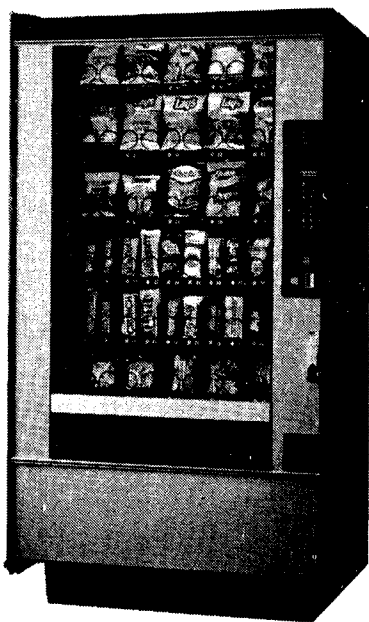


SnackCenter and *RefreshmentCenter*



147 / 148
461 / 462 / 463

474
477



475 / 476
478 / 479

Mechanical Set-Up, Operation and Maintenance Manual

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CRANE- National Vendors

1470121

This machine has been engineered to our own rigid safety and performance standards. It has earned a "Letter of Compliance" from NAMA indicating that it complies 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 FCC verified.

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 Manual. Your investment in this equipment will be protected by using this Mechanical Set-Up, Operation and Maintenance Manual, the accompanying Programming Guide and the Parts Manual in your operation, service and maintenance work. By following prescribed procedures, machine performance and safety will be preserved.

The SNACK CENTER and REFRESHMENT CENTER Merchandisers are 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 is also null and void for all electrical components, wiring, or circuits and/or for all mechanical parts or assemblies damaged as a result of operating the Merchandiser at other than 110-120 volts, 60 Hertz current. The warranty is null and void in event of vandalism, fire or negligence on the part of the operator.

No warranty is given or implied on incandescent lamps, neon lamps, fluorescent lamps, ballasts, starters or other expendable items. No warranty will be given when other manufactured components are installed in National Vendors Merchandisers.

Further, National Vendors is not responsible for any cost of service rendered or repairs made on merchandiser or parts at other than National Vendors unless authorization to incur such expense has been given in writing by National Vendors prior to incurring such expense.

This warranty is in lieu of all other warranties expressed or implied, including, without limitation, warranties of merchantability and all other obligations or liabilities on National Vendors part. National Vendors neither assumes nor authorizes any person to assume for it any other obligation or liability in connection with the sale of said equipment or any part thereof.

**CRANE-National Vendors
12955 Enterprise Way
Bridgeton, MO 63044**

CRANE

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NOTE

*THE INSTRUCTIONS FOR INSTALLING AND OPERATING
THIS MERCHANDISER ARE CONTAINED IN THE FOLLOWING
MANUALS:*

MECHANICAL SET-UP, OPERATION and MAINTENANCE MANUAL
Part Number: 1470058

PROGRAMMING GUIDE
Part Number: 4400002

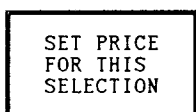
OVERVIEW OF MERCHANDISER SET-UP

* A set of flowcharts has been included in this manual to guide you through the set-up procedure. The charts are summarized in the table below.

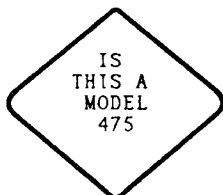
NAME OF CHART	WHEN TO USE THE CHART	WHERE CHART IS LOCATED
Overview	This is the starting point for all merchandisers. All of the other charts branch from here and return to here.	Pages 2-6
I-4 Initial Set-Up	This sequence is normally done only when the merchandiser is installed on site for the first time.	Pages 15-17
Guide to Tray Set-Up	This sequence will be completed for all snack, refreshment and food merchandisers.	Page 27
Guide to Gum & Mint Dispenser Set-Up	This sequence will be completed when an optional Gum & Mint Dispenser is installed in a 147, 148, 461, 462, 474, 475, 476, 477, 478 or 479 merchandiser.	Page 55
Guide to Cold Can Module Set-Up	This sequence will be completed when a Cold Can Module is installed in a 474, 475, 476, 477, 478 or 479 merchandiser.	Page 61
Guide to Hot Drink Module Set-Up	This sequence will be completed when a Hot Drink Module is installed in a 475, 476, 478 or 479 merchandiser.	Pages 65-66
Guide to Refrigerated or Frozen Food Module Set-Up	This sequence will be completed when a Refrigerated Food Module is installed in a 474, 475 or 476 merchandiser.	Page 77

* The boxes and diamonds on the left side of each chart contain "WHAT TO DO" instructions.

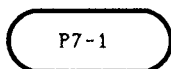
* The ovals on the right side of each chart contain references to the necessary "HOW TO DO IT" information.



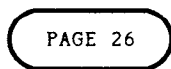
this contains an instruction



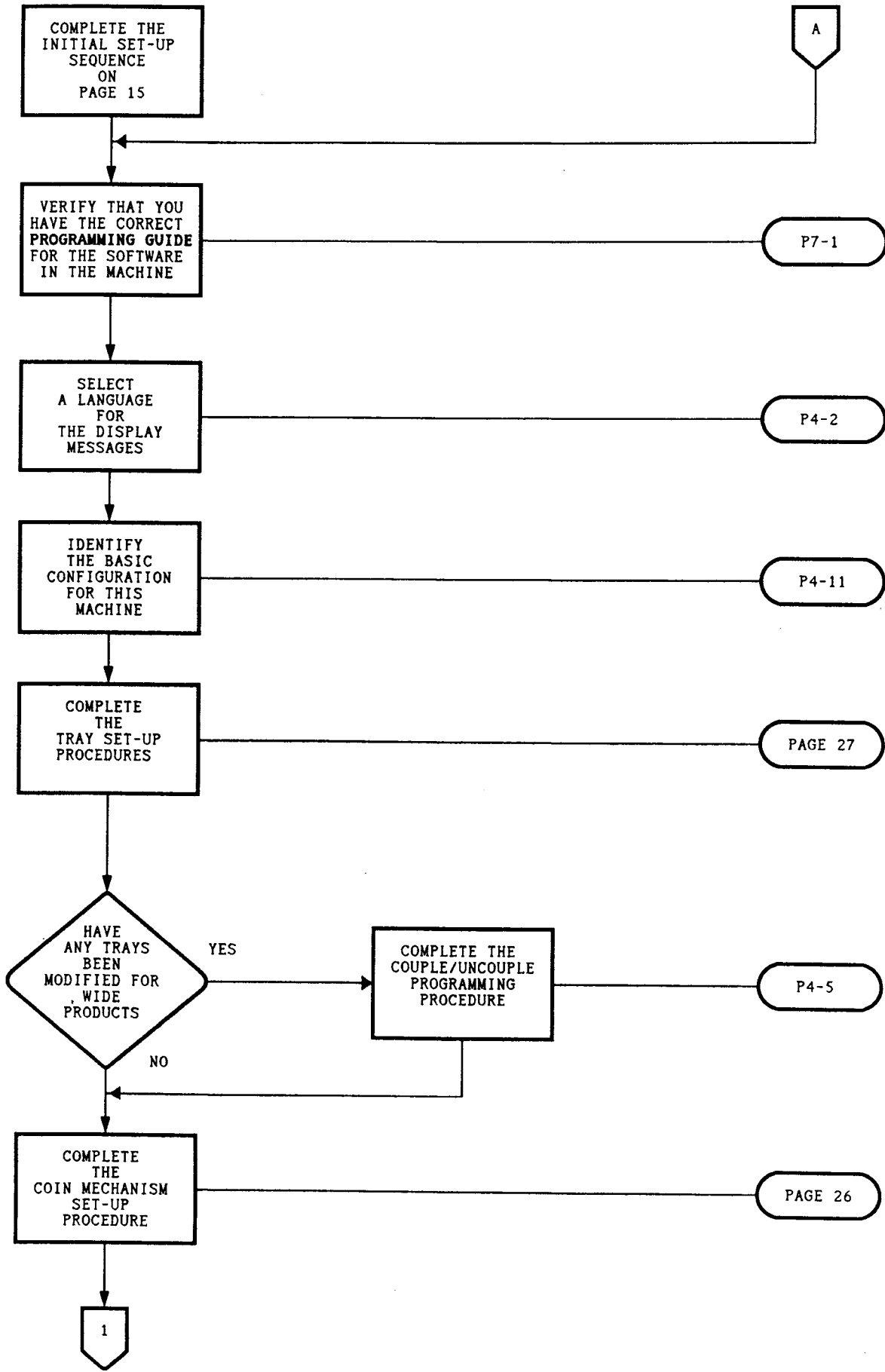
this contains a question or asks you to choose a direction

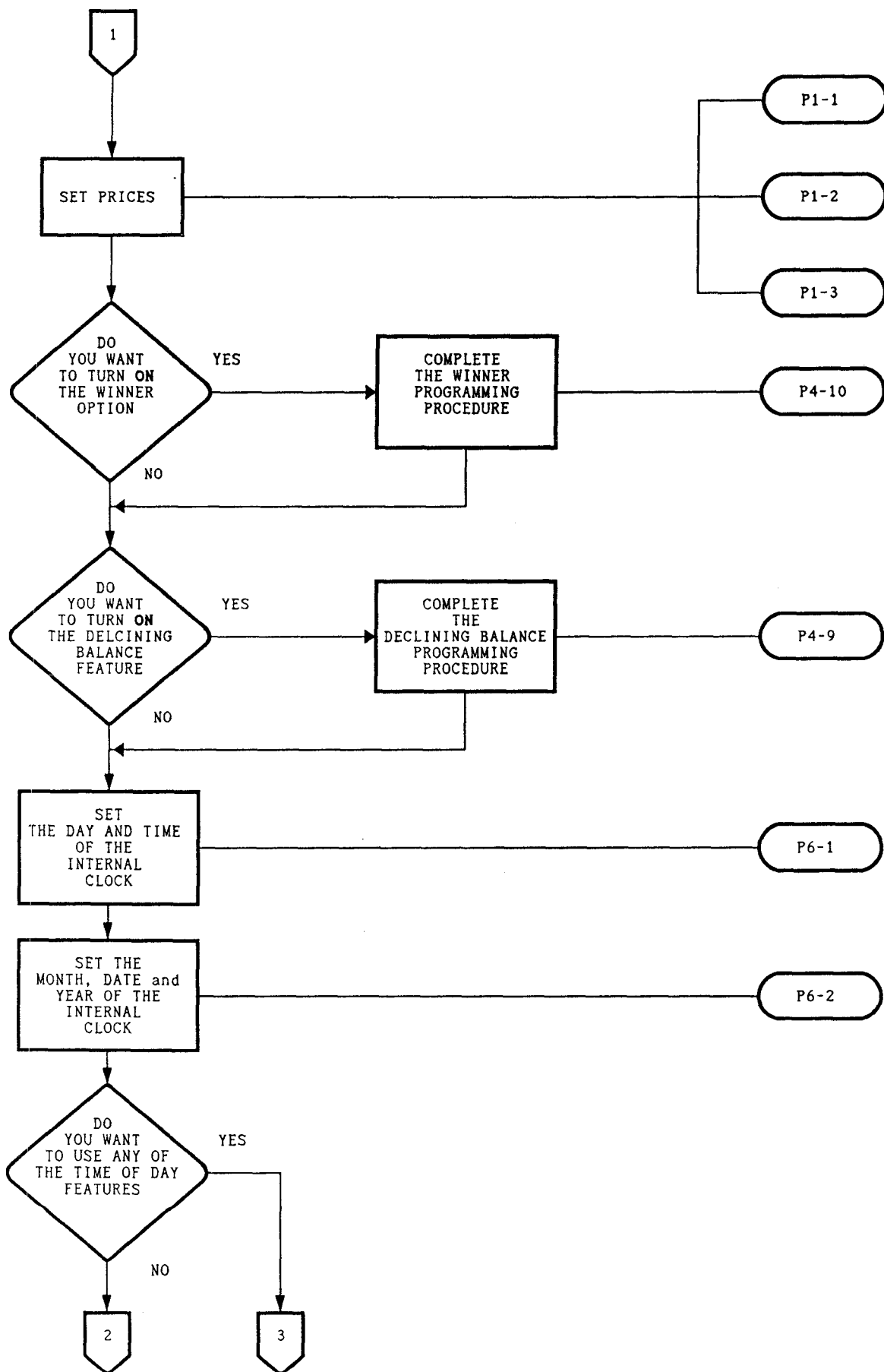


this refers you to procedure P7-1 in the PROGRAMMING GUIDE, part number 1470059.

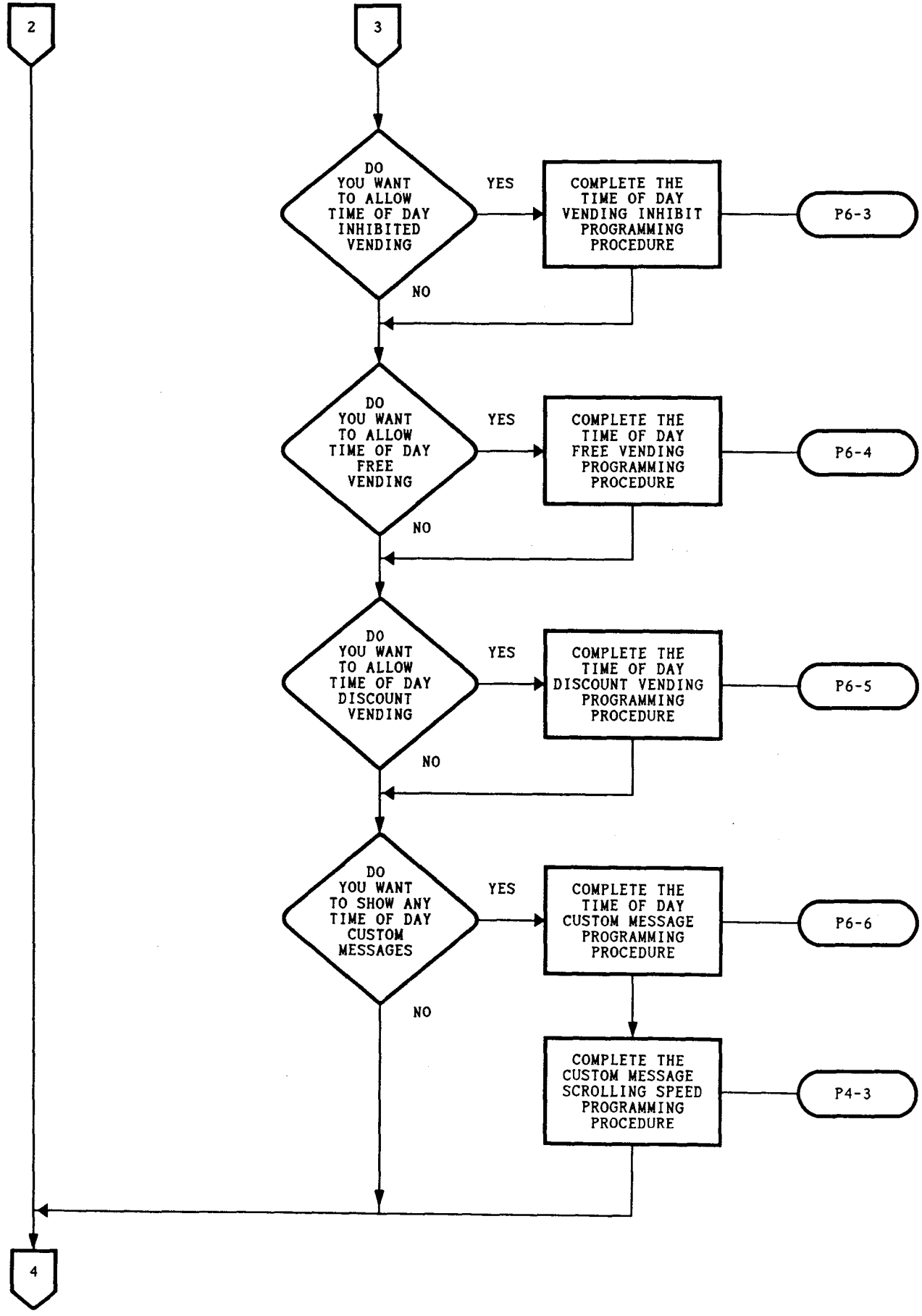


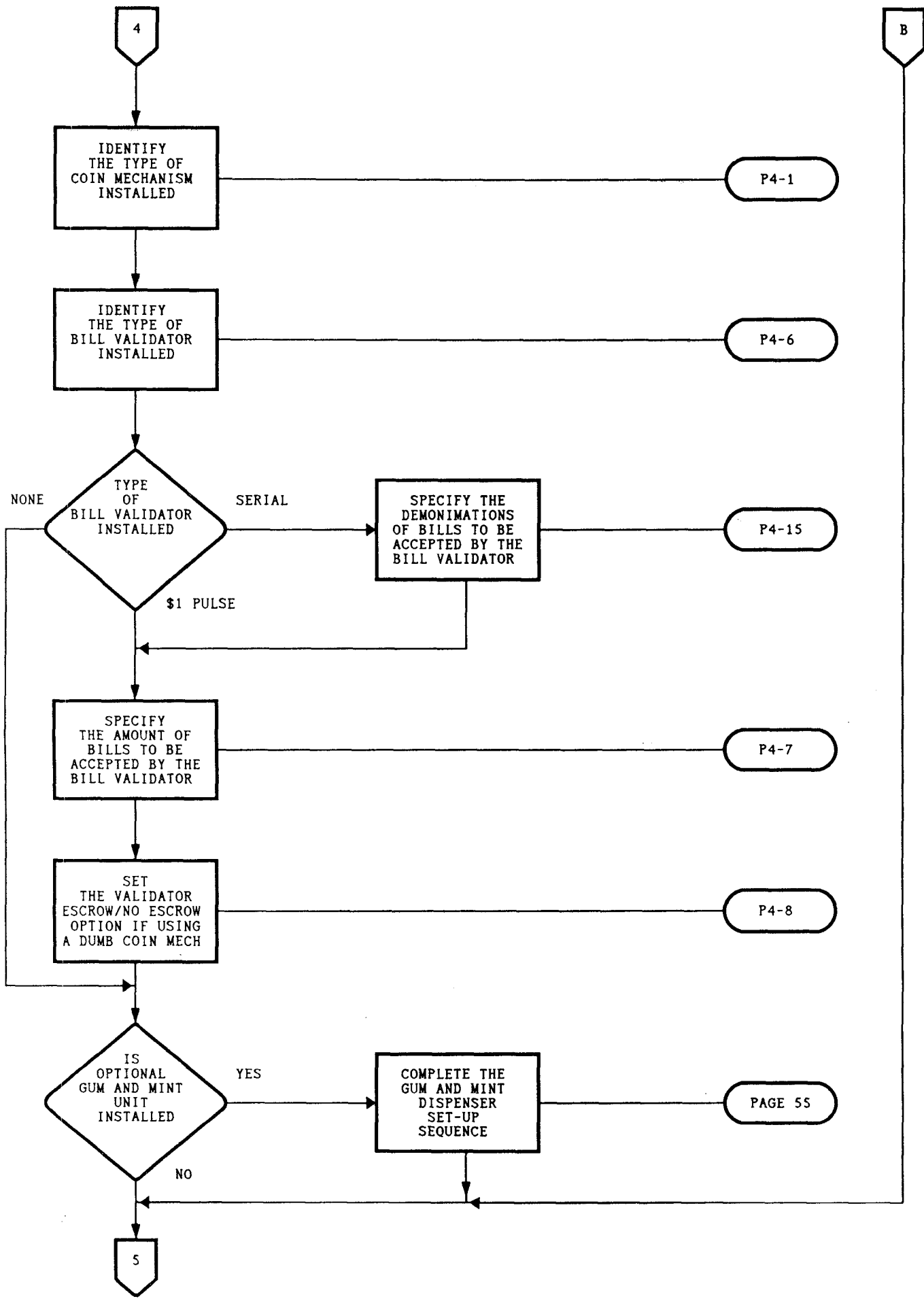
this refers you to page 26 in this manual



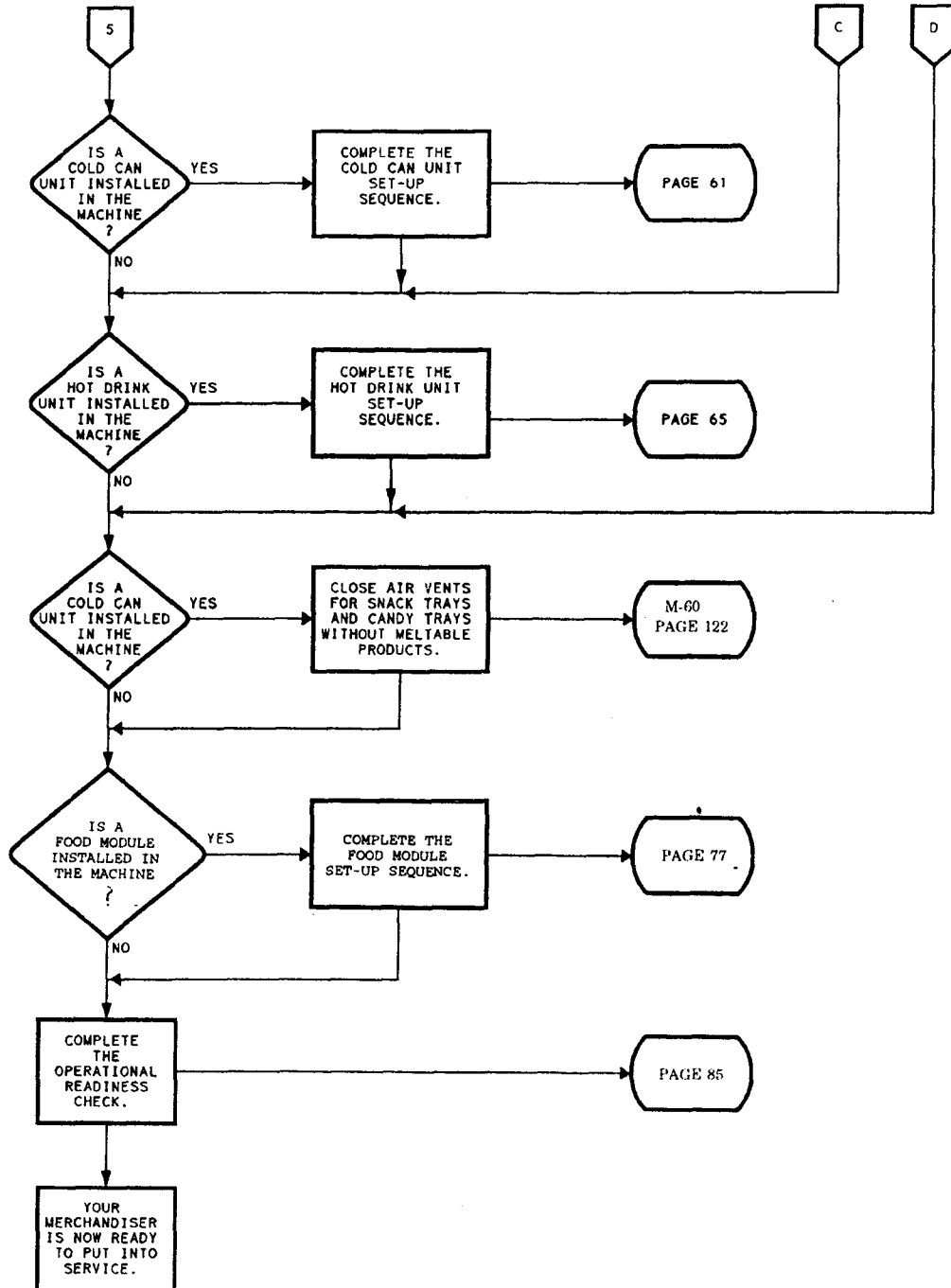


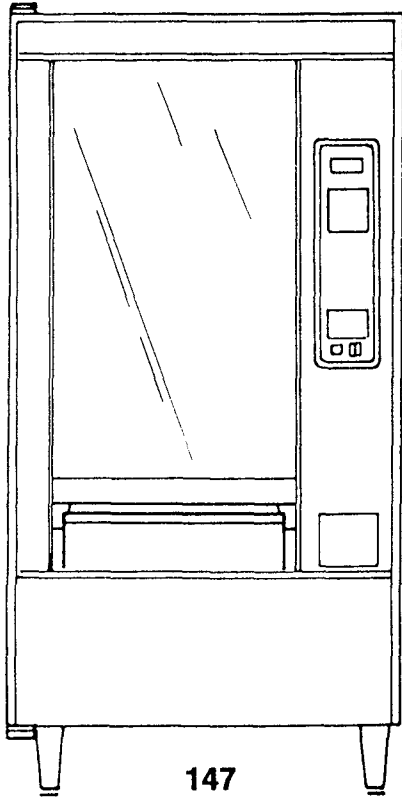
OVERVIEW (Continued)



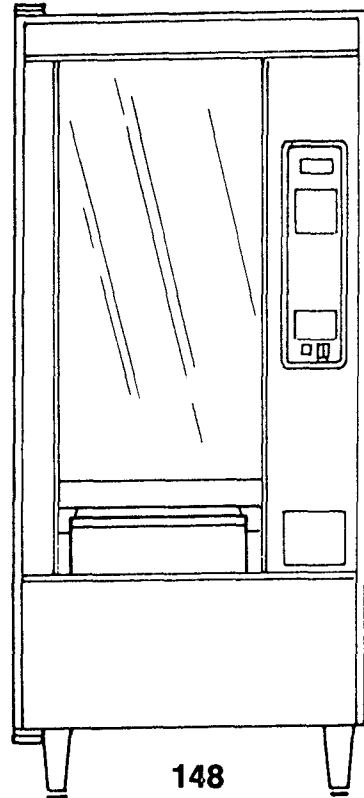


OVERVIEW (Continued)

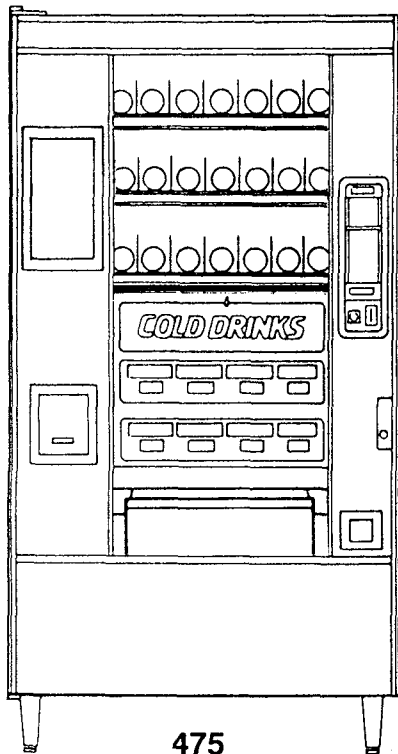




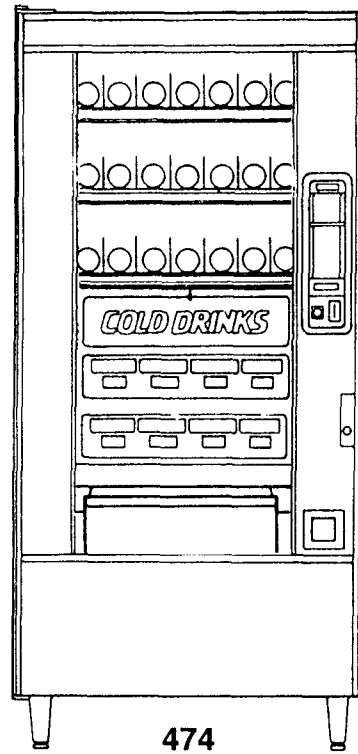
147
461



148
462



475
476
478
479



474
477

POWER REQUIREMENTS

U.S.	MODEL	VOLTS AC	AMPS	HZ	PHASE	OUTLET	TYPE
D O M E S T I C	147/148	115	15	60	Single	3-pin	GND
	461/462	115	15	60	Single	3-pin	GND
	474	115	15	60	Single	3-pin	GND
	475/476	115	20	60	Single	3-pin	GND
	FR	147/148	220-240	2	50	Single	
UK	461/462	220-240	2	50	Single		GND
GR	477	220-240	6	50	Single		GND
SP	478/479	220-240	11	50	Single		GND

NOTE: On foreign applications, German merchandisers **ONLY** use a 2-pin grounded plug.

CHECKING THE POWER OUTLET*VOLTAGE CHECK*

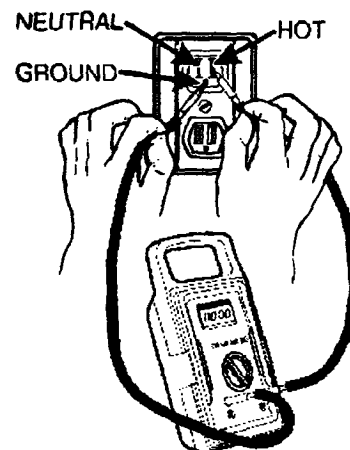
When placed across the **HOT** and **NEUTRAL** terminals, a volt-ohmmeter should indicate 110-130 volts ac.

POLARITY CHECK

When placed across the **HOT** and **GROUND** terminals, a volt-ohmmeter should indicate 110-130 volts ac.

NOISE POTENTIAL CHECK

When placed across the **NEUTRAL** and **GROUND** terminals, a volt-ohmmeter should indicate 0 volts ac. A reading of greater than 1.5 to 2.0 volts ac could result in noise problems for the electronic circuitry



WATER SUPPLY

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 REFRESHMENT CENTER. 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 REQUIREMENTS

Minimum water pressure: 10 psi (69.0 KPa) at 1/2 gallon/minute

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

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.

SUPPLY LINE REQUIREMENTS

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

TO CONNECT MERCHANDISER TO THE SUPPLY LINE

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 flare fitting

USING A WATER FILTER CARTRIDGE

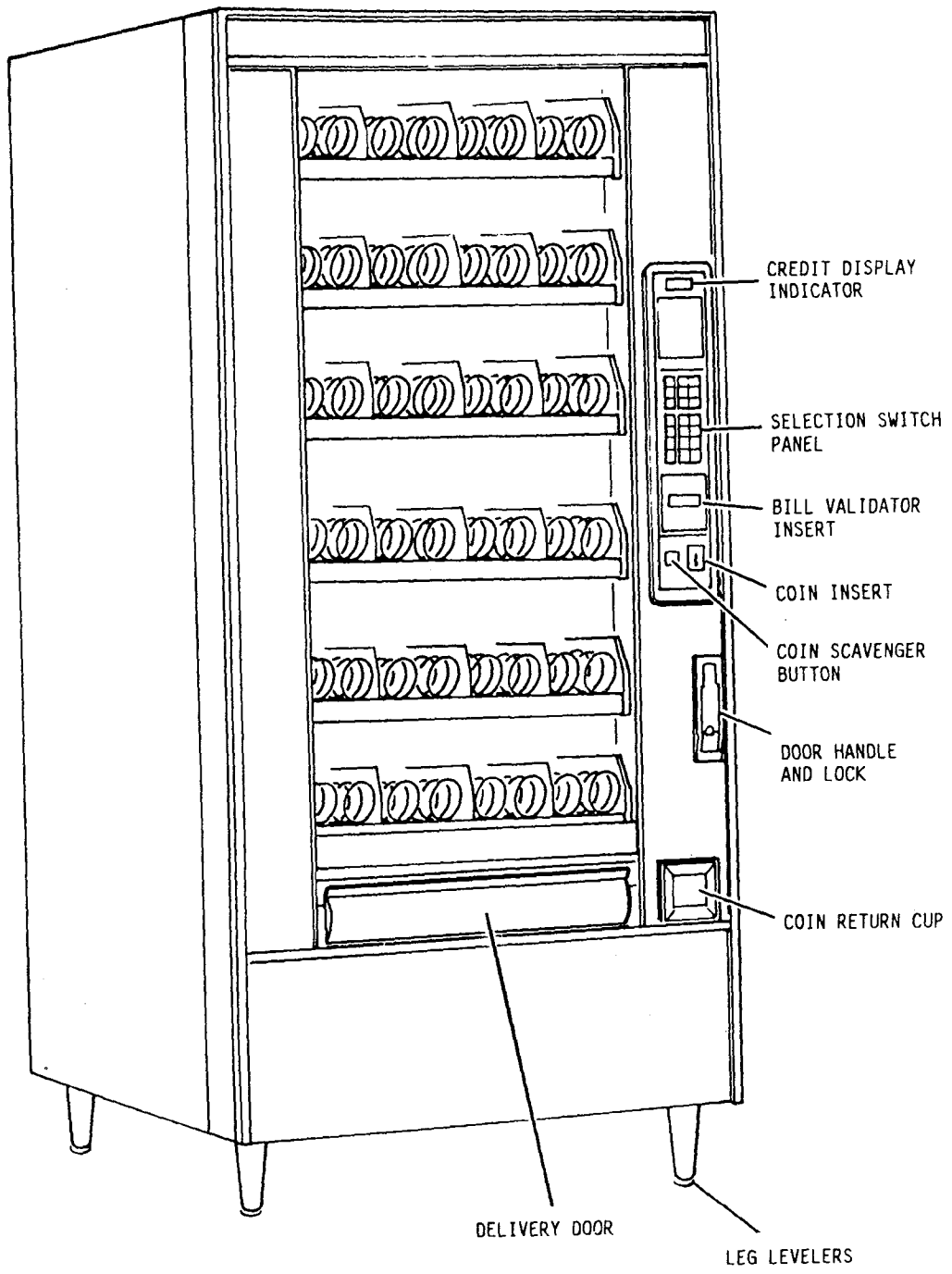
The filter cartridge supplied with this merchandiser will do the following:

- * Filter many particles suspended in the water
- * Introduce a good grade sequesterant into the water to inhibit the formation of lime scale when hard water is heated.

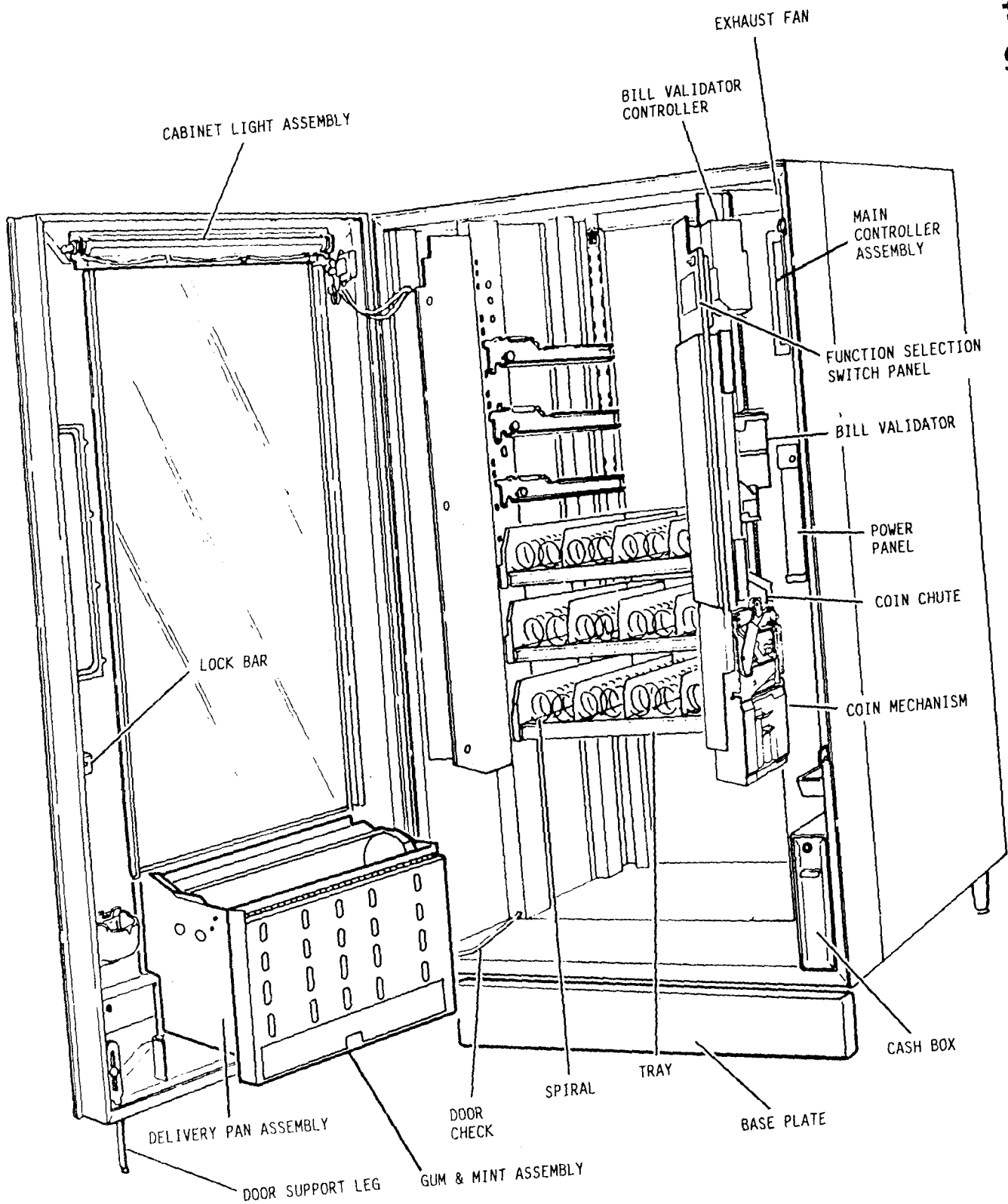
The filter cartridge is effective to the following limits:

- * 7 oz. cup - 26,000 vends
- * 8.25 oz. cup - 22,000 vends
- * 9 oz. cup - 20,000 vends

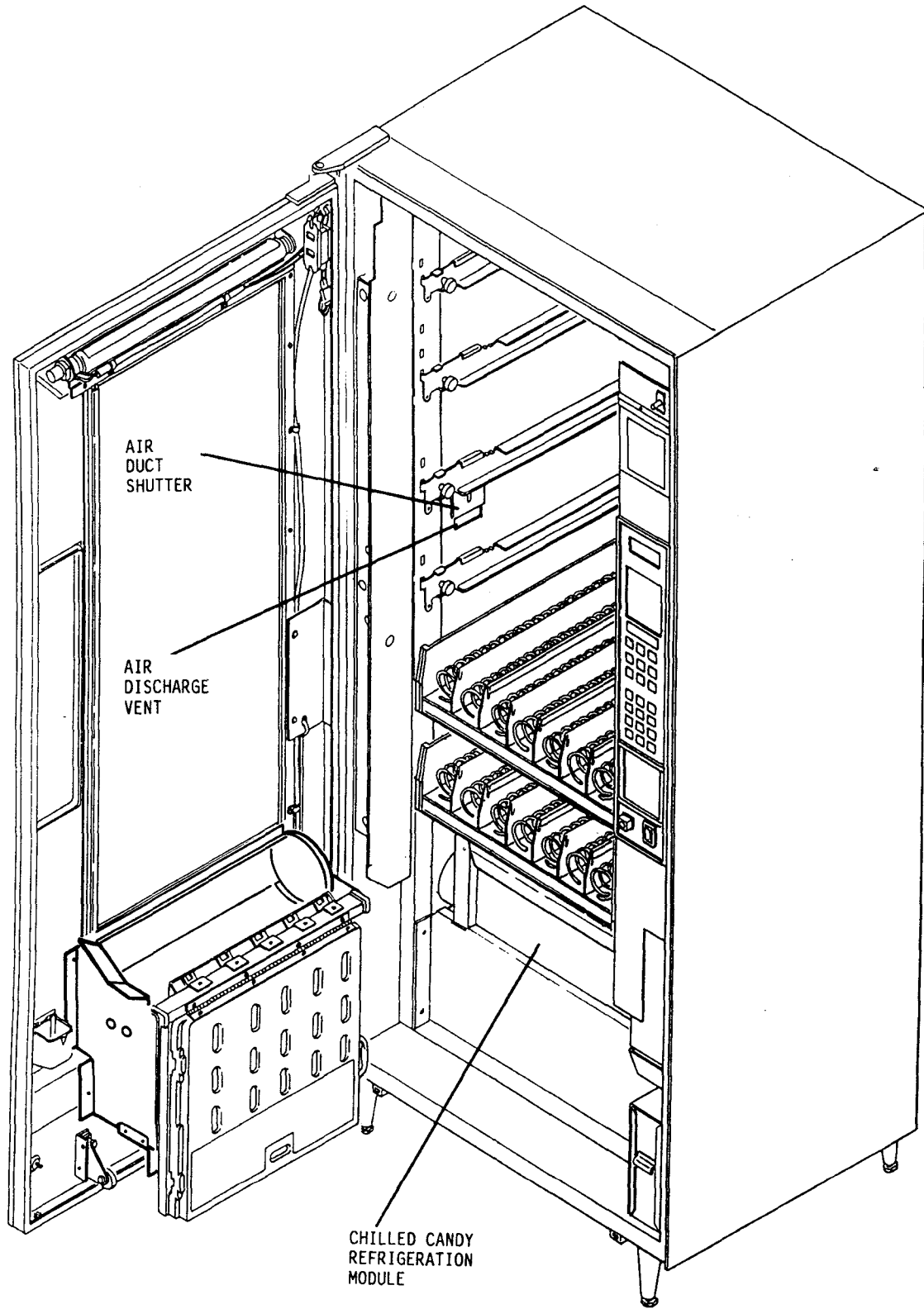
**I-3 IDENTIFICATION AND LOCATION OF
MAJOR ASSEMBLIES AND COMPONENTS**



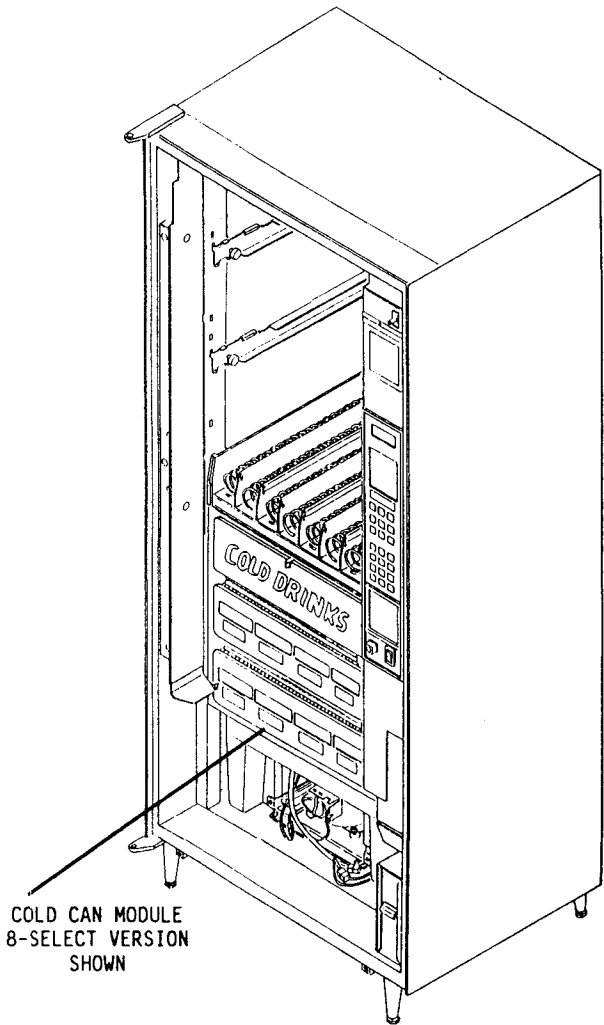
**MODEL 148 - EXTERIOR VIEW
(147, 461, 462 and 474 HAVE SIMILAR APPEARANCE)**



MODEL 148 - INTERIOR VIEW
(147 HAS SIMILAR APPEARANCE)

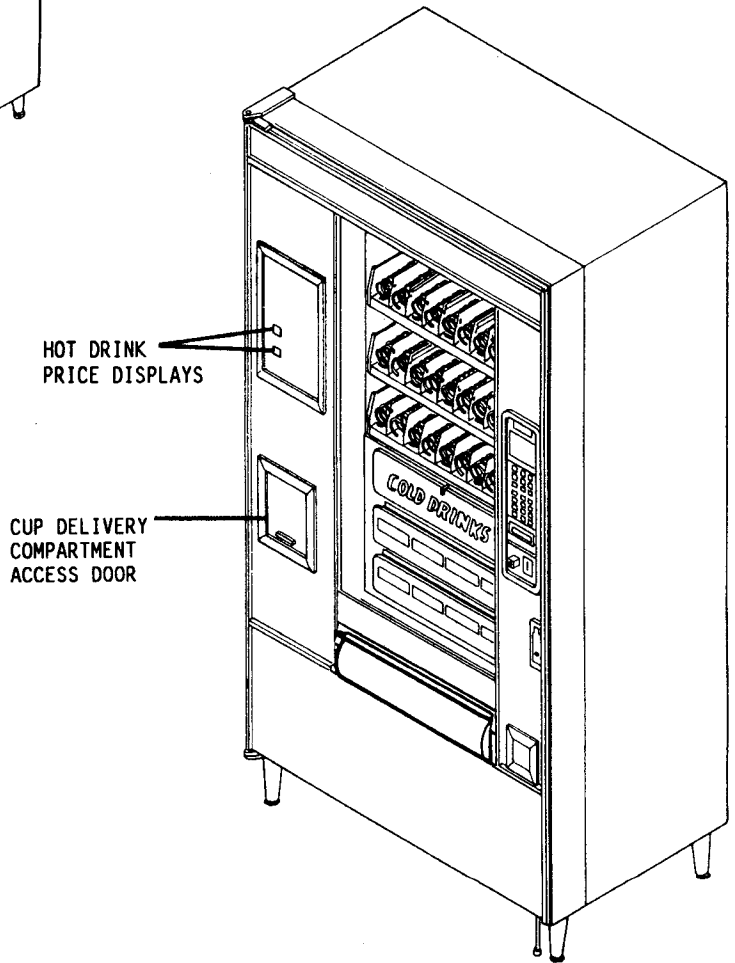


MODEL 462 - INTERIOR VIEW
(461 HAS SIMILAR APPEARANCE)



