Refresh Center
474/475/476
MECHANICAL SET-UP, OPERATION and MAINTENANCE MANUAL

CRANE-NATIONAL VENDORS
12955 ENTERPRISE WAY
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: 1470058

PROGRAMMING GUIDE
Part Number: 1470059

DETAILED PART INFORMATION IS CONTAINED IN THE FOLLOWING MANUAL:

PARTS MANUAL
Part Number: 1470060
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.

<table>
<thead>
<tr>
<th>NAME OF CHART</th>
<th>WHEN TO USE THE CHART</th>
<th>WHERE CHART IS LOCATED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overview</td>
<td>This is the starting point for all merchandisers. All of the other charts branch from here and return to here.</td>
<td>Pages 2-6</td>
</tr>
<tr>
<td>I-4 Initial Set-Up</td>
<td>This sequence is normally done only when the merchandiser is installed on a site for the first time.</td>
<td>Pages 15-17</td>
</tr>
<tr>
<td>Guide to Tray Set-Up</td>
<td>This sequence will be completed for Model 147, 148, 474 and 475 merchandisers.</td>
<td>Page 27</td>
</tr>
<tr>
<td>Guide to Gum &amp; Mint Dispenser Set-Up</td>
<td>This sequence will be completed when an optional Gum &amp; Mint Dispenser is installed in a Model 147, 148, 474 or 475 merchandiser.</td>
<td>Page 55</td>
</tr>
<tr>
<td>Guide to Cold Can Module Set-Up</td>
<td>This sequence will be completed when a Cold Can Module is installed in a Model 474 or 475 merchandiser.</td>
<td>Page 61</td>
</tr>
<tr>
<td>Guide to Hot Drink Module Set-Up</td>
<td>This sequence will be completed when a Hot Drink Module is installed in a Model 475 Merchandiser.</td>
<td>Pages 65-66</td>
</tr>
</tbody>
</table>

* 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.

- SET PRICE FOR THIS SELECTION
  this contains an instruction

- IS THIS A MODEL 475
  this contains a question or asks you to choose a direction

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

- PAGE 26
  this refers you to page 26 in this manual
1. Set prices

- Do you want to turn on the winner option?
  - Yes: Complete the winner programming procedure (P1-1, P1-2, P1-3)
  - No: Complete the declining balance programming procedure (P4-9, P4-10)

- Do you want to turn on the declining balance feature?
  - Yes: Complete the declining balance programming procedure (P4-9, P4-10)
  - No: Set the day and time of the internal clock (P6-1, P6-2)

- Set the month, date, and year of the internal clock

- Do you want to use any of the time of day features?
  - Yes: 
  - No: 2, 3

Rev. E
IS A COLD CAN UNIT INSTALLED IN THE MACHINE

IS A HOT DRINK UNIT INSTALLED IN THE MACHINE

IS THIS A MODEL 461 OR 462 CHILLED CANDY MACHINE

COMPLETE THE COLD CAN UNIT SET-UP SEQUENCE

COMPLETE THE HOT DRINK UNIT SET-UP SEQUENCE

CLOSE AIR VENTS FOR SNACK TRAYS AND CANDY TRAYS WITHOUT MELTABLE PRODUCTS

COMPLETE THE OPERATIONAL READINESS CHECK

YOUR MERCHANDISER IS NOW READY TO PUT INTO SERVICE

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M-60 PAGE 116

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POWER REQUIREMENTS

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<thead>
<tr>
<th>VOLTS AC</th>
<th>147/148</th>
<th>474</th>
<th>475</th>
<th>461/462</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMPS</td>
<td>115</td>
<td>115</td>
<td>115</td>
<td>115</td>
</tr>
<tr>
<td>HZ</td>
<td>3</td>
<td>5</td>
<td>15</td>
<td>9</td>
</tr>
<tr>
<td>PHASE</td>
<td>Single</td>
<td>Single</td>
<td>Single</td>
<td>Single</td>
</tr>
<tr>
<td>OUTLET TYPE</td>
<td>3-pin grounded</td>
<td>3-pin grounded</td>
<td>3-pin grounded</td>
<td>3-pin grounded</td>
</tr>
</tbody>
</table>

