



650

Showcase Merchandiser

Field Service Manual
and
Parts Catalog

Including Direct Access
Programming Instructions

Part No. 90065001
First Edition
August 1996



650 Showcase Merchandiser

Field Service Manual

and Parts Catalog

This manual contains all of the information necessary to install, operate, troubleshoot and perform basic maintenance on the 650 Showcase Merchandiser. It contains instructions for using the new direct access software interface, repair and replacement procedures for major components, and troubleshooting instructions. Section 6 is an illustrated parts catalog that can be used to identify parts available for purchase from your Rowe distributor. Keep a copy of this manual with the vendor at all times for reference.

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SPECIFICATIONS:

650 Showcase Merchandiser

GENERAL

Depth	30 in.
Width	44 in.
Height	72 in.
Net Weight	800 lb.
Shipping Weight	825 lb.
Maximum Location Ambient Temperature	100° F @ 25% Relative Humidity

POWER REQUIREMENTS

Voltage	120 VAC	220/240 VAC
Current	15 AMPS	9 AMPS
Frequency	60 Hz	50/60 Hz

VEND CAPACITY

Total Items	96 MAX.
Number of Shelves	16
Delivery Doors (Baffles)	6
Baffle Widths	4 in.
Compartment Depth (Nominal)	7 in.
Number of Compartments per Shelf	6 maximum

COIN MECHANISMS

120V Models-12 or 15 Pin	
MARS	TRC - 6000
COINCO	9300L
24 V Models-15 Pin Only	
MARS	TRC - 6010 - XV
COINCO	9302LF

European

MARS	MS1900 Executive
	MS1700 Executive
	MS1600 Executive

REFRIGERATION

120 V

220/240 V

Type	3/4 HP Air Cooled	3/4 HP Air Cooled
Charge	R134a (21 oz.)	R134a (510 Grams)
Operating Pressures	@ 75° F	@ 24° C
High Side :	140 - 150 psig	965-1033 KPA
Low Side :	15 - 20 psig	103-138 KPA
Test Pressures:	300 psig	

CAUTION !

Do not use 24 volt Coin Mech with 12 pin plugs! This will result in permanent damage to the Coin Mech and/or vending machine.

NOTICE!

This system is charged with R134a Refrigerant.

HOW TO USE THIS MANUAL

This manual contains five sections. The front section contains a table of contents, power requirements and operating specifications. Described below is a brief outline of the numbered sections and the information discussed there.

SECTION 1 - DESCRIPTION - Section 1 contains a general introduction to the 650 Showcase Merchandiser. It provides descriptions of the major components and features of the machine and a listing of point of sale messages. Before attempting to unpack or install this vendor, read and familiarize yourself with this section and Section 2 - Installation.

SECTION 2 - INSTALLATION - Section 2 contains unpacking and set-up instructions. This section describes how to initialize the machine, load the coin mechanism and perform a pre-operation check. Use this section to install and check out the vendor.

SECTION 3 - PROGRAM OPERATION - Section 3 contains detailed programming information and instructions necessary to perform all of the service mode operations. This section will explain how to enable the functions available on this machine. It provides a detailed explanation of features and operations.

SECTION 4 - MAINTENANCE - Section 4 contains instructions for cleaning, adjusting, repairing and replacing components on the 650 Merchandiser. Adjustment, repair and replacement procedures should be performed only as required. Isolate equipment trouble using the information and diagrams in Section 5 before attempting to make adjustments or replace parts.

SECTION 5 - TROUBLESHOOTING - Section 5 contains troubleshooting procedures, troubleshooting charts, schematics, and wiring diagrams for the vendor, UCB, and Refrigeration Unit. Use this section in conjunction with the information in Section 4 - Maintenance, to isolate and repair vendor malfunctions.

SECTION 6 - PARTS CATALOG - Section 6 contains a view of each assembly with part and section called out. Part numbers under a four digit assembly number are indented to the right if they are shipped as a group when ordering the assembly number. If they are not indented, each part must be ordered separately.

COIN MECH. CHART

ROWE VENDING MACHINE COIN MECH USAGE													
Coin Acceptors	406				425				448 E2	505	548/ 648	550/ 650	5900
	6 PUMP		8 PUMP										
Coinco	WO BA	W BA	WO BA	W BA	W.A.D.	WO BA	W BA	W.A.D.					
9300S Single Price \$12.75 Max 120 VAC	X		X			X							
9340S Single Price \$12.75 Max 120 VAC	X	X	X	X		X	X						
9360S Single Price \$12.75 Max 120 VAC	X	X	X	X		X	X						
S75-9800B-907 Single Price \$3.15 Max 120 VAC	X		X			X							
S75-9400B-977 Single Price \$1.15 Max 120 VAC	X		X			X							
F300E-9210 Four Price \$3.15 Max 120 VAC	3	3	3	3		X	X						
F300-9400 Four Price \$3.15 Max 120 VAC	X		X			X							
S300-9410 Single Price \$3.15 Max 120 VAC	X	X	X	X		X	X						
9300L Micromech 110 VPDC					X			X	X	X	X	X	X
9302LF Micromech 24 VPDC 15 Pin Con.										X	X	X	X
MARS													
Cashflow										X	X	X	X
TRC6010XV Micromech 24 VPDC 15 Pin Con.										X	X	X	X
MC5000 Micromech 117 VPDC \$12.75 Max					X			X	X	X	X	X	X
TRC6000 Micromech 117 VPDC \$12.70 Max					X			X	X	X	X	X	X
TRC6200 120V Single Price \$6.35 Max	X	X	X	X		X	X						
TRC6200H 120V Single Price \$6.35 Max	1	4		4			4						
TRC6800 120V Single Price \$10.00 Max	X	X	X	X		X	X						
TRC6800H 120V Single Price \$10.00 Max		4		4			4						
MC5802 Single Price 115 VAC	X	X	X	X		X	X						
MC5807 Single Price 115 VAC	X	X	X	X		X	X						
MC5920 Four Price 115 VAC \$6.35 Max	X	2	X	2		X	2						
MC5920H Four Price 115 VAC \$6.35 Max													
MS1600 European 24 VAC 50 Hz									X	X	X	X	X
MS1700 European Tropicalized 24 VAC 50 Hz									X	X	X	X	X
MS1900 European 24 VAC 50 Hz									X	X	X	X	X
NRI National Rejectors Inc.													
G-26.4400 European 24 VAC 50 Hz									X	X	X	X	X
Azkoyen													
AN-200										X			X

1= Use with 408-6027 Kit 2= Remove R35 from MC5920 AH when using CBA - 2 B.A. (Also Needs 425-1856 harness)
3= Needs four price kit 4= B.A. Compatible

650 Features

MESSAGE CENTER

The 650's message center has a 20 character vacuum fluorescent display that can scroll up to 255 characters. It can be programmed to display a custom message, the time and date, or temperature.

DIRECT ACCESS PROGRAMMING

The 650 features direct access programming, which allows the operator to program the merchandiser without scrolling through layers of menus and options. The direct access system assigns a code to each programming option, which the operator can enter directly with the numeric keypad. For operators who do not want to memorize codes, direction keys can be used to navigate the menu structure.

REAL TIME CLOCK

Keeps track of start and stop times for options and records fault times.

PROGRAMMABLE COIN LOADING

Coins can be loaded through the top or side of the coin mech.

SHELVES

The easily removable shelves can be configured to hold between one and six selections. The configuration can be changed quickly without tools.

CONVEYOR

The shelf conveyor holds sixteen shelves. It can be rotated up or down by the customer.

SHELF MOTOR LOAD SENSING

The shelf motor and the conveyor drive mechanism are protected against overload damage by electronic monitoring.

FLEXIBLE PRICING

The 650 offers flexible pricing, up to \$99.95, settable in increments of 5¢ (U.S. and Canadian). Prices are set directly using the numeric keypad.

SLIDE-OUT SERVICE PANEL

The slide-out service panel allows the service person to access all of the 650's electronics without opening the main door.

AUDIT INFORMATION

Keeps track of:

- Sales
- Number of free vends
- Value of free vends
- Sales by shift
- Number of vends
- Cash by Bills & Coins

The 650 also provides accurate inventory of money in the Cash Box, Coin Mech, and Bill Stacker. Sales are recorded as resettable and nonresettable sales data.

MULTIVIEW

The conveyor is rotated 3 sections every 3 minutes non-stop or at programmable start and stop times.

COIN MECHANISM

Can use either 110VDC (12 or 15 pin) or 24VDC (15 pin) Coin mechanisms

NOTE: See Coin Mech Chart page viii.

OTHER FEATURES

- Debit Card Reader Capability
- Hard Copy Printout Capability

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Section 1: DESCRIPTION

INTRODUCTION

The Rowe 650 Showcase Merchandiser can be used to vend refrigerated or non-refrigerated products. The unique vertical shelf movement and versatile shelf configuration make this vendor ideal for many locations.

Product is vended from 16 shelves which rotate vertically inside the vendor. The shelves can be set up in a variety of configurations, with a maximum shelf capacity of 6 items.

The shelves are rotated by pressing up or down on the rocker button located on the display panel. When the button is released the conveyor stops rotating.

A selection is made by pressing a 3-digit combination that corresponds to the desired product.

Once a selection choice has been made with the keypad, the conveyor will automatically move the selected shelf into the vend position. The inner baffle door will open and the customer can open the outer delivery door to remove their purchase. A vend can be canceled at any time prior to the opening of the inner baffle door by pressing the reset button. As a safety precaution the inner delivery door will not close if the outer delivery door is open.

Audit Data

The 650 provides detailed audit information in a printed or displayed format. Audit data includes vital diagnostic information, and sales information such as total cash collected and sales totals. Audit information is accessed by entering the appropriate code in the service menu (Refer to Section 3).

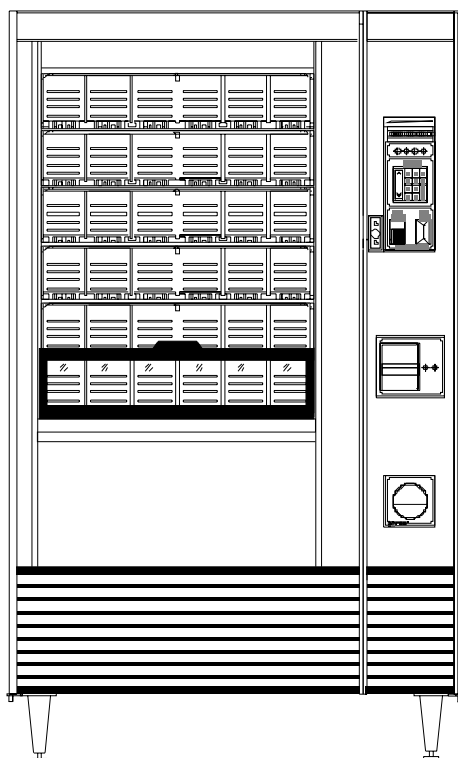


Figure 1-1. 650 Showcase Merchandiser

Delivery Doors

The 650 incorporates a dual delivery door system. The outer delivery door spans the width of the delivery section. Each of the six inner delivery doors, called *baffles*, accesses one 4" shelf section. When an item is selected for purchase the baffle corresponding to the purchased item is opened. All of the other baffles remain closed. In the case of a purchase from a compartment that has been expanded to include more than one 4" shelf section, each of the baffles for that selection will open. Refer to *Figure 1-2* for a pictorial explanation.

The baffles will remain open for one minute or until the conveyor is advanced, another selection is made, or additional credit is introduced. This prevents the possibility of the customer losing his purchase if the outer delivery door is inadvertently shut.

When the shelves are rotated or another selection is initiated, the baffles are closed.

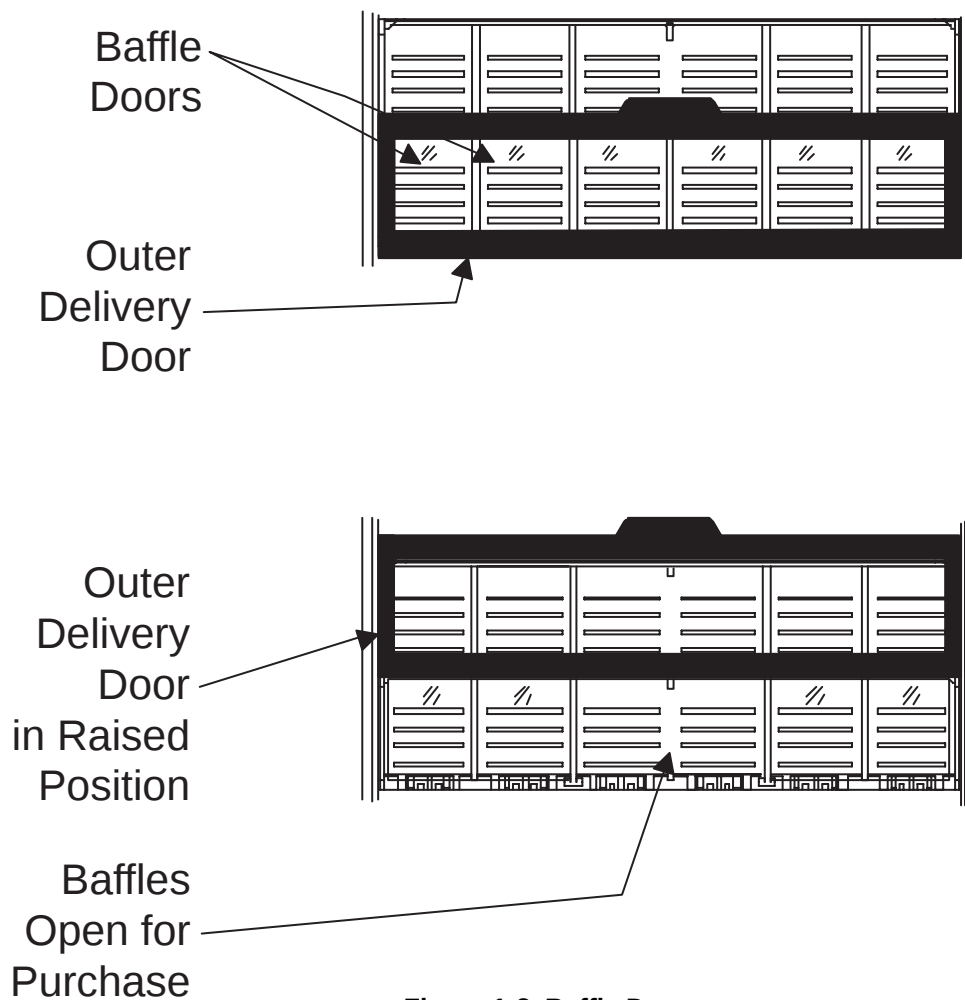


Figure 1-2. Baffle Doors

Service Door

The service door provides access to the slide-out service panel, main door latches, and the conveyor motor assembly. It also houses the message center, coin mech, bill acceptor, and cash box.

When the service door is unlatched, the machine is automatically placed in the service mode. In the service mode the operator can access all of the programming functions using the keypad on the message center. Service mode functions are accessed directly by entering codes with the number keys or indirectly by using the <LINE UP> <LINE DOWN> <MOVE LEFT> and <MOVE RIGHT> commands.

Slide-Out Panel

The slide-out service panel, located behind the service door, contains all of the machine's control systems. Located on the slide-out panel are the universal control board, the power supply, and a junction box containing a convenience plug (120V models only) and a printer port. The main power transformer and the ballast assembly are also located on the slide-out panel.

The slide-out panel allows the operator to have access to all of the machine's control systems without opening the main door.

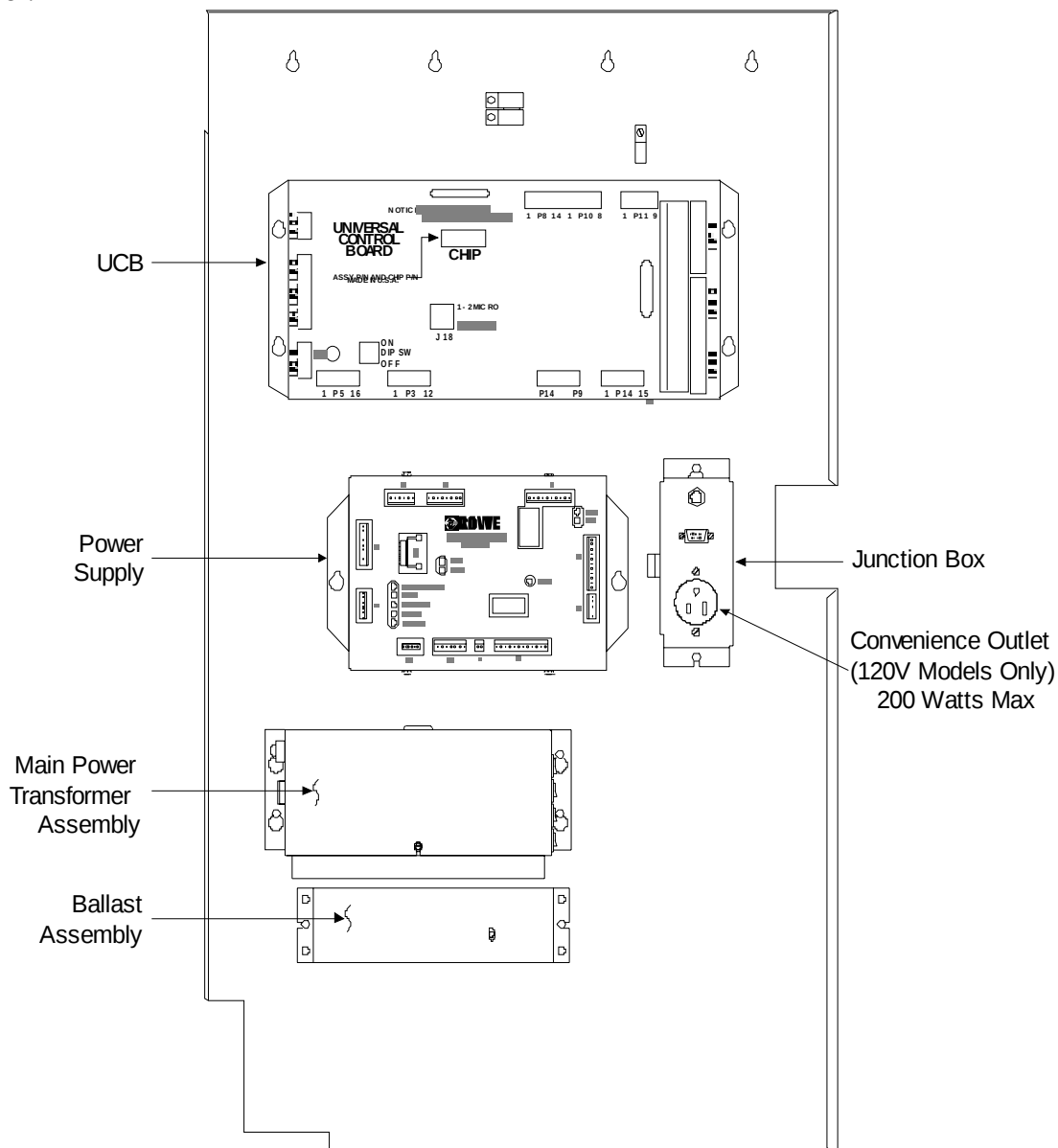


Figure 1-3. Slide-Out Panel

Universal Control Board

The Rowe Universal Control Board is the “brain” of the 650 General Merchandiser. The UCB controls all of the 650’s peripheral devices, such as the coin mech, bill acceptor and refrigeration unit, as well as all of the vending functions and special features. The Universal Control Board also collects and stores vital machine information, such as error messages and audit data. The UCB maintains coin counts and coin tube levels for the coin mech. The refrigeration system is completely controlled by the UCB. The UCB monitors the temperature of the food compartment, and applies the compressor algorithm to maintain the appropriate temperature parameters.

EPROM

The UCB runs a computer program stored on the EPROM. The EPROM is removable and can be updated as new software revisions become available. A label on the top of the EPROM, visible through the square hole above the word ‘CHIP’ on the cover, indicates the revision level of the software loaded onto it. Service to the UCB, including the replacement of the EPROM, should be performed by qualified personnel only.

The UCB is located on the slide-out service panel assembly and can be accessed without opening the main door. UCB functions are accessed through the keypad on the message center. Refer to Section 3 for detailed programming instructions.

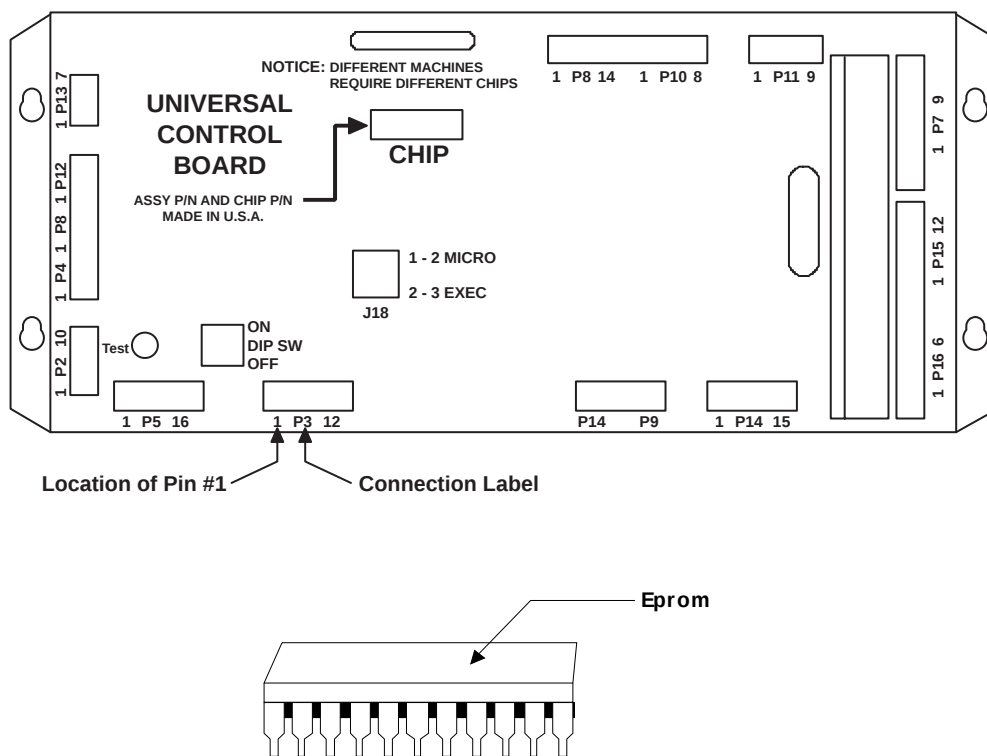


Figure 1-4. UCB and EPROM

Shelves

The 650 vends product from a series of sixteen 24" horizontal shelves which can be rotated up or down by the customer. Each shelf is divided into six 4" sections. The shelves can be easily configured, by removing or adding shelf dividers, to house any combination of 4" compartments. A divider lockbar spans the top of the shelf, and attaches to both sides. The lockbar holds the dividers firmly in position, deterring theft of product from unpurchased compartments.

Zero Position

Attached to the back of one of the shelves is a magnet assembly. It is used to activate the zero position sensor. When activated the UCB uses this as a starting point for the shelf positions. This is used to keep track of the programmed prices and configurations on each of the 16 shelves. **If the zero position shelf is moved to a new location, relative to the other shelves, the prices and shelf configurations must be reprogrammed.** If the machine goes out of service, the shelves must be rotated until the zero position is located before the vendor can be placed back into service.

Loading Shelves

Product must be loaded so that it does not extend beyond the top or front edges of the shelf. Product may shift as the conveyor rotates; ensure that product is loaded properly so that it will not shift beyond the boundaries of the shelf. If the product extends beyond the boundaries of the shelf, the product will cause the conveyor to bind up, resulting in machine shutdown and possible damage to the shelves, shelf carriers, drive chain, and loss of product.

Load heavier products on the left side of the shelves. The components on the left side of the shelves are designed to handle the greater stress produced by heavier products.

Load all shelves with approximately the same weight load.

Do NOT place non-packaged food directly onto the product shelf.

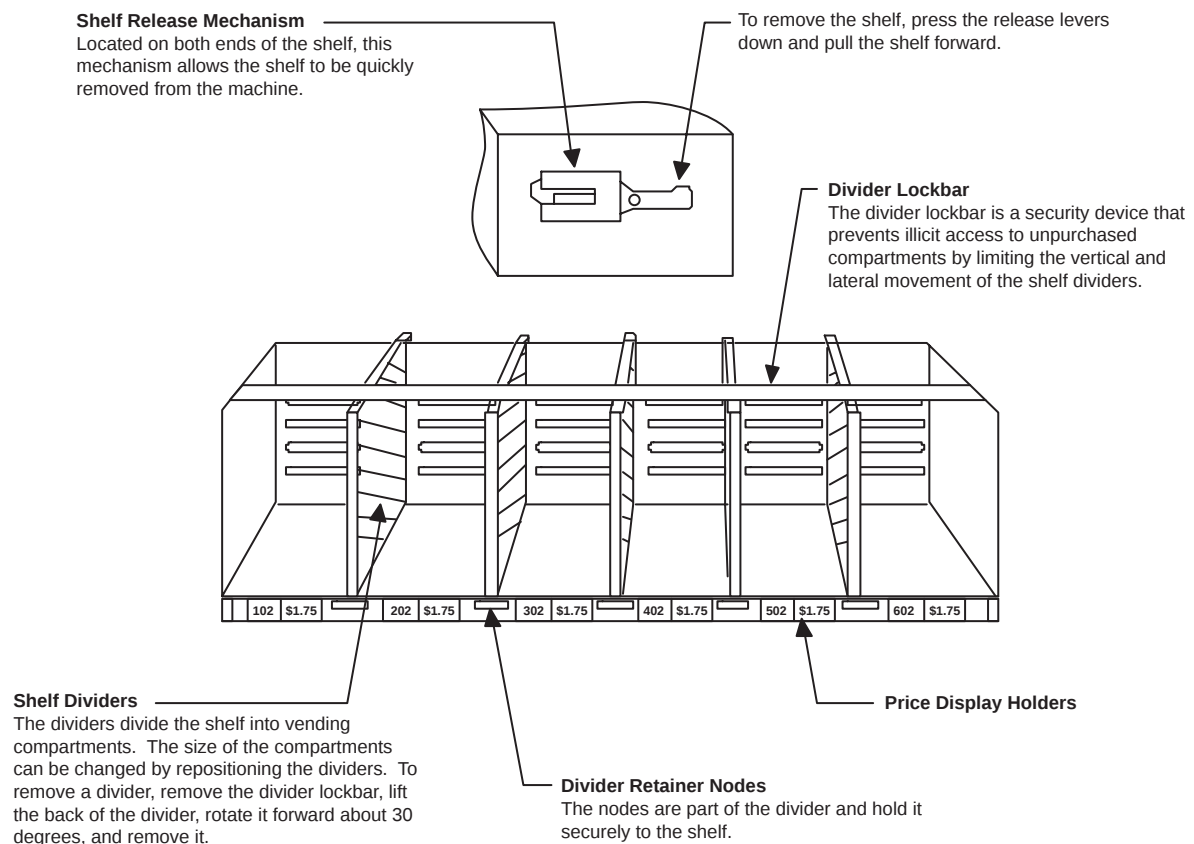


Figure 1-5. Shelves

Connector Panel

The connector panel houses the main door switch, as well as the harness quick-disconnects for the main door. This allows the main door to be quickly removed if necessary.

