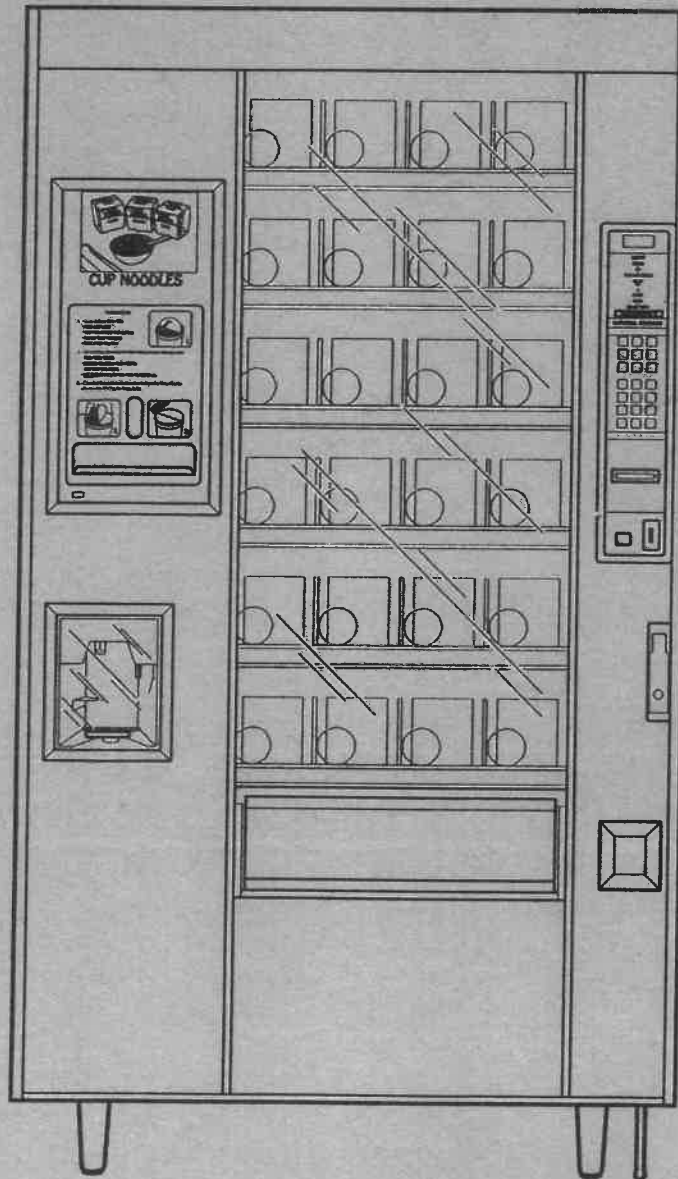


# *Instant Cup Noodle Merchandiser*



## *Mechanical Set-Up, Operation and Maintenance Manual*

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4500058



**CRANE- National Vendors**

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

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

Merchandisers are warranted for one (1) year against defective parts and workmanship. Any part or parts which are proved to be defective within one (1) year of the date of shipment will be replaced free of charge when the defective part is returned with transportation charges prepaid to the destination designated by the National Vendors' Parts 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.

No warranty is given or implied on incandescent lamps, neon lamps, fluorescent lamps, ballasts, starters and other expendable items.

Further, National Vendors is not responsible for any costs of service rendered or repairs made at other than National Vendors; or by anyone other than an authorized factory Service Representative of 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; and 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.

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Bridgeton, MO 63044

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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: 4500058

PROGRAMMING GUIDE

Part Number 4500059

**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. 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 12-14
Guide to Tray Set-Up	This sequence will be completed for the merchandiser.	Page 22
Guide to Hot water Module Set-Up.	This sequence will be completed for the merchandiser.	Pages 50-51

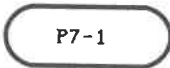
- \* The boxes and diamonds on the left side of each chart contain "WHAT TO DO" instructions.
- \* The ovals on the right side of each chart contain references to the necessary "HOW TO DO IT" information.



this contains an instruction



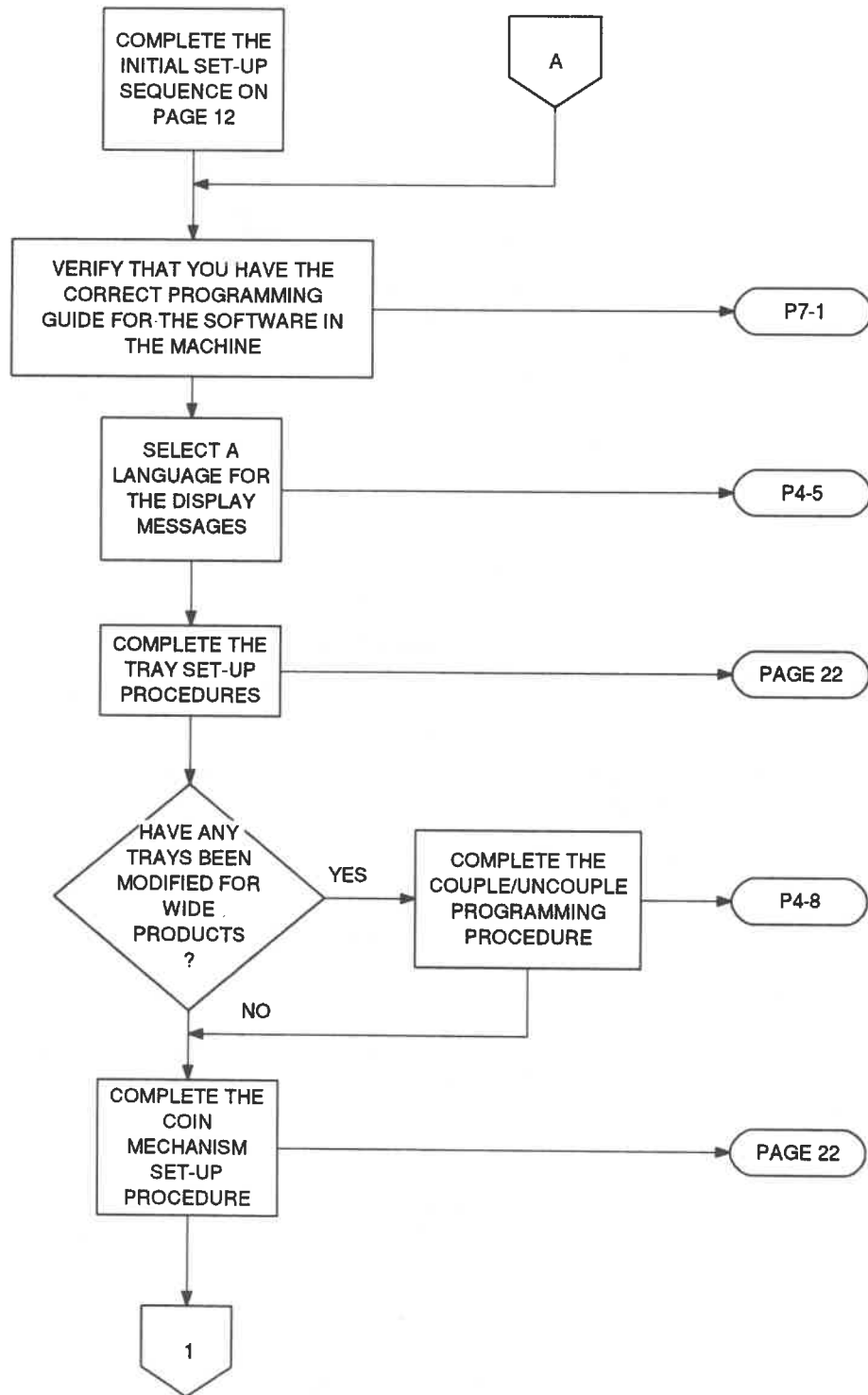
this contains a question or asks you to choose a direction

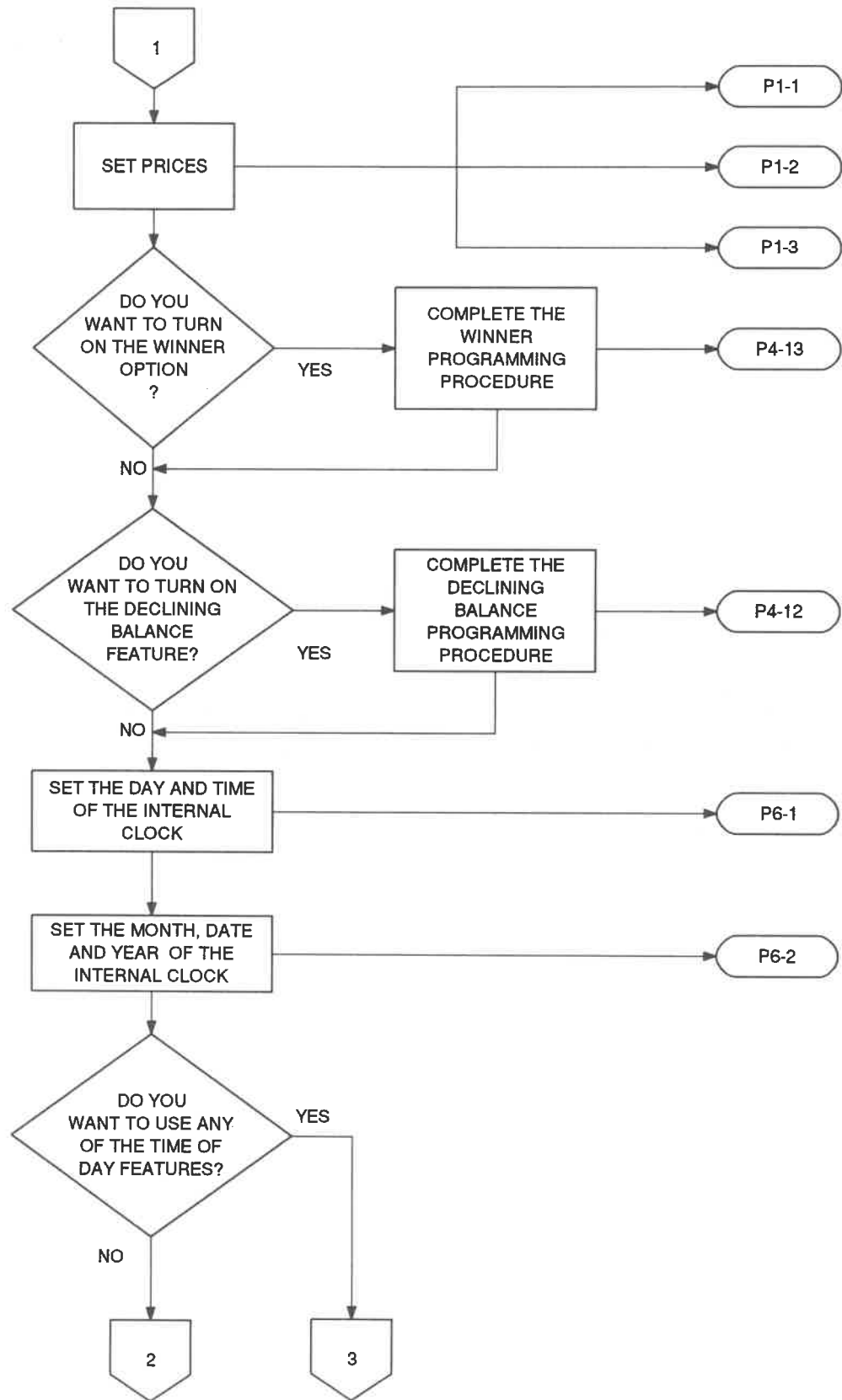


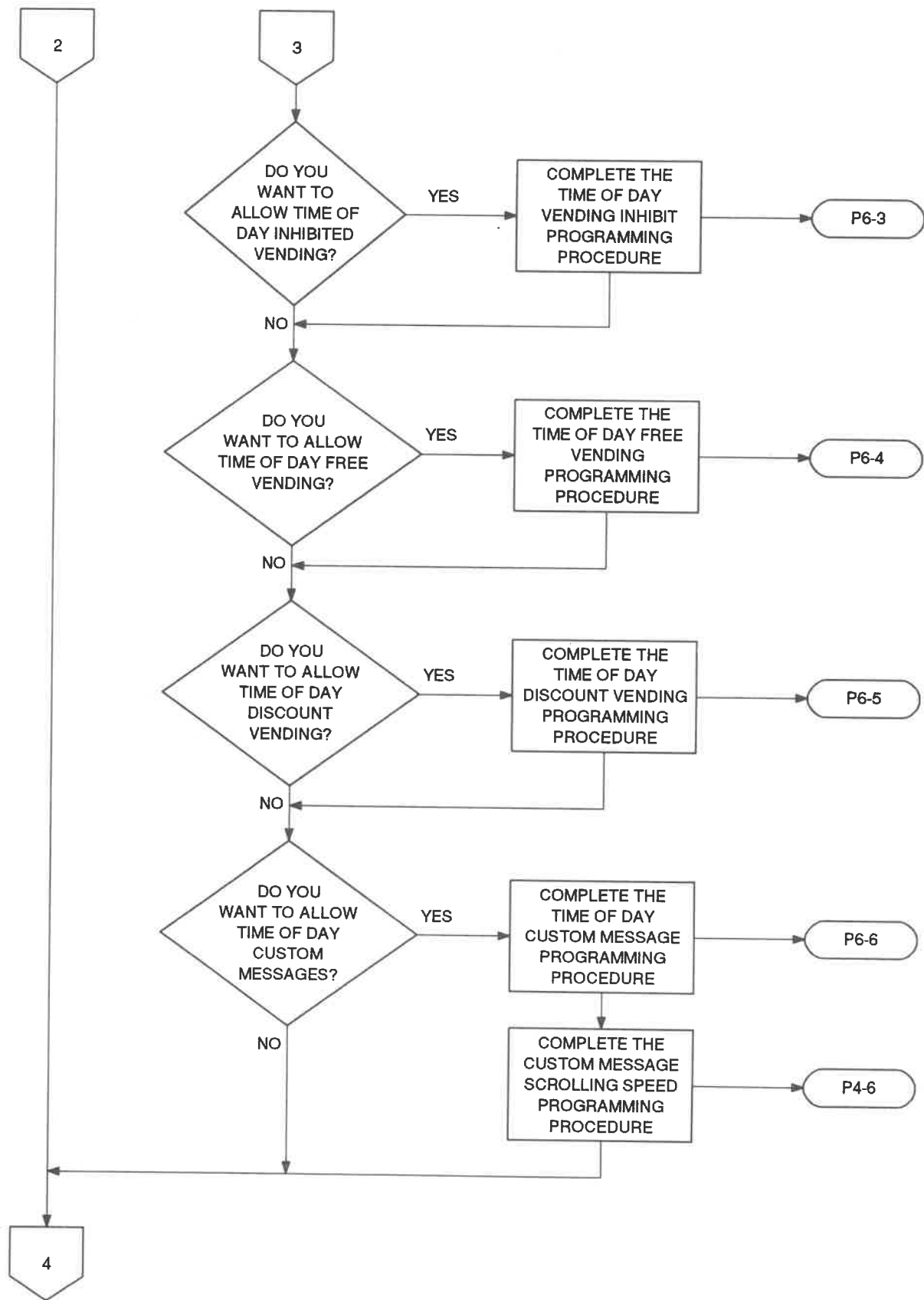
this refers you to procedure P7-1 in the PROGRAMMING GUIDE, part number 4500059.



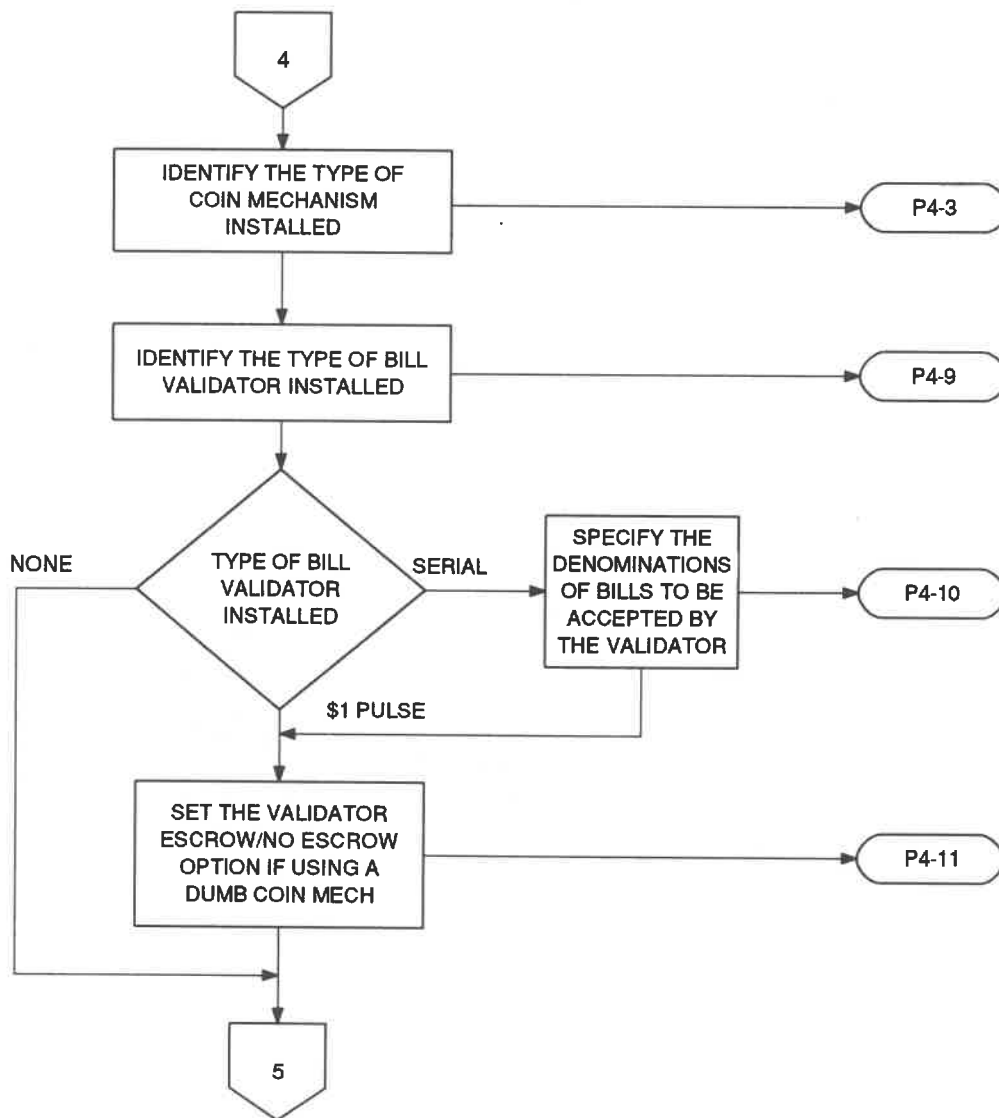
this refers you to page 26 in this manual

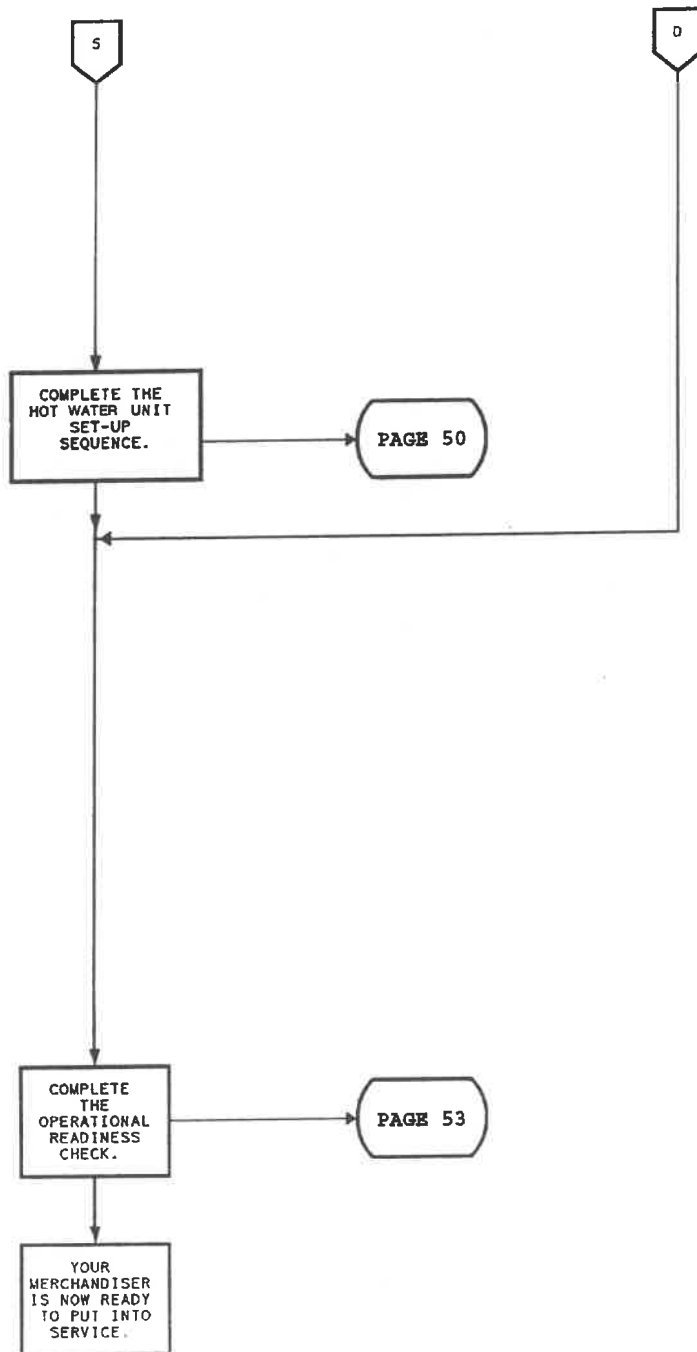




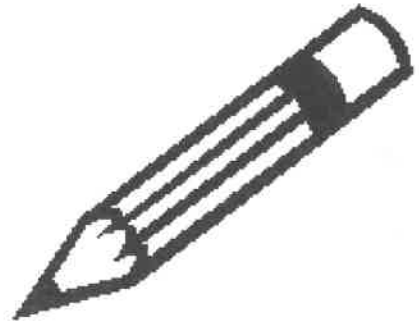








# Notes



A series of horizontal lines for writing notes, organized into four distinct sections. Each section is separated by a small gap and begins with a faint, light-colored curved line on the left side, suggesting a binder or a margin. The lines are evenly spaced and extend across most of the page width.