CHECKING THE POWER OUTLET

VOLTAGE CHECK

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

POLARITY CHECK

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

NOISE POTENTIAL CHECK

When placed across the NEUTRAL and GROUND terminals, a voltmeter 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.
MODEL 148 - EXTERIOR VIEW
(147, 461, 462 and 474 HAVE SIMILAR APPEARANCE)
MODEL 148 - INTERIOR VIEW
(147 HAS SIMILAR APPEARANCE)
* 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 fluorescent 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.

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

<table>
<thead>
<tr>
<th>MODEL and APPLICATION</th>
<th>DESCRIPTION</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>147, 148, 461 and 462</td>
<td>Coin Mechanism Set-Up Guide</td>
<td>26</td>
</tr>
<tr>
<td>X</td>
<td>Tray Set-Up Guide</td>
<td>27</td>
</tr>
<tr>
<td>X</td>
<td>Gum &amp; Mint Dispenser Set-Up Guide</td>
<td>55</td>
</tr>
<tr>
<td>X</td>
<td>Cold Can Module Set-Up Guide</td>
<td>61</td>
</tr>
<tr>
<td>X</td>
<td>Hot Drink Module Set-Up Guide</td>
<td>65</td>
</tr>
</tbody>
</table>
* 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**

<table>
<thead>
<tr>
<th>QUARTER SWITCH POSITION</th>
<th>ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>Will accept only one $1.00 bill.</td>
</tr>
<tr>
<td>HIGH</td>
<td>Will accept $1.00 bills equal in value to first whole dollar above highest vend price.</td>
</tr>
</tbody>
</table>

**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

1. Pull tray forward for unloading

2. Is column wide enough for product
   - NO: Set up tray for wider product
   - YES: Change the spiral

3. Will product fit between spiral turns
   - NO: Reposition the tray and guides
   - YES: Will product touch those on either side

4. Will product touch those on either side
   - YES: Install a product spacer
   - NO: Load the product

5. Return tray to vending position

6. Set price labels for selections

7. Install selection ID numbers

8. Continue
* 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.

**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.
CANDY TRAY
SET-UP FOR WIDER PRODUCTS

1. REMOVE TRAY FROM THE MERCHANDISER
2. REMOVE COLUMN DIVIDERS INSIDE THE GROUP
3. REMOVE ALL BUT THE LEFT MOST SPIRAL IN GROUP
4. REPLACE THE INNER MOTORS WITH SPIRAL BEARINGS
5. REPLACE THE RIGHT MOST SPIRAL BEARING WITH A MOTOR
6. INSTALL A SPIRAL IN THE RIGHT MOST POSITION IN GROUP
7. RETURN TRAY TO THE MERCHANDISER
8. CONTINUE

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 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](image)

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

* Lift the Column Divider clear of the Tray. See Figure S-4b.
* All spirals are the same diameter.

* There are two types of spirals:

  **COUNTER-CLOCKWISE**

  ![COUNTER-CLOCKWISE Diagram]

  **CLOCKWISE**

  ![CLOCKWISE Diagram]