Main Power Switch Assembly

The main power switch assembly (*Figure 1-6*) is located at the lower left side of the cabinet interior. It houses the main power switch, the refrigeration power circuit breaker, the vend power circuit breaker and the refrigeration interlock switch. The refrigeration interlock switch shuts down the refrigeration unit when the main door is open or ajar.

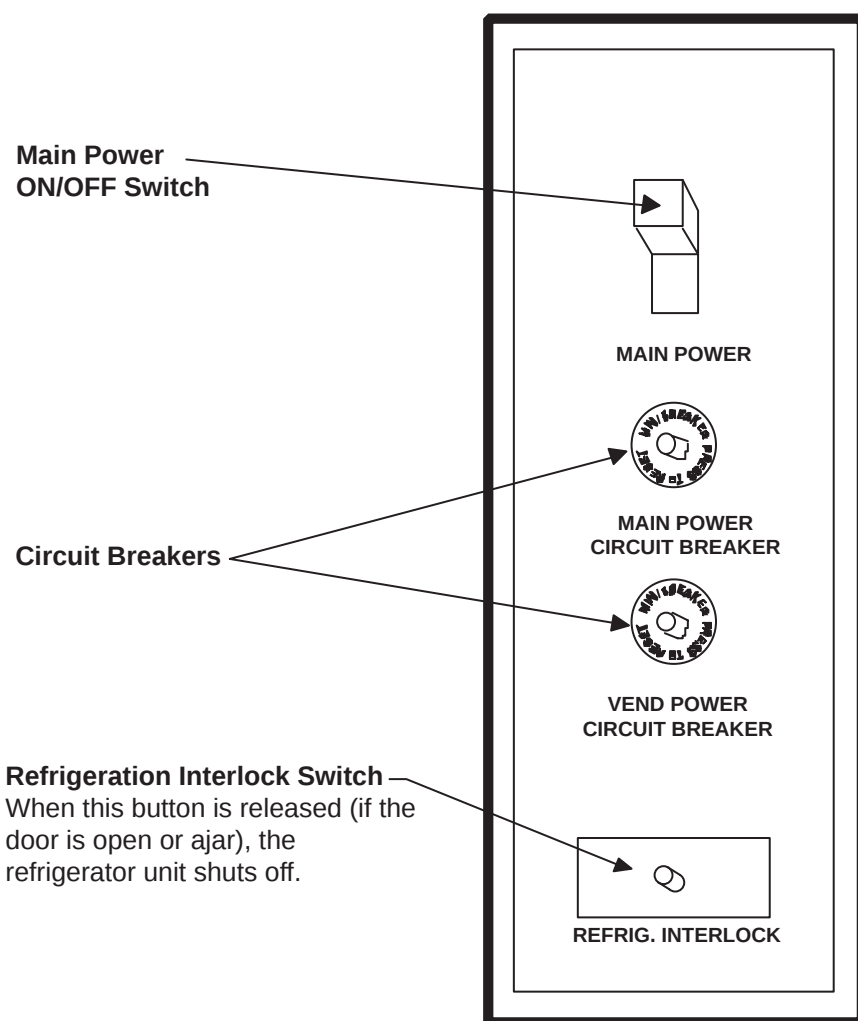


Figure 1-6. Main Power Switch Assembly

Drive Mechanism

The shelves are mounted on individual carrier assemblies, which travel on a fixed guide track. The **carriers** are connected to **drive chains**, which are turned by **drive sprockets**. The drive sprockets are powered by a **24V motor** located in the service compartment. The carrier assemblies on the left side of the cabinet use **alignment gears** to keep the shelves horizontal.

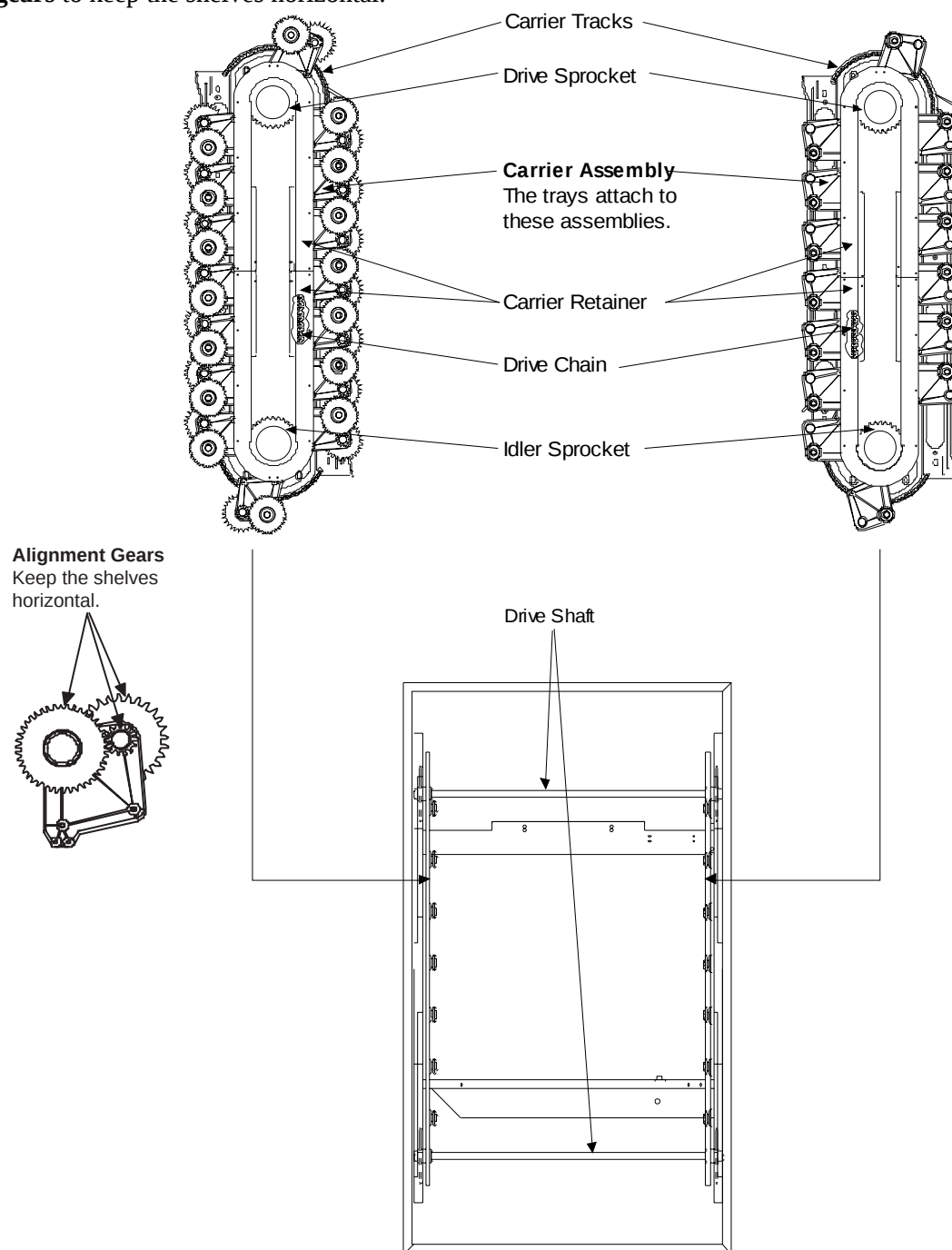


Figure 1-7. Drive Mechanism



CAUTION



Do NOT advance the shelf assemblies without ALL of the carrier retainers installed. Doing so will cause the carrier assemblies to become misaligned and may cause damage to the drive mechanism.

Refrigeration System

The self-contained refrigeration unit is designed to slide in and out of the vendor as a complete assembly. A normal 3 pin AC power cord supplies power to the compressor, the evaporator blower, and the condenser fan. During the normal operating cycle and also during the defrost cycle, the evaporator blower runs continuously, regardless of the temperature inside of the refrigerated compartment. The condenser fan runs only when the compressor is running. The compressor and condenser fan are controlled together by one relay. The defrost heaters are controlled by a separate relay. Both relays are located below the backup relay in the refrigeration control compartment. During normal operation, the temperature of the food compartment is regulated by the Universal Control Board. The temperature will be maintained between 34°-41° F, according to the compressor algorithm described below. Other temperature ranges are available and selected from a service menu.

When the main door is opened, the compressor, condenser fan and evaporator blower are turned OFF by the interlock switch. When the main door is closed, there is a two minute delay before power is applied to the compressor and the condenser fan. The evaporator blower will start immediately after the main door is closed. If power is interrupted for any reason, the delay described above will occur before the compressor and condenser fan are started. This delay helps prolong the life of the compressor by eliminating rapid on/off cycling and hard starts.



NOTE:

The compressor control cycling runs independently of the health control processing. If the machine goes out of service, the compressor will continue to operate.

Compressor Algorithm

The compressor will turn ON two minutes after closing the main door or initiating the start-up sequence. It will remain ON until the temperature inside the food compartment is below 35° F. Once the temperature inside the food compartment falls below 35° F, the compressor will shut off and remain off, until the temperature inside the food compartment reaches 41° F (provided that the selected temperature range is 35° F to 41° F).

Defrost Routine

Every two hours the refrigeration unit enters a defrost routine. The compressor and condenser fan will shut off and the heaters will come on. The heaters will remain on for 5 minutes, or until the compartment temperature reaches 41° F. Once the temperature reaches 41° F or the 5 minute period expires, the compressor and condenser fan will turn on. The evaporator blower runs during the defrost cycle.



CAUTION!

This unit contains R-134A refrigerant. This unit is not compatible with any other type of refrigerant. Use of any other type of refrigerant in this unit will damage the refrigeration unit, and may result in personal injury. Use of any refrigerant other than R-134A will void the unit's warranty.

This unit must be serviced only by certified refrigeration technicians. Unauthorized service or repair will void the warranty on this unit.

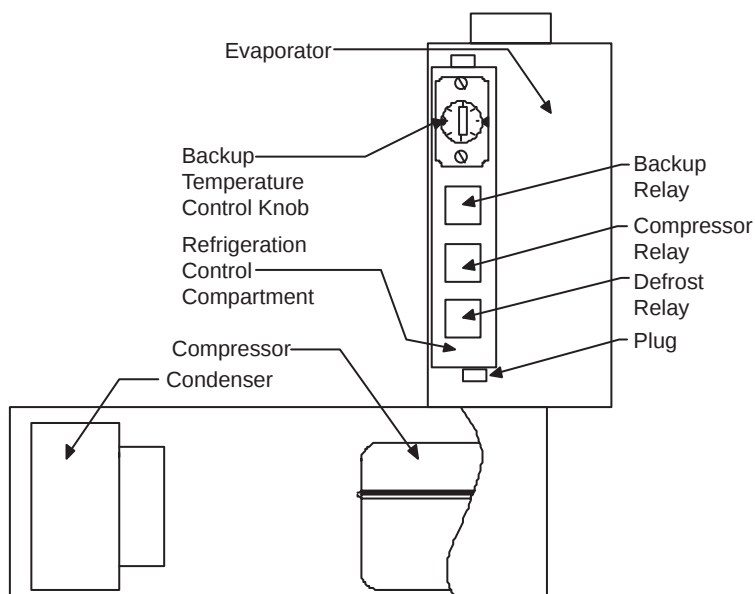


Figure 1-8. Refrigeration System

Backup Temperature Control

The backup temperature control knob should be set at '4'. Under normal circumstances, the temperature of the vendor is controlled by the UCB, and is kept within the parameters described above.

Backup Refrigeration Circuit

During normal operation, the backup relay, located in the refrigeration control compartment, is held energized by electronics on the power supply board and controlled by signals from the Universal Control Board. Under certain circumstances, i.e. power failure to the UCB, the backup relay will de-energize. When this happens, the backup temperature control is connected to the refrigeration circuit and the refrigeration unit is kept in operation.

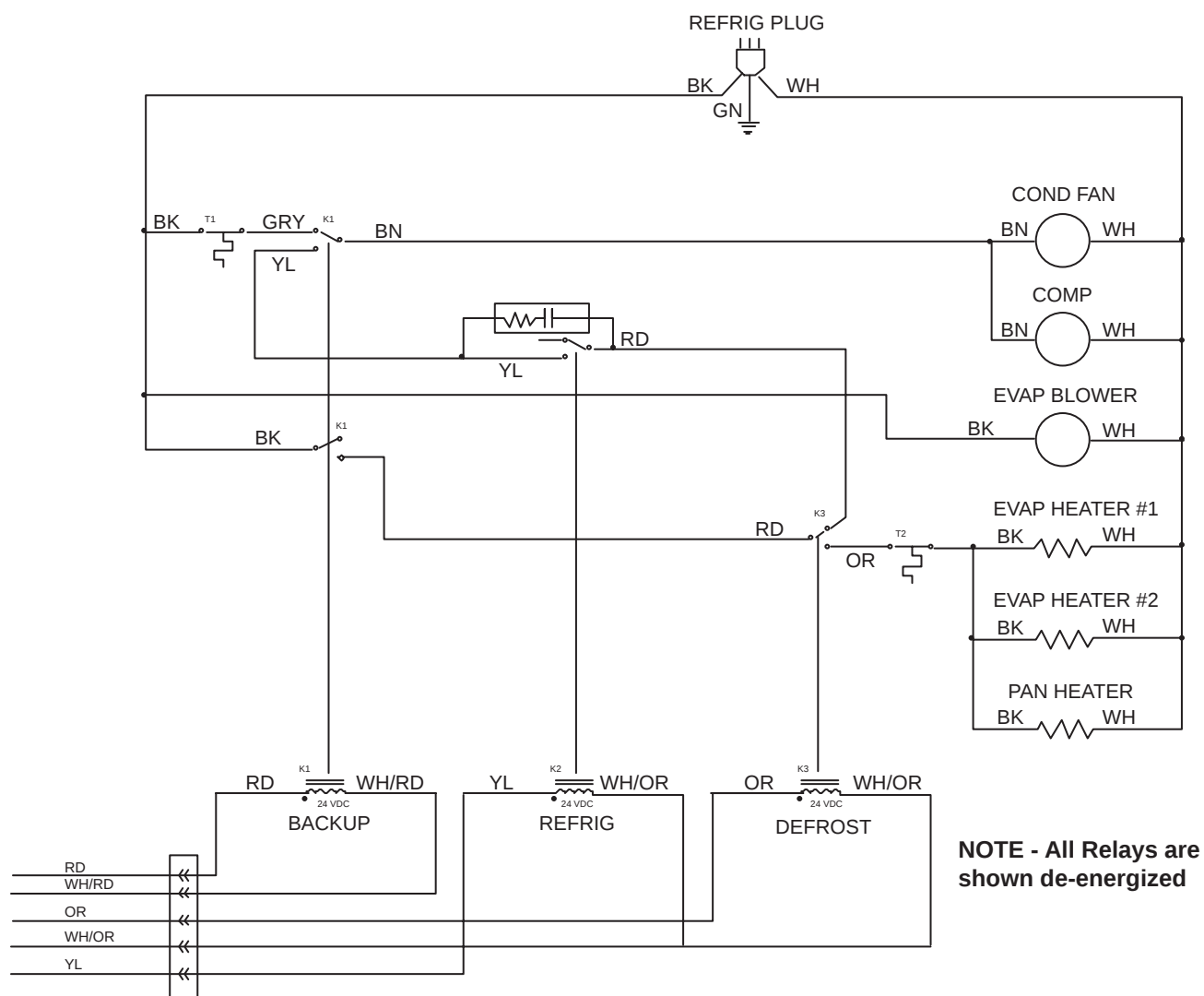


Figure 1-9. Refrigeration Schematic

Backup Thermostat

If the temperature sensor is disconnected or the temperature is actually above 80° F, the vendor will switch to the backup refrigeration circuit and the backup thermostat. The vendor will remain in backup operation until the temperature sensor is reconnected or the temperature in the cabinet is below 80° F. The defrost cycle will not occur when the unit is in the backup mode.

Point of Sale Messages

MESSAGES PRIOR TO CREDIT

- SORRY - OUT OF SERVICE** - This message will appear whenever there is an error condition logged by the software. The display lamps will be OFF when one or more error conditions exist.
- INSERT MONEY** - This message appears when a bill validator is configured and there is sufficient change in the coin mechanism.
- EXACT CHANGE PLEASE** - This message appears whenever there is insufficient change in the coin mechanism. Users can buy with an over credit and the machine will try to make the correct change.
- COINS ONLY PLEASE** - This message appears when a bill validator is not configured and there is sufficient change, or when a bill validator is configured and there are less than 4 quarters in the payout tube.
- MAKE FREE SELECTION** - Machine is in Free Vend Mode. No money is required.
- HEALTH DELAY 30 MINS** - Machine is in Cool Down mode. Appears when Hot Key RESET + 2 is pressed.
- HEALTH CONTROL ON** - 30-minute Health Delay expired. Refrigerated compartment temperature is in normal range. Appears when Hot Key RESET + 2 is pressed.
- ONE MOMENT PLEASE** - Machine is locating zero position.
- 1159PM SUN 12/31/91** - This message appears when Hot Key RESET + 0 is pressed.
- TEMPERATURE 36 F** - Temperature in degrees Fahrenheit. Appears when Hot Key RESET + 1 is pressed.
- TEMPERATURE = 2 C** - Temperature in degrees Celsius. Appears when Hot Key RESET + 3 is pressed.
- MAIN DOOR IS OPEN** - Attempt was made to advance the conveyor with the keypad when the main door is open and the service door switch is closed.
- Machine ID = xxxxxx** - Displays Machine ID number when Hot Key RESET + 4 is pressed.
- Rowe 650 V XX** - Displays software version number when Hot Key RESET + 5 is pressed.

Point of Sale Messages

CREDIT MESSAGES

CREDIT - \$1.25 Purchaser's current credit, validated by the Coin Mech and/or Bill Validator.

SELECTION MESSAGES

INSUFFICIENT CREDIT - Not enough credit to purchase item.

MUST MAKE SELECTION - Coin Return depressed when vendor has Forced Vend Option in use.

INVALID SELECTION - A selection has been entered that is not programmed or is nonexistent.

CAN'T MAKE CHANGE - Correct change is unavailable for vend selected. Forced Vend must be OFF.

ITEM PREVIOUSLY SOLD - This message appears when a vend door with a previously purchased compartment is attempted to be opened.

RESERVED SELECTION - Flex Vend or Baffle Lockout is in use. Cannot vend from that selection.

CLOSE VEND DOOR - This message appears when the outer vend door is open.

VEND COMPLETED

THANK YOU - Transaction has been completed successfully.

Using the Hot Keys

The "Hot" keys are active only when the service door is closed and latched. They are not active in the service mode.

To use the hot keys, refer to the chart below. Press and hold down the RESET key, then press one of the key numbers from the chart below. Release both keys. The Message Center will now display the desired information.

650 HOT KEYS	
RESET + 0	Date & Time
RESET + 1	Temperature in °F
RESET + 2	Health Control Status
RESET + 3	Temperature in °C
RESET + 4	Machine ID Number
RESET + 5	Version Number

Health Control

When the 650 is configured as a refrigerated vendor, it employs a health control feature to monitor **the interior cabinet temperature**.

After opening and closing the main door, the refrigeration unit has 30 minutes to bring the temperature below 45° F. If the temperature does not fall below 45° F, the machine will go out of service. A “HEALTH TIME ERROR” message will be recorded by the Universal Control Board.

It is normal for the machine to experience a health time error during the initial start-up if the machine is placed at a location with high humidity and high ambient temperature. If this occurs, simply open and shut the main door to reset the health timer. Clear the error message. It should not take the merchandiser more than 2 cycles to reach proper operating temperature.

During normal operation, the health control feature monitors the interior temperature of the cabinet. If the temperature rises above 45° F for a two minute period the machine will go out of service. A “HEALTH CODE ERROR” message will be recorded by the Universal Control Board. Troubleshoot the merchandiser using the troubleshooting charts in Section 5.

Section 2:

INSTALLATION

INTRODUCTION

This section contains instructions for unpacking the 650 General Merchandiser and installing it on location. Installation is quick and easily accomplished.

Unpacking Instructions

The vendor is shipped in one carton with all major assemblies in place, ready for installation. The shipping carton should be opened carefully to prevent the merchandiser from being scratched or damaged. Inspect the exterior and interior of the cabinet for evidence of damage. In case of damage, please notify the delivering carrier at once to examine the vendor regardless of the external condition of the carton. Under U.S. regulations, damage claims must be collected from the consignee. Do not return shipping-damaged merchandise until after your claim has been established. Once your claim is established, damaged merchandise may then be returned to your Rowe distributor for repair. The invoice for repair charges may then be collected from the carrier. Do not destroy packing material or boxes until the carrier's agent has examined them.



CAUTION

Pushing or sliding the merchandiser (by hand) on the floor can result in considerable damage to the machine and/or cause personal injury. Always use appropriate material handling equipment and adequate protective padding to protect the merchandiser.

Set-Up Instructions

1. Place the unit in a well ventilated location with a minimum of SIX INCHES between the unit and the back wall.
2. Remove all tape and packing material from the cabinet.
3. The unit must be leveled. Use *Figure 2-1* as a guide.
4. Ensure that all circuit breakers are firmly in place and that the fluorescent lamps are secure in their sockets.
5. Ensure that the main power switch is in the OFF position.
6. Plug the line cord into a dedicated positively grounded receptacle capable of delivering the appropriate voltage and current.

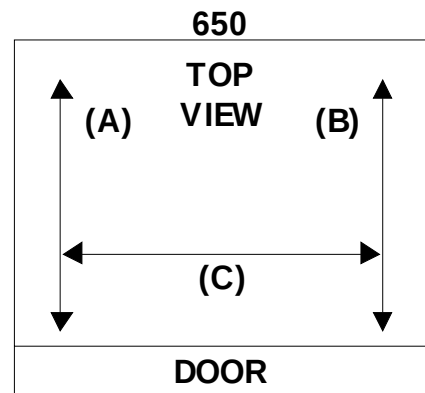


Figure 2-1. Leveling the 650

Place level in the (A) position and adjust the bottom leg levelers. Perform same on position (B), then position (C).



CAUTION



If the unit is not leveled correctly the evaporator may freeze up, causing unit shutdown.

7. Install a recommended Coin Mech (See Specification Sheet page vi). Check coin return lever operation and adjust if necessary.
8. Ensure that all electrical connections are seated properly, especially at the circuit boards.
9. Turn the main power switch ON.
10. The message center should display:
 - a) **"KEYPAD - DISPLAY V XXX"** (X.XX = latest version of message center display)
 {Then}
 - b) **"ROWE 650 - REV X"** (X = latest revision EPROM on UCB)
 {Then}
 - c) **"TESTING RAM" "done"**
 {Then}
 - d) **"SERVICE MENU" or "ERRORS exist"**
11. Check that all fluorescent lamps are illuminated.
12. Ensure that the following LEDs on the Universal Control Board are illuminated:
 - +5 VDC** (Logic Voltage)
 - VFD** (Vacuum Fluorescent Display voltage)
 - VSRC** (Device Source voltage)
 - TEST** Blinking (Control Board operating heartbeat)
13. Perform a full initialization to program the machine to factory default settings.
 - a) In the Service Mode enter 331 on the numeric service keypad.
 - b) Press the enter command (Reset + 8), then press the Delete key (Reset + 4), to execute the initialization. Refer to 'Initialize Sub-Menu' in Section 3.
 - c) To exit the service mode, close the service door.
 - d) The vendor will rotate the conveyor to the zero position after the main door and service door are closed.
 - e) Set the date and clock. Refer to Section 3, Setup Menu.
14. If you have a refrigerated unit, ensure that the temperature control is set at '4'.

Removing and Installing Shelf Dividers

15. Configure each shelf as required. See *Section 4, Figure 4-1*, for complete details on configuring the shelves.

Install the Selection Number Labels

16. Install selection labels for each compartment as required. A double or larger compartment requires one selection label that corresponds to its leftmost position. Refer to *Figure 2-3*.

Each shelf is numbered to correspond with its position in the vendor with respect to shelf 1. Shelf 1 is the home shelf and includes a magnet assembly. The magnet assembly is attached to the rear of the shelf, and is used so the machine can locate "home" position.

The shelves are numbered 01 through 19. No shelves are numbered 05, 10, or 15, since this could be confused with product prices.

The shelf compartments are numbered to correspond with each compartment configured. The compartment numbers on each shelf are 1 through 6.

Each product compartment is assigned a three digit number. The first digit is the compartment number, while the second two digits are the shelf number. As an example, 304 would correspond to the third position of shelf 4.

To install the selection number labels, start with the home shelf. Install the selection number label 101 in the leftmost position of that shelf. If the entire shelf is configured as single compartments, i.e., 6 selections, then install the next selection number label, 201, followed by 301, etc. If the shelf is configured for double or larger compartments, then the selection number label that corresponds to the leftmost position of that compartment should be installed.

For Example: The shelf is configured for two single compartments, followed by one double compartment, followed by two single compartments (1-1-2-1-1). The selection number labels would be installed as follows: 101 in the leftmost position of the shelf, 201 in the leftmost position of the compartment to the right of the first divider, 301 in the leftmost position of the double compartment to the right of the second divider, 501 in the leftmost position of the compartment to the right of the third divider, and 601 in the leftmost position of the compartment to the right of the fourth divider. Selection number label 401 is NOT used, as its position is part of selection 301. See *Figure 2-3, Shelf 19*.

Repeat the above procedure for each of the remaining shelves. The next number shelf is below the current shelf. See *Figure 2-3*.

