



SZF/DZF

VARIABLE TEMP GLASSFRONT VENDOR



MODELS:

3207/3207A - SZF/DZF 3000 (3 WIDE)

3208/3208A - SZF/DZF 5000 (5 WIDE)

SERVICE MANUAL

TABLE OF CONTENTS

INTRODUCTION.....	1	Sensors.....	18
SPECIFICATIONS.....	2	Sensor1.....	18
Dimensions & Weight.....	2	Sensor2.....	18
Electrical.....	2	Relays.....	19
Refrigeration.....	2	Door Switch.....	19
Coin Changer, Bill Validator, Card Reader.....	2	Factory Default Settings.....	20
Vendor Operation.....	2	Bottom (Cool) Zone.....	20
UNPACKING.....	3	Cut-In.....	20
INSTALLATION.....	3	Cut-Out.....	20
Removing the Door.....	4	Health Safety.....	21
Power Cord.....	5	Health Safety Test.....	21
Level the Vendor.....	5	Top (Warm) Zone.....	22
Grounding (Earthing) & Electrical.....	6	Cut-In.....	22
Main Power Switch.....	6	Cut-Out.....	22
Door Glass Heater Switch.....	6	Priority.....	22
Advanced Power Management.....	6	Sensor1.....	22
LOADING PRODUCTS.....	7	Sensor2.....	22
Snack/Candy/Food Tray Option.....	7	REFRIGERATION.....	23
Can/Bottle Tray Option.....	7	Refrigeration Troubleshooting.....	23
Dispenser Mechanism Option.....	8	Compressor will not start.....	24
TRAY ADJUSTMENTS.....	9	Compressor trips on overload.....	25
Vertical Spacing.....	9	Noisy or vibrating unit.....	25
3 Wide Snack/Candy/Food Tray.....	9	Unit short cycles.....	25
5 Wide Snack/Candy/Food Tray.....	10	Unit operates long or continuously.....	26
Can/Bottle Tray or Dispenser Tray (Drawer Slides).....	11	Refrigerated space too cold.....	26
Candy to Snack.....	12	Refrigerated space too warm.....	26
Snack to Candy.....	12	Troubleshooting Circuits with Multi-Meter.....	27
Auger Timing.....	13	Accessing the Power Panel.....	27
Snack/Candy/Food Tray.....	13	Removing the Refrigeration System.....	28
Can/Bottle Tray Option.....	13	PREVENTIVE MAINTENANCE.....	29
CONTROLLER FUNCTIONS.....	14	Once a Month.....	29
Sales Mode.....	14	Clean Cabinet Interior.....	29
Display Credit.....	14	Clean Cabinet Exterior.....	29
Make Selection.....	14	Every 3 Months.....	29
iVEND™ Cycle.....	14	Replace Air Filter.....	29
Credit & Counters.....	15	Clean Bottom Inlet Screen.....	29
Service Mode.....	16	Every 6-months.....	30
Service Mode Button.....	16	Clean Door And Delivery Door Seals.....	30
Keypad.....	16	Clean Evaporator Coil.....	30
Display.....	16	Clean Rear Screen.....	30
BASIC PROGRAMMING.....	17	Clean Delivery Box Bottom.....	31
TEMPERATURE CONTROL.....	18	PARTS ORDERING PROCEDURE.....	31
		BEFORE CALLING FOR SERVICE.....	32

Please have the model and serial numbers if you need service and parts information. The numbers are on the identification plate located on the back side of the cabinet of the vending machine.

If you have any questions pertaining to information in the manual, replacement parts or the operation of the vendor, then you should contact your local distributor or:

VendNet
165 North 10th Street
Waukee, Iowa 50263
Phone: (888) 259-9965
Parts Fax: (515) 274-5775
Sales Fax: (515) 274-0390
E-mail: vendnet@vendnetusa.com

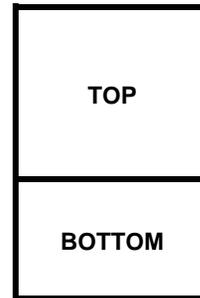
MODEL NUMBER: _____

SERIAL NUMBER: _____

INTRODUCTION

This manual contains instructions, service and installation guidelines for the **SZF/DZF Vendor**. Please read this manual thoroughly and follow instructions. The initial set-up of a vending machine is a very important step of insuring that the equipment operates in a trouble-free manner.

The **SZF/DZF Vendor** can be factory configured to have two temperature compartments (top and bottom) in a single vending machine separated by moveable air deflector and insulating barrier. The vending machine has an air duct that runs up and down on the back inner wall of the cabinet. Each compartment can have 2 to 4 moveable trays and a total of 6 trays for the entire vending machine. The vending machine will maintain up to 13°C (23°F) of separation between the compartments at an ambient range of 4.4°C-37.8°C (40°F-100°F). The temperature setting for both compartments are set at the controller (program).



The top compartment can have an optional heater system to provide further temperature separation across varying ambient temperatures. This option consists of a heater, temperature sensor, air circulating blower and a relay (**RELAY3**).

The bottom compartment has a temperature sensor and an insulated refrigeration system. Cool air is drawn from the refrigeration system's evaporator coils through the air duct and is deflected into the bottom zone by a moveable air deflector. There are openings in the bottom trays to allow air to circulate around the products.

All programming of the pricing, vend functions and features are also done at the controller. Changes can be made without any additional accessories or remote parts. Selections can be priced individually from \$.05 to \$999.95 in five cent increments (US currency). When adapted to accept international or foreign currency, the maximum vend price will be 255 times the smallest denomination of coin being accepted. Cash accountability records, total cash transactions, total vend cycles performed by the vendor, information for individual selections, complete rows or total machine can be compiled and used for inventory and ordering records. Electrical malfunctions are recorded and displayed when the vending machine is placed in the **Service Mode**. Non-functional motors or selections are indicated. Each selection has an individual motor. Functional selections will continue to operate if other motors become nonfunctional.

The vending sequence is "first-in, first-out" for each selection, permitting stock rotation to maintain fresh products in the vending area.

Each **SZF/DZF Vendor** has the capability of supporting a "satellite" vending machine, such as a CB300-SAT, Can Vendor or Food Merchandiser (Menu Mart II). The satellite vendor utilizes the **SZF/DZF Vendor** vendor's existing controller, coin mechanism, bill validator and keypad to perform the vend functions they require. For details on the satellite vendor, refer to the Service Manual pertaining to the specific vendor for installation instructions.

SPECIFICATIONS

DIMENSIONS & WEIGHT

TYPE	SZF/DZF3000 (3 WIDE)		SZF/DZF5000 (5 WIDE)	
MODEL	3207	3207A	3208	3208A
WIDTH	29.5 in. (74.9 cm)		41.2 in. (104.6 cm)	
DEPTH	38 in. (96.5 cm)			
HEIGHT	72 in. (182.9 cm)			
ESTIMATED WEIGHT ¹	693 lbs (614 kg)		816 lbs (370 kg)	
EST. SHIPPING WT. ¹	722 lbs (327 kg)		846 lbs (384 kg)	

Note: ¹ Weights will vary depending on tray configuration and optional equipment installed.

ELECTRICAL

MODEL		Panasonic Super 1/3 Hp		Danfoss 1/2 Hp	
VOLTAGE		115 VAC	230 VAC	115 VAC	230 VAC
CYCLE		60 Hz	50 Hz	60 Hz	50 Hz
NOMINAL AMPS	HEATED GLASS	8.0 Amps	4.0 Amps	10.5 Amps	5.2 Amps
	NON HEATED GLASS	7.0 Amps	3.5 Amps	9.5 Amps	4.8 Amps
TRANSFORMER		110/24 VAC	230/24 VAC	110/24 VAC	230/24 VAC

REFRIGERATION

HORSEPOWER	Panasonic Super 1/3 Hp	Danfoss 1/2 Hp
TYPE	Hermetically Sealed	Hermetically Sealed
CONTROLS	Electronic	Electronic
REFRIGERANT	R-134a	R-134a
CHARGE	20 oz	16 oz

COIN CHANGER, BILL VALIDATOR, CARD READER

TYPE	Any MDB Peripheral Device
------	---------------------------

VENDOR OPERATION

LOCATION	Suitable for indoor use only
RECOMMENDED OPERATING TEMPERATURE	Between 32° and 100° Fahrenheit (0° and 38° Celsius)

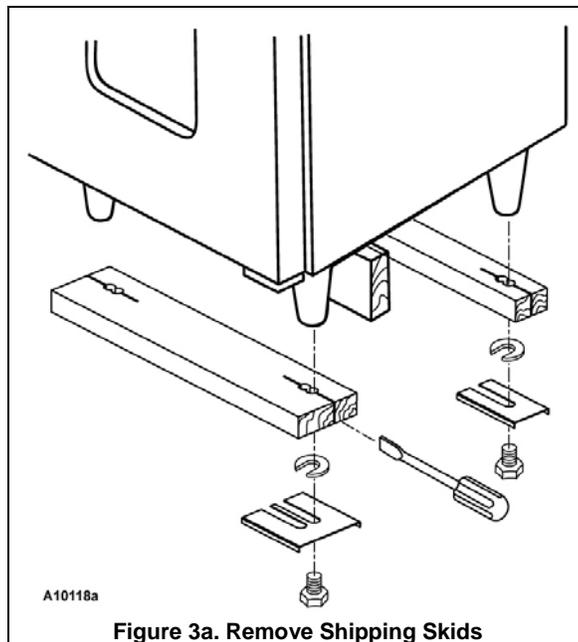
UNPACKING

This vending machine was thoroughly inspected before leaving the factory and the delivering carrier has accepted this vendor as their responsibility. Note any damage or irregularities at the time of delivery and report them to the carrier. Request a written inspection report from the claims inspector to file any claim for damage. File the claim with the carrier (not the manufacturer) within 15 days after receipt of the vending machine.

Carefully remove the outside packing material so as not to damage the finish or exterior of the vending machine. Inspect the vending machine for concealed shipping damage. Report any damage hidden by the shipping material directly to the delivering carrier on a hidden damage report.

Record the model number and serial number of the vendor for your records. These numbers can be found on the Serial Plate on the rear of the cabinet and/or inside the vendor. Refer to these numbers on all correspondence and inquiries pertaining to this vendor.

Remove the shipping skids by placing a 2x6 under the vendor, inserting a large screwdriver or prying tool into the groove and splitting it in two. Turn the leveling screws in as far as possible. See Figure 3a.



INSTALLATION

Consult local, state and federal codes and regulations before installation of the vendor. Retrieve the keys to the vendor from the coin return cup. Open outer door and remove all internal packing material.

REMOVING THE DOOR

The door can be temporarily removed if vending machine needs to go through a narrow opening.

CAUTION: Disconnect the power cord from the wall outlet before servicing. Follow all safety precautions and use the appropriate type of moving equipment. At least two persons must be involved in moving the cabinet and/or removing the door.

1. **Mark the top and bottom hinge locations** - The marks will be used as a reference later on during reassembly.
2. **Disconnect door harnesses** - Loosen the nut and bolt that attaches the harness retaining spring to the door harness and unhook the spring from the harness. Unplug the door harness. Unplug the door glass heater harness from the power panel. See Figure 4a.

