



## **SENSIT 3**

# **OPERATION AND SERVICE MANUAL**

Glass Front Vendor,

Models 28 SLIM GEM®  
& 39 WIDE GEM



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#### Publication Notice

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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.

Note 1 The Sensit 3 Control Board is sometimes referred to as the 'VMC' or Vending Machine Controller.

Note 2 Throughout this manual, the terms, 'Coin Changer' and 'Coin Mech' (or Mech) are used interchangeably and refer to the device that accepts and validates coins inserted through the coin slot and which also includes storage for and means with which to pay coins in change back to the customer.

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# 1 INTRODUCTION

Congratulations on the purchase of your new AMS Sensit 3 vendor. All Sensit 3 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, and flexible product configuration are just some of the many features built into every AMS merchandiser.

## **SENSIT 3 SYSTEM**

Your vendor is equipped with the Sensit 3 control system. The Sensit 3 system is a patented 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 Sensit 3 system can detect when the light has been blocked by a falling product. Using this technology, the vendor “knows” when your customer gets the product. The Sensit 3 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 vendor 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!

### **Adjustable Helix Motion**

With the Sensit 3 system, the helix can stop as soon as the product falls, or when the helix returns to the home position. See **TRAY SETUP** on page 22 for more information.

### **Additional Benefits:**

- Opening the delivery bin door will not affect the Sensit 3 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.
- 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.
- Disabling or blocking the sensor will not allow vandals to receive free product. The Sensit 3 system can over-ride blocked or malfunctioning sensors and still vend.
- Opening the door of a cold vendor will cause some condensation to form inside. The Sensit 3 system will not allow vending until this fogging clears, normally within a few minutes of closing the door.

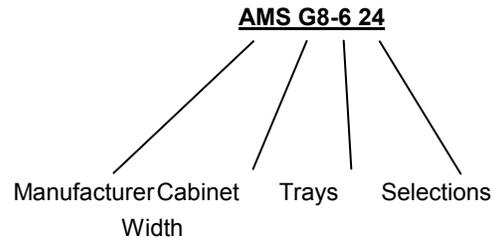
## **MODEL IDENTIFICATION**

When requesting service, replacement parts or technical assistance, please copy the information found on the vendor Serial Plate (Refer to **Figure 1.1** below). 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.



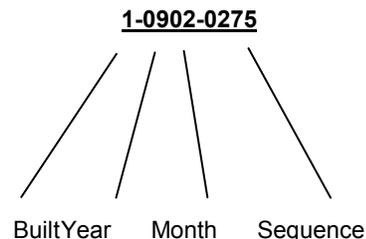
**Figure 1.1 Typical Serial Plate**

### **Model Number Breakdown (Refer to Figure 1.1)**



Example: AMS G8-624 means it is an Automated Merchandising Systems snack vendor, 28" wide, with 6 trays and 24 columns available for different products.

### **Serial Numbering System (Refer to Figure 1.1)**



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 **09** (for 2009) 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 the number assigned to each merchandiser during assembly. Numbering starts with **0000** and continues through **9999**, whereupon these four digits start over.

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

**1-0902-1156**

This merchandiser was manufactured at the Kearneysville, W.V. plant in 2009, in February, and was the 1156<sup>th</sup> merchandiser manufactured.

## **GENERAL SPECIFICATIONS**

### **Operating Environment**

AMS vendors are designed for indoor use only. Indoor temperatures must be between 35°F (1°C) and 110°F (43°C). The vendor should not be located in an area where it may be subjected to a water jet or rain.

### **Cabinet Physical Dimensions:**

Model 28

(Refer to Figure 1.2)

28.7"W x 72-3/4"H x 30"D  
(73.7 cm x 184 cm x 76.2 cm)

Model 39

(Refer to Figure 1.3)

39.1"W x 72-3/4"H x 35.1"D  
(99 cm x 184 cm x 89 cm)

#### 1.3.3 Cabinet Weight:

Model 28: 412 lbs. (187 kg)

Model 39: 488 lbs. (221 kg)

### **Unit Capacity:**

Model 28

Up to 864 Units depending on configuration.  
(6 trays, 6 columns, 24/helix)

Model 39

Up to 1440 Units depending on configuration.  
(6 trays, 10 columns, 24/helix)

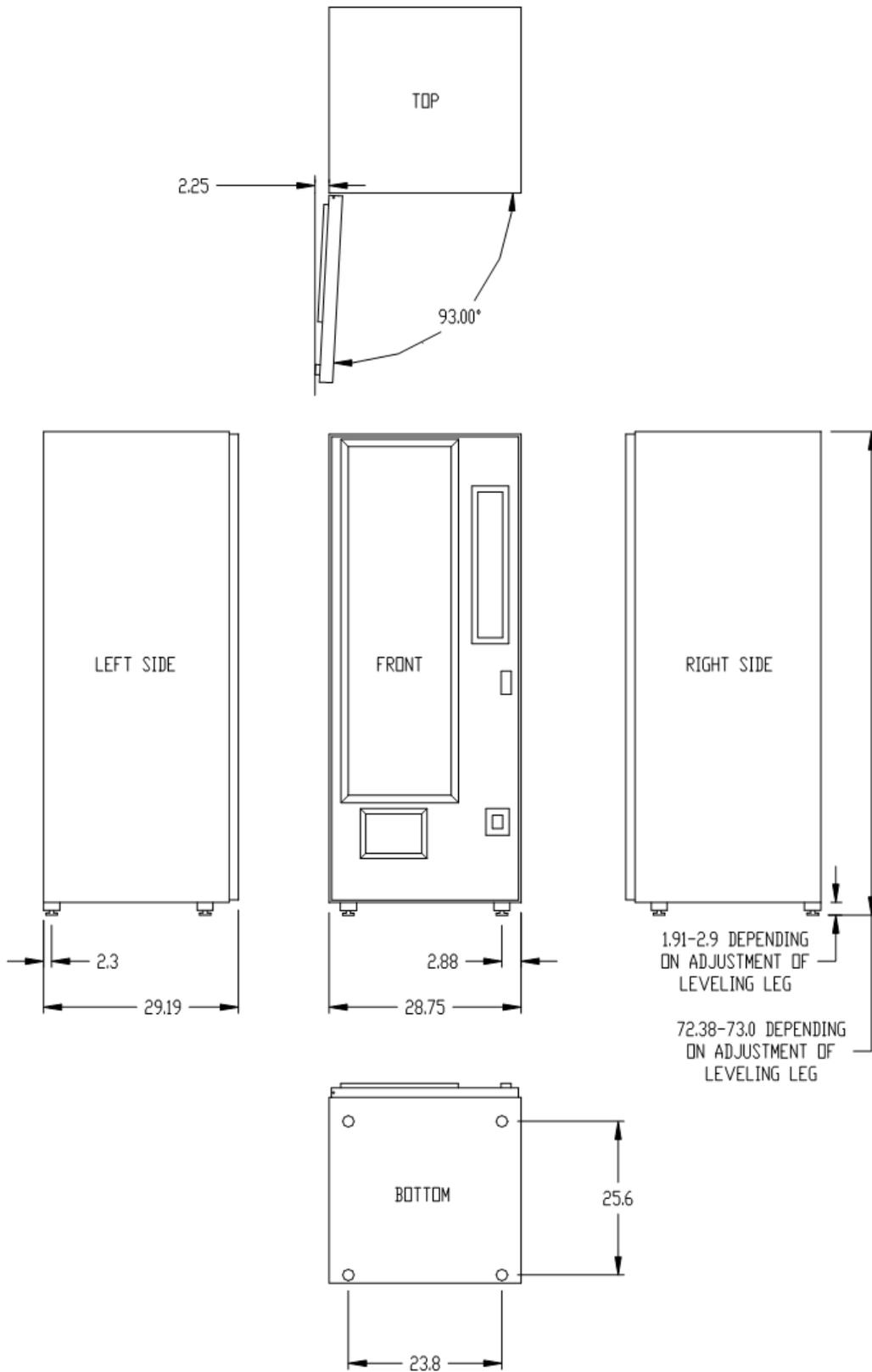
### **Power Requirements:**

United States,  
Canada and Mexico:  
115 VAC, 60 Hz, 3 Amps

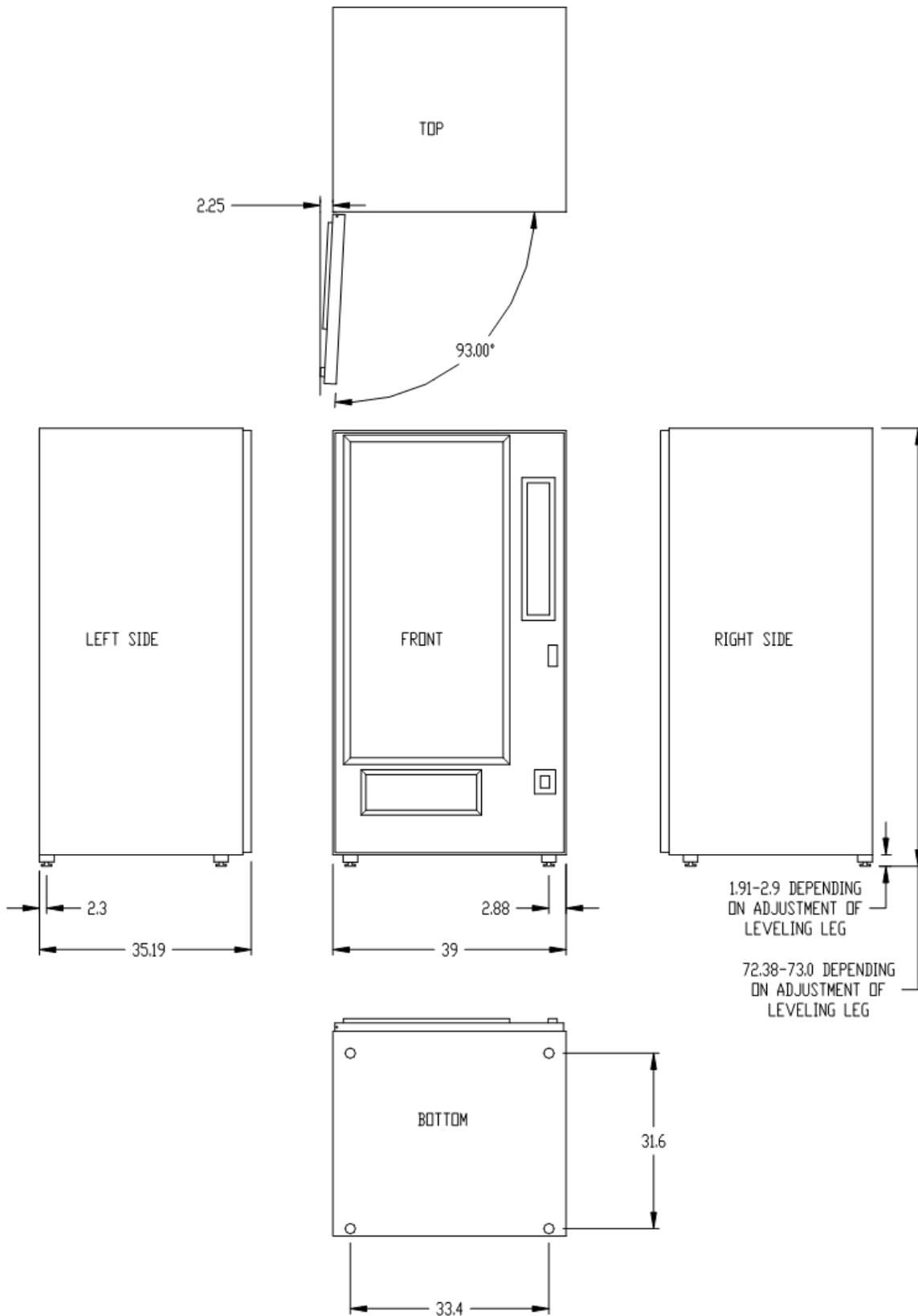
International:  
230 VAC, 50/60 Hz, 1.6 Amps

### **Coin Mechanisms and Bill Validators**

AMS vendors will support all Multi-Drop Bus (MDB) coin mechanisms, bill validators and card readers. Where applicable, it will also support the "Executive Mechanism" Coin Changer.



**Figure 1.2 Model 28 Cabinet Dimensions  
(For reference only)**



**Figure 1.2 Model 39 Cabinet Dimensions  
(For reference only)**

**MERCHANDISER CONFIGURATIONS**

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

The above drawing shows a typical configuration used in an AMS 28 model vendor.

The top tray in the above example contains three columns, formed by the placement of dividers, with motors and large diameter helices in place.