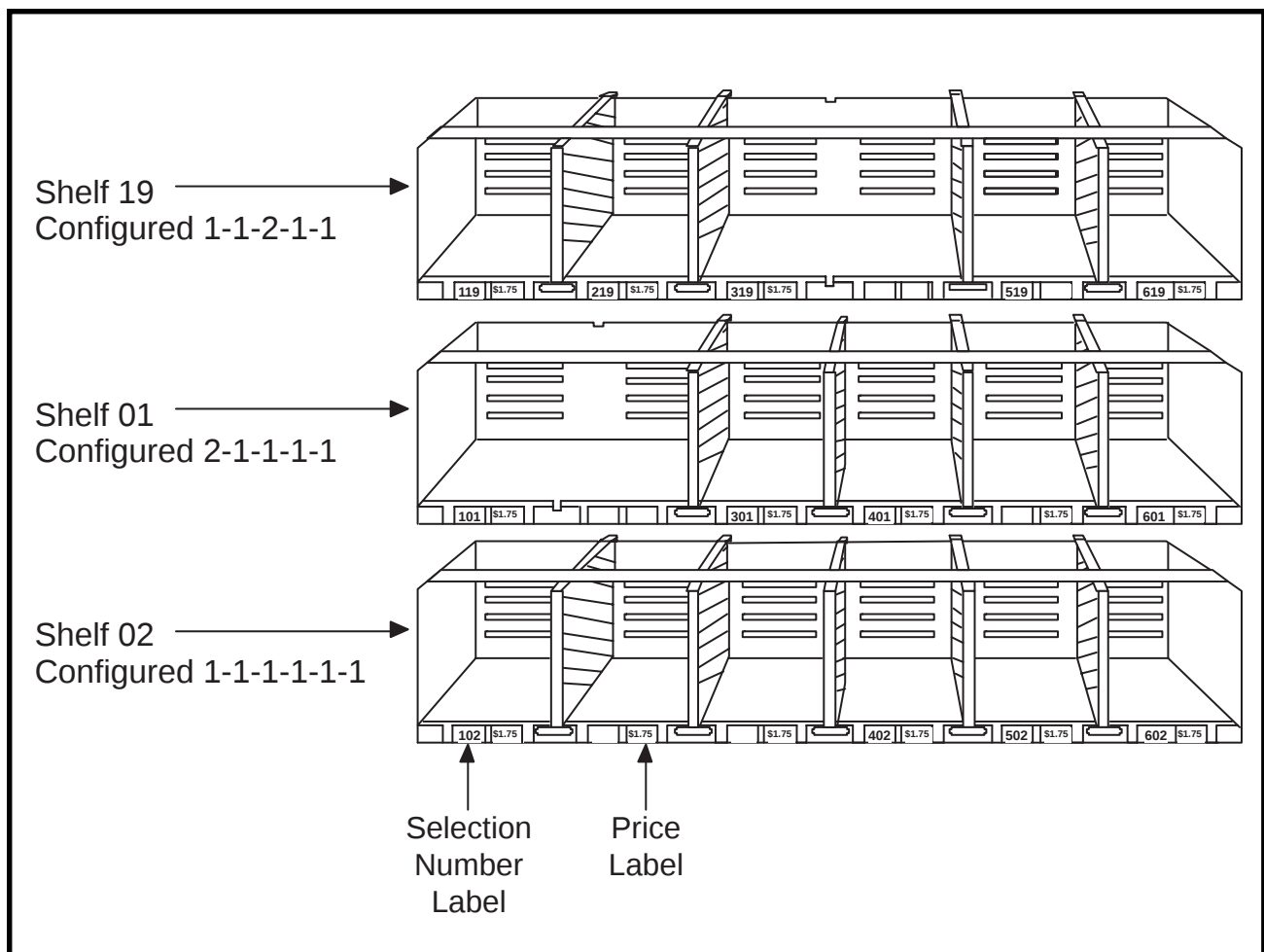


Figure 2-2. Selection and Price Label Placement

Install the Price Labels

17. Price labels are installed just to the right of the selection number labels, with one price label set being used for each selection. See *Figure 2-3*.

The price labels are a set made up of two halves. The left half of the label is the whole dollar amount, while the right half is the fractional amount. The two halves are interlocked together to form the price label. In the case where a price is less than one dollar, the left half is a dollar sign (\$).

For example: The price of selection 101 is \$1 .50. Locate the price label half marked “\$1”. Then locate the price label half marked “.50”. Notice the slit in the upper portion of the \$1 label. There is a corresponding slit in the lower portion of the .50 label. Slide the two halves together and install on the shelf. See *Figure 2-4*.

After the price label set is installed next to the selection number label, install a clear plastic label retainer. This will prevent the labels from coming loose or falling off the shelf during normal operation. See *Figure 2-4*.

Repeat the above procedure for the remaining selections on each shelf.

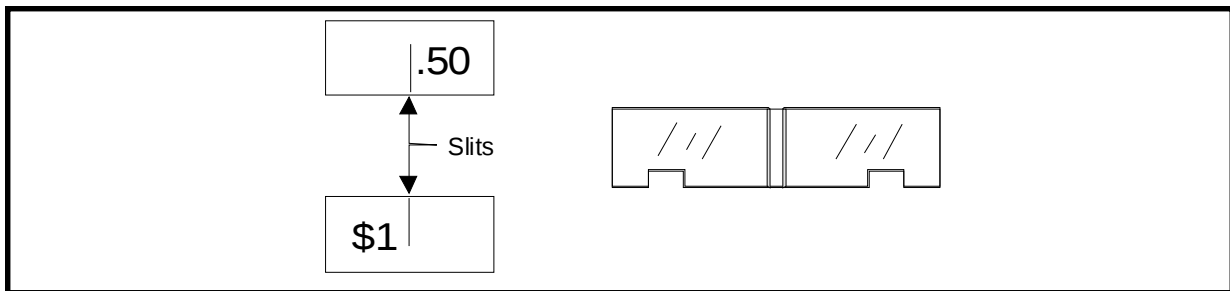


Figure 2-3. Price Label and Label Retainer

Coin Mech Loading with Cash Accountability

18. Coins must be loaded properly for total cash accountability to operate correctly. You may use one of these two methods to load the coin mechanism.
 - a) Drop-In Method: In Service Mode all coin denominations may be loaded through the top flight deck of the coin mech.
 - b) Programming Method: You must keep count and load all the coin denominations through the side loading tubes. The inserted amounts can be keyed into the UCB. See ‘Coin Tubes’ in Section 3.

Coin Mech Loading without Cash Accountability

19. In the Service Mode enter 314 to select ‘Coin Sense.’ Press Reset + 7 to toggle on/off. Set to ON. Load coins through side loading tubes. The 650 will then automatically sense that coins are available to make change.
20. Configure shelves. Refer to ‘Basic Program Setup’ and ‘Set-Up Menu’ in Section 3.
21. Set prices. Refer to page ‘Price Menu’ in Section 3.

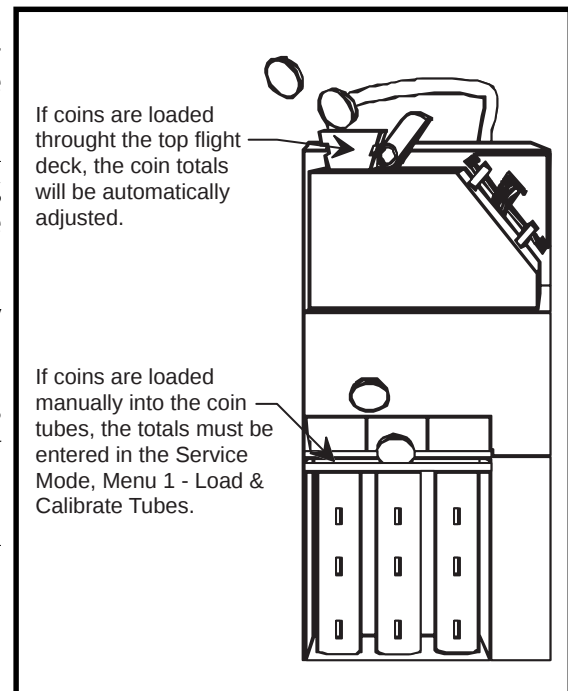


Figure 2-4. Coin Mech Loading

22. Load product.

PRE-OPERATION CHECK



NOTE:

If you have a refrigerated machine, allow the temperature to stabilize between 34° - 39° F before loading temperature sensitive product.

1. Perform the Basic Program Setup routine located in Section 3.
2. Close all machine doors. "INSERT MONEY" or other vending mode messages should display if all parameters were set correctly and no errors exist.
3. Rotate the conveyor one full revolution using the <UP> arrow button.
4. Rotate the conveyor one full revolution using the <DOWN> arrow button.
5. Insert at least one of each coin (5¢, 10¢, 25¢) and make a vend.
6. Check and verify the coin return amount.
7. If equipped with a Bill Acceptor, insert bill(s) and make a vend.
8. Check and verify the coin return amount.
9. Test vend every baffle, rotating the conveyor one shelf between vends.
10. Close and latch the main door to reset the electronic countdown timer. The vendor now has 30 minutes to reduce the interior cabinet temperature to 45° F (7.2 C). The vending circuit will be interrupted by the controller if the temperature requirement is not satisfied. (Refrigerated units only.)



NOTE: (Refrigerated units only)

On initial startup in high ambient temperatures it is normal to experience a shutdown after the first 30 minutes. Open the service door and clear the "Health Time Error" error message. Open and shut the main door (this resets the 30 minute health timer). No further shutdown should occur.



NOTE:

In order to ensure that basic health standards are met, always ensure that all food items are properly packaged before placing them into the machine. This includes items such as apples, bananas, and other food items that may or may not be dependent upon wrapping to maintain freshness. NEVER, under any circumstances, place non-packaged food items directly onto the product shelf.



NOTE:

SET DATE & TIME

DATE AND TIME MUST BE CORRECTLY SET FOR CERTAIN TIMING FUNCTIONS TO OPERATE CORRECTLY!

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Section 3:

PROGRAMMING THE 650 WITH FLEX VEND

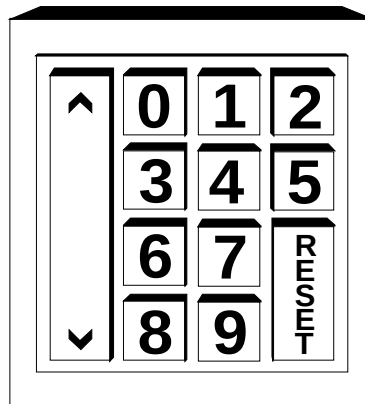


Figure 3-1. Numeric Keypad

INTRODUCTION

Rowe is proud to introduce a new interface that combines a menu driven interface with a direct access interface. An 'interface' is the method that an operator uses to interact with the electronics to set programmable options and retrieve information from the controller. The new dual interface allows the ease of programming inherent with a menu driven system, while increasing efficiency by allowing direct access to all of the programming and information management options.

Menu Driven Interface

The menu driven interface is a program that combines similar options into groups, called menus. To access specific options the user moves from one menu to another and from one option to another within a menu. This type of interface is easy to use because it is intuitive, meaning that operator can manipulate the software with little more than common sense and a basic understanding of what he wants to accomplish.

Direct Access Interface

Direct access means that the operator can access specific programming features by entering a numerical code using the new numerical keypad (see *Figure 3-1*). This type of interface can be more efficient than the menu driven interface because it eliminates the need to go through the layers of menus and options to reach the end goal.

Combining the menu driven interface and the direct access interface will enable you to get the most efficient use from the 650 Showcase Merchandiser.

* SERVICE MENU *

Entering the Service Menu

The service mode is the programming interface that allows the operator to gain access to the programmable features of the machine. It is the starting point for all programming functions. The service menu is divided into 18 sub-menus. To automatically enter the service menu, unlatch the service door. Refer to the Service Mode Map (*Figure 3-3*) for an illustration of the menu descriptions.



NOTE:
If errors have been logged, the display will read '- - ERRORS EXIST - -' instead of 'SERVICE MENU' when entering the service mode. Refer to the Status menu to view and clear errors.

Reading the Map

On the Service Mode Map, menus are listed within a box. The heading of the menu is listed at the top of the box and is enclosed within a pair of asterisks '*' (for example, *SERVICE MENU*). Menu items listed below the title are the programmable options and/or sub-menus of that menu. Sub-menus are indicated by an arrow to the right of the entry. Direct access codes are listed to the left of the menu box. Entries followed by periods '.' indicate that more information is available. Refer to *Figure 3-2* below.

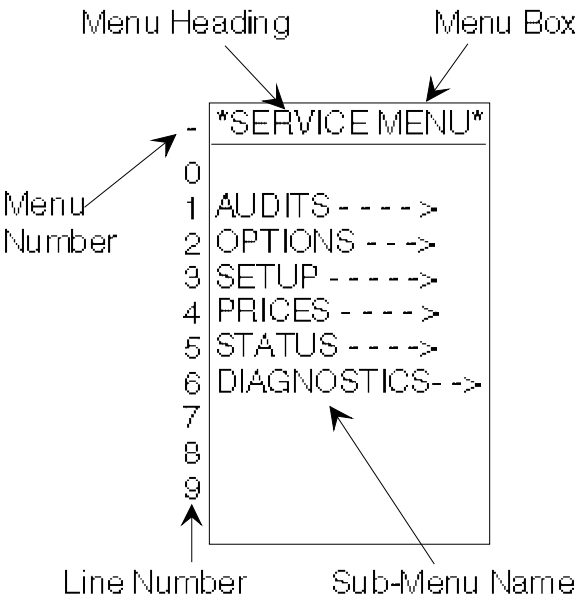
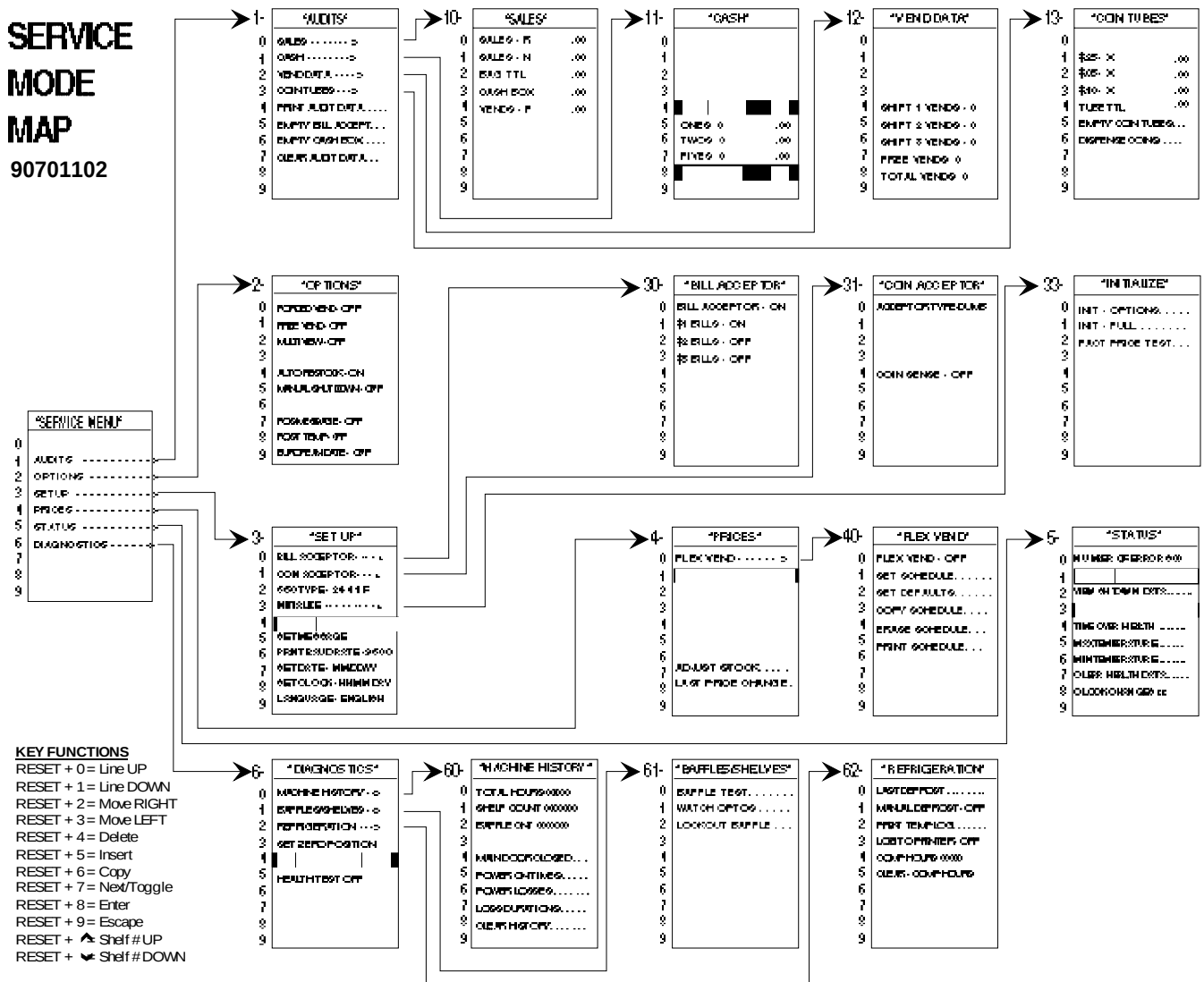


Figure 3-2. Reading the Map

On the display, the menu headings are enclosed in asterisks, just as they appear on the map. Items listed after a menu heading are the programmable options and sub-menus in that menu. Sub-menus are indicated on the display with an arrow to the right of the entry.

SERVICE MODE MAP

90701102



KEY FUNCTIONS

RESET + 0 = Line UP
 RESET + 1 = Line DOWN
 RESET + 2 = Move RIGHT
 RESET + 3 = Move LEFT
 RESET + 4 = Delete
 RESET + 5 = Insert
 RESET + 6 = Copy
 RESET + 7 = Next/Toggle
 RESET + 8 = Enter
 RESET + 9 = Escape
 RESET + Shelf # UP
 RESET + Shelf # DOWN

TO CHANGE SINGLE PRICE (SPECIFIC SELECTION):

1. Display should read "Service Menu."
2. Press "41."
3. Press and hold "Reset" - then press "8" - then release both keys.
4. Enter selection number to be changed.
5. Press and hold "Reset" - then press "2" - then release both keys.
6. Enter new price.
7. Press and hold "Reset" - then press "8" - then release both keys to save the new price.

Figure 3-3 Service Mode Map

Numeric Keypad

The keypad can be used to access either interface, Direct Access or Menu. By entering numeric codes the operator can directly program desired selections. To navigate the menus using the keypad, press the RESET key while pressing the keys listed in *Table 3-1* and *Figure 3-4*. The RESET key operates like the shift key on a typewriter, allowing the secondary functions of the keys to be used.

Navigating the Menu Structure

To move through the menu structure and select programming options, use the keypad as indicated in *Figure 3-4*. The table below explains the function of each key.

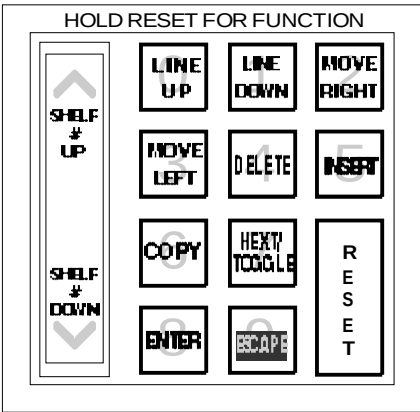


Figure 3.4. Shifted Keypad

Table 3-1. Shifted Key Functions

RESET + 0	=	Line Up: Moves up one line within a menu.
RESET + 1	=	Line Down: Moves down one line within a menu.
RESET + 2	=	Move Right: Moves the cursor one position to the right on the display.
RESET + 3	=	Move Left: Moves the cursor one position to the left on the display.
RESET + 4	=	Delete: Deletes characters within a text string such as a point of sale message or password.
RESET + 5	=	Insert: Inserts characters within a text string such as a point of sale message or password.
RESET + 6	=	Copy: Used to copy Flex Vend schedule from one day to another.
RESET + 7	=	Next/Toggle: This key is used to toggle ON/OFF or to select from a list of options.
RESET + 8	=	Enter: Used to execute a function. This key combination is also used to enter a sub-menu from a menu group.
RESET + 9	=	Escape: Used to move backward from one menu to the previous menu. Pressing this key combination one time will move the operator to the top of current menu. Pressing this key a second time will move the operator to the top of the previous menu.
RESET + UP ARROW	=	Move Up: Used to move up when viewing shelf configuration and prices.
RESET + DOWN ARROW	=	Move Down: Used to move down when viewing shelf configuration and prices.

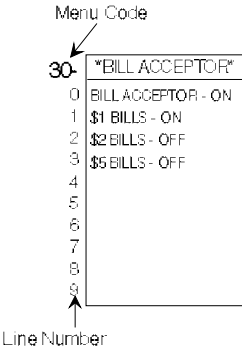
Direct Access

To directly access features, use the numeric keypad to enter selection codes. Refer to the Service Mode Map to determine a selection’s code. The number listed to the left of the menu heading is the menu code; the number listed to the left of the entries is called the line number and is used to access specific menu options. To access a specific option, enter the **Menu Code** followed by the **Line Number**. For example, to select the \$5 BILLS - ON/OFF selection (Line 3) in the BILL ACCEPTOR menu (Menu 30), enter **303**. Refer to *Figure 3-5* below.

30 + 3 = 303

Menu Code Line Number Selection Code

Figure 3-5. Bill Acceptor Menu



**Table 3-2.
Quick Reference Guide**

Selection	Code	Selection	Code
Set Prices	41	View Sales (R)	100
Set Product Code	45	View Sales (N)	101
Remove Stock	46	View Bag Total	102
View Error Codes	51	View Cash Box Total	103
Clear Errors	53	View Bill Total	118
Set POS Message	35	View Total Vends	128
Print Audit Data	14	Empty Coin Tubes	135
Empty Bill Acceptor	15	Dispense Coins	136
Empty Cash Box	16	View Temperature	64
Clear Audit Data	17		

Basic Program Setup

The following list of instructions will explain how to quickly place the 650 Showcase Merchandiser into operation without programming any of the optional features.

- 1) Remove and/or install shelf dividers as required for all 16 shelves (See Section 2).
- 2) Install selection labels on all shelves (See Section 2).
- 3) Install price labels for all selections (See Section 2).
- 4) Set the correct date, menu 37, and set the correct time, menu 38 (See Section 3).
- 5) Select the coin changer type, menu 310 (See Section 3).
- 6) Enable the bill validator if equipped, menu 300 (See Section 3).
- 7) Program shelf configuration, menu 34 (See Section 3).
- 8) Set prices, menu 41 (See Section 3).
- 9) Load the coin changer with change (See Section 2).
- 10) Set Coin Sense to ON, menu 314 (See Section 3).



NOTE:

SET DATE & TIME

**DATE AND TIME MUST BE CORRECTLY SET FOR CERTAIN TIMING
FUNCTIONS TO OPERATE CORRECTLY!**

* AUDITS MENU *

This menu contains commands that allow you to view and manipulate sales and revenue data. To access the Audits menu, enter the service mode and use the directional keys on the keypad to maneuver to the Audits menu. Follow the path indicated below, **or** press '1' on the keypad. To access the items in the Audits menu, use the Line Up (Reset + 0) and Line Down (Reset + 1) keys, **or** press '1' followed by the line number. Pressing the Enter key (Reset + 8) will provide access to a sub-menu (indicated by an arrow to the right of the entry). Follow the instructions below to access the specific menu options.

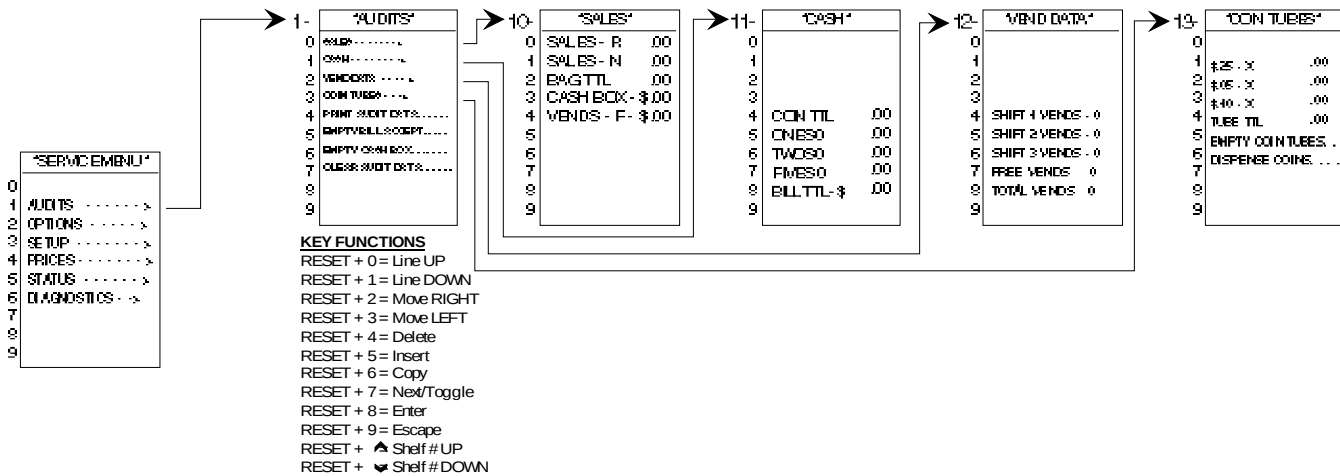


Figure 3-6. Audits Menu

- 10: SALES (Sub-menu)** - The Sales sub-menu allows the operator to view accumulated sales and cash totals. Sales are represented in monetary terms in this menu. This is a read-only menu, meaning that items located in this menu cannot be changed in this menu. Press the Enter key (Reset + 8) to enter the Sales Sub-menu.
- 11: CASH (Sub-menu)** - The Cash sub-menu allows the operator to view accumulated bill and coin totals. Values are represented as both units and monetary totals in this menu (i.e., Ones - 4 \$4.00). This is a read-only menu, meaning that items located in this menu cannot be changed in this menu. Press the Enter key (Reset + 8) to enter the Cash Sub-menu.
- 12: VEND DATA (Sub-menu)** - The Vend Data sub-menu allows the operator to view accumulated vend totals. Vends are represented as units sold in this menu. This is a read-only menu, meaning that items located in this menu cannot be changed in this menu. Press the Enter key (Reset + 8) to enter the Vend Data Sub-menu.
- 13: COIN TUBES (Sub-menu)** - The Coin Tubes sub-menu displays the number of coins in each tube of the coin mech. In this menu, the operator can adjust the number of coins recorded in each tube, empty the coin tubes and dispense coins. Press the Enter key (Reset + 8) to enter the Coin Tubes Sub-menu.

Audits Menu Continued . . .

- 14: PRINT AUDIT DATA** - Press the enter key (Reset + 8) to send all of the audit information to a remote printer. Connecting to a printer requires a printer harness, P/N 593-1800, available from Rowe distributors.

Printer

Rowe recommends the use of the Seiko DPU-411-21BU Serial printer. To operate this printer with the 650 Showcase Merchandiser, the DIP switches must be set as follows:

Switch Bank #1 - 1 & 2 - OFF / 3 & 4 - ON / 5 & 6 - OFF / 7 & 8 - ON

Switch Bank #2 - 1 & 2 - ON / 3, 4, 5 & 6 - OFF

- 15: EMPTY BILL ACCEPT** - This command clears the bill tallies after the bill stacker is emptied. (Ones, Twos, Fives & Bill Total reset to '0') The bill tallies are added to the Bag Total when this function is used. Press the Enter key (Reset + 8) to execute this function.
- 16: EMPTY CASH BOX** - This command clears the cash box total after it is emptied. The cash box total is transferred to the Bag Total when this function is used. Executing this function resets the cash box value to '0'. Press the Enter key (Reset + 8) to execute this function.
- 17: CLEAR AUDIT DATA** - This command clears all resettable audit data. This function should only be used after all audit data has been recorded. This function will not reset the coin totals, bill totals or cash box totals. To reset these values, use the *Empty Bill Accept/Cash Box* commands described above. The Bag total will be cleared. Press the Enter key (Reset + 8) to execute this function.

* SALES SUB - MENU *

The Sales sub-menu displays sales information in monetary units. The items listed in this menu cannot be changed in this menu. To access the Sales sub-menu, enter the service mode and use the directional keys on the keypad to maneuver to the Sales sub-menu. Follow the path indicated below, **or** press '10' on the keypad. To access the items in the Sales sub-menu, use the Line Up (Reset + 0) and Line Down (Reset + 1) keys, **or** press '10' followed by the line number. Pressing the Enter key (Reset + 8) will execute a function. Follow the map below to access the specific menu options.