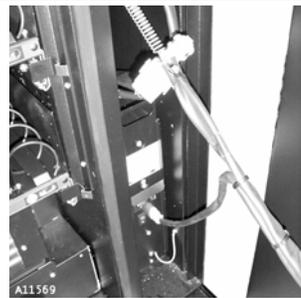


Figure 4a. Door Harness

3. **Remove the door** - While holding the door in place to prevent bending or damage to the bottom pivot, remove the two (2) small locating screws and four (4) large bolts and nuts holding the Top Hinge Plate to the cabinet. See Figure 4b. Save the mounting hardware for step 7. Lift the door up to remove it from the bottom hinge.

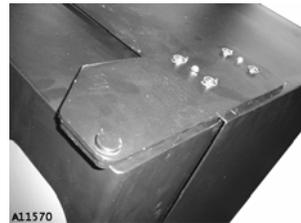


Figure 4b. Top Hinge Plate

4. **Retract the Front Legs** - Start with the Left Front Leg. From underneath the machine, loosen the two screws shown in Figure 4d. Remove the remaining 4 screws and also the large screw shown in Figure 4c. Remove the Left Hinge Reinforcement and the Door Lifter. Save all parts for step 5. Push the Left Front Leg in so that it is flush with the cabinet. Tighten the two (2) screws underneath.

Move to the Right Front Leg. From underneath the machine, loosen the two (2) screws shown in Figure 4f. Remove the remaining four (4) screws and also the large screw shown in Figure 4e. Remove the Bottom Hinge Reinforcement. Save all parts for step 6. Push the Right Front Leg in so that it is flush with the cabinet. Tighten the two (2) screws underneath.

5. **Move the vending machine and door to the desired location.**

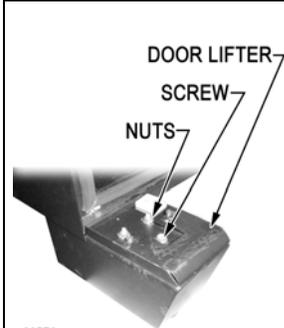


Figure 4c. Left Front Leg

6. **Extend the Front Legs** - Start with the Left Front Leg. Loosen the two (2) bottom screws. Pull the leg forward to its original position. Install the Hinge Reinforcement under the leg. Tighten the two screws and

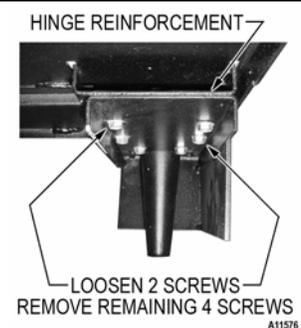


Figure 4d. Remove Left Reinforcement Plate

install the four (4) large screws (saved from step 4) through the bottom. Reinstall the Door Lift on top. Install the nuts and large screw (Figure 4c). Tighten all fasteners.

Go to the Right Leg. Loosen the two (2) bottom screws. Pull the leg forward. Install the Hinge Reinforcement underneath.



Figure 4e. Right Front Leg

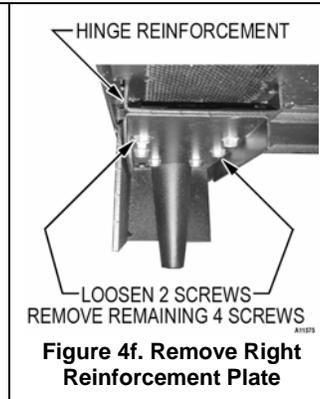


Figure 4f. Remove Right Reinforcement Plate

Use the fasteners saved from step 4. Install the four (4) large screws through the bottom. Reinstall the Door Hinge, nuts and large screw on top (Figure 4e). Tighten all fasteners.

7. **Reattach the door** - Attach the bottom end of the door to the Door Hinge. Hold the door in place while attaching the Top Hinge Plate to the cabinet using the hardware fasteners saved from step 3 (Figure 4b). First, install the two (2) small screws to locate the Top Hinge Plate to the correct location and then add the four bolts and nuts.
8. **Connect door harnesses** - Plug the door glass heater harness to the power panel. Plug the door harness to the cabinet harness. Hook the harness retaining spring to the bolt and tighten the nut. See Figure 4a.

POWER CORD

The power cord is coiled inside the connection cover near the left lower corner as viewed from the back of the vending machine. Remove the retaining screw and uncoil the power cord. Route it under the cover as shown in Figure 4g. Keep power cord secured on the center back of the cabinet until the vendor is placed into its final location to prevent damage to the cord.

Position the vendor in its place of operation no further than nine feet from the power outlet or receptacle. Check that the door will open fully without interference. Leave at least four (4") inches of space between the back of the vending machine and any wall or obstruction for proper air circulation.

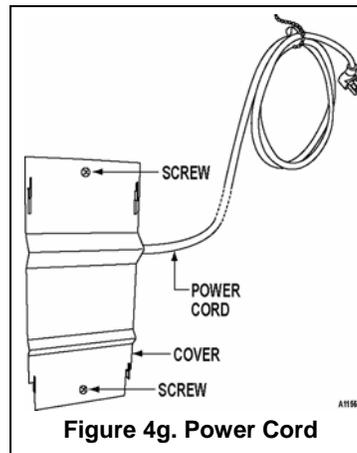


Figure 4g. Power Cord

LEVEL THE VENDOR

All levelers must touch the floor. The vendor **must** be level for proper operation, cabinet to door alignment and for acceptance of coins through the coin mechanism.

GROUNDING (EARTHING) & ELECTRICAL

Before connecting the vendor, the integrity of the main electrical supply must be checked for correct polarity, presence of ground (earth) and correct voltage. Please refer to the **Safety Manual and Installation Guidelines Manual** (P/N 4206816) that shipped in the service package with your vending machine. These checks should be repeated at six (6) month intervals with the routine safety electrical testing of the vendor itself.

If the receptacle is not properly grounded or polarized, you should contact a licensed electrician to correctly polarize and/or ground the receptacle to ensure safe operation.

A noise suppressor has been installed in this vending machine to compensate for any mains signal noise that could interfere with the normal operation of the controller.

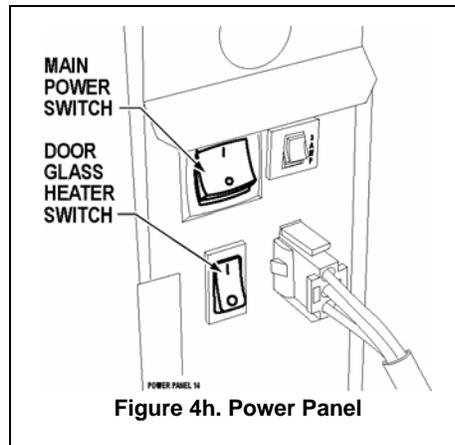
For proper operation of any equipment utilizing electronically controlled components, the equipment should be placed on an isolated or dedicated noise-free circuit, properly polarized and grounded.

MAIN POWER SWITCH

Plug the power cord to a dedicated power outlet. Open the vendor door. Turn on the main power switch located on the lower right hand side of the vendor. See Figure 4h.

DOOR GLASS HEATER SWITCH

This switch is normally turned off to conserve energy. Turn the switch on only if the vendor is in a humid location and water condensates on the glass. See Figure 4h.



ADVANCED POWER MANAGEMENT

This feature is available on software version 67232-7 and 67256-1 only: It uses **INTERVAL 1** of the **SHUTDOWN** mode to activate the **ADVANCED POWER MANAGEMENT (APM)** feature while still keeping intervals 2 thru 4 available for use as vending shutdown timers. The **APM** feature reduces the energy consumption of the refrigeration system between the hours of 12:00 am to 6:00 am by increasing the **SET POINT** for **SENSOR1** to 10°C (50°F).

This feature is available on software version 67256-3 only: In addition, **INTERVAL 2** of the **SHUTDOWN** mode is used to activate the **ADVANCED POWER MANAGEMENT (APM)** feature while still keeping intervals 3 thru 4 available for use as vending shutdown timers. The **APM INTERVAL 2** feature reduces the energy consumption of the refrigeration system between the hours of 12:00 am to 11:59 pm on Saturday and Sunday by increasing the **SET POINT** for **SENSOR1** to 16°C (60°F).

See 120 Select Programming Manual (P/N 4212619) for more information.

LOADING PRODUCTS

All trays of a single zone and all trays in the bottom compartment of dual zone machines are for can, bottle or food products requiring cool temperatures when vended. The trays in the top compartment of dual zone machines are designed for snacks, chips and chocolate products requiring less cool temperatures.

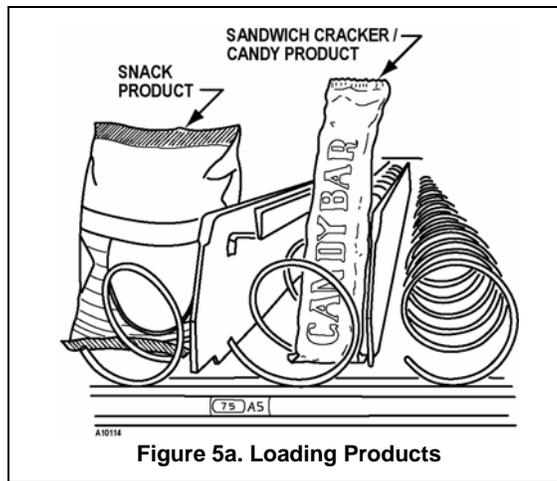
Load product from front to back making sure all items fit freely between the auger spaces. Do not attempt to force oversize items or packages into the spaces. Do not skip a space. Place the product on the bottom of the compartment on the product augers with the label facing the front of the vending machine for easy identification by the customer. See Figure 5a.

SNACK/CANDY/FOOD TRAY OPTION

To load products, lift the tray slightly and pull forward until the tray stops. The trays tilt for easier loading.

The size of the item being vended must be larger than the diameter of the auger being used to vend properly.

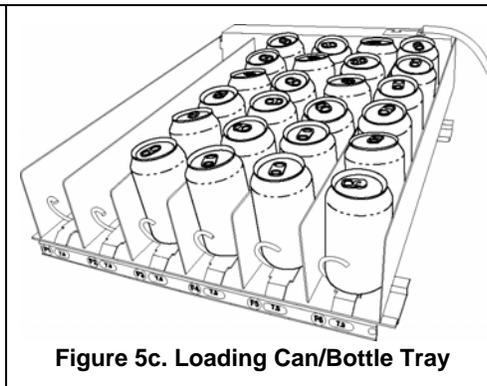
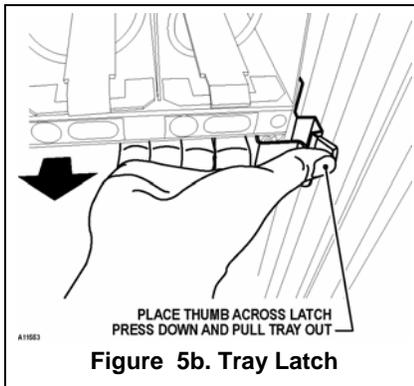
Undersize items could cause vend problems. If the product does not fit the auger properly, use a different pitched auger. See Table 1 for augers available from your distributor or service entity.



CAN/BOTTLE TRAY OPTION

TRAY LATCH

Place thumb across latch, press down to the right and pull the tray out. See Figure 5b. Place product vertically as shown in Figure 5c. Some bottle beverages may require an optional kit for proper vending.



DISPENSER MECHANISM OPTION

Load product horizontally from front to rear and stacked a maximum of three (3) levels high. See Figure 5d.

Install product labels (flavor tabs) in the space provided above the price and selection labels.