POWER REQUIREMENTS

VOLTS AC	115
AMPS	15
HZ	60
PHASE	Single
OUTLET TYPE	3-pin grounded

CHECKING THE POWER OUTLET*VOLTAGE CHECK*

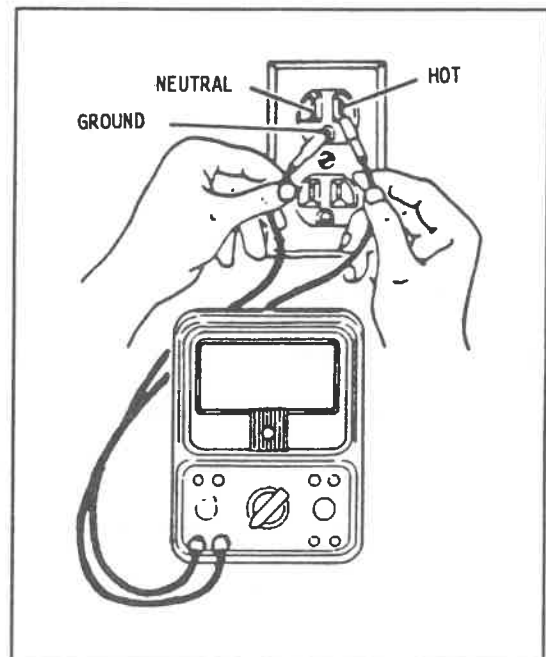
When placed across the **HOT** and **NEUTRAL** terminals, a volt-ohmmeter should indicate 110-130 volts ac.

*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 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 CUP NOODLE MERCHANDISER. 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:

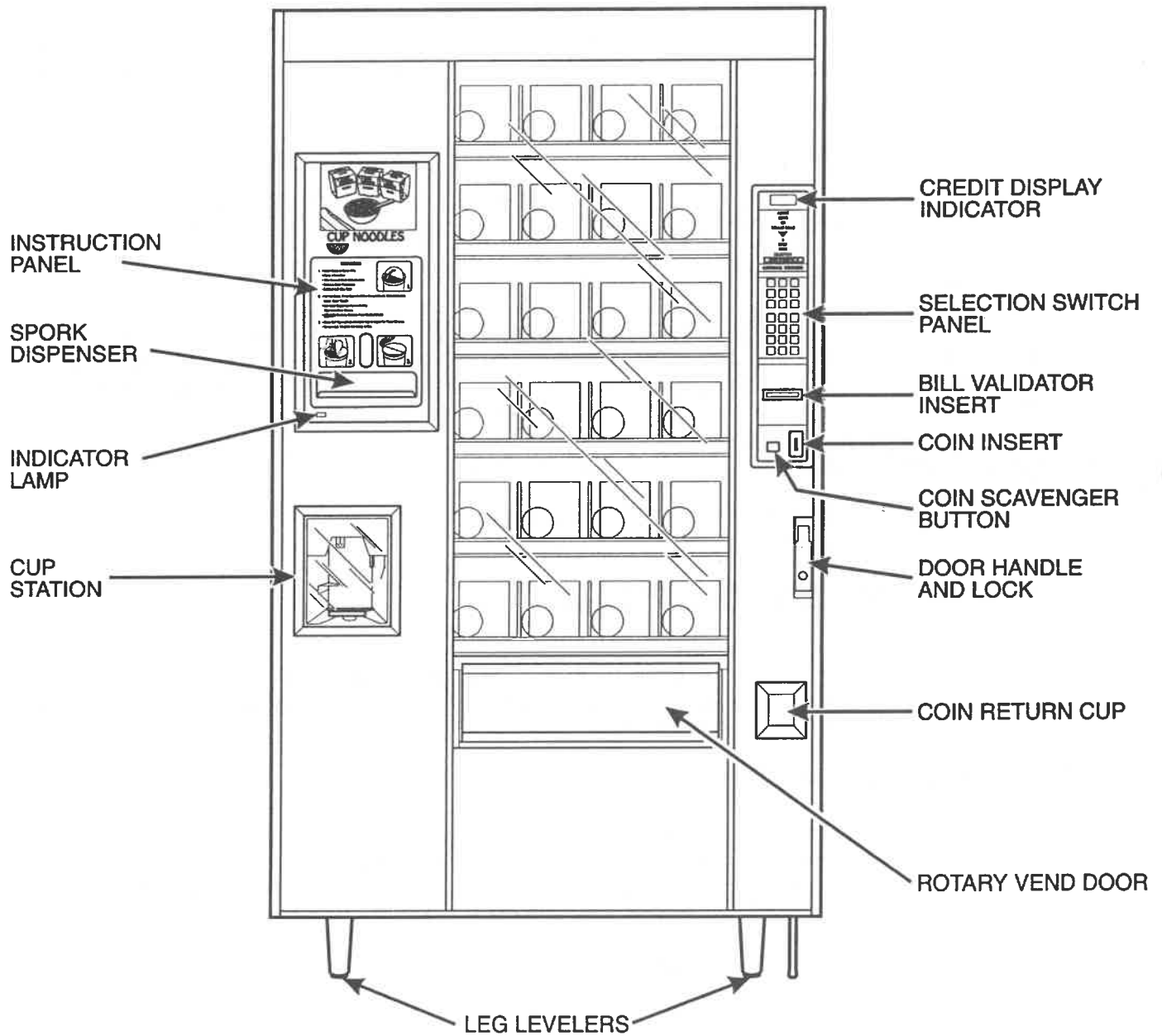
- \* A coil of copper tubing with outside diameter of 3/8 inch (9.5 mm) or greater. The appropriate plastic tubing may be substituted.
- \* A 3/8 inch flare fitting

## USING A WATER FILTER CARTRIDGE

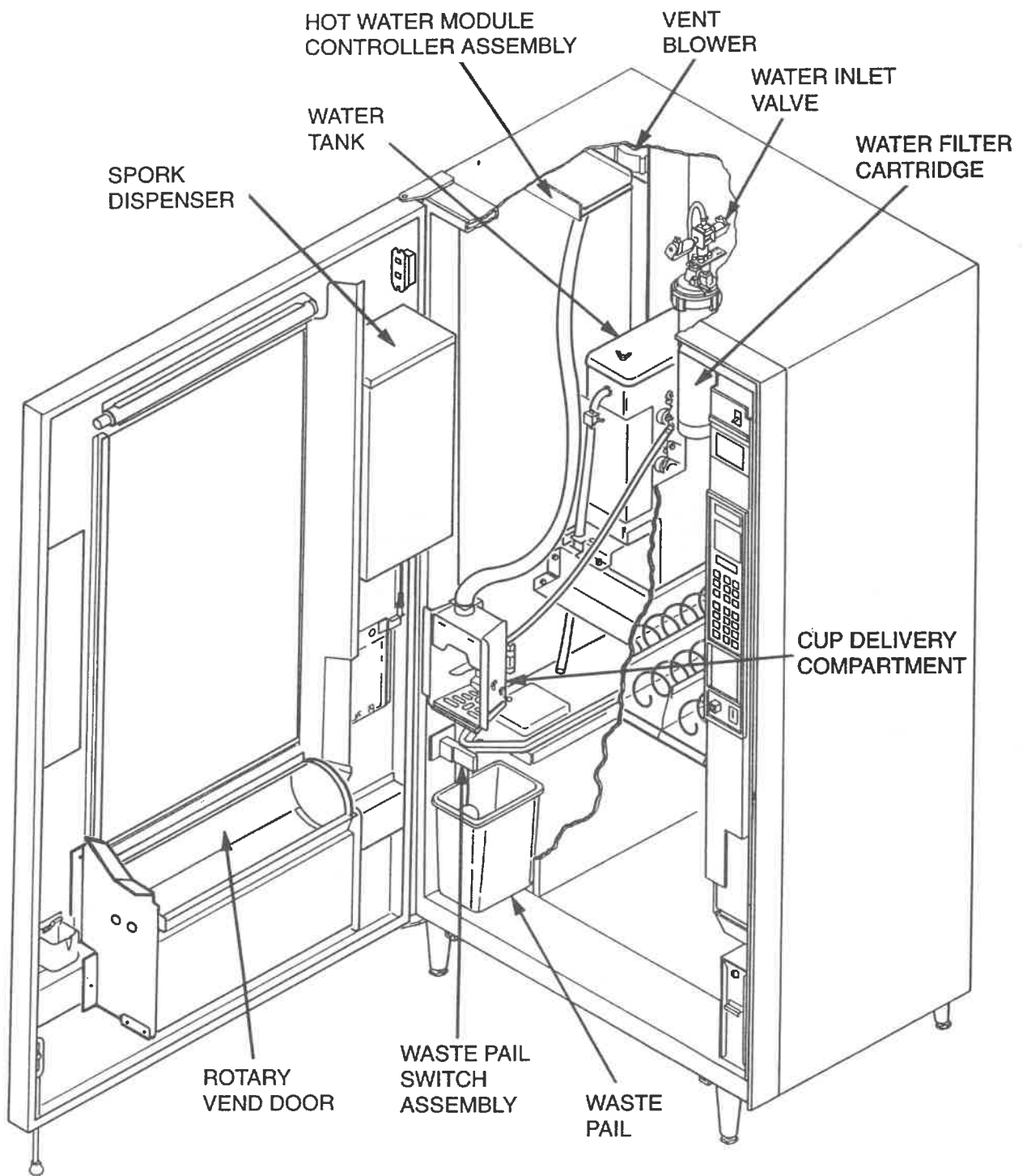
The filter cartridge supplied with this merchandiser will do the following:

- \* 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 for 16,000 vends.

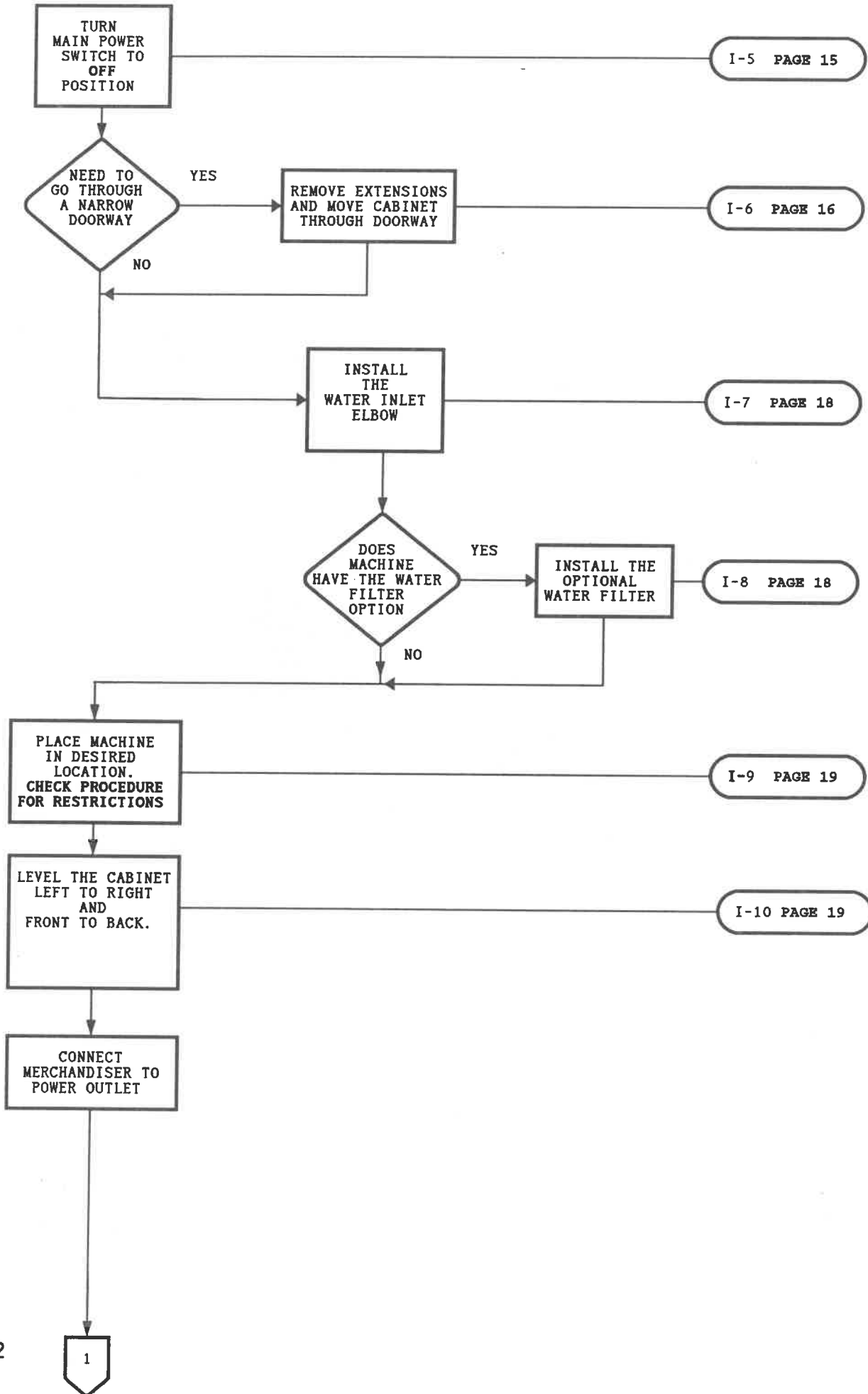


**MODEL 450 - EXTERIOR VIEW**

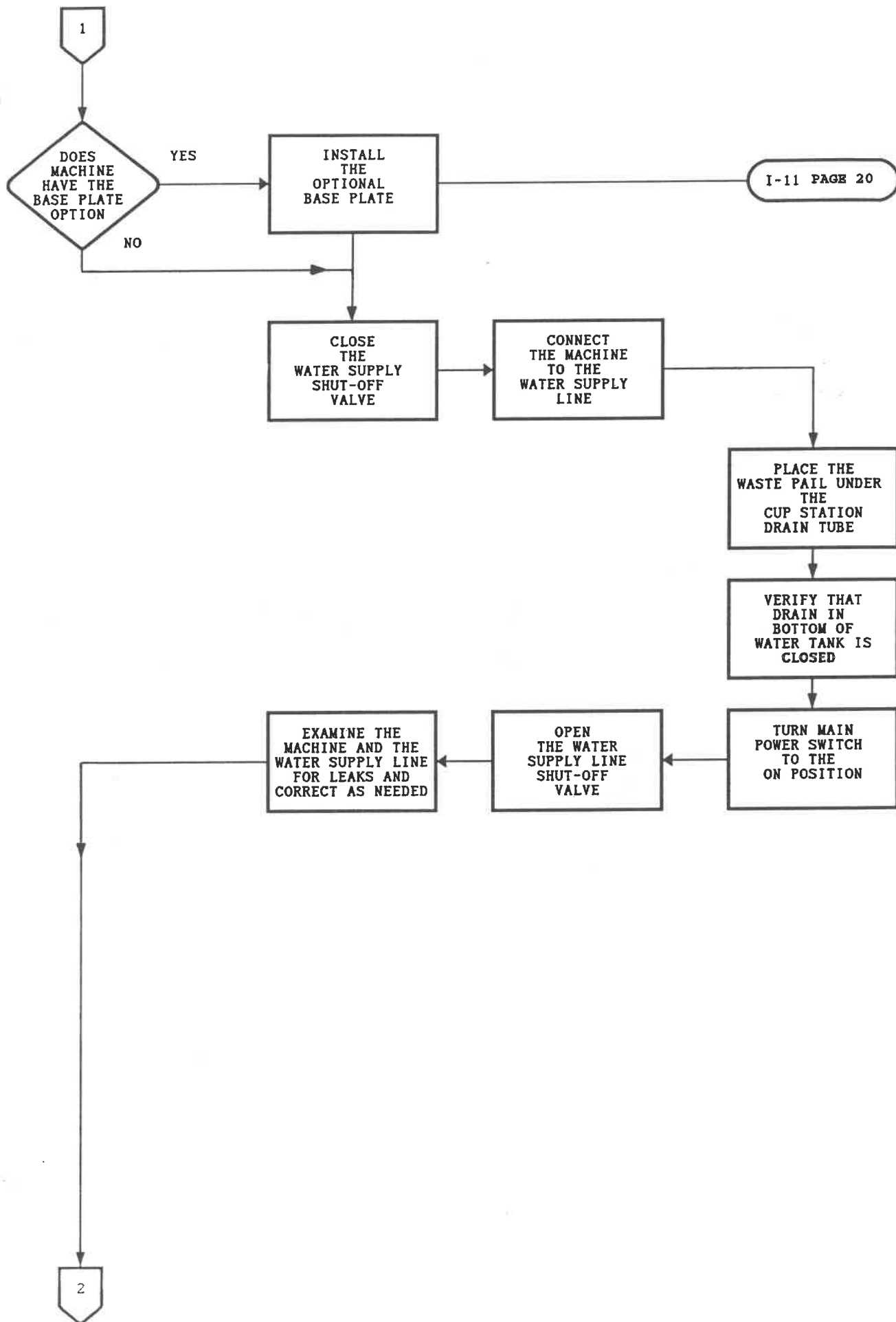


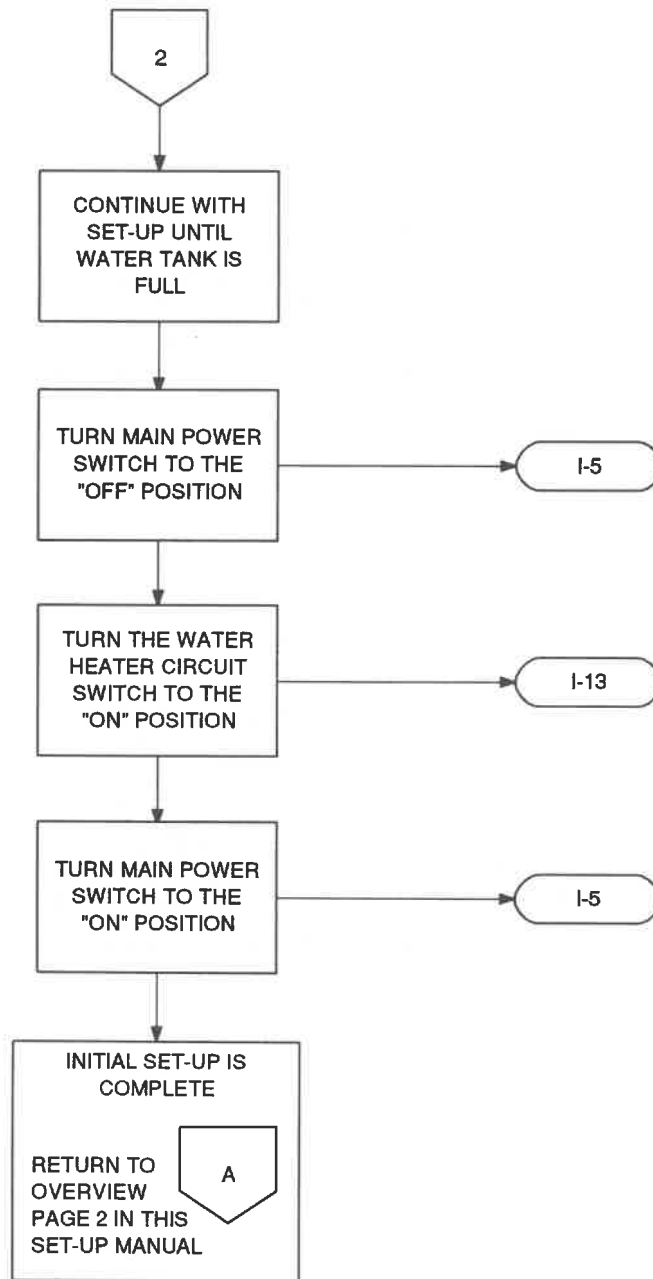
**MODEL 450 - INTERIOR VIEW**

I-4 INITIAL SET-UP







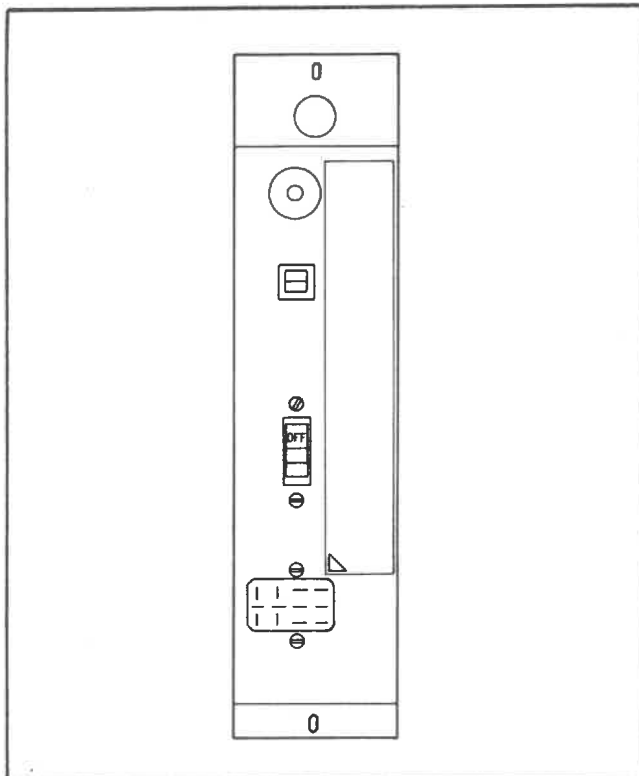


- \* Power to the merchandiser is controlled by the Main Power Switch. It is located on the Power Panel.
- \* The Power Panel is on the right side of the merchandiser, behind the monetary door.

**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 (P4-7) 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:

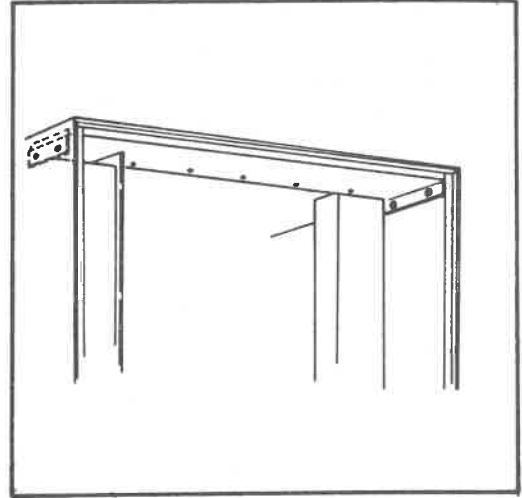
*ID TRAY - UNLATCHED*

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 P4-7 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.

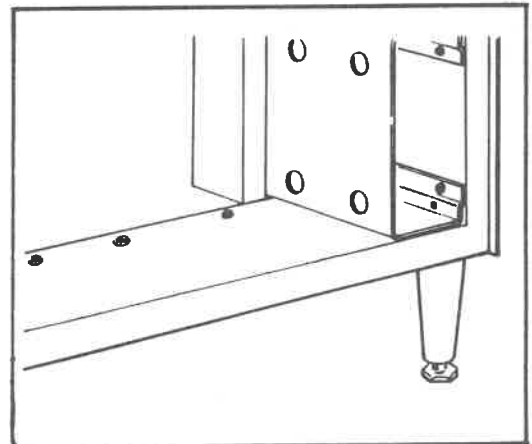
**REMOVING THE TOP EXTENSION (Figure -A)**

- \* Remove the two screws that secure each end of the extension to the sides of the cabinet.
- \* Remove the other five screws that secure the extension to the cabinet.
- \* Pull extension forward to remove it from the merchandiser.



