MARS SERIES 2000 CONFECTIONERY VENDOR MANUAL

"MARS" TABLE OF CONTENTS

SAFETY

A COMMITMENT TO SAFETY

The Vendo Company is committed to safety in every aspect of our product design. Vendo is committed to alerting every user to the possible dangers involved in improper handling or maintenance of our equipment. The servicing of any electrical or mechanical device involves **potential hazards**, both to those servicing the equipment and to users of the equipment. These hazards can arise because of improper maintenance techniques. The purpose of this manual is to alert everyone servicing Vendo equipment of potentially hazardous areas, and to provide **basic safety guidelines** for proper maintenance.

This manual contains various **warnings** that should be carefully read to minimize the risk of personal injury to service personnel. This manual also contains service information to insure that proper methods are followed to avoid damaging the vendor or making it unsafe. It is also important to understand these **warnings** are not exhaustive. Vendo could not possibly know, evaluate, or advise of all of the conceivable ways in which service might be done. Nor can Vendo predict all of the possible hazardous results. The safety precautions outlined in this manual provide the basis for an effective safety program. Use these precautions, along with the service manual, when installing or servicing the vendor.

We strongly recommend a similar commitment to safety by every servicing organization. Only **personnel properly trained** in vendor servicing **should have access to the interior of the machine.** This will minimize the potential hazards that are inherent in electrical and mechanical devices. Vendo has no control over the machine once it leaves the premises. It is the owner or lessor's responsibility to maintain the vendor in a safe condition. See Section I of this manual for proper installation procedures and refer to the appropriate service manual for recommended maintenance procedures. If you have any questions, please contact the Technical Services Department of the Vendo office nearest you. Refer to the listing at the back of this manual.

SAFETY RULES

- Read the Safety Manual before installation or service.
- Test for proper grounding before installing to reduce the risk of electrical shock and fire.
- Disconnect power cord from wall outlet before servicing or clearing product jams. The vending mechanism can trap and pinch hands.
- Use only fully trained service technicians for "Power On" servicing.
- Remove any product prior to moving a vendor.
- Use adequate equipment when moving a vendor.
- Always wear eye protection, and protect your hands, face, and body when working near the refrigeration system.
- Use only authorized replacement parts.
- Be aware of inherent dangers in rocking or tipping a vending machine.
- Always turn power off before plugging or unplugging vendor to wall outlet.

SECTION I: VENDOR INSTALLATION

A. Vendors are large, bulky machines of significant size and weight. Improper handling can result in injury. When moving a vendor, carefully plan the route to be taken and the people and equipment required to accomplish the task safely.

B. Remove all tape, shipping sealant, and Styrofoam from the vendor. Loosen any shipping devices used to secure interior parts during shipping. Remove the wooden shipping base, attached to the vendor base by the vendor leveling screws. Make certain the leveling screws are in place and functional.

C. Position the vendor three to four inches (7.6 cm to 10.2 cm) from a well-constructed wall of a building or otherwise on a flat, smooth surface.

IMPORTANT: The vendor requires three inches (7.6 cm) of air space from the wall to ensure proper air circulation to cool the refrigeration unit.

D. Adjust the leveling screws to compensate for any irregularities on the floor surface. Ideally, no adjustment will be necessary and the leveling legs will be flush with the bottom of the vendor. A spirit level is a useful aid to level the vendor. When the vendor is properly leveled, the outer door, when opened, will remain stationary. Vendors must be level to insure proper operation and to maintain stability characteristics. Do not add legs to the vendor.

E. Check the manufacturer's nameplate on the left side of the vendor outer door to verify the main power supply requirements of the vendor. Be sure the main power supply matches the requirements of the vendor. To ensure safe operation, plug the vendor only into a properly grounded outlet.

DO NOT USE EXTENSION CORDS.

F. Ensure the power supply meets the rating of the machine (voltage & amp rating).

NOTE: Any power supply variance more than $\pm$ 10% may cause vendor to malfunction.
   * Power outlets must be properly **grounded**.
   * Power outlets must be properly **polarized**, where applicable.

With the relevant test device, test the above conditions.

⚠ **CAUTION** ⚠

IF THE ABOVE CONDITIONS ARE NOT MET FOR THE GIVEN OUTLET TYPE, CONTACT A LICENSED ELECTRICIAN AND HAVE THE NECESSARY CORRECTIONS MADE.
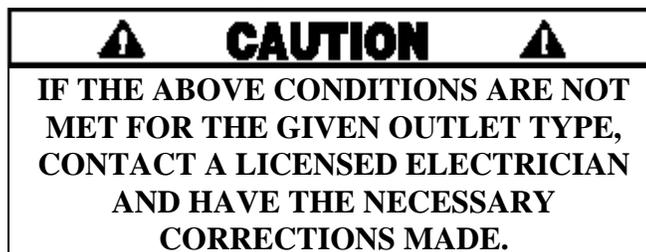
G.   Door Support (Figure 2)

The door support is to insure that the outer door closes squarely to the cabinet. Raising or lowering the door support can also insure proper alignment of the door latch.
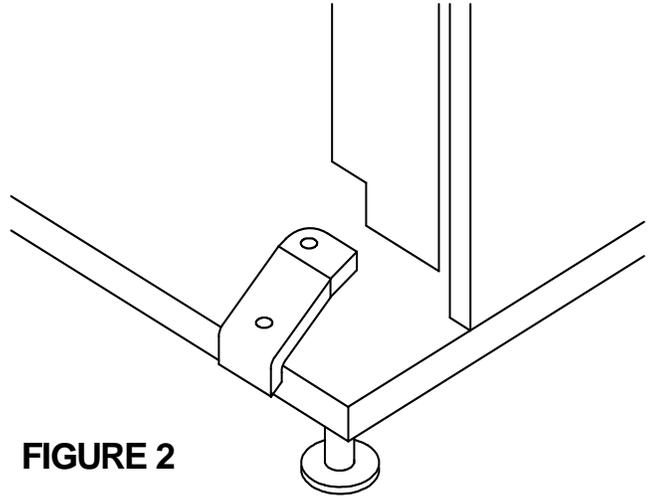
H.   Door Latch Alignment (Figure 3)

After any door adjustment, the floating Quicker Lock assembly should align itself automatically. The latch assembly is adjustable. To adjust, loosen the latch bracket mounting screws, and raise or lower the latch assembly into position, then tighten the mounting screws.

FIGURE 2

LATCH BRACKET

MOUNTING SCREW

FIGURE 3

DO NOT INSERT OBJECTS INTO LOCK CAVITY.

TO FREE OBJECTS, REMOVE LOCK CAP AS SHOWN

⚠ **WARNING** ⚠

KEEP FINGER AND OTHER OBJECTS OUT OF LOCK CAVITY.
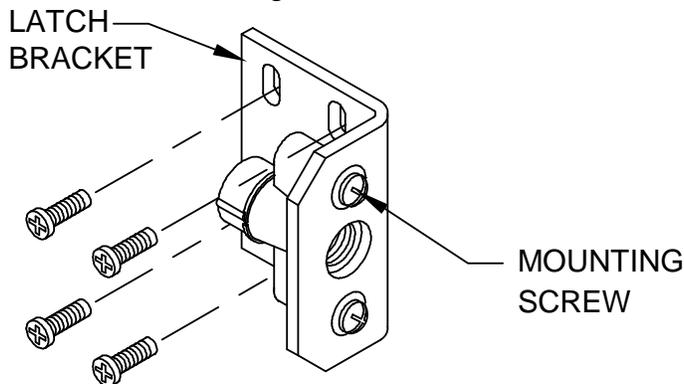
NOTE: Refer to the appropriate Parts and Service Manual for detailed instructions, operating principles, and recommended maintenance intervals and procedures.

SECTION II: ELECTRICAL HAZARDS

GENERAL

Vendo vending machines are provided with the appropriate power supply setting for your area. All models are equipped with transformers, enabling the vending machine to operate on different mains voltages. Refer to the appropriate Service Manual for details of transformers operations.

The power sources are standard for both household and commercial lighting and appliances. However, careless or improper handling of electrical circuits can result in injury or death. Anyone installing, repairing, loading, opening, or otherwise servicing a vending machine should be alerted to this point. Apply all of the normal precautions observed in handling electrical circuits, such as:

- Refrigeration servicing to be performed by qualified personnel only.
- Unplug the vendor or move power switch to off position before servicing or clearing product jams.
- Replace electrical cords if there is any evidence of fraying or other damage.
- Keep all protective covers and ground wires in place.
- Plug equipment into outlets that are properly polarized, where applicable, and protected with fuses or circuit breakers.
- All electrical connections must be dry and free of moisture before applying power.

A.   Grounding Systems

Vendo vending machines are provided with the appropriate service cord for the power supply in your area. The service cord will connect to the matching electrical outlet. Always ensure that the outlet to be used is properly grounded, and polarized where applicable, before plugging in the vendor.

> ⚠ **WARNING** ⚠
>
> **ALWAYS TEST TO VERIFY PROPER GROUNDING PRIOR TO INSTALLATION IN ORDER TO REDUCE THE RISK OF ELECTRICAL SHOCK AND FIRE**
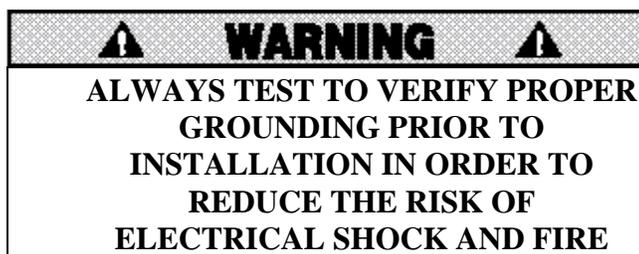
The electrical grounding system also includes the bonding of all metal components within the vendor. This involves a system of bonding wires identified by green or green and yellow marking. The system uses serrated head screws, lock washers, and star washers to insure the electrical connection between parts. Maintenance of vending equipment may involve disassembly. Include the above items when reassembling, even if the vending machine may appear to function normally without them. Omitting any of these items can compromise a link in the grounding system.   See the appropriate Service Manual or kit instructions for components and assembly instructions.

B.   Servicing with "Power Off"

For maximum safety, unplug the service cord from the wall outlet before opening the vendor door. This will remove power from the equipment and avoid electrical and mechanical hazards. Service personnel should remain aware of possible hazards from hot components even though electrical power is off. See the appropriate sections of this manual for further information.

C.   Servicing with "Power On"

Some service situations may require access with power on. Only fully qualified service technicians should perform power-on servicing. Particular caution is required in servicing assemblies that combine electrical power and mechanical movement. Sudden movement, to escape mechanical action, can result in contact with live circuits and vice versa. It is therefore doubly important to maintain maximum clearances from both moving parts and live circuits when servicing.

⚠ **WARNING** ⚠

ONLY FULLY TRAINED PERSONNEL SHOULD ACCOMPLISH "POWER-ON" SERVICING. SUCH SERVICE BY UNQUALIFIED INDIVIDUALS CAN BE DANGEROUS.
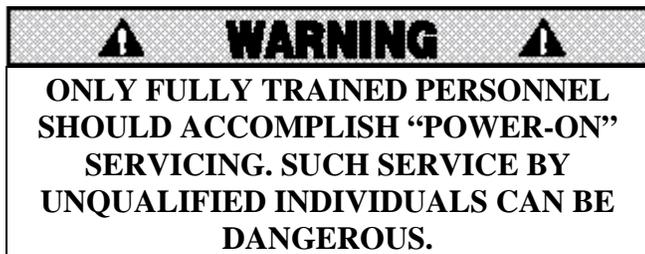
D.   Lithium Battery

This machine contains a Lithium Battery mounted on the VMC board. Always properly dispose of used batteries. **DO NOT** attempt to recharge battery. **DO NOT** throw battery into fire or expose to heat.

⚠ **WARNING** ⚠

EXPLOSION HAZARD. ALWAYS PROPERLY DISPOSE OF USED BATTERIES. DO NOT HEAT OR THROW INTO FIRE. SERIOUS INJURY OR DEATH MAY RESULT.
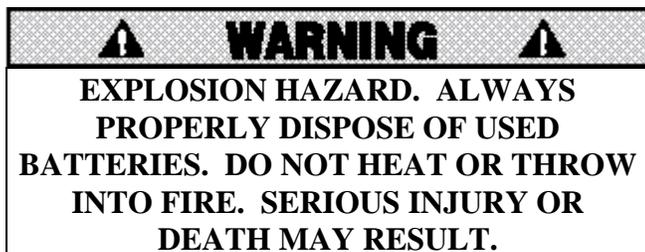
SECTION III: MECHANICAL HAZARDS

A.   Servicing of Moving Parts and Assemblies
When servicing assemblies involving moving parts, **use extreme caution!!** Keep fingers, hands, loose clothing, hair, tools and other foreign material clear of entrapment.

As noted before under the Electrical Hazards section, "Power On" qualified personnel should only perform servicing. Refer to and heed the warnings noted in Electrical Hazards section. These warnings refer to the potential hazards associated with electrical power and moving parts. Always maintain maximum clearances from electrical and moving parts.

Always reinstall protective covers and guards when reassembling equipment.

⚠ **WARNING** ⚠

THIS VENDING MACHINE INCLUDES MECHANICAL EQUIPMENT WHICH CAN BE HAZARDOUS IF IMPROPERLY HANDLED OR SERVICED. USE CAUTION AND CONSULT THE VENDO SAFETY MANUAL AND THE VENDO SERVICE MANUAL FOR ADDITIONAL SAFETY INFORMATION.

⚠ **WARNING** ⚠

RISK OF ENTRAPMENT!

⚠ **WARNING** ⚠

RISK OF ELECTRICAL!
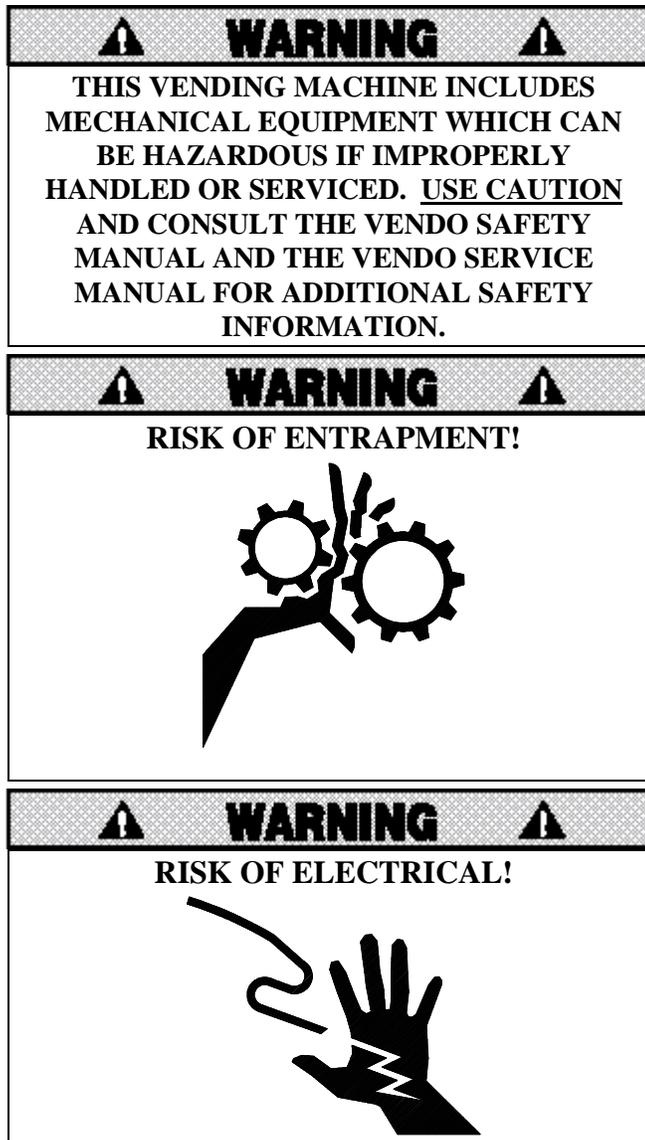
SECTION IV: REFRIGERATION HAZARDS

GENERAL

Refrigeration systems involve both electrical power and mechanical action. These systems may present any of the potential dangers shown in the sections on Electrical and Mechanical Hazards contained in this manual.

A.   Compressed Refrigerant

Refrigeration systems involve the compression and evaporation of gases. The pressures contained represent a potential hazard if suddenly released in confined areas. Caution is required when performing maintenance tests or repairs. Trained personnel who are familiar with the systems and pressures involved should do all testing of sealed refrigeration systems.

B.   Physical Protection

The accidental release of refrigerant gases can result in physical injuries. Always wear protective glasses and protect your hands, face, and body when working near the refrigeration system.

> ⚠ **WARNING** ⚠
>
> **ALWAYS WEAR EYE PROTECTION
> AND PROTECT YOUR HANDS, FACE,
> AND BODY WHEN WORKING NEAR
> THE REFRIGERATION SYSTEM.**

SECTION V: TEMPERATURE HAZARDS

GENERAL

Maintenance personnel should be alert to the potential hazards from hot metal surfaces. High temperatures may be present throughout the refrigeration system although electrical power has been removed.

SECTION VI: SUBSTITUTIONS AND MODIFICATIONS

GENERAL

Unauthorized changes, or the substitution of unauthorized parts, can compromise the equipment designs. This can result in unsafe conditions for either the service personnel or the equipment users. Always refer to the appropriate Parts and Service Manual for replacement parts and maintenance instructions. If questions arise, contact the Technical Services Department of the Vendo office in your area. (See pages T–10 and T-11.)

When servicing the vending machine, always reassemble all components to their original location and position. Maintain the correct routing for tubing, electrical wiring, etc. Replace all clamps, brackets, and guides to their original locations. Replace all tubing, sleeving, insulating material, and protective covers to their original condition.

> ⚠ **WARNING** ⚠
>
> VENDO EQUIPMENT HAS BEEN PROVIDED WITH APPROPRIATE PROTECTIVE DEVICES TO PROTECT AGAINST THE POSSIBILITY OF OVERHEATING AND FIRE, AS A RESULT OF EQUIPMENT OR COMPONENT FAILURES. SUBSTITUTION, MODIFICATION, OR BYPASSING OF SUCH PROTECTIVE DEVICES CAN CREATE DANGEROUS CONDITIONS. PROTECTIVE CIRCUITS SHOULD NEVER BE BYPASSED, AND FAILED PROTECTIVE DEVICES MUST BE REPLACED ONLY WITH FACTORY-AUTHORIZED PARTS.

A.   **Service Cord Replacement**
Vendo vending machines are furnished with unique power supply cords. If replacement becomes necessary, consult the Parts Section and order the correct replacement cord for the model of vending machine in question. Do not use substitute replacement cords. Only authorized service personnel with appropriate training should replace the vending machine service cord. If a question should arise concerning which service cord to order, contact the Technical Services Department of the Vendo office in your area for assistance.

SECTION VI: SUBSTITUTIONS AND MODIFICATIONS (CONT'D)

⚠ **WARNING** ⚠
THIS APPLIANCE MUST BE EARTHED **IMPORTANT**

The wires in the main leads are colored in accordance with the following code:

110V/120V	**220V/240V**	
Green	**Green and Yellow**	**Earth**
White	**Blue**	**Neutral**
Black	**Brown**	**Live**

Vendo®

SECTION VII: CONSUMER SAFETY WARNING

⚠ **WARNING** ⚠

**CRUSH HAZARD
VENDOR CAN BE OVERTURNED IF
SUFFICIENT FORCE IS APPLIED, AND MAY
RESULT IN SERIOUS INJURY OR DEATH.**

GENERAL

There have been incidents, including fatalities, when vending machines have been vandalized by being pulled over in an attempt to obtain free product or money.

To warn of the danger involved in tipping, shaking, or rocking the vending machine, a decal has been designed to be affixed to vending machines. (One such decal is supplied with the vending machine.)   Vendo will supply sufficient decals to be placed on all machines, on request. Should you require additional information, contact a service representative. See parts, sales and service centers listed on page T-10 and T-11.

THE FOLLOWING DECAL SHOULD BE PLACED IN A POSITION ON THE VENDOR CONTROL PANEL AT EYE LEVEL.

⚠**WARNING**

**Never rock or tilt.
Machine can fall over
and cause serious
injury or death.**

**Vending machine will
not dispense free
product.**

389611A

ENGLISH

⚠ **MISE EN GARDE**

**Ne jamais secouer
ou incliner.
Le distributeur peut
se renverser et causer
des blessures graves
ou la morte.
Cette machine ne
distribue pas de
produits gratuitement.**

389611-1A

FRENCH

⚠ **AVISO**

**Nunca voltie o incline
esta maquina.
Puede caer sobre usted
y cauzarle heridas
graves o matarle.**

**Esta Vendomatica no
provee producto gratis.**

389611-2A

SPANISH

NOTES

GENERAL INFORMATION

INNER DOOR

CONTROL
BOARD

BILL
VALIDATOR

COIN
CHANGER

CASH BOX

BAR MODULE

BAR or BAG MODULE

BAR or BAG MODULE

BAR or BAG MODULE

BAR MODULE

PRODUCT
CHUTE

DOOR
SWITCH

OPTICS
CIRCUITRY

ISOLATION
SWITCH

REFRIGERATION
SYSTEM
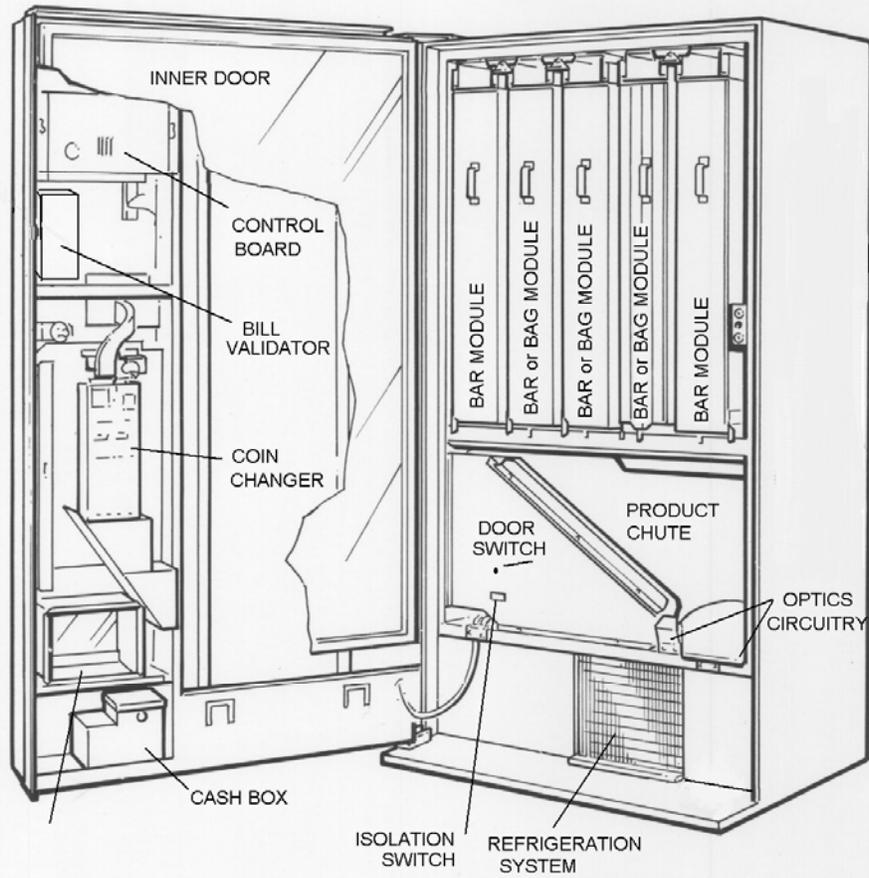
GENERAL INFORMATION

This manual contains programming, operation, and complete parts and electrical wiring diagrams.

The Mars controller has a microprocessor that will permit pricing per selection from 0.00 to 99.99. This machine also has space-to-sales programming.

Specifications:

MODEL	MARS		
SELECTIONS	12		
DIMENSIONS (HEIGHT X WIDTH X DEPTH)			
SERIES 2000	72" x 39" x 30" (183cm x 99 cm x 76 cm)		
VENDING PRODUCT CAPACITY:			
BAR MODULES: 46 BARS PER COL. 4 COL. PER MODULE **TOTAL:**184 BARS PER MODULE	**BAG MODULE:** 39 BAGS PER COL. 3 COL. PER MODULE **TOTAL:**117 BAGS PER MODULE	**UNIVERSAL MODULE:** 21 BAGS PER COL. 3 COL. PER MODULE **TOTAL:**63 BAGS PER MODULE	
SHIPPING WEIGHT	685 POUNDS (311 kg)		
OPERATION VOLTAGE	115v 60 Hz. (U.S.)	220v 50 Hz (Int'l)	240v 50Hz (UK, Australia)
AMP. RATING	10		
REFRIGERATION VOLTAGE	115v 60Hz. (U.S.)	220v 50 Hz (Int'l)	240v 50Hz (UK, Australia)

*Dimensions and shipping weight will vary slightly due to manufacturing tolerances, shipping boards, and whether or not coinage is installed.

Vendo
INITIAL SET UP

A. UNPACKING
Remove all plastic film, cardboard, and tape from the outside of the vendor. Loosen any shipping devices used to secure interior parts during shipment.

To remove shipping boards from base, raise vendor on a well-stabilized lifting device. Remove the leveling bolts, which hold the boards in place and remove the boards. Replace bolts to equal heights in the threaded holes.
Another method to remove shipping boards is to split the boards apart. Using a pinch bar, or a heavy screwdriver and hammer, insert tool into the slots and force the board apart.

B. POSITIONING AND LEVELING
IMPORTANT: PLACE THE VENDOR (IN DESIRED LOCATION) AT LEAST 3 TO 4 INCHES or 8 TO 10 CM AWAY FROM ANY REAR OBSTRUCTION. This is for proper airflow through the refrigeration compartment. The system requires front to rear air circulation for proper operation. Level vendor with leveling bolts. Be sure all four leveling bolts are supporting the machine.

C. POWER SUPPLY CONNECTION

⚠ **CAUTION** ⚠
DO NOT USE AN EXTENSION CORD

The vendor's power requirements will vary depending upon the country it was purchased for. To verify the power requirements of the vendor, check the serial plate located on the hinge side of the door (see Figure 4 on page G-4). The power requirements are listed on the serial plate.

To insure safe operation of the vendor, the vendor's power supply must be a properly grounded and polarized outlet. Before plugging the vendor into the outlet, test the outlet to confirm it will meet the vendor's power requirements. If the power supply of the outlet is different from the power requirements of the vendor, different settings on the transformer may be necessary.

If the power requirements are not properly met, contact a licensed electrician and have the necessary correction made.

Should you require additional information, contact a service representative. See the parts, sales and service centers listed in the back of this manual.

Example:

APPROVED FOR OUTDOOR USE

MODEL

BASIC UNIT

SERIAL NO.

Lot Code: YYMMDD

LR 13085

CHARGE

OZ. R-134a

AMPS

MIN. TEST PRESSURE APPLIED - PSI
LOW SIDE 140   HIGH SIDE 235

Vendo ©

239L

VENDING MACHINE
REFRIGERATED

115v	VOLT
50/60	CYCLE
1	PHASE

THE VENDO COMPANY   FRESNO, CA.

POWER REQUIREMENTS

FIGURE 4

> *NOTE: The **Model** number of the vending machine is located on the top, left hand corner of the serial plate. **Do Not use the "BASIC UNIT" number.** The BASIC number is the cabinet size, which is used on a number of different machines. A typical model number could read "786502004".   The 786 is the model number, and the 004 tells what options are included.*

LABEL INSTALLATION

FLAVOR LABELS: Flavor labels are installed from inside the outer door. Open the vendor door and swing the inner door away, to gain access to the reverse side of the control panel. Open the coinage door. The flavor labels slide into carrier clips on the back of each flavor window (Figure 5).

