
G-II Can/Bottle Vendor



Operation
and
Service
Manual

Royal Vendors, Inc.

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.**

G-II CAN/BOTTLE VENDOR

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SECTION 1: GENERAL INFORMATION

Introduction

This manual contains installation, operation and service instructions for Royal Vendor's G-II Can/Bottle Vendor. This manual also contains a complete parts catalog and electrical wiring diagram for the G-II vendor.

The G-II vendor is a microprocessor controlled vendor which permits pricing per selection from \$0.00 to \$12.75. The G-II vendor provides electronic space-to-sales (STS) programmability and will collect, store and transfer MIS data fields to a hand-held computer (HHC) or on-line device.

Specifications

Dimensions (462 cap.) 79 1/2"H x 36 3/4"W x 29 1/2"D
(390-9 cap.) 72"H x 36 3/4"W x 29 1/2"D
Empty Weight..... Approximately 710 lbs.
Capacity (462 cap.) 12 oz. cans, 12 columns
(390-9 cap.) 12 oz. cans, 12 columns
Operating Voltage 115 V AC, 60 Hertz
Amperage Rating 15 AMP
Construction Steel cabinet, steel rack
Selections 9 Selection, field
convertible from 1 to 9 selections
Charge 5.25 oz. R134A -0+1/2 (after August 1994)
5.5 oz. R12 - 0+1/2 (prior to August 1994)
Attitude Adjustment 1/8 clockwise turn for every
2,000 feet

Unpacking the Vendor

Unwrap the Vendor

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

NOTE: The vendor keys are located in the coin cup.

Remove the Shipping Skid

Separate (split) each section by inserting either a claw hammer, crowbar or similar device into the slot of each section to break apart. Tilt the vendor slightly to remove the separated pieces (see Figure 1.1).

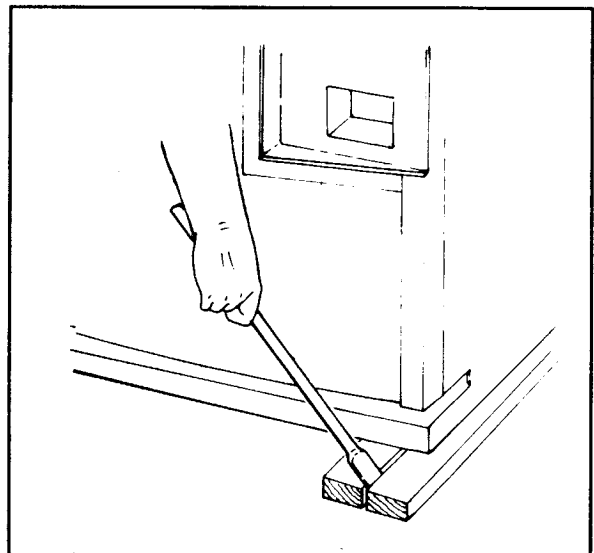


Figure 1.1

SECTION 2: SET-UP AND INSTALLATION

Controller Switch Settings

Vendor Controller

Opening the outer and inner doors of the vendor exposes the coin changer, vendor controller, digital display and selection switch areas. The vendor controller, located in the upper left section of the vendor outer door, is the focal point of all functions of the vendor (see Figure 2.1).

Controller Switch Settings (Figure 2.2)

Located on the lower portion of the vendor controller printed circuit board is a switch module composed of 6 rocker switches. To change any of the switch settings, it will be necessary to remove the controller board cover. The cover is attached with two screws. These switches control the following functions of the vendor:

Switch #1: ON Multi-price operation.
OFF Single-price operation.

Switches #2 and #3: Set the STS allocation (see Figure 2.3). They are set together to change the vendor to seven, eight or nine selections which automatically sets the STS allocation. When using the HHC or selection switches to program the STS, both switches must be set to the OFF position.

NOTE: Changes that are made in STS will not be acknowledged until the door switch is activated.

Switch #4: Designates whether columns 1-6 vend either bottles or cans.
ON Columns 1-6 vend bottles.
OFF Columns 1-6 vend cans.

Switch #5: Setting this switch to the ON position will automatically reset the electronically stored cash and can totals of the individual selections when the door is closed. If none of the selections are read, the totals will carry to the next service session. If any of the selections are read, all selections will be reset.

Setting this switch OFF allows the cash and cans totals of the individual selections to accumulate. The setting of this switch does not affect vendor totals.

Switch #6: Setting this switch to the OFF (default) position, the "Exact Coin Return" feature is enabled. This feature is used to ensure that proper change is returned. A check is made after product selection but before the motorized vend sequence starts. If it is determined that correct change cannot be paid, the vend is aborted and the full credit is returned to the customer. In addition, when using a multi-drop bus bill acceptor, a bill may be held in the "escrow" position so that it can

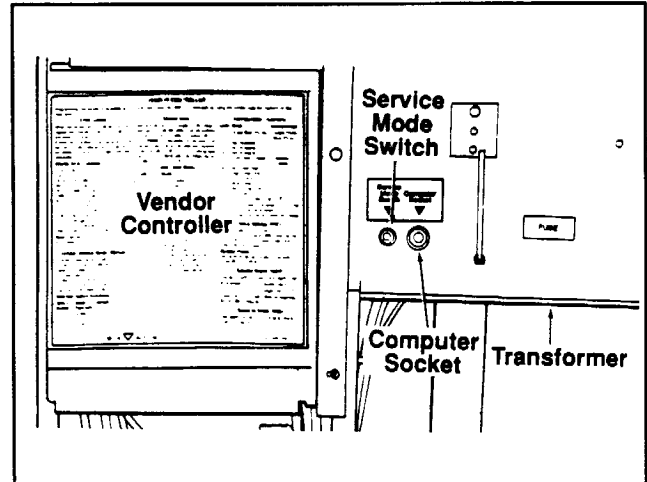


Figure 2.1

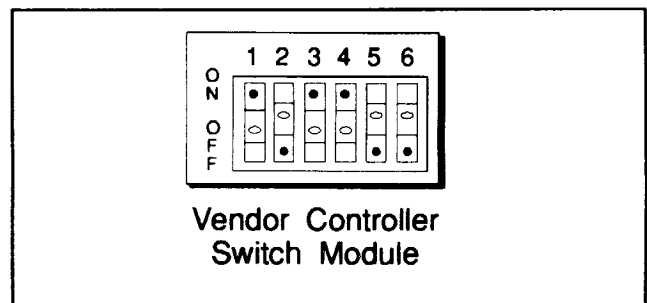


Figure 2.2

SPACE-TO-SALES ALLOCATION

In the automatic mode, switches #2 and #3 of the controller switch module are adjusted together to set the vendor to seven, eight or nine selections. In this mode, the space-to-sales allocations are automatically set.

WHEN CHANGING THE VENDOR TO:	SET #2 SWITCH	SET #3 SWITCH
Seven selections	ON	ON
Eight selections	ON	OFF
Nine selections	OFF	ON

Manual switch settings may be locked out via HHC.

Figure 2.3

SECTION 2: SET- UP AND INSTALLATION

be returned to the customer in the event that it is not necessary (for example, if the selection is sold out).

When Switch #6 is set to the ON position, the “Exact Coin Return” feature is disabled. In certain low change conditions (“Exact Change Only” lamp is lit), the customer may be cheated up to a Nickel. In addition, when using a multi-drop bus bill acceptor, a bill will always be stacked such that it cannot be returned to the customer. A sold-out in this situation would result in allowing the customer to escrow the full credit, but the change would be in the form of coins.

Changing the Number of Selections

The G-II vendor is equipped with nine selection switches. If desired, this number can be reduced by installing a metal plate over the unnecessary selection switches. There are plates that cover one, two, three and four selection switches; converting your G-II to a 5-, 6-, 7-, or 8-select machine. These plates can be ordered from Royal Vendors using the following part numbers. They are installed over the selection switches using existing carriage bolts.

IF YOU HAVE THE VANDAL-RESISTANT DOOR:

<u>To CONVERT To:</u>	<u>ORDER:</u>
5-select	Part #147104013
6-select	Part #147103103
7-select	Part #147102013
8-select	Part #147101013

IF YOU HAVE THE “TUFF GUY” DOOR:

<u>To CONVERT To:</u>	<u>ORDER:</u>
5-select	Part #187104003
6-select	Part #187103003
7-select	Part #187102003
8-select	Part #187101003

NOTE: If the total number of selections will be less than seven, the STS must be programmed manually using the Custom Space-to-Sales function of the Service Mode or the HHC.

SECTION 2: SET-UP AND INSTALLATION

Coin Changer Installation

The coin changer mounts to a hinged panel located on the inside of the vendor main outer door. The panel contains three mounting screws which are used to mount and secure the coin changer in the vendor. Install the coin changer into the vendor as follows:

1. Remove the acceptor from the changer, set the key holes in the back of the changer housing over the mounting screws in the vendor. Tighten snugly.
2. Set the coin changer option switches to the desired settings. (See separate coin changer literature for detailed information.)
3. Replace acceptor and connect the coin changer power plug to the mating connector from the vendor controller.
4. Load coin tubes making sure all coins lie flat.
5. Test changer with a variety of coins to insure proper operation.

NOTE: For detailed changer information, refer to separate operation and service manual for coin changer.

Programming Space-To-Sales (STS)

STS allocation gives the service personnel the flexibility to specifically assign any of the twelve vend columns to any of the nine different selection switches.

The G-II vendor's STS allocation may be set via three different methods:

- **Automatic Mode** - The automatic mode utilizes switches #2 and #3 on the controller switch module which automatically sets the STS allocations. This mode may only be used when the vendor is set-up as a seven, eight or nine select vendor (see Figure 2.4).
- **Hand-Held Computer (HHC)** - Switches #2 and #3 on the controller switch module must be set to the OFF position when using the HHC to program the vendor STS allocations. The HHC interfaces to the vendor controller via a computer socket located on the controller board cover. See separate HHC operations manual for detailed programming instructions.
- **Manual Programming** - Switches #2 and #3 on the controller switch module must be set to the OFF position when using the vendor selection switches to manually program the STS allocations. See "Space-to-Sales" under Service Menu in the Maintenance section of this manual.

SPACE-TO-SALES ALLOCATION CHART

Listed below are the space-to-sales allocations for seven, eight and nine selections and which columns they control when in the automatic mode.

	SELECTIONS SWITCH	COLUMN(S) CONTROLLED
7 SELECT	1	1, 2, 3
	2	4, 5
	3	6
	4	7, 8, 9
	5	10
	6	11
	7	12
8 SELECT	1	1, 2, 3
	2	4, 5
	3	6
	4	7, 8
	5	9
	6	10
	7	11
	8	12
9 SELECT	1	1, 2, 3
	2	4, 5
	3	6
	4	7
	5	8
	6	9
	7	10
	8	11
	9	12

Figure 2.4

SECTION 2: SET-UP AND INSTALLATION

Setting the Vend Price

Vend price may be set in one of two ways.

1. It may be set manually with the aid of the selection switches, see "COST" under **Service Menu** in the maintenance section of this manual.
2. It may be set electronically with the aid of a HHC and the computer socket located on the controller board cover. See separate HHC manual for details.

Loading the Vendor

Adjusting the Columns to Vend Ten Ounce Pre-Labelled Bottles (PLB)

- **Rear Columns One through Six** - These columns must be set to vend all cans or all bottles. The vendor is shipped from the factory to vend double depth 12 oz. cans. Located in the back of each column is a rear retainer that can be adjusted to adapt the column to double depth cans or single depth bottles. To vend the 10 oz. PLB bottles, the rear retainer must be moved to its front position.

Two studs on the retainer engage keyhole slots on the right side of the column wall. To adjust the rear retainer to the front position, lift slightly to free it from the back set of keyhole slots. Move the retainer forward and fit the studs into the front keyhole slots and slide the retainer down (see Figure 2.5). When sliding the retainer into position, guide the left bottom edge of the retainer into the slot on the bottom left side of the column wall. Set switch #4 of the controller switch module to its ON position.

NOTE: When loading bottles in these columns, the cap of the bottle must face the rear of the vendor (see Figure 2.6).

- **Front Columns Seven through Twelve** - No adjustments are necessary to load either 12 oz. cans or 10 oz. PLB bottles in columns seven through twelve. However, cans and bottles cannot be mixed within the same column.

NOTE: When loading bottles in columns seven through twelve, the cap of the bottle must face the front of the vendor and you must use Plastic Bottle Guides. See Page 35.

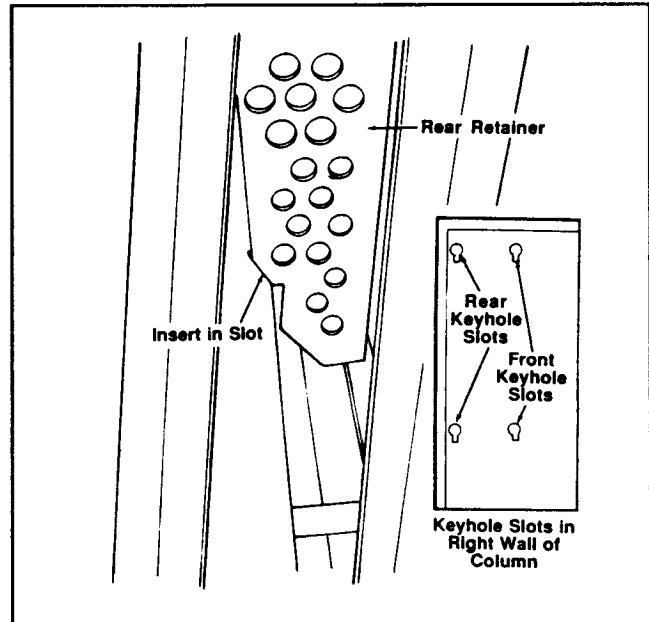


Figure 2.5

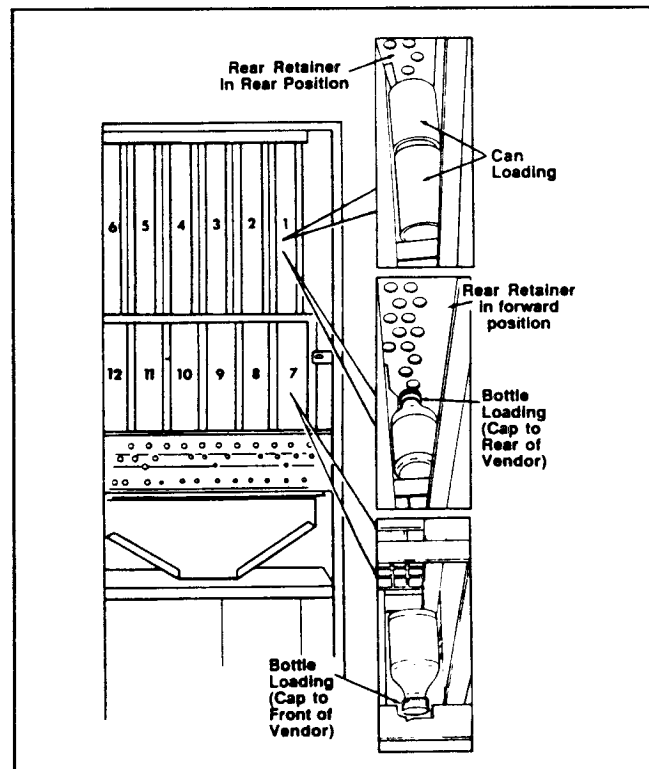


Figure 2.6

SECTION 2: SET-UP AND INSTALLATION

Using the Hand-Held Computer (HHC) to Program The Vendor

The G-II Vendor interfaces with Direct Exchange/Uniform Communication Standard (DEX/UCS) or DEX/UCS Compatible Hand-held Computers (HHC). The HHC may be used to program the G-II Vendor vend price and space-to-sales, as well as other pertinent MIS and security information. The HHC interfaces to the vendor controller via a computer socket located on the top of the main door. Once the HHC is connected and meets initial communication requirements, it may then be used to program the G-II vendor.

NOTE: The HHC may be used to lock out the manual programming of the vendor.

See "Controller Switch Settings Switch #2 and #3," this section and separate HHC operations manual for detailed programming instructions.

Testing the Vendor

Load the coin changer coin tubes making sure all coins lie flat. Close the vendor door and secure with door lock. Using a variety of coins and/or dollar bills, check the vendor operation by vending several cans and/or bottles from each column. Before putting vendor into service, allow the vendor to run overnight to stabilize the cabinet temperature.

NOTE: Install and/or adjust the selection switch flavor strips to correspond to the loading of the columns.

IT IS NOT NECESSARY TO PRIME THE VEND COLUMNS BEFORE PUTTING THE VENDOR INTO SERVICE.

Installing the Vendor on Location

Placing the Vendor on Location

When placing the vendor on location, allow for a minimum of four inches (4") of space at the back of the vendor. This will insure proper ventilation of the refrigeration system (see Figure 2.7).

Level the Vendor

Level the vendor by adjusting the four leveling legs on the bottom corners of the vendor. The vendor is level if the door remains stationary when opened to different positions. The four leveling screws must be in contact with the floor (see Figure 2.7).

Voltage Requirements

The vendor is designed to operate at a voltage of 115 volts, 60 Hertz. It requires the minimum of a 15 amp service. The service outlet voltage must not exceed 129 VAC or fall below 103 VAC.

Vendor Power Cord

The vendor has a three wire grounding cord. The vendor must be plugged into a grounded electrical outlet to protect the customer from an electrical shock. If the outlet is not equipped with a grounded socket. Have one installed by a qualified electrician.

IF YOU ARE NOT SURE YOUR OUTLET IS PROPERLY GROUNDED, HAVE IT CHECKED BY A QUALIFIED ELECTRICIAN.

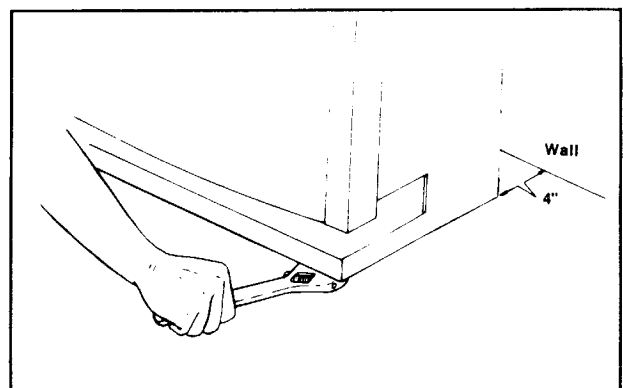


Figure 2.7

SECTION 3: VENDOR COMPONENT EXPLANATION

Vendor Controller (Figure 3.0)

The vendor controller is located in the front upper portion of the vendor and is the focal point of all vendor operations. Power for the control board is provided by the low voltage transformer. The controller board processes information from input devices such as selection switches, door switch, etc., and issues instructions to output devices such as the digital display, vend motor, etc. Devices such as the coin changer, bill validator and hand-held computer communicate both ways with the controller.

THE CONTROLLER RECEIVES INFORMATION FROM:

- Selection Switches
- Home Sensor
- Delivery Chute Sensor
- Switch Module
- Door Switch
- Encoder

THE CONTROLLER ISSUES INSTRUCTIONS TO:

- Vend Motor
- Digital Display

THE CONTROLLER COMMUNICATES BOTH WAYS

WITH: Coin Changer
Bill Validator
Hand Held Computer

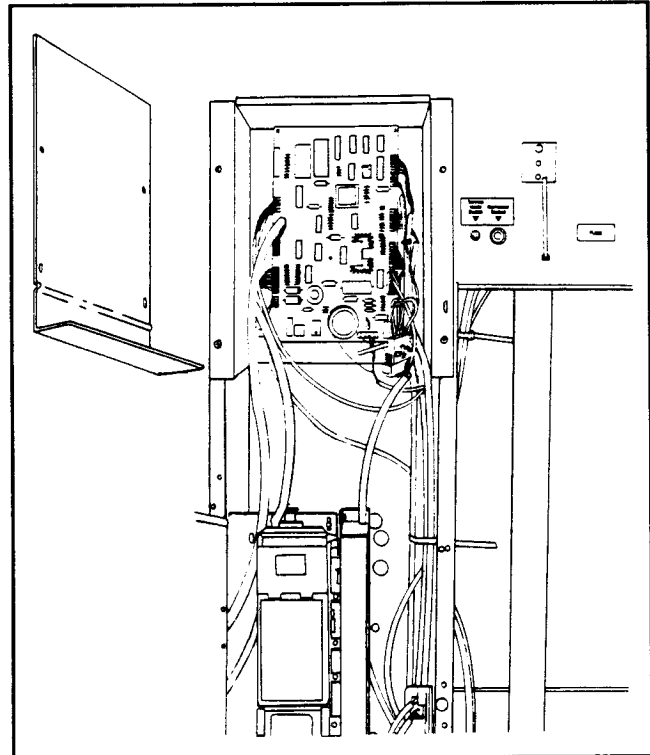


Figure 3.0

Digital Display (Figure 3.1)

The digital display is located on the vendor door next to the coin inlet. The digital display receives its instructions from the vendor controller.