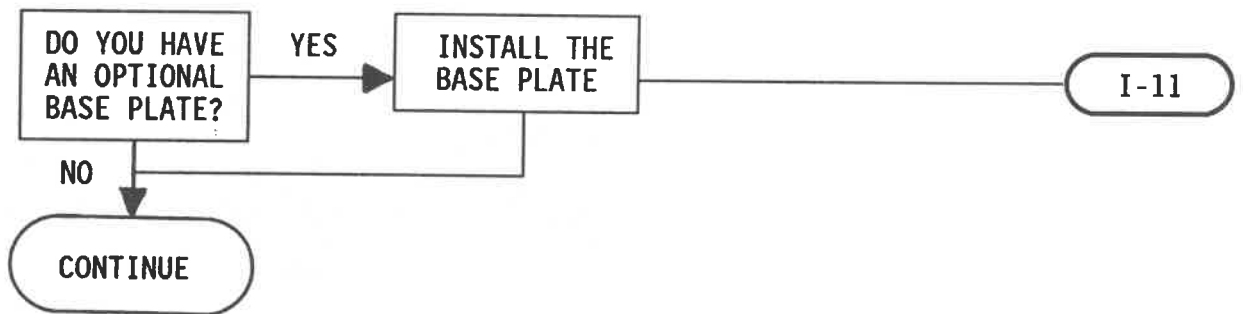
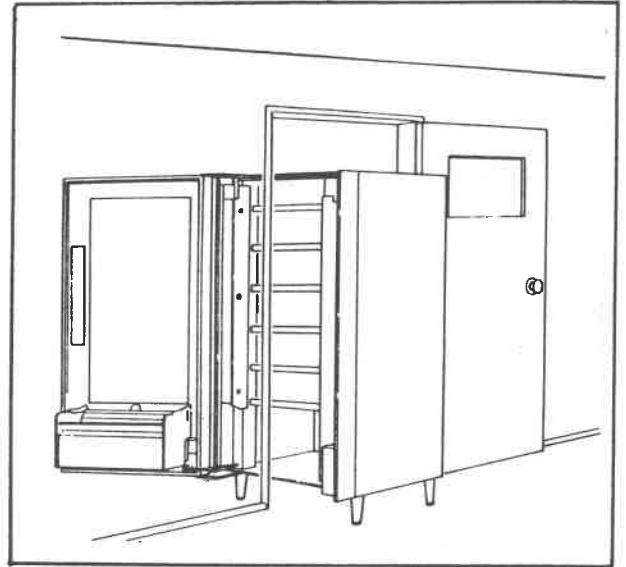
**REMOVING THE BOTTOM EXTENSION (Figure -B)**

- \* Remove the two screws that secure each end of the extension to the sides of the cabinet.
- \* Remove the other five 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**

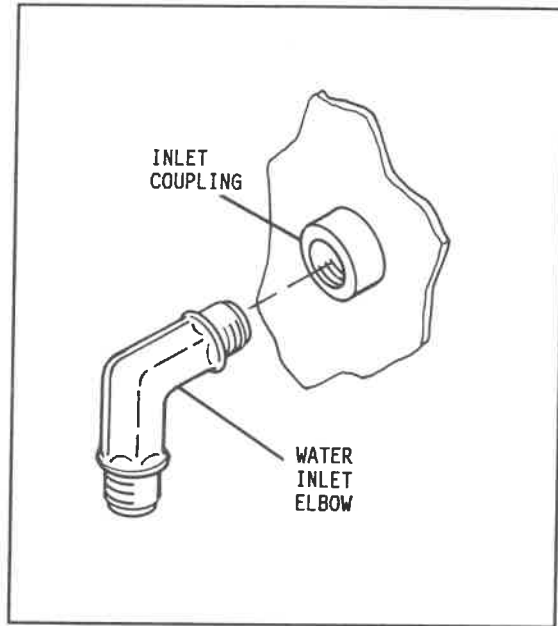
A 3/8 Flare x 3/8 NPTF elbow fitting is included in the same envelope that contained this manual.

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.



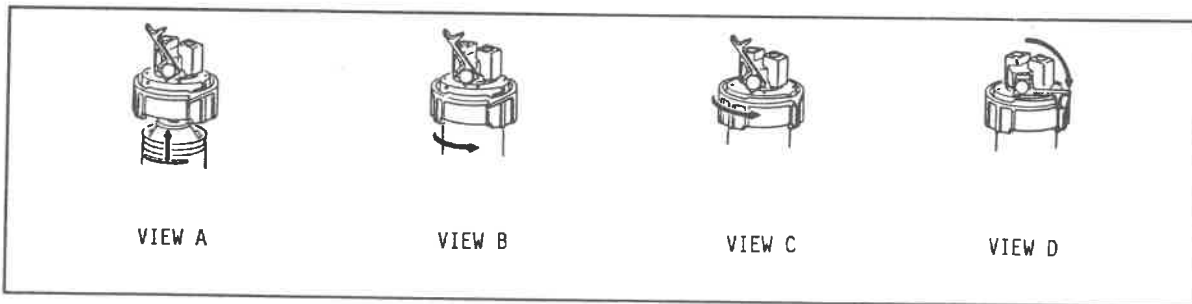
**TO INSTALL A WATER FILTER CARTRIDGE**

- \* 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 merchandiser should be located at least one inch away from the back wall.

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.

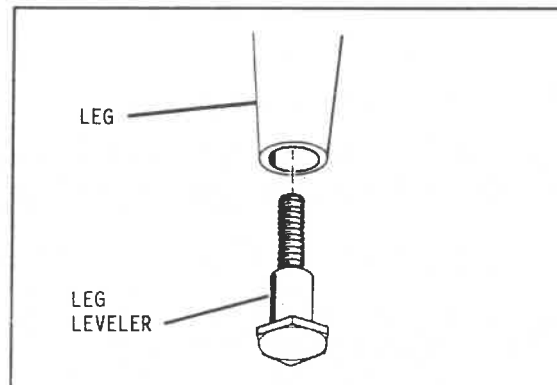
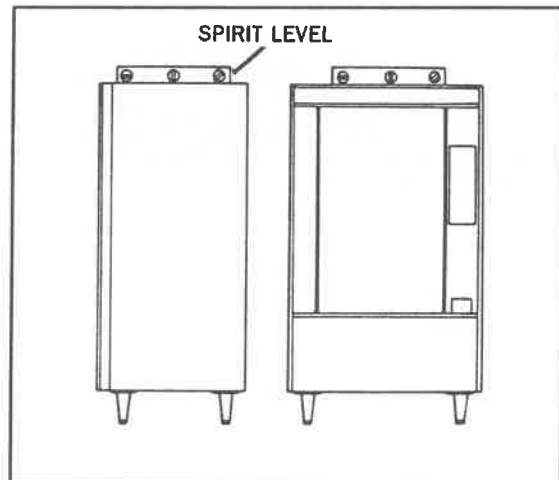
When the merchandiser is part of a bank of machines, it should be leveled in reference to the other machines.

### **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.

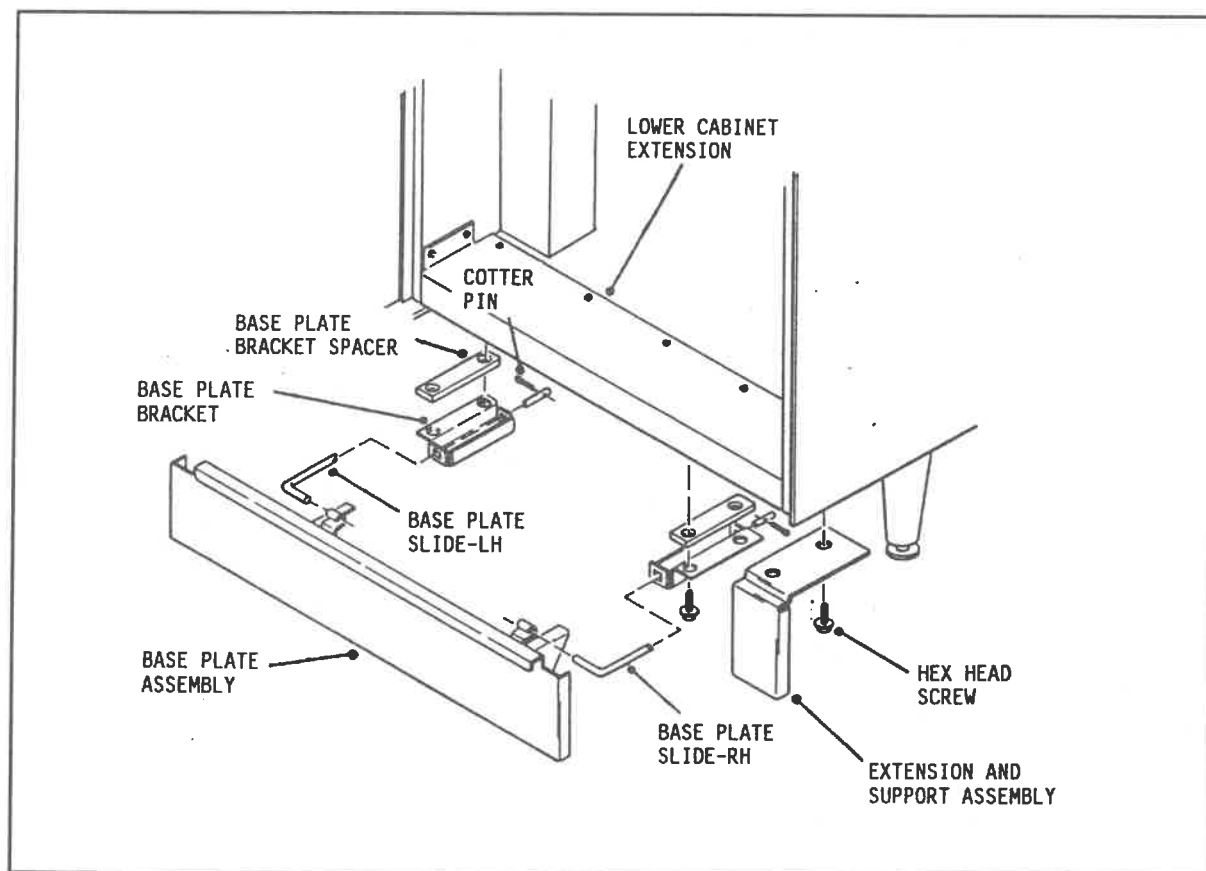
You may need to use pliers or channel locks to loosen the leg levelers.



**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.

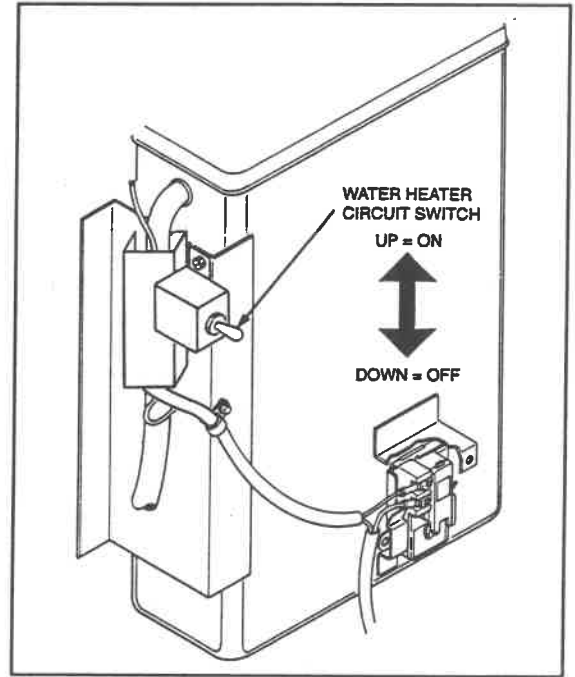


## ENERGIZING THE WATER TANK HEATER CIRCUIT

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.

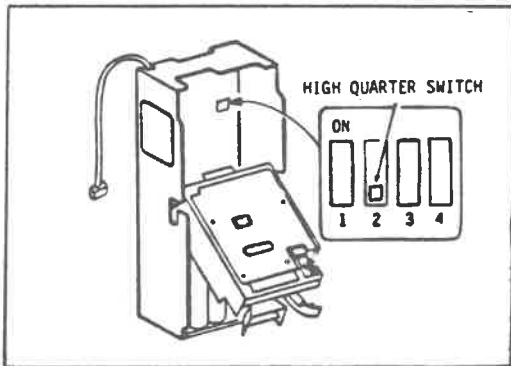


The information in this part of the manual has been provided to help you prepare the merchandiser for vending.

DESCRIPTION	PAGE
Coin Mechanism Set-Up Guide	22
Tray Set-Up Guide	23
Hot Water Module Set-Up Guide	50

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

**SETTING THE QUARTER SWITCH**

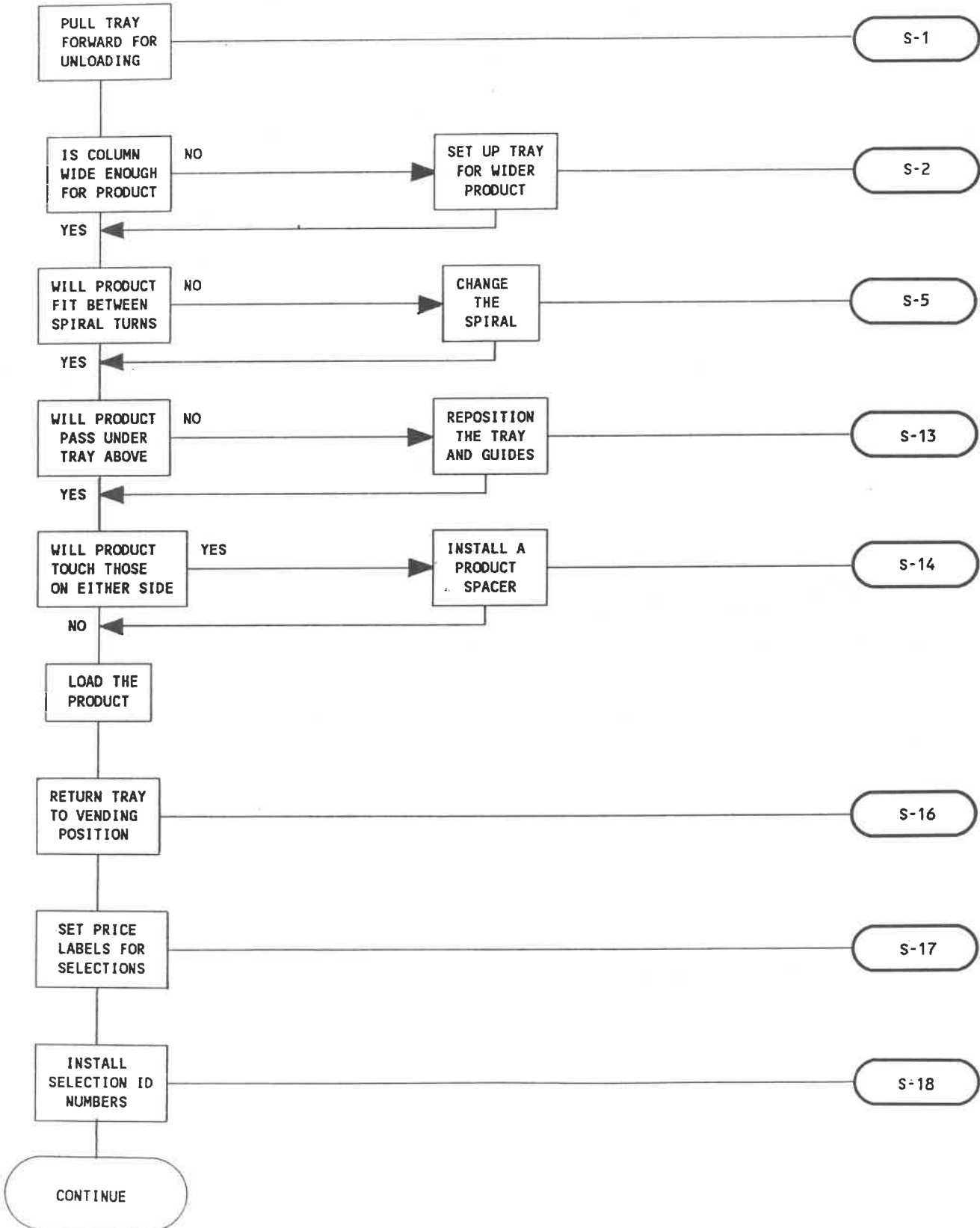


QUARTER SWITCH POSITION	ACTION
LOW	Will accept only one \$1.00 bill.
HIGH	Will accept \$1.00 bills equal in value to first whole dollar above highest vend price.

**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



- \* 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.

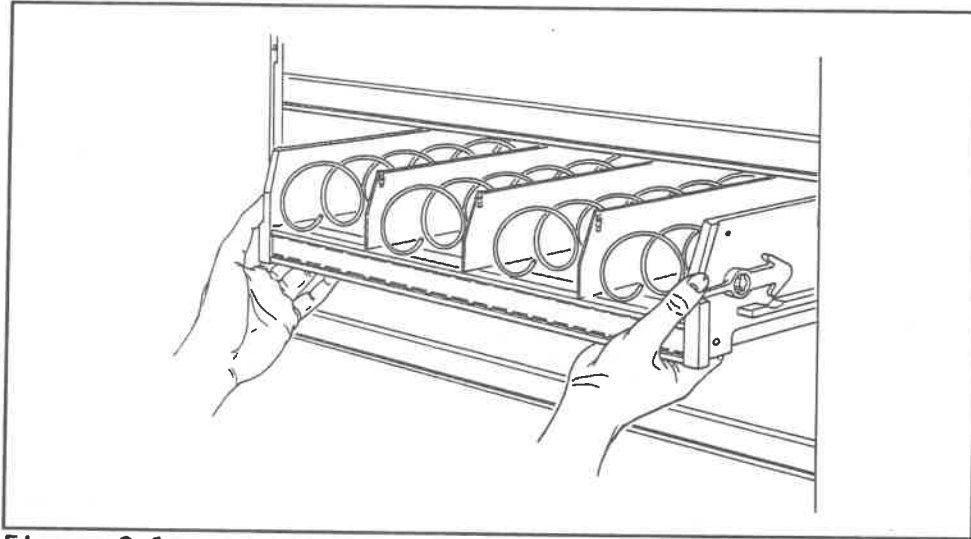


Figure S-1a

**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.

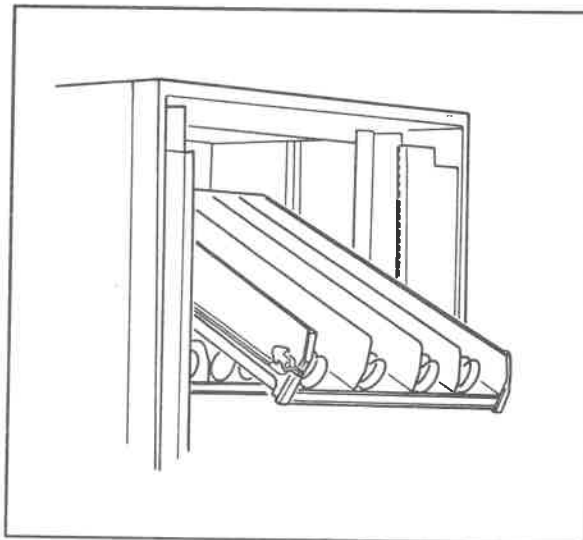
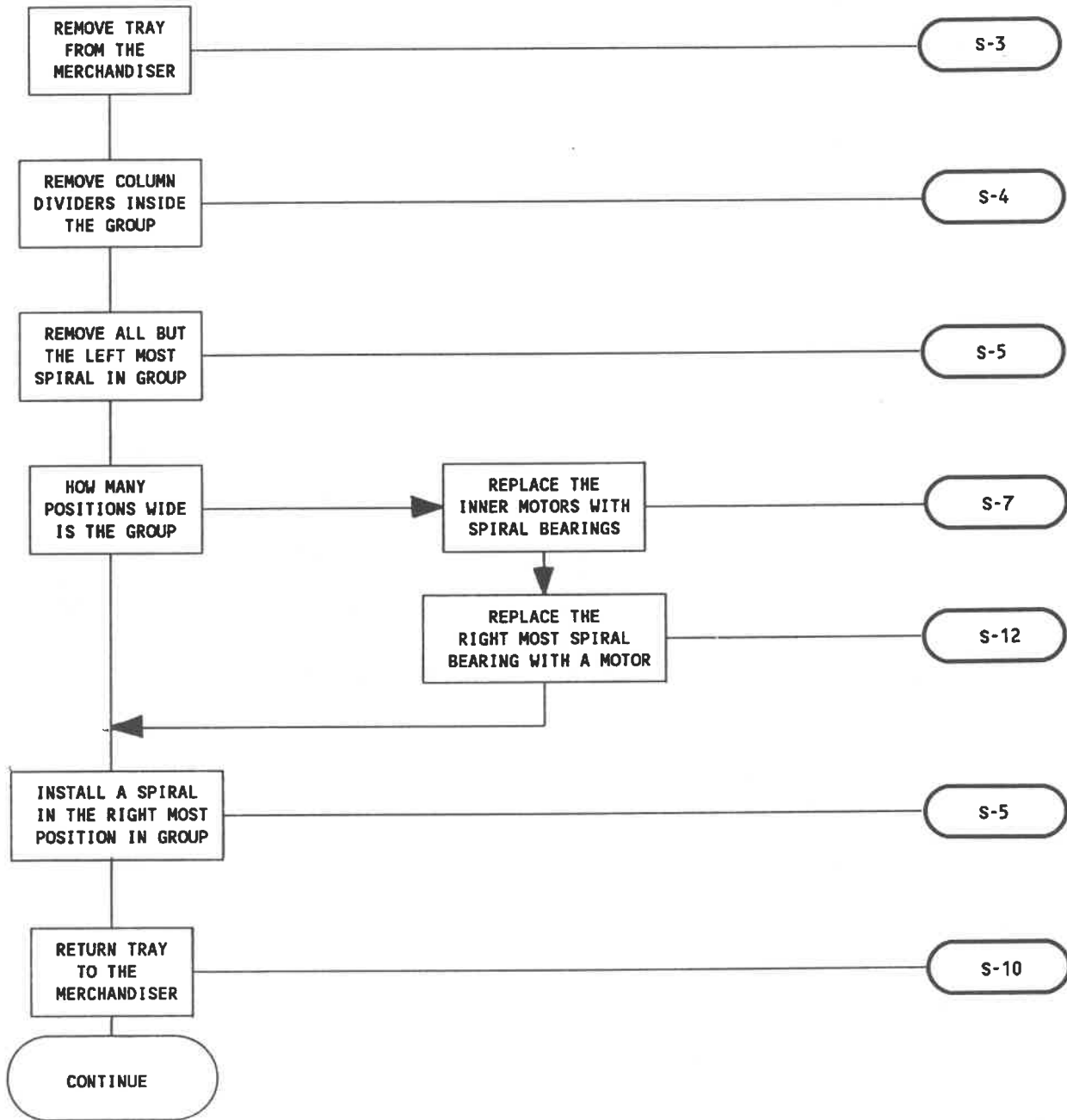