NOTE: Make sure the correct flavor label has been installed for each selection. This vendor can be programmed to link selection buttons to vend modules in a variety of different configurations. Refer to the section on electronic-control programming for detail on the vendor selection set up.

FLAVOR
LABEL

BUTTON ASSY
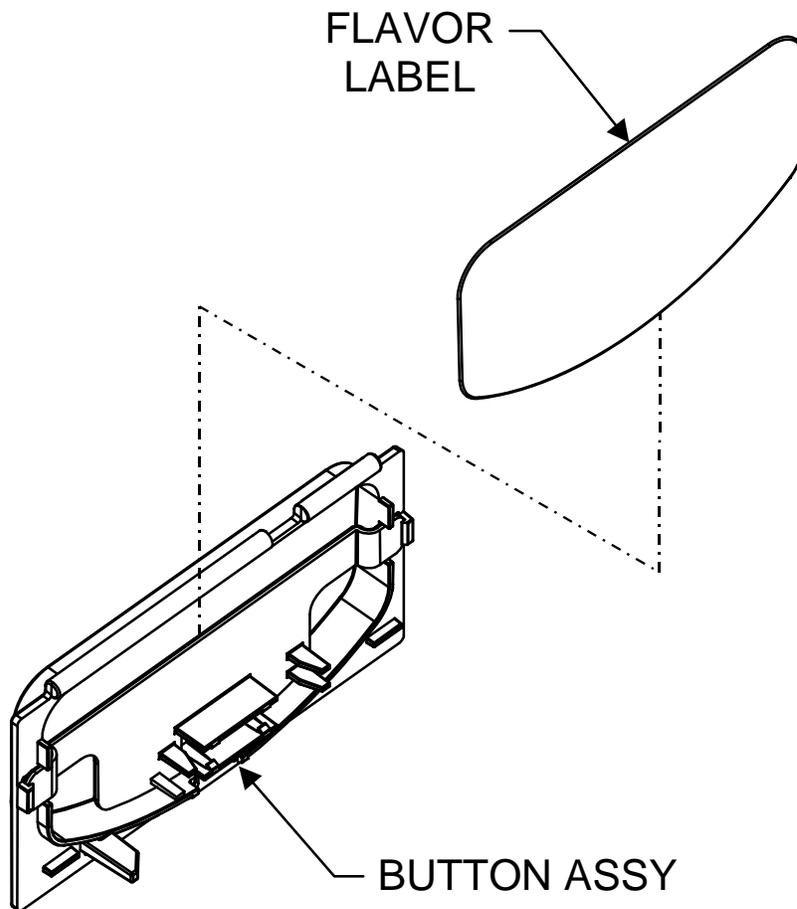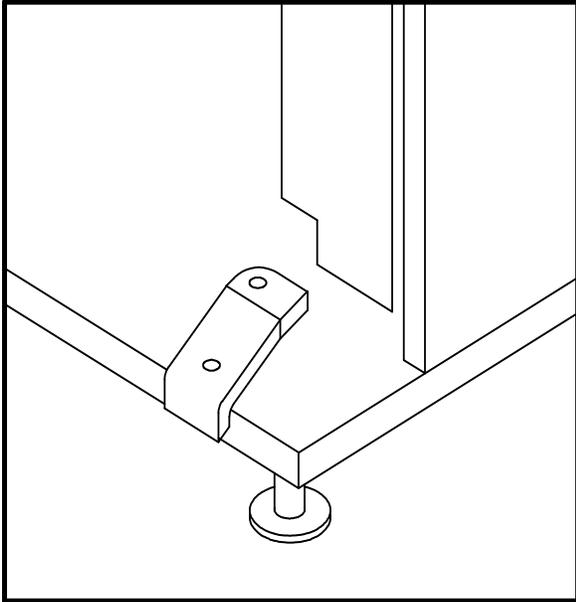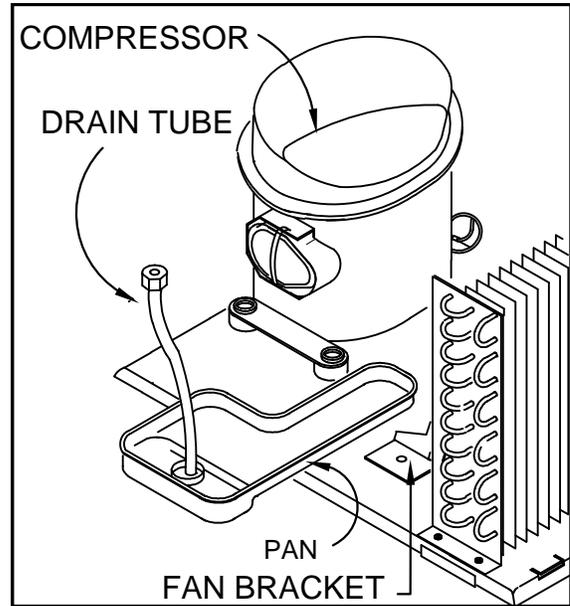
Figure 5

Figure 6   **Figure 7**

ALIGNMENT CHECKS

DOOR RAMP CHECK:
The door support is to ensure that the outer door closes squarely to the cabinet. Raising or lowering the door will help ensure the proper alignment of the door lock stud and the cabinet latch (see Figure 6).

REFRIGERATION AREA CHECK:
Check the position of the condensation pan (see Figure 7). The correct position of the condensation pan is between the compressor and the condenser fan bracket. Be sure the drain tube is clipped to the pan and free of kinks. The trap prevents warm air from reaching the evaporator area.

VENDOR TEMPERATURE CONTROL SETTING

The cabinet temperature is regulated by the temperature control, located on the left side of the evaporator. Before adjusting the control, be sure the refrigeration system is working properly. Check that the condenser and evaporator fans run freely and do not make excessive noise, which might indicate an obstruction to the fan blade. The evaporator and condenser grills should be free from debris. In addition, check the condition of the door gasket, to ensure a proper seal on the cabinet.

When the air temperature at the feeler bulb reaches 65°F (18°C), the refrigeration system should cycle on. To lower the cabinet temperature, turn the temperature control adjustment screw CLOCKWISE. To raise the cabinet temperature, turn the adjustment screw COUNTER-CLOCKWISE.   The cabinet temperature will change 6 degrees for every 1/4 turn of the adjustment screw (Figure 8).

To ensure correct temperature control operation, it is essential that the control feeler bulb be positioned in the air flow from the evaporator, and not resting against any metal surfaces (other than the retaining clip), which will give a misleading reading to the control. This feeler bulb should not require adjustment unless the refrigeration system has been removed for servicing (Figure 9).
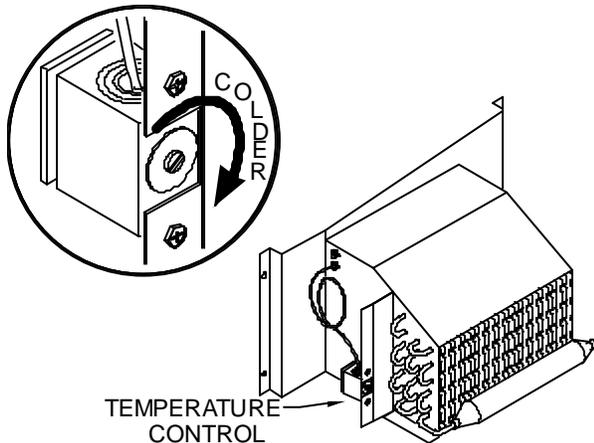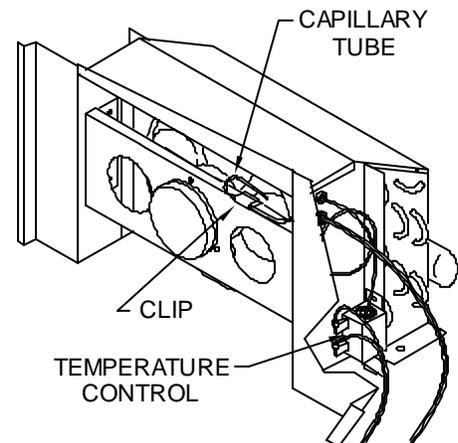
Figure 8   **Figure 9**

ELECTRO-MECHANICAL FUNCTIONAL DESCRIPTION

VEND MODULE CONFIGURATION AND OPERATION:
The Mars Vendo Confectionery vendor is specially designed to dispense chilled bar-type and bag-type products, as specified by Mars. The vendor cabinet is divided into two compartments; the lower portion is open to the ambient environment, and houses the majority of the refrigeration system components. The remainder of the cabinet is refrigerated to preserve the vended product.

The vended product, in bar, bag, or combo form, is dispensed from vend modules mounted in the refrigerated cabinet. There are spaces for up to five vend modules in the cabinet. The use of five modules however, requires a full 180° swing of the outer door. The modules will always be one of four varieties:

    A) Right-Hand Bar Module
    B) Left-Hand Bar Module
    C) Bag Module
    D) Bag Combo Module

There are two types of bar modules, because of the way these modules are loaded. Bar product is loaded into only one side of the module as it is pulled out for loading. Therefore, a right-hand bar module is always installed in the first position at the right side of the cabinet, so that full access to the module chambers is available. The left-hand bar modules can be situated in any of the remaining positions in the cabinet.

The bag modules, on the other hand, are loaded from both sides when pulled out for loading. Therefore, there is only one version of the bag module. Due to the requirement for access to both sides of the module during loading, these modules can only be installed in the three center positions.

The Combos module is a right hand module and therefore can only reside in the first position at the right side of the cabinet.

Each vend module consists of a steel housing with compartments, or columns, segregated by steel partitions. On bar modules, there will always be four chambers, or columns per module. On bag modules including Combos modules, however, due to the larger size of bag product, there are only three chambers, or columns, per module. Each module chamber, or column, has an access door, full-height, on the column. Bar modules have one door per column; bag modules have two doors per column--one on either side of the module for each column. The Combos module has one steel door over all three columns. In each case, these doors keep the product in place within each column of the module. Each module is hung from a support channel mounted to the cabinet ceiling, and suspended between a pair of sliding rails, which allows the module to be pulled forward for loading.

ELECTRO-MECHANICAL FUNCTIONAL DESCRIPTION (CONTINUED)

The product is stored and dispensed by a motor-driven plastic product helix, except in the case of the Combos module, where the helix is a powder coated wire helix. The bar-product helix, bag-product helix, and Combos product helix are different part numbers, as both the diameter and pitch are different. The helix, in the case of the bar and bag, is driven by the same part number vend motor. The Combos helix is driven by its own motor that is different from the bag and bar motors. The vend motors are mounted to a steel support channel at the top of each module, and are connected by a module harness to the cabinet harness. The vend motors are connected to the electronic controller in such a way that any combination of vend motors can be assigned to an individual selection button. This feature allows space-to-sales programming of the vendor's column to the selection buttons, to maximize the use of space for prime product versus slower-moving products.

PRODUCT LOADING:

Check the machine configuration for bar and bag products before loading. All product modules should have labels indicating exactly which products must be loaded.

Pull each product out such that products can be loaded into the machine. **Only one product module must be loaded at a time.** Refer to page G-11.

1) Bar products are loaded from one side of the product module only.
2) Bag products are loaded from each side of the product module, as the module has 2 doors for full access during loading.

No gaps should be left between products. It is essential that **ALL** spaces are filled. Ensure that the product module door is closed after loading.

NOTE: Bag product loading
   1) Ensure that seam is facing upwards when loaded.
   2) Ensure that the product is evenly distributed in the bag.

NOTE: Bar product loading
   1) Ensure that seam is facing upwards when loaded.
   2) Ensure that the product is evenly distributed in the bar.

See Page G-11 for details.

THE VEND CYCLE:
In order to initiate a vend, the customer must first set up a credit. A credit is registered by inserting coins into the coin slot (and into the coin mechanism), by inserting a bill into the bill validator (if available), or by inserting a debit card into the debit-card reader (if available). Once a credit is established equal to or in excess of the lowest product price, the customer is allowed to make a selection. By pressing the selection button of their choice, a signal is sent to the electronic controller which, in turn, feeds power to the vendor column(s) assigned to that selection.

Product is vended when a vend motor assigned to that selection is energized by a circuit from the electronic controller. The motor rotates its product helix, and drops the bottom product out of the bottom of the helix. The product falls freely onto the product chute.

As the product passes down the product chute, it passes through the vend detection system, where optical sensors detect the passage of the product on its way to the product hopper. The passage of product through the vend detection sensors signals the electronic controller, which then performs a variety of functions. The vended product ends up in the product hopper and is removed by the customer as they push open the vend door. (See pages PR3 – PR23 for further electronic controller details.)

Vendo

Figure 1 : Do not remove more ⟶
than one module
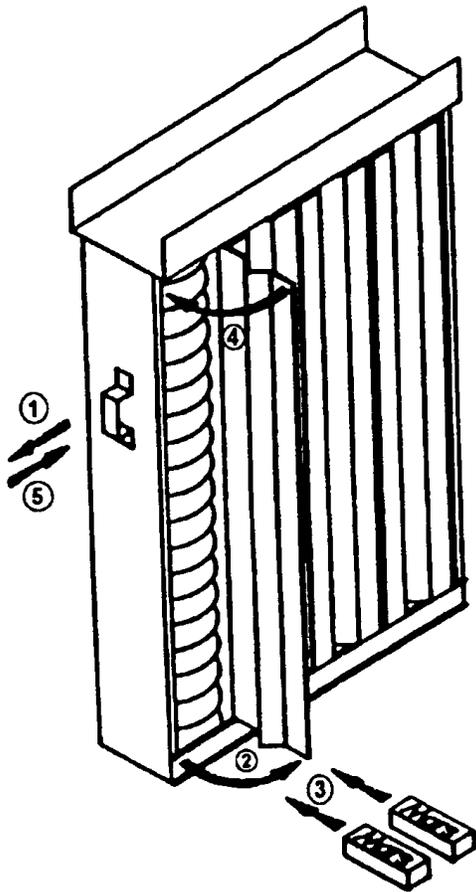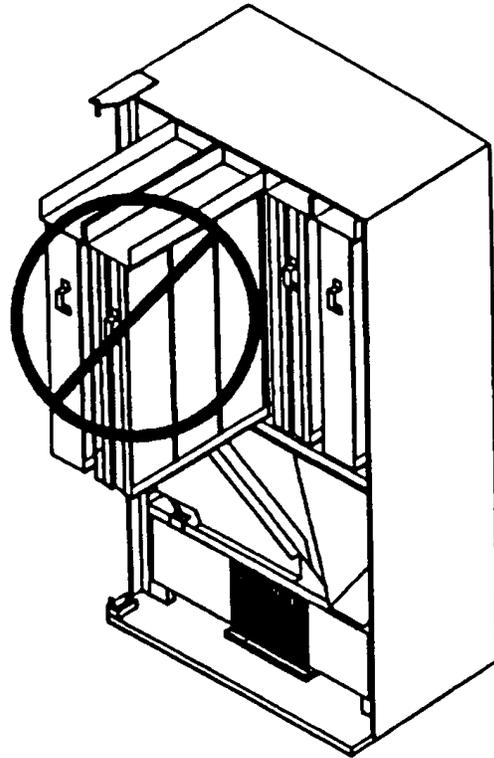
Figure 2: Bar Module
1) Pull module out from machine
2) Open door
3) Insert bar products as shown
4) Close door
5) Push module back into machine
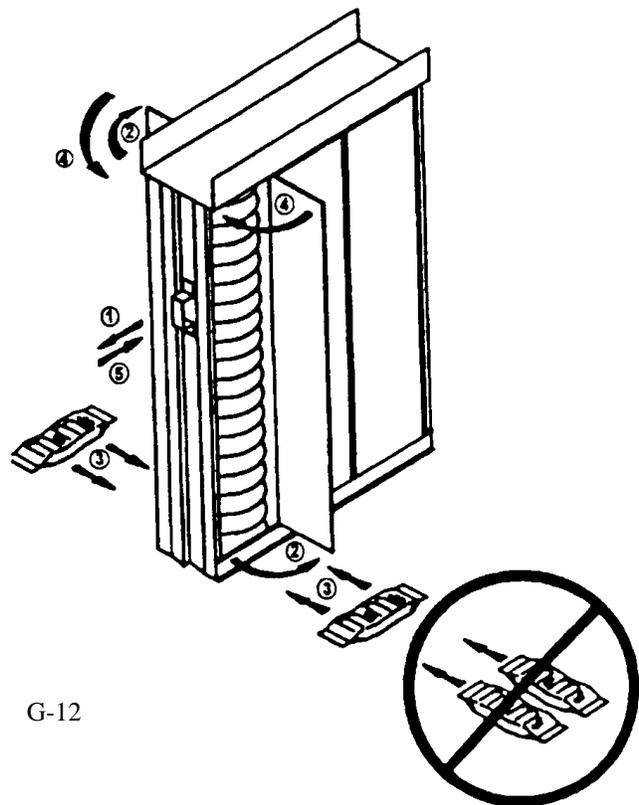
Figure 3 : Bag Module ⟶
1) Pull module out from machine
2) Open door
3) Insert bag products as shown
4) Close door
5) Push module back into machine

BASIC REFRIGERATION PRINCIPLES:
A refrigeration system is principally involved in the process of transferring heat. Heat is removed from the vending product area of the cabinet, and is transferred to the condenser, where it is dissipated. With vending equipment, large quantities of heat must be transferred economically and efficiently in a continuous fashion, without loss of refrigeration gas, over a long period of time. The most common type of refrigeration system in vending is the vapor compression, or simple compression cycle system. This system consists primarily of three elements: a compressor, an evaporator, and a condenser, joined together as a "sealed system".

In the vapor compression system, there are two pressures present: Low, evaporating pressure and high, condensing pressure. The refrigerant gas acts as the transport medium in which heat is transferred from the evaporator to the condenser, where heat is dissipated into ambient air. A change of state occurs as the refrigerant changes from liquid to vapor and back to liquid again, allowing the refrigerant to absorb and discharge large quantities of heat in an efficient manner.

The basic vapor compression cycle occurs as follows: In the evaporator, the refrigerant boils (evaporates to vapor), at a temperature sufficiently low enough to absorb heat from the cabinet space being cooled. The pressure maintained in the evaporator controls the boiling temperature. The higher the pressure, the higher the boiling point. The compressor removes the vapor via suction lines from the evaporator at a rate sufficiently rapid to help maintain the desired pressure. The compressor takes the low-pressure vapor and compresses it, increasing both the pressure and temperature of the vapor. This hot, high-pressure gas is forced out of the compressor discharge valve and into the condenser. Upon reaching the condenser, the refrigerant dissipates its heat and condenses into liquid. This liquid, in turn, flows from the condenser back to the evaporator to repeat the cycle.

VENDO REFRIGERATION SYSTEM OPERATION:
The general cycle described above occurs within the refrigeration system fitted in Vendo equipment. A more detail explanation of the function of the various components in the system follows.

As the temperature within the cabinet increases, the liquid contained in the temperature-control feeler bulb also rises in temperature, and, in doing so, expands. This expansion increases the pressure against the temperature control bellows, and actuates the temperature control switch. This switch directs power to the compressor and condenser fan motor. The compressor pulls low pressure refrigerant vapor from the evaporator and compresses it, increasing both its temperature and pressure. This high-temperature/pressure vapor is expelled to the condenser, where the vapor sheds its excess heat, as drawn off by the airflow created by the condenser fan through the condenser fins. More specifically, the condenser fan pulls air through the condenser, removing heat from the refrigerant vapor in the condenser coils.

REFRIGERATION SYSTEM - FUNCTIONAL DESCRIPTION (CONTINUED)

The cooled gas in the condenser turns to liquid, which is pumped via pressure from the compressor through the drier, which removes any water and particles from the liquid refrigerant. This liquid is then forced through the small-diameter capillary tube, which acts like a throttle for the system, controlling the flow rate of the liquid refrigerant into the evaporator. Airflow is circulated throughout the cabinet by the evaporator fan, which pulls airflow through the coils and fins of the evaporator. Any excess heat present in the airflow is drawn off by the liquid refrigerant, which evaporates, and is, in turn, pulled via the compressor. The falling temperature in the cabinet eventually cools the liquid in the temperature control feeler bulb, condensing the liquid inside, reducing its pressure, which releases the pressure against the temperature control bellows. This reduction deactuates the switch inside, cutting off power to the compressor and condenser fan motor.

HEATING SYSTEM - FUNCTIONAL DESCRIPTION

VENDO HEATING SYSTEM OPERATION:
This vendor is also equipped with a heating element for cold weather environments. This system consists of a simple 150W, 230V or 115V heating element located just behind the evaporator fan air ducting. This unit is controlled by its own thermostat and is activated when temperatures are in danger of freezing the product.

⚠ **WARNING** ⚠
HEATING ELEMENT CAN CAUSE
MINOR BURNS TO YOUR HANDS AND
FINGERS IF TOUCHED WHEN
ELEMENT HAS BEEN ENERGIZED FOR
ANY LENGTH OF TIME.
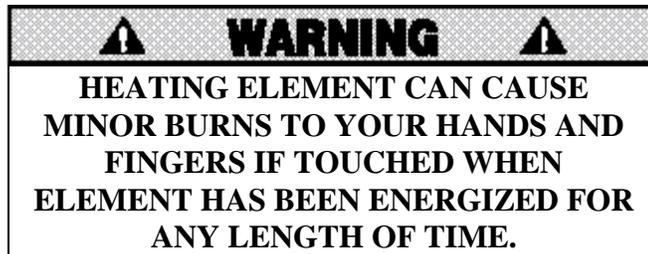
VENDOR ELECTRONIC CONTROLLER

DESCRIPTION:
The Mars Vendo Confectionery machine comes equipped with an integral electronic-control system, which manages the vendor's mechanical functions, monitors the vend system for failures, controls the vendor's coin mechanism, drives the vendor's scrolling display, and keeps track of sales data, among other functions. The control systems consist of the following major components:

- Electronic Control PC Board
- Harnessing
- Scrolling Display
- Transformer
- Reset Switch
- Vend Detection System
- Coin Mechanism

These components work together to jointly control the vendor's functions. The control system is programmed with the following capabilities:

- Space-to-Sales Programming
- Sales Data Storage
- Data Retrieval via DEX/UCS Plug or Optical Datalink
- Self-Diagnostics for the Vend Mechanism
- Multi-Pricing
- Multi-Vend
- Multi-Lingual and Personal-Message Display Programming

In order to begin programming the electronic controller, it is necessary to understand the purpose and location of each of the major components listed above.

Electronic Control PC Board: Located on the outer door, inside a protective housing, the electronic controller is the heart of the vendor control system. This board contains all the microprocessors, memory microchip, and other electronic devices needed to control the functions of the vendor. Also located on the PC board is a small push-button switch, the mode switch, whose purpose is explained in the electronic controller programming section that follows. This switch is accessible through a grommeted hole in the electronic controller housing cover.

Harnessing: Connected to the electronic control PC board are a series of harnesses that supply power to the control board, and distribute power to the various systems within the vendor. The harnesses are all keyed in such a way that they cannot be installed on the wrong set of pins, or misconnected on their correct PC board pins (refer to the Electrical Servicing section for harness connection detail).

Scrolling Display: Located on the control panel, above the selection button and coin-insert plate on the front of the vendor, is a scrolling, 20-character display. This display provides consumer messages such as credit-level established and selections out-of-order during a candy sale, allows for interactive feedback during programming, and faultfinding when servicing. The display can be programmed to display messages in eight different languages. In addition, the display can be programmed to display a custom scrolling message.

Transformer: Each vendor is equipped with a step-down transformer, to drop the input voltage available at the location to 24 volts, for use by the electronic control board, vend motor, and display. The transformer is located at the rear of the cabinet base, beneath a protective cover (refer to the Electrical Servicing section for details on transformer connections).

Reset Switch: Located on the vend-chute support plate, beneath the vend chute in the cabinet, there are two switches mounted in the support plate. The push-button switch with the unshielded plunger is the reset switch. When activated, this switch signals to the electronic controller that the vendor outer door has been closed, indicating the end of service duties, and resets the controller. (The other switch in this pair, with a shielded switch plunger, is the door-power switch--its purpose is to isolate the door circuits when the outer door is opened for service.)

Vend Detector System: Located on either side of the discharge portion of the vend chute in the vendor cabinet is the vend detector system. It consists of two PC boards, an emitter board, and a detector board. These two boards scan across the vend chute, to detect vended product. This information is used by the electronic controller to determine whether a product has been delivered. If it has been delivered, the controller can instruct the coin mechanism to cancel the customer's credit, pay out any change due to the customer, and update the sales data memory fields. If no product is detected as delivered, the electronic controller will run the selected product's vend motor again, to dispense another product.

Coin Mechanism/Bill Validator: The coin mechanism is connected to the electronic controller in a master/slave relationship, with the controller serving as master. The coin mechanism validates incoming coins, pays out change as required, and transfers sales data to the electronic controller. The Mars Vendo Confectionery machine electronic controller is programmed to accept a variety of different Mars coin mechanisms, and Vendo provides the appropriate harnessing to interface with these units (refer to pages 90 - 91 for harness details).

NOTES

PROGRAMMING SECTION

MODE 1: OPERATION MODE

Upon entering the operation mode, the vendor will automatically check all of the motors assigned to selection buttons to ensure they are in the home position. The controller will attempt to home any motors found to be out of position. If the controller detects a motor out of the home position, after a predetermined time, that motor will be recorded as "bad" and no further attempts will be made to run that motor during operation.

During operation mode, the vendor display will scroll through the programmed user's messages. The vendor display will not scroll through these messages if the vendor is totally sold out, all of the vend motors are out of service, or if the vend detector is activated for more than five seconds.

When a selection is made, the controller will run the assigned vend motor. The product auger attached to that motor will rotate, allowing a product to fall free from the vend mechanism, onto the product chute. The product slides down the product chute and, in doing so, passes through the vend detection system, as it makes its way to the vend hopper. The vend detection system signals the controller board that a vend has occurred. The controller, in turn, deducts the product price from the customer's credit, pays out any change that may be owed, and updates the sales data in memory. The display will flash the message "PLEASE REMOVE YOUR PRODUCT."

The controller is designed to operate with a number of different coin mechanisms or bill validators and has the ability to recognize which type of coin mechanism is installed.

ENTERING OPERATION MODE
This mode is the normal operating mode of the machine for receiving credit, paying change, and dispensing product to the customer.

The Operation Mode is entered whenever one of the following occurs:
   a) The mode switch is depressed once from the Entry Code Mode if the correct entry
      code has not been keyed in, or the mode switch is depressed once from the
      last machine programming mode.

   b) The door is closed (causing the open/close signal door switch to activate).

   c) No operation for five minutes.

   d) A coin, bill, or debit card has been detected.

Whenever the Operation Mode is entered, all of the assigned motors will be checked to see if they are in their home position. The controller system will try to re-home any motors that are not in their home positions.

In Operation Mode, the programmable user message is displayed during idle time unless all product is sold out in the machine, all the columns are either bad or unassigned, or if the IR vend detect beam is broken for longer than 5 seconds.

In the case of all columns sold out, the display will indicate "Sold Out".

In the case of all columns bad or not assigned, or the infrared (IR) beam broken, the display will indicate "Out of Order".

If the machine is configured appropriately, the reason for the out of order condition, will be appended to the "Out of Order" message. The following messages are appended (only 1 append at a time):

- ❑ Bad beam -If there's a problem with the vend detect beam
- ❑ Bad motors-If all assigned motors are bad
- ❑ No motors -If all motors are unassigned
- ❑ No cash   -If some prices are 0.00 and no monetary peripheral is attached.

