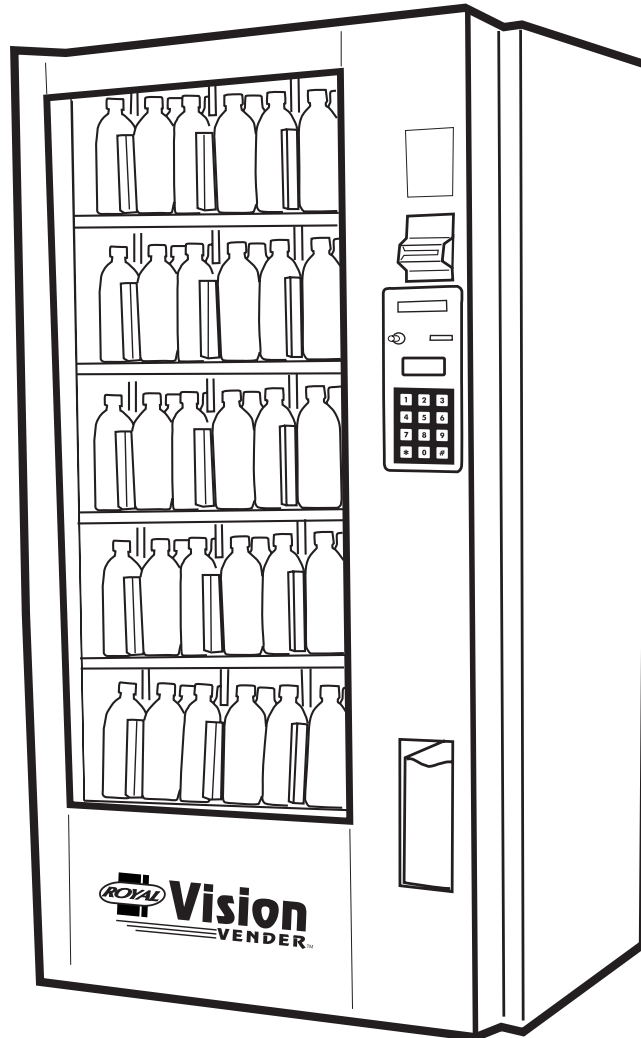


Royal Vendors, Inc.

RVV

Royal Vision Vender

Operation and Service Manual



Manufactured by



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SAFETY SEGMENT

ROYAL VENDORS' COMMITMENT TO SAFETY

Royal Vendors is committed to safety with all of our product designs. We are committed to notifying the user of a possible danger involving the improper handling or maintenance of our venders. The servicing of any electrical or mechanical device involves **potential dangers**, both to those servicing the equipment and to users of the equipment. These dangers can occur because of improper maintenance or usage. The purpose of this safety segment is to alert everyone servicing Royal equipment of potentially dangerous areas, and to provide **basic safety guidelines** for proper upkeep.

The service manual contains various **warnings** that should be carefully read to minimize the risk of personal injury. This manual also contains service information to insure that proper methods are followed to avoid damaging the vender or making it unsafe. It is also important to understand these **warnings** provide general guidance only. Royal could not possibly know, evaluate, or advise of all of the conceivable ways in which service might be done. Consequently, Royal cannot predict all of the possible dangerous results. These outlined safety precautions are the basis for an effective safety program. Use these safety measures, along with the service bulletins, helpful hints and product specification sheets, when installing or servicing Royal equipment.

We recommend that persons servicing our equipment maintain a similar commitment to safety. **Only personnel properly trained should have access to the interior of the vender.** This will minimize the potential dangers that are inherent in electrical and mechanical devices. Royal has no control over the vender once it leaves the premises. It is the owner or lessor's responsibility to maintain the vender in a safe condition. See installation insert located in the coin box of a new vender for proper installation procedures and refer to the service manual for recommended maintenance procedures. If you have any questions, please contact the Technical Services Department at 1.800.931.9214.

SAFETY REGULATIONS

- Read the safety segment before installation or service.
- Test for proper grounding before installing to reduce the risk of electrical shock and fire.
- Turn off or disconnect power cord from wall outlet before servicing.
- Only fully trained service technicians should service vender when vender has power.
- Remove any product before moving a vender.
- Use appropriate equipment when moving a vender.
- 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 vender.

SECTION I: ELECTRICAL HAZARDS GENERAL ADVICE

Careless or improper handling of electrical circuits can result in injury or death. Anyone installing, repairing, loading, opening, or otherwise servicing a vender should be aware of this precaution.

Apply all of the normal precautions when handling electrical circuits, such as:

- Refrigeration servicing to be performed by qualified personnel only.
- Unplug the vender before servicing
- 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 grounded and polarized (where applicable), and protected with fuses or circuit breakers of the correct size.
- All electrical connections must be dry and free of moisture before applying power.

**WARNING:
ALWAYS TEST TO VERIFY PROPER GROUNDING PRIOR TO INSTALLATION IN ORDER TO REDUCE THE RISK OF ELECTRICAL SHOCK AND FIRE**

SAFETY SEGMENT

SECTION II: ELECTRICAL HAZARDS

A. Servicing with “Power Off”

For maximum safety, unplug the power cord from the wall outlet before opening the vender door. This will remove power from the equipment and avoid electrical hazards. Service personnel should remain aware of possible hazards from hot components although electrical power is off.

B. 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 important to maintain maximum clearances from both moving parts and live circuits when servicing.

WARNINGS:

1. ONLY FULLY TRAINED PERSONNEL SHOULD ACCOMPLISH “POWER-ON” SERVICING. SUCH SERVICE BY UNQUALIFIED INDIVIDUALS CAN BE DANGEROUS.

2. LIGHTING CIRCUITS CAN BE HAZARDOUS. ALWAYS DISCONNECT FROM POWER SUPPLY BEFORE REPLACING A BULB OR SERVICING THE VENDER IN THAT AREA.

3. NEVER USE A HOSE, PRESSURE WASHER OR ANY CLEANING METHOD THAT COULD WET ELECTRICAL COMPONENTS. SEE CLEANING SECTION OF MANUAL FOR SUGGESTED CLEANING METHODS. IF WATER CONTAMINATION OF ELECTRICAL COMPONENTS IS SUSPECTED, USE QUALIFIED ELECTRICAL TESTING EQUIPMENT AND TEST METHODS TO ASSURE THAT VENDER IS NOT A HAZARD BEFORE APPLYING POWER FOR ANY REASON.

SECTION 1: General Information and Setup



General Information

Introduction

This manual contains installation, operation, and service instructions for the Royal Vision Vender (RVV), by Royal Vendors, Inc. This manual also contains a complete parts catalog and electrical schematic for the RVV.

The RVV is a microprocessor-controlled glass-front vender that permits pricing per selection from \$0.00 to \$99.99. The RVV provides electronic space-to-sales programmability, and it will collect, store, and transfer MIS data fields to a hand-held computer (HHC) or on-line device through a DEX port.

Unpacking the Vender and Installing It On Location

UNWRAP THE VENDER

Unwrap the vender and remove the padding. Check for any signs of damage. If the vender is damaged, contact the carrier immediately. They will instruct you on the procedure for filing a claim.

If the vender is being stored, remove the plastic stretch wrap, cardboard cover, and styrofoam cushioning first. The plastic stretch wrap and styrofoam cushioning can adhere to the exterior of the vender over an extended period of time, damaging the vender's finish.

Note: The vender's keys are located in the coin cup.

REMOVE THE SHIPPING SKID

Separate (split) each section of the shipping skid by inserting a claw hammer, crowbar, or similar device into the slot of each section to break it apart. Tilt the vender slightly to remove the separated pieces. (See Figure 1.1.)

REMOVE DOOR BLOCK

After opening the vender's door, locate the wooden shipping block at the bottom right under the door. Lift the block straight up to remove it.

REMOVE THE INTERIOR PACKING

Before plugging in the vender's power cord, remove the interior packing. Failure to remove this packing before plugging in the vender could result in damage to the vender mechanisms.

- Remove the styrofoam blocks in the front of each cell, which are used to secure the pushers.
- Remove the packing tape which secures the case supports.
- Remove the binder clips that secure each of the two belts, located approximately in the middle of the belts' runs.
- Remove the styrofoam block located below the elevator arm, above the motor cover.

PLACING THE VENDER ON LOCATION

When placing the vender on location, allow for a minimum of four inches (4") of space at the back of the vender. This will ensure proper ventilation of the refrigeration system.

To level the vender, close and latch the vender's door. Using a spirit level, adjust the four leveling legs until the top of the vender is level left-to-right and front-to-back. Make sure all leveling legs are in contact with the floor (including the support leg - see below).

ADJUSTING THE SUPPORT LEG (Serial number 200412MA00005 and after only)

The RVV is equipped with a support leg that is designed to prevent the vender from tipping. Always ensure that this leg is extended all the way to ground level. Failure to do so may result in the vender tipping forward, potentially resulting in **broken bones, dismemberment, or even death!**

The support leg is located under the bottom hinge plate of the vender's main door. Using a 1½" (38 mm) wrench, turn the leg counterclockwise until it is extended to ground level.

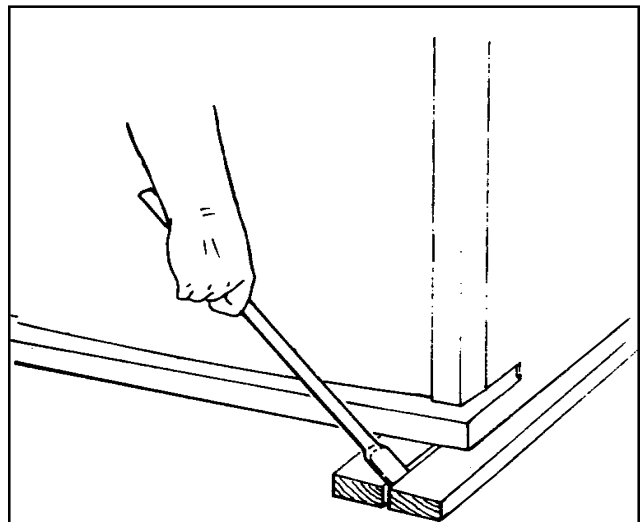


Figure 1.1

SECTION 1: General Information and Setup

Voltage Requirements and Vender's Power Cord

The vender is designed to operate at a voltage of 115 volts AC, 60 Hertz. It requires the minimum of a 15 amp service, and it should be on a dedicated circuit. The service outlet voltage must not exceed 129 VAC or fall below 103 VAC.

The vender has a three-wire grounding cord. The vender must be plugged into a grounded electrical outlet to protect customers from electrical shock. If the outlet is not equipped with a grounded socket, have one installed by a qualified electrician. Do not use an extension cord, unless it has been authorized by a certified electrician. Extension cords are not recommended.

After plugging the vender's power cord into the AC voltage source, the following should be observed:

1. The fluorescent lights will come on;
2. The refrigeration compressor will start to run after approximately 5-7 minutes (*with the door closed*); and
3. The Vacuum Fluorescent Display will light.

The control board is equipped with a battery back-up for use in the event of a power loss. The battery is used to retain important programming information, such as space-to-sales, prices, etc., so that it will not be erased if power is lost or the vender is unplugged.

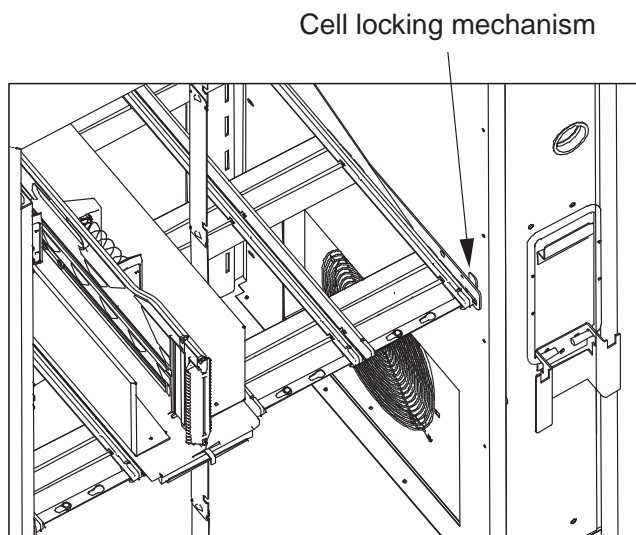


Figure 1.2

Setting Up the Cells

The cells must be set up correctly in order to ensure reliable vending. *Note: Some packages may require slightly different adjustments depending on the location of manufacture of the package.*

CELL SETUP INSTRUCTIONS:

1. *Serial number 200412MA00005 and after:* Unlock the cell by sliding the cell locking mechanism all the way to the left. Push the cell to the right slightly, and pull it out about 6 to 8 inches (15 - 20 cm).
Prior to serial number 200412MA00005: Place the shelf locking mechanism in the correct position for the shelf which holds the cell to be adjusted. (*See Figure 1.3.*) Then, slide the cell locking mechanism all the way to the left. Lift the product cell straight up, and pull it out about 6 to 8 inches (15 - 20 cm).
2. Loosen the wing nut on the bottom of the cell that secures the cell wall.
3. Push down on the strap locking mechanisms of the center support assembly.
4. Move the cell wall inward or outward to the desired setting, using the cell setup decals as a guide.
5. Once the cell is at the correct setting, release the strap locking mechanism.
6. Tighten the nut on the bottom of the cell to secure the cell wall in position.
7. Push the cell back into place, and lock the shelf.

Programming the Vender

All programming of the vender is done in the Service Mode. To enter the Service Mode, open the vender's main door, and press and release the Service Mode Button, located on the controller board. For programming instructions, see the section entitled "Vender Programming," later in this book.

Specifications

Dimensions (280 cap.)	72"H x 37"W x 35.5"D
Approximate Empty Weight	760 lbs.
Operating Voltage	115 VAC, 60 Hz
Amperage Rating	12 Amp
Charge	8.0 oz. R134a
Construction	Steel cabinet, plastic cells, glass front
Configuration	5 shelves, 40 columns

SECTION 1: General Information and Setup

WARRANTY INFORMATION

Royal Vendors, Inc. warrants (to the original purchaser) vend motors and product cells for five years and three months. The warranty of the refrigeration system, consisting of the motor, compressor, evaporator, “clean-flo” condenser, and the refrigerant tubing, will be for five years and three months, and will follow the serial number on the original cooling unit. If the unit fails while under warranty, the same serial number will be put on the replacement unit to track warranty status. Any unauthorized tampering with or cutting (tapping) into the unit will void the warranty. The control board, touch pad, vacuum fluorescent display, and Precision Delivery System® are all warranted for three years. All other parts, except the light bulbs and finish, are warranted for one year.

Notes:

1. Do not use the vender serial number for the cooling deck and control board. These parts carry their own warranty.
2. All stock refrigeration units and control boards will be labelled with a date code (the date the part was shipped to the customer).

Royal Vendors’ obligation under warranty is limited to repairing or replacing the subject part at our discretion, when upon examination it was determined by Royal Vendors to be defective. Royal Vendors will pay shipping charges on all parts covered under this warranty when transportation has been made the most economical way.

The warranty is voided when a cabinet or any part thereof has been subject to misuse or alteration without proper authorization. Accident or damage caused by fire, flood, transportation, civil disorder, or acts of God are not covered under warranty.

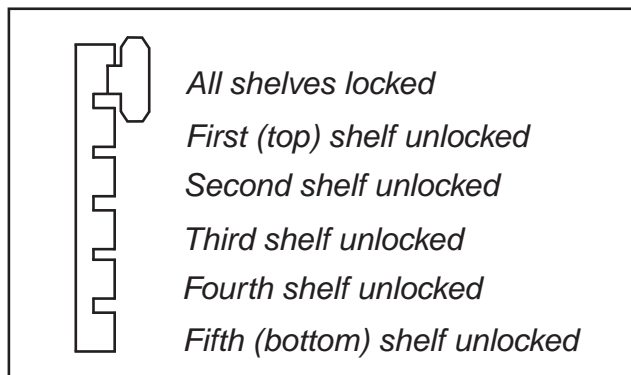


Figure 1.3

IMPORTANT NOTE ON TRANSPORTING THE RVV

Before transporting the RVV, **always ensure that the protective transport packaging is replaced**, including:

- Styrofoam blocks in the front of all cells, to secure the pushers;
- Styrofoam blocks on the cell locking mechanism lever;
- Packing tape to secure the case support;
- Styrofoam block on top of the motor cover, below the elevator arm;
- Binder clips to secure each belt, placed approximately in the middle of each belt’s run; and
- Cardboard to protect the glass.

Improper packaging before shipping could cause damage.

Vender Identification

VENDER SERIAL PLATE — The vender’s main serial plate is located on the exterior left side of the vender’s main door and has the following information:

- Vender model code
- Vender serial number
- Amps required by the vender
- Unit charge of R134a
- Refrigeration design pressures

The vender’s model code contains useful information: the machine type, such as RVRVV (Royal Vendors Royal Vision Vender); the model number, such as 400; and the number 1, which designates that the vender has a keypad.

The vender’s serial number contains several important pieces of information as well. The serial number currently in use consists of the following:

- The first four numbers represent the year the vender was produced;
- The fifth and sixth digits represent the week within that year the vender was produced;
- The first letter represents the style of the vender;
- The second letter represents the location where the vender was built; and
- The last five digits represent the number of that vender built within that week.

REFRIGERATION SERIAL PLATE: The Refrigeration Serial Plate is located on the front of the vender’s refrigeration unit, mounted on the kick plate. It looks similar to the Vender Serial Plate with the exception that the model number specified is the refrigeration unit model. There is currently one model in use:

Model	Compressor size	Usage
8000V	Super 1/3 Horsepower	AllRVV

SECTION 2: Vender Component Explanation

Vender Component Explanation

Vender Control Board (including pinouts)

The control board is responsible for most vender operations. It is located in the upper left corner of the inside of the door. The control board is protected by a cover. Removing this cover will expose the control board, along with all wiring connections to the board.

IDENTIFICATION: The RVV control board can be easily identified by noting the software revision number printed on the board in white letters in the upper-right corner.

OPERATION REQUIREMENTS: The control board requires approximately 24 volts AC from the low-voltage transformer. This will allow the control board to function and to supply power to all the vender's components listed below.

OPERATION: Upon receiving the appropriate voltage from the transformer, the control board issues information to some components, receives information from some components, and communicates both ways with some components.

- The control board issues instructions (and / or voltage) to:
 - Vacuum Fluorescent Display (VFD)
 - Vend mechanisms
 - Relays (refrigeration, evaporator, and lights)
- The control board receives information (and / or voltage) from:
 - Keypad (logic level)
 - Door switch (logic level)
 - Delivery sensor
 - Temperature sensor
- The control board communicates both ways with:
 - Coin mechanism
 - Bill validator (optional)
 - Card reader (optional)
 - Hand-held computer (optional)

CONTROL BOARD PINOUTS: The RVV has several electrical pinouts, a set-up mode button, and various other electronic components (all of which have designated position codes). The following section outlines all the control board's pinouts.

The word *key* refers to the small plastic insert plugged into a position of the connector. The purpose of the key is to prevent connecting the harnessing backwards or upside-down. The "keyed position" is a blank position within the pinout (no pin) in which a key is inserted. Some pinouts may have several blank positions with a key plugged into one or more of the positions. You can use the key to determine which end of the pinout is Pin 1.

Temperature Sensors (Position P1): The wiring harness connected to this pinout travels from the temperature sensor to the control board. This harness is molded into the temperature sensor and should never be cut, pinched, or spliced together if cut. If the harness is cut, pinched, or improperly grounded, the sensor may give the control board false temperature readings.

PIN NUMBER	WIRE COLOR	FUNCTION
1	Green	Ground
2	-	
3	-	
4	-	
5	Black	Health Sensor signal
6	White	Health Sensor ground
7	Red	Health Sensor signal ground
8	Black	Temperature signal
9	White	Temp. sensor ground
10	Red	Temp. signal ground

SECTION 2: Vender Component Explanation

Refrigeration (**Position P2**): The wiring harness connecting to this pinout powers the refrigeration relay. It also sends power to the door switch and to the delivery switch. The board powers the relay by providing a constant 24 VDC to it. Upon activation, the control board also provides a neutral to the relay. For the door switch and the delivery switch, the board provides a constant 5 VDC. When the switches are pressed in, they complete a circuit to the control board.

PIN NUMBER	WIRE COLOR	FUNCTION
1	Black	Delivery switch return
2	Orange	5 VDC door switch
3	Red	Door switch return
4	-	not used
5	Green	24 VDC refrigeration relay
6	Blue	Refrigeration relay
7	-	not used
8	-	not used
9	-	not used
10	-	not used

Selection Switches (**Position P3**): This pinout is not currently used.

Electronic Keypad (**Position P3b**): The RVV uses a keypad, which utilizes a matrix wiring system. Upon pressing a particular button, a signal circuit is completed. Because each output wire carries a different signal, the controller will determine which key has been pressed based on which input wire receives the output signal.

PIN NUMBER	WIRE COLOR	FUNCTION
1	Red	24 VAC
2	-	24 VAC
3	-	Ground
4	-	5VDCVCC
5	-	CO1
6	-	CO2
7	-	CO3
8	-	CO4
9	-	not used
10	-	not used
11	-	RW2
12	-	RW3
13	-	RW4
14	-	not used

Delivery Sensor (**Position P4**): The harness connecting to this pinout should never be cut, pinched, or spliced if cut. The delivery sensors are located in the port area of the vender's main door. The emitter is located above the port; the receiver is located below the port.

PIN NUMBER	WIRE COLOR	FUNCTION
1	Red	Delivery sensor power
2	-	Key
3	White	Delivery detection signal
4	Black	Ground

X-Axis (**Position P5**): The X-axis is the left and right movement of the product elevator.

PIN NUMBER	WIRE COLOR	FUNCTION
1	Black	X-axis Phase A
2	-	Key
3	White	X-axis Phase B
4	Red	X-axis Phase C
5	Green	X-axis Phase D
6	-	
7	Violet	Home signal
8	Grey	Home switch return

Y-Axis (**Position P6**): The Y-axis is the up and down movement of the product elevator.

PIN NUMBER	WIRE COLOR	FUNCTION
1	Black	Y-axis Phase A
2	Green	Y-axis Phase B
3	Red	Y-axis Phase C
4	-	Key
5	White	Y-axis Phase D
6	-	
7	Violet	Home signal
8	Grey	Home switch return

SECTION 2: Vender Component Explanation

Z-Axis (**Position P7**): This harness is for the delivery door switch. The delivery door switch signals to the control board when the port slide door is opened.

PIN NUMBER	WIRE COLOR	FUNCTION
1	-	not used
2	-	not used
3	-	not used
4	-	not used
5	-	not used
6	Orange	5 VDC sliding port door switch
7	-	not used
8	-	not used
9	Blue	Return sliding port door switch
10	-	not used
11	-	not used

Multi-Drop Bus (**Position P8**): The five-wire serial harness connecting to this pinout provides power and communications to and from the control board for the coin mechanism, the optional 34 VDC bill validator, and/or the optional debit card reader. If this harness is cut, pinched, or disconnected, you will noticeably lose power to these items.

PIN NUMBER	WIRE COLOR	FUNCTION
1	Black	34VDC
2	Brown	Return
3	-	Key
4	Red	Receive
5	Orange	Transmit
6	Yellow	Common
7	-	Key

DEX / UCS (**Position P9**): The optional three-wire harness connecting to this pinout comes from the optional Hand-Held Computer (HHC) jack. (*Note: There is also a standard DEX / UCS jack located on the vender's control board at Position P9A.*) The HHC plugs into this jack to read and write information from the vender's control board. If the HHC is not operating properly, check this harness for bad connections at the solder joints. Also check to ensure the insulator is not cracked from over tightening.

PIN NUMBER	WIRE COLOR	FUNCTION
1	Black	Common (sleeve)
2	Red	Receive (ring)
3	-	Key
4	Brown	Transmit (tip)

Display (**Position P10**): This pinout is not currently used.

Display (**Position JP1**): The harness from this connection leads to the Vacuum Fluorescent Display. If the display does not work, check this connection and harness.

PIN NUMBER	WIRE COLOR	FUNCTION
1	Red	5VDC
2	Black	Clock
3	Brown	Data
4	Orange	Ground

24 VAC Power (**Position P11**): The three-wire harness connecting to this pinout comes from the low-voltage transformer. If this harness is not connected (or if power is lost to this connection), you will noticeably lose all vender functions (except main door lighting), including power to the Vacuum Fluorescent Display. The coin mechanism will not accept coins, and the refrigeration system will not run.

PIN NUMBER	WIRE COLOR	FUNCTION
1	Black	24 VAC
2	White	Neutral
3	-	Key
4	Green	Ground

Encoders (**Position P14**): The motor encoders, for the X-axis and Y-axis stepper motors, ensure that the motors have run the correct distance to reach a certain point. If the X-axis (left and right motion of the elevator cup) or Y-axis (up and down movement of the elevator arm) are incorrect, check the harness leading to this connection. *Note: The encoder is part of the motor assembly and cannot be removed separately.*

PIN NUMBER	WIRE COLOR	FUNCTION
1	White / Orange	5 VDC Y-axis
2	Grey	X-axis forward message
3	Pink	X-axis backward message
4	White / Pink	Y-axis backward message
5	White / Grey	Y-axis forward message
6	-	Key
7	Orange	5 VDC X-axis
8	Violet	Ground X-axis
9	White / Violet	Ground Y-axis

SECTION 2: Vender Component Explanation

Electronic Door Lock (**Position P15**): Some venders may be equipped with an electronic door lock system. In the event of a power loss to the electronic door lock system, it will rely on power from the optional battery backup, located in the vend port area. This pinout is also used for the optional override switch, which works in conjunction with the control board to modify certain vending functions.