In the sales mode, the digital display will display a greeting when the machine is not in use. In the sales mode when the G-II is being used, the digital display will display the accumulated credit when the customer deposits money; the amount of change to be paid back on an over deposit; and the sales price of the selection when selected.

NOTE: When vendor is set in the single-price mode, the vend price will be displayed with the greeting. In the service mode, the digital display is used for diagnostics, vendor set-up and MIS information. (See Service Mode and Service Menu in Maintenance section.)

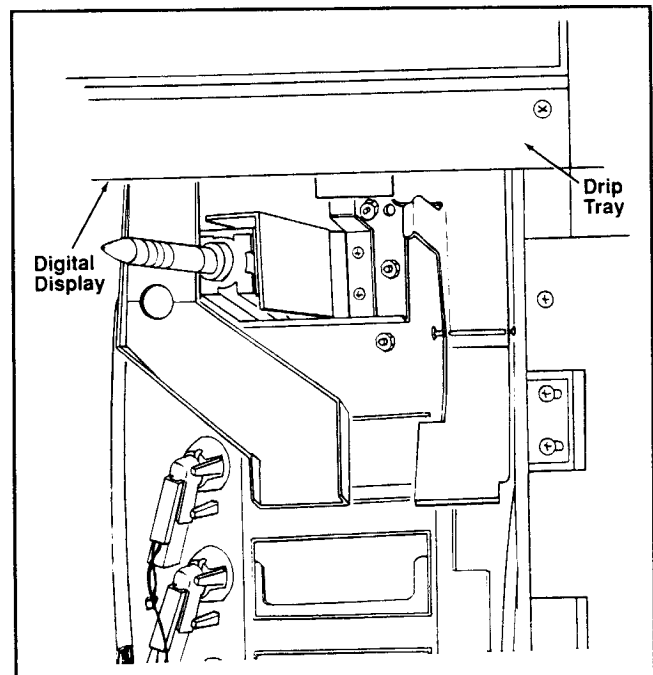


Figure 3.1

SECTION 3: VENDOR COMPONENT EXPLANATION

Coin Changer

The coin changer determines the validity and value of each coin that is inserted into the vendor and sends the coin information to the vendor controller. The coin changer also continuously informs the vendor controller if coins are available in the change tubes to be used for change payout. All change tube status and credit information is accumulated in the vendor controller which controls all vend and payout functions as well as illumination of the vendor's correct change light.

Coins are paid out from the changer when a change payback is required or when any of the coin changer inventory switches are manually operated. Coins are dispensed by D.C. solenoid-operated slides located at the bottom of each of the three coin tubes. The payout solenoids are controlled by signals generated by the vendor controller or the three inventory switches.

NOTE: For detailed changer information, refer to separate operation and service manual for coin changer.

SECTION 3: VENDOR COMPONENT EXPLANATION

Door Switch

The vendor door switch is mounted to the lower right side of the vendor cabinet, and is actuated by the door each time it's opened or closed (see Figure 3.2). The following functions are performed each time the vendor door is closed:

1. Clears any column sold-outs and column jam errors.
2. Resets the coin changer back to zero credit state.
3. Establishes a new coin changer tube inventory status.
4. Sequences the digital display segments and LED's.
This indicates the door switch has been actuated and the display is functioning correctly and allows board to acknowledge STS settings.

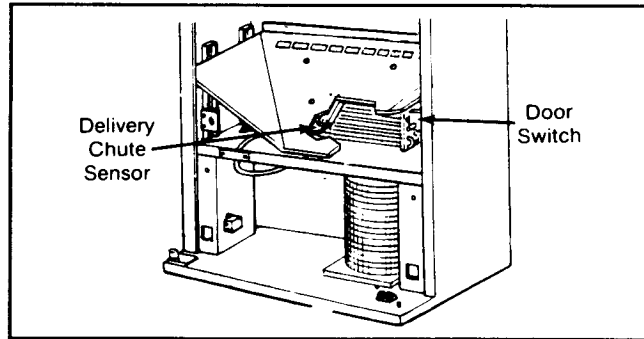


Figure 3.2

Delivery Chute Sensor

The delivery chute sensor mounted on the bottom of the delivery chute signals the controller when a product is delivered (see Figure 3.2).

Selection Switches

The selection switches are located on the front right side of the vendor and signals the vendor controller when a selection is made (see Figure 3.3).

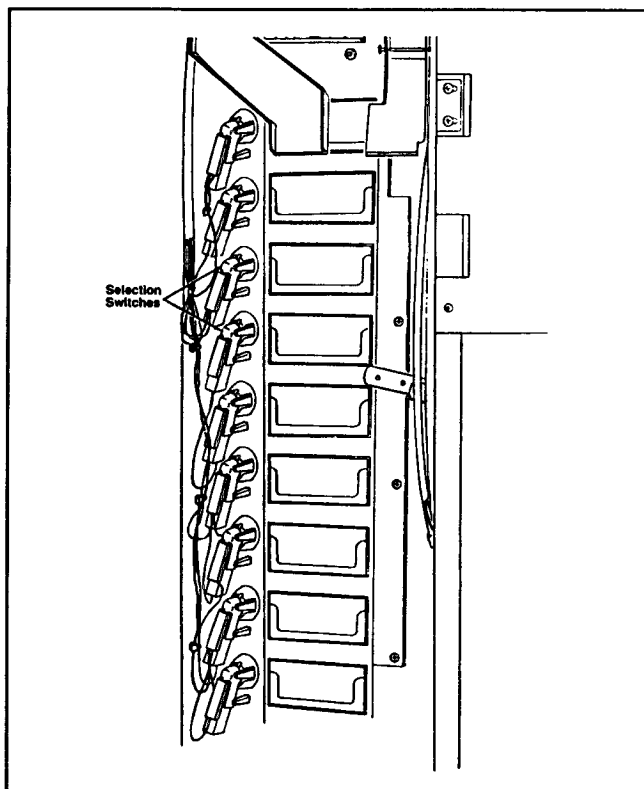


Figure 3.3

Low Voltage Transformer

The step-down transformer is located in the upper section of the vendor outer door. It has dual secondary windings which produce both 9- and 26-volt AC outputs. The transformer is equipped with an internal thermal-fuse which protects the vendor in the event of a short in the secondary circuit. The 26-volt AC output also has an external fuse located next to the service mode switch (see Figure 3.4).

Dual power supplies located on the vendor controller change the 9- and 26-volt transformer outputs to direct current (see Figure 3.4).

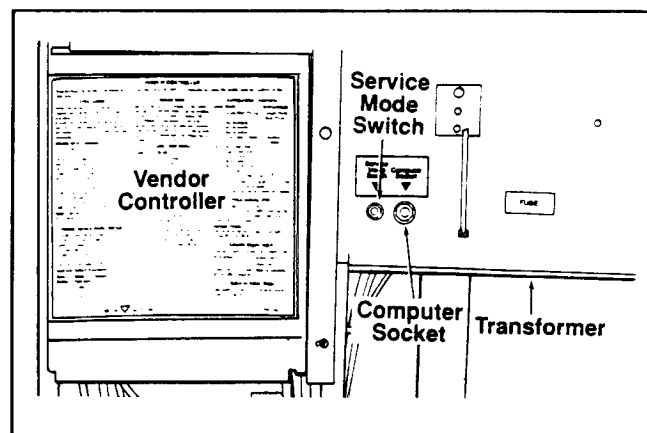


Figure 3.4

SECTION 3: VENDOR COMPONENT EXPLANATION

Vend Rack Assembly

The vend rack assembly, located in the cooling compartment of the vendor, is composed of twelve product columns, six columns located in the rear and six in the front. The rear columns (one through six) are double depth columns that can be adjusted to single depth to accommodate 10 oz. PLB bottles.

NOTE: The rear columns (one through six) must all be set to vend either all cans or all bottles. The front columns (seven through twelve) are single depth columns that can be loaded with either cans or bottles. Bottles and cans cannot be mixed within the same column.

Individual vend mechanisms consisting of a can pivot, release lever and empty lever are mounted to the vend rack's center support beneath each column. Also mounted beneath and secured to the left wall of the vend rack assembly is a vend motor and home sensor. Connected to the vend motors drive sprocket and running below the vend rack center support to the right wall of the vend rack is the drive chain and lever actuator assembly. The vend mechanisms are activated by the movement of the lever actuator, engaging the release lever.

CAN PIVOT: A can pivot is located directly below each of the columns. When the can pivot is allowed to rotate, it releases the bottom can to the customer (see Figure 3.5).

PIVOT END AND RELEASE LEVER: A pivot end is secured to the end of each of the can pivots, but is removable. The pivot end and its release lever control the movement of the can pivot (see Figure 3.5).

EMPTY LEVER: The upper portion of the empty lever extends into the column and senses if cans are present. If cans are not present, the lower portion of the lever extends into the path of the lever actuator preventing it from engaging the release lever during a vend sequence (see Figure 3.5).

VEND MOTOR ASSEMBLY: The vend motor assembly is composed of a vend motor and electronic encoder, which are controlled by the vendor controller. The encoder confirms the positioning of the lever actuator (see Figure 3.6).

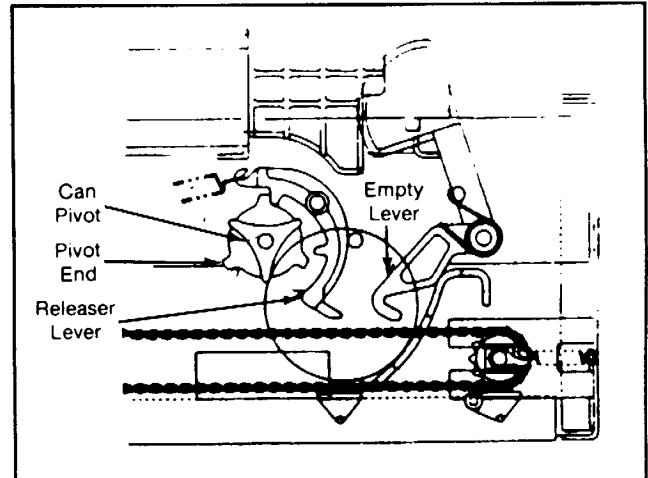


Figure 3.5

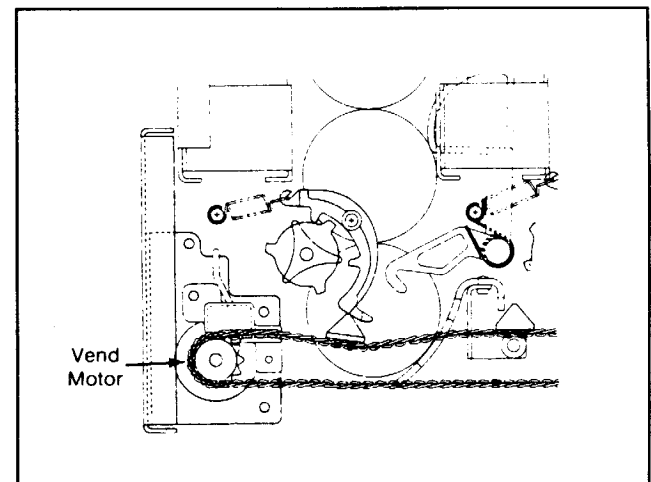


Figure 3.6

SECTION 3: VENDOR COMPONENT EXPLANATION

DRIVE CHAIN AND LEVER ACTUATOR: Attached to the drive chain are the lever actuators. When the vend motor runs, it drives the chain placing a lever actuator in the vend position of the product selected. When the lever actuator engages the release lever, it unlocks the can pivot allowing it to rotate (see Figure 3.7).

HOME SENSOR: The home sensor is mounted directly above the vend motor sprocket on the vend motor mounting bracket and senses the lever actuator. The sensor signals the controller that the lever actuator has reached its home position (see Figure 3.7).

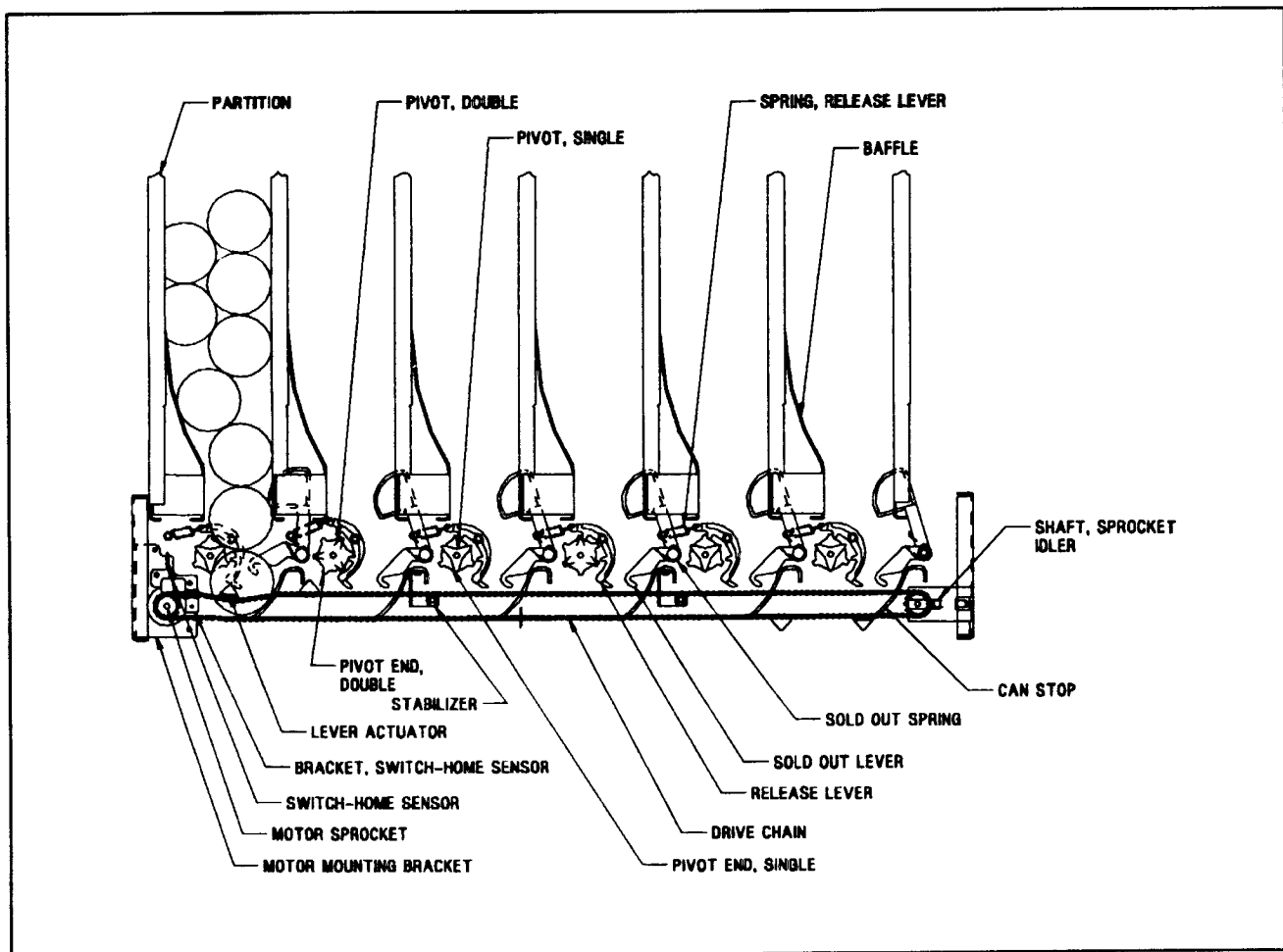


Figure 3.7

SECTION 3: VENDOR COMPONENT EXPLANATION

Refrigeration System Component Explanation

COMPRESSOR/COMPRESSOR MOTOR: The compressor/compressor motor 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 and forces it into the condenser under high pressure. The motor is started and controlled by the temperature control.

STARTING RELAY: The starting relay is mounted on the side of the compressor housing. The compressor motor has two windings, a start and a run winding. To give the motor additional 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 off 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 both the start and run circuits of the motor. After the compressor cools to a safe operating temperature, the thermal overload will close allowing the compressor and condenser fan motors to restart.

CONDENSER: The condenser coil is located beneath (outside) the cooling compartment next to the compressor/compressor motor. The condenser removes heat from the high pressure vapor discharged from the compressor and condenses it to a high pressure liquid.

CONDENSER FAN MOTOR: The condenser fan motor, located beneath the cooling compartment, is a forced air device that uses outside ambient air to cool the surface of the condenser coil. The condenser fan motor runs while the compressor runs.

EVAPORATOR: The evaporator coil is located in the cooling compartment. As low pressure vapor passes through the evaporator coil, it absorbs and removes heat from the compartment.

EVAPORATOR FAN MOTORS: The evaporator fan motors are forced air devices that circulate air throughout the cooling compartment and over the heat exchange surface of the evaporator coil. The evaporator fan motors run continuously.

NOTE: The Condenser and Evaporator Coils have aluminum fins attached to effectively increase their heat exchange surfaces.

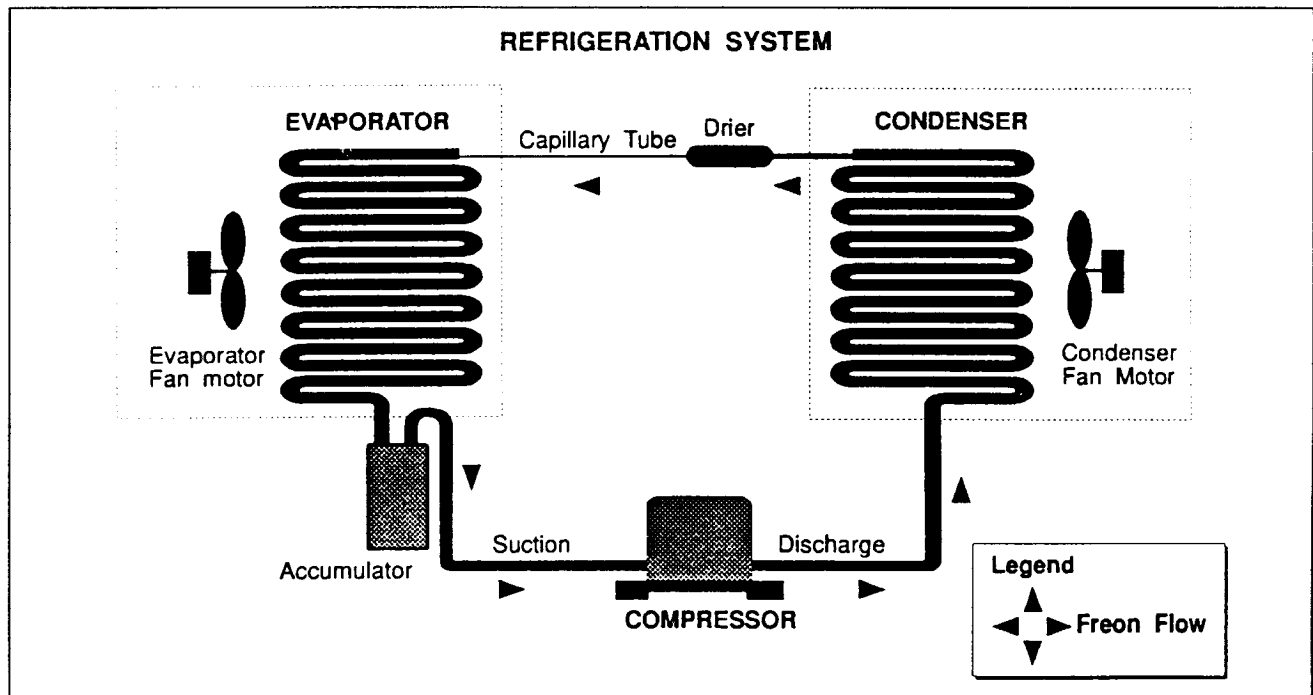


Figure 3.8

SECTION 3: VENDOR COMPONENT EXPLANATION

CAPILLARY TUBE: The capillary tube is located in the refrigerant line, between the condenser and evaporator coils. The small diameter tube 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 compressor. The accumulator traps any liquid refrigerant which did not vaporize before it reaches the compressor.