"Make Another Selection" - Product assigned to that selection is sold-out and/or there are inoperable product motors, the blocker has been activated for product selected or the selection has no columns assigned to it.

"Check Selection Price" - Not enough credit has been established to vend the selected product. Additional credit can be established, or escrow return can be requested to return credit (if allowed by force vend option). For MDB interfaces, the "Use Correct Change" message will be followed by "Selection Price Is - ".

"Selection Price Is" - Not enough credit has been established to vend the selected product. Additional credit can be established or escrow return can be requested.

"Use Correct Change" - The system is unable to make changes for the selection requested. Escrow return can be requested and will return credit on a coin-for-coin basis (if allowed by the force vend option).

A vend will occur when product has been detected by the vend sensing circuit. At that time product price will be deducted from the credit, and change (if any), will be returned depending on the multi-vend option.

When a vend occurs, the display will scroll the message **"Please Remove Your Product"**.

Vendo

	1		2
SWITCH LAYOUT	3		4
	5		6
	7		8
	9		10
	11		12
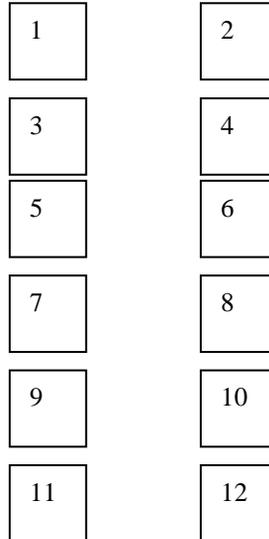
MODE #2: SERVICE MODE

ENTERING SERVICE MODE
The Service Mode is entered when the door is opened and the mode switch is depressed once. If there are no bad motors upon entering the Service Mode, the display will show **" Setup / Tube Control "**.

If there are any bad motors upon entering Service Mode, the display will continuously display all of the bad motors by column number for approximately two seconds before proceeding to the next.
For Example: If A1 is bad, then the display will scroll "Bad Column A1".

❑ **SWITCH #1 (CASH HANDLING MODE)**
Pressing selection switch 1 of the vendor will determine the four different modes of cash handling. Pressing selection switch 1 again will toggle the different types of cash handling.
Note: The type of cash handling does not apply to executive interface.

DISPLAY	CASH HANDLING MODE	DESCRIPTION
FORCE VEND	Force Vend	No escrows return unless product selected is sold out.
FORCE BILL or FORCE COIN	Force Bill/Coin	Bill or high value coin is inserted and accepted. A selection must be made.
CHANGE	Change Machine	Bill or high value coin is inserted and accepted. Escrow return will return coins with no vend transaction.
NEUTRAL	Neutral	The first bill is held in escrow.

❑ **SWITCH #2 (CHANGE HANDLING MODE)**

Pressing selection switch 2 will determine whether the multi-vend feature is enabled or disabled. Pressing selection switch 2 again will toggle between the different types of change handling.

Note: *Change handling is used with MDB interface only.*

DISPLAY	CHANGE HANDLING MODE	DESCRIPTION
NORM VEND	Regular Vend	Change is paid out after the vend sensor detects the delivery of the product.
MULTI VEND	Multivend	Change due is held and displayed, allowing for additional purchases. Change is returned when escrow return is requested or 20 seconds have elapsed. *Note: Forced Vend is disabled when the controller is in multivend.*

❑ **SWITCHES 3, 4, 5, 6 (COIN PAY-OUT MODE)**

Pressing selection switches 3, 4, 5 or 6 will enter the coin payout mode. The controller system recognizes selection switches 3 thru 6. By pressing any of the above switches, the controller will pay out accordingly (.5, .10, .25 etc.).

Note: *Button 6 will only work for four-tube coin changers and the denomination will vary by the country for which the coin mechanism is interfaced.*

SWITCH #	FUNCTION
3	Dispenses coin from the tube associated with the 1st/lowest value coin (typically nickels in the USA)
4	Dispenses coin from the tube associated with the 2nd/lowest value coin (typically dimes in the USA)
5	Dispenses coin from the tube associated with the 3rd/lowest value coin (typically quarters in the USA)
6	Dispenses coin from the tube associated with the 4th/lowest value coin (typically dollar coins in the USA)

❑ **SWITCH 7 (DISPLAY OF UNASSIGNED COLUMNS MODE)**

By pressing selection switch 7, the controller will cause the display to scroll through all the unassigned columns. *For Example: "Column A1".*

When all the columns have been displayed, the display will show "Setup/Tube Control".

Note: If there are no unassigned columns, then the display will show "No Unassigned" for approximately two seconds, followed by two audible beeps, and then the display will show "Setup/Tube Control".

❑ **SWITCH 8 (COIN MECH SPECIFICATION)**

Pressing selection switch 8 will display the present type of Executive Coin Mech, which is specified for the machine. Continued depressions of selection switch 8 toggle between the two different types of mechs.

Note: If MDB mech interface is used, selection switch 8 can still be used to specify a type of Executive Mech, but the setting will have no affect on the performance of the machine.

If the Executive interface is used, it is critical to have the coin mech and VMC set to same configuration (either both at normal mode, or both in the Price Holding / Price Display Mode).

Displays	Description
Executive	Specifies an Executive mech, where the prices are stored in the VMC
Executive PH/PD	Specifies an Executive mech with PH (Price Holding) and PD (Price Display). With this type of mech, the prices are held within the coin mech.

❑ **SWITCH 9 (CASH COUNTER DISPLAY MODE)**
Pressing selection switch 9 will cause the display to show the last known value of the coin mech tube inventory ("Invxxx.xxx"). In that mode, the operator is allowed to deposit any coin into the coin changer acceptor when the coin's tube is not full. The tube inventory level will be displayed after each coin is accepted.
Note: This status is available with MDB coin mechs only. Executive interface provides this information within the mechanism itself and cannot be accessed, and the display will show "Invooo.ooo".

❑ **SWITCH # 10 (SINGLE / MULTI PRICE SELECTION MODE)**
Pressing selection switch 10 will display the present configuration of the machine (single vs. multi price). Continued depressions of the switch toggle between the two different modes.

Display Mode	Description
Single Price	All items are sold at the prices assigned to selection #1
Multi Price	All items are sold at the prices specified for each selection

❑ **SWITCH # 11 (INC/DEC OVERPAY VALUE MODE)**
Pressing selection switch 11 will display:

Overpay xx.xx   where xx is the max overpay amount

While the above message is displayed, depressing selection switch 11 will increase the amount of overpay. Depressing the switch a second time will decrease the amount.

❑ **SWITCH # 12 (MYSTERY VEND MODE)**
Pressing selection switch 12 will display the present configuration of the machine (Mystery Vend Off vs. On). Continued depressions of the switch toggle between the two different modes.

Displays	Description
Mystery Vend On	The motor assigned to selection #12, will be randomly selecting from #12's STS setting
Mystery Vend Off	There is no special processing for Selection #12

MODE #3: SET PRICE MODE

ENTERING SET PRICE MODE
By pressing the mode switch twice will enter the Set Price Mode. You may also enter the Set Price Mode by pressing the mode switch once from the Service Mode. Upon entry, the words "Set Price" will appear on the display.

Depressing a selection switch once displays the present price of the selected product.

Depressing the same selection switch a second time increases the price in base unit increments at the rate of approximately one base unit every half second for 5 seconds. After 5 seconds, the rate changes to one base unit every twentieth of a second.

Depressing the same selection switch a third time decreases the price in base unit decrements at a rate of approximately one base unit every half second for 5 seconds. After 5 seconds, the rate changes to one base unit every twentieth of a second.

Continued depressing of the same selection switch alternates between incrementing and decrementing the price.

A zero price enables that selection to be free vended. **Note: if an Executive mech in non PRICE HOLDING/PRICE DISPLAY mode is used, the user must put in a coin.**

MODE #4: MACHINE TEST MODE

ENTERING MACHINE TEST MODE
Pressing the mode switch three times will enter the Machine Test Mode. Upon entry, the words "Machine Test" will appear on the display.

□ **SWITCHES #1, 2 AND 3 (TEST VEND MODE)**
While the machine is displaying "Machine Test" or any of the other tests are active (except for Switch Test), hitting selection switches 1, 2 or 3 will display "Test Column A1" and the machine will enter the "Test Motor" mode.

Once in this mode, selection switch 3 runs the motor displayed, selection switch 1 increments the letter (e.g. "A1" is changes to "B1"), and selection switch 2 increments the number (e.g. "B1" is changes to "B2"). The letters wrap at "E" while the numbers wrap at "6".

The VMC will attempt to run a motor, even if it is not at the home position, or it has been found to be bad.

Possible messages during the motor test are:	
Displays	**Description**
A1 Running	After sw 3 is pressed, indicates that the motor is running.
A1 Low Current	Indicates that the motor failed due to Low Current.
A1 High Current	Indicates that a high level of current was detected
A1 Stuck Home	Indicates that the motor never left home.
A1 Time Out	Indicates that the motor timed out - it never reached home.

The mode is exited by pressing the mode switch, or selection switches 11 or 12.

□ **SWITCH #4 (VEND DETECT BEAM TEST MODE)**
While the machine is displaying "Machine Test" or any other tests are active (except for Switch Test), hitting selection switch 4 will display "Vend Detect Test". Hitting selection switch 4 a second time will activate the "Vend Detect Test" mode.

While the mode is active, the alarm will sound when the beam is broken or not properly aligned (Beam Error will also be displayed).

Possible messages during the beam test are:

Possible messages during the vend detect beam test are:	
Displays	**Description**
Beam OK	Message when selection switch 4 is hit and the beam is good.
Beam Error	Message when selection switch 4 is hit and the beam is bad.

The mode is exited by pressing the mode switch, selection switches 11 or 12, or hitting one of the switches associated with the other tests.

□ **SWITCH #5 (SELECTION SWITCHES/LEDS TEST MODE)**
While the machine is displaying "Machine Test" or any of the other tests are active, hitting selection switch 5 will display "Switch Test". Hitting selection switch 5 a second time will activate the "Switch Test" mode.

While the mode is active, the display will indicate when a switch is closed (plus the LED associated with the switch will turn red and the Exact Change LED will turn red).

Possible messages during the Switch test are:	
Displays	**Description**
Switch test	The " Switch Test" mode is active, but no switches are being pressed.
Switch *xx*	A selection switch (e.g. 1) is hit. Beyond the "1" being displayed, the LED associated with switch 1 goes from green to red (plus the Exact Change LED also goes from green to red while any switch is pressed).
Switch OV	The "OV" indicates that the "override" switch is being closed. A "TS" would be displayed for the "Tilt" switch, and an "IS" would be displayed the "Inlet Sensor".

The mode is exited by hitting the mode switch, or by not hitting any switch for 5 seconds (auto transfers the machine back into the state where the display shows "Machine Test")

❑ **SWITCH #6 (TOUCH INTERFACE TEST MODE)**
While the machine is displaying "Machine Test" or any of the other tests are active (except for Switch Test), hitting selection switch 6 will display "Touch Test". Hitting selection switch 6 a second time will activate the "Touch Test" mode.

While the mode is active, the VMC will wait for a touch chip to be inserted into the adapter. Once the chip is inserted, the VMC will verify that the chip does not contain information. If the chip is available, the VMC will write a test pattern to the chip and then it will verify that the information was written correctly.

Possible messages during the Touch Test are:	
Displays	**Description**
Touch Test	Message when selection switch 6 is first pressed (while waiting for a touch chip)
Touch Test Passed	Message when the Touch test passes
Touch Test Failed	Message when the Touch test fails

The mode is exited by hitting the mode switch, selection switches 11 or 12, or hitting one of the switches associated with the other tests.

❑ **SWITCH #7 (DEX/UCS TEST MODE)**
While the machine is displaying "Machine Test" or any of the other tests are active (except for Switch Test), hitting selection switch 7 will display "DEX/UCS Test". Hitting selection switch 7 a second time will activate the "DEX/UCS Test" mode.

While the mode is active, the VMC will transmit a test pattern out the DEX/UCS port and verify that the same pattern is received by the port (a loop back cable is required to perform the test).

Possible messages during the DEX/UCS test are:	
Displays	**Description**
DEX/UCS Test	Message when selection switch 7 is first pressed
Insert Loop Back	Message when the VMC is waiting for the loop back to be connected
DEX/UCS Test Passed	Message when the DEX/UCS test passes
DEX/UCS Test Failed	Message when the DEX/UCS test fails (or no shorting jack was connected)

The mode is exited by hitting the mode switch, selection switches 11 or 12, or hitting one of the switches associated with the other tests.

❑ **SWITCH #8 (EXECUTIVE & IrDA TEST MODE)**
While the machine is displaying "Machine Test" or any of the other tests are active (except for Switch Test), hitting selection switch 8 will display "IrDA Test". Hitting selection switch 8 a second time will activate the "IrDA Test mode.

While the mode is active, the VMC will transmit a test pattern out the Executive port and verify that the IrDA port receives the same pattern. It will then transmit a test pattern out the IrDA port and verify that the same pattern is received by the Executive port (a loop back device is required to perform the test).

Possible messages during the Executive & IrDA test Mode are:	
Displays	**Description**
Beam OK	Messages when the transmission is good in both directions
Beam Error	Message when the transmission is broken. When the transmission is failing the beeper will also sound.

The mode is exited by hitting the mode switch, selection switches 11 or 12, or hitting one of the switches associated with the other tests.

❑ **SWITCHES #9, 10 (MOTOR SCAN TEST MODE)**
While the machine is displaying "Machine Test" or any of the other tests are active (except for the Switch Test), hitting selection switch 9 will display "Motor Scan Test". Hitting selection switch 9 a second time will activate the "Motor Scan" mode.

While the mode is active, the VMC will run each motor - starting with A1, A2,…..and ending with E5, E6. The VMC will attempt to run all motors, regardless if they've previously been marked as bad or good. Any motor that runs successfully will be marked as good.

When a motor fault occurs (e.g. over current detected, motor never gets off home, etc.), the motor will be marked as bad, the problem will be displayed, the beeper will beep 3 times, and the scan will stop. The operator can hit selection switch 9 again to reset the same motor, or he can hit selection switch 10 to skip the faulty motor and continue the test with the next motor.

Possible messages during the motor test are:	
Displays	**Description**
A1 Running	Indicates that the motor A1 is running.
A1 OK	Indicates that the motor ran successfully
A1 Low Current	Indicates that the motor failed due to Low Current or motor does not exist
A1 High Current	Indicates that a high level of current was detected
A1 Stuck Home	Indicates that the motor never left home.
A1 Time Out	Indicates that the motor timed out - it never reached home.

The mode is exited by hitting the mode switch, switches 11 or 12, or by hitting one of the switches associated with the other tests.

❑ **SWITCHES # 11, 12 (STOP TEST IN PROGRESS)**
Selection switches 11 & 12 will stop all tests and put the machine back into the state where the display shows "Machine Test". Note that during some tests (e.g. a motor running during Motor scan), it is necessary to hold the switch down until the motor stops.

MODE # 5: SPACE TO SALES INQUIRY MODE

To enter this mode, press the mode switch four times and the display will show "STS Inquiry". After pressing any selection switch, the display will show the columns that are assigned to that certain selection.
If multiple columns are assigned to the selection button, each column assigned will be displayed in sequence followed by "STS Inquiry".
For Example: *By pressing selection button one, the display will scroll "Column A1" followed by "STS Inquiry".*

MODE # 6: MIS DISPLAY MODE

By pressing the mode switch five times, the controller will enter the MIS Display Mode. Upon entry, the words **"MIS Display"** will appear on the display. Pressing either selection switch one or two will allow the controller to scroll up or down through the MIS fields.
Pressing selection switches three or four will allow the controller to scroll up or down through the MIS historical data.
*Note: The MIS data displayed is that of historical data which **cannot** be erased or reset.*

MIS DISPLAY - VIDTS FORMAT

The MIS Display Mode will display MIS data under the guidelines of the Vending Industry Data Transfer Standard. This standard is currently being adopted in both the US and Europe under various sanctioning organizations.

The following interval (resettable) information is displayed in order shown when the selection switch one (up), or selection switch two (down), is pressed.

CODE	DESCRIPTION	MDB MECH	EXEC - MECH
ID101	Machine Serial Number	YES	YES
ID102	Machine Model Number	YES	YES
ID103	Code Revision	YES	YES
ID104	Machine Location	YES	YES
ID106	Machine Asset Number	YES	YES
EA701	Number of Power Outages	YES	YES
VA103	Value of all Paid Sales	YES	NO
VA104	Number of all Paid Vend	YES	YES
VA204	Number of Test Vends	YES	YES
CA301	Value of Cash In	YES	NO
CA302	Value of Cash to Cash Box	YES	NO
CA304	Value of Bills to Stacker	YES	NO
CA401	Value of Cash Dispensed	YES	NO
CA402	Value of Manual Cash Dispensed	YES	NO
CA701	Value of Cash Discount	YES	YES
CA801	Value of Cash Overpay	YES	YES
CA901	Value of Pay Vends Exact Change	YES	YES
CA1001	Value of Cash Manually Added	YES	NO
CA1501	Value Tube Contents	YES	NO
DA203	Value of Card Sales	YES	NO
DA204	Number of Card Sales	YES	NO
PA203-1	Number of Products Vended **(Selection 1)**	YES	YES
PA204-1	Value of Products Vended **(Selection 1)**	YES	YES
PA203-2	Number of Products Vended **(Selection 2)**	YES	YES
PA204-2	Value of Products Vended **(Selection 2)**	YES	YES
PA203-3	Number of Products Vended **(Selection 3)**	YES	YES
PA204-3	Value of Products Vended **(Selection 3)**	YES	YES
PA203-4	Number of Products Vended **(Selection 4)**	YES	YES
PA204-4	Value of Products Vended **(Selection 4)**	YES	YES
PA203-5	Number of Products Vended **(Selection 5)**	YES	YES
PA204-5	Value of Products Vended **(Selection 5)**	YES	YES
PA203-6	Number of Products Vended **(Selection 6)**	YES	YES
PA204-6	Value of Products Vended **(Selection 6)**	YES	YES
PA203-7	Number of Products Vended **(Selection 7)**	YES	YES
PA204-7	Value of Products Vended **(Selection 7)**	YES	YES
PA203-8	Number of Products Vended **(Selection 8)**	YES	YES
PA204-8	Value of Products Vended **(Selection 8)**	YES	YES
PA203-9	Number of Products Vended **(Selection 9)**	YES	YES
PA204-9	Value of Products Vended **(Selection 9)**	YES	YES
PA203-10	Number of Products Vended **(Selection 10)**	YES	YES
PA204-10	Value of Products Vended **(Selection 10)**	YES	YES
PA203-11	Number of Products Vended **(Selection 11)**	YES	YES

CODE	DESCRIPTION	MDB MECH	EXEC - MECH
PA204-11	Value of Products Vended **(Selection 11)**	YES	YES
PA203-12	Number of Products Vended **(Selection 12)**	YES	YES
PA204-12	Value of Products Vended **(Selection 12)**	YES	YES
PA102-1	Price of Product **(Selection 1)**	YES	YES
PA102-2	Price of Product **(Selection 2)**	YES	YES
PA102-3	Price of Product **(Selection 3)**	YES	YES
PA102-4	Price of Product **(Selection 4)**	YES	YES
PA102-5	Price of Product **(Selection 5)**	YES	YES
PA102-6	Price of Product **(Selection 6)**	YES	YES
PA102-7	Price of Product **(Selection 7)**	YES	YES
PA102-8	Price of Product **(Selection 8)**	YES	YES
PA102-9	Price of Product **(Selection 9)**	YES	YES
PA102-10	Price of Product **(Selection 10)**	YES	YES
PA102-11	Price of Product **(Selection 11)**	YES	YES
PA102-12	Price of Product **(Selection 12)**	YES	YES

MIS DISPLAY - VIDTS FORMAT (CONTINUED)

The following historical (non-resettable) information is displayed in order shown when the selection switch three (up), or selection switch four (down), is pressed.

CODE	DESCRIPTION	MDB-MECH	EXEC - MECH
ID101	Machine Serial Number	YES	YES
ID102	Machine Model Number	YES	YES
ID103	Code Revision	YES	YES
ID104	Machine Location	YES	YES
ID106	Machine Asset Number	YES	YES
EA301	Number of Reads	YES	YES
EA702	Number of Power Outages	YES	YES
VA101	Value of all Paid Sales	YES	YES
VA102	Number of all Paid Vends	YES	YES
VA202	Number of Test Vends	YES	NO
CA305	Value of Cash In	YES	NO
CA306	Value of Cash to Cash Box	YES	NO
CA307	Value of Cash to Tubes	YES	NO
CA308	Value of Bills to Stacker	YES	NO
CA403	Value of Cash Dispensed	YES	YES
CA404	Value of Manual Cash Dispensed	YES	YES
CA702	Value of Cash Discount	YES	YES
CA802	Value of Cash Overpay	YES	YES
CA902	Value of Paid Vends Exact Change	YES	YES
CA1002	Value of Cash Manually Added	YES	NO
DA201	Value of Card Sales	YES	YES
DA202	Number of Card Sales	YES	YES
PA201-1	Number of Products Vended **(Selection 1)**	YES	YES
PA202-1	Value of Products Vended **(Selection 1)**	YES	YES
PA201-2	Number of Products Vended **(Selection 2)**	YES	YES
PA202-2	Value of Products Vended **(Selection 2)**	YES	YES
PA201-3	Number of Products Vended **(Selection 3)**	YES	YES
PA202-3	Value of Products Vended **(Selection 3)**	YES	YES
PA201-4	Number of Products Vended **(Selection 4)**	YES	YES
PA202-4	Value of Products Vended **(Selection 4)**	YES	YES
PA201-5	Number of Products Vended **(Selection 5)**	YES	YES
PA202-5	Value of Products Vended **(Selection 5)**	YES	YES
PA201-6	Number of Products Vended **(Selection 6)**	YES	YES
PA202-6	Value of Products Vended **(Selection 6)**	YES	YES
PA201-7	Number of Products Vended **(Selection 7)**	YES	YES
PA202-7	Value of Products Vended **(Selection 7)**	YES	YES
PA201-8	Number of Products Vended **(Selection 8)**	YES	YES
PA202-8	Value of Products Vended **(Selection 8)**	YES	YES
PA201-9	Number of Products Vended **(Selection 9)**	YES	YES
PA202-9	Value of Products Vended **(Selection 9)**	YES	YES
PA201-10	Number of Products Vended **(Selection 10)**	YES	YES
PA202-10	Value of Products Vended **(Selection 10)**	YES	YES
PA201-11	Number of Products Vended **(Selection 11)**	YES	YES
PA202-11	Value of Products Vended **(Selection 11)**	YES	YES
PA201-12	Number of Products Vended **(Selection 12)**	YES	YES
PA202-12	Value of Products Vended **(Selection 12)**	YES	YES

CODE	DESCRIPTION	MDB-MECH	EXEC - MECH
PA102-1	Price of Product **(Selection 1)**	YES	YES
PA102-2	Price of Product **(Selection 2)**	YES	YES
PA102-3	Price of Product **(Selection 3)**	YES	YES
PA102-4	Price of Product **(Selection 4)**	YES	YES
PA102-5	Price of Product **(Selection 5)**	YES	YES
PA102-6	Price of Product **(Selection 6)**	YES	YES
PA102-7	Price of Product **(Selection 7)**	YES	YES
PA102-8	Price of Product **(Selection 8)**	YES	YES
PA102-9	Price of Product **(Selection 9)**	YES	YES
PA102-10	Price of Product **(Selection 10)**	YES	YES
PA102-11	Price of Product **(Selection 11)**	YES	YES
PA102-12	Price of Product **(Selection 12)**	YES	YES

EVENT HISTORY DISPLAY

❑ Switches 5 and 6 are used to view the Sold Out, Door History, and Exact Change history.

❑ Switch 10 is used to display the time/date when the event occurred (the time/date is displayed until another switch depression).

❑ Door History is not reset; displays data from the last two times the door was opened.

❑ The "Sold Out" and "Exact Change" events can be reset. If there have not been any events since the last reset, none will be displayed. If there has been more than one event since the last reset (e.g. the machine has gone into the Exact Change state twice), the last occurrence will be logged (although the "Total Duration of Exact Change" is the total of all time the machine has been in the Exact Change condition since the last reset).

Note that the door has to be closed for 30 seconds before an additional event is logged.

Sold outs displayed as:	
Sold Out Sel x	X = the # of the sold out selection

Door history is displayed as:	
Door Opened Last	When the door was last opened
Door Opened Prev	When the door was previously opened

The Exact Change information is displayed as:	
Exact Change Det	Indicates that the machine was in the Exact Change State

When switch 10 is pressed, the time date is displayed as:	
hh:mm dd/mm/yy dd	Where hh/mm is the time when the event occurred.
	Where dd/mm/yy is the date when the event occurred.
	Where dd is the duration in hours, for Exact Change.

ERROR LOG DISPLAY

Switches 7 and 8 are used to view the error log. Switch 10 is used to display the time/date when the event occurred (the time/date is displayed until another switch depression). The error log can store 20 events (the last event to occur is the 1st displayed). If the log is empty (due to reset), "No Errors" is displayed.

The possible error messages are:	
Displays	**Description**
Coin Mech	When an MDB coin mech has reported an error.
Bill Acceptor (if used)	When an MDB bill acc. has reported an error.
Card Reader (if used)	When an MDB reader has reported an error.
Selection xx	When selection switch "xx" (01 - 12) is bad. (e.g. switch is closed for >30 seconds)
Motor xx	When motor "xx" (A1 - E6) is assigned via STS, but is bad
Door Opened	When the door has been left open > 60 min
Touch	When there's a problem with Touch
DEX	When there's a problem with DEX
IrDA	When there's a problem with IrDA
Fraud Detect	When a fraud attempt has been detected (e.g. reported by a card reader, etc.)
Chute Fraud	When a fraud at the chute has been detected
Bill Fraud	When a bill acceptor fraud has been detected (e.g. bill pull)
Battery	When the RAM is corrupted due to the battery
SW Mismatch	When the SW rev's mismatch (uP and Flash)
When switch 10 is pressed, the time/date is displayed as:	
Hh:mm dd/mm/yy	Where hh:mm is the time when the event occurred.
	Where dd/mm/yy is the date when the event occurred.

RESETTING THE MIS/HISTORY/ERROR LOGS

Switch 9 cycles through the different types of resets:

Displays	**Description**
Reset MIS	Resets Interval/Resettable fields
Reset Event Log	Resets the Event History Log (Sold Out and Exact Change events)
Reset Error Log	Resets the Error log

Switch 10 performs the reset (the switch must be held for 2 seconds). The beeper will sound once the reset has completed.

Note that errors are not auto-cleared from the log (e.g. if an error associated with switch 4 has been posted, it will not automatically be removed when switch 4 is repaired).

MODE # 7: ENTRY CODE MODE

By pressing the mode switch six times will enter the Entry Code Mode. Upon entry, the words **"Entry Code"** will scroll on the display. Pressing selection switches 3, 1, 4, and 2 in sequence enters the entry code. Once the correct entry code has been keyed in, the controller will not need to key in the code again unless the door has been closed, or a five-minute service timeout has occurred.

Note: In order to enter the Space to Sales Programming Mode, Display Programming Mode, or the modes above (modes 8 - 14), the correct entry code must be keyed in. If the correct entry code is not keyed in, the depression of the mode button will cause the Control System to enter the Operate Mode.

MODE #8: SPACE TO SALES (STS) PROGRAMMING MODE

Pressing the mode switch seven times will enter the Space to Sales Programming Mode. Upon entering the mode, the display will show "STS programming".