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

<table>
<thead>
<tr>
<th>ITEM CAPACITY OF SPIRAL</th>
<th>PART NUMBER</th>
<th>PART NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>COUNTERCLOCKWISE (LH)</td>
<td>COUNTERCLOCKWISE (LH)</td>
</tr>
<tr>
<td>6 (Optional)</td>
<td>1477102</td>
<td>1477103</td>
</tr>
<tr>
<td>11 (Standard)</td>
<td>1477027</td>
<td>1477024</td>
</tr>
<tr>
<td>13 (Standard)</td>
<td>1477033</td>
<td>1477030</td>
</tr>
<tr>
<td>15 (Standard)</td>
<td>1477039</td>
<td>1477036</td>
</tr>
<tr>
<td>20 (Standard)</td>
<td>1477045</td>
<td>1477042</td>
</tr>
<tr>
<td>25 (Optional)</td>
<td>1477051</td>
<td>1477048</td>
</tr>
<tr>
<td>30 (Optional)</td>
<td>1477057</td>
<td>1477054</td>
</tr>
<tr>
<td>38 (Optional)</td>
<td>1477063</td>
<td>1477060</td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>SPIRAL TYPE</th>
<th>COLUMN POSITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLOCKWISE (RH)</td>
<td>A1, A3, A5, A7, A9</td>
</tr>
<tr>
<td>COUNTERCLOCKWISE (LH)</td>
<td>A0, A2, A4, A6, A8</td>
</tr>
</tbody>
</table>

Table S-5a
REMOVING A SPIRAL COUPLER

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

Figure 5-6a
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

ORIENTATION 2

* 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](image)

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](image)
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:

<table>
<thead>
<tr>
<th>POSSIBLE POSITIONS</th>
<th>A (BOTTOM)</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

* When relocating Trays, the following rules apply:

<table>
<thead>
<tr>
<th>NEW POSITION OF TRAY BEING MOVED</th>
<th>ALLOWABLE POSITIONS FOR TRAY ABOVE</th>
<th>ALLOWABLE POSITIONS FOR TRAY BELOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPPER</td>
<td>MIDDLE</td>
<td>UPPER</td>
</tr>
<tr>
<td>MIDDLE</td>
<td>UPPER MIDDLE</td>
<td>UPPER MIDDLE LOWER</td>
</tr>
<tr>
<td>LOWER LOWER</td>
<td>UPPER MIDDLE LOWER</td>
<td>LOWER</td>
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<tr>
<td>LOWER</td>
<td>UPPER MIDDLE LOWER</td>
<td>LOWER</td>
</tr>
</tbody>
</table>

**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.
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](image)

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.


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
INSTALLING A PRODUCT SPACER

Insert the mounting pins of the Product Spacer into the Column Divider. See 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.

REMOVING A PRODUCT SPACER

Pull the mounting pins of the Product Spacer from the Column Divider. See Figure S-14c.
LOADING A TRAY WITH PRODUCTS IN GENERAL

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

Thin Packages - position package upright

KitKat - the two right-most columns of a 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.
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.

1. REMOVE COLUMN DIVIDERS
2. REMOVE SPIRALS
3. LEAVE THIS MOTOR CONNECTOR ALONE
4. DISCONNECT THIS MOTOR CONNECTOR
5. MOVE CONNECTOR FROM THIS MOTOR TO THIS MOTOR
6. REMOVE THIS MOTOR
7. INSTALL AN 11-COUNT LEFT-HAND SPIRAL IN THIS POSITION
8. INSTALL AN 11-COUNT RIGHT-HAND SPIRAL IN THIS 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.

* 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-16a

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.

**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.

**WHICH LABEL GOES WITH WHICH SELECTION?**

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<td><strong>TRAY B</strong></td>
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<td><strong>TRAY C</strong></td>
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<td><strong>TRAY D</strong></td>
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<tr>
<td><strong>TRAY E</strong></td>
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<tr>
<td><strong>BOTTOM TRAY</strong></td>
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</tbody>
</table>
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.

PLACE GUM & MINT DISPENSER IN THE LOADING POSITION

REMOVE OR INSTALL COLUMN REDUCERS IN THE TWO LEFT COLUMNS AS REQUIRED

LOAD THE GUM & MINT DISPENSER

RETURN GUM & MINT DISPENSER TO THE VENDING POSITION

ATTACH THE PRICE LABELS

GUM & MINT UNIT INSTALLATION IS COMPLETE

RETURN TO OVERVIEW PAGE 5 IN THIS SET-UP MANUAL
* 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
* 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](image1)

![Figure S-33b Version Number 2](image2)
* 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.
The information in this part of the manual has been provided to help you set up the Cold Can Module.