COLD CAN MODULE
8-SELECT VERSION
SHOWN

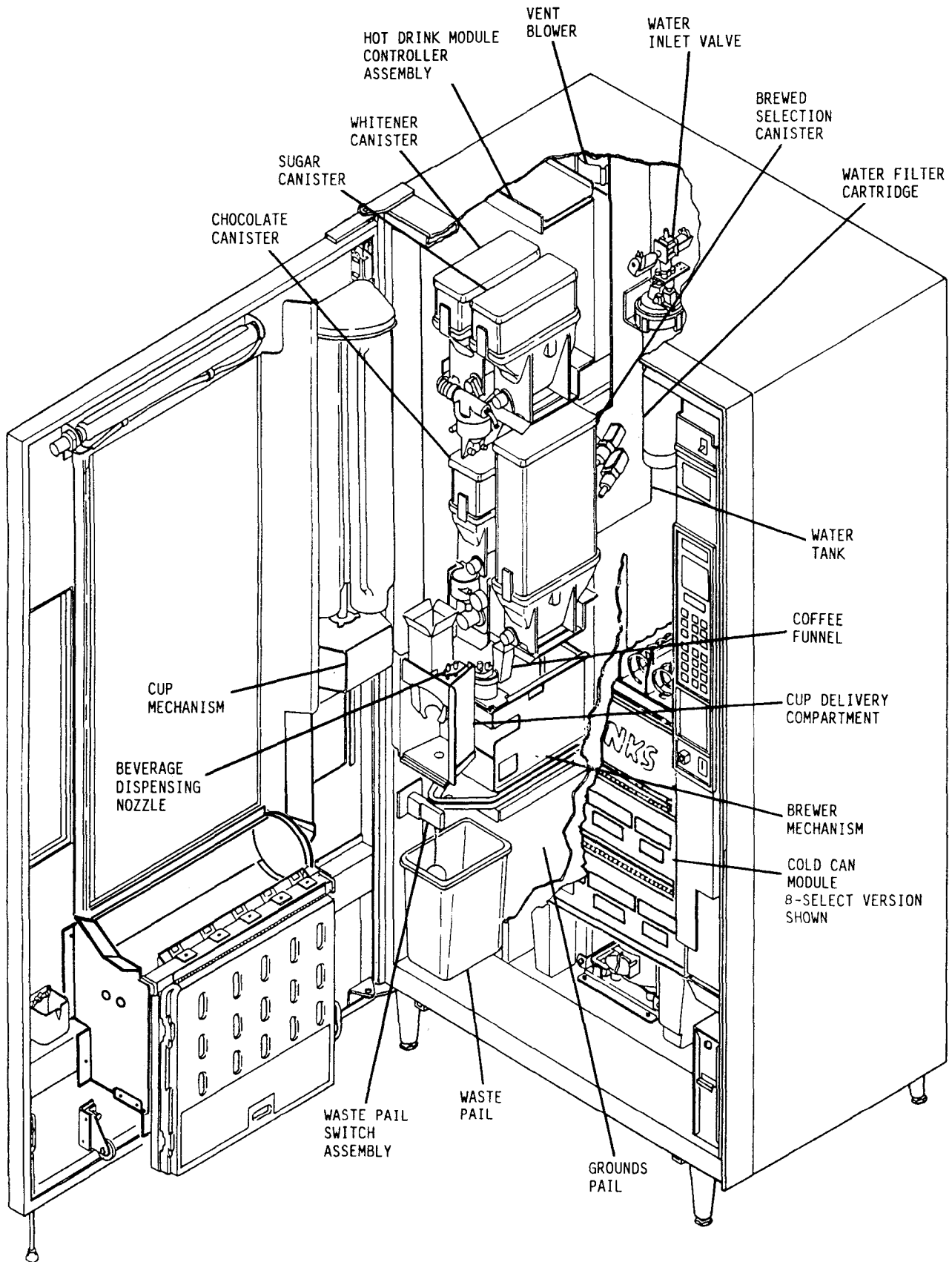
MODEL 474 - INTERIOR VIEW



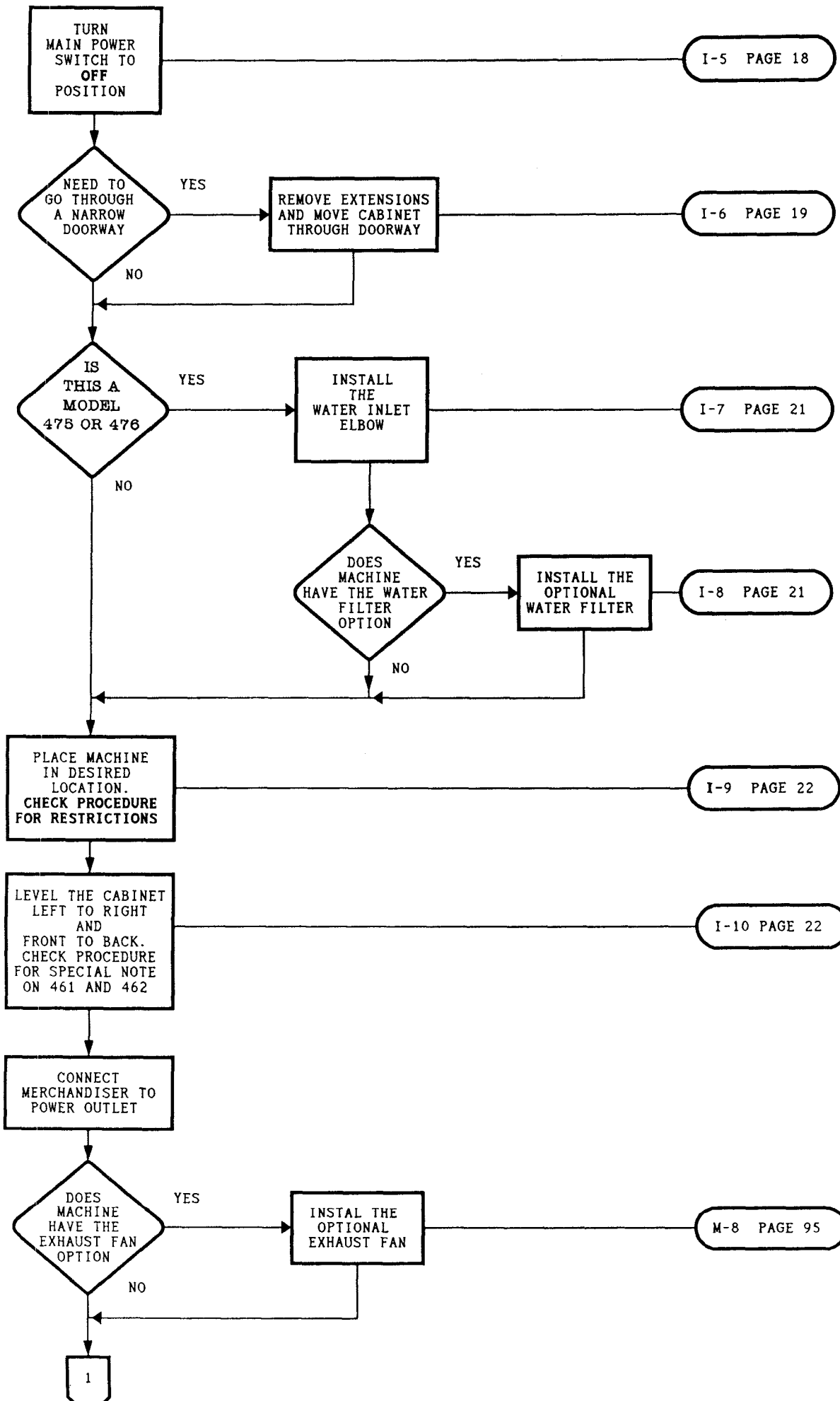
HOT DRINK
PRICE DISPLAYS

CUP DELIVERY
COMPARTMENT
ACCESS DOOR

MODEL 475/476 - EXTERIOR VIEW



MODEL 475/476 - INTERIOR VIEW



I-5 PAGE 18

I-6 PAGE 19

I-7 PAGE 21

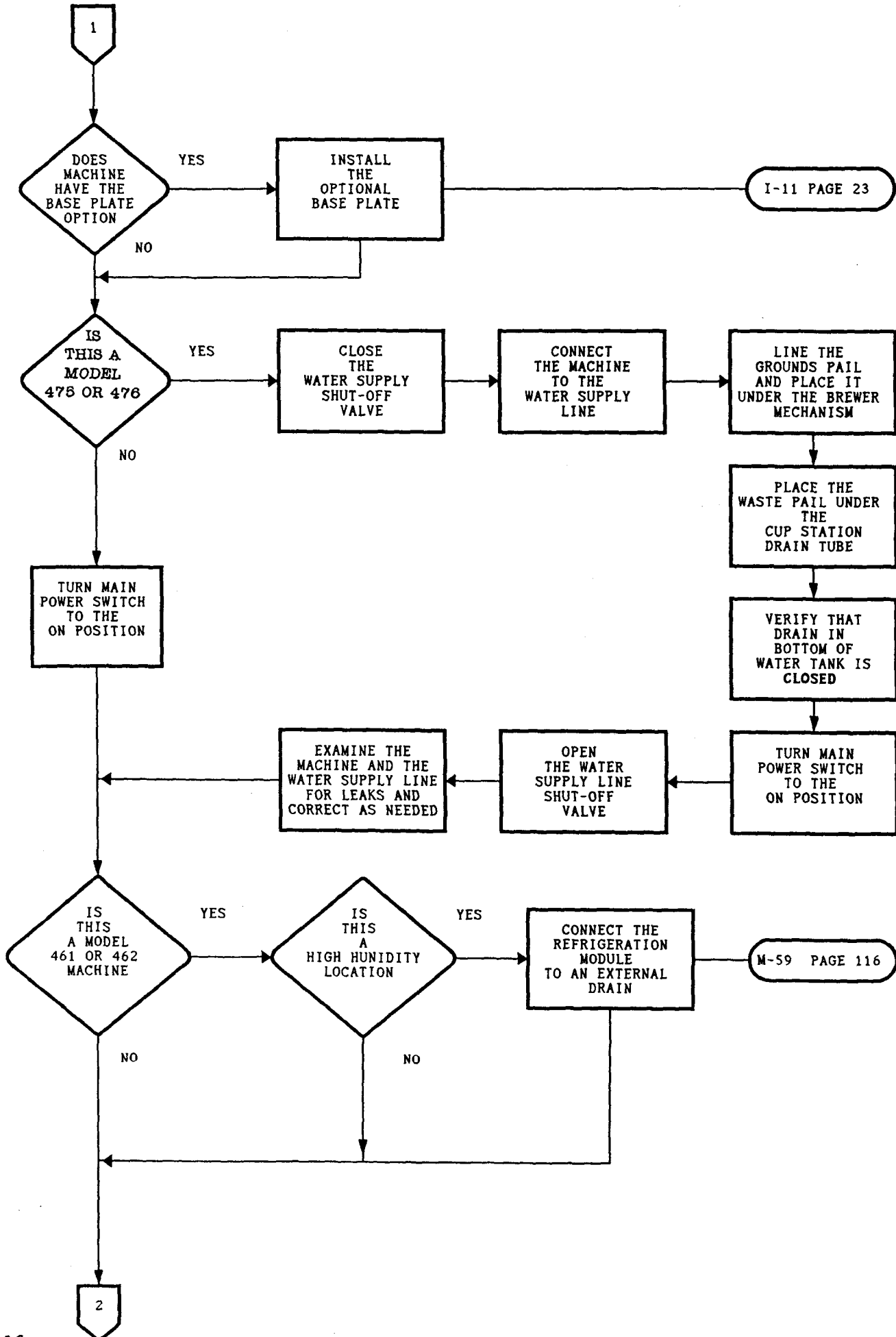
I-8 PAGE 21

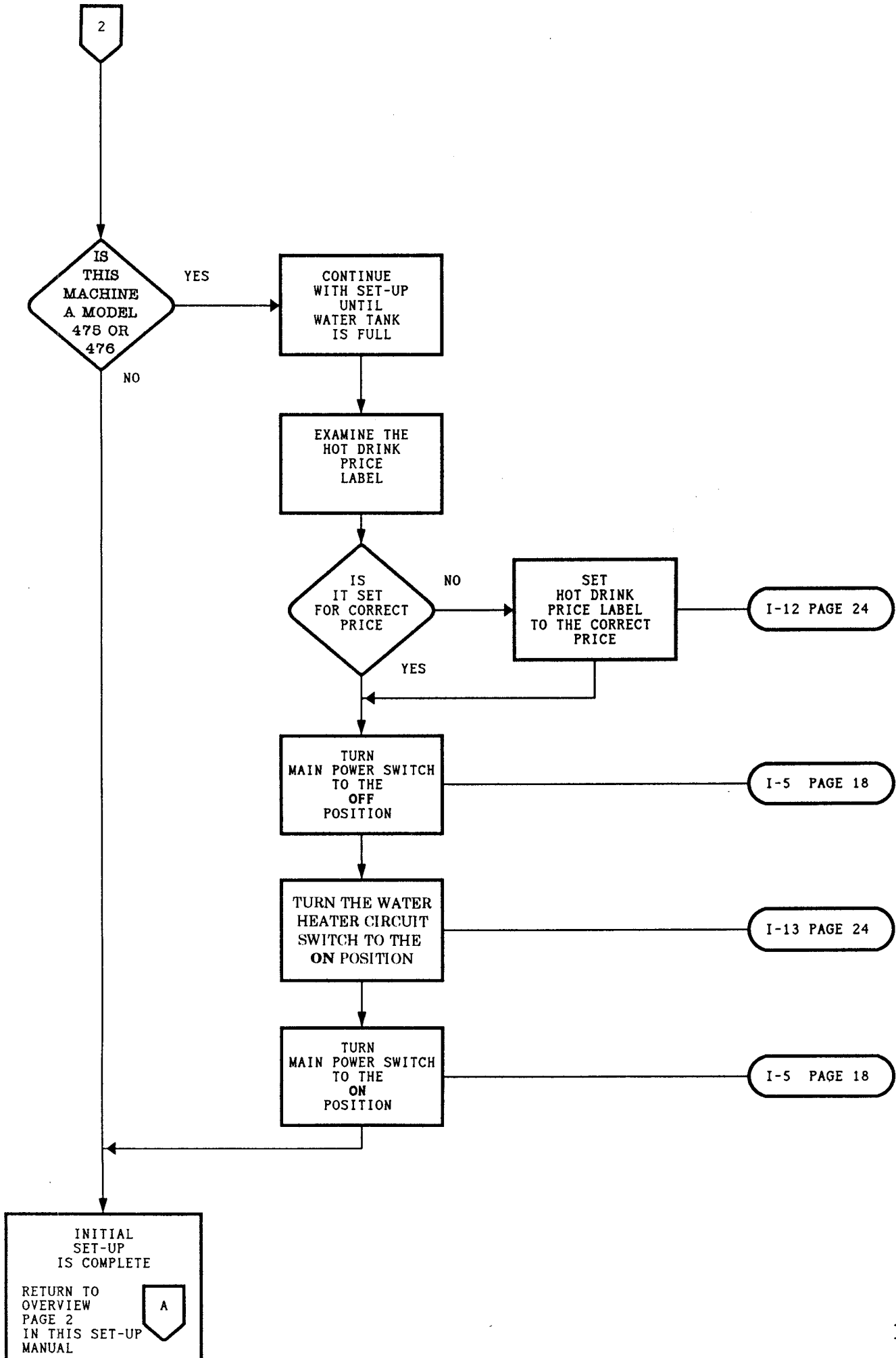
I-9 PAGE 22

I-10 PAGE 22

M-8 PAGE 95

1



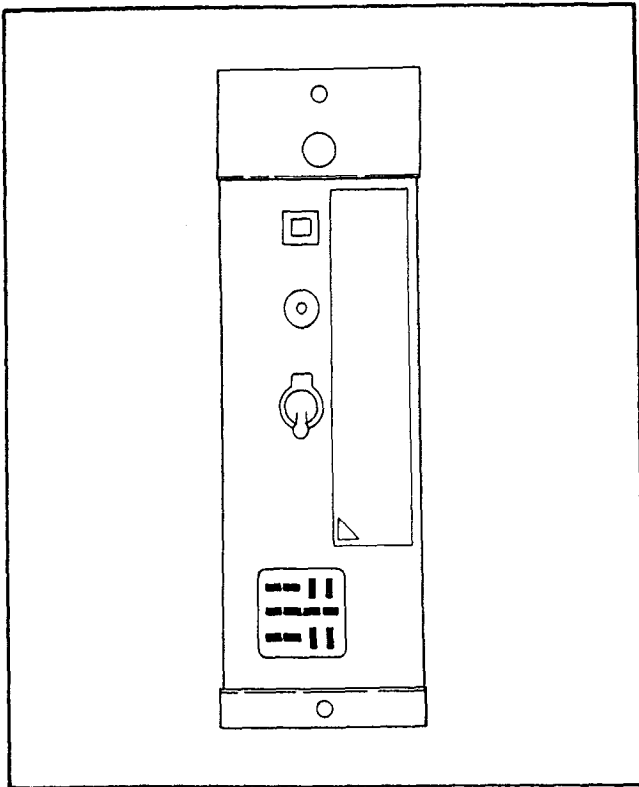


- * Power to the merchandiser is controlled by the Main Power Switch. It is located on the Power Panel.
- * The Power Panel is on the right side of the merchandiser, behind the monetary door.

WARNING

You should unplug the merchandiser whenever you do one of the following:

- Change a fuse
- Change the flourescent lamp
- Change the lamp starter
- Connect or disconnect a harness
(Except a motor harness when the tray has been removed)



NOTE

The Tray List feature (P4-9) is set at the factory to list the trays that were installed at the time of shipping. If any trays are not locked in place and do not make good electrical contact, the display will alternate between:

ID TRAY - UNLATCHED

when the door is closed. You will hear a beeping sound. This condition will continue for one minute. The normal stand-by message will return to the display at the end of this period of time. You may disable this feature by using procedure P4-9 to remove all trays from the list.

This merchandiser can be moved through an opening as narrow as 30 inches by removing the Cabinet Extensions.

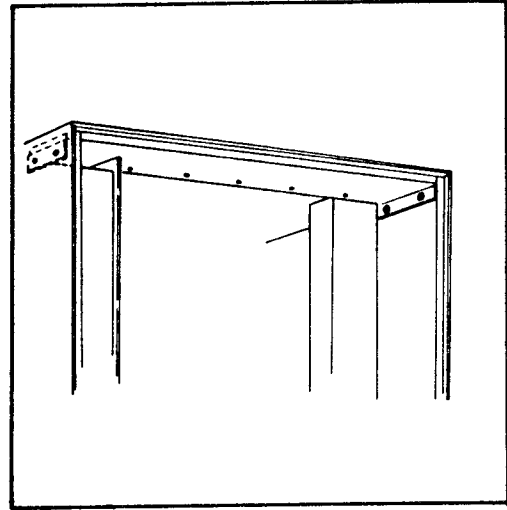
REMOVING THE TOP EXTENSION (Figure -A)

* Remove the two screws that secure each end of the extension to the sides of the cabinet.

* Model 147 - Remove the other five screws that secure the extension to the cabinet.

Model 148 - Remove the other four screws that secure the extension to the cabinet.

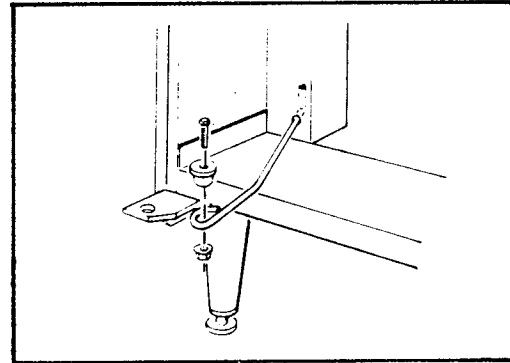
* Pull extension forward to remove it from the merchandiser.



REMOVING THE DOOR CHECK (Figure -B)

* Remove the nut and bolt that secure the Door Check to the Door Check Plate.

* Pull the Door Check fully forward, lift upward and pull the short end of the Check from the Door Check Plate and Spring Assembly.



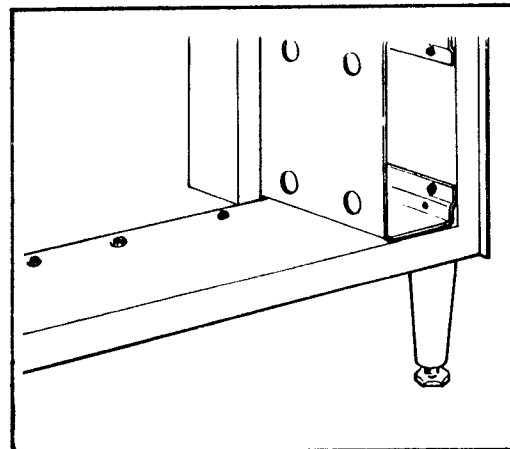
REMOVING THE BOTTOM EXTENSION (Figure -C)

* Remove the two screws that secure each end of the extension to the sides of the cabinet.

* Model 147 - Remove the other five screws that secure the extension to the bottom of the cabinet.

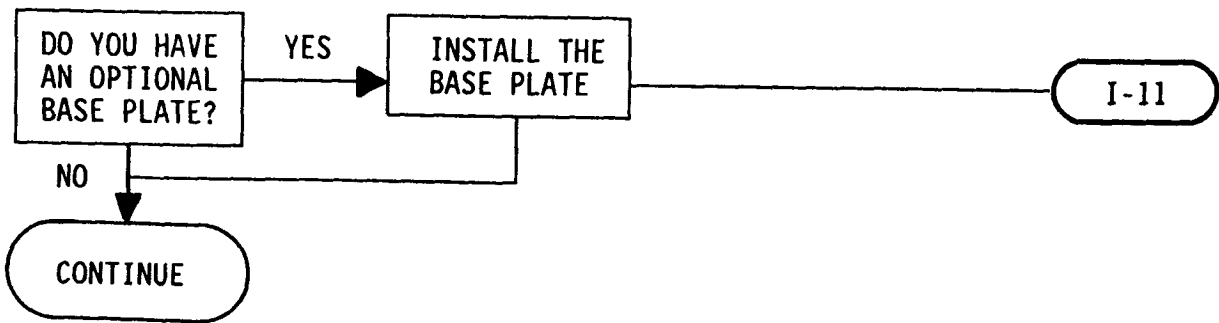
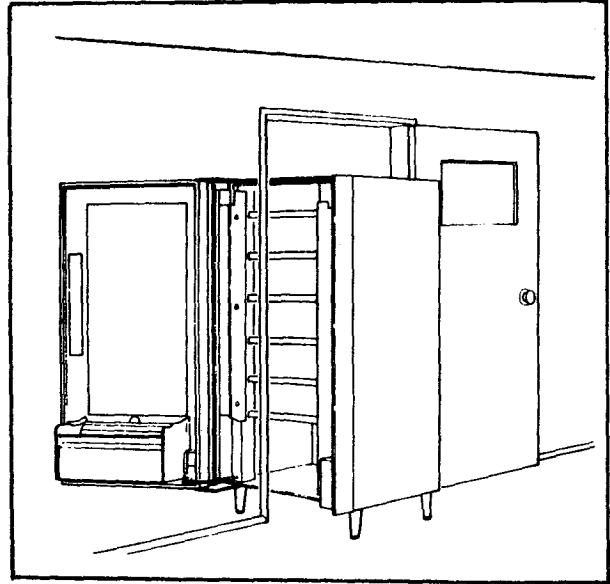
Model 148 - Remove the other four screws that secure the extension to the bottom of the cabinet.

* Pull the extension forward and remove it from the cabinet.



TAKING THE MERCHANDISER THROUGH THE OPENING

- * Open the Cabinet Door and place it square with the left side of the Cabinet.
- * Carefully walk the merchandiser through the opening.



REASSEMBLE THE MERCHANDISER

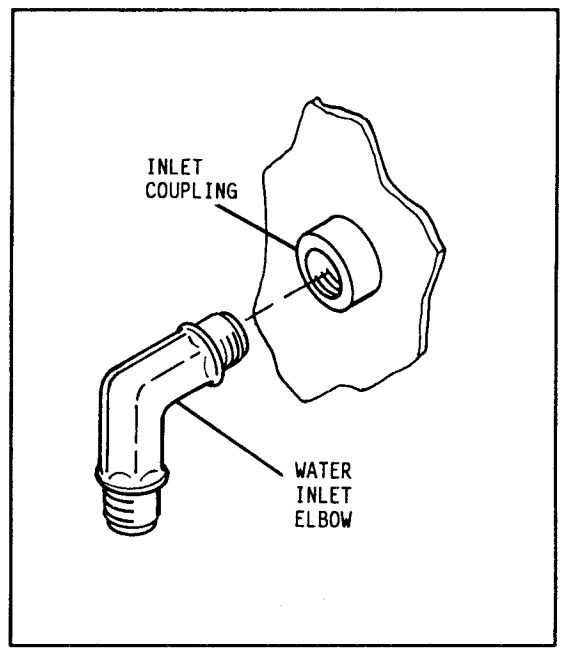
- * Replace the Upper Extension.
- * Replace the Lower Extension.
- * Replace the Door Check.

INSTALLING THE WATER INLET ELBOW

A 3/8 Flare x 3/8 NPTF elbow fitting is included in the same envelope that contained this manual.

Apply a thin coating of TEFLON PASTE to the threads if they are not coated.

Turn the pipe thread end of the elbow into the inlet coupling mounted in the back wall of the cabinet.



CAUTION

DO NOT OVER TIGHTEN THE ELBOW OR THE WELD BETWEEN THE COUPLING AND THE CABINET MAY BREAK.

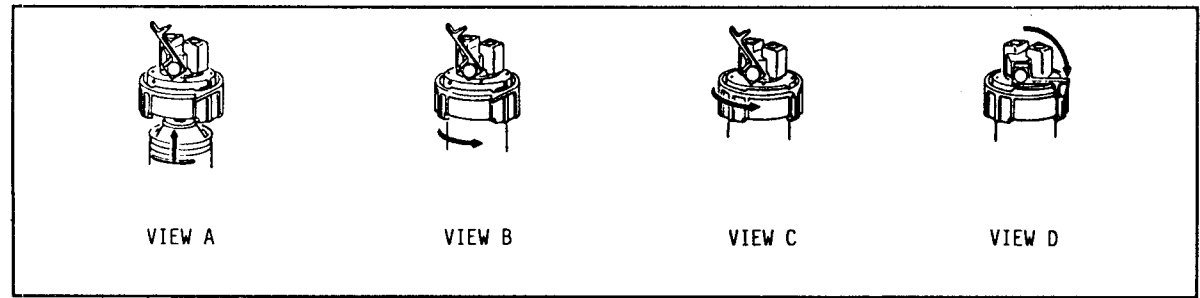
TO INSTALL A WATER FILTER CARTRIDGE

- * Main Power Switch should be in the OFF position.
- * Flip the Lock Lever UP (View A).
- * As viewed from above, rotate the Locking Collar clockwise about 60# until it drops to the filter receiving position.
- * Align the raised rib near the top of the cartridge with the ribless portion of the locking collar.
- * Push the cartridge up into the filter head (View B).
- * As viewed from above, rotate the cartridge clockwise until the Lock Lever engages the Locking Collar (View C).
- * Push the Lock Lever DOWN (View D).

Do not flush the water filter cartridge.

The water filter assembly cannot be operated without a properly installed water filter cartridge.

The Valve Handle on the Water Filter Head is used to open and close the water inlet to the merchandiser.



POSITIONING THE MERCHANDISER

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

The 147 and 148 merchandisers should be located at least one inch away from the back wall.

The 461, 462, 474 and 475 merchandisers should be placed at least six inches away from the back wall. This will provide adequate air circulation for the refrigeration unit.

The 461 and 462 merchandisers will operate more efficiently when placed in a shaded location.

There should be enough room in front of the merchandiser for the door to move freely.

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

LEVELING THE MERCHANDISER**IMPORTANT**

A level merchandiser is less likely to tip over and cause personal injury.

Level the merchandiser from right to left and from front to back. Use of a spirit level is recommended.

A slight slope from front to back will improve the draining of condensate from 461 and 462 merchandisers.

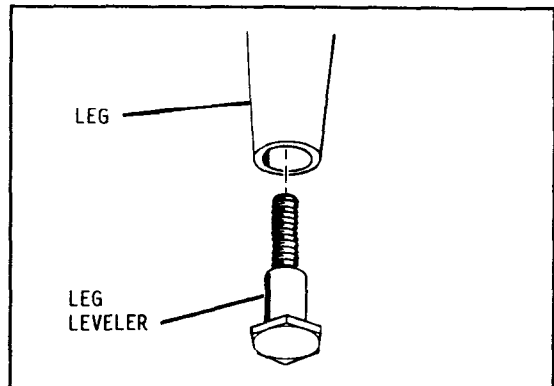
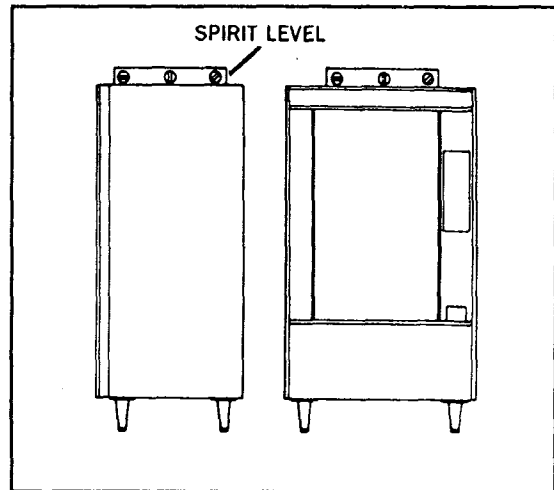
When the merchandiser is part of a bank of machines, it should be leveled in reference to the other machines.

CAUTION

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

If the merchandiser is not level, move the Leg Levelers in or out to make it level.

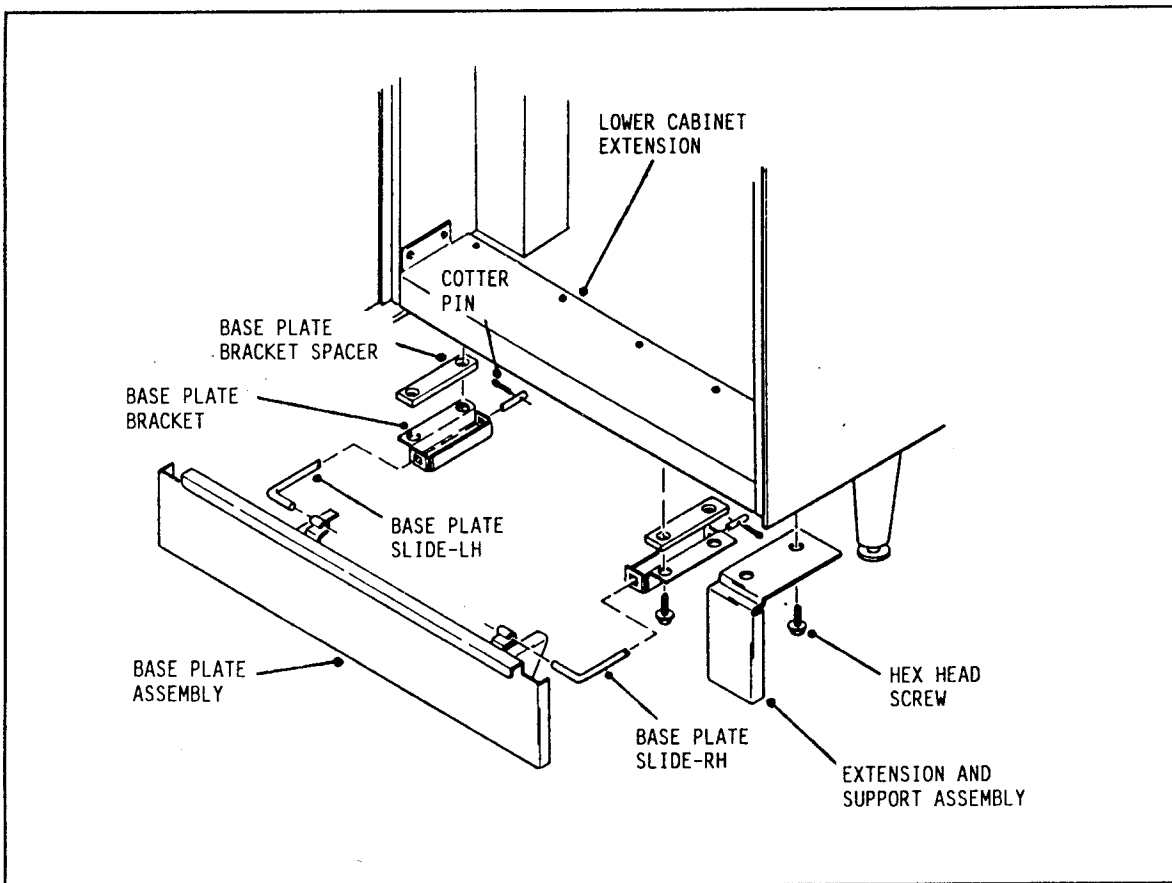
You may need to use pliers or channel locks to loosen the leg levelers.



MOUNTING THE EXTENSION & SUPPORT ASSEMBLY AND THE BASE PLATE BRACKETS

The pair of mounting holes furthest to the right side should be used when mounting the Extension and Support Assembly. Use two of the self-tapping hex head screws to secure the assembly to the cabinet extension.

Use two of the hex head screws to secure a Base Plate Bracket Spacer and a Base Plate Bracket at each of the remaining pairs of holes.



MOUNTING THE BASE PLATE AND SLIDES

Insert the short arms 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.

Insert the long arms of the slides into the base plate brackets.

Insert a cotter pin through the hole in the back end of each of the slides. Secure the pins in place.

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.

ADJUSTING THE HOT DRINK PRICE LABELS

Remove the cup turret assembly to access the price labels.

The upper price roll is for the coffee selection.

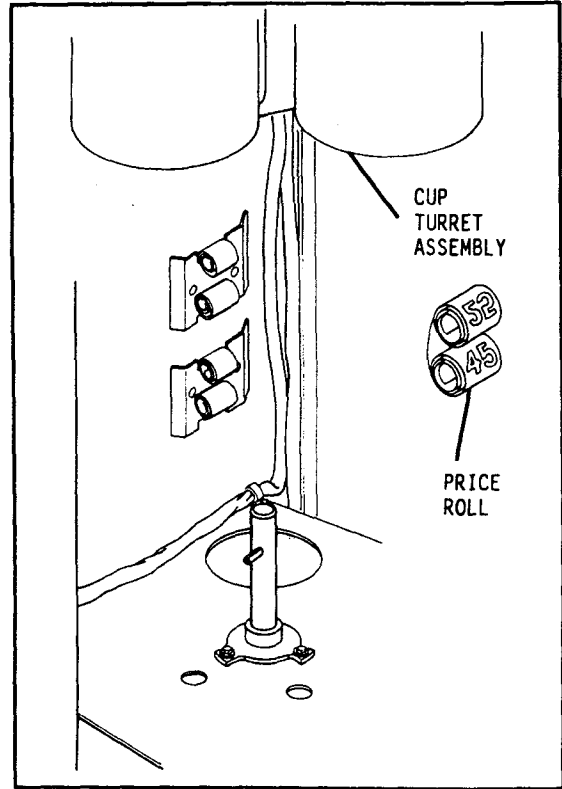
The lower price roll is for the hot chocolate selection.

Scroll the price roll down to decrease the price.

Scroll the price roll up to increase the price.

View price from front of door. Verify that price is correct and is centered.

Replace the cup turret assembly.

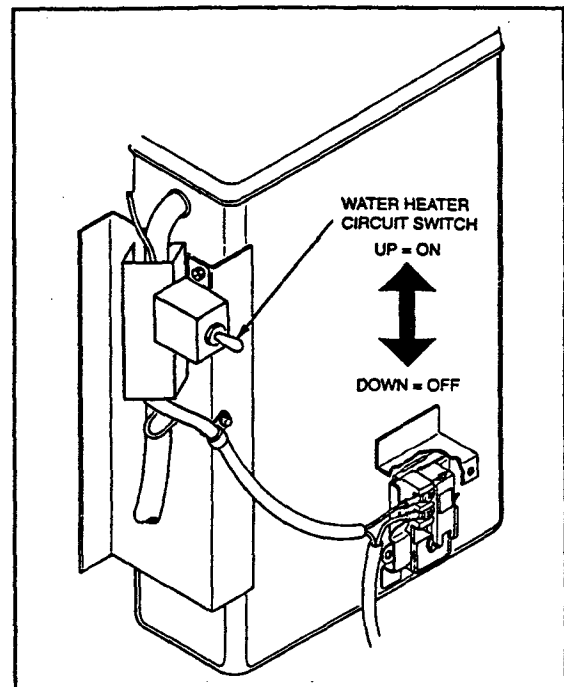


ENERGIZING THE WATER TANK HEATER CIRCUIT

The water tank heater circuit is turned "OFF" at the factory.

Turn the circuit "ON" when the tank is 1/2 full.

Always turn the heater circuit "OFF" when emptying the water tank.

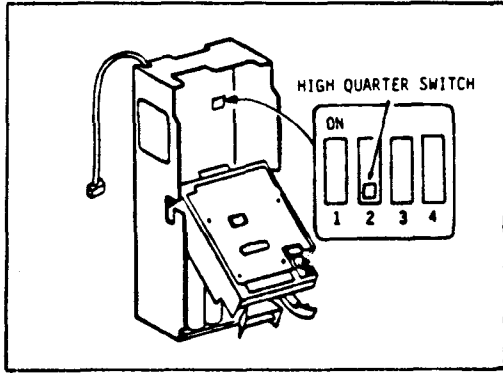


The information in this part of the manual has been provided to help you prepare the merchandiser for vending.

MODEL and APPLICATION			DESCRIPTION	PAGE
147, 148, 461 and 462	474	475		
X	X	X	Coin Mechanism Set-Up Guide	26
X	X	X	Tray Set-Up Guide	27
X	X	X	Gum & Mint Dispenser Set-Up Guide	55
	X	X	Cold Can Module Set-Up Guide	61
		X	Hot Drink Module Set-Up Guide	65

- * If the changer is not a MARS TRC 6000, procede to "Loading the Coin Mechanism".
- * If the changer is a MARS TRC 6000, you must set the high quarter switch.

SETTING THE QUARTER SWITCH

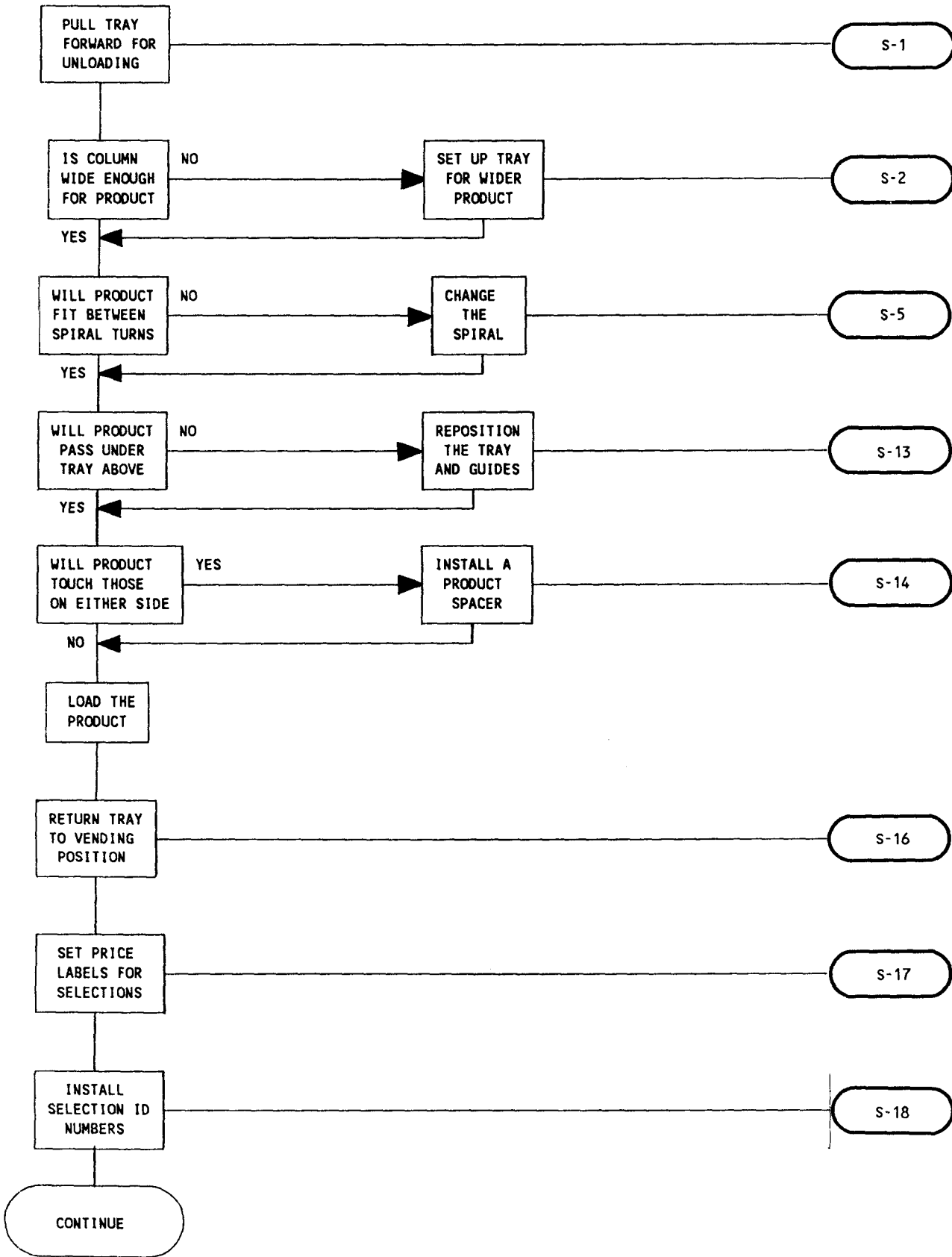


QUARTER SWITCH POSITION	ACTION
LOW	Will accept only one \$1.00 bill.
HIGH	Will accept \$1.00 bills equal in value to first whole dollar above highest vend price.

LOADING THE COIN MECHANISM

- * Open the Cabinet Door.
- * Open the Monetary Door.
- * Insert coins one at a time until each of the coin tubes has been filled.
- * Inspect the tubes for shingled coins and correct if necessary.

MECHANICAL SET-UP OF TRAYS



S-1 Putting Tray In Loading Position

- * Place both hands on the Tray as shown in Figure S-1a.
- * Lightly push back on the Tray with your palms. This will release the Tray Catches on the sides of the Tray.
- * Push down on the Tray Catches with your thumbs.
- * Pull the Tray forward until you hear and feel the rear rollers of the Tray drop into a cut-out in the top of the Guide Rail.
- * Continue pulling the Tray forward for another inch. You will then be able to tilt the Tray downward into the loading position as shown in Figure S-1b.

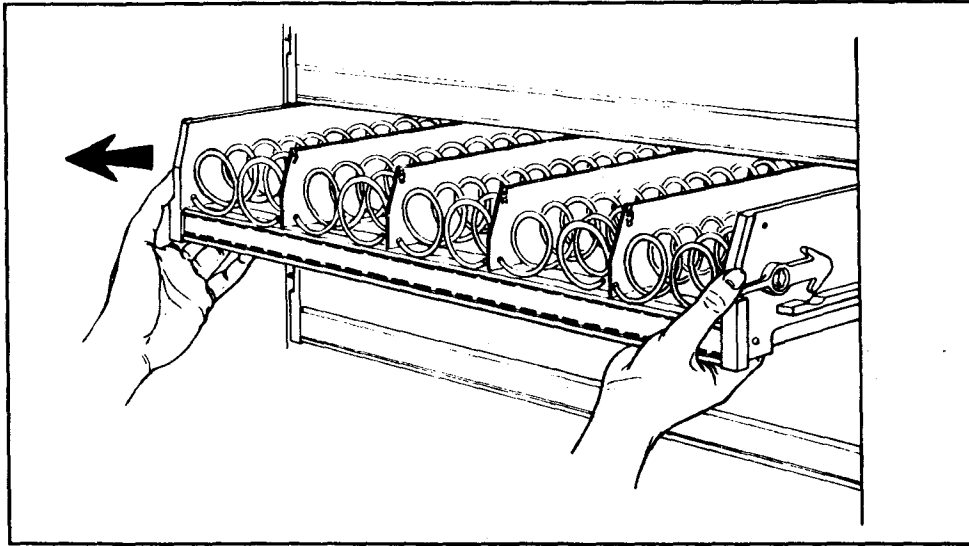


Figure S-1a

NOTE

When the Cabinet Door is not fully open, the bottom tray will rest on the Delivery Pan Assembly. Handle the Tray with care to avoid scratching the Delivery Pan Assembly.

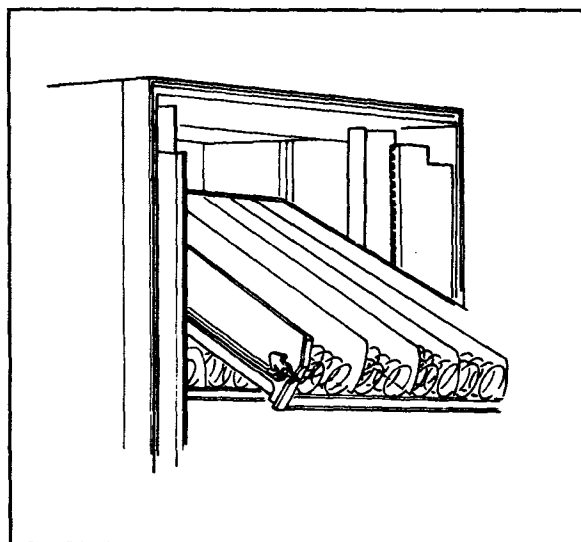
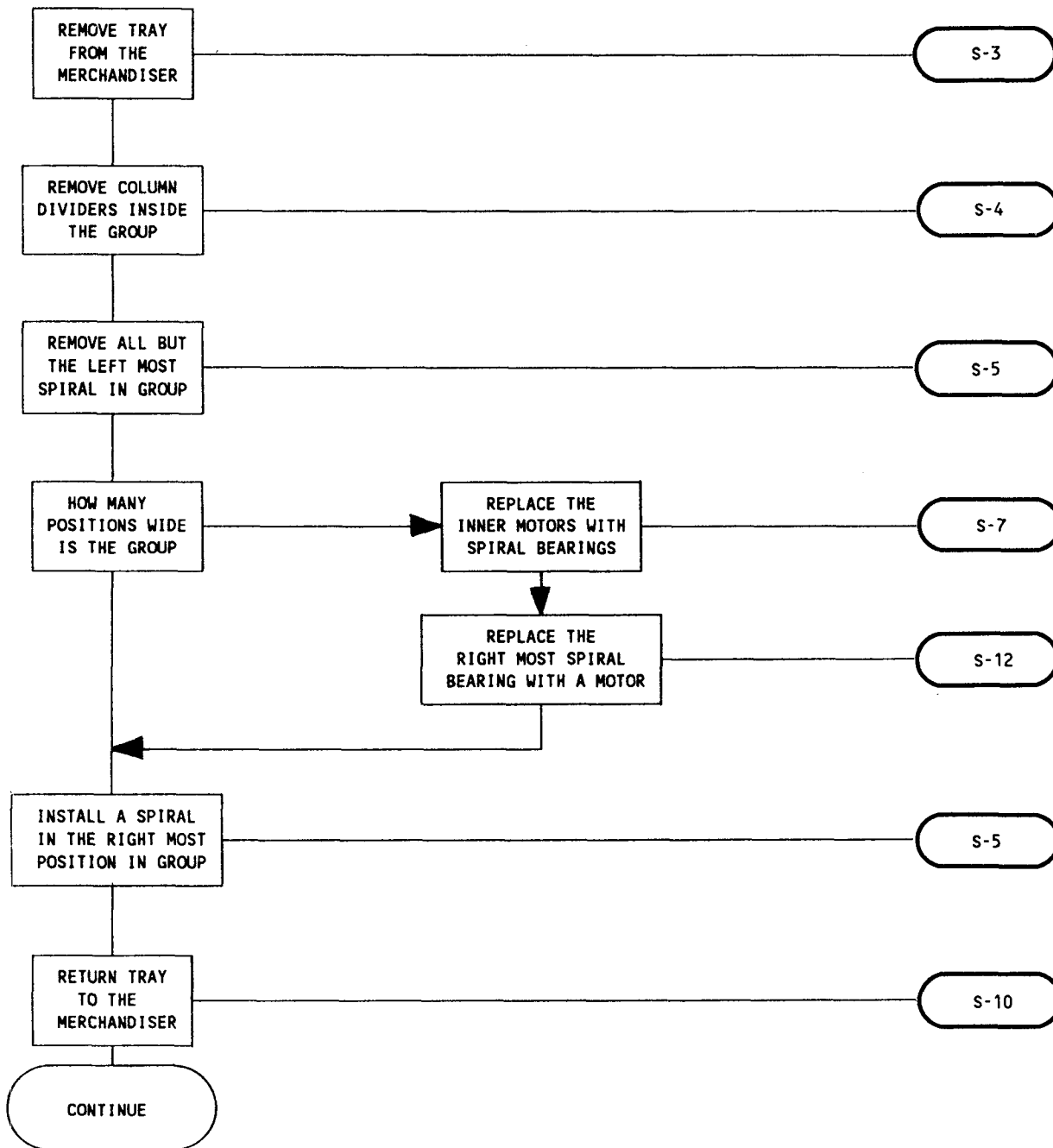


Figure S-1b

**CANDY TRAY
SET-UP FOR WIDER PRODUCTS**



NOTE

The left-most position of a coupled group must be position 0 or an even numbered position.