The VMC's Space to Sales is configured via 13 screens/lines. The 1st screen/line is used to specify if a "Custom" or "Preset" STS is used. For each selection (1 - 12), there is an additional screen/line used for setting its STS. Using selection switches 3 and 4 accesses the screens/lines.

Once the desired screen/line is being displayed, selection switches 5 and 6 are used to move the cursor to the desired position. Once the cursor is at the desired location, selection switches 7 and 8 are used to change the setting.

Note that the selection switches 9 and 10 also move the cursor (multiple positions per depression). Switches 11 and 12 will restore the STS to the setting that existed before the mode was entered.

Selection Switch Number	Function	Selection Switch Number	Function
1	Moves to Previous Screen	2	Moves to the Next Screen
3	Moves the Cursor Left	4	Moves the Cursor Right
5	Decrements the Value	6	Increments the Value
7	Goes to the Previous Module	8	Goes to the Next Module (A to B)
9	N/A	10	N/A
11	Restore	12	Restore

SELECTING A PREPROGRAMMED STS SETTING

With the display showing "STS Programming" (via the mode switch), depressing selection switch 4 will move control to the 1st screen/line.

Preset STS Setting x   (the cursor will be at the "x" location)

The "x" can be either a:

C indicates that the STS configuration is presently custom
1 - 9 indicates that the STS configuration is one of the presets (1 - 9)

With this screen, the operator can specify a custom STS or one of the preset STS configurations. Via switches 7 and 8, changing the "x" to 1 - 9 will select one of the preset STS settings (see the following table for the preset STS configurations). If the mode is exited after the "x" is changed, then the STS configuration will correspond to the entered numerical value.

STS #	ASSIGNED MOTORS PER SELECTION											
	Sel 1	Sel 2	Sel 3	Sel 4	Sel 5	Sel 6	Sel 7	Sel 8	Sel 9	Sel 10	Sel 11	Sel 12
1	B1, 2	C1, 2	A1-A3	D4	D1-D3	E3, 4	B3	E1, 2	A4	C3		
2	TBD											
3	TBD											
4	TBD											
5	TBD											
6	TBD											
7	TBD											
8	TBD											
9	TBD											

If the operator changes the settings to a number and then proceeds to the next screen/line, it is possible to modify one of the preset settings. If a person does modify a preset setting, the 1st line will show a "C" (since it is a custom setting - even if it a variation of a preset setting).

CUSTOM SPACE TO SALES PROGRAMMING

With machine at the 1st screen/line (Preset STS Setting "x"), depressing selection switch 4 will move the control to the 2nd screen/line. Examples of the line are shown below:

SEL01 A……B……   Indicates that Selection 1 is not assigned to motors A1 - A6 or B1 - B6.
SEL A 34 B1…..   Indicates that Selection 1 is assigned to motors A3, A4, and B1.
SEL A……B123456   Indicates that Selection 1 is assigned to motors B1 - B6.

For the screens/lines associated with the individual selections (as shown above), when a number appears (as opposed to a "."), it indicates that the corresponding motor is assigned to

the selection. So when the display shows "B..34.." it indicates that motors B3 and B4 are assigned to the displayed selection (motors B1, B2, B5, and B6 are not assigned to the selection).

SELECTING THE DIFFERENT SCREENS

Selection switches 3 and 4 can be used to access the other 12 screens (for viewing and setting the STS for each of the 12 selections).

Preset STS Setting C	1st screen
SEL01 A12….B……	2nd screen (sets the STS, Sel #1)
SEL02 A……B1……	3rd screen (sets the STS, Sel #2)
SEL03 A……B..34..	4th screen (sets the STS, Sel #3)
Continues to…….	
SEL12 A……B……	13th screen (STS, Sel #12)

VIEWING ALL OF THE MOTOR ASSIGNMENTS

Due to size of the display, only a portion of the information can be seen at a time (an example of the complete information is shown below).

Selection switches 5 and 6 can be used to move the cursor one position at a time. Switches 9 and 10 move the cursor to the next module (e.g. A to B, or C to D). When the cursor reaches the end of the screen/line (eg.. it's at the "6" for "A……B….56"), on the next switch depression the screen shifts the modules (see the following examples).

If the screen shows (cursor at the last position):

After Switch 6 is hit (moves the cursor to the right), the screen will show"

If the screen shows (cursor at 2nd position):

After Switch 5 is hit (moves the cursor to the left), the screen will show:

If the screen shows (cursor at the "3" position):

After Switch 10 is hit (moves to the module on the left), the screen will show:

ASSIGNING A MOTOR TO A SELECTION

A motor can be assigned to a selection by changing the appropriate "." to a number (1 - 6). A motor can be unassigned by changing the appropriate number (1 - 6) to a "." (see the following example):

❑ Assuming that the screen shows the following setting and the operator wants to assign motor C1 to the selection and unassign D1.

❑ The operator would first change the "." to a "1" **(via switches 7 and/or 8).**

❑ The operator would then move the cursor to the D1 position **(via switch 6).**

❑ The operator would then change the "1" to a "." **(via switches 7 and/or 8).**

MODE #9: DISPLAY PROGRMMING MODE

By pressing the mode switch eight times, the controller will enter the Display Programming Mode. Upon entering the mode, the display will show "Display Programming". Depressing a selection switch will cause the following:

Selection Switch Number	Function	Selection Switch Number	Function
1	Selects English (default) or Alt Language	2	Copies English to Alt.
3	Decrements through Message List	4	Increments through Message List
5	Moves cursor left	6	Moves cursor right
7	Decrements value at cursor pos.	8	Increments value at cursor pos.
9	Insert space	10	Delete char at cursor
11	Selects Display Configuration	12	Selects options for Configuration

❑ Switch 1 selects between the standard English messages and the alternate (programmable/loadable) messages. Note that the alternate messages are loaded via DEX.

❑ Switch 2 copies the English messages into the alternate message area.

❑ Switches 3 - 10 are used to change the alternate messages.

❑ Switches 11 and 12 are used to control the information displayed to the user. Switch 11 cycles through 5 different parameters, while switch 12 cycles through the options associated with the parameters. The parameters and their options are below:

  ❑ Append the Block Time to the User Message

    Blocker Time   No/12H/24H   (not displayed, 12 or 24 hour format)

  ❑ Append Time to the User Message

    Display Time   No/12H/24H   (not displayed, 12 or 24 hour format)

  ❑ Append Reason to the Out of Order Message

    Display Fault   Yes/No

  ❑ Display Exact Change State (Append message, etc.)

    Exact Chg   No/Some/Full

❑ Flash LED's if a Product is Discounted

Flash Discount Yes/No

After a machine reset, continuous depressions of switch 11 display:

Blocker Time	24H
Display Time	No
Display Fault	Yes
Exact Chg	Some
Flash Discount	Yes
Blocker Time	24H

MODE #10: MACHINE RESET MODE

The VMC allows four types of Machine Resets (beyond the MIS interval reset, the error log reset, and the history event log reset).

Configuration Reset
Total Machine Reset
MIS Historical Reset
Time Percentage Reset

The Machine Reset Mode is entered when the door is opened and the mode switch is depressed nine times. Upon entering the mode, the display will show "Machine Reset".

CONFIGURATION RESET
Once the display shows "Machine Reset", hitting selection switch 4 will move control to the next menu level, where the machine will display:

Config reset N

Hitting selection switch 7 or 8 will change the "N" to a "Y". Once the display shows:

Config reset Y

Hitting switches 9 or 10 will cause the machine's configuration to be reset to the default values.

TOTAL MACHINE RESET
Once the display shows "Machine Reset", hitting selection switch 4 (move to the next menu) twice or switch 3 (move to the previous menu) once, will move control to the menu level, where the machine will display:

Total Mach Reset N

Hitting selection switch 7 or 8 will change the "n" to a "Y". Once the display shows:

      Total Mach reset <u>Y</u>

Hitting switches 9 or 10 will cause a total machine reset. The following items will be reset:

      Credit
      Machine's configuration
      MIS - Resettable data
      MIS - Historical data
      Error Logs
      History Logs
      Messages (Language will be set to English)
      Old/New Door support (auto detection of machine type)

MIS HISTORICAL RESET

Once the display shows "Machine Reset", hitting selection switch 4 (move to the next menu) three times or switch 3 (move to the previous menu) twice, will move control to the menu level, where the machine will display:

      MIS Historical Reset <u>N</u>

Hitting selection switch 7 or 8 will change the "N" to a "Y". Once the display shows:

      MIS Historical Reset <u>Y</u>

Hitting switches 9 or 10 will cause the Historical MIS information to be reset.

      Time Percent Reset

MODE #11: TOUCH UP/DOWN LOAD MODE

The Touch Up/Down Load Mode is entered when the door is opened and the mode switch is depressed ten times. Upon entering the mode, the display will show "Touch Memory".

With "Touch Memory" displayed, hitting selection switch 4 (one or more times) will move control to the next menus:

Messages during the Touch Upload / Download are:	
Displays	Description
TMU to Clrl config	Downloads the Config info to the Controller
TMU to Ctrl MSG	Downloads the Messages to the Controller
Ctrl to TMU Config	Uploads the Config info to the TMU from the Controller
Ctrl to TMU Msg	Uploads the Messages to the TMU from the Controller
Ctrl to TMU MIS	Uploads the MIS information to the TMU

With any of the above messages on the display, hitting switches 9 or 10, will begin the execution of the selected Up/Download. Once one of the data transfers has been initiated, the operator must place a TMU (Touch Memory Unit) into the TMU socket. The unit must be held in the socket until the VMC displays "Transmission Done".

Possible Messages during the Touch Mode are:	
Displays	Description
Waiting for TMU	Indicates the VMC is waiting for the operator to attach the TMU.
Upload in Progress	Indicates data is transferring to the TMU
Download in Progress	Indicates data is transferring to the VMC
Transmission Done	Indicates that the data transfer has been completed - the TMU can be removed.
TMU Mismatch	Indicates that a specific download has been specified, but the TMU contains a different type of data.
Transmission Failed	Indicates that the transmission failed.

Note, that if a touch chip is connected while the machine's door is opened and the machine is in the operate mode (i.e. the mode switch has not been pressed), the VMC will automatically do a MIS download to the chip.

MODE #12: SET TIME FUNCTIONS MODE

The Time Function programming mode is entered when the door is opened and the mode switch is depressed eleven times. Upon entering the mode, the display will show "Time Programming".

In this mode, the operator can:
- ❑ Set the Machine's Time (2 screens/lines used for setup)
- ❑ Set Blocker 1 (5 screens/lines used for setup)
- ❑ Set Blocker 2 (5 screens/lines used for setup)
- ❑ Set the Discount (6 screens/lines used for setup)

Note that at any time (while in the Time Programming mode), switches 11 & 12 can be used to restore the previous configuration.

ACCESSING THE DIFFERENT SCREENS & FIELDS

The VMC's time related settings are configured via 18 screens/lines. The screens/lines are accessed by using Selection Switches 3 and 4. Once the desired screen/line is being displayed, selection switches 5 and 6 are used to move the cursor to the desired position. Once the cursor is at the desired location, selection switches 7 and 8 are used to change the setting.

LED INDICATION

The LED associated with each selection switch indicates if a selection is effected by a specific feature. If the first 2 letters of the message are"B1", then the LED's indicate which selections have been tied to Blocker 1 (red LED on ON). If the first 2 letters of the message are "B2", then the LED's indicate which are tied to Blocker 2; and if the letters are "D1", then the LED's indicate which selections will be effected by the programmed discount.

SETTING A SELECTION, TO BE AFFECTED BY A FEATURE

If the message is "xx Set Selections Y", then for each selection, a selection can be tied to the feature (B1, B2, D1) by pressing the appropriate selection switch (the selection can be deselected by pressing the switch a second time). The state of the LED (associated with the selection switch) will change to reflect if the selection is tied to the feature (LED is red) or if it has been deselected (LED is off). The mode for specifying which selections are affected by the feature is exited by hitting the mode switch or by not hitting any switch for 10 seconds (auto reverts back to "xx Set Selection N").

SET TIME

When the display shows "Time Programming", hitting selection switch 4, moves control to the screen used for setting the machine's time:

<p align="center">Times hh:mm dd/mm/yy</p>

Via switches 5 and 6, the cursor can be moved between the hour, minute, day, month, and year fields. While in a field, switches 7 and 8 can be used to change value. Note that a 24-hour clock is used here.

With the display showing the time, hitting switch 4 again moves control to the screen used for setting the type of Daylight Savings Time:

<p align="center">DST N., America</p>

Via switches 7 and 8, the Value/type can be set to:

- ❑ None
- ❑ N. America
- ❑ Europe
- ❑ Australia

SET BLOCKER 1 & 2

With the display showing the Daylight Savings type, hitting switch 4 again, moves control to the screens used for setting the parameters associated with Blocker 1 (hitting switch 4 six times, will move to the screens associated with Blocker 2; which is set up exactly like Blocker 1).

Displays	Definition
B1 Blocker active Y	"Y" indicates that the feature is enabled. "N" is disabled
B1 ON h<u>h</u>:mm mtwtfss	Indicates the time when the blocker is active (hh:mm) and for what days (upper case indicates that the blocker will be turned on for that day).
B1 OFF h<u>h</u>:mm mtwtfss	Indicates the time when the blocker is deactivate (hh:mm) and for what days (upper case indicates that the blocker will be turned off for that day).
B1 Ext Switch <u>Y</u>	"Y" indicates that the external switch must be active (closed) for the feature to be active. "N" indicates that the external switch is not used.
B1 Set Selections <u>Y</u>	"Y" indicates that the selection switches are used to specify which selections the Blocker 1 feature effects.

For the ON and OFF screens, the cursor can be moved between the different fields (hour, minute, Monday enable, Tuesday enable, Wed. enable, Thursday enable, Friday enable, Saturday enable, and Sunday enable). Once in the field, the values can be changed via switches 7 and 8 ("Y" to "N", hh = 00 - 23, mm = 00 - 59, m = "m" or "M", t = "t" or "T", …).

The screens/lines for Blocker 2 follow the screens associated with Blocker 1 (they are set up exactly the same).

Displays	Definition
B2 Blocker active <u>Y</u>	"Y" indicates that the feature is enabled. "N" is disabled
B2 ON h<u>h</u>:mm mtwtfss	Indicates the time when the blocker is active (hh:mm) and for what days (upper case indicates that the blocker will be turned on for that day).
B2 OFF h<u>h</u>:mm mtwtfss	Indicates the time when the blocker is deactivate (hh:mm) and for what days (upper case indicates that the blocker will be turned off for that day).
B2 Ext Switch <u>Y</u>	"Y" indicates that the external switch must be active (closed) for the feature to be active. "N" indicates that the external switch is not used.
B2 Set Selections <u>Y</u>	"Y" indicates that the selection switches are used to specify which selections the Blocker 1 feature effects.

SET DISCOUNT

The screens/lines for setting up the Discount follow the screens associated with blocker 2 (they are set up almost in the same manner).

Displays	Definition
D1 Blocker Active <u>Y</u>	"Y" indicates that the feature is enabled. "N" is disabled.
D1 Amount xxx.x<u>x</u>	Indicates the amount of the discount.
D1 ON h<u>h</u>:mm mtwtfss	Indicates the time when the discount is active (hh:mm) and for what days (upper case indicates that the blocker will be turned on for that day).
D1 OFF hh:mm mtwtfss	Indicates the time when the discount is deactivate (hh:mm) and for what days (upper case indicates that the blocker will be turned off for that day).
D1 Ext Switch <u>Y</u>	"Y" indicates that the external switch must be active (closed) for the feature to be active. "N" indicates that the external switch is not used.
D1 Set Selection <u>Y</u>	"Y" indicates that the selection switches are used to specify which selections the discount feature effects.

For the ON and OFF screens, the cursor can be moved between the different fields (hour, minute, Monday enable, Tuesday enable, Wed. enable, Thursday enable, Friday enable, enable, Saturday enable, and Sunday enable). Once in the field, the values can be changed via switches 7 and 8 ("Y" to "N", xxx.xx = 000.00 - 650.00, hh = 00 - 23, mm = 00 - 59, "m" or "M", t = "t" or "T", …).

MODE # 13: TOKEN ENABLING MODE

The Token Enabling Mode is entered when the door is opened and the mode switch is depressed twelve times. Upon entering the mode, the display will show "Token Enable".

While in the mode (display shows "Token Enable"), hitting a selection switch will toggle the setup for the associated selection. If the LED is red, then the selection can be purchased with a token. If the LED is off, then the selection cannot be purchased with a token.

MODE # 14: SET MIS ACCESS MODE

The "Set MIS Access" programming mode is entered when the door is opened and the mode switch is depressed thirteen times. Upon entering the mode, the display will show "Set MIS Access".

In this mode, the operator can:

- ❑ Restrict access to the Optics communications
- ❑ Restrict access to the Door Closed DEX comm.
- ❑ Restrict access to the Door Closed MIS display
- ❑ Change the Optics password
- ❑ Change the password for the Door Closed MIS retrieval

Note that at any time (while in this programming mode), switches 11 & 12 can be used to restore the previous configuration.

LIMITING ACCESS FOR THE OPTICS COMMUNICATIONS
With the display showing "Set MIS Access", hitting switch 1 will move control to the mode where the access to the IrDA optics communication is set. Additional depressions will change the setting to one of the other options.

Displays	Definition
IrDA Audit Only	Indicates that MIS audit info can be retrieved from the VMC, but the VMC can not be configured via optics.
IrDA Audit/Config	Indicates that the MIS audit info can be retrieved from the VMC, plus the VMC can be configured via optics.
IrDA Disabled	Indicates that the optics communication is disabled.

REQUIRING A PASSWORD FOR THE OPTICS COMM.

With the display showing "Set MIS Access", hitting switch 2 will move control to the mode where the requirement for a password (to initiate the IrDA optics communication), is set. The first time switch 2 is pressed, the display will show the present setting; additional depressions will change the setting to one of the other options.

Displays	Definition
IrDA Password Y	Indicates that a password must be entered before the optics communication can begin
IrDA Password N	Indicates that a password is not required to begin the optics communications.

LIMITING ACCESS FOR THE DEX COMM (W/DOOR CLOSED)

With the display showing "Set MIS Access", hitting switch 3 will move control to the mode where the access to the DEX communication (with the <u>door closed</u>), is set. The first time switch 3 is pressed, the display will show the present setting. Additional depressions will change the setting to one of the other options.

Displays	Definition
CD DEX Audit Only	Indicates that MIS audit info can be retrieved from the VMC, but the VMC can not be configured via DEX.
CD DEX Audit/Config	Indicates that the MIS audit info can be retrieved from the VMC, plus the VMC can be configured via DEX.
CD DEX Disabled	Indicates that the DEX comm (when the door is closed) is disabled.

LIMITING ACCESS FOR MIS DISPLAY (W/DOOR CLOSED)

With the display showing "Set MIS Access", hitting switch 4 will move control to the mode where the access to the MIS information (via the display - with the <u>door closed</u>), is set. The first time switch 4 is pressed, the display will show the present setting; additional depressions will change the setting to one of the other options.

Displays	Definition
Closed Door MIS Y	Indicates that MIS audit information can be retrieved from the VMC.
Closed Door MIS N	Indicates that the MIS audit info can not be displayed when the door is closed.

ENTERING THE PASSWORD FOR THE OPTICS COMM (RECOMMENDED)

With the display showing "Set MIS Access", hitting switch 5 will move control to the mode where the optics' password is displayed and changed. The first time switch 5 is pressed, the display will show the present password (e.g. the default is "1212"). An additional depression

will put the machine into the mode for changing the password. While in this mode, switches 1 -
4 are used to enter the new password (e.g. switch 1 is used to enter a "1", etc.), while all other
switches exit the mode.

Displays	Definition
IrDA Password 1212	Indicates the present password
IrDA Password	Indicates that the next 4 switch depressions will be used as the new password. As the keys are entered, they are displayed.

NOTES

MAINTENANCE SECTION

MAINTENANCE

The following section is a basic guide for general maintenance and servicing of the vendor. This section is divided into three parts:

- (I)   Preventative Maintenance Suggestions
- (II)   Lubrication Guide
- (III) Care and Cleaning

I.   PREVENTATIVE MAINTENANCE SUGGESTIONS:
Whenever a vendor is visited on its site, the following service should be performed. Preventative maintenance will help prevent future problems with the vendor.

- A.   Observe the vendor and its surrounding area for any unusual indications of problems (rear on cabinet, obstructions of the air flow, dark spots on the sign face, etc.).
- B.   Open the door and visually check the inside of the vendor (water accumulation, rust marks, moisture around the edges of the inner door, etc.).
- C.   Check the fluorescent lamps, replace as necessary. Replace lamps within 24 to 48 hours of burnout. This will prevent damage to the ballast.
- D.   Check the product temperature for proper cooling.
- E.   Check evaporator drain for obstruction; water in the evaporator area must drain to the condensate pan.
- F.   Empty condensate pan.
- G.   Clean the condenser, free vanes of dirt, lint, etc.
- H.   Check that evaporator fan runs normally.
- I.   Check that the compressor and condenser fan run normally.
- J.   Investigate any unusual sounds (fan blades hitting something, refrigeration lines rattling, etc.).
- K.   Clean coin acceptor.
- L.   Deposit all coinage accepted by the vendor to check for proper operation of the coinage mechanism.
- M.   Test the vendor and make a report on the problems.

II.   LUBRICATION GUIDE:
Lubricate indicated areas as directed on the chart below.

INTERVALS	PARTS	LUBRICANT
Every six months	Top hinge of door, hinge pin at the base of cabinet, T-handle shaft & latch.	Grade two, high - low temperature grease

III.   CARE AND CLEANING

┌─────────────────────────────────────┐
│ ⚠ **CAUTION** ⚠   │
│─────────────────────────────────────│
│ **AVOID USING WATER OR ANY OTHER** │
│ **LIQUIDS NEAR ELECTRONIC**   │
│ **COMPONENTS.**   │
│ **DO NOT USE WATER JET FOR**   │
│ **CLEANING.**   │
└─────────────────────────────────────┘
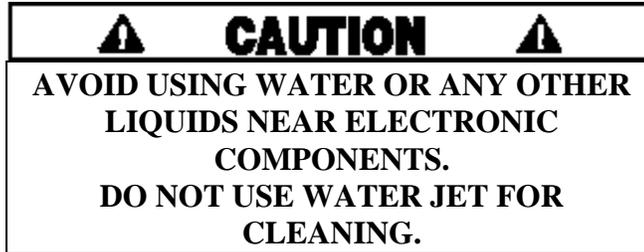
A.   GENERAL PROCEDURE (painted metal areas)
       Wash vendor with soap and water.   The exterior may be waxed with any good automobile wax.

B.   FRESH PAINT SPLASHES, GREASE, GLAZING COMPOUND REMOVAL
       Before drying, these elements may be removed by rubbing lightly with grade "A" Naptha (or equivalent grade solvent).   After removal, use general cleaning procedure (listed above as A).

C.   LABELS AND STICKER REMOVAL
       Use any specialized label removal liquid.   When the label material does not allow penetration of solvent (such as vinyl), the application of heat (ie - hot air gun), will soften the adhesive and promote removal.   **CAUTION:** Excessive heat can cause surface damage.   After the label is removed, use the general cleaning procedure (listed above as A).

D.   SCRATCH REMOVAL
       Remove or minimize hairline scratches and minor abrasions by using any good quality automobile polish.   Test product before using.

E.   LEXAN SIGNS
       To clean Lexan sign faces, the following procedure is recommended.
       1.   Wash sign with mild soap, or detergent, and lukewarm water.
       2.   Using soft cloth or sponge, gently wash the sign.   **DO NOT SCRUB!**
       3.   Rinse well with clean, lukewarm water.
       4.   Dry thoroughly with a chamois or cellulose sponge (to prevent water spotting).   **DO NOT USE SQUEEGEE!**
       NOTE: Most organic solvents, petroleum spirits, or alcohol, are **NOT** compatible cleaning materials for Lexan signs.   Usage of those materials could permanently damage the sign.

F.   REFRIGERATION AREA
       The condenser and evaporator must be kept clean for efficient operation.   Be sure all vanes and tubing are clean and clear of obstruction; this allows free passage of air. Clean with a brush, a vacuum cleaner, or compressed air.   Keep cabinet drain open; clean as necessary.

REFRIGERATION OPERATION

The refrigeration operation section is divided into three areas: Basic Refrigeration Principle, detailed Vending Machine Refrigeration Cycle, and Parts Description.

BASIC REFRIGERATION PRINCIPLE

What a refrigeration system really accomplishes is the transfer of heat. A refrigeration system removes the excess heat from a refrigerated area and then transfers it to a condenser, where it is dissipated. As heat is removed, the refrigerated area cools.

In vending machines, large quantities of the heat must be transferred rapidly, economically, and efficiently. This process must be able to withstand continuous repetition, without loss of refrigerant, over an extended period. The most common system used in the vending industry is the vapor compression (or simple compression), cycle system. It consists of four basic elements: an evaporator, a compressor, a condenser, and a pressure-reducing device (all part of a sealed system).

The compression system operates at two pressure levels: The low evaporating pressure, and the high condensing pressure. The refrigerant acts as the transport medium, in which heat is moved from the evaporator to the condenser; at the condenser, the heat is dissipated into the surrounding air.

The liquid refrigerant changes from a liquid to a vapor, and back to a liquid again. This change of state allows the refrigerant to absorb, and rapidly discharge, large quantities of heat efficiently.

BASIC VAPOR COMPRESSION SYSTEM CYCLE DESCRIBED:
In the evaporator, the liquid refrigerant vaporizes. This change occurs at a temperature low enough to absorb heat from the refrigerated space.   The pressure maintained in the evaporator (the higher the pressure, and the higher the vaporization point) controls the temperature of vaporization.

The compressor pumps the vapor from the evaporator, through the suction line, and to the condenser. The compressor takes the low-pressure vapor and compresses it, increasing both the pressure and the temperature. The compressor pumps the vapor at a rate rapid enough to maintain the ideal pressure. The hot, high-pressure vapor is forced out of the compressor, into the discharge line, and then into the condenser.

Air is blown through the condenser, allowing heat to transfer from the condenser, and into the passing air. As the heat is removed, the stored refrigerant is condensed into a liquid. The liquid refrigerant is stored in the lower tube of the condenser. It is there, available to flow through the restricted tube back into the evaporator, where the refrigeration cycle is repeated.

DETAILED REFRIGERATION CYCLE

The following is a detailed refrigeration cycle as it applies to the refrigeration system installed in Vendo equipment. (Refer to the flow chart in Figure 17.)

The evaporator fan pulls air from the front of the refrigerated space of the cabinet. It pulls the air through the evaporator, and blows it up the back of the modules. (The evaporator fan runs continuously.) As the air passes through the evaporator, heat is drawn from the air and transferred to the liquid refrigerant. As the cooled air circulates through the modules, heat is drawn from the product and transferred to the circulating air. The heated air is again drawn through the evaporator where the heat is removed.

In the evaporator, the liquid refrigerant draws heat from the circulating air. As refrigerant receives heat, it vaporizes.

The compressor pumps the vapor from the evaporator and compresses it (increasing both pressure and temperature). The compressor forces the compressed vapor out, through the discharge line, and into the condenser.

The condenser fan pulls air through the condenser. As the hot refrigerant vapor passes through the condenser tubes, heat is drawn from the vapor. This heat is dissipated into the passing air. The air then exits out the back of the vendor. As the refrigerant vapor in the condenser lines is cooled, it returns to a liquid state.

From the condenser the liquid flows to the drier. The drier removes any water and solid particles from the liquid refrigerant.

The cooled liquid refrigerant continues from the drier, through the capillary tube, to the evaporator. The capillary tube steadies the flow rate of the refrigerant. Its small inside diameter allows the pressure in the evaporator to remain low while the pressure in the condenser is high.