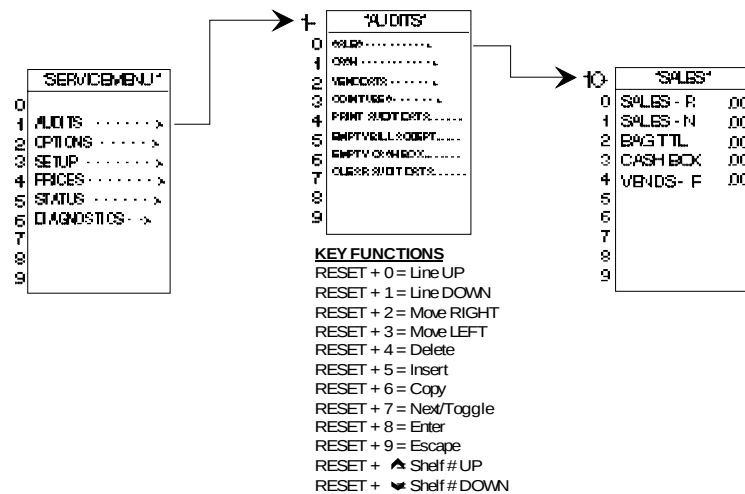


Figure 3-7. Sales Sub-Menu

Resettable Values

Resettable values (R) are values that are reset to zero when the *Clear Audit Data* function is executed. Totals recorded in resettable categories represent activity since the last time audit data was cleared.

- 100: SALES - R** - This line displays the resettable sales total in monetary units. When the *Clear Audit Data* command is used, this total will be reset to '0'.
- 101: SALES - N** - This line displays nonresettable sales total in monetary units. When the *Clear Audit Data* command is used, this total will not be reset.
- 102: BAG TTL** - This line displays the total amount of money emptied from the bill acceptor, coin mech and cash box. When the *Clear Audit Data* command is used this total will be reset to '0'.
- 103: CASH BOX** - This line displays the cash box total. When the *Empty Cash Box* command is used this total will be reset to '0'.
- 104: VENDS - F** - This line displays the total dollar value of free vends made. When the *Clear Audit Data* command is used this total will be reset to '0'.

* CASH SUB - MENU *

This menu contains itemized coin totals for coins in the cashbox and bills in the stacker. Coins in the coin tubes are not included in these totals. These totals cannot be modified in this menu. To access the Cash sub-menu, enter the service mode and use the directional keys on the keypad to maneuver to the Cash sub-menu. Follow the path indicated below, **or** press '11' on the keypad. To access the items in the Cash sub-menu, use the Line Up (Reset + 0) and Line Down (Reset + 1) keys, **or** press '11' followed by the line number. Pressing the Enter key (Reset + 8) will execute a function. Follow the instructions below to access the specific menu options.

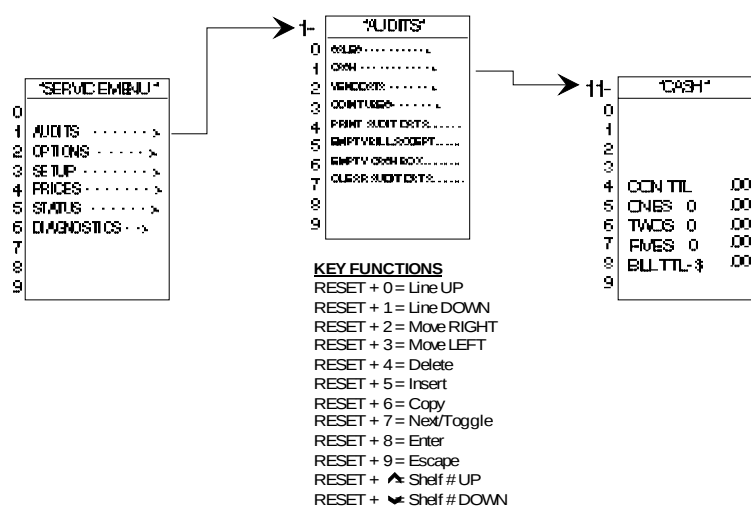


Figure 3-8. Cash Sub-Menu

- 114: COIN TTL** - This line displays the total all coins in the cashbox. This total does not include any coins that may be located in the coin mech. This total is cleared when the *Empty Cash Box* command is executed. This total is not cleared when the *Clear Audit Data* command is executed.
- 115: ONES** - This line displays the number and value of One dollar bills in the bill stacker. This total is cleared when the *Empty Bill Accept* command is executed. This total is not cleared when the *Clear Audit Data* command is executed.
- 116: TWOS** - This line displays the number and value of Two dollar bills in the bill stacker. This total is cleared when the *Empty Bill Accept* command is executed. This total is not cleared when the *Clear Audit Data* command is executed.

Cash Sub-Menu Continued . . .

117: FIVES - This line displays the number and value of Five dollar bills in the bill stacker. This total is cleared when the *Empty Bill Accept* command is executed. This total is not cleared when the *Clear Audit Data* command is executed.

118: BILL TTL - This line displays the value of all bills in the bill stacker. This total is cleared when the *Empty Bill Accept* command is executed. This total is not cleared when the *Clear Audit Data* command is executed.

To clear the bill and coin totals listed above use the *Empty Bill Accept* and *Empty Cash Box* commands. These commands will transfer the appropriate totals to the Bag Total, where they can be cleared from the system.

* VEND DATA SUB - MENU *

This menu contains sales information, detailing the number of sales made according to various price and time schedules. The totals in this menu cannot be modified in this menu. To access the Vend Data sub-menu, enter the service mode and use the directional keys on the keypad to maneuver to the Vend Data sub-menu. Follow the path indicated below, **or** press '12' on the keypad. To access the items in the Vend Data sub-menu, use the Line Up (Reset + 0) and Line Down (Reset + 1) keys, **or** press '12' followed by the line number. Pressing the Enter key (Reset + 8) will execute a function. Follow the instructions below to access the specific menu options.

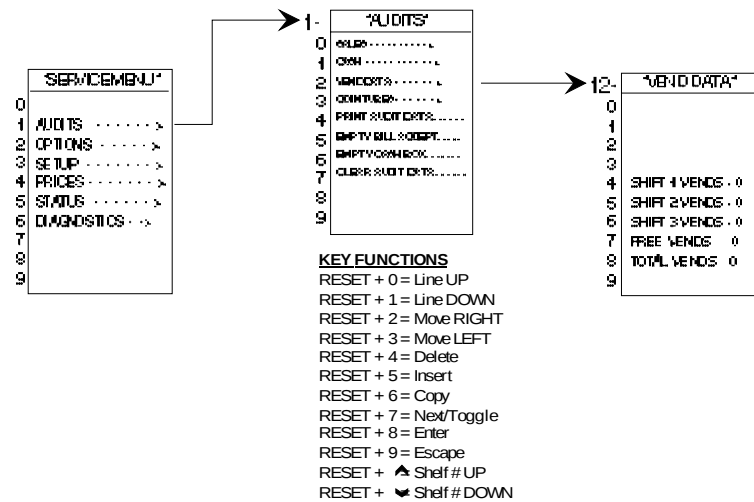


Figure 3-9. Vend Data Sub-Menu

120: Reserved for future use

121: Reserved for future use

122: Reserved for future use

123: Reserved for future use

124: SHIFT 1 VENDS - This line displays the number of items sold from Price Schedule 1. Price Schedule 1 is the default price schedule. All sales will be recorded as Price Schedule 1.

125: SHIFT 2 VENDS - This line displays the number of items sold from Price Schedule 2. All sales will be recorded as Price Schedule 2.

126: SHIFT 3 VENDS - This line displays the number of items sold from Price Schedule 3. All sales will be recorded as Price Schedule 3.

Vend Data Sub-Menu Continued . . .

127: Free Vends - This line displays the number of items free vended since the last time that Audit Data was cleared.

128: Total Vends - This line displays the total number of vends made since the last time that Audit Data was cleared. This includes free vends.



NOTE:

All items in this menu are cleared when the *Clear Audit Data* command is executed.

* COIN TUBES SUB - MENU *

This menu displays the number and value of coins in the coin tubes. Coin tube totals can be adjusted in this menu. To access the Coin Tubes sub-menu, enter the service mode and use the directional keys on the keypad to maneuver to the Coin Tubes sub-menu. Follow the path indicated below, **or** press '13' on the keypad. To access the items in the Coin Tubes sub-menu, use the Line Up (Reset + 0) and Line Down (Reset + 1) keys, **or** press '13' followed by the line number. Pressing the Enter key (Reset + 8) will execute a function. Follow the instructions below to access the specific menu options.

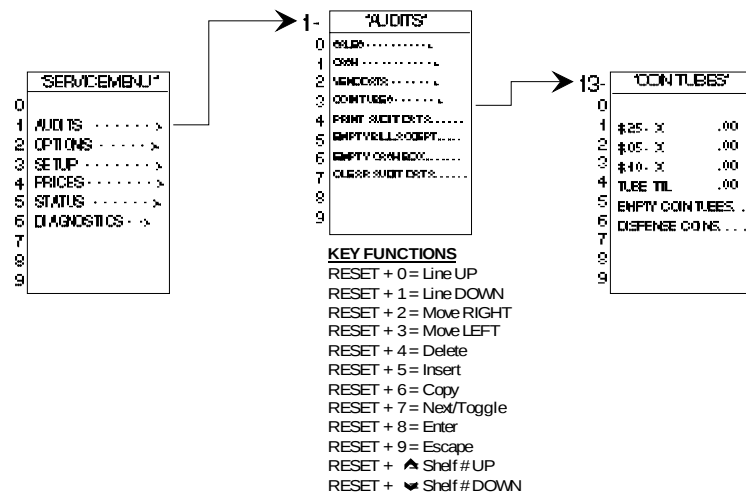


Figure 3-10. Coin Tubes Sub-Menu

130: Not used

131: .25 - X .00 - This line displays the number and total value of coins in tube 0. To change the number of coins, use the keypad to enter the adjusted value. Use the enter key (Reset + 8) to save the new value.

NOTE: The coin value in tube 0 is factory preset to .25 (quarters) on U.S. & Canadian machines.

132: .05 - X .00 - This line displays the number and total value of coins in tube 1. To change the number of coins, use the keypad to enter the adjusted value. Use the enter key (Reset + 8) to save the new value.

NOTE: The coin value in tube 1 is factory preset to .05 (nickels) on U.S. & Canadian machines.

133: .10 - X .00 - This line displays the number and total value of coins in tube 2. To change the number of coins, use the keypad to enter the adjusted value. Use the enter key (Reset + 8) to save the new value.

NOTE: The coin value in tube 2 is factory preset to .10 (dimes) on U.S. & Canadian machines.

134: TUBE TTL - This line displays the monetary value of all coins in the coin mech. This number is a sum of all coin tube totals, and is not adjustable.

Coin Tubes Sub-menu Continued . . .

135: EMPTY COIN TUBES - This function completely empties the coin mech payout tubes. Using this function will reset all coin counts to '0'.



Do not use this command unless you intend to empty the coin tubes. If the coin tubes are registered as empty the machine will not be able to give change.



Press (RESET + 4) to cancel this operation.

136: DISPENSE COINS - This function can be used to dispense individual coins from the coin mech. Press the enter key (Reset + 8) to execute this command. Use the following keys to dispense coins:

Key '0' - Tube 0 (.25 Preset on U.S. & Canadian machines)

Key '1' - Tube 1 (.05 Preset on U.S. & Canadian machines)

Key '2' - Tube 2 (.10 Preset on U.S. & Canadian machines)

Each time one of the coin dispensing keys is pressed, the coin count for that coin will be decremented by one. The display will show the number of coins remaining and the value. The coin count and value will not decrement below zero.

* OPTIONS MENU *

This menu contains the commands that enable and disable the various machine options. To access the Options menu, enter the service mode and use the directional keys on the keypad to maneuver to the options menu. Follow the path indicated below, **or** press '2' on the keypad. To access the items in the Options menu, use the Line Up (Reset + 0) and Line Down (Reset + 1) keys **or** press '2' followed by the line number. Pressing the Enter key (Reset + 8) will execute a function. Follow the instructions below to access the specific menu options.

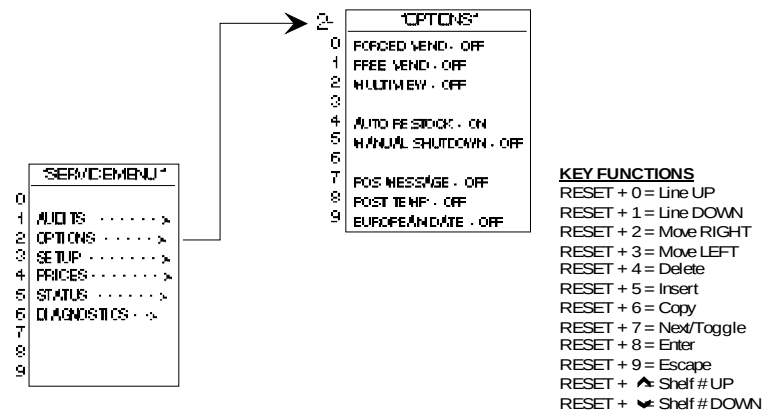


Figure 3-11. Options Menu

20: FORCED VEND - OFF - This option places the machine in forced vend. No change will be returned without a vend being performed.

To enable this option press the Next/Toggle key (Reset +7) while on this line until 'FORCED VEND - ON' is displayed.

21: FREE VEND - OFF - This option places the machine in Free vend. The default is Free Vend - OFF.

To enable this option press the Next/Toggle key (Reset +7) while on this line until 'FREE VEND - ON' is displayed.

22: MULTIVIEW - OFF - This command causes the conveyor to rotate three shelves every three minutes. Multiview will be interrupted while credit is pending, or if the shelf was rotated or a vend occurred within 15 seconds of a scheduled multiview rotation.

Multiview can be scheduled to be active during specific time periods or programmed to be active all the time. These time periods are set in the flex vend menu.

Options Menu Continued . . .

To activate the multiview feature press the Next/Toggle key (Reset + 7) to select MULTIVIEW - ON. If OFF is selected, the feature will be disabled. If ON is selected, multiview will be active all the time. **NOTE: If Flex Vend is on, these settings will have no effect.**

- 24: AUTO RESTOCK - ON** - This option will clear **SOLD** compartments each time the main door is unlatched and the shelves have rotated at least 6 positions. To service the machine without restocking selections, this selection must be turned OFF. The default for this option is ON.

To enable this option press the Next/Toggle key (Reset +7) while on this line until 'AUTO RESTOCK - ON' is displayed. Use the enter key (Reset + 8) to save the new command.

- 25: MANUAL SHUTDOWN - OFF** - This command shuts the machine down when the service mode is exited. When the machine is manually shut down, the following events occur:

- a) A 'Manual Shutdown' error is posted in the error log.
- b) The lights go off.
- c) The shelf rotation keys are disabled.
- d) 'OUT OF SERVICE' is displayed on the customer display.

- 27: POS - MESSAGE OFF** - This command allows the operator to establish the type of Point of Sale (POS) message that will be displayed while the machine is idle. The options are: OFF, Display Time, Temperature, Scroll, or Fixed,. The default for this option is OFF.

OFF - This option disables the POS message.

Display Time - This option displays the time, the day, and the date.

Temperature - This option displays the temperature of the machine.

Scroll - A scrolling message scrolls continuously across the display. It can be up to 255 characters long.

Fixed - A fixed message is displayed on the screen in a fixed position. A fixed message can be up to 20 characters long.

Only one message can be programmed. Scrolled and fixed messages use the same message, but the fixed message only displays the first 20 characters.

Use the Next/Toggle key (Reset + 7) to step through the five available options. Refer to the Setup menu (Command 35) to program the message.

- 28: POST TEMP - OFF** - This function displays the temperature of the machine, alternating with the POS message. Use the Next/Toggle key (Reset + 7) to select ON/OFF.

- 29: EUROPEAN DATE - OFF** - This function formats the date in European style - Day/Month/Year.

* SET UP MENU *

This menu contains commands that allow the operator to establish the operating parameters of the machine. To access the Setup menu, enter the service mode and use the directional keys on the keypad to maneuver to the Setup menu. Follow the path indicated below, **or** press '3' on the keypad. To access the items in the Setup menu, use the Line Up (Reset + 0) and Line Down (Reset + 1) keys, **or** press '3' followed by the line number. Pressing the Enter key (Reset + 8) will provide access to a sub-menu (indicated by an arrow to the right of the entry). Follow the instructions below to access the specific menu options.

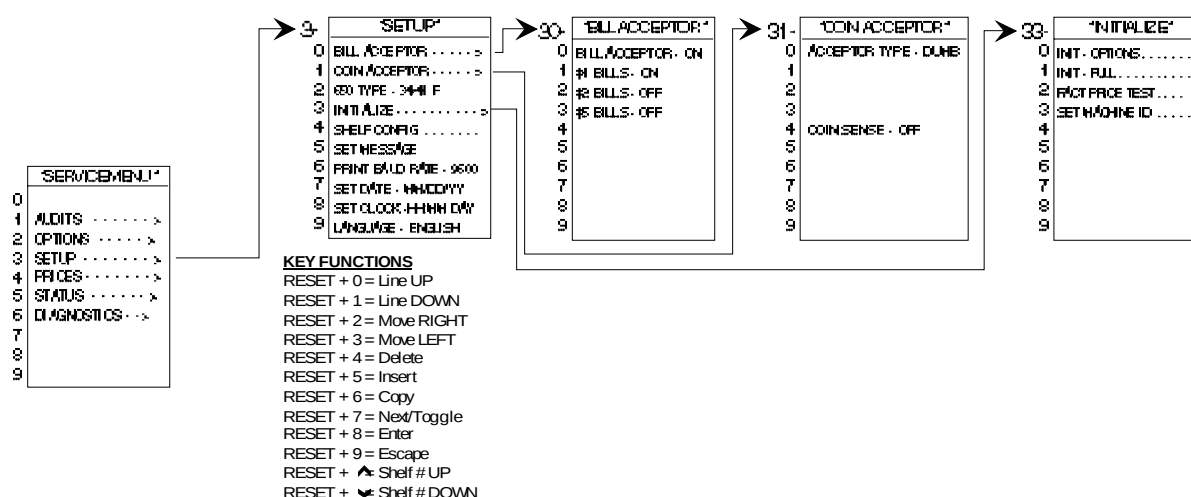


Figure 3-12. Set-Up Menu

- 30: BILL ACCEPTOR (Sub-menu)** - The Bill Acceptor Sub-menu allows the operator to enable or disable the bill acceptor and to select which bills are accepted. Press the Enter key (Reset + 8) to enter the Bill Acceptor sub-menu.
- 31: COIN ACCEPTOR (Sub-menu)** - The Coin Acceptor Sub-menu allows the operator to select the type of coin mech to be used with the 650. Press the Enter key (Reset + 8) to enter the Coin Acceptor sub-menu. The options for this function are Dumb, Exec, and None.
- 32: 650 TYPE - 34-41 F** - The 650 is available as a refrigerated food vendor or a non-refrigerated sundry vendor. This command configures the vendor as refrigerated or non-refrigerated. Use the Next/Toggle key (Shift + 7) to toggle step through non-refrigerated or the operating temperature range on refrigerated models.

If the wrong entry is made at this point, the machine will not operate properly. For example, if the machine is a refrigerated model, and the non-refrigerated option is programmed, the refrigeration unit will not operate. On the other hand, if the machine is a non-refrigerated model and a refrigerated option is programmed, the unit will be subject to the health control feature, which places the machine out of service when the cabinet temperature exceeds the health code temperature. See Table 3-3 on the following page for U.S. and European health temperatures.

Set Up Menu Continued . . .

TEMPERATURE OPERATION CHART

Use For	Low Temperature	High Temperature	Health Temperature
U. S. A.	34° F	41° F	45° F
Europe	1° C	3° C	8° C
Europe	3° C	5° C	8° C
Europe	5° C	8° C	10° C

Table 3-3.

33: INITIALIZE (Sub-menu) - This menu contains commands that are used to reset the software to factory specifications. Press the Enter key (Reset + 8) to enter the Initialize Sub-menu.

34: SHELF CONFIG - This command is used to set the size of the shelf compartments. The default setting is 2 single compartments, 1 double compartment, and 2 single compartments (1, 1, 2, 1, 1).

- With '*SERVICE MENU*' on the display, press 34 on the keypad then press RESET + 8. The display may read 'SHLF 01 [][][][][]'. The six boxes indicate that the shelf is configured as six individual compartments.
- With shelf 01 visible, note the size of each compartment from left to right. Press the digits on the keypad corresponding to the size of each compartment. For example, assume shelf 01 is set up with two single compartments on the left. The next compartment is two spaces wide with the last two compartments single. The sizes of the compartments are 1, 1, 2, 1, 1. Enter 1, 1, 2, 1, 1 using the numeric keypad to configure shelf 01. The display will update the shelf configuration as the digits are entered. After entering the last digit, the display will read 'SHLF 01 [][][-][][]'. Press the Enter key (Reset + 8) to enter this configuration.
- Repeat step b for each shelf. Use the UP and DOWN keys to move the shelves as required so you can look at each shelf as you enter its configuration.
- You can view the programmed configuration of any shelf by using RESET + UP and RESET + DOWN to increment or decrement respectively the displayed shelf number and its configuration.



NOTE:

If a shelf is reconfigured the prices of the reconfigured compartments are automatically set to default (99.95).

Set Up Menu Continued . . .

- 35: SET MESSAGE** - This command is used to set the POS message on the customer display. The point of sales message will be displayed when the machine is idle. To select the type of message to be displayed, refer to menu item 27.

Press the Enter key (Reset + 8). The POS message will be displayed. The first character in the display will be flashing. This is the cursor position.

Use the Move Right (Reset + 2) and Move Left (Reset + 3) keys to select a letter for the flashing character position.

Use the Up (Reset + Up Arrow) and Down (Reset + Down Arrow) keys to move the cursor position within the display (indicated by the flashing character).

- 36: PRINT BAUD RATE - 9600** - This command is used to establish the baud rate at which the controller sends information to the printer. The default rate is 9600 baud. The options are 9600, 2400, or 1200 baud. Refer to the instructions provided with your printer to determine the proper baud rate setting.

Use the Next/Toggle key (Reset + 7) to select the appropriate value.

- 37: SET DATE** - This command is used to set the date on the machine. It is important to set the correct date in order to utilize some of the advanced programming features.

Use the Move Right (Reset + 2) and Move Left (Reset + 3) keys to select which value to program (mm-dd-yy). Use the keypad to enter the correct number for each position.

- 38: SET CLOCK** - This command is used to set the time on the machine. It is important to set the correct time in order to utilize some of the advanced programming features.

Use the Move Right (Reset + 2) and Move Left (Reset + 3) keys to select which value to program (hh:mm day). Use the keypad to enter the correct number for each position.

- 39: LANGUAGE** - This command is used to establish the display language. The options are English, French, German, and Spanish. The language selection only affects messages displayed to the customer. Service mode programming and information displays are not affected by this setting and are displayed in English.

To select a language use the Next/Toggle key (Reset + 7) to display the desired language.

* BILL ACCEPTOR SUB - MENU *

This menu contains a command that allows the operator to enable or disable the bill acceptor. To access the Bill Acceptor Sub-menu, enter the service mode and use the directional keys on the keypad to maneuver to the Bill Acceptor Sub-menu. Follow the path indicated below, **or** press '30' on the keypad. To access the item in the Bill Acceptor Sub-menu, use the Line Up (Reset + 0) and Line Down (Reset + 1) keys, **or** press '30' followed by the line number. Follow the instructions below to access the menu option.

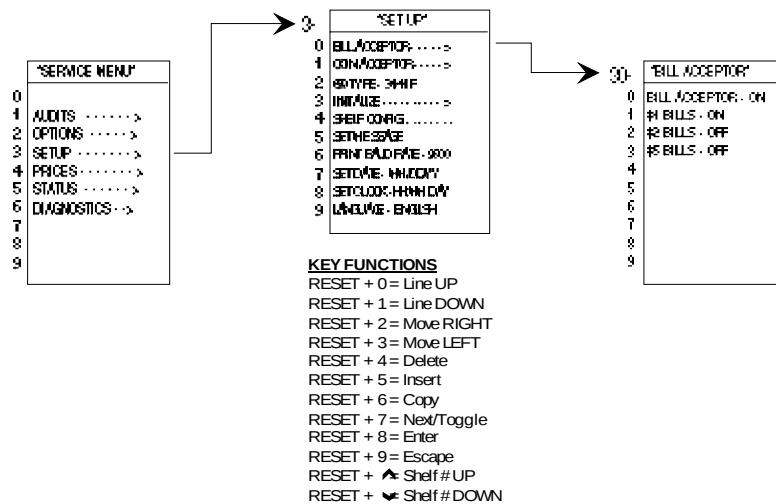


Figure 3-13. Bill Acceptor Sub-Menu

300: BILL ACCEPTOR - ON - This command enables or disables the bill acceptor.

Use the Next/Toggle key (Reset + 7) to toggle ON/OFF. The Default is ON.

301: ACCEPT \$1 - ON - This command programs the controller to accept \$1 bill signals from the bill acceptor. Use the Next/Toggle key (Reset + 7) to toggle ON/OFF. The Default is ON.

302: ACCEPT \$2 - OFF - This command programs the controller to accept \$2 bill signals from the bill acceptor. Use the Next/Toggle key (Reset + 7) to toggle ON/OFF. The Default is OFF.

303: ACCEPT \$5 - OFF - This command programs the controller to accept \$5 bill signals from the bill acceptor. Use the Next/Toggle key (Reset + 7) to toggle ON/OFF. The Default is OFF.

* COIN ACCEPTOR SUB - MENU *

This menu contains a command that allows the operator to select the type of coin mech used in the vendor. To access the Coin Acceptor Sub-menu, enter the service mode and use the directional keys on the keypad to maneuver to the Coin Acceptor Sub-menu. Follow the path indicated below, **or** press '31' on the keypad. To access the item in the Coin Acceptor Sub-menu, use the Line Up (Reset + 0) and Line Down (Reset + 1) keys, **or** press '31' followed by the line number. Follow the instructions below to access the menu option.

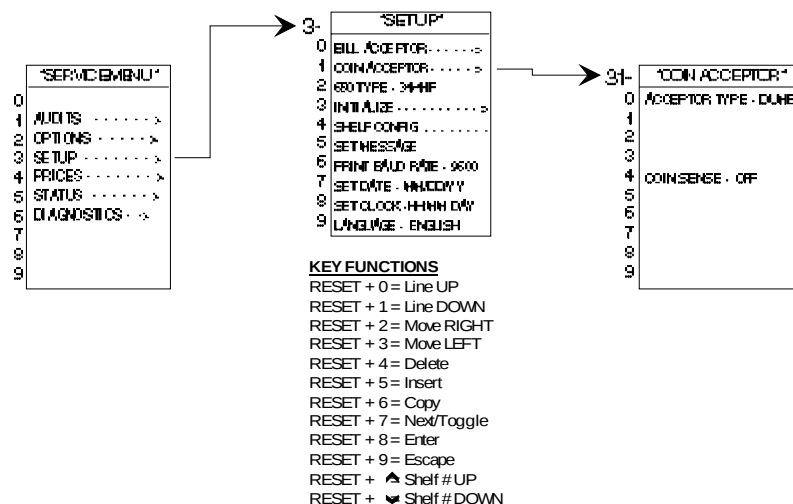


Figure 3-14. Coin Acceptor Sub-Menu

310: ACCEPTOR TYPE - DUMB - This command allows the operator to select the type of Coin Acceptor installed in the 650. The choices are: **Dumb** (Used in U.S. & Canadian machines) **Exec** (Used in export machines), and **None**.