- * Push back on the tray slightly with with your palms. This releases the the tray catches.
- * Push down on the tray catches with your thumbs.
- * Pull the tray forward until you hear and feel the back rollers of the tray drop into the cut-out in the top of the guide rail. See Figure S-3a.

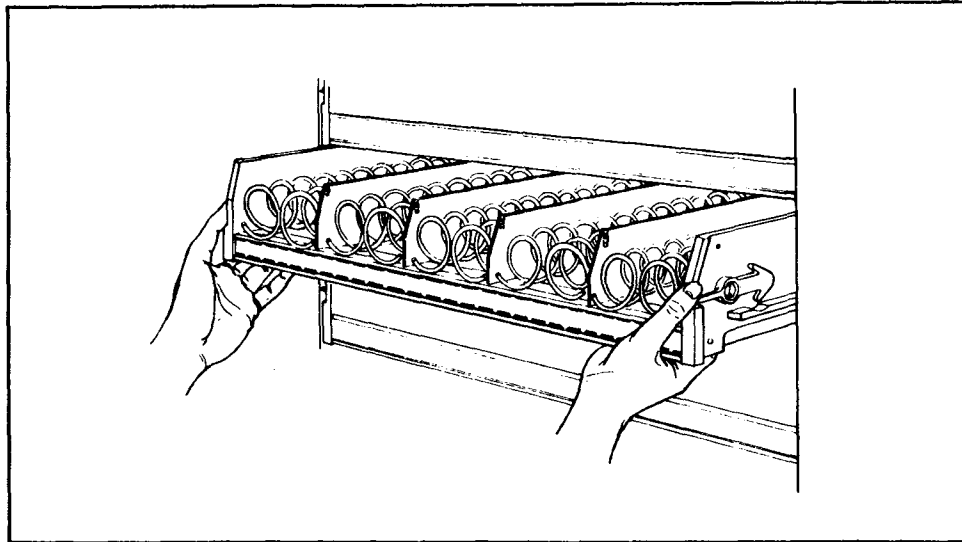


Figure S-3a

- * Lift up on the tray and slide it toward the back. No more than an inch should be needed.
- * The tab near the back of the tray should align with the cut-out in the top of the guide rail. See Figure S-3b.
- * Lift the tray clear of the guide rail and out of the merchandiser.

NOTE

When the cabinet door is not fully open, exercise extra care in removing the bottom tray. Failure to do so may result in damage to the tray or to the delivery pan assembly.

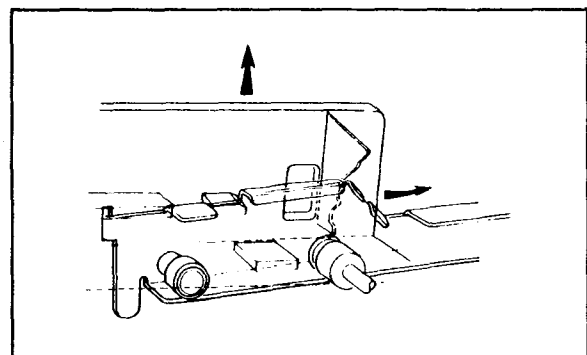


Figure S-3b

* Push the Column Divider toward the back of the Tray. See Figure S-4a.

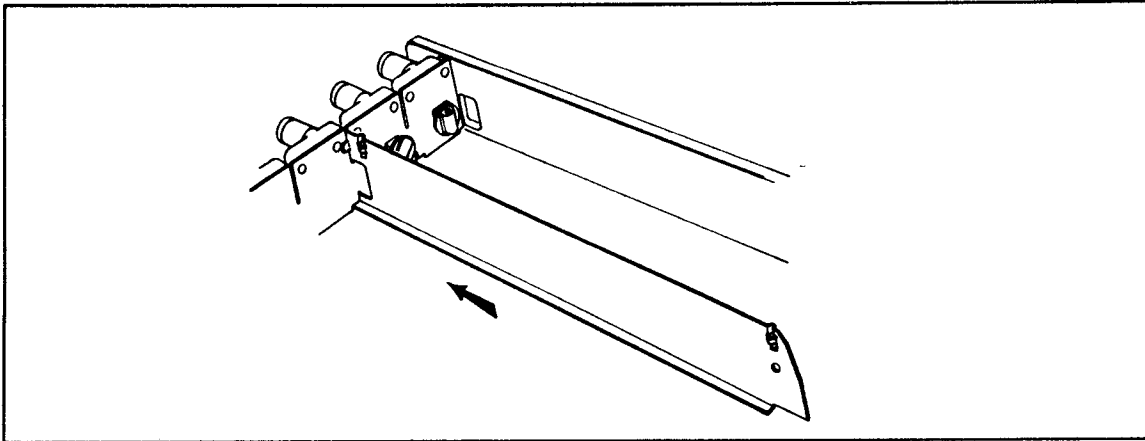


Figure S-4a

* Lift the Column Divider clear of the Tray. See Figure S-4b.

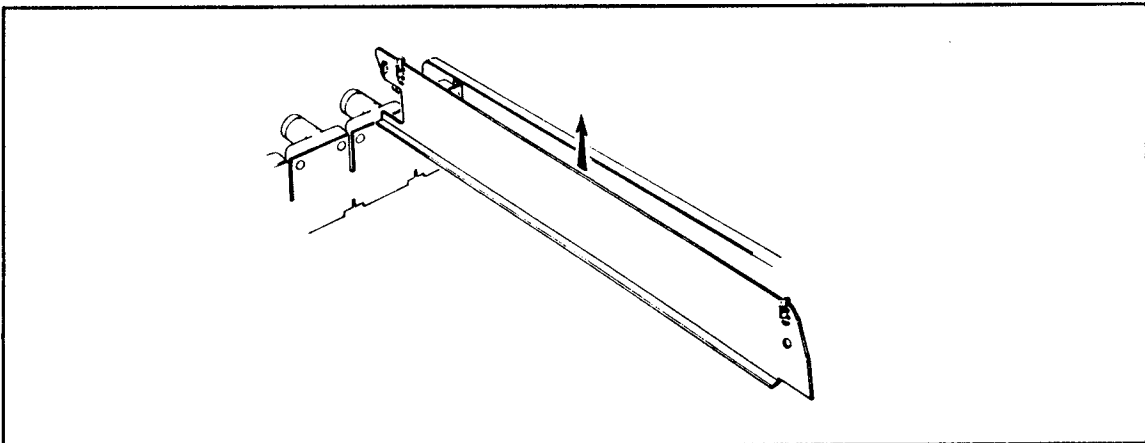
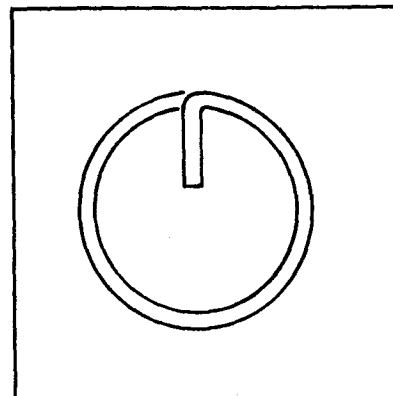


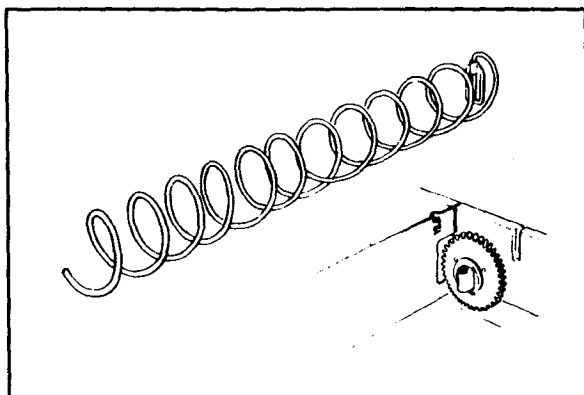
Figure S-4b

* All spirals are the same diameter.

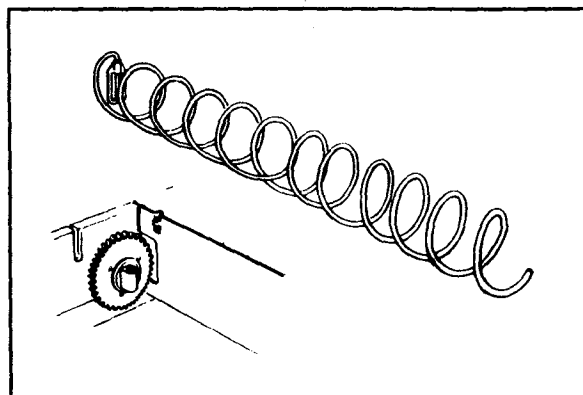


* There are two types of spirals:

COUNTER-CLOCKWISE



CLOCKWISE

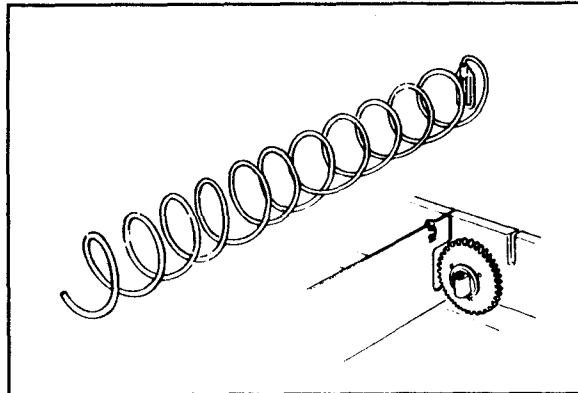
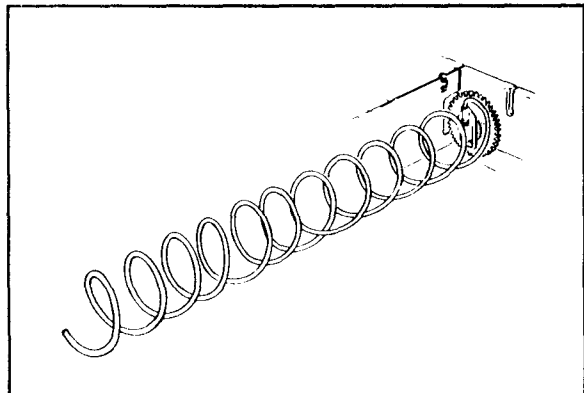


* Spirals are available in eight different capacities. Four of these are standard and four are options.

ITEM CAPACITY OF SPIRAL	PART NUMBER	
	CLOCKWISE (RH)	COUNTERCLOCKWISE (LH)
6 (Optional)	1477104	1477102
11 (Standard)	1477027	1477024
13 (Standard)	1477033	1477030
15 (Standard)	1477039	1477036
20 (Standard)	1477045	1477042
25 (Optional)	1477051	1477048
30 (Optional)	1477057	1477054
38 (Optional)	1477063	1477060

TO REMOVE A SPIRAL

- * Pull forward on the retaining clip and remove the end of the spiral from the spiral coupler.
- * Remove the spiral from the tray.



TO INSTALL A SPIRAL

- * Pull the bottom of the retaining clip toward the front of the spiral.
- * Lower the spiral into the tray column and insert the end of the spiral into the spiral coupler.
- * Release the retaining clip.

SHOULD I USE A CLOCKWISE OR A COUNTERCLOCKWISE SPIRAL?

- * The type of spiral used is determined by the column position it will occupy in the tray.
- * Refer to Figure S-5a and Table S-5a to find the correct spiral type.

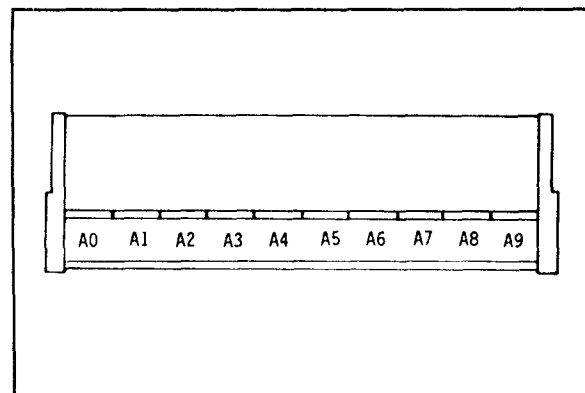


Figure S-5a

SPIRAL TYPE	COLUMN POSITION
CLOCKWISE (RH)	A1 A3 A5 A7 A9
COUNTERCLOCKWISE (LH)	A0 A2 A4 A6 A8

Table S-5a

REMOVING A SPIRAL COUPLER

- * Pinch together the prongs on the end of the Spiral Coupler.
- * Pull the Coupler forward.

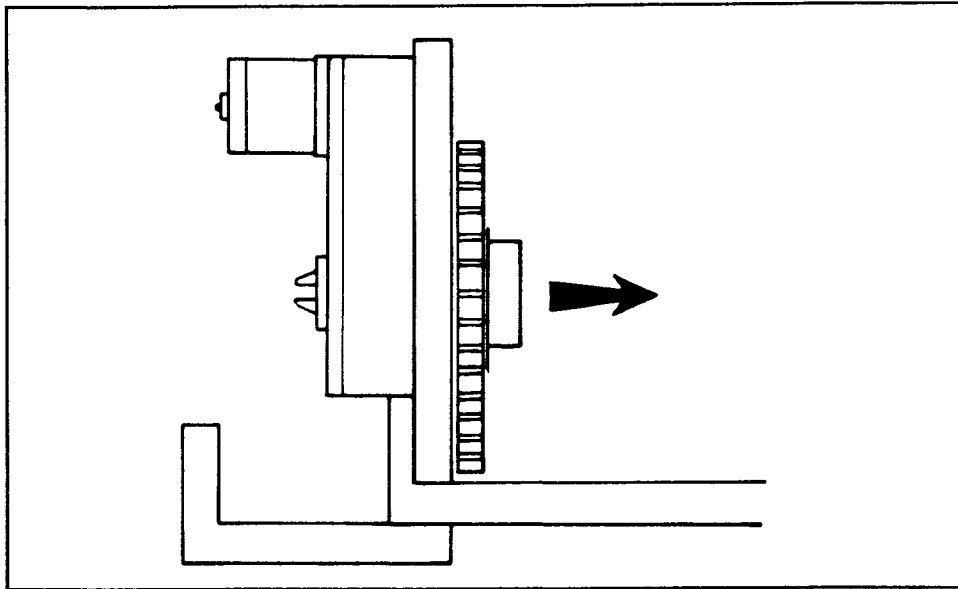


Figure S-6a

REMOVING A MOTOR

- * Disconnect the Harness from the Motor. See S-11
- * Remove the Spiral. See S-5
- * Remove the Spiral Coupler. See S-6
- * Lift the Motor clear of the Tray Assembly.

INSTALLING A SPIRAL BEARING (See Figure S-7a)

- * Put Gear in position if required in this set-up. See S-8
- * Install the Spiral Coupler. See S-9

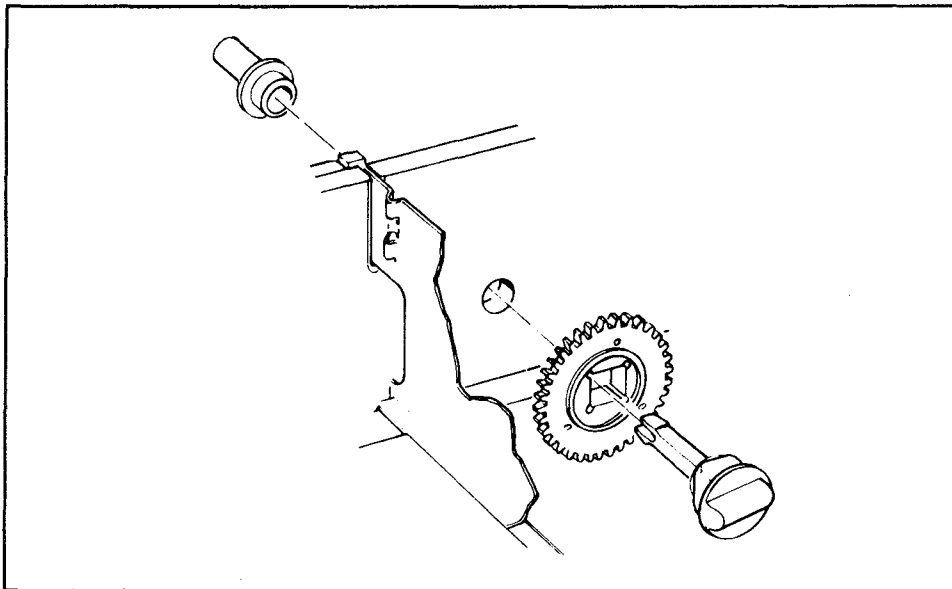


Figure S-7a

WHEN ARE GEARS USED?

- * Gears are used to mechanically couple the Spirals together.
- * This happens whenever you have two Spirals and only one Motor for vending a selection.

WHERE ARE THE GEARS PLACED?

- * The Gear is placed between the back of the Tray and the Spiral Coupler.

HOW IS THE GEAR ORIENTED? (See Figures S-8a and S-8b)

- * There are two possible orientations for the Gear.

ORIENTATION 1

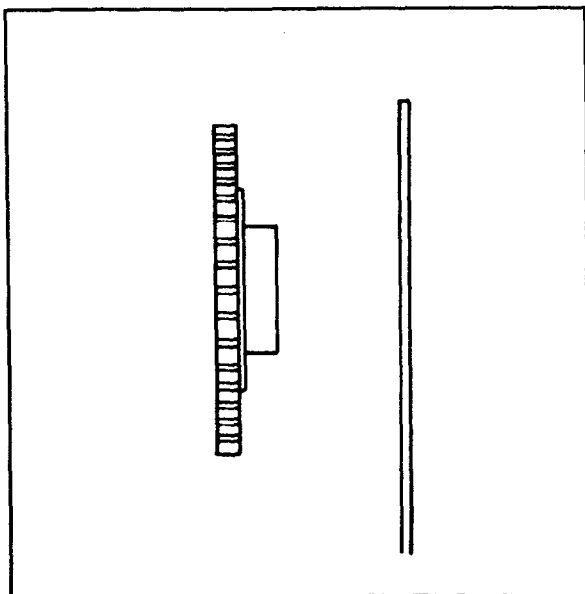


Figure S-8a

ORIENTATION 2

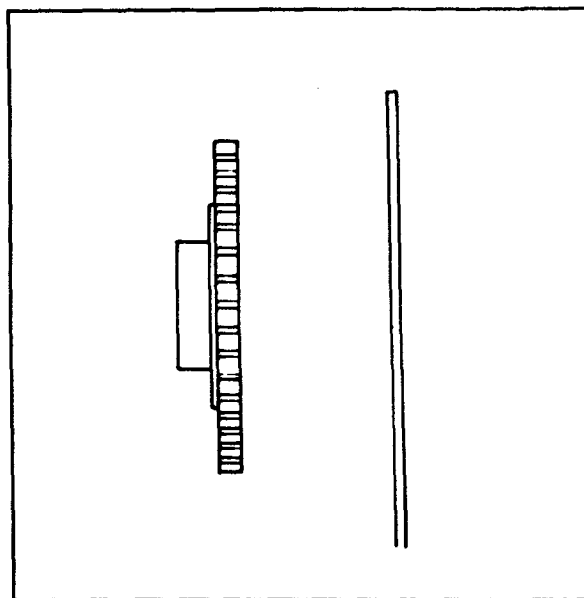


Figure S-8b

- * There are two rules to follow when orienting Gears:

RULE 1 - The Gears for selections next to each other cannot use the same orientation.

RULE 2 - All Gears for a single selection must use the same orientation.

INSTALLING A SPIRAL COUPLER

* Place Gear in position if one is required for this set-up. See S-8

WHEN USED WITH A MOTOR - See Figure S-9a

* Hold Motor in place and push Spiral Coupler through the Motor Gear Box until it licks into position.

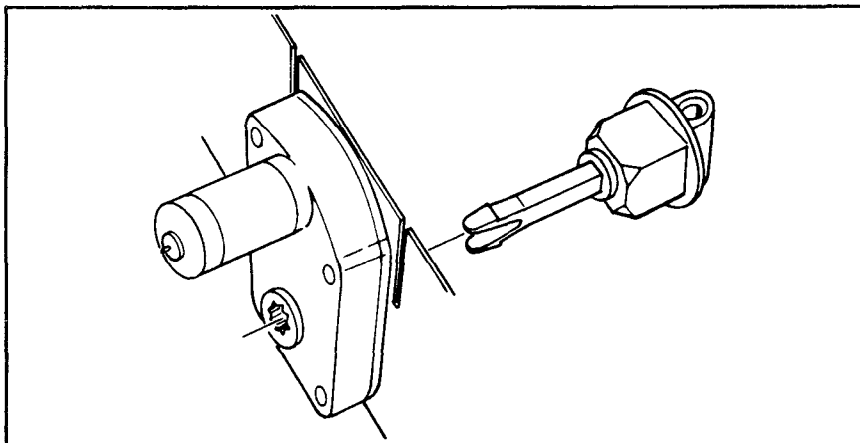


Figure S-9a

WHEN USED WITH A COUPLER BEARING - See Figure S-9b

* Hold the Coupler Bearing in place and push the Spiral Coupler through the Bearing until the Couple locks into position.

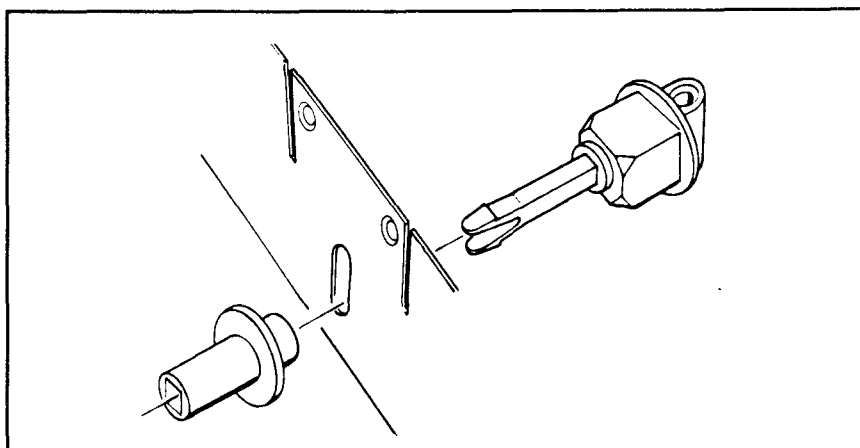
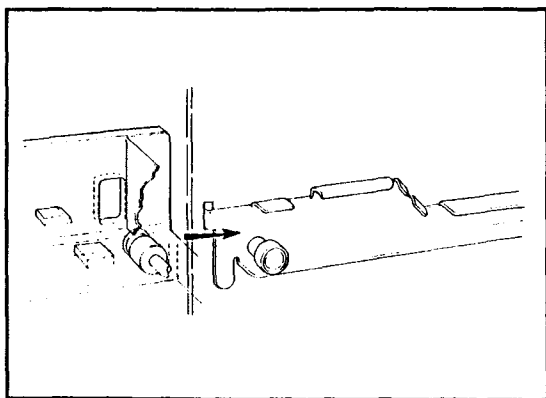


Figure S-9b

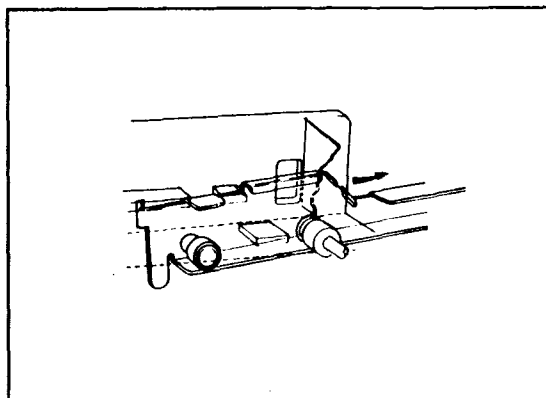
INSTALLING A TRAY IN THE MERCHANDISER

- * Study this procedure before you install a tray for the first time.
- * While you are holding the tray you will not be able to see this area.
- * Complete the following procedure when installing a tray:

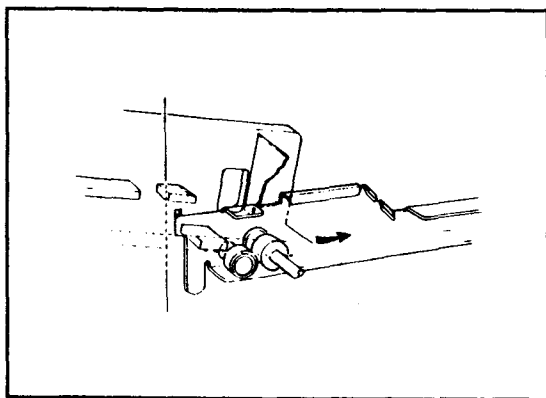
1. Insert the tray so that the tray rollers pass over the tray-guide rollers.



4. Hold the tray up while pushing it toward the rear. Stop when the tab on the tray aligns with the opening in the tray guide.



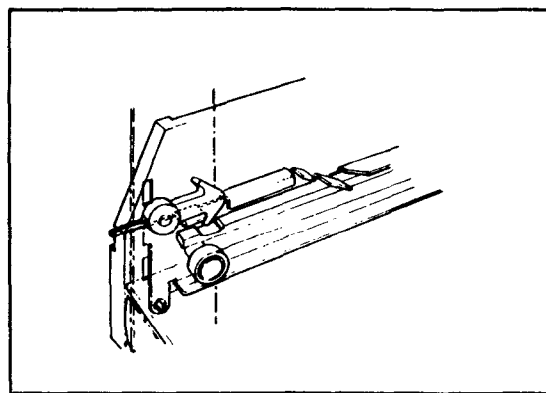
2. Bring the tray roller to rest on the tray guide.



5. Lower the tray until it rests on the tray-guide roller. Push the tray in all the way.

6. The tray retaining clip will fall into the locking position.

3. Tilt the tray upward.

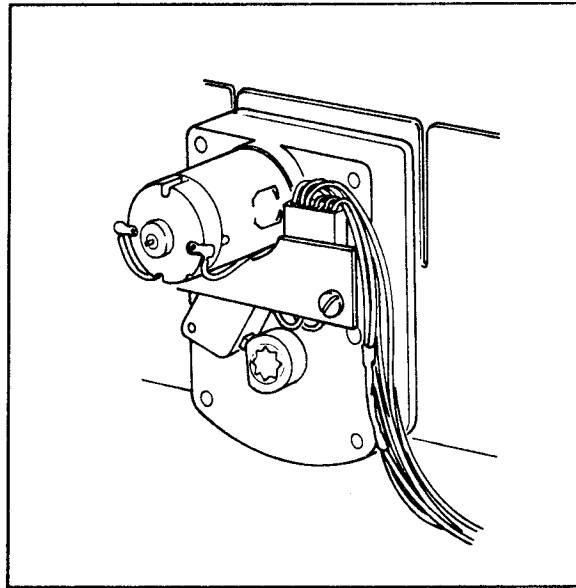


NOTE

Hold the header on the Motor Circuit Board whenever connecting or disconnecting a Motor Harness. This will help prevent breakage of the Circuit Board.

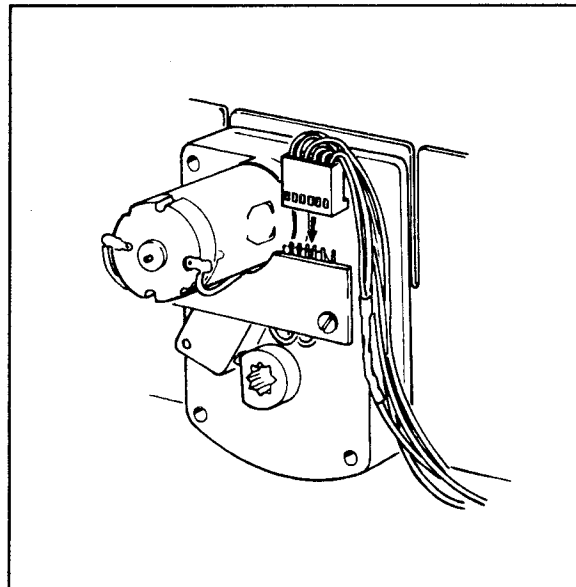
DISCONNECTING A MOTOR HARNESS

- * Pull the harness connector away from the circuit board.
- * Tuck the unused part of the Harness out of the way in the trough at the back of the Tray.



CONNECTING A MOTOR HARNESS

- * Locate the harness connector for the tray position of interest.
- * Push the harness connector over the header pins on the Motor Circuit Board.



REMOVING A SPIRAL MOTOR

- * Place the Tray in the loading position. See S-1
- * Disconnect the Motor Harness. See S-11
- * Remove the Spiral. See S-5
- * Remove the Spiral Coupler. See S-6
- * Lift the Motor clear of the Tray.

INSTALLING A SPIRAL MOTOR (See Figure S-12a)

- * Place the Tray in the loading position. See S-1
- * Place the Motor in the correct position at the rear of the Tray.
- * Place a Gear in position if required by this set-up. See S-8
- * Install a Spiral Coupler. See S-9

NOTE

*The Spiral Coupler
holds the motor
in place.*

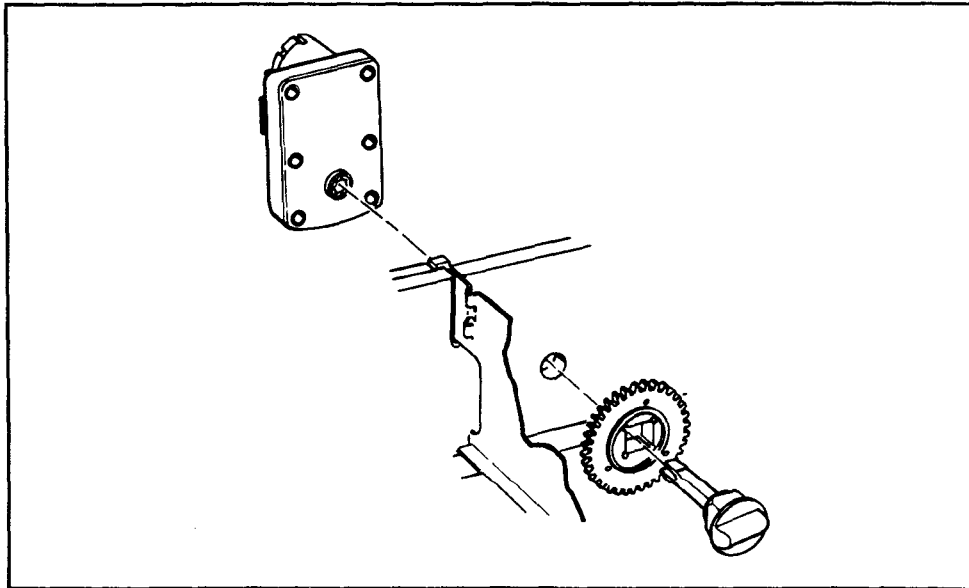


Figure S-12a

- * Connect the Motor Harness. See S-11

- * This merchandiser can be adjusted to vend taller products.
- * When you increase the product height for one tray, you will be decreasing the product height available for the tray below, the tray above or sometimes for both of these trays.
- * The Trays can be relocated as follows:

6-TRAY CONFIGURATION						
TRAY	A (BOTTOM)	B	C	D	E	F
POSSIBLE POSITIONS	1	2	3	3	3	3

- * When relocating Trays, the following rules apply:

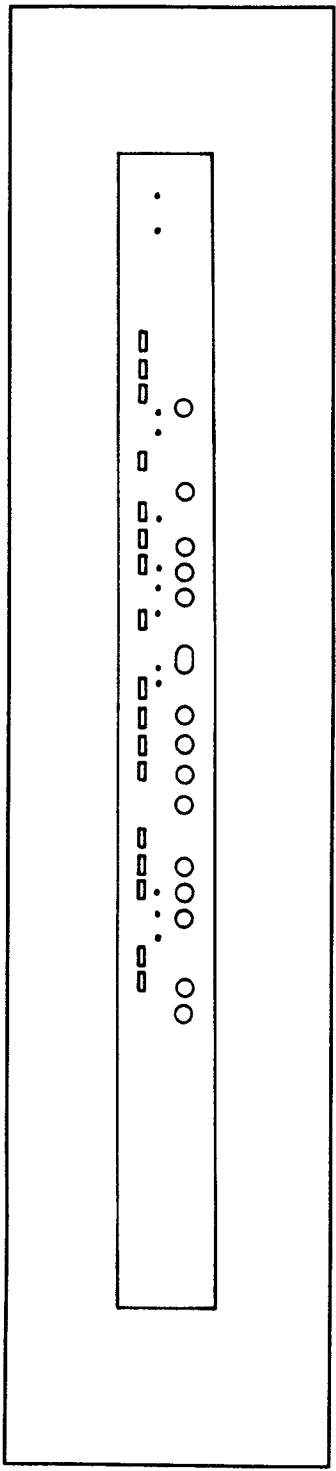
NEW POSITION OF TRAY BEING MOVED	ALLOWABLE POSITIONS FOR TRAY ABOVE	ALLOWABLE POSITIONS FOR TRAY BELOW
UPPER	MIDDLE UPPER	UPPER MIDDLE LOWER
MIDDLE	UPPER MIDDLE LOWER	UPPER MIDDLE LOWER
LOWER LOWER	UPPER MIDDLE LOWER	MIDDLE LOWER

CAUTION

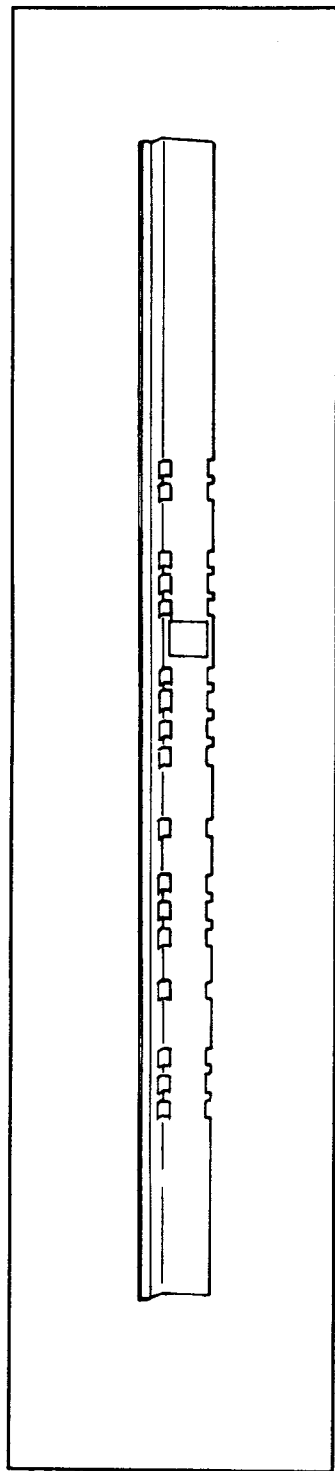
The trays in a Model 461 or 462 merchandiser should not be positioned over an open air discharge vent.

* The slot number used in the Tray-Guide Mounting Channels will be the same as the slot number used in the Receptacle Mounting Channel.

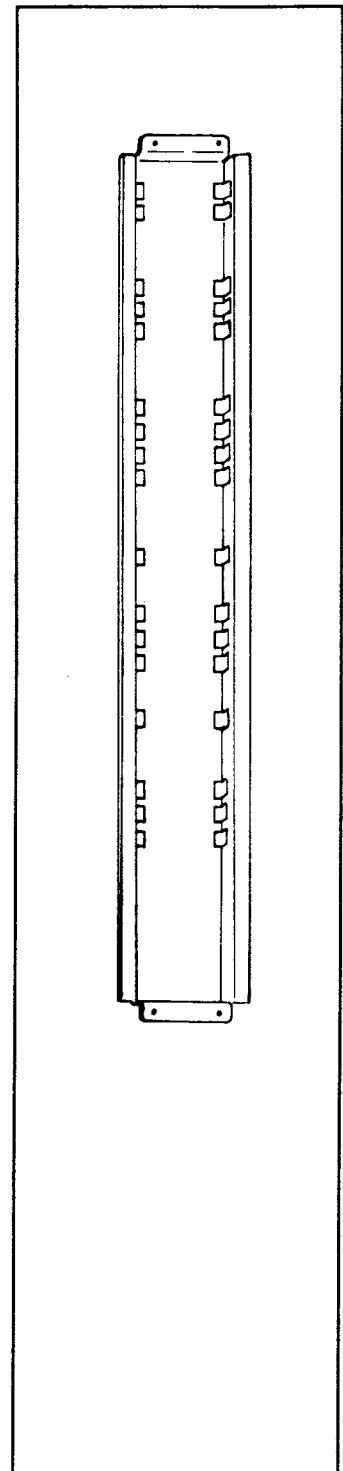
FRONT GUIDE
MOUNTING CHANNEL



REAR GUIDE
MOUNTING CHANNEL



RECEPTACLE BLOCK
MOUNTING CHANNEL



TO RELOCATE A TRAY

1. Remove the Tray from the merchandiser. See S-3
2. Remove the screw that secures the Left Tray-Guide to the Front Guide-Mounting Channel. See Figure S-13a.

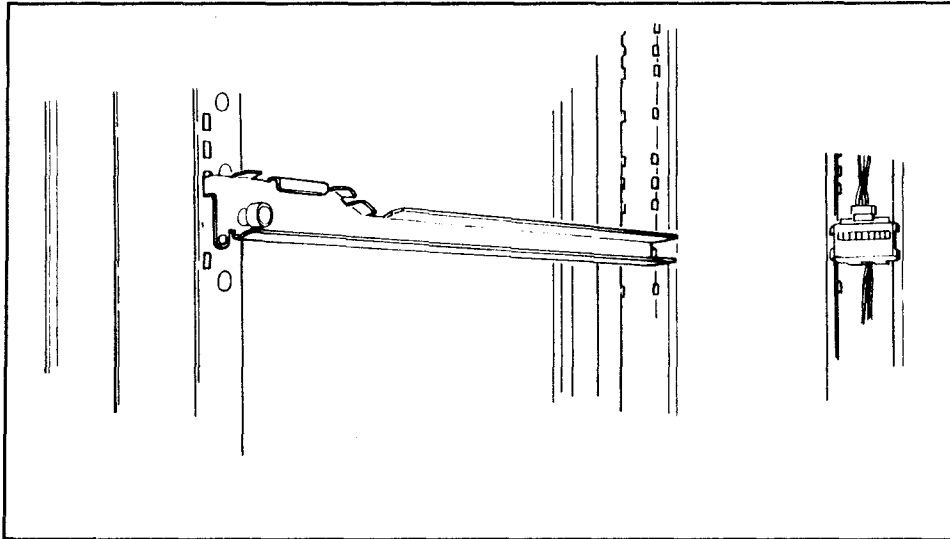


Figure S-13a

3. Tap up on the Tray Guide and unseat the Guide Rail tabs from the channel slots.
4. Pull the Guide Rail away from the Channels.
5. Move the Tray Guide to the desired position.
6. Insert the Guide Rail tabs into the Channel slots. See Figure S-13b.
7. Tap down on the Guide Rail to seat the tabs in the Channel slots.
8. Replace the screw that secures the Guide Rail to the Front Guide-Mounting Channel. See Figure S-13a.
9. Repeat Steps 2-8 for the Right Guide Rail.
10. Disconnect the Harness from the Receptacle Block. See Figure S-13a.
11. Press the blade of a slotted head screw driver between one of the Receptacle Block locking tabs and the Receptacle Mounting Channel. See Figure S-13c. This will unseat the locking tab.
12. Pull the Receptacle Block away from the Channel.
13. Move the Receptacle Block to the desired position.

14. Push the tabs of the Receptacle Block into the slots in the Channel.
15. Reconnect the Harness to the Receptacle Block.
16. Return the Tray to the Merchandiser. See S-10

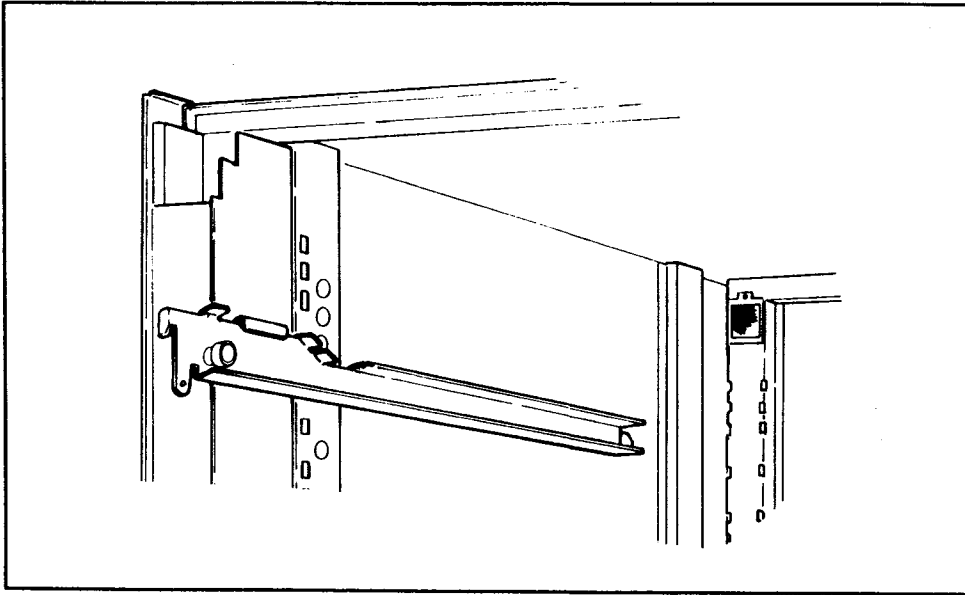


Figure S-13b

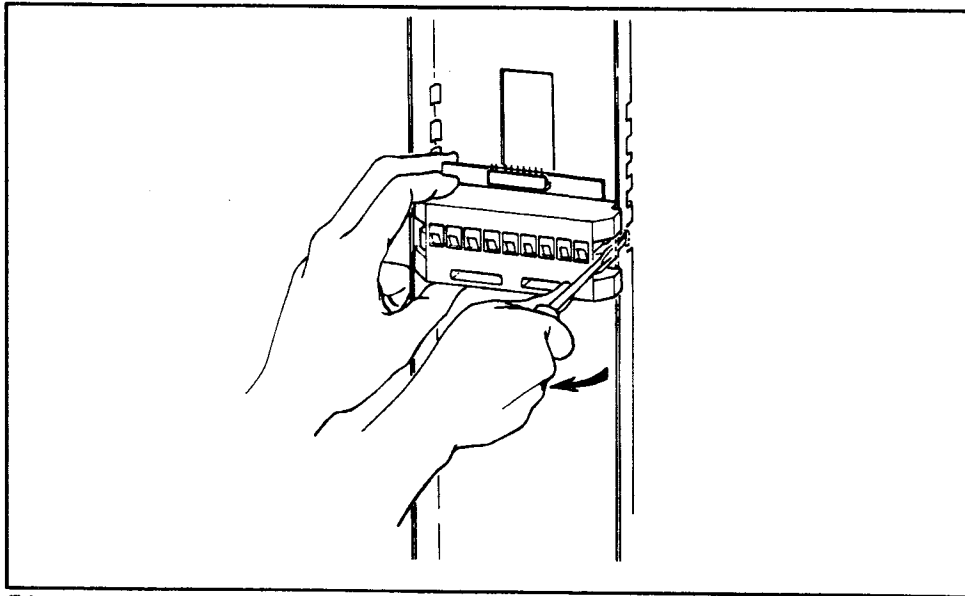


Figure S-13c

INSTALLING A PRODUCT SPACER

Insert the mounting pins of the Product Spacer into the Column Divider. See Figure S-14a

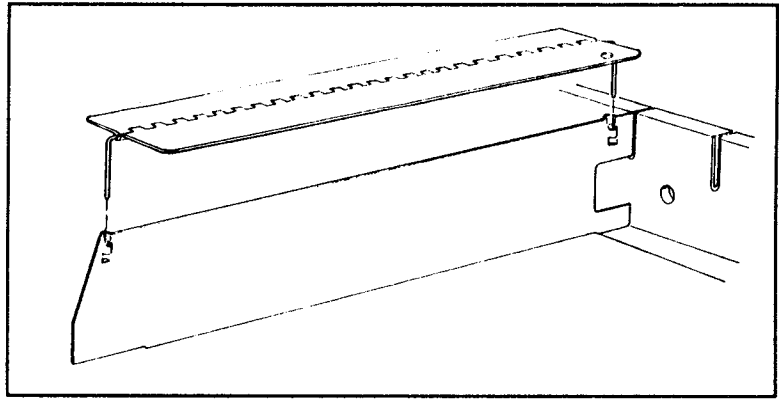


Figure S-14a

ADJUSTING A PRODUCT SPACER

With product loaded in Tray, rotate the Product Spacer up or down to keep the product upright. See Figure S-14b.

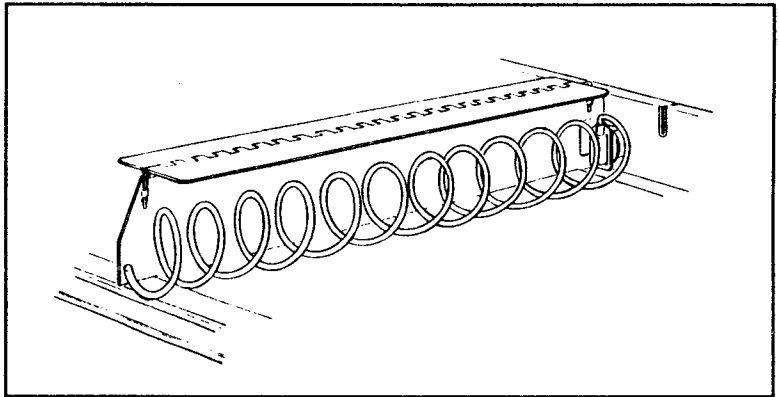


Figure S-14b

REMOVING A PRODUCT SPACER

Pull the mounting pins of the Product Spacer from the Column Divider. See Figure S-14c.