The cool refrigerant in the evaporator draws heat from the circulating air in the cabinet. As the temperature in the cabinet drops, the temperature sensor reports the air temperature.
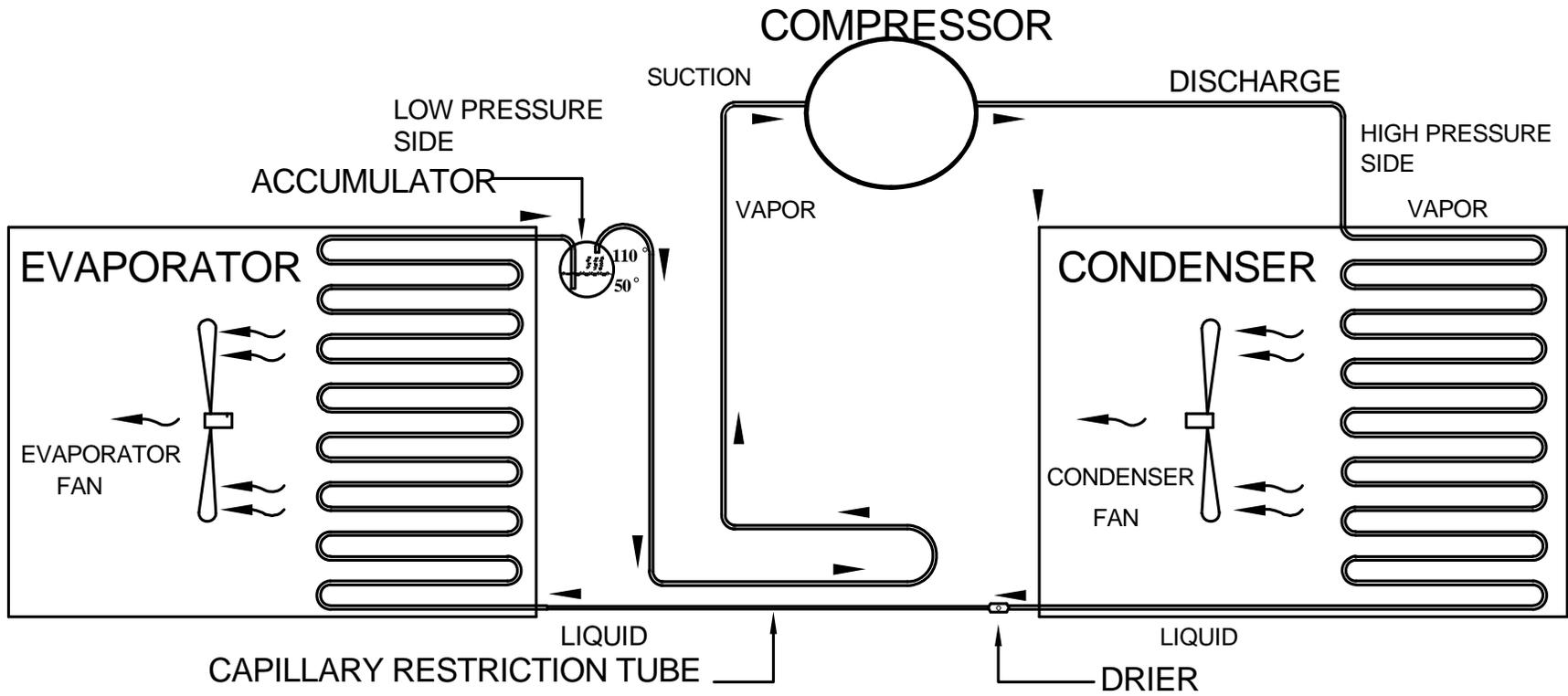
FIGURE 17

REFRIGERATION PARTS DESCRIPTION

The compressor, condenser, drier, capillary tube, evaporator, and accumulator are part of a sealed system (refer to Figure 18). These items are not available separately. For the part number of the sealed refrigeration system, refer to the common parts section of the manual.

COMPRESSOR
The compressor takes in low-pressure vapor and compresses it, increasing both the pressure and the temperature. The hot, high-pressure gas is forced out to the condenser. The compressor, and the motor that drives the compressor, are sealed inside a housing. The compressor, as a unit, is mounted on the refrigeration base. The base is mounted in the bottom of the vendor, outside the sealed refrigeration space.

CONDENSER
The condenser takes heat out of the high-pressure vapor that it receives from the compressor. As the vapor passes through the condenser, it cools and returns to a liquid state. The condenser is mounted to the refrigeration base near the front of the vendor. It is easily accessible for cleaning.

DRIER (Not Shown)
The drier is a molecular sieve strainer/drier. It removes water and solid particles from refrigerant liquid. One side of the drier is connected to the outlet line of the condenser; the other side is connected to the capillary tube going to the evaporator.

CAPILLARY TUBE
The capillary tube controls, at a steady rate, the flow of refrigerant liquid to the evaporator. It has a very small inside diameter to keep pressure in the evaporator low while the pressure in the condenser is high. It is the connecting link between the condenser and evaporator.

EVAPORATOR
The evaporator is a heat transference device. It removes the heat from the air in a refrigerated space and transfers it to the refrigerant liquid. This liquid evaporates into a vapor and is sucked out by the compressor. The evaporator is mounted inside the refrigerated space of the cabinet, directly below the delivery chute.

ACCUMULATOR
The accumulator traps any refrigerant liquid that did not boil off into a vapor before reaching the compressor. The accumulator allows the refrigerant liquid to boil off as a vapor (preventing damage to the compressor). It also prevents suction line sweating. The accumulator is mounted in the suction line on the outline side of the evaporator.
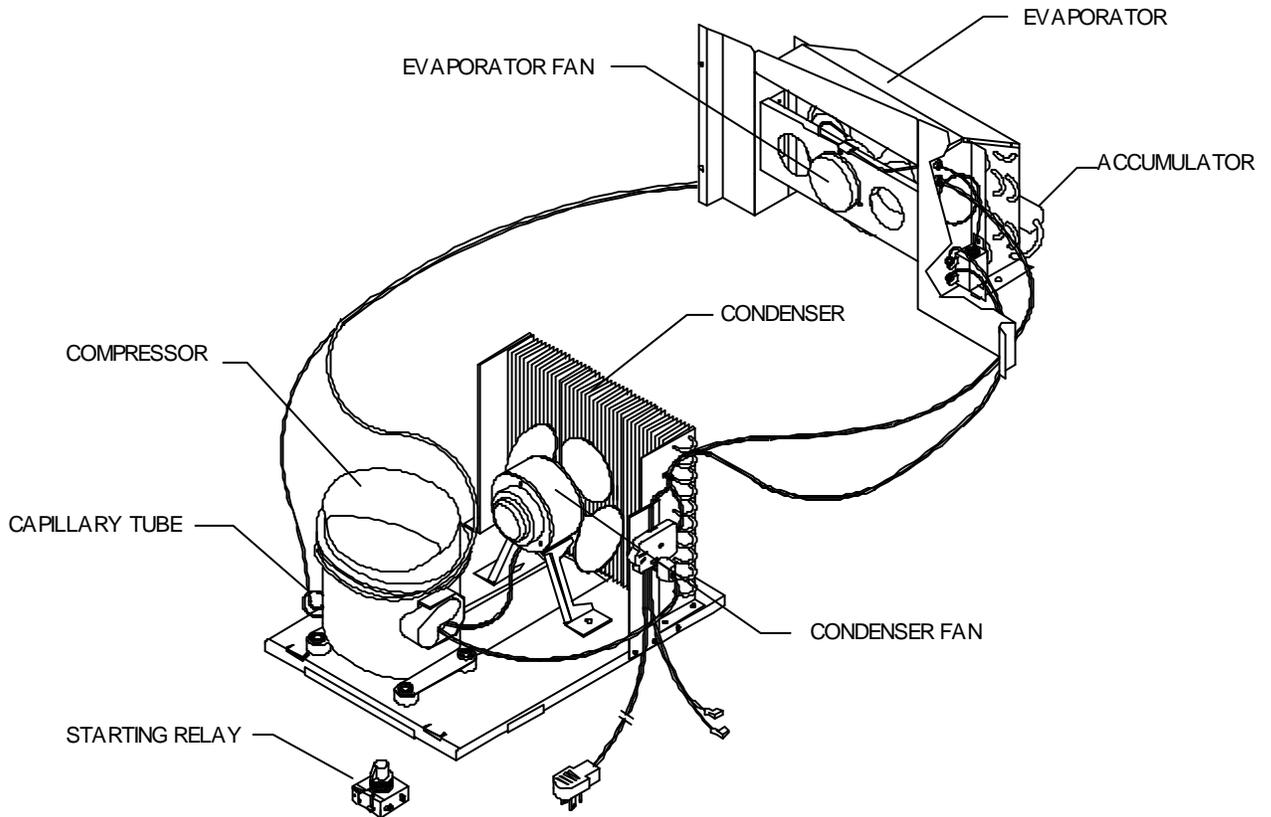
FIGURE 18

(The parts listed below are not part of the sealed refrigeration system and are available separately. For part numbers, see the refrigeration assembly in the common parts section of the manual.)

CONDENSER FAN ASSEMBLY
The condenser fan pulls cool air from outside the vendor, through the condenser, over the compressor, and blows it out the back of the vendor. This cool air removes excess heat from refrigerant in the condenser. The condenser fan runs when the compressor is engaged. The fan assembly is mounted on the refrigeration base between the condenser and compressor.

EVAPORATOR FAN ASSEMBLY
The evaporator fan pulls air from the front of the refrigerated space, through the evaporator, up the rear of the refrigerated space into the modules. The fan blows air through the evaporator (which removes the heat from the air). It circulates the cool air over the product, removing excess heat from the product. The evaporator fan assembly is mounted to a fan bracket, mounted to the extensions of the evaporator. These parts are located in the refrigerated area of the cabinet.

START RELAY – ASSEMBLY P/N: 513501587 (115 volts), 1016644-2 (230 volts)
The starting relay is mounted in the terminal box on the side of the compressor housing. When the compressor first starts up, the starting relay closes and completes a starting circuit. When the compressor motor reaches operating speed, the starting relay opens and breaks the starting circuit.

THERMAL OVERLOAD SWITCH
The thermal overload switch is mounted in the terminal box on the side of the compressor housing. If the compressor motor gets hot, or draws too much current, the thermal overload opens and breaks the starting and running circuit of the motor. As the motor cools, the thermal overload closes, allowing the compressor to run.

Vendo

ELECTRONIC CONTROL BOARD

IrDA BOARD

VEND DETECTION

P22 — CONTROL OUTPUT, CONTROL OUTPUT, SWITCH OUTPUT, SWITCH OUTPUT, KEY, GROUND, KEY, TX OUTPUT, RX INPUT, 5 VCD

P13 — TRANSMIT SIGNAL, N/CC, N/C, GROUND, KEY, GROUND, GROUND, RECEIVE SIGNAL

P2 — COLUMN 6, COLUMN 5, COLUMN 4, COLUMN 3, COLUMN 2, COLUMN 1, KEY, MODULE E, MODULE D, MODULE C, MODULE B, MODULE A

P23 — 1 24 VDC, 2 GROUND, 3 INPUT, 4 KEY, 5 GROUND

M REFUND MOTOR + −

REFUND SWITCH

P24 (NOT USED)

P19 (NOT USED)

P4 — SEL #12, SEL #11, SEL #10, SEL #9, KEY, SEL #8, SEL #7, SEL #6, SEL #5, SEL #4, SEL #3, SEL #2, SEL #1

REFUND SWITCH

CHASSIS GROUND

P1 — 24 VAC NEUTRAL IN, 24 VAC HOT IN

4 AMP SLOW BLOW FUSE

6 10   17 14
115 V   OR   220 V
3   5   11   8

SEE REFRIGERATION WIRING DIAGRAM

220-240 VAC
115 VAC

SEE LIGHTING WIRING DIAGRAM

M-11

Refrigeration Wiring Diagram

* For Lighting Wiring Diagram, please see ballast.

NOTES

PARTS SECTION

READING A PARTS LIST

I.   **ITEM NUMBER** is found in two locations:
   A. It is on the drawing plate, and identifies the part and its location.
   B. The same number is in the parts list and ties the two together.

II.   **PART NUMBER** is the part number that is assigned to a specific part by Vendo for easier identification.

III.   **QUANTITY REQUIRED** relates to the amount required of a part, or will be indicated by "A/R" as required to attach it on another part.

IV.   **PART NAME AND DESCRIPTION** is the general description for the part, for easier identification when ordering a like part.

The example below will show how the parts are listed in the parts list:

1.   **THE LEFT -HAND BAR MODULE:** This is the main assembly named, and any replaceable parts will be indented below the assembly.

2.   **VEND MOTOR:** This is a sub-assembly, and will be indented.

3.   **VEND HELIX:** This is a component part, and will be indented. These indented parts can be ordered separately, so you do not need to order the entire assembly.

4.   Whenever an assembly is ordered, all the parts that are indented will be in the assembly. Any hardware will be listed next to their corresponding parts.

5.   Any parts that may be ordered separately will not have any indented parts listed below them.

MARS VENDO CONFECTIONERY VENDOR

NUMBER	PART NUMBER	DESCRIPTION	# REQ.	HARDWARE
1	1010387	Hanger Module	A/R	V801490
2	1121238	Slide Assembly (**)	2	V800634
***** LEFT-HAND BAR MODULE *****				
3	1011103-4	Left-hand Bar Module Assy (*)	A/R	--------
4	1010867	Door Assembly	4	--------
5	1012738	Bushing - Door Pivot	4	--------
6	1075716	Vend Motor	4	V802180
7	1010379	Module Top - Left	1	V800634
8	1049651	Vend Helix	4	--------
9	1010301	Helix Bearing	4	--------

If an asterisk is listed below the parts list, it is an indication that special information is noted. There may be more than one (*) (**) (***) asterisk denoting special notes.

Hardware List

	PART NO.	DESCRIPTION	PICTORIAL
A	V800762	#8 X 5/16" TAPPING SCREW	
B	V802139	#8 X 5/8" TAPPING SCREW	
C	V800586	#8 X 3/8" TAPPING SCREW W / LOCK WASHER	
D	V801493	#8 X 1/2" TAPPING SCREW (FOR PLASTIC)	
E	V801475	#8 X 1/2" TAPPING SCREW	
F	V801421	#10 X 5/16" TAPPING SCREW	
G	V800570	#10 X 3/8" TAPPING SCREW	
H	V802047	#10 X 3/8" SCREW	
I	V802141	#10 X 1/2" TAPPING SCREW	
J	V801422	#10 X 1/2" TAPPING SCREW	
K	V801489	#10 X 1/2" SELF DRILLING SCREW	
L	V800512	#10 X 1-3/8" TAPPING SCREW	
M	V802115	#10 X 1" BOLT	
N	V801360	1/4" X 1/2" TAPPING SCREW W / LOCK WASHER	
O	V801343	1/4" X 1" TAPPING SCREW	
P	V801490	1/4" X 1" SELF DRILLING SCREW	
Q	V802053	1/4" X 2-1/4" BOLT	
R	V802069	1/4" X 5/8" CARRIAGE BOLT	
S	V801434	1/4" X 3/4" CARRIAGE BOLT	
T	V800267	1/4" X 3/8" BOLT	
U	V800956	#8 NUT W / LOCK WASHER	
V	V800952	#10 NUT W / LOCK WASHER	
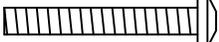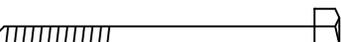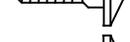
W   V802111   #10 HEX NUT ....

X   V802113   #10 LOCK NUT W / NYLON INSERT ....

Y   V800959   1/4" NUT W / LOCK WASHER ....

Z   387925   1/4" LOCK NUT W / NYLON INSERT ....

AA V802062   3/8" LOCK NUT W / NYLON INSERT ....

AB V801013   #10 FLAT WASHER ....

AC 389026   #10 FLAT WASHER, LARGER O.D. ....
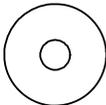
AD V801491   3/8" FLAT WASHER ....
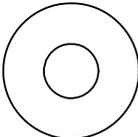
AE V801412   1/8" POP RIVET ....
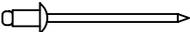
AF 43842   CLOSED END CONNECTOR ....
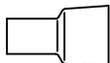
AG V802166   1/2" 13 X 1-1/2" BOLT ....
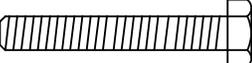
AH V802165   1/2" LOCK WASHER..

AI V801023   1/2" FLAT WASHER.......................................

AJ V801435   1/4" 20 X 1" CARRIAGE BOLT   ....
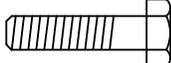
AK V329258   1/4" X 20 CARRIAGE BOLT.........................
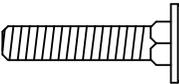
AL V800140   #10 X 3/8" TAPPING SCREW ....

AM V802173   1/4" X 1/2" TAPPING SCREW ....
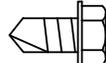
AN V802162   1/4" X 1-3/4" SCREW ....
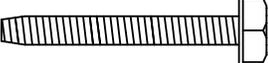
AO V802169   1/4" X 1-3/8" BOLT ....

AP V802185   #8 X 3/8" PH CROSS RECESSED "PLASTITE"……
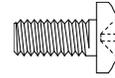
AQ V802186   #4 X 1/4 PH "PLASTITE"…………
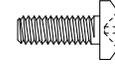
AR V802183   M3 X 8 FH MACHINE SCREW………………….……

ITEM NO.	PART NO.	QTY	DESCRIPTION	HARDWARE
OUTER DOOR COMPONENTS - MARS VENDO CONFECTIONERY				
1	V801491	3	FLAT WASHER	--
2	388094	2	BUSHING - HINGE	--
3	1119694	1	SIGN CAP – TOP MOLDING	V801421
4	~	1	SIGN FACE **	--
5	1120984	2	TRIM, SIGN FACE	V801421
6	1119694-1	1	SIGN CAP - BOTTOM MOLDING	V801421
7	1120911	1	HOPPER BEZEL	V802185
8	1121436	1	VEND FLAP MOULDING	--
9	1121980	1	PROMOTIONS PANEL - BLACK	
10	1120941	1	SELECTION BUTTON ASSY (SEE PGS PS-8 & 9)	
11	1120953	1	PROMOTIONS LABEL	
12	1121948 1121948-1	1	ANTI-VANDAL PANEL, INTERNATIONAL OR ANTI-VANDAL PANEL, U.S.	--
13	2008813-00	1	RAIN GUARD, BLACK	--
~	2008813-01	1	RAIN GUARD, BROWN	--
~	2008813-02	1	RAIN GUARD, YELLOW	--
14	2010162-01	1	DOOR GUARD, BROWN	V801434
~	2010162-02	1	DOOR GUARD, YELLOW	V801434
~	2010162-03	1	DOOR GUARD, BLACK	V801434

*NOTE: WHEN ORDERING OUTER DOOR ASSEMBLY, PLEASE PROVIDE **11 CODE** AND **MANUFACTURER'S DATE CODE**.

NOTE: WHEN ORDERING SIGN FACE, PLEASE PROVIDE **STYLE.

SELECTION PANEL
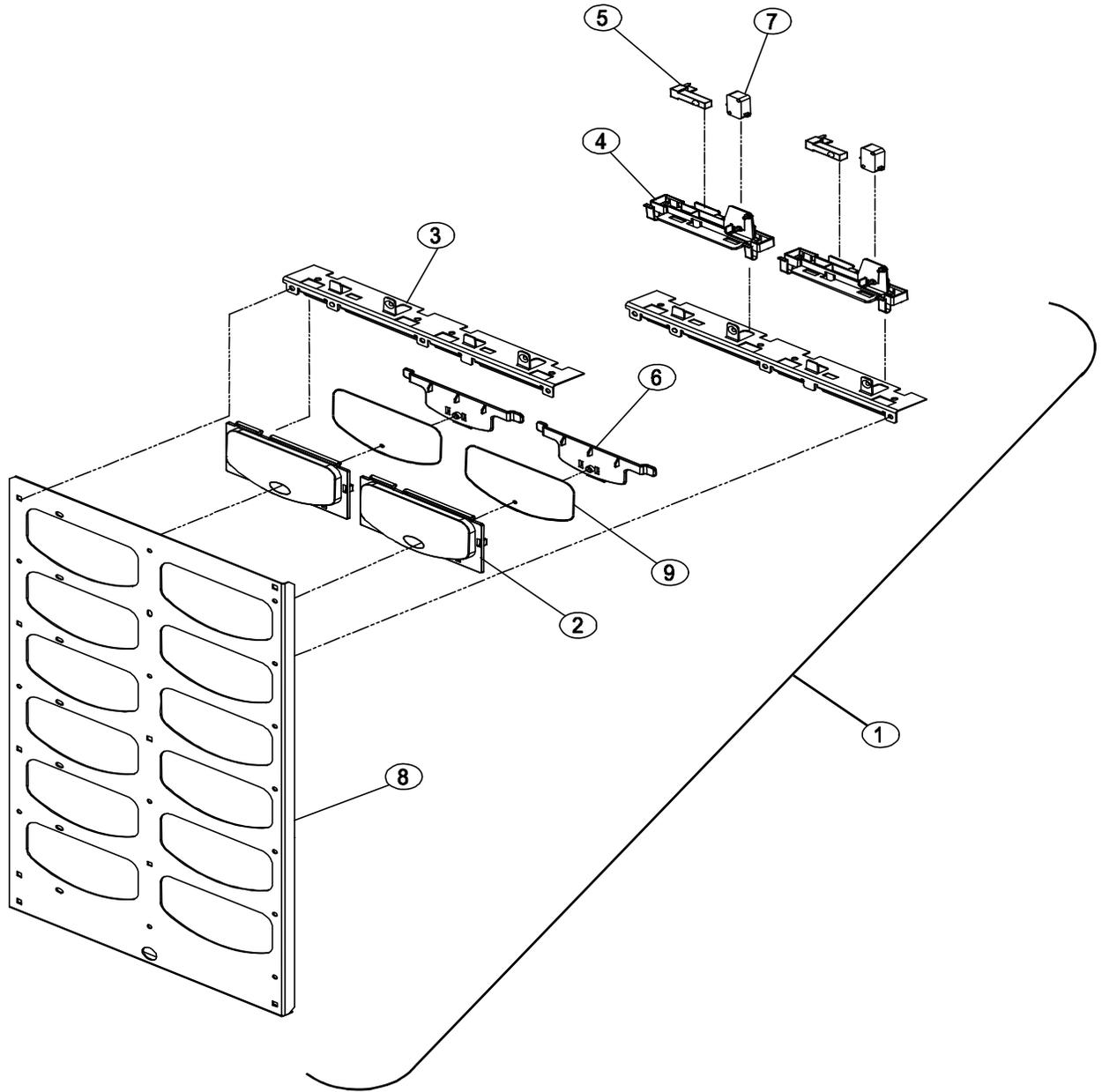
ITEM NO.	PART NO.	QTY.	DESCRIPTION	HARDWARE
SELECTION PANEL COMPONENTS - MARS VENDO CONFECTIONERY
1	1120941	1	BUTTON PANEL ASSEMBLY	V800952
2	1120916	12	SELECTION BUTTON	--
3	1120912	7	BUTTON BRACKET CHASSIS	--
4	1120923	12	BUTTON CHASSIS	--
5	1121795	12	LED, BI-COLOR	--
6	1120926	12	LED / FLAVOR STRIP HOLDER	--
7	1121035	12	SWITCH SELECTION	--
8	1122906	1	BUTTON PANEL	V800952
9	~	12	FLAVOR STRIP*	--

FOR HARNESS PART NUMBERS, SEE PAGE PS-38
* NOTE: WHEN ORDERING FLAVOR STRIPS, PLEASE PROVIDE STYLE
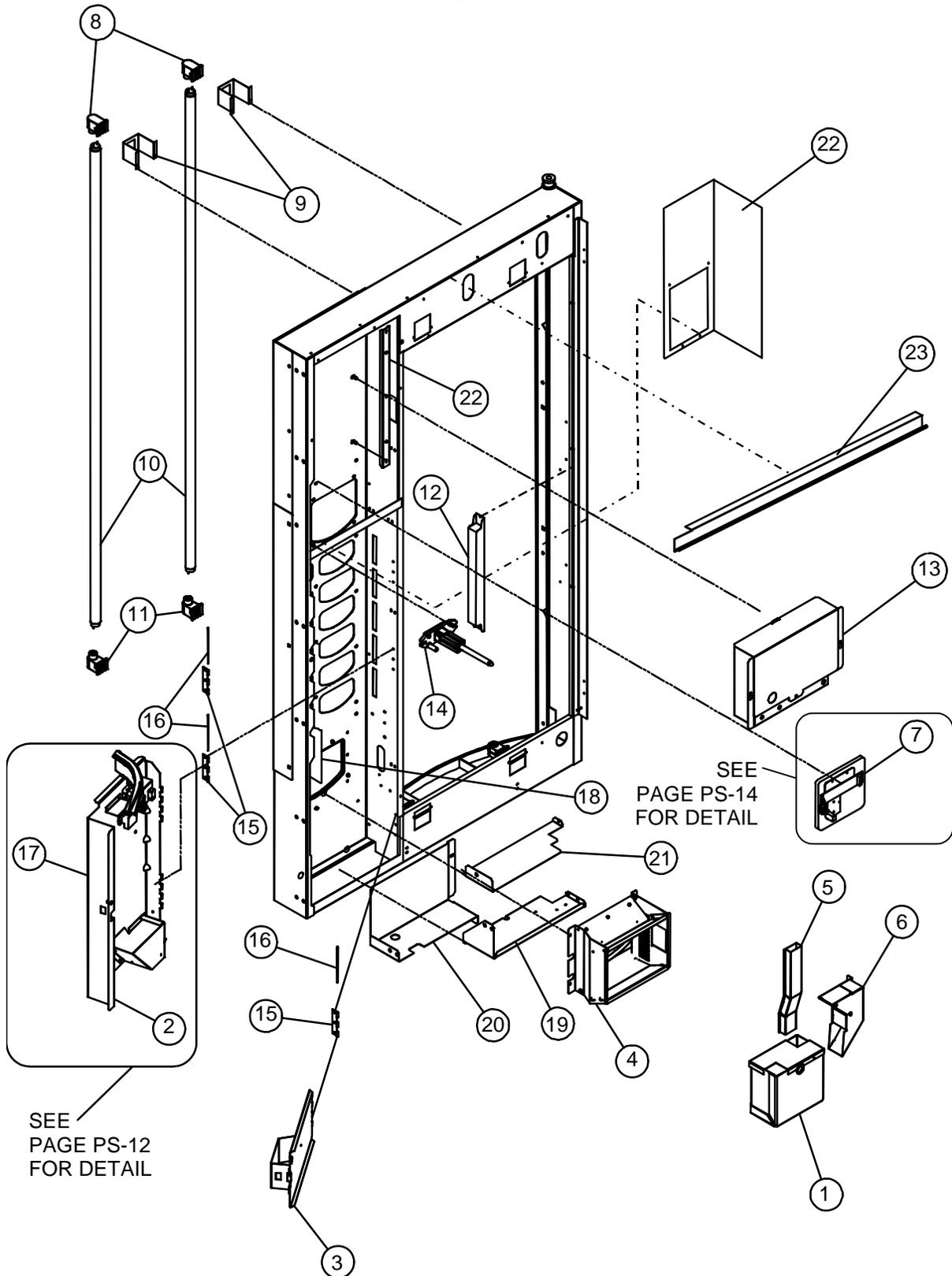
SEE
PAGE PS-12
FOR DETAIL