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 above are of large diameter, and are of 10, 12 and 15 pitch. The configuration on this tray can hold 10+12+15 = 37 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 free to be pushed out of the column by the helix, and fall into the hopper.

A working configuration is one column with a given helix (or dual helices) to vend a given product. A record of working product configurations, as shown in the example diagram, will greatly speed up new set-ups.

The fourth tray down as shown in the above example contains six columns with small diameter helices. The pitch is 18 for all columns, so the configuration on this tray can hold 18 x 6 = 108 products. Note that as the 39" vendor is wider, its tray can hold 10 small diameter helices.

A working configuration is one column with a given helix (or two columns coupled) 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 duplicate vendors.

With Sensit 3, extra wide product can be vended by 'coupling' two 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. 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. See **COUPLED MOTORS** on page 25.
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.

The bottom tray shown in the above example contains three columns with small diameter, coupled helices. The pitch is 7 for all columns, so the configuration on this tray can hold 7 x 3 = 21 products. Again, the 39" vendor is wider, and its tray can hold 5 coupled sets.

**Patent Disclosure**

This vendor and/or certain of its components are covered by one or more of the following U.S. and International patents;

<b>U.S.</b>	
6,145,699	7,191,915
6,384,402	7,343,220
6,520,373	7,446,302
6,708,079	7,742,837
6,794,634	8,003,931
<b>Canada</b>	2,329,314
<b>Mexico</b>	230,714

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# 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, 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.

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 can not possibly anticipate all of the ways that service may be conducted, nor 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 vendor servicing should attempt any service to the internal components of the merchandiser. It is important to point out that 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](mailto:info@amsvendors.com).

### SAFETY PRECAUTIONS

Below are listed safety precautions and safe practices to follow to avoid injury from selected hazards. This list cannot possibly cover all hazards, therefore please remember to

### **THINK SAFETY FIRST!**

#### **High Voltage Contact**

Each vendor is designed to operate on a specific voltage, either single phase 115VAC 60Hz or 220-240VAC 50-60Hz, depending on the country. The voltage is specified on the serial plate (Refer to **Model Identification** on page 1). High voltage areas include the electrical panel, the refrigeration unit and fans, and the fluorescent lamp. It is important to understand that contact with the high voltage wiring can result in injury or death.

- Always test the outlet for proper voltage, polarity and grounding before plugging in the vendor.
- Always disconnect power to the vendor before servicing. Allow only fully trained service technicians to service the vendor if service must be performed with the power on.

- Always keep electrical connections dry. Do not place the vendor in or near standing water.
- 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 vendor. 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 the vendor may appear to work normally without the ground wires, but there will be a potential shock hazard from ungrounded components.

- Always test the outlet for proper grounding before plugging in the vendor.
- Always reconnect ground wires after servicing.
- Test the ground fault circuit interrupter (GFCI) periodically to insure proper operation. See **REPLACING THE POWER CORD AND GFCI TEST** on page 34.

#### **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.

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

#### **Vendor Tipping**

The weight of an empty vendor is over 400 pounds! A falling vendor can cause serious injury or death. Caution should always be taken to avoid dropping or tipping a vendor.

- Never rock or tip the vendor. It must be kept horizontal for safe operation. Never place the vendor in an inclined position, such as on a ramp or with all the legs not on the same horizontal surface.
- Never place the vendor in an inclined position, such as on a ramp or with all the legs not on the same horizontal surface.

- Never place the vendor in a moving environment such as on a ship without properly securing it in place.
- Never place the vendor in a location where it may be struck by a vehicle.
- Never transport an unsecured vendor, or a vendor still containing product.
- Never attempt to lift or move the vendor by hand. Always use equipment with the proper load rating. Note that the Specification weight listed is empty weight.

**Other Improper Conditions**

Hazardous conditions can be created by improper use or service of the vendor.

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

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

**Ground Fault Circuit Interrupter**

This merchandiser is equipped with a Ground Fault Circuit Interrupter (GFCI), in compliance with UL 943, as required by ANSI/UL 751 and 541.

**TEST STANDARDS**

AMS vending machines bearing the ETL mark have been tested and comply with one of the following standards:

Standard for Refrigerated Vending Machines ANSI/UL 541, and the Standard for Refrigeration Equipment, CAN/CSA C22.2 No. 120

Standard for Safety for Vending Machines ANSI/UL 751 and the Standard for Vending Machines, Consumer and Commercial Products (CAN/CSA C22.2 No. 128)

**Additional Standards**

Certain models comply with the following:

European Union  
European Economic Area  
CE (European Conformity)

## 3

## VENDOR SYSTEM AND COMPONENTS

### SENSIT 3 OPERATION

The Sensit 3 system is comprised of the primary sensor, the secondary sensor, and the control logic. The primary and secondary 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. After several seconds, if no product falls in the hopper (or motor returns to home position), the motor will be stopped, the credit will be maintained and the customer will be directed to “PLEASE MAKE ANOTHER SELECTION.”

When the controller 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 controller stops the vend motor (or returns to home position) and removes the credit.

When the vendor is serviced with the door open, the protective lens on the sensors can become fogged up, particularly in hot or humid locations. In these cases, the vendor will display “SENSIT BLOCKED – UNABLE TO VEND” until the fogging has cleared, usually within a minute after closing the door.

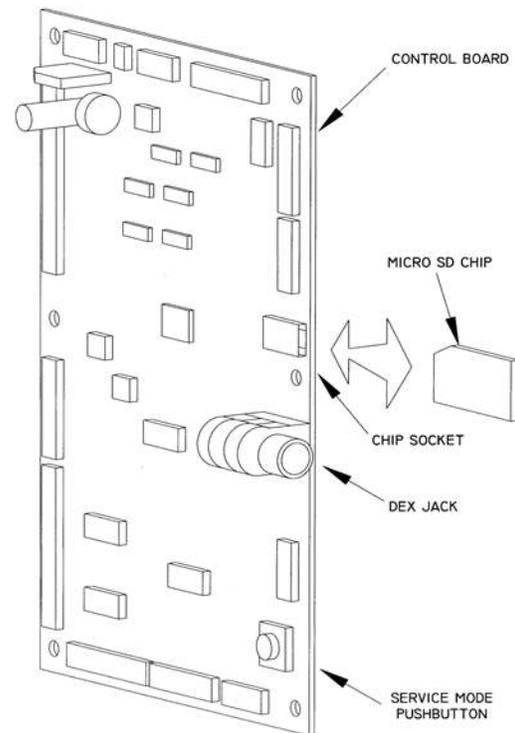


Figure 3.1 Control Board Components

### CONTROL BOARD

The control board controls and monitors the vendor, DEX, and MDB systems. The control board is located in the upper right hand corner of the open vendor, behind an access door.

#### **Upgrading Software**

The software can be upgraded by using a micro SD card. The card, and card readers, are available at Office supply chains or on the internet. Minimum capacity of 512Mb is adequate. See **UPGRADING FIRMWARE** on page 33.

#### **Mode Switch**

Pressing the mode button (Refer to **Figure 3.1** above) allows the user to get in to the controller’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, closing the door, or waiting approximately 3 minutes will automatically switch the computer back to vend mode.

#### **DEX Jack**

The DEX jack (Refer to **Figure 3.1** above) is provided for use with external features, such as Speech (Refer to **OPTIONS** on page 26). Data collection with third party devices can also be made here. Some telemetry-based devices (which may include cashless devices) have a permanent connection here.

### VEND SENSOR

#### **Primary Sensor**

The primary sensor is located on the left of the hopper when viewing the back of the door. The sensor, inside a protective housing, sends light to and receives light from the secondary sensor (both sensors operate the same way in this regard). It contains circuitry to send a signal to the control board. When a product drops through the beam, it causes a change which is interpreted by the control as a successful vend. The primary sensor board also contains circuitry to connect to the secondary sensor, and to connect the temperature sensor to the control board. When servicing the primary board, be mindful of the emitters and detectors. These can be damaged by rough handling.

#### **Secondary Sensor**

The secondary sensor, inside a protective housing, is located on the right side of the hopper when viewing the back of the door. The sensor also sends light to and receives light from the primary sensor. When servicing the secondary board, be mindful of the emitters and detectors, which can be damaged by rough handling.

### DOOR

#### **Validator & Debit Card Reader Locations**

There are two locations that will accept bill validators and/or debit card readers. The lower position meets the guidelines of

the Americans with Disabilities Act (ADA) for access by handicapped persons (Refer to **VENDOR PREPARATION** on page 14).

### Changer Location

Three screws are installed in the door below the coin chute. These screws mate to the keyhole slots on the back of the changer (Refer to **VENDOR PREPARATION** on page 14).

### Coin Box

The coin box is located below the changer, and is used to hold overflow coins when the changer is full. It is removed by tilting slightly and lifting out.

### Door Switch

The door switch is mounted on the right rail mount. The control uses the door switch to switch from service mode to vend mode when the door is closed.

### Display

The display serves as the interface for using and 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 of a selected item and the credit accumulated. When the machine is idle it can display the time and a customizable scrolling message.

When the asterisk key (\*) is pressed, the display other machine details. One of the highlighted characters listed below will be shown in the lower right corner of the display.

- = Chiller off due to open door
- V = Chiller off due to low voltage
- D = Chiller off due to defrost timer
- P = Chiller off due to pressure timer
- % = Chiller can run, subject to temperature, set-point and EnergySENSIT

The number displayed before the % sign indicates the % of time the compressor has been running in the previous 4 hours. This is a moving average, and changes throughout the day.

If there are multiple reasons for a chiller to not be running, the display will show the foremost reason listed (i.e., door open takes precedence over low voltage).

### Keypad

The keypad is located below the display on the front of the escutcheon. A vending selection is made by keying in the number combination that corresponds to the location of an item in the machine. The keypad is also used to enter data in operation and servicing of the vendor.

### 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 changer. If the Force Vend option is disabled, it can also return the full credit before a selection is made when pushed. If the Bill Changer option is enabled, the coin return will return change for bills inserted in the bill validator.

### Lighting Options

Several lighting options, depending on the model and size of the vendor, are available. All options are intended to illuminate the products displayed on the trays. Options include single fluorescent lamps, and single or dual LED lamps.

### TRAY RAILS

The rails are located inside the cabinet and are used to support the trays. The rails are adjustable up and down in 1" increments (Refer to **TRAY VERTICAL POSITIONS** on page 18).

### TRAYS

Refer to **TRAY ADJUSTMENT AND CONFIGURATION** on page 17, and **OPTIONAL EQUIPMENT** on page 41 for optional tray accessories.

### Vend Motors

Two types of motors may be used with this vendor. The configuration of the machine will be different if all of one or another is used, or if there is a mix. S3 software can be used to best advantage if all motors are designed for homing, but must be similar within the same tray.

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 control board (Refer to **VENDOR PREPARATION** on page 14 and **MOTOR POSITIONS / HOME** on page 19).

### S3 Vend Motors

The S3 vend motors have a plastic case of which the rear half is blue. S3 coupled motors can replace dual helix motors. Where a dual helix motor is used, replace it with a 23007 motor (having a blue and ivory case for CCW rotation) and a 23007-01 motor (having a blue and gray case for CW rotation) and reinstall the helices. Use Tray Setup in Service Mode to couple the motors in each column together, causing them to turn at the same rate.

Coupled motors will always stop at the home position. If one motor runs slightly faster, the slower will correct itself. Depending on motor configuration, the motors may jog twice to try to dislodge hanging product.

**Note:** When not in Service Mode, and with door open, press # to reset switched motors to Home position (Not available for non switched motors. Refer to **TRAY SETUP** on page 22). Motors already at home will not move.

### SII Vend Motors

A Sensit II vend motor has a plastic case which is all ivory in color. A dual helix motor allows two helices, one for CW and another for CCW rotation, to be installed. The dual helix housing only allows helices to be adjacent to each other. These motors have been discontinued, and are replaced with S3 vend motors. See **TRAY SETUP** on page 22 when changing motor types.

**Helices**

There are four sizes of helices available, 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. Refer to sections:

<b>CHANGING HELICES</b>	pg. 18
<b>HELIX ADAPTER</b>	pg. 18
<b>HELIX EJECTOR</b>	pg. 18
<b>HELIX ALIGNMENT DEVICE</b>	pg. 19
<b>MOTOR POSITIONS / HOME</b>	pg. 19

**Dividers**

The dividers separate product columns on the tray. On snack trays, 2 horizontal slots in the divider allow for the installation of a candy pusher. To remove the 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 screws.

**Candy Pusher Bar**

The candy pusher bar keeps items pushed to one side of the column. This is typically used with tall product. 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 (Refer to **CANDY PUSHER BAR INSTALLATION** on page 20).