Use the Next/Toggle key (Reset + 7) to make the appropriate selection.

314: COIN SENSE - OFF - When this function is enabled, it uses the level sensors in the coin mech to determine if there is sufficient change available for bill acceptance.

Use the Next/Toggle key (Reset + 7) to toggle ON/OFF. The Default is OFF.



NOTE:

This feature works only with "Dumb" type Coin Mechs.

* INITIALIZE SUB - MENU *

This menu contains commands that allow the operator to return the vendor to factory defaults, i.e., initialize the vendor. To access the Initialize Sub-menu, enter the service mode and use the directional keys on the keypad to maneuver to the Initialize Sub-menu. Follow the path indicated below, **or** press '33' on the keypad. To access the items in the Initialize Sub-menu, use the Line Up (Reset + 0) and Line Down (Reset + 1) keys, **or** press '33' followed by the line number. Follow the instructions below to operate the specific menu options.

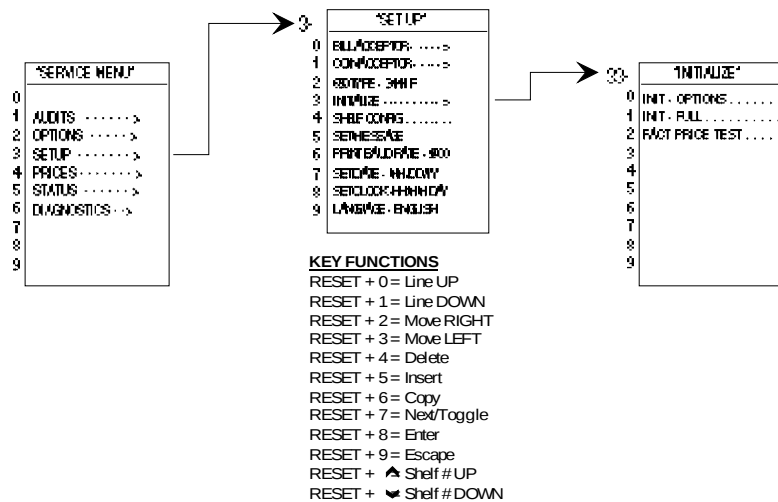


Figure 3-15. Initialize Sub-Menu

330: INIT - OPTIONS - This command returns all user defined options to factory default settings. Selecting this type of initialization does not affect price and product code settings.

Press the Enter key (Reset + 8) to execute this command.

331: INIT - FULL - This command returns all settings to factory default settings. Selecting this type of initialization resets all price and product code settings.

Press the Enter key (Reset + 8) to execute this command.

332: FACT PRICE TEST - See *Figure 3-16*. This command sets prices and product codes for testing the machine at the factory. Selecting this option erases prices and product codes set by the operator.

Press the Enter key (Reset + 8) to execute this command.

101 .05	201 .10	301 .15	401 .20	501 .25	601 .30
102 .35	202 .40				
103 .45		303 .50			
104 .55			404 .60		
106 .65				506 .70	
107 .75					607 .80
108 .85					
109 .90	209 .95			509 1.00	
111 1.05	211 1.10				611 1.15
112 1.20		312 1.25			612 1.30
113 1.35		313 1.40		513 1.45	
114 1.50		314 1.55			614 1.60
116 1.65	216 1.70	316 1.75	416 1.80	516 1.85	616 1.90
117 1.95	217 2.00	317 2.05	417 2.10	517 2.15	617 2.20
118 2.25	218 2.30	318 2.35	418 2.40	518 2.45	618 2.50
119 2.55	219 2.60	319 2.65	419 2.70	519 2.75	619 2.80

Figure 3-16 . 650 Factory Test Configuration and Pricing Chart

* PRICES MENU *

This menu contains commands that allow the operator to set compartment prices and product codes. To access the Prices menu, enter the service mode and use the directional keys on the keypad to maneuver to the Prices menu. Follow the path indicated below, **or** press '4' on the keypad. To access the items in the Prices menu, use the Line Up (Reset + 0) and Line Down (Reset + 1) keys, **or** press '4' followed by the line number. Follow the instructions below to access the specific menu options.

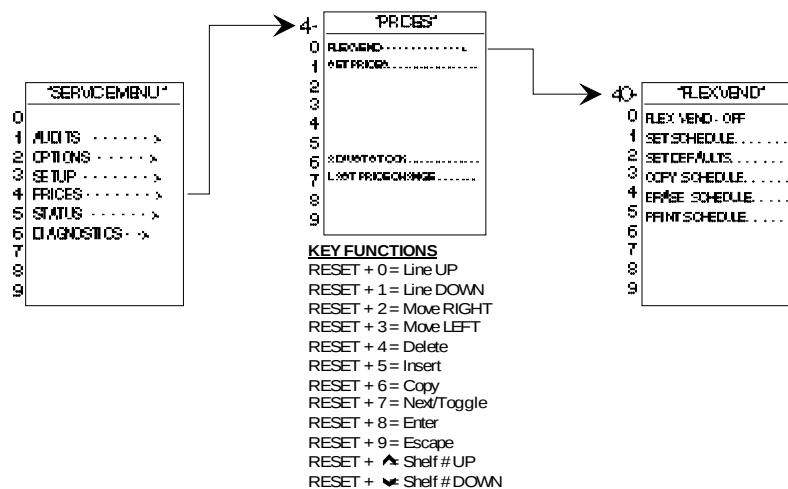


Figure 3-17. Price Menu

40: FLEX VEND (Sub-Menu) - The Flex Vend menu contains commands for scheduling various events for the 650.

Press the Enter key (Reset + 8) to access the flex vend menu..

41: SET PRICES - This command is used to set or change prices of the configured compartments. To set a price:

- With '*SERVICE MENU*' on the display, press 41 on the keypad then press RESET + 8. The display will read 'PRICE 101 = XXXXX' where XXX.XX is the current price of selection 101. The right-most digit in the selection will be blinking.
- Enter the selection number for the price to change using the numeric keypad. As each number is entered, the selection will be shifted to the left and the new digit added to the right. As the digits of the selection number are entered, the current price for the number on the display will be updated automatically. An invalid selection may be displayed as the selection number is entered. The price display will show "- - - -" when an invalid selection number is on the display.

Price Menu Continued . . .

- c) Press RESET + 2 to move the blinking cursor from the selection field to the price field. If an invalid selection number is displayed, RESET + 2 will not move the cursor. Press RESET + 3 to move the blinking cursor from the price field back to the selection field. When using RESET + 3, the selection number will automatically reset to 101.
- d) With the cursor blinking in the price field, enter a new price for the displayed selection using the numeric keypad. The first time a digit is pressed, the displayed price will be erased and only the new digit will be shown. As each additional number is entered, the price will be shifted to the left and the new digit added to the right.
- e) If you make a mistake while typing the price, press '0' a number of times until all the significant digits have been shifted off the display to the left, then retype the correct price.
- f) There are two ways to save the new price after typing it in, by pressing either RESET + 6 or RESET + 8.

Using RESET + 6 to save the price will cause the display to blink, then automatically advance to the same compartment on the next shelf (shelf below the current shelf) and display its current price. If the same compartment on the next shelf is not a valid selection, the next shelf with a valid selection in the same compartment will be displayed.

Using RESET + 8 to save the price will cause the display to blink, then automatically advance to the next selection to the right on the same shelf and display its current price. After entering the price for the last selection on a shelf, the display will then show the price for the first selection on the next shelf.

If the display reads 'INVALID PRICE' while trying to save a new price, the new price is not a multiple of the smallest coin the coin changer can accept.

Example: Assume the smallest coin the coin changer will accept is .05. Prices must be a multiple of .05, so they must end with a 5 or a 0. Any other price will be invalid.

- g) The 650 remembers the last entered price. Press RESET + 7 to toggle between the last entered price and the current price. Press RESET + 6 or RESET + 8 to store the displayed price.
- h) Repeat steps b through g until all prices have been entered.
- i) You can view the price of any selection two ways.
 1. With the blinking cursor in the selection field, simply enter the selection number. The price will automatically be displayed.
 2. With the blinking cursor in the price field, use RESET + UP and RESET + DOWN to numerically increment and decrement the shelf number respectively. In addition, use RESET + 4 and RESET + 5 to display the price of the selection left or right of the current selection respectively. If the leftmost selection on a shelf is displayed, RESET + 4 will cause the right-most selection of the previous shelf to be displayed. Conversely, if the right most selection on a shelf is displayed, RESET + 5 will cause the first selection on the next shelf to be displayed.

Price Menu Continued . . .

- 46: ADJUST STOCK** - This command is used to add stock to or remove stock from compartments. It can be used to change SOLD compartments to FULL when only a few new items are to be added to the vendor. It can also be used to change unfilled compartments to SOLD when it is not desirable to restock the entire vendor. Using the ADJUST STOCK command will not affect sales totals.

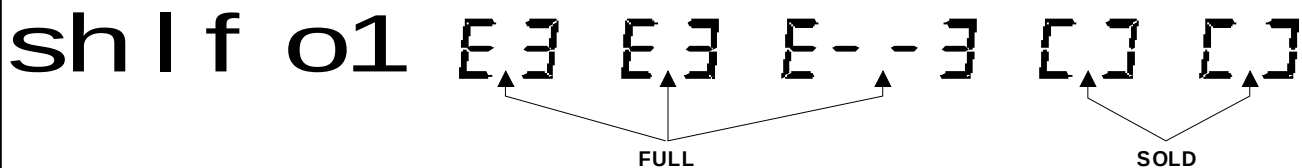
To execute this command, press the Enter key (Reset + 8). The display will look similar to that in *Figure 3-18*, depending on shelf configuration. Use the Move Right command (Reset + 2) to move to the next position on the shelf, right. Use the Move Left command (Reset + 3) to move to the next position on the shelf, left. Use the Shelf up (Reset + up arrow) or the Shelf down (Reset + down arrow) to move between the shelves. The Next/Toggle key (Reset + 7) changes the compartment selected from SOLD to FULL, or from FULL to SOLD.



NOTE:

When using this feature AUTO RESTOCK (Menu code 24), should be set to OFF.

Example 1



Example 2

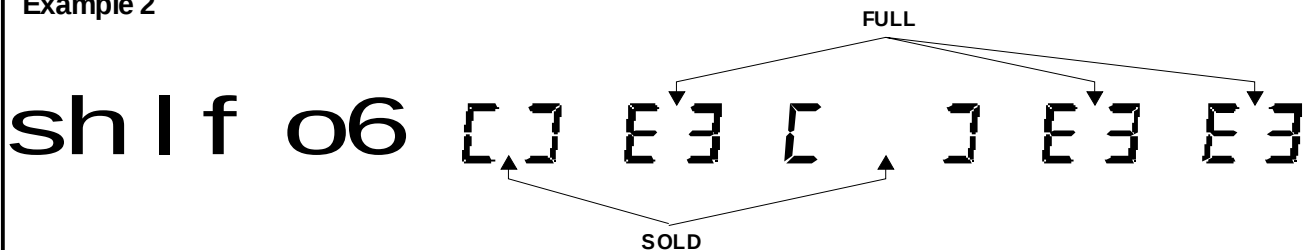


Figure 3-18. Adjust Stock Display

- 47: LAST PRICE CHANGE** - This entry displays the time and date of the last price change. The display will look like this example: 204 Fri 8/25/96

Press the Enter key (Reset + 8) to view this data.

* FLEX VEND SUB - MENU *

This menu contains commands that allow the operator to schedule various events for a vending machine. To access the Flex Vend menu, enter the service mode and use the directional keys on the keypad to maneuver to the Flex Vend menu. Follow the path indicated below, **or** press '40' on the keypad. To access the items in the Flex Vend menu, use the Line Up (Reset + 0) and Line Down (Reset + 1) keys, **or** press '40' followed by the line number. Pressing the Enter key (Reset + 8) will provide access to a sub-menu (indicated by an arrow to the right of the entry). Follow the instructions below to access the specific menu options.

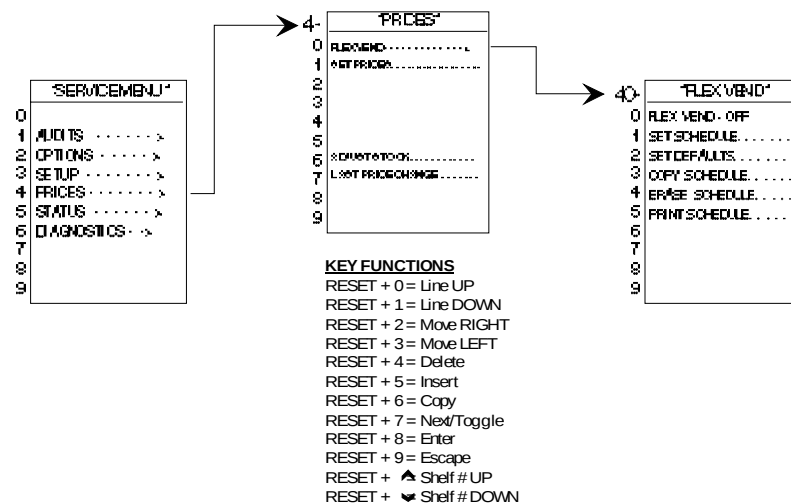


Figure 3-19. Flex Vend Menu

Flex Vend Description and Operation

Flex Vend is a method of scheduling various events for the 650 Showcase Merchandiser.

25 (0-24) events per weekday may be scheduled.

Programming an event involves the following:

- 1) Select the weekday of the event
- 2) Set the time of the event
- 3) Select the event

Flex vend must be turned ON for the programmed events to have effect.

Flex Vend uses a 24-hour clock, with time running from 00:00 to 23:59 for a day. Times less than 13:00 are read as hours and minutes AM. Times greater than 12:59 are read as hours minus 12 and minutes PM. For example, 13:01 is read as 1:01 PM. Zero hour may also be read as 12:minutes AM.

Flex Vend Sub-Menu Continued . . .

For Flex Vend, the week starts at SUN 00:00, or midnight on Saturday night.

At the week start, all of the events set by Flex Vend are set to the Flex Vend Defaults. These defaults may be programmed.

An entire schedule for a day may be copied to another day or days.

Schedules for days may be erased on an individual basis.

With an optional printer attached, the Flex Vend Schedule may be printed.

400: FLEX VEND - OFF - This command enables or disables the Flex Vend option.

Use the Next/Toggle key (Reset + 7) to Toggle ON/OFF. The Default is OFF.

401: SET SCHEDULE - Use this command to set the flex vend schedule.

A typical flex vend schedule display reads like this: 'SUN [00] TIME- 1000'. The blinking character (_) indicates the value that is selected for editing. Use the Move Right (Reset + 2) and the Move Left (Reset + 3) keys to select which value to program. Use the keypad to enter the correct number for each position.

When Event is selected a typical display reads like this: '[00] ^ *- EMPTY - *'.

The day of week selection keys are as follows:

- 1 = Sunday
- 2 = Monday
- 3 = Tuesday
- 4 = Wednesday
- 5 = Thursday
- 6 = Friday
- 7 = Saturday

Event numbers are entered with the number keys. No gaps in sequence are allowed, so the highest number allowed is the next empty event or 24, whichever is smaller.

Hours and minutes are entered with the number keys. Only valid values are accepted. As a number is entered, it pushes the previous value to the left. If the result is too large, the last digit pushed determines the new value.

Example for Minutes:

Number is 05; 5 is pushed, new number is 55.

Number is 55; 9 is pushed, new number is 59.

Number is 59; 8 is pushed; 98 is too large, so new number is 08.

Flex Vend Sub-Menu Continued . . .

Event Options

Events are entered with the number keys and modified with the Next/Toggle key (Reset + 7). The event number is actually a category of events. The Next/Toggle key (Reset + 7) cycles through the optional settings.

0 EMPTY WITH NO OPTIONS

1 ACTIVE SHIFT

Options:

ALL SHIFTS ON
SHIFT ONE ON
SHIFT TWO ON
SHIFT THREE ON

2 ACTIVE PRICE

Options:

PRICE ONE ON
PRICE TWO ON
PRICE THREE ON

3 FREE VEND

Options:

OFF
ON

4 MULTIVIEW

Options:

OFF
ON

5 LOCKOUT

Options:

LOCKOUT ON
LOCKOUT OFF
SHUTDOWN



NOTE:

Shutdown may not be cleared by Flex Vend and will require a service call to put the machine back into service.

6 POINT OF SALE MESSAGE

Options:

SCROLL MESSAGE
FIXED MESSAGE
MESSAGE OFF
DISPLAY TIME

Flex Vend Sub-Menu Continued . . .

When an event is selected, pressing the Enter key (Reset + 8) will advance to the next Flex Vend Slot.

When an event is selected, pressing the Delete key (Reset + 4) will delete the current Flex Vend slot and move all subsequent entries up one slot.

When an event is selected, pressing the Insert key (Reset + 5) will insert a new Flex Vend slot and move all subsequent entries down one slot. If the new event is not assigned, the gap will prevent access of subsequent events until you remove it or until the utility function removes it.



NOTE:

A utility function will remove any gaps before any print is made. This will also happen when the Flex Vend Schedule is used in Vend Mode. The utility will also sort the events into chronological order, so events may be added AD HOC while programming Flex Vend.

402: SET DEFAULTS - Use this command to set the Flex Vend Defaults.

With Flex Vend turned ON at SUN 00.00 all of the events set by Flex Vend are set to the Flex Vend Defaults.

A typical display reads like this: START- *- EMPTY -*

Programming is the same as in Flex Vend Schedule.

Event Options

Events are entered with the number keys and modified with the Next/Toggle key (Reset + 7). The event number is actually a category of events. The Next/Toggle key (Reset + 7) cycles through the optional settings.

0 Empty with no options

1 ACTIVE SHIFT

Options:

ALL SHIFTS ON
SHIFT ONE ON
SHIFT TWO ON
SHIFT THREE ON

2 ACTIVE PRICE

Options:

PRICE ONE ON
PRICE TWO ON
PRICE THREE ON

Flex Vend Sub-Menu Continued . . .

3 FREE VEND

Options:

OFF
ON

4 MULTIVIEW

Options:

OFF
ON

5 LOCKOUT

Options:

LOCKOUT ON
LOCKOUT OFF
SHUTDOWN

**NOTE:**

Shutdown may not be cleared by Flex Vend and will require a service call to put the machine back into service.

6 POINT OF SALE MESSAGE

Options:

SCROLL MESSAGE
FIXED MESSAGE
MESSAGE OFF
DISPLAY TIME

403: COPY SCHEDULE - Use this command to copy all or part of the Flex Vend Schedule.

A typical display reads like this: COPY ^MTWTFS>SMTWTFS

The day to copy is indicated by the blinking character (^). All of the days shown on the right of the arrow (>) will be overwritten with the schedule of the blinking day.

Days to copy are toggled on and off with the number keys. The day of week selection keys are:

1 = Sunday
2 = Monday
3 = Tuesday
4 = Wednesday
5 = Thursday
6 = Friday
7 = Saturday

Flex Vend Sub-Menu Continued . . .

404: ERASE SCHEDULE - Use this command to erase all or part of the Flex Schedule.

A typical display reads like this: ERASE DAYS - SMTWTFS

All of the days shown will be erased.

Days to erase are toggled on and off with the number keys. The day of week selection keys are:

- 1 = Sunday
- 2 = Monday
- 3 = Tuesday
- 4 = Wednesday
- 5 = Thursday
- 6 = Friday
- 7 = Saturday

To perform the erase, press the Enter key (Reset + 8). After the warning messages are displayed, press the Delete key (Reset + 4). The DONE message indicates that the erase was made.

405: PRINT SCHEDULE - Use the command to print the Flex Vend Schedule to an optional printer.

406: Not used

407: Not used

408: Not used

409: Not used

* STATUS MENU *

This menu contains commands that allow the operator to view and clear errors. To access the Status menu, enter the service mode and use the directional keys on the keypad to maneuver to the Status menu. Follow the path indicated below, **or** press '5' on the keypad. To access the items in the Status menu, use the Line Up (Reset + 0) and Line Down (Reset + 1) keys, **or** press '5' followed by the line number. Pressing the Enter key (Reset + 8) will provide access to a sub-menu (indicated by an arrow to the right of the entry). Follow the instructions below to access the specific menu options.

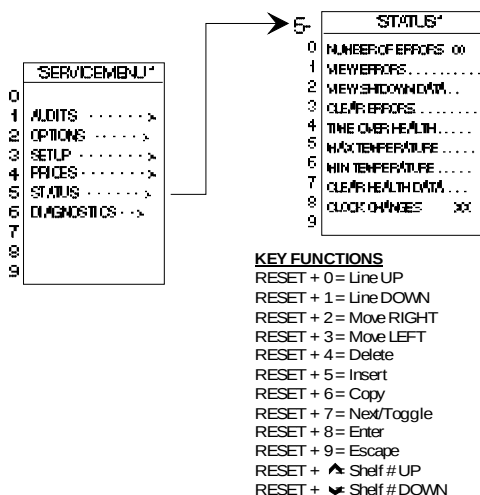


Figure 3-20. Status Menu

- 50: NUMBER OF ERRORS 00** - This line displays the number errors that have been logged since the last time errors were cleared.
- 51: VIEW ERRORS** - This command displays the errors that have occurred since the last time the error log was cleared. The errors are displayed in order of occurrence. The most recent error is first on the list. Errors are only shown once regardless of the number of occurrences.
- 52: VIEW SHUTDOWN DATA** - This command displays a detailed list of all the errors in the error log. The information is displayed one item at a time, but is arranged as a spreadsheet. Use the keys described in *Figure 3-21* to maneuver around the spreadsheet.

Status Menu Continued . . .

Number	Error Title	Temperature	Credit	Shelf Direction	Time/Date
1	Door Open	F = 38	\$.50	Shelf Last Ran Up	7.07 WED 3/03/95
2	Health Code	F = 46	\$.75	Shelf Last Ran Down	17.15 TUE 3/07/95
3	Motor Error	F = 35	\$.50	Shelf Last Ran Down	10.45 MON 3/06/95

Figure 3-21. Maneuvering around the spreadsheet.

- 53: CLEAR ERRORS** - This command clears all errors from the error log.
- 54: TIME OVER HEALTH** - This line displays the amount of time that the machine has been at a temperature that exceeds 45° F, and the maximum temperature reached (while over health). Refrigerated machines are used to sell product that may spoil at high temperatures, and the health code monitor shuts the machine down when temperatures inside the cabinet exceed 45° F. As a general rule, all temperature sensitive products inside the machine should be discarded when a health code error occurs. However, this feature provides the operator with additional information with which to judge the safety of products in a machine that is shut down due to a health code error.
- 55: MAX TEMPERATURE** - This command displays the maximum temperature reached since the last time health data was cleared.
- 56: MIN TEMPERATURE** - This command displays the minimum temperature reached since the last time health data was cleared.
- 57: CLEAR HEALTH DATA** - This command clears the time over health data, maximum temperature, and minimum temperature.
- 58: CLOCK CHANGES XX** - This line is used to view the number of times the clock was changed.
- 59: Not used**

* DIAGNOSTICS MENU *

This menu contains commands that allow the operator to view various diagnostic reports and perform diagnostic functions. To access the Diagnostics menu, enter the service mode and use the directional keys on the keypad to maneuver to the Diagnostics menu. Follow the path indicated below, **or** press '6' on the keypad. To access the items in the Diagnostics menu, use the Line Up (Reset + 0) and Line Down (Reset + 1) keys, **or** press '6' followed by the line number. Pressing the Enter key (Reset + 8) will provide access to a sub-menu (indicated by an arrow to the right of the entry). Follow the instructions below to access the specific menu options.

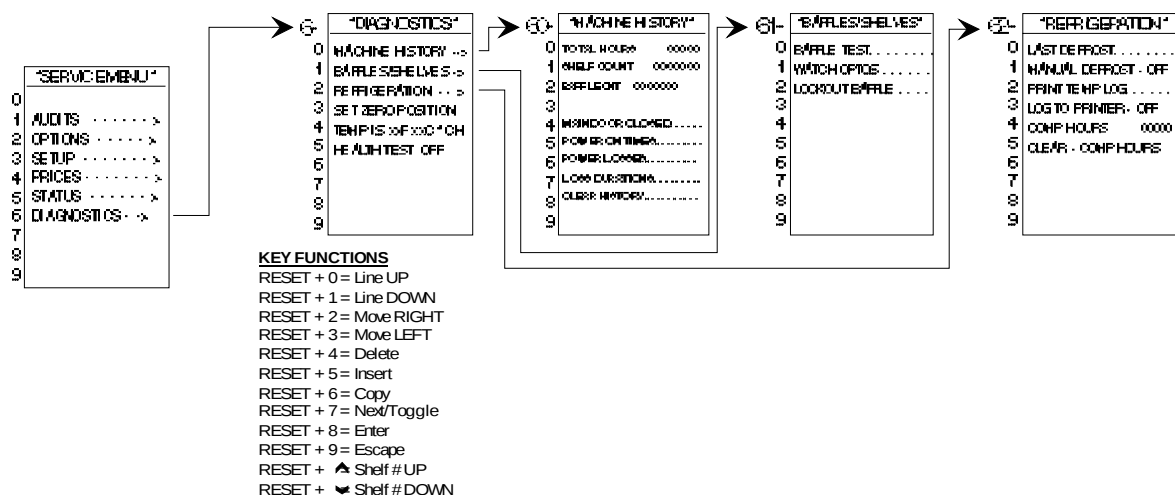


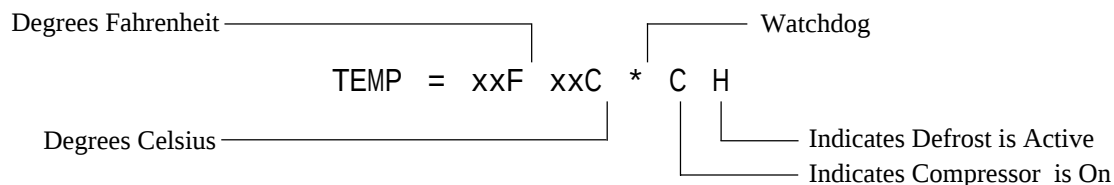
Figure 3-22. Diagnostics Menu

- 60: MACHINE HISTORY (Sub-Menu)** - This sub-menu contains entries that detail the historical operation of the machine.
- 61: BAFFLES/SHELVES (Sub-Menu)** - This sub-menu contains commands that allow the operator to test the operation of the baffles.
- 62: REFRIGERATION (Sub-Menu)** - This sub-menu contains entries that detail the operation of the machine's refrigeration unit.
- 63: SET ZERO POSITION** - This command is used to reset the zero position.

Press the Enter key (Reset + 8). The display will prompt the following message:
 'TURN UNTIL ZERO POS' Use the UP arrow on the keypad to move the shelves until the 'HOME SHELF FOUND' message is displayed.

Diagnostics Menu Continued . . .

- 64: TEMP IS xxF xxC * CH** - This entry displays the current cabinet temperature in Fahrenheit and Celsius. The blinking '*' is the watchdog toggle. 'C' after the '*' indicates that the compressor is on. 'H' after the '*' and the 'C' indicates that Defrost is active. See below.