PIN NUMBER	WIRE COLOR	FUNCTION
1	Red	32 VDC door lock
2	-	Key
3	Black	Ground
4	White	Door signal
5	Green	Ground
6	Red	Override switch
7	Black	Ground
8	-	Key

Keypad

The 12-button keypad is located on the right side of the door front. The keypad contains the numbers 0-9, plus the * key and the # key. All programming and sales selections are done by way of the keypad.

Delivery Sensor

The delivery sensor actually consists of two separate components which work in conjunction with one another. The emitter, above the product delivery cup, emits an infrared beam. The receiver, below the delivery cup, receives the infrared beam. When a product falls into the delivery cup, the infrared beam is broken, signalling to the control board that a vend has been made.

Door Switch

The vender's door switch is mounted on the top of the door above the vender's control board. The door switch is actuated by the door each time it is opened or closed. The following functions are performed each time the vender door is closed:

1. All sold-out selections are cleared;
2. The greeting scrolls on the display;
3. If door switch reset is enabled in programming, the resettable MIS counters will be reset if at least one selection has been read; and
4. A 5-8 minute delay begins after which the refrigeration unit will come on.

Vacuum Fluorescent Display (VFD)

The VFD, a two-line 32-character display, is located above the keypad. All information to the programmer and to the customer is conveyed on the VFD.

Low-Voltage Transformer

The Royal Vision Vender uses a low-voltage (75 VA) transformer which reduces 115 volts AC (conventional domestic voltage) to 24 volts AC, to power the vender's control board. The transformer is a major contributor to the vender's operation. Without the transformer, the control board cannot function.

LOCATION OF TRANSFORMER: The transformer is located in the bottom of the vender's door. It is contained in a metal tray which also holds the light ballast and the fusebox assembly. To remove this metal tray, unscrew the nut from the carriage bolt that holds the tray in place with a 7/16" wrench. **Note:** Before removing this tray, remove power from the vender by unplugging the main power cord from the AC voltage source (wall outlet)!

CHECK THE TRANSFORMER AND FUSE: If upon arriving at the vender the display is not lit and the coin changer does not take coins or payout coins, make sure the vender is plugged in. Next, check the transformer's external 3-amp fuse for visual damage. Check for continuity across the fuse with a voltage meter or similar device. If defective, replace the external fuse.

1. Check the power going into the transformer at the connected red and black wires. It should register 115 volts AC. If not, check all wiring leading up to this point from the bottom of the vender's door. The transformer may not be the problem. There may be a broken wire or bad connection.
2. If 115 volts is registered in Step 1, measure voltage at the other end of the transformer. The two-pin connector at the control board connected to position P11 should register approximately 24 volts AC. If so, check the control board; the transformer is good.

SECTION 2: Vender Component Explanation

- 3. If 115 volts is registered in Step 1 and 24 volts is NOT registered in Step 2, the transformer is probably bad. Unplug the vender, and unplug the connections at the transformer (115-volt side). Then, unplug the transformer from the control board and from the connector at the fuse box. Remove the transformer from the door. Replace it with a new transformer.

Product Shelves

The RVV has five product shelves, each capable of holding eight different products, for a total of forty products in the vender. Each shelf contains four cells, with each cell having two product columns.

Between each column is a mechanism. An actuation lever that operates the mechanism extends from the shelf and is operated by the elevator cup moving the lever. When the cup moves the lever to the left, a product from the right column is pushed into the cup. Conversely, when the elevator cup moves the lever to the right, a product from the left column is pushed into the cup.

Refrigeration System

The vender’s refrigeration system is responsible for the cooling of the cabinet and the products loaded within it. The refrigeration system comes as a completely sealed unit and should never be cut or tapped into, or the warranty will be voided.

OPERATION REQUIREMENTS

The refrigeration system requires 115 volts AC from the main wiring harness for it to operate. The main wiring harness will get its voltage for the unit from the refrigeration relay.

REFRIGERATION COMPONENTS

The refrigeration system is a sealed system. Described in this section are explanations of the refrigeration system’s major components.

Compressor - The compressor is a hermetically-sealed unit located beneath (outside) the cooling compartment. The compressor is a pump, driven by the compressor motor which draws low-pressure vapor (refrigerant) from the evaporator coil, compresses it, and forces it into the condenser under high pressure. The motor is started and controlled by the refrigeration relay.

REFRIGERATION SYSTEM

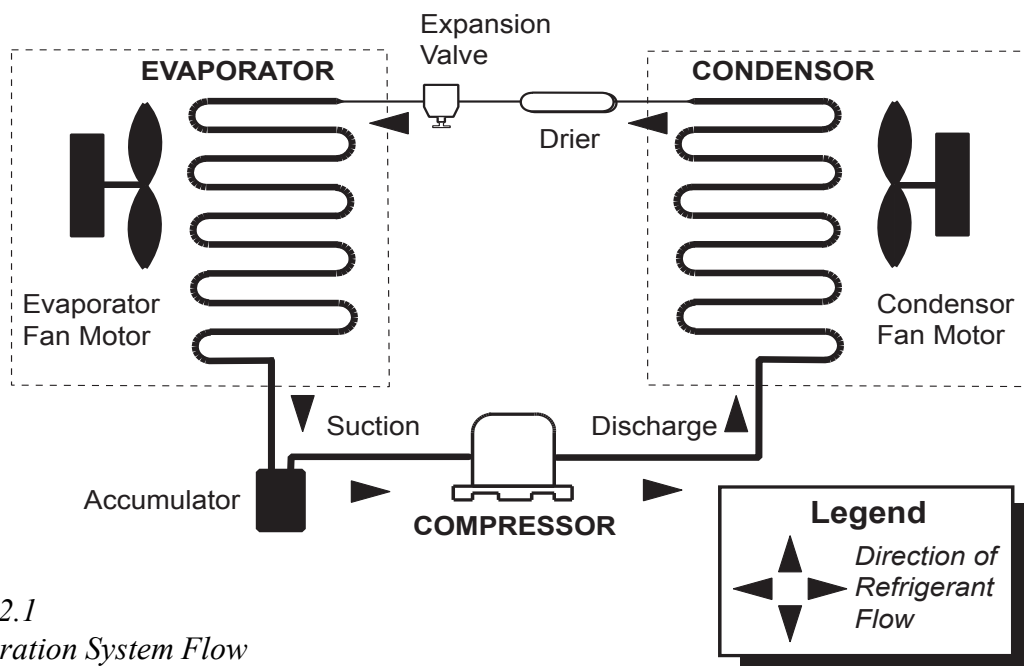


Figure 2.1
Refrigeration System Flow

SECTION 2: Vender Component Explanation

Condenser - The condenser is located beneath (outside) the cooling compartment next to the compressor. It can be seen from the front with the door open. The condenser removes heat from the high-pressure vapor discharged from the compressor and condenses it to a high-pressure liquid. The condenser and evaporator coils have aluminum fins attached to effectively increase heat exchange surfaces.

Starting Relay - The starting relay is mounted on the side of the compressor housing. The compressor motor has two windings (start winding and run winding). To give the motor torque when it first starts, the starting relay switches in the additional start winding. After the motor gets up to speed, the relay opens the start winding and the motor continues using only the run winding.

Thermal Overload - The thermal overload is a heat-sensitive device mounted on the side of the compressor housing. If the compressor motor gets too hot or draws an excessive amount of current, the thermal overload will open, breaking the circuit to the compressor. After the compressor cools to a safe operating temperature, the thermal overload will close, allowing the compressor and condenser fan motors to restart.

Condenser Fan and Motor - The condenser fan and motor, located beneath the cooling department, are a forced-air device using outside ambient air to cool the surface of the condenser coil. The condenser fan and motor run while the compressor operates.

Evaporator Coil - The evaporator coil is located in the cooling compartment. As low pressure liquid passes through the evaporator coil, it absorbs and removes heat from the compartment as it changes to vapor. The condenser and evaporator coil have aluminum fins attached to effectively increase their heat exchange surfaces.

Evaporator Fan and Motor - The evaporator fan and motor are a forced-air device circulating air throughout the cooling compartment and over the heat exchange surface of the evaporator coil.

Expansion Valve - The expansion valve is located in the refrigerant line between the condenser and evaporator coils. The expansion valve is used as a metering device to control the flow of liquid refrigerant to the evaporator coil. This creates a low pressure causing the refrigerant to vaporize and absorb heat as it passes through the evaporator.

Drier - The drier is located in the refrigerant line between the capillary tube and condenser. It traps and removes moisture from the refrigeration system while allowing oil and refrigerant to pass through the system.

Accumulator - The accumulator is located in the refrigerant line between the evaporator coil and the compressor. The accumulator traps any liquid refrigerant which did not vaporize before it reaches the compressor.

Refrigeration Relay - The refrigeration relay is located in the lower section of the vender's cabinet near the main wiring harness. The refrigeration relay is responsible for powering the compressor and condenser fan motors. The refrigeration relay consists of a coil powered by the control board (24 VDC) and a switch. When the control board completes the circuit to the refrigeration relay, the relay will energize, closing the contact between the common and the normally-open positions. When this happens, power (110 VAC) travels from the refrigeration relay to the main wiring harness for the refrigeration unit.

REFRIGERATION CYCLE

1. The rising temperature in the cooling compartment is reported to the control board through the temperature sensor.
2. The control board registers the current temperature inside the vender's cabinet. When it rises equal to or above the pre-programmed cut-in temperature, the control board will complete the circuit to the refrigeration relay to energize its coil.
3. The refrigeration relay coil closes the contact between the common and normally-open positions, allowing 110 volts to travel to the main wiring harness to start the compressor.
4. The compressor circulates refrigerant throughout the system by pulling low-pressure refrigerant vapor from the evaporator coil, compressing it, and forcing it into the condenser. The condenser, aided by the condenser fan motor, removes heat from the refrigerant as it flows through the condenser and releases it to the outside environment. The dropping of the refrigerant temperature changes the vapor to liquid.
5. The evaporator coil allows the liquid refrigerant to absorb heat from the cooling compartment as it evaporates in the coil.
6. The falling temperature in the cooling compartment is caused by the continual circulation of refrigerant through the system, removing heat from the cooling compartment and transporting it to the outside environment. When the temperature drops, the temperature sensor reports this to the vender's control board.
7. When the temperature drops below the preset cut-out temperature, the control board will disable the refrigeration relay, thus killing power to the refrigeration unit.

SECTION 2: Vender Component Explanation

TESTING THE REFRIGERATION SYSTEM

1. The sealed refrigeration unit can be tested by unplugging it from the top of the main wiring harness and plugging it directly into a power source. If the unit still does not operate, a problem exists within the sealed unit.
2. If the sealed unit runs when plugged into an external power source, the problem more than likely lies between the control board, the refrigeration relay, and the main wiring harness.

Ballast

The ballast acts as a transformer to convert conventional voltage (115 VAC) to a higher voltage required to energize the vender's fluorescent lights (upwards of 600 VAC). The ballast is located in a metal tray in the bottom of the vender's door, along with the low-voltage transformer and the fusebox assembly. To remove this metal tray, unscrew the nut from the carriage bolt that holds the tray in place with a 7/16" wrench. **Note:** *Before removing this tray, remove power from the vender by unplugging the main power cord from the AC voltage source (wall outlet)!*

Credit Peripherals

There are three possible credit peripherals for the RVV: the coin changer, bill acceptor, and debit card reader. The coin changer determines the validity and value of each coin that is inserted into the vender and sends the coin information to the vender controller. The coin changer also continuously informs the vender controller if coins are available in the change tubes to be used for change payout. The bill acceptor determines the validity and value of each bill that is inserted and sends that information to the vender controller. The debit card reader allows customers to purchase a product using a debit or credit card. For detailed information on any of the credit peripherals, refer to the separate operation and service manual provided by the peripheral's manufacturer.

TriTeq Electronic Door Lock

Some venders may be equipped with the TriTeq electronic door lock system. The TriTeq electronic door lock provides the control board with one signal line to determine the status of the door and lock. It consists of a motor-driven bolt (mounted on the door), an electronic nut receptacle (mounted on the cabinet), an infrared signal receiver, and an infrared key. The infrared code for this lock cannot be decoded if the key is lost or stolen. If the key is lost or stolen, it will be necessary to change the lock code as soon as possible. It is not necessary to replace the lock in order to re-key it.

Loss of power to the electronic door lock will prevent entry to the vender, unless it has been equipped with an optional battery. With the battery installed, it will be possible to open the vender's door in the event of a power loss.

The TriTeq electronic door lock system is not available for purchase from Royal Vendors. To order any component of the electronic door lock system or for more information, contact:

TriTeq Lock and Security
701 Gullo Avenue
Elk Grove Village IL 60007
Tel. 847-640-7002
Fax 847-640-7008
E-mail: sales@triteqlock.com
Website: www.triteqlock.com

OPENING THE RVV DOOR

Make sure power is applied to the electronic door lock, either by way of a standard 115 VAC receptacle or by the battery. Aim the infrared key at the detector hole (below the VFD), about 1-3 inches (about 3-8 cm) away from it, and press the button on the key. The VFD will display "Door Open ing," and the door will begin to unlock. After the door is opened, the display will show "Door Un-locked."

CLOSING THE RVV DOOR

Gently push the door to the cabinet. **Do not slam the door.** The lock motor will begin to run, and the VFD will display "Door Clos ing." Hold the door firmly until the nut has grasped the bolt. The motor will continue to run until the door is closed tightly. Check to make sure the door is secure.

SECTION 3: Vender Programming

Vender Programming

PRECAUTIONS TO TAKE WHEN WORKING WITH CONTROL BOARD

As with any printed circuit board, our electronics are very sensitive to Electrostatic Discharge (ESD). Simply walking across a tile or carpeted floor can generate a range of 30,000 to 50,000 volts of electricity. One ESD can be enough to seriously damage your control board or at least weaken it enough that erratic problems could occur in the future. Even a discharge surge under 100 to 200 volts is enough to create problems within the circuitry of the electronics. It is advised when storing the electronics that they be kept in anti-static bags, even if the electronics are thought to be defective. If a control board is thought to be defective and is really not, it soon will be after being charged with ESD. The ideal prevention against ESD is to use anti-static conductive wrist straps which ground you to the machine before touching the electronic boards. If it is not possible to use these, at least ground yourself before handling the electronic boards. Whatever method you use, always handle the electronic boards by the edges. Be careful not to touch the components on the control board.

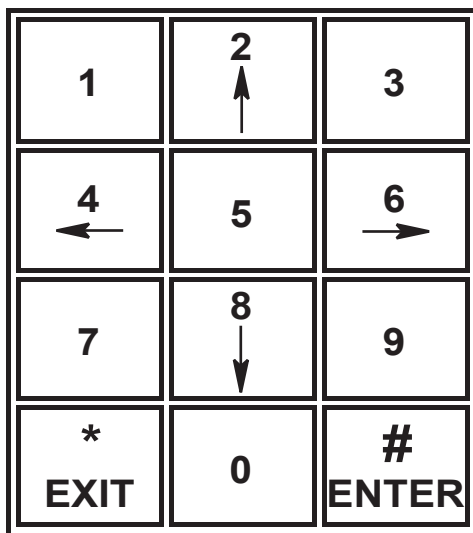


Figure 3.1
Keypad

KEYPAD PROGRAMMING

It is very important that the RVV is programmed properly. All programming of the vender options is done in the Service Mode. To enter the Service Mode, open the vender door, and press and release the yellow mode button located on the control board.

The vender's keypad consists of 12 buttons. Four of these buttons (see Figure 3.1, below left) are used to program the vender and navigate through the service routines, plus two are used to move the elevator cup (in "Product Location"), as follows:

Button	Meaning	Usage
2	FORWARD	Increase, next, up
4	LEFT	Move elevator cup left
6	RIGHT	Move elevator cup right
8	BACKWARD	Decrease, previous, down
*	EXIT	Escape, cancel, exit
#	ENTER	OK, accept, save

The controller will automatically return to the Sales Mode if:

- No response from the keypad is received for approximately five minutes;
- The service mode button is pressed a second time;
- The "Return" mode is activated; or
- The door is actually closed.

If credit exists, the credit amount will be displayed after returning to the Sales Mode.

MENU SYSTEM

When programming, you must first use the programming buttons listed above to maneuver through menus and sub-menus before you will be allowed to accomplish your task. Each menu consists of various items, or modes, such as "Set Prices" Mode or the "Set Internal Clock" Mode.

There are two menus:

1. INTERNAL (Service) MENU - This menu is available only with the vender's door open. It is accessed upon pressing the control board's mode button.
2. EXTERNAL MENU - This menu is available with the vender's door closed. From this menu, cash / sales counts and vender errors can be read (but not cleared).

Note: Programming flowchart located in rear of manual.

SECTION 3: Vender Programming

Internal (Service) Menu

Errors Were Detected (or No Errors Found)

If **<enter>** is pressed at the “Errors Were Detected” prompt, the controller will enter the error display mode. (If no errors have occurred since the last error reset, the display will show “No Errors Found.”) If an error has been detected since the last error reset, the display will show the first summary error code that has occurred, such as “Vend,” which would indicate a vend error. Pressing **<up>** or **<down>** will allow you to cycle through all of the summary error codes that are present. Pressing **<enter>** at the displayed summary error code will allow you to view the detailed error codes beneath the summary error heading (see below). Pressing **<up>** or **<down>** at this point will allow you to cycle through all of the detailed error codes that are present beneath the summary error code. If the **<exit>** button is pressed at anytime during this operation, the controller will return to the “Errors Were Detected” prompt. Press the **<up>** button to proceed to the next prompt, “Coin Dispense / Insert.”

If the **<enter>** button is pressed and held for two seconds during the display of any detailed error code, that error will be cleared. If other errors exist that fall under the currently accessed detail type, the next error would be displayed. If no other errors of the current type exist, the next error summary code will be displayed, or “No Errors Found” will be displayed if no other errors exist.

The error summary codes and their corresponding detailed error codes are as follows:

- **Miscellaneous**

By pressing **<enter>** at the “Miscellaneous” prompt, the controller will display either:

1. “Vertical Home Switch,” indicating a problem with the vertical home switch;
2. “Horiz. Home Switch,” indicating a problem with the horizontal home switch;
3. “Sliding Port Switch,” indicating that there is a problem with the switch that detects the position of the vertical sliding door;
4. “Product Undelivered,” indicating that there is a problem with the optical delivery detection system, or perhaps a product has been left in the delivery bin; or
5. “Unknown,” indicating that an error has occurred which is of unknown cause.

After taking corrective action to fix the “Miscellaneous” errors, the errors may be cleared manually through the service mode by pressing and holding the **<enter>** button for two seconds or electronically via a hand-held device.

- **Control**

By pressing **<enter>** at the “Control” prompt, the controller will display:

1. “Door,” indicating the door switch has been open for more than an hour;
2. “RAM,” indicating the machine setup information has been corrupted;
3. “AC Under Voltage,” indicating that the average rectified voltage was under 22VAC for more than 30 seconds;
4. “AC Over Voltage,” indicating that the average rectified voltage was over 42VAC for more than 30 seconds;
5. “System Scale Factor,” indicating one of the credit peripherals has introduced an incompatible scaling factor; or
6. “Lost XY Position,” indicating that the controller is unable to establish where the elevator mechanism is located in the matrix.

- **Select Switch**

Select Switch error indicates that a key on the keypad has been stuck in the “on” position for more than 5 minutes. This error will automatically clear when the stuck-key condition is removed. To locate the stuck key, use the keypad test diagnostic in service mode.

SECTION 3: Vender Programming

- **Coin Changer**

By pressing <enter> at the “Coin Changer” prompt, the controller will display either:

1. “Communication,” indicating no communication with the changer for more than 2 seconds;
2. “Tube Sensing,” indicating a tube sensor error;
3. “Inlet,” indicating no coins sensed by acceptor for over 96 hours;
4. “Tube Jam XX,” indicating a tube jam error for coin type XX;
5. “ROM,” indicating a changer ROM checksum error;
6. “Excesses,” indicating more than 255 escrow attempts since the last coin was accepted;
7. “Coin Jam,” indicating a coin jam;
8. “Low Coin Acceptance,” indicating a low acceptance rate (more than 20% of the last 255 coins were slugs);
9. “Disconnected Acceptor,” indicating an unplugged acceptor; or
10. “Misrouted Coin,” indicating a coin had been improperly routed.

The “Communications” error will be cleared when proper communications are re-established. After taking corrective action to manually fix the other “Changer” problems, the errors may be cleared electronically via a hand-held device or through the service mode by pressing and holding the <enter> button for two seconds.

- **Bill Validator**

By pressing <enter> at the “Bill Validator” prompt, the controller will display either:

1. “Communication,” indicating no bill validator communications for more than 5 seconds;
2. “Full,” indicating a full bill stacker;
3. “Motor,” indicating a defective motor;
4. “Jam,” indicating a bill jam error;
5. “ROM,” indicating a bill acceptor ROM check sum error;
6. “Sensing” indicating a bill sensor error; or
7. “Open,” indicating that the stacker is open.

The “Communication” error will be cleared when proper communications are re-established. After taking corrective action to manually fix the other “Bill Validator” problems, the errors may be cleared electronically via a hand-held device or through the service mode by pressing and holding the <enter> button for two seconds.

- **Card Reader**

By pressing <enter> at the “Card Reader” prompt, the controller will display either:

1. “Communication,” indicating no card reader communications for more than 5 seconds; or
2. “Card Reader Error XY,” indicating that a particular type of card reader malfunction occurred where “XY” indicates the error type.

The “Communications” error will be cleared when proper communications are re-established. The “Card Reader Error XY” errors may be reset via the hand-held device or through the service mode by pressing and holding the <enter> button for two seconds.

- **Refrigeration**

By pressing <enter> at the “Refrigeration” prompt, the controller will display either:

1. “Temperature Sensing,” indicating an unplugged temperature sensor error;
2. “Too Cold,” indicating temperatures 3° F (1.5° C) below the compressor cut-out setting;
3. “Too Hot,” indicating temperatures 3° F (1.5° C) above the compressor cut-in setting;
4. “No Cooling,” indicating that the compressor is not cooling at 1° F (0.5° C) per hour or better while on; or
5. “No Heating,” indicating that the heating system is not heating at 1° F (0.5° C) per hour or better while on.

The “Temperature Sensing” error will be cleared if the sensor is detected. The “Too Cold” error will be cleared when the temperature rises above the cut-out limit. The “Too Hot” error will be cleared when the temperature falls below the cut-in limit. The “No Cooling” error will be cleared when the system cools at 1° F (0.5° C) per hour or better. The “No Heating” error will be cleared when the system heats at 1° F (0.5° C) or better. All “Refrigeration” errors can also be cleared via the hand-held device or through service mode by pressing and holding the <enter> button for two seconds.

SECTION 3: Vender Programming

Coin Dispense / Insert

This mode is used to keep inventory of the exact coin tube levels in the coin mechanism, as well as allowing you to pay out coins from the changer through the control board. This mode tests proper communication between the control board and the coin mechanism. When dispensing coins, the control board will remember the coin mechanism's coin tube levels and automatically deduct a coin each time a coin is paid out.

OPERATION: If **<enter>** is pressed when the display shows "Coin Dispense / Insert," the display will then show the following:

```
Coin dispense X
Coin inventory Y
```

where X = the lowest coin value for the coin mechanism (normally 0.05), and Y = the exact number of that coin in the coin mechanism, starting with "1" when the first coin of this value is inserted. Pressing **<enter>** at this point will cause the coin mechanism to dispense one coin, and the value of Y will be lowered by one. Pressing **<up / down>** will move the display to the next higher coin value (normally 0.10). To return to "Coin Dispense / Insert," press **<exit>**. From "Coin Dispense / Insert," press **<up>** to proceed to the next prompt, "Diagnostics."

Diagnostics

If **<enter>** is pressed at the "Diagnostics" prompt, the controller will enter the test mode by displaying "Test Vending". Pressing **<enter>** will allow enter you into the test vending mode. If **<exit>** is pressed at any time, the controller will return to the "Diagnostics" prompt. Use **<up>** to proceed to the next prompt, "Cash Collected."

• Test Vending

Pressing **<enter>** at the "Test Vending" prompt will cause the controller to enter into the test vend function. The RVV allows many types of test vending including:

- "One Selection Only," where one individual selection can be vended;
- "One With Prod Det," which functions similar to "One Selection Only" except that a product must be delivered to consider the vend successful;
- "One Without Prod Det," similar to "One With Prod Det," but the delivery requirement is removed;
- "Four Corners," which causes a vend of all the extreme corners of the matrix (selections 11, 12, 17, 18, 51, 52, 57, and 58);

- "All With Prod Det," where all selections are vended in order; and
- "All Without Prod Det," similar to "All With Prod Det," but the delivery requirement is removed.

Each routine operates similarly and will allow the user to test the respective range of selections. For example, "One Selection Only" will allow the user to select any one product in the matrix to vend. The product selection number and the X-Y coordinates are shown on the display. During the vend, the display will show the message "Attempting Sel XX," where XX is the selection that is being vended. If the test vend fails anywhere in the process of vending, the error will be shown on the display.

Vends made while in this routine will not be added to the "Cash Collected" or "Number of Vends" mode totals. If **<exit>** is pressed at any time when "Column XX" is displayed, the controller will return to the "Test Vending" prompt.

Note: Test vending should only be performed with the vender's door closed tightly.

- **Test Cruise, Test Speed, Test Collision, Test Diagonal Moves, and Test Accel Values** (*certain software revisions only*)

These items are for internal use at the factory. **Do not enter into these menu items!** Functional errors can occur!

- **Test Keypad**

If **<enter>** is pressed at the "Test Keypad" prompt, the controller will enter the keypad test mode. The display will show "Pressed Key #," which indicates that the pound (#) key was pressed last. When any key is pressed, it will be represented by the numbers shown after the words "Pressed Key." The last key pressed will remain on the display until the service mode timer expires or the **<exit>** button is pressed and held for two seconds. This will return the controller to the "Test Keypad" prompt. Press the **<up>** button to proceed to the next prompt, "Test Display."

