in the order shown below, followed by the first two (normal condition) displays. In a no-fault condition, the first two displays are all you will see.

TEMP YYY°F "YYY" is the current water tank temperature. In this case, temperature is displayed in degrees Fahrenheit. Depending upon your LANGUAGE configuration, the display may be expressed in degrees Celsius.

XX VOLTS "XX" is the measured value of the unregulated 12 volt power supply.

2. The following displays will appear when the appropriate fault condition exists:

KEYPAD XY	Key(s) "X" and "Y" are stuck. Try unsticking keycaps or replacing key membrane.
ROM ERROR	ROM checksum error. Replace EPROM or main controller assembly.
RAM DATA	RAM battery error. Replace RAM.
RAM ERROR	RAM addressing error. Replace RAM or main controller assembly.
CONFIG ERR	Configuration error. Recheck configuration settings.
RING JAM	The cup ring is jammed.
MOTR 1A 1B 2	Cup turret motor 1A, 1B, or 2 is jammed.
NO CUPS 12	Out of cups (cup ring 1 or 2).
WASTE PAIL	The waste pail is full.
LOW WATER	The water level in the tank is low.
COLD TANK	Water is too cold to vend.
NO SENSOR	Illegal temperature reading. Check tank sensor. Check harnessing for broken or bad connections.
WHIP 1234	Whipper motor failure (motor 1, 2, 3, or 4)
MUG SWITCH	Mug sensor is always on.
NO MECH	Coin mechanism not detected. Check for bad mechanism or harnessing.

MECH COMM   Coin mechanism detected, but no communication established.

MECH.SENSOR   Coin mechanism sensor error.

CHECK DBV   Bill jam or full bill validator stacker. Empty stacker.

DBV COMM   Bill validator communication not established.

BRW JAM   The brewer is jammed.

DOOR JAM   The automatic delivery door is jammed.

DEBIT CARD   Error in the debit card unit.

CHK PRICES   Illegal price detected.

BAD CLOCK   The real-time clock is not running.

LOCKS SET   All selections are locked (see PRODUCT CONFIGURATION).

3.   **VIEW SETUP**   This allows you to view (but not edit) certain configuration items.

Press [EDIT] , and the following will be displayed:

VER HD3.1   The current software version number.

CONF XYZ   The machine configuration. (See PRODUCT CONFIGURATION for an explanation of "X", "Y", and "Z".

0.ABCDEFGH
1.ABCDEFGH   This is the selection configuration. It shows which selections are available for sale and setup.

CUPVND ON
CUPVND OFF   This shows whether or not the machine is configured to vend a cup without a drink.

J WHIP   Selections programmed for optional whipping will be whipped only if J is pressed.

                     OR

J NO WHIP   Selections programmed for optional whipping will be whipped only if J is pressed.

DOOR ON
DOOR OFF   This shows whether or not the optional automatic delivery door is enabled.

SANITATION

SANITATION

INTRODUCTION

Anybody who services vending machines must use proper sanitizing procedures. Health regulations require that hands be clean when cups, commodities, and food-contact parts are handled or serviced.

In addition, Federal and State Health Departments require regular cleaning and sanitizing procedures for food contact parts.

The information in this section will explain how to clean and sanitize the merchandiser on a day to day basis. A clean and well maintained merchandiser will provide a better product and greater safety for your customers.

CLEANING AND SANITIZING – WHAT'S THE DIFFERENCE?

Clean means "free of visible soil". In cup vending machine servicing, cleaning is also done to maintain product quality and to remove food soils, oils, and mineral stains that could affect product taste, aroma, and appearance.

Sanitizing means the reduction, to safe levels, of the number of disease-causing bacteria that remain on the surface after cleaning. Therefore, cleaning and sanitizing are done in separate steps, as prescribed by health regulations and good industry practice.

When you sanitize you create a healthy and hygienic condition. This leads to wholesome food, which in turn leads to satisfied customers.

SANITIZING IS NO SUBSTITUTE FOR A GOOD CLEANING

HOW DO I SANITIZE?

You can sanitize by using either of these two methods:

Chemicals: The object to be sanitized is treated with a bactericidal compound.

Heat: Raise the temperature of the object high enough to kill bacteria. Water must be at least 170° F.