- 65: HEALTH TEST - OFF** - This command resets the health timer to zero. Under normal circumstances the health timer will shut the machine down when the temperature rises above 45° F for 5 minutes. There is also a 30 minute allowance for the temperature to pull down below 45° after the main door is closed. This feature allows the health control to be tested without waiting 30 minutes.

Press the Enter key (Reset + 8) to execute this command. The machine will go out of service within five minutes if the temperature inside of the refrigerated compartment is above 45° F.



NOTE:

To force the temperature above 45° F, disconnect the temperature probe. This will set the temperature to 96° F. Remember to reconnect the temperature probe when finished with the Health Test.

* MACHINE HISTORY SUB - MENU *

This sub-menu contains commands that allow the operator to view data regarding the machine's performance. To access the History Sub-menu, enter the service mode and use the directional keys on the keypad to maneuver to the History Sub-menu. Follow the path indicated below, **or** press '60' on the keypad. To access the items in the History Sub-menu, use the Line Up (Reset + 0) and Line Down (Reset + 1) keys, **or** press '60' followed by the line number. Follow the instructions below to access the specific menu options.

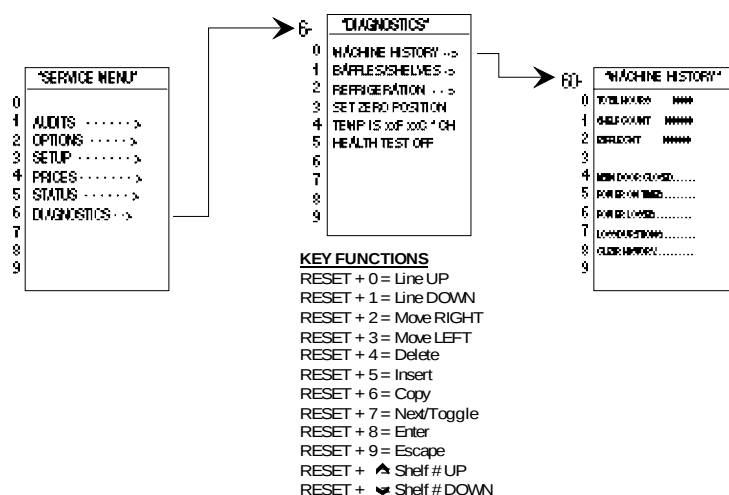


Figure 3-23. Machine History Sub-Menu

600: TOTAL HOURS - This line displays the total number of hours that the machine has been in service since the last time the count was cleared. The count will roll over to '0' after 99,999 hours.

601: SHELF COUNT - This line displays the total number of shelf movements since the last time the count was cleared. A shelf movement is defined as the shelf moving 1 position forward or backward. The count will roll over to '0' after 9,999,999.

602: BAFFLE CNT - This line displays the total number of times a baffle was cycled since the last time the count was cleared. A baffle cycle is defined as one successful up or down movement. The count will roll over to '0' after 9,999,999.

603: Reserved for future use.

604: MAIN DOOR CLOSED - This line displays the most recent date and time that the main door was closed. Press the Enter key (Reset + 8) to view this data.

Machine History Sub-Menu Continued . . .

605: POWER ON TIMES - This line displays the dates and times that power was applied to the machine, i.e., the main power switch was turned ON.

Press the Enter key (Reset + 8) to view the first line in this list. Press the Move Right (Reset + 2) or the Move Left (Reset + 3) key to move up or down through the list of 'power on' times.

606: POWER LOSSES - This line displays the dates and times that power was interrupted for any reason, such as the main power switch being turned OFF or general power failure.

Press the Enter key (Reset + 8) to view the first line in this list. Press the Move Right (Reset + 2) or the Move Left (Reset + 3) key to move up or down through the list of 'power loss' times.

607: LOSS DURATIONS - This line displays the duration of the power losses described on line 606.

Press the Enter key (Reset + 8) to view the first line in this list. Press the Move Right (Reset + 2) or the Move Left (Reset + 3) key to move up or down through the list of 'power loss durations'.

608: CLEAR HISTORY - This command erases the vend log and the shutdown log. Press the Enter key (Reset + 8), then the Delete key (Reset + 4), to execute this command.

609: Not used

* BAFFLES / SHELVES SUB - MENU *

This sub-menu contains commands that allow the operator to test the operation of the baffle assembly. To access the Baffles/Shelves Sub-menu, enter the service mode and use the directional keys on the keypad to maneuver to the Baffles/Shelves Sub-menu. Follow the path indicated below, **or** press '61' on the keypad. To access the items in the Baffles/Shelves Sub-menu, use the Line Up (Reset + 0) and Line Down (Reset + 1) keys, **or** press '61' followed by the line number. Follow the instructions below to access the specific menu options.

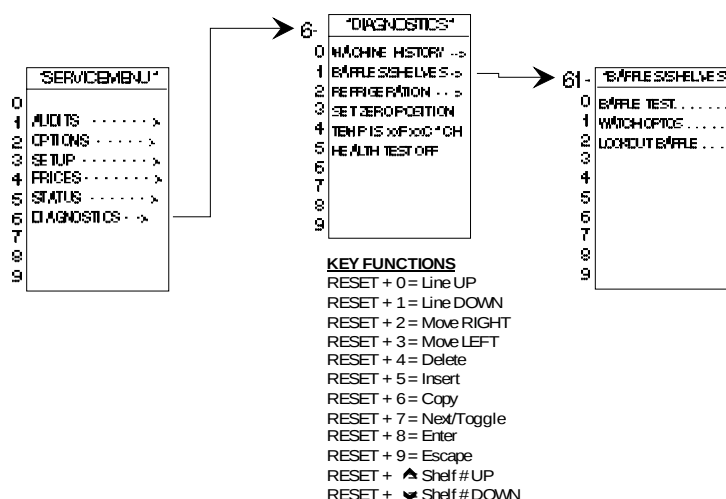


Figure 3-24. Baffles/Shelves Sub-Menu

610: BAFFLE TEST - This command allows the operator to test the operation of any baffle.

Press the Enter key (Reset + 8) to execute this command. The display will read 'RUN DOWN'. Enter the baffle number (s) to test and press Reset + 8. The baffle will move down and the display will read 'RUN UP'. Press Reset + 8 to move the baffles to the closed position.

611: WATCH OPTOS - This command allows the operator to test the optical sensors on the baffle assembly to be sure they are working properly. In a normally operating machine with all baffle doors in the UP (closed) position the display should show the following:

OPTO UPPER = - - - - -

Press Reset + 7 to toggle to view the lower optos. The display should show the following:

OPTO LOWER = X X X X X X

'-' indicates opto open.

'X' indicates opto blocked.

Baffles/Shelves Sub-Menu Continued . . .

612: LOCKOUT BAFFLE - This feature allows one or more baffles to be “locked-out” or disabled. This makes it possible for a non-functioning baffle to be disabled so the rest of the machine can remain in operation until repairs can be completed. Any selection that contains a “locked” baffle will be disabled. If a customer attempts to purchase a locked out selection the message ‘RESERVED SELECTION’ will be displayed.

* REFRIGERATION SUB - MENU *

This sub-menu contains entries that allow the operator to track the performance of the refrigeration unit. To access the Refrigeration Sub-menu, enter the service mode and use the directional keys on the keypad to maneuver to the Refrigeration Sub-menu. Follow the path indicated below, **or** press '62' on the keypad. To access the items in the Refrigeration Sub-menu, use the Line Up (Reset + 0) and Line Down (Reset + 1) keys, **or** press '62' followed by the line number. Follow the instructions below to access the specific menu options.

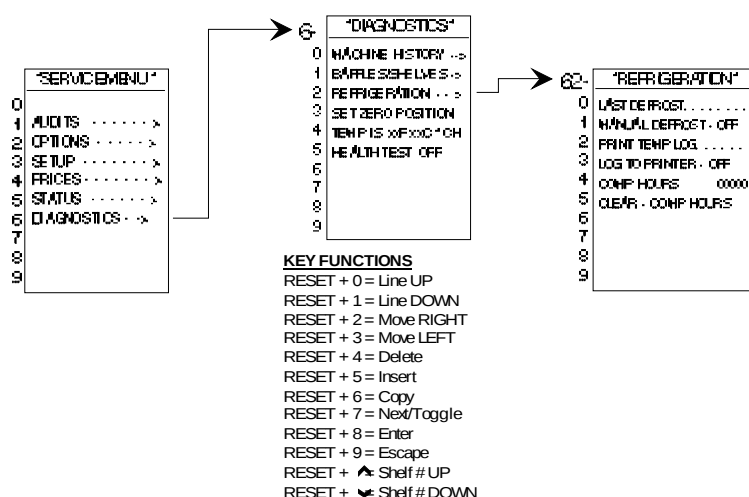


Figure 3-25. Refrigeration Sub-Menu

620: LAST DEFROST - This command allows the operator to view the date and time of the last defrost routine performed by the refrigeration system.

621: MANUAL DEFROST - OFF - Places the refrigeration unit into defrost mode.

Press the Next/Toggle key (Reset + 7) to 'Manual Defrost - ON' to defrost the unit. The unit will defrost as long as 'Manual Defrost - ON' is displayed or up to 15 minutes.

622: PRINT TEMP LOG - This command allows the operator to print the vend temperature log.

623: LOG TO PRINTER - OFF - This command allows the operator to print refrigeration data to a printer in real time. The controller will print one entry each minute while this feature is enabled.

624: COMP HOURS - This command allows the operator to view the number of hours of service logged on the compressor. The count will roll over to '0' after 99,999 hours.

625: CLEAR - COMP HOURS - This command allows the operator to reset the number of hours of service logged on the compressor to '0'.

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Section 4:

MAINTENANCE

INTRODUCTION

This section will explain how to perform routine maintenance, make necessary adjustments and replace key components of the 650 Showcase Merchandiser.

Cleaning

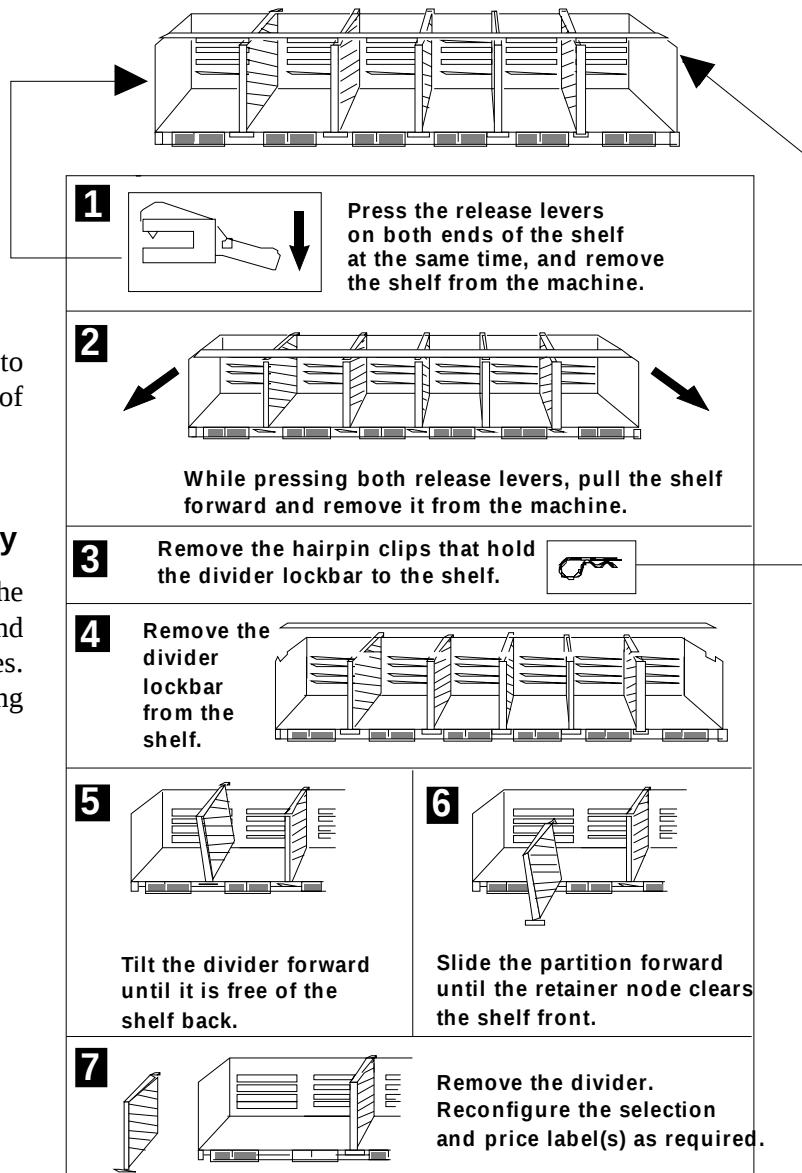
Maintain the beauty of the Merchandiser and project the best selling image to the customer by cleaning the machine at regular intervals.

- 1) The display window should be cleaned inside and out with a good glass cleaner, using clean soft cloths or paper towels.
- 2) Painted metal and vinyl surfaces can be cleaned with warm water and mild detergent.
- 3) The shelves and shelf dividers should be cleaned at every servicing. The shelves should be removed from the machine, and the dividers removed from the shelves for best results. See *Figure 4-1*.
- 4) Check the coin paths regularly to make sure they are clean and dry through the coin mechanism.
- 5) Check the drive chains regularly to make sure they are tight and free of debris.

Shelf Removal and Disassembly

Figure 4-1 describes how to remove the shelf assemblies from the machine and remove the dividers from the shelves. Reassembly is accomplished by reversing the removal procedure.

Figure 4-1.
Removing the Shelf Assemblies
and Shelf Dividers



Drive Motor Assembly

The drive motor has one adjustment screw that is used to adjust the stopping position of the shelves. To make the shelves stop higher in relation to the delivery door, turn the adjustment screw clockwise. To make the shelves stop lower, turn the adjustment screw counterclockwise.

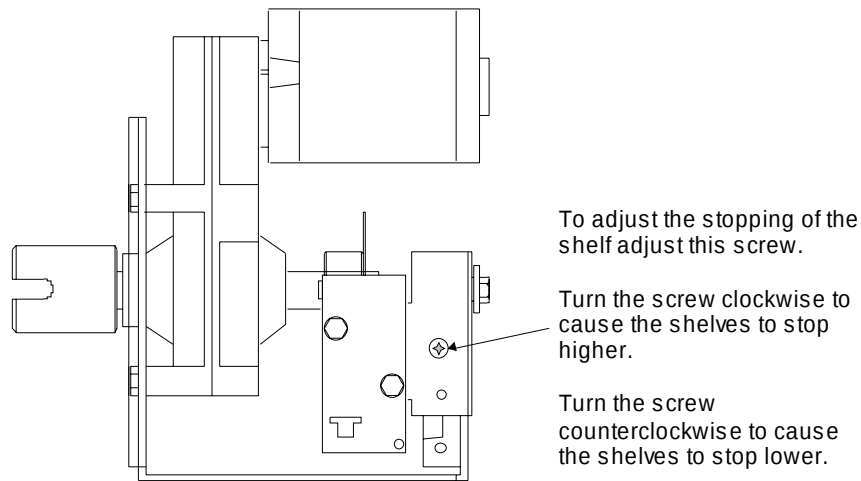


Figure 4-2. Shelf Stop Adjustment

Drive Assembly Alignment

In order for the machine to operate properly, the product shelves must be precisely aligned horizontally. The drive chains must be placed on the right and left drive sprockets in identical relative positions on both sprockets. To accomplish this follow the steps below.

- 1) With the shelves and carrier assemblies removed, rotate the sprockets so that the alignment holes on the upper drive sprockets are in the 12 o'clock position.
- 2) Ensure that the set screw securing the opto-interrupter disc is facing the rear of the cabinet.
- 3) Place the drive chains on the upper drive sprockets so that a pair of carrier mounting pins is centered above the alignment hole in the drive sprocket.
- 4) Attach the carriers and shelves to the drive chain mounting pins.

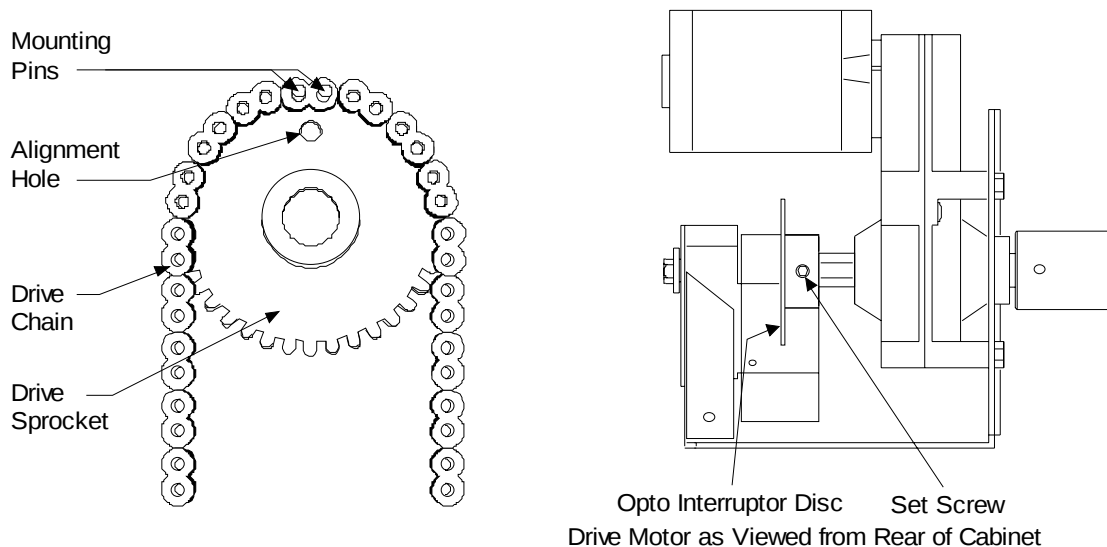


Figure 4-3. Drive Assembly Alignment

Adjusting Drive Chain Tension

In order for the 650's drive mechanism to function properly, be sure that the drive chain is kept tight. As a result of normal use, it may be necessary to adjust the drive chain tension. Follow the steps below.

1. Remove the shelves from the machine. Follow the instructions in Figure 4-1.
2. Remove the lower carrier retainers.
3. Remove the carrier assemblies from the lower portion of the carrier tracks.
4. Loosen the screws securing the lower carrier tracks.
5. Push the lower drive shaft toward the cabinet base. Use equal pressure across the shaft so that it is adjusted equally on the right and left sides.
6. Tighten the screws.
7. Attach carriers to the drive chain. Be sure the timing marks on the alignment gears are properly aligned.
8. Reinstall the carrier retainers.
9. Reinstall the shelves.

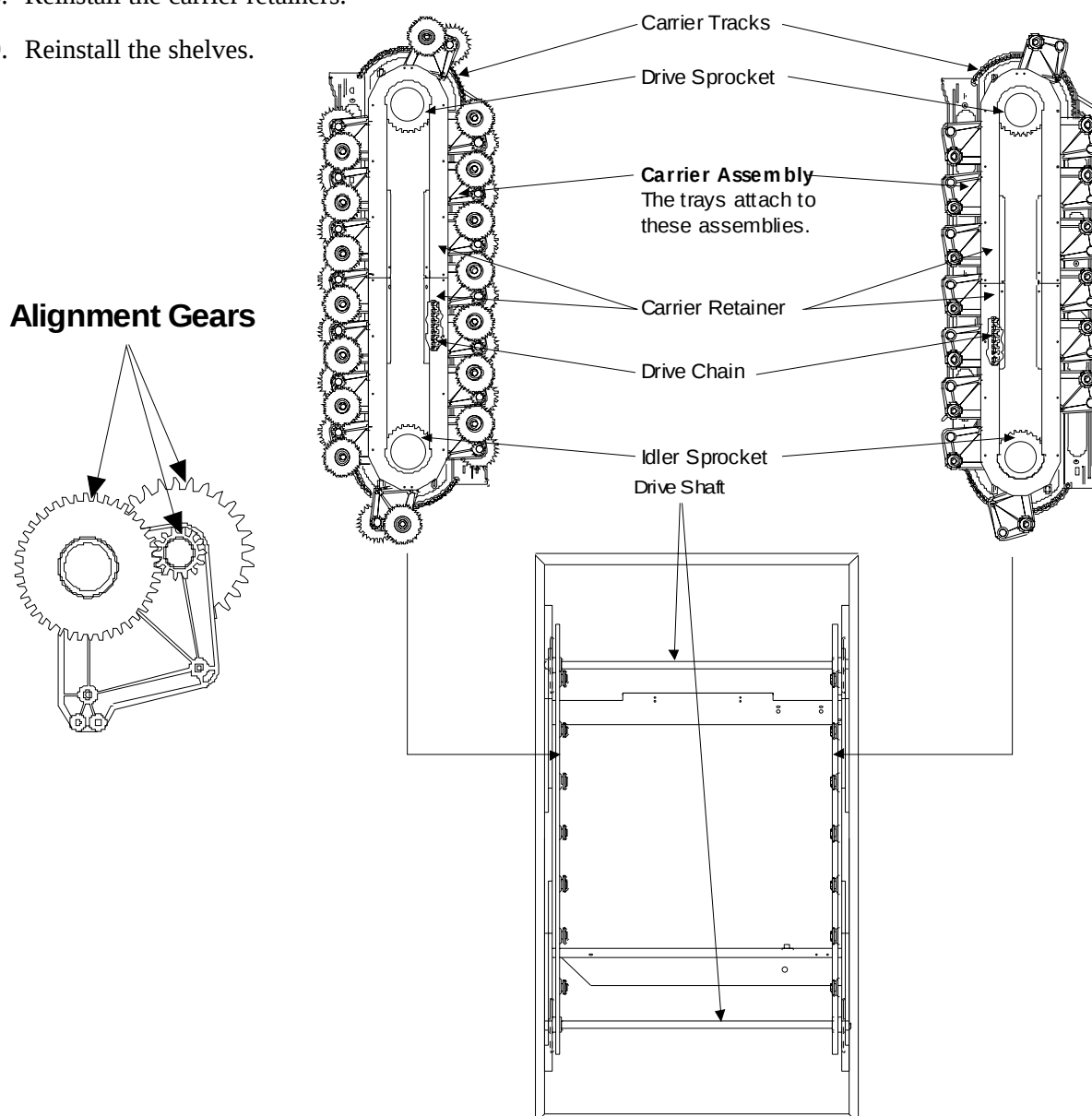


Figure 4-4. Drive Chain Tension Adjustment

Replacing Baffle Motors

Occasionally it may become necessary to replace a baffle drive motor. Replacing the motor is easily accomplished by following the steps below.

1. Remove the 4 screws that attach the baffle security cover. Lift the cover up and out and remove it from the machine.
2. Disconnect the motor from the baffle board.
3. Remove the 2 screws that attach the motor to the baffle assembly and remove the motor.
4. Reverse steps 1-3 to install a new motor.

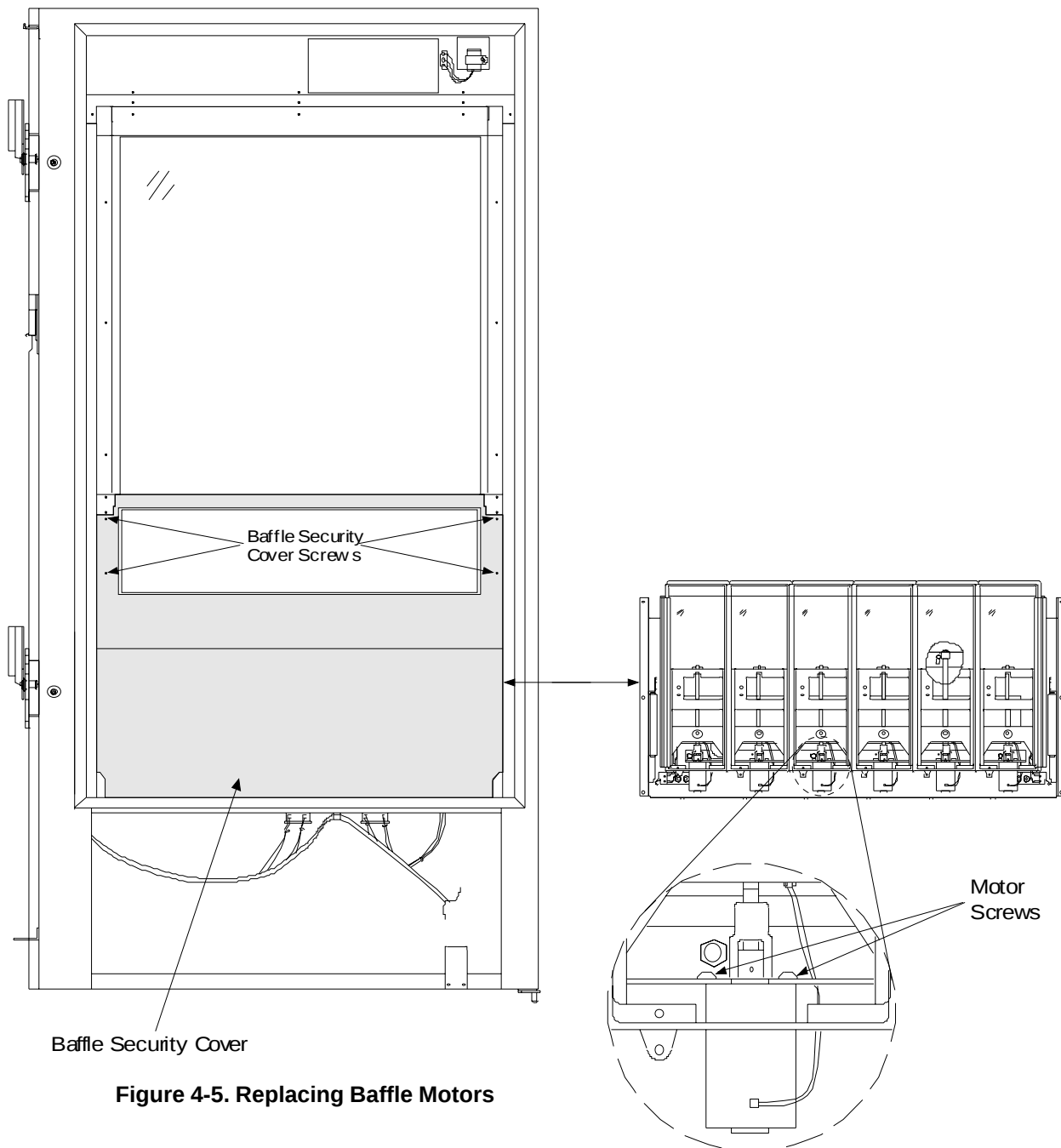


Figure 4-5. Replacing Baffle Motors

Remove Baffle Assembly

To remove the Baffle Assembly follow the directions below.

1. Remove the 4 screws that attach the baffle security cover. Lift the cover up and out and remove it from the machine.
2. Disconnect the 2 main harnesses from the opto-circuit board.
3. Remove the 3 screws that attach the top of the baffle assembly to the front extrusion.
4. Remove the 6 screws attaching the baffle assembly to each side of the main door.
5. Block the outer vend door open and remove the baffle assembly.
6. Reverse steps 1-5 for reassembly.