Figure S-1b

**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 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.

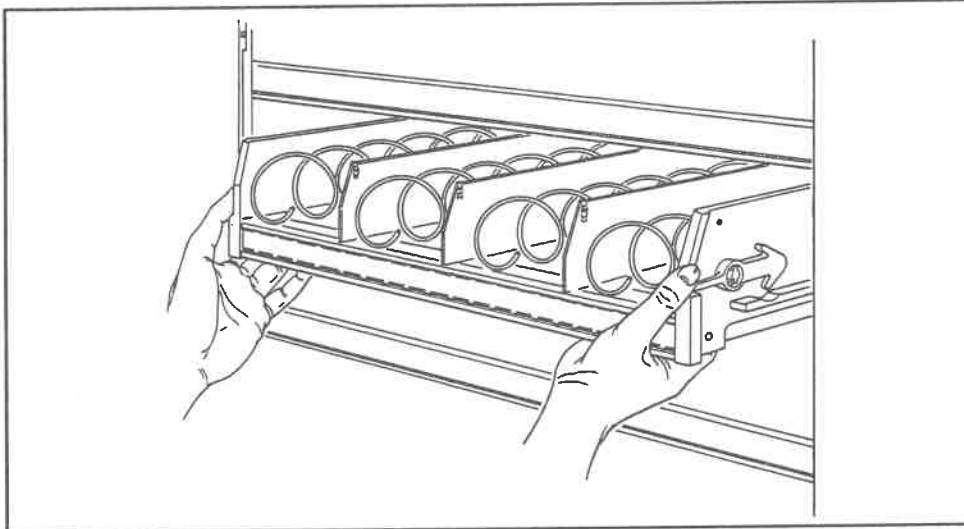


Figure S-3a

- \* 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.*

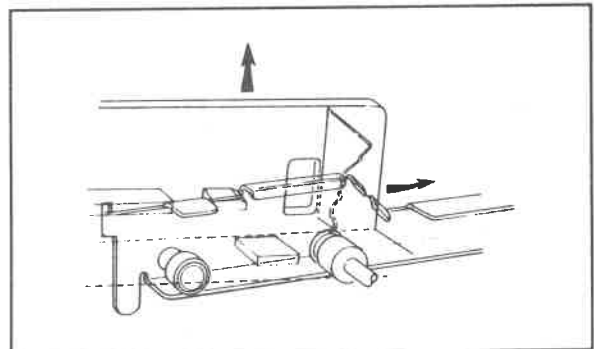


Figure S-3b

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

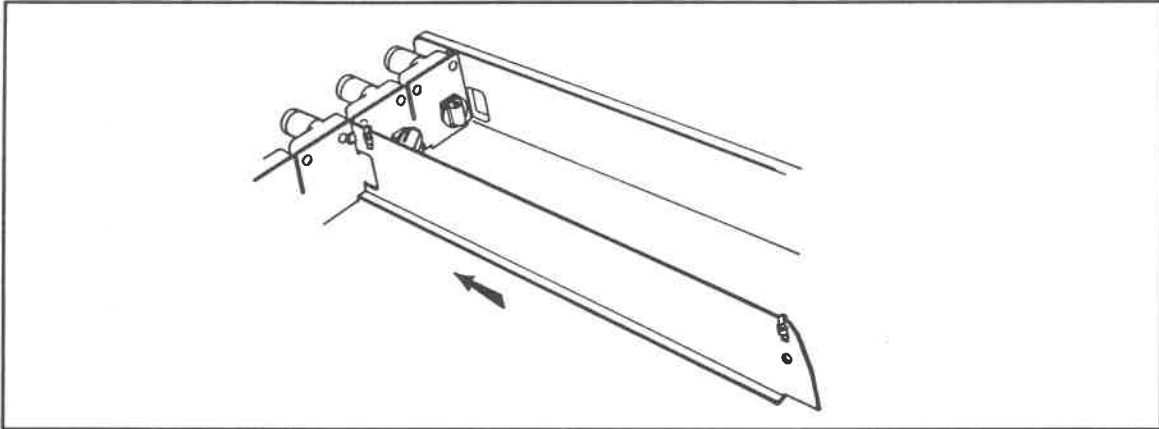


Figure S-4a

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

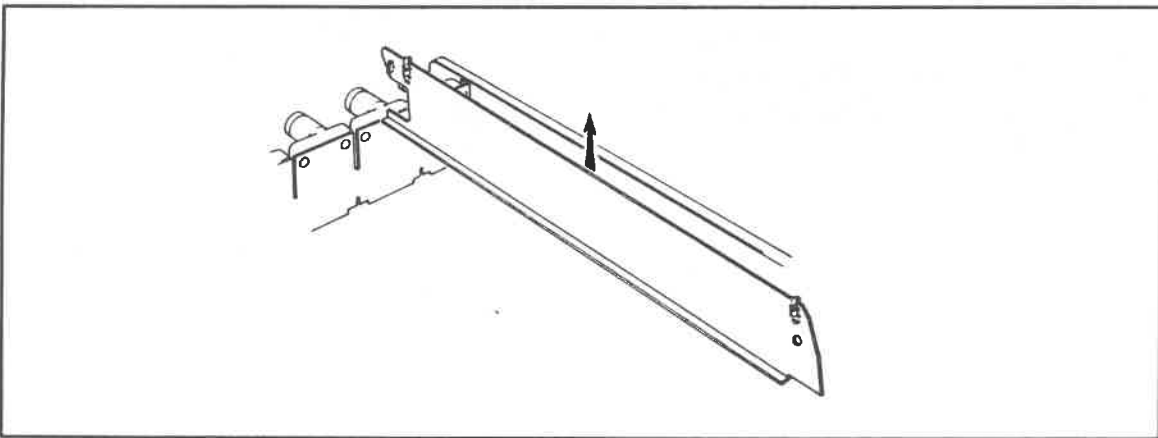
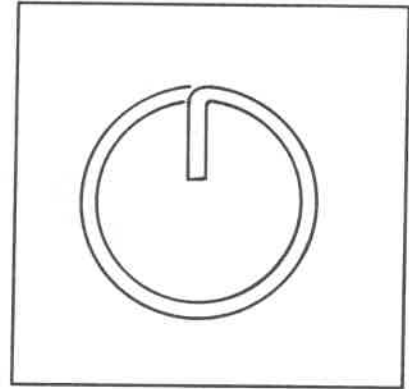


Figure S-4b

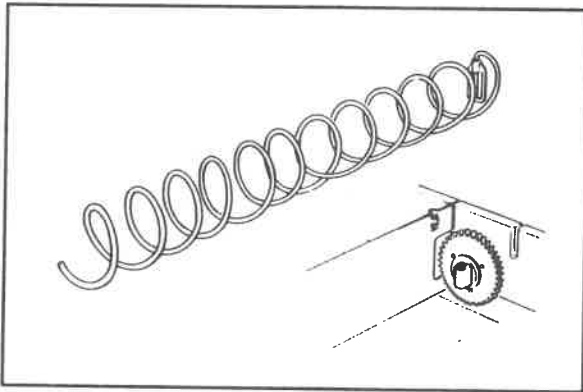
**S-5 CHANGE A SPIRAL**

\* All spirals are the same diameter.

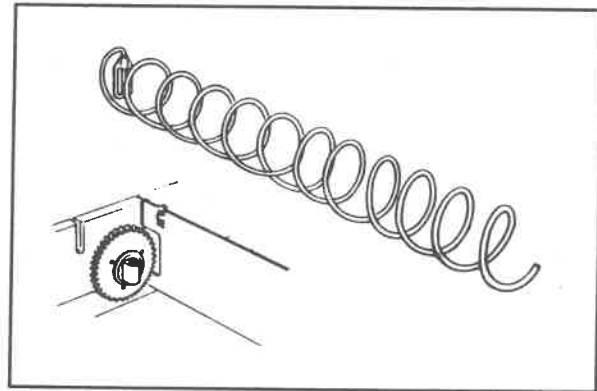


\* There are two types of spirals:

*COUNTER-CLOCKWISE*



*CLOCKWISE*



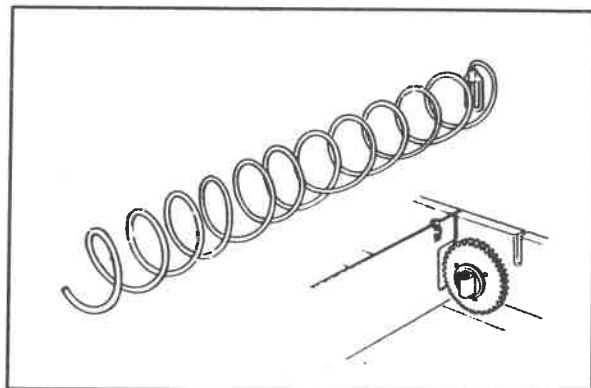
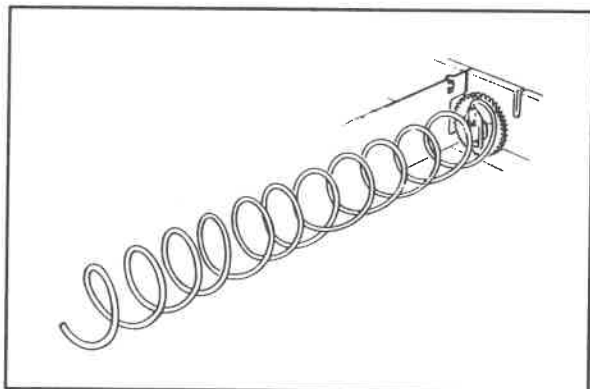
\* Spirals are available in eight different capacities. One of these is standard and seven are optional.

ITEM CAPACITY OF SPIRAL	PART NUMBER	
	CLOCKWISE (RH)	COUNTERCLOCKWISE (LH)
6 (Standard)		1477171
6 (Optional)	1477172	
6 (Optional)	1477104	1477102
11 (Optional)	1477027	1477024
13 (Optional)	1477033	1477030
15 (Optional)	1477039	1477036
20 (Optional)	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.

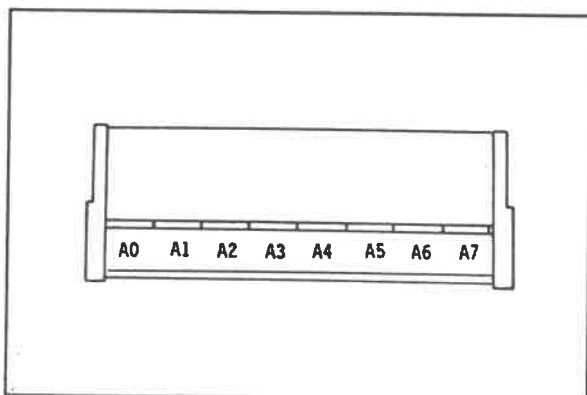


Figure S-5a

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

Table S-5a

### REMOVING A SPIRAL COUPLER

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

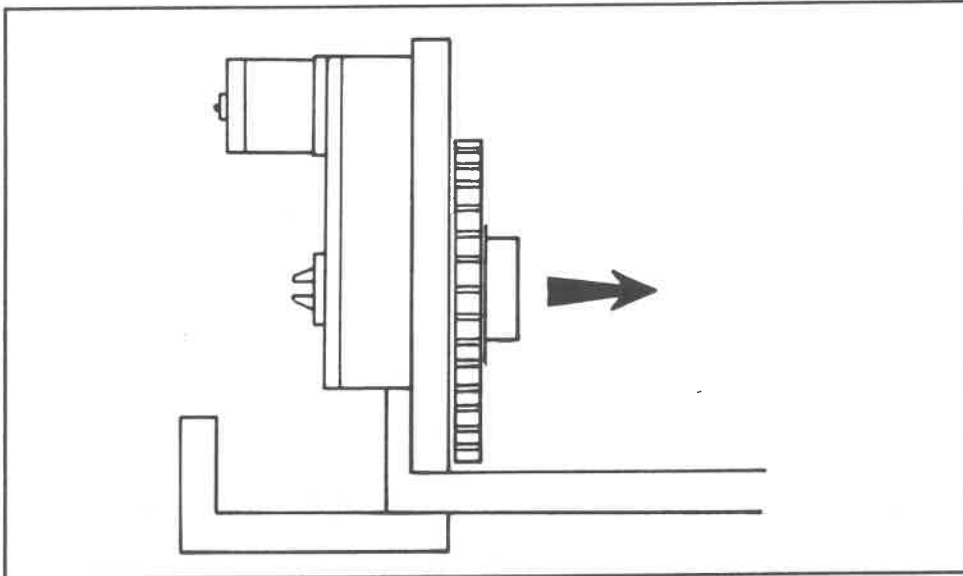


Figure S-6a

**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

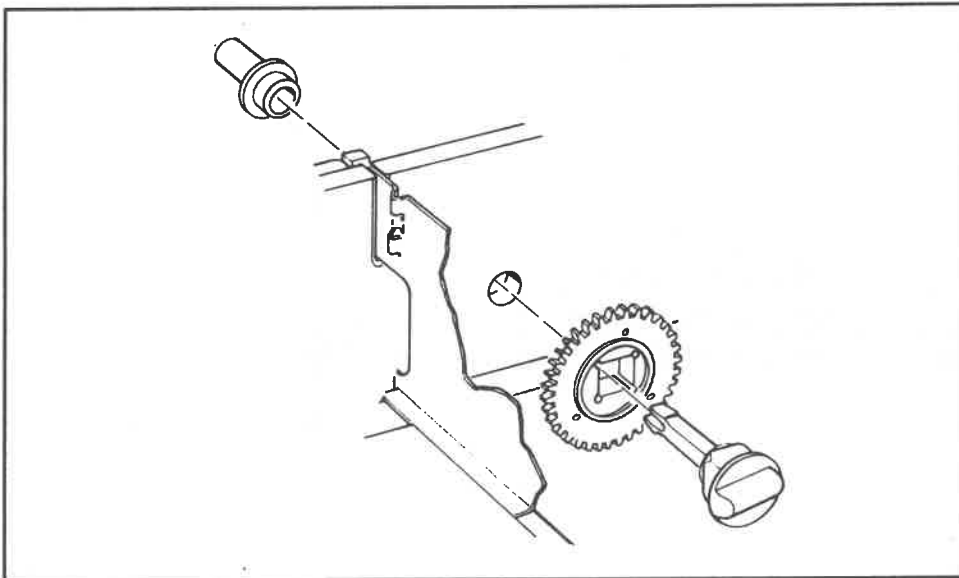


Figure S-7a

### 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**

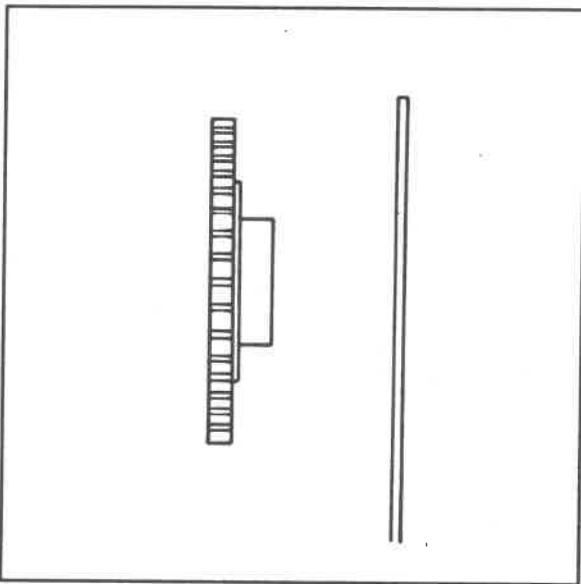


Figure S-8a

**ORIENTATION 2**

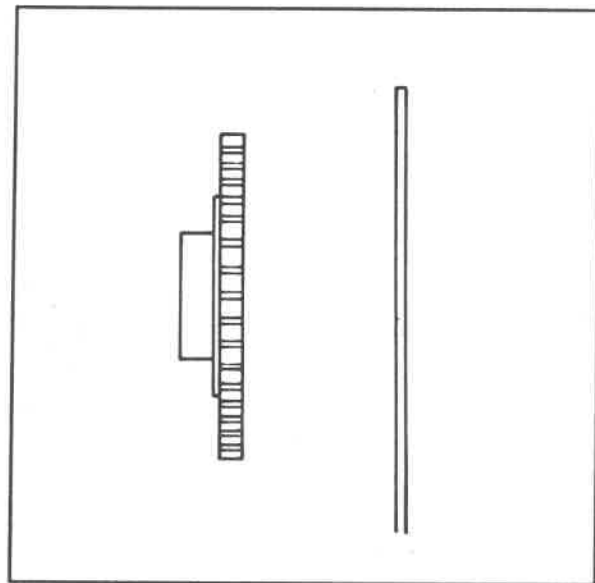


Figure S-8b

- \* 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 locks into position.

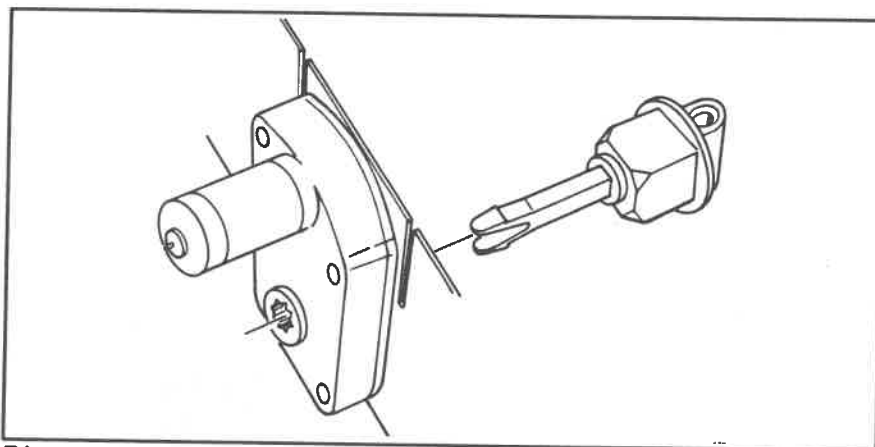


Figure S-9a

*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 Coupler locks into position.

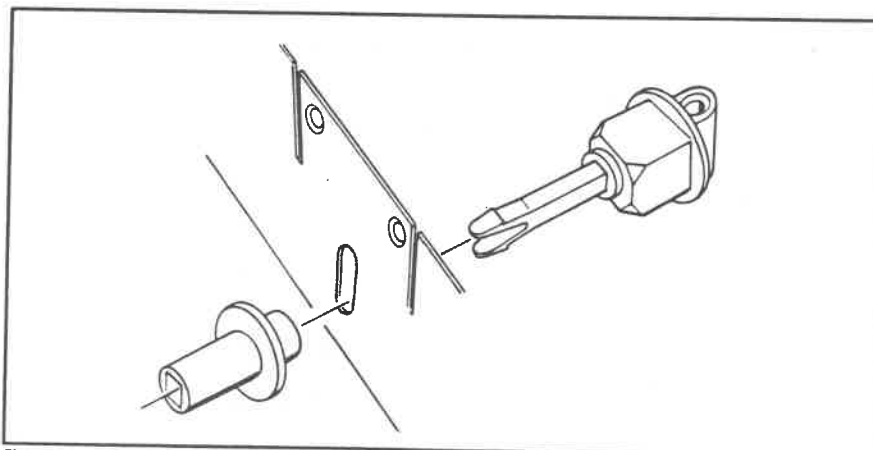
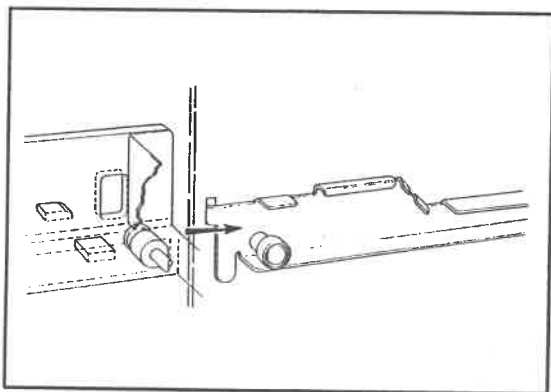


Figure S-9b

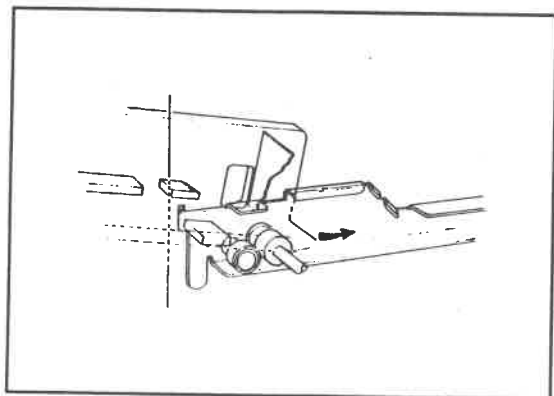
## INSTALLING A TRAY IN THE MERCHANDISER

- \* 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.

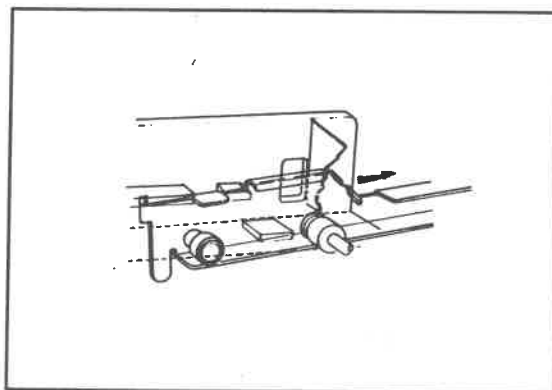


2. Bring the tray roller to rest on the tray guide.



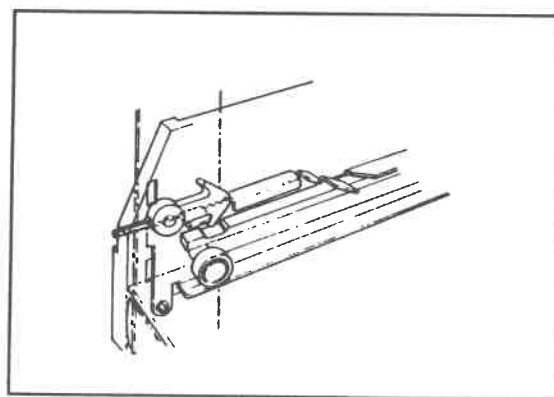
3. Tilt the tray upward.

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.



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.