**ELECTRICAL PANEL**

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

**Power Switch**

The power switch is located on the top of the electrical compartment near the fuse. The power switch is used to disconnect 24VAC power to the control board.

**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 control board or sensors.**

**Fuse Holder**

The fuse holder is located on the side of the right rail mount near the refrigeration unit power outlet. It contains a 3 amp fast-blow fuse to protect the 24 VAC power supply to the control board. 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 pulling out.

**Transformer**

The transformer reduces the input voltage to 24 volts AC for the control board.

**RFI Filter**

The filter removes electrical noise from the power supplied to the 24VAC transformer to prevent interference with operation of the control board and software.

**Ballast**

The ballast provides the necessary power to the optional fluorescent lamp in the door.

**Ground Attachment**

The vendor 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 always be replaced after service or repair.*

**1.5" HELIX TRAY (OPTIONAL)**

The 1.5" Helix Tray is mounted below the bottom snack tray. To load the tray with small products such as gum and mints, grasp the tray and pull forward to unsnap the catches. After loading, push the tray to the rear until the catches snap in place.

The motors in the 1.5" Helix Tray operate in the same way as snack or bottle tray motors (Refer to **OPTIONAL 1.5" HELIX TRAY ADJUSTMENT AND LOADING** on page 20).

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## 4

## VENDOR PREPARATION AND INSTALLATION

Setting up a vendor has been divided into three stages: **CONFIRMING POWER AT OUTLET**, below, confirms power and site suitability. **VENDOR PREPARATION**, on page 14 includes preparations accomplished in the shop and **ON-SITE INSTALLATION**, on page 15 where the vendor is to be located.

**NOTE:** *These vendors 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 vendor.

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 negative (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 vendor. **Abnormal voltage, reversed polarity or improper grounding may cause the vendor to malfunction or create hazardous conditions in the vendor, resulting in possible injury, damage to the vendor, or fire.**

The power cord is shipped in the hopper on the inside of the door. The cord is supplied with a standard NEMA 3-wire plug. If there are no 3-wire outlets available for powering the vendor, 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. If the outlet isn't grounded, the GFCI will not provide power to the machine!**

**NEVER USE AN EXTENSION CORD  
WITH THE VENDOR.**

#### 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 vendor is rated for the outlet voltage.

#### Electrical Service Requirement for CE Compliance

The following requirement applies only to models using ½ HP compressors and displaying the CE mark on the serial plate. If this requirement applies to your vendor, you will find a similarly worded decal on the back of the vendor near the power cord.

Note: This requirement does not apply to any vendor using 120V 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 modelos 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 120V.

### 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 120V 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 DISTRIBUCION 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.**

**VENDOR PREPARATION****Inspection**

Inspect the vendor carefully for shipping damage prior to signing the carrier's delivery receipt. Check for dents on the top or sides of the vendor, 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 vendor will support any 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 control board before servicing.**
2. On the inside of the escutcheon control cassette, 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 bill validator or card reader. The lower mounting position is ADA approved for consumers with disabilities.
3. Remove the four nuts that retain the steel cover panel. Remove the steel cover panel, and then press out the plastic cover panel in the escutcheon.
4. Refer to the manufacturer's literature for instructions on accessing the mounting holes in your device. Place the mounting holes over the threaded studs and reinstall the nuts. Some devices may require spacers, which are available from AMS (Part Number 20258).
5. Connect the wiring harness to the MDB harness from the control board. If two devices are installed, connect the second device to the validator.
6. If a coin mechanism has been previously installed, disconnect it from the control board MDB harness and connect it to the validator or second device if installed.
7. Reconnect power to the control board.

**Mounting and Connecting Coin Mechanism (Changer)**

The AMS vendor will support any NAMA-approved Multi-Drop Bus (MDB) Coin Mechanism. On some export models, the Mars-type Executive Mechanism is supported. Please read the coin mechanism manufacturer's literature before proceeding.

1. **Always disconnect power to the control board before servicing.**
2. On the inside of the right rail mount door, below the coin chute, (3) screws which correspond to slots on the back of the changer. Do not adjust these screws.
3. Install the changer 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 changer 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. Connect the wiring harness to the bill validator (if applicable) or to the MDB connector from the control board.

6. Adjust the white plastic coin chute as required to align the chute with the changer.
7. Reconnect power to the control board.

**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 control board (Refer to **Figure 3.1** on page 9).
2. Using the # or the \* key, scroll through the menu to **"TRAY SETUP"**.
3. Press **6** to configure the motors. Each switched motor is moved to the home position (moving the motor only if it is not at home) in addition to detecting connected motors. If the number of motors displayed does not match the number of motors in the vendor, press **1 \* 2** to jog all the motors in the vendor.
4. Watch the display for missing motors that should be connected. The vendor will not vend from a given helix when the motor is missing, jammed or has home switch problems.
5. 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, turn it until it is, and reinsert the helix into the motor.

**Note:** When *not* in Service Mode and with door *open*, press # to force switched motors to Home position (Not applicable to motors set to "Sensit". Refer to **TRAY SETUP** on page 22. Motors already at home will not move.

**Test Product Loading**

Before putting the vendor 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** on page 18 for tray vertical adjustments and **TRAY COLUMN POSITIONS** on page 18 for tray column configuration when configuring your vendor 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. Refer to the following sections:

<b>MERCHANDISER CONFIGURATIONS</b>	5
<b>CHANGING DIVIDERS</b>	18
<b>CHANGING HELICES</b>	18
<b>HELIX ADAPTER</b>	18
<b>HELIX EJECTOR</b>	18
<b>HELIX ALIGNMENT DEVICE</b>	19

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. This is also a good time to set the end position of the helix to make sure the first product is held securely held in the helix. The control stops the helix the instant the sensor detects a product falling in the hopper. The end position of the helix will automatically be set to the correct position when a product is vended (Refer to **MOTOR TYPE** on page 23).
8. 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.
9. 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 (Refer to **HELIX EJECTOR** on page 18).

### Installing Price Labels

After determining the product placement, install the price labels. The labels are shipped in the envelope with this manual.

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.

### Setting Prices

After product placement and installation of the price labels, set the prices into the vendor (Refer to **PRICE SETTINGS** on page 22 ).

1. To enter the service mode, press the mode switch on the control board (Refer to **Figure 3.1** on page 9 ), or the decal inside the vendor door, for the location of the mode switch).
2. Using the \* or # keys, scroll through the menu to "**PRICE SETTINGS**".
3. Press 1.
4. Enter the selection for which you want to set the price (example: **12**).
5. Press 9 to edit or change the price.
6. Enter the price and press \* to save this price, then do one of the three things listed below:
  - a. To save the selection at this price press \* again.
  - b. Press **1** to save all the tray selections at this price.
  - c. Press **2** to save all the vendor selections at this price.
7. The prices as set will be maintained by the vendor 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.
8. Using the \* or # keys, scroll through the menu, or exit the service mode by pressing the mode switch or closing the vendor door.

### Scrolling Prices

If the Scrolling Prices option is present, prices are changed by simply rolling the price tape up or down. A pencil eraser may help. To repair or re-configure the tray, the covers simply snap on and off.

## ON-SITE INSTALLATION

### Remove the Shipping Boards

1. Split the shipping boards by inserting a crowbar or wedge into the slots at either end.
2. If necessary, lift the vendor to remove the broken boards using properly rated equipment. Do not tilt the vendor. Do not attempt to lift the vendor with a 2-wheel hand truck.

### Placing the Vendor in Location

- Place the vendor within 5 feet of the designated power outlet. The power outlet should be accessible when the vendor is in position, and the ventilation opening in the back of the vendor must be clear of obstructions.
- For refrigerated models, allow at least 4 inches between the wall and the back of the vendor for air circulation.
- Make sure the vendor does not block walkways or exits.
- Do not place the vendor in a location where it can be struck by vehicles.
- Leave at least 18 inches between a wall and the hinge side of the vendor 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.
- If ADA requirements must be met then make sure the customer operated devices are no higher than 48 inches off the floor. The vendor is designed to meet ADA guidelines for persons in wheelchairs using a parallel approach (side of wheelchair adjacent to front of vendor). Make sure there is adequate room to maneuver a wheelchair into this position in front of the vendor.

### Leveling the Vendor

For safe operation the vendor must be level.

1. On the bottom of the vendor 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 vendor front-to-back.
6. After the vendor is level, adjust the support screw under the door until it contacts the floor.

### False Leg Installation

#### WARNING

The False Leg helps to prevent the machine from tipping forward when the vendor door is open and one or more loaded trays are extended. Failure to install the false leg on vendors may result in serious injury (Refer to Figure 4.1 below).



Figure 4.1 Tip-Over Warning

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

### 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 right side of the bottom of the door (Refer to **Figure 4.2** below). 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.

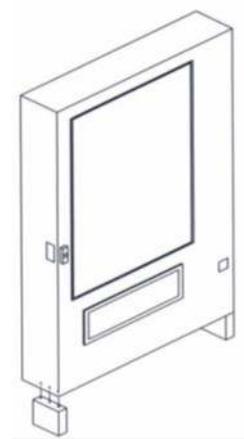


Figure 4.2 False Leg Installation

## 5

## TRAY ADJUSTMENT AND CONFIGURATION

The trays in AMS Sensit 3 vendors 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.

### SNACK, CANDY AND FOOD TRAYS

#### Removal

1. To remove the tray, gently pull forward until it contacts one or more of the restraint tabs on the side of the right rail mount. Press the tab(s) in while pulling out on the tray slightly. 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.

### BOTTLE TRAY

#### Removal

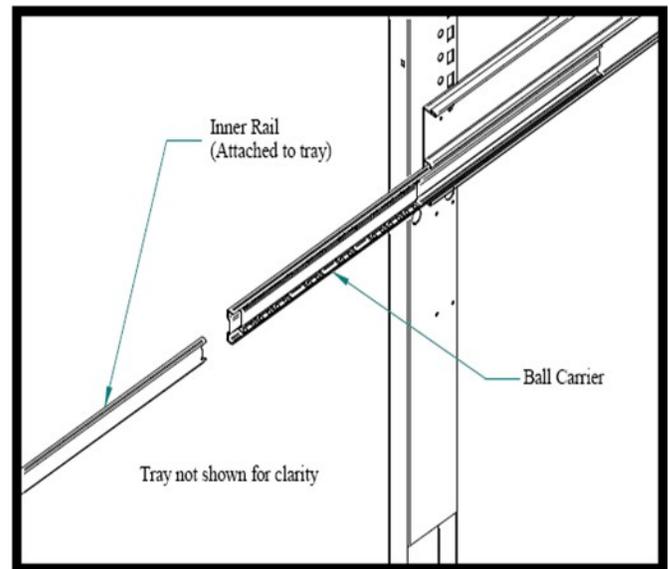
1. Disconnect the harness inside the right column in the cabinet. The connections are labeled corresponding to the number of the tray (1-7). Push the connector out through the hole in the back of the column.
2. Pull the tray out until it stops. Carefully pull the harness up on top of the tray.
3. Locate 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 (Refer to **Figure 5.1** below) 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**

**TRAY VERTICAL POSITIONS**

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

**Removal**

1. Remove the tray for access to the support rails. Note that bottle trays have a screw in each rail holder.
2. Remove the screw located at the front of each rail.
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.

Use these same steps for the other side.

**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. Align the round hole in the rail with the hole in the column and replace the screw.
6. Use these same steps for the other side.
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 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 6 columns wide (for 28" 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 6 (28" 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 (Refer to **VENDOR PREPARATION** on page 14.)

**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.

**HELIX ADAPTER**

1. To remove, twist the adapter to free the mounting leg from the locking tab.
2. Reverse the removal procedure to reinstall.

**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.

1. The helix ejector is pulled off and pressed on the helix by hand.
2. 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.
- Reinstall by pressing the plastic mounting clips back into the mounting holes. Note that the mounting flange goes toward the helix.

### **MOTOR POSITIONS / HOME**

Motor position can be changed sideways 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.

- Remove the helix. Remove the harness terminals (one small and one large).
- Press down and rearward on the top mounting tab, then pull the lower mounting legs out of the mounting slots.
- Reverse the removal procedure to reinstall.
- After all motor changes have been made use the Tray Setup option in Service Mode to configure the motors.
- The vendor will not vend from a given helix when the motor is missing, jammed or has home switch problems.
- After a motor has 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, 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 off the tray.