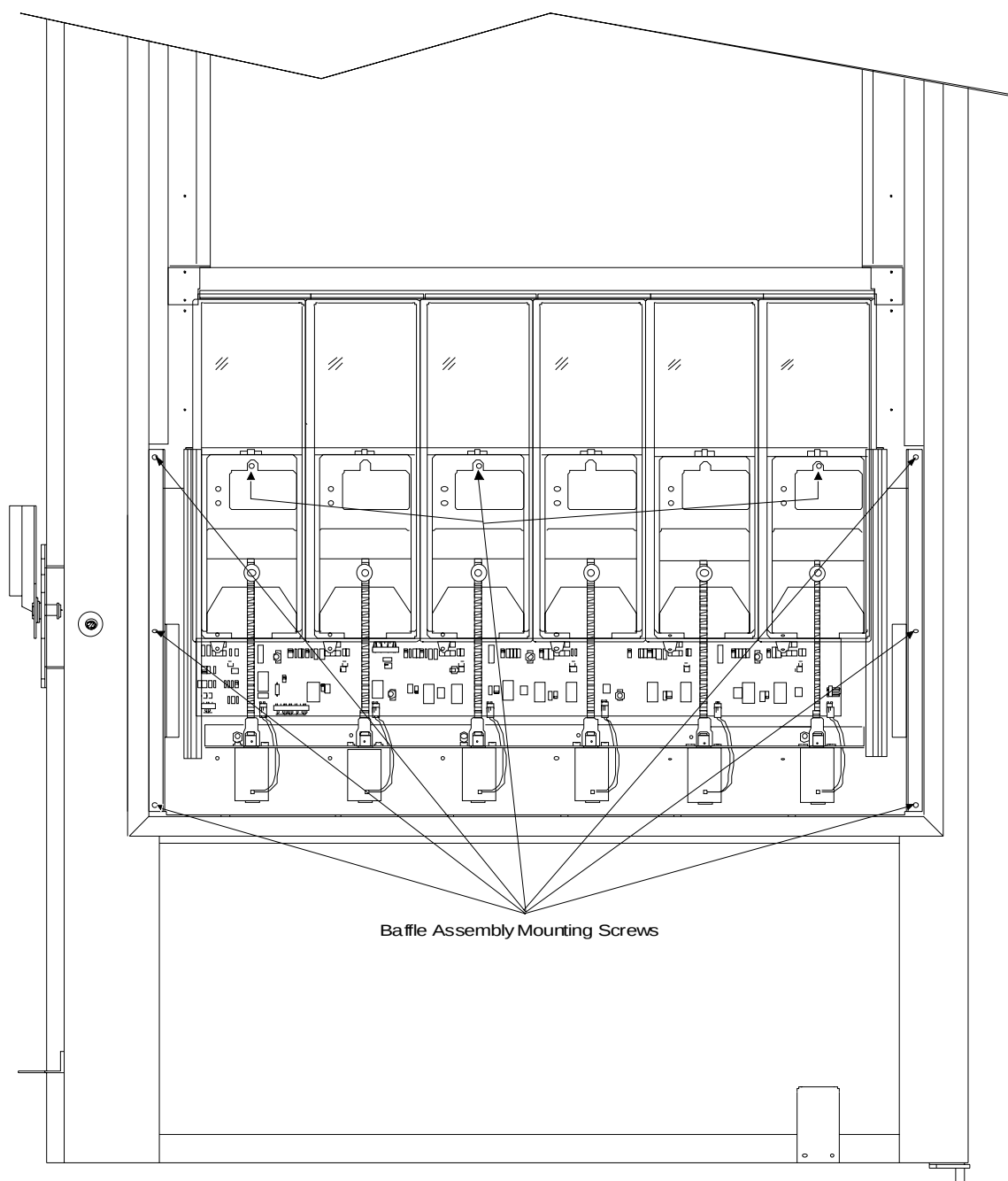


Figure 4-6. Removing the Baffle Assembly

Baffle Height Adjustment

To adjust the baffle height, it is necessary to properly position the opto-circuit board so all the baffles close completely.

1. Remove the baffle security cover.
2. Raise the baffles to their UP position. Press 610.
3. Rotate the baffle motor drive screws counterclockwise by hand to lower the baffles slightly, then raise each baffle until it just contacts the lower glass retainer. **DO NOT OVERTIGHTEN.**
4. Lower the outside 2 baffles 2 full turns of the motor drive screw.
5. From the Service Menu, press 611 to see WATCH OPTOS. Press Reset +8 then Reset +7 to see OPTOS LOWER.
6.
 - a. Loosen all 5 screws that hold the opto-circuit board to the baffle assembly (see *Figure 4-7*).
 - b. Raise the opto-circuit board to its full UP position.
 - c. If the leftmost LED is lit, tighten the leftmost screw. If the left most LED is not lit, lower the left side of the baffle board until the LED just comes on. Tighten the leftmost screw.
 - d. Repeat *Step c* for the right side of the board.
6. Press Reset + 0 to see BAFFLE TEST, then Reset + 8 to enter. The display shows RUN DOWN _____. Enter 1-2-3-4-5-6, then press Reset + 7, then Reset + 8.
7. The display shows RUN DOWN 123456. Press Reset + 8 to run the baffles down. Press Reset + 8 again to run the baffles up.
8. Be sure that the baffles aren't binding against the lower glass retainer. If they are, repeat the previous steps and check again. If okay, tighten all the baffle board screws.
9. Recheck baffle operation to verify proper adjustment.

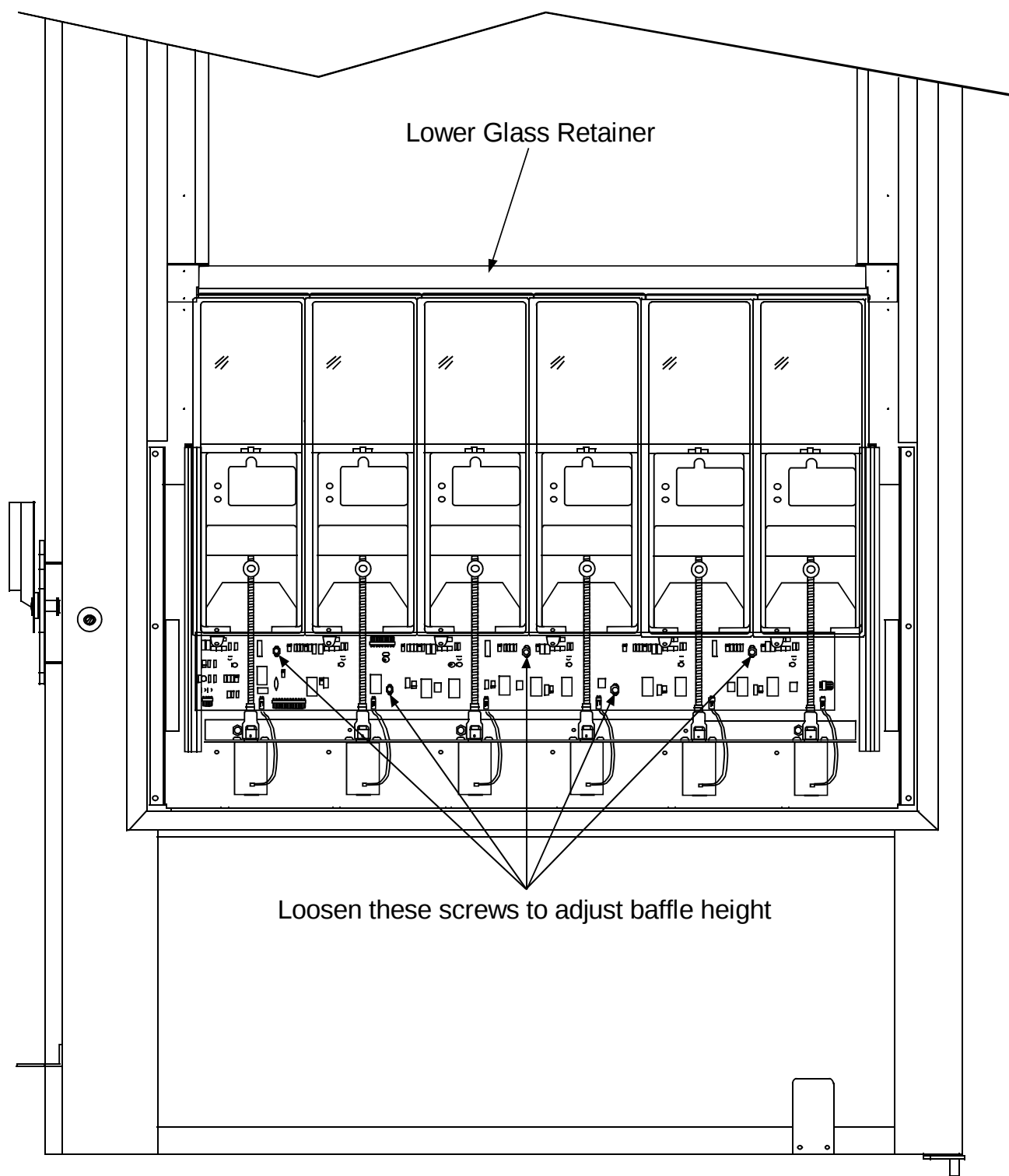


Figure 4-7. Baffle Height Adjustment

Change the Fluorescent Lamp Located in the Door

1. Remove the 5 screws securing the lamp access panel.
2. Remove the lamp access panel.
3. Remove the light diffuser.
4. Remove the lamp from the front of the vendor.
5. Reverse steps 1-4 for reassembly.

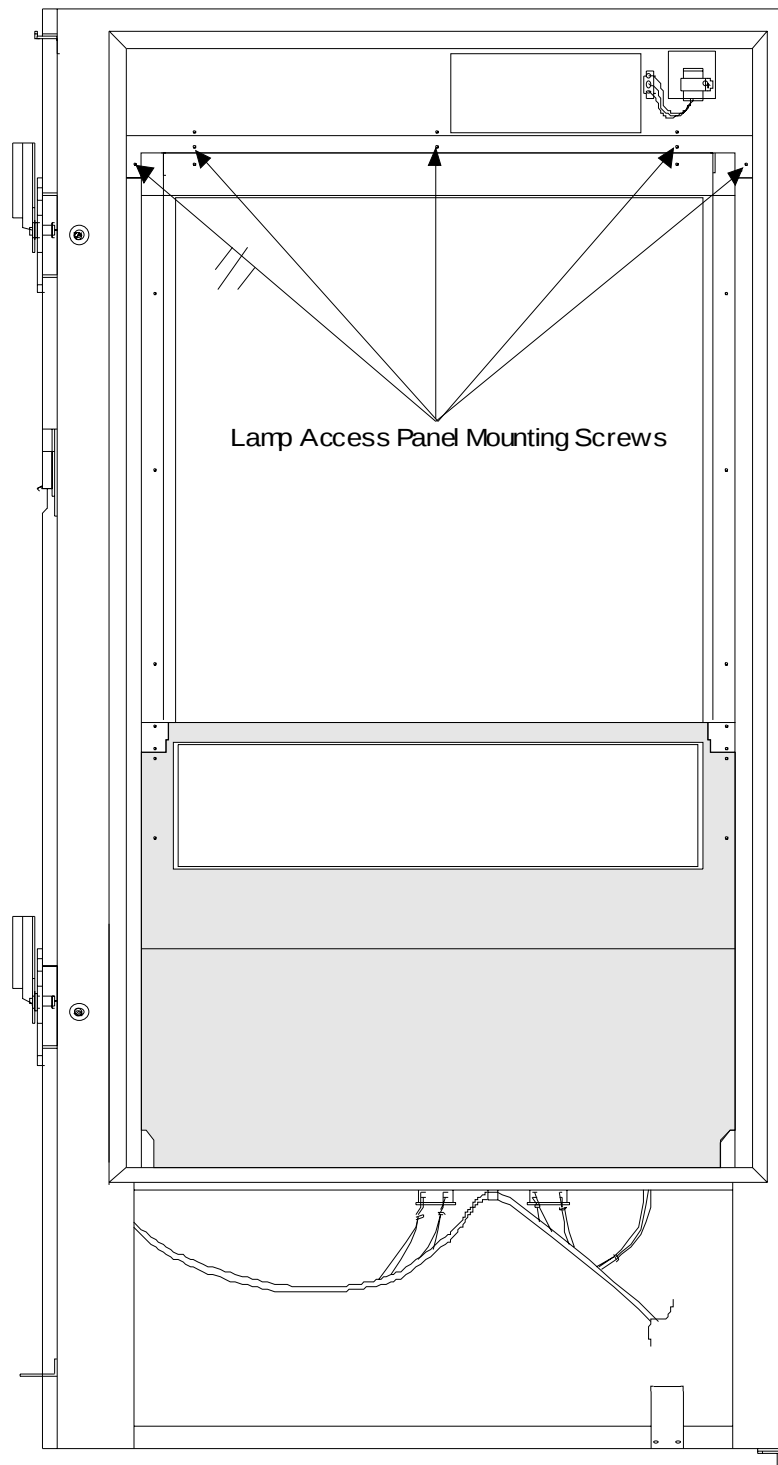


Figure 4-8. Fluorescent Lamp Replacement

Replacing the Heated Insulated Glass Assembly

1. Remove the 5 screws securing the lamp access panel.
2. Remove the lamp access panel.
3. Remove the light diffuser.
4. Remove each of the vertical glass retainers. See *Figure 4-9*.
5. Remove the 2 breaker strips from each side of the glass.
6. Disconnect the wire to the heated insulated glass assembly.
7. Tip the glass toward you from the top.
8. Lift the glass up and out, being careful not to damage the external heater wire.
9. Reverse the above steps for reassembly.

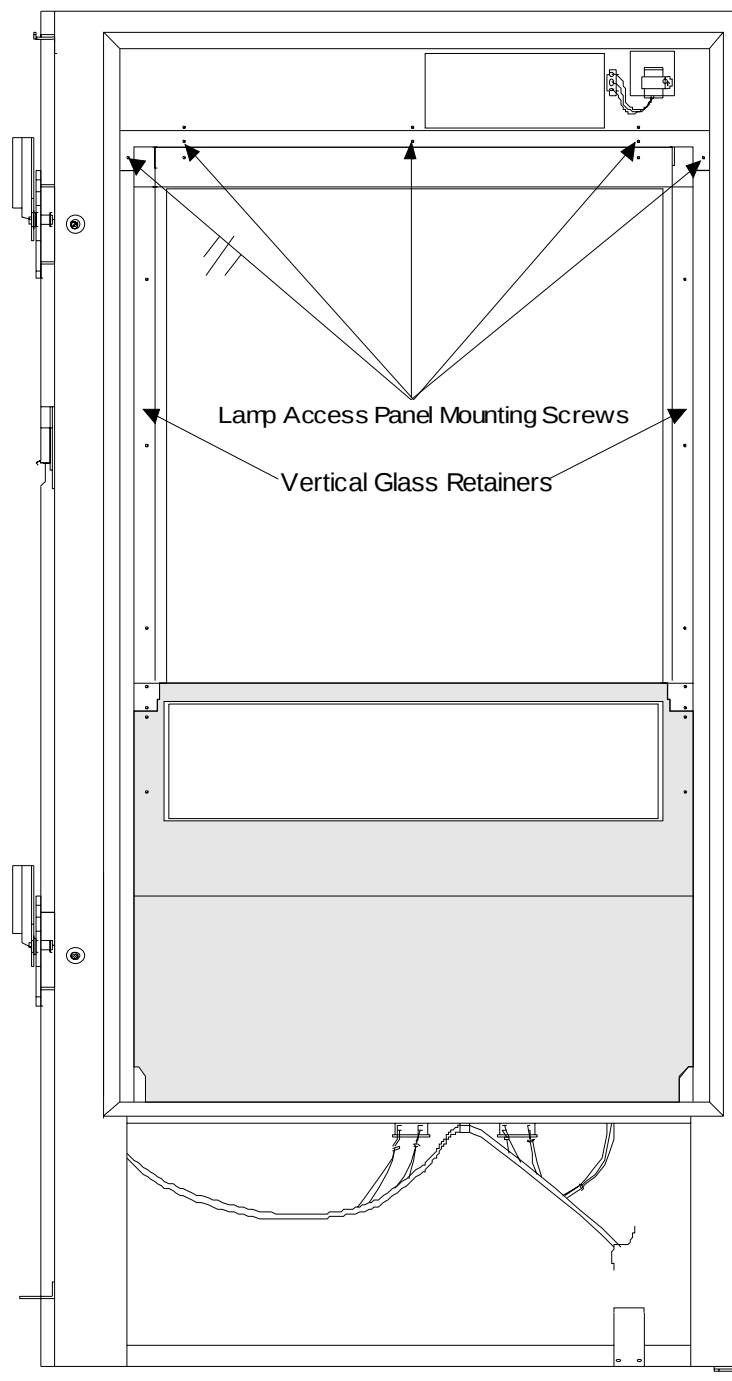


Figure 4-9. Replacing the Glass

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Section 5:

TROUBLESHOOTING

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INTRODUCTION

This section contains a preliminary check list and two troubleshooting charts. The first chart lists Error Messages which will be shown on the Message Display Center when in the Service Mode. The second lists possible problems and suggested solutions.

When a problem occurs, always look for the obvious solution first. Check the following before attempting to make any adjustment or replace any parts:

✓ Check List

- ✓ Check that the merchandiser is connected to a 120V power source with a good ground.
- ✓ Check that the main power switch is ON.
- ✓ Check the condition of the circuit breakers on the Main Power Switch Assembly and on the transformer unit located on the sliding panel.
- ✓ Check to ensure the refrigeration interlock switch is actuated when cabinet door is closed and latched.
- ✓ Check that all plugs are seated in their receptacles.
- ✓ Check that connector pins are not bent, broken or pushed through the back of the connector when mated.
- ✓ Check that wires are not broken at connector pins.
- ✓ Check all indicator LED's on UCB and Power Supply Assembly
- ✓ Check all trays to ensure they are securely connected to the carrier assemblies.

Error Messages

Each time the Universal Control Board is powered up it performs a series of tests to determine if specific components are functioning properly. As the machine goes through its various cycles during a vend, there are a number of routines which monitor the machine's performance and record any malfunctions. If a problem is encountered, an Error Message indicating the type of problem is stored in the Universal Control Board's memory. The memory is battery-backed and will not be affected by routine power outages.

If an error occurs, the machine will attempt to continue to operate normally. It should be noted however, that certain errors are fatal and will put the machine out of service.

For a listing of the Error Messages see the Troubleshooting Chart - Error Messages.

To view and clear Error Messages see Service Mode Operation, Figure 3-3.

The 650 has self diagnosing software to identify problem conditions. The operator is alerted using error messages rather than error codes.

If an error occurs while the service door is open (service mode), a temporary descriptive message is displayed. If the error occurs while the service door is closed (vend mode), the error message is added to the error queue. If there are any error messages in the error queue at the start of the service mode, * ERRORS EXIST * will be displayed. Press 51 to view the first error. Press RESET + 2 to continue viewing errors. Press 53 to clear errors, followed by RESET + 8 and RESET + 4.

Out of Service

When a serious error condition occurs or exists while in vend mode, the machine will be put out of service. If there was credit established at that time, it will be returned. All of the money handling devices will be disabled. The Message Center will display 'SORRY-OUT OF SERVICE' and the fluorescent lights will be turned off.

Drive Motor Errors

Upon full initialization, the drive motor zero position is reset and needs to be located. The zero position is indicated by the activation of a magnetic switch by a magnet assembly mounted on the of the back of one of the shelves. The switch is mounted on the refrigeration duct, located in the lower portion of the cabinet. The zero position will also need to be found if any motor error occurs either in vend mode or service mode.

If the error occurred in vend mode, the machine will be put out of service, the motor will be disabled and an error message will be inserted into the error queue.

If the error happens while in service mode a temporary error message will be displayed. Another temporary error message will appear each time the conveyor motor is operated until zero position is located again.

Coin Mech Errors

The coin mech is required for machine operation in vend mode, except when free vend is active. Upon power up and each time the service door is closed, the reset line on the coin mech is toggled, which results in the coin mech sending a power-up message to the UCB. If that message is not received in the specified time period, the 'COIN MECH ERROR' message will be displayed. The machine will be put out of service if this occurs in vend mode. The probable causes of this error are either the coin mech is not plugged in or the hold down clamp is not secured.

During the service mode, the coin mech is enabled at all times and coins should be accepted. If coins are not being accepted, make sure the coin mech is receiving power from the power supply by pressing the coin dispense keys (Menu 136) and listening for the solenoids to energize. If none of the solenoids are energized, examine the power connections in the coin mech harness and fuse F1 on the power supply board. If the solenoids do energize but the coin mech is not accepting coins in service mode, examine the accept-enable connections in the coin mech harness.

Initial Power Up

The Message Center will display a 'KEYBOARD - DISPLAY' message upon power up. The display will remain unchanged until the Universal Control Board sends it a message. If the Message Center fails to "light up," the Message Center harness should be tested to ensure that power is being supplied.

When the UCB software starts up, it sends a 650 software revision identification message to the Message Center for a few seconds. Following this, the display will read 'TESTING RAM then 'done'.

The "TEST" LED on the Universal Control Board will begin to flash, indicating that the processor is running. In general, the LED should always be flashing; though there are times when it will stop flashing momentarily during certain normal processing.

If the power up message of the display remains after the UCB TEST LED begins flashing, then there is no communication between the UCB and the message center and the harness should be examined.

Power-Up Initialization

The UCB features 8 Kilobytes of battery-backed RAM enabling the software to "remember" the state of the 650 if power is interrupted for any amount of time.

The expected life of the battery-backed RAM is 10 years. When power to the machine is restored, the prices, options, audit information, etc. are the same as when the power was lost.

Each time the UCB is powered up, two tests are executed to determine if initialization is necessary. One test examines two memory locations for a specific test pattern. The other test performs a memory checksum calculation on most of the code section of UCB EPROM. If either test fails, a full software initialization will take place. This will also occur after a new EPROM is installed.

After initialization, all options are defaulted, audit information is cleared, the prices are set back to default, etc. The default price for each price schedule is \$99.95 for all selections.

The operator may also manually default the machine via the Initialize service menu. There are three types of initialization available: options, full, and factory test. The options initialization will initialize all the options found in the Options menu to their default state. **The full initialization will reset all machine settings to factory defaults including nonresettable audit totals, which will be cleared.** The factory test initialization will establish a set of prices and compartment configurations used for testing the vendor at the factory.

The factory test initialization is not intended for use in the field.

	WARNING! IF YOU INITIALIZE THE MACHINE WITH THE FACTORY TEST YOU MUST FULLY REINITIALIZE AND REPROGRAM THE ENTIRE VENDOR!	
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Coin Mechanisms

120V Models - 12 or 15 Pin

MARS TRC - 6000

COINCO 9300L

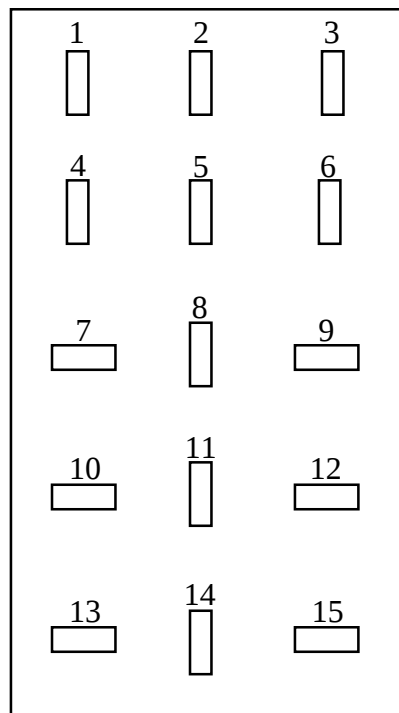
24V Models - 15 Pin Only

MARS TRC - 6010 - XV

COINCO 9302LF

CAUTION !

Do not use a 24 volt Coin Mech with a 12 pin plug. This will result in permanent damage to the Coin Mech and / or the vendor.



1. +5 VDC
2. 5V RTN
3. Send
4. Int
5. Data
6. Accept Enable
7. Dis \$.25
8. Dis \$10
9. Dis \$.05
10. -120V PDC
11. Reset
12. +120V PDC
13. -24V PDC
14. Dis \$1
15. +24V PDC

Figure 5-1. 15 Pin Coin Mech Socket

Troubleshooting Chart

Error Messages

ERROR MESSAGE	MESSAGE MEANS	PROBABLE CAUSE
"HEALTH TIME ERROR"	Unit did not pull down to 45° F or less during the 30-minute period.	Machine too close to the wall Refrigeration air intake screen or condenser clogged High ambient temperature above 100° F at 25% R.H. Main door not closed tightly Refrigeration relay disconnected or defective Temperature Sensor not plugged in or defective Invalid date and/or time Machine not in refrigerated mode Press 32. Refrigeration unit not plugged in
"health code error"	Refrigerated compartment temperature rose above 45° F while health control on	Defective temperature probe Loss of electrical power. Press 606. Machine too close to the wall Refrigeration air intake screen or condenser clogged High ambient temperature above 100° F at 25% R.H. Main door not closed tightly
"MAIN DOOR OPEN"	UCB did not detect main door switch when service door switch was closed.	Main door switch out of adjustment, disconnected, or defective. Main door not closed tightly
"shelf motor ERROR"	Shelf was not detected leaving the current position or arriving at the next position within the allotted time.	Opto Switch disconnected or defective Motor Interlock Switch disconnected or defective Shelf Motor defective

Troubleshooting Chart Error Messages

ERROR MESSAGE	MESSAGE MEANS	PROBABLE
"shelf motor over load"	Running current was detected to be greater than its allotted percentage of the starting current.	Improperly loaded product Foreign object in carrier drive path, or broken carrier Disconnected or open wire in sense circuit . Check UCB P17. Shelf Motor disconnected Defective Shelf Motor Defective Driver Circuit on Power Supply Board Defective sense circuit on UCB
"home shelf lost"	Machine is unable to locate zero position	Machine initialized, no zero position located Disconnected or defective zero position sensor Magnet assembly missing from zero position shelf
"bad coin SENSOR"	Defective coin tube sensor	Defective Coin Mech
"COIN mech Jammed"	Coin lodged between acceptance gates	Dirty Flight Deck Defective Coin Mech
"NO coin STROBE"	Valid coin has been recognized but not detected passing through to the inventory tubes or to the cash box.	Fuse F1 on Power Supply board blown. Blockage in Coin Mech
"COIN MECH ERROR"	Coin mech power-up message not detected by UCB	Coin mech disconnected Defective coin mech
"BAFFLE ERROR"	Baffle was not detected changing positions within the allotted time.	Baffle Motor disconnected or defective. Press 610. Defective optical sensor. Press 611. Defective Baffle Board
"PRINTER ERROR"	Printer power-up message not detected by UCB	Printer not connected or properly configured.