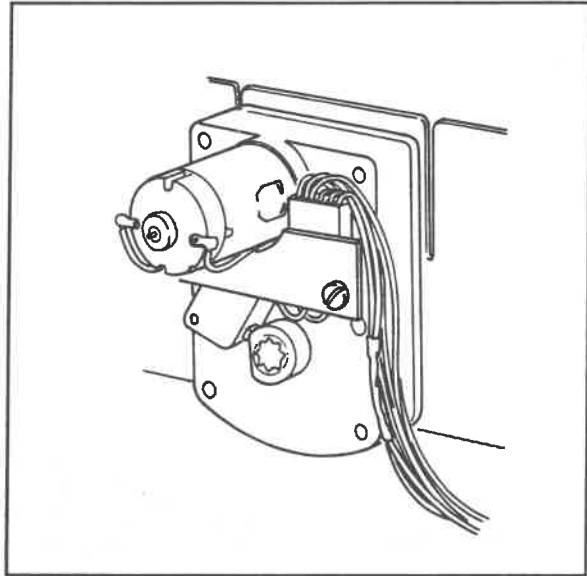


## **NOTE**

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

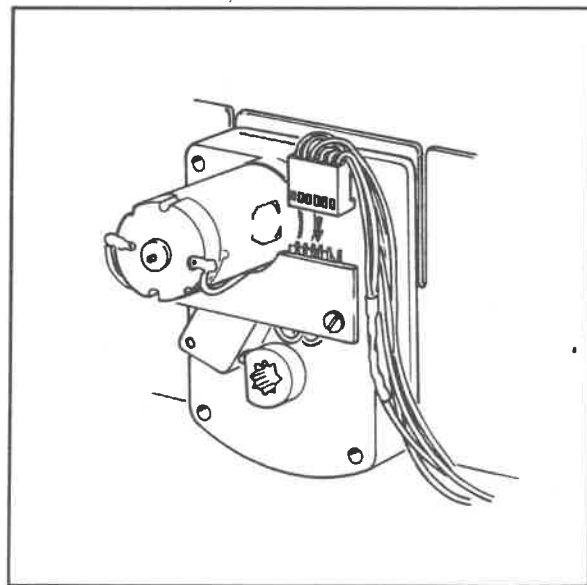
### **DISCONNECTING A MOTOR HARNESS**

- \* 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.*

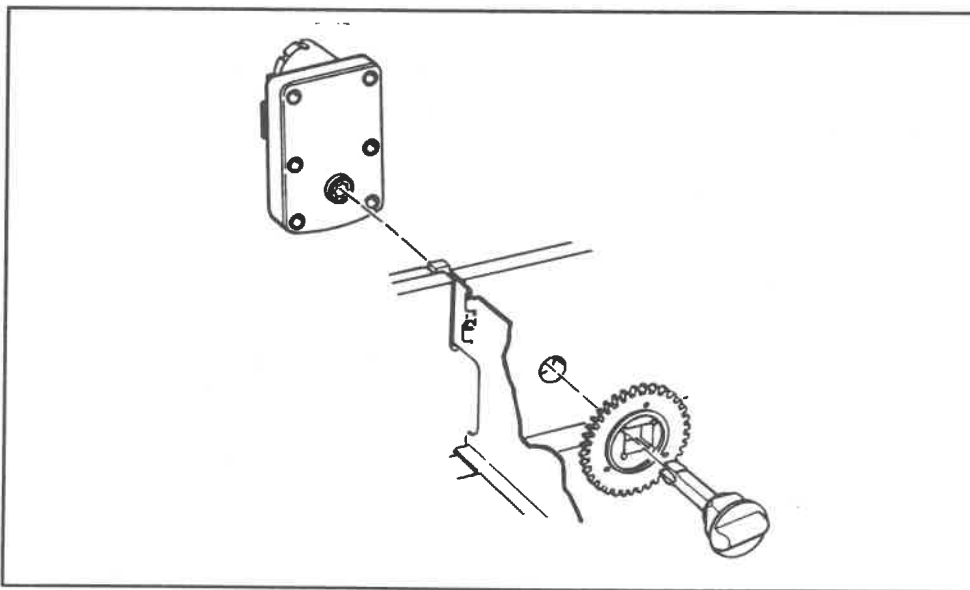


Figure S-12a

- \* 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:

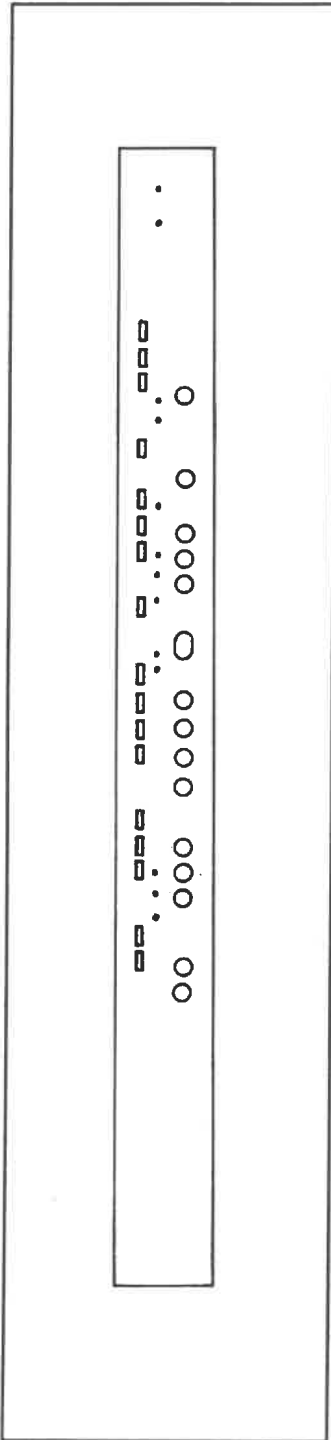
6-TRAY CONFIGURATION						
TRAY	A (BOTTOM)	B	C	D	E	F
POSSIBLE POSITIONS	1	2	3	3	3	3

\* When relocating Trays, the following rules apply:

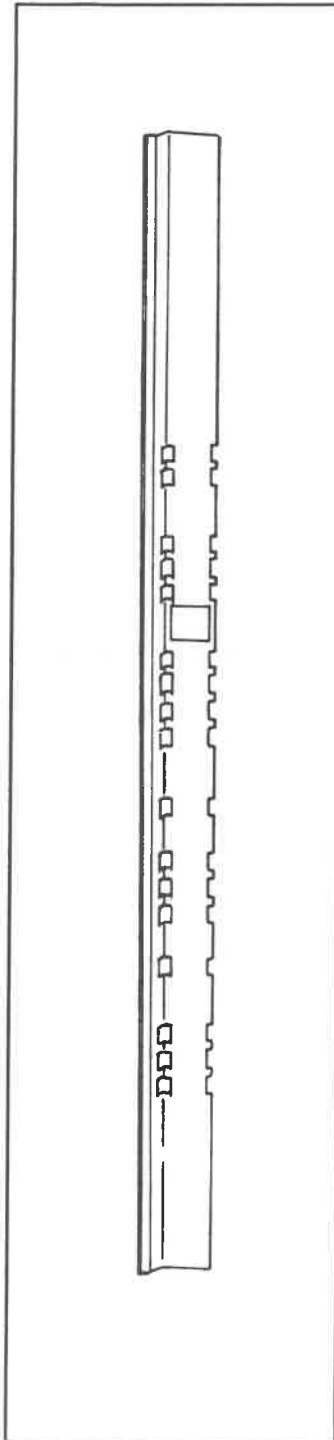
NEW POSITION OF TRAY BEING MOVED	ALLOWABLE POSITIONS FOR TRAY ABOVE	ALLOWABLE POSITIONS FOR TRAY BELOW
UPPER	MIDDLE UPPER	UPPER MIDDLE LOWER
MIDDLE	UPPER MIDDLE LOWER	UPPER MIDDLE LOWER
LOWER LOWER	UPPER MIDDLE LOWER	MIDDLE LOWER

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

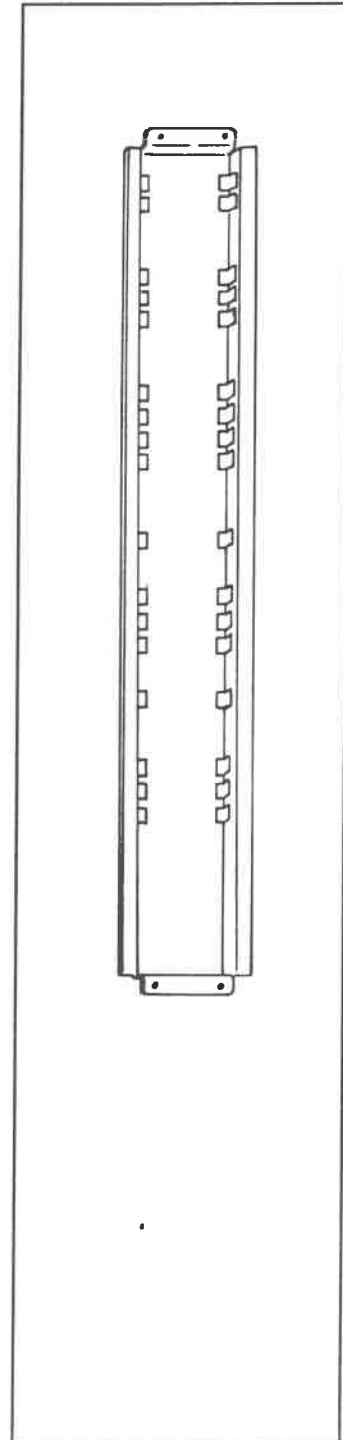
**FRONT GUIDE  
MOUNTING CHANNEL**



**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.

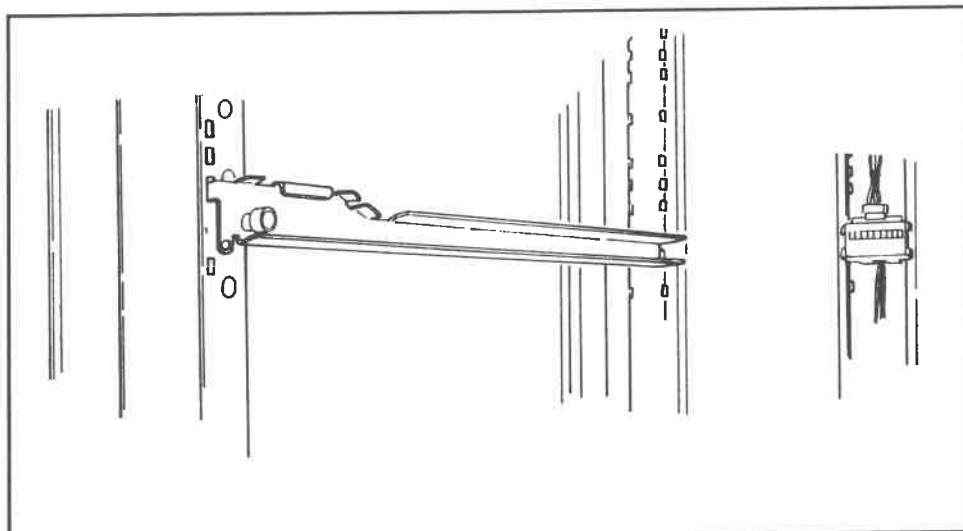


Figure S-13a

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

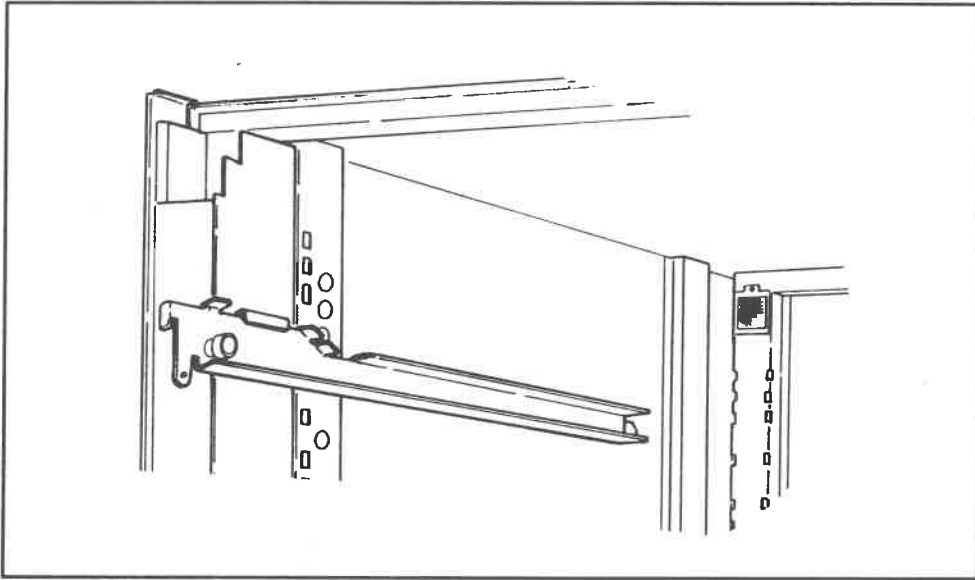


Figure S-13b

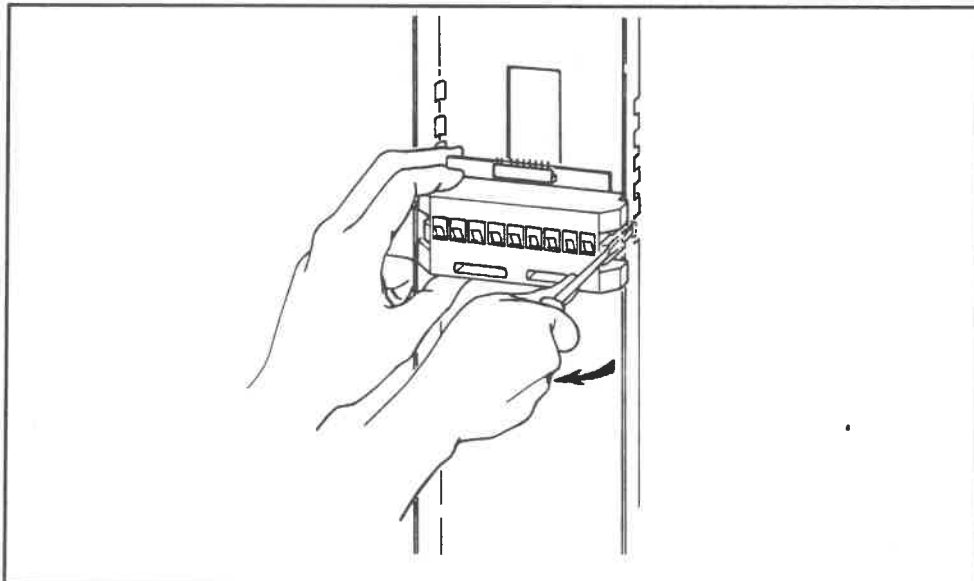


Figure S-13c

### INSTALLING A PRODUCT SPACER

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

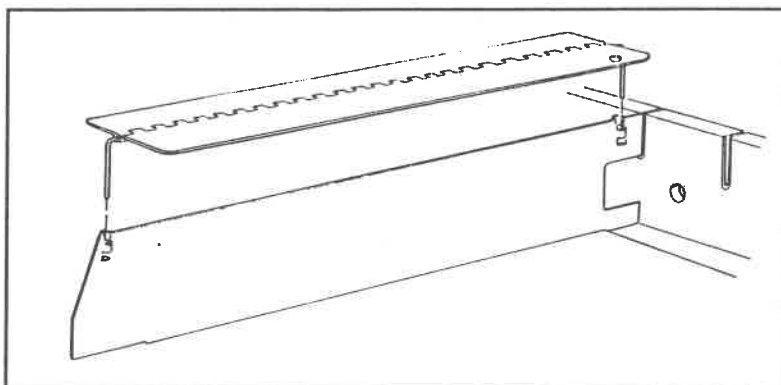


Figure S-14a

### 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.

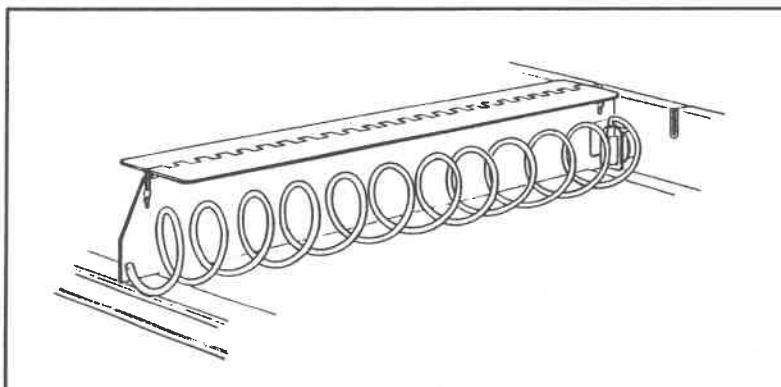


Figure S-14b

### REMOVING A PRODUCT SPACER

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

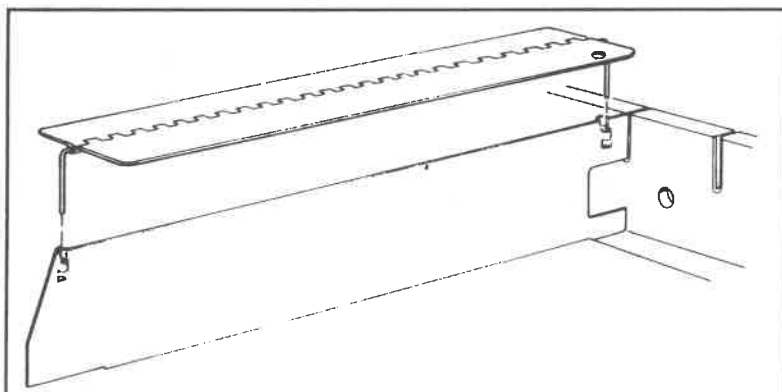


Figure S-14c

## **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-5**.

Be sure there are no empty positions between products in each spiral.

## **SPECIAL CONSIDERATIONS**

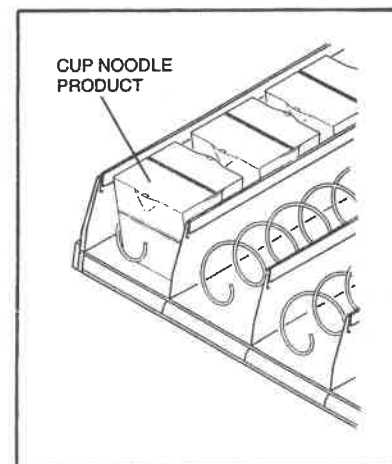
Bagged Products - position package upright, then push tops slightly toward rear of the tray. - **ALSO SEE RC-6.**

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

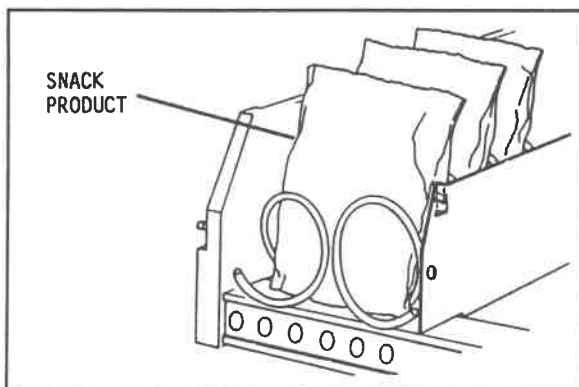
KitKat - the two right-most columns of candy tray are designed to accept the KitKat candy bar.

### **WARNING**

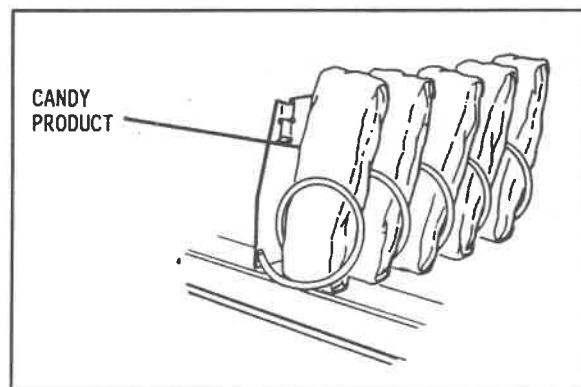
**THIS MERCHANDISER DOES NOT HAVE A HEALTH CONTROL CIRCUIT. IT IS NOT APPROVED FOR THE VENDING OF PERISHABLE FOOD ITEMS.**



**CORRECT LOADING  
OF CUP NOODLE**



**CORRECT LOADING  
OF  
SNACKS**



**CORRECT LOADING  
OF  
CANDY**

**PREPARING MERCHANDISER FOR VENDING CUP OF NOODLES WITHOUT CARDBOARD WRAPPER OR, "LUNCH BUCKET"**

To vend the products, 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.

