LTC OPERATION AND SERVICE MANUAL

Low Temp Combo Merchandiser



AMS PC5 35” Combo machine
AMS PF5 35” Food Machine
AMS PC9 39” Combo machine
AMS PF9 39” Food Machine

L0264 Rev. B

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LIMITED WARRANTY

Automated Merchandising Systems Inc. (AMS) warrants this equipment to the Original Purchaser only, for a period of one (1) year from the date of shipment, to be free under normal use and service from defects in material or workmanship, and for three (3) years on the refrigeration unit, electronic VMC, and the two sensor boards. The refrigeration unit consist of the compressor, fan motors, relay, and the sealed components of the system. Light bulbs, glass, and painted surfaces are not covered by this warranty.

Should any part prove defective within the warranty period, AMS will repair or replace (at its option) the defective component. AMS will provide normal ground shipment for parts replaced under warranty. This warranty does not cover the labor or other costs associated with removal and reinstallation of a defective component. All defective components, at the option of AMS, are to be returned, properly packaged, freight prepaid, to AMS or to the authorized dealer or distributor from whom the equipment was purchased for verification of the defect. Prior to returning any parts for replacement, the customer is to contact the AMS Service Department at (304) 725-6921 for return authorization. AMS reserves the right to refuse any collect shipment.

This warranty applies only if the equipment has been serviced and maintained in strict accordance with the instructions presented in the AMS service manual and no unauthorized repair, alteration, or disassembly has been done. Any defects caused by improper power source, abuse of the product, accident, alteration, vandalism, improper service techniques, or damage incurred during return shipment due to improper packaging will not be covered by this warranty. Likewise, any equipment that has had the serial number removed, defaced or otherwise altered will not be coved by this warranty.

AMS reserves the right to make changes or improvements in its products without notice and without obligation, and without being required to make corresponding changes or improvements in equipment already manufactured or sold.

AMS SHALL NOT BE BOUND BY ANY REPRESENTATION OR WARRANTY MADE BY ANY PERSON, INCLUDING BY EMPLOYEES OF AMS, EXCEPT AS SET FORTH IN THIS LIMITED WARRANTY. **AMS DISCLAIMS ANY AND ALL OTHER EXPRESS OR IMPLIED WARRANTIES OF ANY NATURE, INCLUDING WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY, FITNESS OF A PARTICULAR PURPOSE OR OTHER IMPLIED WARRANTIES**.

— CAUTIONS —



DANGER! Risk of fire or explosion. Flammable refrigerant used. To be repaired by trained service personnel. Do not puncture refrigerant tubing.

DANGER– Risque de feu ou d'explosion. Le frigorigene est inflammable. Confir les reparatioins a un technician specialize. Ne pas performer la tubulure contenant le frigorigene.



ATTENTION! Risk of fire or explosion. Flammable refrigerant used. Consult service manual before attempting to install or service this vending machine. All safety precautions must be followed.

ATTENTION!– Risque de feu ou d'explosion. Refrigerant inflammable utilize. Consultez le manuel d'entretien et de reparation avant d'essayer d'installer ou de reparer ce produit. Toutes les precautinos de securitie doivent etre suivies.



CAUTION! Risk of fire or explosion. Dispose of properly in accordance with federal or local regulations. Flammable refrigerant used.

ATTENTION!– Risque de feu ou d'explosion. Eliminer conformement aux reglements federaux ou locaux. Le frigorigene est inflammable.



CAUTION! It is important that the power supplied to the vendor is the proper voltage. Different countries have different power arrangements. Ensure the machine is properly grounded before operating. If the power cord is damaged, it must be replaced by a qualified person to avoid electrical hazards.

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Publication Notice

It is our intent to assist our customers with up-to-date documentation: however, this manual may not contain all updates and is subject to revision without notice. Please contact our Service Department with your requests or comments.

info@amsvendors.com servicio@amsint.com.mx

1
INTRODUCTION

Congratulations on the purchase of your new AMS merchandiser. All AMS PXx models are versatile, high-capacity vending machines. AMS machines are designed, tested, and built to provide years of reliable, low-maintenance service in an indoor environment. A fully insulated cabinet, DEX data capability, ADA compliance, and flexible product configuration are just some of the many features built into every AMS merchandiser covered in this manual.

INSIGHT SYSTEM

Your merchandiser is equipped with the Insight control system. The Insight system is a vend-sensing system that detects when products fall into the delivery bin. Basically, a plane of infra-red light is created across the top of the delivery bin, and the Insight system can detect when the light has been blocked by a falling product. Using this technology, the merchandiser "knows" when your customer gets the product. The Insight system has several important benefits:

Guaranteed Delivery
If, during the vend, the product hangs up or an opening was missed in loading, the helix can rotate several additional partial revolutions to attempt to deliver the product. No more hitting or shaking the merchandiser to get products that did not fall!

Instant Refund
If the customer does not receive a product, he can receive a full refund by pressing the coin return, or he can select another product. No more refund requests!

Additional Benefits:

a. Opening the delivery bin door will not affect the Insight system. The sensors are located above the delivery bin and will not be blocked by the bin door. Product that falls while the door is open will still pass through the beam.
b. Shining a light at a sensor will not allow vandals to receive free product. Any tampering which changes the precise amount of light normally received will be treated as a successful vend, resulting in the vandal losing his money.
c. Disabling or blocking the sensor will not allow vandals to receive free product. The Insight system can over-ride blocked or malfunctioning sensors and still vend.

Firmware Updates
The firmware can be upgraded by using a USB thumb drive, available at most electronics retailers.

HEALTH AND SAFETY (H&S)

H&S Specifications
AMS merchandisers intended for vending perishable products (AMS PF5, AMS PF9 or any merchandiser with FOOD firmware enabled) meet the National Automatic Merchandising Association (NAMA) requirements for refrigerated food vending machines. As of this writing, the NAMA specifications for perishable food product merchandisers require that the temperature in the merchandiser must cool to 41°F within 30 minutes of closing the door or an error will be generated and the merchandiser will not allow sales of protected items. This is to allow a recovery period following loading: however, all products should be chilled prior to loading. After the 30 minute cool-down requirement has been met, if the temperature in the merchandiser exceeds 41°F for more than 30 minutes an error will be generated and the merchandiser will not allow sales of protected items. Selections that are 'exempt' from Health & Safety protection will still be available.

H&S Firmware
To meet these requirements, AMS refrigerated food merchandisers have a built-in Health & Safety (H&S) function. The H&S function is activated in food merchandisers when enabled. Unless otherwise specified by regulatory agencies, AMS recommends setting the temperature to 40°F when vending perishable food products.

H&S Protection
In the event the temperature exceeds the NAMA specifications following the recovery period or during normal operation, an error will be generated and the merchandiser will not allow sales of protected items. This protects the consumer from purchasing spoiled food.

Mixing Potentially Hazardous Food
From the NAMA Construction Standard:
700.1B In single compartment machines vending both potentially hazardous and non-potentially hazardous food, areas not provided with an automatic shutoff control shall be clearly marked with labels, lights or other means that will alert the route person not to stock potentially hazardous food in those areas.

Insight Food merchandisers can be configured for Health & Safety protection by selection. All merchandisers are shipped from the factory with FOOD firmware installed will be configured for Health & Safety protection of all selections.

WARNING: The merchandiser must never be loaded with perishables above the bulkhead (if installed).

If any selections are exempted, *it is the operator's responsibility* to mark those unprotected selections with the included yellow labels (or by other means), and to instruct route persons on loading restrictions.

FAILURE TO DO SO COULD RESULT IN AN UNACCEPTABLE HEALTH RISK TO THE CUSTOMER.

REFRIGERATION ZONES

Some customers prefer to segregate their products into cooled and non-cooled zones. When machines are ordered this way, an insulated panel, or Bulkhead, is placed beneath the specified tray and a truncated cold air delivery plenum is installed along the right side of the machine. While products above this bulkhead will be cooler than they would be in a machine without any refrigeration, they will not be reliably 'cold' when compared to products below the bulkhead. The merchandiser must never be loaded with perishables above the bulkhead (if installed).

WARNING!
Perishable foods must never be loaded above one of these bulkheads! See HEALTH AND SAFETY (H&S).

MODEL IDENTIFICATION

When requesting service, replacement parts or technical assistance please provide the model and serial number found on the merchandiser serial plate (See **Figure 1.1**). It is attached inside the door near the upper right corner of the window and is visible from the outside. The information contained on this plate is necessary to determine what parts, kits, or maintenance should be applied to your specific model.

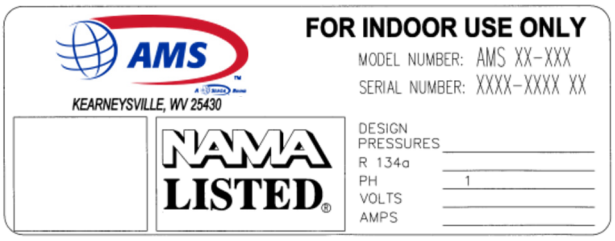


Figure 1.1 Typical Serial Plate

Model Number Breakdown

PFx Fully cooled, with Health/Safety firmware.
PCx Combo, Fully cooled, without Health/Safety firmware. (may include a bulkhead mounted 38.6" high).
The 'x' can be **5** for 35" wide cabinets, or **9** for 39" cabinets.

Example: AMS PF9 means it is an Automated Merchandising Systems Food merchandiser, **39**" wide, with firmware to prevent dispensing potentially hazardous food.

SERIAL NUMBERING SYSTEM

Please See **Figure 1.1.** The serial number is constructed as follows:
On all AMS serial numbers, the first digit identifies where a merchandiser was manufactured. Those merchandisers built in the U.S. start with the number **1**. Those merchandisers built in Mexico start with the number **2**.

The next two digits identify the year of manufacture. These numbers are **21** (for 2021) and so forth.

The next two digits identify the month. The first month of the year is **01** and the last month is **12**.

The last four digits identify a number assigned to each

1-1902-0275

Mfg Plant Year Month Sequence

merchandiser during assembly. Numbering starts with **0001** and continues through **9999**, whereupon these four digits start over.

An example of the numbering system in use is as follows:

This merchandiser was manufactured at the Kearneysville, WV. plant in 2019, in February, and was the 275th merchandiser manufactured sequentially.

GENERAL SPECIFICATIONS

Operating Environment
This AMS merchandiser is designed for indoor use only. Indoor temperatures must be between 35°F (1°C) and 110°F (43C). Maximum temperature for merchandisers with perishable food is 100F (38C). The merchandiser should not be located in an area where it may be subjected to direct sunlight, a water jet, or rain.

35" Cabinet Dimensions:
33 3/4"W x 72"H x 36"D
(89 cm x 183 cm x 91 cm)

39" Cabinet Dimensions:
39"W x 72"H x 36"D
(99 cm x 183 cm x 91 cm)

Approximate Cabinet Weight:
35" Vendor 570 lbs. (258 kg)
39" Vendor: 605 lbs. (274 kg)
Note that a HD shipping pallet adds 75 lbs.

Product Capacity:
Capacity depends on configuration:
10-selection trays, for 39" vendors, can hold up to 32 products per selection, based on the helix used.
NOTE: Do not load any tray with more than 10# per selection, or 100# per tray.

Power Requirements,
All models covered by this manual:
5.4 amps @115 VAC or
2.7 amps @ 220 VAC

Energy Consumption
Daily energy consumption varies considerably due to temperature, humidity, usage, load schedule, etc. Based on our testing done to ANSI/ ASHRAE standard test conditions (75°F @ 45% RH), use 3.41 KWH/day for comparison only.

Refrigeration Specifications
All PXx merchandisers use a 1/3+HP compressor, 1220 BTU/hr, 3.35 Oz, (95 Grams) R290 refrigerant

MDB Peripheral Levels Supported
The Insight control electronics are designed to work with MDB Devices at the following Function and Option Levels:

>Coin Mechs – Level 3 Mechs are supported: The Alternate Payout Method, and Controlled Manual Fill/Payout features are supported.
>Bill Validators – Level 1 & 2 Validators and recyclers are supported
>Cashless Devices – Level 1, 2, & 3. Including revalue, remote vend, and support for 2 cashless devices.
>Universal Satellite Devices (USD) supports level 1, 2, & 3 devices.

EXECUTIVE PERIPHERALS
The Insight control electronics will not support coin mechs using the "executive" communications protocol.

Patent Disclosure
This merchandiser and/or certain of its components are covered by one or more of the following U.S. and International patents:

U.S.