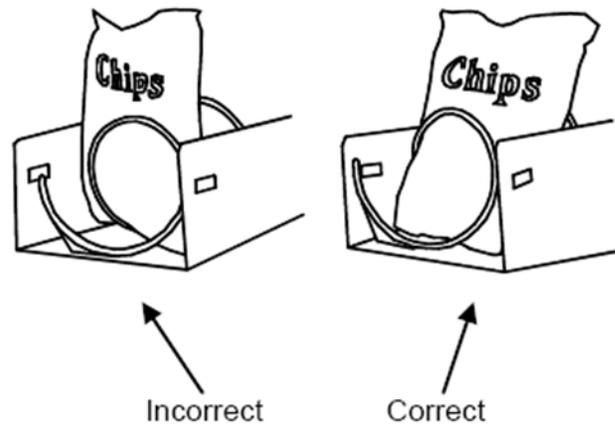
- To remove, bow the bar until one end can be pulled free from the support bracket. Take care not to lose the plastic bushings in the supports.
- To reinstall, reverse the removal procedure.

### **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 (Refer to **Figure 5.2** below). 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.

### **TALL PRODUCT VENDING**

Place tall, narrow products in a column with a candy pusher bar. Rotate the bar upward or downward to the desired position. It should hold the product upright, but not pinch or bind the product.

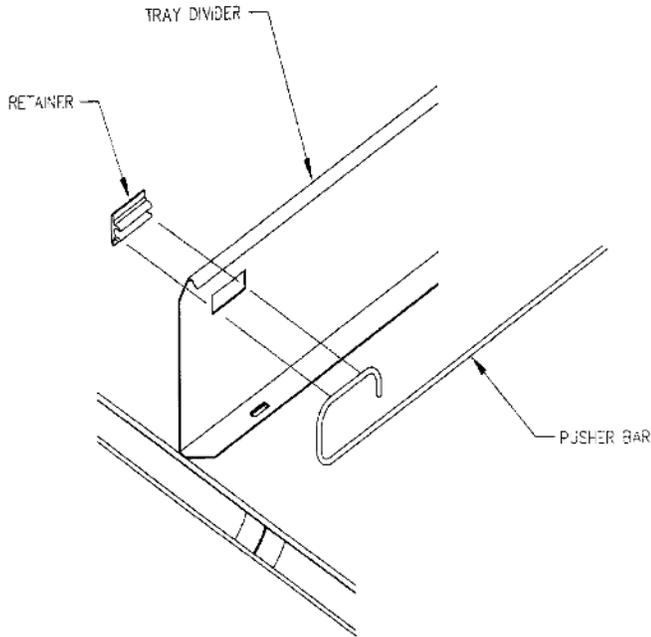


**Figure 5.2 Large Bag Vending**

### **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 (Refer to **Figure 5.3** below). Four pusher bars are provided with the standard glass front vendor.

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



**Figure 5.3 Candy Pusher Bar Installation**

### **OPTIONAL 1.5" HELIX TRAY ADJUSTMENT AND LOADING**

#### **General Information**

Some vendors are equipped with an optional 1.5" Helix Tray designed to vend small candy, gum and mint packs. The 1.5" Helix Tray can also be ordered separately for new installations in 39" cabinets (Refer to **OPTIONAL EQUIPMENT** on page 41 for installation kit).

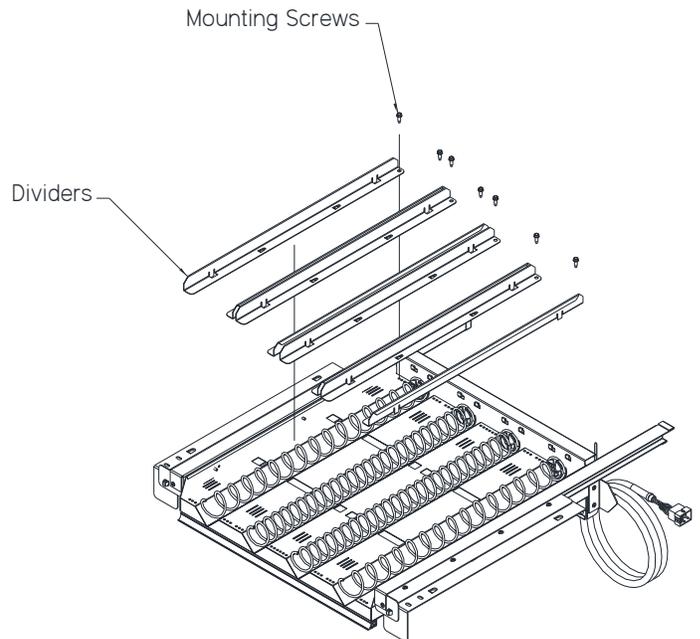
#### **Tray Adjustment and Loading**

As delivered from the factory there are two wide columns for products such as mints, and two narrow columns for products such as gum.

However, the tray may be reconfigured to fit the product being vended by adjusting the position of the column dividers (Refer to **Figure 5.4** below). The dividers, being adjustable, change the column width.

Adjust the divider position by removing the screw at the rear of the divider. Pull on the divider towards the front of the tray to loosen it. Reposition the divider by inserting the mounting tabs into the appropriate slots. Push the divider down and to the rear to tighten it into place. Reinstall the screw at the rear of the divider.

Test the column for proper vending.



**Figure 5.4 1.5" HELIX TRAY**

## 6

# SERVICE PROGRAMMING

## SERVICE MODE

Access the service mode by pressing the yellow mode button on the control board (Refer to **Figure 3.1** on page 9). If there are no errors, ACCOUNTING DATA is displayed. Press # or \* to scroll through the errors and functions. Return to vend mode by closing the door, pressing the mode switch or allowing the 2 minute time-out to occur.

For convenience, there is an instruction card inside the cabinet, and in this manual that presents the basic information in this section in a flow-chart format.

## ERROR CODES

Any errors that have been recorded will be displayed when the mode switch is pressed. **CLEARING JAMMED MOTOR** on page 30 provides descriptions of errors and tips for troubleshooting them.

### ***ALWAYS CORRECT THE ERROR BEFORE CLEARING THE MESSAGE!***

1. **# NEXT ERROR** – View the next top level error code.
2. **1. SUBLVL ERRORS** – Displays any sublevel error codes.
3. **2. DETAILS** – Displays date and time of the *last* sublevel error.
4. **0. CLEAR ERROR** – Erases the error code from memory.

## ACCOUNTING DATA

Limited sales information can be displayed directly on the vendor display. More detailed sales information is contained in the DEX data. This data can be collected with any DEX data collection system.

1. **HIST. VENDS** – Displays number of vends since initialization of the control board.
2. **HIST. CASH** – Displays the total sales since initialization of the control board.
3. **RESET. VENDS** – Displays the number of vends since the last reset.
4. **RESET. CASH** – Displays the total sales since the last reset.
5. **HIST. SELECTIONS** – Displays sequential number of paid vends for each individual selection since initialization of the control board. Depending on the configuration, up to 80 selections may be audited.

Enter a selection by entering its characters. The display will show the total paid count for the selection for 2 seconds. At this time another selection may be entered. All selections can be

accessed this way. Press # to exit to the Accounting Menu.

6. **CLEAR VALUES** – Clears RESET. VENDS, RESET. CASH, RESET CARD, and CASHBOX COINS.
7. **RESET. CARD** – Displays the total cashless sales since the last reset.
8. **CASHBOX COINS** – Displays number and value of coins in coinbox since last reset. First the TOTAL value is shown, then by pressing the \* you can step through each coin denomination.
9. **STACKED BILLS** – Displays number and value of bills stacked in the billbox since last reset. First the TOTAL value is shown, then by pressing the \* you can step through each bill denomination.

## FILL / DISPENSE

The FILL/DISPENSE function allows the user to add coins to the changer payout tubes or dispense coins from the changer.

1. **SELECT TUBE 1-6** - To dispense coins, press 1 through 6 (for a 6-tube changer) to dispense from tubes 1-6. Tubes are numbered starting with the lowest denomination. Each key press displays the value of the coin being dispensed and the total number of coins remaining in that tube.
2. **OR INSERT COINS** - To fill the changer, 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 changer. However, the control 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.

## DELAYED SALES

The user can delay sales of specified selections to give the product time to settle or cool. The delay must be manually started each time sales are to be delayed. Delayed sales do not add to or subtract from the time limits imposed by the Health and Safety rules (Refer to **GENERAL SPECIFICATIONS** on page 2). To automatically prevent sales during specific days and times, use **SALES BLOCKING** on page 27.

1. **START DELAY** – Begins the sales delay timer. Before starting the timer, choose menu item "5. EDIT SEL'NS" to specify which selections will be delayed. Customers will not be able to purchase those selections until the delay period ends.
2. **CANCEL DELAY** – Stops the delay timer and allows vending of all selections.
3. **SET DELAY** – Adjust the time of the delay timer in 15 minute increments.

4. **CLEAR ALL** – Clears all selections that were chosen to be delayed.
5. **EDIT SEL'NS** – View and change the delay status of all selections. The user can choose to apply the delay to a single selection, a tray, or all selections in the vendor.

### TEMPERATURE

This option is shown in the menu but is unavailable for this machine because the hardware to control the temperature inside the vendor is not offered.

### PRICE SETTINGS

Before setting prices, install a coin changer and/or bill validator so that the control will recognize the proper scaling factor for your currency.

#### **Set Prices**

Enter the tray then the column for the first selection to be priced. The current price for the selection will be displayed. Press **9** to edit, then enter the new price, making sure to enter all digits after the decimal point. The decimal is placed automatically based on the scaling factor from the changer.

**Example: For a price of \$1.50, enter 1 5 0.**

The user can choose to apply the new price to that selection (\*\*), all selections on the tray (\*1), or all selections in the vendor (\*2). It is usually faster to set all selections to the most common price in the vendor (\*2), then change individual trays or items that have a different price.

#### **ValueVend**

ValueVend starts with the prices that were set using SET PRICES. Using ValueVend, two selections are grouped together and offered at a reduced price. This is possible with any possible pair of selections in the vendor, including pairing a selection with itself.

Up to 10 such groups are available. For example, in one group, soup and crackers are offered individually at full price, but if one is purchased along with the other the (total) price is reduced. In addition, a "Global" feature allows all selections (if priced the same) to get the second selection at a reduced price.

The vending machine operator should advertise the special combinations and prices.

1. **RESPOND TIME** is used to set the number of seconds (20 to 99) the customer has to make the second selection before any remaining credit is returned. Set the time to at least 30 if dual languages are scrolled in the display.

1 – Press to increase the seconds.

2 – Press to decrease the seconds.

\* -- Press to save the new setting and return to the ValueVend menu.

2. **CHANGE** is used to select the group to change (Group 1 through Group 10, or global). Pressing the "\*" button once each time will step the display to the next group. Only one group at a time can be set.

**0 CLEAR** – Clears all of the settings in the *current group*. Use this key before changing ValueVend settings. Using CLEAR will not change the selection price as set using SET PRICES.

**1 EDIT** – Enter the first selection, enter the second selection, then enter the discounted price *for this grouping*. The discount will appear to the customer as a discount on the second selection. Selections can be any combination of tray and column.

Press "\*" to save and return to the CHANGE display.

Press "#" to return to the CHANGE display without saving.

\* **NEXT** – Press to return to the CHANGE display.

# **EXIT** – Returns to the ValueVend menu.

#### **Operations Note:**

If a bill is held in escrow when the first selection is made, it will be returned if it is not needed for the purchase of that first selection. Inserted coins will be held as credit on the machine until the Response Time is reached and if no selection has been made those coins will be returned as well.

### TRAY SETUP

#### **Test Motors**

Enter the selection number to be tested, or press \* to see the following options for testing multiple motors.

**1- JOG ALL** – All motor positions in the vendor will be tested. Each motor will be turned only a very small amount, so that products loaded in the vendor will not be dispensed. The display will show the number of the motor being jogged, or it will show a message that a motor is missing.

**2- JOG TRAY** – All motor positions on the selected tray will be tested. The display will show the number of the motor being jogged, or it will show a message that a motor is missing.

**3-CHECK JAMMED** – The control will attempt to run each motor that has caused a jammed motor error. The status of the motor will be displayed afterward.

#### **Link Motors**

The user can link selections to ensure even vending of dated products, or other "space-to-sales" functions. Linked selections are vended sequentially for better product rotation. Up to 40 groups can have motors linked together *regardless of location or tray*. The linked selection with the lowest number is the master selection. All other linked selections are vended using the selection number and price of the master selection. Entering the selection number of any linked selection will default to the master selection number, and the control will vend the next linked selection in the sequence. If motors are linked- but not present (or jammed), the next available motor will run.

From Tray Setup, select **2-Link Motors**.

**Enter Selection:** then select from the following.

**9- EDIT** – Use 1 & 2 to select desired link group.

\* saves *this* selection to *this* link group.

**0- CLEAR** – This will unlink the current selection. The price will revert to its original value. All other linked selections in that group will remain unchanged.