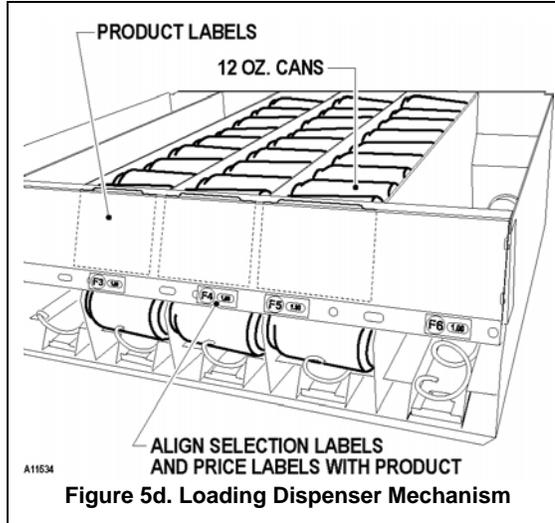


Figure 5d. Loading Dispenser Mechanism

Table 1. Available Augers

TYPE	PRODUCT			PART NUMBER
	WIDTH (INCH)	THICK (INCH)	QTY	
CANDY	2.75	0.50	30	4200272.103309
		0.66	24	4200272.102309
		0.94	18	4200272.101309
		1.19	15	4200272.100309
		1.50	12	4200272.104309
		2.03	9	4200272.105309
		3.09	6	4200272.106309
CAN/BOTTLE	2.75	3.09	6	4200272.106309
DISPENSER (12 OZ CAN)	4.84	2.59 DIA	8	4214090
SNACK	5.50	1.19	15	4200272.109309
		1.50	12	4200272.108309
		1.81	10	4200272.107309
		2.62	8	4200272.111309
		2.69	7	4200272.110309

TRAY ADJUSTMENTS

By re-timing the augers, difficult-to-vend items can be dispensed more dependably. By altering tray spacing, larger items can be vended. By changing the tray configuration, different product mixes can be accommodated.

VERTICAL SPACING

The trays can be adjusted up or down in half-inch increments to provide additional headroom for vending taller products. When increasing the height in one area, the same amount of room will be lost at the tray above or below the one being adjusted.

3 WIDE SNACK/CANDY/FOOD TRAY

1. Pull out the tray to be adjusted until it stops.
2. Disengage the tray harness from its harness retainer on the right side wall. See Figure 6a on page 10. Disconnect the tray plug from its receptacle on the right side wall.
3. Lift up on the rear of the tray and remove it from the vendor.
4. Disengage both left and right tray rails from their corresponding slots on the left and right side walls by pulling inward on the bottom front of each rail and lifting its flange out of the slot. Pull each rail forward to disengage its rear tabs from the hole in the rear wall.
5. Relocate both left and right rails by reversing step 4. **Rails must be level from front to back and evenly spaced from top to bottom of each side.**
6. Replace the tray by placing its rear rollers on the left and right rails and lifting up on the front of the tray as it is pressed back.
7. Install the tray plug into its receptacle on right side wall.
8. Re-engage the tray harness into its harness retainer. See Figure 6a.
9. Test vend the tray in its new position to assure that the tray plug is properly seated.

5 WIDE SNACK/CANDY/FOOD TRAY

1. Pull the tray out until it stops.
2. Locate the harness retainer on the right side wall. See Figure 6a. Pull the tray harness out of the harness retainer.
3. Unplug the tray plug from its receptacle on the right side wall.

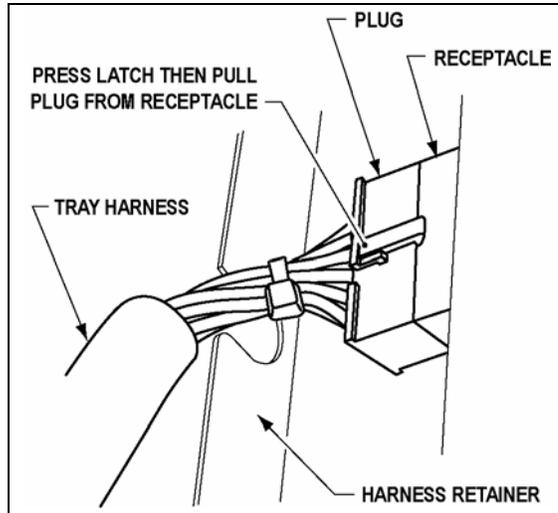


Figure 6a. Tray Harness

4. Lift up on the front of the tray and pull slightly (approximately 1.5 cm (.5 in) forward to clear the tray stop.
5. Locate the release lever on the left and right tray rails. See Figure 6b. Swing the release levers all the way up to unlatch.

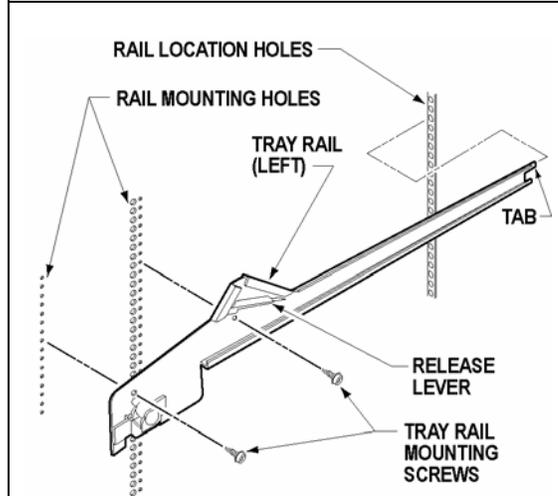


Figure 6b. Tray Rails

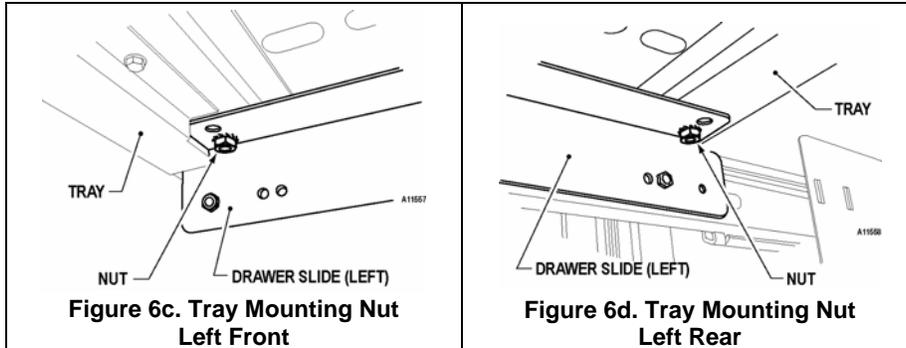
6. Lift up on the rear of the tray and remove it from the vendor.
7. Relocate both left and right tray rails from the left and right side walls.
 - A. Remove tray rail mounting screws.
 - B. Pull each rail forward to disengage its rear tab from the hole in the rear wall. See Figure 6b.

8. Relocate both left and right rails by reversing step 7. **Rails must be level front to back and left to right.**

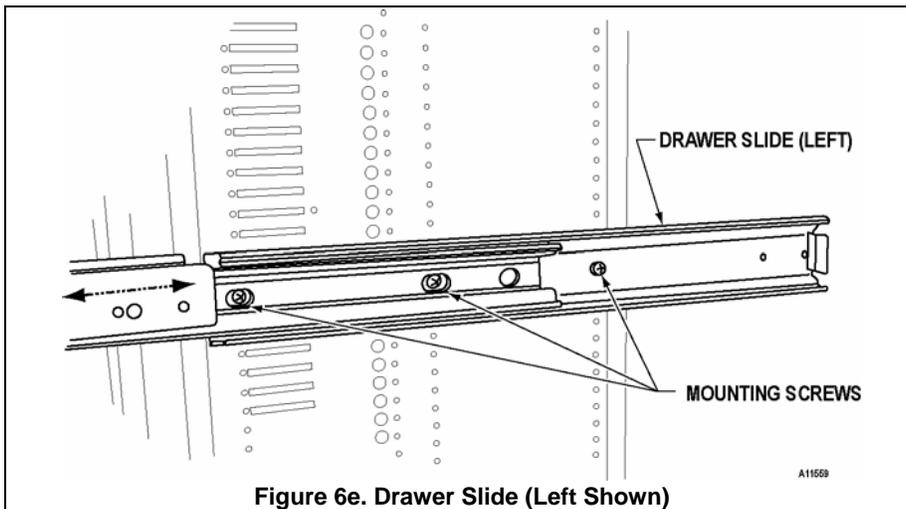
9. Replace the tray by placing its rear rollers on the left and right rails and lifting up on the front of the tray as you push it back.
10. Swing the tray rail release levers all the way down.
11. Install the tray plug into its receptacle on the right side wall.
12. Re-engage the tray harness into its harness retainer.
13. Test vend the tray in its new position to assure that the tray plug is properly seated.

CAN/BOTTLE TRAY OR DISPENSER TRAY (DRAWER SLIDES)

1. Unlatch the tray and pull it all the way out until it stops.
2. Disengage the tray harness from its harness retainer on the right side wall. See Figure 6a on page 10. Disconnect the tray plug from its receptacle on the right side wall.
3. Remove and save the four (4) nuts located near the corners of underneath the tray. See Figure 6c and Figure 6d. Lift up and forward to remove the tray.



4. Remove and save the drawer slide mounting screws of both the left and right drawer slides. See Figure 6e.



5. Relocate the drawer slides to their new position and attach them with the mounting screws (saved from step 4). **The drawer slides must be level front to back and left to right.**
6. Extend the slides all the way to the front and reinstall the tray. Install the four (4) nuts underneath the drawer slides.
7. Reattach the tray harness to its harness retainer on the right side wall. Connect the tray plug to its receptacle on the right side wall. See Figure 6a on page 10.
8. Push the tray into the cabinet and engage the tray latch.

CANDY TO SNACK

To change the tray configuration, order a conversion kit. See the Parts Ordering Procedure section of this manual.

1. Order the conversion kit from your local distributor or service entity.
2. Unplug and remove the tray assembly from the vendor. Place the tray harness in the tray before removal.
3. Remove the motor cover by pulling up on front edge of the cover to clear the stop and then pull forward on cover.
4. Remove existing tray divider and discard.
5. Remove existing auger assemblies and discard.
6. Remove the existing "even" numbered motor. This motor will not be needed.
7. Tape or secure the terminals removed from the motor out of your way.
8. Move the "odd" numbered motor to the center slot of the compartment.
9. Install the auger retainer furnished as part of the conversion kit.
10. Install auger assembly furnished as part of the conversion kit, making sure the motor coupling properly engages the motor and is securely snapped over the vertical rail or retaining rig on the tray.
11. Re-assemble the motor cover removed in step 3.
12. Replace the tray assembly into the vendor making sure that the tray is properly located and latched and connect the tray harness.
13. Set the selection to the desired vend price and adjust the price scroll to agree.

NOTE: In large item selections, the selection numbers will be the "odd" numbers. For example, selections C3 and C4 are converted to a single selection, C3.

14. Test vend the converted selection for proper operation and price settings.

SNACK TO CANDY

To change the tray configuration, order a conversion kit. See Parts Ordering Procedure section of this manual.

1. Order the conversion kit from your local distributor or service entity.
2. Unplug and remove the tray assembly from the vendor. Place the tray harness in the tray before removal.
3. Remove the motor cover by pulling up on front edge of the cover to clear the stop and then pull forward on cover.
4. Remove the existing auger assembly and discard.
5. Remove the auger retainer and discard.
6. Move motor from the center slot to the left slot in the compartment.
7. Add the new motor furnished as part of the conversion kit in the right hand slot of the compartment.
8. Properly wire the motor and switch. Refer to the "Schematic" section for wire colors and locations.
9. Add the divider furnished as part of the conversion kit.