TEMPERATURE CONTROL: The adjustable temperature control is responsible for sensing temperature changes in the cooling compartment and starting the compressor motor when the compartment temperature rises above a preset setting.

The temperature control is composed of a control switch that is actuated (opened and closed) by the mechanical movement of the bellows. The bellows are connected to a temperature sensing bulb (located in the cooling compartment) by a small diameter refrigerant tube. The bellows, temperature sensing bulb, and refrigerant tube are filled with refrigerant that react to temperature changes.

When the temperature of the cooling compartment rises, the refrigerant in the sensing bulb expands forcing the bellows to close the temperature control switch. The temperature control switch turns the compressor and condenser motors ON. As the refrigeration cycle cools the compartment, the refrigerant in the sensing bulb contracts allowing the bellows to relax, actuating the temperature control switch to its open position, turning the compressor and condenser motors OFF.

COOLING COMPARTMENT: The cooling compartment is the sealed area of the vendor that holds the product for delivery. This area is designed to allow free flowing air to circulate throughout the product.

The Refrigeration Cycle

1. The rising temperature in the cooling compartment heats and expands the refrigerant in the temperature control bulb, expanding the bellows. The expansion of the bellows closes the temperature control switch.
2. The temperature control switch turns the compressor and condenser fan motors ON.
3. 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 coil.
4. The condenser, aided by the condenser fan motor, removes heat from the refrigerant as it flows through the condenser coil and releases it to the outside environment. The dropping of the refrigerant temperature changes the vapor to a liquid.
5. The capillary tube controls the amount of refrigerant released to the evaporator coil.
6. The evaporator coil allows the vaporized refrigerant to absorb heat from the cooling compartment as it flows through the coil.
7. 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 refrigerant in the temperature control bulb contracts, allowing the bellows to open the temperature control switch.
8. The temperature control switch turns the compressor and condenser fan motors OFF.

SECTION 4: VEND SEQUENCE OF OPERATION

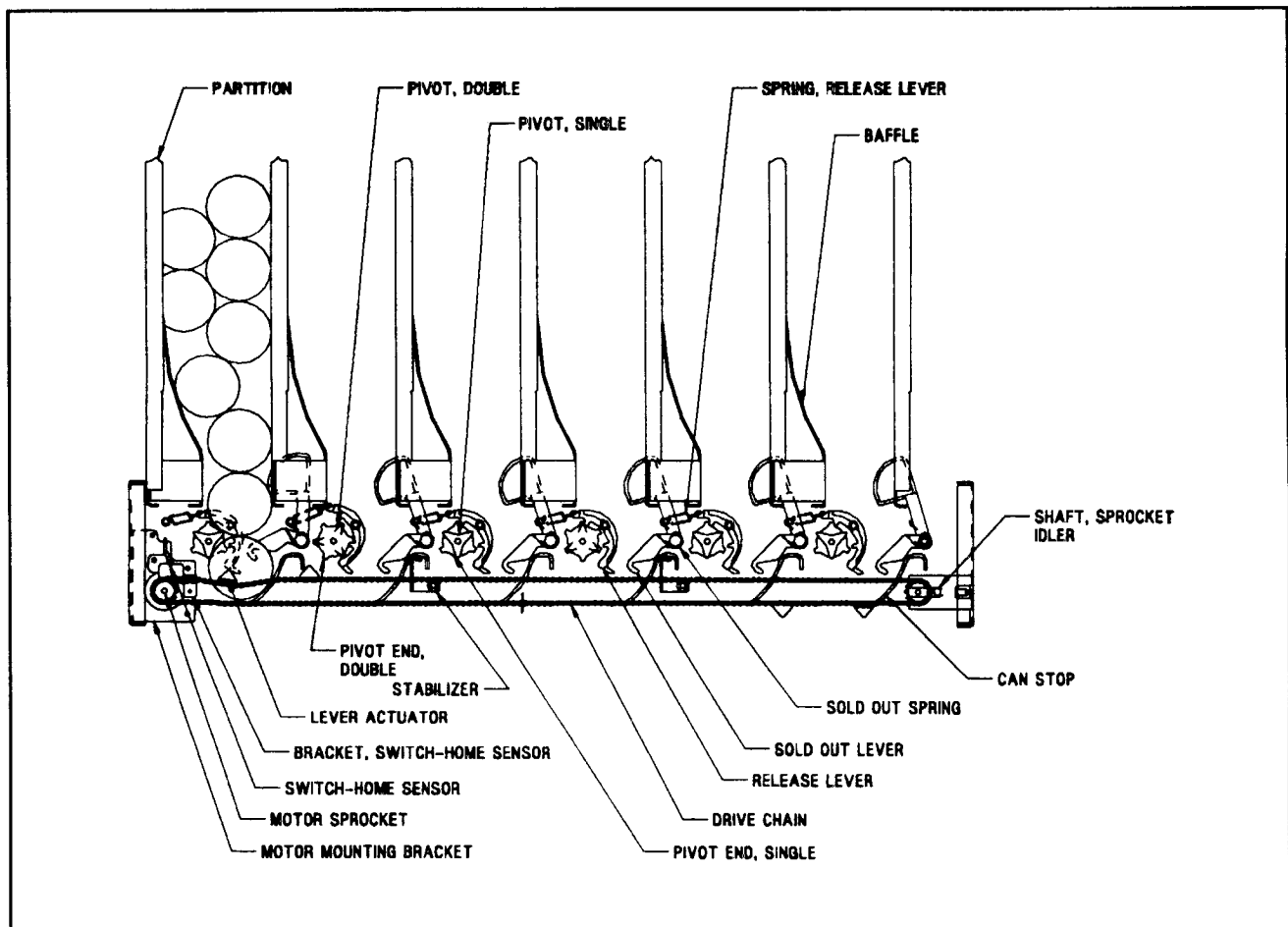


Figure 4.1

Vend Sequence (Figure 4.1)

Condition: Vendor has sufficient product in each column and the coin changer has sufficient coins in the tubes.

Coins inserted by a customer are directed to the coin inlet funnel of the acceptor. As coins pass through the acceptor, they are electronically validated and directed to the appropriate coin tube of the changer. If the coin tubes are full, the coins are directed to the cash box. Inserted slugs or spurious coins are directed back to the customer via the coin return chute.

Signals generated by good coins are directed to and counted by the controller. Only after sufficient money has been inserted to satisfy the sales price setting, can a customer make a selection.

NOTE: At anytime prior to reaching vend price, a customer may press the coin release lever on the outside of the vendor, cancelling credit and escrowing all inserted money. Insertion of a dollar bill or coin, however, will disable escrow.

When a customer presses a selection button, the controller senses a selection has been made and immediately

compares the amount of money validated by the coin changer to the sales price of the product selected. If the amount of money credited is the same or exceeds the sales price setting, the controller directs the vend motor to position the lever actuator to the vend position of the column selected.

After the position is verified by the encoder, the vend motor is directed to reverse direction, the chain drives the lever actuator engaging the release lever. The upper tooth on the release lever disengages the pivot end allowing the can pivot to rotate one increment. At the same time, the lower tooth engages the pivot end preventing further rotation of the can pivot.

When the vend motor again reverses, and starts its return to the home position, the lever actuator pulls away from the release lever allowing the can pivot to complete the rotation, releasing the product to the customer.

A delivery sensor on the bottom of the delivery chute indicates a can was delivered and signals the controller to reset and initiate a payback of change if an over-insertion was made.

SECTION 4: VEND SEQUENCE OF OPERATION

Sold Out

If the product selected is sold out, the digital display will indicate "SOLD OUT" and flash the "SOLD OUT" lamp, signalling the customer to make another selection or push the coin return lever for a full refund.

When a column sells out of product, one can of product will remain in a single depth column while one to three cans of product, depending on the load, will remain in a double depth column.

If the vendor is totally sold out of product, illumination of the "SOLD OUT" lamp and the "SOLD OUT" message on the digital display will be continuous. No money will be accepted into the vendor in a total sold out condition.

NOTE: When the decimal point appears in the digital display, a column is empty.

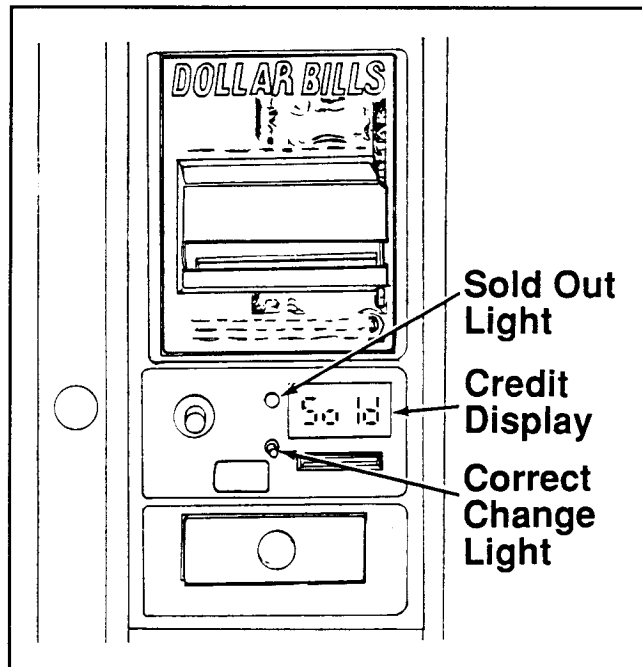
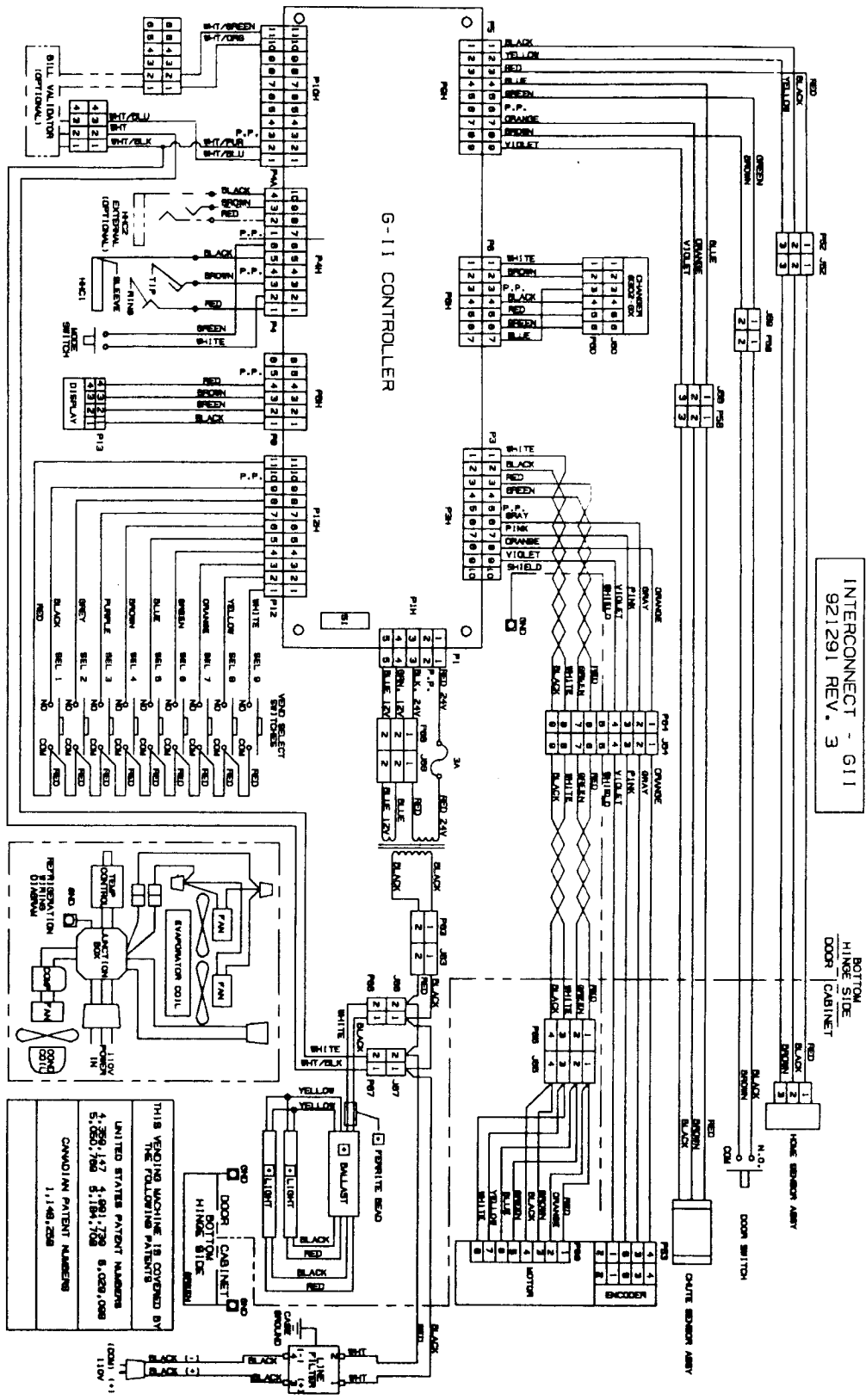


Figure 4.2

SECTION 5: MAINTENANCE

VENDOR INTERCONNECT

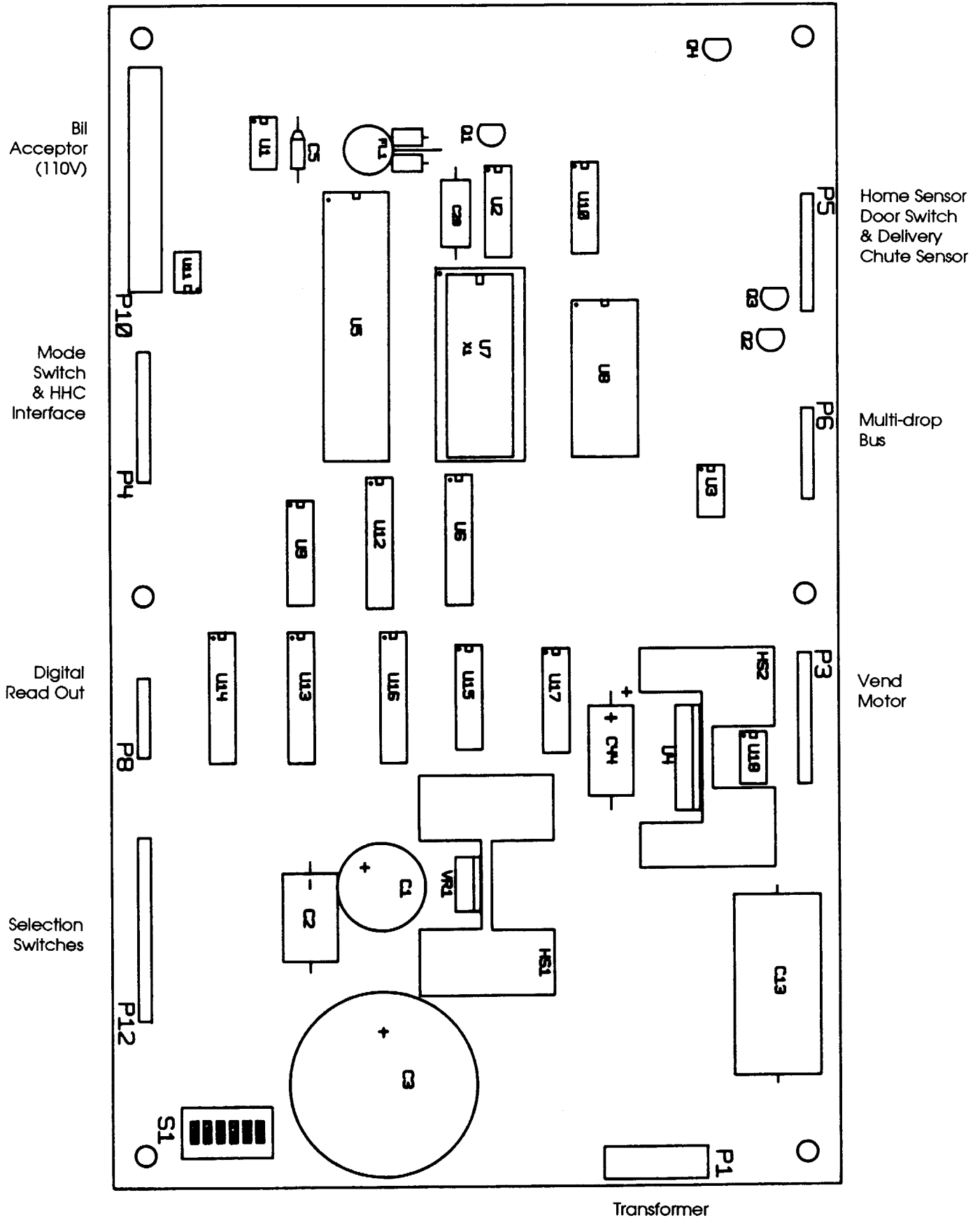


INTERCONNECT - G11
921291 REV. 3

BOTTOM
HINGE SIDE
DOOR
CABINET

SECTION 5: MAINTENANCE

CONTROLLER BOARD CONNECTOR LAYOUT



SECTION 5: MAINTENANCE

This section contains cleaning instructions and procedures for removing major vendor components. Components should be installed by reversing components removal procedures. Lubrication is not necessary nor is it recommended.

Taking Care of the Vendor

WHAT TO CLEAN

A routine cleaning schedule is the best way to insure the best possible service and appearance from your G-II vendor.

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 lint from the condenser and evaporator coils with a brush, vacuum cleaner or compressed air.

Cabinet and Rack: Steam clean as required. Never use petroleum cleaners and never submerge electronics in water.

WHAT TO LUBRICATE

The Refrigeration System: The refrigeration system is a sealed unit and does not require any lubrication. The condenser and evaporator fan motors do not require any lubrication.

WHAT TO ADJUST

Temperature Control: The temperature control has been pre-set at the factory to maintain the specified temperature of the product. If you wish to change this setting, turn the control knob clockwise to make the product colder and counter-clockwise to make it warmer. When making an adjustment, turn the control in increments of 1/8 of a turn in the required direction. Wait at least two hours and check product temperature again before making further adjustments. See Figure 5.1.

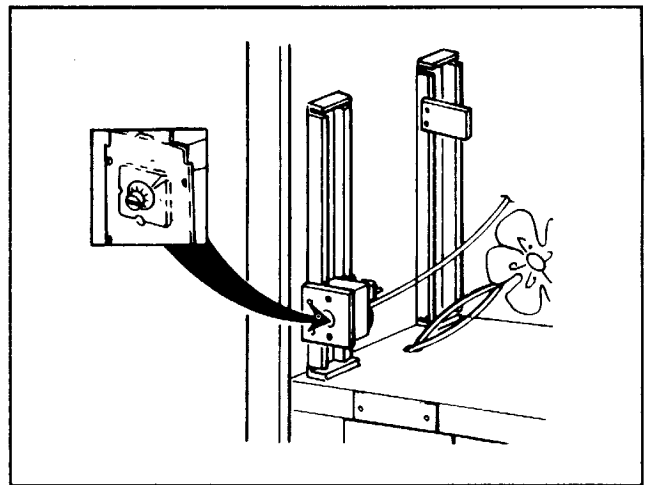


Figure 5.1

SECTION 5: MAINTENANCE

Removal of Vendor Components

NOTE: To prevent damaging the electronics, never plug or unplug any electrical connectors with power applied.