\* **NEXT** – Press to increment by one selection. Any selection number may be entered directly for faster access.

# **EXIT** – Returns to the Tray Setup menu.

Repeat for each linked selection.

### Motor Type

Motor Type allows the user to change the motor-stop and credit deduction behavior. See the table below for more details on the various settings available under this function.

**Enter tray** – enter tray number to change motor type.

Press **1** to change motor type.

Press **#** to save and exit.

Press **2** to save entire vendor to this motor type.

All motors on a tray must be of the same design (SII or S3), but different motor types (per tray) can be used in the same vendor.

You must press **6** (configure) after making and changes to motor type, or quantity, of vend motors.

ITEM	DISPLAYED OPTION	MOTOR STOP	CREDIT DEDUCTION
1	SENSIT	Sensor*	Sensor
2	HOME/SENSOR/3	Home	Sensor
3	HOME/SENSOR +/3 (FACTORY DEFAULT)	Home + Extra**	Sensor
4	HOME_ONLY/3	Home	Home
<b>(SII WITH HOMING) MOTOR TYPES</b>			
5***	HOME/SENSOR/2	Sensor	Sensor
6***	HOME/SENSOR +/2	Home + Extra**	Sensor
7***	HOME_ONLY/2	Home	Home
<p>* If S3 motors are used: the switch function is ignored, and homing &amp; coupling are not available.</p> <p>** "Extra" means that if a drop is not detected by the home position, the motor will move 2 additional increments to try to vend the product.</p> <p>*** These are settings for use only with vendors equipped with Sensit II with Homing.</p>			

**HomeSensor/** will make one full turn and stop at home position. If a drop was detected, credit will be accepted. If no drop detected, "Please Make Another Selection" will scroll allowing the customer to try that or another selection- or press coin return.

**HomeSensor +/** is similar to HomeSensor/, except that if no drop is detected the motor will make 2 short jogs in an effort to dislodge the product. If the motor stops *off* the home position, the next vend will begin the process again: stop at home- if a drop is detected deduct credit. If not, try up to two jogs. This is similar to the original Sensit sequence, and is the factory default setting for all vendors.

**Home\_Only/** disregards the Sensit system, and will make one complete turn and take credit- whether a drop is detected or not.

**Auto Sensor Recovery** is an improvement to the AMS Sensit system that allows certain vends even when the sensor system is blocked or malfunctioning. If Motor Type is set to Home/Sensor/3 or Home Sensor+/3, and the sensor system is inoperable, the control will automatically switch to Home\_Only/3 and allow a vend. Simply put, the sensors will be ignored, the helix will make a full turn and the credit value will be deducted. Once the error is cleared, the vendor will return to its original sensor setting. **Note** that this will only work with the 23007 and 23007-01 motors, and

during this temporary mode, selecting an item with the older style motor will read "selection unavailable".

#### Delayed Stop

The user can program a delayed stop of up to one second to allow a motor to continue running after the product has been dispensed. Note: this feature will only work with the 1-Sensit motor setting.

ENTER SELECTION – Enter the number of the selection to be delayed, enter 9 to edit, then enter the time in tenths of a second. The decimal point is placed automatically.

**Example: Entering 8 will program a delay of 0.8 seconds.**

The user can save the programmed delay to the selection, the entire tray, or all selections in the vendor. Linked selections will use the delay programmed for the master selection.

**Letter / Number**

Allows use of either keyboard format. The control board/software default is for NUMERIC, using the 12-key keypad. Note that if the control board is changed this setting may need to be set to "Number". This setting should be changed to "Letter" if the vendor is equipped with 20 pushbutton keypads (with alphabetic characters). Depending on the setting, the top tray is designated "1" or "A", and downward with numbers (2-8) or letters (B-H).

**Configure Motors**

Configure Motors moves each switched motor to the home position (moving the motor only if it is not at home) in addition to detecting connected motors.

***This selection MUST BE RUN after changes in the arrangement or number of motors have been made.***

The vendor will not vend from a given helix when the motor is missing, jammed or has home switch problems. This requires that Configure Motors must be run after adding motors or otherwise changing the motor configuration.

The configuration of connected motors is stored in memory. If a configured motor is later found to be missing during a vend, an error message will be generated in service mode to alert the service person that the motor is disconnected. (In non-switched Sensit II firmware, the control allowed new motors to be auto-configured.)

**Coupled Motors**

With Sensit 3, configurations to vend extra wide product can be made by using the coupled- motors feature (Refer to **MERCHANDISER CONFIGURATIONS** on page 5). The coupled motor feature works by coupling together a set of two motors. One motor turns counter-clockwise, and the other motor must turn clockwise. Both motors turn for the same length of time. Trays may have multiple coupled motors.

1. From the Tray Setup menu, press "7", then enter the first selection to couple (for example 24).
2. Press "9" to edit, then enter the column number of the second column to couple. For this example, press 7 to couple selections 24 and 27. The second column could also be 5 or 6 for this set. In this example, the display will read COUPLE 24,27.
3. Press the "\*" to save these selections and move to the next selection.

Note that a coupled motor set will vend using the lowest numbered column selected. In the example given above, use 24 to select a product. A column selection of 25 will display the message "PLEASE MAKE ANOTHER SELECTION".

If the "\*" button is pressed the display will move to the next selection. Entering the desired number will also take you to another selection.

Press "0" to clear coupled motor sets from the control board. The display will read "XX: COUPLE OFF".

To return to Tray Setup, press the "#" key at any time. The tray numbers on the front of the tray should be changed to suit.

*The Coupled Motor feature will not work with Sensit II motors.*

**MDB (MULTI-DROP BUS)****Settings**

The user can select from many different operating features using the following settings.

**Force Vend**

The factory default is "N" for no. If set to "Y", the customer is forced to make a selection before the control will allow a refund. If the selected product cannot be dispensed, a full refund can be returned to the customer. Note that if the CHANGE BILL feature is ON, it will override Force Vend.

**No Cheat**

The factory default is "Y" for yes. If set to "Y", the control will not allow a vend to occur unless correct change can be returned to the customer. If disabled, the control will allow the customer to be short-changed up to \$1.00.

**Change Bill**

The factory default is "N" for no. If set to "Y", the customer can insert a bill and receive a full refund in coins by pressing the coin return button. Note that using CHANGE BILL will override Force Vend.

**Hold Lost Credit**

The factory default is "Y" for yes. If set to "Y", any remaining credit after a vend that cannot be returned to the customer will be maintained on the machine and be displayed for 15 minutes. The customer can add to this credit to purchase additional items.

**Multi-Vend**

The factory default is "N" for no. If set to "Y", the vendor will hold and display any change due the customer following a vend. The customer is thus encouraged to make additional purchases with the remaining credit. The customer may push the coin return button at any time to refund this credit.

**Lev2 Coin Mech**

The factory default is "N" for no. If set to "Y", the vendor will treat the coin mechanism as a level 2 device. Vendor must be powered down before change will take effect. AMS recommends that this option remain as "N" for no.

**Instant Revaluation**

Adds value to card immediately when cash is inserted.

**BILL AND CASH-LESS APPLICATIONS**

Sensit 3 software allows running the vendor with no coin mech.

The changes to allow bill-only and bill and cashless applications affect fundamental MDB behavior of the VMC. It was decided to make these changes without introducing new layers of option settings. The typical customer using a coin-based system should not notice any changes except under unusual conditions. This section will explain those changes and unusual conditions.

To simplify the discussion, the term "healthy" will be used to describe a peripheral (coin mech, bill validator, or a cashless device) which is present, which is communicating normally to the VMC, and which has no fatal out-of-service conditions.

**MDB OUT-OF-SERVICE**

Previously, the VMC would go out-of-service if what it determined a "critical" peripheral became unhealthy. In a coin-based system,

the coin mech was the critical peripheral. In a cashless-only system, the card reader was the critical peripheral. Bill-only applications were not supported, so an unhealthy validator was never sufficient to take the machine out-of-service.

In this firmware, the machine will only go out-of-service if at first at least one peripheral becomes unhealthy, then all peripherals become unhealthy.

#### REMAINING IN SERVICE W/O COIN MECH

If a bill validator is present, and the coin mech becomes unhealthy, the VMC will continue running with the bill validator (and cashless if present). Over the past several years, the criteria for an "unhealthy" finding have become more stringent, as various reported error conditions such as coin jams were removed from out-of-service consideration. Right now, in practical terms, the coin mech either has to burn out completely or become disconnected to be considered unhealthy by the VMC's criteria. A healthy coin mech going unhealthy should be a rather rare occurrence.

To help notify patrons and service personnel that the coin mech has become unhealthy, the EXACT CHANGE message will be activated. This should discourage patrons from inserting paper money, unless the prices happen to be in paper money increments. Also, patrons trying to feed coins into the mech will notice immediately that the coins disappear (in the case of a serious coin jam) or fall through.

#### "#" KEY FOR ESCROW RETURN

In bill-only applications, there is no classic coin return button to request return of the last-inserted bill. As a result, when the coin mech is considered unhealthy, the "#" key will be treated as equivalent to a coin mech escrow return.

#### BILL-ONLY APPLICATION NOTES:

In a bill-only system, prices must be restricted to the scaling factor of the bill validator. Usually, this scaling factor will start from the smallest paper currency unit instead of the smallest coin unit. This will limit setting selection prices that would require change-making.

Due to the absence of a coin mech, the normal **No Cheat** logic is disabled, regardless of the VMC option setting. The VMC's fairness is limited to not taking in more money than the maximum price in the machine. As mentioned earlier, the '#' key is equivalent to escrow return, possibly allowing the patron to retrieve the last-inserted bill.

The EXACT CHANGE message should never occur in a pure bill-only system.

#### BILL PLUS CASHLESS APPLICATION NOTES

Prices will be restricted to the scaling factor of the cashless device, which is usually the smallest coin unit.

Revaluation occurs in the same way it does with a coin mech, except in cases where the payment medium is at or near its maximum balance. With a coin mech, the VMC will allow credit to exceed the maximum balance as long as any excess can be paid back in coins. Without a coin mech, the VMC rejects any bills that would exceed the maximum balance (in a card-first revaluation) or rejects the payment medium entirely (in a cash-first revaluation).

#### Hide Card Value

Use this feature to display or not display the value on the card. When enabled, this will prevent the credit amount from being displayed during a card swipe. This can avoid confusion for the customer when the maximum priced value is displayed before making a selection for a lesser cost product.

Press "8" to change the YES to a NO and again to change it back. Press"#" to save any change and exit this feature.

**Card Refund** should be enabled only for certain card readers that have difficulty processing refunds. Any credit displayed after a failed vend will be held for 15 minutes. Additional credit may be added to this *un-refundable* credit for other purchases.

Press "9" to change the YES to a NO and again to change it back. Press"#" to save any change and exit this feature.

#### OPTIONS

##### Message

The user can customize the scrolling message that is displayed when the vendor is idle. It is best to write out the desired message first. The message to be displayed on the scrolling display can be up to 50 characters, including letters, numbers, punctuation and spaces. New messages erase old ones.

Select the message option and the controller will prompt the user to press "1" to change the message, or press "#" to exit.

To enter a message, the user should rapidly tap a particular key to cycle through a list of characters for that key. Stop at the desired character. When the keypad is left idle, the last-displayed character is moved over to the end of the message. Continue to select the next character. The key definitions are similar to those of cell phones:

<b>KEY 0:</b> (space)0	<b>KEY 5:</b> JKL5
<b>KEY 1:</b> !? ,\$.;*"+-/<>=#%"1	<b>KEY 6:</b> MNO6
<b>KEY 2:</b> ABC2	<b>KEY 7:</b> PQRS7
<b>KEY 3:</b> DEF3	<b>KEY 8:</b> TUV8
<b>KEY 4:</b> GHI4	<b>KEY 9:</b> WXYZ9

Pressing the \* key will back space through the message.  
Pressing the # key will save the message.

##### Prize

The factory default is "0" for none. The user can set the vendor to give away a free product after a predetermined number of successful vends. Enter the number of vends between free vends, up to 9999. Setting the number to "0" will disable the prize option.

#### Language

##### Primary

The user is presented with a menu of available languages. The user may choose the primary language for the display of all messages. Note that Service Mode messages are available in Primary language only.

##### Secondary

If desired, the user can select a secondary language for the display of all messages. Messages will be displayed first in the primary language, then in the secondary language.

**Product Sensor**

If set to "Y", the vendor will use the product sensor (optional) to determine if there is product in the delivery bin. The control board will not allow vending until any product in the delivery bin is removed. A "REMOVE PRODUCT" message will be displayed. This feature is used primarily when vending glass bottles and products that can be damaged by other falling products.