Hot brew water (if available) is an acceptable sanitizer. When food contact surfaces are washed and/or rinsed, use the hot water available in the machine.

Turn the machine off before using water on the machine.

In either case, the object must be thoroughly clean and completely rinsed in order for the sanitizing process to work. Caked-on soils not removed by cleaning, for example, may shield bacteria from a sanitizing solution.

A GOOD PLACE TO START -- YOUR SANITATION KIT

You need to be sure that each machine is clean, safe, and functioning when you leave it. In order to properly do this, you need to have a complete set of the right tools. In addition to the screwdrivers, pliers, and test equipment necessary to repair a machine, you need to have the tools to clean the machine.

Here is a checklist of the items needed for a good sanitation kit:

- ☐ Sanitation pail
- ☐ Tube and nozzle brushes for food contact surfaces
- ☐ Utility brush for dry spillage around canisters, etc.
- ☐ Disposable towels, wet-strength and lint-free

NOTE
Wiping with towels can recontaminate sanitized food-contact parts. Therefore, towels should not be used to dry food-contact surfaces. Instead, these parts should be air dried.

- ☐ Spray detergent, diluted to desired strength
- ☐ Urn cleaner packets for coffee stains and oils
- ☐ Odor control chemicals for pails
- ☐ Replacement parts (if the exchange method is used)
- ☐ Cabinet polish or window cleaner for the outside of the machine

Feel free to add some items to this list. For example, you may want to use a portable vacuum cleaner.

SANITATION PROCEDURES

Refer to the recommended cleaning and sanitation interval table on the final page of this section.

SANITATION PROCEDURES

Refer to the recommended cleaning and sanitation interval table on the final page of this section. For each item, complete the procedure as outlined here.

Food-Contact Parts

> **NOTE**
> All food-contact parts must be cleaned and sanitized. Air dry, do not wipe dry.

Ingredient Canisters - Empty and wash the canisters, augers, and spouts. Sanitize with hot water and allow to air dry completely before returning to cabinet.

Mixing Bowls - The inside of all mixing bowls can be rinsed by performing the "Bowl Rinse" operation as outlined in the Programming section of this manual.

If needed, remove mixing bowls from the dry ingredient shelf. Wash the mixing bowl lids and sanitize with hot water. Allow to completely air dry before reassembling.

Whipper Lids and Impellers - Remove lids and impellers from the whipper housings, wash the lids and impeller housing. Sanitize with hot water and allow to air dry before reassembling.

Beverage Discharge Nozzles - Disconnect the beverage dispensing tube from the nozzles. Remove the nozzles from the mounting bracket. Remove the cap from the nozzle, wash clean and sanitize the nozzles and cap. Refer to the tubing connection diagram for proper routing.

Condiment Chute Assembly - Remove the condiment chute and cover from the condiment canisters. Thoroughly wash all parts using soap and water. Sanitize by rinsing thoroughly with hot water.

Non Food-Contact Parts

Cup Delivery Compartment - Remove the compartment from the merchandiser. Wash clean and rinse with hot water.

Exhaust Fan Filter - Remove the filter from its housing. Wash with soap and water, rinse, wring dry, and replace into housing.

Waste Pail - Empty, wash, and rinse with hot water. Sprinkle detergent powder in the bottom of the pail to help control odors.

Ingredient Rinse Tray - Remove product canisters. Wash and rinse with hot water. Allow to air dry.

OVERALL CLEANING

Inspect your merchandiser both inside and out. Be sure to check corners and all less visible parts of the merchandiser.

Clean where needed.