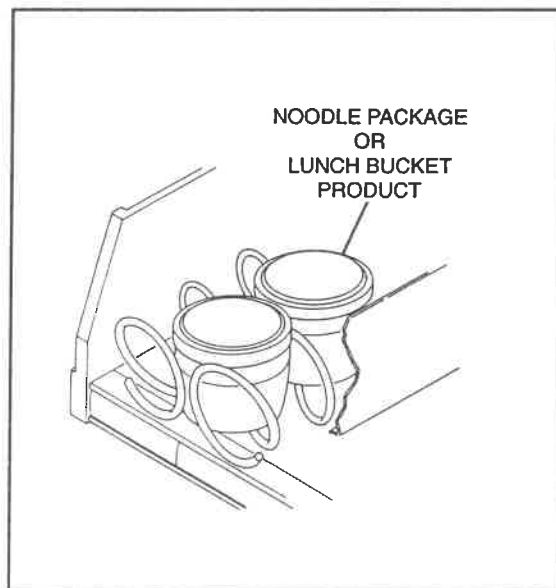
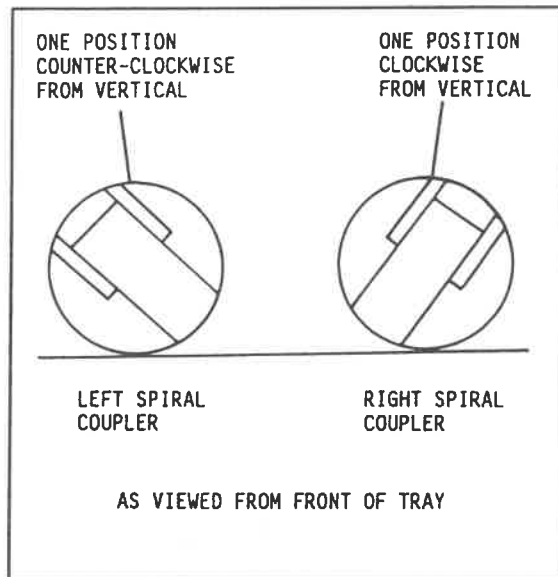
**SPECIAL CONSIDERATIONS FOR "LUNCH BUCKET"**

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

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 CUP OF NOODLES PACKAGED WITHOUT CARDBOARD WRAPPER OR, "LUNCH BUCKET"**

CORRECT LOADING OF  
NOODLE PACKAGE  
OR  
"LUNCH BUCKET"



## PREPARING MERCHANDISER FOR VENDING "TOP SHELF"

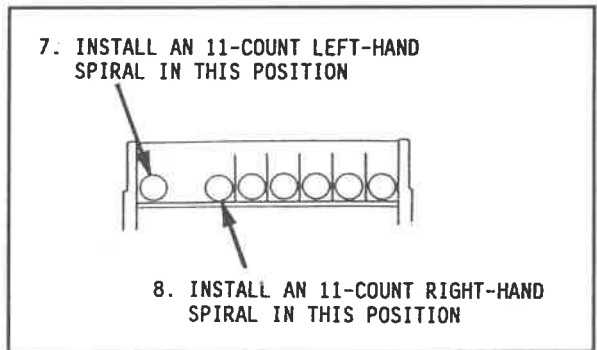
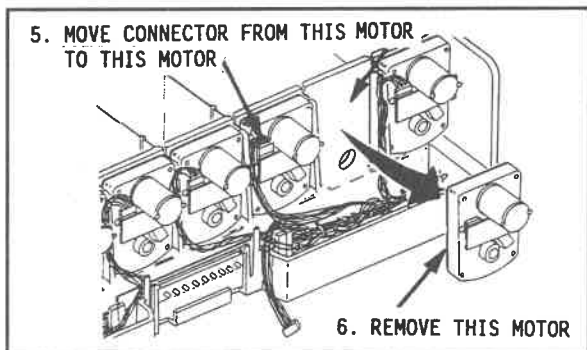
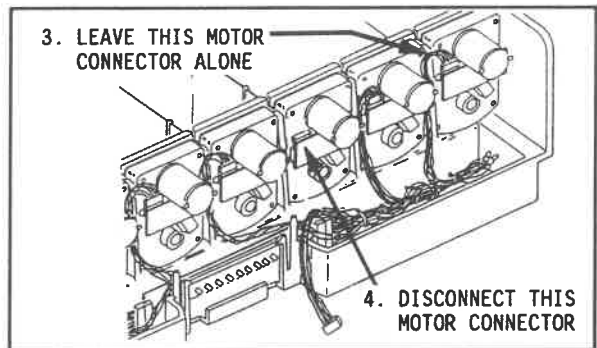
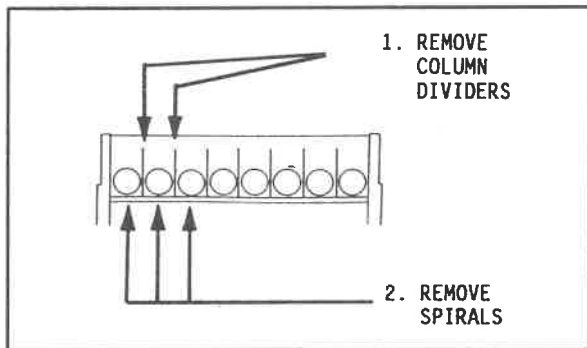
National Vendors recommends that this product be vended from a candy tray.

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

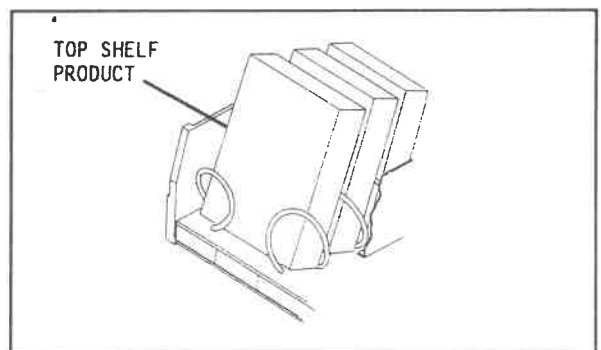
The left-most position in the group of three must be an even numbered position.



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.

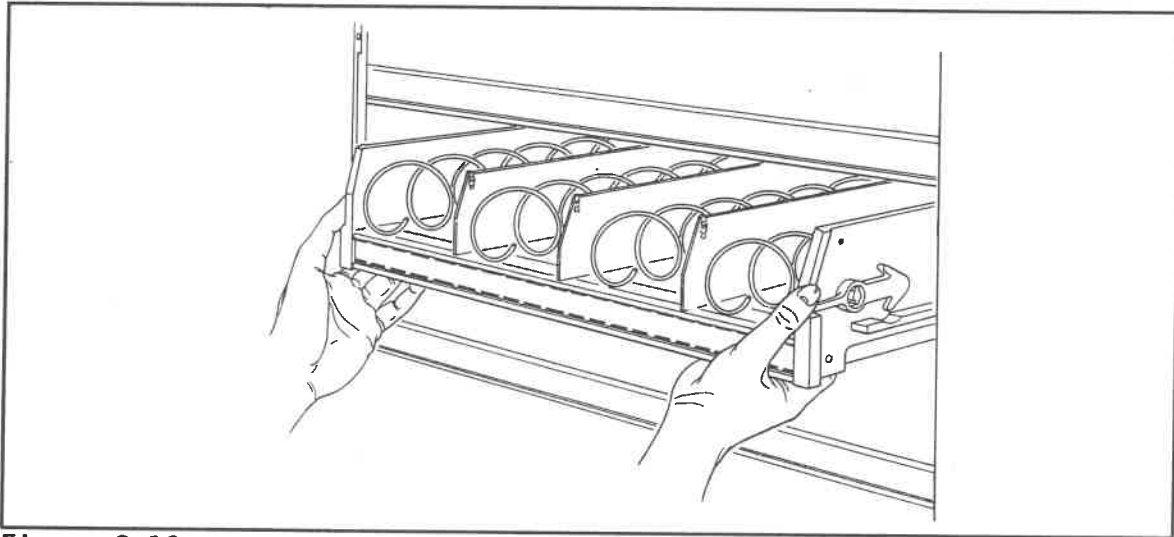


Figure S-16a

\* 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.

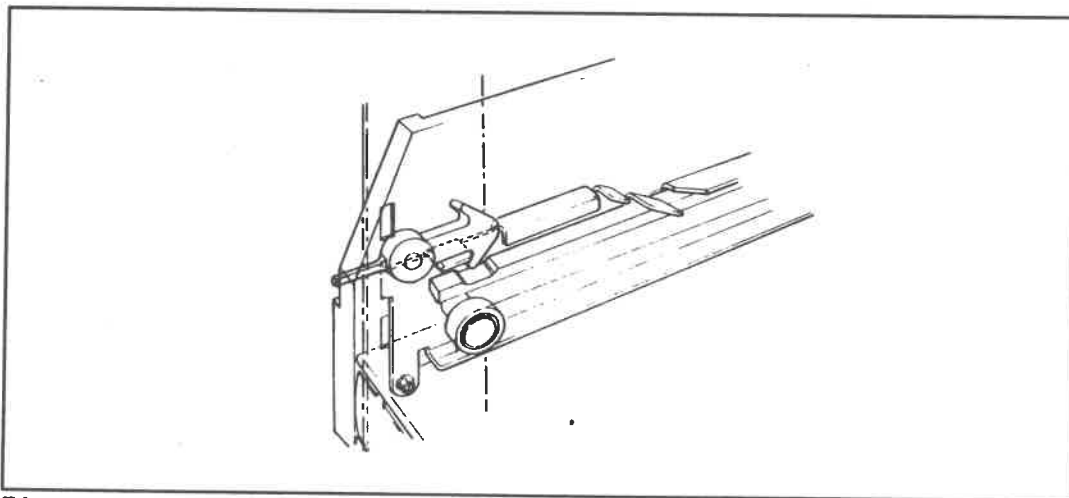


Figure S-16b

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

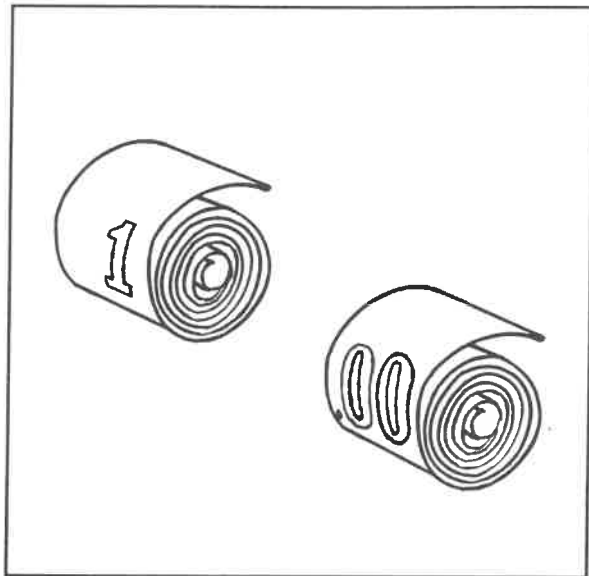


Figure S-17a

### 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.

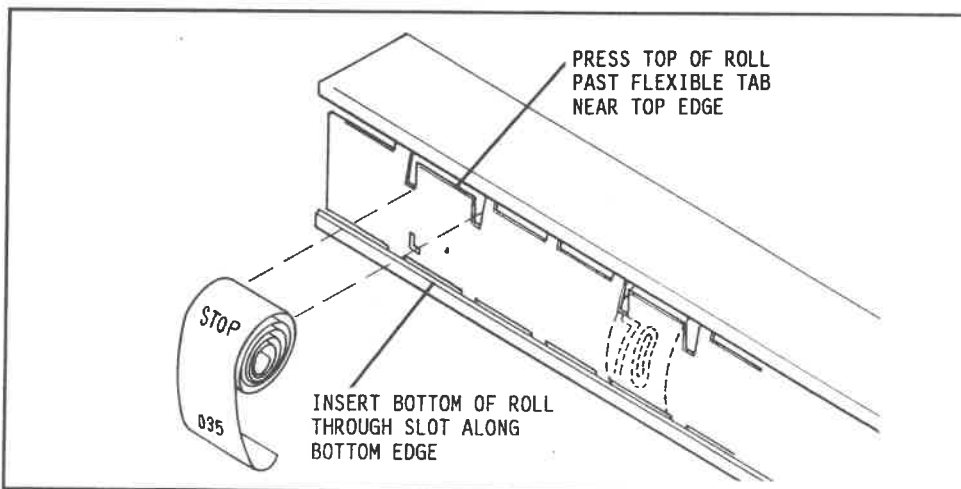


Figure S-17b

**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.*

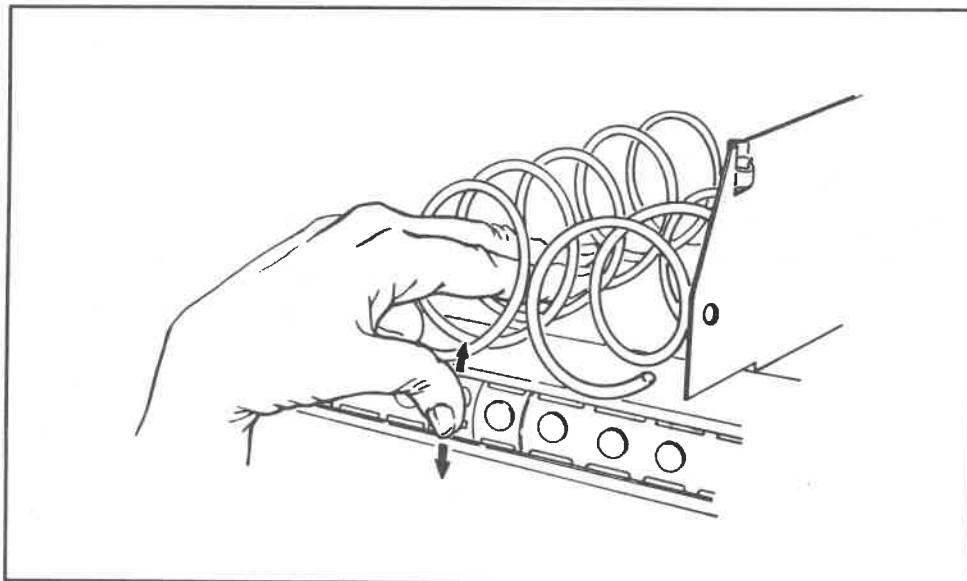


Figure S-17c

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.

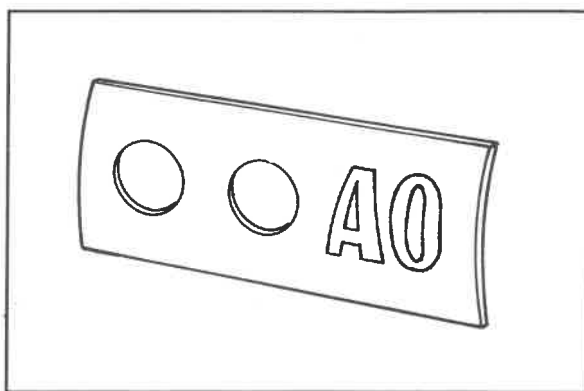


Figure S-18a

**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.

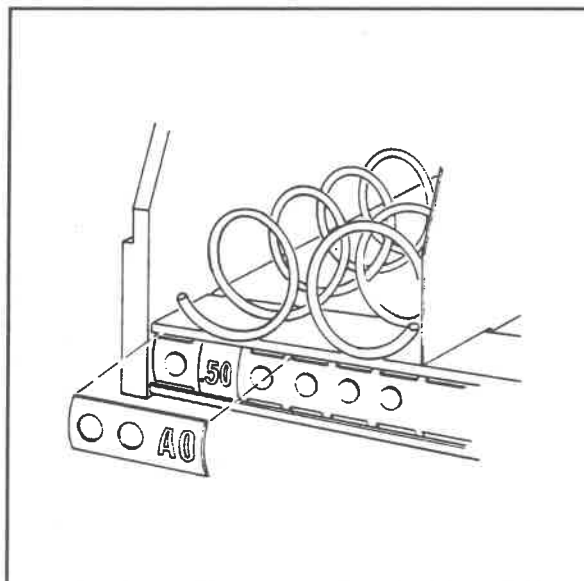
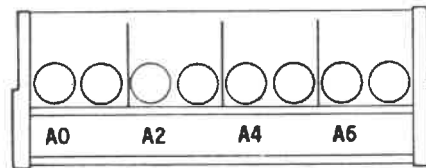


Figure S-18b

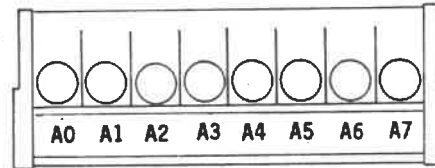
**WHICH LABEL GOES WITH WHICH SELECTION?**

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

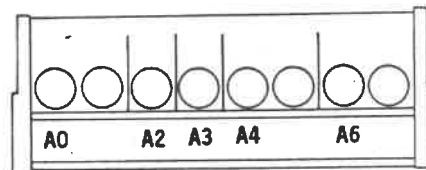
EXAMPLE OF A  
BASIC SNACK  
TRAY OR  
COUPLED CUP  
NOODLE TRAY  
LABEL TO USE



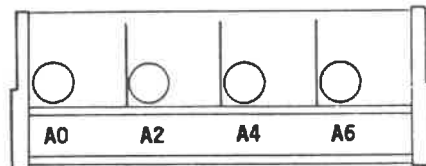
EXAMPLE OF A  
BASIC CANDY  
TRAY  
LABEL TO USE



EXAMPLE OF A  
COUPLED CANDY  
TRAY  
LABEL TO USE

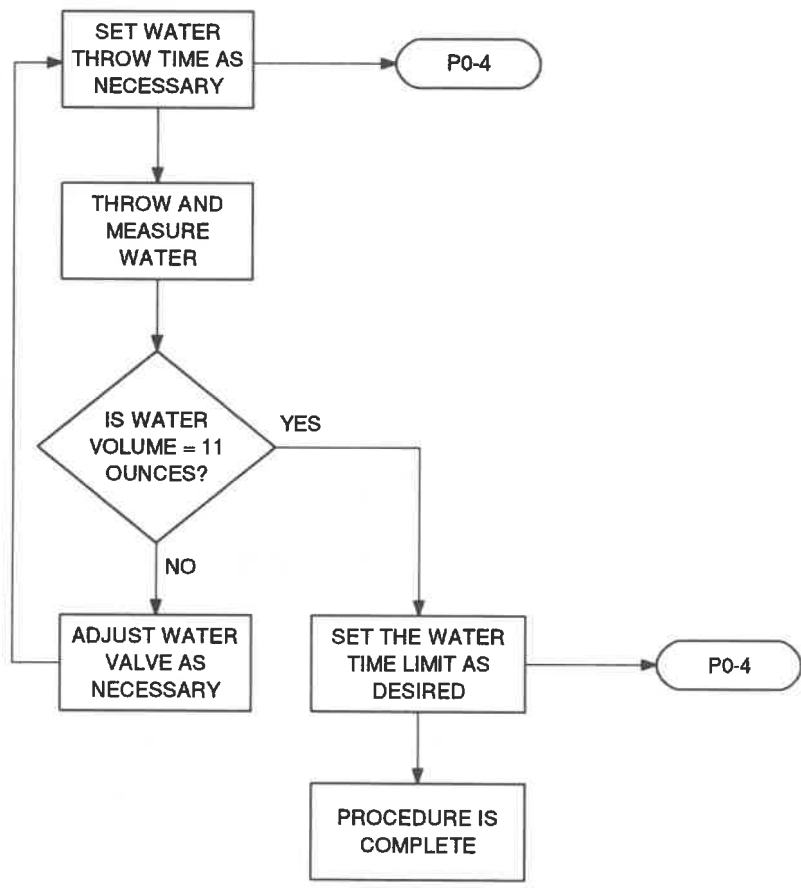


EXAMPLE OF A  
CUP OF NOODLE  
TRAY  
LABEL TO USE



\* 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 Hot Water Module.



**SETTING THE WATER TIME IN A NEW MERCHANDISER OR WHEN AN OLD MERCHANDISER HAS A NEW VALVE**

- \* Set the water time. See **PO-4** in the **PROGRAMMING GUIDE**.
- \* Prepare to collect the water throw.

**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 the volume of collected water. It should be approximately 11 OZ.
- \* Adjust the valve as needed to increase or decrease the water flow.
- \* Repeat the previous four steps until the correct volume of water is dispensed.
- \* If the valve adjustment has not adequately altered the water flow, adjust the time as needed to increase or decrease the water flow.
- \* Reconnect the water supply tube to the brew barrel if removed earlier.
- \* Set the water time limit. See **PO-4** in the **PROGRAMMING GUIDE**.

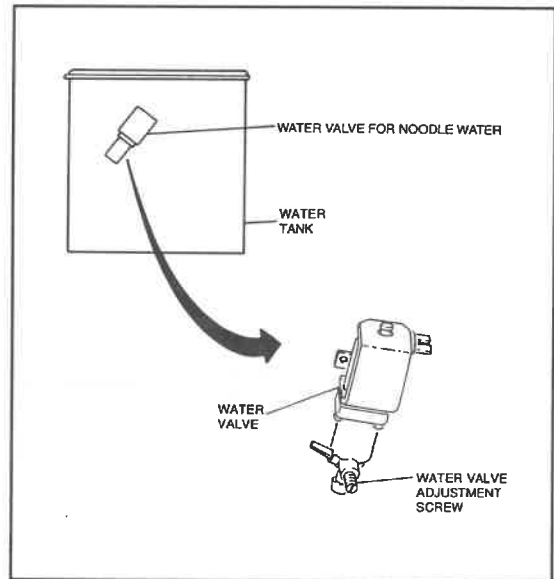
**ADJUSTING THE WATER VALVES**

Refer to the figure below during this procedure.

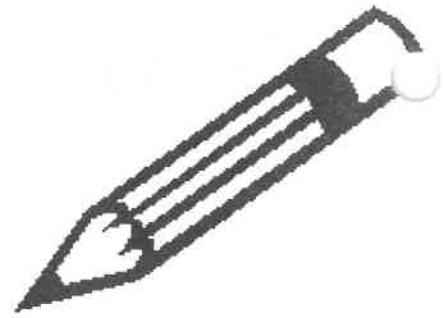
**WARNING**

**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.



# Notes



A series of horizontal lines for writing notes, consisting of three lines on the left side and a larger set of lines extending across the page.

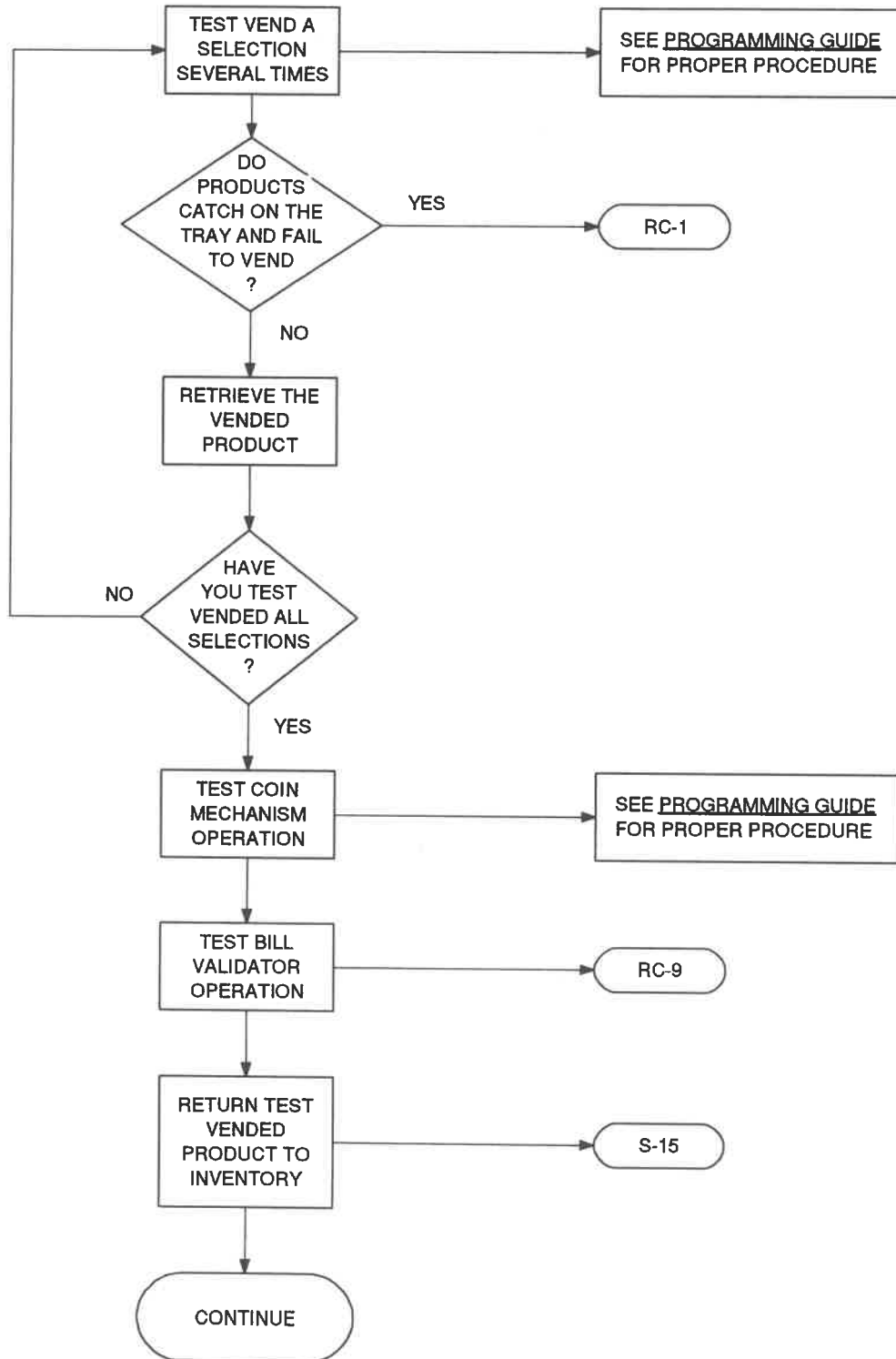


The information in this part of the manual has been provided to help you determine if the merchandiser is ready to put into operation.