SECTION 3: Vender Programming

- Test Relay**
Pressing <enter> at the “Test Relay” prompt will cause the controller to enter the relay test routine. This routine allows you to test the compressor relay. Upon entry into this routine, the display will show the state of the compressor relay, “Compressor X,” where X = “On” or “Off.” Pressing <enter> will toggle the state of the compressor relay. *Note: To prevent equipment malfunctions, the relay state should not be toggled more than once every 10 seconds.* If <exit> is pressed at any time during this mode, the controller will return to the “Test Relay” prompt.
- Test Temperature Sensors**
Pressing <enter> at the “Test Temperature Sensors” prompt will cause the controller to enter the test temperature sensors routine. The current temperatures of the evaporator and cabinet sensors will be displayed. *(Most RVV machines will be equipped with the evaporator sensor only. The cabinet sensor is only used for vending perishable products, such as milk.)* Press <exit> to return to the “Test Temperature Sensors” prompt.
- Test Display**
Pressing <enter> at the “Test Display” prompt will cause the controller to enter the display test routine. Upon entry into this routine, the display will cycle through a series of several test patterns, including all segments on and all segments off. The test will continue for ten seconds or until the <exit> button is pressed. This will return the controller to the “Test Display” prompt. Press the <up> button to proceed to the next prompt in the test mode, “Test Home Sensors.”
- Test Home Sensors**
Pressing <enter> at the “Test Home Sensors” prompt will cause the controller to enter into the test home sensors display. This display shows the current state of all of the home sensors. The state of the sensors is updated in real time; thus, you can see the switch or sensor change state if the respective switch or sensor is manipulated. The interpretation of the display is as follows:

X - Yes/No, where yes indicates that the X axis home switch is in its home position;
Y - Yes/No, where yes indicates that the Y axis home switch is in its home position;
G - Yes/No, where yes indicates that the slide door switch is in its home position;
Dt - Yes/No, where yes indicates that the optical delivery detection system is blocked;

Pr - Yes/No, where yes indicates that the product present switch is in its normal position; and
Ov - Yes/No, where yes indicates that an override key switch is activated.

Press <exit> to return to the “Test Home Sensors” prompt.

- Test Encoders**
Pressing <enter> at the “Test Encoders” prompt will cause the controller to enter into the test encoders routine. This display shows the current X-Y position of both encoders. The position of the encoders is updated in real time; thus if the arm is lifted or the cup moved the X and Y positions should change correspondingly. It should be noted that lifting the arm will cause the X and Y encoders to change. Movements in the X (horizontal) axis will only cause the X position to change.
- Exercise Gantry**
Pressing <enter> at the “Exercise Gantry” prompt will cause the controller to enter into the exercise gantry routine. In this mode the arm (or gantry) will trace out a rectangular pattern starting at the X and Y home positions. This routine will continue until the <exit> button is pressed.

Cash Collected

If <enter> is pressed at the “Cash Collected” prompt, the controller will enter the non-resettable cash counter display mode by displaying “All Selects \$XX.XX,” where the X’s will represent total cash over the life of the vender’s control board. Using <up> or <down> will cycle through each selection as “Selection #N \$X.XX,” where “N” represents the appropriate selection number and the X’s represent the resettable cash count for that selection. If <exit> is pressed at any time during this operation, the controller will return to the code level. Press the <up> button to proceed to the next prompt, “Number of Vends.”

Number of Vends

If <enter> is pressed at the “Number of Vends” prompt, the controller will enter the non-resettable sale count display mode displaying “All Selects XXX,” where the X’s represent the number of all paid vends over the life of the vender’s control board. Using <up> or <down> will cycle through each selection as “Selection #N XXX,” where “N” represents the appropriate selection number and the X’s represent the resettable number of vends for that selection. If <exit> is pressed anytime during this operation, the controller will return to the “Number of Vends” prompt. Press the <up> button to proceed to the next prompt, “Free Vend Count.”

SECTION 3: Vender Programming

Free Vend Count

If <enter> is pressed at the “Free Vend Count” prompt, the controller will enter the free vend counters mode. The controller will display “View Price.” If <exit> is pressed, the controller will return to the code level. From “Free Vend Count,” press <up> to proceed to the next prompt, “Set Price.”

- **View Price**

If <enter> is pressed at the “View Price” prompt, the controller will enter the view price mode. The controller will display “All Selections,” for a universal selection price; or “Selection,” if the controller is set for multiple pricing. Selection prices can only be viewed, not changed, from this mode. If <exit> is pressed at any time during this operation, the controller will return to the “View Price” prompt. Press the <up> button to proceed to the next prompt, “Value of Free Vends.”

- **Value of Free Vends**

If <enter> is pressed at the “Value of Free Vends” prompt, the controller will enter the non-resettable free-vend cash counter display mode by displaying “All Selects \$XX.XX,” where the X’s will represent total monetary value of free vends over the life of the vender’s control board. Using <up> or <down> will cycle through each selection as “Selection #N \$X.XX,” where “N” represents the appropriate selection number and the X’s represent the resettable free-vend cash count for that selection. If <exit> is pressed at any time during this operation, the controller will return to the “Value of Free Vends” prompt. Press the <up> button to proceed to the next prompt, “Number of Free Vends.”

- **Number of Free Vends**

If <enter> is pressed at the “Number of Free Vends” prompt, the controller will enter the non-resettable free-vend count display mode displaying “All Selects XXX,” where the X’s represent the number of all free vends over the life of the vender’s control board. Using <up> or <down> will cycle through each selection as “Selection #N XXX,” where “N” represents the appropriate selection number and the X’s represent the resettable number of free vends for that selection. If <exit> is pressed anytime during this operation, the controller will return to the “Number of Free Vends” prompt. Press the <exit> button to return to the “Free Vend Count” prompt.

Set Prices

If <enter> is pressed at the “Set Price” prompt, the controller will enter the selection price setting mode. If multiple prices are enabled, the controller will display “All Selections,” for a universal selection price. If <up> is pressed, the controller will display “Shelf All,” which is used for pricing an entire shelf to the same price. If <up> is pressed again, the display will show “Selection,” which is used to set prices for individual selections.

If <enter> is pressed while “All Selections” is displayed, the display will show “All Selections Y.YY,” where “Y.YY” is the current price for all selections in the machine. Use <up> or <down> to increase or decrease the price.

If <enter> is pressed while “Selection” is displayed, the display will show “Selection XX Y.YY,” where “X” is the current selection number and “Y.YY” is the selection price. Use the <up> or <down> keys to sequence through the list of available selections, or press <enter> to edit the price of the selection that is currently shown on the display. Use the <up> or <down> to increase or decrease the price.

If <enter> is pressed while “Shelf All” is displayed, the display will show “Shelf X Y.YY,” where “X” is the current shelf number and “Y.YY” is the price for any of the products on that particular shelf. Use the <up> or <down> keys to sequence through the list of available shelves, or press <enter> to edit the price of the shelf that is currently shown on the display. Use the <up> or <down> to increase or decrease the price.

In all cases, when the desired price is on the display, pressing <enter> will save that price and return to the previous service mode function level. Pressing <exit> will return the controller to the “Set Price” prompt. Press <up> to proceed to the next prompt, “Product Location.”

Product Location

If <enter> is pressed at the “Product Location” prompt, the display will show “Enter Password 0000,” and the first “0” will be flashing. It will be necessary to enter the non-resettable password (9-8-7-6) in order to enter into the Product Location mode. To enter the password, press <up> or <down> to enter the first digit, then press <enter>. The second “0” will then begin to flash. Repeat this procedure to enter all four digits. After the fourth digit has been entered, the controller will enter the product location control mode. This mode is used to accurately set the stop locations for the vender’s elevator cup, allowing precision vending. Only the positions of four selections (12, 18, 52, and 58) and the port are here adjusted; the controller will determine the positions of the rest of the selections based on the settings of the four mentioned above. Using <up>

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or **<down>** will allow you to scroll through the adjustable locations. If **<exit>** is pressed at any point, the elevator cup's current setting for that location will be saved, and the controller will return to "Product Location." Press **<up>** to proceed to the next prompt, "Set Configuration."

- **END X=NNNN Y=NNNN**

Upon first entry into "Product Location," the controller will display "END X=NNNN Y=NNNN," where the N's represent the X-axis coordinates and the Y-axis coordinates. If **<enter>** is pressed, the elevator cup will go to the port, as if it were vending a product. At that exact point, it will stop, and the X-axis and Y-axis coordinates will begin to flash. If any adjustment is needed to correct the alignment of the elevator cup for proper delivery into the port, use **<left>** and **<right>** to correct the X-axis location, or **<up>** and **<down>** to correct the Y-axis location. Once the elevator cup is in the correct location, press **<exit>** to save that setting. Press **<up>** to proceed to the next prompt, "Sel=Z."

- **Sel=Z X=NNNN Y=NNNN**

At this point, the controller will display "Sel=Z X=NNNN Y=NNNN," where "Z" represents a selection number (either 12, 18, 52, or 58), and the N's represent the X-axis and Y-axis coordinates. If **<enter>** is pressed, the elevator cup will go to the lever for that selection number. At that point, it will stop, and the X-axis and Y-axis coordinates will begin to flash. If any adjustment is needed to correct the alignment of the elevator cup to properly trip the release lever, use **<left>** and **<right>** to correct the X-axis location, or **<up>** and **<down>** to correct the Y-axis location. Once the elevator cup is in the correct location, press **<exit>** to save that setting. Press **<up>** to proceed to the next prompt, "Test Vend Sel=Z."

- **Test Vend Sel=Z**

If **<enter>** is pressed while "Test Vend Sel=Z" is displayed, the vender will test-vend the selection number here represented by "Z" (either 12, 18, 52, or 58). The purpose of this test-vend is to ensure that the X-axis and Y-axis coordinates set for this selection are correct. Once the test-vend is complete, press **<down>** to return to the "Sel=Z" prompt to adjust that selection's coordinates (if needed), or press **<up>** to continue to the next selection or to "Jog Even=XXX."

- **Jog Even=XXX** and **Jog Odd=XXX**

These items are for internal factory use. Press **<exit>** to return to the "Product Location" prompt.

Space to Sales

If **<enter>** is pressed at the "Space to Sales" prompt, the display will show the vender's current space-to-sales setting (either "Option 1," "Option 2," "Option 3," or "Custom").

- To use a preset option, scroll to the desired option number and press **<enter>**. After pressing **<enter>**, the display will return to "Space to Sales." Press **<up>** to continue to the next prompt, "Set Configuration." The three available options are:

- Option 1: One for one (each individual selection number will only vend that column number);
- Option 2: By shelf (each selection number will vend all products on the same shelf in sequence); and
- Option 3: All selections tied together.

- To use a custom setting, scroll to "Custom" and press **<enter>**. After pressing **<enter>**, the display will show "Clear Settings?." To delete all current space-to-sales settings, press **<enter>**. The display will then show "Settings Cleared." Press **<up>** to go to the first selection. The display will show "Selection 11 Sel: None," meaning that no columns are currently assigned to this selection.

To assign columns to the selection, press **<enter>**. The display will show "Selection 11 Sel: 11 Assign: No." To assign this column, press **<enter>** to make the "No" flash, and press **<up>** to change the "No" to "Yes." Press **<enter>** to save the change. To add more columns to the selection, press **<up>** to go to the desired column number, and repeat the previous steps. Once all desired columns have been assigned to this selection, press **<exit>**. The display will then show "Selection 11 Sel: X," where "X" represents the assigned column numbers. Press **<up>** to continue to the next selection.

Once all space-to-sales settings are complete, press **<exit>**. The display will show "Selections: All Save Settings? Yes." Press **<enter>** to save the space-to-sales settings. (*Note: If **<enter>** is not pressed at this point, no changes will be recorded to the space-to-sales settings.*) The display will automatically return to "Space to Sales." Press **<up>** to continue to the next prompt, "Set Configuration."

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Set Configuration

If <enter> is pressed at the “Set Configuration” prompt, the controller will enter the machine configuration mode. This mode is used to set vender options dealing with pricing, vending, payback, and a few other features. While in Configurations mode, the display will show the configuration followed by the current setting (“On” [enabled] or “Off” [disabled]). Using <up> or <down> will allow you to cycle through all available configuration options. If <exit> is pressed at any time during this operation the controller will return to the “Configurations” prompt. If <enter> is pressed the display will flash “X” (the current status). Pressing <up> or <down> will cause the flashing status to toggle between “On” and “Off.” When the desired status is displayed, pressing <enter> will save that status.

The following information describes the various machine configuration options.

- **Multi Price**

This option is used to toggle between the single-price and multi-price modes. In the single-price mode, the price of selection 1 will be used for all selections. In the multi-price mode, each shelf or each selection can be set to a different price.

If X = Off, single pricing is used.
If X = On, multi pricing is used.

- **Hide Menu**

This option is used to disable or hide certain menu items.

If X = Off, all menu items will appear.
If X = On, certain menu items will not appear.

- **POS Disable**

This configuration is used to disable the Point of Sales (POS) greeting (i.e., “Ice Cold Drinks,” etc.).

If X = Off, no POS greeting will be shown.
If X = On, the greeting will be shown in Sales mode.

- **Open Door Totals**

This option is used to turn on the display of the total machine sales and total machine cash values in the open-door mode.

If X = Off, only errors will be displayed when the door is open.

If X = On, sales and cash totals will be displayed and “Errors Were Detected” or “No Errors Detected” will replace the error codes when the door is open.

- **Reset Counts**

This option is used to allow the door switch to reset all resettable MIS (cash and sales counts, etc.).

If X = Off, all resettable MIS registers are reset only when the “CF” command is received from the hand-held device (HHC).

If X = On, all resettable MIS registers are reset when the door switch is sensed as open and at least one of the resettable MIS registers has been read (i.e., individual cash and sales counts).

- **No Cheat Mode**

This option is used to prevent vending with insufficient change to pay back correct change after a purchase. If disabled and the correct change cannot be paid back, the vend is aborted and the deposited credit is returned if possible.

If X = Off, the cheat mode is disabled.
If X = On, the cheat mode is enabled.

- **Save Credit**

This configuration is used to determine how long credit will be displayed.

If X = Off, established credit will be erased after five minutes of no activity.

If X = On, credit will be displayed indefinitely.

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- **Forced Attempt**

This option prevents the machine from becoming a change maker. When this mode is enabled, escrow of coins is allowed until the maximum vend price is met or exceeded.

Once this condition is met, any accumulated credit must be used toward a vend attempt, and coins will not be dispensed for credit in response to an escrow request. If a sold out selection, or if a valid selection that becomes sold out, is made, this option will be over-ridden and an escrow will be honored.

If X = Off, forced vend attempt is disabled.
If X = On, forced vend attempt is enabled.

Note that Forced Attempt has no effect on the card reader; once a card is inserted it can always be returned to the customer via the escrow lever on the changer or return button on the card reader.

- **Multi Vend**

This option will allow multiple purchases without re-entering coins. If enabled, instead of immediately returning the change after a vend, the credit will remain on the display to be used for another selection. An escrow request will be honored at any time. This option will take precedence over the force vend option after the first vend has been completed.

If X = Off, multi-vend is disabled.
If X = On, multi-vend is enabled.

- **Bill Escrow**

This option will allow escrowing of bills. If enabled, and the current bill value inserted takes the accumulated credit over the maximum price, the bill will be held in the escrow position. If the rule is disabled, bills will always go to the cash box.

If X = Off, Bill Escrow is disabled.
If X = On, Bill Escrow is enabled.

- **DEX Auto Reset**

This option will allow all cash and sales counts to be reset after they are read using a hand-held computer (HHC).

If X = Off, cash and sales counts will accumulate.
If X = On, cash and sales counts can be reset.

- **Debus Enable**

This configuration is used for special factory test modes. It should be left in the "Off" state.

Door Password

If <enter> is pressed at the "Door Password" prompt, the controller will display the current password for the external menu. The first digit of the number will be flashing. Pressing <up> or <down> will adjust the currently flashing digit up or down. Pressing <enter> will save the currently flashing digit and cause the next digit of the password to begin flashing. All digits may be modified in this manner. Pressing <exit> at any point in the procedure will save the currently displayed password and return you to the "Door Password" prompt. From the "Door Password" prompt, use <up> to proceed to the next prompt, "Lighting."

Note: The factory pre-set password is 1-3-2-4.

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Lighting

If <enter> is pressed at the “Lighting” prompt, the controller will enter the lighting control mode. Using <up> or <down>, the board will rotate through the various lighting control settings (“Enable Timer,” “Start Time,” and “Stop Time”). If <exit> is pressed, the controller will return to the “Lighting” prompt. Press <up> to proceed to the next prompt, “Set Refrigeration.”

- **Enable Timer**

Upon first entry into “Lighting,” the controller will display “Enable Timer.” The lighting timer is used to enable or disable the main door lights. Press <enter> to show the current setting (“On” or “Off”). If set to “On,” the lighting control will be enabled. If set to “Off,” the lighting control will be disabled, and the lights will always be on. Toggle between “On” or “Off” by pressing <up> or <down>. Pressing <enter> will save the displayed setting and return the controller to the non-editable “Enable Timer” prompt. Use <up> to proceed to the next prompt, “Start Time.”

- **Start Time**

If <enter> is pressed at the “Start Time” prompt, the controller will enter the start lighting control time setting routing. Upon entry into this routine, the display will show one of the two start time setting modes, “Start Day” or “Start Hour.” Pressing <up> or <down> will cycle between the two. Pressing <exit> at this point will return to the “Start Time” prompt without saving any changes. Use <up> to proceed to the next prompt, “Stop Time.”

If <enter> is pressed at the “Start Day” prompt, the controller will enter the day of the week setting routine. The display will show “YY X”, where “YY” is the day of the week (Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday, or Every Day) and “X” is either “On” or “Off.” Pressing <up> or <down> will cycle through the days of the week. If <enter> is pressed at the “YY X” prompt, “X” will flash indicating that it can be changed. Pressing <up> or <down> will toggle “X” between “On” (enabled) and “Off” (disabled). Pressing <enter> again will save the displayed setting and return you to the non-flashing “YY X” prompt. Pressing <exit> will return to the “Start Day” prompt.

If <enter> is pressed at the “Start Hour” prompt, the controller will enter the start time setting routine. The display will show the current four-digit hour and minute setting, in 24-hour format. The hour setting will be flashing to indicate that it can be modified. Pressing <up> or <down> will increase or decrease the hour. Pressing <enter> will stop the hour from flashing and cause the minutes to flash, indicating they can be modified. Pressing <up> or <down> will increase or decrease the minutes value. Pressing <enter> again will save the displayed setting and return you to the “Start Hour” prompt. Pressing <exit> while in editing mode will return to the “Start Hour” prompt without saving changes.

- **Stop Time**

If <enter> is pressed at the “Stop Time” prompt, the controller will enter the stop lighting control time setting routing. Upon entry into this routine, the display will show one of the two stop time setting modes, “Stop Day” or “Stop Hour.” Pressing <up> or <down> will cycle between the two. Pressing <exit> at this point will return the controller to the “Stop Time” prompt without saving any changes. From “Stop Time,” use <exit> to return to the “Lighting” prompt.

If <enter> is pressed at the “Stop Day” prompt, the controller will enter the day of the week setting routine. The display will show “YY X”, where “YY” is the day of the week (Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday, or Every Day) and “X” is either “On” or “Off”. Pressing <up> or <down> will cycle through the days of the week. If <enter> is pressed at the “YY X” prompt, “X” will flash, indicating that it can be changed. Pressing <up> or <down> will toggle “X” between “On” (enabled) and “Off” (disabled). Pressing <enter> again will save the displayed setting and return you to the non-flashing “YY X” prompt. Pressing <exit> will return to the “Stop Day” prompt.

If <enter> is pressed at the “Stop Hour” prompt, the controller will enter the stop time setting routine. The display will show the current four-digit hour and minute setting, in 24-hour format. The hour setting will be flashing to indicate that it can be modified. Pressing <up> or <down> will increase or decrease the hour. Pressing <enter> will stop the hour from flashing and cause the minutes to flash, indicating they can be modified. Pressing <up> or <down> will increase or decrease the minutes value. Pressing <enter> again will save the displayed setting and return you to the “Stop Hour” prompt. Pressing <exit> while in editing mode will return the controller to the “Stop Hour” prompt without saving changes.

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Set Refrigeration

If <enter> is pressed at the “Set Refrigeration” prompt, the controller will enter the refrigeration control mode. Using <up> or <down>, the board will rotate through the various refrigeration control settings (“Enable Timer,” “Start Time,” “Stop Time,” “Degree,” “Setpoint,” “Storage,” “Display,” “Health Safety,” “Temp Testing,” and “X Hrs till Defrost”). If <exit> is pressed, the controller will return to the “Set Refrigeration” prompt. Press <up> to proceed to the next prompt, “Set Internal Clock.”

- **Enable Timer**

Upon first entry into “Set Refrigeration,” the controller will display “Enable Timer.” The energy conservation timer is used to enable or disable the energy conservation mode. Press <enter> to show the current setting (“On” or “Off”). If set to “On,” the cabinet temperature will be allowed to raise to the “Storage” programmed time blocks. If set to “Off,” the energy conservation timer will be disabled, and the refrigeration unit will operate as normal to maintain the “Setpoint” temperature. Toggle between “On” or “Off” by pressing <up> or <down>. Pressing <enter> will save the displayed setting and return the controller to the non-editable “Enable Timer” prompt. Use <up> to proceed to the next prompt, “Start Time.”

- **Start Time**

If <enter> is pressed at the “Start Time” prompt, the controller will enter the start energy conservation time setting routing. Upon entry into this routine, the display will show one of the two start time setting modes, “Start Day” or “Start Hour.” Pressing <up> or <down> will cycle between the two. Pressing <exit> at this point will return to the “Start Time” prompt without saving any changes. Use <up> to proceed to the next prompt, “Stop Time.”

If <enter> is pressed at the “Start Day” prompt, the controller will enter the day of the week setting routine. The display will show “YY X”, where “YY” is the day of the week (Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday, or Every Day) and “X” is either “On” or “Off.” Pressing <up> or <down> will cycle through the days of the week. If <enter> is pressed at the “YY X” prompt, “X” will flash indicating that it can be changed. Pressing <up> or <down> will toggle “X” between “On” (enabled) and “Off” (disabled). Pressing <enter> again will save the displayed setting and return you to the non-flashing “YY X” prompt. Pressing <exit> will return to the “Start Day” prompt.

If <enter> is pressed at the “Start Hour” prompt, the controller will enter the start time setting routine. The

display will show the current four-digit hour and minute setting, in 24-hour format. The hour setting will be flashing to indicate that it can be modified. Pressing <up> or <down> will increase or decrease the hour. Pressing <enter> will stop the hour from flashing and cause the minutes to flash, indicating they can be modified. Pressing <up> or <down> will increase or decrease the minutes value. Pressing <enter> again will save the displayed setting and return you to the “Start Hour” prompt. Pressing <exit> while in editing mode will return to the “Start Hour” prompt without saving changes.

- **Stop Time**

If <enter> is pressed at the “Stop Time” prompt, the controller will enter the stop energy conservation time setting routing. Upon entry into this routine, the display will show one of the two stop time setting modes, “Stop Day” or “Stop Hour. Pressing <up> or <down> will cycle between the two. Pressing <exit> at this point will return the controller to the “Stop Time” prompt without saving any changes. Use <up> to proceed to the next prompt, “Degree.”

If <enter> is pressed at the “Stop Day” prompt, the controller will enter the day of the week setting routine. The display will show “YY X”, where “YY” is the day of the week (Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday, or Every Day) and “X” is either “On” or “Off”. Pressing <up> or <down> will cycle through the days of the week. If <enter> is pressed at the “YY X” prompt, “X” will flash, indicating that it can be changed. Pressing <up> or <down> will toggle “X” between “On” (enabled) and “Off” (disabled). Pressing <enter> again will save the displayed setting and return you to the non-flashing “YY X” prompt. Pressing <exit> will return to the “Stop Day” prompt.

If <enter> is pressed at the “Stop Hour” prompt, the controller will enter the stop time setting routine. The display will show the current four-digit hour and minute setting, in 24-hour format. The hour setting will be flashing to indicate that it can be modified. Pressing <up> or <down> will increase or decrease the hour. Pressing <enter> will stop the hour from flashing and cause the minutes to flash, indicating they can be modified. Pressing <up> or <down> will increase or decrease the minutes value. Pressing <enter> again will save the displayed setting and return you to the “Stop Hour” prompt. Pressing <exit> while in editing mode will return the controller to the “Stop Hour” prompt without saving changes. From “Stop Time,” pressing <up> will proceed you to the next prompt, “Degree.”