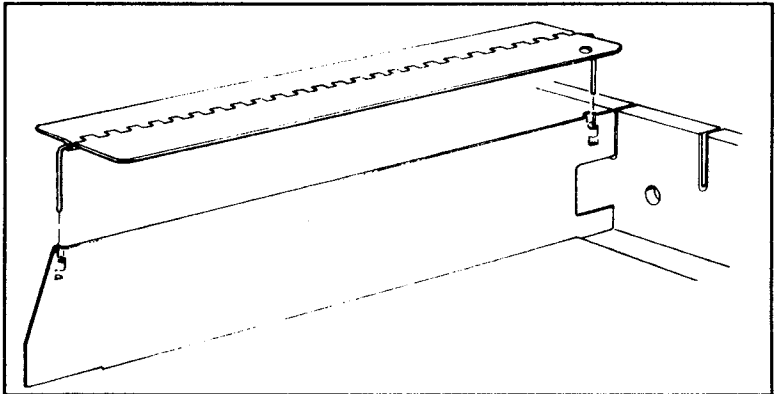


Figure S-14c

LOADING A TRAY WITH PRODUCTS IN GENERAL

See **RC-6** for spirals with capacity of 11, 13 or 15.
See **RC-7** for spirals with capacity of 20,25,30 or 38.
Place tray in the loading position. See **S-1**.
Begin loading products at the front of the tray and work to the back.
Position the product so the package rests on the tray.
DO NOT force a product into a spiral.
If the fit is too light or too loose, change the spiral size. See **S-12**.
Be sure there are no empty positions between products in each spiral.

SPECIAL CONSIDERATIONS

Bagged Products - position package upright, then push tops slightly toward rear of the tray. - **ALSO SEE RC-6.**

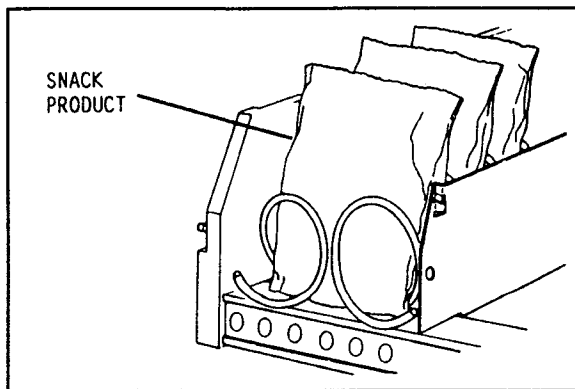
Thin Packages - position package upright. - **ALSO SEE RC-7.**

KitKat - the two right-most columns of candy tray are designed to accept the KitKat candy bar.

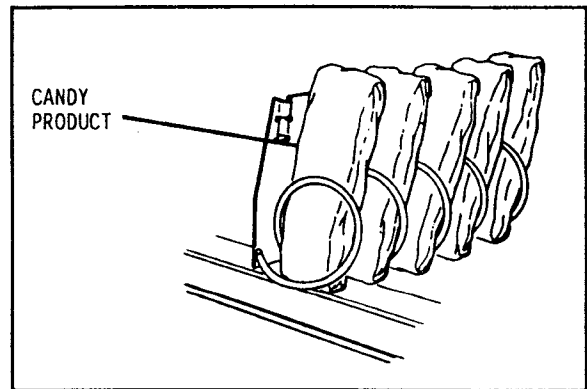
Chilled Candy - use the lowest trays for candy that is to be chilled.

WARNING

THIS MERCHANDISER DOES NOT HAVE A HEALTH CONTROL CIRCUIT. IT IS NOT APPROVED FOR THE VENDING OF PERISHABLE FOOD ITEMS.



CORRECT LOADING OF SNACKS



CORRECT LOADING OF CANDY

**PREPARING MERCHANDISER FOR VENDING
"LUNCH BUCKET"**

Because of the weight and shape of the package, National Vendors recommends that this product be vended only from the bottom tray.

To vend this product, two adjacent positions must be coupled together.

See S-8 for mechanical coupling directions or see P4-5 for electrical coupling directions.

The left spiral coupler should be installed one position counter-clockwise from the vertical position.

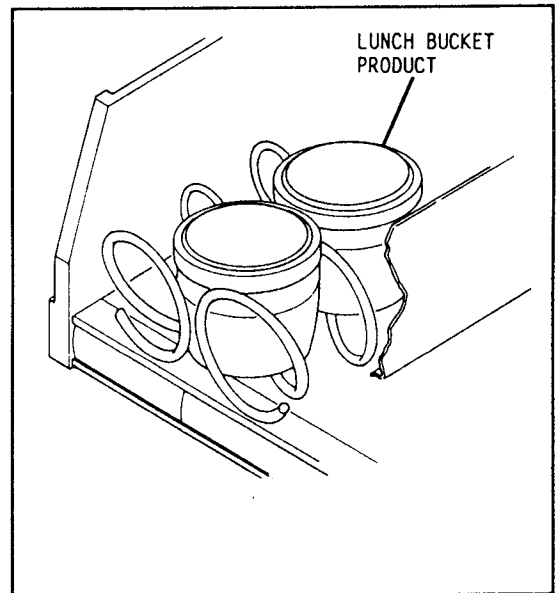
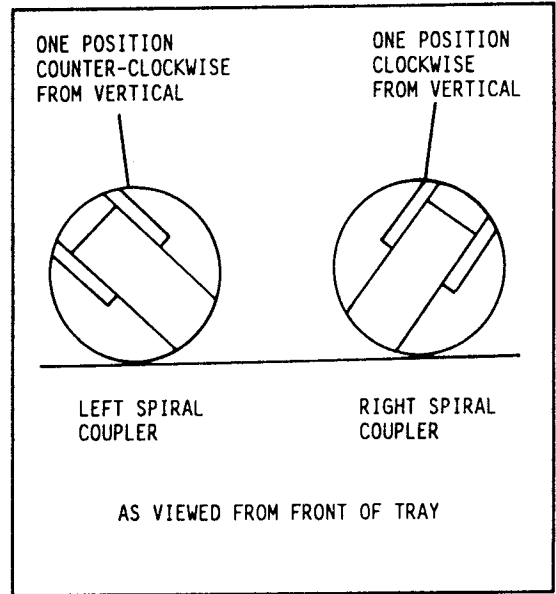
The right spiral coupler should be installed one position clockwise from the vertical position.

Replace the current spirals with six-count spirals. These are available from National Vendors Parts Department. See S-5 for removal and replacement instructions.

A pad can be installed in the bottom of the delivery pan to quiet and cushion the delivery. This part is available from National Vendors Parts Department.

LOADING "LUNCH BUCKET"

CORRECT LOADING
OF
"LUNCH BUCKET"



PREPARING MERCHANDISER FOR VENDING "TOP SHELF"

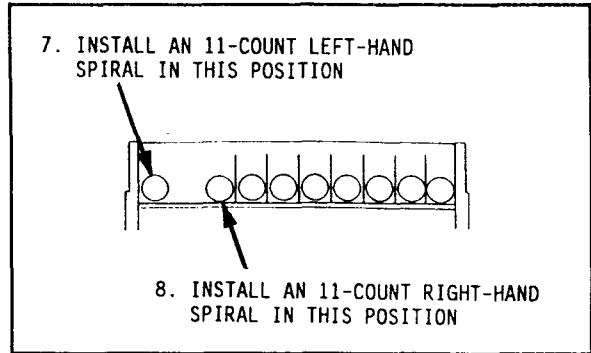
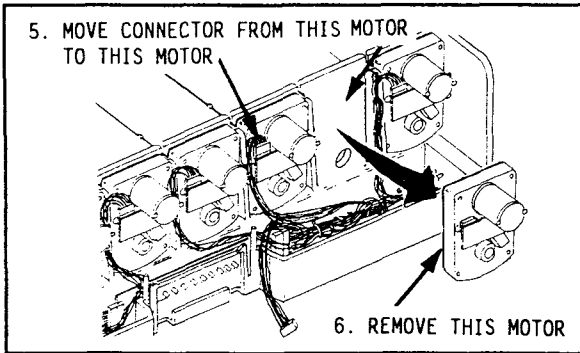
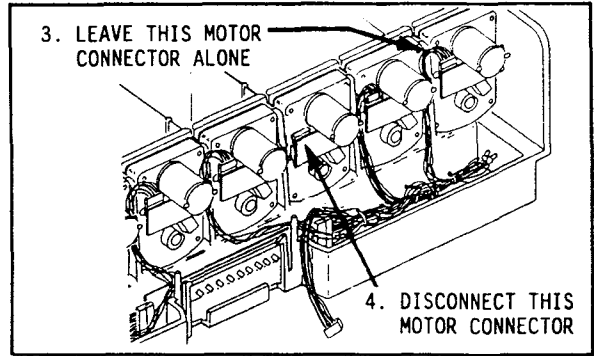
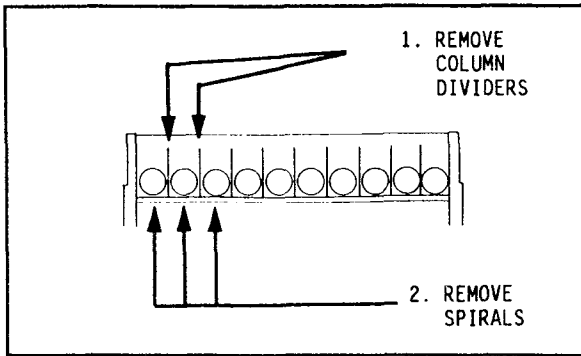
National Vendors recommends that this product be vended from a candy tray.

Move the tray so the package can be loaded standing on its left or right edge. See S-13 in this manual.

The following steps must be completed for three adjacent positions on the tray:

NOTE

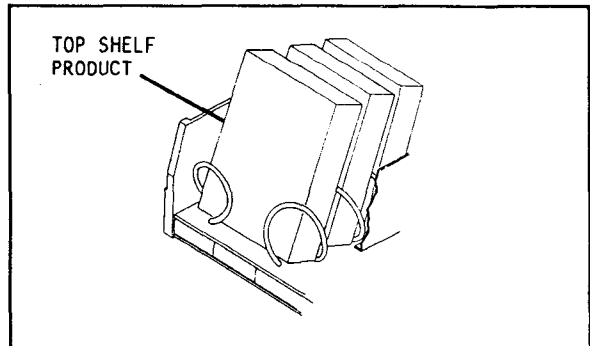
The left-most position in the group of three must be an even numbered position.



Couple the left motor to the right motor. See P4-5 in the PROGRAMMING GUIDE.

LOADING "TOP SHELF"

CORRECT LOADING
OF
TOP SHELF



WHEN THE TRAY IS IN THE LOADING POSITION:

* Lift the Tray until it is parallel to the floor. See Figure S-16a.

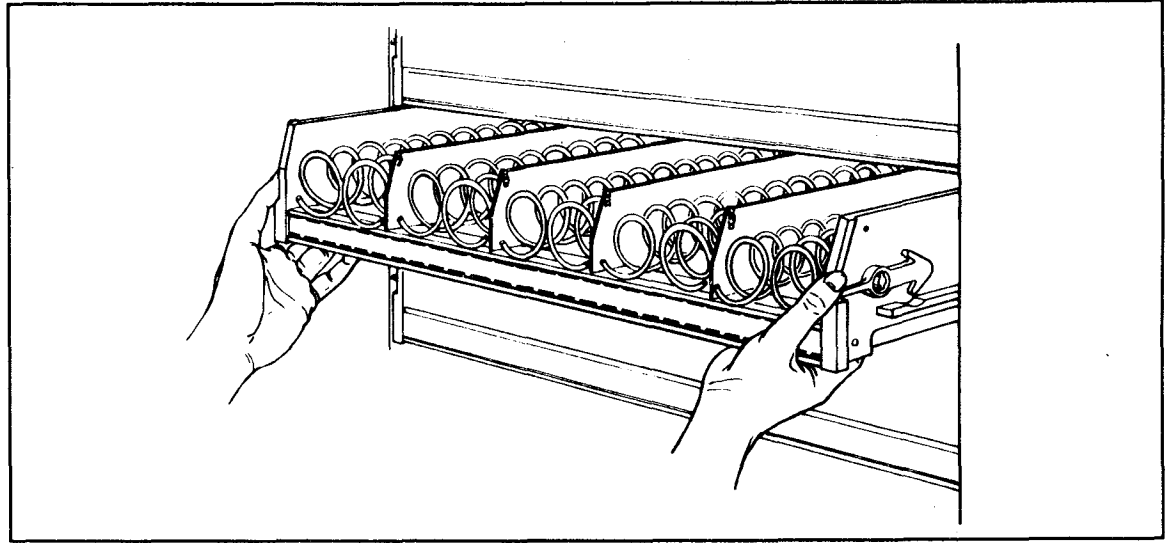


Figure S-16a

- * Push the Tray toward the back of the cabinet.
 - The connector on the back of the Tray mates with the Receptacle Block
 - The retaining clips on the sides of the Tray lock into position.

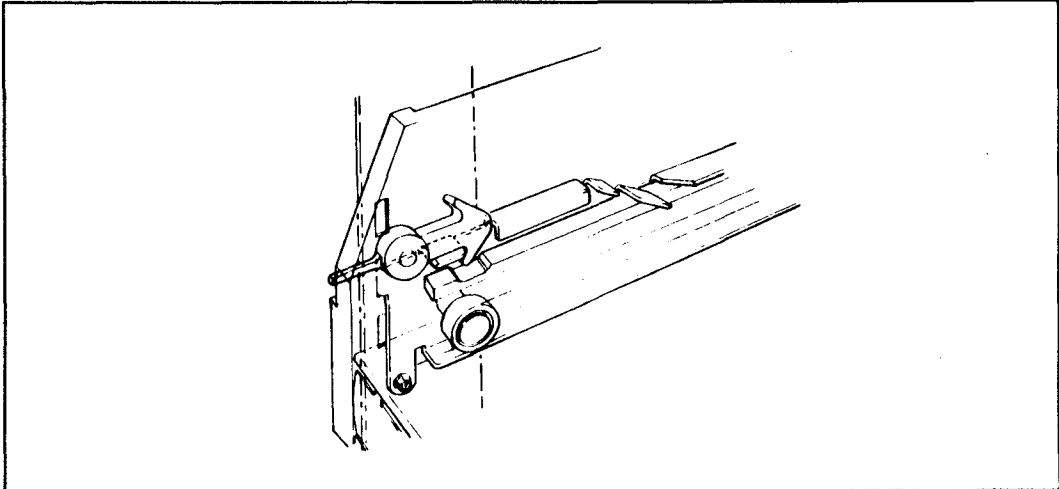


Figure S-16b

Price labels are printed on coiled-up rolls. You will find these in the plastic bag that contained this manual. See Figure S-17a.

There are two types of price rolls:

- * Dollar Roll - 1 to 12 increments of 1
- * Cents Roll - 00 to 95 increments of 05

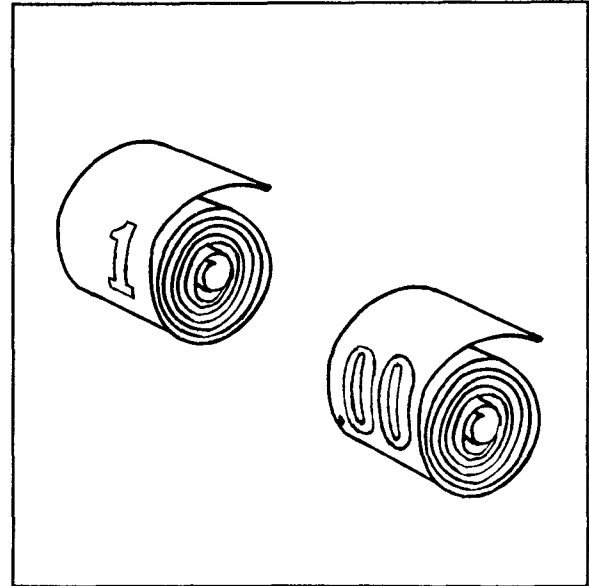


Figure S-17a

INSTALLING PRICE LABELS

- * There are three pairs of slots in the front of the Tray for each column position.
- * Insert the dollar roll in the left-most pair of slots if the price is \$1.00 or more. See Figure S-17b.
- * Insert the cents roll in the center pair of slots. See Figure S-17b.
- * The low-number end of the roll goes in the top slot and the high-number end of the roll goes in the bottom slot.

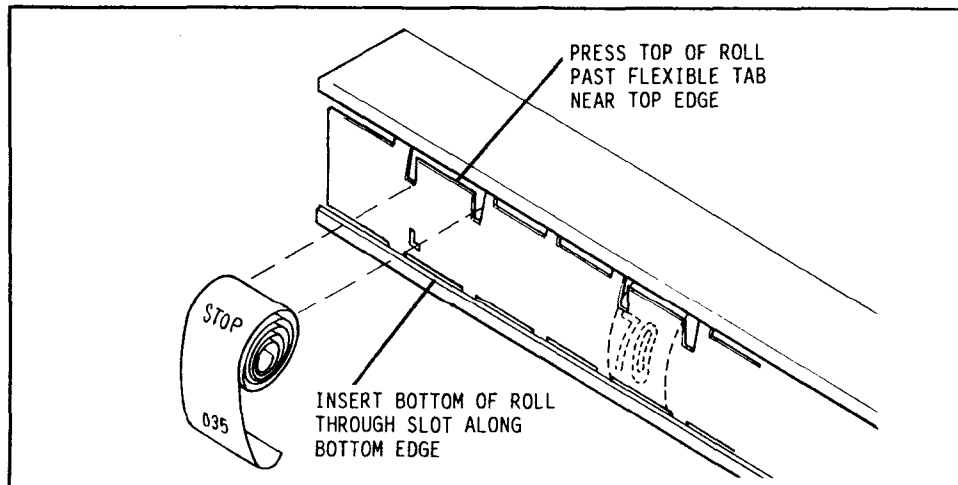


Figure S-17b

ADJUSTING THE PRICE LABELS

* You can set selection prices within the following range:

Minimum Price \$.00

Maximum Price \$12.95

Increment \$.05

* Use your thumb to move each price roll up or down as needed to set the desired price. See Figure S-17c.

NOTE

You will see the word STOP near either end of the roll.

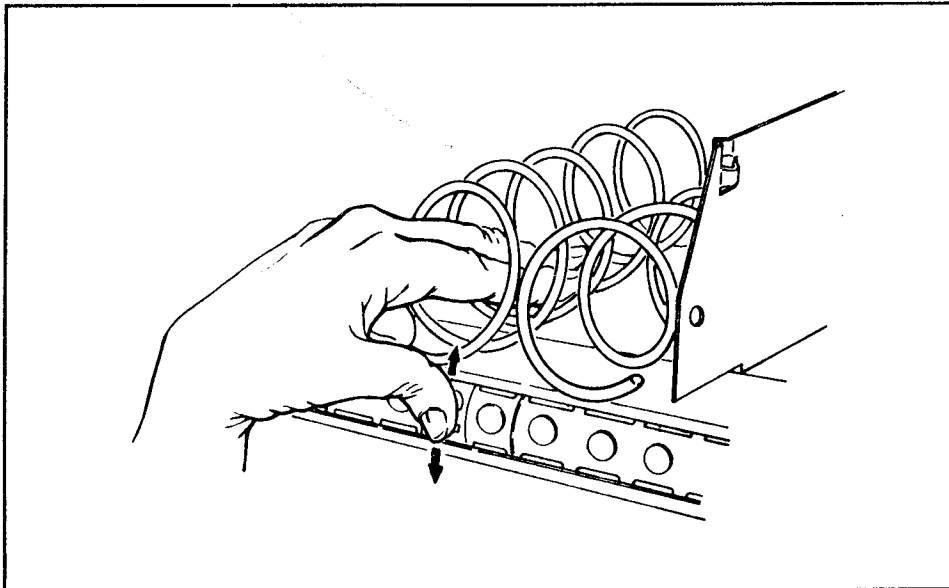


Figure S-17c

Selection ID Numbers are printed on clear plastic labels. You will find these in the plastic bag that contained this manual. See Figure S-18a.

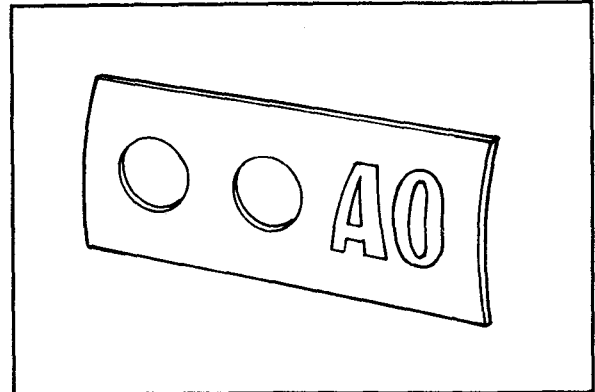


Figure S-18a

INSTALLATION OF SELECTION ID NUMBERS

- * The price label should be installed first.
- * Press the two long edges of the label together.
- * Snap the label into position on the front of the Tray. See Figure S-18b.

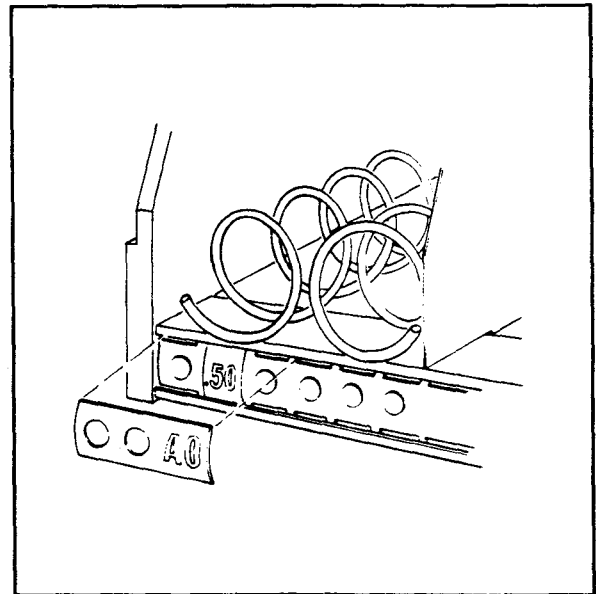


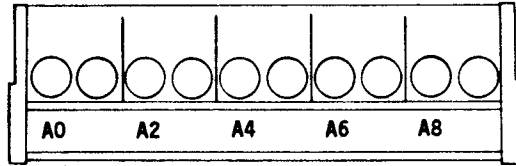
Figure S-18b

WHICH LABEL GOES WITH WHICH SELECTION?

		MOTOR POSITION									
TOP TRAY	TRAY A	A0	A1	A2	A3	A4	A5	A6	A7	A8	A9
	TRAY B	B0	B1	B2	B3	B4	B5	B6	B7	B8	B9
	TRAY C	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9
	TRAY D	D0	D1	D2	D3	D4	D5	D6	D7	D8	D9
	TRAY E	E0	E1	E2	E3	E4	E5	E6	E7	E8	E9
BOTTOM TRAY	TRAY F	F0	F1	F2	F3	F4	F5	F6	F7	F8	F9

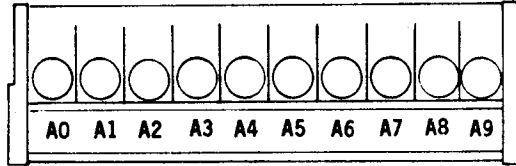
EXAMPLE OF A
BASIC SNACK
TRAY

LABEL TO USE

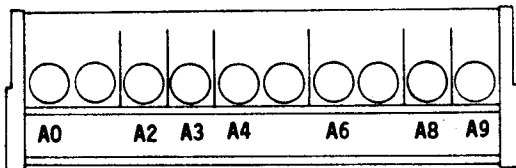


EXAMPLE OF A
BASIC CANDY
TRAY

LABEL TO USE

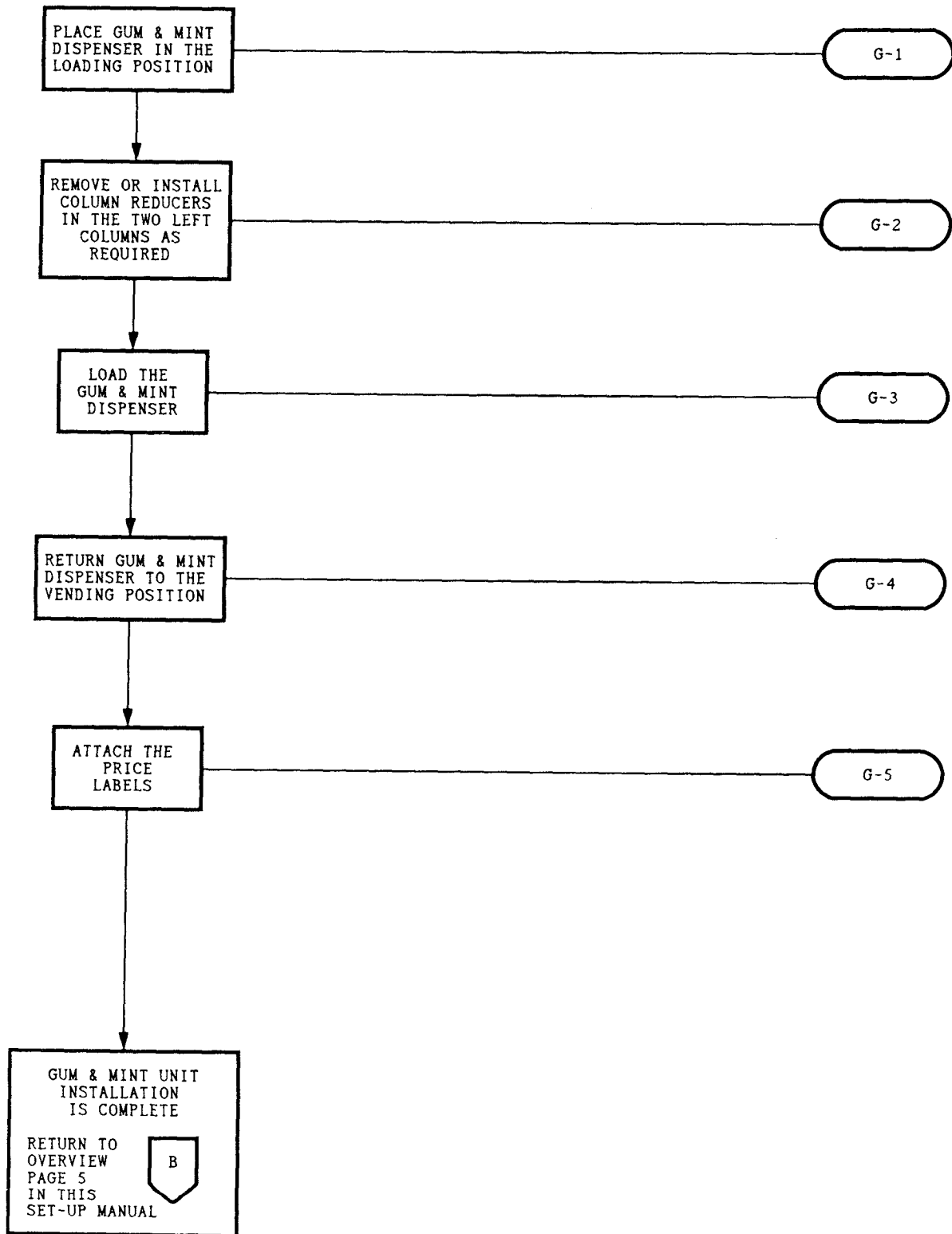


EXAMPLE OF A
COUPLED CANDY
TRAY



* When motor positions have been coupled together, the *SMALLEST EVEN-NUMBERED* position within the group will be the selection ID Number that you should use for this selection.

The information in this part of the manual has been provided to help you set up the Gum & Mint Dispenser.



- * The Gum & Mint Assembly is hinged to the Delivery Pan Assembly.
- * The Gum & Mint Assembly is held in the vending position by two magnets.
- * On version number 1, pivot the Gum & Mint Assembly upward until the support arms fall into the locked position. See Figure S-30a below.
- * On version number 2, the Gum & Mint assembly is held in the loading position by a hook and a loop. One end of the hook is attached to the right side of the door. The loop is mounted on the right side of the Gum & Mint assembly. Use the loop as a handle and raise the Gum & Mint magazine with your left hand. Use your right hand to move the free end of the hook so it catches the loop. This will hold the magazine while you are loading it with product. See Figure S-30b below.
- * The lid of the Gum & Mint assembly is held closed by two magnets.
- * Pivot the lid up and back until it is a little past the vertical position.
- * The Gum & Mint Assembly is now in the loading position

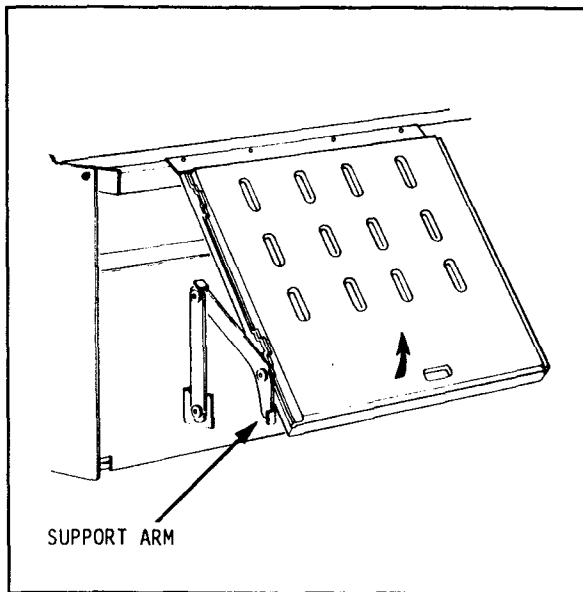


Figure S-30a Version Number 1

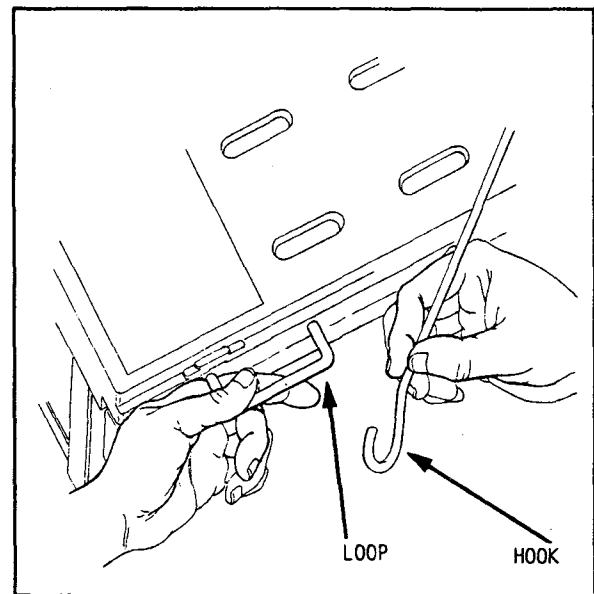


Figure S-30b Version Number 2

- * The two left-most vending columns (as seen from the loading side) can be adjusted for two different widths.
- * When a column reducer is in place, the width of the column will be 3-1/16 inches.
- * When the column reducer is removed, the width of the column will be 3-7/8 inches.

TO REMOVE A COLUMN REDUCER

- * Pull the reducer away from the cabinet door to disengage the locking tabs.
- * Lift up to remove the reducer from the Gum & Mint Assembly.

TO INSTALL A COLUMN REDUCER

- * Place the reducer on the Gum & Mint Dispenser so the locking tabs are in the slots.
- * Push the reducer toward the cabinet door to lock the reducer in position.

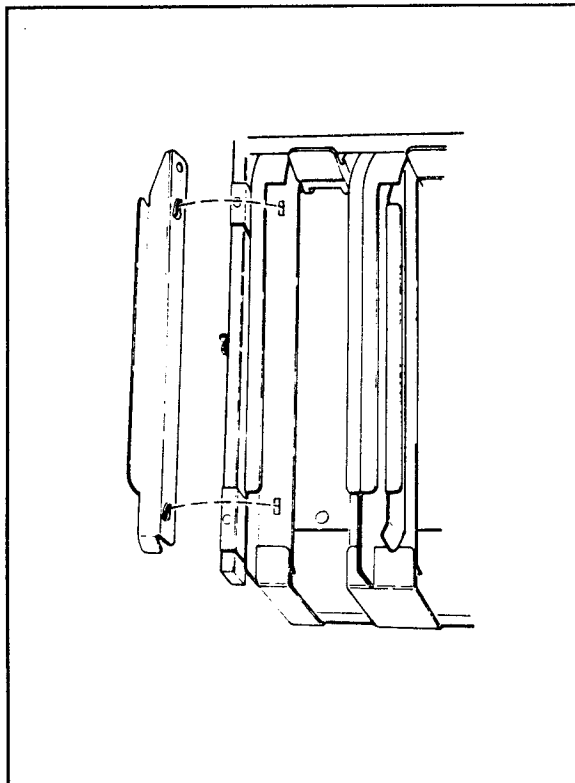


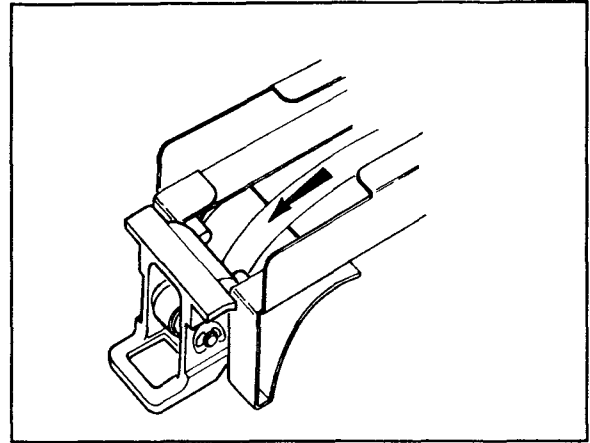
Figure S-31a

* Complete the following steps when loading the Gum & Mint Dispenser:

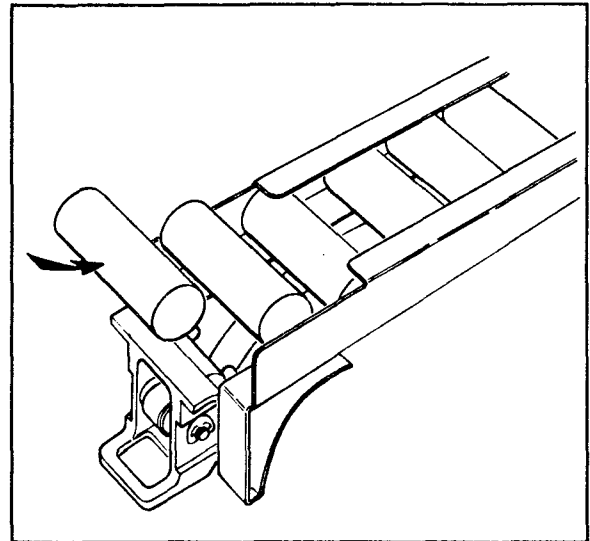
CAUTION

Keep your hand on the product pusher until it is locked in place. Failure to do so may result in damage to the Dispenser or in personal injury.

1. Move the product pusher into the loading position.
 - Pull back on the pusher.
 - Pull down on pusher and lock the front glide into position.



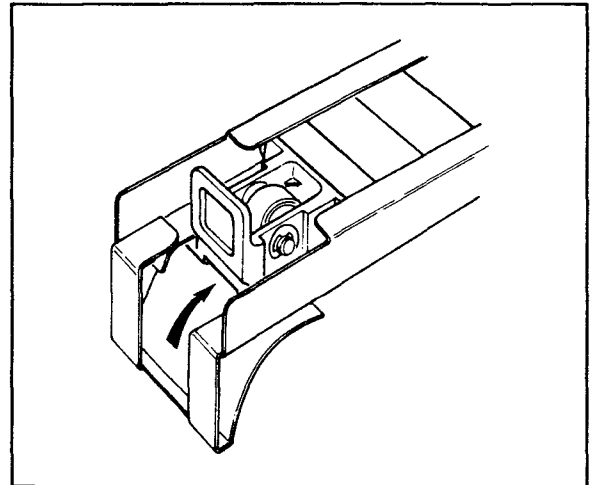
2. Load the product.
 - Push product forward.
 - Be sure last item is completely under the product retaining lip.



CAUTION

Keep your hand on the product pusher until it comes to rest behind the last item in the column. Failure to do so may result in damage to the dispenser, damaged product or personal injury.

3. Move the product pusher into the dispensing position.
 - Pull pusher down to unlock the front glide.
 - Guide the pusher toward the product.



- * All product pushers should be in the vending position.
- * Close the lid of the Gum & Mint Assembly.
- * On version number 1, hold the assembly as shown in Figure S-33a. While your fingers are supporting the magazine assembly on the bottom side, press down on the support release tabs with your thumbs and lower the magazine back into the vending position.

WARNING

Your hands must be in the position shown in Figure S-33a. In addition, continue to hold the magazine assembly until it has been fully lowered. You may be injured if you do not follow this procedure.

- * On version number 2, hold the loop on the right side of the magazine with your left hand. Release the hook with your right hand and lower the magazine. Continue to hold the loop until the magazine has been fully lowered.
- * Pivot the Gum & Mint Assembly back to the vending position.

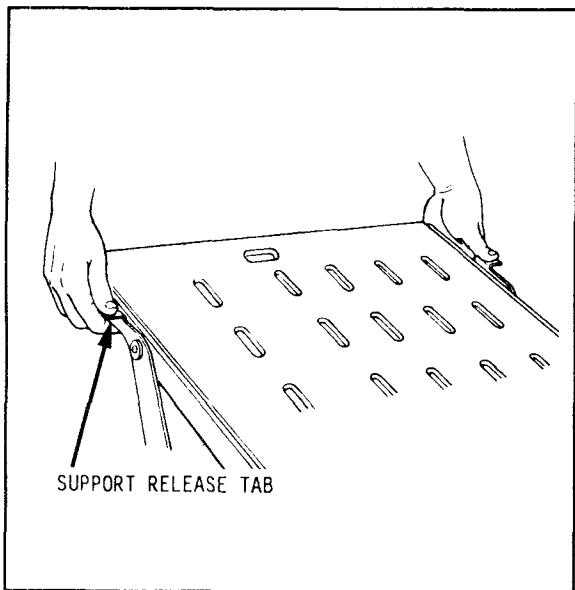


Figure S-33a Version Number 1

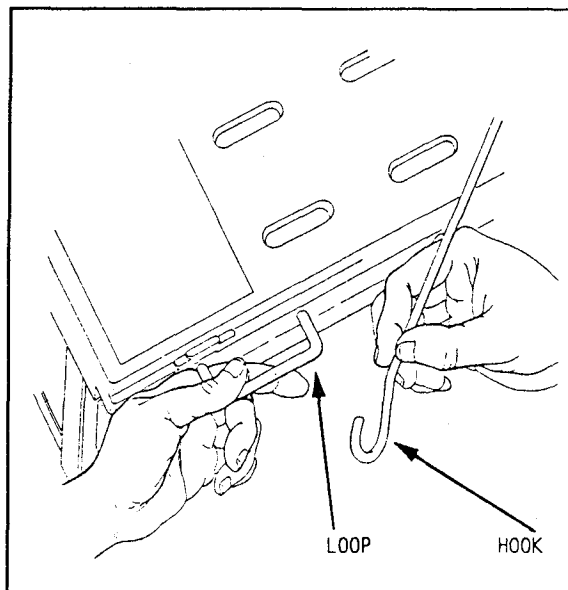


Figure S-33b Version Number 2

- * The column ID labels have already been attached to the rear delivery door.
- * A set of self-adhesive price labels are in the plastic bag that contained this manual.
- * Stick the desired price label next to the column ID number as shown in Figure S-34a.
- * Peel the old price label off when you want to change the price for a selection.

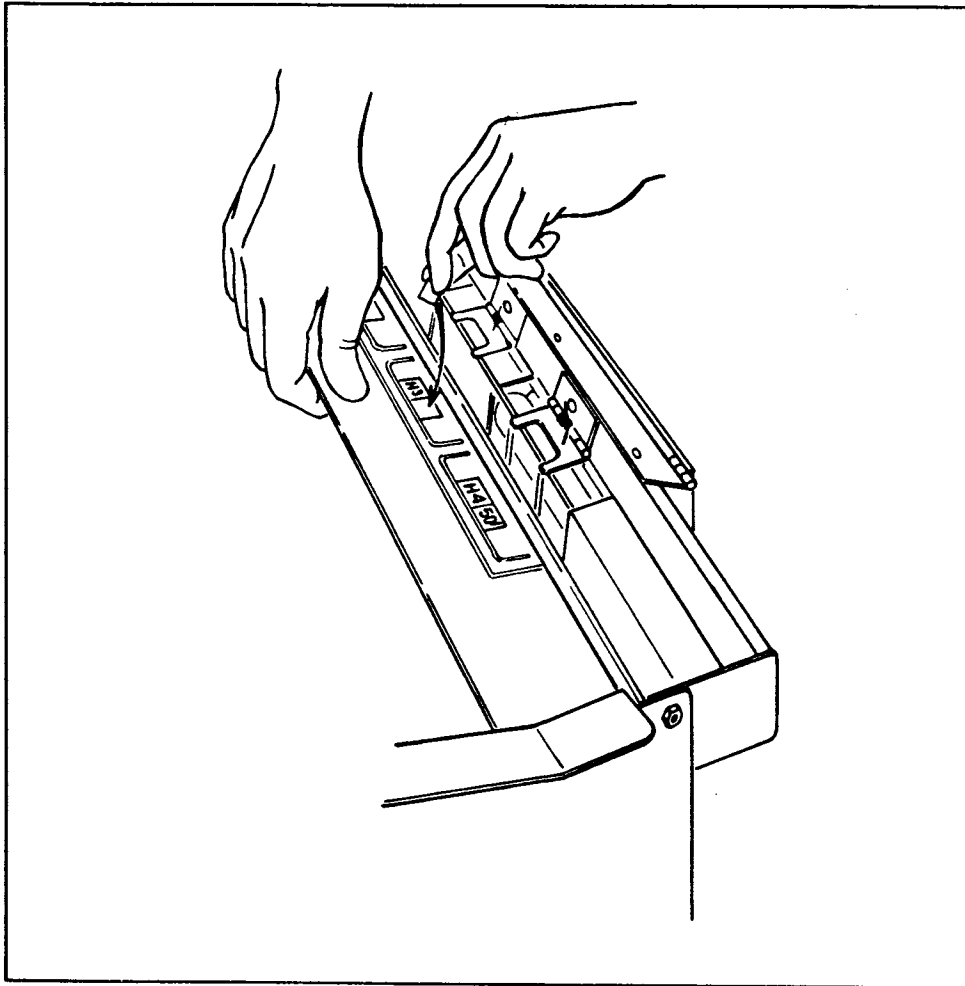
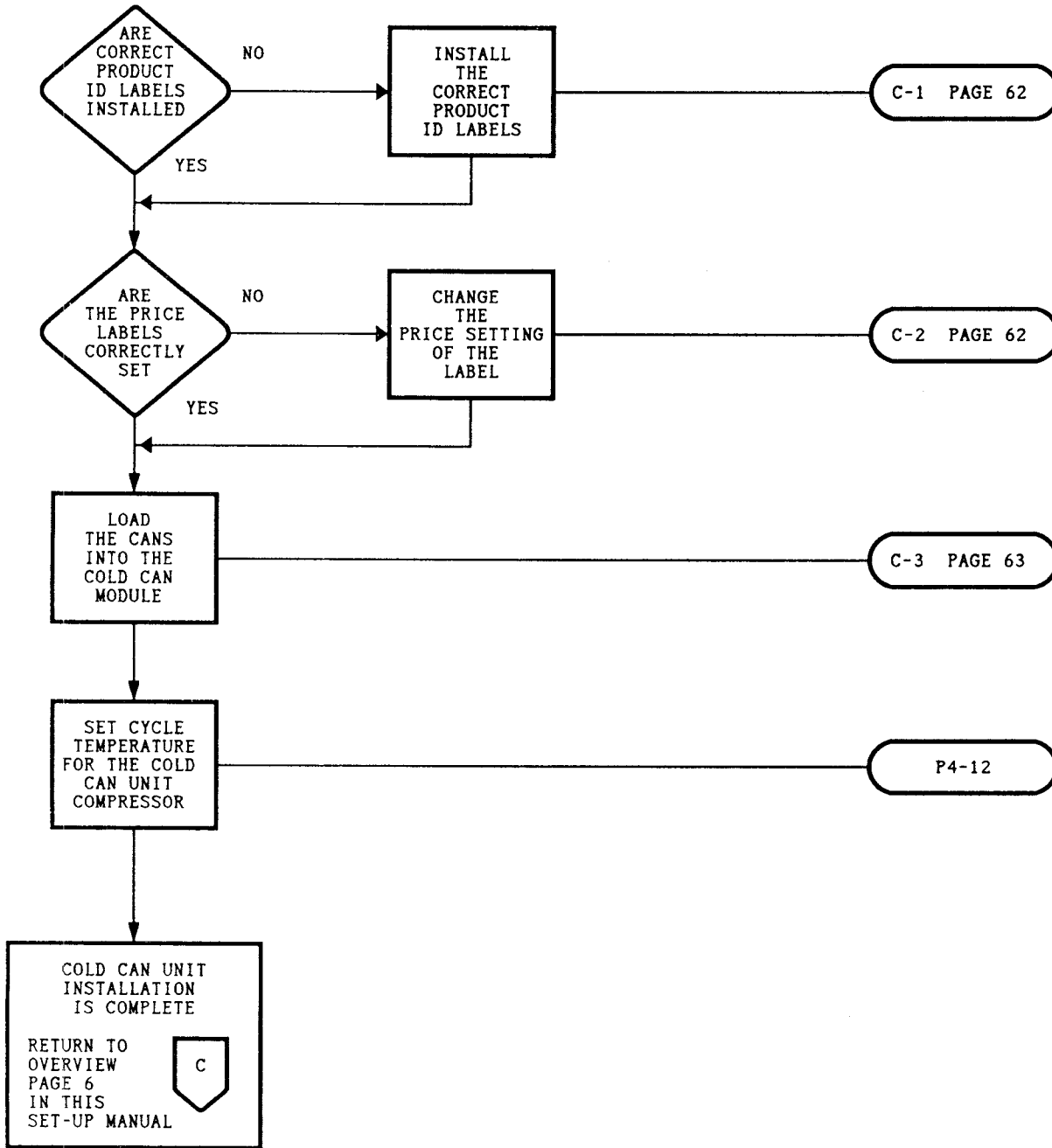


Figure S-34a

The information in this part of the manual has been provided to help you set up the Cold Can Module.



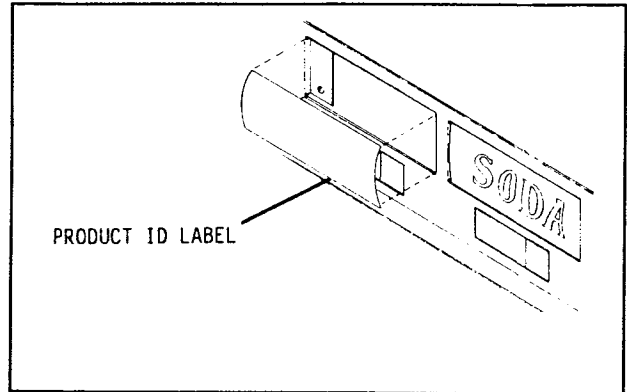
PRODUCT ID LABELS FOR COLD CAN SELECTIONS

Refer to the figure below.