Controller Board (See Figure 5.2)

The controller board is located in the upper left hand corner of the outer door. To remove the controller board, first remove the controller board cover by removing the two screws holding it in place. Once the cover is removed, unplug the harnessing from the controller board. Remove ground screw from the lower right hand stand-off and free the controller board from the five nylon stand-offs by pressing in the small tab on each stand-off and pulling out on the controller board.

Digital Display (See Figure 5.3)

The digital display is located on the inside of the vendor outer door above the coin changer and just below the drip tray. To remove, remove two screws securing drip tray and remove the drip tray. Next, unplug the harness from the digital display board and pull straight out on the digital display board.

Low Voltage Transformer (See Figure 5.2)

The low voltage transformer, hereafter referred to as transformer, is located on top of the main door. To remove, unplug the harness going from the transformer to the controller board, unplug the harness from the light ballast. Trace the two wires from the mate of the light ballast connector down to the two pin connector located at the lower center portion of the outer door and unplug the connector. Free these two wires and remove the two nuts holding the transformer to the outer door and remove transformer and harness assembly.

Coin Changer

See appropriate coin changer service manual.

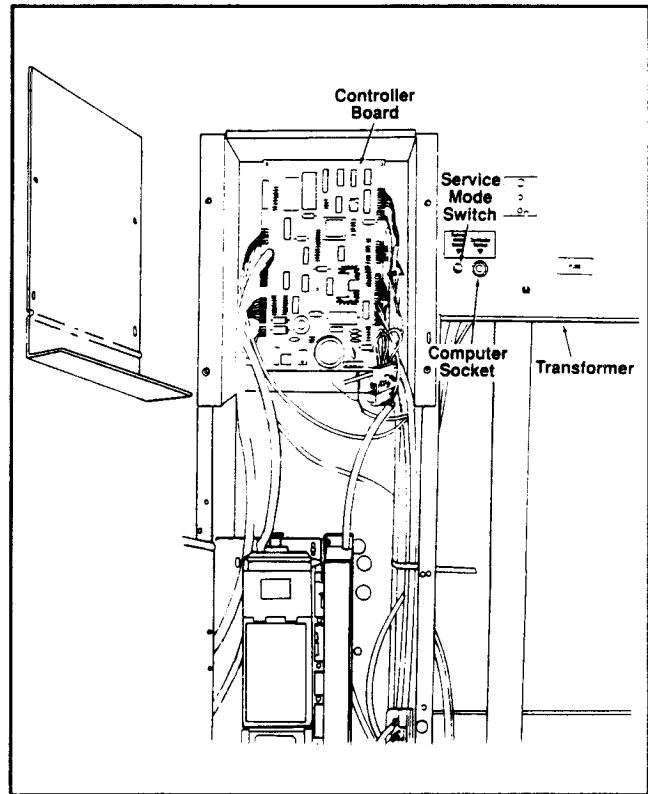


Figure 5.2

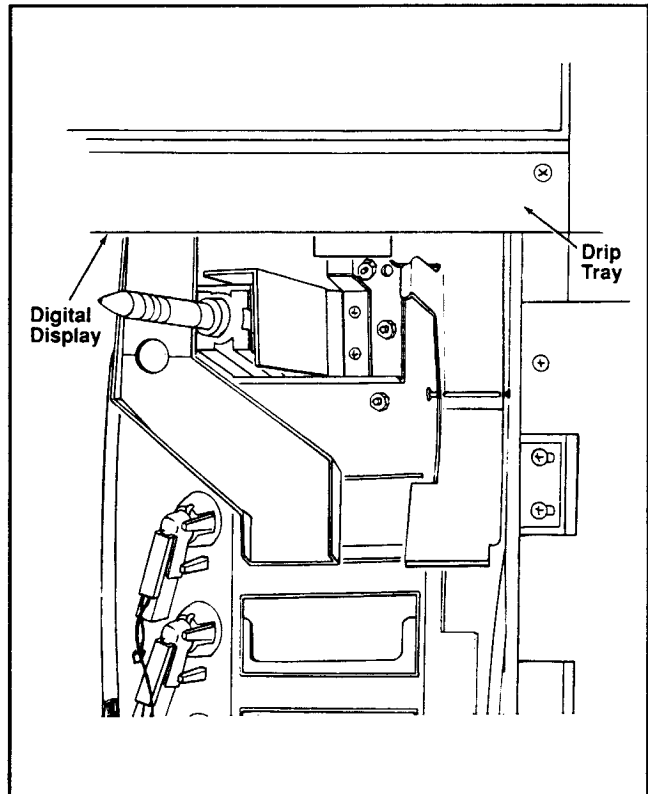


Figure 5.3

SECTION 5: MAINTENANCE

Delivery Chute Sensor (See Figure 5.4)

The delivery chute sensor is located on the underneath side of the delivery chute. To remove, lift the vinyl cover from the delivery chute. Locate the four rivets holding the delivery chute sensor to the bottom of the delivery chute. Using a 1/8 inch drill bit, drill out the four rivets holding the sensor to the bottom of the delivery chute. To totally remove the vinyl cover, drill out the two rivets located in the upper left and right corners of the delivery chute using a 1/8" drill bit. Remove the two screws from the bracket where the harness and cooling lines enter the refrigerated compartment. Trace the delivery chute sensor harness back to the bottom of the vendor outer door and unplug the harness. Remove sensor and harness assembly.

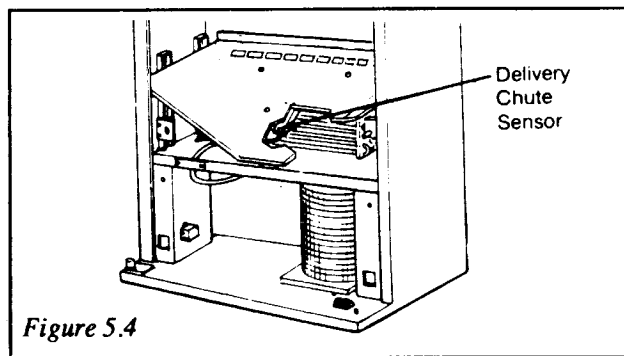


Figure 5.4

LIGHTING

To remove the fluorescent lights, grasp light and lift upward. Remove the bottom of light tube from fixture, lower light tube and free from the top fixture, remove light.

Light Ballast

The light ballast is located on the outer door to the right of the coin changer compartment. To remove ballast, unplug light ballast, remove the lights and remove the four screws holding the four light fixtures. Remove the two screws securing the light ballast, remove ballast.

Vend Rack Assembly (See Figure 5.5)

Remove the four 3/8 hex head bolts which secure the vend rack. Remove the vend motor from the vend rack and lay in bottom of cabinet. (See vend motor for more details.) Slide vend rack out of vendor cabinet.

CAUTION: Support main door or cabinet may fall over. Vend rack weighs 200+ lbs.

Selection Switches (See Figure 5.6)

There are nine selection switches located behind the coin changer on the outer door. To remove, unplug harness from the switch and unplug switch.

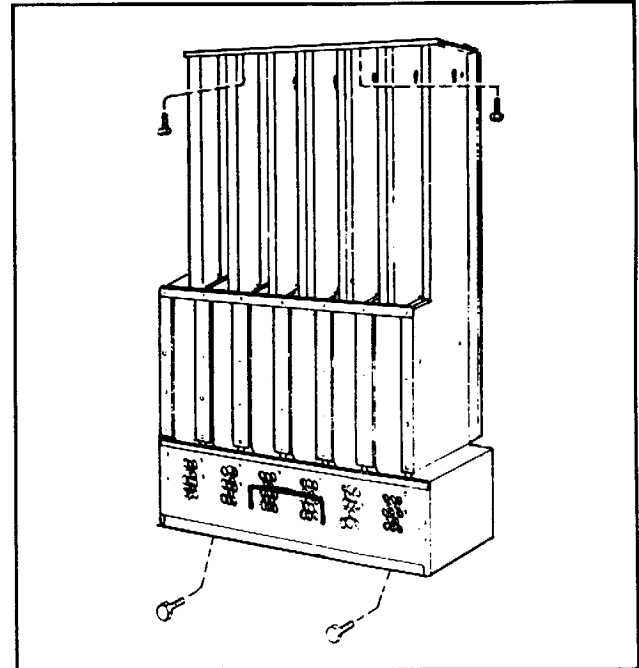


Figure 5.5

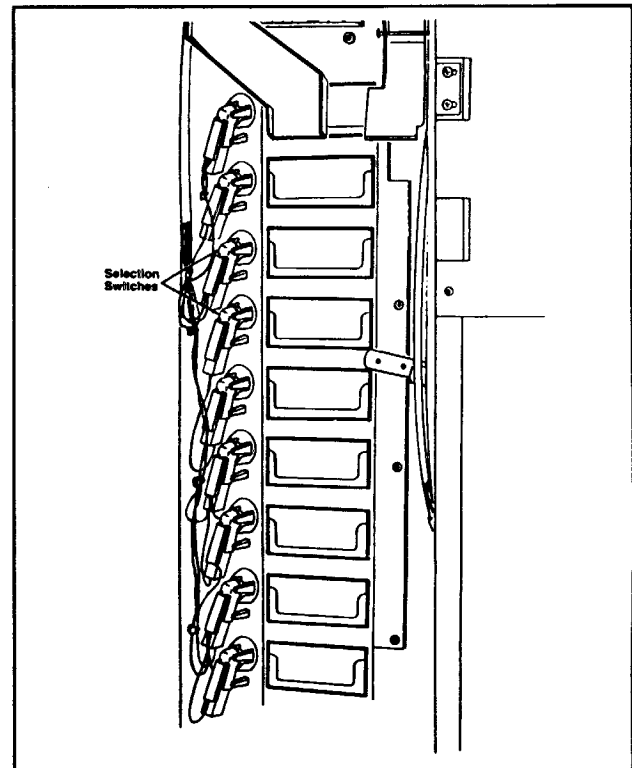


Figure 5.6

SECTION 5: MAINTENANCE

Drive Chain and Actuator Assembly (Figure 5.7)

The drive chain and actuator assembly is located on the bottom of the vend rack assembly. The drive chain and actuator assembly runs from the vend motor sprocket on the bottom left side to a spring loaded idler sprocket on the bottom right side and is supported in the middle by two equally spaced idler pulleys. To remove the drive chain and actuator assembly, place two fingers behind the spring loaded idler sprocket on the right side and pull the sprocket to the left. With the sprocket pulled to the left, remove the chain from the vend motor sprocket, let the chain and actuator assembly hang. Remove the screw securing the spring loaded idler sprocket. Lift idler sprocket to free the two keys from the key holes and remove chain and actuator assembly with idler sprocket.

NOTE: When reinstalling the drive chain and actuator assembly, make sure the magnets of the actuators are facing the back of the vendor. Also, make sure the top run of the chain is positioned over the stabilizer brackets.

Stabilizer Brackets (Figure 5.7)

There are two equally spaced drive chain stabilizer brackets, connected to the bottom center wall of the vend rack by two screws each. To remove, remove screws and remove stabilizer brackets.

Vend Motor (Figure 5.7)

The vend motor is located on the bottom left side of the vend rack assembly. To remove the vend motor, unhook the drive chain from the vend motor sprocket by locating the spring loaded idler sprocket on the right hand side and pulling the idler sprocket to the left. With the idler sprocket pulled to the left, slip the drive chain off of the vend motor sprocket and let the chain hang. Remove the two screws from the vend motor bracket and lift the vend motor to free the three keys from the key slots. Remove the home sensor (see Home Sensor, this section).

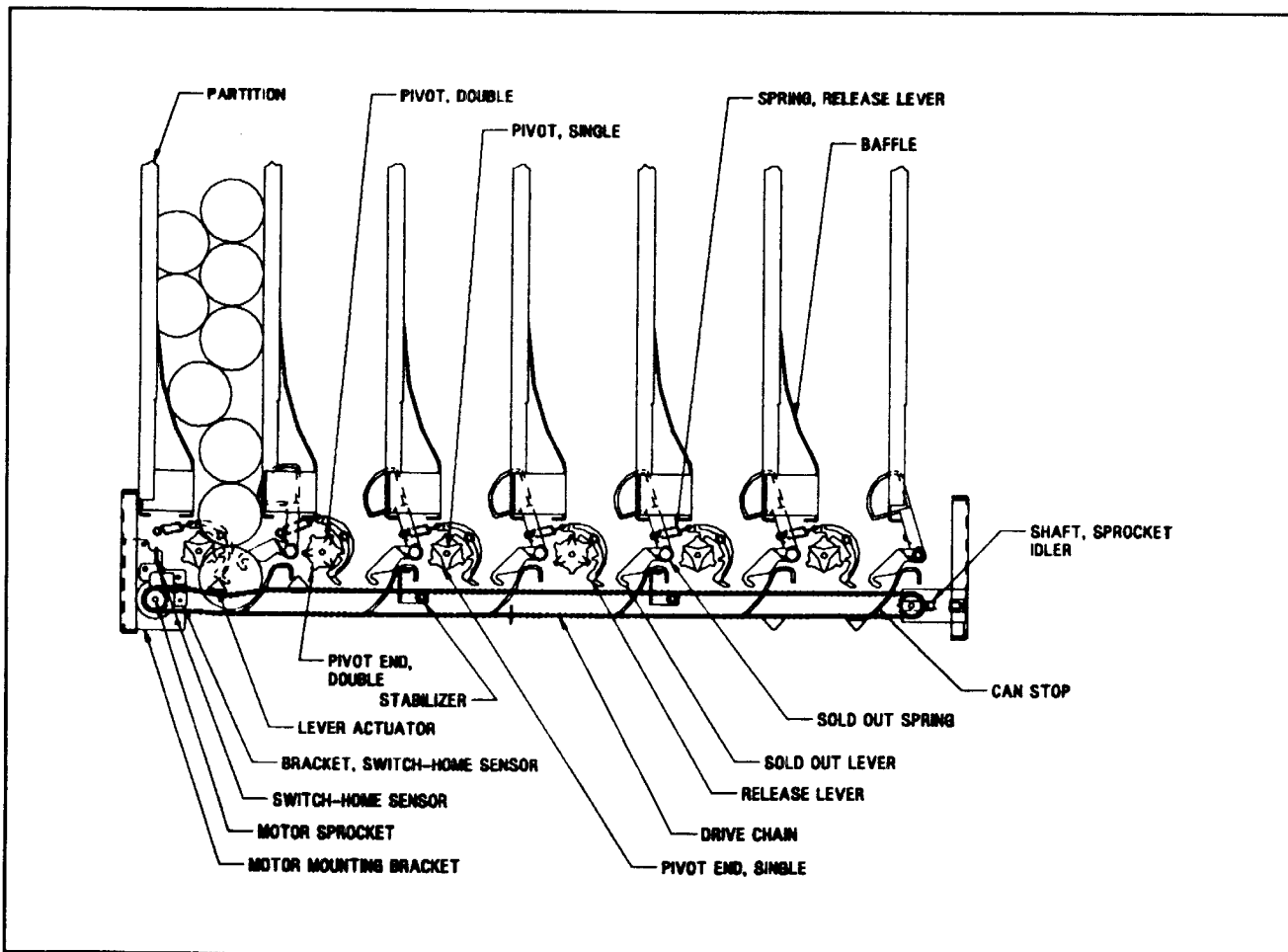


Figure 5.7

SECTION 5: MAINTENANCE

Home Sensor (See Figure 5.7)

The home sensor is located on the vend motor mounting bracket just above the vend motor sprocket. To remove the home sensor, remove the two nuts which secure the home sensor, pull sensor forward and remove. Remove the two screws from the bracket where the harness and cooling lines enter the refrigerated compartment. (See Figure 5.10) Trace the home sensor harness back to the bottom of the vendor outer door and unplug harness. Remove harness and sensor assembly.

CAN PIVOT AND RELEASE LEVER (Figure 5.7)

There are twelve can pivot and release levers, one for each column. They are located on the bottom of the vend rack assembly's center wall. These release levers are actuated by the actuators on the drive chain assembly. To remove a release lever, remove the release lever spring, then remove the C-clip which holds the release lever.

CAN PIVOT (See Figure 5.7)

There are twelve can pivots, one for each column of the vendor, held in by six mounting rods. To remove, loosen the screw securing the can pivot mounting rod retainer. Slide the retainer up, releasing the mounting rod and pull the rod out while holding the back can pivot. When the rear can pivot is free, remove rear can pivot. Hold the front can pivot and pull the mounting rod out the rest of the way. Remove front can pivot.

NOTE: Longer can pivots go to the rear columns and toothed pivot ends go to the center of vend rack.

EMPTY LEVERS (See Figure 5.7)

There are twelve empty levers, one for each column of the vendor. To remove, remove the C-clip which holds the empty lever, unhook empty lever spring and remove empty lever.

DELIVERY CHUTE (See Figure 5.8)

Remove the 3/8 inch hex head bolt and phillips locating screw from the delivery chute (front center of chute). Lift delivery chute slightly and pull forward. If total removal of delivery chute and delivery chute sensor is desired, remove delivery chute sensor harness as explained under delivery chute sensor this section.

DOOR SWITCH (See Figure 5.8)

The door switch is located in the refrigerated compartment on the right side of the vendor cabinet and is actuated by the vendor's inner door. To remove, unplug the door switch harness from the N/O and C terminals of the door switch. Compress the two tabs of the door switch and pull switch forward. The door switch bracket is held on by two screws. To remove, remove two screws and remove bracket.

COOLING SYSTEM

COMPRESSOR

To remove the compressor as a sealed unit, first remove the delivery chute (see delivery chute this section). Remove the two 3/8 inch bolts holding the compressor and condenser assembly. Remove the two screws and strap which secure the harness and cooling lines where they enter the refrigerated compartment. Remove the two screws from the sheet metal shroud to the left of the condenser coils. Remove the four screws securing the evaporator coil and pull the entire sealed system forward, being careful not to damage the drain tube.

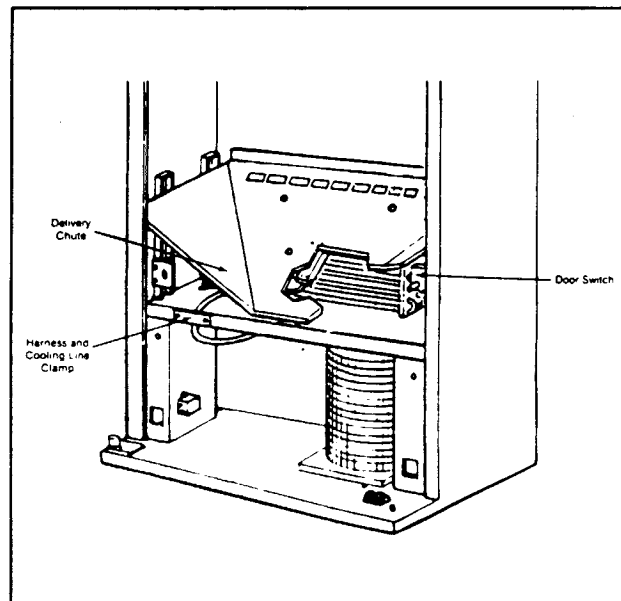


Figure 5.8

SECTION 5: MAINTENANCE

EVAPORATOR FANS

With the delivery chute removed (see "Delivery Chute," this section), remove the sheet metal cover from the top of the evaporator coil by pushing back and lifting on the cover. Unplug the harness coming from the fans. Remove the two 3/8 inch bolts from the fans (one bolt per fan), lift fans and remove.

TEMPERATURE CONTROL (See Figure 5.9)

Unplug harness from temperature control, remove the two screws securing temperature control and pull the capillary tube from protective tube. Remove temperature control.

CONDENSER FAN

From the back of the vendor, locate the condenser fan and compressor assembly. Remove the bale strap and cover from the starter overload located on the compressor. Remove the condenser fan harness from the compressor. Remove the four screws that secure the fan assembly from the condenser. Remove fan assembly.

NOTE: Condenser coils must be kept unrestricted for maximum efficiency.