6,145,699	6,384,402
6,520,373	6,708,079
6,794,634	7,191,915
7,343,220	7,742,837
7,446,302	8,003,931

Canada
2,329,314

Mexico
230,714

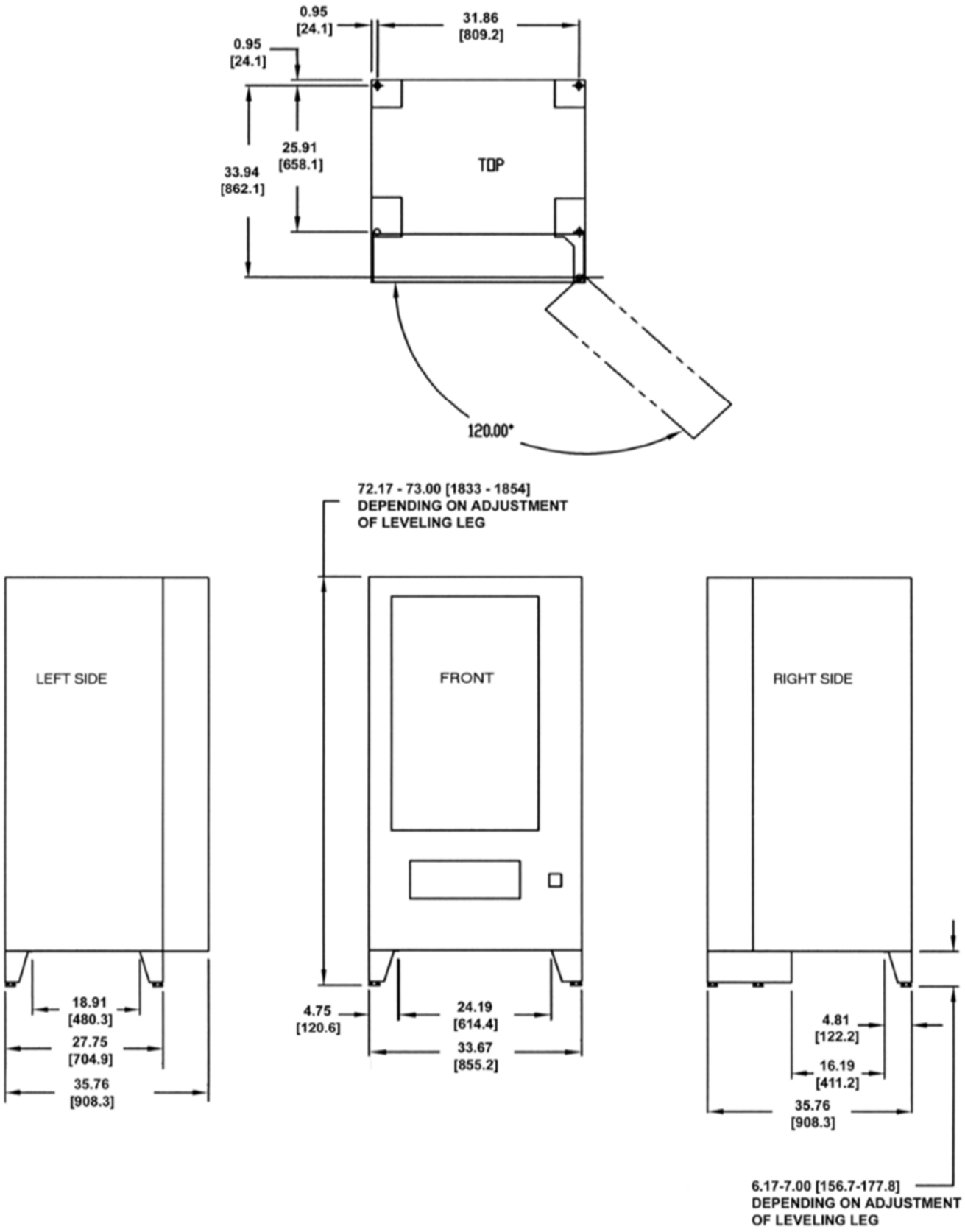


Figure 1.2 35” CABINET DIMENSIONS

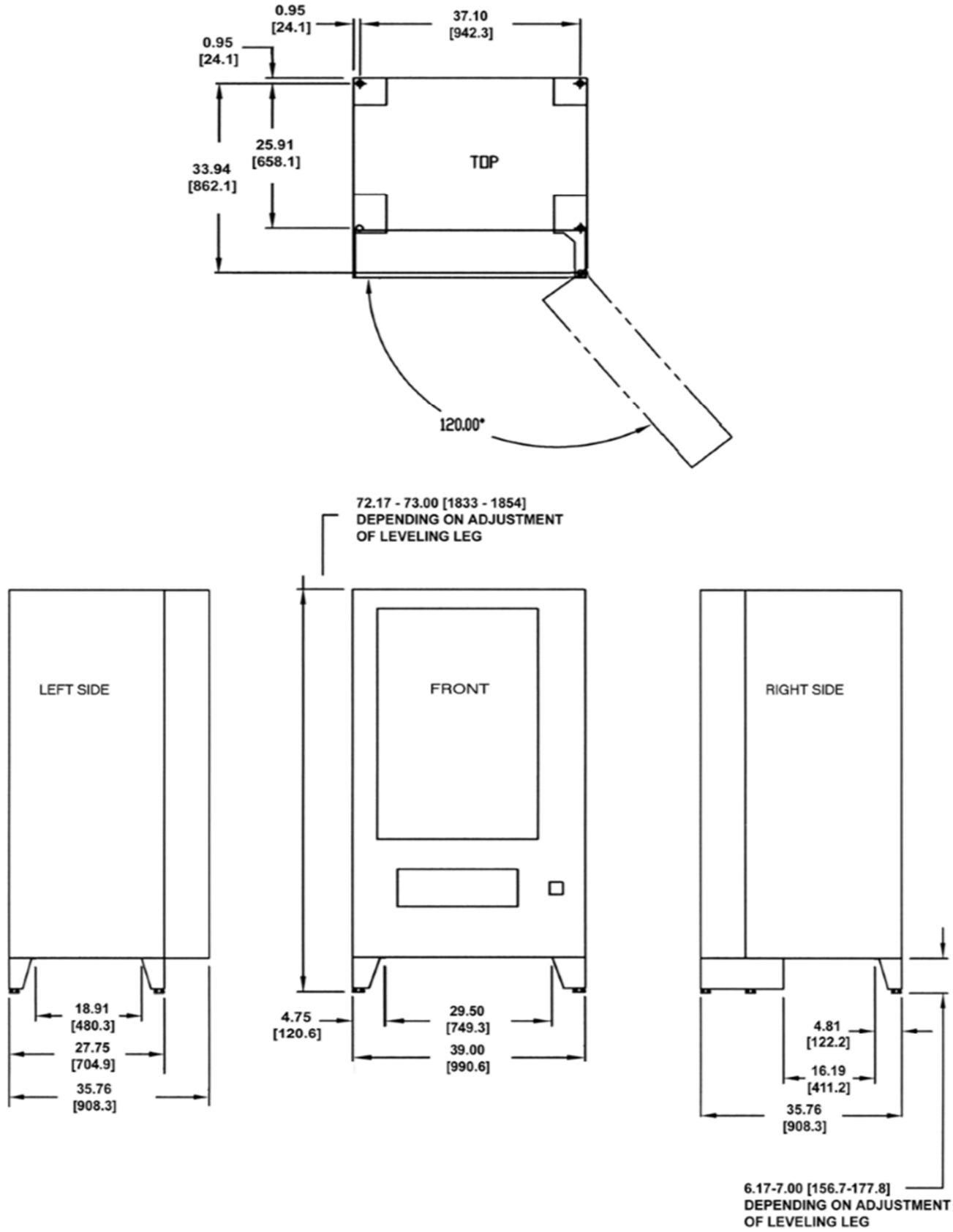


Figure 1.3 39" CABINET DIMENSIONS

MERCHANDISER CONFIGURATIONS

10		12		15		15	
12		12		15		15	
15	15	15	15	24	24	24	24
18	18	18	18	18	18	18	18
18	18	18	18	18	18	18	18
7 cw7		7 cw7		7 cw7		7 cw7	

Figure 1.2 Typical Configuration

Figure 1.2 shows a typical configuration used in a 35" merchandiser.

The top tray in the above example contains four columns, formed by the placement of dividers, with motors and large diameter helices in place. Note that as the 39" merchandiser is wider, its tray can hold 5 large diameter helices.

The pitch of the helices (the number of slots for loading product) is given by the number. The size of the square indicates the size of the helix (small or large).

All of the top tray helices shown are of large diameter, and are of 10, 12 and 15 pitch. The configuration on this tray can hold 10+12+15+15 = 52 products.

All trays can be configured in this or another configuration, depending on the products being vended.

Products which fit in the 10 pitch helix may be too large to fit in the 15 pitch helix. The product must be freely pushed out of the column by the helix to fall into the hopper.

The fourth tray down as shown in the above example contains eight columns with small diameter helices. The pitch is 18 for all columns, so the configuration on this tray can hold 18 x 8 = 144 products. Note that as the 39" merchandiser is wider, its tray can hold 10 small diameter helices.

A working configuration is one column with a given helix (or two columns paired) to vend a given product. A record of working product configurations, as shown in the example diagram, will greatly speed up new set-ups and aid in duplicating merchandisers.

With Insight, extra wide products can be vended by 'pairing' two adjacent motors.

1. Form a column between dividers, wide enough for the product. When viewed from the front of the tray, install a clockwise (CW) motor and helix on the right side of the column, and a counter-clockwise (CCW) motor and helix on the left side of the column (see **Figure 1.3**). (Note that all normal or standard motors and helices turn CCW to vend product.) The motors can be any distance apart. The helices must be of the same pitch.
2. Using the configuration menu, couple the two motors together.
3. Install the product into the two helices. Change the selection and price on the tray.

When this product is selected, the two helices will turn at the same rate to vend the product.



CCW Helix **CW Helix**

Figure 1.3 Helix Orientations

The bottom tray, shown in **Figure 1.2** contains four columns with small diameter, *paired* helices. The pitch is 7 for all columns, so the configuration on this tray can hold 7 x 4 = 28 products. Again, the 39" merchandiser is wider, and its tray can hold 5 paired sets.



DANGER -RISK OF FIRE OR EXPLOSION. FLAMMABLE REFRIGERANT USED. TO BE REPAIRED ONLY BY TRAINED SERVICE PERSONNEL. DO NOT PUNCTURE REFRIGERANT TUBING.

DANGER- RISQUE DE FEU OU D'EXPLOSION. LE FRIGORIGENE EST INFLAMMABLE. CONFIER LES REPARATIONS A UN TECHNICIEN SPECIALISE. NE PAS PERFORER LA TUBULURE CONTENANT LE FRIGORIGENE.



CAUTION - RISK OF FIRE OR EXPLOSION.FLAMMABLE REFRIGERANT USED. CONSULT REPAIR MANUAL/OWNER'S GUIDE BEFORE ATTEMPTING TO INSTALL OR SERVICE THIS PRODUCT.
ALL SAFETY PRECAUTIONS MUST BE FOLLOWED.

ATTENTION- RISQUE DE FEU OU D'EXPLOSION. LE FRIGORIGENE EST INFLAMMABLE. CONSULTER LE MANUEL DU PROPRIETAIRE/GUIDE DE REPARATION AVANT DE TENTER UNE REPARATION.
TOUTES LES MESURES DE SECURITE DOIVENT ETRE RESPECTEES.

2
SAFETY

COMMITMENT TO SAFETY

Automated Merchandising Systems Inc. is committed to designing and producing a safe product. As with all electrical or mechanical pieces of equipment, some potential hazards exist. It is the intent of Automated Merchandising Systems, through this manual and service technician training, to alert individuals who will be servicing our equipment to these potential hazards, and to provide basic safety guidelines.



ATTENTION! Risk of fire or explosion. Flammable refrigerant used. Consult service manual before attempting to install or service this vending machine. All safety precautions must be followed.

To reduce the risk of serious injury or death, please read and follow all warnings in this manual. It is important that we point out that these warnings are not comprehensive. Automated Merchandising Systems cannot possibly anticipate all of the ways that service may be conducted, or all of the possible safety hazards that may result from service. Therefore at all times we urge you to beware of hazards such as electrical shock, mechanical entrapment, and tipping a merchandiser during movement.

Automated Merchandising Systems strongly recommends a commitment to safety on the part of all servicing personnel or organizations. Only personnel properly trained in merchandiser servicing should attempt any service to the internal components of the merchandiser. Automated Merchandising Systems has no control over the merchandiser once it leaves our factory.

Maintaining the merchandiser in a safe condition is the sole responsibility of the owner.

If you have questions concerning safety or service, or would like more information, please contact the Automated Merchandising Systems Service Department at 304-725-6921 or e-mail info@amsvendors.com.



DANGER! Risk of fire or explosion. Flammable refrigerant used. To be repaired by trained service personnel. Do not puncture refrigerant tubing.

SAFETY PRECAUTIONS

Safety precautions and safe practices to follow to avoid injury from specific hazards are listed below. This list cannot possibly cover all hazards, therefore please remember to

THINK SAFETY FIRST!

To Protect Yourself from Injuries

Plan ahead to employ proper personal protective equipment (PPE), including safety glasses, slip resistant steel-toed boots and leather/protective gloves. Don't place hands against edges of metal drawers or bare parts inside the machine. Beware that parts on the inside of the Vending Unit can be sharp.

High Voltage Contact

Each merchandiser is designed to operate on a specific voltage. High voltage areas include the electrical panel, the refrigeration unit and fans. It is important to understand that contact with the high voltage wiring can result in injury or death.

a. Always test the outlet for proper voltage, polarity and grounding before plugging in the merchandiser.
b. Always disconnect power to the merchandiser before servicing. Allow only fully trained service technicians to service the merchandiser.
c. Always keep electrical connections dry. Do not place the merchandiser in or near standing water.
d. Never use a worn or damaged power cord.

Grounding

Some electrical components have a green or green/yellow ground wire attached to a grounding point in the merchandiser. If it becomes necessary to remove a ground wire during service, note how the wire is attached, including the locations of any washers. After servicing, make sure that the wires and washers are replaced exactly as they were. Note that an ungrounded merchandiser may appear to work normally without the ground wires, but there will be a potential shock hazard from ungrounded components.

a. Always test the outlet for proper grounding before plugging in the merchandiser.
b. Always reconnect ground wires after servicing.

Ground Fault Circuit Interrupter

This merchandiser may be equipped with a Ground Fault Circuit Interrupter (GFCI), in compliance with UL 943, as required by ANSI/UL 751 and 541.Test the ground fault circuit interrupter (GFCI) periodically to insure proper operation. Note that all new vendors are required to use a GFCI with an end-of-life circuit of approximately 10-14 years. If the green LED turns red, the cord must be replaced. See **REPLACING THE POWER CORD AND GFCI TEST**.