SEE
PAGE PS-14
FOR DETAIL

ITEM NO.	PART NO.	QTY.	DESCRIPTION	HARDWARE
			OUTER DOOR COMPONENTS - **MARS VENDO CONFECTIONERY**	
1	1122687	1	COIN BOX WELD ASSEMBLY	--
2	1120942	1	COINAGE DOOR BRACKET ASSEMBLY	--
3	1120973	1	COIN BOX DOOR ASSEMBLY	--
4	1120972	1	HOPPER ASSEMBLY	V800952
5	1120963	1	LOWER RETURN CHUTE	V801421
6	1121003	1	LARGE RETURN CHUTE, UPPER	~
7	1120946	1	COIN ENTRY ASSEMBLY	V801421
8	388531	2	LAMP HOLDER - FIXED	--
9	1122305	4	BRACKET LAMP HOLDER	--
10	1121030	2	FLUORESCENT LAMP	--
11	388532	1	LAMPHOLDER – PLUNGER	--
12	1120450 1121732	1	BALLAST – 230 VOLTS **OR** BALLAST – 115 VOLTS	V800955
13	1121954	1	CONTROLLER ASSY (SEE PAGE PS-16 & 17)	--
14	1002635	1	T-HANDLE LOCK ASSEMBLY	V800959/ V801023
15	1120994	3	HINGE	--
16	1121002	3	HINGE PIN	--
17	1121986	1	COINAGE DOOR REFLECTOR	--
18	1121987	1	RIGHT HAND DOOR FRAME REFLECTOR	--
19	1120938	1	BAFFLE, COIN BOX	V801421
20	1120974	1	BRACKET, COIN BOX SUPPORT	V800952
21	1121448	1	BAFFLE, COIN MECH	V801421
22	1121444	1	BAFFLE, DBV (U.S. ONLY)	V800956
23	2000848	1	RAIN GUTTER, EN APPROVED – INT'L ONLY	V802123

FOR HARNESS PART NUMBERS, SEE PAGE PS-38
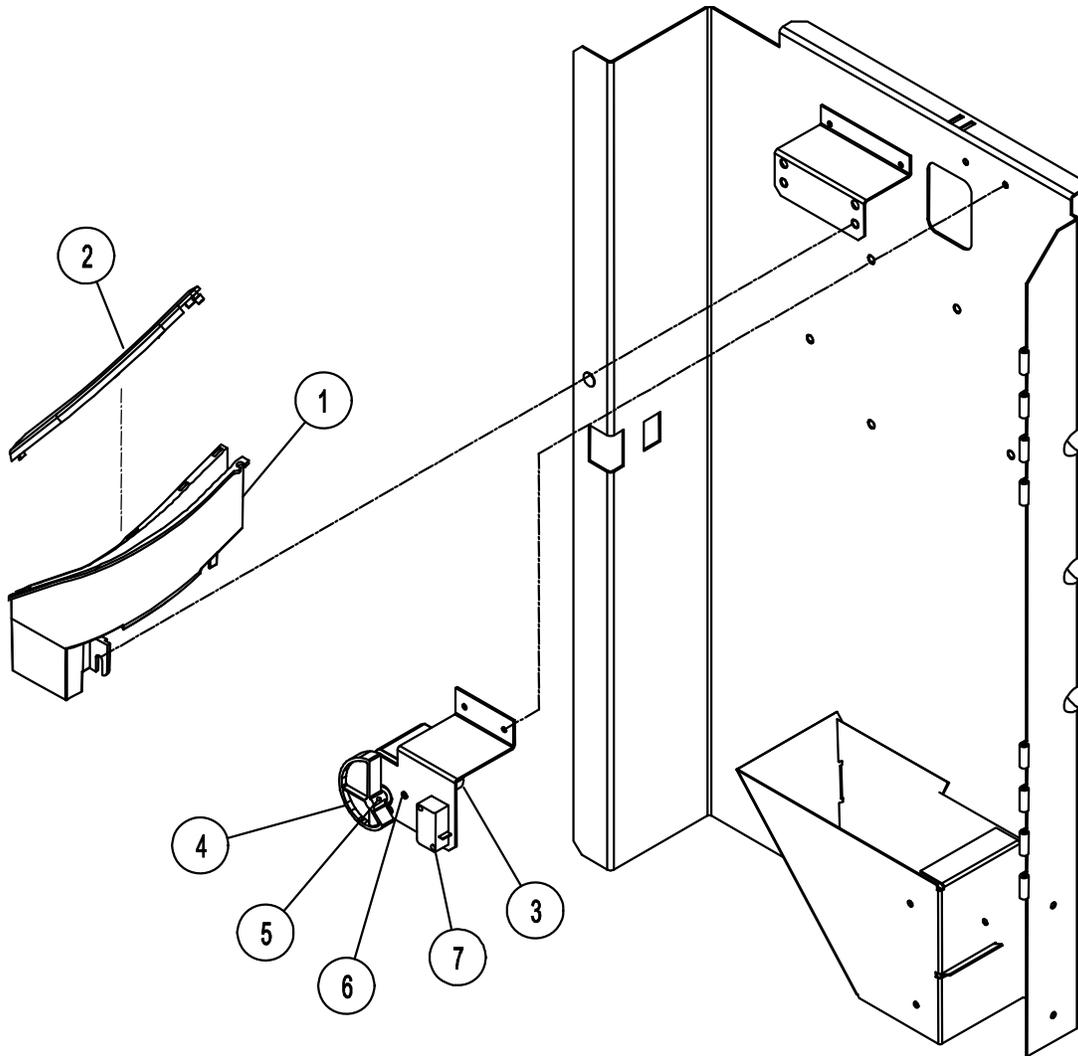
ITEM NO.	PART NO.	QTY.	DESCRIPTION
			REFUND MOTOR ASSEMBLY - MARS VENDO CONFECTIONERY
1	1120982	1	COIN ENTRY CHUTE
2	1120983	1	COIN ENTRY CHUTE COVER
3	1121012	1	REFUND MOTOR
4	1121031	1	CAM, REFUND
5	V802190	1	SET SCREW
6	V802183	3	FH MACHINE SCREW
7	1121034	1	REFUND SWITCH

FOR HARNESS PART NUMBERS, SEE PAGE PS-38

Vendo

COIN ENTRY ASSEMBLY
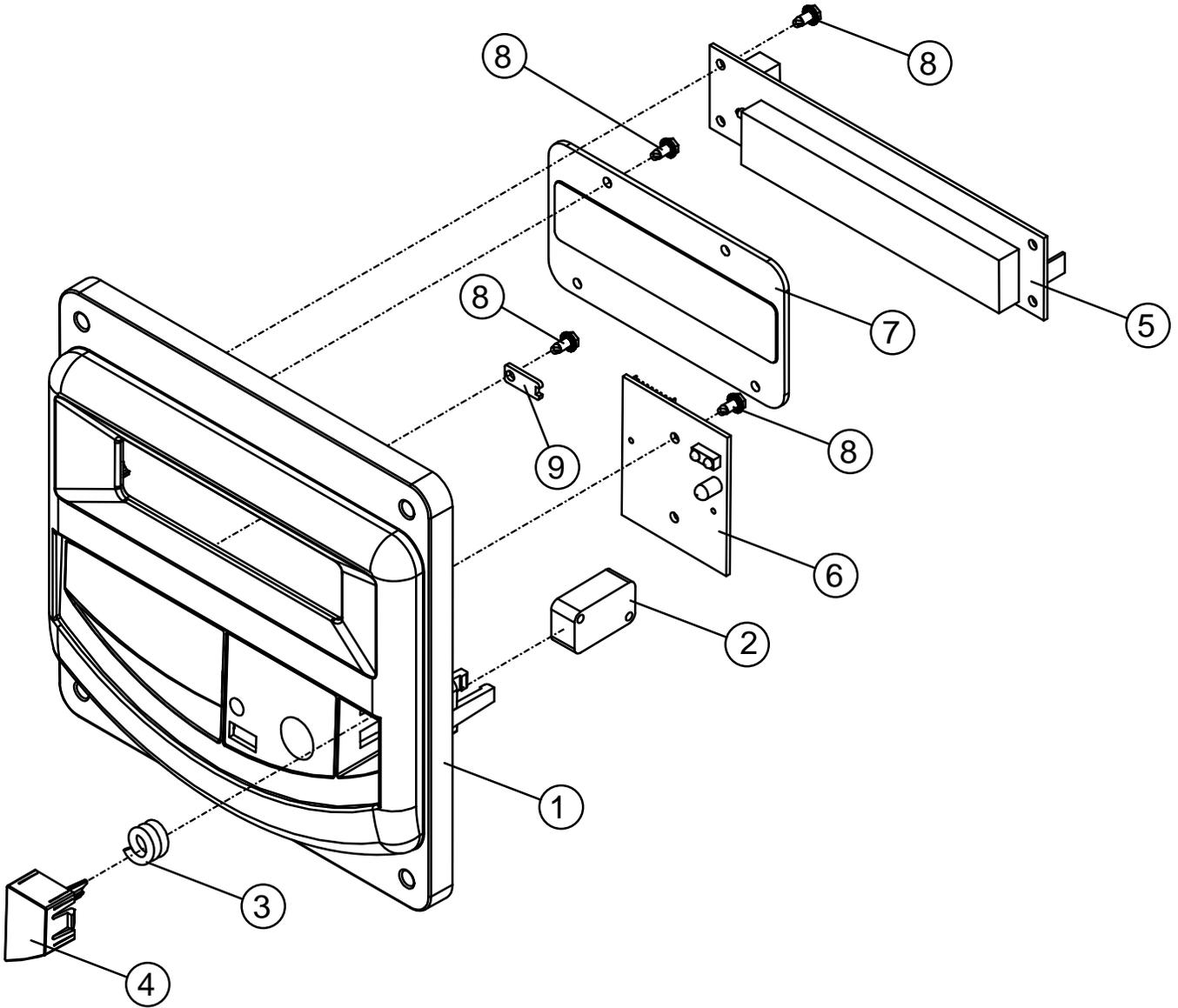
COIN ENTRY ASSEMBLY - MARS VENDO CONFECTIONERY

ITEM NO.	PART NO.	QTY.	DESCRIPTION	HARDWARE
1	1120920	1	COIN ENTRY MOLDING	--
2	368299	1	SWITCH	--
3	1122156	1	REFUND BUTTON SPRING	--
4	1120927	1	COIN RETURN BUTTON	--
5	1121684	1	DISPLAY	--
6	1121453	2	PCBA, IRDA, MARS MILLENNIUM	--
7	1121435	4	FLUORESCENT LENS FILTER	--
8	V802186	7	SCREW, #4 X 1/4, "PLASTITE"	--
9	1122346	1	50 CENT BLOCKER (U.S. ONLY)	--
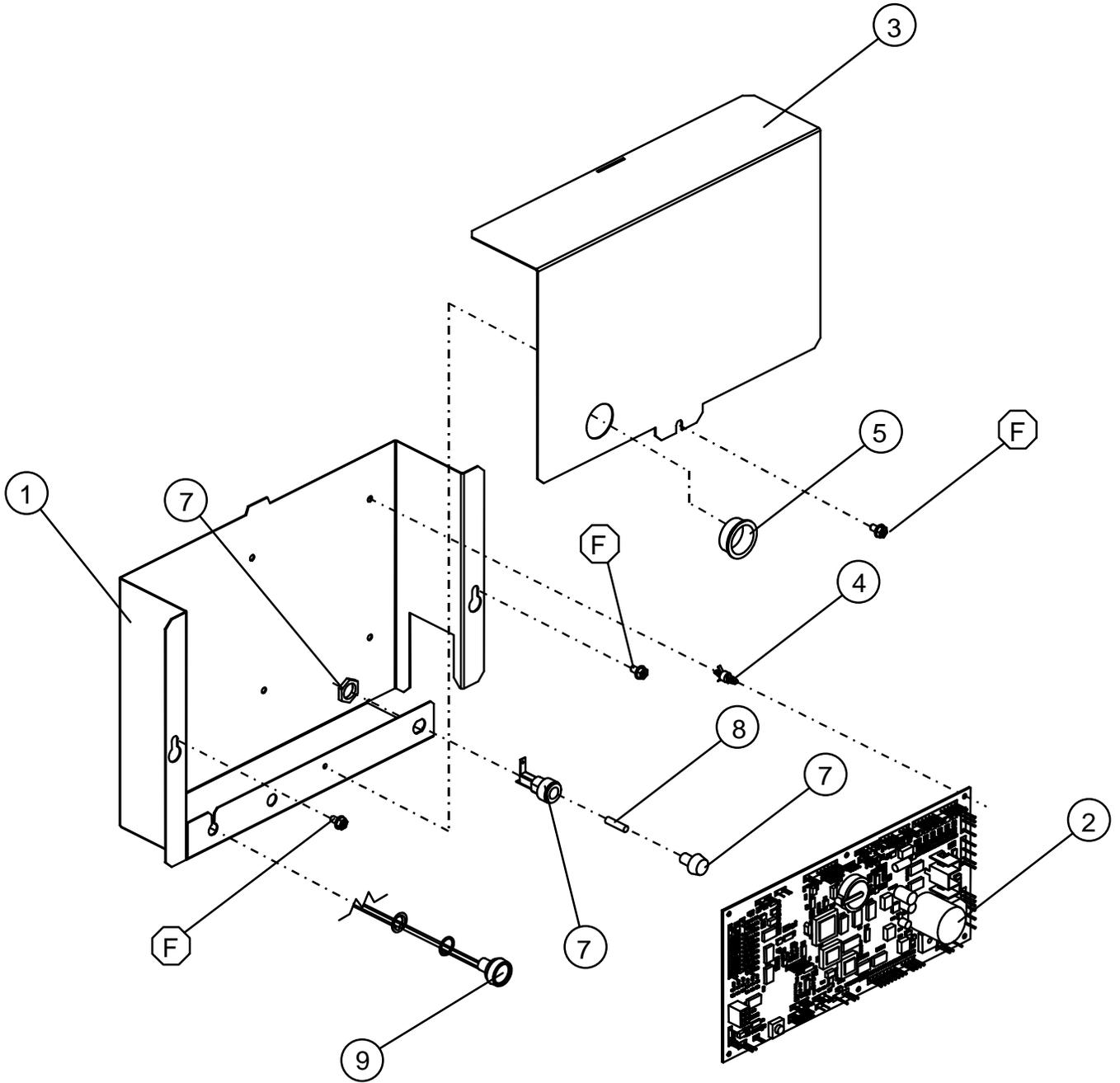
CONTROLLER ASSEMBLY - MARS VENDO CONFECTIONERY				
ITEM NO.	PART NO.	QTY.	DESCRIPTION	HARDWARE
1	1120996	1	CONTROL BOARD HOUSING	V801421
2	1122024	1	MARS MILLENNIUM CONTROL BOARD	--
3	1121439	1	CONTROL BOARD COVER	--
4	1121740	6	STANDOFF	--
5	1016288	1	BUSHING	--
6	384692-2	1	PUSH MOUNT CLAMP **(NOT PICTURED)**	--
7	1008722		FUSE HOLDER	--
8	1122155	1	FUSE, 4 AMP SLOW BLOW – INT'L	--
8	1050058	1	FUSE, 4 AMP – U.S.	--
9	1122275	1	I-BUTTON PROBE ASSEMBLY	

* FOR HARNESS PART NUMBERS, SEE PAGE PS-38

INNER DOOR
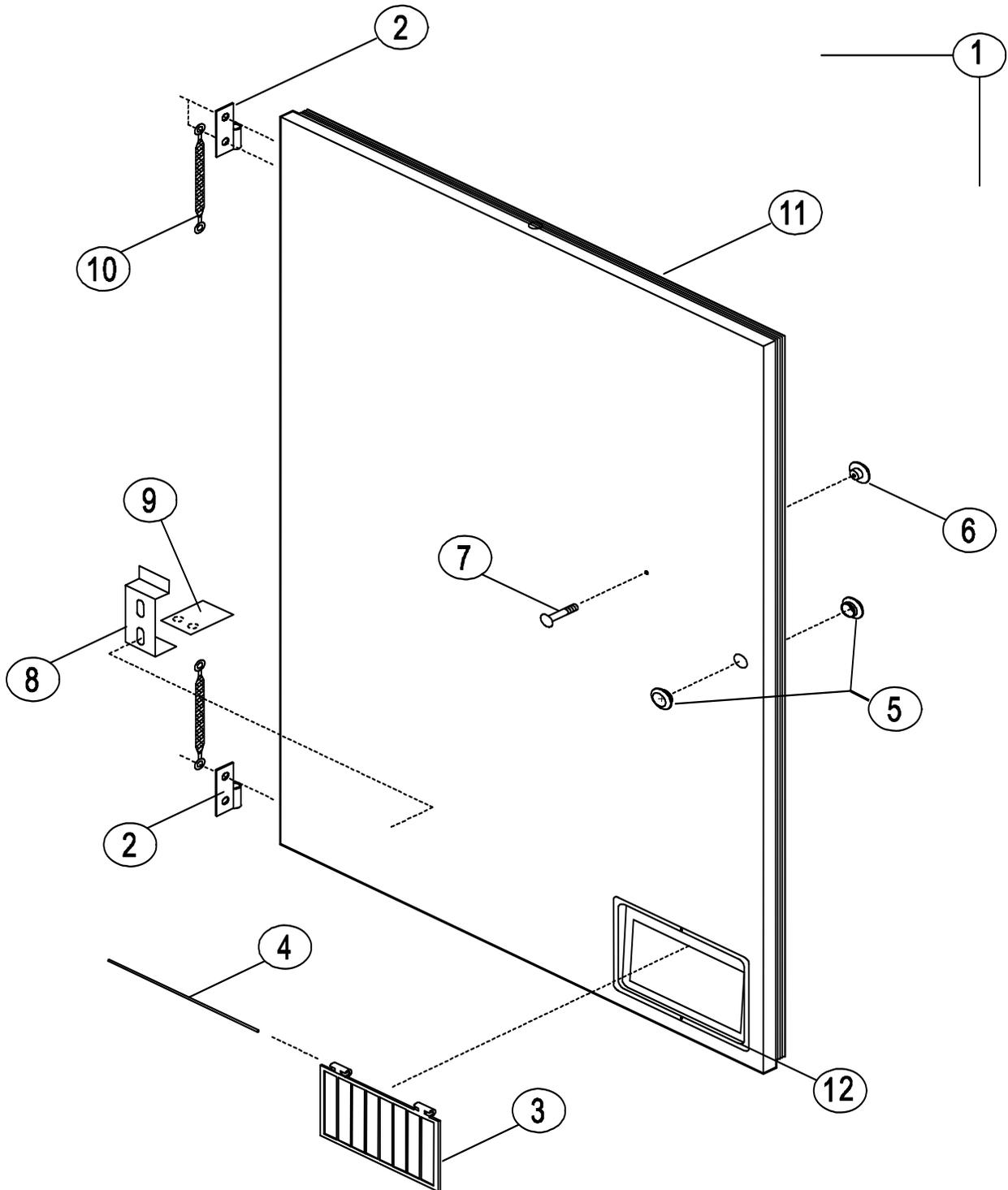
ITEM NO.	PART NO.	QTY.	DESCRIPTION	HARDWARE
			INNER DOOR ASSEMBLY - **MARS VENDO CONFECTIONERY**	
1	134302-18 134302-16	1	INNER DOOR PANEL ASSEMBLY – INTERNATIONAL **OR** INNER DOOR PANEL ASSEMBLY – U.S.	--
2	1121286	2	HINGE LEAF - INNER DOOR	V801489
3	1010239	1	VEND DOOR - INNER DOOR	--
4	389985-1	1	HINGE ROD - INNER DOOR	V800570
5	388090	2	GROMMET	--
6	388305	1	KNOB	--
7	V329258	1	CARRIAGE BOLT	--
8	1120697	1	PLUNGER BRACKET	V801489
9	1018159	1	PLUNGER	V801471
10	1011367	2	GROUND STRAP	--
11	389622-3	1	GASKET KIT	--
12	1010182	1	EYELET INNER DOOR	

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CABINET ASSEMBLY

SEE PAGE PS-22
FOR DETAIL

SEE PAGE PS-24
FOR DETAIL

3.02

PS-20
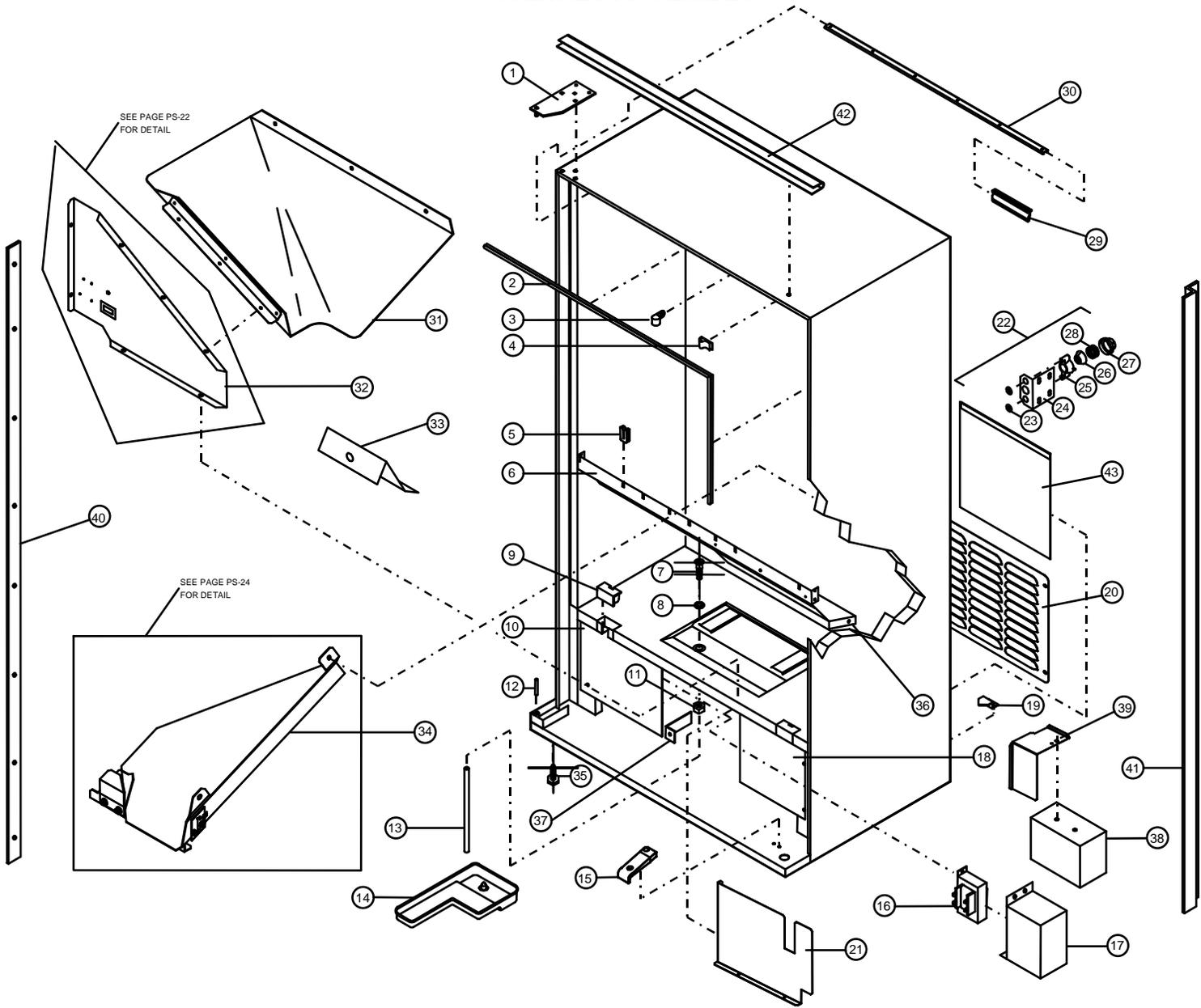
ITEM NO.	PART NO.	QTY.	DESCRIPTION	HARDWARE
			CABINET ASSEMBLY -	
			MARS VENDO CONFECTIONERY	
1	2000805-03	1	TOP HINGE WELD ASSEMBLY	V801434
2	389463	1	RAIN GASKET - CABINET	--
3	324099-4	AR	HARNESS CLAMP	V801489
4	1122194	AR	HARNESS CLIP ADHESIVE	--
5	1016237	4	BEARING - MODULE GUIDE	--
6	1027611	1	FRONT STRAP	V802133
7	1068678	1	DRAIN TUBE - CABINET	--
8	387837	1	GASKET - DRAIN TUBE	--
9	388143	2	CLOSURE CAP	V801489
10	1122688	1	AIR DAM – LEFT – DOMESTIC	V801489
10	1123015	1	AIR DAM ASSEMBLY, INT'L	V801489
11	387925	1	NUT -DRAIN TUBE	--
12	389071	1	LOWER HINGE PIN	--
13	1088449	1	DRAIN HOSE	--
14	1112023	1	CONDENSATE PAN	--
15	1120387	1	RAMP - DOOR ROLLER	V802173
16	1017861	1	TRANSFORMER 110/24V (U.S.)	
17	1066961	1	TRANSFORMER COVER	V801489
18	1089236	1	AIR DAM - RIGHT	V801489
19	388387	2	BRACKET - REFRIGERATION SYSTEM	V801490
20	1123080	1	SAFETY SCREEN	V801489
21	1123040	1	BAFFLE, TRANSFORMER	V802147
22	1087813	1	QUICK-LOCK ASSEMBLY	V801490
23	389026	2	FLAT WASHER	V802139
24	1079112	1	BRACKET - QUICK LOCK	--
25	389022	1	RETAINER - NUT SEGMENT	--
26	389023	3	NUT SEGMENT (3 REQUIRED)	--
27	1111988	1	CAP	--
28	389690	1	SPRING	--
29	1076317	4	MODULE STOP	--
30	1076007	1	MODULE STOP GUIDE	--
31	1017888-1	1	PRODUCT CHUTE ASSEMBLY	V801489
32	1027085	1	CHUTE SUPPORT (SEE PGS PS-22 & 23)	V801489
33	1027603	1	DEFLECTOR BRACKET	--
34	~	1	OPTIC ASSEMBLY (SEE PGS PS-24 & 25)	V801489
35	1059902	4	LEVELING LEG	--
36	1112999	1	DEFLECTOR CHUTE	--
37	1073627	1	BRACKET - AIR DAM	--
38	1121812	1	COUNTER WEIGHT - INT'L	--
39	1123041	1	BAFFLE, CORDSET – INT'L	
40	1122160	1	PINCH GUARD, BLACK	V802069
41	2001376	1	OVERLAP GUARD – SIDE BLACK	V802069
42	2010165-00	1	OVERLAP GUARD – TOP BLACK	V802069
43	1123064	1	RAIN CURTAIN, COMPRESSOR – INT'L	--