- * Product ID labels are held in place above the price labels for each selection.
- * To install a new ID label, flex the label as shown and place in position.
- * Release the label and the label frame will hold it in place.
- * A pencil or a finger nail can be used to pop a label out of place.
- * If you need an ID label for a product and it was not included in the plastic bag that contained this manual, contact:

SCREEN ART
1801 Mid Park Drive
Knoxville, TN 37921
Phone: 1-800-251-9031
In Tenn: 1-800-332-9924

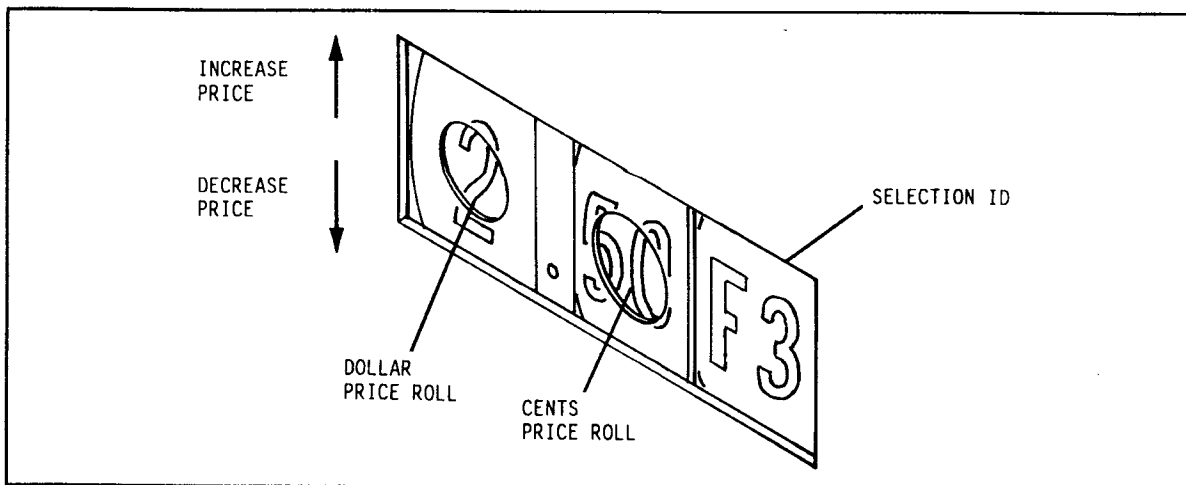
Refer to style: SA13
(1.75 x 4.62)



SETTING PRICE LABELS FOR COLD CAN SELECTIONS

Refer to the figure below.

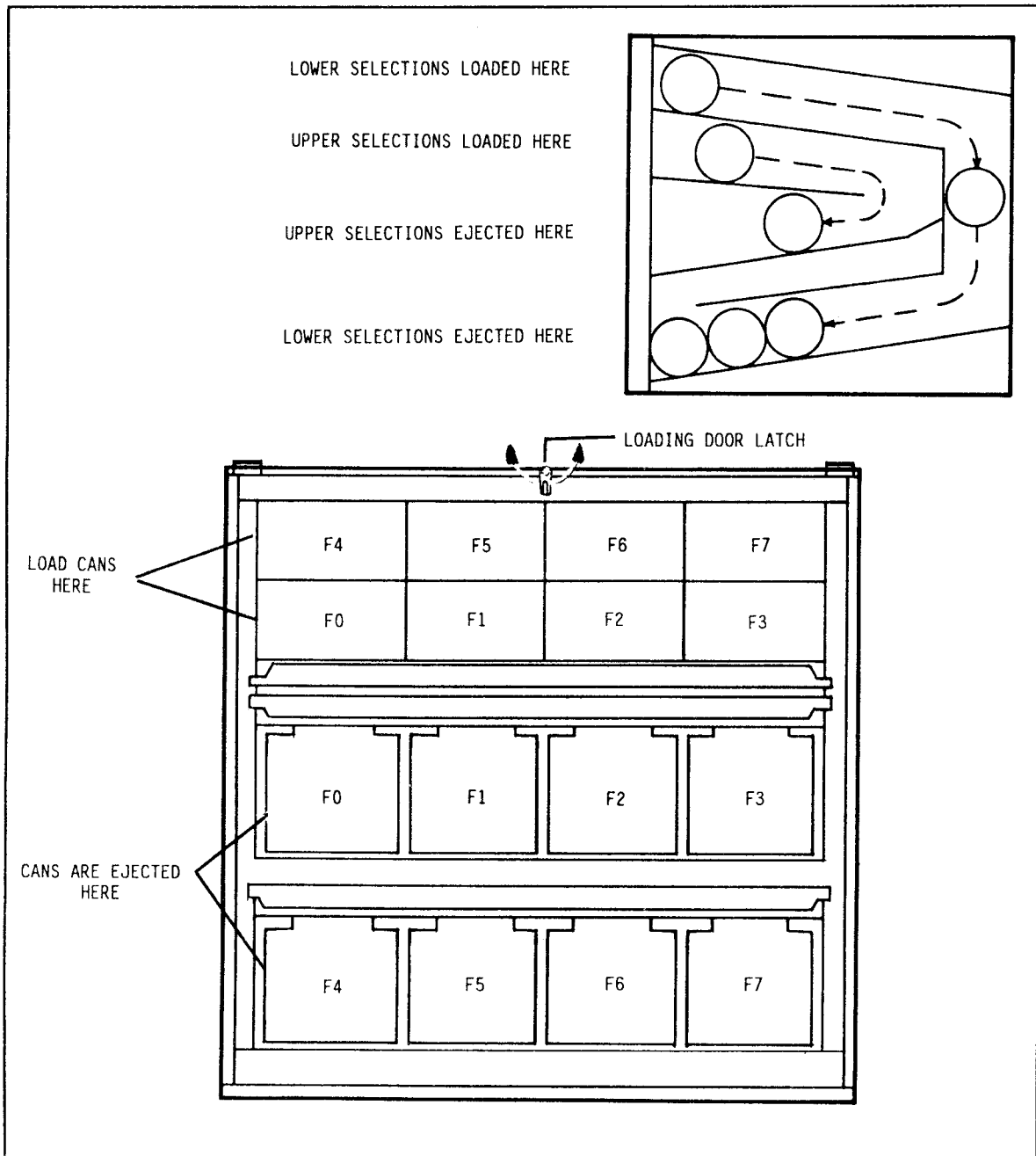
- * There are two price label rolls for each selection.
- * The roll on the left is for dollars. It goes from \$0 to \$12.
- * The roll on the right is for cents. It goes from .00 to .95 in steps of .05.
- * Scroll downward to decrease the price.
- * Scroll upward to increase the price.
- * The rolls are easier to scroll if you use the eraser on the end of a pencil.



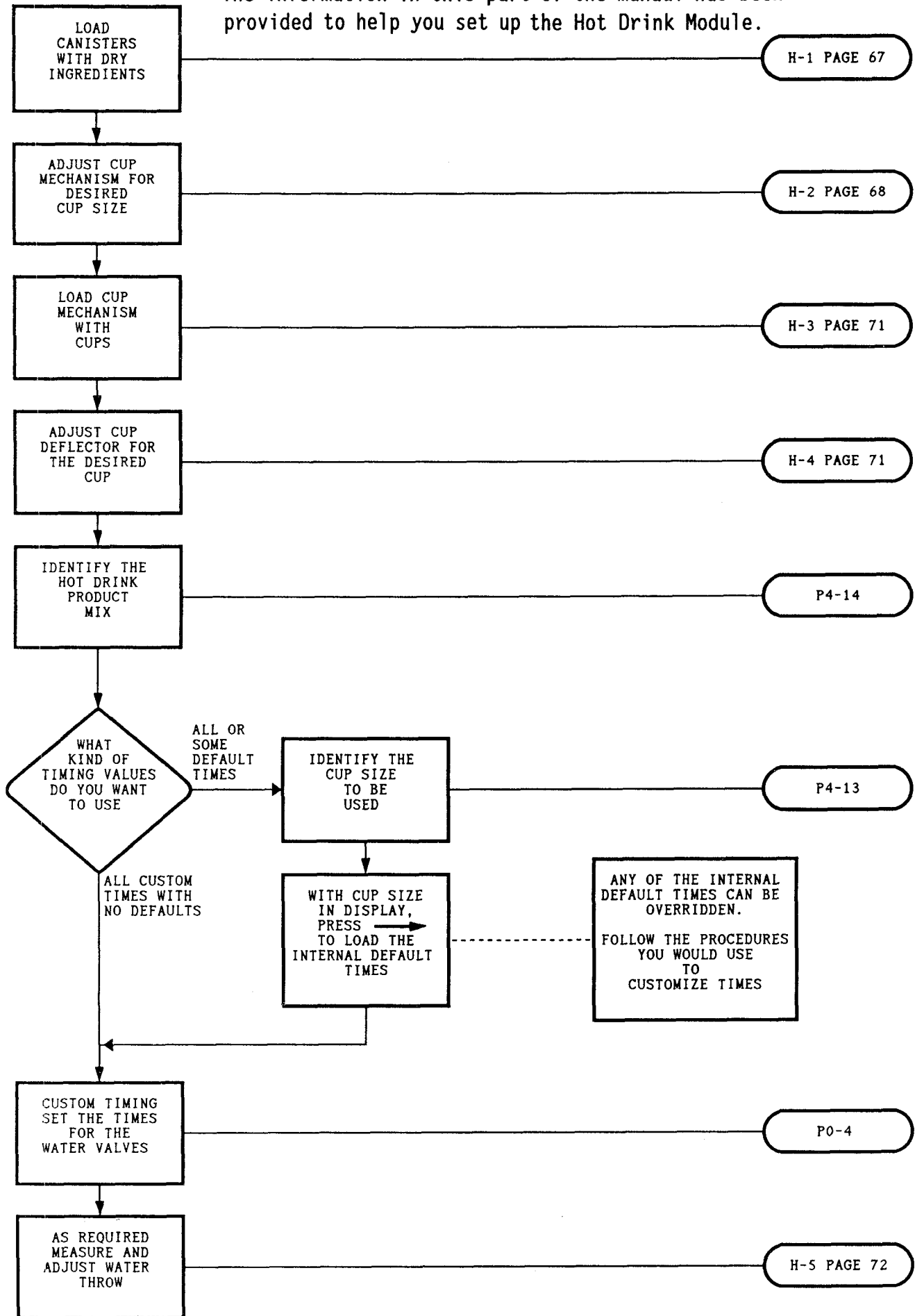
LOADING THE COLD CAN MODULE

Refer to the figures below.

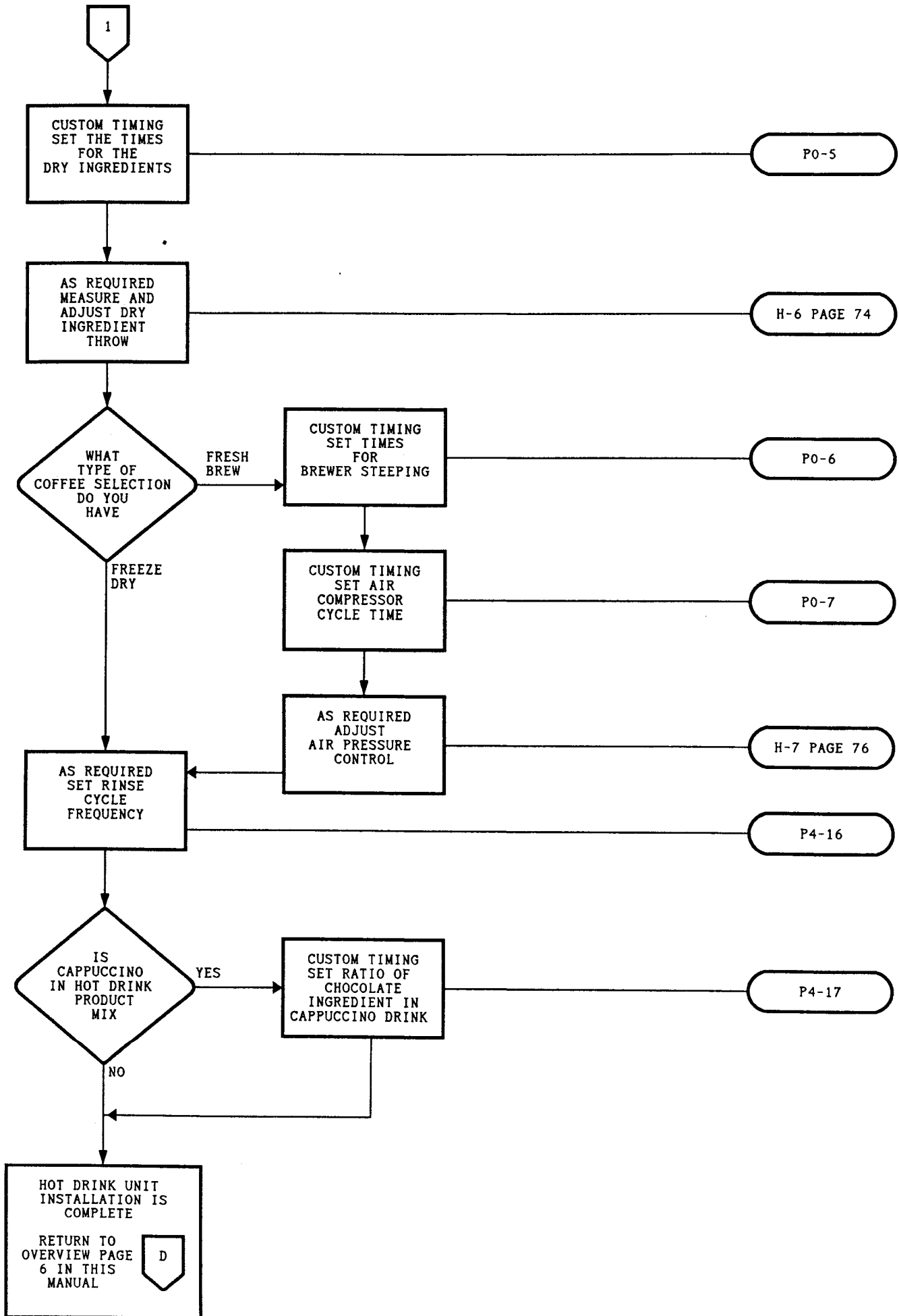
- * Turn the loading door latch to the left or to the right.
- * Lower the loading door into the loading position.
- * Load each of the selections as shown.
- * After all selections are loaded, raise the door and secure it in place.
- * In the four-select version, cans are loaded directly above the matching selection position.
- * In the eight-select version, cans are loaded as shown below.



The information in this part of the manual has been provided to help you set up the Hot Drink Module.



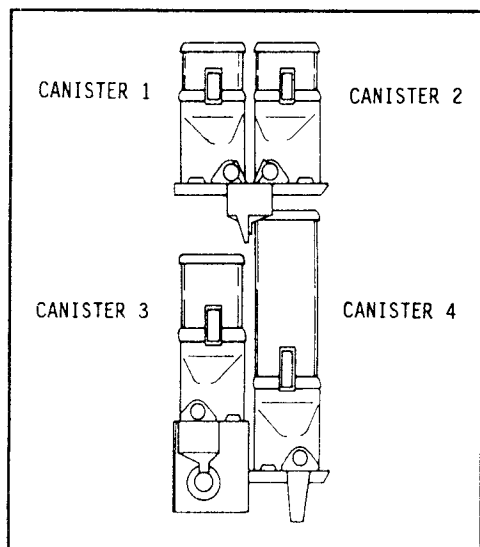
GUIDE TO HOT DRINK MODULE SET-UP (Continued)



INGREDIENT SPECIFICATIONS

PRODUCT	CANISTER CAPACITY	SPECIFICATION	SPECIAL COMMENTS
Chocolate	5 Lb. (2.3 Kg)	All-in-one commercial chocolate mix	DO NOT tap the canister to settle the contents
Whitener	3 Lb. (1.4 Kg)	Non-caking powder type	
Sugar	5 Lb. (2.3 Kg)	Regular, fine, granulated table sugar	Cane sugar is the recommended alternative
Tea	5 Lb. (2.3 Kg)	Bulk leak tea	
Fresh Brew Coffee or Decaf	4.5 Lb. (2.1 Kg)	Single cup, fine grind, vending machine coffee or decaf is recommended	Soft water problems may require the use of a coarse grind
Freeze Dry Coffee or Decaf	3 Lb. (1.4 Kg)	Instantly soluble type.	

CANISTER ASSIGNMENTS



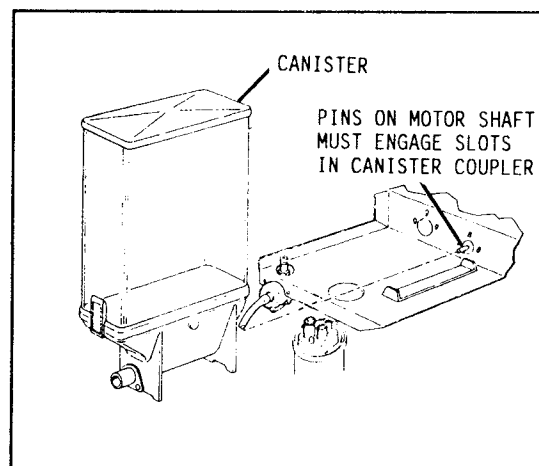
CANISTER 3 AND 4 INGREDIENT OPTIONS

PRODUCT MIX	CANISTER	
	3 NON-BREWED	4 BREWED or FREEZE DRY
FRESH BREW	Choc *	Coffee, Decaf or Tea
FB/SHORT	Choc *	Coffee or Decaf
FB/SHT/CAP	Choc **	Coffee or Decaf
FREEZE DRY	Choc *	Coffee, Decaf or Tea
FD/SHORT	Choc *	Coffee or Decaf
FD/SHT/CAP	Choc **	Coffee or Decaf

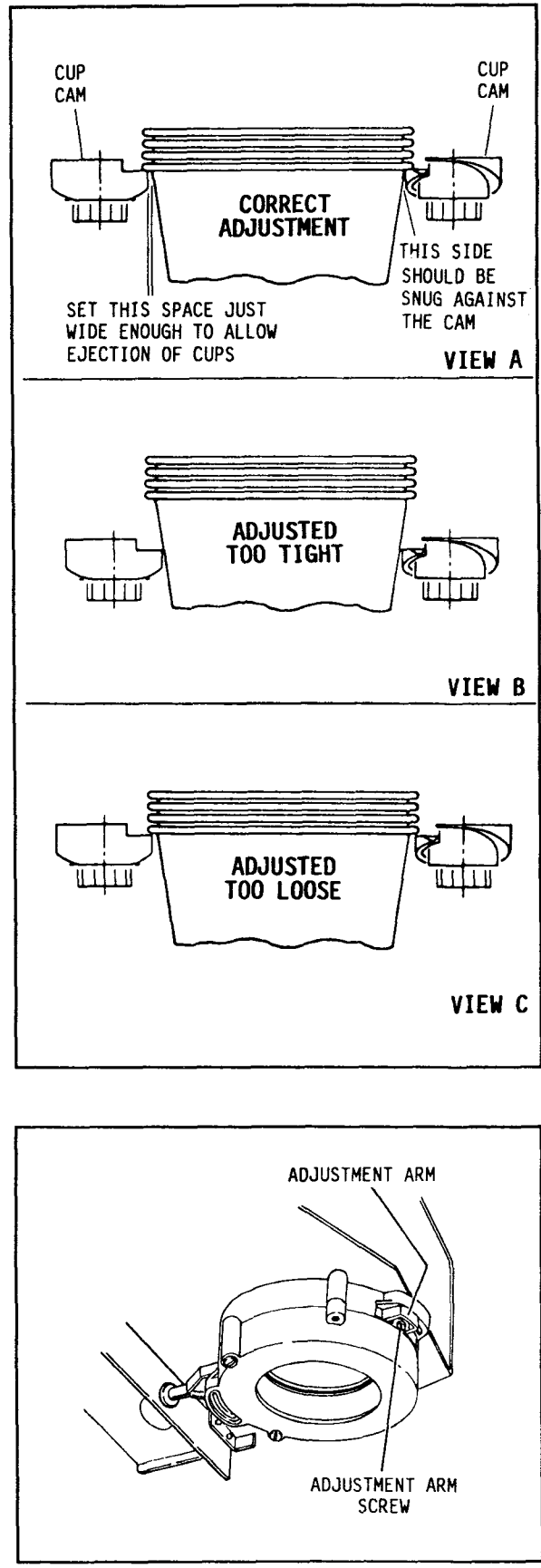
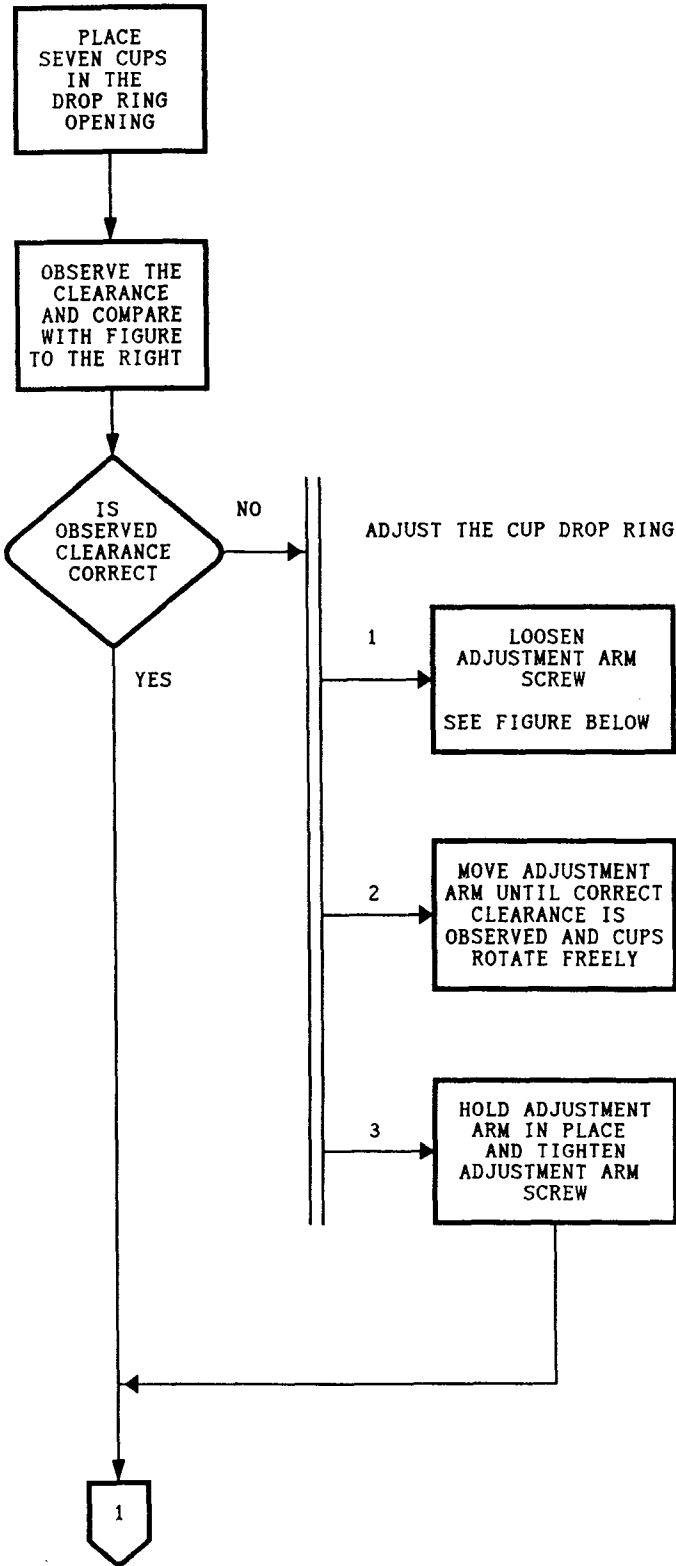
* Chocolate is optional.
 ** Chococate must be present to make a Cappuccino drink.

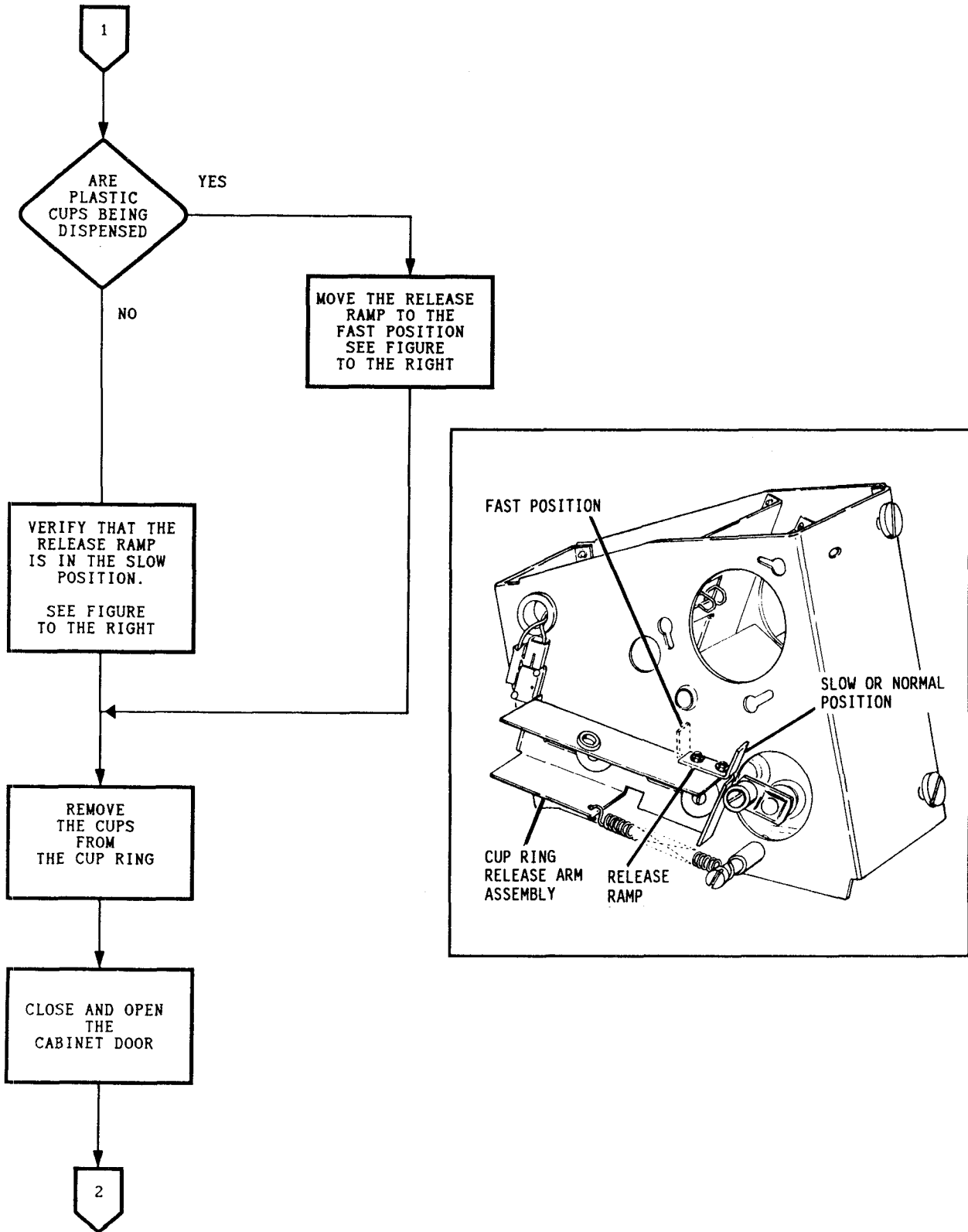
CANISTER REMOVAL AND REPLACEMENT

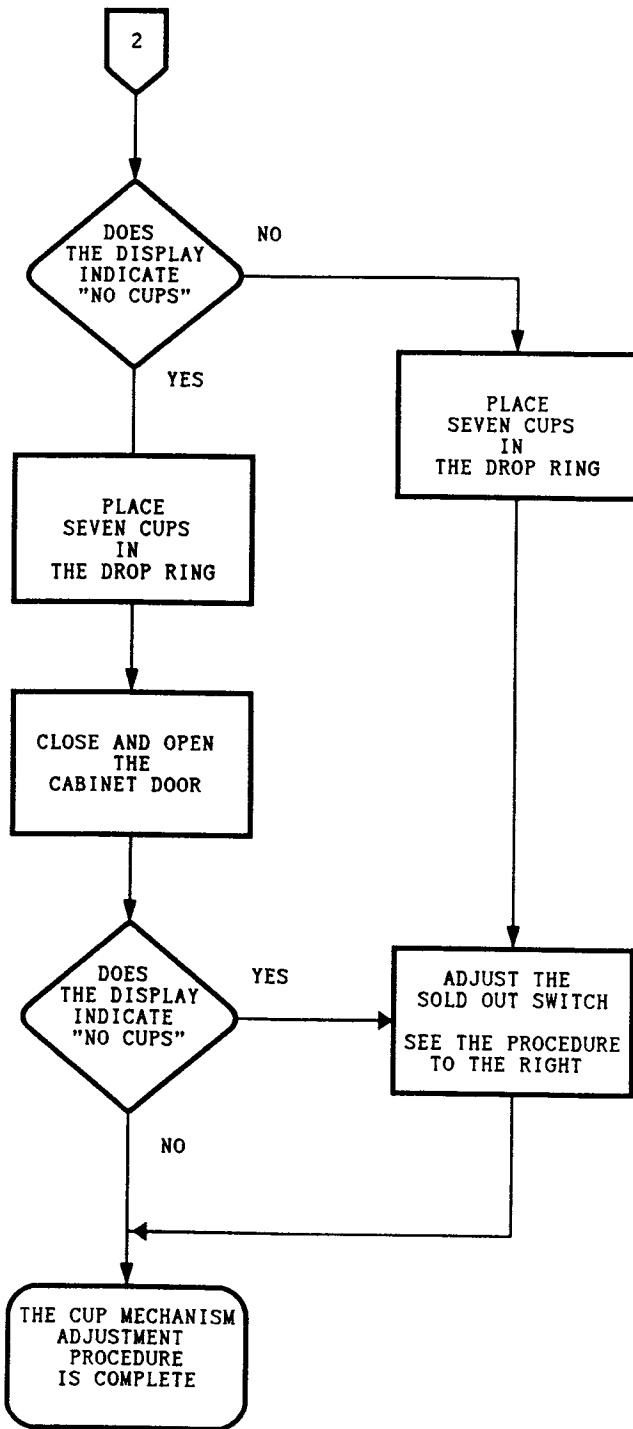
- * Unlatch the retaining clip.
- * Lift up on the lower front edge of the canister base and lift the assembly clear of the shelf.
- * When replacing a canister, be sure the pin in the dispenser motor shaft seats properly in the auger coupling.



H-2 CUP MECHANISM ADJUSTMENT







SOLD OUT SWITCH ADJUSTMENT

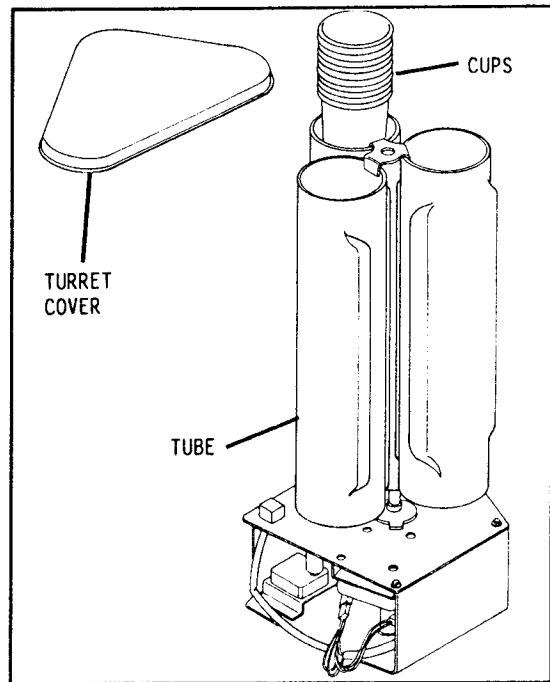
- * Remove the cup turret cover and lift the turret assembly clear of the cup dispenser.
- * Remove the cups remaining in the cup drop ring.
- * Loosen the nut securing the sold out switch bracket to the cup dispenser.
- * Pivot the switch and bracket assembly away from the cup drop ring opening.
- * Install a stack of seven or more cups in the drop ring.
- * Pivot the switch and bracket assembly toward the cups until the switch actuating lever touches the cups. You should hear a "clicking" sound made by the switch.
- * Tighten the nut that secures the switch bracket to the cup dispenser.
- * Replace the cup turret and cover.
- * Load the cup turret with cups.
- * Test drop enough cups so the turret will rotate to dispense from a new stack of cups.

LOADING THE CUP MECHANISM

CAUTION

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

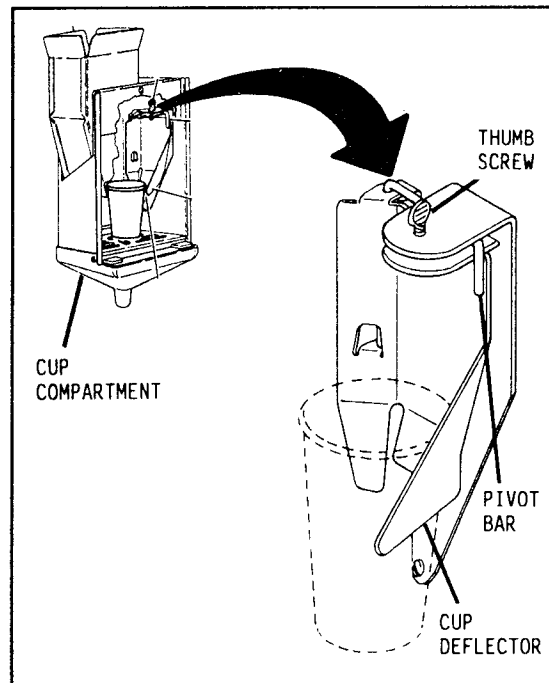
- * The size of cup you load must agree with the cup size that you selected with procedure P4-13 in the PROGRAMMING GUIDE.
- * Remove the turret cover.
- * Flex a stack of cups.
- * Place one hand under the cup tube to catch the cups as you drop them into the tube.
- * Replace the turret cover after each of the tubes has been loaded.



CUP DEFLECTOR ADJUSTMENT

The cup deflector is adjustable for different cup sizes.

- * Place a cup of the desired size and style in the cup compartment.
- * Loosen the thumb screw on the top of the cup deflector.
- * The distance between the cup and the deflector should be about 1/4 inch (6 mm).
- * Move the pivot bar to the left to decrease the distance between the cup and the deflector.
- * Move the pivot bar to the right to increase the distance between the cup and the deflector.
- * Hold the pivot bar and deflector in place and tighten the thumb screw.



SETTING WATER TIME IN A NEW
MERCHANTISER OR WHEN AN OLD
MERCHANTISER HAS A NEW VALVE

- * Set the Cup Size option to 7 oz. See P4-13 in the PROGRAMMING GUIDE.
- * Locate the correct time for the chosen product and cup size. See Table A on the next page.
- * Set the water time for this product. See PO-4 in the PROGRAMMING GUIDE. *USE THE TIME FOR A 7 oz CUP.*
- * Prepare to collect the water throw as explained on the next page.

WARNING

THE WATER IN THE WATER TANK IS VERY HOT. USE CARE WHEN COLLECTING THE WATER THROWS.

- * With the water time shown in the display, press ENTER/ACTION. Water will be dispensed.
- * Measure volume of collected water. Compare with the value in Table B on the next page.
- * Adjust the valve as needed to increase or decrease water flow. See instructions on next page.
- * Repeat the previous four steps until the correct volume of water is dispensed.
- * If a larger cup size will be vended, increase the water time to the value listed in Table A on the next page.
- * Measure and compare collected water volume with the value in Table B.
- * Adjust time as needed to increase or decrease the water flow.
- * Reconnect the water supply tube to the brew barrel if removed earlier.

SETTING THE WATER TIME AT ANY OTHER TIME

- * Locate the correct time for the chosen product and cup size. See Table B on the next page.
- * Set the water time for this product. See PO-4 in the PROGRAMMING GUIDE.
- * Prepare to collect the water throw as explained on the next page.

WARNING

THE WATER IN THE TANK IS VERY HOT. USE CARE WHEN COLLECTING THE WATER THROWS.

- * With the water time shown in the display, press ENTER/ACTION. Water will be dispensed.
- * Measure collected water volume. Compare with the value in Table B on the next page.
- * Adjust the time as needed to increase or decrease water flow.
- * Repeat the previous four steps until the correct volume of water is dispensed.
- * Reconnect the water supply tube to the brew barrel if removed earlier.

COLLECTING WATER THROWS FOR A BREWED SELECTION

Refer to the figure below during this procedure.

WARNING

THE WATER IN THE WATER TANK IS VERY HOT. USE CARE WHEN COLLECTING THE WATER THROWS.

- * Remove the water supply tube from the brew barrel manifold.
- * Insert the disconnected water tube in a clean cup and hold as shown.

COLLECTING WATER THROWS FOR THE HOT CHOCOLATE OR HOT WATER SELECTIONS

- * Place a clean cup in the cup station to collect the water.

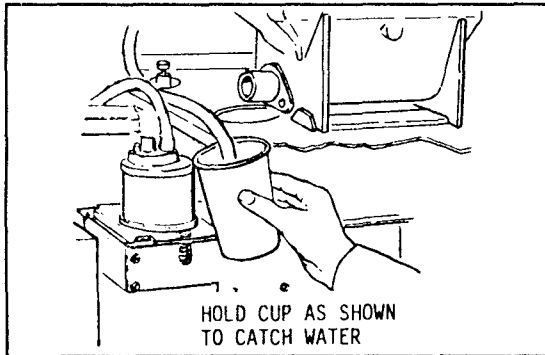


TABLE A: SUGGESTED WATER TIMES

SELECTION	CUP SIZE		
	7 oz	8.25 oz	9 oz
FRESH BREW	4.0 sec	4.5 sec	5.0 sec
FREEZE DRY	3.8	4.2	4.7
HOT CHOCOLATE	10.2	12.0	13.1
HOT WATER	8.0	8.0	8.0
TEA	4.0	4.5	5.0

Local conditions may require different times in order to dispense the correct volume of water.

ADJUSTING THE WATER VALVES

Refer to the figure below during this procedure.

WARNING

THE WATER IN THE WATER TANK IS VERY HOT. USE CARE WHEN ADJUSTING THE WATER VALVES.

- * Turn the water valve adjusting screw clockwise to decrease the water flow.
- * Turn the water valve adjusting screw counter-clockwise to increase the water flow.

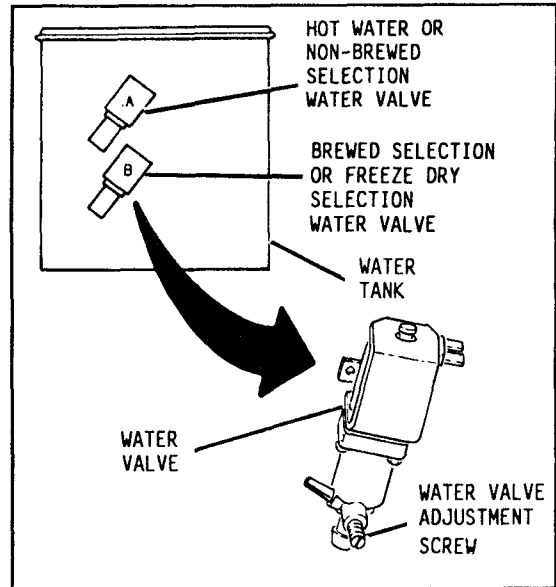


TABLE B: RECOMMENDED WATER VOLUME

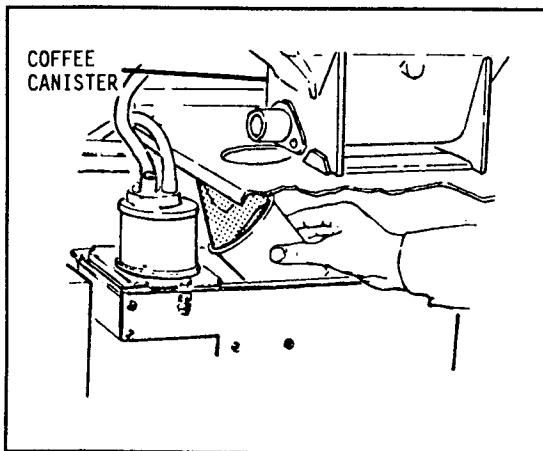
SELECTION	CUP SIZE		
	7 oz	8.25 oz	9 oz
FRESH BREW	170 ml	200 ml	220 ml
FREEZE DRY	160	180	200
HOT CHOCOLATE	150	170	190
HOT WATER	160	180	200
TEA	170	200	220

SETTING THROW OF THE BREWED SELECTION

WARNING

KEEP YOUR HANDS AWAY FROM THE MOVING PARTS OF THE BREWER WHILE IT IS CYCLING.

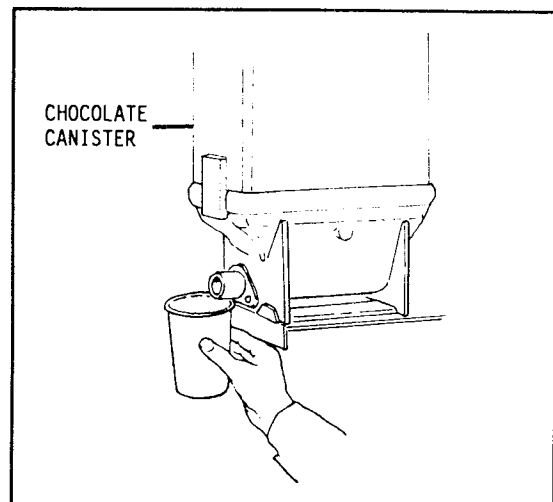
- * Locate the correct time for the chosen product and cup size. See Table A on the next page.
- * Set a new time for this ingredient or review the current time. See PO-5 in the PROGRAMMING GUIDE.
- * Hold a clean, empty cup under the canister discharge funnel. See the figure below.



- * With the ingredient time shown in the display, press ENTER/ACTION. The dry ingredient will be dispensed.
- * Weigh the collected ingredient. Compare with the value in Table B on the next page.
- * Adjust the time as needed to increase or decrease the amount of ingredient dispensed.
- * Repeat the previous four steps until the correct amount of dry ingredient has been dispensed.

SETTING HOT CHOCOLATE, SUGAR AND WHITENER THROW

- * Locate the correct time for the chosen ingredient and cup size. See Table A on the next page.
- * Remove the mixing bowl for the ingredient being measured.
- * Set a new time for this ingredient or review the current time. See PO-5 in the PROGRAMMING GUIDE.
- * Hold a cup under the dispensing spout for the chosen ingredient. See the figure below for hot chocolate and the figure on the next page for sugar or whitener.
- * With the ingredient time shown in the display, press ENTER/ACTION. The dry ingredient will be dispensed.
- * Weigh the collected ingredient. Compare with the value in Table B on the next page.
- * Adjust the time as needed to increase or decrease the amount of ingredient dispensed.
- * Repeat the previous four steps until the correct amount of dry ingredient has been dispensed.



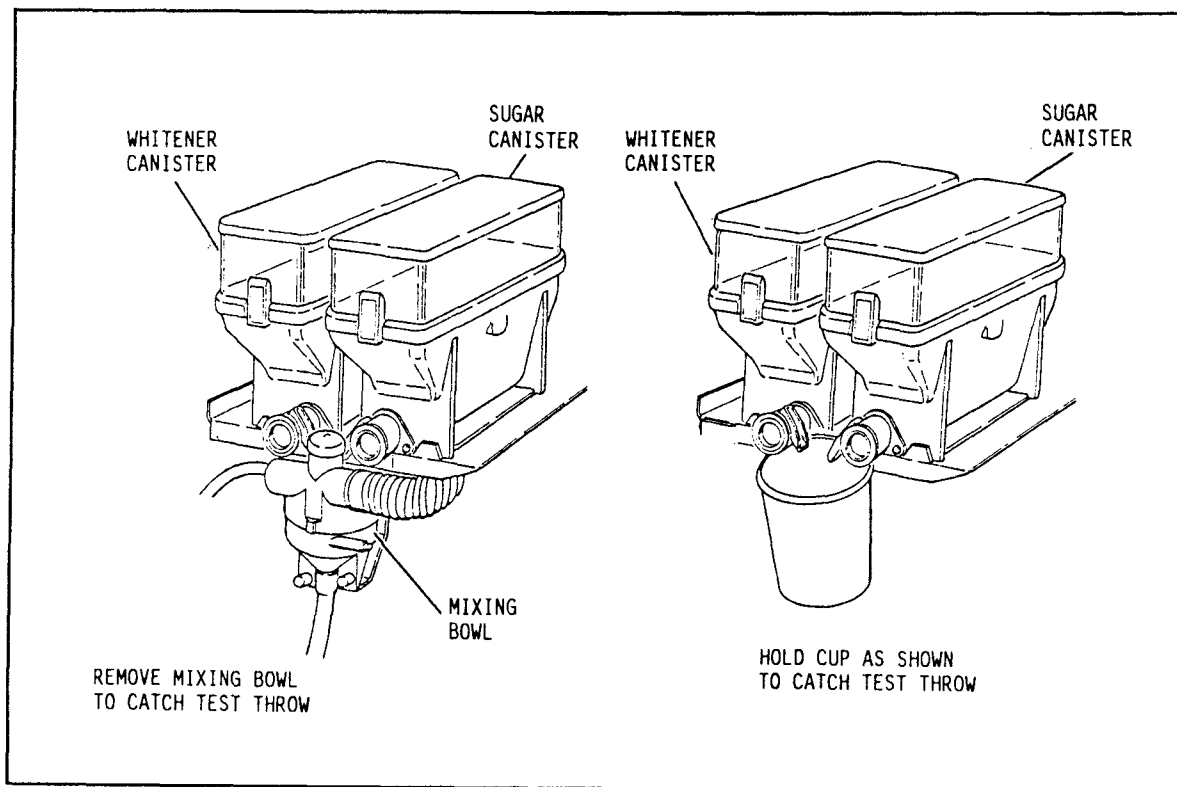


TABLE A: SUGGESTED INGREDIENT TIMES

SELECTION		CUP SIZE		
		7 oz	8.25 oz	9 oz
FRESH BREW		2.75 sec	3.25 sec	3.55 sec
FREEZE DRY	REGULAR	3.3	5.0	6.7
	STRONG	4.0	5.7	7.7
HOT CHOCOLATE		2.7	3.1	3.4
TEA		Find correct time by testing		
SUGAR		1.5	1.7	1.9
TOTAL SUGAR EXTRA		1.75	2.1	2.5
WHITENER		.3	.4	.5
TOTAL WHITENER EX		.5	.6	.7

TABLE B: RECOMMENDED INGREDIENT WEIGHTS

SELECTION		CUP SIZE		
		7 oz	8.25 oz	9 oz
FRESH BREW		8 g	9 g	10 g
FREEZE DRY	REGULAR	1.0	1.5	2.0
	STRONG	1.2	1.7	2.3
HOT CHOCOLATE		24	28	31
TEA		Find correct weight by testing		
SUGAR		6	7	8
TOTAL SUGAR EXTRA		8	9	10
WHITENER		1.5	2	2.5
TOTAL WHITENER EX		2	2.5	3

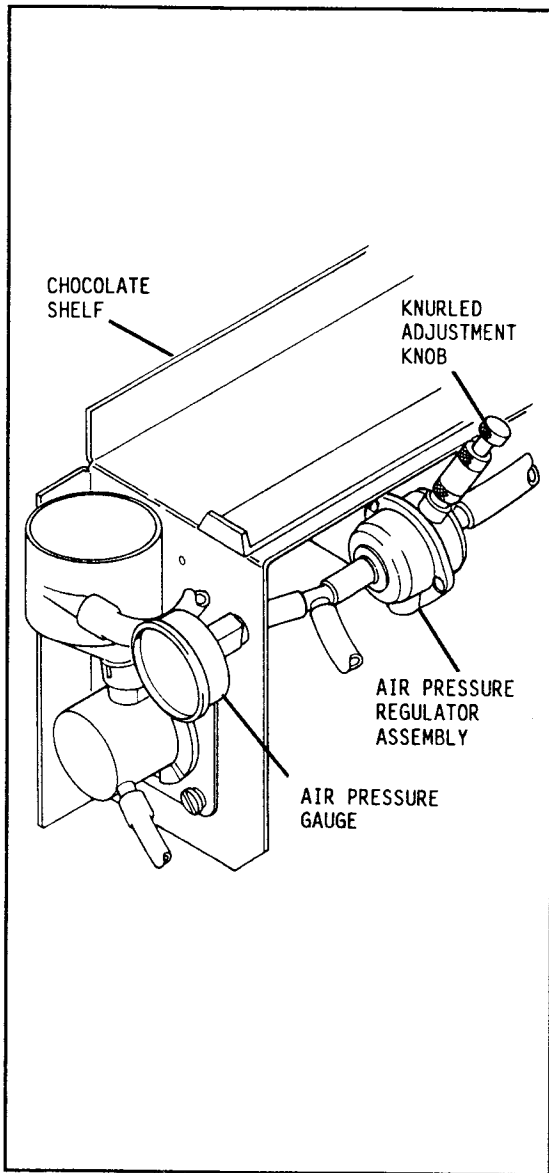
NOTE

In the end, the amount of dry ingredients used is a matter of taste. Use the times in the tables as a starting point. If the drink does not taste right to you, try a range of times until the taste is more to your liking. In addition to taste, the amount of dry ingredients used is also influenced by local water conditions and the brand of ingredient being used.