Fan Contact

Some merchandisers are equipped with fans which can start automatically. These fans are guarded to prevent accidental contact. However, removal of guards or other components can leave fan blades exposed and create a physical hazard.

a. Always disconnect power to the merchandiser before servicing.
b. Always wear hand and eye protection when servicing the merchandiser.
c. Always keep hands, hair, loose clothing and tools away from fan blades.
d. Never insert hands or tools into concealed areas.
e. Always replace protective covers after service.

Helix Motion and Jamming
Energized vend motors can turn a helix with considerable torque, creating a possible entrapment hazard. Also, turning helices may eject tools or other objects left on trays. A helix that is jammed or caught can store energy as it binds, which can cause it to twist or spring outward suddenly even if power is disconnected. Use gloves and caution when freeing a jammed helix.

a. Always disconnect power to the merchandiser or VMC before servicing the vend motors.
b. Always check for proper fit when loading products in helices to avoid jamming.
c. Always restrain the helix before freeing a jammed or caught helix.
d. Always wear hand and eye protection when servicing the merchandiser.
e. Always keep hands, hair, loose clothing and tools away from moving parts.

Always wear hand and eye protection when servicing the merchandiser.

Refrigerant Release
The refrigeration system is pressurized and sealed at the factory. Puncturing or cutting any component in the system will cause refrigerant gas and liquid to be propelled out of the system, creating an immediate physical hazard. Use caution to avoid accidentally opening the refrigerant system.



DANGER! Risk of fire or explosion. Flammable refrigerant used. To be repaired by trained service personnel. Do not puncture refrigerant tubing. All safety precautions must be followed.

Any service work requiring the system to be opened must be performed by a licensed technician. Unauthorized service to the sealed refrigerant system will void the warranty.

1. Never puncture or cut any component in the refrigeration system.
2. Always use licensed service technicians to service the refrigeration system.
3. Always wear hand and eye protection when servicing the merchandiser.

Merchandiser Tipping
The weight of an empty merchandiser is over 450 pounds, and can be more than 600 pounds! A falling merchandiser can cause serious injury or death. Caution should always be taken to avoid dropping or tipping a merchandiser.

1. Never rock or tip the merchandiser. It must be kept horizontal for safe operation.
2. Never place the merchandiser in an inclined position, such as on a ramp or with all the legs not on the same horizontal surface.
3. Never place the merchandiser in a moving environment such as on a ship without properly securing it in place.
4. Never place the merchandiser in a location where it may be struck by a vehicle.
5. Never transport an unsecured merchandiser, or a merchandiser still containing product.
6. Never attempt to lift or move the merchandiser by hand. Always use equipment with the proper load rating. Note that the Specification weight listed is *empty* weight.

To Safely Move Machine
If you need to move your Vending Unit, you'll want to use a material handling device, such as a pallet jack, appliance dolly or forklift to position it. Make certain that the door is shut and secured.

Other Improper Conditions
Hazardous conditions can be created by improper use or service of the merchandiser.

1. Always reinstall any parts removed during service to their original locations.
2. Never make unauthorized modifications to any part of the merchandiser.
3. Always replace components that are worn, broken, or otherwise unfit for use.
4. Never use unauthorized parts, or use parts for anything other than their intended use.

TEST STANDARDS

AMS vending machines bearing the ETL mark have been tested and comply with the following standard:

ANSI/UL 541
Standard for Refrigerated Vending Machines
ANSI/UL 541

Additional Standards
Certain models comply with the following:

European Union
European Economic Area
CE (European Conformity)

Natural Resources Canada (NRCan)
Energy Efficiency Regulations, OEE

UKCA (UK Conformity Assessed) marking

Americans with Disabilities Act
See **ON-SITE INSTALLATION**.

3
MERCHANDISER SYSTEMS AND COMPONENTS

INSIGHT SYSTEM OPERATION

The Insight system is comprised of the control board (VMC), an emitter vend sensor, a detector vend sensor, and control software. The emitter and detector sensors are attached to opposite ends of the hopper, and infrared light is passed between them.

When a selection is made, the vend motor will begin to run. If no product falls in the hopper (or motor returns to home position twice), the motor will be stopped, the credit will be maintained and the customer will be directed to “PLEASE MAKE ANOTHER SELECTION.”

When the VMC measures a variation in the light intensity during the vend cycle, it recognizes that a product has fallen through the light into the hopper. The VMC stops the vend motor (or returns to home position) and removes the credit.

VMC (Vending Machine Controller)

The VMC controls and monitors the merchandiser, DEX, and MDB systems. The VMC is located in the upper left hand corner of the open merchandiser door, behind an access door.

Upgrading Firmware
The firmware can be upgraded by using a USB drive. The latest firmware is available on the AMS website. See **UPGRADING FIRMWARE, SECTION 8**

Mode Switch
Pressing the mode button (See **Figure 3.1**) allows the user to access the VMC’s service mode to change settings, access vend data, and check error codes for troubleshooting. Data is displayed on the front display panel, and entered at the front selection panel. Pressing the switch again, or closing the door, and waiting approximately 30 seconds will automatically switch the VMC back to vend mode.

DEX Jack
The DEX jack is provided for data collection with third party devices. Some telemetry-based devices (which may include cashless devices) have a permanent connection to this port.

VEND SENSOR

Primary Sensor
The primary sensor is located on the left of the hopper when viewing from the back of the door. The sensor, inside a protective housing, sends light to the secondary sensor. It also contains circuitry to send a signal to the VMC. When a product drops through the beam, it causes a change which is interpreted by the VMC as a successful vend. The primary sensor board also contains circuitry to connect to the secondary sensor. A small green LED will turn red when this light beam is broken with an object. This can help diagnose sensor issues.

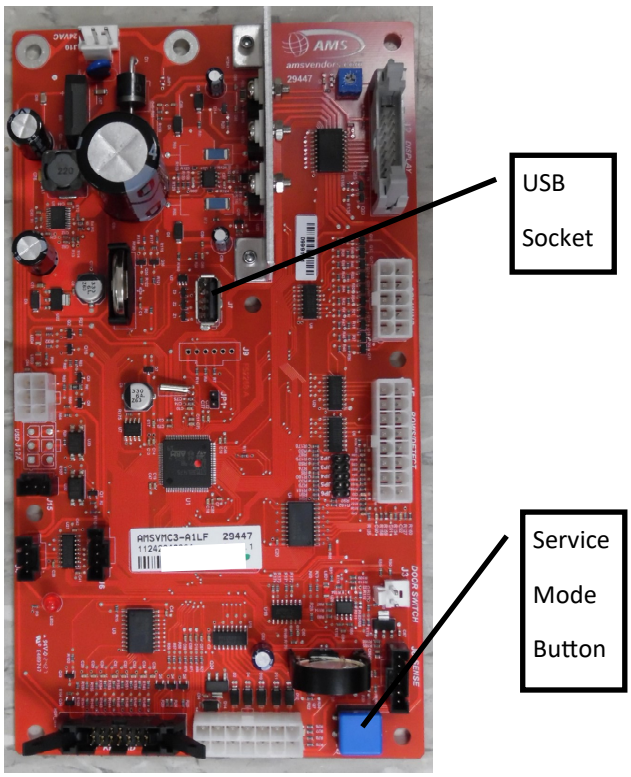


Fig. 3.1 VMC components

Secondary Sensor
The secondary sensor, inside a protective housing, is located on the right side of the hopper when viewed from the back of the door. The sensor receives light from the primary sensor.

When servicing the sensor boards, be mindful of the emitters and detectors as they can be damaged by rough handling.

DOOR

Validator and Card Reader Locations
There are three locations that will accept card readers. The center opening will also accommodate a bill validator. The lower two openings meet the guidelines of the1991 Americans with Disabilities Act (ADA) for access by handicapped persons (See **MERCHANDISER PREPARATION**).

Coin Mechanism Location
Three screws are installed in the door below the coin chute. These screws mate to the keyhole slots on the back of the coin mech (See **MERCHANDISER PREPARATION**).

Coin Box
The coin box is located below the coin mech and is used to hold non-payout denominations and overflow coins when the coin mech's payout tubes become full. It is removed by tilting slightly and lifting out.

Door Switch
The door switch is mounted on the back of the merchandiser door. The VMC uses the door switch to monitor door closure and to turn off the refrigeration unit when the door is open.

Display
The display is located on the front of the door. It serves as the interface for customers using and operators programming the machine. In service mode, it displays the active function and parameter values. In vend mode it can display the selection entered, the price and Caloric content of a selected item and the credit accumulated. When the machine is idle it can display the time and a customizable message.

When the zero key is pressed, the display shows the temperature inside the cabinet. An asterisk (*) before the temperature indicates the chiller is running.

Keypad
The keypad is located below the display on the front of the door. A vending selection is made by keying in the number combination that corresponds to the location of an item in the machine. Pressing a selection number will reveal the price for that selection. The keypad is also used to enter data while servicing of the merchandiser.

Coin Return Button
The coin return button is located next to the coin slot. Pressing the coin return button will release bent or irregular coins that are not accepted by the coin mech. If the machine fails to vend a selection that has been made, pressing the coin return will return the full credit. If the Force Vend option is disabled, it can also return the full credit before a selection is made. If the Bill Changer option is enabled, the coin return will return bills held in escrow or change for bills inserted and stacked in the bill validator.

REFRIGERATION SYSTEM

Temperature Control
Whenever the door is closed the evaporator fan runs continuously to circulate air within the cabinet. A temperature sensor located near the evaporator measures the temperature of air entering the evaporator. When this temperature is above the temperature set point, the compressor and condenser fan are turned on.

When the temperature falls to 4°F below the temperature setting, the compressor and condenser fan are turned off.

Refrigeration Controls
The refrigeration system is operated through the VMC. The temperature sensor in the cabinet relays the current temperature to the VMC which cycles the unit on and off as appropriate.

If the temperature is above the setting that has been programmed in by the user, the VMC sends a 24VDC signal to the refrigeration relay. The energized relay closes to complete the high voltage circuit that powers the compressor and the condenser fan.

If the compressor should overheat, a thermal overload removes power to the compressor until it has cooled.

To protect against evaporator freeze-up, after one hour of continuous running the compressor will be shut off for 7 minutes to allow for defrosting

The VMC will also shut off the compressor if the door is opened.

After the compressor has been shut off, the VMC will wait until the compressor has been shut down 2 minutes and if applicable, the door has been closed 10 seconds before restarting the compressor. This delay allows pressure in the system to equalize.

TRAY RAILS

The rails are used to support the trays. The rails are adjustable up and down in 1/2" increments (See **TRAY VERTICAL POSITIONS**).

TRAYS

See **TRAY ADJUSTMENT AND CONFIGURATION** and **OPTIONAL EQUIPMENT** for optional tray accessories.

Insight Vend Motors
The vend motors supplied with this vendor utilize a brushless motor design, ensuring there are no sparks during operation. The connection and circuitry are different from the standard vend motor, and cannot be interchanged.

The vend motors are snapped into mounting holes on the back of each tray. The motor is driven by 24 VDC through a harness from the VMC (See **MOTOR POSITIONS / HOME**).

These brushless vend motors have a plastic case, molded in red for easy identification. Use **6-Advanced, 7-Pair** in Service Mode to couple the motors in each column together, causing them to turn at the same rate.
Paired motors will always be stopped when either one reaches the home position. If one motor runs slightly faster, the slower will then be individually driven to its home position. Depending on motor configuration, the motors may jog twice to try to dislodge hanging product.

Helices
There are four different diameters of helices available for use, approximately 1 1/2", 2 5/8", 3", and 4" in diameter. There are several pitches available in each size, and is determined by counting the number of product openings in the helix (See **CHANGING HELICES** and **MOTOR POSITIONS / HOME**.)

Dividers
The dividers separate product columns on the tray. To remove the snack divider, push rearward and lift. To install, insert the rear tab in the desired slot, push rearward and then down. Make sure the locking tabs on the bottom have engaged their respective slots and pull forward.
Bottle tray dividers are held in place with rivets, and are not intended to be adjusted.

Candy Pusher Bar
On snack trays, 2 horizontal slots in the divider allow for the installation of a candy pusher bar. The candy pusher bar keeps items pushed to one side of the column. This is typically used with tall products. The candy pusher bar is removed by pulling the bar free from the plastic clips. To reinstall, it is easiest to squeeze the bar into the clip using pliers (See **CANDY PUSHER BAR INSTALLATION**).

ELECTRICAL PANEL

The electrical panel is located in the recess formed by the right rail mount on the right side of the cabinet, behind two access panels.

Power Switch
The power switch is located on the lower right rail mount near the fuse. The power switch is used to disconnect 24VAC power to the VMC. *This switch is sealed, for use in hazardous environments.*

> **Note: The power should be shut off when MDB devices are being connected or disconnected, when the board is being serviced, or before any wiring harness is connected to or disconnected from the VMC or sensors.**

Fuse Holder
The fuse holder is located on the lower right rail mount near the refrigeration unit power outlet and power switch. It contains a 3 amp fast-blow fuse to protect the 24 VAC power supply to the VMC. A spare fuse is stored in the cover. The fuse holder is opened by pressing in and down on the indicated side of the cover and then pulling out.

Transformers
The transformer reduces the input voltage to 24 volts AC for the VMC. An optional second transformer supplies power to the window heater if equipped.

RFI Filter
The filter removes electrical noise from the power supplied to the 24VAC transformer to prevent interference with operation of the VMC and firmware. This is located in the rear of the cabinet, above the evaporator coil.

Relay
AMS relays use a 24 VDC signal from the VMC to actuate the relay and supply power to the refrigeration unit. *This relay is sealed, for use in hazardous environments.*

Power Distribution Harness
The power distribution harness splits the incoming power into individual leads for the high voltage components.