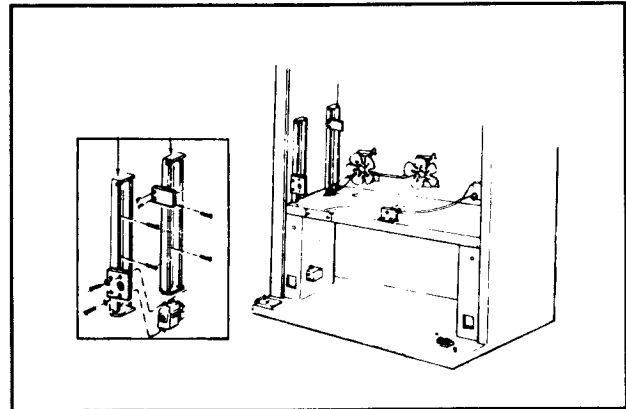


Figure 5.9

Service Mode

When the vendor door is opened, the vendor will automatically enter the service mode. If any errors have been detected by the controller, those error codes will be displayed for one second, sequencing each error code until all have been displayed, then repeating until errors have been cleared. For detailed instructions on clearing error codes, see ERROR under Service Menu this section.

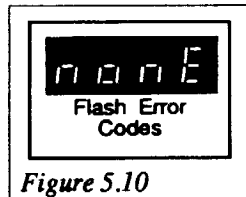


Figure 5.10

NOTE: If no errors have been detected, the display will read "NONE". (See Figure 5.10)

The following is a list of error codes and their descriptions:

Er-1	Jammed Column
Er-2	Drive Mechanism
Er-3	Door Open
Er-4	Selection Switch
Er-5	Changer
Er-6	Acceptor
Er-7	Chute Sensor
Er-8	Column Assignment
Er-9	Validator

SECTION 5: MAINTENANCE

The following functions are performed each time the vendor door is closed.

1. Clears any column sold outs and column jam errors from the controller memory.
2. Resets the coin changer back to zero credit state.
3. Sequences the digital display segments and LED's. This indicates the door switch has been actuated and the display is functioning correctly.
4. Allows controller to acknowledge STS change.

Service Menu

Open the vendor's main door, open inner door to access the vendor controller board. Locate the control board service mode switch. There are five service menus which can be entered by depressing the service mode switch one to five times.

SERVICE MENUS ARE AS FOLLOWS:

Depress mode switch one time:	CANS Menu
Depress mode switch two times:	CASH Menu
Depress mode switch three times:	ERRORS Menu
Depress mode switch four times:	COST Menu
Depress mode switch five times:	STS Menu
Depress mode switch six times:	Immediate return to sales mode

NOTE: The vendor will automatically return to the sales mode if the vendor door is closed or five minutes elapses with no activity in any of the service menus.

Menu Explanation

CANS: When the service mode switch is pressed one time, the display will read "CANS" for one second, then the total number of cans vended will be displayed. This cumulative total of cans vended is non resettable. This can total includes all completed vends made (excluding test vends) regardless if the vendor door is open or closed however, it does not include service vends or test vends using the HHC diagnostic function. When any selection switch is pressed while in the CANS menu, the total number of cans vended from that selection since last reset will be displayed. For selection reset options, see "Controller Switch Settings Switch #5," under Set-up and Installation section, this manual.

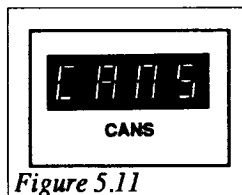


Figure 5.11

CASH: When the service mode switch is pressed a second time, the display will read "CASH" for one second, then the display will read the total cash accumulated. If the amount is \$99.95 or less it will be displayed as dollars and cents.

If the amount is over \$99.95, it will be displayed as hundreds of dollars for one second followed by tens and units of dollars and cents.

Example: \$195.95 will be displayed as 1 followed by 95.95. If any selection switch is pressed

while in the CASH menu, the cash since last reset will be displayed for that selection. For selection reset options, see "Controller Switch Settings Switch #5," under Set-up and Installation section, this manual.

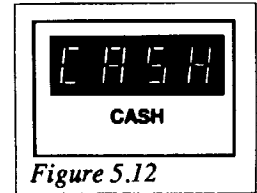


Figure 5.12

ERROR: When the service mode switch is pressed a third time, the display will read "ERRS" followed by any errors that have been detected by the controller. Those error codes will be displayed for one second, sequencing each error code until all have been displayed, then repeating until errors have been cleared. When a selection is pressed and released while an error is being displayed, a more detailed code will be displayed. Example: If Er-1 is being displayed and a selection button is pressed, the display will cycle through the columns jammed in one second increments, if "CJ-1" and "CJ-10" are being displayed, this means that columns 1 and 10 are jammed.

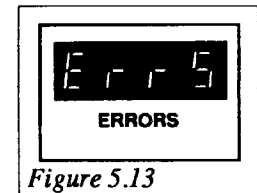


Figure 5.13

CLEARING ERROR CODES: All error codes should be cleared from the controller memory each time the vendor is serviced. Error codes that are not cleared will be displayed the next time the vendor is serviced. Most error codes will automatically be cleared from the controller memory once the error has been corrected and the vendor door is closed. Some error codes, however, must be manually cleared from the controller memory as follows:

When an error code is being displayed in the service menu, pressing any vendor selection switch and keeping it depressed for two seconds will clear the error code from the controller memory. If more than one error code has been detected by the controller, these error codes will continue to be displayed until they are also cleared from the controller memory.

NOTE: The troubleshooting section of this manual contains a list of all error codes and their descriptions.

SECTION 5: MAINTENANCE

COST: When the service mode switch is pressed a fourth time, the display will read "COST." To set the price, first check the single/multiple switch setting (see "Controller Switch Settings Switch #1," under Set-up and Installation section, this manual). Next, press a selection switch which you wish to change. The display will show the price of that selection. Holding that selection switch down will cause the vend price to increment by 5¢, then 10¢ increments every 1/2 second until the switch is released. Releasing the selection switch for two seconds and reselecting it will cause the vend price to decrement by 5¢, then 10¢ decrements every 1/2 second until the switch is released. When incrementing price on the high end, pricing goes from \$12.75 to Free to \$.05. When decrementing price on the low end, pricing goes from \$.05 to Free to \$12.75. In single-price mode, setting one selection price sets all selection prices. In multi-price mode, all selections must be set as previously explained. After five minutes with no activity, the vendor will automatically return to the sale mode.

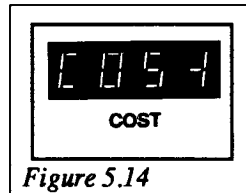


Figure 5.14

NOTE: In the multi-price mode, after changing the sale price, install the appropriate price decal on the appropriate selections if desired. Also, the ability to change prices may be locked out by the HHC.

SPACE-TO-SALES: The STS mode gives the service personnel the flexibility to specifically assign any of the 12 vend columns to any of the 9 different selection switches. When manually setting the STS, the vendor's digital display becomes your reference for column to selection designation.

The twelve vertical segments for the three right digits of the digital display indicate the 12 columns.

The top six vertical segments represent from right to left columns 1 through 6. The six lower vertical segments represent from right to left columns 7 through 12. The left most digit will display the selection being programmed.

(See Figure 5.15)

To manually re-assign the STS allocations with the selection switches, do the following:

1. Determine the column to selection designations you wish to program.
2. Set switches #2 and 3 of the controller board switch module to the OFF position.
3. Enter the STS mode by pressing the service mode switch five times. The credit display should indicate STS.

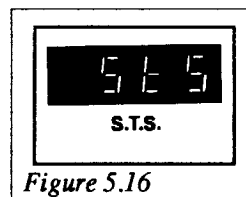


Figure 5.16

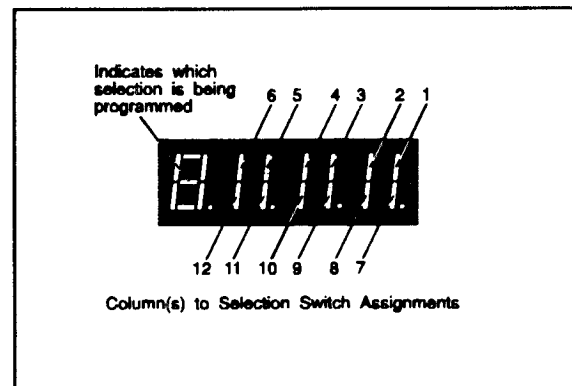


Figure 5.15

SECTION 5: MAINTENANCE

4. Press any selection switch. The left-most digit of the display will show that selection's number. The lighted vertical segments of the right three digits will show the columns assigned to that selection. (See Figure 5.15)
5. To change the column to selection designation for any selection, press and hold the desired selection switch for two seconds or until the upper right most vertical segment representing column one begins to flash. (To leave that column's designation the same, press the same selection switch.) The segment representing the next column will now begin flashing.

To change or toggle that column's designation, press any other selection. The segment representing the next column will now begin flashing. If the column was on it will turn it off and if it was off it will turn on. Each time a selection is pressed the display will step through the segments until all 12 have been shown. Pressing the selection a thirteenth time clears the flashing segments allowing you to begin programming the next selection.

EXAMPLE: *If column 3 is assigned to selection one and you wish to assign column 3 to selection two, press the service mode switch five times or until the display shows "StS" (see Figure 5.16). Now press and hold selection switch one for two seconds until the display shows a one in the left most digit and the right most upper segment is flashing. Press and release selection switch #1 two more times. Note that the flashing segment moves to the third segment from the right upper row. Now press any other selection (maybe selection 2). Note that segment #3 which was lighted is now out and segment four is now flashing. Press and release selection #1 until there is no segment flashing on the display. Now press and hold selection #2 until the left-most digit displays a two and the right-most upper segment of the display is flashing. Press and release selection #2 two more times until the third segment is flashing. Press and release any other selection (maybe selection #3). Note that the third segment is lighted and the fourth segment is now flashing. Continue to press and release selection #2, to step through segments and clear display. Repeat step 5 for other selections to be programmed.*

NOTE: *STS programming may be locked out by the HHC.*

TEST VENDS: When the service mode switch is pressed a sixth time, the display will read "TEST." This mode allows test vending using coins and dollar bills without incrementing the sales, cash and can totals.

If the vendor door is closed while in the test vend mode, a vend will be allowed for up to 30 seconds. If a test vend is not made within 30 seconds, the credit will be erased and the vendor will return to the sales mode.

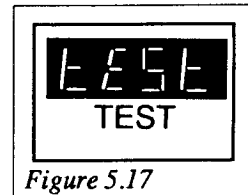


Figure 5.17

RETURN TO SALES MODE: When the service mode switch is pressed a sixth time, the display will read "END" for one second and immediately return to the sales mode. You may also return to sales mode at any time by closing vendor door.

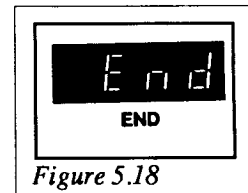


Figure 5.18

SECTION 5: MAINTENANCE

Trouble Shooting

The GII vendor is equipped with a self-diagnostic feature to aid in the repair and maintenance of the vendor. When servicing the vendor, pay close attention to the digital display. When the vendor door is opened the electronics will begin displaying any error codes that are stored in memory. If there are no errors, the display will read NONE. See "Service Mode," this section.

Enter the service menu by pressing the controller service mode switch three times. The display will read "ERRS," then display all errors which are stored in the controller memory. While an error is being displayed, pressing and releasing any selection switch will signal the controller to display a more detailed error code. Following is a list of all error codes and their descriptions.

ERROR	DETAILED ERROR CODES AND PROBABLE CAUSE AS DISPLAYED	CORRECTIVE ACTION
ER-1 (Column Jams)	CJ-1 Column One Jammed CJ-2 Column Two Jammed CJ-3 Column Three Jammed CJ-4 Column Four Jammed CJ-5 Column Five Jammed CJ-6 Column Six Jammed CJ-7 Column Seven Jammed CJ-8 Column Eight Jammed CJ-9 Column Nine Jammed CJ-10 Column Ten Jammed CJ-11 Column Eleven Jammed CJ-12 Column Twelve Jammed	Clear Jam Clear Jam Clear Jam Clear Jam Clear Jam Clear Jam Clear Jam Clear Jam Clear Jam Clear Jam Clear Jam Clear Jam Clear Jam Check for contamination on release lever.
ER-2 (Drive Mechanism)	HS (Home Sensor) rAB (Rabbit/Actuator) Chn (Chain) Enc (Encoder)	Check chain for proper installation. Replace Home Sensor* Replace Chain* Replace Chain* Check 24V AC Fuse. If fuse is OK, replace Motor Assembly*
ER-3 (Door)	Door opened for more than one hour.	Check door switch and harness. Replace if necessary.
ER-4 (Selection Switches)	SS-1 Switch One Closed SS-2 Switch Two Closed SS-3 Switch Three Closed SS-4 Switch Four Closed SS-5 Switch Five Closed SS-6 Switch Six Closed SS-7 Switch Seven Closed SS-8 Switch Eight Closed SS-9 Switch Nine Closed	Replace Switch Replace Switch Replace Switch Replace Switch Replace Switch Replace Switch Replace Switch Replace Switch Replace Switch Check for selection switch lock-outs installed on wrong selections or jammed selection switch buttons.

SECTION 5: MAINTENANCE

ERROR	DETAILED ERROR CODES AND PROBABLE CAUSE AS DISPLAYED	CORRECTIVE ACTION
ER-5 (Changer)	CCO (Changer Communication) tubE (Tube Sensor) icb (Inlet Chute Blocked) <i>No coins have entered in 96 hours.</i>	Check changer harness connections. Replace if necessary. Replace changer if necessary. Replace controller if problem still exists. Defective changer tube sensor board* (see Change Section, F.M.D.) Clear Inlet Chute*
ER-6 (Acceptor)	ESC (Excessive Escrow) <i>Over 240 escrow attempts have been made with no other activity, or acceptor is in escrow position for more than one minute.</i> JA (Coin Jammed) <i>Coin is in the validation circuit for more than five seconds.</i> LO (Low Acceptance Rate) <i>20% of the last 256 coins have been rejected or 52 slugs in a row were detected.</i>	Check out changer and replace if necessary. See separate Changer Manual for details.* Clear Jam* See separate Changer manual. Replace if necessary.*
ER-7 (Chute Sensor)	CHUt <i>Chute Sensor is always on.</i>	Replace Chute Sensor. If problem still exists, replace controller board.
ER-8 (Column Assignment)	d=A column is assigned to more than one selection. u=A column is unassigned to a selection.	Assign columns to appropriate selections. See STS mode page.
ER-9 (Bill Acceptor)	bS Optical sensor blocked or defective bIll Transport or stacked motor defective bJ Bill Jammed bOPn Bill cash box open bFUL Bill cash box full	Remove obstruction or replace bill acceptor. Replace bill acceptor. Remove jammed bill or replace bill acceptor. Close bill acceptor cash box. Remove bills from cash box.
Vendor appears dead; No digital display and No Lights	Defective main harness. Secondary power harness to the transformer. Lights Defective.	Repair main harness or replace. Repair or replace secondary power harness. (See Interconnect Drawing, this section.)
<p>TO RESET A SPECIFIC ERROR CODE, HOLD ANY SELECTION IN FOR TWO SECONDS, WHILE THAT ERROR IS DISPLAYED.</p> <p>NOT ALL TROUBLESHOOTING CAN BE DONE IN THE SELF-DIAGNOSTIC MODE. THE FOLLOWING IS A CONTINUANCE OF POSSIBLE PROBLEMS AND THEIR SOLUTIONS. IT IS BEING ASSUMED THAT THERE IS POWER TO THE WALL OUTLETS AND THE VENDOR IS PLUGGED IN.</p> <p>* ERROR CODE MUST BE MANUALLY CLEARED, SEE CLEARING ERROR CODES UNDER SERVICE MENU THIS SECTION FOR DETAILED INSTRUCTIONS.</p>		

SECTION 5: MAINTENANCE

ERROR	DETAILED ERROR CODES AND PROBABLE CAUSE AS DISPLAYED	CORRECTIVE ACTION
No Digital Display; Vendor Lights On	Transformer not properly connected or defective. Defective display or display harness. Defective controller board.	Check transformer connection. Check power from transformer to controller board. (See Interconnect drawing, this section.) Replace if necessary. Check display and display harness and replace if necessary. Replace controller board.
Vendor Scrolls Message On Display But Does Not Accept Money	Changer out of tune. Defective changer. Defective controller board.	See "Tuning Changer." Replace changer. Replace board.
Vendor Accepts Money But Does Not Credit	Defective changer. Defective controller board.	Replace changer. Replace board.
Vendor Accepts And Credits Money But Does Not Vend (Does Not Indicate A Sold-Out)	Defective selection switch. Defective selection switch harness. Defective controller board.	Replace selection switch. Repair or replace harness. Replace controller board.
Vendor Delivers Wrong Product	Vendor loaded wrong. Vendor space-to-sales set wrong. Defective encoder. Defective controller board.	Correct loading. See STS page. Replace motor assembly. Replace controller board.

REFRIGERATION SYSTEM TROUBLESHOOTING

ERROR	PROBABLE CAUSE	CORRECTIVE ACTION
Refrigeration Unit Inoperative	Line cord not connected, low line voltage. Control Thermostat inoperative. Electrical circuits open. Defective motor start relay or thermal overload protector. Defective compressor.	Correct line cord. See Interconnect page. Connect to circuit with proper line voltage. Replace control thermostat. Locate and repair break. Replace start relay or thermal overload. Check refrigeration system. Replace refrigeration unit.

SECTION 5: MAINTENANCE

ERROR	PROBABLY CAUSE	CORRECTIVE ACTION
Compressor Overheats	<p>Compressor relay not operating properly.</p> <p>Condenser fans/compressor cooling fan not operating properly.</p> <p>Condenser clogged or dirty.</p> <p>Low voltage.</p> <p>Defective compressor.</p>	<p>Check by replacing relay.</p> <p>Check and replace defective parts.</p> <p>Clean condenser.</p> <p>Correct wiring to supply required power.</p> <p>Replace refrigeration unit.</p>
Unit Operates On Short Cycles (runs ON or OFF for less than one minute)	<p>Dirty or clogged condenser screen.</p> <p>Insufficient air circulation.</p> <p>Low line voltage.</p> <p>Defective Start Relay.</p> <p>Cold control thermostate incorrectly adjusted or inoperative.</p> <p>Defective thermal overload.</p> <p>Defective compressor.</p>	<p>Clean condenser and screen.</p> <p>Provide at least 4 inches of free air space behind cabinet.</p> <p>Check line voltage. Should be 105V min., AC 60 Hz.</p> <p>Replace start relay.</p> <p>Reset control or replace.</p> <p>Replace thermal overload.</p> <p>Replace refrigeration unit.</p>
Unit Runs Continuously But Does Not Cool	<p>Insufficient refrigerant.</p> <p>Evaporator freeze-up.</p> <p>Compressor does not pump (damaged Reed plate).</p>	<p>Repair leak, purge and re-charge.</p> <p>Defrost and check for thermostat malfunction or defective refrigeration compartment seal or low charge.</p> <p>Replace refrigeration unit.</p>
Evaporator Freeze-up	<p>Evaporator fan motors not running.</p> <p>Cold control thermostate set too cold.</p> <p>Air leaks into cabinet; front door not sealed.</p> <p>Low charge causing unit to run continuously or capillary tube out of protective tubing.</p>	<p>Check wiring, replace motor if defective.</p> <p>Adjust thermostat.</p> <p>Check door gaskets, refrigerant line seal and other openings.</p> <p>Correct charge.</p>
Cabinet Temperature Too Low	<p>Cold control thermostat not set properly or inoperative.</p>	<p>Adjust cold control to proper setting or replace if necessary.</p>

SECTION 6: OPTIONAL EQUIPMENT

G-II Options

Hand Held Computer (HHC)

The G-II Vendor interfaces with the Direct Exchange/Uniform Communications Standard (DEX/UCS) and DEX/UCS Compatible Hand-held Computers (HHC). The HHC may be used to program the G-II Vendor's vend price and (STS), as well as other pertinent MIS and security information. The HHC interfaces to the vendor's controller board via the computer socket located on the controller board cover. Once the HHC is connected and meets initial communication requirements, it may then be used to program the G-II Vendor. For more information on the HHC see separate HHC manual.