- **ARE CORRECT PRODUCT ID LABELS INSTALLED**
  - **NO** branch leads to **INSTALL THE CORRECT PRODUCT ID LABELS**
  - **YES** branch leads back to itself

- **ARE THE PRICE LABELS CORRECTLY SET**
  - **NO** branch leads to **CHANGE THE PRICE SETTING OF THE LABEL**
  - **YES** branch leads to **LOAD THE CANS INTO THE COLD CAN MODULE**

- **LOAD THE CANS INTO THE COLD CAN MODULE**
  - **C-1 PAGE 62**

- **SET CYCLE TEMPERATURE FOR THE COLD CAN UNIT COMPRESSOR**
  - **C-2 PAGE 62**

- **COLD CAN UNIT INSTALLATION IS COMPLETE**
  - **RETURN TO OVERVIEW PAGE 6 IN THIS SET-UP MANUAL**
  - **C-3 PAGE 63**

- **P4-12**
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 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

TEST VEND A SELECTION SEVERAL TIMES

SEE PROGRAMMING GUIDE FOR PROPER PROCEDURE

DO SNACK OR CANDY PRODUCTS CATCH ON THE TRAY AND FAIL TO VEND

YES

NO

RETRIEVE THE VENDED PRODUCT

RC-1

NO

HAVE YOU TEST VENDED ALL SELECTIONS

YES

TEST COIN MECHANISM OPERATION

SEE PROGRAMMING GUIDE FOR PROPER PROCEDURE

TEST BILL VALIDATOR OPERATION

RC-9

RETURN TEST VENDED SNACKS, CANDY AND CANS TO INVENTORY

S-15

CONTINUE
ANTI HANG-UP PROCEDURES
FOR
FINE TUNING SPIRALS

INDEX THE
SPIRALS

NUMBER OF
SPIRALS FOR THE
SELECTION

1 SPIRAL
WITH
RH MOTOR

1 SPIRAL
WITH
LH MOTOR

2 SPIRALS
WITH
1 MOTOR

2 SPIRALS
WITH
2 MOTORS

INSTALL AND/OR
ADJUST
PRODUCT SPACERS

INSTALL A
PRODUCT
PUSHER

INSTALL AND/OR
REMOVE SPIRAL
WALL RETAINERS

RC-2
RC-3
RC-4
RC-5
S-14
RC-6
RC-7

* 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.
HOME THE MOTOR

* SEE PROGRAMMING GUIDE FOR PROPER PROCEDURE

REMOVE THE SPIRAL S-5

IS COUPLER IN THE BASE POSITION

NO

YES

MOVE COUPLER TO THE BASE POSITION S-6 and S-9

MOVE COUPLER TO NEXT CLOCKWISE POSITION S-6 and S-9

REPLACE THE SPIRAL S-5

TEST VEND A SELECTION

* SEE PROGRAMMING GUIDE FOR PROPER PROCEDURE

REMOVE THE SPIRAL S-5

NO

HAVE YOU MOVED ONE CLOCKWISE POSITION FROM BASE POSITION

YES

TRY AGAIN ANTI HANG-UP PROCEDURE RC-1

YES

NO

DOES PRODUCT HANG-UP AT END OF VEND CYCLE

THE PROCEDURE IS COMPLETE

YES
HOME THE MOTOR

* SEE PROGRAMMING GUIDE FOR PROPER PROCEDURE

REMOVE THE SPIRAL S-5

IS COUPLER IN THE BASE POSITION

NO

YES

MOVE COUPLER TO THE BASE POSITION S-6 and S-9

MOVE COUPLER TO NEXT COUNTERCLOCKWISE POSITION S-6 and S-9

REPLACE THE SPIRAL S-5

TEST VEND A SELECTION

* SEE PROGRAMMING GUIDE FOR PROPER PROCEDURE

REMOVE THE SPIRAL S-5

HAVE YOU MOVED ONE COUNTERCLOCKWISE POSITION FROM THE BASE POSITION

NO

YES

TRY ANOTHER ANTI HANG-UP PROCEDURE RC-1

YES

DOES PRODUCT HANG-UP AT END OF VEND CYCLE

NO

THE PROCEDURE IS COMPLETE

YES
HOME THE MOTOR
P7-4

REMOVE LH SPIRAL
S-5

IS LEFT SPIRAL COUPLER IN BASE POSITION

YES

MOVE LEFT SPIRAL COUPLER TO NEXT COUNTERCLOCKWISE POSITION
S-6 and S-9

NO

MOVE LEFT SPIRAL COUPLER TO BASE POSITION
S-6 and S-9

REPLACE LH SPIRAL
S-5

REMOVE THE RH SPIRAL AND SPIRAL COUPLER AS A UNIT
S-6 and S-9

TURN THIS UNIT UNTIL RH SPIRAL MIRRORS POSITION OF LH SPIRAL