10. Install new auger assemblies furnished as part of the conversion kit, making sure the motor couplings properly engage with the motor and are securely snapped over the vertical rail or retaining rib on the tray.
11. Re-assemble the motor cover removed in step 3.
12. Replace the tray assembly into the vendor making sure that the tray is properly located and latched and connect the tray harness.
13. Set the selections to the desired vend price and adjust the price scrolls to agree.
14. Test vend the converted selections for proper operation and price settings.

AUGER TIMING

SNACK/CANDY/FOOD TRAY

Each auger can be rotated in 20° (degree) increments for a different product vend drop-off point. Most items can be vended successfully when the auger end is positioned at 6 o'clock.

The general rule is - **the narrower the product, then the higher the timing.**

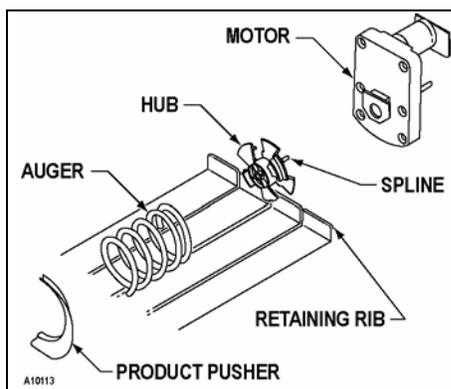
- Thick Products - 4-6 o'clock
- Most products – 6 o'clock
- Thin Products - 6-8 o'clock

TO CHANGE AUGER TIMING

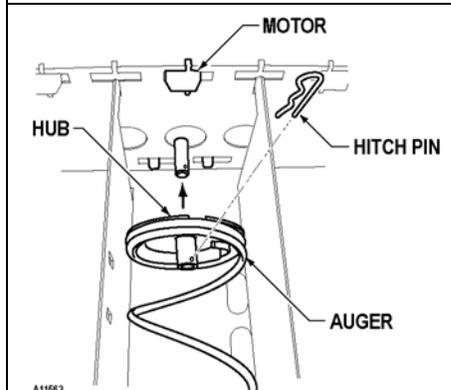
1. Remove the motor cover. See Figure 6f.
2. Raise the motor slightly and pull forward on the auger until it separates from the motor.
3. Rotate the auger to the desired position and re-insert the hub (auger coupling) into the motor. The hub (auger coupling) must be seated over the vertical rail or retaining rib on the tray.
4. Replace the motor cover making sure it is securely tightened.
5. Test vend to make sure product vends correctly.

CAN/BOTTLE TRAY OPTION

1. Remove the hitch pin. See Figure 6g.
2. Pull hub and auger away from the motor.
3. Rotate the hub and auger.
4. Re-insert the hub and auger.
5. Re-insert the hitch pin.
6. Test vend to make sure product vends correctly.



**Figure 6f. Motor & Auger
(Standard Tray)**



**Figure 6g. Motor & Auger
(Can/Bottle Tray)**

CONTROLLER FUNCTIONS

SALES MODE

This is the normal mode when the vending machine is turned on. The vendor accepts money, pays out change, and dispenses product to the customer.

While in **Sales Mode**, press **0** to display the current temperature readings of each zone and the status of the compressor and heater relays. Bottom zone (**SENSOR1**) temperature is displayed on the left side as **Bxxx*** where B=bottom, xxx=temperature°C, *=compressor relay is on. Top zone (**SENSOR2**) is displayed on the right side as **Tyyy*** where T=top, yyy=temperature°C or °F, *=heater relay is on. The temperature display reading can be set to Celsius or Fahrenheit within the **Service Mode** functions.

NOTE: Top zone temperature will not be shown if **SENSOR2** is off. **SENSOR2** is optional.

DISPLAY CREDIT

The 10-character scrolling display is also used to communicate with the customer. If credit has not been established and a selection is made, then the price for that selection displays for approximately one second. When money or credit is accepted, then the credit amount displays.

If the payout tubes in the coin mechanism are below the low-level sensors or if the money level is below the exact change setting set in the **Service Mode** then the message **USE CORRECT CHANGE** will scroll.

For Software revision 67256-3 only:

If credit can not be established by coin, bill or card; there are no motors attached or iVend is blocked / disconnected. The machine is placed out of service and the message **FUERA DE SERVICIO** is displayed. See 120 Select Programming Manual (P/N 4212619) for more information.

MAKE SELECTION

If a selection is made and the accumulated credit is greater than or equal to the price of the selection, then a vend attempt will take place. If credit is less than the selection price, the price will be displayed followed by the message **PLEASE INSERT MORE MONEY**.

iVEND™ CYCLE

Selections A thru G have been assigned at the factory to be monitored for iVend™ optical sensing. They will have an associated vend operation that differs from the normal vend operation.

For 5 milliseconds at the start of a vend, the iVend™ optical sensor will be checked to make sure it is not blocked, damaged or disconnected.

If blocked, damaged or disconnected - the normal home-switch-vend cycle will be used and the optical sensors will be ignored. Both the vend motor and a vend timeout timer are started.

- The selection motor rotates to the home-switch position.
- If there is a home-switch signal, then the vend is considered successful.
- If after 9 seconds and there is no home-switch signal, then the vend failed. The vend motor is shut down and **MAKE ALTERNATE SELECTION** is displayed. The customer can press selection buttons to activate this or another motor or press the coin return button.

NOTE: Force Vend is disabled to permit customer to retrieve deposited money.

- **FOR SOFTWARE VERSION 67256-1 ONLY:**
 - **OPTIC** is factory set to **ON**. The machine is disabled if the iVend™ optical sensors are blocked or disconnected from the control board. The point of sale message will have an illuminated decimal point on the right-most digit. If another selection is made, vending is inhibited and the display will scroll the message "SELECCIONE OTRO PRODUCTO?". If any credit is remaining, pressing the coin return button will return the money.
 - If **OPTIC** is set to **OFF**, then the machine will operate using the optical sensors and the standard iVend™ algorithm program.
- **FOR SOFTWARE VERSION 67256-3 ONLY:**
 - The message **FUERA DE SERVICIO** is displayed when vending is inhibited.
 - The **OPTIC** menu must be accessed by **SERV/CONTR** menu password. See 120 Select Programming Manual (P/N 4212619) for more information.

If not blocked, damaged or disconnected - the iVend™ Sensor System is used. The vend motor and a vend timeout timer are started.

- The selection motor rotates to the home-switch position.
 - If a product is detected during this time period, then the vend is considered successful.
 - If after reaching the home-switch position and a product is not detected, then the vend motor will pause for 1 second while the controller continues to monitor the optical sensor for product delivery.
 - If a product is detected during this pause, then the vend is considered successful.
 - If a product is not detected, then the controller initiates a second vend cycle and another vend timeout timer while continuing to monitor the optical sensor.
 - If a product is detected during this second cycle, the motor will be stopped immediately. The vend is considered successful. The **2ND VEND** accounting counter is increased by one.
 - If a product is not detected and the motor reaches the home-switch position or if the vend timeout timer runs out, then the vend has failed or the selection is sold out. Such a state will trigger the display of the **MAKE ALTERNATE SELECTION** message. The amount of credit is displayed. The customer can press selection buttons to activate this or another motor or press the coin return button.
- NOTE:** Force Vend is disabled to permit customer to retrieve deposited money.

CREDIT & COUNTERS

After a successful vend, the amount of remaining credit will be displayed until all coinage is paid back. Change will be dispensed immediately following a successful vend or will be held for approximately 25 seconds if vending machine is in Multi Vend mode. See 4212619 for further information.

Following a successful vend, the **HIST COUNT** (total vends count) will be incremented by one (1) and the **HIST CASH** (total cash count) will be incremented by the price of the vended selection. The counter rollovers occur at 79,999,920 and 99,999.95 respectively. If a product is detected during the second vend cycle, then the **2ND VEND** record counter is increased by one. The counters are viewable in the accounting menu as well as through a DEX/UCS download. Refer to the 120 Select Programming Manual (p/n 4212619) for additional information on DEX/UCS fields.

Following a successful vend, the **RES COUNT** (resettable vend count) will be incremented by one (1). The **RES SALES** (resettable total cash value) counter will be incremented by the price of the selection vended. The counter rollovers occur at 79,999,920 and \$99,999.95 respectively if never reset.

NOTE: Test vends are not included in the counter totals.

SERVICE MODE

The **Service Mode** is used to access the menus for testing, retrieving accounting information or creating custom program settings. Refer to the **Basic Programming** steps in this manual or on the laminated instructions attached below the control board.

If credit exists when entering the **Service Mode**, it will be restored when the vending machine is returned to **Sales Mode**.

Watch the **Display** after pressing the **Service Mode Button** and/or **Keypad Buttons** to navigate the menus.

SERVICE MODE BUTTON

The **Service Mode Button** is located near the top right corner of the control cover.

Press the button to access the **Service Mode** features. Press the button again to exit and return to **Sales Mode**.

If no key is pressed within 25 seconds while in **Service Mode**, then the controller automatically exits to the **Sales Mode**.

KEYPAD

While in **Service Mode**, keys **A** through **E** are used to navigate between the modes, menus and sub-menus.

- A** = Scroll UP.
- B** = ENTER a menu.
- C** = Scrolls DOWN.
- D** = SAVES a setting.
- E** = EXITS down a level from a menu, sub-menu or routine without making a change.

DISPLAY

Watch the **Display** after pressing the **Service Mode Button** and/or **Keypad Buttons** to make sure that the program is responding correctly.

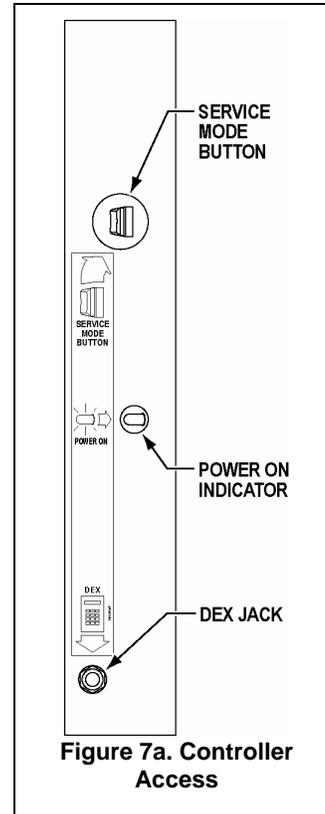


Figure 7a. Controller Access

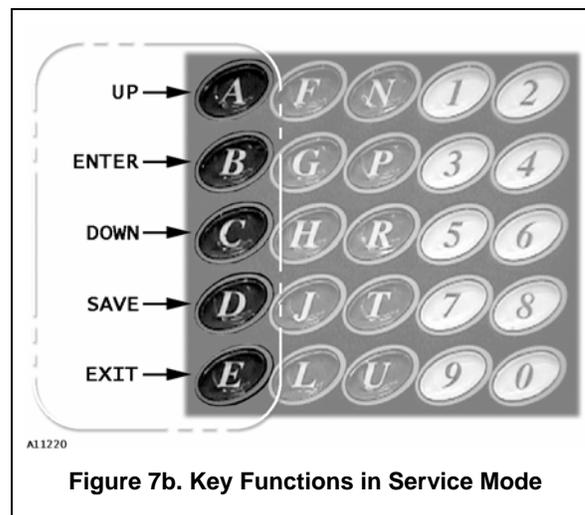


Figure 7b. Key Functions in Service Mode

BASIC PROGRAMMING

The diagram (Figure 8a) illustrates the basic programming menus available on the attached instruction sheet below the controller. Refer to **120 Select Controller Programming Manual** (p/n 4212619) for additional programming instructions.