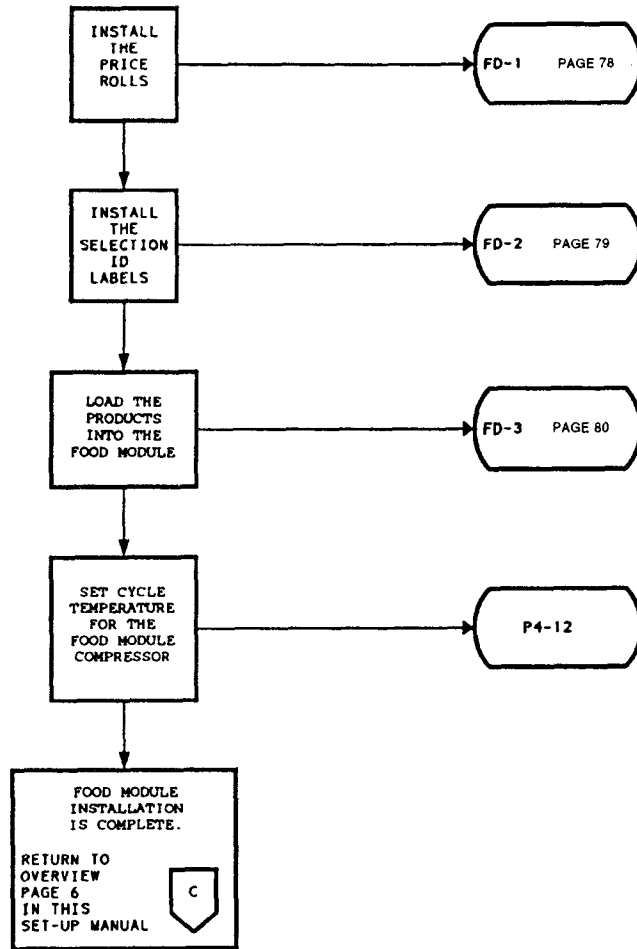
AIR PRESSURE GAUGE ADJUSTMENT

The air pressure gauge is located below the chocolate canister. It is mounted on the front of the chocolate shelf.

The air pressure regulator assembly is located on the other side of the shelf panel in line with the gauge.



- * The air pressure regulator should be adjusted during the vending of a brewed selection.
- * While the air compressor is running, the pressure will register on the pressure gauge.
- * The air pressure must be sufficient to force the brew past the filter screen, out of the brewer barrel and up to the mixing bowl.
- * Once the brew reaches the mixing bowl, it must start a swirling action in the bowl. The swirling action mixes the sugar and whitener with the brew.
- * Ideally, the pressure should be set to the lowest workable pressure between 4 and 8 psi (27.6 and 55.2 kPa). If the pressure is too high, the brew will overshoot the mixing bowl.
- * Turn the knurled knob on the regulator clockwise to increase pressure. Turn it counter-clockwise to decrease the pressure.
- * Generally, decaf will require more pressure than coffee.
- * Run a series of test vends to determine the best setting for your location and machine.



Price labels are printed on coiled-up rolls. You will find these in the plastic bag that contained this manual. See Figure FD-1a.

There are two types of price rolls:

- * Dollar Roll - 1 to 12 increments of 1
- * Cents Roll - 00 to 95 increments of 05

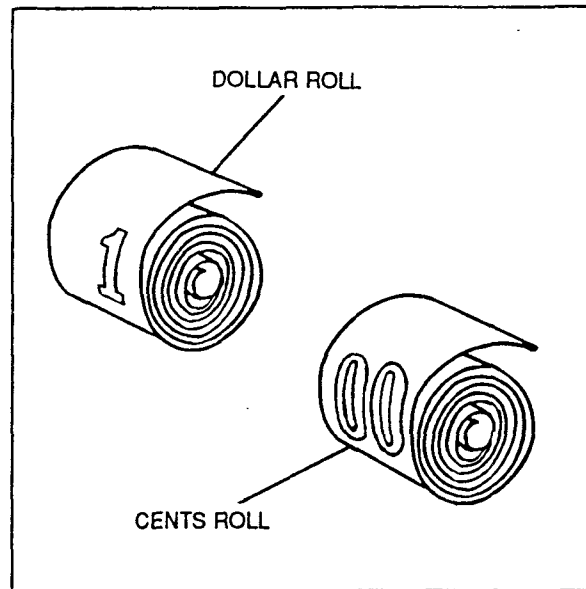


Figure FD-1a

INSTALLING PRICE ROLLS

- * There are three pairs of slots in the front of the Tray for each column position.
- * Insert the dollar roll in the left slot below each column if the price is \$1.00 or more. See Figure FD-1b.
- * Insert the cents roll in the slot immediately to the right of the dollar roll. See Figure FD-1b.
- * The low-number end of the roll goes in the top slot and the high-number end of the roll goes in the bottom slot.

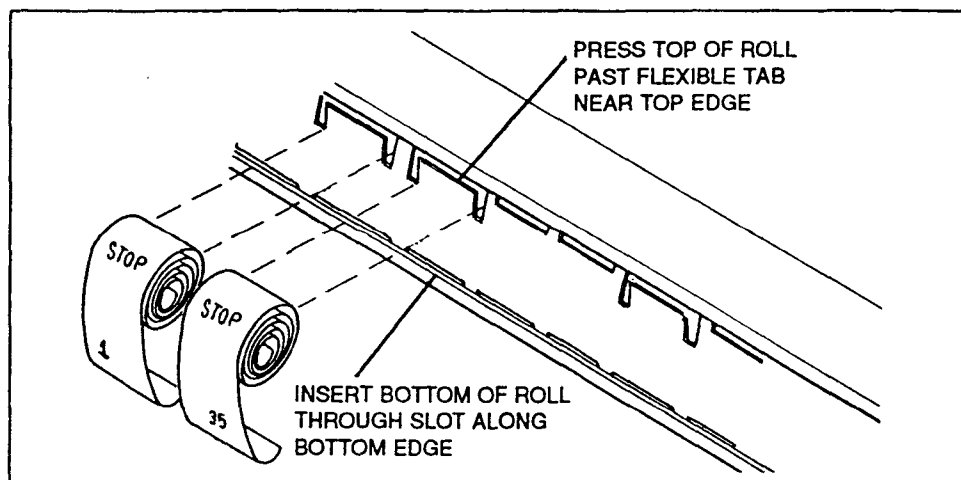


Figure FD-1b

ADJUSTING THE PRICE LABELS

- * You can set selection prices within the following range:

Minimum Price \$.00

Maximum Price \$12.95

Increment \$.05

- * Use your thumb or a pencil eraser to move each price roll up or down as needed to set the desired price. See Figure FD-1c.

NOTE

*You will see the word STOP
near either end of the roll.*

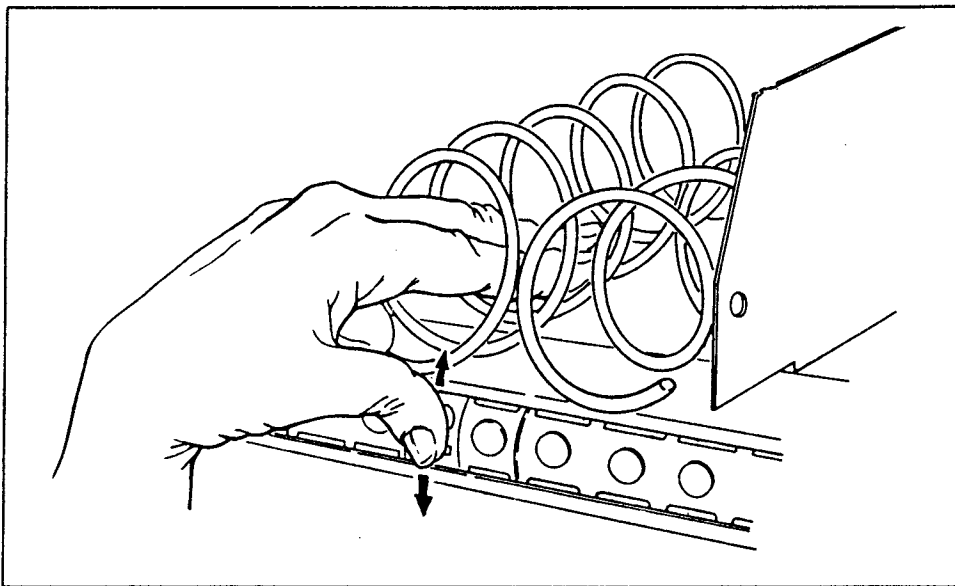


Figure FD-1c

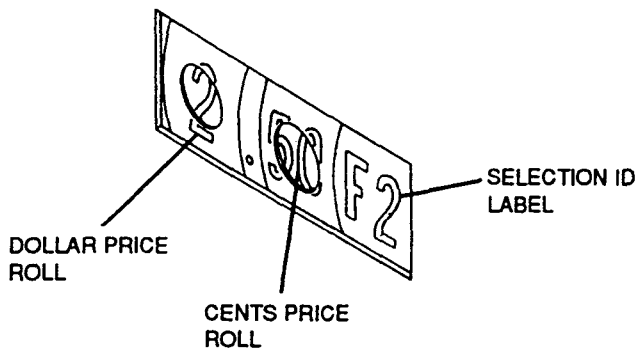
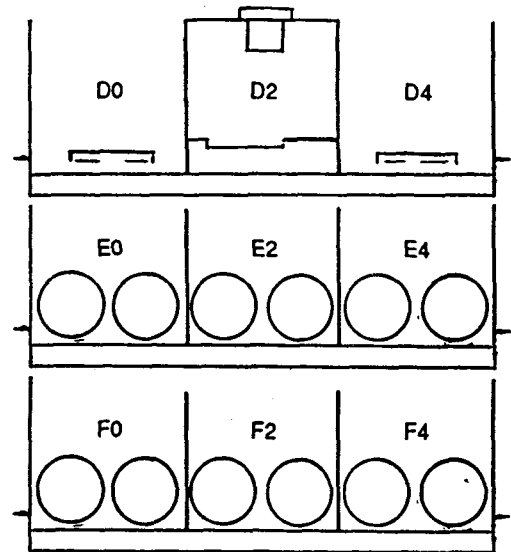
INSTALLATION OF SELECTION ID NUMBERS

Selection ID Numbers are printed on clear plastic labels. You will find these in the plastic bag that contained this manual.

- *The price rolls should be installed first. See paragraph FD-1.
- * Press the two long edges of the selection ID label together.
- * Snap the label into position on the front of the Tray. See Figure FD-2a.

WHICH LABEL GOES WITH WHICH SELECTION?

SELECTION ID LABEL ASSIGNMENTS



DETAIL A

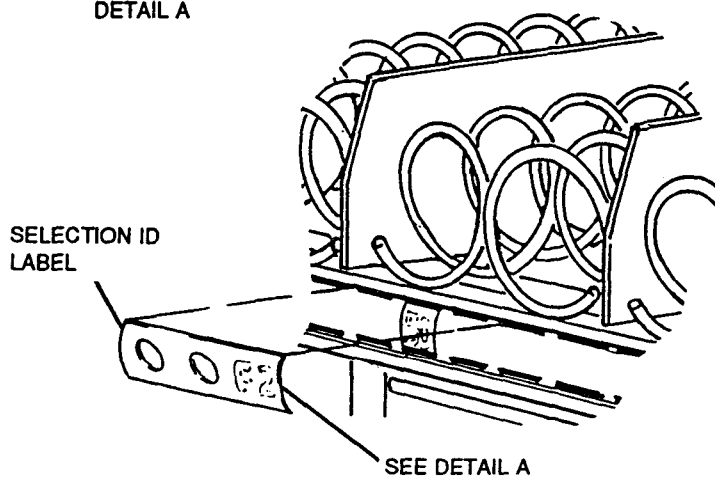


Figure FD-2a

LOADING THE REFRIGERATED OR FROZEN FOOD MODULE

Refer to the figures below.

- * Lift the loading door latch and open the loading door.
- * Place both hands on the Food Module tray as shown in Figure FD-3a.
- * Lightly push back on the tray with your palms. This will release the tray latches on the sides of the tray.
- * Push down on the tray latches with your thumbs.
- * Pull the tray forward until it stops.
- * Load each of the spiral selections as shown. See Figure FD-3b.
- * Load the belt and pusher selections as shown in Figure FD-3c.
- * See Figure FD-3d for belt, pusher and spiral assignments.
- * After all selections are loaded, push the tray in until it latches. Then close and latch the door.

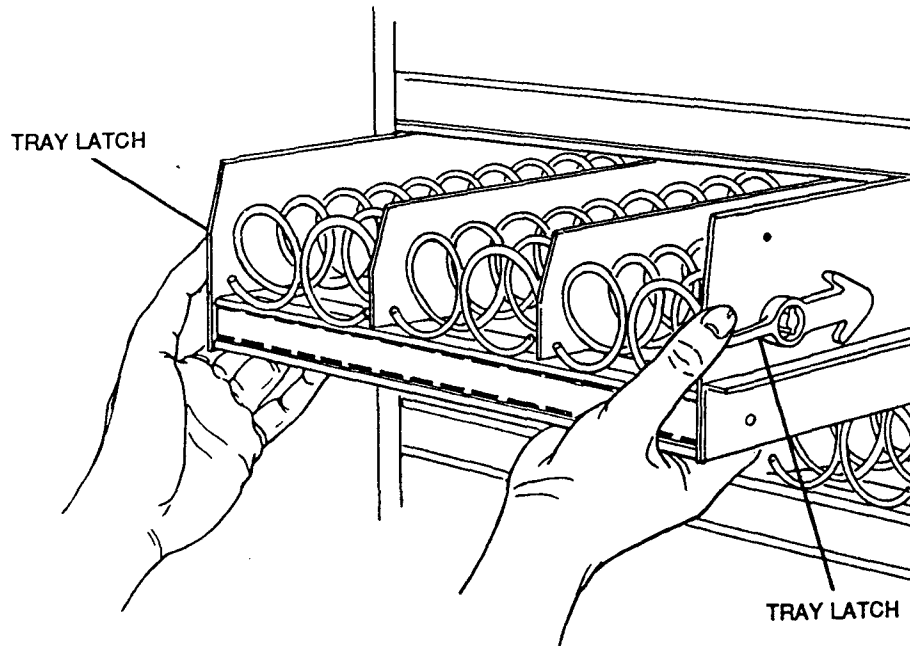


Figure FD-3a

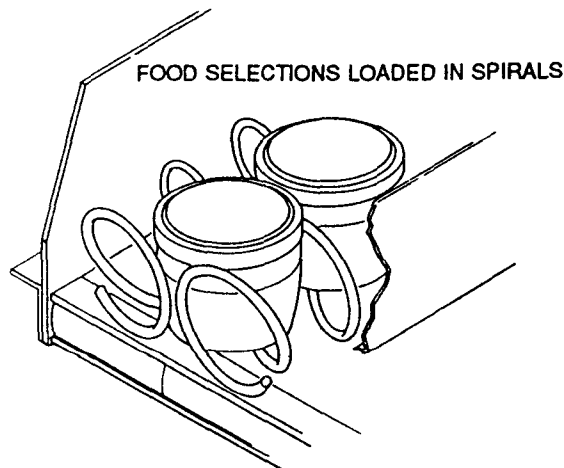


Figure FD-3b

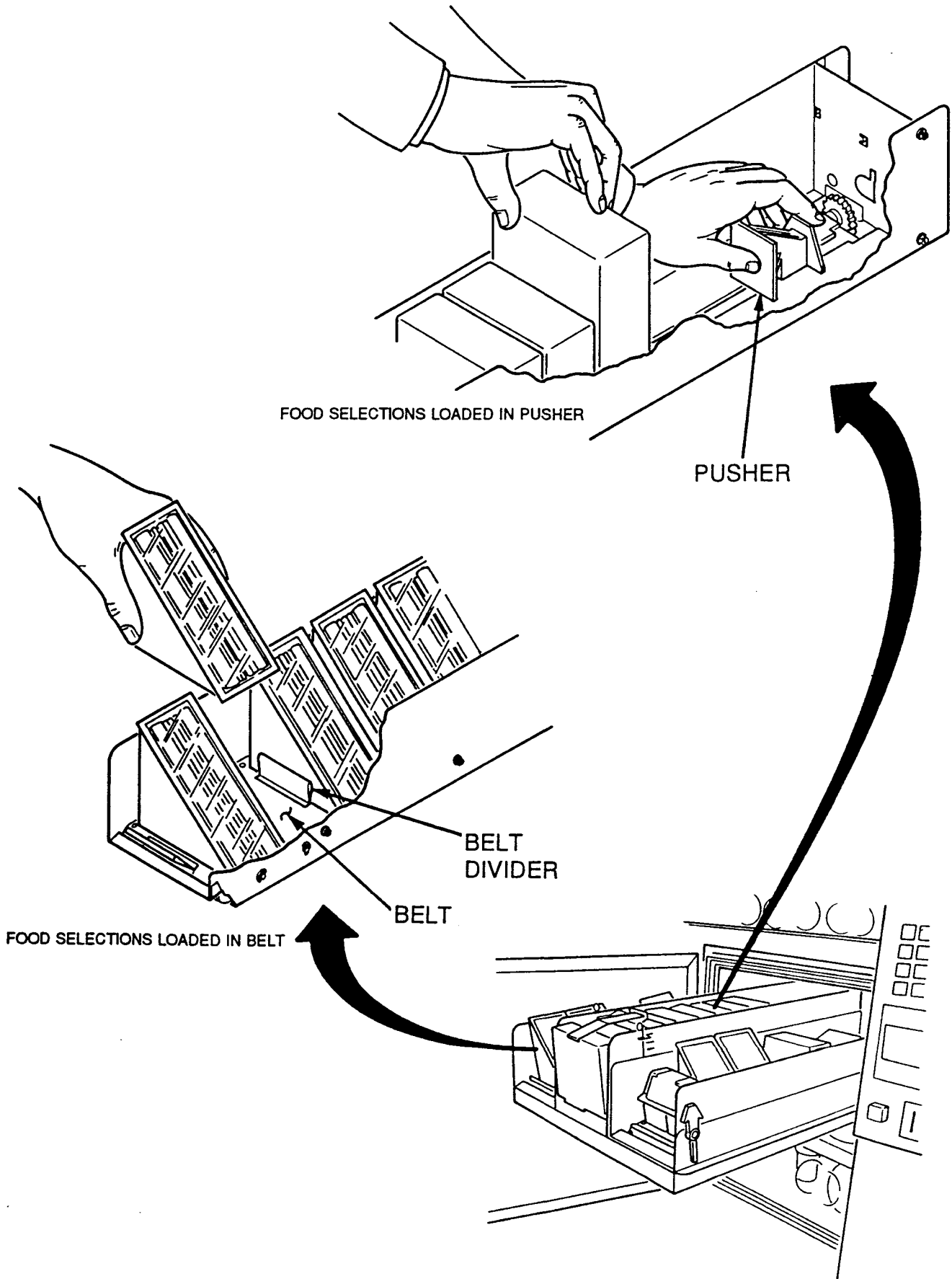


Figure FD-3c

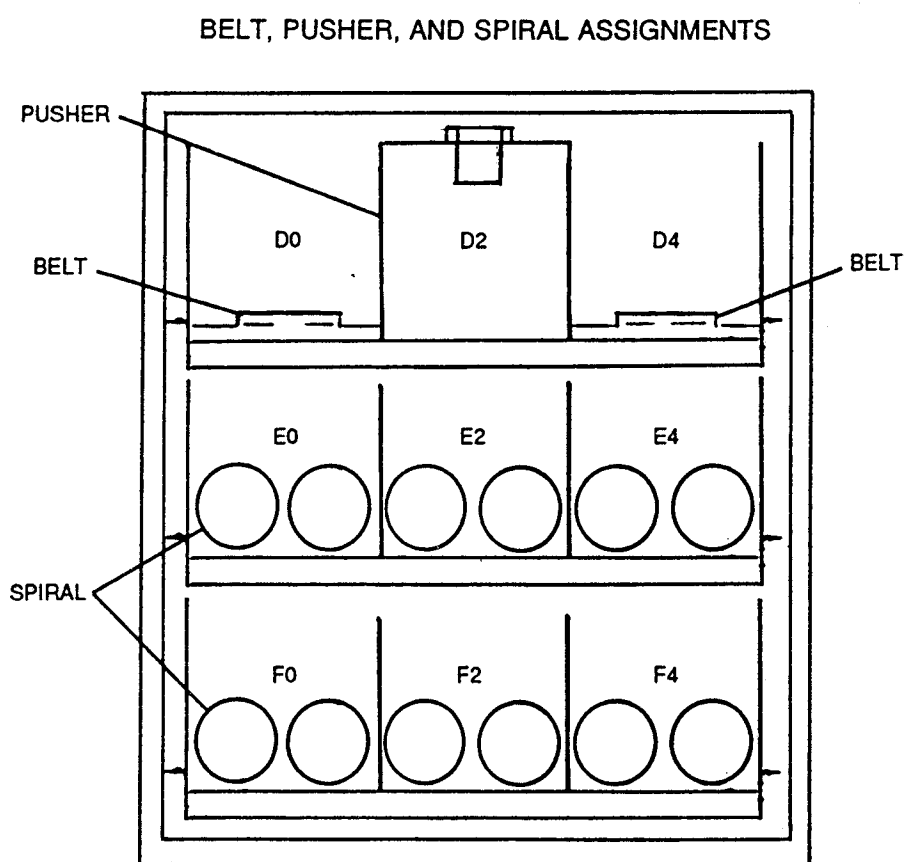


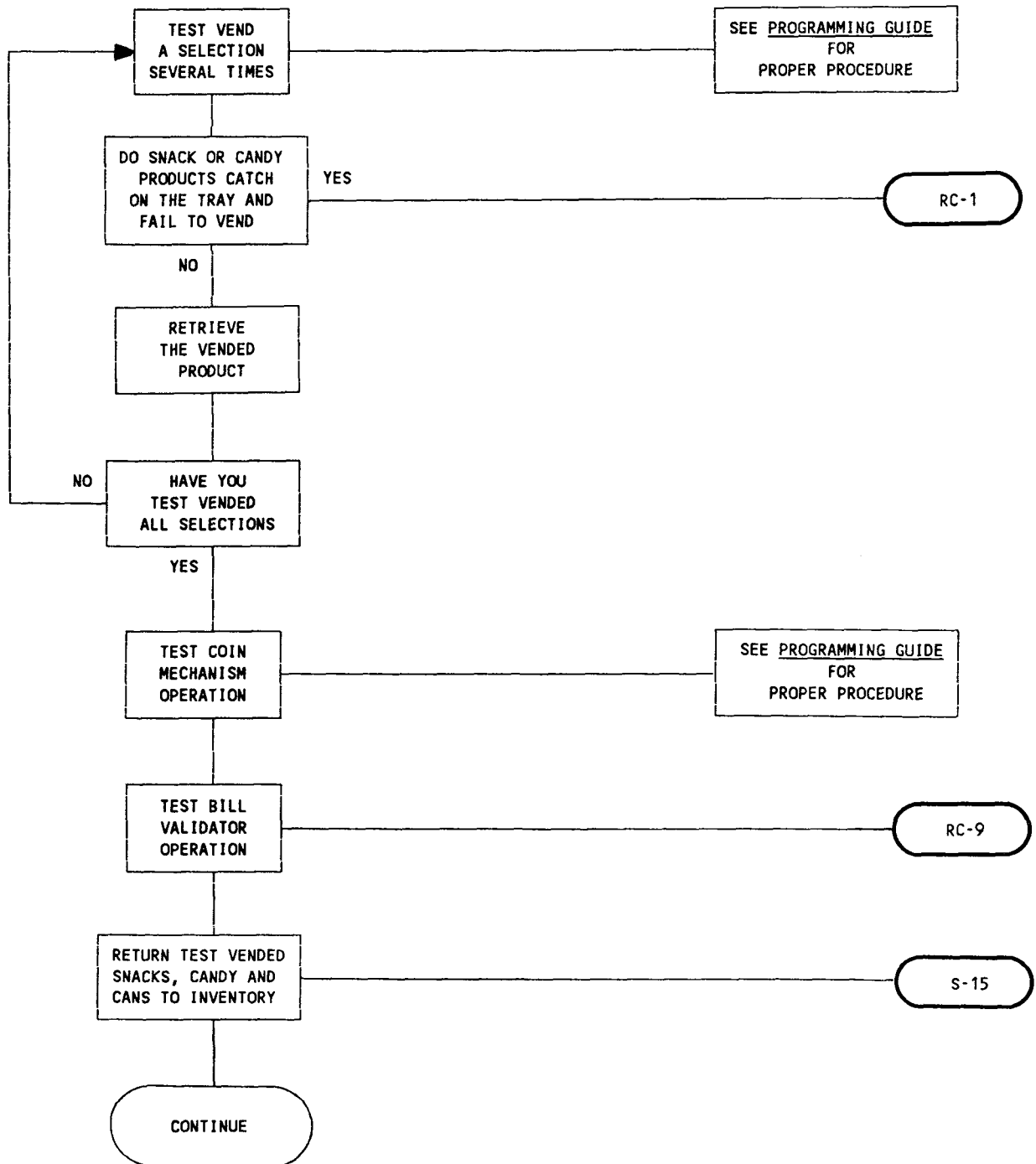
Figure FD-3d

The information in this part of the manual has been provided to help you determine if the merchandiser is ready to put into operation.

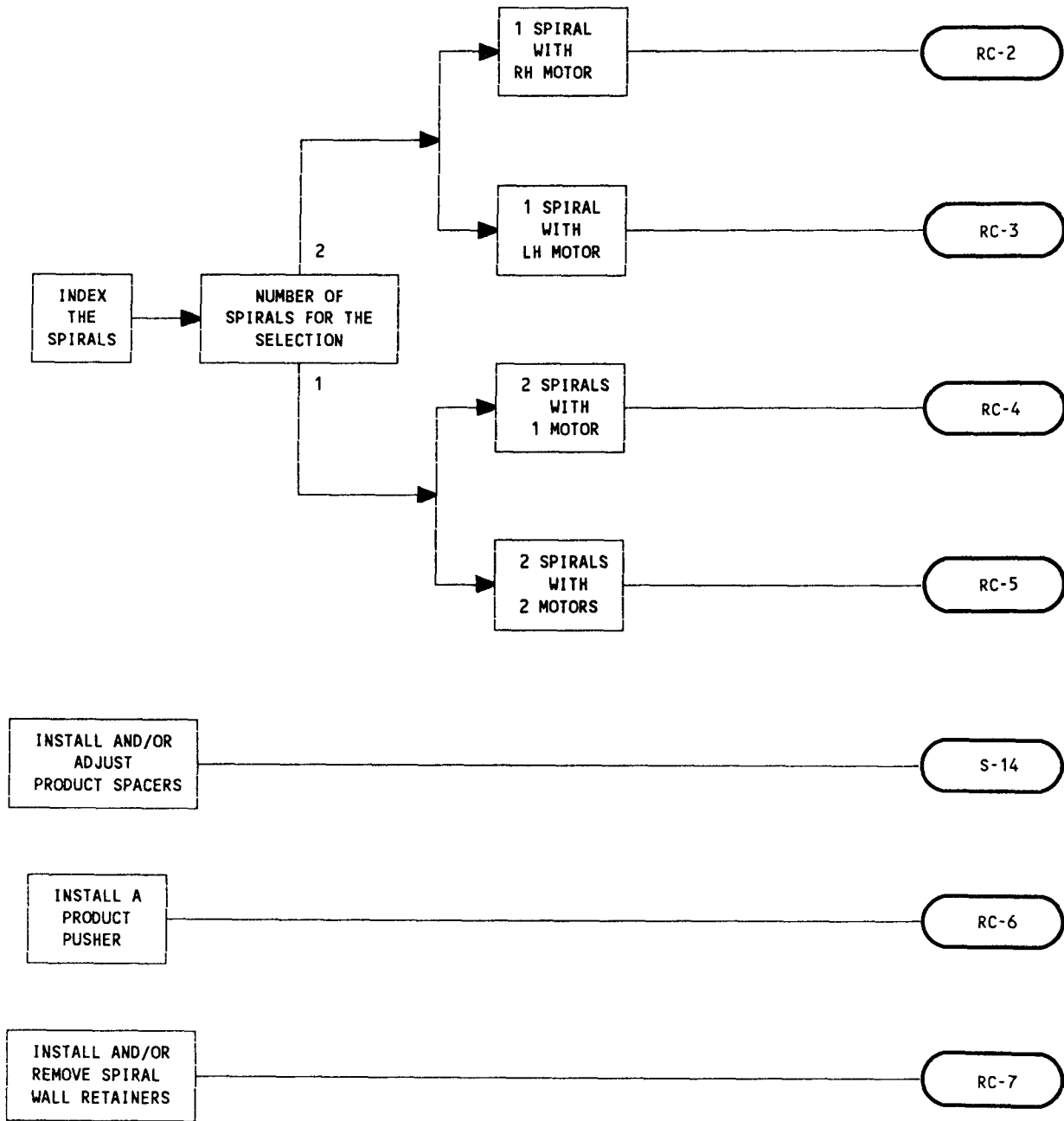
OPERATIONAL READINESS CHECKING PROCEDURES

- RC-1 Anti Hang-Up Procedure Overview
- RC-2 Indexing 1 Spiral Used With A Right Hand Motor
- RC-3 Indexing 1 Spiral Used With A Left Hand Motor
- RC-4 Indexing 2 Spirals Used With 1 Motor
- RC-5 Indexing 2 Spirals Used With 2 Motors
- RC-6 Installing A Product Pusher
- RC-7 Installing and Removing A Spiral Wall Retainer
- RC-8 Retrieving A Product Through the Delivery Door
- RC-9 Testing the Bill Validator

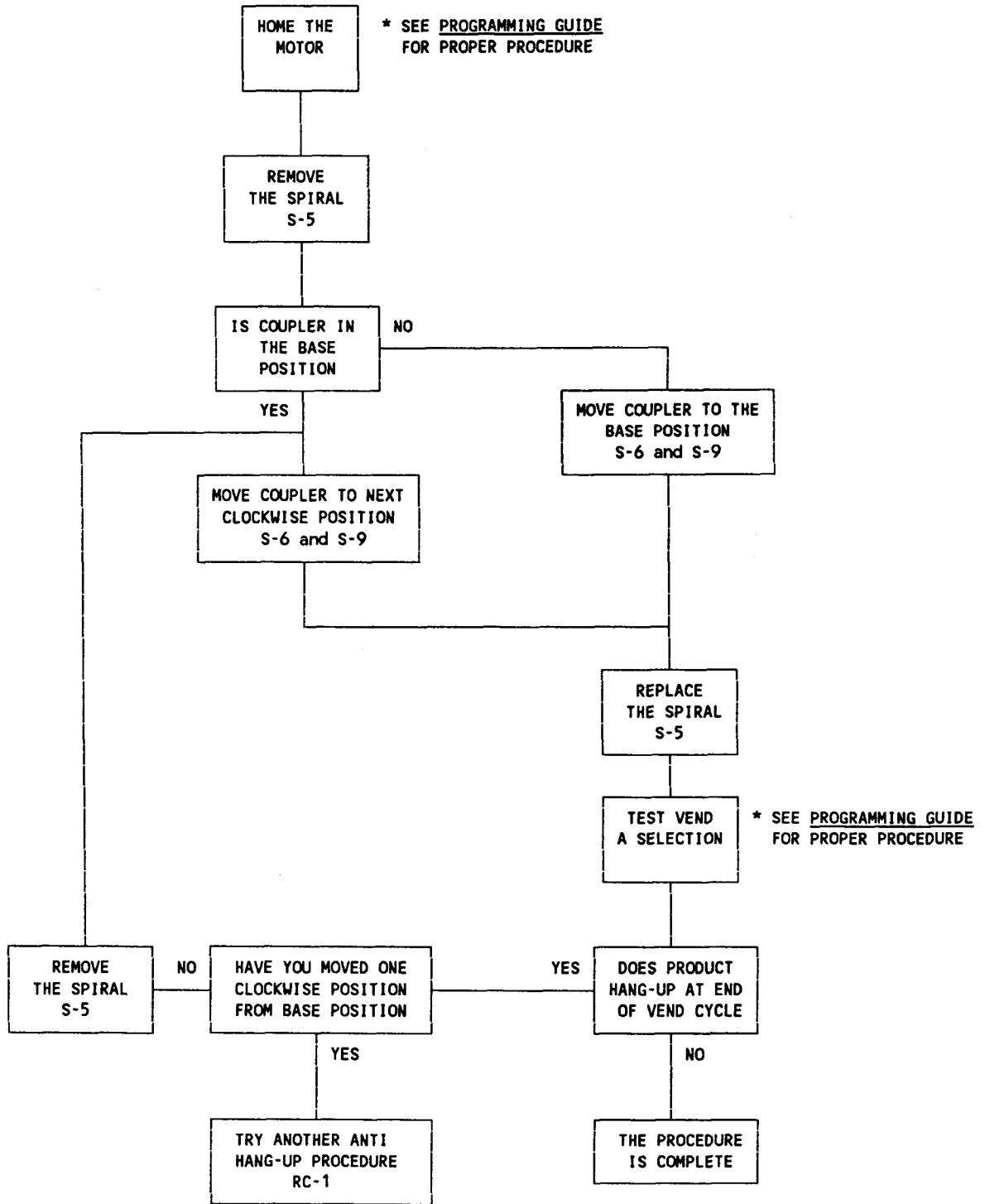
COMPLETE THE OPERATIONAL READINESS CHECK
WHEN YOU ARE INSTALLING A NEW MERCHANDISER,
WHEN YOU CHANGE THE SET-UP OF A TRAY OR
AFTER YOU HAVE CHANGED A PART OF THE CONFIGURATION

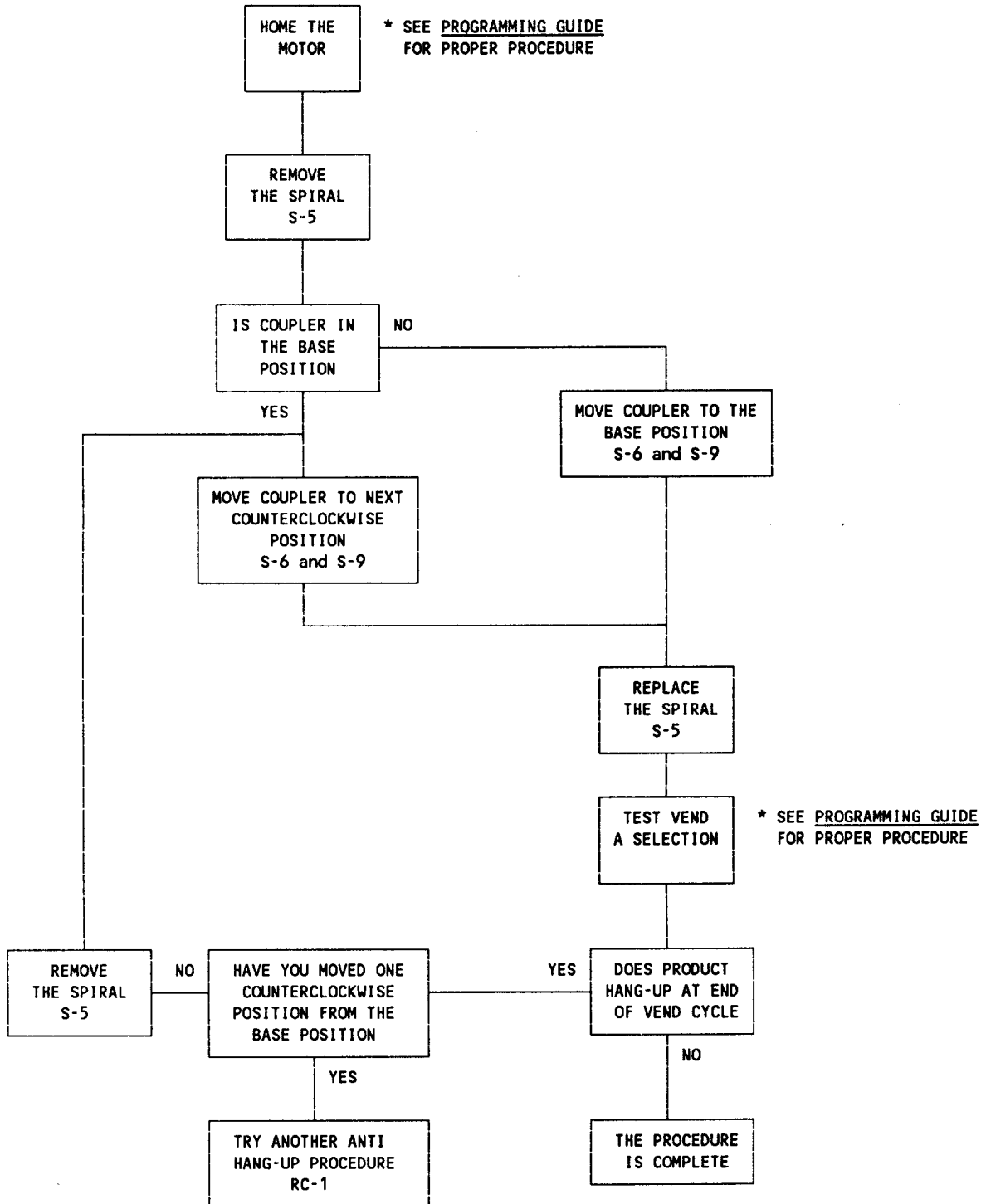


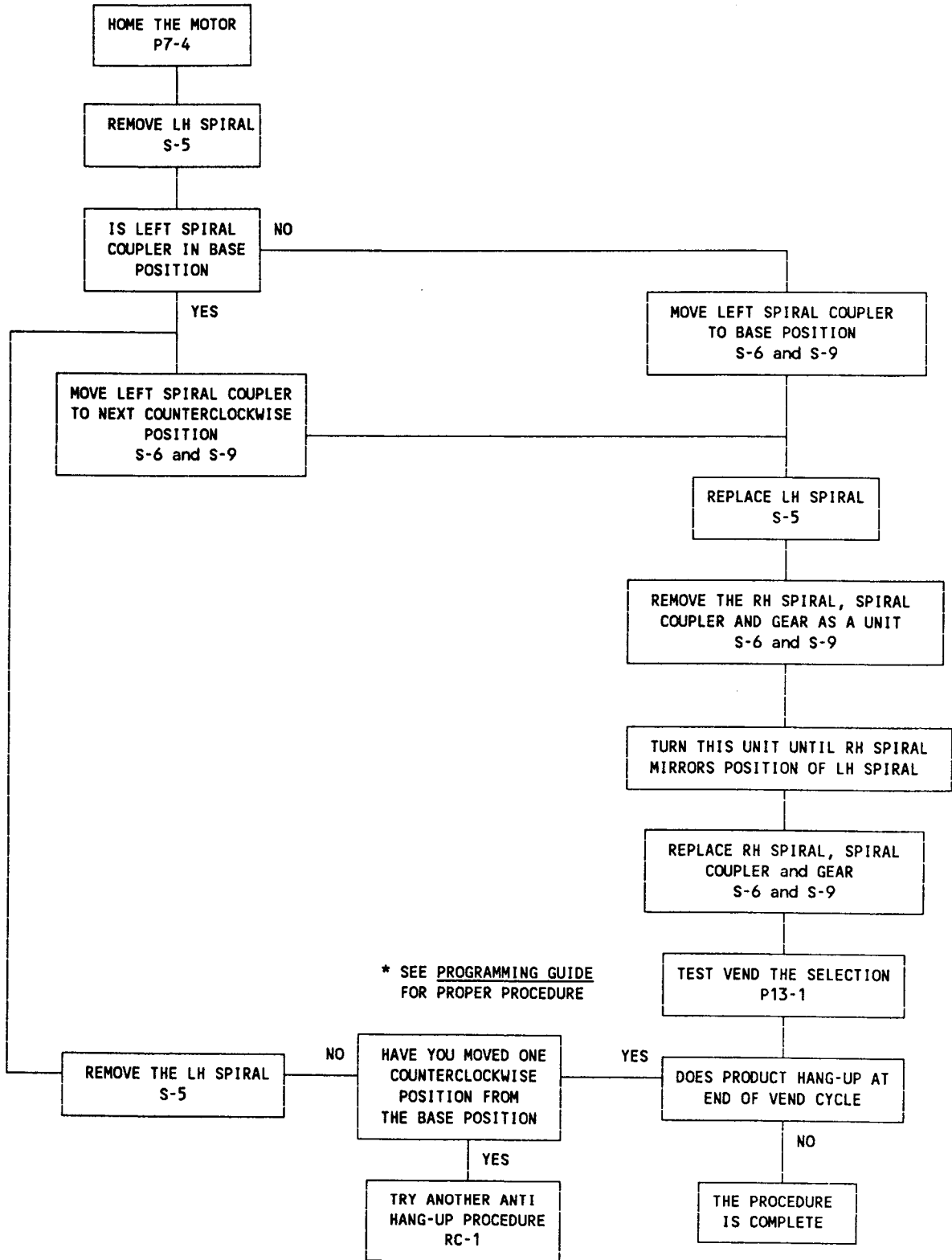
ANTI HANG-UP PROCEDURES FOR FINE TUNING SPIRALS

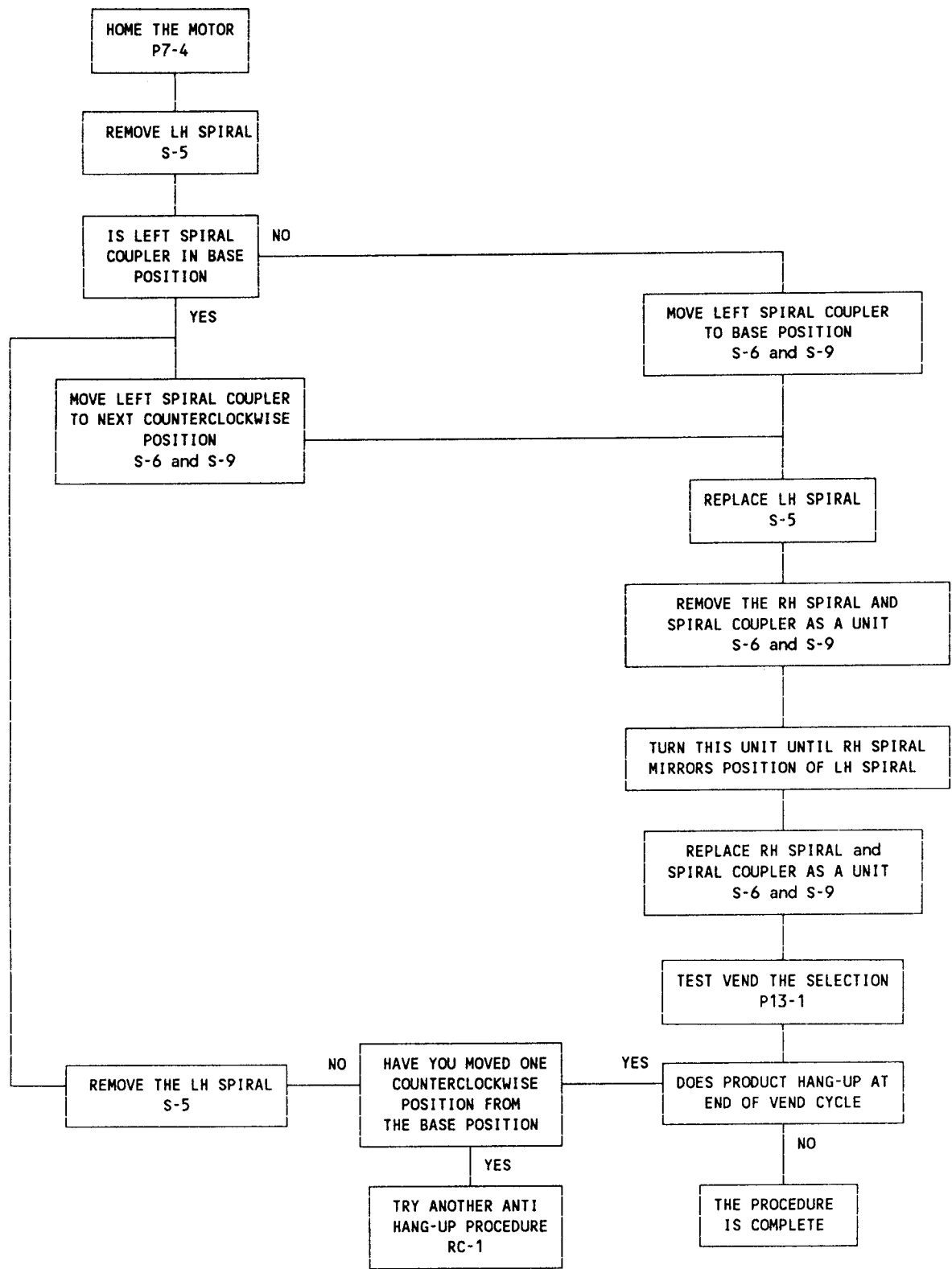


* Work with these procedures individually and in various combinations. If you are not able to eliminate a hang-up, contact National Vendors Service Department for help.