**Speech**

A speech synthesizer option is available for use with RC Systems Inc. DoubleTalk LT speech synthesizer. It operates only while the vendor is in service mode. The speech synthesizer vocalizes keystrokes and what is shown on the display.

The Options menu selection 5 enters the synthesizer on/off menu.

1. Press 5 to toggle on/off.
2. Press # to exit to the Options Menu.

When turned on the synthesizer is inactive until the vendor is placed into service mode.

The synthesizer must be plugged into the DEX plug on the control board. A utility cable (AMS P/N 20786, Harness, Chip Programming) may be used, but it must be plugged into a male-to-male gender adapter (Radio Shack 26-231B) followed by a null modem adapter (Radio Shack 26-264). The serial cable from the DoubleTalk LT is plugged into the null modem adapter. The ¼" jack from the utility cable is then plugged into the DEX plug on the control board (other DEX functions cannot be used while the DoubleTalk LT is plugged in). A dedicated cable could also be constructed.

**Serial Number**

Field ID101 in the DEX data report is for the machine's Serial Number and can be used to identify the different machines on your route. This field default is the Serial Number of the Control Board itself.

This menu option allows you to program a Serial Number of your choice up to 10 digits long.

Enter the number you want to use – up to 10 Digits – and press \* to Save. If you make a mistake, simply press # to Exit the process without saving.

**SALES BLOCKING**

Four separate time periods in each day of the week can be set, during which selections can be blocked (prevented from vending). All or any combination of selections in the vendor can be blocked from vending, or are exempt from blocking (free to vend).

**SET PERIODS 1-4**

1. Enter the number (1-4) of the time period to set-up. For example, choose #1.
2. Enter the time when sales blocking period #1 is to start, then press SAVE as indicated.
3. Select a.m. or p.m. for starting.
4. Enter the time when sales blocking period #1 is to end, then press SAVE as indicated.
5. Select a.m. or p.m. for ending.

NOTE: A time period can be started, for example, at 9:00 p.m., and may be set to end at 6:00 a.m. (which would be the following day).

6. Starting with Sunday, press #1 blocking will be ON or OFF. Select 2 to continue with the next day of the week.

NOTE: Sales blocking as set in the vendor may be turned ON or OFF by turning one or more days of the week ON or OFF.

**ALL SELECTIONS?**

1. To block all selections in the vendor in time period #1 select YES for "ALL SELECTIONS?"
2. To choose different selections to block in time period #1 select NO. Choose the combination of selections to block as desired. Any combination of tray and column may be blocked (for example, trays 3, 4 and 5, and selections 61, 62 and 66).
3. In this Selection Entry display, enter the number of the first selection. For example, choose 25.
4. The display will show 25, and if it is blocked or exempt.
5. Press the number "9" on the keypad anytime to switch 25 from being blocked to being exempt, or back again.
6. Press "#" on the keypad to exit without saving, and return to the previous display.
7. Press "\*" on the keypad to show the next display for selection 25.
8. Press "\*" again to save selection 25 as blocked or exempt, as was displayed.
9. Press "1" to save ALL of #2 tray as blocked or exempt.
10. Press "2" to save ALL selections in the vendor as blocked or exempt.
11. Press "#" to exit and return to the previous display. After a short time without any keystrokes the control will save entries as-is and return to the Selection Entry display.
12. After saving, these selections will be blocked as set for time period #1.
13. Return to 1-4 SET PERIODS and chose time period #2. Follow the same steps as given above for time period #1. The time of day, the days of the week, and the selections can be different from time period #1. All four time periods may be different from others.
14. The settings in sales blocking may be changed at any time by selecting the time period and changing the time of day, day of the week, and selections.

**CLOCK SETTINGS**

1. **TIME AND DATE** – Enter the current time and date. This information will be used for data logs and error records.
2. **DAYLIGHT SAVINGS** – The factory default is "Y", and the time is automatically adjusted for Daylight Savings Time to the US scheme. Other locations available are Europe, Australia, and Mexico. Selecting "N" will disable this feature completely.

3. **DISPLAY CLOCK** – The factory default is “Y”. The current time will appear on the display beneath the scrolling message when the vendor is not in use.
4. **12/24 FORMAT** – The user can choose to display the time in 12-hour or 24-hour (military) format. The factory default is 12-hour format.

**EnergySENSIT**

This feature is not used because the vendor is not equipped with a refrigeration unit.

**FREE VEND**

The factory default is “N” for no. The vendor 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.**

**VIEW / EDIT** – The current setting is displayed, and the user can change the setting. A warning will be briefly displayed if FREE VEND is turned on.

**AUXILIARY OUTPUT**

The auxiliary output is a 5VDC signal lasting 100 milliseconds following a successful vend. This signal can be used to trigger user-supplied external devices. AMS does not currently supply such accessory devices and cannot offer technical assistance for such devices. This feature is provided only as a convenience to those users of advanced technical skill who wish to connect such a device to their AMS vendor and have sufficient electronic expertise to do so.

**VIEW / EDIT** – The current setting is displayed, and the user can change the setting. Enabling the auxiliary output will not harm the vendor or affect the performance of the vendor in any way.

**DATA LOGS**

The user can review recorded data on vendor temperature, power outages, and door openings. This data is sometimes helpful in diagnosing problems with the vendor. These logs are cleared whenever the software is changed, and once the maximum number of entries is reached, the oldest entry will drop from the list. There are some special situations on these logs – please read the Notes indicated.

1. **TEMPERATURE** – The temperature log contains temperature measurements taken at half-hour intervals over the previous two days. The display shows the recording number, the recorded temperature, and the time and date of the recording. The log holds 96 measurements, with number 1 being the most recent.
2. **POWER** – The power log records power failure information. The display shows whether power went ON or OFF, the temperature in the cabinet, and the time and date of the recording. The log holds 10 recordings, with number 1 being the most recent.
3. **DOOR SWITCH** – The door switch log records door openings and closings. The display shows whether the door was OPENED or CLOSED, the temperature in the cabinet, and the time and date of the recording. The log holds 10 recordings, with number 1 being the most recent.

## 7

# TROUBLESHOOTING

## OUT OF SERVICE MESSAGE

Certain critical errors will disable the vendor. When this happens, an "OUT OF SERVICE" message will be displayed.

To get the vendor back in service, press the mode switch on the control board. Any errors will be displayed immediately. Refer to the list of error codes and explanations below. *Correct the cause of the error first*, then press "0" to clear the error code. Certain errors will have more detail available: press **1** to see more detailed (sublevel) error codes, or **2** for date/time of last occurrence.

## MACHINE ERROR CODES: CAUSES AND SOLUTIONS

### Viewing Top Level Error Codes

To view top level error codes, enter the service mode by pressing the mode switch located at the lower right corner of the control board. **ACCT DATA** 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 can be re-displayed by briefly

turning off the power. Use the keypad buttons to perform the following:

- # - NEXT ERROR** – to view the next top level error code in memory.
- 2 - DETAILS** – displays the time and date of last error occurrence.
- 1 - SUBLVL ERRORS** – to display any sublevel error codes including MDB devices.
- 0 - CLEAR ERROR** – to erase the error code from memory (first correct the error).

### Viewing Sub-Level Error Codes

To view the sub-level error codes, press the 1 key while the top level error code is being displayed (Refer to **CLEARING JAMMED MOTOR** on page 30). Correct the condition which caused the error first, then clear the error code by pressing "0".

Once all errors are cleared, **ACCT-DATA** will be displayed.

ERROR CODES – CAUSES AND SOLUTIONS			
TOP LEVEL ERROR CODE	SUB LEVEL CODE	CAUSES	SOLUTIONS
<b>X STUCK</b>	NONE	Keypad selection button X has been depressed more than 2 minutes.	Clear any obstructions or dirt from around the selection buttons and make sure they can move freely. If proper operation is not restored, replace the keypad.
<b>PROD-SENSOR</b>	NONE	The product sensor is blocked or disconnected.	Remove any products or other objects in the bottom, or in sensor openings in ends of the delivery bin. Check sensor harness connections.
<b>SENSIT BLOCKED</b>	NONE	The vend sensor is blocked or lens is fogged.	Remove any obstructions from the path of the sensor.
<b>SENSIT DISCONNECTED</b>	NONE	The vend sensor is disconnected.	Check all sensor harness connections.
<b>HOME ERROR</b>	NONE	Motor switch problem.	Check for correct motor type. Check for proper connections. Check for correct motor set-up (See <b>TRAY SETUP</b> on page 22).
<b>MOTOR JAMMED</b>	Displays selection #	Excessive current draw.	Caution! See <b>MACHINE TROUBLESHOOTING CHART</b> on page 30.
<b>CLEAN SCREEN</b>	NONE	Reminder generated by control board.	Not an error, but an aid for the service person. See <b>CLEANING THE VENDOR INTERIOR</b> on page 33.

**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 vendor or control board before freeing a jammed helix or motor. Always restrain or block the helix before freeing a jammed or caught product.**

**CAUTION: Use caution when freeing jammed product (Refer to SAFETY PRECAUTIONS on page 7)!**

Clear any jammed products from the indicated vend columns.

To reset the error, first enter service mode, then select Tray Setup (Refer to **TRAY SETUP** on page 22). Press "1", then " \* ", then "3". The control will attempt to run the jammed motors. If the motor had been taken out of the motor matrix, it will be re-established in the matrix.

**MACHINE TROUBLESHOOTING CHART**

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

**MACHINE TROUBLESHOOTING CHART**  
*IF A REPLACEMENT PART IS NECESSARY, PLEASE CONTACT YOUR DISTRIBUTOR*

Symptom	Possible Cause	Remedy
No power at the control board. (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.
	3.0 amp fuse is blown.	Replace 3.0 amp fuse.
	Fuse harness is not connected to the back of the fuse holder.	Connect fuse holder harness.
	Short or cut in the power harness between the transformer and control board.	Check continuity through the power harness. If there is no continuity replace the power harness.
Vendor displays "Please Make Another Selection".	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 29 VAC on secondary side replace transformer.
	Selection not configured in the motor matrix.	Reconfigure the motors. Check for motor coupling.
	Motor jammed.	Clear jammed motor and clear error code.
Vendor does not accept coins.	Vend not sensed by sensor.	Clear fault in sensor boards or harness: possible control board error.
	Options set for "Free Vend".	Scroll to Free Vend and change to <b>N</b> .
	Changer unplugged.	Plug in changer.
	Coins jammed.	Clear changer.
	Defective changer or other MDB device.	Replace changer.
	Credit amount exceeds the highest price. (Prices may be set at \$0.00.)	Set prices.
Vendor will pay out coins.	Control board is in service mode.	Exit service mode.
	Changer unplugged.	Plug in changer.
	Defective changer.	Replace changer.
	Coins jammed.	Clear jammed coins.
	No coins in changer.	Add coins to the changer.

## MACHINE TROUBLESHOOTING CHART (cont.)

Symptom	Possible Cause	Remedy
Validator will not accept bills.	Changer unplugged.	Plug in changer.
	Not enough changer in the changer.	Add coins to the changer.
	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.
Tray selections do not make a complete cycle.	Harness off at the J-1, J-5 and/or J-6 connector on the control board. Motor jammed. Sensors blocked.	Connect harness to the control board connector. Check harnesses.
Tray selection continues to turn after a successful vend.	Wrong motor or motor type: Still motors will not stop at Home position.	See <b>ACCOUNTING DATA</b> on page 21 and <b>FILL / DISPENSE</b> on page 21.

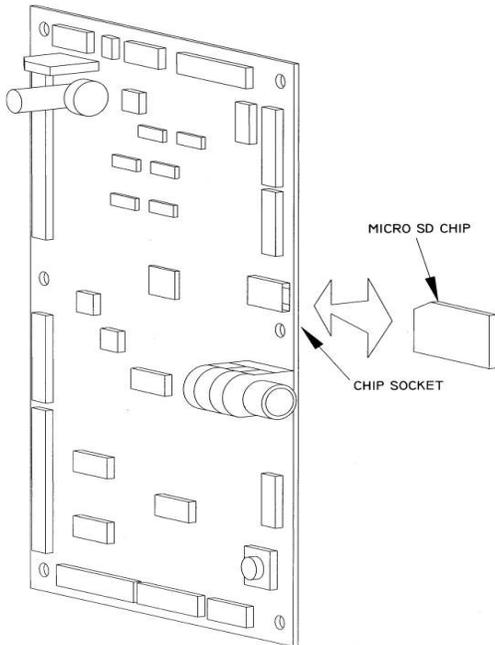
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# 8

## MAINTENANCE

### UPGRADING FIRMWARE

Occasionally it may be necessary to take advantage of new software features. The software can be upgraded by using a micro SD card, available at most electronics retailers.