FOR HARNESS PART NUMBERS, SEE PAGE PS-38

ELECTRONIC COMPONENTS
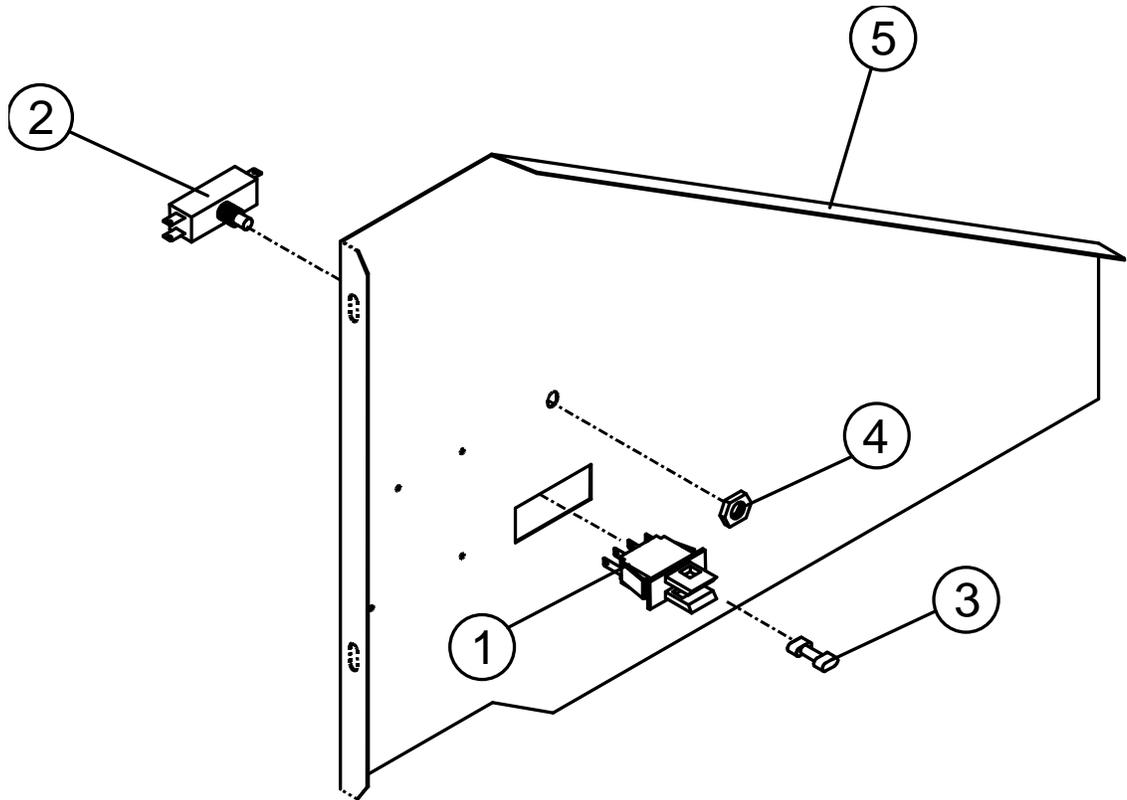
ELECTRONIC COMPONENTS - MARS VENDO CONFECTIONERY				
ITEM NO.	PART NO.	QTY.	DESCRIPTION	HARDWARE
1	1121825	1	POWER SWITCH	--
2	323007	1	RESET SWITCH	--
3	1122298	1	OVERRIDE KEY - POWER SWITCH*	--
4	V801449	1	NUT - RESET SWITCH	--
5	1122364	1	PRODUCT CHUTE SUPPORT	V801489
	1016601	1	DOOR SWITCH COVER **(NOT SHOWN)**	

∗ SUPPLIED IN LOOSE PARTS KIT

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OPTIC ASSEMBLY
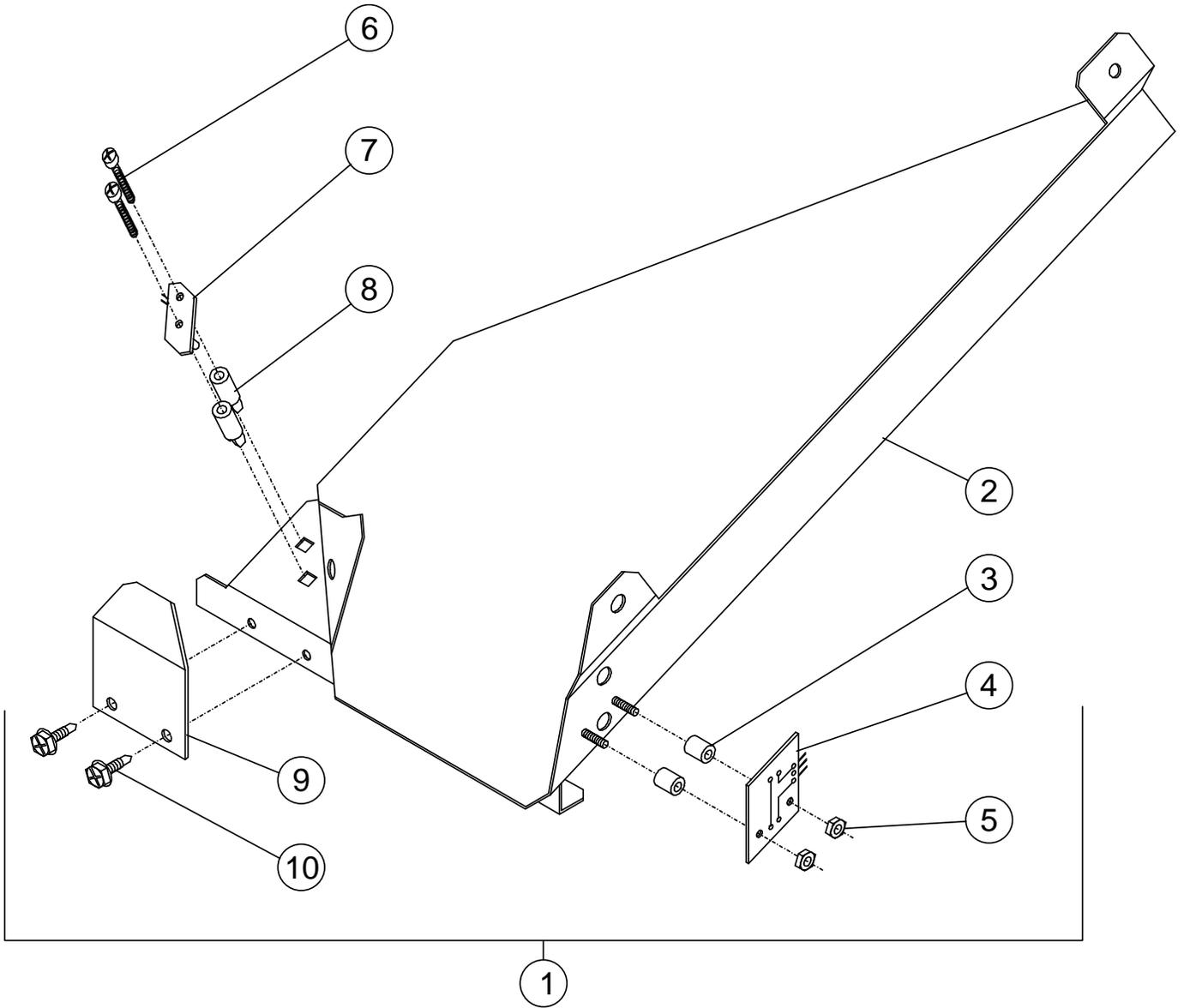
	OPTIC ASSEMBLY - MARS VENDO CONFECTIONERY		
ITEM NO.	PART NO.	QTY.	DESCRIPTION
1	1018078	1	OPTIC ASSEMBLY
2	1017241-1	1	SNOUT WELD ASSEMBLY
3	387238	2	SPACER
4	1012711	1	DETECTOR BOARD
5	1017942	2	NYLON NUT
6	V802067	2	SCREW (#8-16 x 1.00" LG. FILLISTER HEAD)
7	1012703	1	EMITTER BOARD
8	1016393	2	GROMMET
9	1017934	1	OPTIC COVER
10	V801489	2	SCREW (#10 SELF-DRILL, HEX HEAD)

FOR HARNESS PART NUMBERS, SEE PAGE PS-38
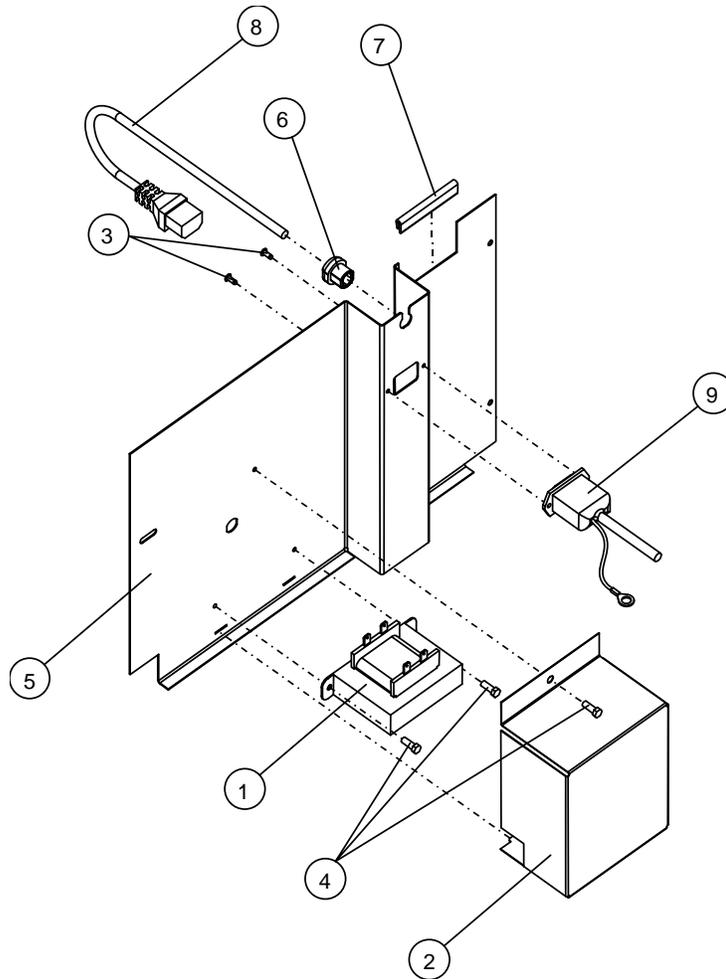
TRANSFORMER CONNECTIONS

110 Volt AC Input - Use pins 3 and 5 for input connections

220 / 240 Volt AC Input - Use pins 1 and 5 for input connections

24 Volt AC Output - Use pins 6 and 10 for output connections

230 Volt AC Input – Use pins 8 and 11 for input connections

110/220/240 Volt Input
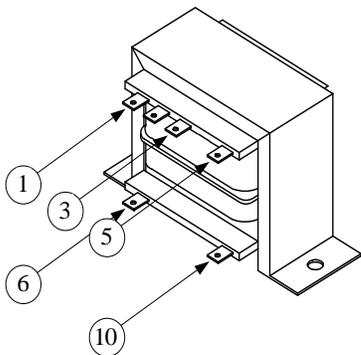
230 Volt Input
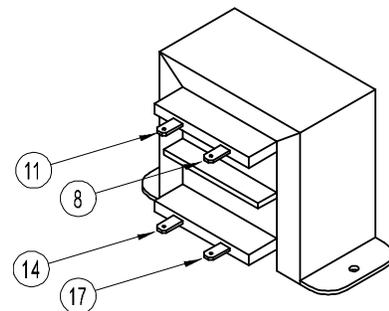
INTERNATIONAL AIR DAM ASSEMBLY - MARS VENDO CONFECTIONERY			
ITEM NO.	PART NO.	QTY.	DESCRIPTION
1	1121932	1	TRANSFORMER – 230/24VOLT
2	1122724	1	TRANSFORMER COVER
3	V801412	2	RIVET
4	V802147	3	SELF TAPPING HEX SCREW
5	1122701	1	LEFT HAND AIR DAM WITH POWER INLET
6	1112449	1	STRAIN RELIEF
7	388304-1	1	EDGE TRIM
8	*	1	CORDSET
9	*	1	SERVICE CORD

*FOR HARNESS PART NUMBERS, SEE PAGE PS-38

LEFT HAND BAR MODULE
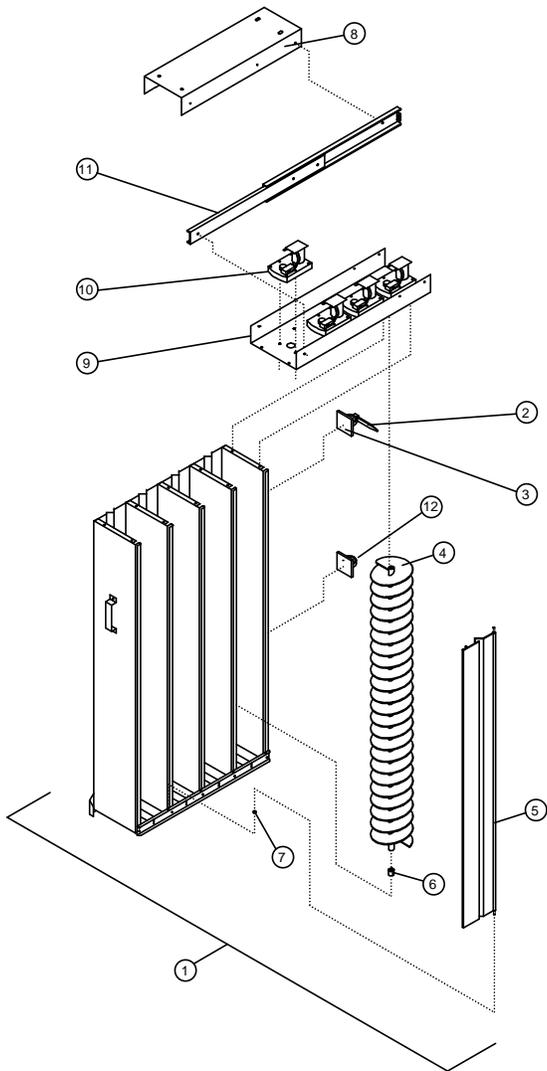
RIGHT HAND BAR MODULE
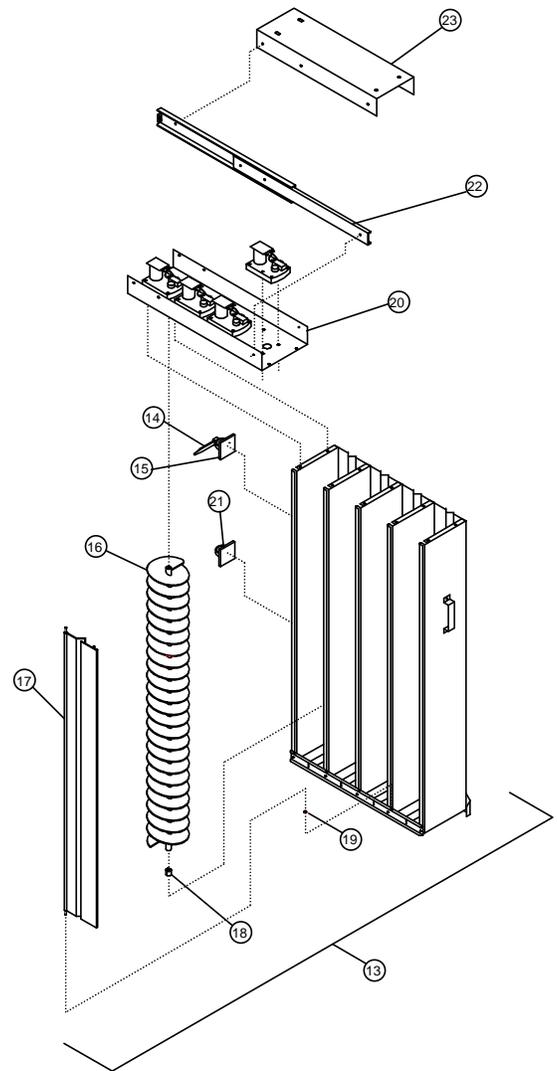
ITEM NO.	PART NO.	QTY.	DESCRIPTION	HARDWARE
			BAR MODULE COMPONENTS - **MARS VENDO CONFECTIONERY**	
1	1011103-4	-	LEFT HAND BAR MODULE ASSEMBLY	--
2	378513-1	1	CABLE TIE	--
3	1045474	1	ANCHOR TIE	--
4	1049651	4	VEND HELIX - 4" DIA.	--
5	1122670	4	DOOR COVER ASSEMBLY - BAR	--
6	1010301	4	HELIX BEARING	--
7	1012738	4	BUSHING - DOOR PIVOT	--
8	1010387	AR	HANGER - MODULE	V801490
9	1010379	1	MODULE TOP - LEFT	--
10	1075716	4	VEND MOTOR	V802180
11	1122762	2	SLIDE ASSEMBLY	V800634
12	1030639	1	HARNESS CLIP - ADHESIVE	--
13	1011103-5	1	RIGHT HAND MODULE ASSEMBLY	--
14	378513-1	1	CABLE TIE	--
15	1045474	1	ANCHOR TIE	--
16	1049651	4	VEND HELIX - 4" DIA.	--
17	1122670	4	DOOR COVER ASSEMBLY - BAR	--
18	1010301	4	HELIX BEARING	--
19	1012738	4	BUSHING - DOOR PIVOT	--
20	1017144	1	MODULE TOP - RIGHT	V800634
21	1030639	1	HARNESS CLIP - ADHESIVE	--
22	1122762	2	SLIDE ASSEMBLY	V800634
23	1010387	AR	HANGER MODULE	

FOR HARNESS PART NUMBERS, SEE PAGE PS-38

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭

ITEM NO.	PART NO.	QTY.	DESCRIPTION	HARDWARE
LEFT HAND BAR MODULE 5th COMPONENTS - MARS VENDO CONFECTIONERY				
1	1010387	AR	HANGER - MODULE	V801490
2	1122762	2	SLIDE ASSEMBLY	V800634
3	378513-1	1	CABLE TIE	--
4	1045474	1	ANCHOR TIE	--
5	1049651	4	VEND HELIX - 4" DIA.	--
6	1122386	4	DOOR COVER	--
7	1010301	4	HELIX BEARING	--
8	1012738	4	BUSHING - DOOR PIVOT	--
9	1027395-1	-	LEFT HAND BAR MODULE ASSEMBLY	--
10	1010379	1	MODULE TOP	--
11	1075716	4	VEND MOTOR	V802180
12	1030639	1	HARNESS CLIP - ADHESIVE	--
13	1027166	2	WEAR STRIP	--
14	1027174	2	WEAR STRIP MOUNT	V800956

FOR HARNESS PART NUMBERS, SEE PAGE PS-38
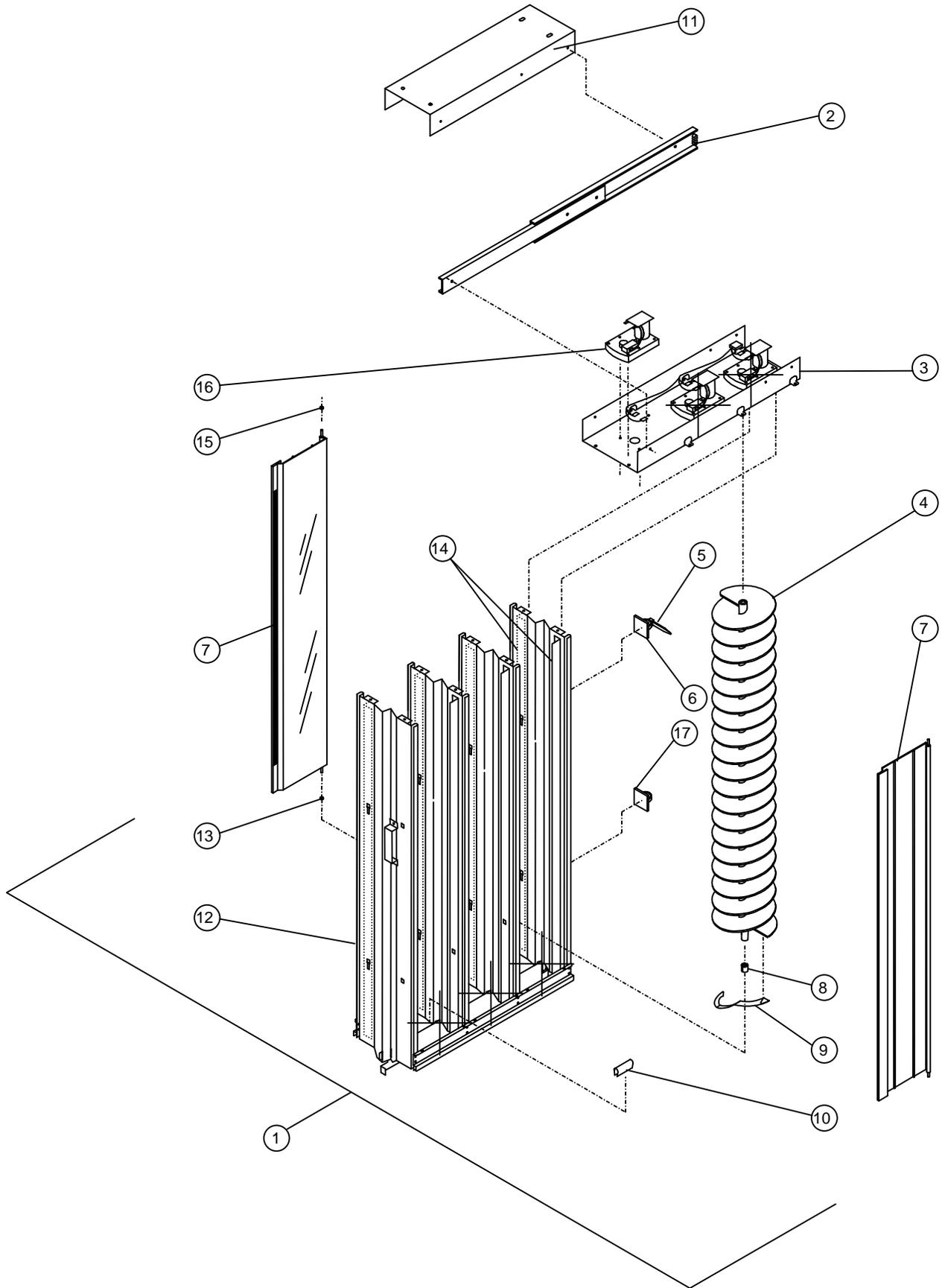
ITEM NO.	PART NO.	QTY.	DESCRIPTION	HARDWARE
— **BAG MODULE COMPONENTS - MARS VENDO CONFECTIONERY**				
1	1011111-4	AR	BAG MODULE ASSEMBLY - UK, EURO	--
~	1011111-6	AR	BAG MODULE ASSEMBLY - USA	--
2	1122762	2	SLIDE ASSEMBLY	V800634
3	1010921	1	MODULE	V800634
4	1049643	3	VEND HELIX - 5" DIA.	--
5	378513-1	1	CABLE TIE	--
6	1045474	1	ANCHOR TIE	--
7	1122673	6	MODULE DOOR ASSEMBLY - BAG	--
8	1010301	3	BEARING HELIX	--
9	1012797	3	DEFLECTOR SPRING - HELIX	--
10	388304-2	6	EDGE TRIM	--
11	1010387	AR	HANGER - MODULE	V801490
12	1018248	1	BAG MODULE HOUSING(**)	--
13	1012738	6	BUSHING - DOOR PIVOT	--
14	1017179	8	SPACER (***)	--
15	1122391	6	HINGE, MODULE DOOR	V800634
16	1075716	3	VEND MOTOR	V802180
17	1030639	3	HARNESS CLIP ADHESIVE	V802180

FOR HARNESS PART NUMBERS, SEE PAGE PS-38
(**) NOTE: INCLUDES MODULE TOP 1010921.
(***) NOTE: PRODUCT SPACER INCLUDED IN UK AND EUROPEAN UNITS ONLY.

![Vendo]
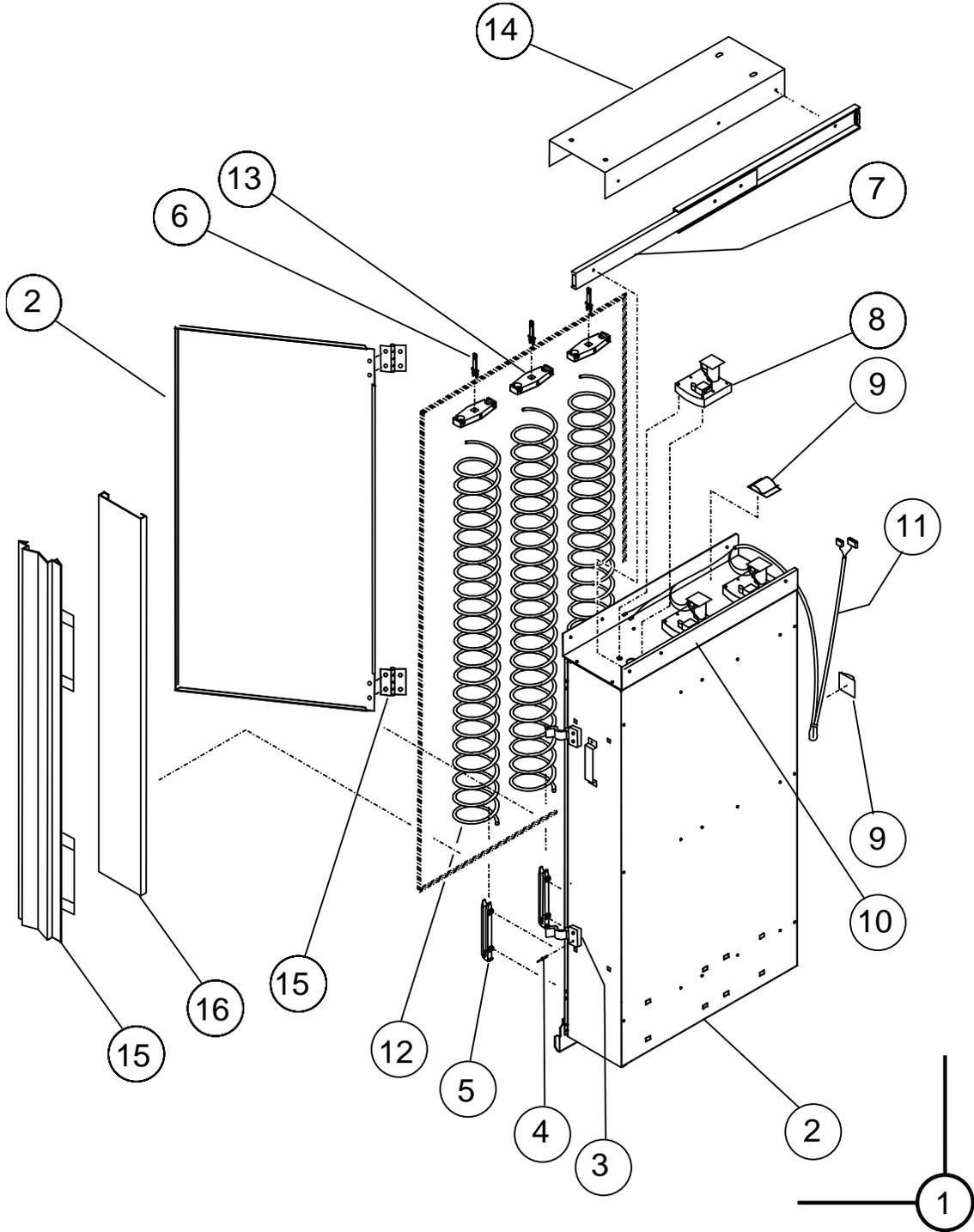
UNIVERSAL MODULE

UNIVERSAL MODULE COMPONENTS - MARS VENDO CONFECTIONERY				
ITEM NO.	PART NO.	QTY.	DESCRIPTION	HARDWARE
1	1112228	~	MODULE ASSEMBLY - COMPLETE	--
2	1040499	1	MODULE HOUSING FRAME (INCLUDES DOOR)	V800634
3	1047728	2	DOOR LATCH	--
4	V801412	AR	RIVET 1/8 DIA.	--
5	1047574	2	HINGE, MODULE DOOR	--
6	1045598	3	MOTOR COIL CLIP	--
7	1121238	2	SLIDE ASSEMBLY	--
8	1052376	3	GEAR MOTOR	V802180
9	1030639	2	WIRE CLIP - ADHESIVE	--
10	1045172	1	TOP SUPPORT	--
11	1054457	1	MODULE HARNESS	--
12	1046276	3	WIRE HELIX (GREEN)	--
13	1045156	3	WIRE COIL MOUNT	V800570
14	1010387	AR	HANGER	V801490
15	1112082	3	SPACE ASSEMBLY	
16	1112104	3	SPACE MODULE, SIDE	