Ground Attachment
The merchandiser initial electrical ground is made through the use of grounding studs or screws at the lower back wall of the right rail mount. Earth ground and individual ground wires from the high voltage components are attached here, *and should never be left in a disconnected state.*

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4

MERCHANDISER PREPARATION AND INSTALLATION

Setting up a merchandiser has been divided into three stages:

CONFIRMING POWER AT OUTLET confirms power and site suitability.
MERCHANDISER PREPARATION includes preparations accomplished in the shop.
ON-SITE INSTALLATION is accomplished on-site, where the merchandiser is to be located.

NOTE: These merchandisers are not to be installed within motor fuel dispensing facilities.

CONFIRMING POWER AT OUTLET

Checking the Outlet (U.S. and Canada)
AMS recommends using a dedicated outlet which can supply 15 to 20 amps per merchandiser.

Using a volt meter set to AC VOLTS, check the voltage between the positive (smaller) lug entry and the ground lug entry (or center screw on two-lug outlets). The reading should be **between 110 volts and 130 volts**. Next, check the voltage between the neutral (larger) lug entry and the ground. The reading should be **0 volts**. If your results vary, contact a qualified electrician to correct the outlet wiring before plugging in the merchandiser. **Abnormal voltage, reversed polarity or improper grounding may cause the merchandiser to malfunction or create hazardous conditions in the merchandiser, resulting in possible injury, damage to the merchandiser, or fire.**

The power cord is supplied with a standard NEMA 3-wire plug. If there are no 3-wire outlets available for powering the merchandiser, a grounding adapter may be used to convert a 2-wire outlet to accept the 3-wire plug. **The adapter must have a ground tab or wire which must be fastened to the center screw of the outlet**.

NEVER USE AN EXTENSION CORD WITH THE MERCHANDISER.

Checking the Outlet (Outside the U.S. and Canada)
Consult a qualified electrician to check the outlet for proper polarity, voltage, and grounding. Check the serial plate on the side of the door to confirm the merchandiser is rated for the outlet voltage.

Electrical Service Requirement for CE Compliance
The following requirement applies only to models using 1/2 HP compressors and displaying the CE mark on the serial plate. If this requirement applies to your merchandiser, you will find a similarly worded decal on the back of the merchandiser near the power cord.

NOTE: This requirement does not apply to any merchandiser using 115V service.

ELECTRICAL SERVICE REQUIREMENT FOR CE COMPLIANCE:

THIS EQUIPMENT IS INTENDED FOR USE ONLY IN PREMISES HAVING A SERVICE CURRENT CAPACITY OF AT LEAST 100A PER PHASE, SUPPLIED FROM A DISTRIBUTION NETWORK HAVING A NOMINAL VOLTAGE OF 400/230V. THE USER SHOULD DETERMINE IN CONSULTATION WITH THE SUPPLY AUTHORITY, IF NECESSARY, THAT THE SERVICE CURRENT CAPACITY AT THE INTERFACE POINT IS SUFFICIENT FOR THIS EQUIPMENT.

Requerimiento de Servicio Eléctrico para Certificación CE
El siguiente requerimiento se aplica solamente a los modelo utilicen compresores de ½ HP y que muestren la marca CE en la placa de serie. Si este requerimiento se aplica a su dispensadora, verá una calcomanía con una terminología parecida en la parte posterior de la dispensadora, cerca del cordón de corriente.

Este requerimiento no se aplica a dispensadoras que utilizan un servicio de 115V.

REQUERIMIENTO DE SERVICIO ELECTRICO PARA CERTIFICACION CE:

ESTE EQUIPO SE PUEDE UTILIZAR SOLAMENTE EN ESTABLECIMIENTOS QUE CONTENGAN UNA CAPACIDAD DE CORRIENTE DE SERVICIO DE POR LO MENOS 100A POR FASE, Y SUMINISTRADOS POR UNA RED DE DISTRIBUCION QUE CONTENGA UN VOLTAJE NOMINAL DE 400/230V. EL USUARIO DEBERA CONSULTAR CON UNA AUTORIDAD DE SUMINISTRO, SI ES NECESARIO, PARA VERIFICAR QUE LA CAPACIDAD DE CORRIENTE DE SERVICIO EN EL PUNTO DE INTERFASE ES SUFICIENTE PARA ESTE EQUIPO.

Les Utilites Electriques Necessaire Pour Conformement Aux Regles CE
Le suivant condition applique seulement à modèle en utilisant ½ HP compresseur et montrer le CE sur l'en série plaque. Si cette condition s'applique à votre vendeur, vous verrez un decal de même exprimé sur le dos du vendeur près du cordon d'alimentation.

Cette condition ne s'applique pas au service de 115V d'utilisation de vendeur.

LES UTILITES ELECTRIQUES NECESSAIRE POUR CONFORMEMENT AUX REGLES CE:

CET EQUIPEMENT NE DOIT UTILISER QUE SUR LES LIEUX AVEC UNE CAPACITE DU COURANT AU MOINS 100A LA PHASE, FOURNIE A UN RESEAU DE DISTRIBUTION AVEC UN VOLTAGE NOMINAL DE 400/230V. LA PERSONNE QUI SE DETERMINER PENDANT UNE CONSULTATION AVEC L'ADMINISTRATION DU SECTEUR, S'IL FAUT, QUE LA CAPACITE DE COURANT AU POINT D'INTERFACE EST ASSEZ POUR CET EQUIPEMENT.

MERCHANDISER PREPARATION

Inspection

Inspect the merchandiser carefully for shipping damage prior to signing the carrier's delivery receipt. Check for dents on the top or sides of the merchandiser, bent legs, broken glass, or other damage on the exterior of the machine. Check the interior for components that may have been knocked loose or other damage.

Mounting and Connecting Bill Validators and Card Readers

The AMS merchandiser will support most NAMA-approved Multi-Drop Bus (MDB) bill validator or card reader. Please read the device manufacturer's literature before proceeding.

1. **Always disconnect power to the VMC before servicing.**
2. On the inside of the main door, locate and open the access door on the left side. Locate the coin chute which leads from the coin slot on the front of the door. Above the coin chute are (2) metal plates, each fastened to a set of (4) threaded mounting studs which correspond to the mounting holes in the bill validator. Either set of mounting studs may be used for a card reader. The lower mounting position will fit a bill validator, and is ADA approved for consumers with disabilities.
3. A third opening, also at ADA approved height, is accessible behind the coin mechanism mounting plate. A single screw next to the coin slot releases the top of this plate so it can pivot down and be pulled out. Feed any wires behind the plate holding the coin chute. Once the card reader is mounted in it's opening, replace the mounting plate and secure with a screw.
4. Remove the four nuts that retain the steel cover panel. Remove the steel cover panel, then press out the plastic cover panel in the escutcheon.
5. Refer to the manufacturer's literature for instructions on accessing the mounting holes in your device. Place the device over the threaded studs and reinstall the nuts. Some devices may require spacers, which are available from AMS (Part Number 20258).

Mounting and Connecting Coin Mech

The AMS merchandiser will support most NAMA-approved Multi-Drop Bus (MDB) Coin Mechs. Please read the manufacturer's literature before proceeding.

1. **Always disconnect power to the VMC before servicing.**
2. On the inside of the main door, locate and open the access doors on the left side. Locate the coin chute which leads from the coin slot on the front of the door. Below the coin chute are (3) screws which correspond to slots on the back of the coin mech.
3. Install the coin mech by placing the large round opening at the bottom of each slot over a screw head. Be careful to hold the wiring harnesses in this area out of the way . Once each of the round openings are over the screw heads, the coin mech is lowered to engage the narrow portion of the slot with the shank of each screw.
4. Tighten the mounting screws (reference manufacturer's literature).
5. Adjust the coin chute as required to align the chute with the coin mech.

Connecting the MDB Devices

Note: Always disconnect power to the VMC before servicing.

Your merchandiser is equipped with energy efficient LED lighting. The MDB Harness from the VMC also powers the LED connector.
Connect the Card Reader (if present), to the MDB's free connector, then the Bill Validator (if present) and finally the coin mech. Note that the coin mech has no continuation connector, so it must always be the last device connected.

Reconnect power to the VMC.

Configuring Motors

The vend motors MUST BE CONFIGURED after any changes in the arrangement, type, or number of motors have been made.

1. Press the service mode switch on the VMC (See **Figure 3.1**).
2. Press 7. This will give a count of all motors, and home any vend motors not there already.
3. Watch the display for missing motors that should be connected. The merchandiser will not vend from a given helix when the motor is missing, jammed or has home switch problems.
4. After the motors have been configured check to make sure all the helices are in the home position. If the end of a helix is not at its lowest position in the column pull it out of the motor by the plastic hub, turn it until it is, and reinsert the helix into the motor.
5. Pressing 9 will turn each motor, stopping at home in a continuous loop. Press * to stop.

Note: While other vend motors may fit into the tray slots, only use the red brushless motor, to avoid potential sparks.

Test Loading and Configuration

Before putting the merchandiser on location, it is a good idea to determine the placement of products on the trays. Place at least one product in each helix to check for fit.

1. Remove the cardboard spacers and ties securing the trays.
2. See **TRAY VERTICAL POSITIONS** and **TRAY COLUMN POSITIONS** for tray vertical adjustments and tray column configuration when configuring your merchandiser to suit your product.
3. Make sure the product can slide in and out of the helix easily. If the product is too snug, it may cause the helix to jam during vending. Place it in a helix with a larger opening.
4. Likewise, if the product is too loose in the helix, it may not vend properly. Use a helix with the smallest opening that will allow the product to slide in and out freely (**TRAY ADJUSTMENT AND CONFIGURATION**).
5. Place tall, narrow products in a column with a candy pusher bar, which is an adjustable bar used to push the product to one side of the column. Typically these are installed in columns 8 and 9 on the candy trays.
6. Make sure there is adequate clearance between the tops of the packages and the trays above when sliding the trays in and out, and when the product is being vended.

7. If desired, the end position can be set manually by pulling the helix out of the motor, rotating it, and reinserting it in the motor.
8. Test vend the product and add a helix ejector if necessary. The helix ejector is a plastic device installed on the front end of the helix to kick out the product (See **HELIX EJECTOR**).

Installing Optional Price Labels
If desired, after determining the product placement, install the price labels. The labels are available as a service part.

1. Insert the bottom edge of the label in the lower groove of the extrusion on the front of the tray.
2. Carefully press in on the label until it bows enough to snap into the top groove of the extrusion.
3. The price will be displayed whenever that selection number is pressed by the customer. Instead of installing separate price labels, some operators insert the "Press Selection For Price" label, also included with the price labels.

Setting Prices
After product placement, set the prices into the merchandiser.

1. To enter the service mode, press the mode switch on the VMC (See **Figure 3.1**.)
2. Press 1 to access "**PRICE SETTINGS**".
3. Press 1, 2, or 3 to set All, by Row, or by selection.
4. Enter the price, including cents if applicable.
5. Press # to save changes, then # again to go to the next row or selection.
7. Press * to exit the Price program.
8. The prices as set will be maintained by the merchandiser even if there is a power failure or if the machine is unplugged: however, prices will need to be reset if the configuration of motors or trays is changed.

ON-SITE INSTALLATION

Removing the Shipping Boards
Split the shipping boards by inserting a crowbar or wedge into the slots at either end.

If necessary, lift the merchandiser to remove the broken boards using properly rated equipment. Do not tilt the merchandiser. Do not attempt to lift the merchandiser with a 2-wheel hand truck.

Placing the Merchandiser on Location

1. Place the merchandiser within 5 feet of the designated power outlet. The power outlet should be accessible when the merchandiser is in position, and the ventilation opening in the back of the merchandiser must be clear of obstructions.
2. Allow at least 4 inches between the wall and the back of the merchandiser for air circulation.
3. Make sure the merchandiser does not block walkways or exits.
4. Do not place the merchandiser in a location where it can be struck by vehicles.
5. Leave at least 18 inches between a wall and the hinge side of the merchandiser to prevent the door hitting the wall when opened, or use a protective wall bumper. The door must open wide enough to allow the trays to be pulled out.
6. This merchandiser is designed to meet the 1991 ADA guidelines for persons in wheelchairs using a parallel approach (side of wheelchair adjacent to front of merchandiser). Make sure there is adequate room to maneuver a wheelchair into this position in front of the merchandiser.

Leveling the Merchandiser
For safe operation and for proper coin handling by the coin mech, the merchandiser must be level.

1. On the bottom of the merchandiser are four (4) threaded leveling legs located at the corners of the cabinet and a fifth support screw under the door. Before beginning, be sure that all five leveling legs are screwed in completely.
2. With the door closed and locked, check the four main legs and adjust any leg that is not contacting the floor. Make sure the support screw under the door is all the way up and is **not** contacting the floor at this time.
3. Place a level on top of the cabinet and check for horizontal from side-to-side.
4. Adjust the leveling legs on the low side one turn at a time until the cabinet is level.
5. Repeat the last two steps to level the merchandiser front-to-back.
6. After the merchandiser is level, adjust the support screw under the door until it contacts the floor.

Initial Power-Up and Cool-down
When placing a refrigerated machine on a new location it is important to allow the machine to cool to the operating temperature **prior to placing products** in the machine. **All food products are to be pre-packaged.** Depending upon the machine's initial temperature and ambient conditions, it will take about 2 to 4 hours to accomplish this. Normal practice is to place a machine on location and come back the next day to load it**. Do not load warm bottle/milk and food products into merchandiser. All bottle/milk and food products must be pre-chilled.**

1. Plug in the merchandiser.
2. Check that the lights inside the door come on: the chiller may or may not be running in its cycle at this time.
3. Enter the service mode and check that all settings are correct.
4. Check error codes for problems.
5. Load product after the merchandiser has cooled. Load one tray at a time, from the bottom up.
6. Ensure merchandiser is operating properly. If the Health and Safety option is being used check merchandiser after 30 minutes from closing of the door to ensure NAMA requirements are being met.