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- **Degree**

If <enter> is pressed at the “Degree X” prompt, the controller will display “Degree X,” where “X” will be flashing. If X = F, the controller is currently in Fahrenheit mode; if X = C, the controller is currently in Celsius mode. Pressing <up> or <down> will toggle “X” between “F” and “C.” Pressing <enter> at this point will save the displayed temperature mode and return you to the “Degree X” prompt. Pressing <exit> will return you to the “Degree X” prompt without saving changes. Use <up> to proceed to the next prompt, “Setpoint.”
- **Setpoint**

The setpoint default is 36° F (2.0° C). If <enter> is pressed at the “Setpoint” prompt, the controller will display the current set point temperature setting “xx F” or “xx.x C,” depending on the “Degree” setting. Using <up> or <down> will increase or decrease the number by 1° F (0.5° C). Pressing <enter> will save the set point and return you to the “Setpoint” prompt. Pressing <exit> will return to the “Setpoint” prompt without saving changes. From “Setpoint,” press <up> to proceed to the next prompt, “Storage.”
- **Storage**

The storage temperature is the maximum temperature the cabinet is allowed to reach when the timer mode is in use. The storage default is 45° F (7° C). If <enter> is pressed at the “Storage” prompt, the controller will display the current storage temperature setting “xx F” or “xx.x C,” depending on the “Degree” setting. Using <up> or <down> will increase or decrease the number by 1° F (0.5° C). Pressing <enter> will save the storage temperature and return you to the “Storage” prompt. Pressing <exit> will return to the “Storage” prompt without saving changes. From “Storage,” press <up> to proceed to the next prompt, “Display.”
- **Display**

If <enter> is pressed at the “Display” prompt, the controller will display “Display X,” where “X” will be flashing. If X = “On”, the controller will display the temperature immediately following the POS. If X = “Off”, the controller will not display the temperature. Pressing <up> or <down> will toggle “X” between “On” and “Off.” Pressing <enter> will save the currently displayed setting and return you to the “Display” prompt. Pressing <exit> will return you to the “Display” prompt without saving changes. From “Display,” press <up> to proceed to the next prompt, “Health Safety.”
- **Health Safety**

This submode is used to enable a timer used in conjunction with an optional health sensor. If <enter> is pressed at the “Health Safety X” prompt, the “X” will begin to flash. If X = Off, this indicates that the health timer will be disabled. If X = On, the timer is enabled. Using <up> or <down> will toggle the value of “X.” If <enter> is pressed at this point, the currently displayed value of “X” will be saved, and the display will return to the non-editable “Health Safety” prompt. Press <up> to proceed to the next prompt, “Temp Testing.”
- **Temp Testing**

This item is used for special factory test modes. It should be left in the “Off” state. Press <up> to proceed to the next prompt, “X Hrs till Defrost.”
- **X Hrs till Defrost**

This submode is used to determine how often the vender will go into defrost mode. (X = the current setting for defrost mode.) If <enter> is pressed at the “X Hrs till Defrost” prompt, the “X” setting will flash. Use <up> or <down> to change the current setting. Once set, press <enter> to save this setting. From “X Hrs till Defrost,” use <exit> to return to the “Set Refrigeration” prompt.

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Set Internal Clock

If <enter> is pressed at the “Set Internal Clock” prompt, the controller will enter the current time setting mode by displaying “Enable.” Using <up> or <down> will allow you to cycle through all available time setting options. If <exit> is pressed any time during this operation, the controller will return to the “Set Internal Clock” prompt. Use <up> to proceed to the next prompt, “Set Language.”

- **Enable**

If <enter> is pressed at the “Enable X” prompt, the current value of X (either “On” or “Off”) will flash. This function is used to enable or disable the real-time clock. Use <up> or <down> to toggle between “On” and “Off.” Pressing <enter> will save the value of X and return the controller to the “Enable” prompt.

- **Date**

If <enter> is pressed at the “Date” prompt, the current date setting (as known by the controller) is displayed in DD-MMMM-YYYY fashion (for example, “31-January-2003”). If <enter> is pressed again, the current day will begin to flash. Use <up> or <down> to change the day setting. Once it is set, press <enter> again to move to the month. Pressing <enter> again will cause the year to flash. After the year has been set, press <enter> once more to save the changes. After saving the change, press <exit> to return to the non-resettable “Date” prompt. Press <up> to move to the next prompt, “Time.”

- **Time**

If <enter> is pressed at the “Time” prompt, the current time (as known by the controller) is displayed in a 24-hour format. The left two digits of the display show the current hour setting; the right two digits show the current minutes. The hour setting will be flashing. Pressing <up> or <down> at this point will increase or decrease the hour setting. If <enter> is pressed, the minute setting will flash. Pressing <up> or <down> at this point will increase or decrease the minutes setting. Pressing <enter> again will save the displayed hour and minutes setting and return you to the “Time” prompt. Pressing <exit> while in editing mode will return you to the “Hour” prompt without saving changes. Use <up> to proceed to the next prompt, “DST.”

- **DST**

If <enter> is pressed at the “DST” prompt, the display will show the current daylight saving time code. Using <up> or <down> will rotate through the available options listed below. Pressing <enter> when the desired saving time code is displayed will save that code and return you to the “DST” prompt. Pressing <exit> at any time in this options list will return you to the “DST” prompt without saving any changes. Use <up> to proceed to the next prompt, “Display Time.”

“OFF”:
No daylight savings time changes made.

“Australia”:
Australian rules
Set forward 1 hour at 1:00 a.m. on first Sunday in October
Set back 1 hour at 1:00 a.m. on last Sunday in March

“Europe”:
European rules
Set forward 1 hour at 1:00 a.m. on last Sunday in March
Set back 1 hour at 1:00 a.m. on last Sunday in October

“N. Am.”:
North American rules
Set forward 1 hour at 2:00 a.m. on first Sunday in April
Set back 1 hour at 2:00 a.m. on last Sunday in October

- **Display Time**

If <enter> is pressed at the “Display Time X” prompt, the display will show “Display Time X”, where “X” will be flashing. If X = Off, this indicates that the current time will not be displayed with the POS message in sales mode. If X = On, the time will be displayed in sales mode. Using <up> or <down> will toggle the value of “X.” If <enter> is pressed at this point the currently displayed value of “X” will be saved, and you will be returned to the non-editable “Display Time” prompt. Use <exit> to return to the “Set Internal Clock” prompt.

Set Language

If <enter> is pressed at the “Set Language” prompt, the controller will display the current language setting. Pressing <up> or <down> will sequence through the available language settings: English, French, German, Italian, Portuguese, Spanish, Slovene, Finnish, Norwegian, and Custom. Pressing <enter> at any point in the procedure will save the currently displayed language setting and return you to the “Set Language” prompt. Custom language is present only if custom language has been uploaded using DEX. From the “Set Language” prompt, use <up> to proceed to the next prompt, “Select Block 1.”

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Select Block 1 / 2 / 3

If <enter> is pressed at the “Select Block X” prompt (where X = 1, 2, or 3), the controller will enter the selection blocking control mode. Using <up> or <down>, you can cycle through the various selection blocking timer settings (“Enable Timer,” “Start Time,” “Stop Time,” “Select,” and “Light Control”). If <exit> is pressed, the controller will return to the “Selection Blocking X” prompt. Use <up> to proceed to the next prompt, “Discount.”

- **Enable Timer**

Upon first entry into “Selection Blocking X,” the controller will display “Enable Timer X.” If <enter> is pressed at “Enable Timer X,” “X” will begin to flash, indicating that it can be edited. If X = On, selection blocking will be enabled. This means that active programmed selections will not be allowed to vend during programmed time blocks and a “No Sale Until xx:xx” message will be displayed. The “xx:xx” will be replaced with the time vends will be allowed again (12-hour format if using “North American” or “OFF” daylight savings time settings; 24-hour format otherwise). If X = Off, selection blocking will be disabled. Pressing <up> or <down> will allow the user to toggle “X” between “On” and “Off”. Pressing <enter> will save the displayed setting and return you to the non-editable “Enable Timer” prompt. Use <up> to proceed to the next prompt, “Start Time.”

- **Start Time**

If <enter> is pressed at the “Start Time” prompt, the controller will enter the start selection blocking time setting routing. Upon entry into this routine, the display will show one of the two start time setting modes, “Start Day” or “Start Hour.” Pressing <up> or <down> will cycle between the two. Pressing <exit> at this point will return to the “Start Time” prompt without saving any changes. Use <up> to proceed to the next prompt, “Stop Time.”

If <enter> is pressed at the “Start Day” prompt, the controller will enter the day of the week setting routine. The display will show “YY X”, where “YY” is the day of the week (Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday, or Every Day) and “X” is either “On” or “Off.” Pressing <up> or <down> will cycle through the days of the week. If <enter> is pressed at the “YY X” prompt, “X” will flash indicating that it can be changed. Pressing <up> or <down> will toggle “X” between “On” (enabled) and “Off” (disabled). Pressing <enter> again will save the displayed setting and return you to the non-flashing “YY X” prompt. Pressing <exit> will return to the “Start Day” prompt.

If <enter> is pressed at the “Start Hour” prompt, the controller will enter the start time setting routine. The display will show the current four-digit hour and minute setting, in 24-hour format. The hour setting will be flashing to indicate that it can be modified. Pressing <up> or <down> will increase or decrease the hour. Pressing <enter> will stop the hour from flashing and cause the minutes to flash, indicating they can be modified. Pressing <up> or <down> will increase or decrease the minutes value. Pressing <enter> again will save the displayed setting and return you to the “Start Hour” prompt. Pressing <exit> while in editing mode will return to the “Start Hour” prompt without saving changes.

- **Stop Time**

If <enter> is pressed at the “Stop Time” prompt, the controller will enter the stop selection blocking time setting routing. Upon entry into this routine, the display will show one of the two stop time setting modes, “Stop Day” or “Stop Hour. Pressing <up> or <down> will cycle between the two. Pressing <exit> at this point will return the controller to the “Stop Time” prompt without saving any changes. Use <up> to proceed to the next prompt, “Select.”

If <enter> is pressed at the “Stop Day” prompt, the controller will enter the day of the week setting routine. The display will show “YY X”, where “YY” is the day of the week (Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday, or Every Day) and “X” is either “On” or “Off”. Pressing <up> or <down> will cycle through the days of the week. If <enter> is pressed at the “YY X” prompt, “X” will flash, indicating that it can be changed. Pressing <up> or <down> will toggle “X” between “On” (enabled) and “Off” (disabled). Pressing <enter> again will save the displayed setting and return you to the non-flashing “YY X” prompt. Pressing <exit> will return to the “Stop Day” prompt.

If <enter> is pressed at the “Stop Hour” prompt, the controller will enter the stop time setting routine. The display will show the current four-digit hour and minute setting, in 24-hour format. The hour setting will be flashing to indicate that it can be modified. Pressing <up> or <down> will increase or decrease the hour. Pressing <enter> will stop the hour from flashing and cause the minutes to flash, indicating they can be modified. Pressing <up> or <down> will increase or decrease the minutes value. Pressing <enter> again will save the displayed setting and return you to the “Stop Hour” prompt. Pressing <exit> while in editing mode will return the controller to the “Stop Hour” prompt without saving changes.

SECTION 3: Vender Programming

- **Select**

If <enter> is pressed at the “Select” prompt, the controller will display “Selection N X”, where “N” represents the selection number and “X” indicates whether that selection will be blocked or not. Using <up> or <down> will allow you to cycle through each individual selection. If <enter> is pressed at “Selection N X”, the display will flash “X” (block status) for the displayed selection. Pressing <up> or <down> will toggle “X” between “On” (enabled) or “Off” (disabled). When the desired setting is on the display, pressing <enter> will save the setting and return to the selection level, where the block status no longer flashes. If the “All Selections X” is set and saved, all the selections will be set at once. Use <exit> to return to the “Blocked Selections” prompt. From the “Blocked Selections” prompt, use <up> to proceed to the next prompt, “Light Control.”

- **Light Control**

If <enter> is pressed at the “Light Control X” prompt, the “X” will begin to flash. If X = “On”, the controller will turn off the main door lights while the selections are blocked. If X = “Off”, the controller will not affect the operation of the lights. Pressing <up> or <down> will toggle “X” between “On” and “Off.” Pressing <enter> will save the currently displayed setting and return you to the “Light Control” prompt. Pressing <exit> will return you to the “Light Control” prompt without saving changes. From “Light Control,” press <exit> to return to the “Select Block X” prompt.

Discount

If <enter> is pressed at the “Discount” prompt, the controller will enter the discount timer mode. Using <up> or <down>, you can cycle through the various discount timer settings (“Enable Timer,” “Start Time,” “Stop Time,” “Select,” and “Less Amount”). If <exit> is pressed, the controller will return to the “Discount” prompt. Use <up> to proceed to the next prompt, “Override Options.”

- **Enable Timer**

Upon first entry into “Discount,” the controller will display “Enable Timer X.” If <enter> is pressed at “Enable Timer X,” “X” will begin to flash, indicating that it can be edited. If X = On, the discount timer will be enabled. This means that active programmed selections will be discounted during programmed time blocks. If X = Off, the discount timer will be disabled. Pressing <up> or <down> will allow the user to toggle “X” between “On” and “Off”. Pressing <enter> will save the displayed setting and return you to the non-editable “Enable Timer” prompt. Use <up> to proceed to the next prompt, “Start Time.”

- **Start Time**

If <enter> is pressed at the “Start Time” prompt, the controller will enter the start discounting time setting routine. Upon entry into this routine, the display will show one of the two start time setting modes, “Start Day” or “Start Hour.” Pressing <up> or <down> will cycle between the two. Pressing <exit> at this point will return to the “Start Time” prompt without saving any changes. Use <up> to proceed to the next prompt, “Stop Time.”

If <enter> is pressed at the “Start Day” prompt, the controller will enter the day of the week setting routine. The display will show “YY X”, where “YY” is the day of the week (Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday, or Every Day) and “X” is either “On” or “Off.” Pressing <up> or <down> will cycle through the days of the week. If <enter> is pressed at the “YY X” prompt, “X” will flash indicating that it can be changed. Pressing <up> or <down> will toggle “X” between “On” (enabled) and “Off” (disabled). Pressing <enter> again will save the displayed setting and return you to the non-flashing “YY X” prompt. Pressing <exit> will return to the “Start Day” prompt.

SECTION 3: Vender Programming

If **<enter>** is pressed at the “Start Hour” prompt, the controller will enter the start time setting routine. The display will show the current four-digit hour and minute setting, in 24-hour format. The hour setting will be flashing to indicate that it can be modified. Pressing **<up>** or **<down>** will increase or decrease the hour. Pressing **<enter>** will stop the hour from flashing and cause the minutes to flash, indicating they can be modified. Pressing **<up>** or **<down>** will increase or decrease the minutes value. Pressing **<enter>** again will save the displayed setting and return you to the “Start Hour” prompt. Pressing **<exit>** while in editing mode will return to the “Start Hour” prompt without saving changes.

- **Stop Time**

If **<enter>** is pressed at the “Stop Time” prompt, the controller will enter the stop discounting time setting routine. Upon entry into this routine, the display will show one of the two stop time setting modes, “Stop Day” or “Stop Hour. Pressing **<up>** or **<down>** will cycle between the two. Pressing **<exit>** at this point will return the controller to the “Stop Time” prompt without saving any changes. Use **<up>** to proceed to the next prompt, “Select.”

If **<enter>** is pressed at the “Stop Day” prompt, the controller will enter the day of the week setting routine. The display will show “YY X”, where “YY” is the day of the week (Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday, or Every Day) and “X” is either “On” or “Off”. Pressing **<up>** or **<down>** will cycle through the days of the week. If **<enter>** is pressed at the “YY X” prompt, “X” will flash, indicating that it can be changed. Pressing **<up>** or **<down>** will toggle “X” between “On” (enabled) and “Off” (disabled). Pressing **<enter>** again will save the displayed setting and return you to the non-flashing “YY X” prompt. Pressing **<exit>** will return to the “Stop Day” prompt.

If **<enter>** is pressed at the “Stop Hour” prompt, the controller will enter the stop time setting routine. The display will show the current four-digit hour and minute setting, in 24-hour format. The hour setting will be flashing to indicate that it can be modified. Pressing **<up>** or **<down>** will increase or decrease the hour. Pressing **<enter>** will stop the hour from flashing and cause the minutes to flash, indicating they can be modified. Pressing **<up>** or **<down>** will increase or decrease the minutes value. Pressing **<enter>** again will save the displayed setting and return you to the “Stop Hour” prompt. Pressing **<exit>** while in editing mode will return the controller to the “Stop Hour” prompt without saving changes.

- **Select**

If **<enter>** is pressed at the “Select” prompt, the controller will display “Selection N X”, where “N” represents the selection number and “X” indicates whether that selection will be discounted or not. Using **<up>** or **<down>** will allow you to cycle through each individual selection. If **<enter>** is pressed at “Selection N X”, the display will flash “X” (discount status) for the displayed selection. Pressing **<up>** or **<down>** will toggle “X” between “On” (enabled) or “Off” (disabled). When the desired setting is on the display, pressing **<enter>** will save the setting and return to the selection level, where the discount status no longer flashes. If the “All Selections X” is set and saved, all the selections will be set at once. Use **<exit>** to return to the “Select” prompt. Use **<up>** to proceed to the next prompt, “Less Amount.”

- **Less Amount**

If **<enter>** is pressed at the “Less Amount” prompt, the controller will enter the discount amount setting. The first display will show the current four-digit discount amount (00.00 - 99.95). For example, if the discount amount is set to 0.10, every price set in the price mode will be reduced by 0.10 during the discount time. Using **<up>** or **<down>** will allow the user to increase or decrease the amount in increments of the least coin tube amount. Press **<enter>** to save the setting and return the controller to the “Less Amount” prompt. Press **<exit>** to return the controller to the “Less Amount” prompt without saving any changes. Pressing **<exit>** at the “Less Amount” prompt will bring the controller back to the “Discount” prompt.

SECTION 3: Vender Programming

Override Options

If the controller is equipped with a key switch, it can be used to override some of the settings stored for normal operation of the vendor. The key switch can be programmed to control one or several features simultaneously. If a feature is enabled in this menu, that feature will override normal machine operation when the switch is activated.

If <enter> is pressed at the “Override Options” prompt the controller will enter the override configuration setting mode by displaying “Free Vend”. Using <up> or <down> will allow you to cycle through all available override configuration options. If <exit> is pressed at any time during this operation, the controller will return to the “Override Options” prompt. From the “Override Options” prompt, press <up> to proceed to the final prompt, “Return to Sales.”

The following options can be selected in the override selection level:

- **Free Vend**

If <enter> is pressed at the “Free Vend X” prompt, where “X” is the current status (either “On” or “Off”), the display will flash the current status. Pressing <up> or <down> will cause the flashing status to toggle between “On” and “Off.” When the desired status is displayed, pressing <enter> will save that status and return you to the “Free Vend X” display (status no longer flashing). If “Free Vend” is enabled, “Free” will be displayed immediately after the POS message.

If X = Off, free vend will be disabled when the key switch is activated.

If X = On, free vend will be enabled when the key switch is activated.

Note: All free vends will increase free vend MIS counters (VA3).

- **No Vend**

If <enter> is pressed at the “No Vend X” prompt, where “X” is the current status (either “On” or “Off”), the display will flash the current status. Pressing <up> or <down> will cause the flashing status to toggle between “On” and “Off.” When the desired status is displayed, pressing <enter> will save that status and return you to the “No Vend X” display (status no longer flashing). If “No Vend” is enabled, no selections will be allowed to vend and a “No Sale” message will be displayed.

If X = Off, no vend will be disabled when the key switch is activated.

If X = On, no vend will be enabled when the key switch is activated.

Note: If both “Free Vend” and “No Vend” are enabled, “No Vend” will be given priority (no vending will be allowed).

- **Blocking 1 / 2 / 3**

If <enter> is pressed at the “Blocking N X” prompt, where “N” = 1, 2, or 3 and where “X” is the current status (either “On” or “Off”), the display will flash the current status. Pressing <up> or <down> will cause the flashing status to toggle between “On” and “Off.” When the desired status is displayed, pressing <enter> will save that status and return you to the “Blocking N X” display (status no longer flashing).

If X = Off, selection blocking will be disabled when the key switch is activated.

If X = On, selection blocking will be enabled when the key switch is activated.

Note: “Blocking” is used in conjunction with “Selection Blocking X” programming menus.

- **Vend Discount**

If <enter> is pressed at the “Vend Discount X” prompt, where “X” is the current status (either “On” or “Off”), the display will flash the current status. Pressing <up> or <down> will cause the flashing status to toggle between “On” and “Off.” When the desired status is displayed, pressing <enter> will save that status and return you to the “Vend Discount X” display (status no longer flashing).

If X = Off, discounting will be disabled when the key switch is activated.

If X = On, discounting will be enabled when the key switch is activated.

SECTION 3: Vender Programming

- **Lighting**

If <enter> is pressed at the “Lighting X” prompt, where “X” is the current status (either “On” or “Off”), the display will flash the current status. Pressing <up> or <down> will cause the flashing status to toggle between “On” and “Off.” When the desired status is displayed, pressing <enter> will save that status and return you to the “Lighting X” display (status no longer flashing).

If X = Off, lighting control will be disabled when the key switch is activated.

If X = On, lighting control will be enabled when the key switch is activated.

- **Refrigeration**

If <enter> is pressed at the “Refrigeration X” prompt, where “X” is the current status (either “On” or “Off”), the display will flash the current status. Pressing <up> or <down> will cause the flashing status to toggle between “On” and “Off.” When the desired status is displayed, pressing <enter> will save that status and return you to the “Refrigeration X” display (status no longer flashing).

If X = Off, refrigeration control will be disabled when the key switch is activated.

If X = On, refrigeration control will be enabled when the key switch is activated.

Return

If <enter> is pressed at the “Return” prompt, the controller will return to the idle condition of the sales mode, unless there is established credit. If credit exists, the credit amount will be displayed after returning to sales mode.

SECTION 4: Vender Maintenance

Vender Maintenance

What to Clean

CAUTION: *Electrical and electronic components should NEVER be subjected to water.*

Belts: The belts should always be kept clean and free of debris to ensure efficient operation, as well as to extend the life of the belts.

Cells: Make sure the cells are free of dirt, syrup, and debris. Build-up of foreign material, especially syrup from busted or leaking packages, can cause the cell to stick and adversely affect the cell's performance. Use warm soapy water or other food grade cleaning agents to maintain a clean smooth surface. Also make sure that the cells are level and seated properly in the tracks that they slide into. If the back of the cell is elevated it is possible that the cup will not engage the release lever properly or the cup may hit these levers on the way to other cells.

Condenser and Evaporator Coils: For efficient operation, the condenser and evaporator coils must be kept clear of any dirt or foreign materials. Clean dirt and debris from the condenser and evaporator coils with a small light-bristled brush, vacuum cleaner, or compressed air. This will help to ensure an extended unit life.

Control Board: The vender's control board should always be enclosed by its cover to protect it. Routine cleaning is not necessary but, if desired, the controller's area may be blown out with compressed air.

Delivery Bin: Make sure that the delivery bin remains clean and free of any debris or other objects that may block the optic sensors. Bottles sometimes have a tendency to lose their labels, which may be left in the delivery bin. If objects are left in the bin and the sensors are blocked, the board will assume there is a package in the bin and will not deliver product to the bin.

Elevator Arm and Cup Tracks: The elevator arm and cup assemblies travel in aluminum tracks that guide these components. Make sure that these tracks are kept clean and free from foreign material such as dirt, syrup, or other debris. Use a wet cloth to wipe these tracks clean. Avoid using any type of silicone or lubricant, as they may tend to collect dirt and will adversely affect performance.

What to Lubricate

Latch Strike Nut: The latch strike nut should not be lubricated.

Refrigeration Unit: The refrigeration unit is a sealed system that does not require any lubrication. Also, the condenser and evaporator fan motors do not require any lubrication.

Preventive Maintenance

Vender Leveling: Make sure that the vender is level when placed on site. If the vender is not properly leveled it can begin to accumulate standing water, which over a period of time may begin to freeze and will eventually freeze the evaporator. Another problem that may occur from an unlevelled vender will be improper vending, which would include but not be limited to product not vending from cell, product vending slow from cell, product not being delivered to the delivery bin, or product jamming.

Vender Support Leg: The RVV is equipped with a vender support leg. This leg is similar to the leveling legs but is longer and is located in the bottom door hinge. It is very critical that after the vender is placed on location and is leveled that this support leg is brought down even with the ground, floor, or whatever surface the vender is placed on. If the support leg is not making contact with the ground surface there is a possibility of the vender tipping over when the door is opened, possibly resulting in **broken bones, dismemberment, or even death.**

Lighting System: The lighting system contains extremely high voltage (upwards of 600 volts), and power should always be disconnected when working with or around this portion of the vender. Light bulbs should be replaced whenever one or more of the bulb ends are blackened or discolored, or when the lights are flickering or are not lit, and it has been determined that the ballast is good. Replace these bulbs as soon as it is determined they are bad. If it is decided not to use the lighting system, the ballast **MUST** be unplugged. **DO NOT** remove the bulbs and leave the ballast plugged in. Doing so can cause the ballast to generate a very high amount of electrical noise, which can cause problems with or permanently damage electronic components.

SECTION 4: Vender Maintenance

Replacing the Belts

X-axis belt replacement

The X-axis belt controls the left and right movement of the elevator cup assembly. To replace this belt:

1. On the upper idler assembly, loosen the nuts that hold the X-axis upper mounting assembly in place. (See Figure 4.2.) Pull the assembly downward to loosen tension on the belt. Ensuring that the belt is now loose, secure the assembly in place by retightening one of the nuts on the assembly.
2. Loosen the nuts that secure the belt in the clamps on the bottom of the elevator cup assembly.
3. Remove the existing belt, then install the new belt. Route the belt as shown in Figure 4.1. Ensure that the grooved side of the belt faces inward with respect to the general loop formed by the belt's routing.
4. Secure one end of the belt in the upper clamp below the elevator cup. Tighten the clamp by screwing in the upper set of nuts between the clamps.
5. Pull the other end of the belt firmly, and secure it in the lower clamp.
6. Reloosen the nut on the upper idler assembly that was tightened in step 1. The X-axis upper mounting assembly will spring upward to tighten tension on the belt. Once it has done so, tighten all three nuts on the X-axis upper mounting assembly to secure the belt tension.