**Figure 8.1 Loading Control Firmware**

1. Locate the socket for the micro SD program card (Refer to **Figure 8.1** above).
2. Load the program chip into the socket (it will only fit one way). Push in until it latches in place.
3. Press the yellow Mode button. Three software options will be shown on the display.
4. Press **3**, then the “\*” key to scroll through the options.
5. When the desired software is shown on the display press the “#” key.
6. The selected software will be loaded and verified (this will take about 30 seconds).
7. After the software has been loaded the vendor will re-boot, and display will show the software number, version and name.
8. Remove the chip by pushing it into the socket a small amount. It will unlatch and slide out when pressure is released.
9. Check options and set prices as needed. Note that prices and settings (but not DEX data) are saved and restored during this process.
10. Store the micro SD card in a safe place.

The small program that starts the sequence of loading the program into RAM, is known as a *boot loader*. This can be upgraded in the same manner as firmware, but prices will NOT be saved.

### CLEANING THE VENDOR EXTERIOR

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

This vendor uses a door and top made from clear acrylic plastic. These plastic pieces will scratch or haze if chemical solvents or harsh detergents are used. Use a cleaner that is specified for plastic and microfiber cloth like those supplied with the vendor.

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

### CLEANING THE VENDOR 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.

This vendor uses a door and top made from clear acrylic plastic. These plastic pieces will scratch or haze if chemical solvents or harsh detergents are used. Use a cleaner that is specified for plastic and microfiber cloth like those supplied with the vendor.

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

### LUBRICATION WITH LITHIUM GREASE

Once a year the bottle tray rail ball bearings and door moving 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.

### LAMP REPLACEMENT

#### Replacing Optional Fluorescent Bulb

1. Unplug the vendor from the wall.
2. Open the door.
3. Remove the lamp cover from over the defective bulb.
4. Turn bulb one-quarter turn and, at both ends at the same time, slide out through the slots in bulb sockets.
5. Dispose of bulb properly.
6. Install the bulb by inserting bulb pins at both ends at the same time through slots in bulb sockets, then turn bulb one-quarter turn.
7. Reinstall the lamp cover.
8. Plug in the vendor to test the lamp.
9. Close the vendor door.

#### Replacing LED Lamps

1. Open the door.
2. Turn off the power to the control board by using the power switch.
3. Locate the LED harness and remove it from the MDB harness.
4. Remove the screws holding the large and small P-clips, and remove the LED lamps.
5. Install the replacement LED lamps, using the small and large P-clips and the screws.
6. Connect the LED harness to the MDB harness.
7. Turn on the power to the control board.
8. With the LED lamps operating, turn the LED lamps to direct the light into the vendor.
9. Close the vendor door.

### SENSIT 3 UTILITY

A basic software Utility is available for Sensit3 control boards. Currently it allows an operator to save/load vendor configurations, and upgrade firmware. Please contact your distributor or AMS for more information.

### REPLACING THE POWER CORD AND GFCI TEST

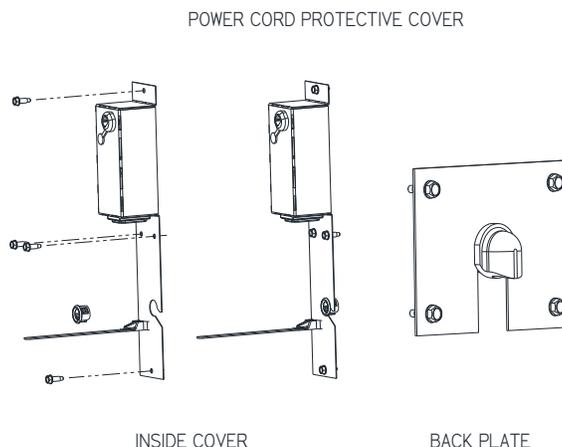
Use this procedure to replace a power cord that is cut, split open or is otherwise damaged or is a hazard. A ¼" nut driver, pliers, gloves and protective eyewear are required. Refer to **Figure 8.2** below.

#### Removal

1. Move the vendor away from the wall and unplug the power cord from the wall outlet.
2. Remove outside cover by taking out the four screws, and lifting the cover up to release the right-angle strain relief.
3. Remove and save the screws attaching the back plate cover. Save the cover.
4. Unplug the power cord from inside the vendor.
5. Remove and save the screws attaching the inside cover. Save the cover.
6. Remove the plastic strain relief and dispose of the damaged power cord.

#### Installation

1. Attach the strain relief to the new power cord, approximately 12" from the end.
2. Capture the strain relief with the outside cover, and reattach the four screws. Do not overtighten the screws.
3. Reattach the inner cover, and plug cord into IEC receptacle.



**Figure 8.2 Power Cord and Protective Cover**

4. Plug the power cord into the power outlet. The power should come on in the vendor.
5. If the power **is on** in the vendor, test the GFCI as follows: press the TEST pushbutton on the GFCI for 1 second to trip the GFCI and shut it off. The vendor power should turn off. Then press the RESET pushbutton for 1 second to return the GFCI to normal operation. The vendor should turn on.
6. If the power **is not on** in the vendor check the GFCI as follows: press the TEST pushbutton on the GFCI for 1 second to trip the GFCI and shut it off. Then press the RESET pushbutton for 1 second to return the GFCI to normal operation. The vendor should turn on.

7. 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.
8. If everything is operational return the vendor to its position next to the wall.

### **STORING THE VENDOR**

If the vendor 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.

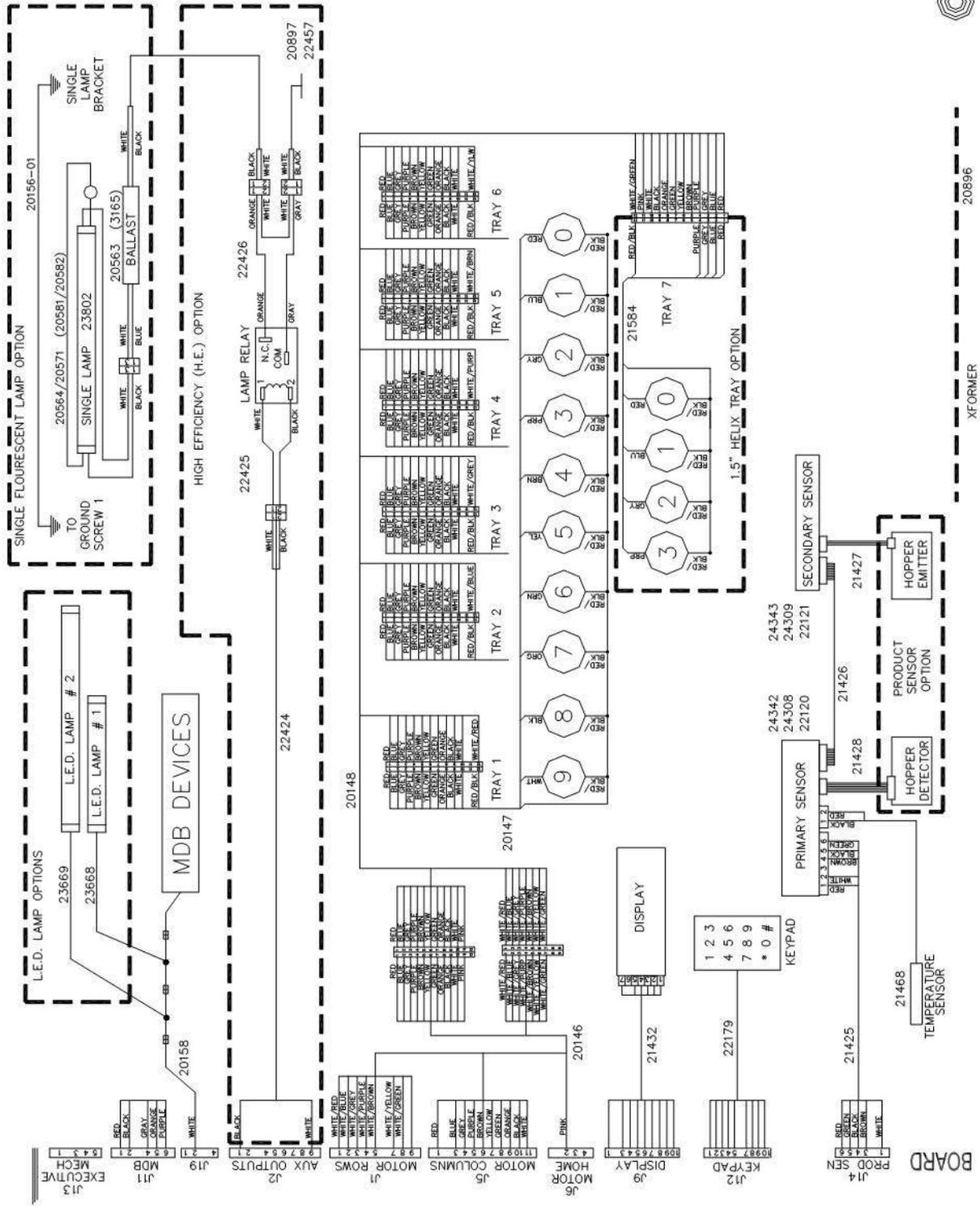
1. Unplug the vendor from the power outlet.
2. Remove any products from the vendor.
3. Clean the inside of the vendor using the general directions given in **CLEANING THE VENDOR INTERIOR** on page 33.
4. Leave the vendor door open for a day to allow the interior to thoroughly dry.
5. Close the vendor door and lock it to protect the interior.
6. Roll up the power cord and place it in the hopper. If the vendor is being moved follow the handling and setup procedures given in section **VENDOR PREPARATION AND INSTALLATION** on page 13.

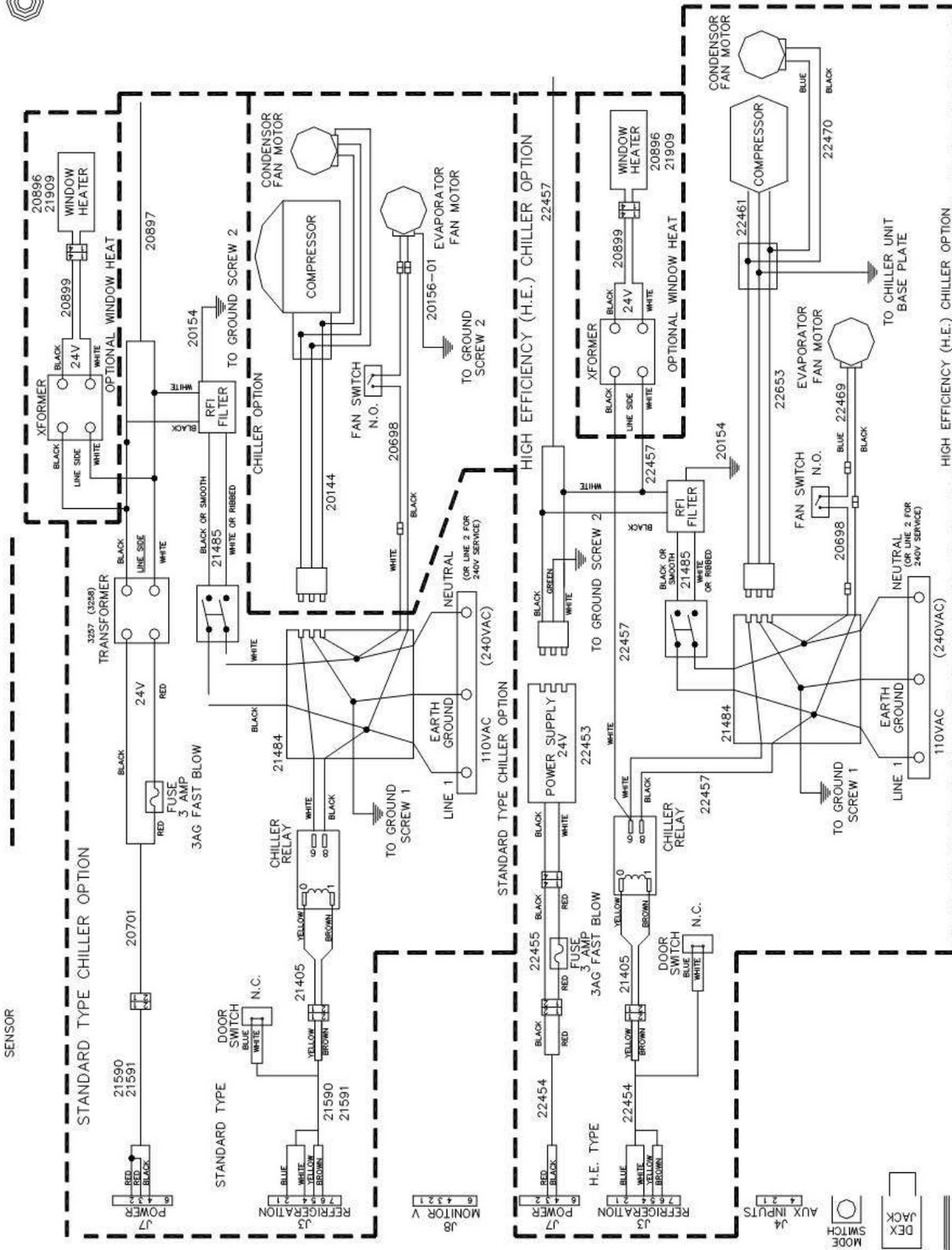
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# WIRING DIAGRAM