False Leg Installation

CAUTION: Wear gloves-edges may be sharp! Always wear eye protection when servicing merchandiser!

Tools Required:
1/4” Nut driver or socket wrench

1. Align the holes in the top of the false leg with the 1/8” holes on the left side of the bottom of the door (See **Figure 4.1**). The closed end of the false leg should be facing forward.
2. Install screws through the holes and tighten until snug. Do not over tighten.

WARNING!
The False Leg helps to prevent the machine from tipping forward when the merchandiser door is open and one or more bottle trays are extended. Failure to install the false leg on merchandisers with bottle trays may result in serious injury (See Figures 4.1 and 4.2).

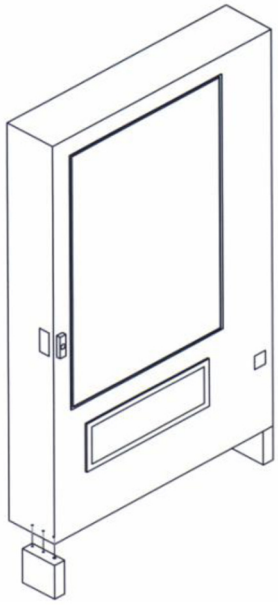


Figure 4.1 False Leg Installation

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Figure 4.2 Tip-Over Warning

5
TRAY ADJUSTMENT AND CONFIGURATION

The trays are highly configurable. Practically any combination of wide and narrow columns can be set up on a tray. Before changing the configuration of your trays, make sure to order the parts you will need, such as new helices, dividers or additional motors.

BOTTLE AND SCCD TRAY

WARNING!
The bottle tray uses a different set of rails as compared to a SCCD tray and, as a result, they are not interchangeable.

Removal

1. Disconnect the harness inside the right column in the cabinet. The connections are labeled corresponding to the number of the tray (1-7). Push the connector out through the hole in the back of the column.
2. Pull the tray out until it stops. Carefully pull the harness up on top of the tray.
3. Locate the slide rail release levers on both sides of the tray. There should be an arrow indicating which way to push to release the levers. Note that the lever direction on the right side is opposite the direction on the left side. Push the release levers in the directions indicated and simultaneously pull on the tray.
4. Be sure to push the extended slide rails back into the cabinet before closing the door. Otherwise the slides will be damaged.

Installation

CAUTION: **An incorrectly installed tray can disengage from the rails and fall when extended! It is recommended that installation be performed by two people!**

1. Fully extend the slide rails in the cabinet and hold in position.
2. Move the ball carriers out to the ends of the slide rails (See **Figure 5.1**) and hold in position.
3. Align the rails on the sides of the tray with the extended slide rails and insert. Continue to hold the ball carriers and slide rails in place until the rails on the tray are firmly engaged in the ball carriers.
4. Push the tray in completely to lock the rails together.
5. Carefully extend the tray to check for proper installation. Support the tray to prevent falling if the rails are not properly engaged. Visually inspect the rails, and gently pull the front of the tray side to side to make sure the rails will not disengage.
6. Route the tray harness over the rail in the cabinet and into the right column. Connect the tray harness to the appropriate receptacle.

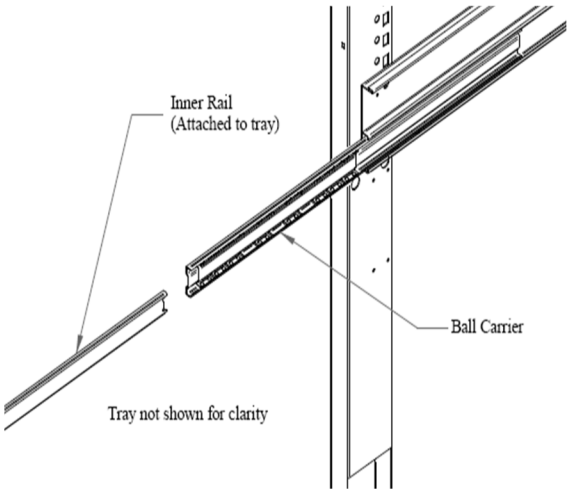


Figure 5.1 Bottle Tray Rails

SNACK TRAYS

Removal

1. To remove the tray, start with the tray pushed to its rearmost position. Lift the back of the tray up and pull the tray forward about ten inches. Reposition your hands to grasp the tray at its sides and slide the tray out. If the tray is spaced close to the tray above, it may be helpful to raise the front of the tray as you pull it free.
2. When removing a tray, it is not necessary to disconnect the tray harness. The harness is long enough that it will allow a removed tray to be placed on the floor without having to be disconnected.

Installation

To install the tray, place the tray on top of the rails and slide the tray all the way to the rear. It will automatically drop into position. Make sure the harness slack is draped over the outside of the rail.

TRAY VERTICAL POSITIONS

The trays can be adjusted to different vertical positions in 1/2 inch increments. To reposition a tray use the following steps.

Removal

1. Remove the tray for access to the support rails. Note that the trays have a screw in each rail holder.
2. Remove the black screw located at the front of each rail with a 1/4” socket or driver.
3. The front of the rail can now be lifted upward and disengaged from the vertical column.
4. Pull forward to disengage the rail from the slots at the back of the cabinet.
5. Remove the opposite side rails in the same manner.

Installation

1. To reinstall the rail in the new position, locate the rear “T” slots that will be used.
2. Then push the two tabs at the back of the rail into the appropriate slots.
3. Engage the hooked tabs at the front of the rail into the appropriate rectangular holes and pull down.
4. Make sure the rail is level.
5. For the safety of the operator, replace the screw.
6. Install the opposite side rails in the same manner.
7. Reinstall the tray, making sure the harness is routed over the top of the rail and all slack is draped to the outside of the RH rail.

TRAY COLUMN POSITIONS

Bottle tray column dividers are fastened in place and cannot be adjusted. The tray columns used for snacks, candy and food can be configured by the user for up to 10 columns wide (for 39” cabinets) or up to 8 columns wide (for 35” cabinets) for these trays. Typically the vend columns are set to single (2.66”) or double (5.32”) width, to be used with the standard small or large helices, respectively. Single and double width columns can be configured in any arrangement on the tray by following the procedure below.

Plan your tray arrangement before beginning to determine which extra parts may be required. Contact your distributor to order the necessary parts.

1. Disconnect the harness and remove the tray. Place the tray on a flat, stable work surface.
2. Reposition, remove, or add tray dividers in the desired locations. To remove the divider, push rearward then lift. Reverse the procedure to reinstall.
3. It may be necessary to remove a motor and helix in order to install some dividers. Pull forward on the helix to remove it from the motor. Press down and rearward on the top motor tab to remove the motor from the tray.
4. Reposition the motors to the center of each vend column, using the upper mounting position for the large helix and the lower position for the small helix. It may be easiest to disconnect the motors from the harness first.
5. The harness has 10 sets of motor connections. The first set of connections (at the end of the harness farthest away from the connector) is position 0, followed by 1, 2, 3, and so on. The last set (nearest to the wire connector) is position 8 (35” cabinets) or 10 (39” cabinets). Starting at the left side of the tray, attach the harness connectors to the motors in order. For double columns, use the even numbered connection and disregard the odd numbered connection. (Example: If the first column on the left is double width, disregard position 1 and attach the connectors for position 0). Each set of connectors has a wide and a narrow connector, corresponding to a wide and a narrow tab on the back of the motor.
6. Place the correct label in front of each column, according to the motor connections used.
7. Reconnect the harness, routing it over the rail and through the back of the column.
8. Reinstall the tray.
9. After changing the tray configuration, it will be necessary to reconfigure the motor matrix (See **MERCHANDISER PREPARATION**).

CHANGING DIVIDERS

1. To remove, push rearward on the divider as far as it will go, then lift it up and out of the tray.
2. Reverse the removal procedure to reinstall.

CHANGING HELICES

Each helix is snapped into an adapter which snaps into the vend motor. To remove a helix from the motor, and while wearing gloves, grasp the helix about one “turn” away from the motor, and pull straight out sharply. Do not remove the helix adapter if the helix is going to be reinstalled.

To install a helix, insert the end of the adapter into the motor, and push the helix back towards the motor until the adapter snaps into place. For helix install position, see **Fig. 5.2**.

HELIX ADAPTER

To remove the helix adapter from the helix, twist the adapter to free the mounting leg from the locking tab. Reverse the removal procedure to install.

HELIX EJECTOR

The ejector’s function is to cause the product to fall sooner, and therefore stop the helix sooner. This will help retain the next product in the helix coil, especially if they are difficult products.

The helix ejector is pulled off and pressed on the helix by hand. The ejector is typically positioned half a coil, and often much less, from the end of the helix. The “fin” shaped portion is angled towards the front of the tray.

The best position and angle for the ejector is determined by test vending products.

HELIX ALIGNMENT DEVICE

The helix alignment device is installed under the bottom left side of the large helices to help keep them centered in their columns.

To remove, grasp the front of the helix alignment device with pliers and pull or pry upward. Take care not to lose the plastic mounting clips.

Install by pressing the plastic mounting clips back into the mounting holes. Note that the mounting flange goes toward the helix.

SMALL PRODUCT TRAY (OPTIONAL)

The Small Product Tray is similar to a candy tray, provides 9 selections, and is only 2-3/8” high.

MOTOR POSITIONS / HOME

Motor position can be changed left or right for different width columns, and there are two mounting positions on the snack tray. The lower and upper positions are used for the small and large helices, respectively.

1. Remove the helix. Remove the harness terminal.
2. Press down and rearward on the top mounting tab, then pull the lower mounting legs out of the mounting slots.
3. Reverse the removal procedure to reinstall.
4. After all motor changes have been made press 7 to re-count all the motors.
5. The merchandiser will not vend from a given helix when the motor is missing, jammed or has home switch problems.
1. After a motor has been configured check to make sure the helix is in the home position (see **Figure 5.2**). If the end of a helix is not, pull it out of the motor, turn it until it is, and reinsert the helix into its motor.

BOTTLE TIPPER BAR

The bottle tipper bar is typically used with carbonated beverage bottles. The bottles stand upright. The tipper bar restrains the top of the bottle so that it falls bottom first, rather than tumbling

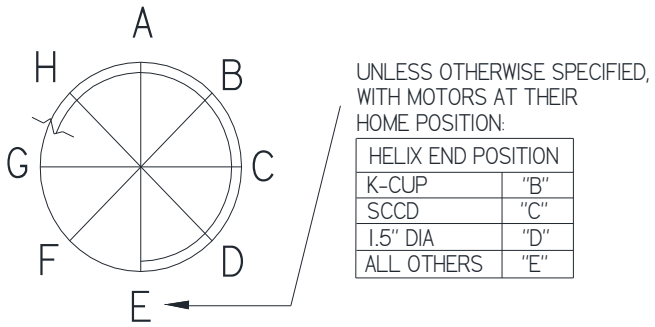


Figure 5.2 Helix Install Position

off the tray.

1. To remove, bow the bar until one end can be pulled free from the support bracket. Take care not to lose the plastic bushings in the supports.
2. To reinstall, reverse the removal procedure.

AVOIDING PRODUCT HANG-UPS

Avoid large products, such as chips, from “hanging-up” between the tray and the glass by loading them “left corner first” into the helix. The bottom left corner of the bag should be in front of the helix to let the helix push the bottom out first (See **Figure 5.3**). An incorrect loading may cause the bag to fall top first, which could lead to a hang-up. Loading “left corner first” prevents the product from falling top first.

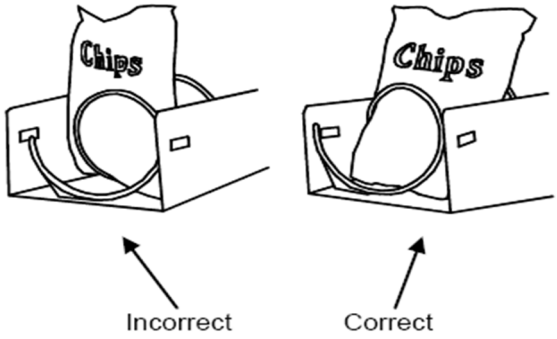


Figure 5.3 Large Bag

TALL PRODUCT VENDING

Place tall, narrow products in a column with a candy pusher bar. Typically these are installed in columns 8 and 9 on the candy trays. Rotate the bar upward or downward to the desired position. It should hold the product upright, but not pinch or bind the product.

CANDY PUSHER BAR INSTALLATION

The candy pusher bar is an adjustable bar that mounts to any tray divider to keep tall candies from falling sideways (See **Figure 5.4**). Four pusher bars are provided with the standard glass front merchandiser.

1. Snap the pusher bar into the retainer.
2. Rotate the pusher bar to accommodate the product.

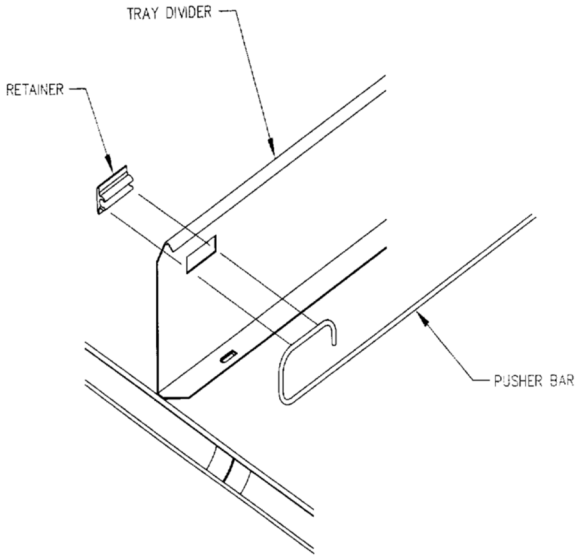


Figure 5.4 Candy Pusher Bar Installation

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6
SERVICE PROGRAMMING

ERROR CODES

Any errors that have been recorded will be displayed when the door is opened. *These will be erased when the Service Mode button is pressed, or the door is closed.* **Section 7** provides descriptions of errors and tips for troubleshooting them.