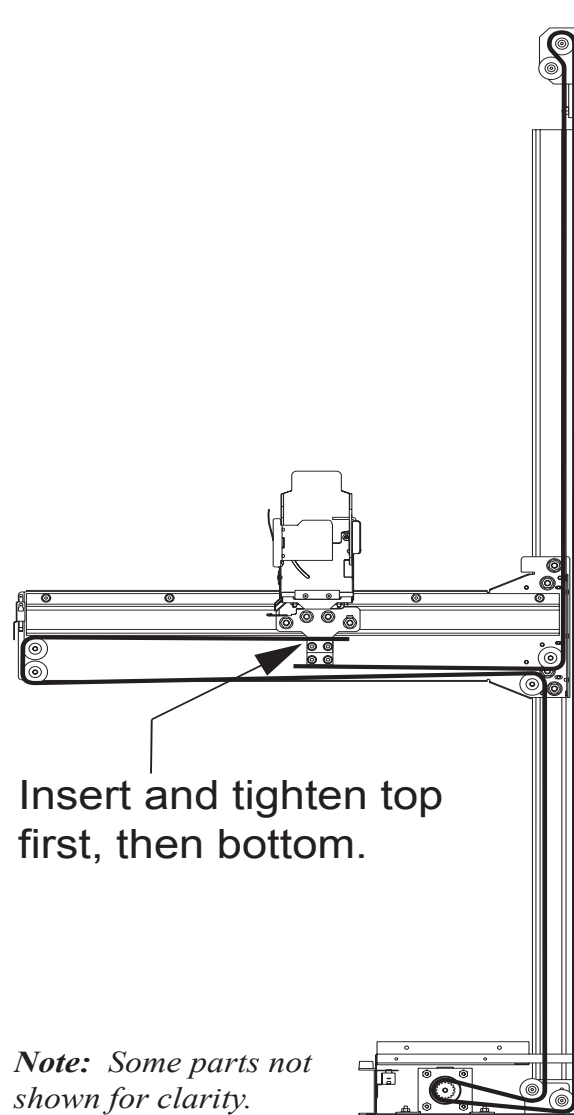
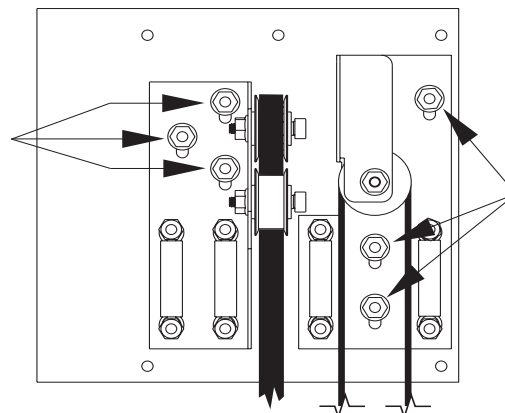


Figure 4.1

Loosen these nuts for X-axis belt replacement.



Loosen these nuts for Y-axis belt replacement.

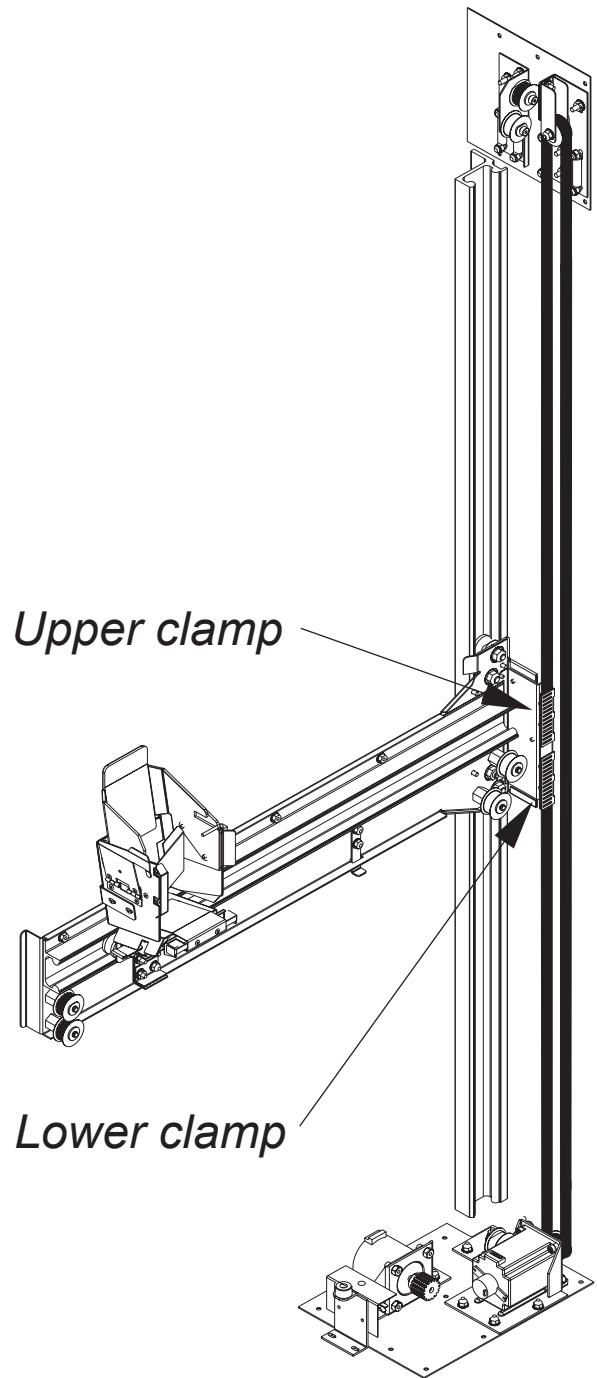
Figure 4.2

SECTION 4: Vender Maintenance

Y-axis belt replacement

The Y-axis belt controls the up and down movement of the elevator arm assembly. To replace this belt:

1. On the upper idler assembly, loosen the nuts that hold the Y-axis upper mounting assembly in place. (See Figure 4.2.) Pull the assembly downward to loosen tension on the belt. Ensuring that the belt is now loose, secure the assembly in place by retightening one of the nuts on the assembly.
2. Loosen the nuts that secure the belt in the upper and lower clamps. (See Figure 4.3.) These nuts are located behind the clamps.
3. Remove the existing belt, then install the new belt. Ensure that the grooved side of the belt faces inward.
4. Secure one end of the belt in one of the clamps, and tighten the clamp by screwing in the nuts.
5. Pull the other end of the belt firmly, and secure it in the other clamp.
6. Reloosen the nut on the upper idler assembly that was tightened in step 1. The Y-axis upper mounting assembly will spring upward to tighten tension on the belt. Once it has done so, tighten all three nuts on the Y-axis upper mounting assembly to secure the belt tension.



Note: Some parts not shown for clarity.

Figure 4.3

SECTION 4: Vender Maintenance

Product Location Setup Procedure

Make sure the adjustment nuts are tight (see Detail C) prior to setting up the 4 corners.

Selection 12

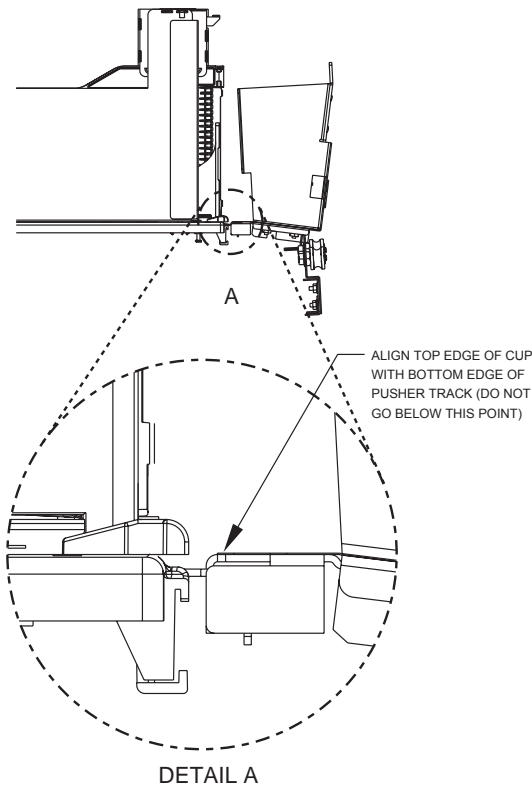
Set X to 370 (do not change this setting) and set Y so that the top of the cup lip is level with the bottom of the pusher track (see Detail A). The lever should be centered within the cup cutout (see Detail B and D). Remove cells 11/12 and 13/14 to gain access to the adjustment bolt (see Detail C). Loosen the nut with a 7/16" wrench. Adjust the bolt with a flat head screwdriver in order to center lever with the cutout. Tighten the nut against the arm to lock the shelf into place. Note: one full turn of the bolt is equal to .050".

Selection 18

Set X to 2864 (2860 for non wide door venders) and set Y so that the top of the cup lip is level with the bottom of the pusher track (see Detail A). The lever should be centered within the cup cutout (see Detail B and D). The cup hard stop should not hit the wall of the door (see Detail G). If so, back off the X setting until the interference is corrected. If the lever is not centered within the cutout, split the difference with Selection 12 (see Detail E and F) by adjusting the adjustment bolt mentioned above.

Selection 52

Set X to 370 (do not change this setting) and set Y so that the top of the cup lip is level with the bottom of the pusher track (see Detail A). The lever should be centered within the cup cutout (see Detail B and D). Remove cells 51/52



and 53/54 to gain access to the adjustment bolt (see Detail C). Loosen the nut with a 7/16" wrench. Adjust the bolt with a flat head screwdriver in order to center lever with the cutout. Tighten the nut against the arm to lock the shelf into place. Note: one full turn of the bolt is equal to .050".

Selection 58

Set X to 2864 (2860 for non wide door venders) and set Y so that the top of the cup lip is level with the bottom of the pusher track (see Detail A). The lever should be centered within the cup cutout (see Detail B and D). The cup hard stop should not hit the wall of the door (see Detail G). If so, back off the X setting until the interference is corrected. If the lever is not centered within the cutout, split the difference with Selection 52 (see Detail E and F) by adjusting the adjustment bolt mentioned above. Note: the X setting should be the same for both Selection 18 and 58.

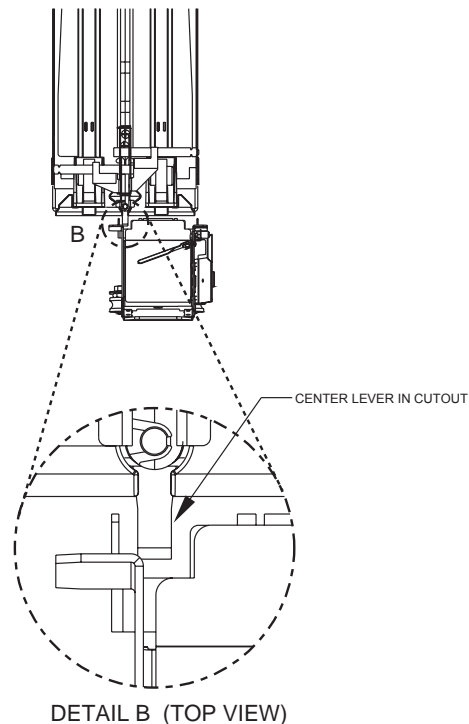
End

X should be set to the same setting as Selections 18 and 58 (approximately 2864). Set Y so that when the cup is engaged with the hook, the wall of the cup and cup floor are parallel to each other. Note: vend test a sold out column to ensure the magnet on the cup is making proper contact with the hall effect sensor.

Note: Selections 12, 18, 52 and 58 and End are all located under Product Location in the Service Menu of the software. The following steps should be followed in addition to those previously listed.

Selection 31

Test vend the selection. Place a package in the port once the cup leaves home in order to keep the cup at the cell. The lever should be centered within the cup cutout (see Detail B and D). The cup lip should be level with the bottom of the pusher track (see Detail A). Remove cells 31/32 and 33/34 to gain access to the adjustment bolt (see



SECTION 4: Vender Maintenance

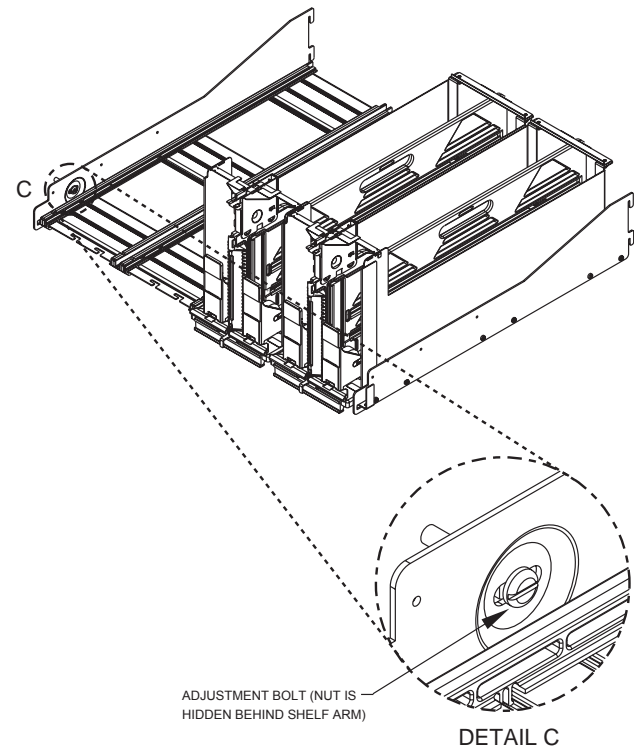
Detail C). Loosen the nut with a 7/16" wrench. Adjust the bolt with a flat head screwdriver in order to center the lever with the cutout. Tighten the nut against the arm to lock the shelf into place. Note: one full turn of the bolt is equal to .050".

Selection 38

Test vend the selection. Place a package in the port once the cup leaves home in order to keep the cup at the cell. The lever should be centered within the cup cutout (see Detail B and D). The cup lip should be level with the bottom of the pusher track (see Detail A). The cup hard stop should not be hitting the wall of the door (see Detail G). If the lever is not centered within the cutout, split the difference with Selection 31 (see Detail E and F) by adjusting the adjustment bolt mentioned above. Note: the X setting should be the same for Selections 18, 58 and 38.

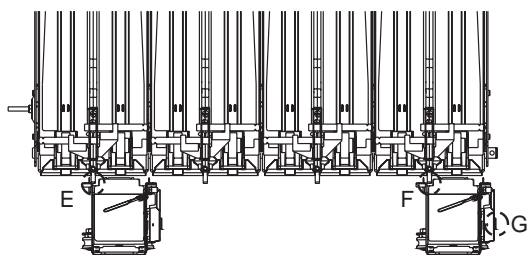
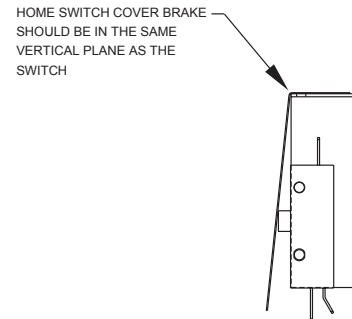
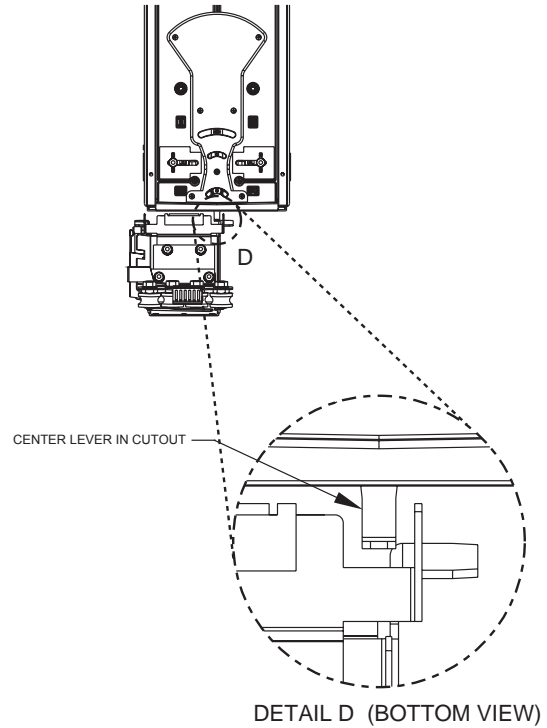
Selection 11

Test vend the selection. Place a package in the port once the cup leaves home in order to keep the cup at the cell. The cup lip should be level with the bottom of the pusher track (see Detail A). The lever should be positioned within the cup cutout the same as Selection 12. Check to ensure that the brake on the home switch cover is in the same vertical plane as the home switch (see home switch view).

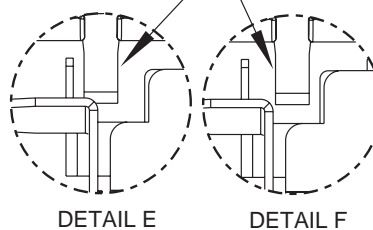


Selection 51

Test vend the selection. Place a package in the port once the cup leaves home in order to keep the cup at the cell. The cup lip should be level with the bottom of the pusher track (see Detail A). The lever should be positioned within the cup cutout the same as Selection 52. Check to ensure that the brake on the home switch cover is in the same vertical plane as the home switch (see home switch view).



SPLIT THE DIFFERENCE (OFF CENTER)



SECTION 5: Troubleshooting

Troubleshooting

The RVV is equipped with a self-diagnostic feature to aid in the repair and maintenance of the vender. When servicing the vender, pay close attention to the digital display. When the vender door is opened, the display will begin showing any error codes that are stored in memory. If there are no errors, the display will show “No Errors Found.”

To enter the Service Mode, press and release the Service Mode Button located on the controller. The display will show “Errors Were Detected” if there are recorded errors. If <enter> is pressed at the “Errors Were Detected” prompt, the controller will enter the error display mode. The display will show the first error summary code that has occurred.

If <enter> is pressed, the controller will display the detailed error for the summary code. The <up> and <down> buttons will cycle through any remaining error detail codes. If <exit> is pressed while displaying any *detailed* code, the controller will return to the summary code. If <exit> is pressed while displaying any *summary* code, the controller will return to the code level (“No Errors Found” or “Errors Were Detected”).

NOTE: When troubleshooting errors with peripherals, the appropriate peripheral service manual(s) should also be consulted for further tests and corrective actions.

Error Type	Detailed Error Code	Test Procedure	Corrective Action
Coin Changer (Coin Acceptor error)	Communication = Indicating no communication with changer for more than 2 seconds.	Check serial changer and MDB harness	Replace any harnessing found to be defective.
	Tube Sensing = Indicating a tube error.	Check changer tubes for blockage.	Clear tube blockage if found. If no blockage found replace changer.
	Inlet = Inlet chute blocked error (no coins sensed in the acceptor for over 96 hours).	Check inlet chute for blockage. Drop coins in Sales mode or Tube Fill mode to test acceptance. Manually clear the error.	Clear inlet chute blockage. If no blockage found, replace the changer. If acceptance rate is acceptable, system is probably OK. If acceptance rate is low or changer will not accept coins, replace changer.
	Low Acceptance Rate = Indicating more than 20% of the last 255 coins were rejected as slugs.	Check changer / acceptor for obstruction or dirt.	If no obstructions are apparent and the acceptance appears to be OK, this may be an indication of cheating attempts.
		Drop coins in Sale mode or Tube Fill mode to test acceptance.	If no obstruction are apparent and coins do not accept or acceptance rate is poor replace the changer / acceptor.
	Tube Jam XX = Indicating a tube jam for coin type XX.	Check changer tubes and payback for blockage.	Clear blockage, if found. If no blockage found, replace changer.
	ROM = Indicating a changer ROM checksum error.	Unplug machine and wait at least 5 seconds, replug machine. Manually clear error.	If error does not clear, replace the changer.
	Excesses = Indicating more than 255 attempts since the last coin was accepted.	Check escrow lever and associated mechanisms.	If vendor returns to Sales mode from open door mode without input, replace changer / acceptor.
		Go to open door mode and wait for 30 seconds. Manually clear the error.	If it stays in the Open Door mode and the manually cleared error does not reoccur, system may be OK.
	Coin Jam = Indicating a coin jam.	Check changer / acceptor for jammed coins or other obstructions.	If no obstructions are found, replace the coin acceptor.
Disconnected Acceptor = Indicating an unplugged acceptor or harnessing.			
Misrouted Coin = Indicating a coin had been improperly routed.			

SECTION 5: Troubleshooting

Error Type	Detailed Error Code	Test Procedure	Corrective Action
Bill Validator (Bill Acceptor error)	Communication = Indicating no bill validator communications for more than 5 seconds.	Check serial changer and MDB harnessing.	
	Full = Indicating a full bill stacker.	Ensure bill cash box is empty and that the cash box is properly closed and in place.	If cash box appears to be OK, replace the bill acceptor.
	Motor = Indicating a defective motor.	No test available.	Replace bill acceptor.
	Jam = Indicating a bill jam error.	Check bill acceptor for obstruction or dirt.	If no obstructions are apparent, replace the bill acceptor.
	ROM = Indicating a bill acceptor ROM checksum error.	Unplug machine and wait at least 5 seconds, then replug machine. Manually clear error.	If error does not clear, replace the bill acceptor.
	Open = Indicating that the stacker is open.	Check that bill cash box is closed and in correct position.	If cash box appears to be OK, replace the bill acceptor.
	Sensor = Indicating a bill sensor error.	Check bill acceptor for obstruction or dirt.	If no obstructions are apparent, replace the bill acceptor.
Card Reader (Card Reader error)	Communication = Indicating no card reader communication for more than 5 seconds.		
	Card Reader Error XX = Indicating that a particular type of card reader malfunction occurred, where XX indicates the error type.	No test available.	Refer to card reader manual for corrective action.
Refrigeration (Refrigeration errors)	Temperature Sensing = Indicating an unplugged temperature sensor.	Check the temperature sensor connection at the control board to make sure it is plugged in. Check that it is wired properly and the pins are making contact.	If the sensor is unplugged, replug it. If it is miswired, replace the temperature sensor. If the connections are bad, attempt to repair them or replace sensor.
	Too Cold = Indicating temperatures 3 degrees below the compressor cut-out setting.	<ol style="list-style-type: none"> 1. Check the refrigeration unit before opening the vendor's main door to see if it's running. 2. Open the main door to see if the unit cuts off. 3. Make sure the vendor's door switch is working properly. 4. Unplug one of the two white wires plugged into the refrigeration relay. 	<p>If upon unplugging the white wires the unit stops:</p> <ol style="list-style-type: none"> 1. Check the temperature sensor's reading. 2. Check SetP (set point) settings. 3. Check the white wires for shorts from the control board. 4. If upon unplugging one of the white wires the unit still runs, unplug one of the black wires. If the unit stops, replace the refrigeration relay. If optional heater relay kit is not installed, one may be required. 5. If heater kit is installed and heater does not turn on (heater relay does not click upon energizing in heater relay test mode), check the two white wires from the board to the heater relay for 24VDC. Check the other wire for continuity between the control board and the relay. If voltage is OK, replace the relay; otherwise, replace control board.
	Too Hot = Indicating temperatures 3 degrees above compressor cut-in setting.	Proceed with normal refrigeration troubleshooting. Refer to the refrigeration flow chart.	