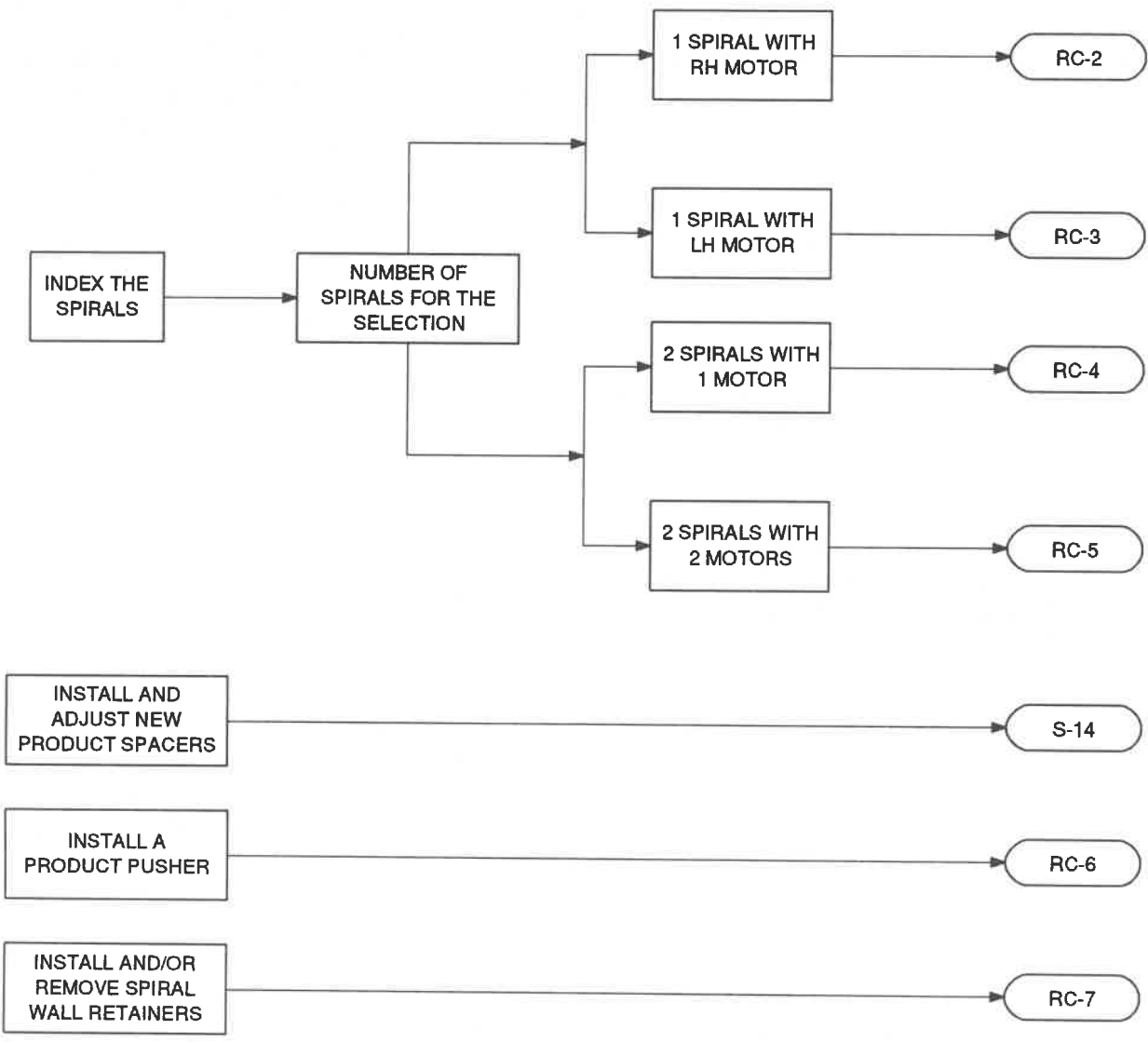
### OPERATIONAL READINESS CHECKING PROCEDURES

- 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

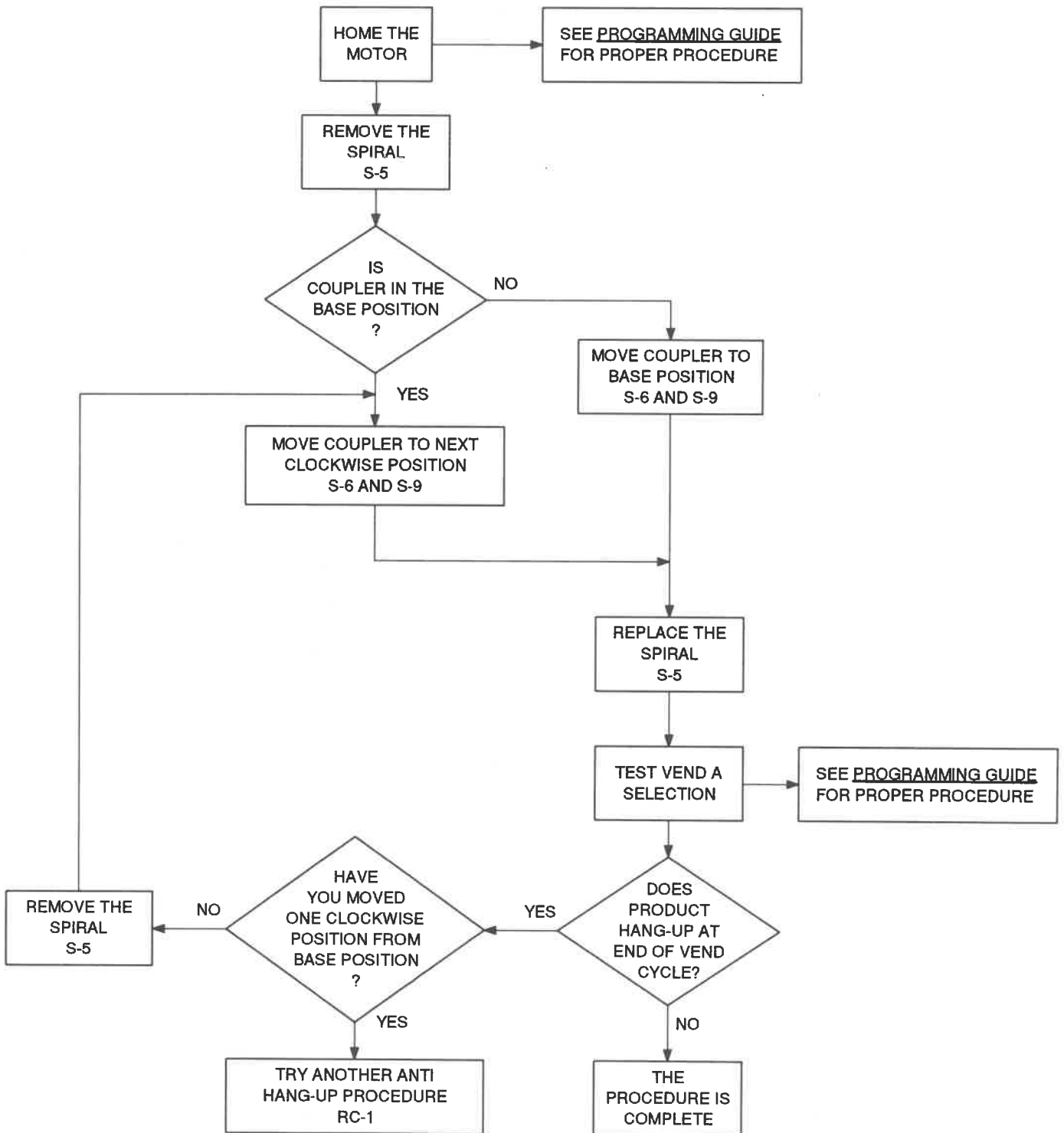
COMPLETE THE OPERATIONAL READINESS CHECK  
WHEN YOU ARE INSTALLING A NEW MERCHANDISER,  
WHEN YOU CHANGE THE SET-UP OF A TRAY OR AFTER  
YOU HAVE CHANGED A PART OF THE CONFIGURATION

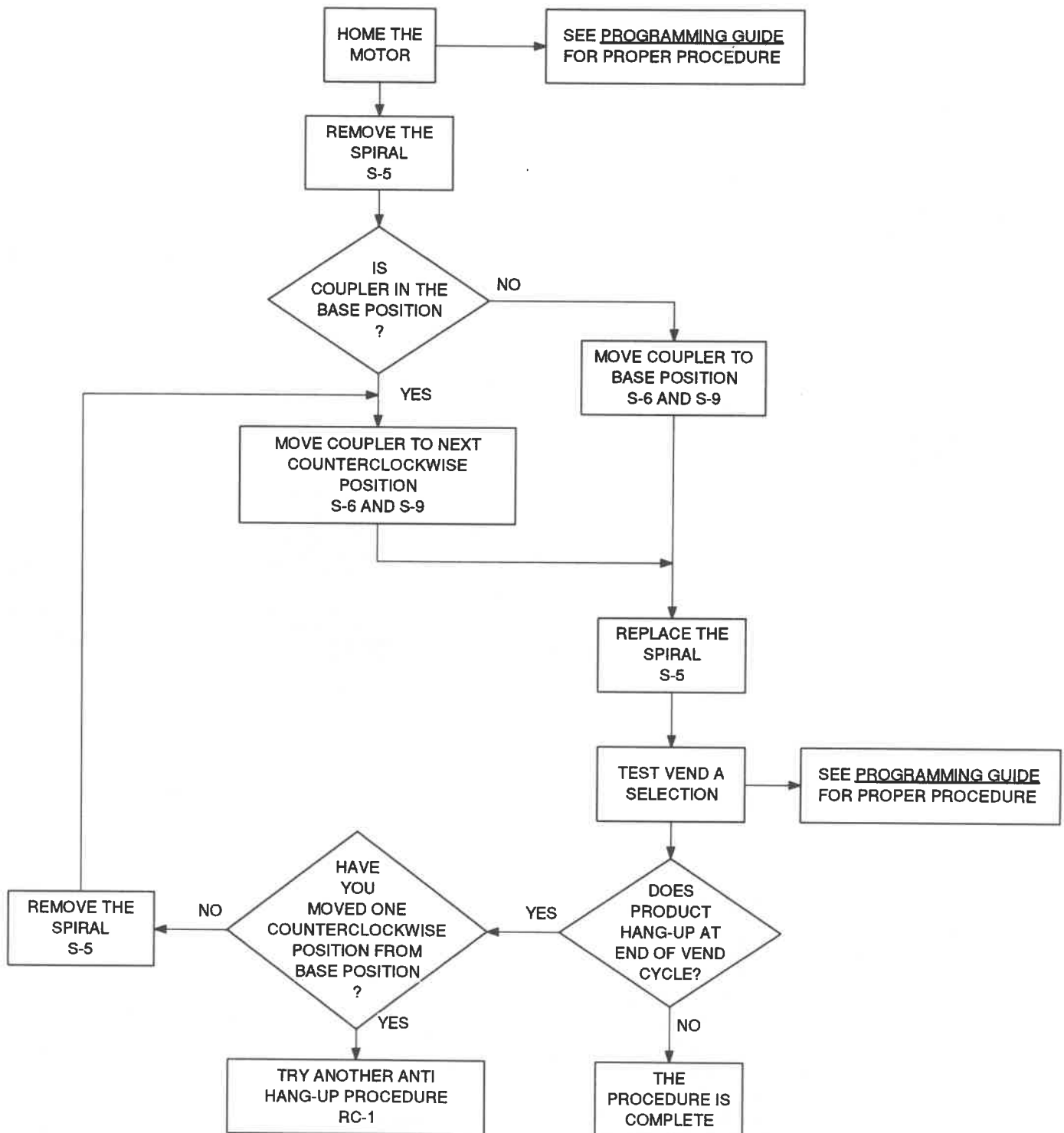


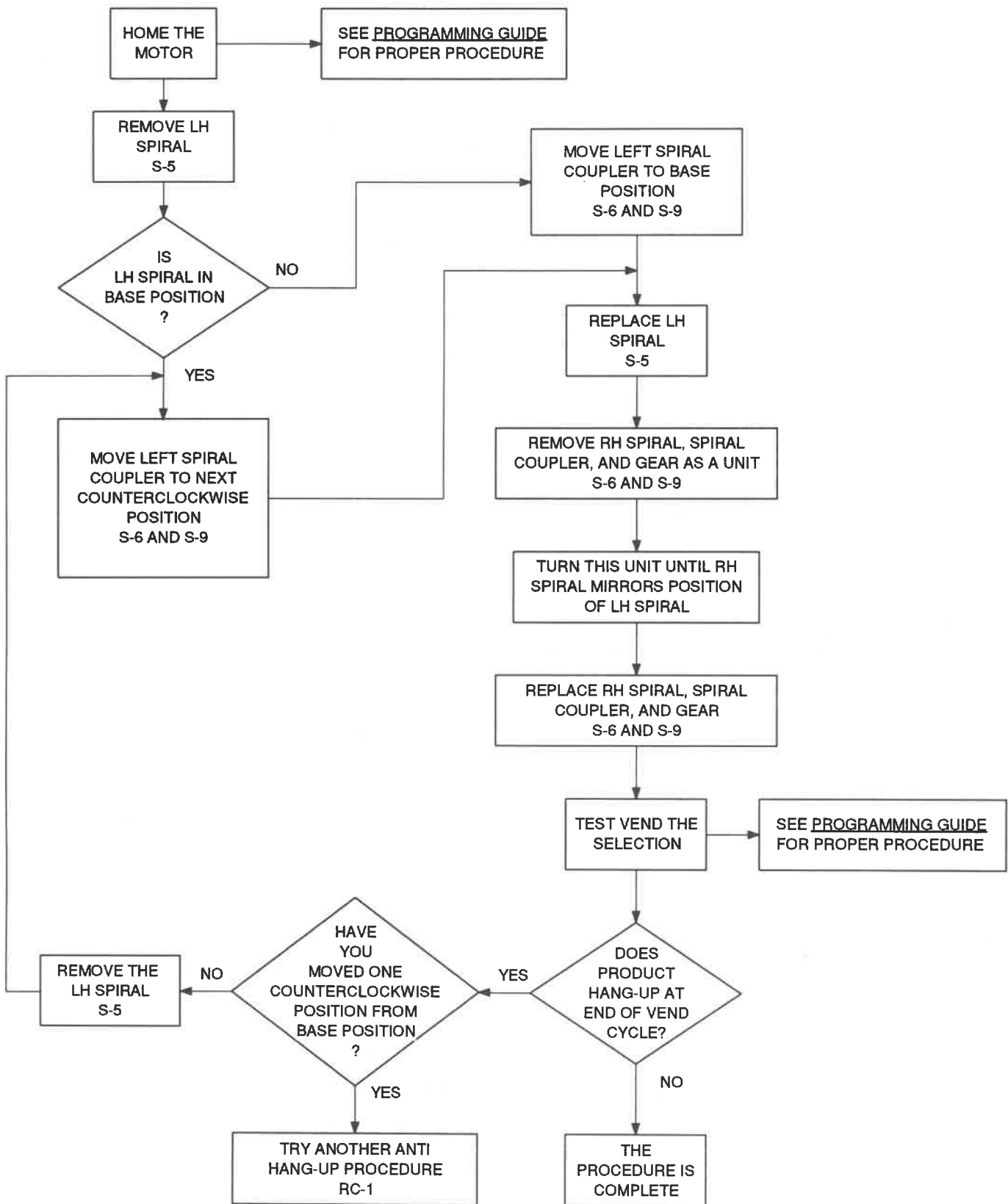
### ANTI HANG-UP PROCEDURES FOR FINE TUNING SPIRALS

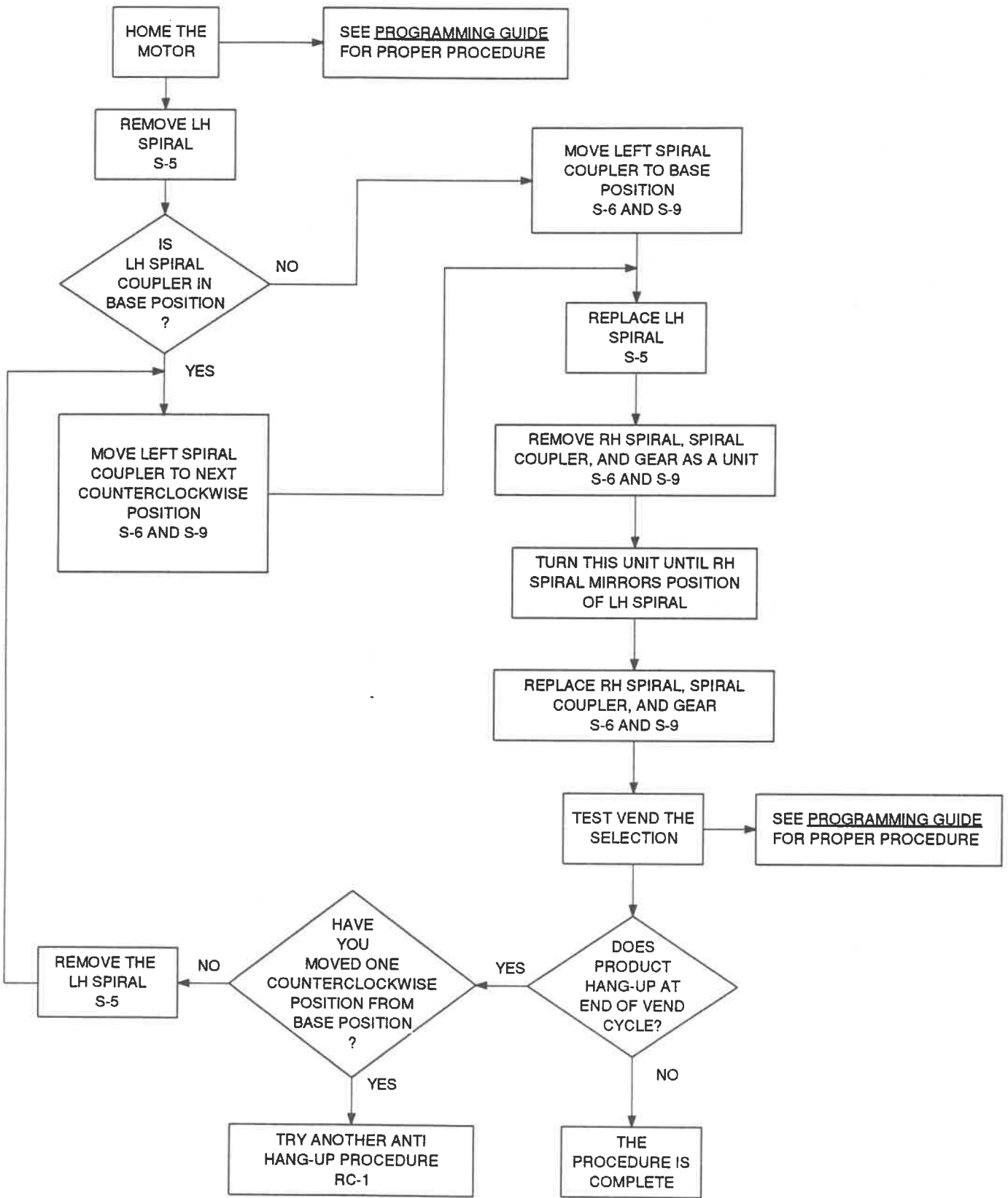


\*Work with these procedures individually and in various combinations. If you are not able to eliminate a hang-up, contact National Vendors Service Department for help.





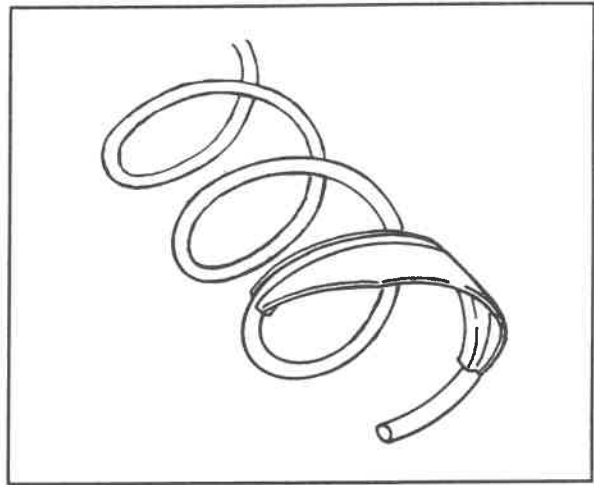




\* A Product Pusher is normally used in the following cases:

- 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.

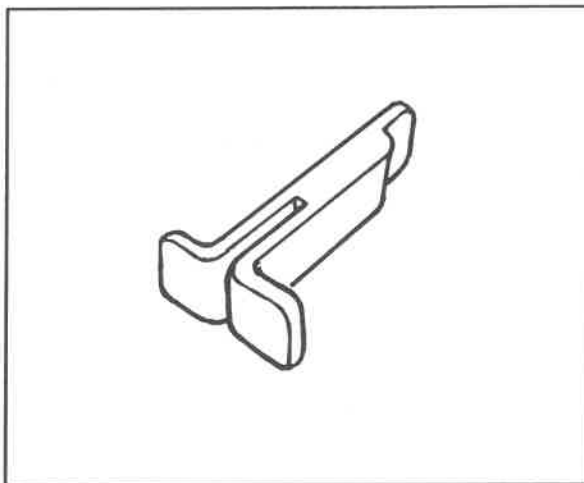
\* If the product still hangs up, reposition the product pusher or try another anti hang-up procedure.



\* 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.