SERVICE MODE

Access the service mode by pressing the blue mode button on the VMC (See **Figure 3.1**). If there are no errors, the number of vend motors available is displayed.
Return to vend mode by closing the door or pressing the mode switch or allowing the 3 minute time-out to occur from inactivity.
For convenience, there is an instruction decal inside the cabinet that presents the top-level information in this section

1– PRICE PROGRAM Before setting prices, install a coin mech and/or bill validator so that the control board will recognize the proper scaling factor for your currency.

Press 1 to enter Price Program. Then choose one of the following:
1– All Items. This sets all prices in the vendor the same. To save time, set all prices to a common price, then go back and set individual rows or selections as needed. Press # to save.
2– Row. Enter row number, then new price, including cents. Press # to save, then # to go to next row.
3– Selection. Enter selection, then price using number keys. Press # to save, then # to move to the next selection.
4– Coupons. This requires a programmed validator. Please contact Customer Service for more information.
5– Tokens. This requires a programmed changer. Please contact Customer Service for more information.
6– Combo. This option allows you to vend up to four additional items for a single price. Please contact Customer Service for more information.
7– Calories. Used to display calories prior to making a selection.
8– Lottery. Enter number of vends between jackpot.

2– CASH COUNTERS
Limited sales information can be seen directly on the merchandiser display. More detailed sales information is contained in the DEX data. This data can be collected with any DEX data collection system through the 1/4" phono plug.

1– All Items. Displays total total vends, cash & card sales. Press 7 to clear resettable registers.
2– Row. Displays as above, but for specified row only.
3– Selection. Same as above, per selection.
4– Short DEX. Removes less-common settings from DEX.
5- Reset on Read. Press 5 to toggle on/off.
6- DEX save.
7- DEX Upload. Press 7 to load DEX to USB drive.

3– COIN PAYOUT This option allows the user to add or dispense coins to/from the changer. On some changers, pressing a number on the keypad will dispense a coin from that numbered coin tube.

SELECT TUBE 1-6 - To dispense coins, press 1 through 6 (for a 6-tube coin mech) to dispense from tubes 1-6. Each key press displays the value of the coin being dispensed and the total number of coins remaining in that tube.
OR INSERT COINS - To fill the coin mech, simply drop coins in the coin slot. The display will show the value of the coin and the total number of coins in that tube. Note that coins can also be added through the back of the coin mech. However, the VMC will not have an accurate count of the coins in the tube unless the tube is filled completely. When the high-level sensor in the tube detects coins, the control will set the correct coin count for that tube.

4– CONFIGURATION Use this for most of the setup and operation options. Others can be found in **6-ADVANCED**.
1- Date/Time. Enter the current time and date. This information will be used for data logs and error records.
2– Health & Safety. Allows selection of protected products by selection, row, or the entire machine. Be sure to also press 4.2.1.9, and enable the H&S function.
3- Language. Toggle between English, Spanish & French.
4- Type, all items. Leave this on Snack.
5- Type, by row. Leave this on Snack.
6- Type, by selection. Leave this on Snack.
7- Auto Reinstate. Re-enable motors from locked-out vends. Press 9 to disable.
8- Space-to Sales. The user can link selections to ensure even vending of dated products. Linked selections are vended sequentially for better product rotation. Press 8 to edit.
9- STS Custom. Links specific selections.
0- Advanced. **Password: 2314**
   1. Beep enable. Turn off keypad beep.
   2. Optics disable. Failed optics disables the entire machine.
   3. Motor type. Set to 3-wire B
   4. Temp. Choose Snack, Low-temp, or Low-temp + for Health & Safety protection for perishable foods.
   5. Sel Style. Set to 2-digit selection.
   6. Aux Menu. Master reset: 0.0.0 to clear.
   7. Defrost Menu. Adjust time between defrost cycles.
   0. AUX Card Rules. Allows remote price setting.

5– MDB OPTIONS Select from several features to adapt to specific accounting environments.

1- Force Vend. Default is OFF. If set to ON, the customer is forced to make a selection before a refund will be made. If the selected product cannot be dispensed, a full refund can be returned to the customer.
2– Bill Escrow. Default is ON. Allows last bill to be returned if validator is able.
3- Multi-Vend. Default is OFF. If set to ON, remaining credit is held and displayed, encouraging additional purchases.

4- Free Vend. No money is accepted.. The merchandiser can be quickly set to vend all products for free. Prices are ignored while FREE VEND is enabled. The original prices will be restored when FREE VEND is turned off. **Note that Free Vend will not time-out on its own.**
5– Fast Change. Default is OFF. If set to ON, overrides Multi-Vend.
6– Optical Vend. Designates which items are monitored by the vend sensors. Press 9 to toggle on/off.
7– POS Options.
1-Toggle POS message on/off.
2- Toggle Opt out.
3- Toggle time display on/off.
4– Toggle programmable POS on/off.
5– Toggle between MM/DD/YYYY and DD/MM/YYYY
6– Toggle between AM/PM and 24 hour format.
8- Set Point. Set the cutoff temperature in chilled vendors. The current temperature can be displayed momentarily by pressing the 0 key when not in Service Mode.
9- Hold Credit. Credit hold on vend fall.

6– ADVANCED. This menu requires a password: **2314** to access the following.
1– Discount. Allows a discounted price for all, by row, and by selection for up to 4 time periods.
2– Exact Change. Set coin tube value that displays 'Please use exact change'.
3- Unconditional Accept. Credit is accepted, even when change is not available. Press 0 for all-accept.
4- Max Change. Prevents change from dispensing until the credit amount has been reduced to less than the programmed limit.
5- Shutdown. Will not sell items by all, row or selection during up to 4 preset periods. If selected during these times "Vending Operation to resume at hh:mm" is displayed.
6- Energy Savings. Raises the cabinet temperature to a set point, and/or turns lights off during programmed times/days.
7- Pair Motors. Allows 2 motors to run simultaneously to vend wide items. The paired motor feature works by electronically coupling two motors together. One motor turns counter-clockwise, and the other motor must turn clockwise – corresponding CW and CCW helices must be used as well. Both motors turn for the same length of time. Trays may have multiple coupled motors. Use a shunt (AMS P/N 30190) to change direction of rotation.
Note: A coupled motor set will vend using the price of the lower-numbered motor.
8- Degrees. Toggles between Fahrenheit and Celsius display.
9- Decimal place. Leave on auto.
0- Currency. Select $, £, €, or Rs symbols.

7– MOTORS. This is used to establish the presence of and test the motors that are connected in your machine as it is configured. Press once to show motor count and then return any motors to home if not already there. Use only when every helix is empty!

8- SELECTION. Perform a single test vend. Motor will turn twice and display "Sold Out" if vend sensor is not interrupted.

9- SELECTION– ALL. Pressing 9 will run each vend motor in a continuous loop. To stop sequence, press the * key. Temporarily block the vend sensor during this step.

0- TEST MODES.
1– Relays. Manually operate the chiller relay (relay 1).
2– Vend Sensor. Optics alignment test.
3– Log. Use password to collect log.
Save to USB drive: 0-3-PW-3-3-#
4– On Door. Toggles error message off when door open.
5– Manual Defrost. Set a manual defrost cycle.
6- Event Log. Logs defrost and door openings.
7- Temperature Log. Hourly temperature & compressor status

CUSTOM MESSAGE

The user can customize the message that is displayed when the merchandiser is idle. The message to be displayed on the display can be up to 50 characters, including letters, numbers, punctuation and spaces. New messages erase old ones.

Edit program DEX-UPLOAD.txt (available on the website) by changing any text between the quotes. Do not change any of the other formatting. Add spaces to center if needed. Then copy to USB drive and insert in VMC.
1– Press blue Service Mode button.
2– Press 2.7.7 Display should read "dex upload found"
3- Press # to upload settings.
4- When display reads "upload complete" remove thumb drive.

7
TROUBLESHOOTING

OUT OF SERVICE MESSAGE

Certain critical errors will disable the merchandiser. When this happens, an “OUT OF SERVICE” message will be displayed. **Note that if a Health and Safety error occurs, any food which may have spoiled should be discarded.**

To get the merchandiser back in service, press the mode switch on the VMC. *Any errors displayed will be cleared immediately.* Refer to the list of error codes and explanations on the following pages.

HEALTH AND SAFETY ERRORS

NAMA specifications for perishable food merchandisers require that the temperature in the merchandiser must cool to 41°F or lower within 30 minutes of closing the door. This is to allow a recovery period following loading - however, all products should be chilled prior to loading. After this requirement has been met, the temperature in the merchandiser must never remain above 41°F for more than 30 minutes.

For merchandisers configured to COLD + H&S, the Health & Safety function is activated automatically. Unless otherwise specified by regulatory agencies, AMS recommends setting the temperature to 39°F when vending perishable food products.

In the event the internal temperature exceeds the NAMA specifications following the recovery period or during normal operation, an error will be generated and the merchandiser will not allow further sales. This protects the consumer from purchasing spoiled food. Note that this feature can be enabled only for certain products if desired.

The H&S function can be tested by manually warming the temperature sensor to simulate the failure conditions.

ERROR CODES: CAUSES AND SOLUTIONS

To view error codes, open the vending cabinet door.
NO ERRORS will be displayed if there are no errors or an error has been cleared (whether corrected or not). If the error message has been cleared, but the cause has not been corrected, the message will NOT re-appear until the error is detected again.

CLEARING JAMMED MOTOR

If one or more motors and helices become jammed, the motor(s) will be displayed as a sublevel error under “Motor Jammed”.

Energized vend motors can turn a helix with considerable torque, creating a possible entrapment hazard. Disconnect power to the merchandiser or VMC before freeing a jammed helix or motor. Always restrain or block the helix before freeing a jammed or caught product.

CAUTION: **Use care when freeing jammed product**
(See Helix Motion and Jamming)!

Clear any jammed products from the indicated vend columns.

WATER FORMATION IN THE CABINET

Water formation in the cabinet indicates an air leak which allows moist air to continually enter the cabinet and condense on the evaporator.

1. Make sure the refrigeration unit cover gasket is sealing properly all the way around. In particular, check the openings where the refrigeration lines and drain tube pass through the cover. These openings should be sealed completely around the lines and tube with duct seal.
2. Make sure the door is properly tightened so that it makes contact with the gasket on all sides.
3. Make sure there are no foreign objects interfering with the vend door, and the vend door closes properly.

MACHINE TROUBLESHOOTING CHART

The following troubleshooting chart may be used to find quick remedies for electrical and mechanical failures in the merchandiser.

IF A REPLACEMENT PART IS NECESSARY, PLEASE CONTACT YOUR DISTRIBUTOR

ERROR CODES – CAUSES AND SOLUTIONS		
ERROR CODE	**POSSIBLE CAUSE**	**SOLUTIONS**
HEALTH	The internal temperature rose above 41°F for more than 30 minutes.	The power was disconnected, the door was not closed completely, or the refrigeration system needs service/cleaning. Check/clean screens. Check operation of door switch.
VMC DOOR SWITCH	Door switch open more than 30 minutes	Check switch in door (near hopper) and harness for proper operation.
VMC SELECTION SW	The keypad has a stuck button.	Determine reason for stuck keypad and repair or replace keypad.
VMC LOW AC	Incoming power to the vendor is too low to run the vending machine	Do not use an extension cord. Remove any voltage-reducing devices not authorized by the manufacturer.
MOTOR (X) OPEN OR SHORT	The motor or harness has an electrical open or short.	Try swapping motors or tray harnesses to see if the error follows the swap. Replace defective component.
VMC OPTICS ERROR	The vend sensor is blocked, mis-aligned, or defective.	Check sensor placement and harnesses.
MOTOR (x) JAM	Excessive current draw.	Caution! See **CLEARING JAMMED MOTOR**.
REFRIG. SENSOR1 OPEN OR SHORT	The temp sensor or harness has an electrical open or short.	Replace if needed.

MACHINE TROUBLESHOOTING CHART		
Symptom	**Possible Cause**	**Solutions**
No power at the VMC. (No beeping sound during power-up or when the service mode button is pushed.)	No power from power cord.	Check power cord, outlet or supply.
	3 amp fuse is blown.	Replace 3 amp fuse.
	Short or cut in the power harness between the transformer and VMC.	Check continuity through the power harness. If there is no continuity replace the power harness.
	Transformer does not have power at the 24 VAC secondary side.	Insure primary side of transformer is receiving power. If there is not at least 24 VAC on secondary side replace transformer.
Upon selection, the merchandiser displays "Please Make Another Selection".	Selection not configured in the motor matrix.	Reconfigure the motors. Check for motor pairing.
	Motor jammed.	Clear jammed motor.
	Vend not sensed by sensor.	Clear fault in sensor boards or harness: possible VMC error.
Merchandiser does not accept coins.	Options set for "Free Vend".	In Service mode, press 5-4 and change to **N**.
	Coin mech unplugged.	Plug in coin mech.
	Coins jammed.	Clear coin mech.
	Defective coin mech.	Replace coin mech.
	Credit amount exceeds the highest price. (Prices may be set at $0.00.)	Set prices.
	VMC is in service mode.	Exit service mode.
Merchandiser will not pay out coins.	Coin mech unplugged.	Plug in coin mech.
	Defective coin mech.	Replace coin mech
	Coins jammed.	Clear jammed coins.
	No coins in coin mech.	Add coins to the coin mech.
Validator will not accept bills.	Coin mech unplugged.	Plug in coin mech.
	Not enough change in the coin mech.	Add coins to the coin mech.
	Validator unplugged.	Plug in the validator.
Bill is immediately stacked.	Change feature is enabled.	Disable change feature.
	Highest price is greater than bill value.	Change price.
	Non configured selection has a price greater than bill value.	Set and save all prices, including selection columns not in use.