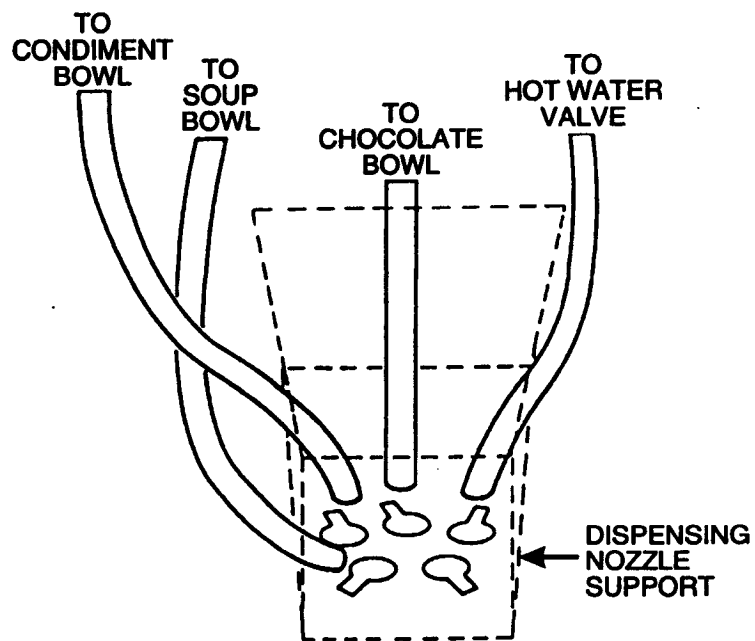Allow the inside of the cabinet to dry thoroughly before you close the door.

National Vendors recommends using the following supplies:

A commercial glass cleaner on the glass in the cabinet door.

A mild detergent and warm water on the cabinet, brewer, and other NON ELECTRICAL components.

CAUTION
The plastic parts in your merchandiser should be cleaned with mild detergent and warm water. The use of other cleaning agents may damage the material, and should be avoided.

TO
CONDIMENT
BOWL

TO
SOUP
BOWL

TO
CHOCOLATE
BOWL

TO
HOT WATER
VALVE

DISPENSING
NOZZLE
SUPPORT

TUBE ROUTING DIAGRAM

RECOMMENDED CLEANING AND SANITATION INTERVALS

ITEM	DAILY	WEEKLY	MONTHLY	QUARTERLY	SEMI-ANNUALLY
Ingredient Canisters	C		S		
Mixing Bowls	C	S			
Whipper Funnels and Impellers	C	S			
Beverage Discharge Nozzles	C	S			
Brewer, Brewer Basket and Brewer Funnel	C	S			
Bean Grinder Coffee Chutes	C	S			
Bean Grinder Housing		S			
Brewer Mechanism		C			
Cup Delivery Compartment	C				
Exhaust Fan Filter		C			
Grounds Pail	C				
Waste Pail	C				

S = Sanitize at this interval

C = Clean only at this interval

Index

APPENDIX A. INITIAL SET-UP GUIDE

This guide will help you install your merchandiser, complete any final assembly, and supply it with water and electricity. Consult the set-up manual for your specific machine for programming, configuration, and product loading instructions. Keep this guide for later reference.

I. POWER REQUIREMENTS

This merchandiser requires power as shown in the following table. NOTE: Each merchandiser should have its own electrical circuit.

Power Requirements

Country	Volts	Frequency (Hz)	Current (Amps)
Canada	115	60	15
France	230	50	10
Germany	230	50	10
United Kingdom	230	50	10
United States	115	60	15

II. WATER REQUIREMENTS

The best type of water for coffee brewing is normal hard water. If your location has chemically softened water, one of the following steps is advised:

• Have a non-softened supply line run to the merchandiser
• Contact your local water filter supplier for information and suggestions

Well water can also be used in the EuroDrink Machine. However, you should have it checked for levels of carbonates and alkalies. Contact your water filter supplier if these values are relatively high.

WATER PRESSURE

Minimum water pressure: 20 psi (138.0 KPa) at 1/2 gallon/minute
Maximum water pressure: 80 psi (522.0 KPa) at 1/2 gallon/minute

SUPPLY LINE REQUIREMENTS

Locate supply line at rear of the merchandiser.
Equip the line with a shut-off valve.

FLUSHING WATER SUPPLY LINE

Flush the water supply line before connecting it to the merchandiser. A minimum of five gallons is usually required before connecting the merchandiser to the supply line. DO NOT flush the merchandiser water system to avoid introducing possible water line contaminants into the merchandiser.

III. POSITIONING THE MERCHANDISER

You can position this merchandiser anywhere in a bank of machines. It can even be placed on the end flush against a side wall.

Leave enough room in front of the merchandiser for the door to move freely.

BE SURE THE REAR OF THE MERCHANDISER IS AT LEAST 6" AWAY FROM THE WALL. THIS WILL ALLOW WARM MOIST AIR TO BE VENTED OUT OF THE MACHINE'S INTERIOR.