SECTION 5: Troubleshooting

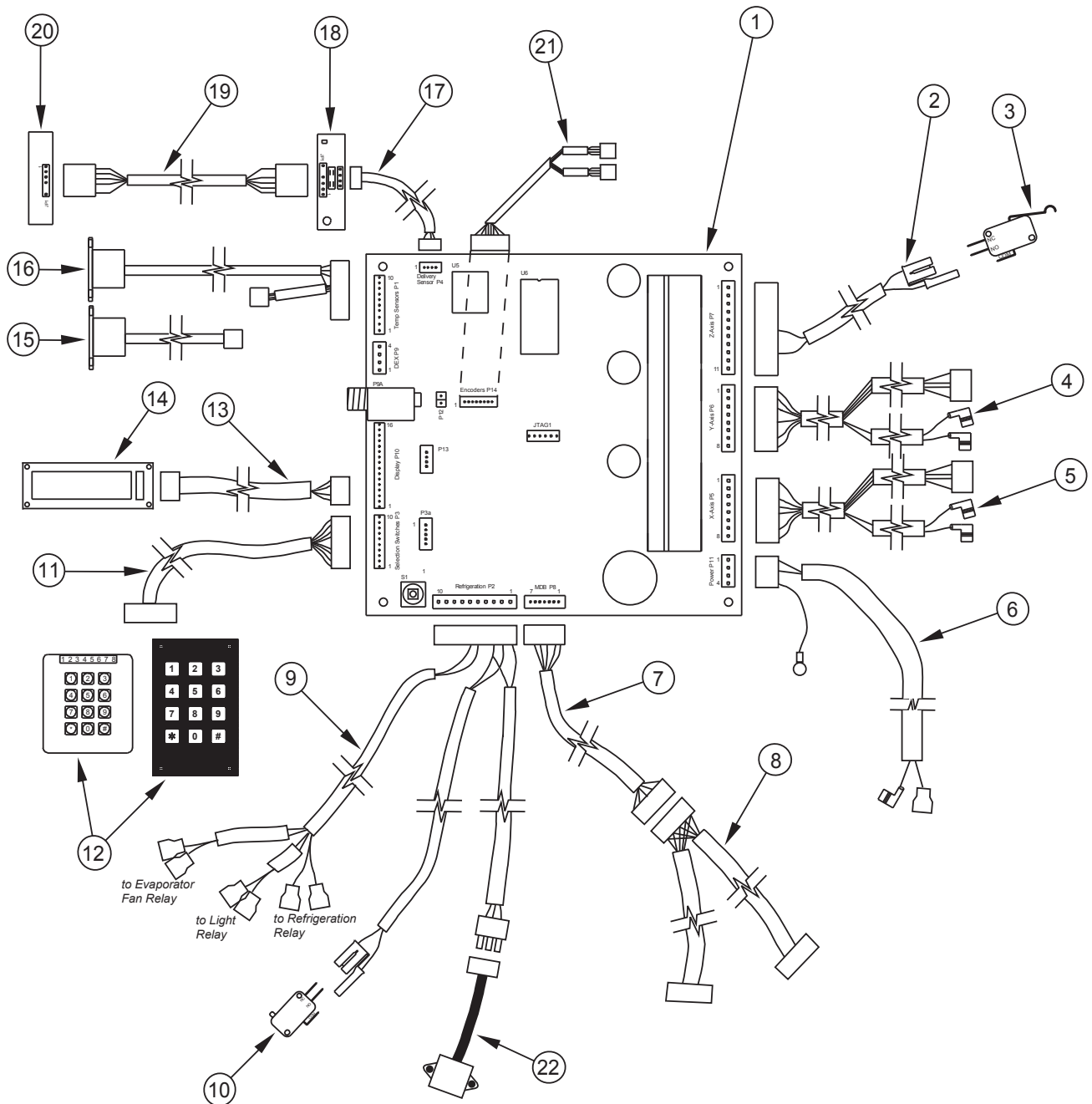
Error Type	Detailed Error Code	Test Procedure	Corrective Action
Refrigeration (Refrigeration errors)	No Heating = Indicating heating system not heating at 1 degree per hour or better when on.	Proceed with normal refrigeration troubleshooting. Refer to the refrigeration flow chart.	
	No Cooling = Indicating that the compressor is not cooling at 1 degree per hour or better when on.	<ol style="list-style-type: none"> 1. Check the refrigeration unit before opening the vendor's main door to see if the unit is running. 2. Open the vendor's main door, and check the display to see that the door switch is working as normal. 3. Access the Refrigeration Mode, and check the Set Point settings. 4. While in the Refrigeration Mode, change 'dSP' to 1 to show the temperature on the display during the greeting to see if it's correct. 5. While in the Test Mode, access the Test Relays Mode, and turn compressor on. 	<ol style="list-style-type: none"> 1. If the unit is running, clear the error to see if it reoccurs. 2. If the display does not function as normal, check the door switch circuit. 3 & 4. Change any setting if necessary and check temperature sensor operation. 5. If the unit does not run (refrigeration relay not clicking upon energizing with the relay test mode), check the two white wires from the board to the refrigeration relay for voltage (should be 24VDC on one of the two wires). Check the other wire for continuity between the control board and relay. <p>Note: The compressor relay must be on to check voltage.</p>
Control (Controller errors)	Door = Indicating the door switch has been open for more than one hour.	Check the vendor's door switch to see if it's sticking or miswired. If nothing is found at the door switch, check the two wires from the door switch to the control board to see if they are pinched or shorted.	Replace the door switch, if defective. Repair or replace the door switch harness to the control board.
	RAM = Indicating the machine setup information has been corrupted	No test available.	If error shows up frequently, replace the control board and contact Royal Vendors.
	AC Under Voltage = Indicating that the average rectified voltage was under 22VAC for more than 30 seconds.	Check for low voltage at the wall outlet at unit startup with all else on circuit running in an "extreme" condition.	If low voltage can't be found on the wall outlet in an extreme condition, check for shorts in the vendor.
	AC Over Voltage = Indicating that the average rectified voltage was over 32VAC for more than 30 seconds.	Check for high voltage at the wall outlet at the startup with all else on circuit running in an "extreme" condition.	
	System Scale Factor = Indicating one of the credit peripherals has introduced an incompatible scaling factor.	Check the connections of the changer harness. Make sure changer is plugged up and working.	Make connections to the harness or replace the changer, if necessary.
	Lost XY Position = Indicating that the controller is unable to establish where the elevator mechanism is located in its matrix.		

SECTION 5: Troubleshooting

Error Type	Detailed Error Code	Test Procedure	Corrective Action
Miscellaneous	Horiz. Home Switch = Indicating a problem with the horizontal home switch.	Check for 5 volts DC to the violet and grey wires at the vertical home switch. Check that the terminals are connected to the Com and the NO positions on the home switch.	<ol style="list-style-type: none"> 1. If 5 volts DC is found, replace the home switch. 2. If voltage is not present, check pins 7 & 8 at pinout 5 on the control board for 5 volts DC. If no voltage is found, replace the board. 3. If voltage is found from the board, check the wiring from the board to the home switch for cut or broken wires. Replace the wiring harness, if needed.
	Sliding Port Switch = Indicating that there is a problem with the switch that detects the position of the sliding door.	Check for 5 volts DC from the orange and blue wires going to the sliding port switch. Check that the terminals are connected to the COM and NC positions on the switch.	<ol style="list-style-type: none"> 1. If 5 volts DC found, replace the slide switch. 2. If no voltage is found, check for 5 volts DC at pins 6 and 9 at pinout 7 on the control board. If none found, replace the control board. 3. If 5 volts DC found at the control board check the wiring from the board to the switch for cut or broken wires. Replace the harnessing to the switch, if needed.
	Product Undeliverable = Indicating that there is a problem with the optical delivery detection system, or perhaps a product has been left in the delivery bin.	Check delivery bin for obstruction.	Remove any obstruction found in the delivery bin.
		Check that the wiring from the board to the delivery detection board and the emitter board are connected properly.	Reconnect the wiring properly.
Unknown = Indicating that an error has occurred which is of unknown cause.			

SECTION 6: Parts Catalog

RVV Control Board



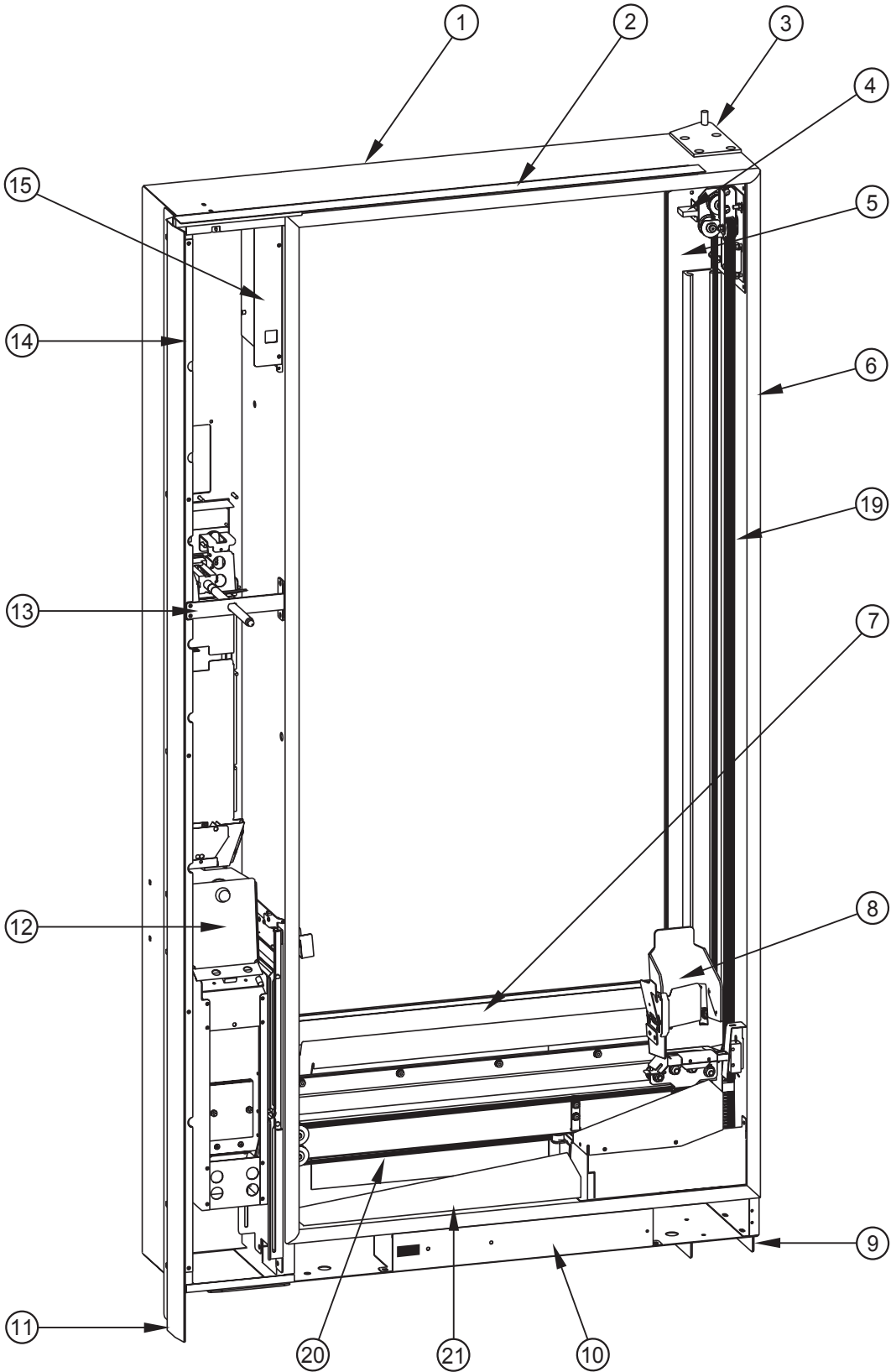
SECTION 6: Parts Catalog

RVV Control Board

ITEM #	DESCRIPTION	PART NUMBER
1	RVV Control Board	836151
2	Delivery Bin Harness	842485
3	Gate Switch	835022
4	Y-Axis Motor Harness	842488
5	X-Axis Motor Harness	842487
6	24 VAC Power Harness	842477
7	MDB Harness - RVV	842480
8	Split MDB Harness	842116
9	Refrigeration Harness	842482
10	Door Switch	835001
11	Keypad Harness	842478
	Touchpad Harness	Not available separately
12	Keypad	842476
	Touchpad (includes harness)	842500
13	Display Harness, Serial	842498
14	Vacuum Fluorescent Display, Serial (VFD)	836162
15	Health Safety Sensor (optional)	842497
16	Temp / Health Sensor Harness	842481
17	Delivery Detection Harness	842484
18	Detector Board	842426
19	Del. Detection Emitter Harness	842483
20	Emitter Board	842427
21	Motor Encoder Harness - RVV	842486
22	Product Sensor (Hall Effect)	842515
	- Old-style Product Sensing Switch	835001
•	Electronic Door Lock Harness, Door Side (if equipped)	842496
•	Electronic Door Lock Harness, Cabinet Side (if equipped)	842465

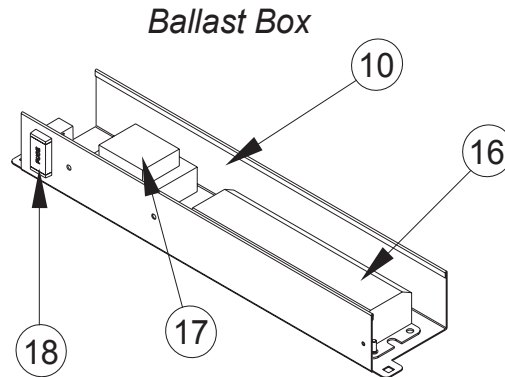
SECTION 6: Parts Catalog

Door Assembly, Rear



SECTION 6: Parts Catalog

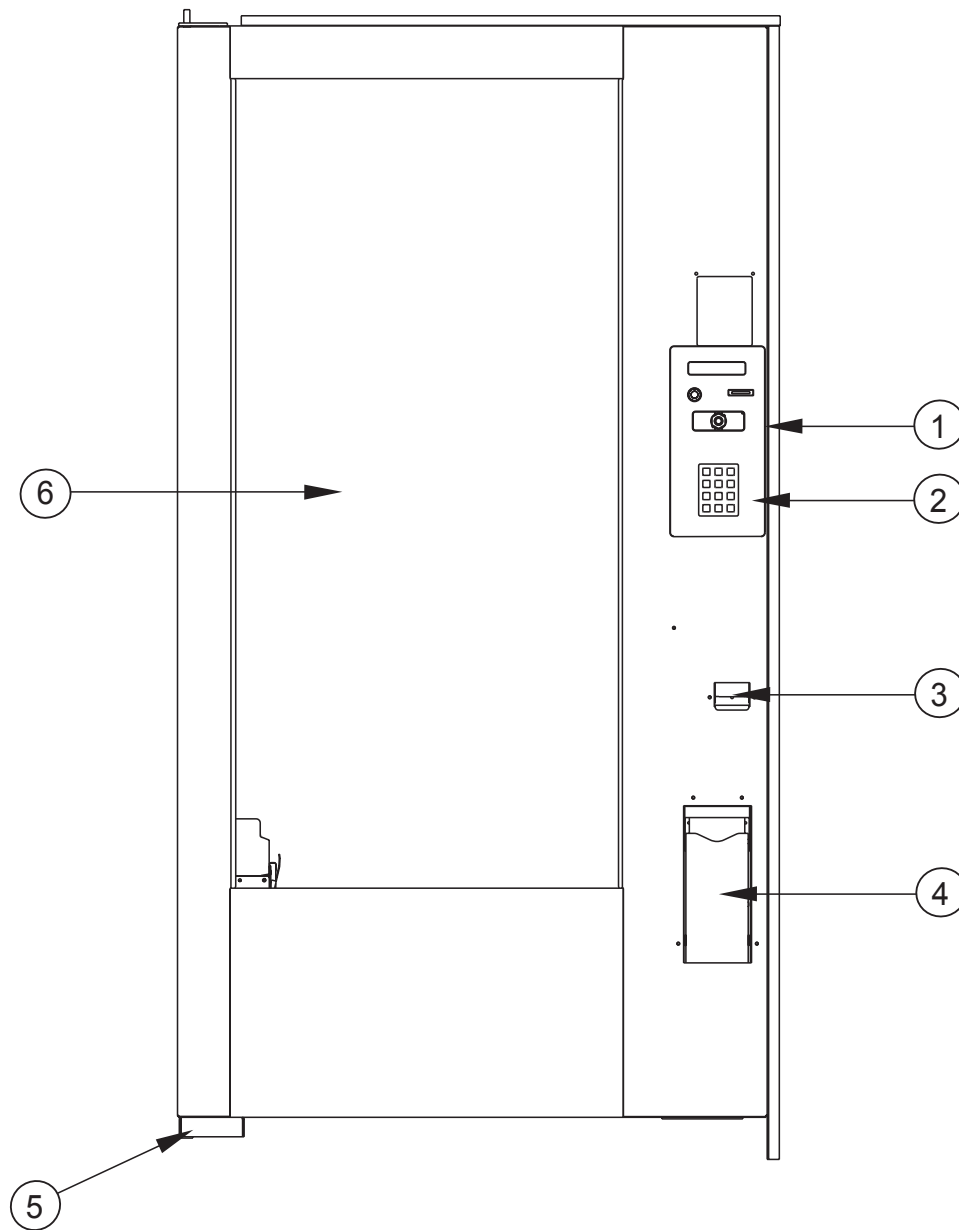
Door Assembly, Rear



ITEM #	DESCRIPTION	PART NUMBER
1	Door Foamed Assembly RVV, T-handle Lock	337530
	- TriTeq Lock	350520
2	Rain Guard RVV	337581
3	Top Door Hinge Assembly RVV	810120
4	Lampholder RVV	842475
5	Glass Retainer, Left	337593
	- Right	337594
6	Main Door Gasket RVV	815483
7	Glass Retainer Top & Bottom	337547
8	Elevator Cup Assembly	337897
9	Bottom Hinge W/A	337599
10	Ballast Box	337588
11	Door Vandal Panel RVV	337539
12	Coin Box RVV, T-handle	337566
	- TriTeq Lock	350550
13	Stud Brace RVV	337532
14	Harness Retainer RVV	337584
15	Control Board Housing	337592
	- Board Cover	337578
16	Electronic Ballast	838033
17	Transformer Assembly	842147
18	Fusebox Assembly	842219
19	Y-Axis Belt	337865
20	X-Axis Belt	337864
21	Product Slide, Bottom Door RVV	995330
	• Lock Housing, TriTeq only	350590
	• Coin Box Housing RVV, TriTeq only	350504
	• Wiring Diagram	931525
	• Programming Label RVV	931540
	• Harness, EMI Filter to Ballast and Transformer	842389

SECTION 6: Parts Catalog

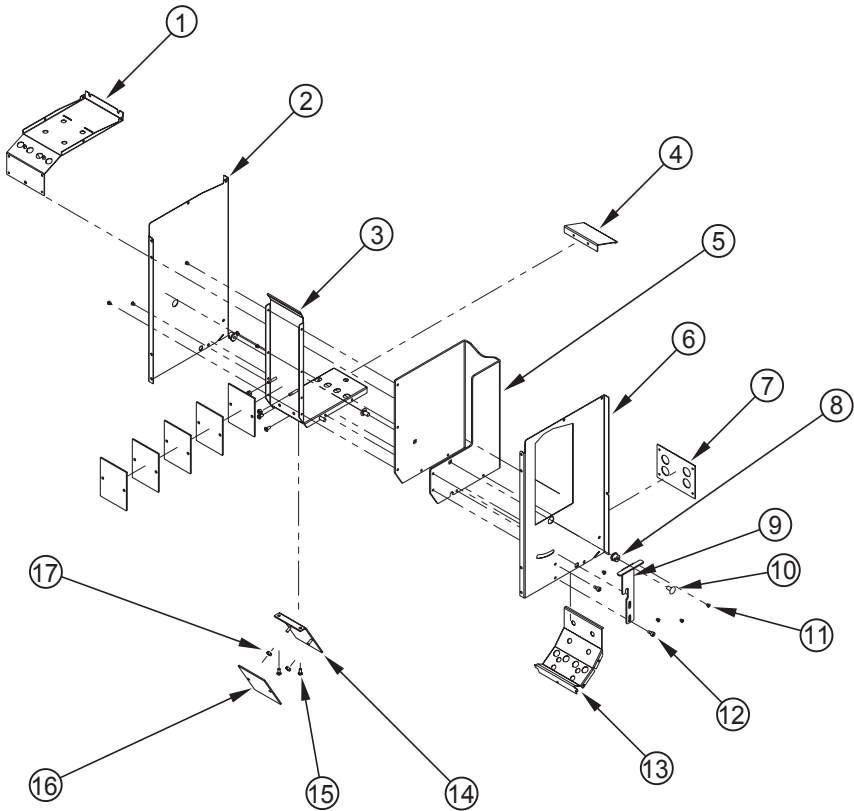
Door Assembly, Front



ITEM #	DESCRIPTION	PART NUMBER
1	Security Plate Assembly RVV, T-handle Lock	337570
	- TriTeq Lock	350530
2	Security Plate Decal RVV, T-handle Lock	831535
	- TriTeq Lock	831588
3	Coin Cup Assembly	337589
4	Port Assembly RVV	337550
5	Bottom Hinge W/A	337599
6	Tempered Glass Panel	849171

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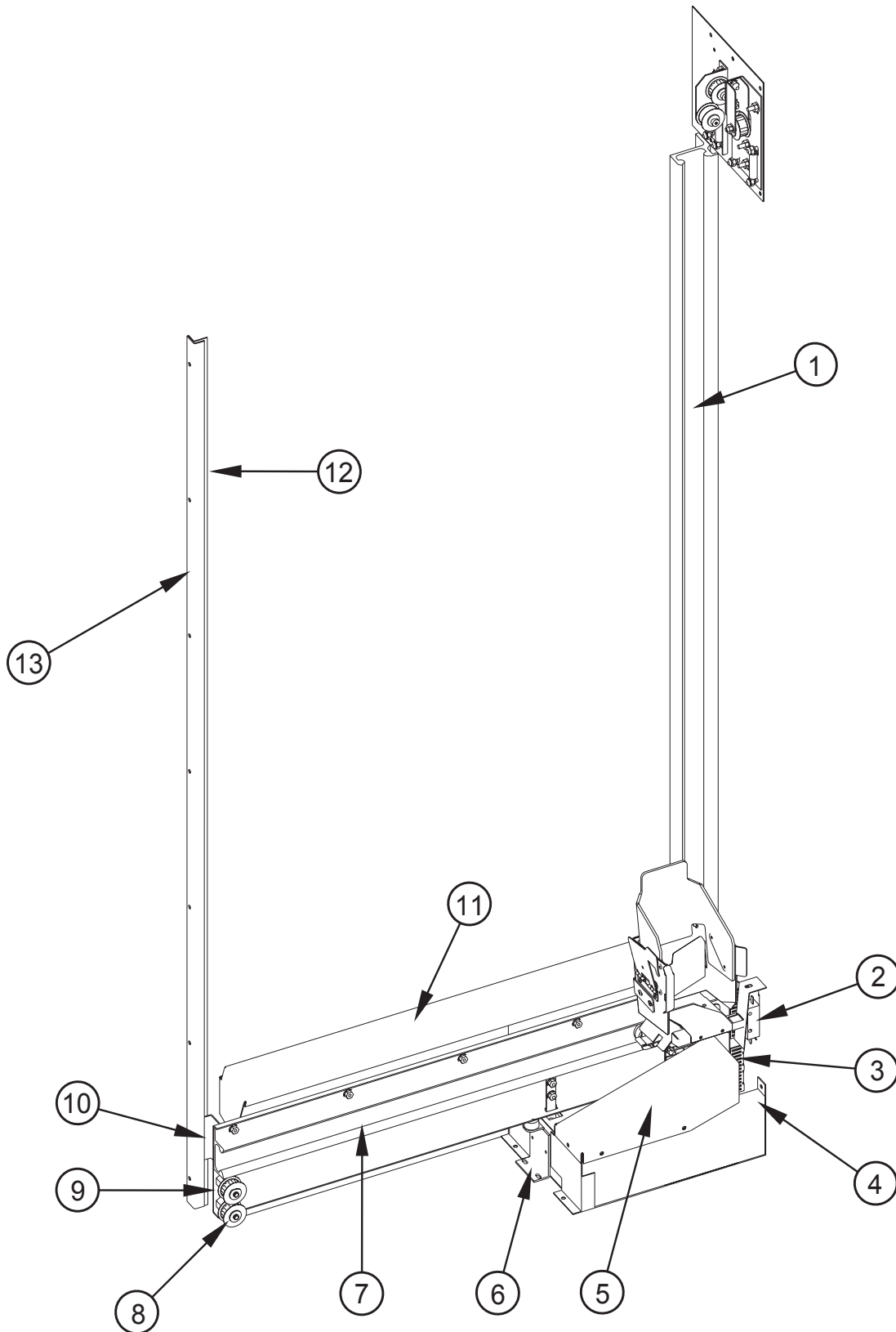
Port Assembly 337550



ITEM #	DESCRIPTION	PART NUMBER
1	Port Housing Top	337553
2	Port Housing Right	337522
3	Port Box Bottom	337595
4	Port Box Ramp	337527
5	Port Box Wrapper	815536
6	Port Housing Left	337521
7	Port Housing Back	337531
8	Nut, Port RVV	803079
9	Port Latch	337576
10	Carriage Bolt	901007
11	Rivet, 1/8" x 0.328	908007
12	Shoulder Screw	901073
13	Port Housing Bottom	337524
14	Weight Bracket	337598
15	Screw, 8-32 x 3/8"	901011
16	Port Box Weight	337528
17	Keps Nut	905001
•	Detector Board	842426
•	Emitter Board	842427

SECTION 6: Parts Catalog

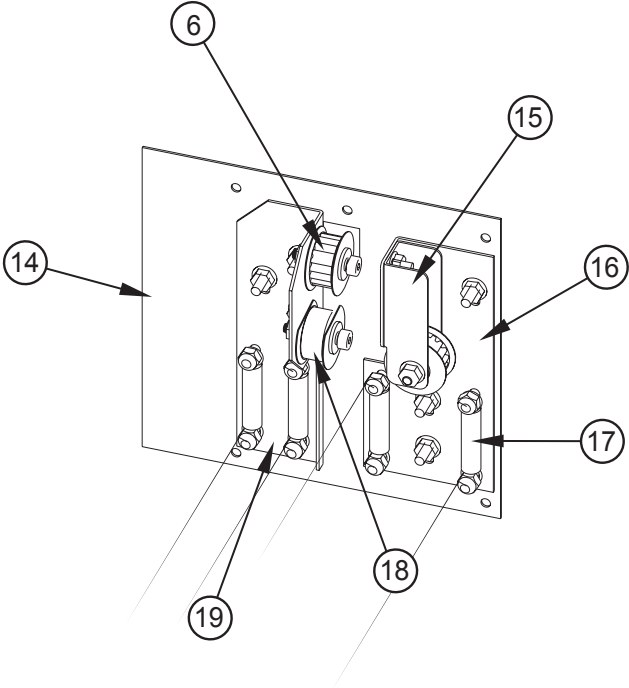
Elevator Mechanism 350898



SECTION 6: Parts Catalog

Elevator Mechanism

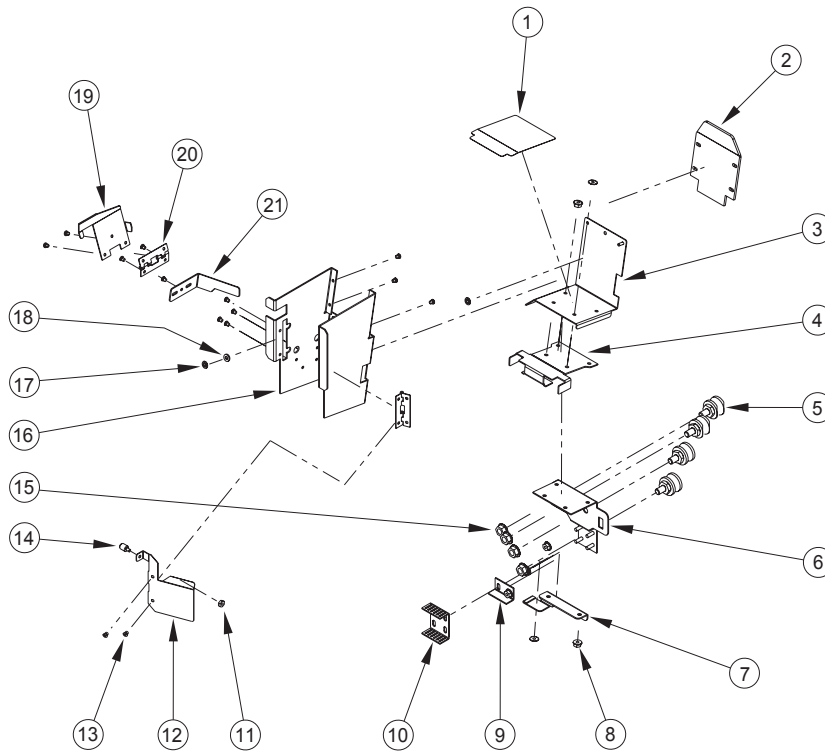
Upper Idler Subassembly
337894



ITEM #	DESCRIPTION	PART NUMBER
1	Vertical Track RVV	813034
2	Switch	835012
3	Belt Clamp	337808
4	Motor Cover RVV	337841
5	Secondary Motor Cover	337857
6	Bottom Arm Stop	337842
7	Horizontal Track RVV	813035
8	Grooved Belt Idler	337878
9	Elevator Arm	337868
10	Arm Endpiece Stud Assembly	337871
11	Lower Bottle Kicker	337843
12	Locator Bracket	337836
13	Arm End Guide	337869
14	Upper Adapter Plate	337886
15	Upper Idler Cage	337830
16	Upper Idler Mount, Rear	337884
17	Spring	914038
18	Smooth Belt Idler	337877
19	Upper Idler Mount, Front	350885