MACHINE TROUBLESHOOTING CHART (con't.)		
Symptom	**Possible Cause**	**Solitions**
Tray selections do not make a complete cycle.	Harness off or shifted at the vend motor connection Motor jammed. Sensors blocked.	Connect harness to the VMC. Check harnesses.
Tray selection continues to turn after a successful vend.	Motor not sensing home.	Verify connection at the motor
Health and Safety shut down.	Door switch is not working.	Adjust switch for positive contact with door.
		Close door tightly.
		Replace defective door switch.
		Replace defective door switch harness.
	Bottom air vent screen is blocked.	Clean obstruction or dirt from bottom screen.
	Evaporator is frozen.	Check for air leaks.
		Check for a failed evaporator fan motor. If it has failed replace the evaporator fan motor.
		Check evaporator fan switch harness connection.
	Defective temperature sensor.	Replace temperature sensor.
	Refrigeration problem.	See below.
Refrigeration unit not running.	Door switch is not working.	Adjust switch for positive contact with door.
		Close door tightly.
		Check door switch harness connection.
		Replace defective door switch.
		Replace defective door switch harness.
	Temperature setting in the VMC is set too high.	Change temperature setpoint.
	Refrigeration relay harness Damaged or disconnected.	Connect refrigeration relay harness.
	Inoperative relay.	Check for low voltage and high voltage.

8
MAINTENANCE

UPGRADING FIRMWARE

Occasionally AMS releases new firmware which adds features or functions that you might want to use to enhance your operation. Additionally there may be times you want to replace a control board. In these cases you will have to install new firmware in your board.

To upgrade firmware, you must first obtain the new file from the AMS website and store it on a USB drive. Then follow the steps below to transfer that new firmware into the VMC's memory.

Important! All files on the USB device must be saved in the top level (or 'ROOT') directory. The VMC will not look into other folders for files. Only one version of the file can be on the drive.

1. Open the Front Door and turn the machine OFF. Note that settings will be cleared during this process. If necessary, write down the prices or other settings first.
2. Locate the socket for the USB drive (**see Figure 3.1**).
3. Insert the USB drive firmly into the socket (it will only fit one way).
4. While pressing (holding) the blue Mode button, turn the power to the vendor ON. . After a few seconds, a small red LED will begin flashing rapidly. This is located near the blue button.
5. When LED stops flashing, remove finger, then power the machine OFF.
6. Wait 5 seconds for power to fully dissipate from the control board, then remove USB drive.
7. Turn power ON, and verify software version on the display.
8. Check options and set prices as needed.

CLEANING THE BOTTOM SCREEN

Obstructions and lint blocking the air flow up into the chiller condenser can damage the chiller. Clean monthly to allow air to flow through the chiller condenser.

CLEANING THE REFRIGERATION UNIT

AMS recommends cleaning the inside of the refrigeration unit at least twice a year under normal conditions, more often in dusty environments.

CAUTION: Always wear eye protection and gloves when cleaning merchandiser! Condenser fins are sharp!

1. Unplug the merchandiser.
2. Remove the temperature sensor from refrigeration unit housing.
3. Remove the refrigeration unit housing (See **Figure 8.2**).

CAUTION: Condenser fins are sharp!

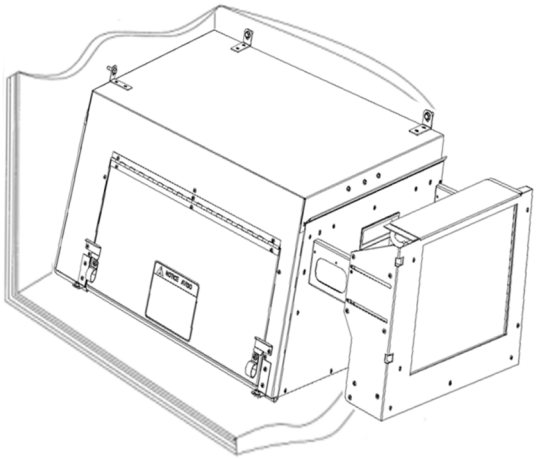


Figure 8.2 Refrigeration Unit Housing

4. Remove dust from the condenser fins and coils with a vacuum or stiff brush.
5. Remove dust from the inside of the rear screen.
6. Remove dust from the outside of the bottom screen.
7. Replace the housing. When reinstalling the refrigeration unit housing, it is important to seal the housing completely to prevent air leaks. Outside air leaking into the cabinet can cause condensation to form, which can lead to water overflowing the drain pan or ice build-up on the evaporator. Follow the procedure below to ensure proper sealing.
    a. Locate the notches on the back right corner of the housing (See **Figure 8.2**).
    b. Remove any duct seal from the notches. Do not discard the duct seal. It will be reinstalled in a later step.
    c. Set the housing in place, making sure the drain line and power cord pass through the lower notch. The insulated copper tubing should pass through the upper notch.
    d. Push the housing tightly against the back of the cabinet and visually check that the foam gasket is making contact on all sides.
    e. Continue to push on the housing while reinstalling the screws through the mounting tabs. Be careful – do not overtighten the screws.
    f. Remove the screen from the outside back of the cabinet.
    g. Press the duct seal into the notches. Make sure to seal completely around the drain line, power cord, and insulated copper tubing.
    h. Reinstall the screen.

8. Reinstall the temperature sensor.
9. Plug in the merchandiser.

Cleaning Removable Bottom Screen

1. Open the door to the merchandiser.
2. Turn the two tabs on the chiller housing and swing the chiller cover door all the way up.
3. With a finger in the removable screen handle, lift it up slightly and slide it towards you.
4. A vacuum attachment with a brush, or a bristle brush, may be used to remove dirt and lint from screen.

CAUTION: Condenser fins are sharp!

5. Remove dust from the condenser fins and coils. Do not damage the fins or coils.
6. Do not use water or other liquid chemicals or solvents.
7. Reinstall the clean and dry removable screen by sliding it back into the holder.
8. Close door on chiller housing and turn the two tabs to hold door closed.
9. Clean the floor under the merchandiser with the brush, removing any obstructions such as cardboard and wrappers.
10. Close the merchandiser door.

CLEANING THE MERCHANDISER EXTERIOR

Clean the merchandiser exterior as necessary using mild household cleaners and water. Dampen a cloth or sponge with the cleaning solution and gently wipe the exterior.

1. Do not use chemicals or solvents. These can damage paint, plastic trim and decals.
2. Do not use abrasive cleaners.
3. Do not use a water jet.
4. Do not let water or cleaning solutions contact electrical or electronic components.
5. Clean the glass front inside and out with a good window cleaner.

CLEANING THE MERCHANDISER INTERIOR

Clean the interior using mild household cleaners and water. Dampen a cloth or sponge with the cleaning solution and gently wipe the interior surfaces clean.

Some merchandisers use a door liner made from ABS plastic. This liner will crack if chemical solvents or harsh detergents are used.

1. Unplug the merchandiser from the power socket.
2. Open the merchandiser door.
3. Do not use chemicals or solvents. These can damage paint, extruded plastic parts and other plastic parts.
4. Do not use abrasive cleaners.
5. Do not use a water jet.
6. Do not let water or cleaning solutions contact electrical or electronic components.
7. Allow to air dry, or place a fan on the floor in front of the open interior.
8. When dry, plug in the merchandiser.

LUBRICATION WITH LITHIUM GREASE

Once a year the bottle tray rail ball bearings and moving door parts should be lubricated with grease.

1. Pull out the tray. The tray rail is constructed of telescoping channel sections. Apply a very light coating of white lithium grease on the outside of the first two sections, along the top and bottom edges.
2. Apply grease on the inside of the last two sections along the top and bottom.
3. Apply grease (or similar lubricant) to the door lock bolt threads and the door hinges as necessary.
4. Wipe off excess grease. No other lubrication is required.

WARNING!
Do not use electrical appliances inside the merchandiser unless recommended by AMS.

DEFROSTING THE EVAPORATOR COIL

Excess moisture accumulating inside the cabinet may freeze in the evaporator coil. As the coil becomes blocked, air flow suffers.

1. Unplug the merchandiser
2. Open the door.
3. If the merchandiser has an H&S error, the food products should be disposed of.
4. Place a fan on the floor in front of the merchandiser to direct room temperature air into the back of the cabinet.
5. Do not use any tools or electrical appliances to chip at, heat up or otherwise “speed up” the defrosting action around the coil. Do not puncture the coil.
6. Look for the source of excess moisture.
7. Look for broken or leaking product. Dispose of it and clean up the liquid.
8. Inspect the vend hopper and clean it of liquids and broken containers.
9. Check to make sure the vend hopper door doesn’t hang open.
10. Check that the gasket of the chiller housing is securely contacting the cabinet and is sealing it on all sides.
11. Check to ensure the duct seal is firmly in place around the two openings on the rear, right hand edge of the chiller housing. Use more duct seal if it is missing or there is not enough.
12. Check the door gasket around the cabinet opening. It should be intact.
13. Check to see if the door closes squarely on all four sides and the door is firmly seated against the gasket.

14. After the evaporator coil has been defrosted, clean up any water inside the cabinet.
15. Close the door.
16. Plug in the merchandiser and allow merchandiser to cool down before loading perishable products.

TESTING THE TEMPERATURE SYSTEM
(Health and Safety)

1. The sensor can either be temporarily disconnected, causing the controller to assume a temperature of 125°F/49C (display will read ***F), or relocated outside the cabinet.
2. The sensor is mounted to its bracket using two spring clamps (See **Figure 8.3**). To remove it, first unwrap the sensor wire from the two slots in the bracket, and then slide the sensor out of the two spring clamps.
3. Relocate the sensor outside the merchandiser, and allow to warm up (above 41°). Carefully close the door. The temperature may be monitored by pressing the **0** button. The sensor bulb has a 20-25 second response delay to minimize hysteresis error before the correct temperature is displayed. Thirty minutes after the door is closed, the display should read “OUT OF SERVICE”. The merchandiser will not vend protected products until the door is opened and the error is cleared.

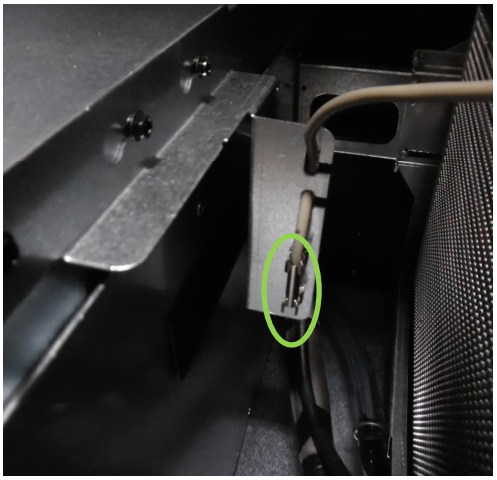


Figure 8.3 Temperature Sensor

6. After testing, remount the temperature sensor on the two spring clips, and carefully re-wrap the sensor wire in the two bracket slots ensuring the wire is not caught or pulled, and is not pinched when the door is closed.
7. Close merchandiser door. The merchandiser will return to normal operation (including a cool-down time if needed).

REPLACING THE POWER CORD AND GFCI TEST

TOOLS REQUIRED:
Use this procedure to replace a power cord that is cut, split open or is otherwise damaged or is a hazard. A ¼” nut driver, gloves and protective eyewear are required. (See **Figure 8.4**)

REMOVAL
1. Move the merchandiser away from the wall (if applicable) and unplug the power cord from the wall outlet.
2. Remove and save the screws attaching the back plate cover. Save the cover.
3. Unplug the power cord from inside the merchandiser.
4. Remove and save the screws attaching the inside cover. Save the cover.
5. Remove and dispose of the damaged power cord.

INSTALLATION
1. Insert the new power cord in from the rear of the merchandiser.
2. Plug the new cord into the merchandiser’s IEC receptacle but do not plug the power cord into a power outlet at this time.
3. Reattach the inside cover.
4. Place the insulation and back plates over the cord, with the cord exiting to left or right.
5. Align the holes in the cover with the holes on the back of the machine. Reinstall screws through the holes in the cover. Do not over-tighten the screws.
6. Plug the power cord into the power outlet. The merchandiser should power up.
7. If the power is on in the merchandiser, and your machine is equipped with a GFCI, test the GFCI as follows: press the TEST pushbutton on the GFCI to trip the GFCI and shut it off. The merchandiser power should turn off. Then press the RESET pushbutton to return the GFCI to normal operation. The merchandiser should power up.
8. If the power is not on in the merchandiser check the GFCI as follows: press the TEST pushbutton on the GFCI for 1 second, then press the RESET pushbutton for 1 second to return the GFCI to normal operation. The merchandiser should turn on.
9. If there is no power, check the power outlet at the wall. If there is power at the outlet check for power at the plug end of the power cord.
10. If everything is operational return the merchandiser to its position near the wall (if applicable).