Bill Acceptor

MOUNTING: The bill acceptor mounting hole is located on the inside of the vendor outer door, just above the coin inlet chute (see Figure 6.0). Remove the filler plate by removing the four nuts which secure the filler plate, remove the filler plate and store for future use (in the event the bill acceptor is removed). Install the new bill acceptor mounting plate and bill acceptor in accordance with the bill acceptor mounting instructions provided with the bill acceptor mounting plate and bill acceptor.

INTERFACE (110V AC):

The bill acceptor interfaces directly to the vendor's controller board. Connect the bill acceptor to the controller as follows:

1. Remove the vendor controller board cover (see "Controller Board" under Removal of Vendor Components in the maintenance section of this manual).
2. Connect the bill acceptor interface harness to the bill acceptor and the two pin connector supplying the 110 VAC. This connector is "Y" connection coming from the transformer.
3. Secure bill acceptor harness and reinstall the controller board cover.

INTERFACE (24V AC): Multi-drop Bus

1. Unplug the coin changer.
2. Plug the bill acceptor's Y-harness mating connectors to the coin changer and vendor harnesses.
3. Plug harness into bill acceptor.

NOTE: The interface harness is provided with the bill acceptor.

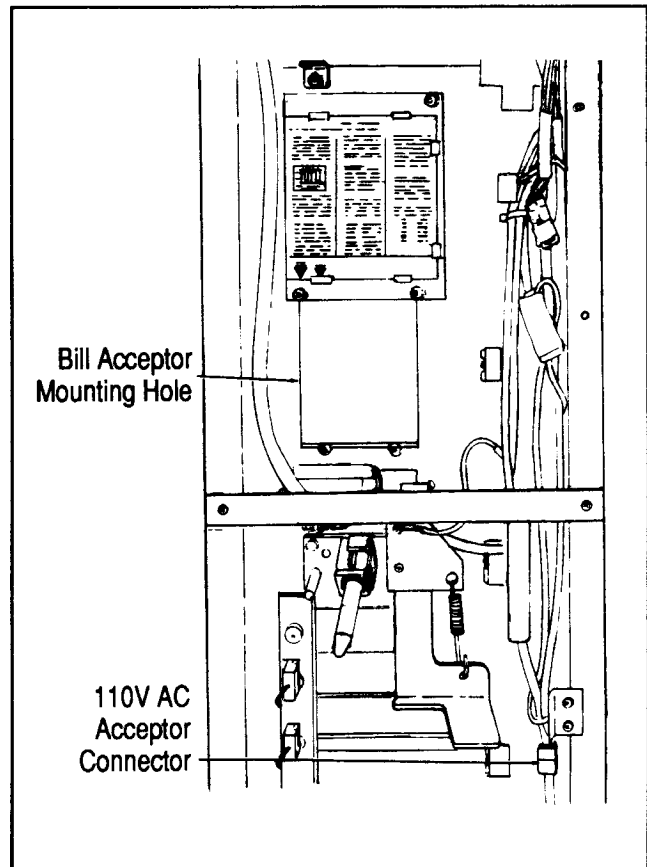
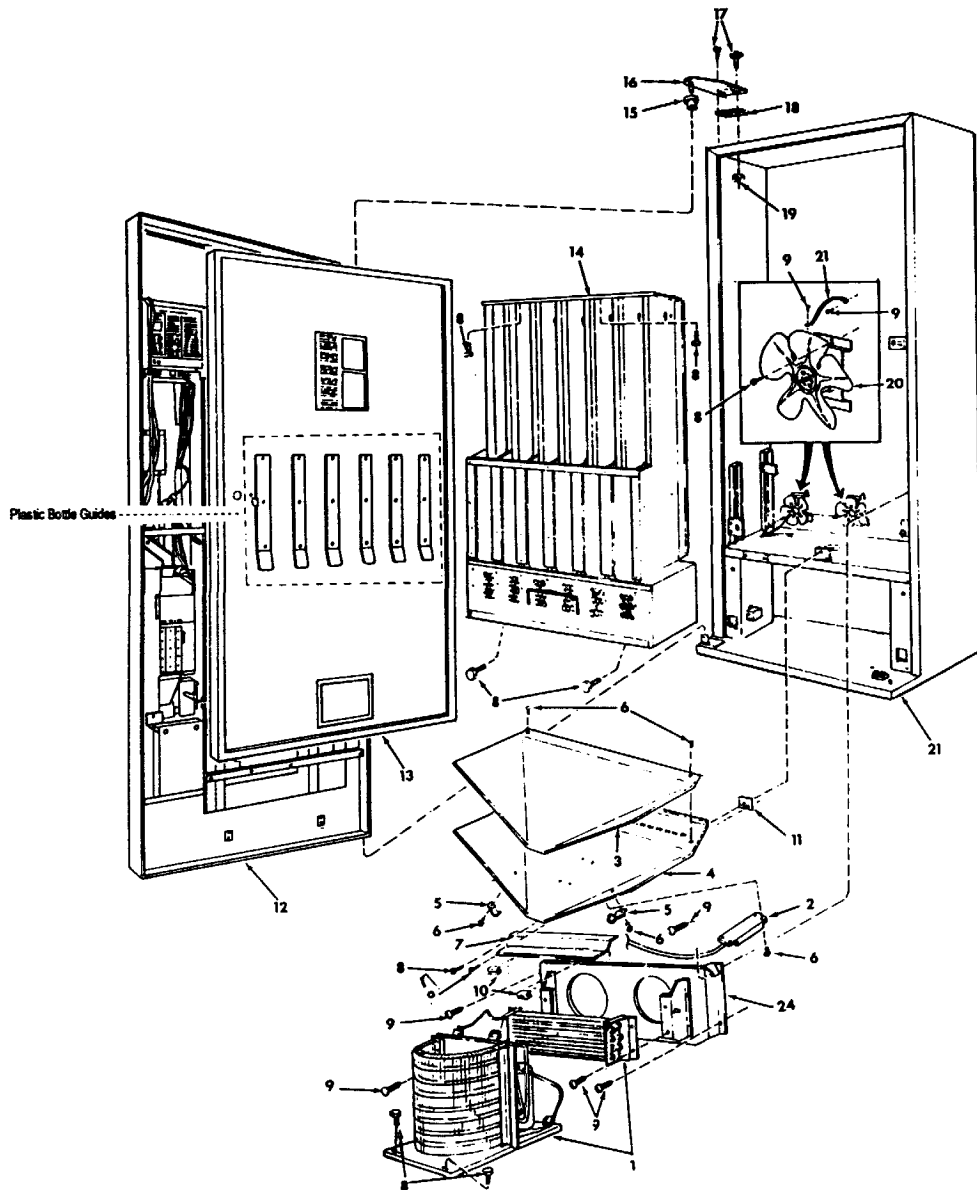


Figure 6.0

External MIS Plug

An external MIS Plug is available with Kit #842099001. Install in accordance with kit instructions.

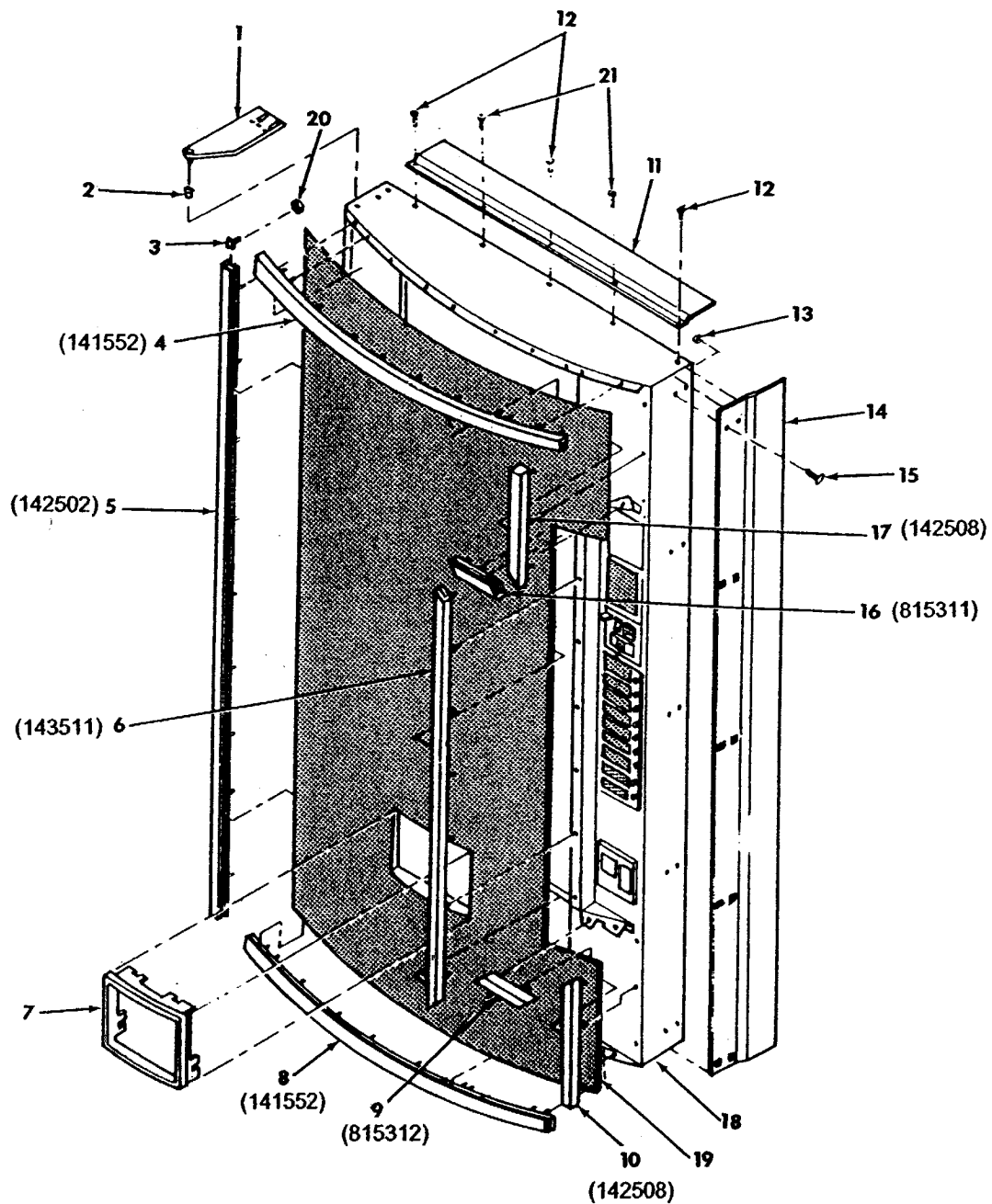
SECTION 7: EXPLODED VIEWS



ITEM #	DESCRIPTION	PART NUMBER	QTY.
1	Refrigeration System	147,430,024	1
2	Delivery Chute Sensor Chute Sensor Adaptor Kit (Run 1300 and before)	836,004,001 <095,150,004>	1
	Chute Sensor Adaptor Kit (Run 1300 and after)	<836,004,001>	
3	Delivery Chute Liner	D095,005,003	1
4	Delivery Chute	E095,004,003	1
5	Tension Clips (Plastic)	A916,047,001	2
6	Rivets	908,004,001	2
7	Cover	B095,008,003	1
8	Bolts	901,003,001	9
9	Screw	902,004,001	7
10	"U" Clips (Metal)	906,007,001	2
11	Isolation Gasket	A915,132,001	1
12	Outer Door Assy., 79.5"	095,540,003	1

ITEM #	DESCRIPTION	PART NUMBER	QTY.
	Outer Door Assy., 72"	096,520,003	
13	Inner Door Assy., 79.5"	095,610,003	1
	Inner Door Assy., 72"	096,610,004	
14	Vend Rack Assembly	095,793,003	1
15	Nyliner	916,012,001	1
16	Top Hinge, left	B810,002,001	1
17	Carriage Bolt	901,008,001	2
18	Top Hinge Spacer	A010,016,003	1
19	Nut	905,002,001	2
20	Evap. Fan Assembly	095,430,004	2
21	Grounding Strap	A010,554,003	2
22	Bolt	901,003,001	3
23	Cabinet Assy., 79.5"	010,230,003	1
	Cabinet Assy., 72"	011,220,003	
24	Evap. Fan Shroud	B095,009,003	1
25	Screw	901,011,001	1

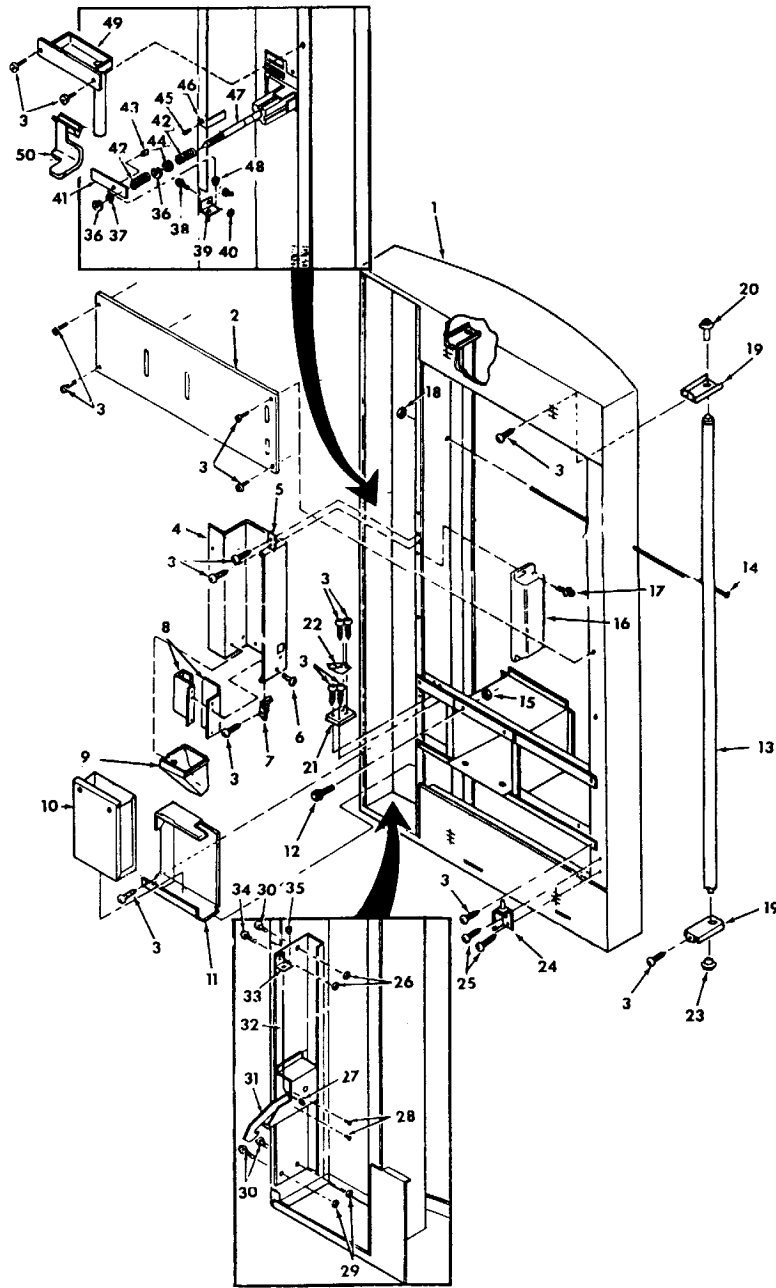
SECTION 7: EXPLODED VIEWS



ITEM #	DESCRIPTION	PART NUMBER	QTY.
1	Hinge	810,002,001	1
2	Nyliner	916,012,001	1
3	"T" Screw	A901,001,001	41
4,5,6,8,9,16	Trim, Flat		190"
7	Port Trim	C815,019,001	1
10	Trim, Angle		13.5
11	Rain Guard	A010,518,003	1
12	Rivets	908,004,001	3

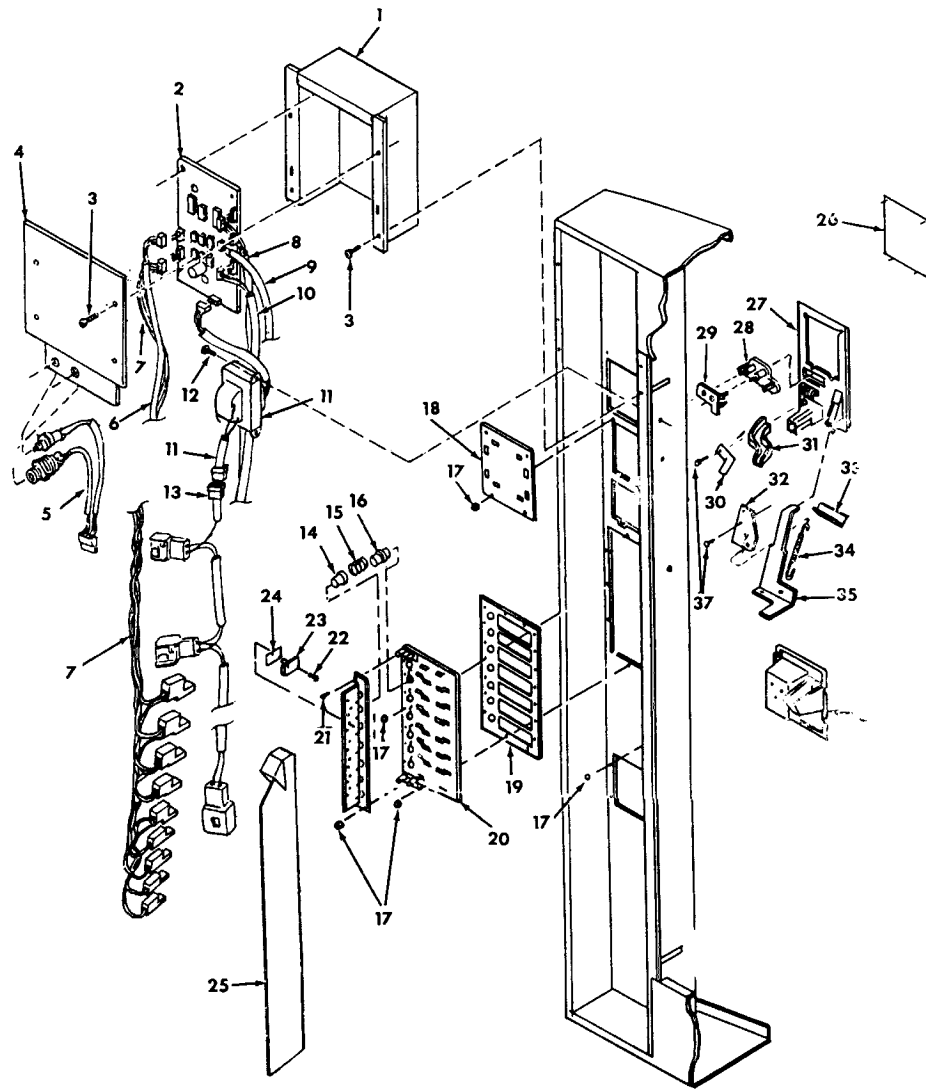
ITEM #	DESCRIPTION	PART NUMBER	QTY.
13	Nut	905,002,001	10
14	R Vandal Panel, 79.5"	B010,519,003	1
15	R Vandal Panel, 72"	011,501,073	1
15	Carriage Bolt	901,007,001	10
18	Door Frame, 79.5"	125,540,014	1
18	Door Frame, 72"	126,520,004	1
19	Sign	845,004,001	1