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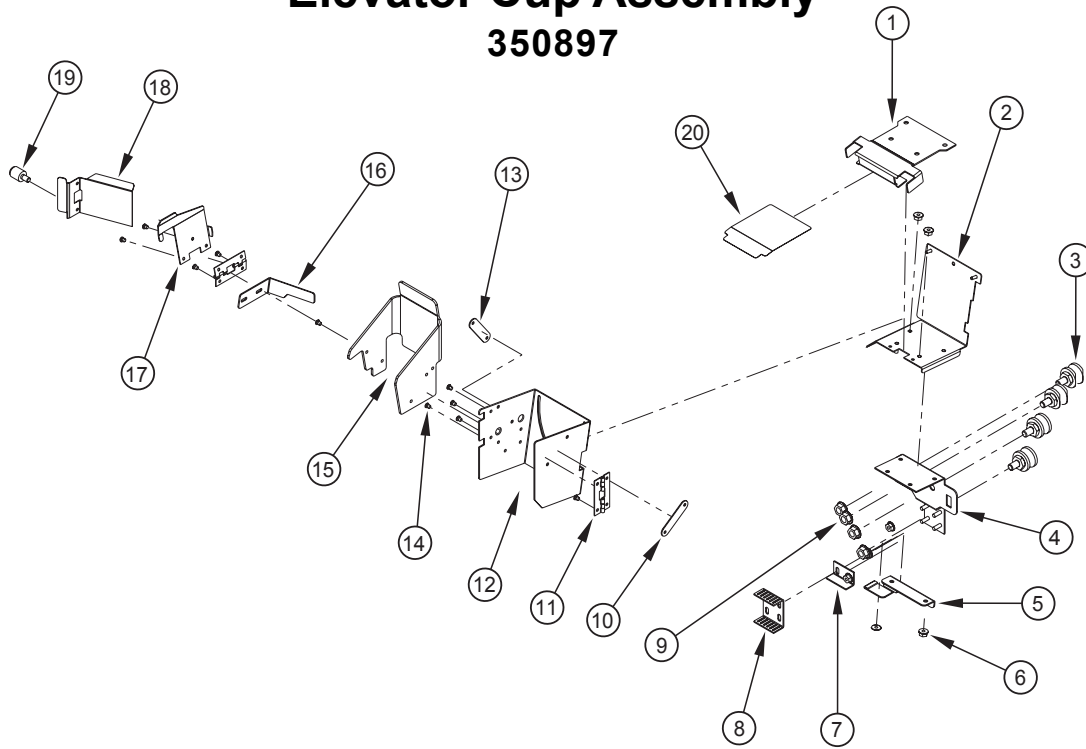
Narrow Elevator Cup Assembly 350896



ITEM #	DESCRIPTION	PART NUMBER
1	Anti-friction Sheet RVV	815560
2	Package Stabilizer	350809
3	Bottom Plate, Narrow Cup	350811
4	Cup Lip, Extended Travel	350812
5	Wheel / Stud Assembly	337879
6	Elevator Cup Mounting Plate	337888
7	Port Open Bracket	337822
8	Flange Nut, #8-32	905035
9	Belt Clamp Bottom Cup	337806
10	Belt Clamp Top Cup	337805
11	Keps Nut, #6-32	905018
12	Product Sensing Lever, Narrow Cup	350807
13	Pop Rivet	908004
14	Magnet Assembly, Product Sensor	350899
15	Flange Nut, 5/16" - 18	905034
16	Rotating Cup	350808
17	Palnut (Push Retainer)	905039
18	Washer, Nylon	904029
19	Cup Trip Arm	350810
20	Spring Hinge	912156
21	Cup Tilt Brace	337825

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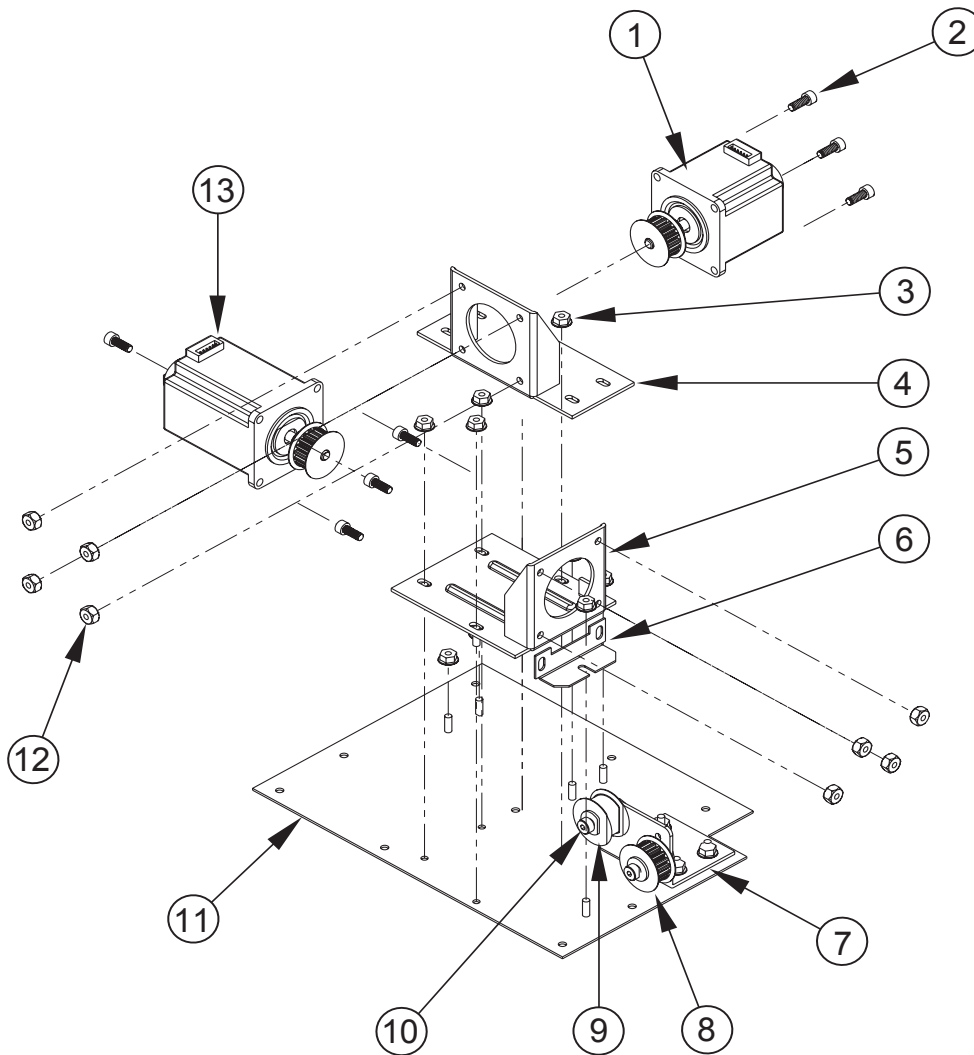
Elevator Cup Assembly 350897



ITEM #	DESCRIPTION	PART NUMBER
1	Cup Lip	350805
2	Cup Bottom Plate	337887
3	Wheel / Stud Assembly	337879
4	Elevator Cup Mounting Plate	337888
5	Port Open Bracket	337822
6	Flange Nut, #8-32	905035
7	Belt Clamp Bottom Cup	337806
8	Belt Clamp Top Cup	337805
9	Flange Nut, 5/16"-18	905034
10	Cup Rivet Plate RH	337854
11	Spring Hinge	812382
12	Rotating Cup	337823
13	Cup Rivet Plate	337854
14	Pop Rivet	908004
15	Package Stabilizer Cup	815549
16	Cup Tilt Brace	337825
17	Cup Trip Arm	337821
18	Product Sensing Lever	337839
19	Magnet Assembly, Product Sensor	350899
20	Anti-friction Sheet RVV	815560
•	Keps Nut, #6-32 (secures Magnet Assembly)	905018
•	Blind Rivet, 1/8"	908026
•	Washer, Nylon	904029
•	Palnut (Push Retainer)	905039

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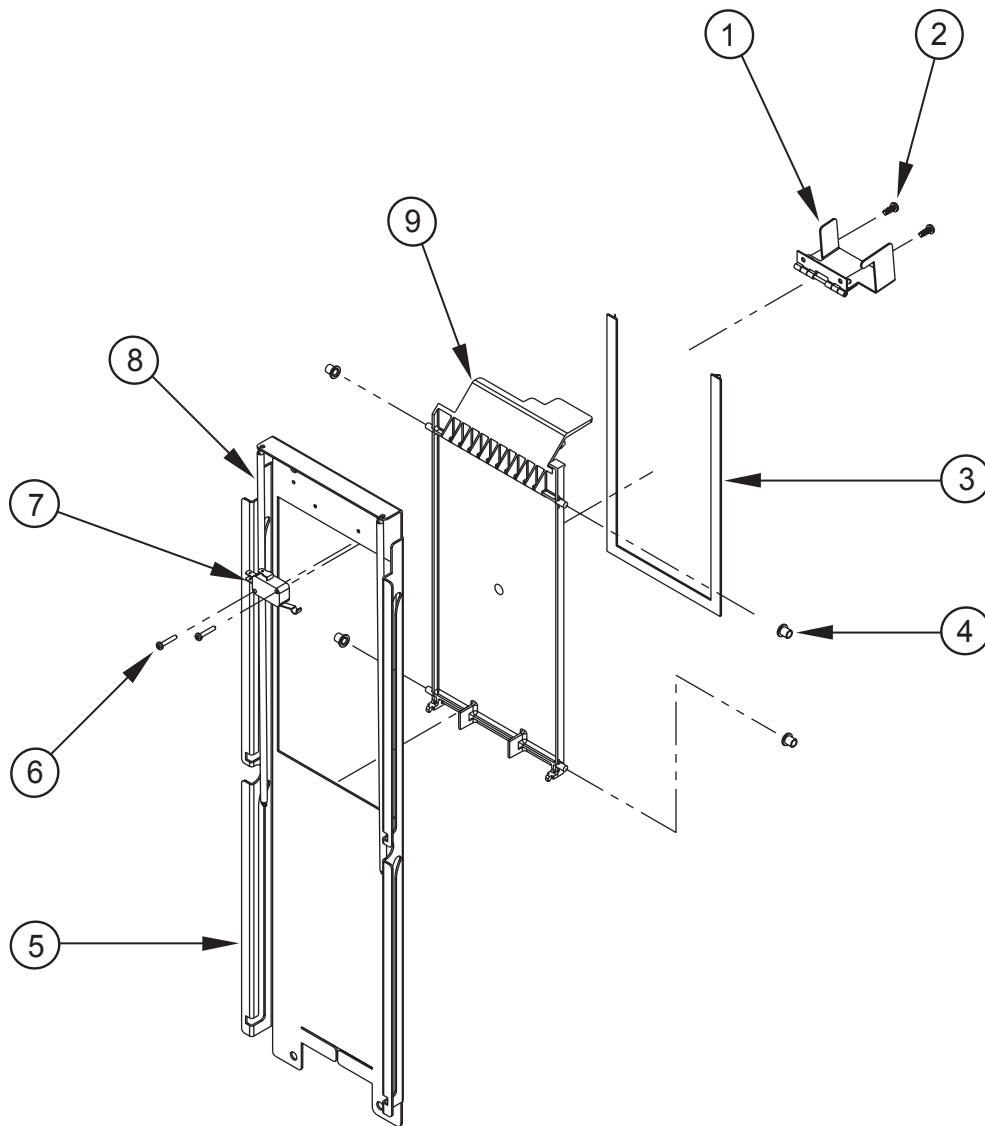
Lower Drive Subassembly 337895



ITEM #	DESCRIPTION	PART NUMBER
1	X-Axis Motor Assembly (shorter motor)	355805
2	Screw, 10-24 x 0.5 SS	901081
3	Flange Nut, 8-32	905035
4	Motor Mount, Cup Drive	337816
5	Motor Mount, Arm Drive	337815
6	Vertical Motor Stabilizer	337838
7	Idler Bracket, Bottom	337817
8	Grooved Belt Idler	337878
9	Smooth Belt Idler	337877
10	Shoulder Bolt	901078
11	Adapter Plate, Lower	337890
12	Nylon Lock Nut	905032
13	Y-Axis Motor Assembly (longer motor)	337876

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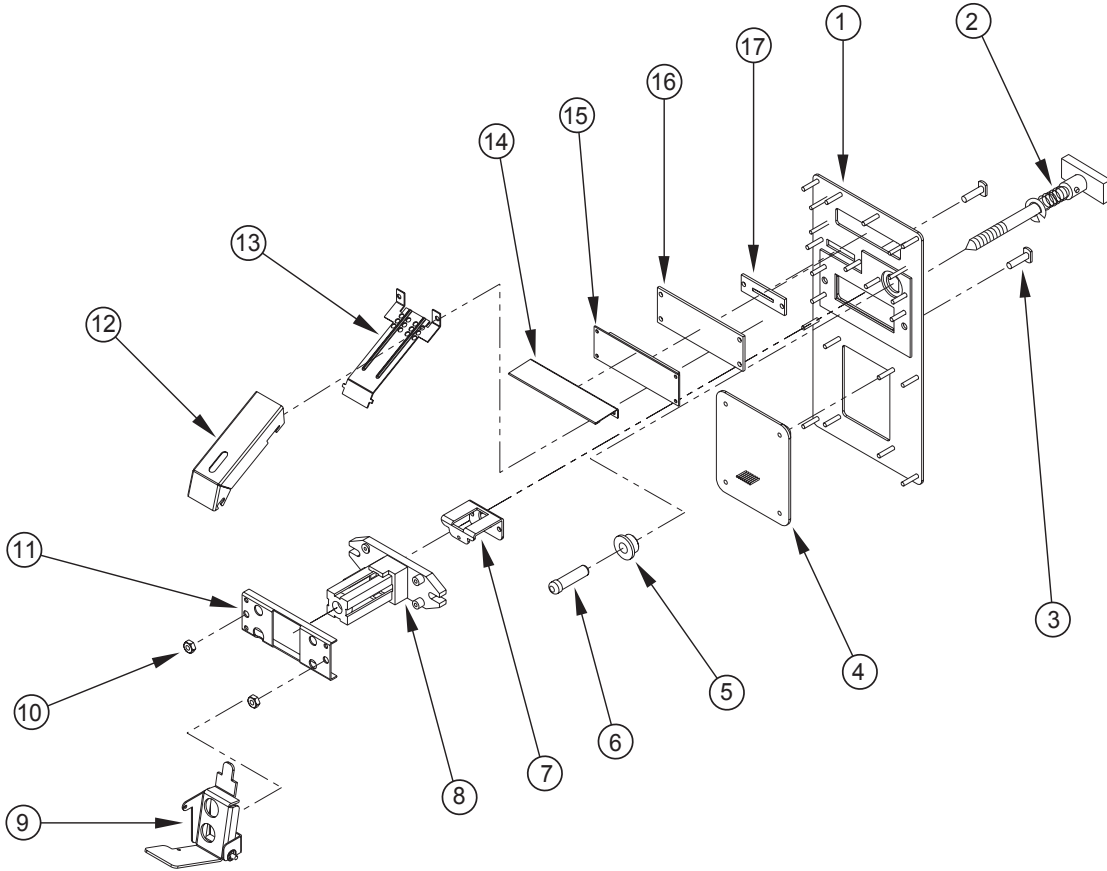
Port Door & Slide Assembly RVV 350553



ITEM #	DESCRIPTION	PART NUMBER
1	Port Door Latch Assembly RVV	350583
2	Screw, #6 x 3/8"	902027
3	Gasket, Port Door RVV	815562
4	Bushing, Delivery Door RVV	803092
5	Delivery Door Slide RVV	350549
6	Screw, Sheet Metal, #4 x 5/8"	902009
7	Gate Switch	835022
8	Spring Extension, Port Door RVV	914037
9	Delivery Door RVV	815545

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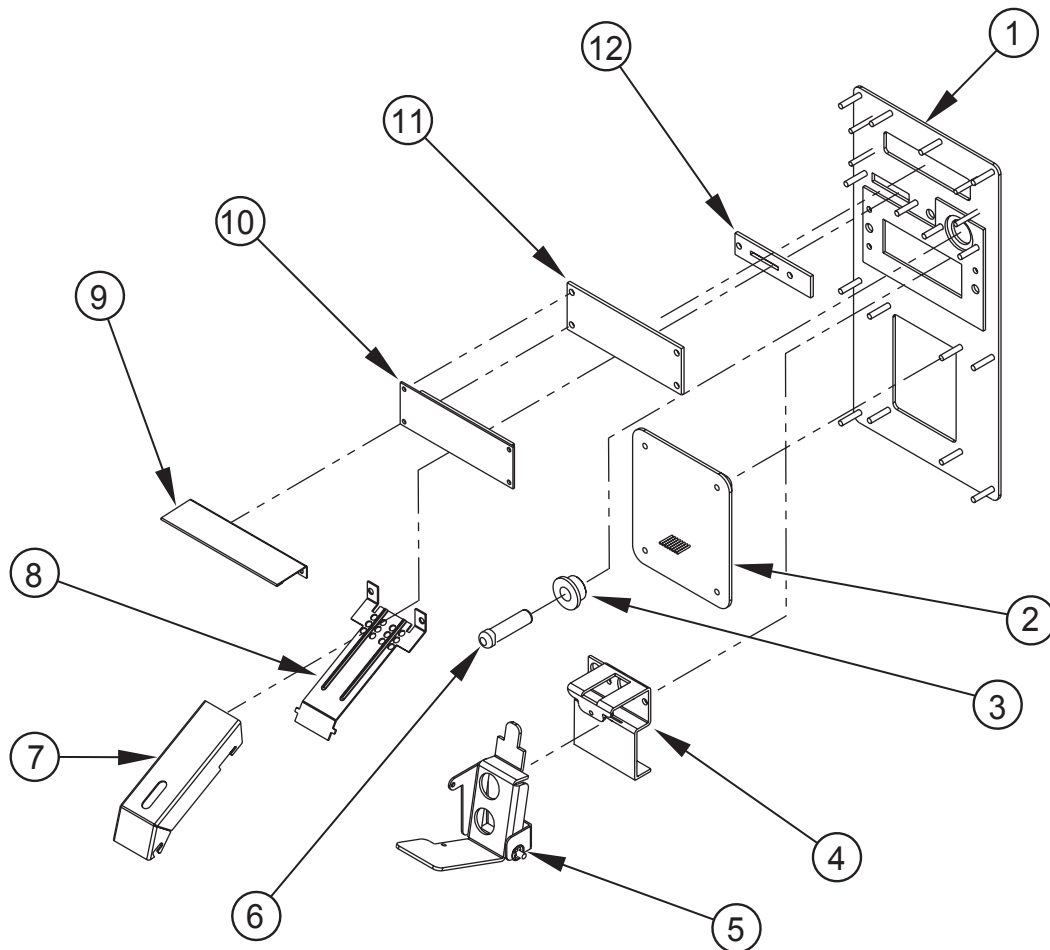
Security Plate Assembly RVV, T-handle Lock 337570



ITEM #	DESCRIPTION	PART NUMBER
1	Security Plate Weld Assembly RVV, T-handle Lock	337590
2	T-handle Assembly RVV	812370
3	T-bolt, 1/4-20 x 1	901037
4	Keypad	842476
	Touchpad	842502
5	Coin Return Bushing	803059
6	Coin Return Button	803031
7	Bushing Retainer RVV, T-handle Lock	337556
8	T-handle Housing	812190
9	Coin Return Assembly RVV	337580
10	Keps Nut	905002
11	T-handle Brace RVV	337583
12	Coin Chute Cover RVV, T-handle	337562
13	Coin Chute RVV, T-handle	337561
14	Display Cover RVV	337582
15	Vacuum Fluorescent Display (VFD)	836144
16	Display Window RVV	815515
17	Coin Plate RVV, T-handle Lock	337559

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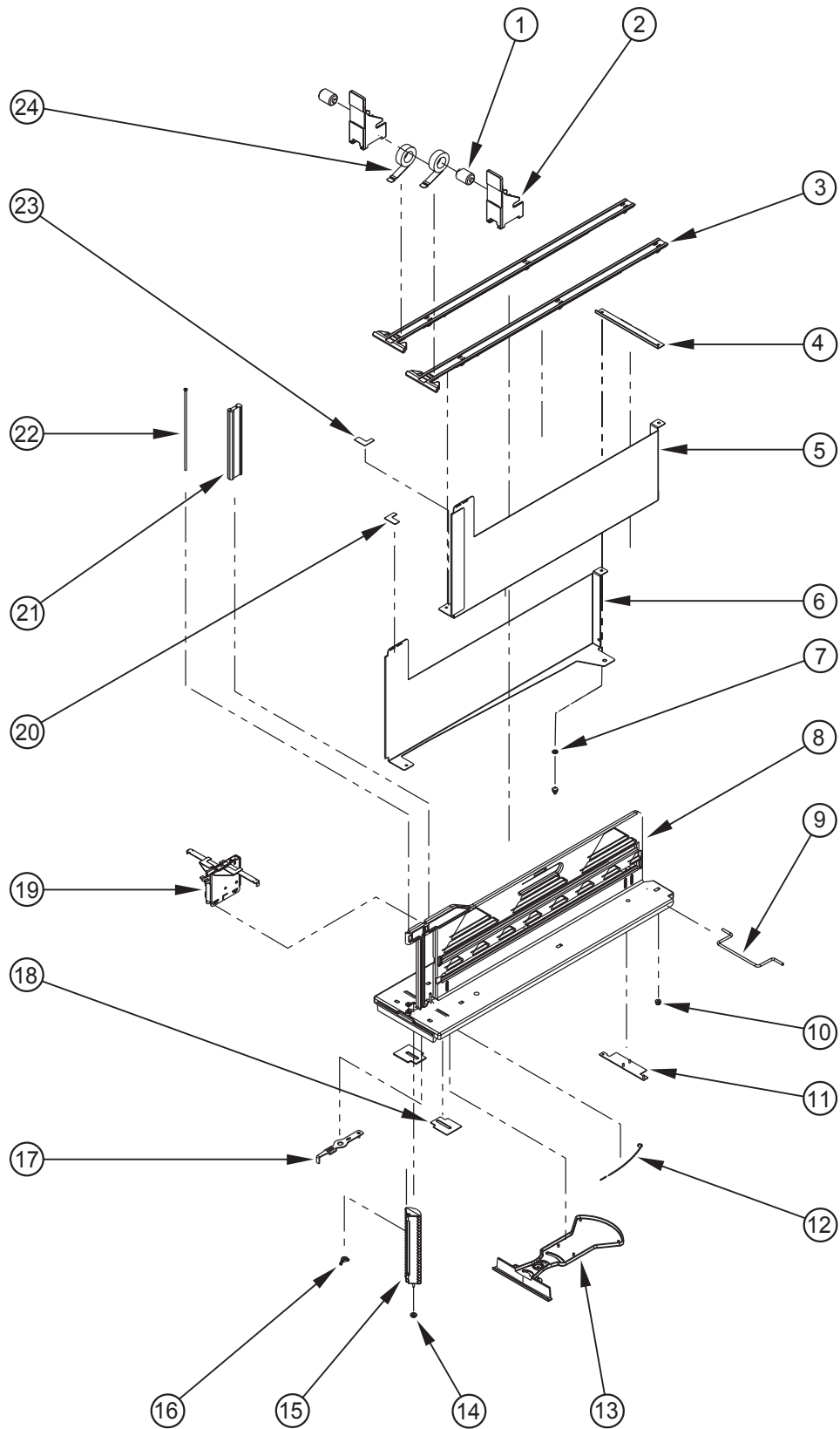
Security Plate Assembly RVV, TriTeq Lock 350530



ITEM #	DESCRIPTION	PART NUMBER
1	Security Plate Weld Assembly RVV, TriTeq Lock	350540
2	Keypad	842476
	Touchpad	842502
3	Coin Return Bushing	803059
4	Bushing Retainer RVV, TriTeq	350509
5	Coin Return Assembly RVV	337580
6	Coin Return Button	803031
7	Coin Chute Cover RVV	337562
8	Coin Chute RVV	337561
9	Display Cover RVV	337582
10	Vacuum Fluorescent Display	836144
11	Display Window RVV	815515
12	Coin Plate RVV, TriTeq	350508