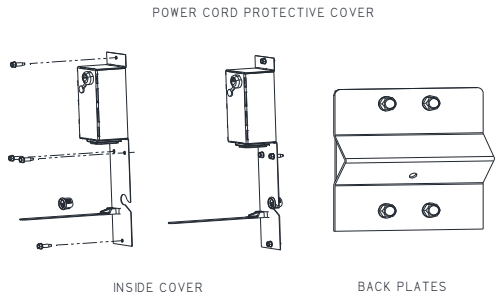


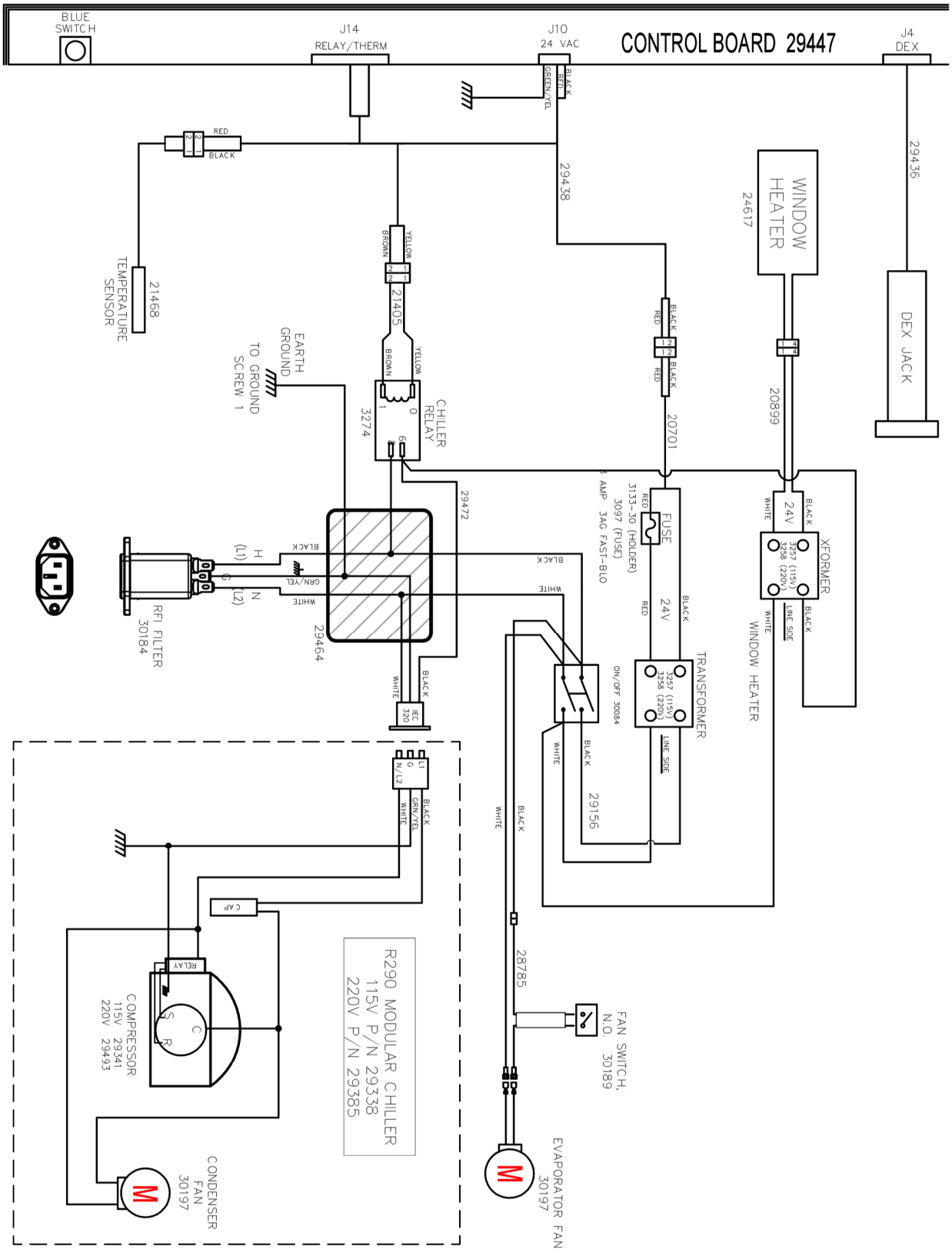
Figure 8.4 Replacing Power Cord

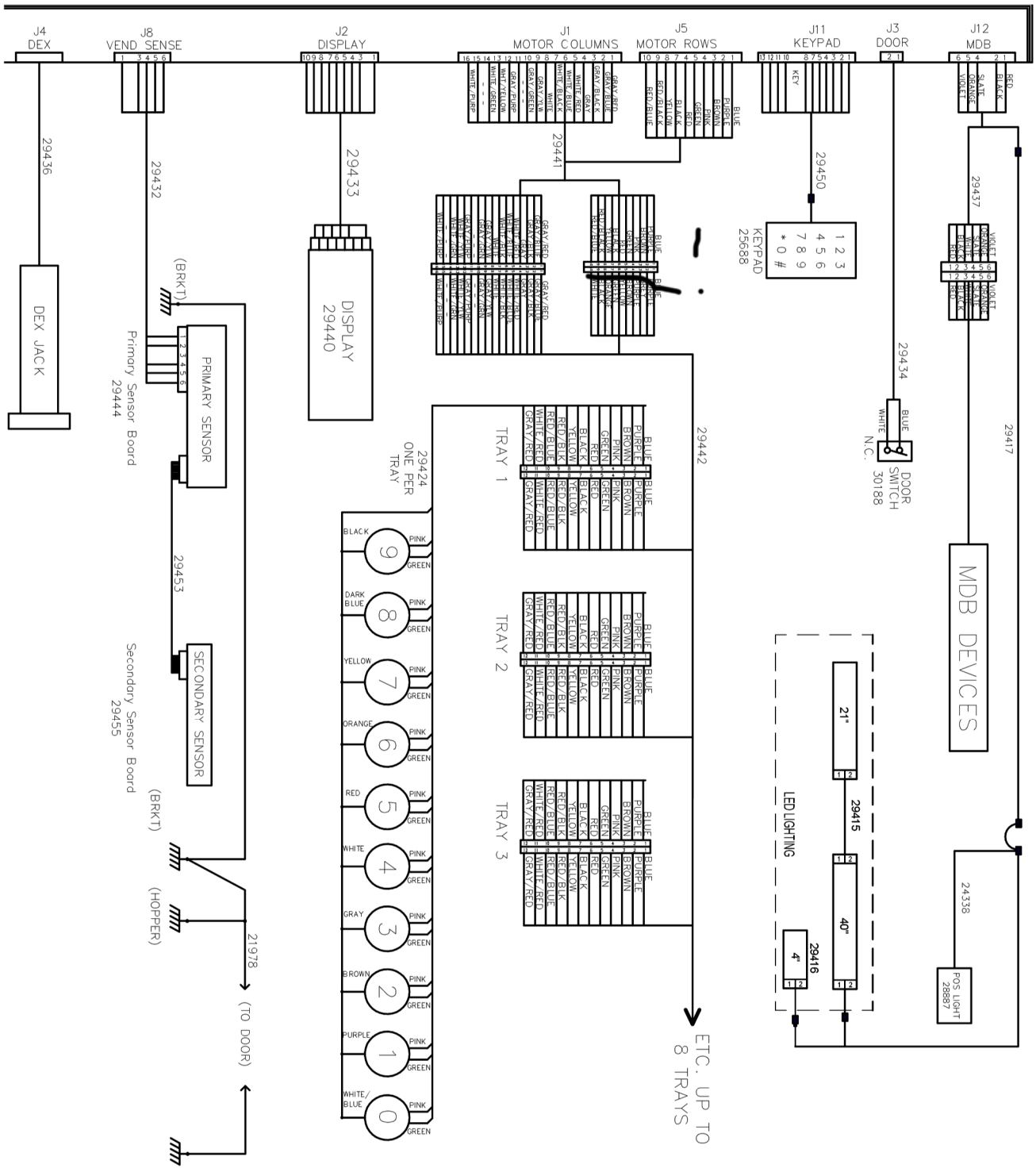
STORING THE MERCHANDISER

If the merchandiser is to be stored without power for several days or longer, use the following instructions. These instructions are similar to those used to store any refrigerator.

1. Unplug the merchandiser from the power outlet.
2. Remove any products from the merchandiser.
3. Clean the inside of the merchandiser using the general directions given in **CLEANING THE MERCHANDISER INTERIOR**.
4. Leave the merchandiser door open for a day to allow the interior to thoroughly dry.
5. Close the merchandiser door and lock it to protect the interior.
6. Roll up the power cord and place it in the hopper. If the merchandiser is being moved follow the handling and setup procedures given in **MERCHANDISER PREPARATION AND INSTALLATION**.

9
WIRING DIAGRAMS




J4
DEX
J8
VEND SENSE
J2
DISPLAY
J1
MOTOR COLUMNS
J5
MOTOR ROWS
J11
KEYPAD
J3
DOOR
J12
MDB
29436
29432
29433
29441
29450
29434
29437
29417
DEX JACK
DISPLAY
29440
KEYPAD
25688
DOOR
SWITCH
30188
MDB DEVICES
(BRKT)
PRIMARY SENSOR
Primary Sensor Board
29444
29453
SECONDARY SENSOR
Secondary Sensor Board
29455
(BRKT)
(HOPPER)
21978
(TO DOOR)
29424
ONE PER
TRAY
TRAY 1
TRAY 2
TRAY 3
29442
ETC. UP TO
8 TRAYS
21"
29415
40"
LED LIGHTING
4"
29416
24338
POS LIGHT
29687

10
OPTIONAL EQUIPMENT & SERVICE PARTS

Part No. 20449 - KIT, CANDY PUSHER
The candy pusher is an adjustable bar that mounts to any tray divider to keep tall candies from falling sideways. Four of these are provided with the standard glass front merchandiser.

Part No. 20450 - KIT, HELIX SPLITTER
The helix splitter is a plastic divider that can be inserted into a small helix to divide each coil into two product openings, thereby doubling product capacity. The helix splitter works best with narrow products such as Life Savers.

Part No. 20535 - KIT, CUP RAIL, SMALL HELIX

Part No. 20536 - KIT, CUP RAIL, 4" HELIX

Part No. 20723 - KIT, CUP RAIL, 3" HELIX
The cup rail is a flat plastic bar that can be placed inside the helix to provide a flat surface for rigid flat-bottomed packages that otherwise do not stay upright when placed in a helix. Examples would be drink boxes, small bottles, or individual serving cups of soup, pudding, etc.

Part No. 21166 - KIT, FALSE LEG
The false leg is to be installed on all machines having 2 or more bottle trays, to prevent the machine from tipping during loading. *Failure to install the false leg could result in serious injury.*

Part No. 24056 – KIT, 39" HIGH CAPACITY HEAVY PRODUCT TRAY
Based on a reinforced snack tray, allows vending 10 columns of cans.

Part No. 24046 - KIT, MINI DISPENSER
Replaces a snack selection with 1.5" helix and spacer.

Part No. 23958 - KIT, LOW-AMBIENT HEATER
Used in 39" L/T vendors

Part No. 23958-01 - KIT, LOW-AMBIENT HEATER
Used in 39" L/T Visi-Combo vendors w/bulkhead

Part No. 21141 - KIT, VENDOR TO WALL BRACKET
Used to secure a vendor to a wall

Part No. 29098 - KIT, VENDOR TO FLOOR
Used to attach a vendor to the floor

Part No. 20130 Replacement T-handle

Part No. 23305 T-Nut cage assembly

Part No. 25688 Lighted Keypad

Part No. 29338 120V refrigeration unit, R290

Part No. 29385 220V refrigeration unit, R290

Part No. 29451 Replacement LED light kit

Part No. 29439 Brushless vend motor

Part No. 29440 Display, 2x20, Insight

Part No. 29444 Sensor board, Detector (primary)

Part No. 29447 Control Board, Insight

Part No. 29455 Sensor board, Emitter (secondary)

Part No. 30186 Power Switch, Ignition Protected, R290

Part No. 30187 Sealed Relay, R290

Part No. 30188 Switch, Normally closed, (door switch)

Part No. 30189 Switch, Normally open, (fan switch)

Part No. 30190 Mini Shunt, 2.54 spacing (reverse direction of a vend motor)

Part No. 30197 Refrigeration Fan (condenser and evaporator)

SERVICE MENU MAP

SERVICE MODE

Open door and press the blue switch on the control board to enter SERVICE MODE.

When in Service Mode press * to move back or up to previous item on above list.

1- PRICE PROGRAM

1. All Items
2. By Row
3. By Selection
4. Coupons
5. Tokens
6. Combo
7. Calories
8. Lottery

2- CASH COUNTERS

1. Historical count
2. By Row
3. By Selection
4. Short DEX
5. Reset on Read
6. DEX Save
7. DEX Upload

3- COIN PAYOUT

Use to fill changer or determine number and value of coins in each tube.

4– CONFIGURATION

1. Date/Time
2. Health Safety ◙
3. Language
4. n/a
5. n/a
6. n/a
7. Auto reinstate
8. Space To Sales
9. Custom STS
0. **Advanced**. Password: 2314
    1. Beep enable
    2. Optics disable
    3. Motor type.
    4. Temp (snack, cold, or cold+H&S) ◙
    5. Selection Style (2-digit or 3-digit selection)
    6. AUX Menu (0-factory reset)
    7. Defrost
    0. AUX Card Rules

5– OPTIONS

1. Forced Vend [OFF]
2. Bill Escrow [ON]
3. Multivend [OFF]
4. Free Vend [OFF]
5. Fast Change [OFF]
6. Optical Vend [ON]
7. POS Options
8. Temperature Set Point ◙
9. Hold Credit [ON]

6– ADVANCED Password: 2314

1. Discount
2. Exact Change
3. Unconditional Acceptance
4. Max Change
5. Scheduled Shutdown
6. Energy Savings
7. Pair (couple) Motors
8. Degrees [F]

7– MOTORS

Use this to verify motor count, and return any motors not at home.

8– SELECTION

Perform a single test vend.

9-SELECTION: ALL

Use this to run every vend motor in sequence, in a continuous loop. Press * to stop.

0– TEST MODES

1. Relays. Relay 1 is chiller.
2. Optical sensor test
3. System logs
4. Show Errors on Door
5. Manual Defrost
6. Event Log
7. Temperature Log

Note: Return to vend mode by closing the door, waiting 30 seconds, or pressing the mode switch.