SECTION 7: EXPLODED VIEWS



ITEM #	DESCRIPTION	PART NUMBER	QTY.	ITEM #	DESCRIPTION	PART NUMBER	QTY.
1	Door Frame	D015,520,003	1	16	Ballast Assy., 79.5"	010,950,063	1
2	Lamp Guard	B012,514,003	1		Ballast Assy., 72"	011,930,063	
3	Screws	902,011,001	19	17	Screw	901,006,001	1
4	Changer Door Assy.	011,580,004	1	18	Nut	905,004,001	1
5	Changer Door Hinge, TOP	A010,570,003	1	21	Latch Roller Bkt.	A010,516,001	1
7	Changer Door Hinge, BOT	010,560,003	1	22	Latch Strike, Inner	812,003,001	1
9	Coin Hopper	C815,015,001	1	24	Hinge, inner Assy.	010,550,003	1
10	Coin Box	C010,580,003	1	26	Keps Nuts	905,002,001	2
11	Coin Box Housing	B010,537,003	1	27	Cable Sleeve	906,015,001	1
12	Carriage Bolt	901,007,001	11	28	Screws	901,011,001	2
13	Fluorescent Bulb	841,001,001	2	30	Bolts	901,007,001	3
14	Tie Rod	A811,001,001	1	31	Door Latch Kit	011,570,004	1
15	Nut	905,002,001	11				

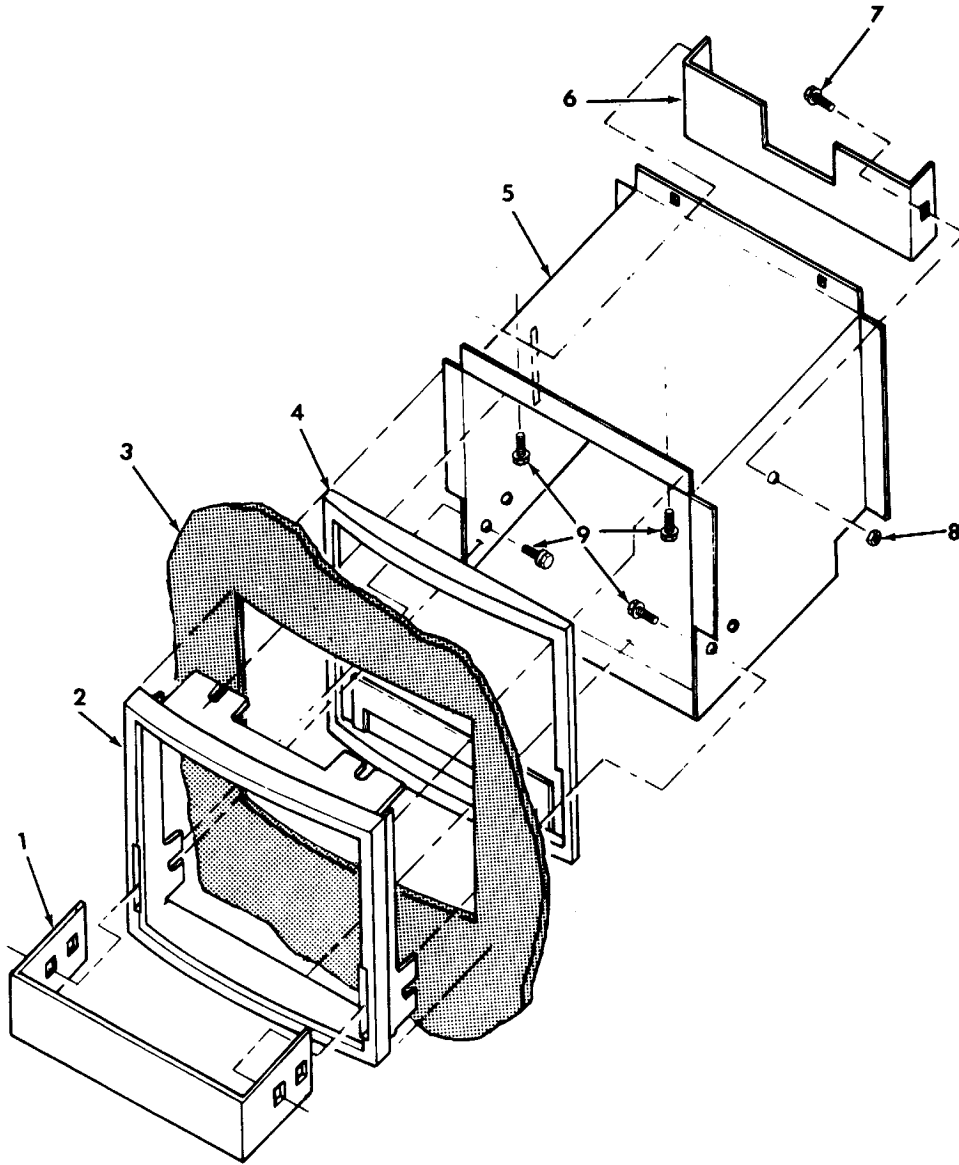
SECTION 7: EXPLODED VIEWS



ITEM #	DESCRIPTION	PART NUMBER	QTY.
1	Logic Board Housing	D095,530,003	1
2	Logic Board	836,059,091	1
3	Screw	902,004,001	6
4	Logic Board Cover	095,512,003	1
5	Harness, Phone Jack	B842,078,001	1
6	Harness, Display	B842,081,001	1
7	Harness, Sel. Switch	D842,044,001	1
8	Harness, Home Sens.	D842,080,001	1
9	Changer Harness Assy.	C842,079,001	1
10	Harness, Mtr. Enc.	C842,083,001	1
11	Trans & Harness Assy.	C842,092,001	1
12	Screw	902,002,001	13
13	Harness, Trans. Power	C842,093,001	1
14	Bushing	916,002,001	1
15	Button Spring	A914,004,001	9

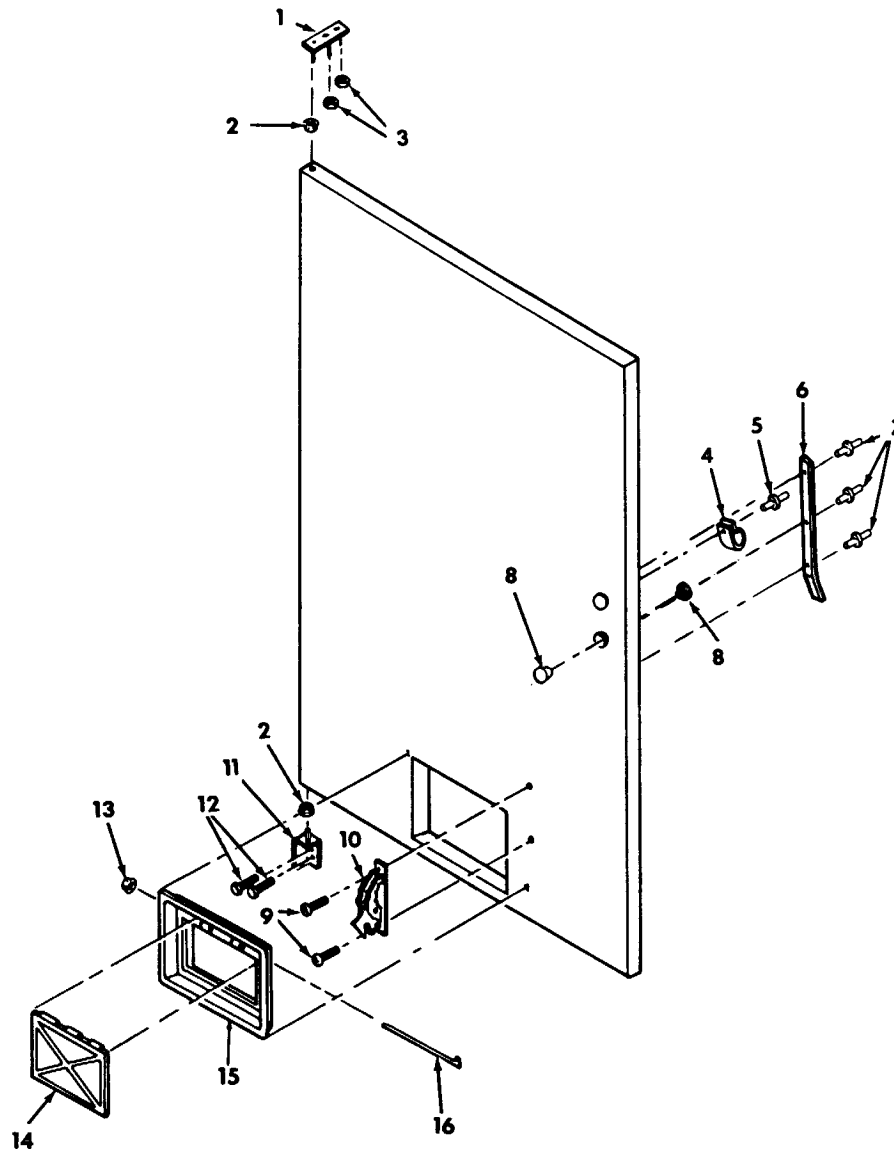
ITEM #	DESCRIPTION	PART NUMBER	QTY.
16	Button	A815,006,001	9
17	Nut	905,001,001	29
18	Point of Sale Window	B815,007,001	1
19	Control Panel/Front	815,034,001	1
20	Control Panel/Rear	815,035,001	1
21	"T" Screw	A901,001,001	4
22	Screw	902,002,001	18
23	Switch	C835,009,001	9
24	Insulator	A942,009,001	9
25	Splash Guard	815,169,001	1
26	Validator Cover Assy. w/ label	010,573,004	1
27	Coin Insert Assy.	010,920,034	1
36	Coin Cup	D815,003,001	1

SECTION 7: EXPLODED VIEWS



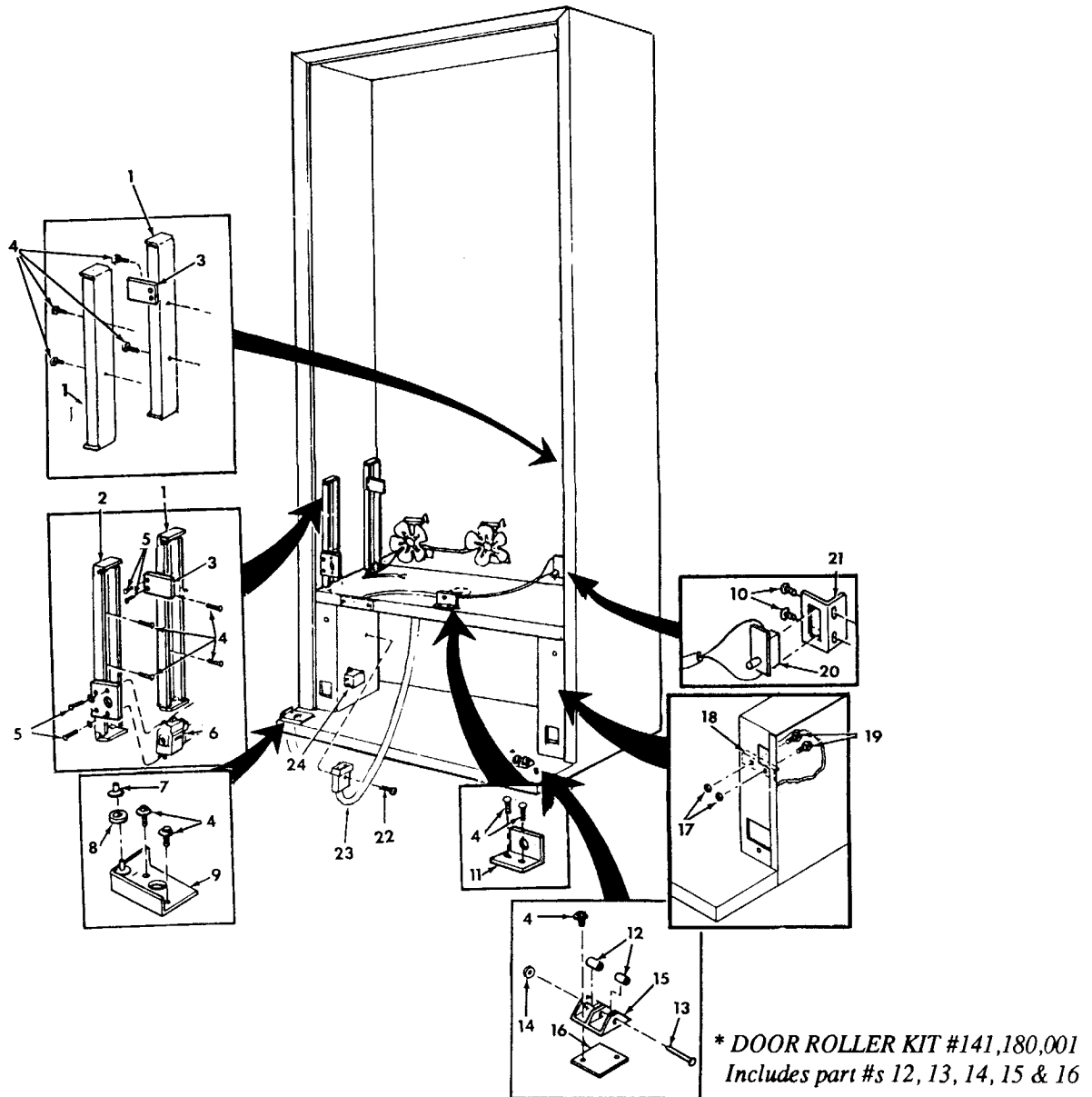
ITEM #	DESCRIPTION	PART NUMBER	QTY.
1	Can Stop	B010,508,003	1
2	Port Trim	C815,019,001	1
3	Sign, 79.5"	845,545,001	1
	Sign, 72"	845,546,001	1
4	Port Spacer	C815,020,001	1
5	Port W/A	D095,520,003	1
6	Anti-theft plate	A010,509,003	1
7	Bolt	901,007,001	2
8	Nut	905,002,001	7

SECTION 7: EXPLODED VIEWS



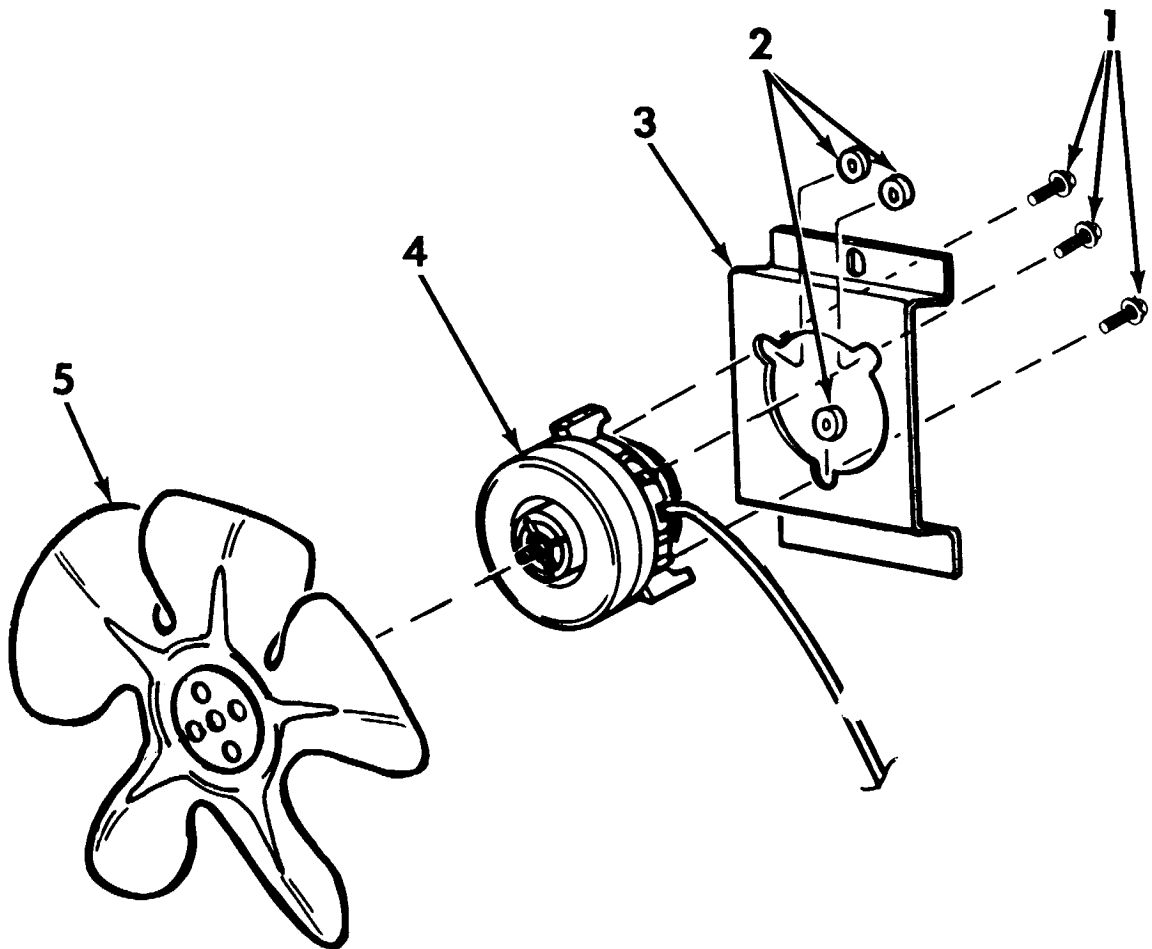
ITEM #	DESCRIPTION	PART NUMBER	Qty.
1	Top Inner Door	010,545,003	1
2	Inner Door Bushing	A815,026,001	2
3	Nuts	905,001,001	2
4	Cable Clamp	916,004,001	1
5	Rivet	908,002,001	1
6	Front Product Retainer	B915,142,001	6
7	Rivets	908,004,001	18
8	Bushing	816,003,001	2
9	Screws	902,004,001	2
10	Latch	812,003,001	1
11	Hinge, Btm., Inner Door	010,543,003	1
12	Screws	901,003,011	2
13	Nut	905,006,001	1
14	Port Door	C815,014,001	1
15	Port Door Frame	C815,013,001	1
16	Port Door Rod	811,004,011	1

SECTION 7: EXPLODED VIEWS



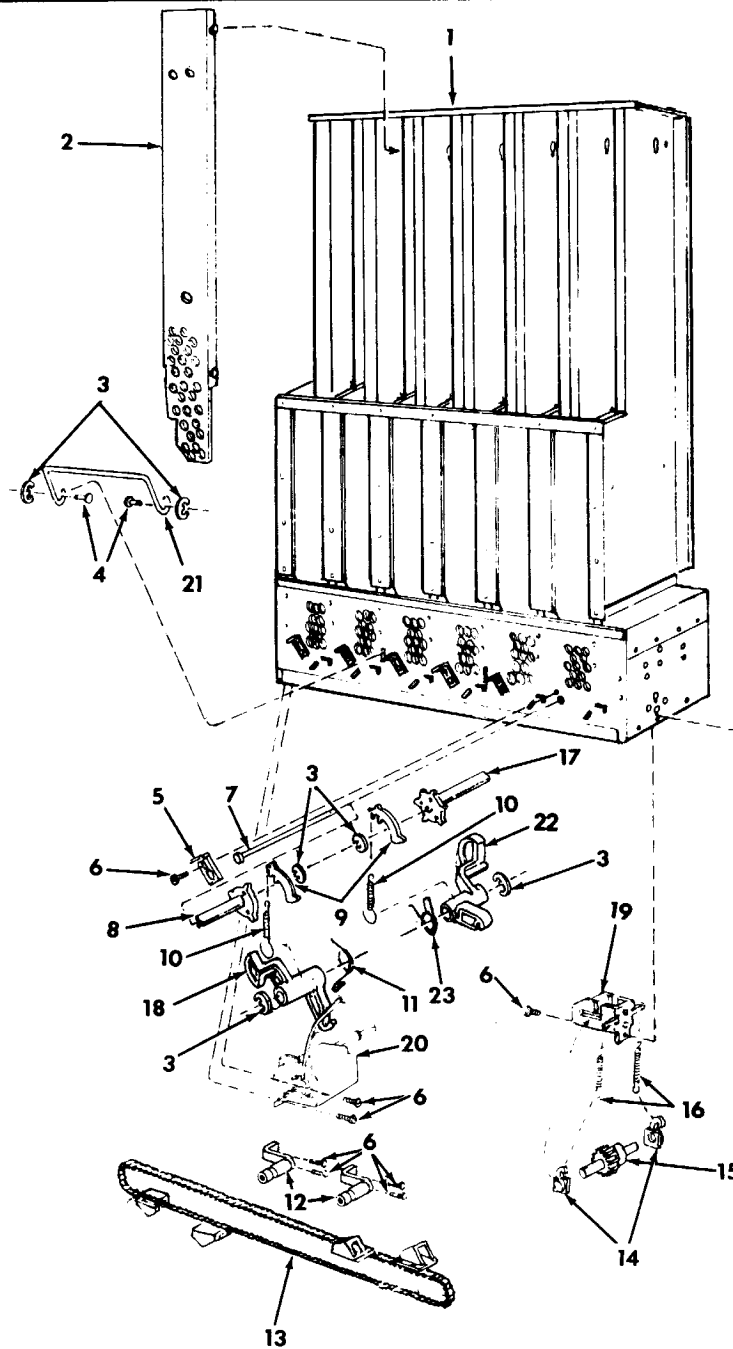
ITEM #	DESCRIPTION	PART NUMBER	QTY.	ITEM #	DESCRIPTION	PART NUMBER	QTY.
1	Support, Rack	C095,003,001	3	13	Roller Pin	A811,002,001	1
2	Support, Rack	A095,040,003	1	14	Retainer Ring	906,005,001	1
3	Rest Plate	A095,012,001	2	15	Roller Bracket	A815,022,001	1
4	Screw	901,003,001	16	16	Roller Spacer	A010,015,003	1
5	Screws	901,011,001		17	Keps Nut	905,002,001	2
6	Cold Control	822,001,001	1	18	Latch Strike	A011,508,003	1
7	Nyliner	916,012,001	1	19	Carriage Bolts	901,007,001	2
8	Washer	904,002,001	1	20	Switch	835,003,001	1
9	Bottom Hinge	A010,040,003	1	21	Door Switch Bracket	A010,045,003	1
10	Bolt	901,003,001		22	Screw	901,027,001	1
11	Can Chute Tie Bracket	A010,017,001	1	23	Power Harness, Assy.	842,090,031	1
12	Rollers	A815,021,001	2	24	Line Filter	C842,072,001	1