REPLACE RH SPIRAL and SPIRAL COUPLER AS A UNIT
S-6 and S-9

TEST VEND THE SELECTION
P13-1

HAVE YOU MOVED ONE COUNTERCLOCKWISE POSITION FROM THE BASE POSITION

YES

TRY ANOTHER ANTI HANG-UP PROCEDURE RC-1

NO

DOES PRODUCT HANG-UP AT END OF VEND CYCLE

THE PROCEDURE IS COMPLETE
* 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.

A | B
---|---
0 and 1 | 1 and 2
2 and 3 | 3 and 4
4 and 5 | 5 and 6
6 and 7 | 7 and 8
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.
* Snack, candy and cold can selections are dispensed into the delivery pan.

* Push inward on 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.
IS VALIDATOR IN ESCROW MODE

YES

INSERT A $1 BILL IN VALIDATOR

PUSH COIN RETURN BUTTON TO GET MONEY BACK

You should receive four quarters in change.

INSERT A $1 BILL IN VALIDATOR

MAKE A SELECTION

The correct selection should be vended and correct change should be returned

CONTINUE

INSERT A $1 BILL IN VALIDATOR

PUSH COIN RETURN BUTTON TO GET MONEY BACK

Money is not returned; you must make a selection to receive any change.

MAKE A SELECTION

The correct selection should be vended and correct change should be returned
The information in this part of the manual has been provided to help you service and maintain the merchandiser.

### DIRECTORY OF MAINTENANCE PROCEDURES

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<td>Water valve removal and replacement</td>
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<td>M-49</td>
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</tr>
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<td>M-50</td>
<td>Water tank heater removal and replacement</td>
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<tr>
<td>M-51</td>
<td>Reserved for future use</td>
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<td>M-52</td>
<td>Reserved for future use</td>
<td>--</td>
</tr>
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<td>M-53</td>
<td>Dry ingredient air fluffing</td>
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<td>Sugar and whitener mixing bowl inspection</td>
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<td>Dry ingredient shelf cleaning</td>
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<td>M-56</td>
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<td>M-57</td>
<td>Mixing bowl sanitizing</td>
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<td>M-58</td>
<td>Chocolate funnel and impeller housing sanitizing</td>
<td>115</td>
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<td>M-59</td>
<td>Connecting a Model 461 or 462 refrigeration module to an external drain</td>
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</tr>
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<td>M-60</td>
<td>Opening, closing and adjusting the air discharge vents</td>
<td>116</td>
</tr>
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THE MOST PROFITABLE MERCHANDISER IS CLEAN AND WELL MAINTAINED
### RECOMMENDED SANITATION