QUICK REFERENCE PROGRAMMING INSTRUCTIONS

SET PRICE

STEP	DISPLAY
1 Press Service Mode Button [M]	DIAGNOSTIC
2 Press [A] MENU 2	
3 Press [B] SERV/CONTR	
4 Press [C] PRICE	
5 Press [D] ITEMS	
6 Press [E] SELECT --	
7 Press [A] for selection A1. SELECT A1	
8 Press [D]	ALL000.50
9 Input the desired price for selection A1.	
10 Press [D] SELECT --	
11 Repeat steps 7 through 10 for other selections.	
12 Press Service Mode Button [M] (Slide Mode)	

TEST VEND

STEP	DISPLAY
1 Press Service Mode Button [M]	DIAGNOSTIC
2 Press [A] MENU 2	
3 Press [B] TEST	
4 Press [D] TEST VEND	
5 Press [E] SELECT --	
6 Press [A] for selection A1. SELECT A1	
7 Press [D]	ALL000.50
8 The selection and price will display with the test vend. A flash beep indicates that the selection did not properly vend.	
9 Repeat steps 6 through 7 for other selections.	
10 Press Service Mode Button [M] (Slide Mode)	

DISPLAY WORKING MOTORS

STEP	DISPLAY
1 Press Service Mode Button [M]	DIAGNOSTIC
2 Press [C] MOTOR	
3 Press [D] MOTOR	
4 Press [E] MOTOR	
5 Press [D] MOTOR	
6 Press Service Mode Button [M] (Slide Mode)	

ACCOUNTING

STEP	DISPLAY
1 Press Service Mode Button [M]	DIAGNOSTIC
2 Press [C] ACCOUNT	
3 Press [D] BEST SALES	
4 Press [E] MOTOR COUNT	
5 Press [D] RES SALES	
6 Press [E]	000000.00
7 Total Sales since last reset.	
8 Press [E] RES SALES	
9 Press [C] RES COUNT	
10 Press [E]	00000000
11 Total Vends since last reset.	
12 Press [C] RES COUNT	
13 Press [D] ADR SALES	
14 Press [C] SET RANGE	
15 Press [C] RANGE CASH	
16 Press [C] RANGE VENDS	
17 Press [C] CLEAR	
18 To clear all readable values, press [E] CLEAR	
19 Press Service Mode Button [M] (Slide Mode)	

COIN PAY-OUT

STEP	DISPLAY
1 Press Service Mode Button [M]	DIAGNOSTIC
2 Press [C] MOTOR	
3 Press [C] ACCOUNT	
4 Press [C] COIN	
5 Press [E] CPO	
6 Press [E] DISPENSE	
7 Press [E] DISPENSE	
8 Press [E] DISPENSE	
9 Press [E] DISPENSE	
10 Press [E] DISPENSE	
11 Press Service Mode Button [M] (Slide Mode)	

FOR ADVANCED PROGRAMMING ONLY

MENU MAP

```

Service Mode [M]
+
DIAGNOSTIC
MOTOR
ACCOUNT
COIN
TEST
MENU 2 -> SERV/CONTR
PRICE
OPTIONS
PRIMO VEND
CONFIG
MENU 3 -> POS/AGE
LINE/DATE
SHUTDOWN
TEMPERATURE
DISCOUNT
AUTOREINST
COUNP/TDSK
CAM/BOTTLE
OPTIC
    
```

CONTROL KEYS

```

[A] = up
[B] = enter
[C] = down
[D] = save
[E] = backup
    
```

REFER TO PROGRAMMING MANUAL FOR OTHER PROGRAMMING OPTIONS

REFERENCIA RÁPIDA INSTRUCCIONES DE PROGRAMACIÓN

FIJE EL PRECIO

PASO	APARECE
1 Presione el botón de Modo de Servicio [M]	DIAGNOSTICO
2 Presione [A] MENU 2	
3 Presione [B] SERV/CONTR	
4 Presione [C] PRECIO	
5 Presione [D] ARTICULOS	
6 Presione [E] SELECC --	
7 Presione [A] para la selección A1. SELECC A1	
8 Presione [D]	A1 007.50
9 Entre el precio deseado para la selección A1.	
10 Presione [D] SELECC --	
11 Repita los pasos 7 a 10 para otras selecciones.	
12 Presione el botón de Modo de Servicio [M] (Modo de Ventas)	

PRUEBE LA VENTA

PASO	APARECE
1 Presione el botón de Modo de Servicio [M]	DIAGNOSTICO
2 Presione [A] MENU 2	
3 Presione [B] PRUEBA	
4 Presione [E] PRUEBA VEND	
5 Presione [E] SELECC --	
6 Presione [A] para la selección A1. SELECC A1	
7 Presione [D] A1 7.00	
8 La selección y el precio aparece con la prueba de venta. Una beep señal indica que la selección no vendió correctamente.	
9 Repita los pasos 6 a 7 para otras selecciones.	
10 Presione el botón de Modo de Servicio [M] (Modo de Ventas)	

MOTORES DE TRABAJO DE LA EXHIBICIÓN

PASO	APARECE
1 Presione el botón de Modo de Servicio [M]	DIAGNOSTICO
2 Presione [C] MOTOR	
3 Presione [D] MOTORES	
4 Presione [E] MOTORES RRE	
5 Presione el botón de Modo de Servicio [M] (Modo de Ventas)	

CONTABILIDAD

PASO	APARECE
1 Presione el botón de Modo de Servicio [M]	DIAGNOSTICO
2 Presione [C] MOTOR	
3 Presione [C] CONTABILIDAD	
4 Presione [D] BEST VEND	
5 Presione [C] HISTORICAL	
6 Presione [C] PRG VENTAS	
7 Presione [E] 00000.00	
8 Ventas Totales desde el reinicio pasado.	
9 Presione [E] PRG VENTAS	
10 Presione [C] PRG CUENTA	
11 Presione [E] 00000000	
12 Cuenta Total desde el reinicio pasado.	
13 Presione [E] PRG CUENTA	
14 Presione [C] VENTAS ADR	
15 Presione [C] ZONA VENTA	
16 Presione [C] PRG RANGO	
17 Presione [C] RING CERRAR	
18 Presione [C] BORRAR	
19 Presione [C] BORRADO	
20 Al cerrar todos los valores mostrados presione [E] BORRADO	
21 Presione el botón de Modo de Servicio [M] (Modo de Ventas)	

PAGO DE MONEDA

PASO	APARECE
1 Presione el botón de Modo de Servicio [M]	DIAGNOSTICO
2 Presione [C] MOTOR	
3 Presione [C] CONTABILIDAD	
4 Presione [C] MONEDA	
5 Presione [E] CPO	
6 Presione [E] DISPACHO	
7 Presione [C] DISPACHO	
8 Presione [E] DISPACHO	
9 Presione [C] DISPACHO	
10 Presione [E] DISPACHO	
11 Presione el botón de Modo de Servicio [M] (Modo de Ventas)	

PARA LA PROGRAMACIÓN AVANZADA SOLAMENTE

MAPA DE MENÚ

```

Modo de Ventas [M]
+
DIAGNOSTICO
MOTOR
CONTABILIDAD
MONEDA
PRUEBA
MENU 2 -> SERV/CONTR
PRECIO
OPCIONES
VENTA/PRG
CONFIG
MENU 3 -> POS/AGE
NOVAFECHA
ARRGADO
TEMPERATURA
DESCUENTO
AUTOREINST
CUNP/FECHA
LAMP/OT
OPTIC
    
```

PARA OTRAS OPCIONES DE PROGRAMACIÓN REFIERA AL MANUAL DE REPARACIONES

Figure 8a. Basic Programming

TEMPERATURE CONTROL

To prevent damage to the refrigeration unit when it is turned off or the power is interrupted, the refrigeration unit will not restart for at least three minutes regardless of the temperature.

SENSORS

Temperature sensor(s) are positioned to best represent the product temperature. The sensor(s) are monitored by the controller program. The refrigeration and optional heater systems are activated depending on the target temperature setting or **SET POINT**. The total allowable temperature variation from the **SET POINT** is **DELTA**.

SENSOR1

Single Zone versions have **SENSOR1** located near the top of the back panel. Dual Zone versions have **SENSOR1** located near the bottom of the back panel.

SENSOR2

Dual Zone versions may have an optional **SENSOR2** mounted near the top of the back panel. Refer to Sales Mode section on page 14 to view the current temperatures readings. **SENSOR2** must be turned on to view the top zone temperature while in Sales Mode. Refer to the 120 Select Programming Manual (p/n 4212619) for additional information.

NOTE: The maximum temperature difference (**SENSOR2 SET POINT** minus **SENSOR1 SET POINT**) that can be set between the zones is 13°C (23°F). This means that if you are changing **SENSOR2 SET POINT**, the program will automatically adjust **SENSOR1 SET POINT** if the difference between set points is greater than 13°C (23°F).

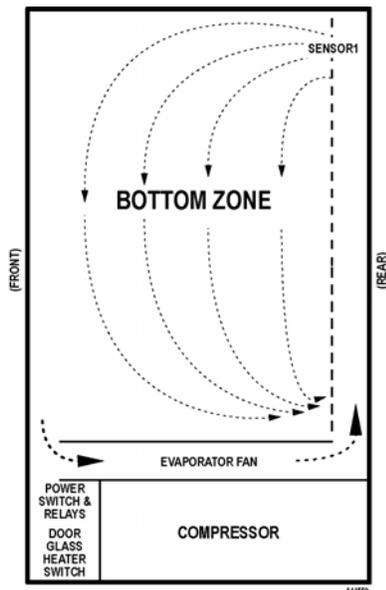


Figure 9a. Single Zone Airflow

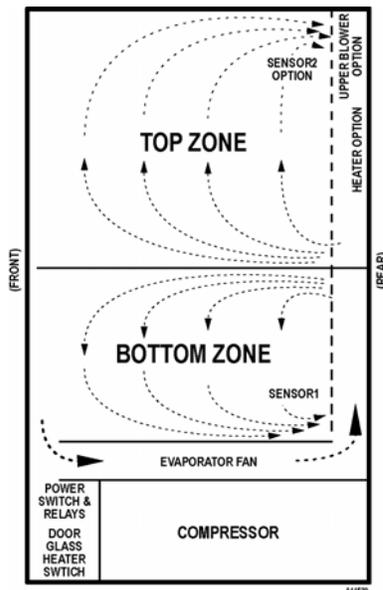


Figure 9b. Dual Zone Airflow

RELAYS

The program controls three relays which then control the refrigeration and heating systems:

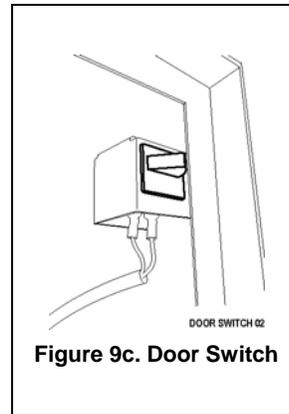
- **RELAY1** - controls the compressor and the condenser fan (refrigeration system).
- **RELAY2** - controls the evaporator fan (refrigeration system).
- **RELAY3 OPTION** - controls the optional upper blower and heater system.