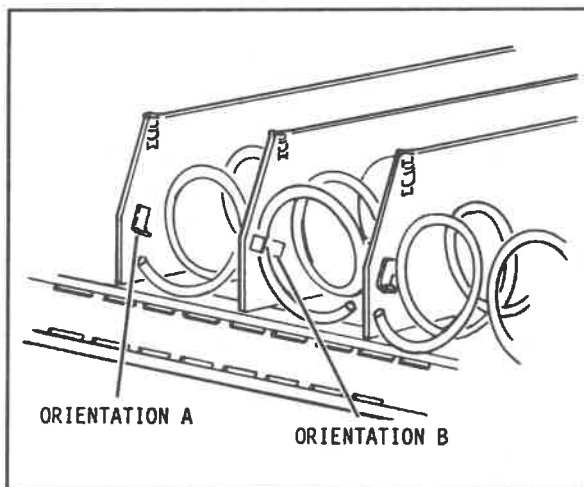
\* The Spiral Wall Retainer can also be used with other spirals and types of products.



\* 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 DIVIDER	0 and 1	1 and 2
BETWEEN THESE POSITIONS	2 and 3	3 and 4
	4 and 5	5 and 6
	6 and 7	



\* 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*.

\* All soup, snack, and candy selections are dispensed into the delivery pan.

\* Push down on the lip of the delivery door with one hand. Retrieve the selection with the other hand.



\* Remove the outer packaging from the cup and open the cup lid half way.

\* Place the cup into the water compartment, with the open side under the water nozzle. Hot water dispenses automatically after the vend door closes.

\* When the water stops, carefully remove the cup from the compartment. CAUTION! The cup is Hot!

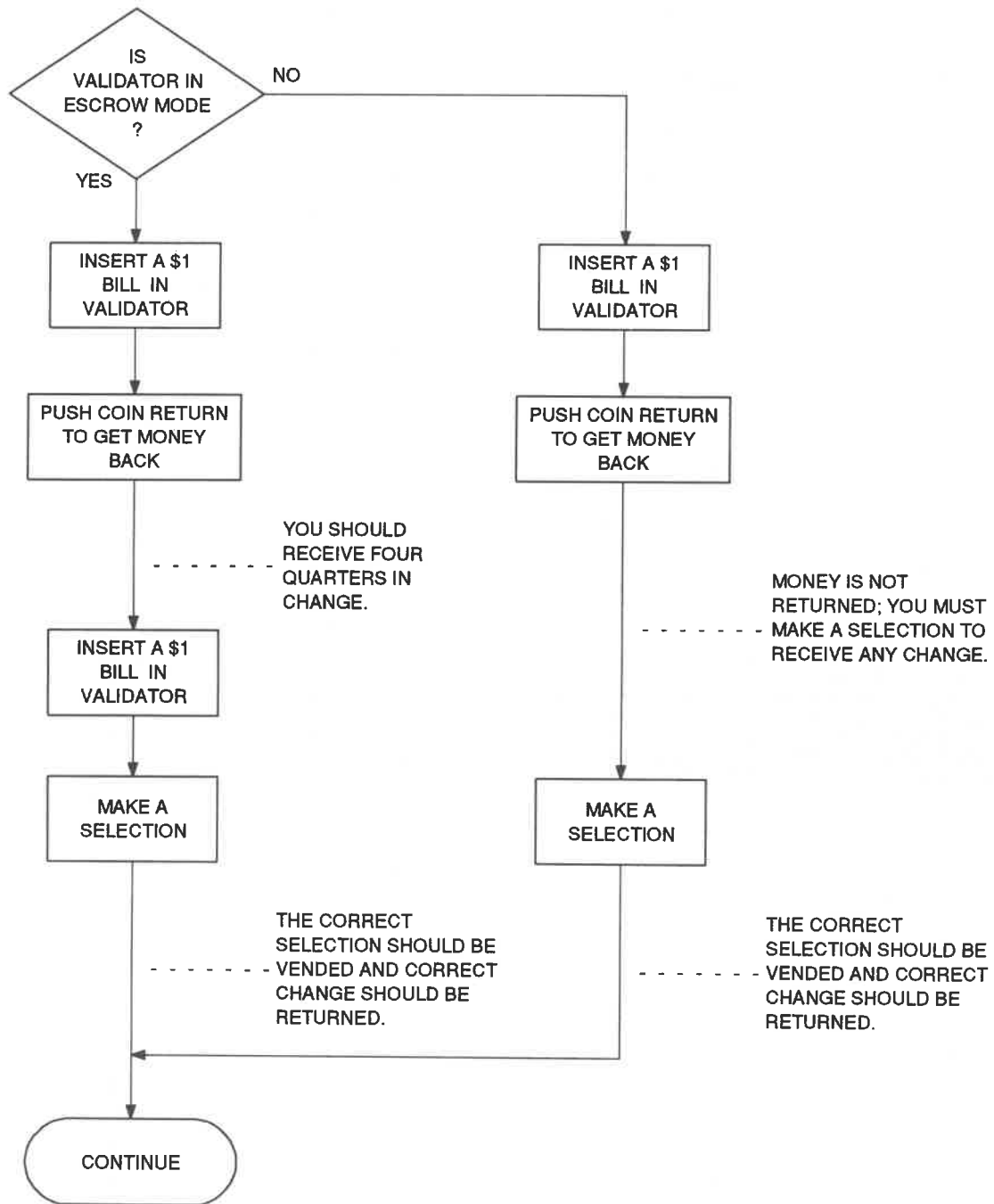
\* Close the half-opened lid and allow the cup to stand for three minutes.

\* Remove the lid. The noodles are ready.

**NOTE:**

Water will not dispense when selections are made from trays designated for snacks/candy.





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	Reserved for future use	
M-3	Door lock removal	67
M-4	Cash box lock installation	67
M-5	Cash box removal and replacement	67
M-6	Fluorescent lamp replacement	68
M-7	Lamp starter replacement	68
M-8	Reserved for future use	
M-9	Coin mechanism inspection and clearing	69
M-10	Bill validator inspection and clearing	69
M-11	Emptying the bill validator magazine	70
M-12	Reserved for future use	
M-13	Lubrication	70
M-14	Overall cleaning	71
M-15	Reserved for future use	
M-16	Reserved for future use	
M-17	Reserved for future use	
M-18	Reserved for future use	
M-19	Reserved for future use	
M-20	Reserved for future use	
M-21	Reserved for future use	
M-22	Reserved for future use	
M-23	Reserved for future use	
M-24	Reserved for future use	
M-25	Reserved for future use	
M-26	Reserved for future use	
M-27	Reserved for future use	
M-28	Reserved for future use	
M-29	Reserved for future use	
M-30	Reserved for future use	
M-31	Reserved for future use	
M-32	Reserved for future use	

PROCEDURE	DESCRIPTION	PAGE
M-33	Reserved for future use	
M-34	Reserved for future use	
M-35	Reserved for future use	
M-36	Reserved for future use	
M-37	Reserved for future use	
M-38	Cup compartment removal and replacement	72
M-39	Cup compartment sanitizing	72
M-40	Cup compartment mounting bracket removal and replacement	72
M-41	Reserved for future use	
M-42	Reserved for future use	
M-43	Waste pail sanitizing	73
M-44	Vent blower filter removal and replacement	73
M-45	Water filter cartridge service limits	73
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M-49	Tube replacement	75
M-50	Adjust door close rate	76
M-51	Check cup door lock solenoid	76
M-52	Reserved for future use	
M-53	Reserved for future use	
M-54	Reserved for future use	
M-55	Reserved for future use	
M-56	Reserved for future use	
M-57	Reserved for future use	
M-58	Reserved for future use	
M-59	Reserved for future use	
M-60	Reserved for future use	
M-61	Reserved for future use	
M-62	Reserved for future use	

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

### RECOMMENDED SANITATION

PROCEDURE	REFERENCE	DAILY	WEEKLY	MONTHLY	QUARTERLY	SEMI-ANNUAL
REPLACE TUBING	M-49					X See Note 1
SANITIZE CUP COMPARTMENT	M-39	X				
CLEANING THE WASTE PAIL	M-43	X				
CLEAN MERCHANDISER OVERALL	M-14	X				

NOTE 1: Replace the tubing only if needed.

### RECOMMENDED SERVICE

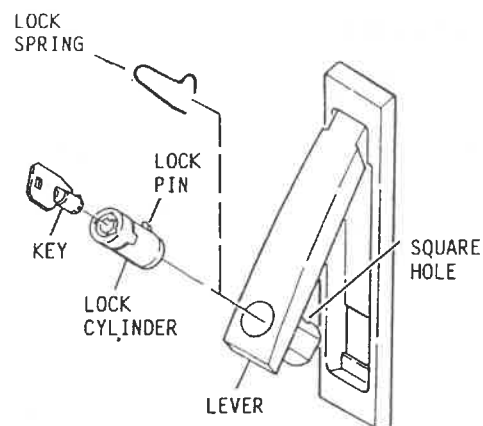
PROCEDURE	REFERENCE	DAILY	WEEKLY	MONTHLY	QUARTERLY	SEMI-ANNUAL
IN-TANK WATER TEMPERATURE	M-46	X				
WATER FILTER SERVICE LIMIT	M-45	X				
WATER VOLUME CHECK	H-5				X	
WATER TANK LINING INSPECTION	NR					X
REFILL COIN TUBES	Page 12	X				
INSPECT AND CLEAN COIN MECH.	M-9		X			
INSPECT AND CLEAN BILL VALIDATOR	M-10		X			
EMPTY BILL MAGAZINE	M-11	X				
TEST VEND PRODUCTS	P13-1	X				
INSPECT LAMP BULBS	M-6	X				
INSPECT EXHAUST FILTER	M-44		X			
INSPECT MOVING PARTS	M-19					X
ADJUST CUP DOOR CLOSE RATE	M-50				X	
CHECK CUP DOOR LOCK SOLENOID	M-51			X		

NR = No reference given

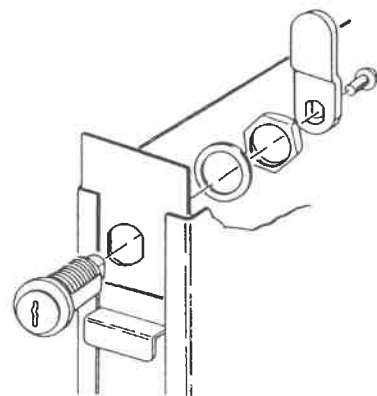
**M-3****LOCK CYLINDER INSTALLATION**

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

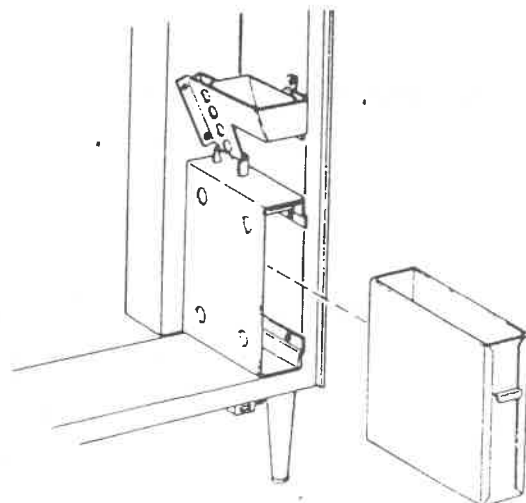
- \* Position the lift-handle lock lever as shown.
- \* Depress the lock spring at the square hole of the lock cylinder receptacle and pull the lock spring out through the front.
- \* Position the lock cylinder as shown. Depress the spring-loaded lock pin. Push the cylinder into the the cylinder receptacle 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.

**M-4****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.

**M-5****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.

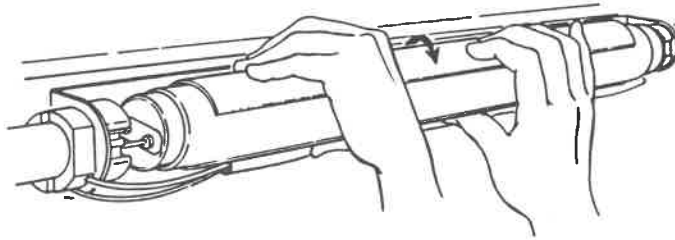


## REPLACING THE FLUORESCENT LAMP

\* 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

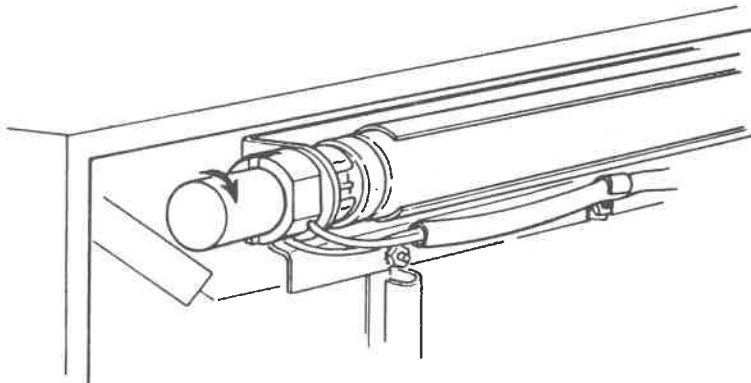
\* The starter is mounted on the left end of the lamp assembly.

### *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.



M-6

M-7



## **M-9** 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.

---

## **M-10** BILL VALIDATOR INSPECTION AND CLEANING

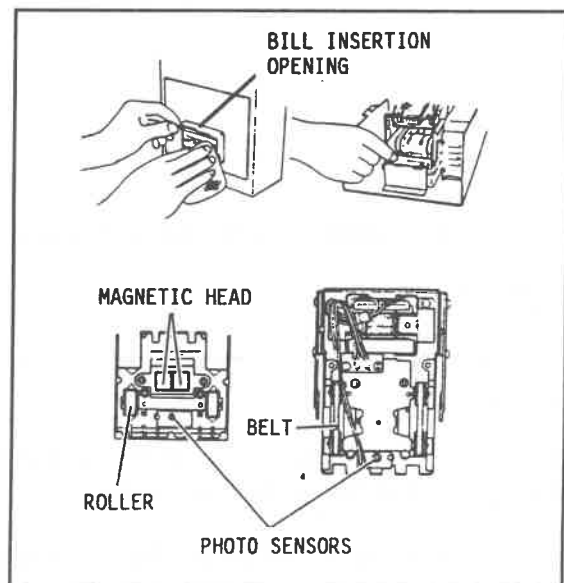
### WARNING

**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

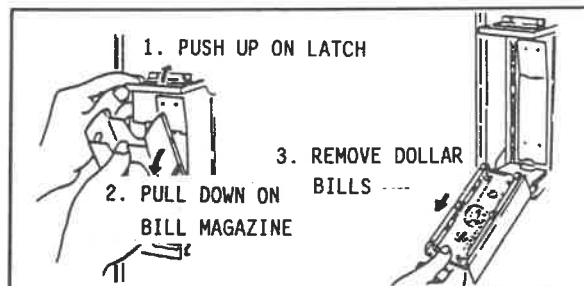
**NEVER USE WATER OR SPRAY SOLVENTS TO CLEAN THE BILL VALIDATOR.**



- \* 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.



---

### 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.

**M-14** **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, and other *non-electrical* components.

**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.

---

**CUP 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 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 COMPARTMENT MOUNTING BRACKET**

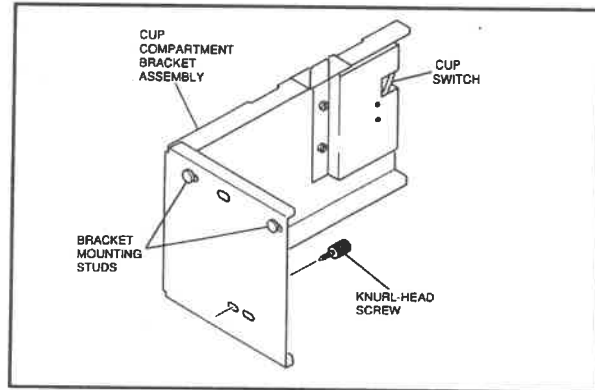
Refer to the figure on the right.

**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.



---

**M-43** CLEANING THE WASTE PAIL

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

**M-44** VENT BLOWER FILTER, REMOVAL AND REPLACEMENT

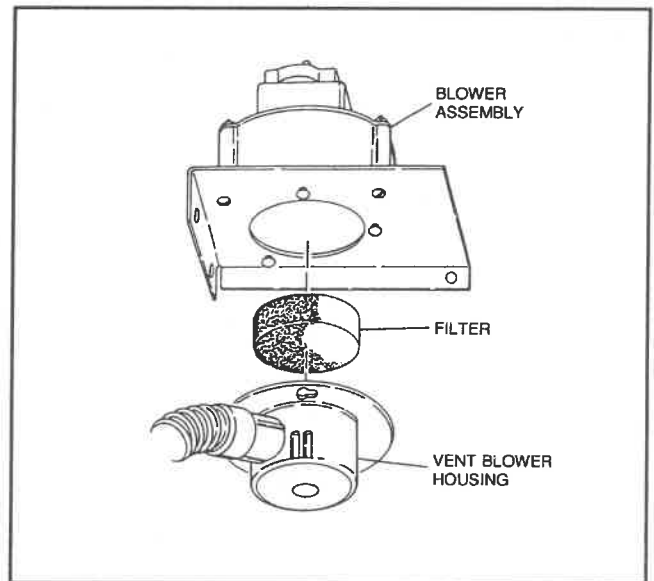
Refer to the figure on the right.

*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.



---

**M-45** 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 filter cartridge is effective for 16,000 vends.

\* Local conditions may require more frequent replacement.

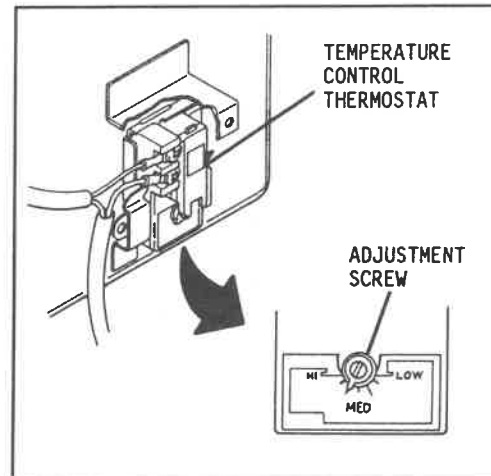
## MEASURING AND SETTING WATER TEMPERATURE

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

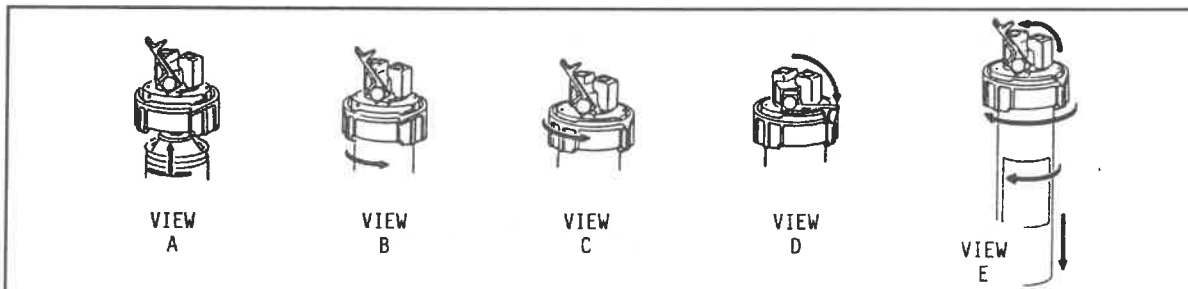
**THE WATER IN THE WATER TANK IS VERY HOT. BE CAREFUL WHEN ADJUSTING THE TEMPERATURE CONTROL THERMOSTAT.**



- \* Place a cup in the cup station.
- \* Initiate a water throw. See P0-4 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.



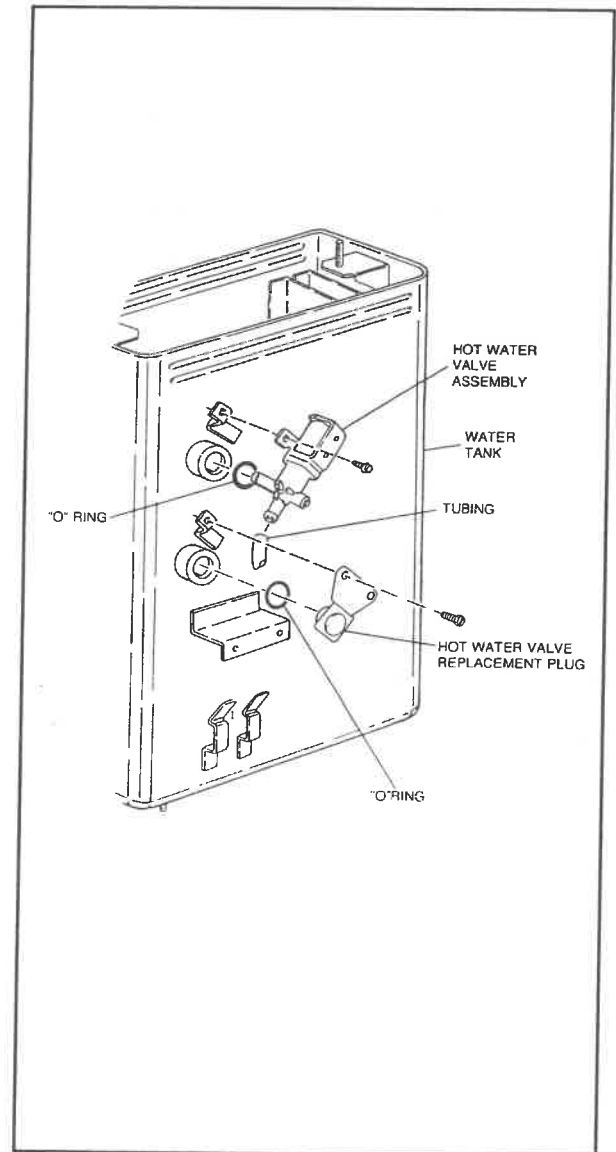
## M-48 WATER VALVE REMOVAL AND REPLACEMENT

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.

**ADJUST THE CUP DOOR CLOSE RATE**

- \* Insert a 5/32 allen wrench into the top of the door closure cylinder.
- \* Open the cup compartment door. Release the door and note the elapsed time for the door to close completely. The elapsed time should be 5-10 seconds.
- \* Turn the allen wrench clockwise to slow the door close rate or counterclockwise to increase the door close rate.

---

**CHECK THE CUP DOOR LOCK SOLENOID**

- \* With the merchandiser door open and the machine in the service mode, initiate a vend. See **PO-4** in the PROGRAMMING GUIDE.
- \* Place a cup in the cup compartment large enough to hold 11 OZ. of water.
- \* Observe the door lock solenoid for actuation. Be sure the locking arm is in the lock position over the vend door.
- \* When the water dispensing stops, the solenoid deactivates and the locking bar retracts to the unlock position.



## 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.