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

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

### RECOMMENDED SERVICE

<table>
<thead>
<tr>
<th>PROCEDURE</th>
<th>REFERENCE</th>
<th>DAILY</th>
<th>WEEKLY</th>
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<th>SEMI-ANNUAL</th>
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<tbody>
<tr>
<td>Brewer barrel and basket</td>
<td>M-27</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>Coffee funnel</td>
<td>NR</td>
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<td>In-tank water temperature</td>
<td>M-48</td>
<td></td>
<td>X</td>
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<tr>
<td>Water filter service limit</td>
<td>M-45</td>
<td></td>
<td>X</td>
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<tr>
<td>Water volume check</td>
<td>H-5</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Water tank timing Inspection</td>
<td>NR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Refill coin tubes</td>
<td>Page 12</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inspect and clean coin mech</td>
<td>M-9</td>
<td></td>
<td></td>
<td>X</td>
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<td></td>
</tr>
<tr>
<td>Inspect &amp; clean bill validator</td>
<td>M-10</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>Empty bill magazine</td>
<td>M-11</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>Refill ingredient canisters</td>
<td>H-1</td>
<td></td>
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<tr>
<td>Fluff dry ingredients</td>
<td>H-53</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>Test vend products</td>
<td>P-13-1</td>
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<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Inspect mixing bowls</td>
<td>M-54</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
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</tr>
<tr>
<td>Check ingredient throw</td>
<td>H-6</td>
<td></td>
<td></td>
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<td></td>
<td>X</td>
</tr>
<tr>
<td>Refill cup tubes</td>
<td>H-3</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
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<tr>
<td>Inspect lamp bulbs</td>
<td>M-6</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>Inspect exhaust filter</td>
<td>M-44</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>Lubrication</td>
<td>M-13</td>
<td></td>
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<td></td>
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<tr>
<td>Inspect springs</td>
<td>M-18</td>
<td></td>
<td></td>
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<td>X</td>
</tr>
<tr>
<td>Inspect moving parts</td>
<td>M-19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

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 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.

![Image of lamp being removed](image)

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.

![Image of starter being installed](image)
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. See S-10.

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

ABBREVIATIONS USED IN WIRING DIAGRAMS

<table>
<thead>
<tr>
<th>ABBREVIATION</th>
<th>DEFINITION</th>
<th>ABBREVIATION</th>
<th>DEFINITION</th>
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<tbody>
<tr>
<td>CB</td>
<td>Circuit Breaker</td>
<td>MOT</td>
<td>Motor</td>
</tr>
<tr>
<td>J</td>
<td>Jack</td>
<td>PCB</td>
<td>Printed Circuit Board</td>
</tr>
<tr>
<td>P</td>
<td>Plug</td>
<td>HDLG</td>
<td>Handling</td>
</tr>
<tr>
<td>SW</td>
<td>Switch</td>
<td>VAL</td>
<td>Validator</td>
</tr>
<tr>
<td>CYC</td>
<td>Cycle</td>
<td>P/O</td>
<td>Part Of</td>
</tr>
<tr>
<td>PRES</td>
<td>Present</td>
<td>TEMP</td>
<td>Temperature</td>
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<tr>
<td>SEN</td>
<td>Sense</td>
<td>BAL</td>
<td>Ballast</td>
</tr>
<tr>
<td>COL</td>
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WIRE COLOR ABBREVIATIONS

<table>
<thead>
<tr>
<th>ABBREVIATION</th>
<th>COLOR</th>
<th>ABBREVIATION</th>
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<tbody>
<tr>
<td>RO</td>
<td>Red</td>
<td>YEL</td>
<td>Yellow</td>
</tr>
<tr>
<td>BLU</td>
<td>Blue</td>
<td>BRN</td>
<td>Brown</td>
</tr>
<tr>
<td>ORN</td>
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<td>Gray</td>
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<tr>
<td>BLK</td>
<td>Black</td>
<td>PNK</td>
<td>Pink</td>
</tr>
<tr>
<td>WHT</td>
<td>White</td>
<td>PUR</td>
<td>Purple</td>
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</tbody>
</table>

* 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.