WARNING:
THIS MACHINE IS ONLY RATED FOR INSTALLATION IN AN INDOOR LOCATION.

IV. FINAL INSTALLATION

1. **CONNECT THE MERCHANDISER TO THE WATER SUPPLY**

    a.   You will need the following:

    •   A coil of copper tubing with outside diameter of 3/8 inch (9.5 mm) or greater. The appropriate plastic tubing may be substituted.

    •   A 3/8 inch (9.5 mm) flare fitting

    b.   Connect the merchandiser to your water supply.

2. **CONNECT THE MERCHANDISER TO THE POWER SOURCE**

Power to the merchandiser is controlled by the main power switch, located on the power panel.

    a.   Make sure the main power switch is OFF.

    b.   Connect the merchandiser's power cord to your wall outlet.

3. **LEVEL THE MERCHANDISER**

    a.   Place a spirit level on the top front edge of the cabinet with the door fully closed. Adjust the front legs only until the cabinet is reasonably level (figure 1).

    b.   Hold the door open about 4 inches.

    WARNING:
    HAVE AN ASSISTANT HOLD THE MERCHANDISER WHILE YOU ADJUST THE LEG LEVELERS.

    c.   Adjust the back legs so that the back leg leveler on the hinge side is off the floor just enough so a piece of paper can slide under it with only a bit of resistance (figure 2).

    d.   For proper weight distribution on all four legs, raise the back leg on the hinge side by unscrewing the leveler 1½ turns.

    NOTE
    You may need to use pliers or channel locks to loosen the leg levelers.
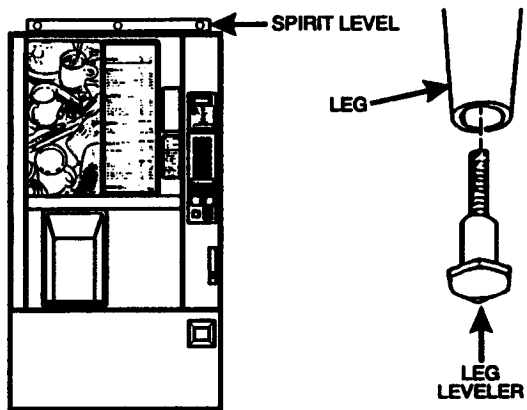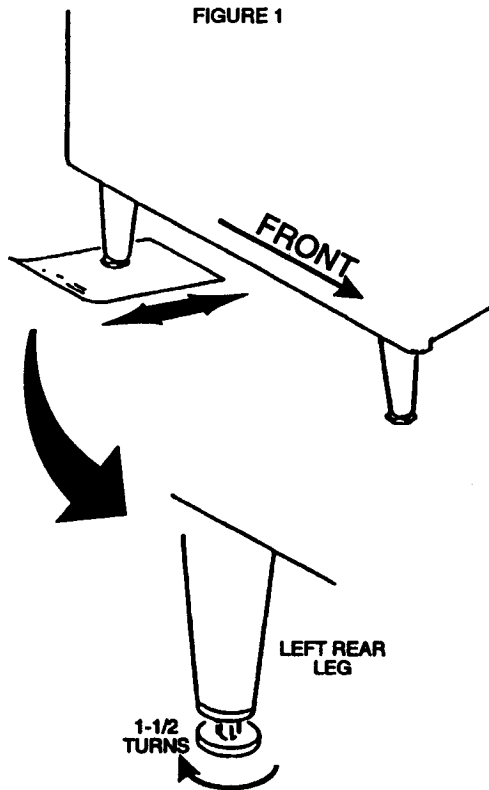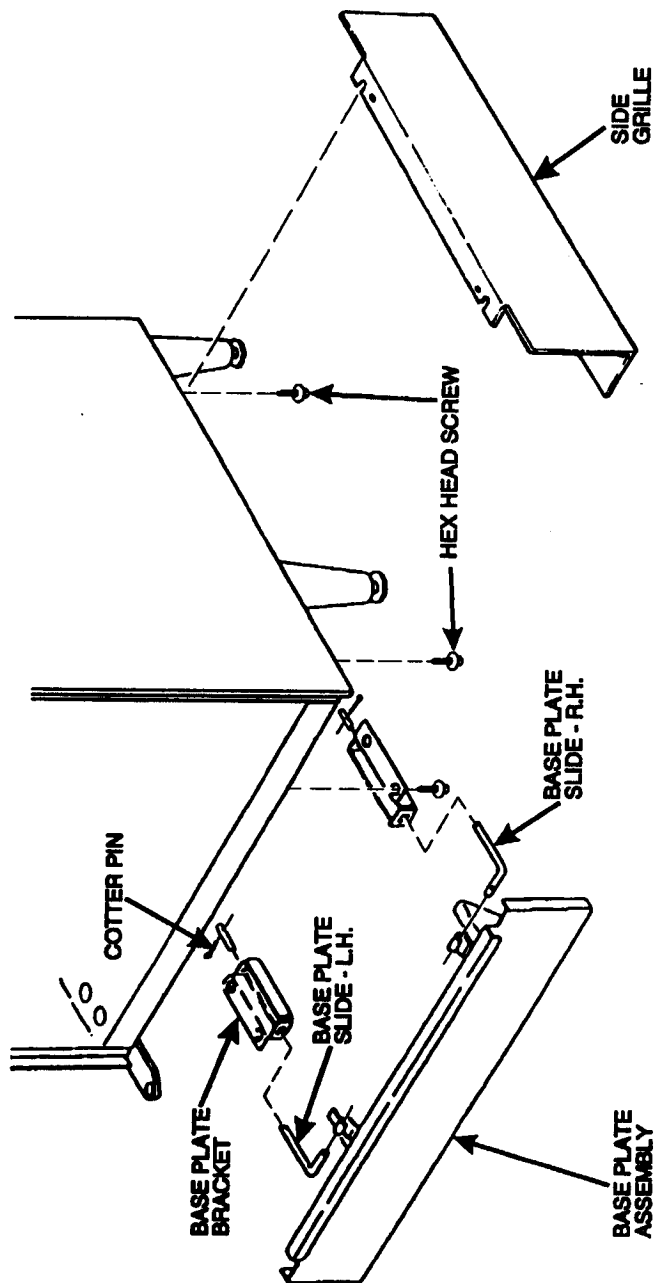
SPIRIT LEVEL