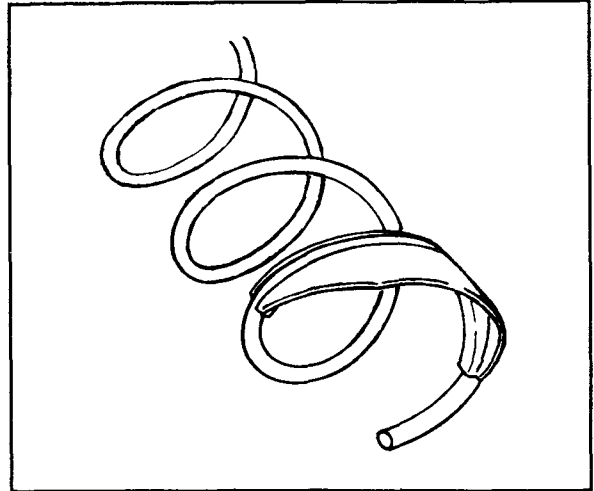




* A Product Pusher is normally used in the following cases:

- The spiral has a capacity of 15, 13 or 11
- The package is non-rigid like bagged peanuts

* The Product Pusher can also be used with other spirals and types of products.

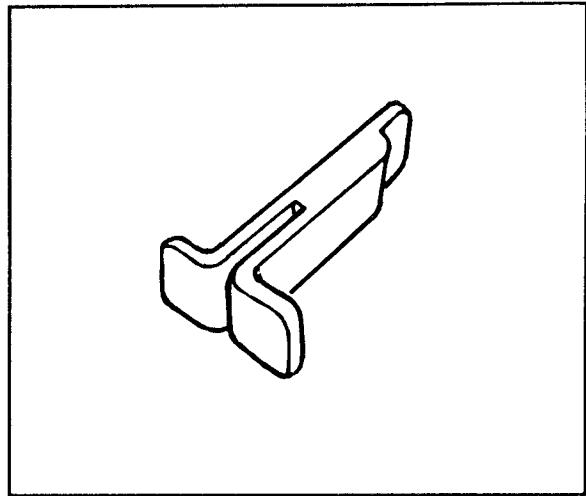


- * A bag of Product Pushers has been shipped with the merchandiser. Additional product pushers are available from National Vendors Parts Department.
- * Snap the Product Pusher on the Spiral as shown above.
- * Test Vend the selection.
- * If the product still hangs up, reposition the product pusher or try another anti hang-up procedure.

* A Spiral Wall Retainer is normally used in the following cases:

- The spiral has a capacity of 20, 25, 30 or 38.
- The product is thin
- The product is on a candy tray.

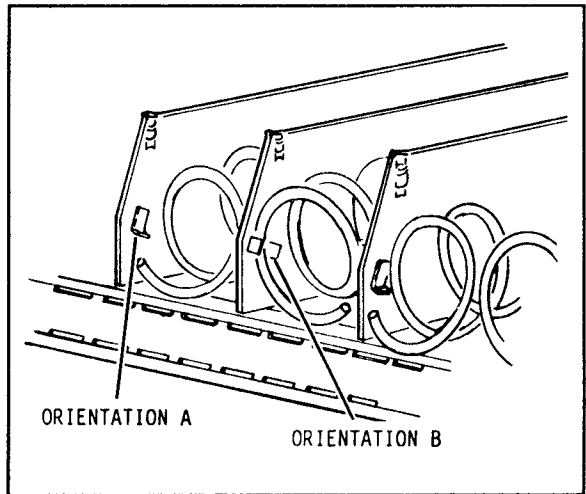
* The Spiral Wall Retainer can also be used with other spirals and types of products.



* The Spiral Wall Retainer is installed near the front of the Column Divider.

* There are two ways to install the Spiral Wall Retainer.

	RETAINER ORIENTATION	
	A	B
COLUMN	0 and 1	1 and 2
DIVIDER	2 and 3	3 and 4
BETWEEN	4 and 5	5 and 6
THESE	6 and 7	7 and 8
POSITIONS	8 and 9	



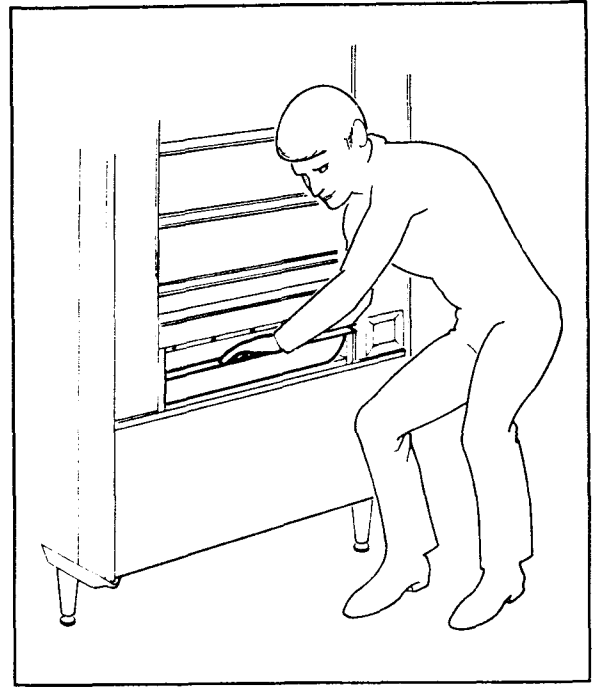
* To install a Spiral Wall Retainer, insert the Retainer in the square slot near the front of the Column Divider.

* The Spiral Wall Retainer must be removed in two cases:

- A KIT-KAT bar loaded into either of the two right hand positions of a tray will not clear the Retainer on the Column Divider between the two positions.
- A Product Pusher will catch on a Retainer in *ORIENTATION A*.

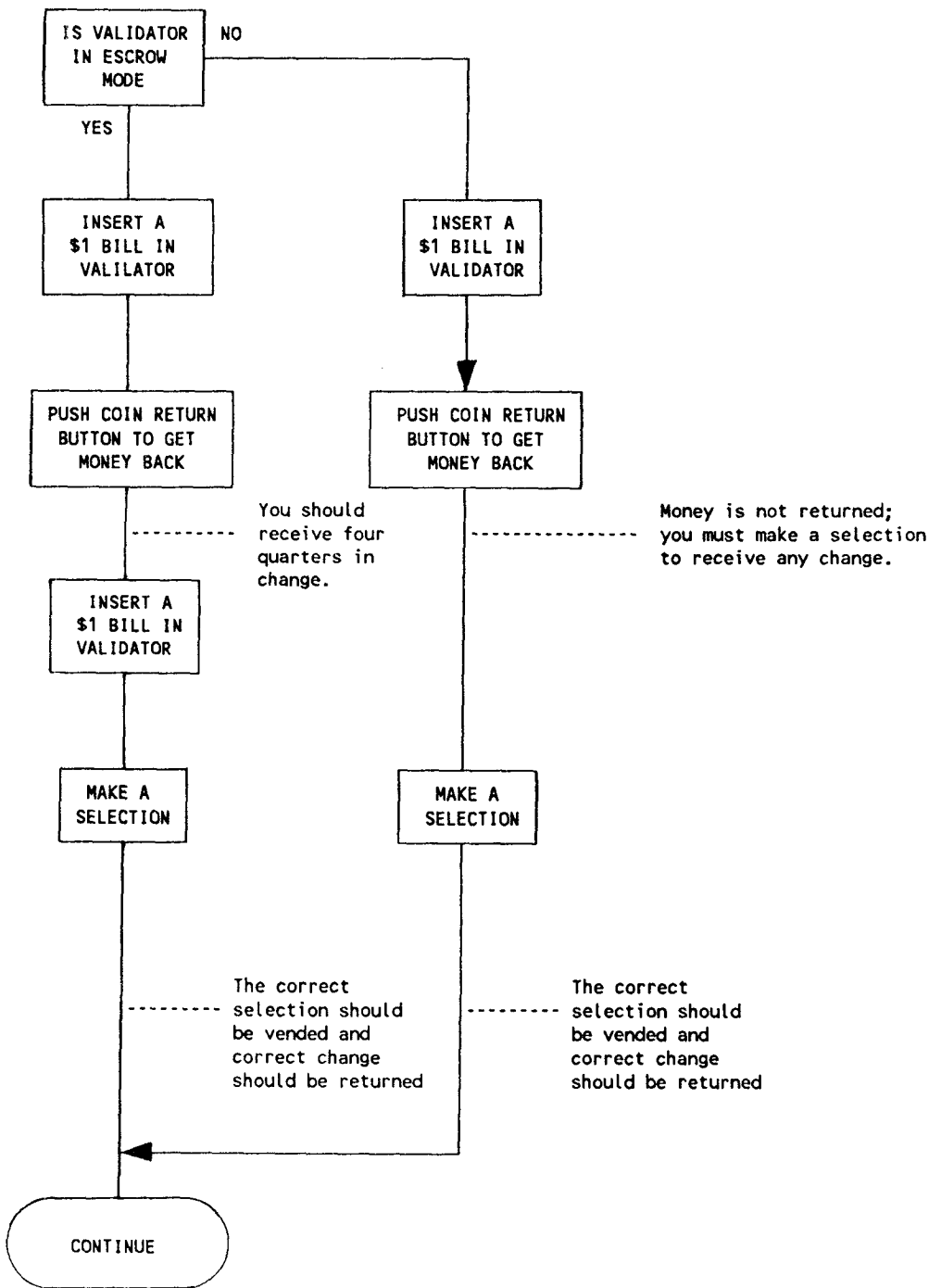
RC-8: RETRIEVING A PRODUCT

- * Snack, candy and cold can selections are dispensed into the delivery pan.
- * Push down on the lip of the delivery door with one hand. Retrieve the selection with your other hand.



- * Hot drink selections are dispensed into cups that have been dropped into the cup delivery station.
- * Lift up on the cup station door with one hand. Carefully remove the hot drink selection with your other hand.





The information in this part of the manual has been provided to help you service and maintain the merchandiser.

DIRECTORY OF MAINTENANCE PROCEDURES

PROCEDURE	DESCRIPTION	PAGE
M-1	Reserved for future use	---
M-2	Removing the controller PC boards	100
M-3	Door lock removal	101
M-4	Cash box lock installation	101
M-5	Cash box removal and replacement	101
M-6	Fluorescent lamp replacement	102
M-7	Lamp starter replacement	102
M-8	Exhaust fan installation	103
M-9	Coin mechanism inspection and cleaning	104
M-10	Bill validator inspection and cleaning	104
M-11	Emptying the bill validator magazine	105
M-12	Dispenser motor positioning	105
M-13	Lubrication	105
M-14	Overall cleaning	106
M-15	Can compartment door removal	106
M-16	Removing the can unit from the merchandiser	107
---	Identification of brewer components	108
M-18	Spring inspection	108
M-19	Worn parts inspection	108
M-20	Brewer barrel and manifold removal	109
M-21	Brewer barrel and manifold disassembly	109
M-22	Brewer manifold inspection	109
M-23	Brewer seal inspection	110
M-24	Brewer basket removal	110
M-25	Brewer basket replacement	110
M-26	Brewer basket screen removal	110
M-27	Brewer basket screen and brewer barrel screen cleaning	111
M-28	Brewer basket screen and brewer barrel screen replacement	111
M-29	Brewer barrel and manifold reassembly	111
M-30	Brewer barrel and manifold replacement	111
M-31	Brewer funnel removal	112
M-32	Brewer funnel replacement	112

PROCEDURE	DESCRIPTION	PAGE
M-33	Centering the brewer basket	112
M-34	Cam switch adjustment	113
M-35	Brewer barrel support spring adjustment	113
M-36	Brewer mechanism cleaning	113
M-37	Brewer mechanism washing	114
M-38	Cup delivery compartment removal and replacement	115
M-39	Cup delivery compartment sanitizing	115
M-40	Cup delivery compartment mounting bracket removal and replacement	115
M-41	Beverage dispensing nozzle sanitizing	115
M-42	Grounds pail cleaning	116
M-43	Waste pail sanitizing	116
M-44	Vent blower filter removal and replacement	116
M-45	Water filter cartridge service limits	116
M-46	Water temperature measurement and setting	117
M-47	Water filter cartridge removal	117
M-48	Water valve removal and replacement	118
M-49	Tube replacement	118
M-50	Water tank heater removal and replacement	119
M-51	Reserved for future use	---
M-52	Reserved for future use	---
M-53	Dry ingredient air fluffing	120
M-54	Sugar and whitener mixing bowl inspection	120
M-55	Dry ingredient shelf cleaning	120
M-56	Canister sanitizing	120
M-57	Mixing bowl sanitizing	120
M-58	Chocolate funnel and impeller housing sanitizing	121
M-59	Connecting a Model 461 or 462 refrigeration module to an external drain	122
M-60	Opening, closing and adjusting the air discharge vents	122
M-61	Removing the refrigerated food module from the merchandiser	123
M-62	Food module door switches harness connections	125

**THE MOST PROFITABLE MERCHANDISER
IS CLEAN AND WELL MAINTAINED**

RECOMMENDED SANITATION

PROCEDURE	REFERENCE	DAILY	WEEKLY	MONTHLY	QUARTERLY	SEMI-ANNUAL
Clean brewer mechanism	M-36		X			
Wash brewer mechanism	M-37			X		
Clean ingredient shelf	M-55	X				
Sanitize canisters	M-56			X		
Rinse mixing bowls	NR	X				
Sanitize mixing bowls	M-57		X			
Sanitize impeller funnel	M-58		X			
Sanitize dispenser nozzles	M-41		X			
Replace tubing	M-49					X See Note 1
Sanitize cup compartment	M-39	X				
Clean the grounds pail	M-42	X				
Sanitize the waste pail	M-43	X				
Clean merchandiser overall	M-41	X				

NOTE 1: Replace the tubing only if needed. Use of the auto rinse feature extends the life of the tubing.

RECOMMENDED SERVICE

PROCEDURE	REFERENCE	DAILY	WEEKLY	MONTHLY	QUARTERLY	SEMI-ANNUAL
Brewer barrel and basket	M-27	X				
Coffee funnel	NR					X
In-tank water temperature	M-46	X				
Water filter service limit	M-45	X				
Water volume check	H-5				X	
Water tank liming inspection	NR					X
Refill coin tubes	Page 12	X				
Inspect and clean coin mech	M-9		X			
Inspect & clean bill validator	M-10		X			
Empty bill magazine	M-11	X				
Refill ingredient canisters	H-1	X				
Fluff dry ingredients	H-53		X			
Test vend products	P13-1	X				
Inspect mixing bowls	M-54	X				
Check ingredient throw	H-6				X	
Refill cup tubes	H-3	X				
Inspect lamp bulbs	M-6	X				
Inspect exhaust filter	M-44		X			
Lubrication	M-13					X
Inspect springs	M-18					X
Inspect moving parts	M-19					X

NR = No reference given.

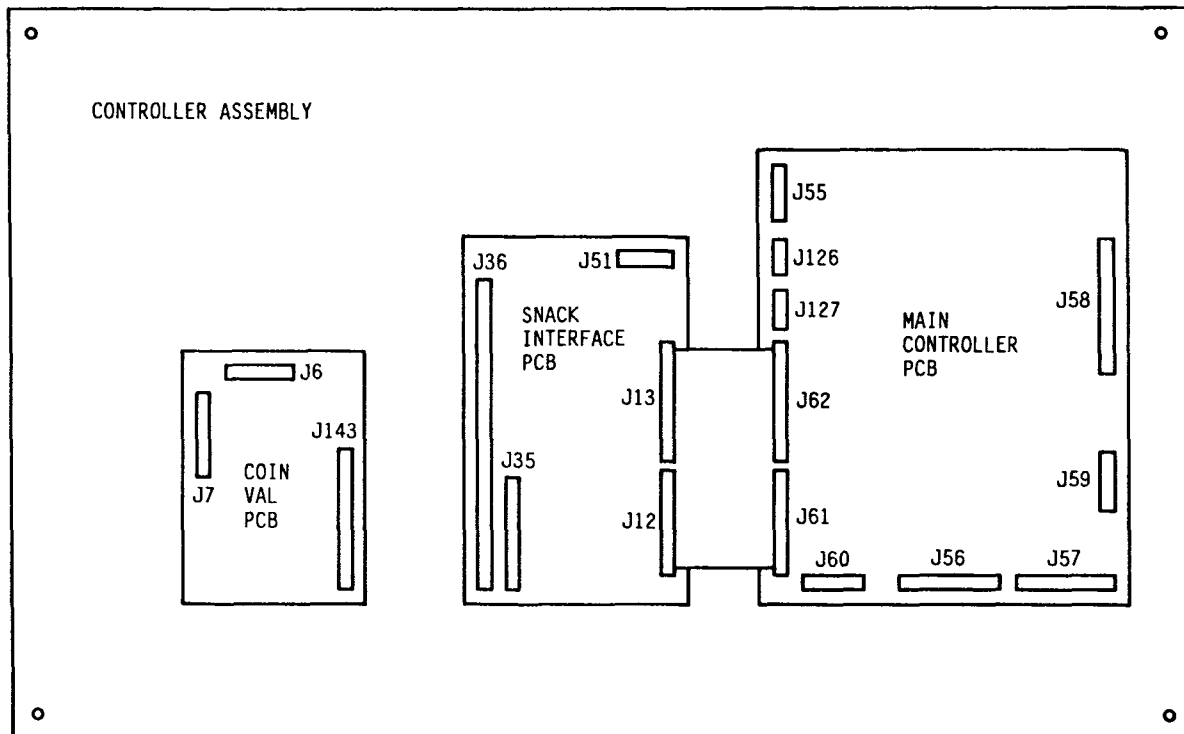
REMOVING PC BOARDS FROM THE CONTROLLER ASSEMBLY**WARNING**

DISCONNECT THE MERCHANDISER FROM ITS POWER SOURCE BEFORE REMOVING ANY OF THE PC BOARDS.

ELECTRO-STATIC DISCHARGE PRECAUTIONS MUST BE TAKEN WHEN HANDLING THE CIRCUIT BOARDS.

REMOVAL

- * Disconnect J58 and J59 from the front of the controller assembly.
- * Pull the controller assembly forward.
- * Remove the cover from the assembly.
- * Disconnect all harnesses and jumpers from the PC Board being removed.
- * Loosen and remove the screws that secure the PC Board to the chassis.
- * Remove the circuit board.

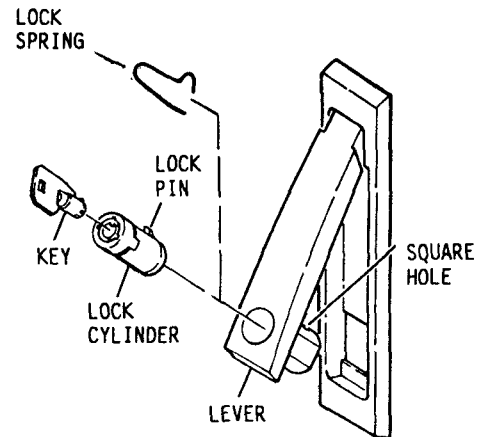
***INSTALLATION***

- * Reverse the removal procedure when installing a PC Board in the controller assembly.

LOCK CYLINDER INSTALLATION

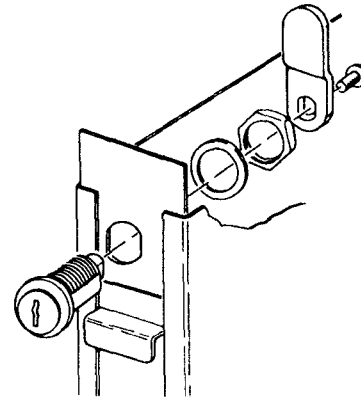
An optional lock cylinder can be installed in the merchandiser by completing the following steps:

- * Position the lift-handle lock lever as shown.
- * Depress the lock spring at the square hole of the lock cylinder receptacle and pull the lock spring out through the front.
- * Position the lock cylinder as shown. Depress the spring-loaded lock pin. Push the cylinder into the the cylinder receptacle in the lever. The pin should snap into the square hole.
- * If the cylinder pin does not seat in the square hole, press against both ends of the lock cylinder. Rotate the cylinder until the pin snaps into place.
- * Test the lock mechanism with a key.



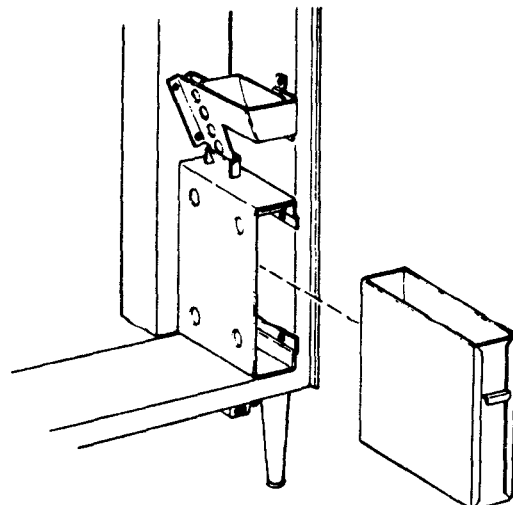
INSTALLING THE OPTIONAL CASH BOX LOCK

- * Remove the cash box from the merchandiser.
- * Assemble the lock as shown in the illustration to the right.
- * Return the cash box to the merchandiser.



REMOVAL AND REPLACEMENT OF CASH BOX

- * The cash box is located in the lower right-hand corner of the merchandiser near the front.
- * If the cash box has a lock, you will need to unlock it first.
- * Pull the cash box forward to remove it from the merchandiser.
- * Reverse the procedure when replacing the cash box.

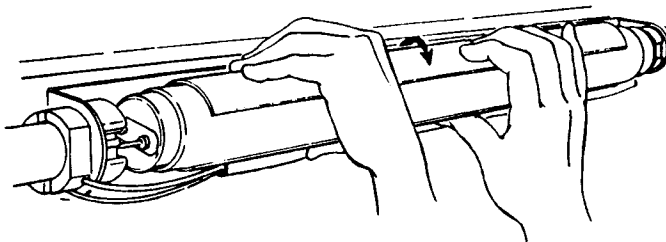


REPLACING THE FLUORESCENT LAMP

* The fluorescent lamp is mounted on the inside of the cabinet door near the top.

REMOVING THE FLUORESCENT LAMP

* Hold the lamp as shown below and turn it to remove it from the lamp sockets.

**WARNING**

Exercise care when you remove or replace the lamp diffuser. Eye protection should be worn during this procedure.

REPLACING THE FLUORESCENT LAMP STARTER

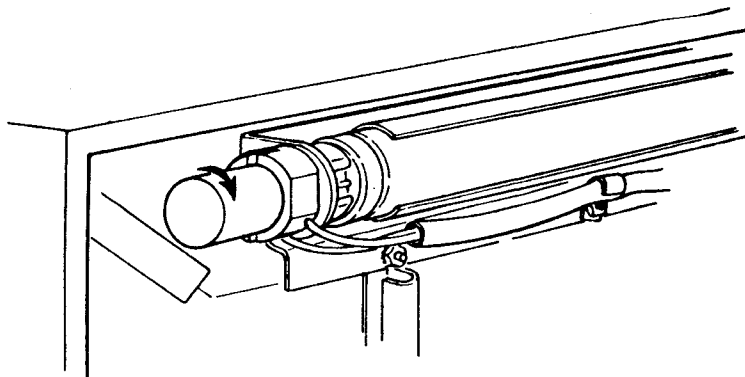
* The starter is mounted on the left end of the lamp assembly.

REMOVING THE STARTER

* Turn the starter counter-clockwise to unseat it from the socket.

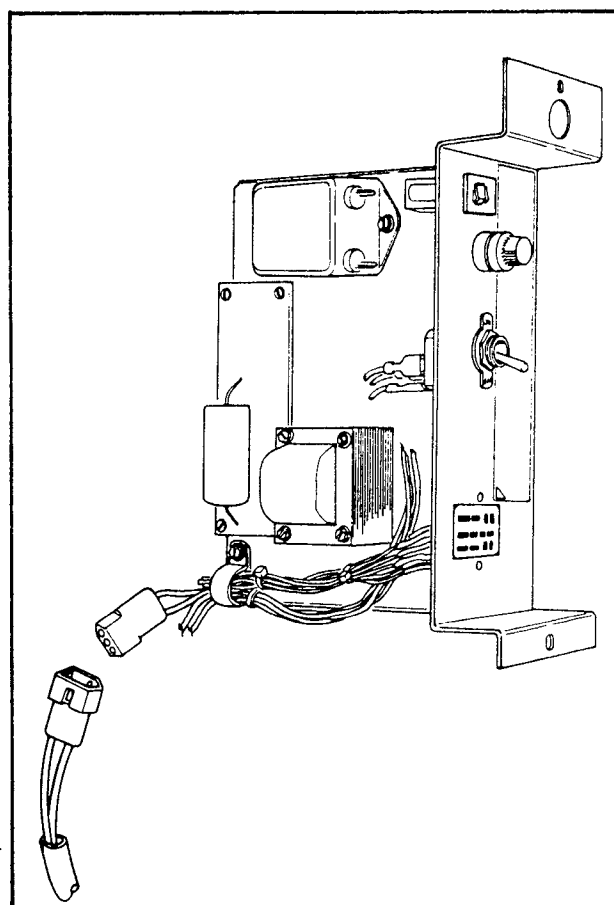
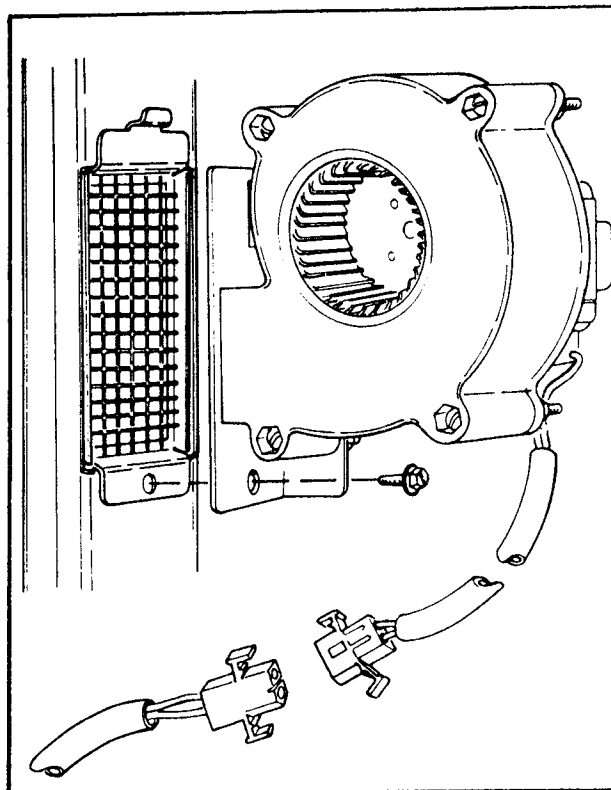
INSTALLING THE STARTER

* Insert the starter and turn it clockwise to seat it in the socket.



INSTALLING THE OPTIONAL EXHAUST FAN

- * There is a vent screen at the top of the right-hand, rear tray-guide mounting channel.
- * The exhaust fan will be mounted over this vent screen. See Figure M-6a.
- * Turn the Main Power Switch to the OFF position.
- * Remove the trays from the merchandiser. See S-3.
- * Remove the screw that secures the cable clamp above the vent screen assembly.
- * Remove the lower screw that secures the vent screen assembly.
- * There is a tab on the top of the vent screen assembly. Hook the small, square hole in the back of the fan mounting over this tab.
- * Secure the fan mounting bracket and the vent screen assembly. Use the screw previously removed.
- * Connect the fan to one end of the jumper that is supplied with the fan.
- * Connect the other end of the jumper to the mating connector in the power harness. See Figure M-6b.
- * Secure the cable clamp above the fan with the screw previously removed.
- * Replace the trays.
- * Turn the Main Power Switch to the ON position.



COIN MECHANISM INSPECTION AND CLEANING**WARNING**

TURN THE MAIN POWER SWITCH TO THE "OFF" POSITION and THEN DISCONNECT THE COIN MECHANISM FROM THE POWER PANEL.

- * Remove the coin mechanism from the merchandiser.
- * Clean the coin chute with a tube cleaning brush.
- * Clean the mechanism thoroughly or replace it with a clean unit from the shop.

CAUTION

NEVER USE WATER OR A SPRAY SOLVENT TO CLEAN THE COIN MECHANISM.

- * The coin mechanism can be cleaned by wiping it with a clean cloth.
- * The electrical section must be kept dry. It can be cleaned with a soft brush.
- * The unit must be completely dry before it is returned to service.

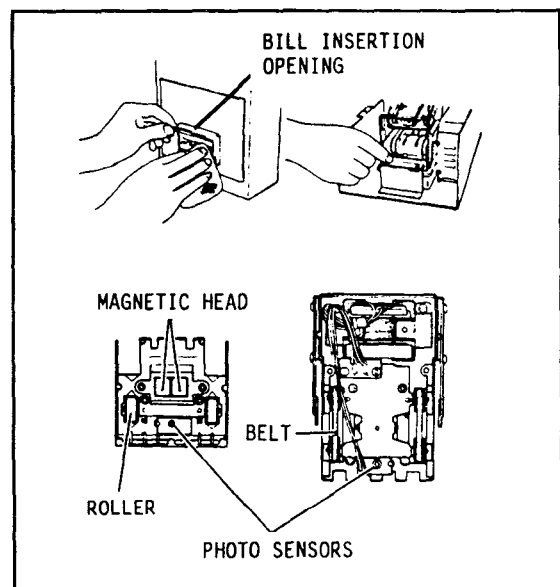
BILL VALIDATOR INSPECTION AND CLEANING**WARNING**

TURN THE MAIN POWER SWITCH TO THE "OFF" POSITION and DISCONNECT THE BILL VALIDATOR FROM THE POWER HARNESS.

- * Open the bill validator.
- * Examine the magnetic heads, the belts and the rollers. See the figure below.
- * Clean the bill insertion opening with a mild detergent.

CAUTION

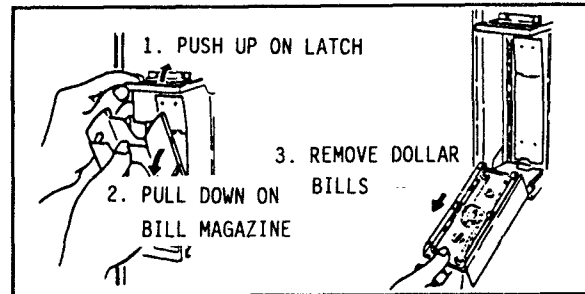
NEVER USE WATER OR SPRAY SOLVENTS TO CLEAN THE BILL VALIDATOR.



- * Clean the magnetic heads by using a cotton applicator and a small amount of denatured alcohol.
- * Wipe clean the rollers and belts.
- * Use a soft brush to remove any loose foreign matter from inside the validator.
- * Inspect latches and levers for smooth operation.
- * Reconnect validator to the merchandiser, restore power and test the unit.

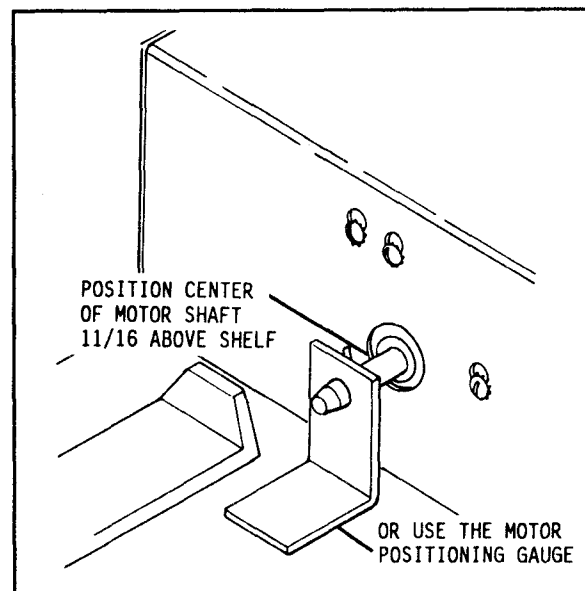
EMPTYING THE BILL MAGAZINE

- * Remove the collected bills from the optional bill validator. See figure to the right.



DISPENSER MOTOR POSITIONING

- * The dispenser motor may stall if the shaft of the motor is not positioned correctly.
- * The center of the shaft should be $11/16$ inch above the shelf. See the figure to the right.
- * A dispenser motor positioning gauge is available from National Vendors' Parts Department. Ask for part number 6220005.



LUBRICATION

- * Permanent lubrication has been incorporated in these merchandisers whenever practical.
- * The Door Check and Lock Bar assemblies are two exceptions. Refer to the assembly location illustrations in I-1 of this manual.
- * Lubriplate or a similar product should be used in the areas listed above.
- * Whenever lubrication does become necessary, **DO NOT** use a silicone based product. A silicone based lubricant can cause electrical failures.

OVERALL CLEANING

- * Inspect the merchandiser both inside and out. Be sure to check corners and less visible parts of the merchandiser.
- * Clean where needed.
- * Allow the inside of the cabinet to dry thoroughly before closing the door.
- * National Vendors recommends using the following supplies:
 - * Use a commercial glass cleaner on the glass in the cabinet door.
 - * Use a mild detergent and warm water on the cabinet, trays, spirals, gum and mint assembly and other *non-electrical* components. Brewer cleaning is discussed later in this manual.

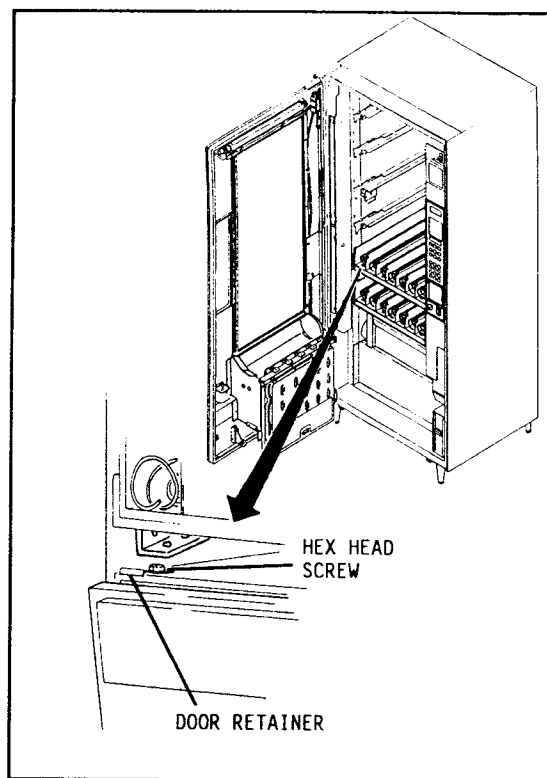
CAUTION

The plastic components in this merchandiser should be cleaned with a mild detergent and warm water. The use of other cleaning agents may damage the material and should be avoided.

REMOVING CAN COMPARTMENT DOOR ASSEMBLY

Refer to the figure on the right during this procedure.

- * Loosen the screws which secure the door retainers to the can compartment.
- * Push up on the retainers and tilt the door forward and down.
- * Lift the door clear of the retaining channel .
- * The product deflector can be pushed aside while removing the door.



REMOVING THE CAN UNIT FROM THE MERCHANDISER

Refer to the figure below during this procedure.

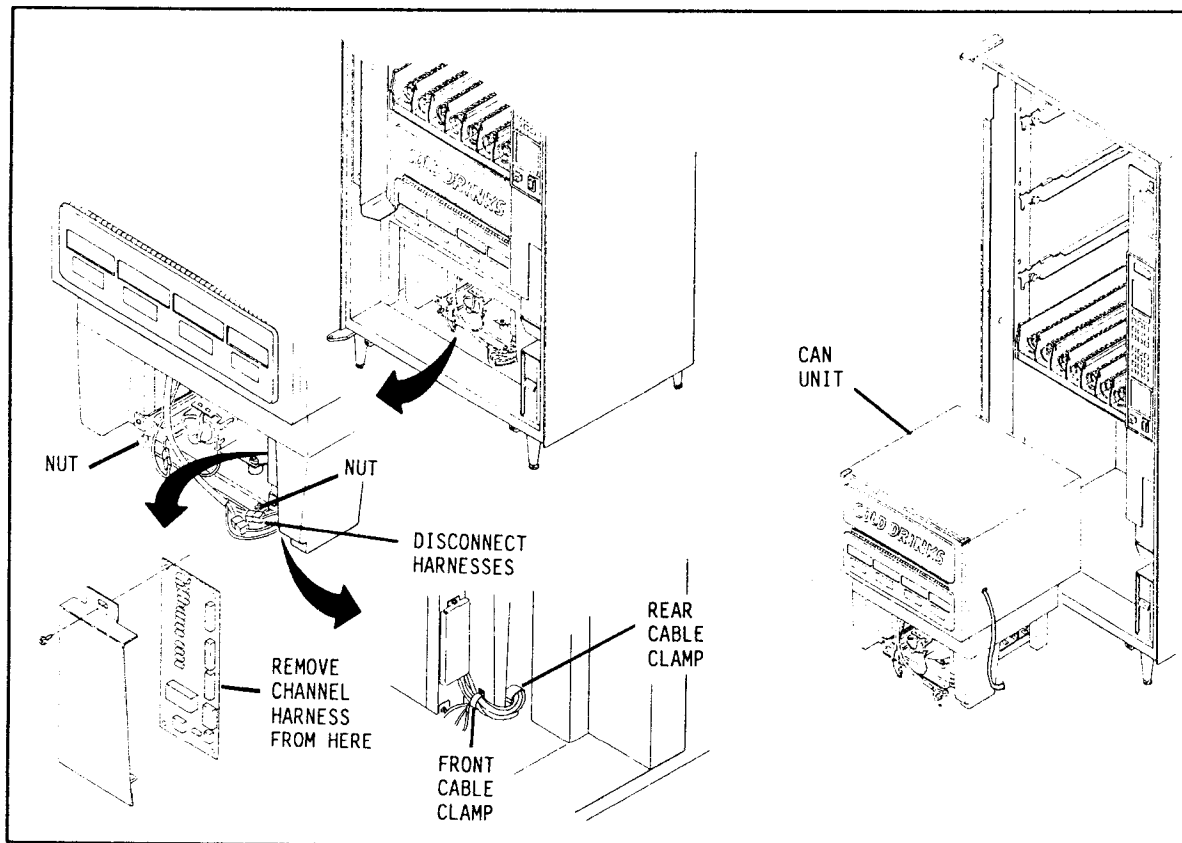
CAUTION

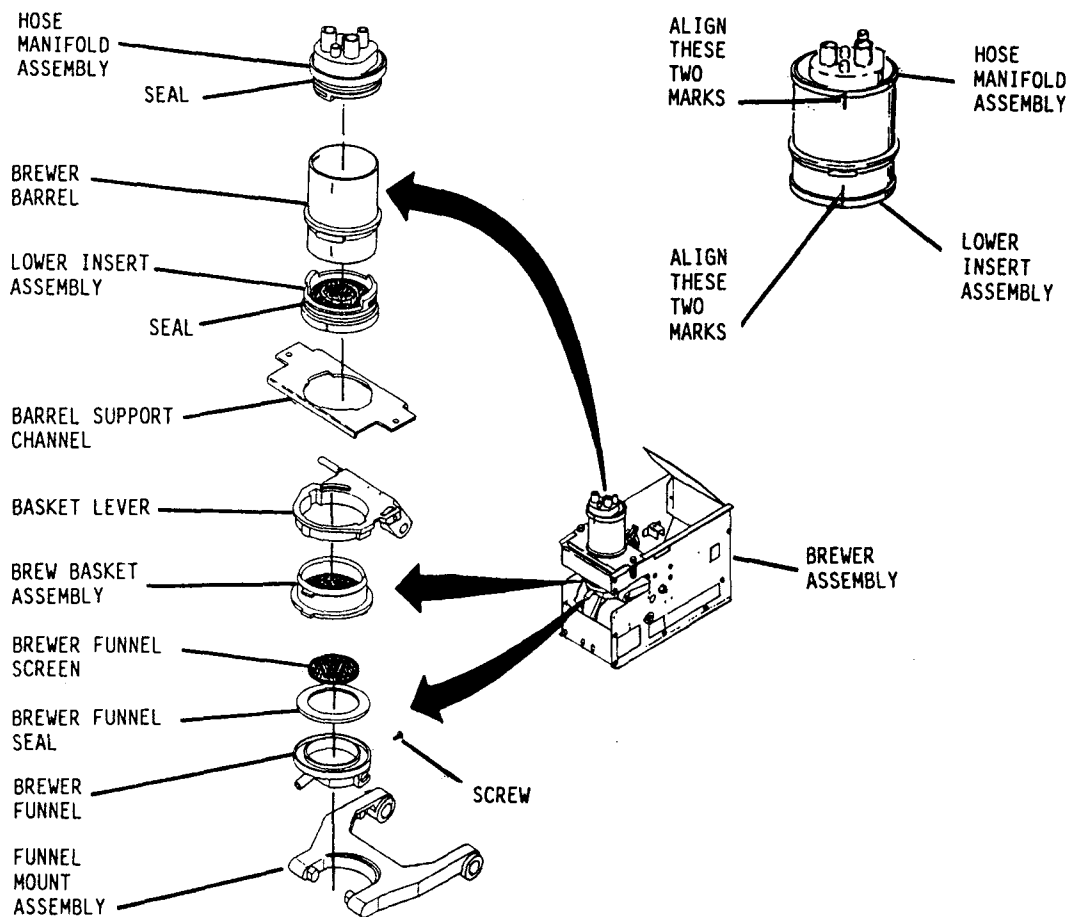
National Vendors recommends that you empty the can compartment before removing the unit. A fully loaded unit may be too heavy to handle safely.

WARNING

TURN THE MAIN POWER SWITCH TO THE "OFF" POSITION BEFORE STARTING THIS PROCEDURE.

- * Remove the two nuts that secure the can unit to the floor of the cabinet.
- * Disconnect the can unit from the power harness.
- * Remove the cover from the can unit PC Board.
- * Disconnect the channel harness from the can unit PC Board.
- * Free the channel harness from the front cable clamp.
- * Free all wires from the rear cable clamp.
- * Push the channel harness to the side.
- * Carefully slide the can unit out of the cabinet.





SPRING INSPECTION

- * Springs that are overstretched or broken should be replaced.
- * Some areas to check include:

- | | |
|-------------------------|---------------------------|
| - Brewer mechanism | - Bill validator |
| - Coin mechanism | - Cup dispenser mechanism |
| - Scavenger mechanism | - Gum and mint assembly |
| - Delivery pan assembly | |

WORN PARTS INSPECTION

- * Worn or damaged parts should be replaced.
- * Some areas to check include:

- | | |
|-----------------------------|--------------------------|
| - Brewer mechanism | - Delivery pan assembly |
| - Cup dispenser mechanism | - Scavenger mechanism |
| - Canister auger assemblies | - Can ejector assemblies |

* Replacement parts are available from National Vendor's Parts Department. Refer to your PARTS MANUAL for part information.

REMOVAL OF BREWER BARREL AND MANIFOLD**WARNING**

WEAR SAFETY GOGGLES OR OTHER EYE PROTECTION WHENEVER YOU REMOVE THE BREWER MECHANISM COVER.

- * Remove the brewer mechanism cover.
- * If the barrel and manifold are to be removed as an assembly, disconnect the tubes from the manifold.
- * Rotate the brewer barrel and manifold assembly 1/4 turn clockwise to align the flanges of the barrel with the slots in the support channel.
- * Lift the brewer barrel and manifold assembly clear of the support channel.

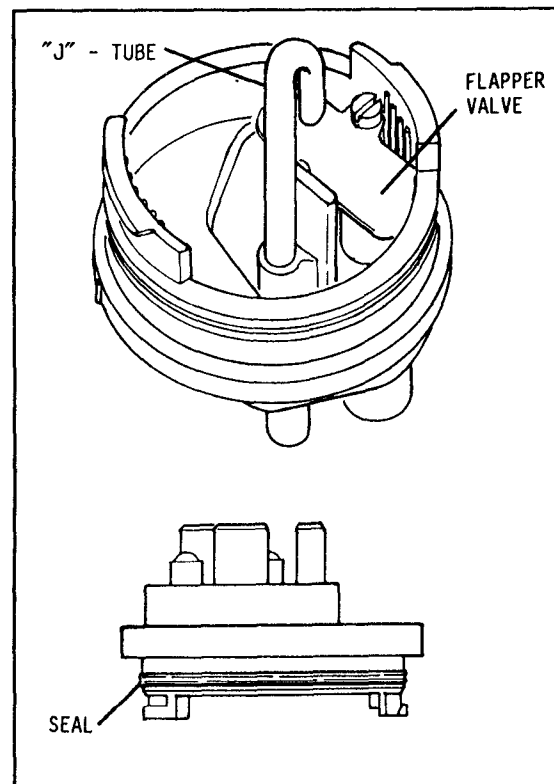
DISASSEMBLY OF BREWER BARREL AND MANIFOLD

- * When viewed from the bottom, rotate brewer barrel 1/4 turn clockwise and pull the lower insert assembly clear of the brewer barrel.
- * When viewed from the top, rotate the brewer barrel 1/4 turn clockwise and pull the manifold clear of the brewer barrel.

BREWER MANIFOLD INSPECTION

Refer to the figures to the right during this procedure.

- * The brewer barrel can leak if the brewer barrel manifold assembly is defective.
- * The flapper valve should be examined for cracks, tears and proper positioning. Reposition and replace if necessary.
- * The "j-tube" will pivot a few degrees. The output of the tube should be directed at the part of the flapper valve covering the bottom of the brew water inlet port. If the tube will not stay in the proper position, replace the brewer barrel manifold assembly.
- * The brewer barrel can also leak if the seal on the manifold is not seated properly.
- * Examine the seal to be sure it is not twisted and reseal if necessary.



BREWER SEAL INSPECTION

- * Remove the brewer barrel and coffee funnel. Procedures for these tasks are located elsewhere in this part of this manual.
- * Check for worn or cracked brewer barrel or coffee funnel seals. If a seal has lost its resiliency or if cuts or cracks are visible, a leak may develop.
- * Replace seals that are defective. Make sure seals are seated properly and that they have not been twisted during installation.

NOTE

A leak is the visible discharge of steam or water. Water or steam can be forced out between the brewer barrel and the brewer basket or between the brewer basket and the coffee funnel.

BREWER BASKET REMOVAL

- * Rotate the basket 1/4 turn clockwise to align the flanges of the basket with the slots in the basket lever.
- * Drop the basket clear of the basket lever.

BREWER BASKET REPLACEMENT

- * Raise the basket lever and hold in position.
- * Align the flanges of the basket with the slots in the lever.
- * Insert the basket into the lever and rotate the basket counter-clockwise. A spring clip in the basket lever should engage the lock tab in the basket.