**POWER-DOWN BEFORE DISCONNECTING ANYTHING.**





<p><b>AUTOMATED MERCHANDISING SYSTEMS INC.</b>                  255 WEST BURR BLVD., KEARNEYSVILLE, WV, 25430                  304-725-6921, FAX 304-725-6983                  www.amsvendors.com - info@amsvendors.com</p>	<p>REVISION  <b>D</b></p>	<p>DWG. NO.  <b>23802</b></p>	<p>TITLE  <b>DECAL, COMBINED WIRING DIAGRAM</b></p>
	<p>                 STANDARD TYPE CHILLER OPTION                  STANDARD TYPE CHILLER OPTION                  HIGH EFFICIENCY (H.E.) CHILLER OPTION             </p>		

# 10

## SUPPORTED DEX FIELDS

**NOTE: Certain fields may not be reported if the value is zero.**

BA101	Bill Validator Serial Number	DA401	Value credited to cashless 1 device since initialization
BA102	Bill Validator Model Number	DA402	Value credited to cashless 1 device since last reset
BA103	Bill Validator Software Revision		
CA101	Coin changer serial number	DA501	Value of cashless 1 discounts since last reset
CA102	Coin changer model number	DA502	Number of cashless 1 discounts since last reset
CA103	Coin changer software revision	DA503	Value of cashless 1 discounts since initialization
		DA504	Number of cashless 1 discounts since initialization
CA201	Value of cash sales since initialization	DA901	Value of cashless overpay since last reset
CA202	Number of cash vends since initialization	DA902	Value of cashless overpay since initialization
CA203	Value of cash sales since last reset		
CA204	Number of cash vends since last reset	DXE01	Transmission Control Number:"1"
		DXE02	Number of Included Sets:"1"
CA301	Value of cash in since last reset	EA301	Number of reads with reset since initialization
CA302	Value of cash to the cash box since last reset	EA302	Date of the current read out
CA303	Value of cash to tubes since last reset	EA303	Time of current read out
CA304	Value of bills in since last reset	EA304	This terminal/interrogator identification
CA305	Value of cash in since initialization	EA305	Date of the last read out
CA306	Value of cash to the cash box since initialization	EA306	Time of the last read out
CA307	Value of cash to the tubes since initialization	EA307	Last terminal/interrogator
CA308	Value of bills in since initialization		
CA401	Value of cash dispensed since last reset	EA401	Date of first DEX configuration
CA402	Value of cash manually dispensed since last reset	EA402	Time of first DEX configuration
CA403	Value of cash dispensed since initialization	EA403	Installation terminal/interrogator identification during first DEX configuration
CA404	Value of cash manually dispensed since initialization		
CA601	Number of DEX reads performed since initialization	EA701	Number of power outages since last reset
CA602	Number of door openings since initialization	EA702	Number of power outages since initialization
CA701	Value of cash discounts since last reset	G8501	Record Integrity Check (least significant byte first if DEX 5.0, most significant byte first if DEX 6.0)
CA702	Value of cash discounts since initialization		
CA703	Number of cash discounts since last reset	IC101	Machine serial number
CA704	Number of cash discounts since initialization	IC106	Machine Asset Number
CA801	Value of cash overpay since last reset	IC501	System Date (yymmdd)
		IC502	System Time (hhmm)
CA1001	Value of cash filled since last reset	IC504	System Daylight Savings Mode (OFF, NA, EU, AUS, MEX)
CA1002	Value of cash filled since initialization		
CB101	Control board serial number	ID101	Machine serial number
CB102	Control board model number	ID102	Machine model number
CB103	Control board software revision	ID103	Machine Software Revision
DA101	Cashless 1 Serial Number	ID106	Machine Asset Number
DA102	Cashless 1 Model Number	ID107	DTS Level: "6"
DA103	Cashless 1 Software Revision	ID108	DTS Revision: "0"
DA201	Value of cashless 1 sales since initialization	ID401	Decimal point position
DA202	Number of cashless 1 vends since initialization	ID402	Numeric Currency Code (ISO4217)
DA203	Value of cashless 1 sales since last reset	ID403	Alphabetic Currency Code
DA204	Number of cashless 1 vends since last reset		

ID501	System Date (yymmdd)
ID502	System Time (hhmm)
ID504	System Daylight Savings Mode (OFF, NA, MEX, EU, AUS)
PA101	Product number (set to the selection number (e.g. 12))
PA102	Product price
PA103	Product Identification (Customer Facing product name)
PA201	Number of products vended since initialization
PA202	Value of paid products since initialization
PA203	Number of products vended since last reset
PA204	Value of paid product sales since last reset
PA205	Number of discounted paid vends since initialization
PA206	Value of discounts given since initialization
PA207	Number of discounted paid vends since last reset
PA208	Value of discounts given since last reset
PA401	Number of free vends since initialization (not sent if = 0)
PC101	Product number (one based index)
PC102	Product price
PC103	Product Identification
SE01	Number of Included Sets
SE02	Transaction Set Control Number: "0001"
TA201	Value of vend token sales since initialization
TA202	Number of vend token vends since initialization
TA203	Value of vend token sales since last reset
TA204	Number of vend token sales since last reset
VA101	Value of all paid sales since initialization
VA102	Number of all paid vends since initialization
VA103	Value of all paid sales since last reset
VA104	Number of all paid sales since last reset
VA105	Value of all discounts since initialization
VA106	Number of all discounted paid vends since initialization
VA107	Value of all discounts since last reset
VA108	Number of all discounted paid vends since initialization
VA301	Value of all free vends since initialization
VA302	Number of all free vends since initialization
VA303	Value of all free vends since last reset
VA304	Number of all free vends since last reset

Receiving devices should not be designed to expect any particular transmission order.

If firmware or BOOT is upgraded, installation numbers are reset to zero.

Certain fields are omitted if all element values are zero.

# 11

## OPTIONAL EQUIPMENT

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### **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 vendor. Wide Gem only.

### **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. Wide Gem only.

### **Part No. 20535 - Kit, Cup Rail, Small Helix**

Wide Gem only.

### **Part No. 20536 - Kit, Cup Rail, 4" Helix**

Wide Gem only.

### **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. Wide Gem only.

### **Part No. 20664 - Kit, Banking Spacer**

### **Part No. 21166 - Kit, False Leg**

The false leg is to be installed on all machines having 2 or more bottle trays, to prevent machine tipping during loading. **Failure to install the false leg could result in serious injury.**

### **P/N 20786, Harness, Chip Programming**

Use with the speech hardware and software program.

### **P/N 3701, S3 Utility Programming software**

Use with 20786 harness.

### **P/N 23569 Assembly, LED Lights Single Snack**

Description of parts needed for installing single LED light in a 39" snack vendor

### **P/N 23570 Assembly, LED Lights, Dual Snack**

Description of parts needed for installing dual LED lights in a 35" or 39" snack vendor

### **Part No. 24056 – Kit, 39" High capacity Heavy product tray.**

Based on a reinforced snack tray, allows vending 10 columns of cans. Wide Gem only.

### **Part No. 24057 – Kit, 39" High capacity Heavy product tray, with scrolling prices.**

Based on a reinforced snack tray, allows vending 10 columns of cans. Wide Gem only.

### **Part No. 24046 - Kit, Mini Dispenser**

Replaces a snack selection with 1.5" helix and spacer. Use 24046-01 for Slim Gem.

### **Part No. 24012-x - Kit, Scrolling price conversion**

Convert any tray to new scrolling prices. Specify tray type when calling the factory. Contact factory for correct dash number.

### **Part No. 22986 - Kit, EnergySENSIT Lighting Installation**

All parts needed to add this feature to vendors *not* configured for HE from the factory.

### **Part No. 23968 - 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 vendor. This kit is for the Slim Gem.

### **Part No. 24058 - 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. This kit is for the Slim Gem.

### **Part No. 23967 - Kit, Cup Rail, Small Helix**

This kit is for the Slim Gem.

### **Part No. 24062 - Kit, Cup Rail, 3.75" 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. This kit is for the Slim Gem.

### **Part No. 25757-01 - Kit, POS Display with Rail, K-Cup<sup>®</sup>, Slim Gem**

This rail inside of a helix dispenses K-Cup and has a holder for the static display of the K-Cup selection. This kit is for the Slim Gem.

### **Part No. 25763-01 - Kit, POS Display with Rail, Tassimo T-Disk, Slim Gem**

This kit includes a mini-dispenser to dispense Tassimo T-Disks. It also has a static display of the T-Disk Selection. This kit is for the Slim Gem.

### **Part No. 25722-01 - Kit, POS Display with Rail, K-Cup<sup>®</sup>, Slim Gem**

This rail inside of a helix dispenses K-Cup and has a holder for the static display of the K-Cup selection. This kit is for the Wide Gem.

### **Part No. 25718-01 - Kit, POS Display with Rail, Tassimo T-Disk, Slim Gem**

This kit includes a mini-dispenser to dispense Tassimo T-Disks. It also has a static display of the T-Disk Selection. This kit is for the Wide Gem.

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# 12

## LIMITED WARRANTY

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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 control board, 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 covered 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.**

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**SERVICE MODE**

1. Open door and press the yellow switch on the control board to enter SERVICE MODE.
2. Press # or \* to scroll through the functions.
3. Return to vend mode by closing the door or pressing the mode switch.

**ERROR CODES**

- # NEXT ERROR  
2 DETAILS  
1 SUBLVL ERRORS  
0 CLEAR ERROR

**ACCOUNTING DATA**

1. HIST. VENDS
2. HIST. CASH
3. RESET VENDS
4. RESET CASH
5. HIST. SELECTIONS
6. CLEAR VALUES
7. SERIAL NUMBER
8. RESET CARD
9. CASHBOX COINS

**FILL/DISPENSE**

- SELECT TUBE 1-6  
OR INSERT COINS

**DELAYED SALES**

1. START DELAY
2. CANCEL DELAY
3. SET DELAY
4. CLEAR ALL
5. EDIT SEL'NS

**TEMPERATURE\***

1. CURRENT TEMP
  2. SETPOINT
  3. START LOG
  4. VIEW LOG
  5. NAMA HEALTH TEST
  6. EDIT SELECTIONS
- Mark exempt selections to alert driver!**

**PRICE SETTINGS**

1. SET PRICES
2. VALUEVEND

**TRAY SETUP**

1. TEST MOTORS
2. LINK MOTORS
3. MOTOR TYPE
4. DELAYED STOP
5. LETTER / NUMBER
6. CONFIGURE
7. COUPLE MOTORS

**MDB SETTINGS**

1. FORCE VEND
2. NO CHEAT
3. CHANGE BILL
4. HOLD LOST CREDIT
5. MULTI-VEND
6. LEVEL2 COIN MECH.
7. INSTANT REVAL
8. HIDE CARD VALUE
9. CARD REFUND

**OPTIONS**

1. MESSAGE
2. PRIZE
3. LANGUAGE
4. PPRODUCT SENSOR
5. SPEECH

**SALES BLOCKING**

- 1 - 4 SET PERIODS

**CLOCK SETTINGS**

1. TIME AND DATE
2. DAYLIGHT SAVINGS
3. DISPLAY CLOCK
4. 12/24 FORMAT

**FREE VEND**

- VIEW / EDIT

**AUXILIARY OUTPUT**

- VIEW / EDIT

**DATA LOGS**

1. TEMPERATURE
2. POWER
3. DOOR SWITCH

**ENERGYSENSIT\***

1. ON/OFF
2. CLEAR HISTORY
3. SET TEMP CHANGE
4. SET PATTERN TIME
5. SET HIST FACTOR
6. SET DELAY TIME
7. LIGHTING
8. BRIGHTNESS (LED)

**\* These menu selections are present but since these Models do not include refrigeration they should be ignored**

**Note:** When not in Service Mode and with door open, press # to move out-of-position switched motors to Home position (Home/Sensor +/2 or Home/Sensor +/3 only).