LEG

LEG
LEVELER

FIGURE 1

FRONT

LEFT REAR
LEG

1-1/2
TURNS

FIGURE 2

TYPICAL INSTALLATION

SIDE GRILLE

HEX HEAD SCREW

BASE PLATE SLIDE - R.H.

COTTER PIN

BASE PLATE SLIDE - L.H.

BASE PLATE BRACKET

BASE PLATE ASSEMBLY

4. MOUNT THE BASE PLATE BRACKETS

Secure a base plate bracket at each of the remaining pairs of holes with two of the hex head screws.

5. MOUNT THE BASE PLATE AND SLIDES

    a. Insert the short arm of the slides into the hinged tabs of the base plate. Position the slide so the notch near the short arm is on the bottom side.
    b. Insert the long arms of the slides into the base plate brackets.
    c. Insert a cotter pin through the hole in the back end of each slide. Secure the pins in place.
    d. Push the base plate toward the merchandiser cabinet. The front tab of the base plate bracket should seat in the notch in the long arm of the slide.

6. MOUNT THE OPTIONAL SIDE GRILLES

    a. Loosen the hex head screws on each side as shown.
    b. Position the side grilles so the hex head screws are captured by the slots in the grilles.
    c. Tighten the screws.

7. FILL THE TANK

National Vendors recommends that you do the following procedure the first time you fill the tank in your EuroDrink merchandiser:

    a. Remove the small inner "O" ring from the filter cartridge.
    b. Install the filter cartridge.
    c. Turn on the water at its source, and allow the tank to fill.
    d. Remove the filter cartridge and replace the "O" ring.
    e. Install the filter cartridge.

APPENDIX B. THE FREE VEND KEYSWITCH

The free vend keyswitch allows someone to set up free vending without needing to open the door.

TO START FREE VEND:

1. Place your key in the free vend keyswitch and turn it to the right. (If the keyswitch is already turned to the right, turn it to the left, then back to the right.) The display shows:
    ENTER CODE.