BREWER BASKET SCREEN REMOVAL

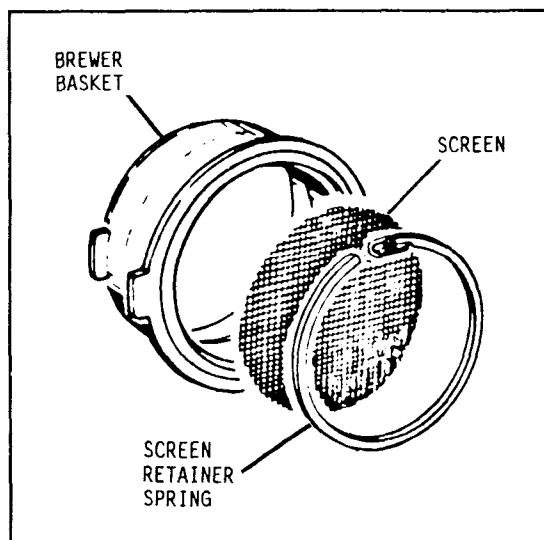
Refer to the figures to the right during this procedure.

- * Remove the screen retainer spring from the bottom side of the brewer basket. Use a small screw driver.

NOTE

It is very easy to damage the screen if the screw driver slips.

- * Remove the screen from the basket.



BREWER BASKET SCREEN AND BREWER BARREL SCREEN CLEANING

- * Inspect screens and replace if damaged.
- * Prepare a solution of urn cleaner in a container.
- * Place the screens in the solution. Agitate solution while brushing screen with a soft bristle brush.
- * Rinse the screens thoroughly in hot water.

NOTE

You can save time by replacing these parts with similar parts that have already been cleaned in the shop.

BREWER BASKET SCREEN AND BREWER BARREL SCREEN REPLACEMENT

- * Return the brewer basket screen to the brewer basket.
- * Return the brewer barrel screen to the brewer barrel.

NOTE

Use a 230 mesh screen in this merchandiser.

- * Press the screen firmly in place.
- * When replacing the brewer basket screen, insert the plain end of the retainer spring into the groove in the brewer basket.
- * Press the retainer spring until it seats in the groove. See figure on previous page.

REASSEMBLY OF BREWER BARREL AND MANIFOLD

- * Insert the manifold into the top of the brewer barrel.
- * When viewed from the top, rotate the barrel counter-clockwise until the registration marks are in line.
- * Insert the lower insert assembly into the brewer barrel.
- * When viewed from the bottom, rotate the barrel counter-clockwise until the registration marks are in line.

REPLACEMENT OF BREWER BARREL AND MANIFOLD

- * Position the brewer barrel and manifold assembly so the flanges of the barrel are in line with the slots in the support channel.
- * Press down and rotate the barrel 1/4 turn clockwise.
- * If any tubes were disconnected from the manifold, reconnect them.

BREWER FUNNEL REMOVAL

- * Raise the funnel mount lever.
- * Pivot the front edge of the funnel assembly downward about 90°.
- * Push down on the funnel to separate it from the pins of the lever.
- * If the funnel is to be removed from the merchandiser, disconnect the discharge tube from the funnel.

BREWER FUNNEL REPLACEMENT

- * Raise the funnel mount lever.
- * The dispensing port should be pointed downward and the top of the funnel should be facing left. While the funnel is in this position, slide it over the pins on the lever.
- * Pivot the funnel assembly upward and return the lever to the home position.
- * If the funnel was removed from the merchandiser, reconnect the discharge tube.

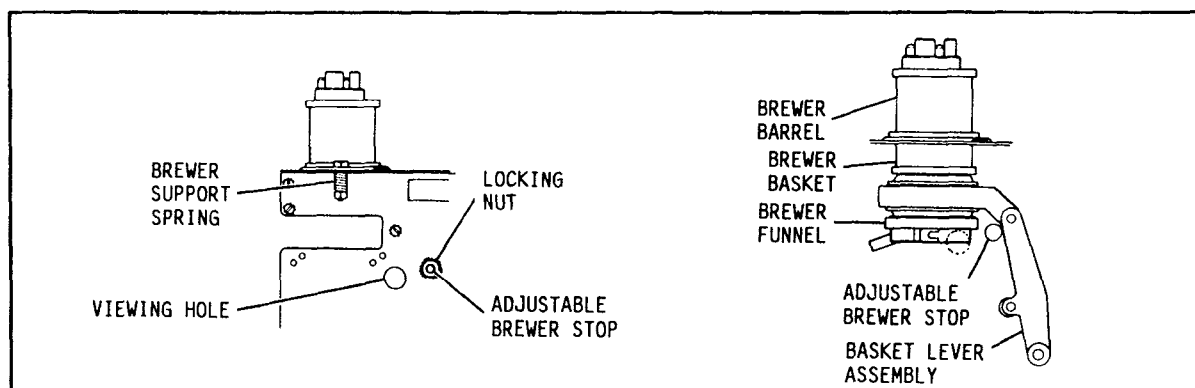
CENTERING THE BREWER BASKET

Refer to the figure below during this procedure.

WARNING

KEEP HANDS AND LOOSE CLOTHING AWAY FROM MOVING PARTS WHEN THE MERCHANDISER IS IN AN OPERATING CYCLE.

- * When the brewer is in the CLOSED position, the brewer basket, the brewer funnel and the brewer barrel must all lie on the same center line. If they do not, the brewer is likely to leak. This will also permit air to escape and prevent complete evacuation of brew at the end of a brewing cycle. The brewer barrel and brewer funnel can only be in one position when the brewer is CLOSED. The forward movement of the brewer basket is adjustable. The adjustable brewer stop limits this movement. The stop can be adjusted by loosening the lock nut and turning the stop.



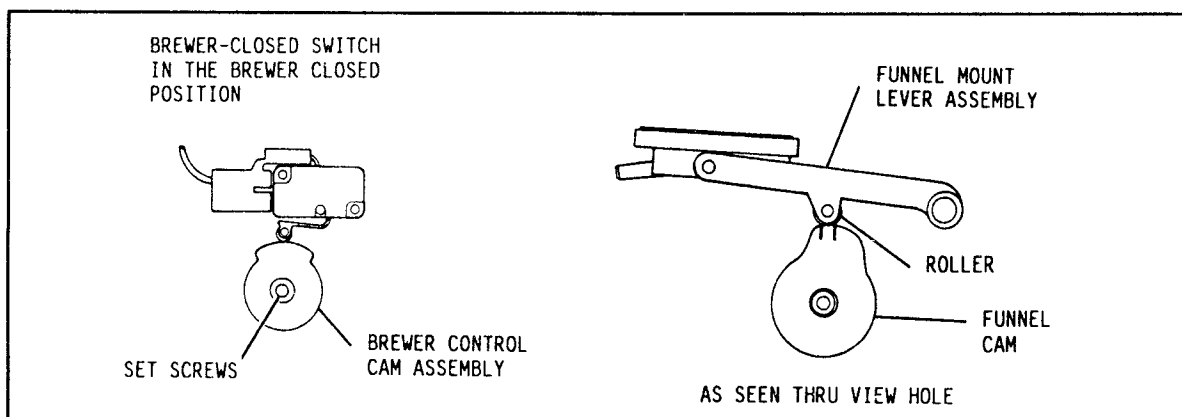
SWITCH CAM ADJUSTMENT

WARNING

KEEP HANDS AND LOOSE CLOTHING AWAY FROM MOVING PARTS WHEN THE MERCHANDISER IS IN AN OPERATING CYCLE.

Refer to the figures below during this procedure.

- * When the brewer closed switch moves to the NO position, the roller on the funnel mount lever assembly should ride between the two scribe marks on the lobe of the funnel cam. These marks can be observed through the viewing hole in the right side frame. Loosen the two set screws and reposition the brewer control cam assembly as needed for proper timing.



BREWER BARREL SUPPORT SPRING ADJUSTMENT

- * Before adjusting the springs, you should check the seals and adjust the cam. Instructions for doing these tasks are located elsewhere in this section of this manual. These steps will usually correct any problem.
- * During the brewer closing cycle some upward and downward movement of the brewer barrel is necessary. When the brewer is CLOSED, the brewer barrel must form an effective seal against the top of the brewer basket. The necessary force is supplied by the two barrel support springs.
- * Sufficient force is applied when one or two threads are visible below the nut that holds the springs in place. If greater force is required, tighten the nuts one half turn.

BREWER MECHANISM CLEANING

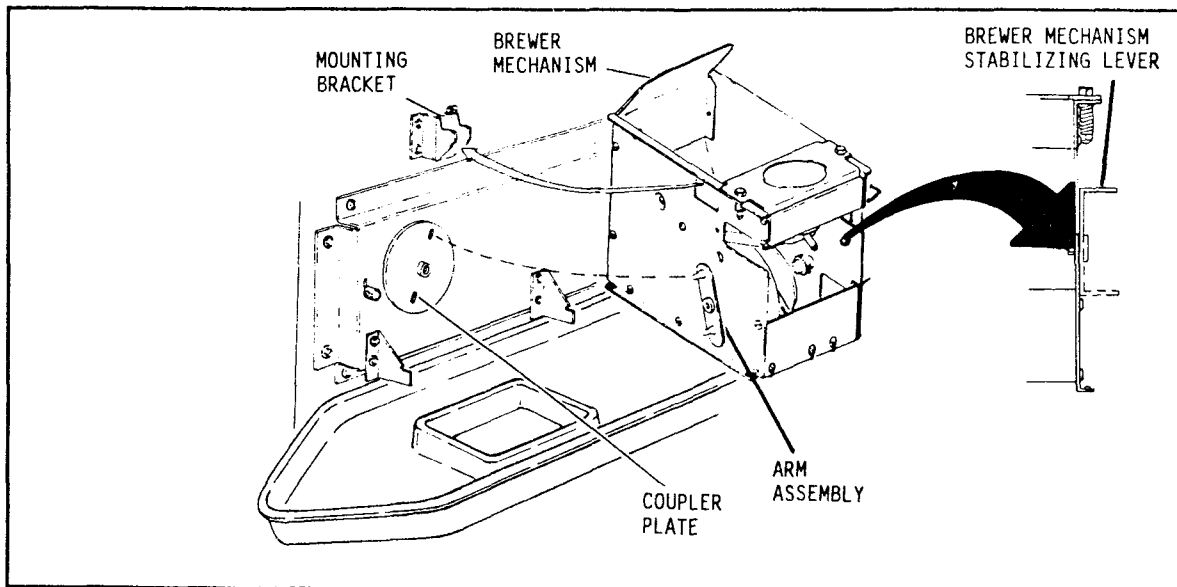
- * National Vendors recommends that you remove the brewer mechanism from the cabinet for cleaning.
- * A removal procedure is located on the next page of this manual.

BREWER MECHANISM WASHING

Refer to the figure below during this procedure.

REMOVAL

- * Remove the brewer barrel and manifold assembly. Instructions for doing this are located elsewhere in this section of this manual.
- * Disconnect the discharge tube from the brewer funnel. Instructions for doing this are located elsewhere in this section of this manual.
- * Remove the cup delivery compartment. Instructions for this procedure are on the next page of this manual.
- * Remove the cup delivery compartment mounting bracket. Instructions for this procedure are on the next page of this manual.
- * Rotate the brewer mechanism stabilizing lever forward and up. Place it in a horizontal position.
- * Lift the brewer mechanism off its mounting bracket.
- * Remove the brewer mechanism from the merchandiser.

**WASHING**

- * Wash the brewer mechanism with detergent and hot water.
- * Rinse and allow the mechanism to dry thoroughly.

REPLACEMENT

- * Hang the brewer mechanism on its mounting bracket.
- * Be sure the pins in the arm assembly on the rear of the brewer line up with the holes in the coupler plate.
- * Replace the cup delivery compartment mounting bracket, the cup delivery compartment, the brewer barrel and manifold assembly and the brewer mechanism cover.
- * Reconnect all of the tubes that were disconnected.
- * Rotate the brewer mechanism stabilizing lever down and back into place.

CUP DELIVERY COMPARTMENT REMOVAL AND REPLACEMENT

REMOVAL

- * Lift the compartment from its mounting bracket and then remove the compartment from the cabinet.

REPLACEMENT

- * Position the compartment over the mounting bracket. Lower the compartment until it hangs from the mounting bracket.

CUP DELIVERY COMPARTMENT SANITIZING

- * Remove the compartment from the merchandiser.
- * Wash and sanitize the compartment.
- * Rinse with clean, hot water and dry thoroughly.
- * Return the compartment to the merchandiser.

REMOVAL AND REPLACEMENT OF THE CUP DELIVERY COMPARTMENT MOUNTING BRACKET

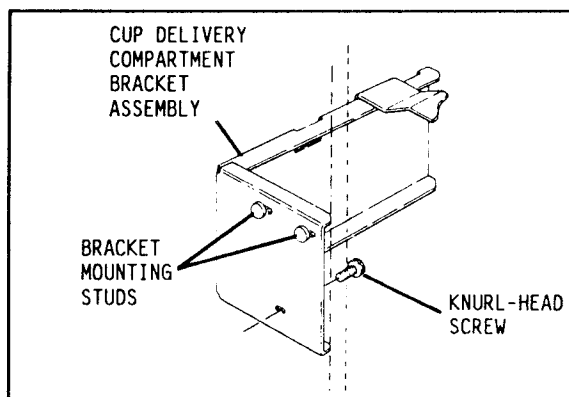
Refer to the figure on the right.

REMOVAL

- * Remove the knurl-head screw.
- * Lift the bracket up and pull it away from the cabinet wall.

REPLACEMENT

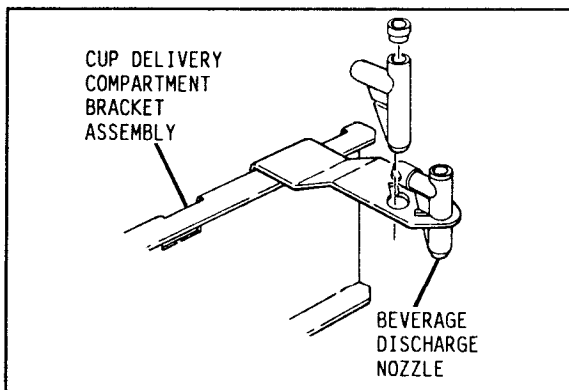
- * Insert the bracket mounting studs in the slotted holes.
- * Replace the knurl-head screw.



BEVERAGE DISCHARGE NOZZLE SANITIZING

Refer to the figure on the right.

- * Disconnect the dispensing tube.
- * Turn the nozzle until its slotted web is in line with the slotted mounting hole in the bracket.
- * Remove the nozzle.
- * Remove the cap from the nozzle.
- * Clean and sanitize the nozzle and cap.
- * Replace the nozzle and cap.
- * Reconnect the dispensing tube.



GROUNDS PAIL CLEANING

- * Empty and rinse the grounds pail.
 - * Reline the pail with a clean plastic trash liner.
-

WASTE PAIL SANITIZING

- * Empty, wash and sanitize the waste pail.
 - * Sprinkle half of a handful of detergent powder in the bottom of the pail. This will help control odors from waste liquids.
-

VENT BLOWER FILTER, REMOVAL AND REPLACEMENT

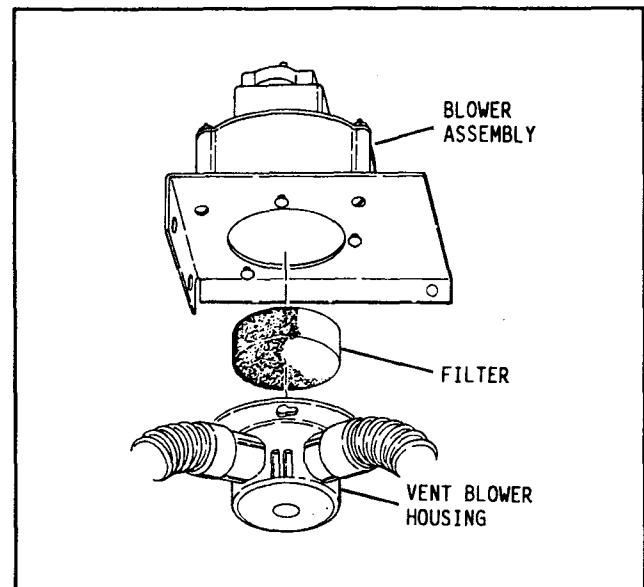
Refer to the figure on the right.

REMOVAL

- * Rotate the vent blower housing clockwise.
- * Lower the housing.
- * Remove the filter from inside the housing.

REPLACEMENT

- * Place the new filter in the vent blower housing.
- * Position the housing over the mounting studs on the bottom of the blower assembly.
- * Rotate the housing counter-clockwise to secure it in place.

**WATER FILTER CARTRIDGE, SERVICE LIMITS**

- * Check the water filter cartridge installation record. There is a place to write the vend number on the cartridge
- * The effective limits of the cartridge are as follows:

7 oz cup - 26,000 vends
 8.25 oz cup - 22,000 vends
 9 oz cup - 20,000 vends

- * Local conditions may require more frequent replacement.

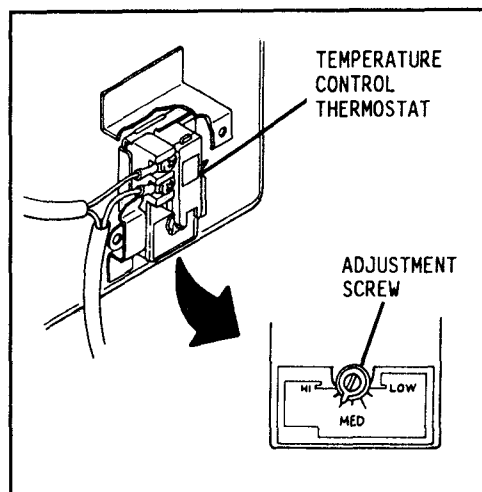
MEASURING AND SETTING WATER TEMPERATURE

Refer to the figure on the right.

- * Temperature of the water in the water tank is controlled by the temperature control thermostat.
- * The temperature of the water in the water tank should be 190-200 degrees F or 88-93 degrees C.

WARNING

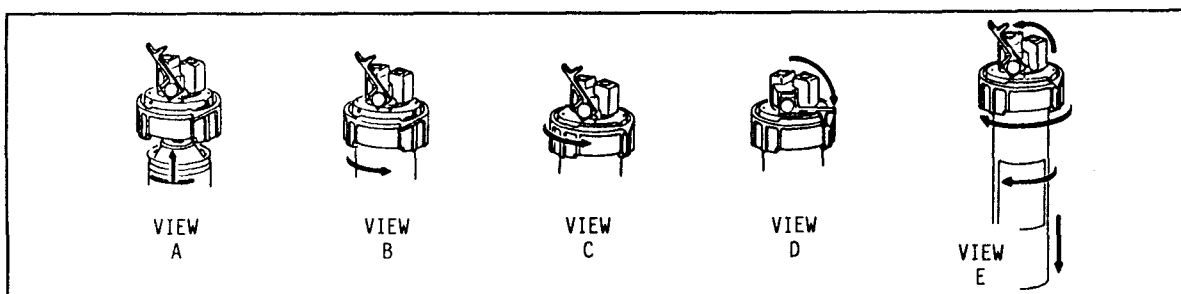
THE WATER IN THE WATER TANK IS VERY HOT. BE CAREFUL WHEN ADJUSTING THE TEMPERATURE CONTROL THERMOSTAT.



- * Place a cup in the cup station.
- * Initiate a water throw for the hot chocolate selection. See PO-4 in the PROGRAMMING GUIDE.
- * Repeat the previous two steps until ten cups of water have been thrown.
- * Wait 20 minutes to allow the temperature in the water tank to stabilize.
- * Place a cup in the cup station.
- * Initiate another water throw.
- * Measure the temperature of the water. Compare your reading with 190-200 degrees F or 88-93 degrees C.
- * Turn the thermostat adjustment screw clockwise to increase the temperature.
- * Turn the adjustment screw counter-clockwise to decrease the temperature.

WATER FILTER CARTRIDGE REMOVAL

- * Close the water supply line shut-off valve.
- * Turn the main power switch to the OFF position.
- * Flip the lock lever UP (View E).
- * As viewed from above, rotate the cartridge clockwise about 60 degrees. The locking collar will turn with the cartridge.
- * When the locking collar drops about 3/8 inch, rotate the cartridge another 45 degrees or so.
- * Pull the cartridge down to separate it from the head assembly.
- * See I-4 on page 15 in this manual for the replacement procedure.



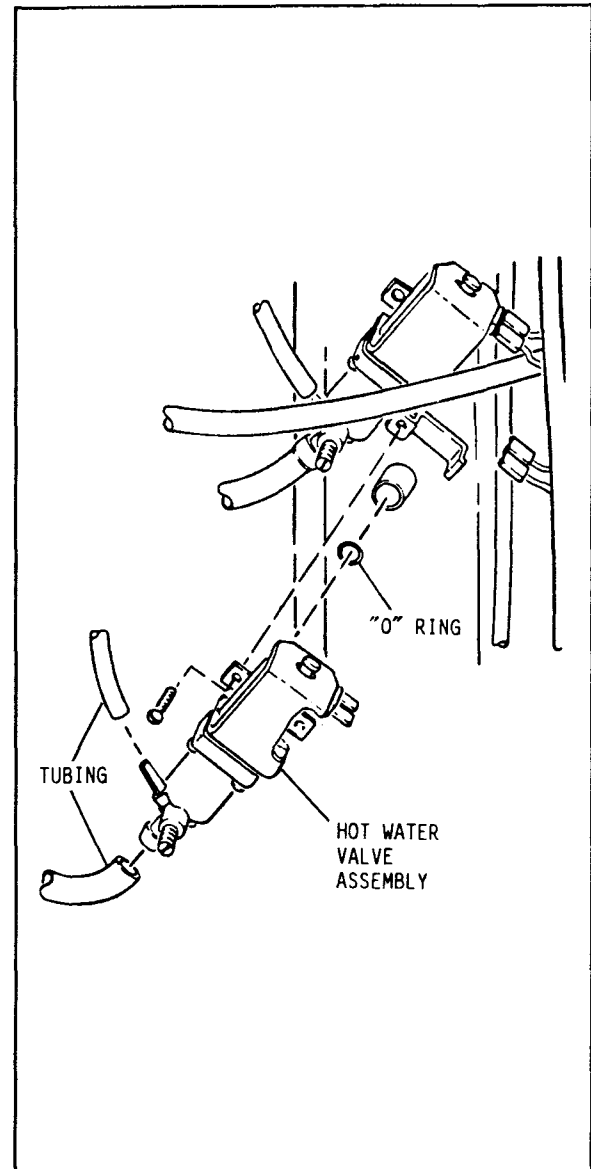
WATER VALVE REMOVAL AND REPLACEMENT

Refer to the figure on the right.

WARNING

TURN THE MAIN POWER SWITCH TO THE OFF POSITION BEFORE STARTING THIS PROCEDURE.

- * Allow the water in the tank to cool down.
- * Disconnect the water harness from the valve being removed.
- * The water level must be below the valve being removed. Use the valve in the bottom of the tank to drain the water from the tank.
- * Disconnect the tubing from the valve being replaced.
- * Remove the screw which secures the valve to the water tank.
- * Inspect the "O-ring" on the water valve inlet port. If it is cracked or damaged, replace it with a new one.
- * Insert the new valve and secure it to the water tank.
- * Reconnect the tubing to the new valve.
- * Reconnect the water harness to the valve.
- * **CLOSE THE DRAIN VALVE IN THE BOTTOM OF THE WATER TANK.**
- * Turn the main power switch to the ON position.
- * Allow the tank to fill with water and wait for the temperature to stabilize.
- * Re-adjust the water times for any selections that get water from this valve. See H-54 on page 66 in this manual.

**TUBE REPLACEMENT**

- * Inspect all tubing and replace as required.
- * Avoid potential problems by using new tubing.
- * Replacement tubing is available from National Vendors' Parts Department. Consult your PARTS MANUAL for tube locations, sizes and part numbers.

WATER TANK HEATER REMOVAL AND REPLACEMENT

Refer to the figure on the right.

REMOVAL

WARNING

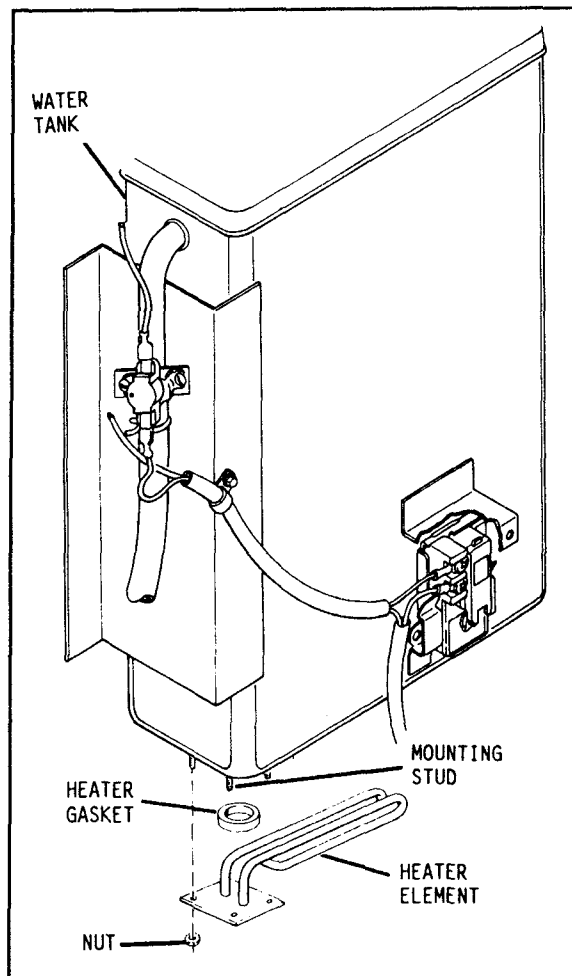
TURN THE MAIN POWER SWITCH TO THE OFF POSITION BEFORE STARTING THIS PROCEDURE.

- * Allow the water in the tank to cool down.

WARNING

THE WATER IN THE TANK IS VERY HOT. BE CAREFUL WHEN REMOVING THE WATER HEATER.

- * Drain the water tank. Use the valve in the bottom of the tank to drain the water from the tank.
- * Remove the air compressor water shield.
- * Disconnect the heater harness from the heater terminals.
- * Remove the four nuts that secure the heater to the water tank.
- * Pull the heater out of the water tank.



REPLACEMENT

- * Position the new heater over the four mounting studs.
- * Secure the heater to the water tank. Use the four nuts removed earlier.
- * Connect the heater harness to the heater terminals.
- * **CLOSE THE DRAIN VALVE IN THE BOTTOM OF THE WATER TANK.**
- * Replace the air compressor water shield.
- * Restore power to the merchandiser.
- * Allow the tank to fill with water and wait for the temperature to stabilize.
- * Examine the bottom of the tank for leaks.

M-53

DRY INGREDIENT AIR FLUFFING

- * Remove the canister from the merchandiser.
 - * Hold the lid securely and invert the canister.
 - * This will help prevent the compacting of ingredients in the canister base.
-

M-54

SUGAR AND WHITENER MIXING BOWL INSPECTION

- * Look for an accumulation of sugar or whitener in the mixing bowl.
 - * If necessary, clean and sanitize the bowl. Instructions are given later on this page.
-

M-55

DRY INGREDIENT SHELF CLEANING

- * Remove canisters from all of the shelves.
 - * Clean shelves with a damp, disposable wiper.
 - * Allow shelves to thoroughly dry before replacing canisters.
 - * Replace the canisters.
-

M-56

CANISTER SANITIZING

- * Empty and wash the canister.
 - * Sanitize the canister, lid, augur and spout.
 - * Rinse all parts in hot water.
 - * Allow parts to thoroughly dry before reassembly.
 - * Reassemble the canister and return it to the merchandiser.
 - * Load the canister with the appropriate ingredient. See H-50 on page 61 in this manual.
-

M-57

MIXING BOWL SANITIZING

- * Remove mixing bowl from the dry ingredient shelf assembly.
- * Wash, sanitize and thoroughly rinse the mixing bowl.
- * Return the mixing bowl to the dry ingredient shelf assembly.

CHOCOLATE FUNNEL AND IMPELLER HOUSING SANITIZING

Refer to the figure on the right.

REMOVAL

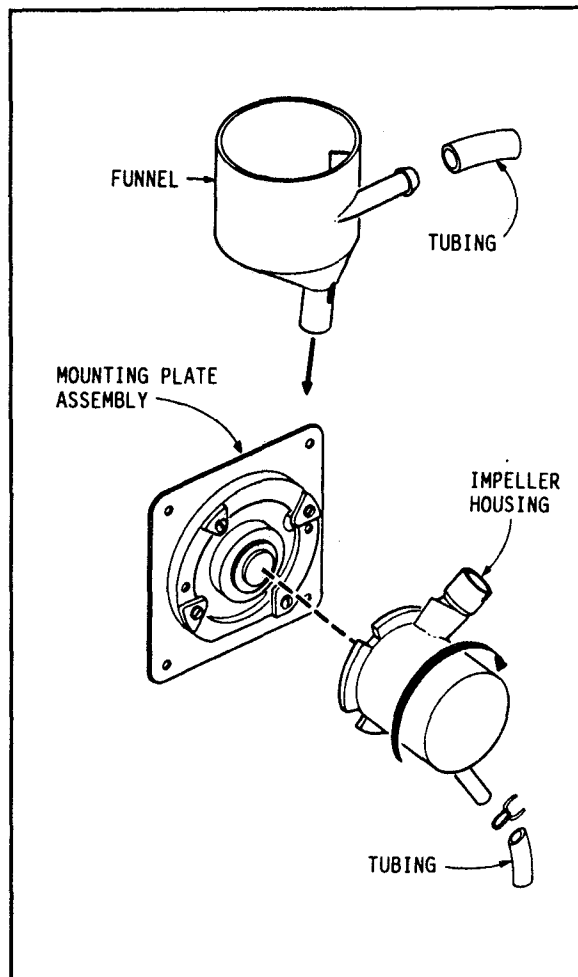
- * Disconnect tubing from the funnel.
- * Remove the funnel.
- * Rotate the impeller housing clockwise.
- * Pull housing forward and away from the mounting plate assembly.

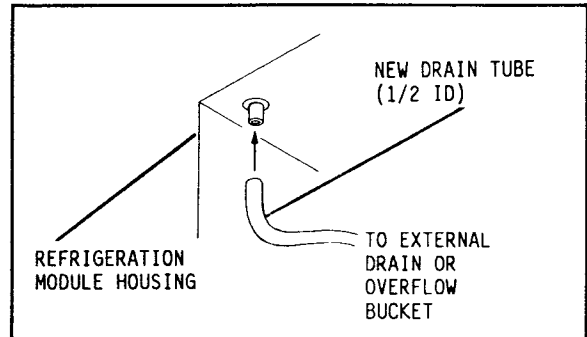
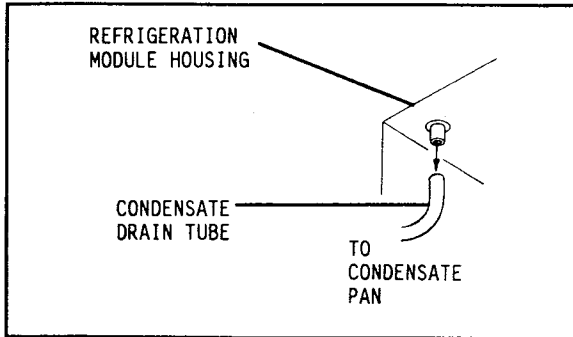
SANITIZING

- * Wash and sanitize the funnel and the impeller housing.
- * Rinse both with hot water and thoroughly dry them before replacing them.

REPLACEMENT

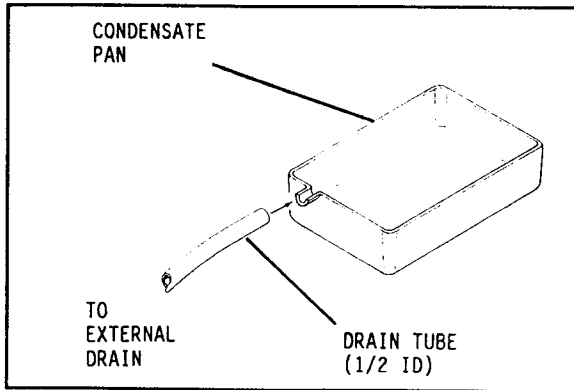
- * Reverse the removal procedure when replacing the funnel and impeller housing.



CONNECTING A 461 OR 462 REFRIGERATION MODULE TO AN EXTERNAL DRAIN**METHOD 1:**

1. Remove the Condensate Drain Tube from the Refrigeration Module.

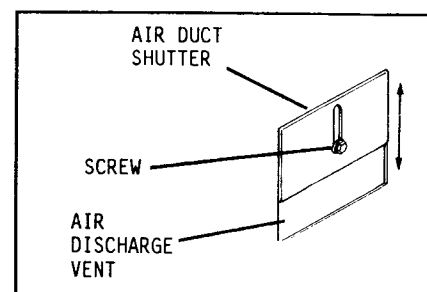
2. Connect a new Drain Tube to the Refrigeration Module Housing.
3. Route the new tube to an external drain or to an overflow bucket.

METHOD 2:

1. Connect a drain tube to the condensate pan.
2. Route the drain tube to an external drain or to an overflow bucket.

OPENING, CLOSING AND ADJUSTING THE AIR DISCHARGE VENTS

The Air Discharge Vents are located in the left side-wall near the front of the tray guide rails. The bottom vent cannot be closed or adjusted. The other vents are adjusted by loosening the screw and sliding the Air Duct Shutter up or down as required. With the shutter all the way up, the vent is fully open. The vent is closed when the shutter is all the way down.



REMOVING A REFRIGERATED OR FROZEN FOOD MODULE FROM THE MERCHANDISER

Refer to the figure below during this procedure.

CAUTION

National Vendors recommends that you empty the food module before removing the unit from the merchandiser. A fully loaded unit may be too heavy to handle safely.

WARNING

TURN THE MAIN POWER SWITCH TO THE "OFF" POSITION BEFORE STARTING THIS PROCEDURE.

Refrigerated or Frozen Food:

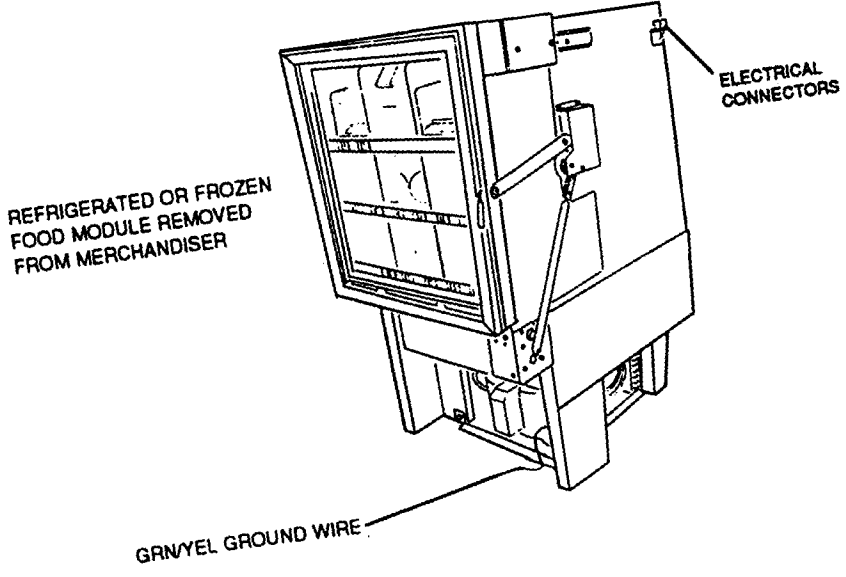
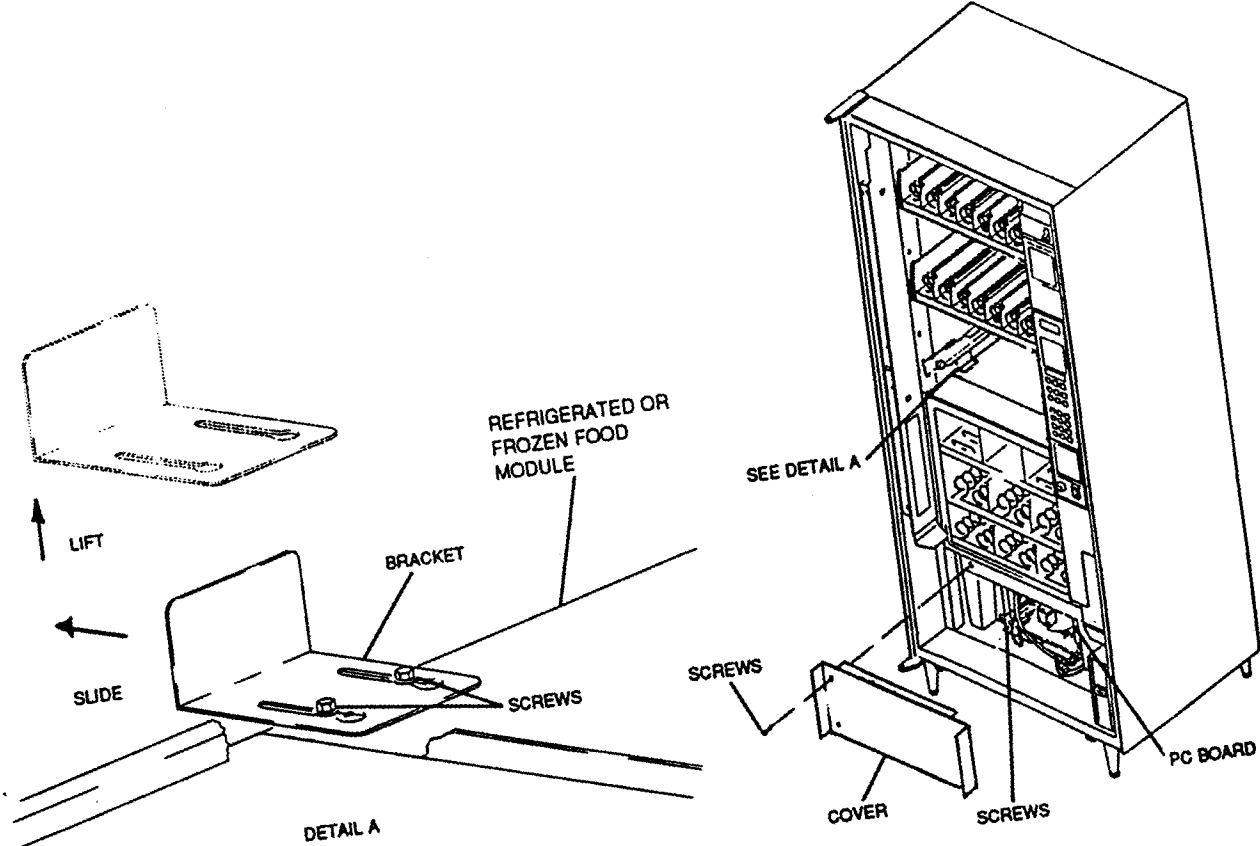
1. Remove the tray immediately above the Food Module.
2. Remove the Food Module front cover. (The compressor and the condenser coil are behind this cover.)
3. Remove the two hex head screws that secure the food module to the floor of the merchandiser.
4. Disconnect the harness from the food module PC Board.
5. Remove the GRN/YEL ground wire from the floor of the merchandiser cabinet.

Frozen Food only:

6. Disconnect the Frozen Food module door heater cable from the interlock switch cable.
7. Remove the Frozen Food module door heater cable from the harness retainer on the cabinet.

Refrigerated or Frozen Food:

8. Loosen the screws that secure the food module brackets to the top of the housing. Slide the brackets outward from the housing and lift them off.
9. Pull the food module forward several inches then disconnect the harness from the right rear of the housing.
10. Pull the food module from the merchandiser.



FOOD MODULE DOOR SWITCHES HARNESS CONNECTIONS

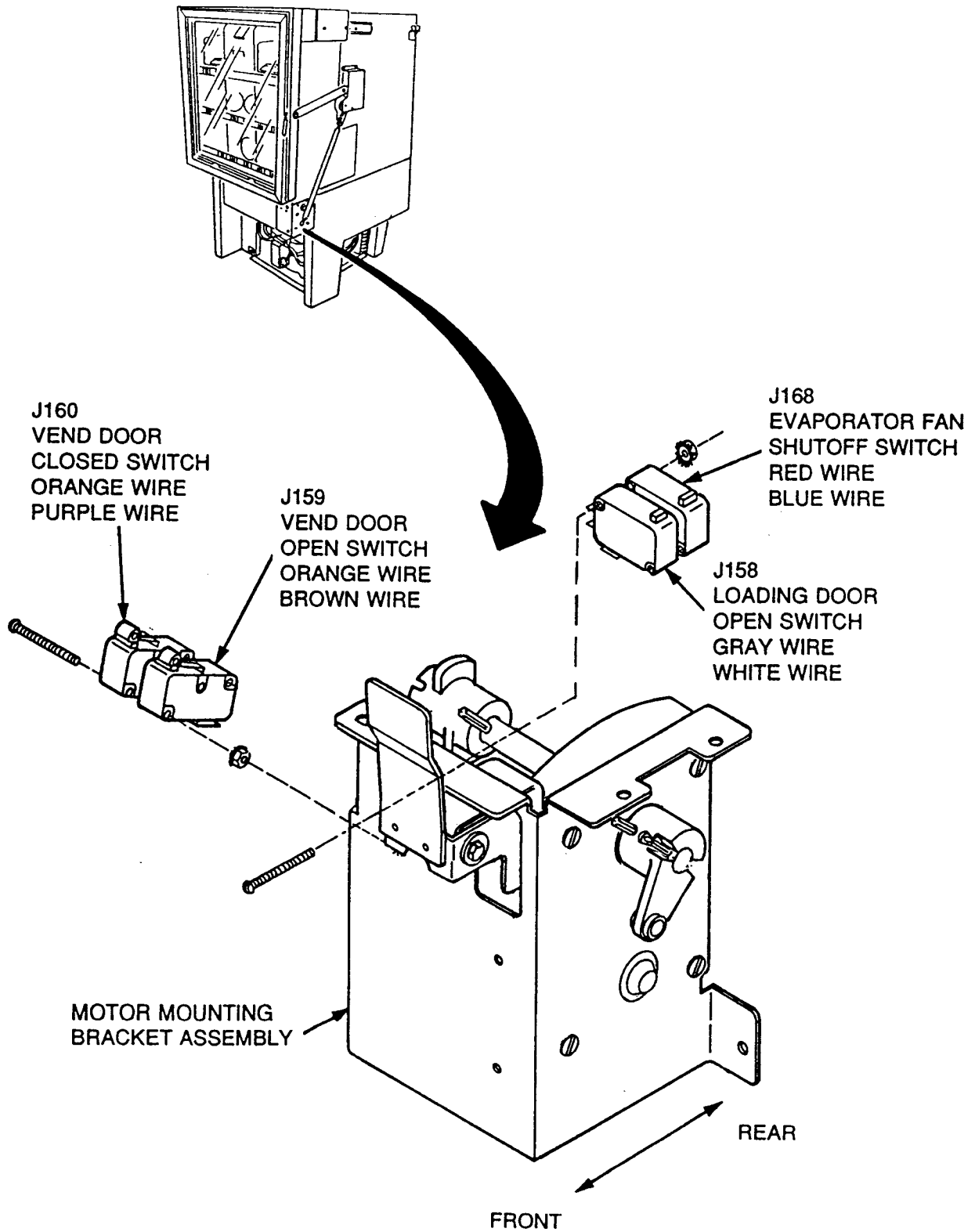
Refer to the figure below during this procedure.

The following identification should aid you in making harness connections at the switches on the motor mounting bracket assembly.

Switch Identification	Harness Connection
J158 Loading Door Open Switch	Gray wire, White wire
J159 Vend Door Open Switch	Orange wire, Brown wire
J160 Vend Door Closed Switch	Orange wire, Purple wire
J168 Evaporator Fan Shutoff Switch	Red wire, Blue wire

If any of these switches needs to be adjusted to ensure proper switch actuation, the following steps should be taken.

1. Begin by making sure the vend door and loading door are closed and the door motor is in the home position.
2. After the motor is "homed", shut off the power to the merchandiser and open the food module loading door.
3. Loosen the switch mounting screws slightly and rotate the switch toward or away from the switch actuator as necessary, until the switch actuates with an audible "click". If there is too little clearance, damage to the switch may occur. The switch should just make to be properly adjusted.
4. Restore power to the merchandiser.
5. When you press in on the loading door switch actuator, the evaporator fan should come on and the display should indicate that the merchandiser is ready to vend.
6. The vend door will cycle open and closed for eight seconds and then stop in a random position if the door switches are not adjusted correctly. Using "FOOD DOOR" service function, the vend door can be cycled open-to-closed and closed-to-open to test switches.
7. If the vend door switch connections are reversed, the door will open when it should be closed and vice-versa.



GUIDE TO ELECTRICAL WIRING DIAGRAMS

This part of the manual has been provided to help you understand the electrical circuitry of your merchandiser.

WARNING

DISCONNECT THE MERCHANDISER FROM ITS POWER SOURCE BEFORE CHECKING ANY CIRCUITS FOR CONTINUITY.

A VOLT-OHMMETER SHOULD BE USED FOR ALL TESTS. USE OF A JUMPER WIRE OR AN INCANDESCENT LAMP ARE NOT RECOMMENDED

ABBREVIATIONS USED IN WIRING DIAGRAMS

ABBREVIATION	DEFINITION	ABBREVIATION	DEFINITION
CB	Circuit Breaker	MOT	Motor
J	Jack	PCB	Printed Circuit Board
P	Plug	HDLG	Handling
SW	Switch	VAL	Validator
CYC	Cycle	P/O	Part Of
PRES	Present	TEMP	Temperature
SEN	Sense	BAL	Ballast
COL	Column		

WIRE COLOR ABBREVIATIONS

ABBREVIATION	COLOR	ABBREVIATION	COLOR
RD	Red	YEL	Yellow
BLU	Blue	BRN	Brown
ORN	Orange	GRN	Green
TAN	Tan	GRY	Gray
BLK	Black	PNK	Pink
WHT	White	PUR	Purple

- * When two colors are shown for a single wire, the first is the basic color of the wire and the second is the color of the stripe. For example: BLK/WHT is a black wire with a white stripe.
- * When a color and a number are shown for a single wire, the number is printed on the wire.

ELECTRO-STATIC DISCHARGE PREVENTION

- * Circuit board components are easily damaged by electro-static discharge. This is especially true for EPROMS. A surge of 100 volts or less can cause problems in micro-electronic circuits. Much larger charges are very easy to create. For example, sitting on a varnished wooden stool can generate 20,000 volts. Simply walking across the floor can produce up to 50,000 volts.
- * Fortunately, much can be done to greatly reduce electro-static discharge and the damage it can cause. A successful plan for controlling static discharge includes the following steps:

Eliminate potential sources of friction. Carpet is especially troublesome. Carpet should be treated periodically with an "anti-static" solution;

Avoid a low humidity environment. Humidity levels of 50% or more tend to discourage the formation of static charges;

Provide each machine with a separate, properly grounded outlet;

Use a conductive wrist-strap which is grounded to the machine when servicing controller boards in the merchandiser. An anti-static mat should be used when servicing boards outside of the merchandiser;

Use anti-static containers and packaging for storing and transporting circuit boards and individual EPROMS.