NOTE: For more information regarding the Power Panel, please refer to Accessing the Power Panel on page 27.

DOOR SWITCH

The door switch is located in the upper right hand corner of the vending machine cabinet. See Figure 9c.

- **If the vending machine is plugged in and the power switch is on and the door is open**, then the compressor, evaporator fan, heater and heater fan are all turned off. A 30 minute door timer starts and a compressor delay timer starts.
- **If the door is open for more than 30 minutes**, then the controller will resume closed door operation, the message **DOOR OPEN** is displayed and error code **(VMC 7)** is set. The **DIAGNOSE** menu will also display the current state of the door switch after all other messages (if any) are displayed. **DOOR** is displayed if the door switch is in the "door open position" and no message is displayed if the door switch is in the "closed door position".



If a defrost cycle is in progress (compressor off and defrost **DURATION** timer on) and the door is opened, then the **DURATION** timer continues while the door is open.

The **PERIOD** timer is reset if the compressor was on and the door was opened for more than 95% of the defrost **DURATION** timer setting. If the door was opened briefly (less than 95% of the defrost **DURATION** timer setting), then the **PERIOD** timer continues even though the compressor is off.

- **If the door is closed**, then evaporator fan is turned on. When the compressor delay timer (defrost **DELAY**) expires, then the controller evaluates the priority, zone sensor readings, relay states and timers.

FACTORY DEFAULT SETTINGS

PROGRAM MODE		PROGRAM VERSION		
		67232-7 SPANISH	67234-3 ENGLISH	67256-3 SPANISH
TEMPERATURE	DEGREE	°C (Celsius)	°F (Fahrenheit)	°C (Celsius)
	SENSOR1	ON	ON	ON
	SENSOR2	OFF	ON	OFF
PRIORITY		SENSOR1	SENSOR1	SENSOR1
PRICE • ITEM(S)		All selections set to 50	All selections set to 1.00	All selections set to 50
SENSOR1	SET POINT	4°C	36°F	4°C
	DELTA	4°C	7°F	4°C
	DURATION	10 MIN	10 MIN	10 MIN
	DEFROST PERIOD (timer)	2.5 HRS	2.5 HRS	2.5 HRS
	DEFROST DELAY (timer)	3 MIN	3 MIN	3 MIN
	H/S LEVEL (health/safety)	NONE	NONE	NONE
	RANGE (health/safety)	SR/ER D-F	SR/ER D-F	SR/ER D-F
SENSOR2 OPTION	SET POINT	17°C	63°F	17°C
	DELTA	3°C	5°F	3°C

NOTE: Please read and follow the step-by-step instructions in the 120 Select Programming Manual (p/n 4212619) to change the factory default settings.

BOTTOM (COOL) ZONE

For a Single Zone vending machine, the entire tray compartment is the Bottom (Cool) Zone. For a Dual Zone vending machine, the product trays contained below the insulating barrier is the Bottom (Cool) Zone.

The evaporator is located between the lowest tray and the compressor. The evaporator fan distributes cold air to products in the bottom zone. See Figure 9a and Figure 9b on page 18. The refrigeration compressor is fully insulated and is located below the bottom (cool) zone.

CUT-IN

The refrigeration system is turned on when the temperature reading of **SENSOR1** is greater than or equal to **SET POINT** plus half of **DELTA**.

CUT-OUT

The refrigeration system is turned off when the temperature reading of **SENSOR1** is less than or equal to **SET POINT** minus half of **DELTA**.

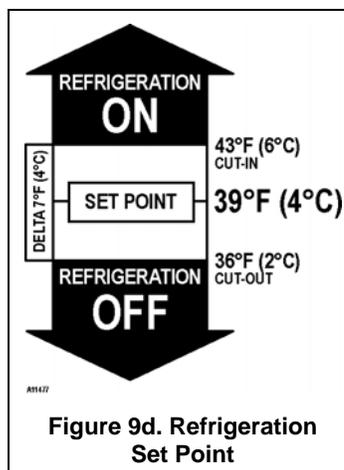


Figure 9d. Refrigeration Set Point

HEALTH SAFETY

The **HEALTH SAFETY** feature prevents the sale of perishable food if the air temperature inside the bottom zone (**SENSOR1**) rises above the health safety temperature limits for cold food products (41°F / 5°C) for more than 15 minutes. The **SZF/DZF Vendor** can vend cold food products that require storage temperatures in the range of 32°F to 41°F.

NOTE: The time requirements for the **COLD** setting do not apply for 30 minutes immediately following vending machine filling or servicing.

IMPORTANT NOTE! The operator is responsible for setting the health safety at the correct (**COLD**) level and selection range for the product being vended.

Refer to the 120 Select Programming Manual (p/n 4212619) for additional instructions on how to set the **Sensor1 Health Safety Level** and **Sensor1 Health Safety Range**.

HEALTH SAFETY TEST

1. Disable Door Switch

Open the vendor door and place removable tape over the door switch (to simulate closed door) at least 30 minutes before performing the test (step 3). The door switch is located on the top right front corner of the vending machine cabinet. See Figure 9c on page 19.

2. Locate **SENSOR1**

Single Zone – mounted on the back of the cabinet, left side behind the top tray.

Dual Zone – mounted on the back of the cabinet, left side near the bottom tray.

3. Simulate Warm Temperature

Remove **SENSOR1** and save mounting screws. Place **SENSOR1** so that it is outside of the vendor cabinet. The temperature outside the cabinet must be above 41°F (5°C). The sensor can also be placed inside a cup of warm water.

4. Perform Test

Press **0** on the keypad to check the temperature of **SENSOR1**. **SENSOR1** is displayed on the right side of the display. Wait for **SENSOR1** to get above health safety cut-out temperature for cold food of 41°F (5°C). Wait 15 minutes and then vend a product from the cold/frozen food vendor. If health safety feature (H/S) is functioning properly it will lock out vending in preset range and instruct customer to make alternate selection. If this test was started following a defrost or entering **Service Mode** it will take 75 minutes to go out on health safety (H/S).

5. After Test is Completed

Reinstall the sensor to its original place using the mounting screws saved from step 3. Remove the tape over the door switch.

TOP (WARM) ZONE

If the vending machine is a Dual Zone, then the trays above the barrier are in the Top (Warm) Zone. If the optional heater system is installed, then an optional temperature **SENSOR2** is also installed.

The optional heater is inside the air duct located on the back of the cabinet. An optional blower fan is located on the top corner above the heater. The blower is turned on if the temperature is outside of the setting (**SET POINT** plus or minus half of **DELTA**).

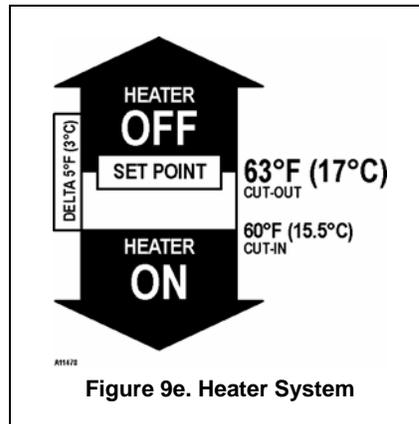
CUT-IN

The heater turns on when **SENSOR2** temperature is less than or equal to **SET POINT** minus half of **DELTA**.

CUT-OUT

The heater turns off if **SENSOR2** reading equals the **SET POINT** or if the compressor is on.

NOTE: The compressor (refrigeration system) and the heater will not run at the same time.



PRIORITY

SENSOR1

The program's factory default **PRIORITY** setting is **SENSOR1** (bottom zone). This means that the temperature requirements of the bottom zone must be satisfied first before it can activate and satisfy the temperature requirements of the top zone. If it is not cold enough in the bottom zone (regardless of the temperature in the top zone), then the optional heater is shut off and the compressor is turned on. If the bottom zone temperature is cold enough, then the compressor is shut off and only then can the optional heater and blower turn on to warm the top zone.

SENSOR2

If the priority setting is changed to **SENSOR2** (top zone), then the temperature of the top zone takes precedence over the bottom zone. If it is not warm enough in the top zone (regardless of the temperature in the lower zone), then the compressor is shut off and the optional heater and blower are turned on. If the top zone is warm enough, then the optional heater and blower are shut off and only then can the compressor be turned on to cool the bottom zone.

NOTE: Please refer to the 120 Select Programming Manual (p/n 4212619) for detailed description of the **PRIORITY** setting and how it affects the operation of the refrigeration and heating systems, and its associated setpoints and timing sequences. The program's priority setting can be changed from **SENSOR1** (bottom zone) to **SENSOR2** (top zone) by activating the **Service Mode** feature of the control board. Read and follow instructions in the 120 Select Programming Manual.

REFRIGERATION

To prevent damage to the refrigeration unit when it is turned off or the power is interrupted, the refrigeration unit will not restart for at least three minutes regardless of the temperature.

REFRIGERATION TROUBLESHOOTING

CAUTION:

Breaking the refrigerant joints or seals on the system voids the unit warranty. Failure to keep the condenser coil clean and free of dirt and dust and other similar debris voids the unit warranty.

Know and understand how the unit operates. Units may vary, but the operation is basically the same. Never guess at the problem; find the symptom before attempting any repair.

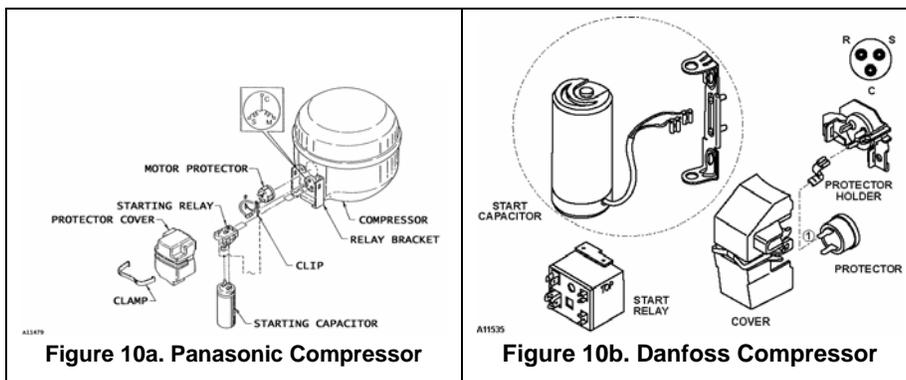
NOTE: Most refrigeration problems are electrical.

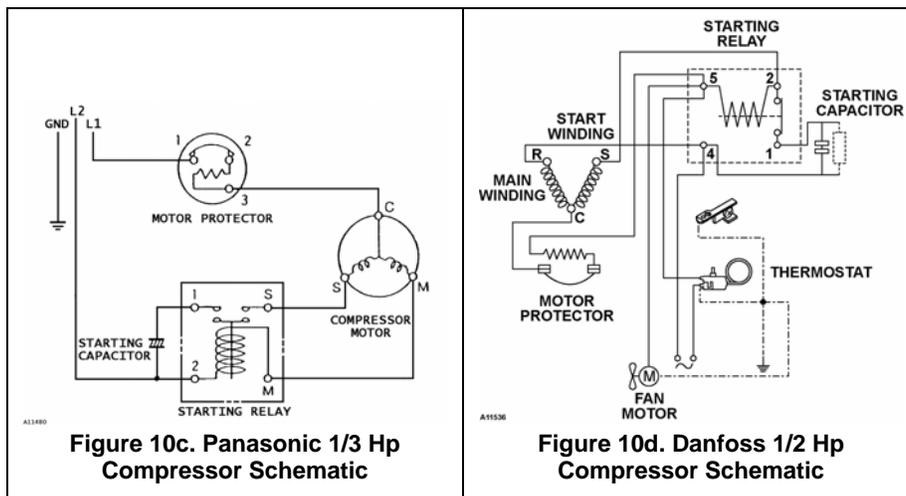
WARNING:

Wiring diagrams must be followed as shown. Wrong wiring may cause serious electrical hazard and potential damage or rupture component electrical parts.