2. Enter the four-digit free vend code. If you enter the wrong code, you have to return to step 1 and start over.

3. If you enter the correct code, the display shows: *FREE ON.*

4. Remove your key. NOTE: You don't have to turn the key back to the left to remove it, but it's a good idea to do so.

TO END FREE VEND:

1. Place your key in the free vend keyswitch and turn it to the right. (If the keyswitch is already turned to the right, turn it to the left, then back to the right.) The display shows:
    ENTER CODE.

2. Turn the keyswitch back to the left and remove your key. The display returns to the standby message.

**NOTE THAT NO CODE IS NECESSARY TO REMOVE THE
MACHINE FROM FREE VEND.**

APPENDIX C. THE INFRARED MUG/CUP SENSOR

The infrared mug/cup sensor can sense the presence of a mug or cup without using moving parts.

Indicator light

The sensor is equipped with an indicator light. This light will help you get the best results from the infrared mug/cup sensor.

Under these conditions:

· Machine door open
· Cup station in place
· No cup in the station

The indicator light should be off. If it is on, it is indicating improper cup station alignment or excessive sensor sensitivity.

Under these conditions:

· Machine door closed
· Cup station in place
· No cup in the station

Press any letter on the selection switch panel, for example, A. Only the letter A should be showing in the message display. If "A MUG" is displayed, it indicates one or more of the following:

· Improper cup station alignment
· Excessive sensitivity (the sensor is sensing the delivery door)
· Cup station lens is not clean

Cleaning

As indicated in the Sanitation section, you should remove the cup station to clean it. Pay particular attention to the dark colored infrared mug/cup sensor lens, which is part of the cup station. If it is not thoroughly cleaned, the sensor will not work properly.

CAUTION
Do not get liquid inside the sensor unit.

Cleaning the infrared mug/cup sensor unit itself is not usually necessary. If it does require cleaning, just wipe it with a damp cloth.

Calibration

1. Remove the plastic cap in the rear of the sensing unit, exposing the potentiometer adjusting screw, as shown in figure C1.

2. Turn the screw clockwise to increase sensitivity of cup detection, or counterclockwise to decrease sensitivity.

3. Calibrate the sensor:

   CAUTION
   Do not adjust sensitivity too far, or unreliable sensing could result.

   a. Using a piece of WHITE poster board or heavy cardboard, make a 5" x 5 5/8" target.

   NOTE
   IT IS VERY IMPORTANT THAT THIS MATERIAL BE WHITE.

   b. Place the target in the cup station just beyond the cup deflectors (see figure C-2). The target should be standing vertically; not tilted forward or backward.
   c. With the target in place, turn the adjusting screw clockwise very slowly until the indicator just turns ON.
   d. Turn the adjusting screw counterclockwise very slowly until the indicator just turns OFF.

4. Replace the plastic cap.

5. Insert a mug into the cup station in the vending position and check to see that the red indicator light is ON.

This calibration will be adequate for most cups or mugs. In some cases, a slightly more sensitive setting is needed if the cup or mug is a dark color.
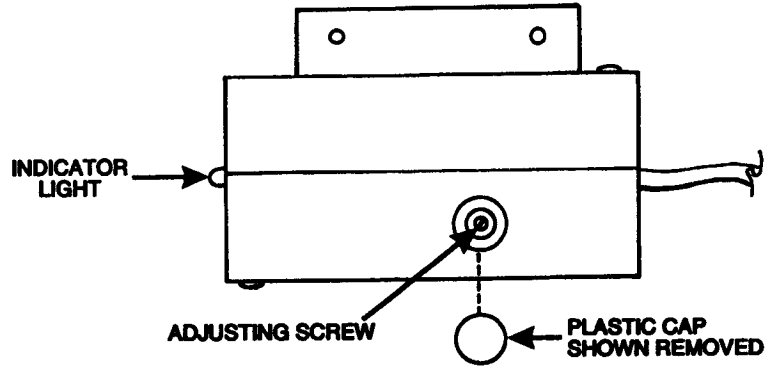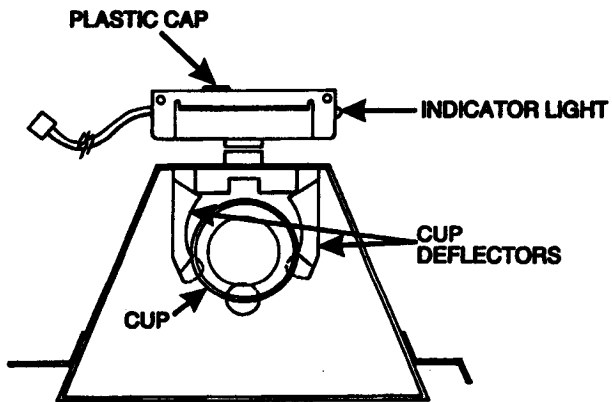
VIEWING REAR OF SENSOR ASSEMBLY