FOR HARNESS PART NUMBERS, SEE PAGE PS-38

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REFRIGERATION ASSEMBLY
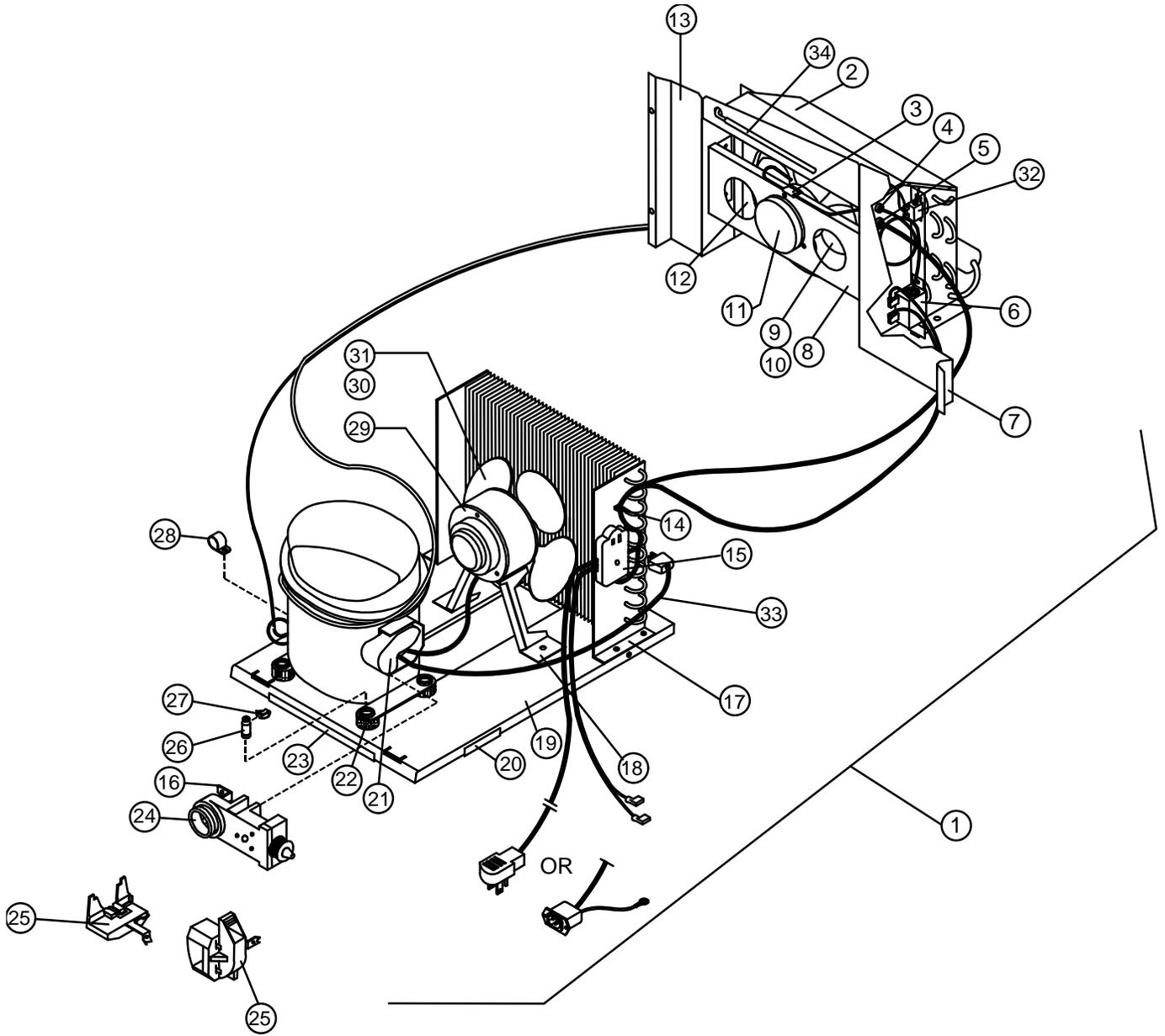
ITEM NO.	PART NO.	QTY.	DESCRIPTION	HARDWARE
			REFRIGERATION ASSEMBLY - **MARS VENDO CONFECTIONERY**	
1	1047019	1	D89TB REPLACEMENT REF. SYSTEM - 115 VOLT (U.S.)	--
~	1087643	1	REFRIGERATION UNQ - 220 VOLT (INT'L)	--
2	1064635	1	TOP COVER - EVAPORATOR	V802141
3	1030612	1	CLIP - TEMPERATURE CONTROL PROBE	--
4	389747	1	BUSHING - TEMPERATURE CONTROL PROBE	--
5	327699-2	1	BUSHING - EVAPORATOR FAN WIRE	--
6	368794-2	1	TEMPERATURE CONTROL - REFRIGERATION	V802141
7	1014854	1	RIGHT EXTENSION - EVAPORATOR	V802141
8	320266-1	1	BRACKET - EVAPORATOR FAN MOTOR	--
9	44190	1	FAN BLADE - EVAPORATOR FAN	--
10	V42323	1	RETAINER CLIP - FAN BLADE	--
11	42321-44	1	FAN MOTOR - EVAPORATOR - 115 VOLT (U.S.)	V800586
~	42321-43	1	FAN MOTOR - EVAPORATOR - 230 VOLT (INT'L)	V800586
12	385434	1	ORIFICE PLATE - EVAPORATOR FAN	--
13	1028278	1	LEFT EXTENSION - EVAPORATOR	V802141
14	384692-3	1	CLAMP - ROUTING	--
15	1120279-3	1	SERVICE CORD - U.S.	V800512
~	1121647	1	SERVICE CORD - INT'L, WITH POWER INLET	V800512
16	1086074	2	TERMINAL ADAPTOR	
17	916923	2	TINNERMAN - CONDENSER MOUNT	--
18	389797	1	BRACKET- CONDENSER FAN	V801360
19	1006703	1	BASE - REFRIGERATION	--
20	388304-1	3	EDGE TRIM BASE (SHORT)	--
21	1078406	1	COVER - INT'L	--
~	1078392	1	COVER - U.S	
22	323090-1	4	GROMMET - COMPRESSOR MOUNT	--
23	388304-3	1	EDGE TRIM - BASE (LONG)	--
24	513501587	1	RELAY ASSY - 115 VOLT (U.S.)*	--
25	1120669	1	RELAY ASSY – 230 VOLT (INT'L)*	
26	390102	4	STUD - COMPRESSOR MOUNT	--
27	343874	4	CLIP - COMPRESSOR MOUNT	--
28	324099-3	1	CLAMP - DRIER	--
29	42321-35	1	FAN MOTOR - CONDENSER - 115 VOLT (U.S.)	V800586
~	42321-28	1	FAN MOTOR - CONDENSER - 230 VOLT (INT'L)	V800586
30	V42323	1	RETAINER CLIP - FAN BLADE	--
31	389602	1	FAN BLADE - CONDENSER	--
32	368794-2	1	TEMPERATURE CONTROL - HEATER	--
33	1118686	1	COMPRESSOR CORD	--
34	1028197	1	HEATER - 115 VOLT (U.S.)	--
~	1121767-1	1	HEATER - 230 VOLT (INT'L)	--

* INCLUDES OVERLOAD PROTECTOR

FOR HARNESS PART NUMBERS, SEE PAGE PS-38

VENDO HARNESS QUICK REFERENCE GUIDE
For Mars Confectionery Vendors – Series 2000

PART NO.	DESCRIPTION	PURPOSE
1089376-1	Evaporator Fan Harness	Connects evaporator fans to junction box
1121647	Service Cord – Int'l with power inlet	Connects refrigeration deck and air dam
1052422	Module Harness – 4 Motor	Connects module motors to door harness
1054457	Module Harness – 3 Motor	Connects module motors to door harness
1120524	Cabinet Harness	Connects motor harnesses to door harness
1120936	Selection Harness	Connects selection switches to control board
1121455	Refund Motor Harness	Connects refund motor to control board
1121447	MDB Coin Mech Harness	Connects MDB coin changer and validator to control board
1014595	Executive Mech Harness	Connects Executive coin changer to control board
1122249	DEX Harness	Connects DEX peripheral device to control board
1120935	Door Harness	Connects cabinet harness to control board
1121641	Cordset, Continental Europe	Connects wall outlet to the air dam
1121642	Cordset, UK	Connects wall outlet to the air dam
1121644	Cordset, Italy	Connects wall outlet to the air dam
1121643	Cordset, Australia	Connects wall outlet to the air dam
1121645	Cordset, Switzerland	Connects wall outlet to the air dam
1121646	Cordset, Denmark	Connects wall outlet to the air dam
1122275	IButton Receiver Harness	Connects Dallas iButton to the control board

LABELS AND DECALS

Outer-Door Labels

1122154	Label - Fuse (Int.)
1122353	Label - T8 (Int.)
1122378	Label - Lithium Battery
1122379	Label - Read Manual

Inner-Door Labels

1123128	Label - Schematic / Wiring Diagram
1120243	Label - Loading Instruction
1122362	Label - M&M Standard Configuration (U.S.)

Cabinet Labels and Decals

1121824	Label - High Voltage
389220	Label - Warning - Quick Lock
1120245	Label - 1/5 HP Refrigeration 220V Wiring
1120303	Label - 1/5 HP Refrigeration 115V Wiring
1072821	Label - Position Module Type
1072805	Label - M&M Bar Module (U.S.)
1072805-1	Label - M&M Bag Module (U.S.)
1072805-2	Label - M&M Combo Module (U.S.)

GRAPHICS

1120924	Sign Face Panel Mars Millennium
1120953	Promotions Label

SUGGESTED SPARE PARTS

Outer Door / Inner Door / Cabinet

	389463	Rain Gasket - Cabinet
	1111406	Inner door Gasket Kit
	1087813	Quick Lock Assembly
	1121035	Selection Switch
	1120916	Selection Button
	1120926	Led Holder
	(See PG. PS-9)	Selection Panel - Painted
	1120920	Coin Insert Molding
	1120982	Coin Insert Chute
	1122156	Spring Refund
	1121795	Led Bi-Color
	388531	Lampholder - Fixed
	388532	Lampholder - Plunger
	1121030	Fluorescent Lamp
	1121732	Ballast - Lighting - 115 Volt (U.S.)
or:	1120450	Ballast - Lighting - 230 Volt (INT'L)
	1121436	Vend Flap Moulding
	1121435	Lens - Display
	1120972	Vend Hopper Assembly
	1010239	Vend Door - Inner Door
	1010247	Vend Eyelet Trim
	1120911	Hopper Bezel

Electronics

	1122024	Electronic Control Board
	1121684	Display
	1012711	Detector PCB
	1012703	Emitter PCB
	1121825	Power Switch
	323007	Reset Switch
	1122298	Key - Power Switch Override
	1017861	Transformer 115v
	1121932	Transformer 230v
	1050058	Fuse - 4 Amp 115v
	1122155	Fuse - 230v
	1121453	PCB, IrDA
	1122384	Dallas iButton Fob Assembly (optional)

Refrigeration

	513501587	Relay Assembly- 115 Volt (U.S.)
or:	1016644-1	Start Relay - 220 Volt (INT'L)
or:	1016652-2	Overload Protector - 220 Volt (INT'L)
	42321-35	Condenser Fan Motor - 115 Volt (U.S.)
or:	42321-28	Condenser Fan Motor - 220 Volt (INT'L)
	42321-44	Evaporator Fan Motor - 115 Volt (U.S.)
or:	42321-43	Evaporator Fan Motor - 220 Volt (INT'L)
	368794-2	Temperature Control - Refrigeration

SUGGESTED SPARE PARTS (CONTINUED)

1028197	Heater Kit - 115 Volts (U.S.)
1121767-1	Heater Kit - 220 Volts (INT'L)
1028146	Temperature Control - Heater (INT'L)

Vend Mechanism

1075716	Gear Motor - Bag/Bar
1052376	Gear Motor - Combos
1122673	Door Assembly - Bag Module
1122670	Door Assembly - Bar Module
1012738	Bushing - Door Pivot
1049643	Product Helix - Bag Module - 5" Dia.
1049651	Product Helix - Bar Module - 4" Dia.
1121238	Slide Assembly
1010301	Bearing - Helix
1012797	Deflector Spring - Helix (Bag)
388304-2	Edge Trim

NOTES

TROUBLESHOOTING

NEW EQUIPMENT WARRANTY
THE VENDO COMPANY
MVC 600 & MVC Series 2000

I.   This is a limited warranty.

II.   The Vendo Company warrants to the original purchaser each part of each new vending machine excluding any Mars-supplied components for a period of two (2) years from the date first placed on location, but not to exceed twenty-seven (27) months from the date of shipment, to be free from defects in material and workmanship. This Warranty DOES NOT include light bulbs, fluorescent tubes, fuses, finish, or operating supplies.

III.   To qualify for warranty replacement, all claims must be made in writing within the warranty period, accompanied by a record of the cabinet model and serial number. If a return is found to be inoperative due to defects in material and/or workmanship, we will, at our option, make necessary repairs, or furnish a reconditioned or new replacement part or refrigeration system at no charge.

IV.   The Vendo Company will pay normal transportation charges on parts replaced under this Warranty. If special handling or premium transportation is requested, the purchaser assumes these charges.

V.   Any parts replaced during the warranty period are warranted for the remaining time on the original warranty.

VI.   This Warranty DOES NOT apply to reconditioned equipment, to equipment sold "as is", or to components designed to work on electric current other than 110/120 60 cycle or 208/220 50 cycle, as specified on the serial tag.

VII.   Title and risk of loss pass to the purchaser on delivery of the vending machine, replacement part and/or refrigeration system to the common carrier. All loss and damage claims are the responsibility of the purchaser and must be filed with the delivering carrier.

VIII.   This Warranty DOES NOT include any labor guarantee, either explicit or implied, nor will it extend to cover incidental or consequential damage, or damage resulting from negligence, operation not in accordance with the Service and Operations Manual, accidents, vandalism or any act of God.

IX.   The Vendo Company reserves the right to make design changes, additions to, and improvements upon any of our products without incurring any obligation to incorporate same on any products previously manufactured.

X.   This Warranty is in lieu of all other express warranties or other obligations or liabilities on our part, and we neither assume nor authorize any person to assume for us, any other obligation for liability in connection with the sale of said machines or parts thereof. EXCEPT AS SPECIFICALLY PROVIDED HEREIN, THERE ARE NO WARRANTIES GIVEN, EITHER EXPRESS OR IMPLIED, AND ALL OTHER WARRANTIES, INCLUDING SPECIFICALLY, BUT WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY EXPRESSLY DISCLAIMED.

THE VENDO COMPANY

2/2002

TROUBLESHOOTING GUIDE

This guide is a general list of probable problems, causes, and solutions. For problems not listed, or additional questions, contact the Field Service Department at Vendo, 7209 N. Ingram Ave., Fresno, CA 93650 or call 1-800-344-7216 or the Mars Snack Central Team in the UK at +44 1256 471 500. Please have the manufacturer's date code and model number of the vendor when you call.

The troubleshooting guide is divided into three columns: First Column, Possible Problem; Second Column, Possible Cause, Third Column, Service Suggestion.

POSSIBLE PROBLEM	POSSIBLE CAUSE	SERVICE SUGGESTION
Vendor rejects all coins - without scrolling display	Power plug from outlet unplugged or loose	Check wire connections at both ends of wire harness for good connections; or plug in
	Transformer assembly unplugged at cabinet	Check wire connection (P1-1 and P1-4) for 24VAC from transformer. Check for continuity on the same wires.
	Fuse or circuit breaker tripped at power supply (building) outlet	Reset or replace breaker or fuse
	Damaged or defective power cord	Repair or replace power cord
Vendor rejects all coins - with scrolling display	Coin mechanism plug unplugged, too loose	Plug coin mechanism into plug
	Vend price set for 0.00	Check for unassigned column or defective motors by entering MODE 2 (Service Mode). Check vend prices; using MODE 3 (Set Price Mode). Check vend motors; using MODE 4 (Test Vend Mode).
	Controller configured for wrong coin mechanism	Check coin mechanism configuration; using MODE 2 (Service Mode), selection button #8
	Defective harness	Repair or replace harness
	Defective coin mechanism	Replace with same model coin mechanism
	Defective controller board	Replace controller board

POSSIBLE PROBLEM	POSSIBLE CAUSE	SERVICE SUGGESTION
Vendor accepts coin but does not vend on one or more selections	Broken or loose wire from controller to selection switch or vend motor	Check wire connections at both ends of harness for good connections. Check both; selection switch by using MODE 5 (Space to Sales Inquiry Mode) and/or vend motor(s) using MODE 4 (Test Vend Mode)
	Vend prices set incorrectly	Set vend prices, using MODE 3 (Set Price Mode)
	Vend switch defective	Replace vend switch
	Vend motor defective	Replace vend motor
	Defective controller board	Replace controller board
	Defective coin mechanism	Replace coin mechanism
Vendor accepts coins but does not vend on any selection	Plug on controller loose or unplugged; broken or loose wire from controller to selection switch or vend motor	Check wire connections at both ends of wire harness for good connections. Check both; selection switch by using MODE 5 (Space to Sale Inquiry Mode) and/or vend motor(s) using MODE 4 (Test Vend Mode)
	Display incorrect amount deposited	Check coin mechanism configuration; using MODE 2 (Service Mode), selection button #8
	Vend prices set incorrectly	Set vend prices, using MODE 3 (Set Price Mode)
	Defective controller board	Replace controller board
Vendor vends properly, but pays out wrong or no change	Vend prices set at 0.00	Enter into MODE 3 (Set Price Mode)
	Manually dispense coins	By way of MODE 2 (Service Mode) Operate selection buttons #3, #4 and #5.
	Changer out of change, display scrolls "USE CORRECT CHANGE"	Fill inventory tubes using MODE 2 (Service Mode) selection button #9; deposit coins.
	Changer configuration incorrect	Check coin mechanism configuration; using MODE 2 selection button #8

TROUBLESHOOTING – (MACHINE) - CONTINUED

POSSIBLE PROBLEM	POSSIBLE CAUSE	SERVICE SUGGESTION
Vendor vends properly, but pays out wrong or no change (Con't)	Broken or loose MDB harness wire.	Check wire connections at both ends of wire harness for good connections. Repair or replace
	Defective coin mechanism	Replace coin mechanism
	Defective controller board	Replace controller board
Product does not match selection	Product loaded incorrectly	Load product properly
	Product dispensed incorrectly	Enter into MODE 5 Load product properly
	Selection switch wires crossed or vend mechanism plugs crossed	Enter into MODE 4 and/or MODE 5 plug vend mechanism in correctly if crossed.
	Defective controller board	Replace controller board
Vendor free vends	Vend prices set at 0.00	Enter into MODE 3, set prices
	Vend switch defective or out of adjustment	Re-adjust or replace switch
	Defective optics circuitry	Check wire connections at both ends for good connections. Repair or replace optics circuitry
	Check coin mechanism interface	Enter into MODE 2 Depress switch #8
	Defective controller board	Replace controller board
Cannot enter into service mode	Door switch defective, broken or loose wire to controller board	Check wire and switch for continuity at both ends of wires for good connections
	Defective controller board	Replace controller board
Bill validator does not accept bills, displays "USE CORRECT CHANGE"	Coin mechanism out of change	Fill inventory tubes using MODE 2, depress switch #9 deposit coins
	Check coin mechanism interface	Enter into MODE 2 depress switch #8
	Check bill validator, coin mechanism harnesses	Repair or replace

TROUBLESHOOTING – (MACHINE) - CONTINUED

POSSIBLE PROBLEM	POSSIBLE CAUSE	SERVICE SUGGESTION
Bill validator does not accept bills, displays "USE CORRECT CHANGE" (Con't)	Defective bill validator	Replace bill validator
	Defective coin mechanism	Replace coin mechanism
Bill validator does not accept bills	Coin mechanism out of change	Fill inventory tubes using MODE 2 Depress switch #9; deposit coins
	Check coin mechanism interface	Enter into MODE 2, depress switch #8
	Check MDB harness	Repair or replace
	Defective bill validator	Replace bill validator
	Defective coin mechanism	Replace coin mechanism
	Defective controller board	Replace controller board
Bill validator does not power up	Defective MDB harness	Power down machine replace harness, power up
	Defective bill validator	Replace bill validator
No scrolling display but vendor operates properly	Broken or loose ribbon connector from controller to display board	Check connections at both ends for good connection or replace
	Defective display board	Replace display board
	Defective controller board	Replace controller board
Does not enter into Operate Mode	Door switch defective, broken or loose wire to controller board	Check wire and switch for continuity at both ends of wires for good connections
	Striker plate does not contact to door switch	Realign striker plate with door switch
	Defective controller board	Replace controller board
Display incorrect amount deposited	Check coin mechanism configuration	By way of MODE 2, depress selection button #8
	Vend prices set incorrectly	Set vend prices, using MODE 3
	Defective controller board	Replace controller board
Display "OUT OF ORDER" on display	Product blocking optic circuitry	Open outer door and remove product. Close door
	Defective optics harness	Check for continuity from optics board to controller in machine
	Defective optics board(s)	Replace optics board(s)
	Defective controller board	Replace controller board

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TROUBLESHOOTING – REFRIGERATION

POSSIBLE PROBLEM	POSSIBLE CAUSE	SERVICE SUGGESTION
Refrigeration unit will not run at all	No power to vendor	Check power supply, also check service cord connections.
	Thermostat open (temperature control)	Check thermostat (Apply insulated jumper across terminals, if compressor starts, replace thermostat)
	Temperature control bulb out of position	Check that bulb is in air flow
Compressor will not start	Overload Protector inoperative	Check overload (apply insulated jumper across terminal, if compressor starts, replace overload)
Compressor will not start, condenser fan motor running, unit cool (no power to compressor)	Open wire to the compressor.	Power down machine. Check for continuity, if open, reconnect.
Compressor will not start, condenser fan motor running - unit hot (power to compressor)	Starting relay or capacitor inoperative	Check relay or capacitor replace
	Compressor inoperative	Disconnect power to vendor, remove all leads from compressor, check continuity from "common", "start" and "run" to compressor case. If continuity shows, replace compressor. Also check from "common to start" (using continuity or IHMS.) If meter fails to show reading replace compressor.
Compressor starts but does not run	Will not cycle	Check overload and contact, replace overload if necessary
Compressor starts but does not run	Thermostat inoperative	Check thermostat clean contacts with approved electrical cleaner. Replace thermostat if necessary
	Compressor motor problem	Check, replace
Compressor runs but cabinet temperature warm	Loss of refrigerant	Replace refrigeration unit *(Note: Any work of this nature done without express permission from The Vendo Company can void refrigeration unit warranty)*

POSSIBLE PROBLEM	POSSIBLE CAUSE	SERVICE SUGGESTION
Compressor runs but cabinet temperature warm (cont'd)	Condenser fan not working	Check circuit to run motor. Replace motor. Check for obstruction of fan blade.
Compressor runs but cabinet temperature warm	Blocked or dirty condenser (refer to initial installation in the service manual)	Check condenser vanes for obstruction, lint or dirt. Clean, and also check for proper airflow through refrigeration area.
	Evaporator fan not working	Check circuit to fan motor. Replace motor also check for obstruction of fan blade
	Bad inner door seal	Check for moisture on seal. Adjust inner door as necessary (see initial setup section of Vendo manual). Replace door seal.
	Thermostat set too high	Adjust thermostat (see initial set up section of Vendo manual)
Compressor runs continuously	Thermostat inoperative	Check thermostat
Evaporator frosted over	Water at base of evaporator unit	Check for proper drainage (such as plugged drain, kinks in drain tube, etc.); check door seal
Product freezing up too cold	Temperature setting too low	Adjust temperature setting in electronic controller
	Thermostat inoperative *(compressor runs continuously)*	Check thermostat replace if necessary
	Thermostat feeler bulb out of position	Adjust feeler bulb (see initial set up section of Vendo manual)
Excessive noise	Fan blade bent or hitting shroud	Straighten, relocate shroud position, or remove shroud.
	Fan motor noisy	Replace if necessary
	Refrigeration base loose or bent	Tighten bolt or replace if necessary
Both compressor and condenser fan motors will not operate	Bad refrigeration control relay	Test relay using relay test function of the electronic controller. Replace relay if necessary.
	Bad wiring connection at refrigeration control relay	Check wiring connections. Make corrections if necessary.

PARTS, SALES, & SERVICE CENTERS OF VENDO/SANDEN COMPANY

AREA	ADDRESS	PHONE NUMBERS
United States, Canada	The Vendo Company 7209 N. Ingram Fresno, CA 93650 U.S.A.	Tel: (559) 439-1770 Fax: (559) 439-2083
Japan	Sanden International Corporation 31-7 Taito 1-Chome Taito-ku Tokyo 110, Japan	Tel: (81) 3-3835-1321 Fax: (81) 3-3833-7096
Europe, Mid-East, Africa, U.S.S.R.	Vendo GMBH Spangerstr. 22 40599 Dusseldorf Germany	Tel: (49) 0211-74-039-0 Fax: (49) 0211-748-8541
Australia, New Zealand	Sanden International Pty. Ltd. 54 Allingham St., Condell Park N.S.W. 2200 Australia	Tel: 61-2-9791-0999 Fax: 61-2-9791-9029
Singapore, Hong Kong, Indonesia, Philippines, India	Sanden International (Singapore) Pte., Ltd. Sanden House, 25, Ang Mo Kio St. 65 Singapore 569062 The Republic of Singapore	Tel: 65-482-5500 Fax: 65-482-1697
Taiwan	Sanden International Taiwan Corp. No, 21-6, Sec 1 Tun Hwa S. Rd., Taipei, Taiwan Taiwan, ROC	Tel: 886-2-570-6106 Fax: 886-2-577-1959
Belgium	Vendo Benelux, S.A. Industrial Research Park N.O.H. 13 Font St. Landry 1120 Brussels Belgium	Tel: 0032-2-268-2595 Fax: 0032-2-268-2862
Vendo France S.A.	20, Rue Camille Mouquet 94220 Charenton-le-pont, France	Tel/Fax: 0033-1-43534095
Italy	Vendo Italy S.p.A. Casella Postale 9 15033 Casale Monferrato (AL) Italy	Tel: 0039-142-335111 Fax: 0039-142-562348
Spain	Vendo Iberia, S.A. C/ Sant Ferran No. 92 Poligono Industrial la Almeda 08940 Cornella, (Barcelona), Spain	Tel: 0034-3-474-1555 Fax: 0034-3-474-1842

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PARTS, SALES, & SERVICE CENTERS OF VENDO/SANDEN COMPANY FOR LATIN AMERICA

AREA	ADDRESS	PHONE NUMBERS
Mexico	Vendo de Mexico Camino Real de Toluca No. 154 Col. Bellavista 01140 Mexico D.F. Mexico	Tel: (525) 515-9745 Fax: (525) 277-0111
Central America	The Vendo Company 7209 N. Ingram Fresno, CA 93650 U.S.A.	Tel: (559) 439-1770 Fax: (559) 439-2083
Chile	Pelp Internacional, S.A. 4560 El Rosal Huechuraba, Santiago, Chile	Tel: (562) 243-9710 Fax: (562) 740-0504
Brazil	Cimaq Industria e Comercio de Maq, Ltda. Estrada Uniao e Industria, 9.120 Itaipava 25730-730 Petropolis Rio de Janeiro, Brazil	Tel: (55242) 22-2666 Fax: (55242) 22-3244
South America	The Vendo Company 7209 N. Ingram Ave. Fresno, CA 93650 U.S.A.	Tel: (559) 439-1770 Fax: (559) 439-2083

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