Table 2. Approximate Winding Resistance

Across Terminals	Panasonic Super 1/3 Hp	Danfoss 1/2 Hp
COMMON to START:	7.53 Ohms	2.9 Ohms
COMMON to RUN:	1.06 Ohms	0.7 Ohms
COMMON to SHELL:	No continuity	No continuity





The sealed hermetic system should not be worked on outside the Factory Service Center. There are three things that can go wrong with a sealed system and should be repaired only at the Factory Service Center. These are:

1. **Low Charge** - usually caused by leaks; look for oil around seals and welds. Unit will not cool properly. The capillary tube is frosted before it enters the evaporator inlet tube.
2. **Restriction in Systems** (unit frosts, then melts) - not cooling properly.
3. **Bad valves** - unit does not cool properly-- noisy compressor.

COMPRESSOR WILL NOT START

Compressor has no power:

- Vending machine not plugged in.
- Tripped circuit breaker or blown fuse.
- Faulty wall outlet or improper wiring.
- Faulty (short or open) power cord.
- Temperature sensor circuit is open. If temperature reading of **SENSOR1** is "111°F", then check sensor harness connection or defective sensor.
- Low voltage. Check the power source with a volt meter. Minimum 103V for 115VAC, 60Hz. Minimum 195V for 230VAC, 50 Hz.
- Check motor protector (overload). See page 27, Troubleshooting Circuits with Multi-Meter.
- No DC voltage. Check control board terminals P7-9, P7-13 for a loose connection.
- Check compressor starting relay. See page 27, Troubleshooting Circuits with Multi-Meter.
- Check compressor winding. See page 27, Troubleshooting Circuits with Multi-Meter.
- Defective refrigeration relay. Switch the controller to **Service Mode** then verify that the relay turns on by using the **TEST RELAY** menu.
- Unplug power to the vending machine. Open the power panel. Use insulated jumper wires to short the wire terminals on **RELAY1**; between 2 and 4 and between 6 and 8. Restore power to the vending machine. The compressor should start, indicating a problem in the control circuit.
- Check relay terminals 1 to 0 with a Multi-Meter. Should have 24VDC applied to them.
- No DC voltage. Check control board terminals P7-9, P7-13 for a loose connection.
- Check the door switch operation. See Door Switch section on page19.

COMPRESSOR TRIPS ON OVERLOAD

1. Improper voltage: Check power source with volt meter. Acceptable range is 103-127VAC for 115V (60Hz), or 195-255VAC 230V (50Hz).
2. Defective starting relay. Won't open after starting. Check compressor starting relay. See page 27, Troubleshooting Circuits with Multi-Meter.
3. Compressor has shorted windings. Check compressor winding resistance values. See page 27, Troubleshooting Circuits with Multi-Meter.
4. Short in other component: Isolate and eliminate each electrical component until short is found.
5. Compressor is too hot.
 - ◆ Dirty condenser.
 - ◆ Faulty condenser motor or blade.
 - ◆ Restricted airflow. Check for clogged air filter. Check for clogged inlet and outlet screens.
6. Defective or worn out overload: Trips too fast or too often.

CAUTION:

Replace air filter every 3 months to maintain proper air circulation to the condenser and to prevent dirt and debris from clogging up the condenser.

NOISY OR VIBRATING UNIT

1. Components rubbing or touching each other.
 - ◆ Check fan blades and motor.
 - ◆ Loose shrouds and harness.
 - ◆ Copper tubing.
 - ◆ Loose or unsecured parts.
 - ◆ Dirty condenser fan blades.
2. Worn or aged compressor grommets.
3. Compressor.
 - ◆ Bad valves.
 - ◆ Slugging.
 - ◆ Bad windings (Refer to Table 2 and schematic on page 23.).
 - ◆ Voltage too low.

UNIT SHORT CYCLES

- Defective condenser fan.
- Dirty or blocked condenser coils.
- Dirty or blocked air filter.
- Dirty or blocked inlet or outlet screens.
- Defective overload (motor protector).
- Temperature sensor is defective or not mounted in the correct spot.
- Temperature setting set too warm. See Temperature Control section and Factory Default Settings section of this manual.
- Defective control board.

UNIT OPERATES LONG OR CONTINUOUSLY

1. Airflow restricted.
 - ◆ Clogged or blocked inlet screen, air filter, or outlet screen.
 - ◆ Exhaust area blocked. Vending machine too close to wall.
 - ◆ Airflow blocked by product in front of evaporator or air duct openings.
 - ◆ Faulty evaporator motor or blades causing coils to ice.
 - ◆ Loose connections on evaporator motor. Motor not running.
2. Refrigeration relay shorted. Switch the controller to **Service Mode**, and then verify that relay turns off by using the **TEST RELAY** menu.
3. Gasket leak around door.
4. Excessive load: After loading, unit runs longer to pull out excessive heat from product.
5. Shortage of refrigerant or restriction.
6. Faulty controller.
7. Ambient air temperature and relative humidity exceed manufacturer's operational standards.
8. Defective temperature sensor or sensor has been moved or remounted to wrong spot.

REFRIGERATED SPACE TOO COLD

1. Refrigeration control setting too cold. See **TEMPERATURE CONTROL** section on page 18 of this manual.
2. Check temperature sensor. If temperature reading of **SENSOR1** is "111°F", then check sensor harness. . See page 27, Troubleshooting Circuits with Multi-Meter. Check the program **DIAGNOSTICS** and look for error codes.
3. Refrigeration relay bad. Switch the controller to **Service Mode**, and then verify that relay turns on by using the **TEST RELAY** menu. Check relay terminals for continuity with an ohmmeter.
4. Faulty controller.

REFRIGERATED SPACE TOO WARM

1. Refrigeration control setting too warm. See **TEMPERATURE CONTROL** section on page 18 of this manual.
2. Check temperature sensor. If the temperature reading of **SENSOR1** is "111°F", then check sensor harness. See page 27, Troubleshooting Circuits with Multi-Meter.
3. Refrigeration relay bad. Switch the controller to **Service Mode** and verify that the **RELAY1** turns on by using the **TEST RELAY** menu.
4. Faulty control board.
5. Restricted evaporator space.
 - ◆ Evaporator motor or blades faulty, causing the coils to ice over the evaporator.
 - ◆ Condenser airflow restricted.
 - ◆ Plugged or dirty condenser.
 - ◆ Condenser motor or blades bad.
 - ◆ Blade stuck.
 - ◆ Condensing space restricted.
 - ◆ Unit placed too close to a wall.
 - ◆ Compressor - bad valves.
 - ◆ Low charge or restriction in tube if capillary tube starts frosting 8 to 20-25 cm (10 inches) past evaporator connection tube.
 - ◆ Check for oil leaks around brazed connections.

TROUBLESHOOTING CIRCUITS WITH MULTI-METER

CAUTION

Power must be disconnected and fan circuit open.

1. To check the power source, use the voltage section of the Multi-Meter. Acceptable range is 103-127VAC for 115V (60Hz), or 195-255VAC 230V (50Hz).
2. **Check compressor starting relay.**

Panasonic 1/3 HP - Unscrew lead terminals and remove relay from compressor. See Figure 10a and Figure 10c, pages 23 and 24.

 - Keep relay upright. Use ohmmeter to check for continuity between switch terminals 1 and S. Replace relay if continuity exists.
 - Use ohmmeter to check for continuity across coil terminals 2 and M. If open then replace the starting relay.

Danfoss 1/2 HP - Remove relay from compressor. See Figure 10b and Figure 10d on pages 23 and 24.

 - Use ohmmeter to check for continuity between switch terminals 1 and 2. Replace if continuity exists.
 - Use ohmmeter to check for continuity between coil terminals 5 and 2.
3. **Check temperature sensor harness** to control board for continuity using ohmmeter of Multi-Meter. Replace if there is no continuity.
4. **Check compressor windings** using ohmmeter. Refer to Table 2, Figure 10a, Figure 10b, Figure 10c and Figure 10d on page 24.
5. **Check motor protector (overload).** Use the ohmmeter section of the Multi-Meter.

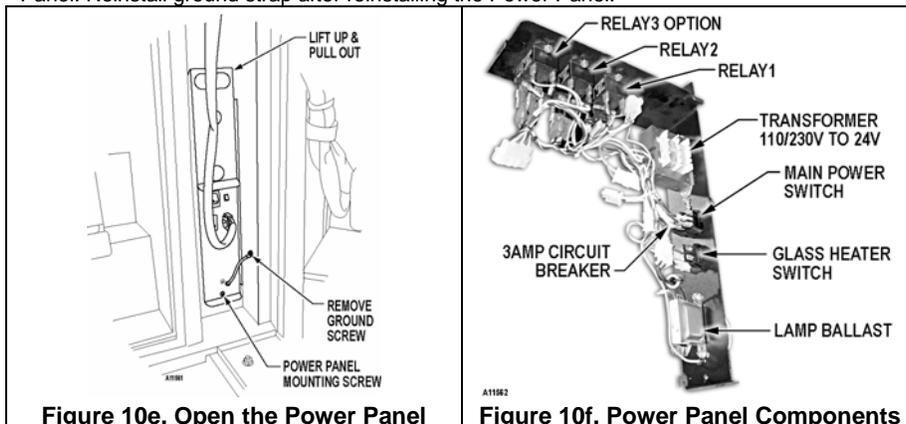
Panasonic 1/3 HP - Check between terminals 1 and 3 for continuity. If no continuity is measured (infinity), overload may be tripped. Wait 10 minutes and try again. If still no continuity, overload is defective.

Danfoss 1/2 HP - Remove the overload. Check between the overload terminals for continuity. If no continuity is measured (infinity), overload may be tripped. Wait 10 minutes and try again. If still no continuity, overload is defective.

ACCESSING THE POWER PANEL

CAUTION: ALWAYS DISCONNECT POWER SOURCE BEFORE SERVICING.

Remove mounting screw. Remove the ground strap screw. Lift up and pull out the Power Panel. Reinstall ground strap after reinstalling the Power Panel.



REMOVING THE REFRIGERATION SYSTEM

CAUTION: Always disconnect power source BEFORE servicing.

1. Turn off Main Power Switch and unplug vending machine's power cord from wall outlet.
2. Remove the bottom two (2) trays but do not remove the tray rails. See **TRAY ADJUSTMENTS** on page 9.
3. Locate the cabinet control harness on the top right of the refrigeration unit. It has three (3) plugs. Unplug the connector to refrigeration unit and the evaporator fan. The 3rd plug is for the optional heater. See Figure 10g. Remove harness from any retaining clips mounted on the refrigeration unit.