SECTION 7: EXPLODED VIEWS



ITEM #	DESCRIPTION	PART NUMBER	QTY.
1	Screws	901,006,001	6
2	Grommet	916,006,001	6
3	Evap. Fan Plate	A010,008,004	2
4	Evap. Motor	839,017,001	2
5	Fan Blade	810,013,001	2

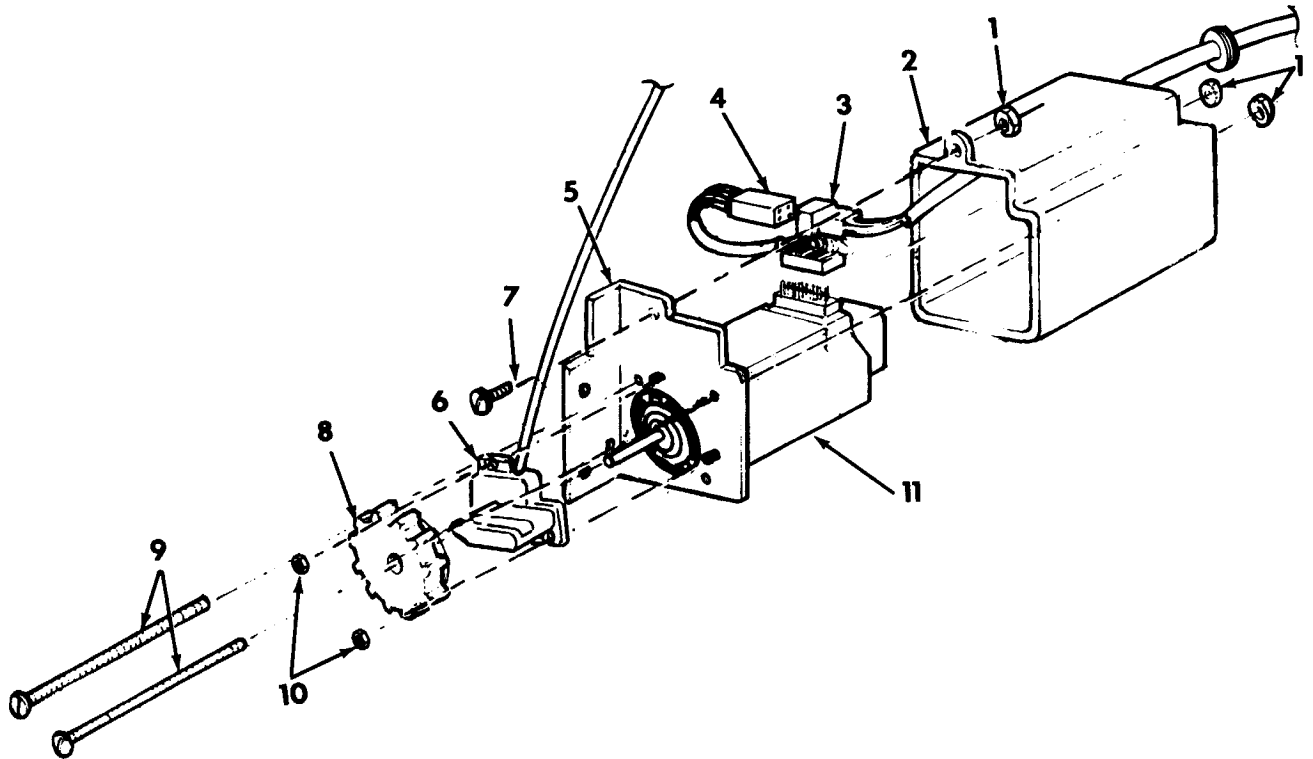
SECTION 7: EXPLODED VIEWS



ITEM #	DESCRIPTION	PART NUMBER	QTY.
1	Vend Rack Assy.	095,793,003	1
2	Rear Retainer Assy.	095,792,003	6
3	Retaining Ring	906,013,001	2
4	Product Support Pivot Shaft	A803,014,001	2
5	Retainer, Pivot Shaft	B095,737,043	6
6	Screw	901,011,001	6
7	Pivot Shaft	B803,015,001	6
8	Single Pivot Assy.	B095,720,003	6
9	Release Levers	D915,125,001	12
10	Spring, Extension	A914,008,001	12
11	Springs, Front	C914,011,001	6
12	Stabilizer Assembly	095,799,004	2

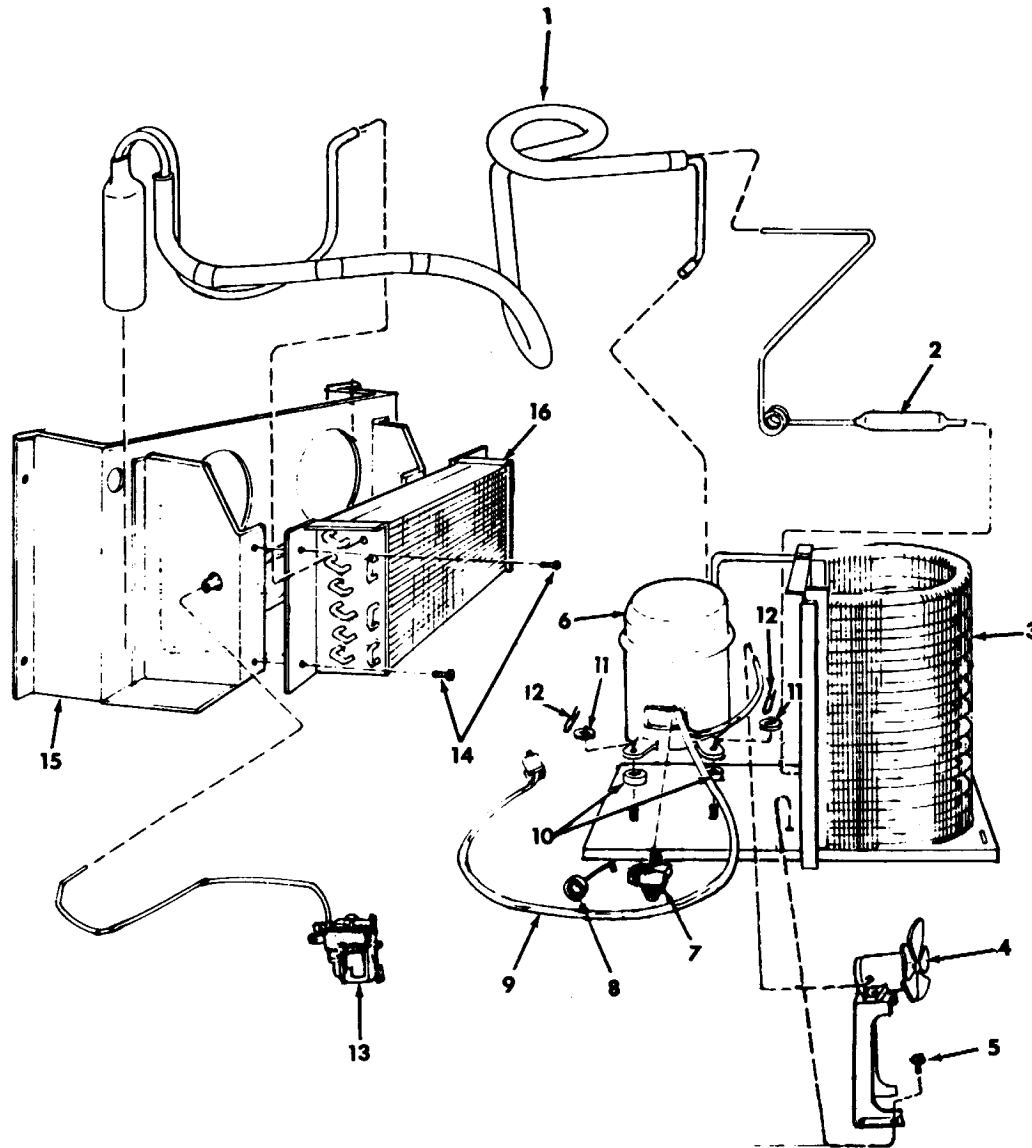
ITEM #	DESCRIPTION	PART NUMBER	QTY.
13	Chair & Actuator Assy.	095,740,003	1
14	Idler Shaft Bearing	C915,079,003	2
15	Idler Sprocket	B095,770,003	1
16	Idler Springs	A914,016,001	2
17	Double Pivot Assy.	B095,730,003	6
18	Sold-out Sensor Lever, Front	D915,127,001	6
19	Idler Bracket & Stud Assy.	B095,750,003	1
20	Motor Assembly	095,794,011	1
21	Case Support	B911,016,001	1
22	Sold-Out Sensor Lever, Rear	915,126,001	6
23	Lever, Front	C914,011,001	1
24	Idler Sprocket Kit	095,795,001	4

SECTION 7: EXPLODED VIEWS



ITEM #	DESCRIPTION	PART NUMBER	QTY.
	Motor Assembly (Includes Item #s 1, 2, 3, 4, 5, 7, 8, 9, 10, & 11)	095,794,004	1
1	Nut		
2	Motor Cover		
3	Harness		
4	Harness		
5	Motor Bracket		
6	Home Sensor Assembly	D842,052,001	1
7	Screw		
8	Sprocket		
9	Screws		
10	Nuts		
11	Motor & Encoder		

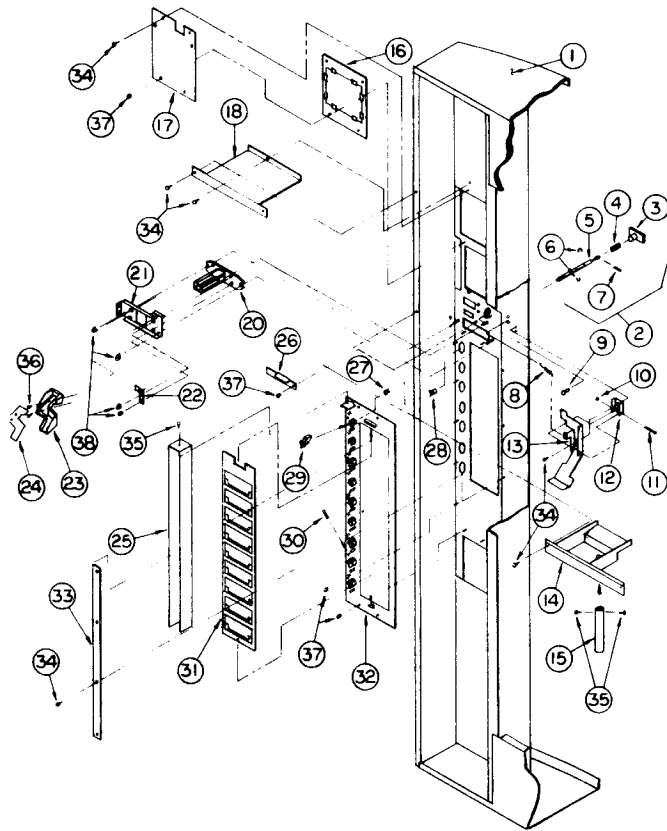
SECTION 7: EXPLODED VIEWS



ITEM #	DESCRIPTION	PART NUMBER	Qty.
1	Heat Exchange Assembly	095,410,003	1
2	Dryer	B824,005,001	1
3	Condenser	C820,005,001	1
4	Condenser Motor Assy. (Blade)	839,010,021 (810,014,001)	1
5	Screw	901,006,001	1
6	Capstart Compressor	819,028,001	1
7	Relay	822,009,001	1
8	Overload	822,010,001	1
10	Grommets	916,015,001	4
11	Grommet Plug	A815,017,001	4
12	Clip	A914,002,001	4
13	Cold Control	822,001,001	1
14	Screws	902,004,001	4
15	Fan Shourd Assy.	095,009,003	1
16	Evaporator Coil	C820,002,001	1

SECTION 7: EXPLODED VIEWS

G-II SELECT PANEL ASSEMBLY - COKE

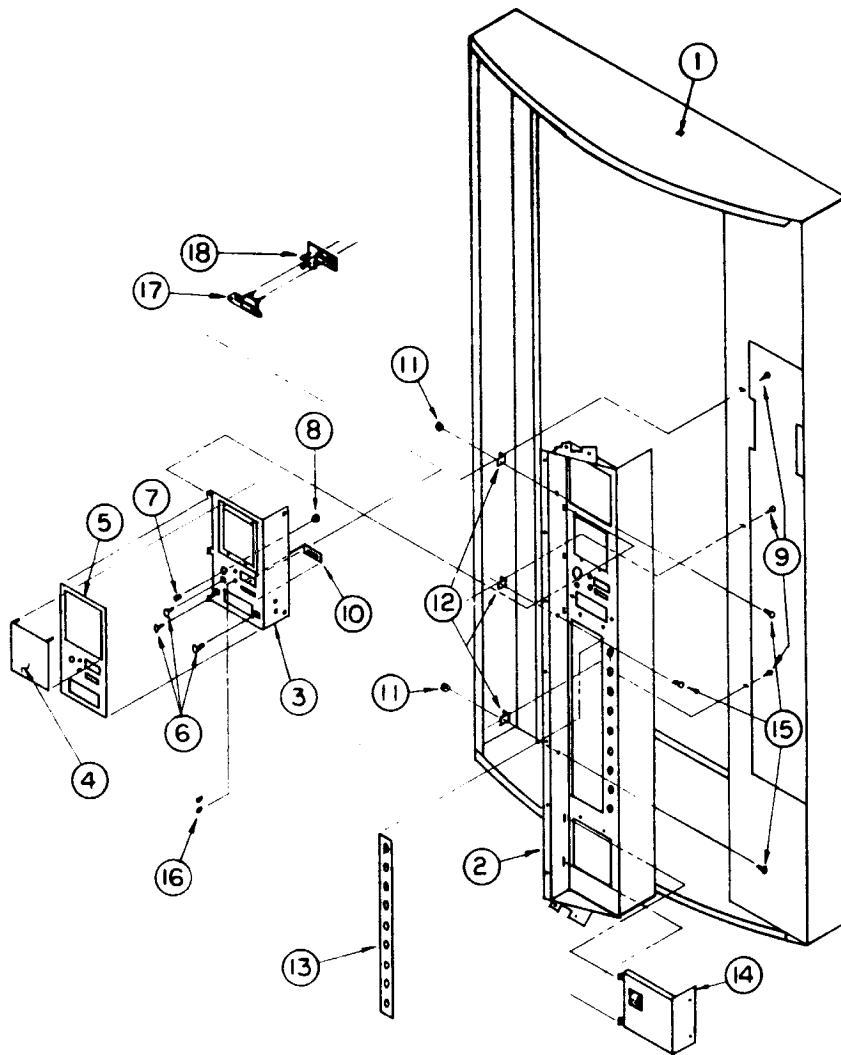


ITEM #	DESCRIPTION	PART NUMBER
1	Welded Assy.-79.5" Coke	D141,510,003
	Welded Door Assy.-72" Coke	D142,510,003
2	Flush Mount Pop-Out T-Handle Assy. (Items 3, 4, 5, 6, 7 & 20)	812,176,001
3	Flush Mount T-Handle Only	
4	Spring	
5	T-Handle Stud	
6	Retaining Ring	
7	Pin/T Handle Stud	
8	Sold Out Spring	A914,003,001
9	Button, Coin Return Lever	A803,031,001
10	Retaining Ring, 5-32"	906,005,001
11	Roller Pin - Door Lifter	A811,002,001
12	Hinge - Coin Return Lever	A141,506,003
13	Coin Return Lever	C141,504,003
14	Catch Basin Bill Validator	C095,509,003
15	Catch Basin Drain Tube	825,035,001
16	P.O.S. Window - Coke	B815,007,001
17	P.O.S. Window Plate	A123,503,003

ITEM #	DESCRIPTION	PART NUMBER
18	Security Shelf	B141,512,003
20	T Handle Housing	
21	T-Handle Brace	B141,513,003
22	Lever Stop	A141,514,003
23	Coin Chute Assembly	010,532,004
25	Splash Guard - Coke	B815,169,001
26	Coin Ramp	A141,508,003
27	Spring-Select Button	A914,004,001
28	Select Button - Coke	B815,165,001
29	Switch, Miniature	C835,009,001
30	Sold Out Lamp	841,009,001
31	Assembly Carrier Strip	815,167,001
32	Button Panel - Coke	D815,168,001
33	Retaining Strap	A141,507,001
34	Sems Screw - #8-32x3/8" LG	901,011,001
35	Screw, Self-drilling #8x1/2"W	902,001,001
	1/2" Washer	
36	Sew Screw #6-32x3/8"	901,004,001
37	Nuts, Keps #8-32	905,001,001
38	Nuts, Keps 1/4-20	905,002,001

SECTION 7: EXPLODED VIEWS

COKE - VANDAL-RESISTANT DOOR



ITEM #	DESCRIPTION	PART NUMBER	ITEM #	DESCRIPTION	PART NUMBER
1	Door w/a Coke 79 1/2" Wide	D141,510,003	11	Keps Nut - 1/4-20	905,002,001
	Door w/a Coke 72" Wide	D142,510,003	12	Hold-Down Angle	A123,505,003
2	Control Panel - Coke 9 Select	C143,501,003	13	Decal Select Button	C845,383,001
3	Security Plate W/A	C141,550,003	14	Coin Cup Mounting Plate W/A	B123,550,003
4	Validator Cover - Coke	A010,535,003	15	Carriage Bolt, 1/4-20x1/2" LG	901,007,001
5	Security Plate Decal - Merlin	C845,396,001		LED Assembly (Item #s 16,	010,593,001
6	T-bolt 1/4-20x1" LG	A901,037,001	16	L.E.D. Lens	
7	Bushing Button Coin Return	A803,030,001	17	L.E.D. Window	
8	Hex Jam Nut 9/16-18 UNFZA	905,019,001	18	L.E.D. Display - Small	
9	Sems Screw -#8-32x3/8" LG	901,011,001		"Custom Display"	
10	Coin Plate - Coke	A141,516,003			

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. (Ex. within the continental U.S. 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 vendor / unit serial number.
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 or it will be scrapped.
6. All warranty parts should be properly wrapped and packed securely to avoid further damage. Refrigeration units that are returned from the field and have been tapped into, tampered with, not packaged properly or have had the serial plate removed, will void the warranty.
7. If parts are not returned within 15 working days, the invoice will be due in full.