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Cell Assembly RVV 337755



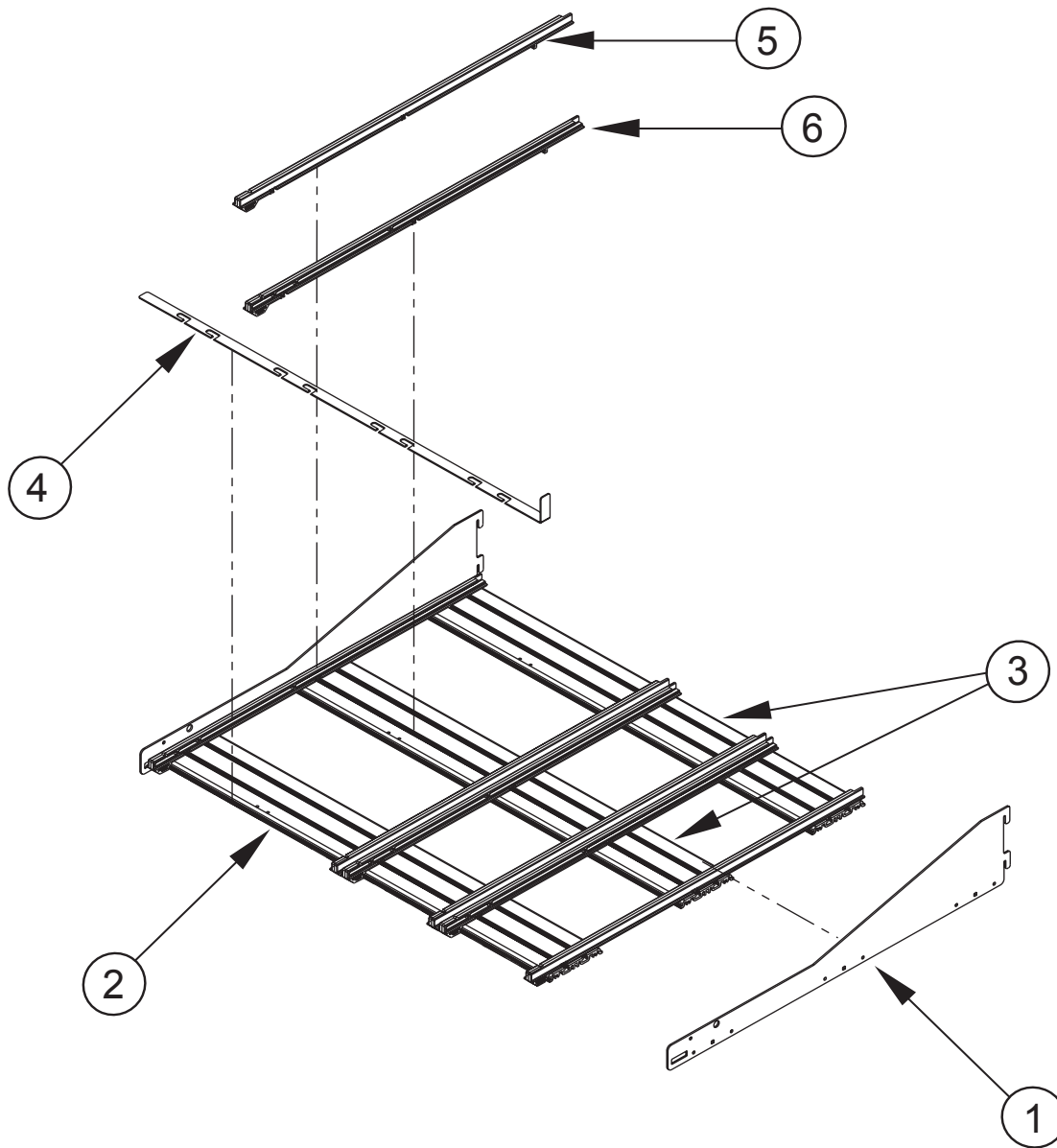
SECTION 6: Parts Catalog

Cell Assembly RVV 337755

ITEM #	DESCRIPTION	PART NUMBER
1	Negator Drum, Bottom Slide RVV	803089
2	Pusher, Bottom	815553
3	Track, Pusher	815554
4	Cell Wall Tie Strap	337771
5	Cell Wall Assembly, Right	337748
6	Cell Wall Assembly, Left	337749
7	Nylon Washer	904029
8	Cell Base	815544
9	Slide-Tilt Wire	811059
10	Elastic Stop Nut	905004
11	Wire Cover RVV	337709
12	Sold-Out Spring RVV	914033
13	Actuation Cover	815500
14	Rotator Bushing RVV	815531
15	Cell Rotator	815498
16	Wing Nut #8-32	905027
17	Product Release Lever RVV	810218
18	Washer, Cell Wall RVV	337719
19	Center Support Assembly RVV	337743
20	Cell Setup Decal, Left	931578
21	Stop Gate	815499
22	Pivot Pin	811062
23	Cell Setup Decal, Right	931579
24	Negator Spring RVV	914043

SECTION 6: Parts Catalog

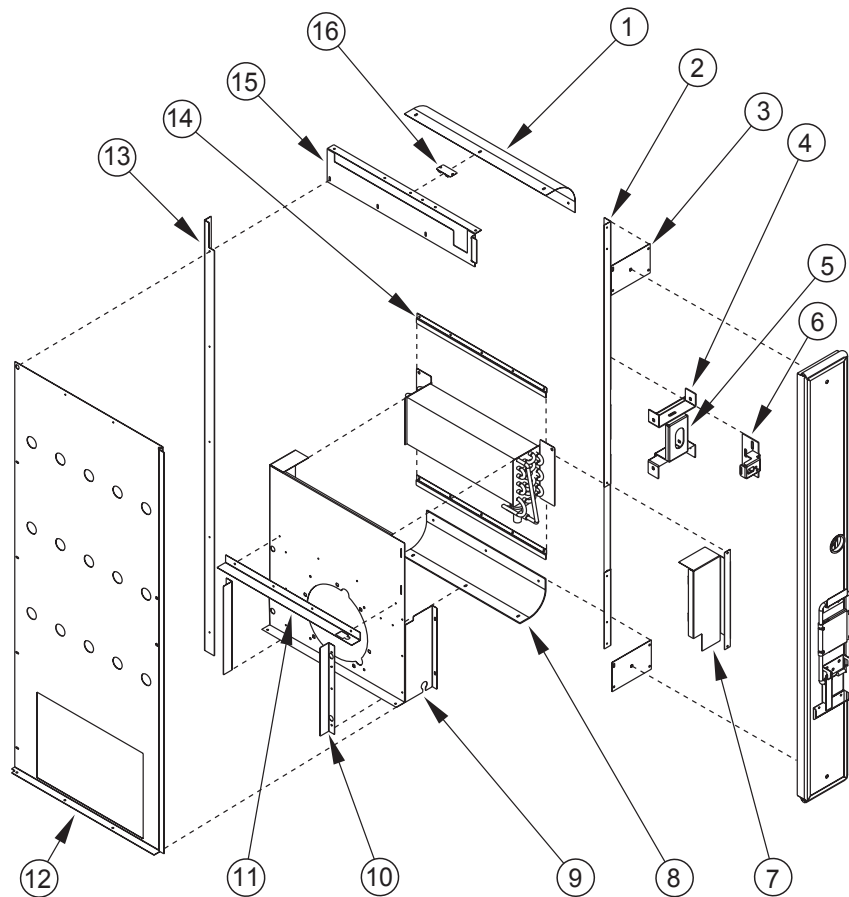
Shelf Assembly RVV 337710



ITEM #	DESCRIPTION	PART NUMBER
1	Shelf Arm	337701
2	Modified Shelf Extrusion RVV	337724
3	Shelf Extrusion	813032
4	Shelf Lock	337706
5	Shelf Slide, Right	815501
6	Shelf Slide, Left.....	815502

SECTION 6: Parts Catalog

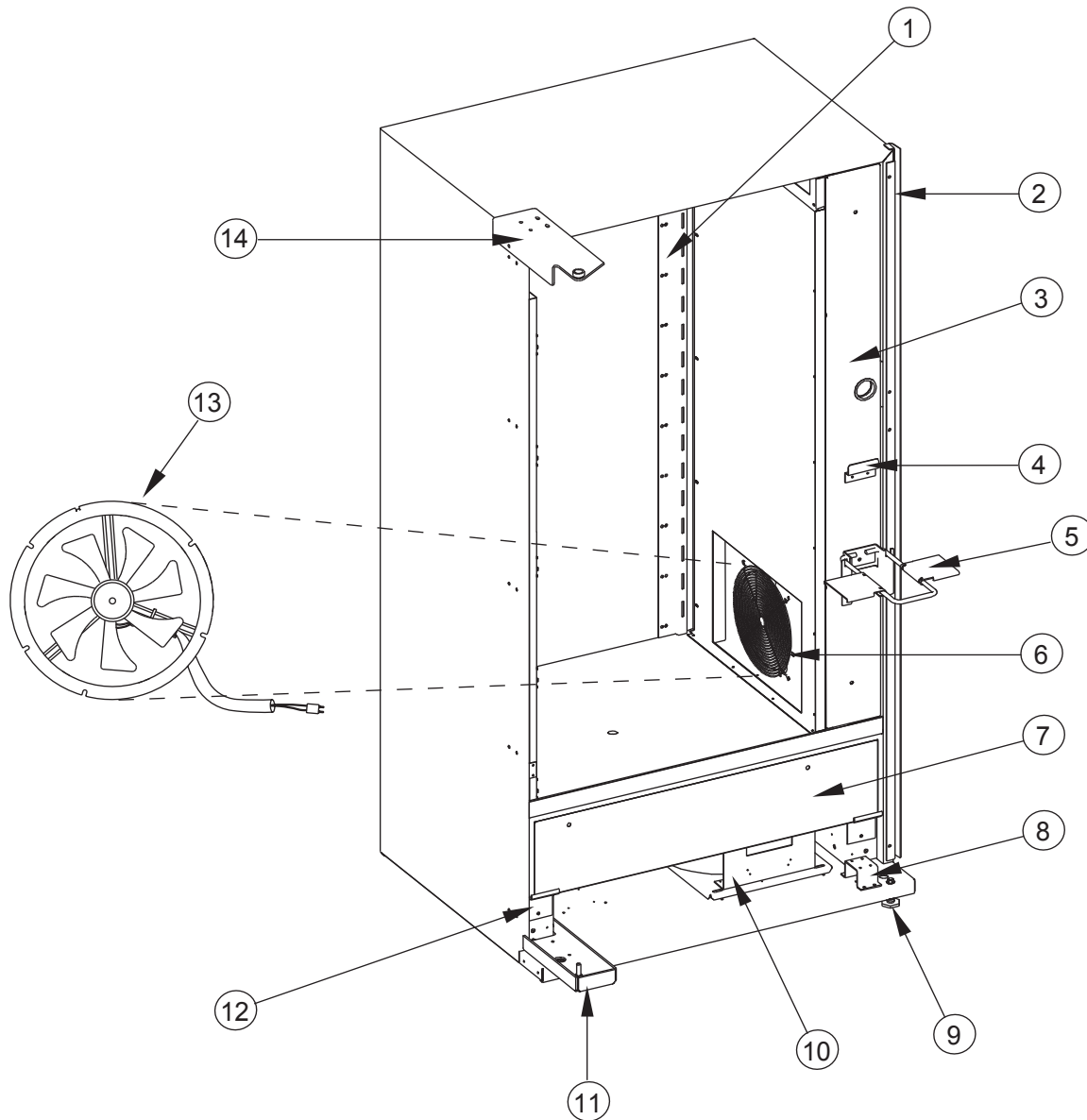
Evaporator Section



ITEM #	DESCRIPTION	PART NUMBER
1	Top Air Guide	337007
2	Inner Door Channel, Right RVV	337009
3	Inner Door Channel, Top / Bottom RVV	337020
4	Strike Adjustment Channel, TriTeq Lock	337024
5	Strike Mounting Bracket, TriTeq Lock	337023
6	Latch Strike, T-handle Lock	281002
7	Evaporator Cover RVV	337004
8	Bottom Air Guide	337008
9	Evaporator Fan Housing RVV	337001
10	Evaporator Air Guide, Side	337003
11	Evaporator Air Guide, Top	337002
12	Cabinet Baffle RVV	337013
13	Rear Cabinet Baffle Bracket RVV	337012
14	Evaporator Slide RVV	337006
15	Top Cabinet Baffle Bracket RVV	337014
16	Sensor Bracket	810085

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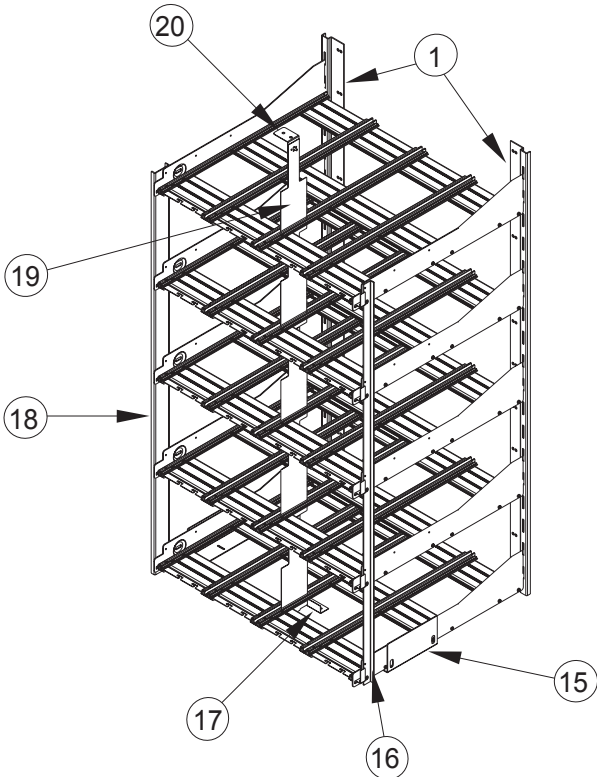
Cabinet



ITEM #	DESCRIPTION	PART NUMBER
1	Shelf Bracket (left & right sides)	337705
2	Vandal Panel Channel 72"	282201
3	Inner Door Assembly RVV, T-handle Lock	337610
	- TriTeq Lock	337620
4	Case Support Latch	337102
5	Case Support Assembly RVV	337120
6	Fan Cover	811052
7	Refrigeration Door Assembly RVV	337410
	- Refrigeration Door Gasket	815519

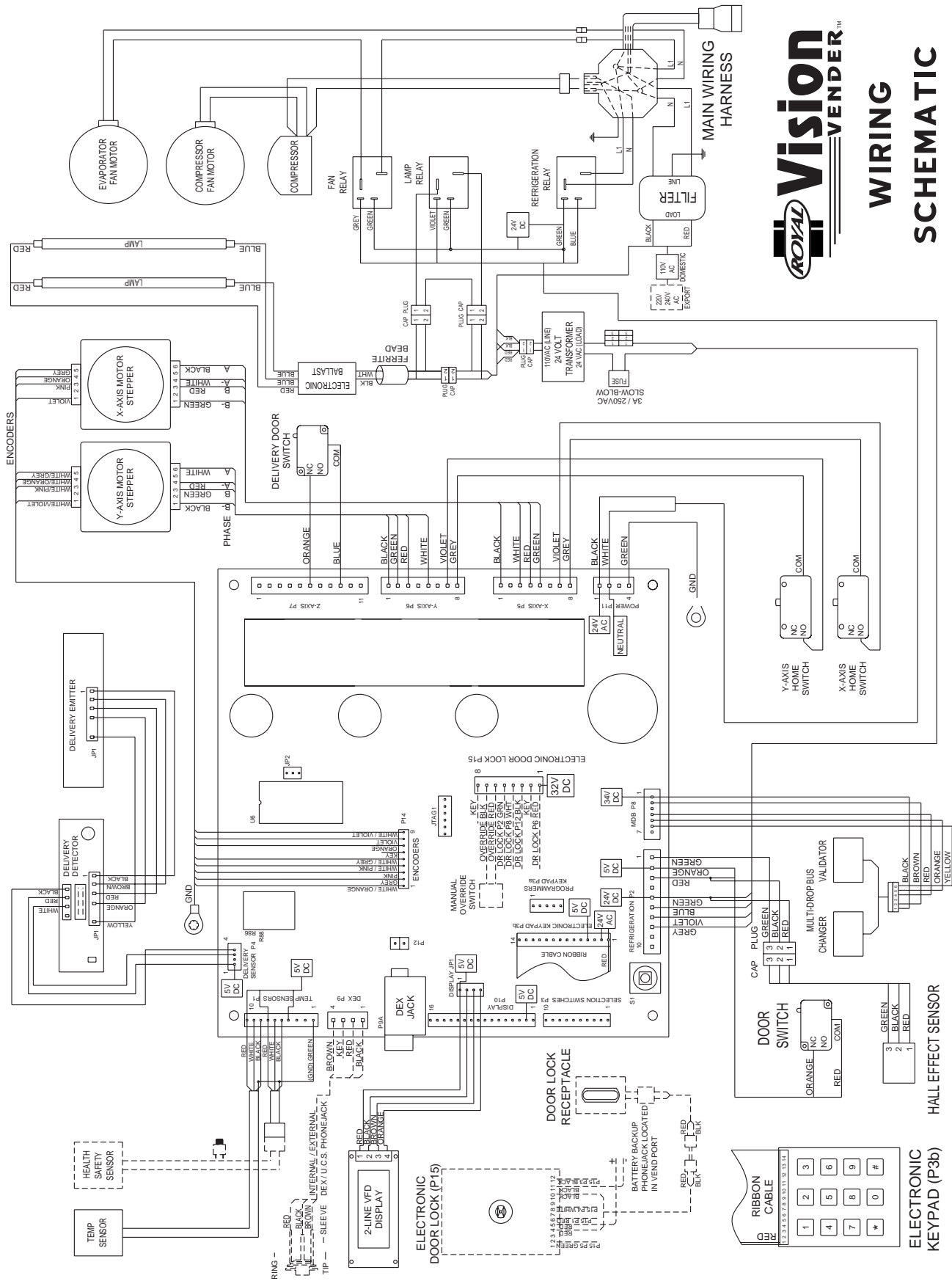
SECTION 6: Parts Catalog

Cabinet



ITEM #	DESCRIPTION	PART NUMBER
8	Roller Hat Section	337579
9	Leveling Leg	803002
10	Refrigeration Unit RVV	337420
11	Bottom Cabinet Hinge Assembly	810119
12	Refrigeration Door Support Plate	337100
13	Evaporator Fan Motor Assembly	231060
14	Top Cabinet Hinge Assembly	810118
15	Shelf Support, Bottom	337758
16	Shelf Alignment Bracket, Right	337752
17	Center Strap Locker	337769
18	Shelf Bracket, Left	337756
19	Shelf Center Strap	337767
20	Mount, Shelf Center Support	337717
•	Condensate Pan	815368
•	Latch Strike Assembly	281002
•	Main Wiring Harness (inside cabinet bottom)	842424
•	Main Wiring Cord (to wall outlet)	842413
•	Relay	836130
•	EMI Filter	842061

SECTION 7: Wiring Schematic

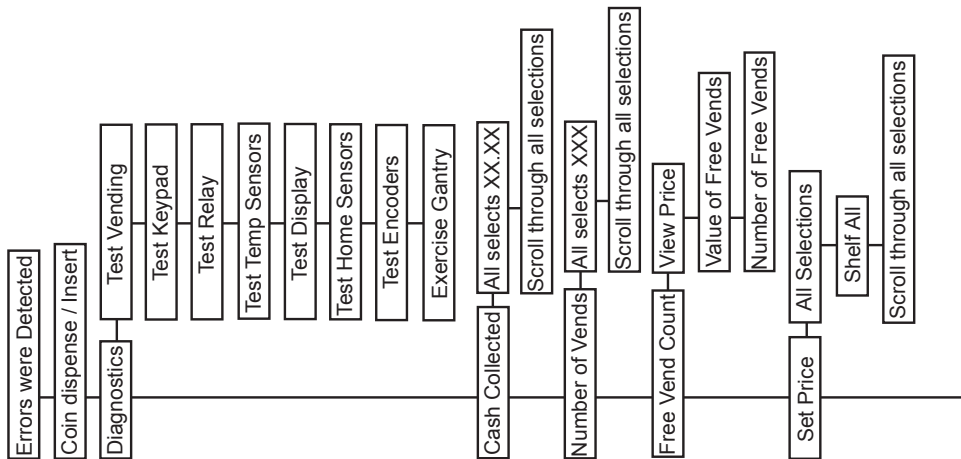
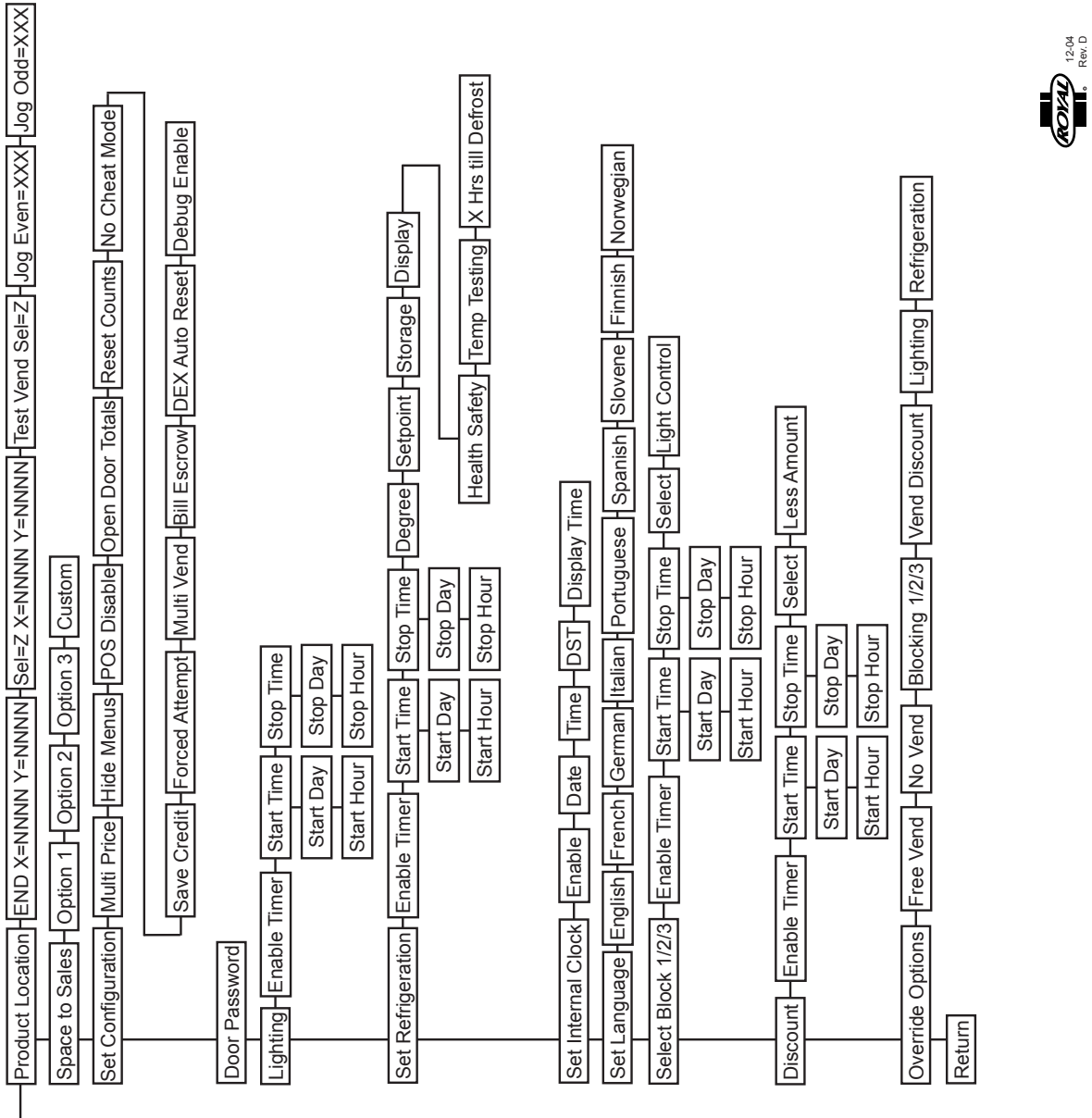


WIRING SCHEMATIC

SECTION 8: Programming Flowchart



Programming Flowchart



CREDIT AND REPLACEMENT POLICY

Credits or replacements will be issued on warranty items if the proper procedures are followed:

1. ROYAL VENDORS will pay shipping charges on all parts covered under this warranty when transportation has been made the most economical way. (Example: within the continental USA, regular ground UPS). An A.R.S. (Authorized Return Service) sticker will be sent with all warranty parts. This method of shipping is preferred for returning parts to Royal.
2. Credits will only be issued to warranty parts that have been ordered in advance, not for parts ordered as stock. (NO EXCEPTIONS)
3. When ordering warranty parts in advance, please have the full vender, refrigeration unit, and / or control board serial numbers.
4. A copy of the Packing Slip, the correct serial number and complete Return Material Tag (provided with part) are required for sending back parts. Please fill out the Return Material Tag completely, keeping the white copy for your records and sending the yellow tag back with the attached part. Make sure you have your company name, address, phone number, serial number, and model number, along with a brief explanation of the problem.
5. If the item returned is not under warranty, it will be sent back to you at your expense along with a US\$10.00 handling fee or it will be scrapped.
6. All warranty parts should be properly wrapped and packed securely to avoid further damage. Parts that are returned from the field and have been tapped into, tampered with, not packaged properly or have had the serial plate or label removed, will void the warranty.
7. If parts are not returned within 15 working days, the invoice will be due in full.