INDICATOR LIGHT

ADJUSTING SCREW

PLASTIC CAP
SHOWN REMOVED

Figure C1

PLASTIC CAP

INDICATOR LIGHT

CUP
DEFLECTORS

CUP

Figure C2

APPENDIX G. CAFFÉ LATTE RECIPE

Caffe Latte has a rich, robust coffee flavor. It is a full-bodied hot beverage with extra creamer, whipped to frothy perfection, with sugar optional. Try this recipe to expand your gourmet product selections and increase premium pricing opportunities.

VIEW THE SOFTWARE VERSION NUMBER:

Your machine must have software version number HD3.1 installed before this recipe can work. View the version number as follows:

1. Open the machine door and pull out the interlock switch. From the standby message, press

    [DIAGNOSTICS], then press [↑]. The display shows *VIEW SETUP.*

2. Press [EDIT]. The display should show *VER HD3.1.* If it shows another version besides this, contact National Vendors Parts Department for an upgrade. If you have the correct version, continue with the steps below.

ENTER THE SUPERVISOR CODE:

1. Press and hold [EDIT]. The display shows: *ENTER CODE.* You must enter the four-digit supervisor code within 6 seconds to gain access.

NOTE

A new machine has a factory-set supervisor code of 0000.

When you have entered the right code, you will hear two beeps and see *SUPERVISOR* in the display.

SET THE MACHINE TO VEND A LARGE "D" SELECTION:

1. Press the following keys: [PRODUCT CONFIG], [↑], and [EDIT]. The CONFIGURE screen is displayed.

2. Press [↓] twice. The display should look something like this: *1. ABCDEFGH.*

    Make sure the *"D"* is displayed. If not, press "D" on the selection switch panel to display the *"D".*

3. Press [EXIT/STOP] twice to return to the standby message.

SET UP YOUR SELECTION:

Follow the instructions in the **PRODUCT CONFIGURATION** section of the *Hot Drink Center Operator's Guide*.

1. Make sure the machine is configured to use 12 oz. cups.
2. Set up the 1D selection as follows:
   a. Coffee: 17 grams
   b. Sugar: 2.5 grams
   c. Lightener: 5 grams
   d. Water: 6 ounces (about 177 ml)
   e. Steep time: 12.5 seconds
   f. Whip: ON +

To get these measurements, refer to the **PRODUCT CONFIGURATION** section of the *Hot Drink Center Operator's Guide*. See **COLLECTING DRY PRODUCT GRAM THROWS**, and perform test throws of the dry ingredients. See **COLLECTING WATER THROWS**, and perform test water throws.

This Merchandiser is warranted for one (1) year against defective parts and workmanship. Any part or parts which are proven to be defective within one (1) year of the date of shipment will be repaired or replaced free of charge when the defective part is returned, with transportation charges prepaid, to the destination designated by the National Vendors Warranty Department.

This warranty applies only to the original purchaser of the Merchandiser and is null and void if the Merchandiser is sold during the period of warranty.

This warranty does not apply to a) electrical components, wiring, or circuits and/or for all mechanical parts or assemblies damaged as a result of operating the Merchandiser at other than the design voltage and frequency specified on the Electrical Rating Tag, or b) in event of vandalism, fire or negligence, or c) incandescent lamps, neon lamps, fluorescent lamps, ballasts, starters or other expendable items or d) when other manufactured components are installed in National Vendors Merchandisers.
National Vendors is not responsible for any cost of service rendered or repairs made by customer or its agents on Merchandiser or parts unless authorization to incur such expense has been given in writing by National Vendors prior to incurring such expense.

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