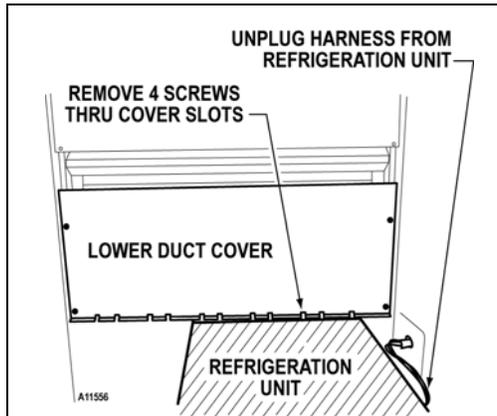


Figure 10g. Remove Rear Deflector Screws & Unplug Harness

4. Through the bottom slots of the Lower Duct Cover, remove the four (4) screws that attach the refrigeration unit (rear air deflector) to the rear of the cabinet. See Figure 10g.
5. Remove the two (2) screws on the front spacer bracket. Pull on the top edge of the front spacer bracket and swing it down to remove it.
6. Remove the front retaining bracket by removing the four (4) screws. See Figure 10h.
7. **DZF3000 (3 Wide)** – Remove each of the mounting screws securing the metal wedges from the left side of the refrigeration unit. Pry and remove both metal wedges.
DZF5000 (5 Wide) Only - Remove the front screw of the left side retaining bracket. Loosen the back screw. Remove the bracket by sliding it through the keyhole.

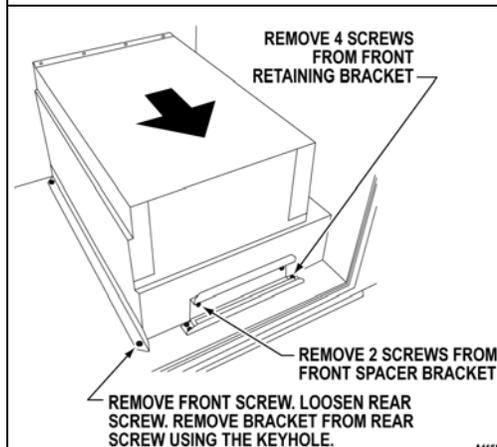


Figure 10h. Remove Front Brackets and Side Brackets

8. Pull the refrigeration unit halfway out of the cabinet. Unplug the condenser fan harness from the back of the refrigeration unit. Pull the refrigeration unit out.

NOTE: All gaskets must seal tightly to the back and right side of the cabinet when installing the refrigeration unit back into the cabinet.

PREVENTIVE MAINTENANCE

CAUTION: Always disconnect power source BEFORE cleaning or servicing.

ONCE A MONTH

CLEAN CABINET INTERIOR

Wash with a mild detergent and water, rinse and dry thoroughly. Odors may be eliminated by including baking soda or ammonia in the cleaning solution. Plastic parts may be cleaned with a quality plastic cleaner.

The vend mechanisms must be kept clean. Any build-up can cause the mechanisms to malfunction.

Do not get the cleaning solution on electrical components.

To insure proper vending keep delivery box area free of dirt and sticky substances.

CLEAN CABINET EXTERIOR

Wash with a mild detergent and water, rinse and dry thoroughly. Clean occasionally with a quality car wax. Plastic exterior parts may be cleaned with a quality plastic cleaner.

EVERY 3 MONTHS

REPLACE AIR FILTER

The refrigeration air filter is to prevent dust from building up on the condenser coils and allows the refrigeration system to operate efficiently.

- Pull the filter holder and check the air filter.
- If filter is dirty, replace it with the same size and type filter.
- Airflow arrow on filter must point to the left (towards the inside of vending machine).
- **On those machines with air filter handle hook filter holder around filter edge and reinstall clip on opposite end.**

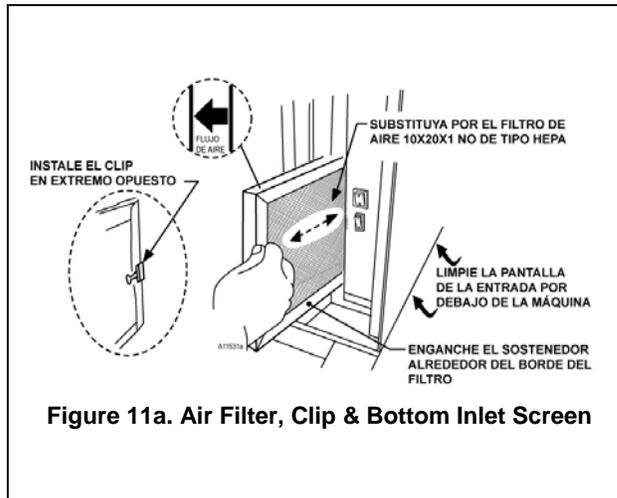


Figure 11a. Air Filter, Clip & Bottom Inlet Screen

WARNING: Do not replace with a HEPA type filter. This type may not allow the correct amount of air to flow through.

CLEAN BOTTOM INLET SCREEN

The inlet screen is a long narrow screen located on the bottom right side. It can only be accessed from underneath the cabinet. See Figure 11a on page 29. Remove dust and debris from the inlet screen to allow air to flow to the condenser coils.

EVERY 6-MONTHS

CLEAN DOOR AND DELIVERY DOOR SEALS

Clean the door seals. Inspect them for any deformities or cracking.

CLEAN EVAPORATOR COIL

Open the door. Clean the evaporator coil of refrigeration unit using a soft bristle brush and/or vacuum cleaner.

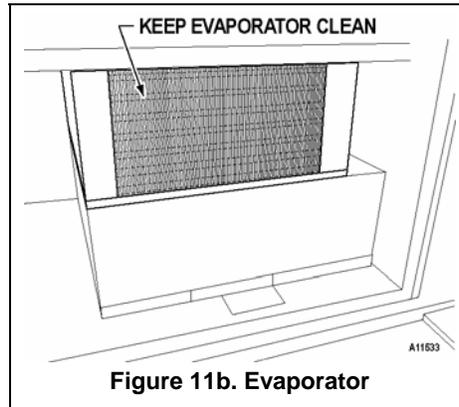


Figure 11b. Evaporator

CLEAN REAR SCREEN

Remove the **Back Screen Cover** from cabinet back. Clean dust and debris from screen using a soft bristle brush or a vacuum cleaner.

NOTE: Remove screws from Back Screen Cover at the back of the machine, 3 from top and 2 from bottom. To remove the Back Screen Cover lift up and pull in the direction shown in **Fig. 11c.**

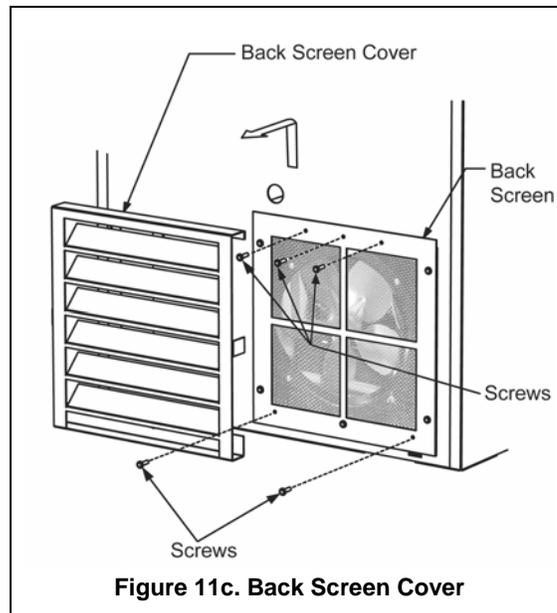
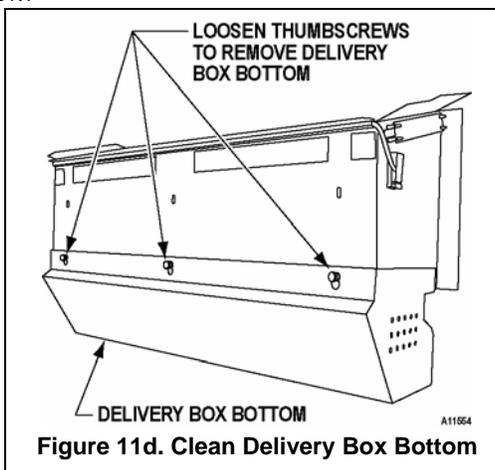


Figure 11c. Back Screen Cover

CLEAN DELIVERY BOX BOTTOM

Inspect the Delivery Box. Wipe clean any dirt and debris that may have accumulated.

The bottom half of the Delivery Box can be removed for thorough cleaning. To remove the Delivery Box Bottom, loosen the three (3) thumbnuts located on the rear of the Delivery Box. Lift up then pull it out.



PARTS ORDERING PROCEDURE

When ordering parts, include the following:

1. The model and serial numbers of the vending machine for which the parts are needed.
2. Shipping address.
3. Address where the invoice should be sent.
4. The number of parts required.
5. Always refer to the pertinent parts and/or part manual for the correct part number and description of a specific part.

NOTE:

When RIGHT or LEFT is used with the name of a part, it means the person is facing the vending machine with the door closed.

6. Any special shipping instructions.
7. Carrier desired: air or air special, truck, parcel post or rail.
8. Signature and date.
9. Purchase order number, if used.

Mail your order to:

VendNet™
165 North 10th Street
Waukee, IA 50263 USA

All orders are carefully packed and inspected prior to shipment. Damage incurred during shipment should be reported at once and a claim filed with the terminating carrier.

If you do not have the right parts manual: contact VendNet™.

If you have any questions, check out our Website www.vendnetusa.com or call VendNet™. Ask for the Parts Department. We will be happy to assist you. Email: vendnet@vendnetusa.com

BEFORE CALLING FOR SERVICE

Please check the following:

- Does your vending machine have at least 6-inches of clear air space behind it?
- If the power is turned on at the fuse box, is the vending machine the only thing that doesn't work?
- Is the vending machine plugged directly into the outlet?

WARNING:

**Extension cords can cause problems.
DO NOT USE EXTENSION CORDS.**

- Is the evaporator coil free of dust and dirt?
- Is the condenser coil free of dust and dirt?
- Is the compressor free of dust? A blanket of dust can prevent the compressor from cooling in between workout cycles.
- Is the circuit breaker at the fuse box reset?
- Is the evaporator fan working? To check if the fan is running take a small piece of paper in front of the evaporator coil and see if the evaporator fan will draw the paper. See Figure 11b on page 30.
- Is the condenser fan running? Fold a sheet of 8 1/2" x 11" paper in half. Place the paper in front of the condenser coil inlet screen located on the bottom right side underneath the cabinet and see if it draws the paper to it. See Figure 11a on page 29.
- Is the shelf in front of the evaporator coil clear? (No tools, product, or other air-restricting items).
- Is the temperature setting set as specified? See TEMPERATURE CONTROL on page 18 or refer to 120 Select Programming Manual (p/n 4212619).

NOTE:

Setting the temperature colder does not accelerate cooling of product but may cause the product to freeze.

NOTES

The contents of this publication are presented for informational purposes only, and while every effort has been made to ensure their accuracy, they are not to be construed as warranties or guarantees, express or implied, regarding the products or services described herein or their use or applicability. We reserve the right to modify or improve the designs or specifications of such products at any time without notice.



VendNet™
165 North 10th Street
Waukee, Iowa 50263
United States of America



	USA & Canada	International
Service	(800) 833-4411	(515) 274-3641
Parts	(888) 259-9965	
Email	vendnet@vendnetusa.com	
Web Site	www.vendnetusa.com	