Troubleshooting Chart

Problem/Solution

PROBLEM	PROBABLE CAUSE	SOLUTION
DOES NOT ACCEPT COINS	Missing Power or Data Signals	Check Coin Mech Socket, UCB (P8) and P/S (P6)
	Blown fuse	Check Fuse F1 on P/S Board
	Defective Coin Mech	Replace
	Machine Configuration not correctly set	Configure machine for correct type Coin Mech. Press 31.
DOES NOT REGISTER CREDIT	Credit messages not received from Coin Mech	Check continuity between Coin Mech socket pin 5 and UCB J8, pin 9
	Defective Coin Mech	Replace
DOES NOT GIVE CHANGE	Coin Mech Tube levels not correctly programmed	Reprogram Coin Tube Levels. Press 131
	Coin Sense Option turned OFF	Set to ON position. Press 314.
	Service Door Switch Not Activated	Check Service Switch. Adjust or Replace as necessary.
	Open connection dispense lines	Check continuity between: <u>UCB P8</u> pin 3 pin 4 pin 5 pin 7 <u>Coin Mech Socket</u> pin 9 pin 8 pin 7 pin 14
	Blown fuse	Check Fuse F1 on P/S Board
	Defective Coin Mech	Replace
	Open Diodes on Power Supply Board	Replace P/S Board
	Defective UCB	Replace
	Not Enough Change in Coin Mech	Add change to Coin Mech
	Coin Mech Tube Levels not correctly programmed	Reprogram Coin Tube Levels. Press 131.
BILL ACCEPTOR DOES NOT ATTEMPT ACCEPTANCE	Coin Sense Option turned OFF	Set to ON position. Press 314.
	Bill Acceptor not enabled	Check Options Menu program in Section 3 to see if B/A is enabled
	No Power to Bill Acceptor	Check for 115 VAC at Bill Acceptor Power Connector
	Defective Bill Acceptor	Replace
	Data Lines Open or Disconnected	Check for Continuity between UCB (P-5) and Bill Acceptor, or Reconnect Harness.

Troubleshooting Chart Problem/Solution

PROBLEM	PROBABLE CAUSE	SOLUTION
NO DISPLAY ON MESSAGE CENTER	No Power to Message Center	Check for +5VDC at Message Center between Pin 1 (+5V) and Pin 10 (ground).
	Point of Sale Message Option ON, but no message is programmed.	Set this option to OFF. Press 27. Reprogram Message. Press 35.
MESSAGE CENTER ALWAYS DISPLAYS DEFAULT MESSAGE "KEYPAD - DISPLAY V X.XX"	No communication between Message Center and UCB	Check for continuity of data lines between Message Center and UCB. UCB P2 pin 3 to Message Center pin 4 AND UCB P2 pin 5 to Message Center pin 3.
MESSAGE CENTER DISPLAYS "CLOSE VEND DOOR"	Interlock switches on Baffle Assembly disconnected or defective	Check Interlock Switch wiring for continuity. Reconnect to Baffle Board.
	Damaged switch actuators.	Reform Actuators or replace switch.
CONVEYOR DOES NOT ROTATE	No Signal from Message Center	Replace Message Center.
	Shelf drive output signal missing	Check for 12V DC between UCB P1 pin 5 and UCB P7 pin 1 ground with the Rotate button depressed. Replace UCB if voltage is not present. Replace Power Supply Board if voltage is OK.
	Shelf Motor Defective	Check for 24V DC across motor. If voltage is OK, replace motor.
CONVEYOR ONLY TURNS ONE DIRECTION	UCB shelf direction signal missing	Measure across Power Supply P1 pin 4 to UCB P7 pin 1 ground for 12 VDC. Replace UCB if voltage is not present. Replace Power Supply Board if voltage is OK.
	Harness/Connector open	Check for continuity between UCB P11 pin 4 and Power Supply Board P1 pin 4.
	Message Center Rocker Switch defective	Replace Message Center
CONVEYOR ROTATES CONSTANTLY	Key stuck on Message Center	Replace Message Center
	Defective Drive Circuit on Power Supply Board	Replace Power Supply Board

Troubleshooting Chart

Problem/Solution

PROBLEM	PROBABLE CAUSE	SOLUTION
BAFFLES DO NOT OPEN	Shelf configuration not correct	Reconfigure Shelf (Press 34)
	Compartment in Sold Condition	Rotate the Conveyor one full revolution
	Invalid selection	Check Shelf Configuration
	No Power to the Baffle Board	Reconnect or test motor. Press 610. Place meter across motor leads and check for 24 VDC. If 24 VDC is OK, replace motor.
	No Power to the Baffle Board	Check for +5 VDC at Baffle Board J1 between pin 1 +5V and pin 2 ground. Check for +24 VDC at Baffle board between J4 pin 6 +24V and J1 pin 2 ground.
	Defective Power Supply	Check Power Supply Indicator Lamps. Replace Power Supply Board.
	Defective Motor Driver on UCB	Replace UCB
BAFFLES RUN IN ONLY ONE DIRECTION	Open connection in direction line.	Check continuity between Baffle Board J4 pin 5 and UCB P15 pin 9.
	Dirty or Defective Optical Sensor	Check Optical Sensors Operation. Press 611. Clean Optical Sensors Replace Baffle Board
	Defective Relay on Baffle Board	Replace Baffle Board
	Defective UCB	Replace UCB
BAFFLE STARTS TO OPEN OR CLOSE BUT STOPS	Dirty or Defective Optical Sensor	Check Optical Sensors Operation. Press 611. Clean Optical Sensors Replace Baffle Board
	Open connection in Opto-Select Line	Check continuity between Baffle Board J1 pin 3 and UCB P15 pin 10.
	Defective Optical Sensor	Replace Baffle Board
	Defective UCB	Replace UCB
BAFFLE DOES NOT CLOSE COMPLETELY	Baffle Board Out of Adjustment	Adjust Position of Baffle board

Troubleshooting Chart Refrigeration

PROBLEM	PROBABLE CAUSE	SOLUTION
MACHINE IS IN SHUTDOWN	Manual Shutdown Active	Set to OFF. Press 25.
	Auto Shutdown Active	Check Flex-Vend Programming
CONFIGURATION CHANGES BY ITSELF	Two or More Shelves have a Magnet Assembly	Check for more than one Magnet Assembly on Shelves. Only the Home Shelf should have a Magnet Assembly.
	Shorted Zero Position Sensor	Disconnect Sensor from Machine harness and check with Ohm Meter on RX1 Scale. Meter should read 0 Ohms when a magnet is place in close proximity.
	Short in Wiring to UCB	Clear Short
HEALTH CONTROL SHUTDOWN	Refrigeration Air Intake Screen Blocked with Lint, Dust, or Dirt	Clean Air Intake Screen
	Condenser Coil Blocked with Lint, Dust, or Dirt	Clean Condenser Coil
	Machine Too Close to the Wall	Move away from wall at least 6"
	Main Door Not Closed Tightly	Check and Adjust Latches
	Invalid Date and/or Time	Reset Date and/or Time
	Refrigeration Interlock Switch is not Actuating or is Defective	Close Main Door. Listen for Evaporator Blower Motor to start. If it runs, switch is OK. If it doesn't run, check wiring to switch. Replace Refrigeration Interlock Switch.
	Temperature Probe is Disconnected	Press 64 to display the temperature. If the display shows 96° F, check Probe connections. If OK, replace Temperature Probe.
	Temperature Probe is Defective	Press 64 to display the temperature. If the actual temperature is different from the display, replace the Temperature Probe.
	Machine is Not Programmed for Correct Operating Mode.	Check Setup. Press 32.
	Machine operating in Backup Mode.	Turn Cold Control on Refrigeration Unit to OFF. Close Main Door. If compressor does not start within 3 minutes, set Cold Control to 7. If compressor starts, machine is operating in backup mode. Reset Cold Control to 4 when done.
	Refrigeration Problem	Check Refrigeration Unit

Troubleshooting Chart Refrigeration

PROBLEM	PROBABLE CAUSE	SOLUTION
REFRIGERATION INOPERATIVE	Refrigeration Interlock Switch is not Actuating or is Defective	Close and latch Main Door. Listen for Evaporator Blower Motor to start. If it runs, switch is OK. If it doesn't run, check wiring to switch and main door latch adjustment. Replace Refrigeration Interlock Switch.
UNIT RUNS IN BACKUP MODE ONLY	Backup Relay not Energized	Check wiring from Power Supply J11 to refrigeration unit.
	Refrigerated Compartment Temperature is above 80° F.	This is a normal condition. The unit will run in Backup Mode if the compartment temperature is 80° or higher.
	Defective Backup Relay	Replace Relay
	Defective Compressor Relay	Replace Relay
UNIT FAILS TO MAINTAIN TEMPERATURE	Refrigeration Air Intake Screen Blocked with Lint, Dust, or Dirt	Clean Air Intake Screen
	Condenser Coil Blocked with Lint, Dust, or Dirt	Clean Condenser Coil
	Machine Too Close to the Wall	Move away from wall at least 6"
	Main Door Not Closed Tightly	Check and Adjust Latches
	High Ambient Temperature	Machine will operate best if ambient temperature is between 70° and 80° F and relative humidity is approximately 50%.
EVAPORATOR FREEZE-UP	Vendor is Not Level	Level Vendor
	Main Door Not Closed Tightly	Check and Adjust Latches
	Evaporator Fan Motor Not Running	Check wiring to Fan Motor. Check for 115 VAC at Fan Motor Connector on Refrigeration Unit (pins 1 & 3).
	Low Air Flow Across Evaporator	Check for dirt buildup on Blower Wheel and on Evaporator Coil and clean if necessary. Check for obstruction in Air Distribution Duct. Remove obstruction.
	Low Refrigerant Charge.	See Refrigerant Charge Troubleshooting.

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Refrigerant Charge Troubleshooting



NOTE:

Adjusting the refrigerant charge and/or repair of the refrigeration system should only be performed by qualified and licensed service technicians!

It is very important to make sure that there is no “outside” influence (i.e., dirty condenser coils) when checking refrigeration operating pressures. The design operating pressures listed in the front of this manual are for normal operating temperatures and humidity. Normal operating temperatures are 70° - 80° F with a relative humidity of 50 - 60%, AND refrigerated compartment temperature in normal range (35° - 41°F).

Every refrigeration unit used in the Rowe 650 Showcase Merchandiser is carefully assembled and subjected to a variety of tests, including evaluation to 50 Microns, with a maximum rise over a 5 minute period to 500 Microns. This helps assure that there are no leaks in the refrigeration system. The refrigerant charge is accurately weighed using sophisticated equipment. Under normal circumstances no adjustments to the refrigerant charge are necessary.

PRELIMINARY CHECKS



NOTE:

Make sure all refrigeration system components are operating properly before proceeding. Many factors can affect the pressure readings.

1. Verify that the air intake screen is clean and free of lint, dust or dirt.
2. Clean the Condenser Coil, if dusty or dirty. A dusty or dirty condenser coil will cause the Head Pressure (high side) to run higher than normal.
3. Verify that the Condenser Fan Motor is operating.
4. Verify that the Evaporator Coil is clean and free of dust and dirt. If the evaporator coil is dusty or dirty, it will cause the suction pressure (low side) to run lower than normal.
5. Verify that the Evaporator Blower Motor is operating.
6. Verify that the Evaporator Blower Wheel is clean and free of dust and dirt. If the blower wheel is dusty or dirty, it will “paddle” the air. The result is reduced airflow and lower than normal suction pressure readings.

CONNECTING THE MANIFOLD GAUGE SET

1. Remove the dust caps from the service ports and connect a manifold gauge set. Make sure the gauges are properly connected, with NO leaks.
2. Make sure that the valves on the manifold gauge set are closed.
3. Using an Allen wrench, open the service ports. It is not necessary to fully open the ports; a quarter turn is sufficient to read the pressures. Open the low side first, then the high side.

Refrigerant Charge Troubleshooting

READING THE PRESSURES

Read the high and low side pressures. If the pressures do not appear to be normal, check the high to low side ratio.

The formula is $4.45 \leq (P_{\text{HIGH}} + P_{\text{AMB}}) / (P_{\text{LOW}} + P_{\text{AMB}}) \leq 5.54$

Where P_{AMB} is the atmospheric pressure at sea level.

P_{HIGH} is the high side pressure in pounds per square inch gauge.

P_{LOW} is the low side pressure in pounds per square inch gauge.

Design Conditions

Pressures $P_{\text{HIGH}} = 140 \text{ psig to } 150 \text{ psig}$ Temperature = 75° F
 $P_{\text{LOW}} = 15 \text{ psig} - 20 \text{ psig}$ Relative Humidity = 50% to 60%
 $P_{\text{AMB}} = 14.7 \text{ psia}$

Examples			
Pressure (psig)	Pressure Ratio	Meaning	Symptom
1. $P_{\text{HIGH}} = 150$ $P_{\text{LOW}} = 20$	4.74	Ratio Good	Refrigeration System Operating Normally
2. $P_{\text{HIGH}} = 185$ $P_{\text{LOW}} = 13$	7.20	Ratio High Restriction in System	Evaporator Freezing Low Capacity
3. $P_{\text{HIGH}} = 100$ $P_{\text{LOW}} = 40$	2.09	Ratio Low Defective Compressor	Very Low Capacity
4. $P_{\text{HIGH}} = 220$ $P_{\text{LOW}} = 30$	5.50	Ratio Good, BUT Both Pressures Are too High. System Overcharged.	Low Capacity
5. $P_{\text{HIGH}} = 110$ $P_{\text{LOW}} = 12$	4.67	Ratio Good, BUT Both Pressures Are too Low. Refrigerant Leak or Undercharged.	Evaporator Freezing

Refrigerant Charge Troubleshooting

PROBLEM		PROBABLE CAUSE	SOLUTION
PRESSURE READINGS			
HIGH SIDE	LOW SIDE		
TOO HIGH	OK	Low airflow across condenser	Check air intake screen, rear output screen
		Defective fan motor or fan blade	Replace defective component
		Lint, dust, or dirt blocking condenser	Clean condenser
OK	TOO LOW	Low airflow across evaporator	Check evaporator and blower wheel for lint, dust or dirt buildup. Clean if necessary.
		Defective blower motor	Replace blower motor
TOO HIGH	TOO HIGH	System overcharged	Evacuate and recharge system
		Air or other non-condensable in system	Evacuate and recharge system
TOO LOW	TOO LOW	Refrigerant Leak or system undercharged	Find and repair leak, evacuate and recharge system
TOO LOW	TOO HIGH	Defective valves in compressor	Replace compressor
TOO HIGH	TOO LOW	Restriction in capillary tube or drier	Remove restriction, evacuate and recharge system

EVACUATING THE REFRIGERANT SYSTEM

If a leak was found and/or a repair was made, the system must be properly evacuated. Connect a high vacuum pump to the manifold gauge set. Connect an electronic thermistor micron gauge between the low side port of the refrigeration unit and the manifold gauge set. Fully open both service ports. Start the vacuum pump. Fully open both the high and low side valves on the manifold gauge set. Fully open the vacuum valve on the manifold gauge set. Allow at least one hour for the vacuum pump to “pull down” the system. Turn on the micron gauge. If the reading is below 500 microns, close the vacuum valve. If the pressure does not rise above 500 microns in a 5 minute period, the system is ready to charge.

If it does rise above 500 microns, restart the vacuum pump. Wait 30 minutes and try again. Repeat this procedure until the pressure does not rise above 500 microns in 5 minutes. If you cannot get to this level of vacuum, the system probably has a leak.

Find and repair the leak. Repeat the above procedure until the pressure does not rise to more than 500 microns.

Once the desired vacuum level is achieved, close both service ports on the refrigeration unit. Remove the micron gauge, and reconnect the low side hose back to the service port. Restart the vacuum pump for 2 minutes to pull a vacuum on the manifold gauge set and hoses. Close the vacuum valve and remove the vacuum pump. You are now ready to charge the refrigeration system.

DO NOT APPLY POWER TO THE COMPRESSOR WHILE IT IS UNDER A VACUUM.

Refrigerant Charge Troubleshooting

CHARGING AND ADDING REFRIGERANT TO THE SYSTEM

**NOTE:**

Adjusting the refrigerant charge and/or repair of the refrigeration system should only be performed by qualified and licensed service technicians!

**NOTE:**

Before adding refrigerant to this system, make sure all other components of the system are clean and operating properly. If you need to add refrigerant to the system, there is probably a reason; **FIND AND REPAIR REFRIGERANT LEAKS BEFORE ADDING REFRIGERANT TO THE SYSTEM!**

Once the leak is found and repaired, proceed as follows:

1. Connect the refrigerant canister to the manifold gauge set. Purge the charging hose so that no air or other non-condensable is introduced into the system. Make sure the high side valve is closed on the manifold gauge set.
2. Open both service ports on the refrigeration unit. Add refrigerant GAS slowly through the low side service port. When the pressure reaches approximately 10 psig, start the compressor. **NEVER CHARGE LIQUID INTO THE SYSTEM THROUGH THE LOW SIDE PORT.** Add a little at a time, waiting a few minutes between, to allow the system to stabilize. Once normal pressures are achieved, close the refrigerant canister. Leave the charging line attached to the refrigerant canister.
3. Using an Allen wrench, close the High Side service port at the unit. With the compressor still running, crack open the low side on the manifold gauge set. This will remove most of the refrigerant from the manifold gauge set and hoses. When the pressures on the gauges equalize, close the Low Side service port on the unit.
4. Remove hoses from unit. Using this method of removing the manifold gauge set prevents loss of refrigerant from the unit and prevents venting of unnecessary amounts of refrigerant into the atmosphere.

**NOTE:**

Rowe recommends that any time the refrigerant system is opened for parts replacement or leak repair that the liquid line drier be replaced. Be sure to replace the drier with one of the same type and capacity.



Power Supply Indicator Lights

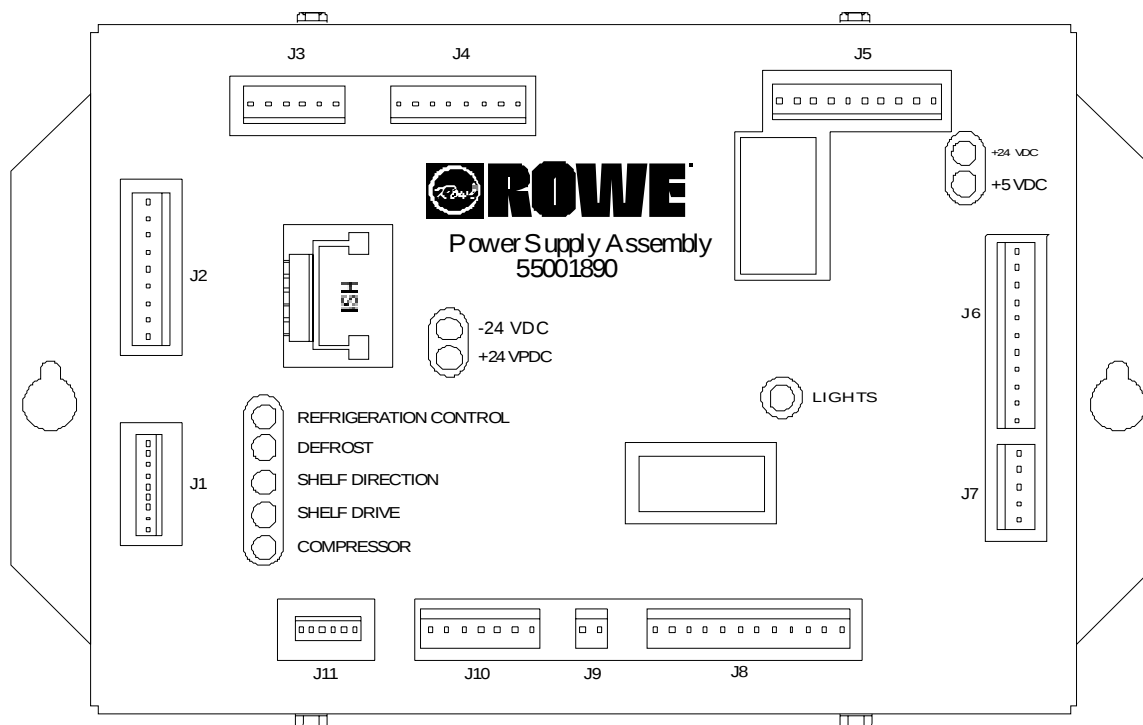
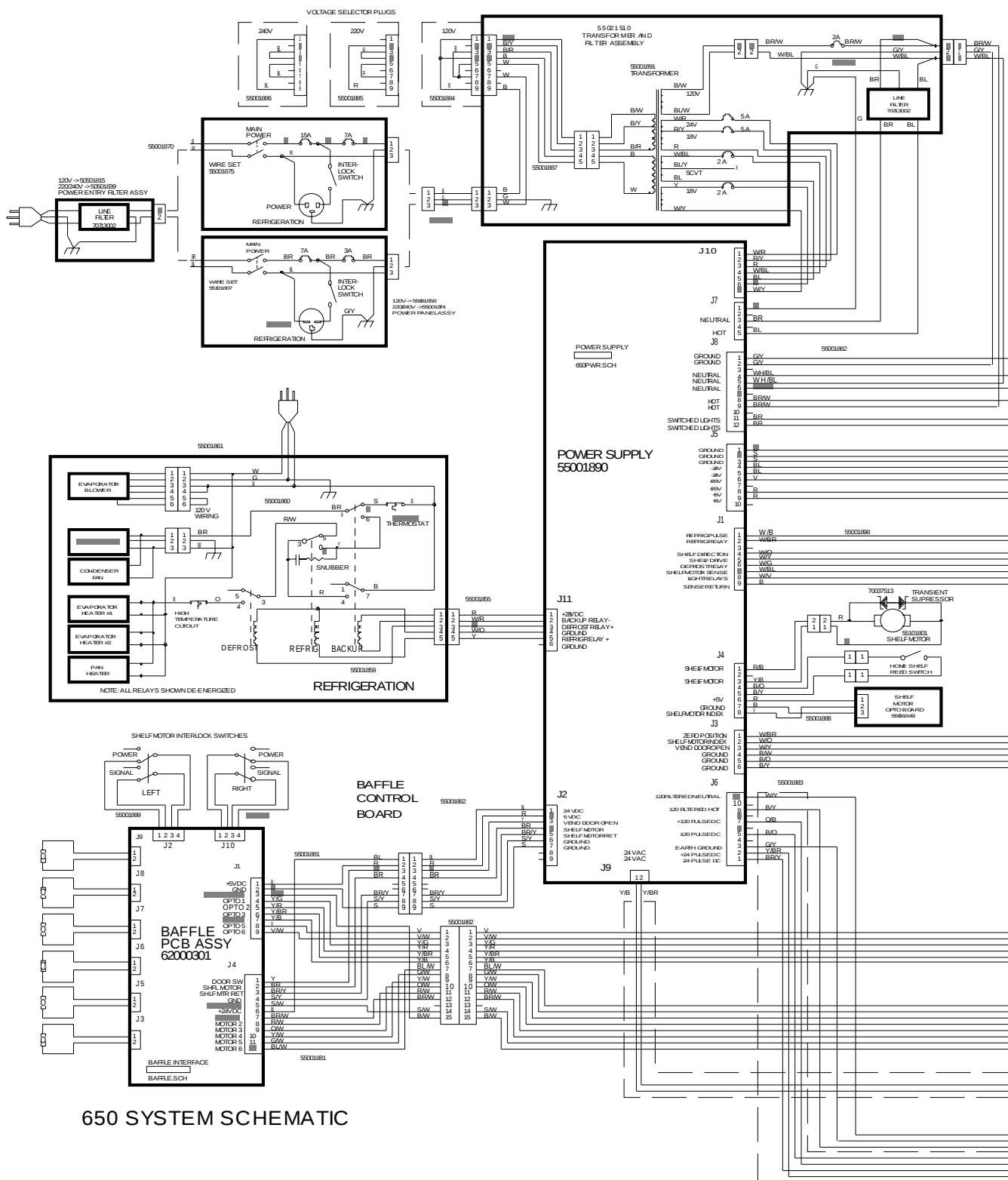
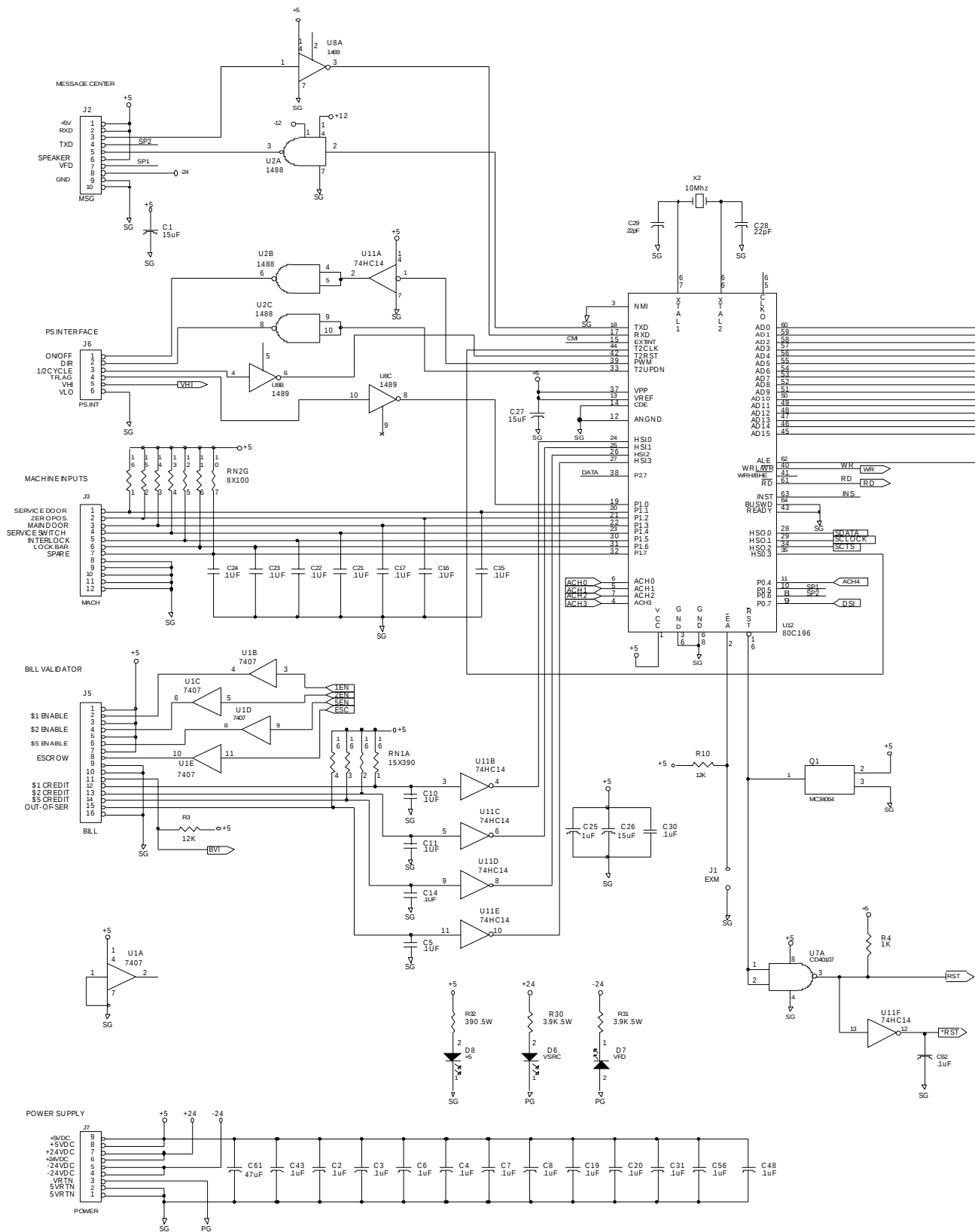


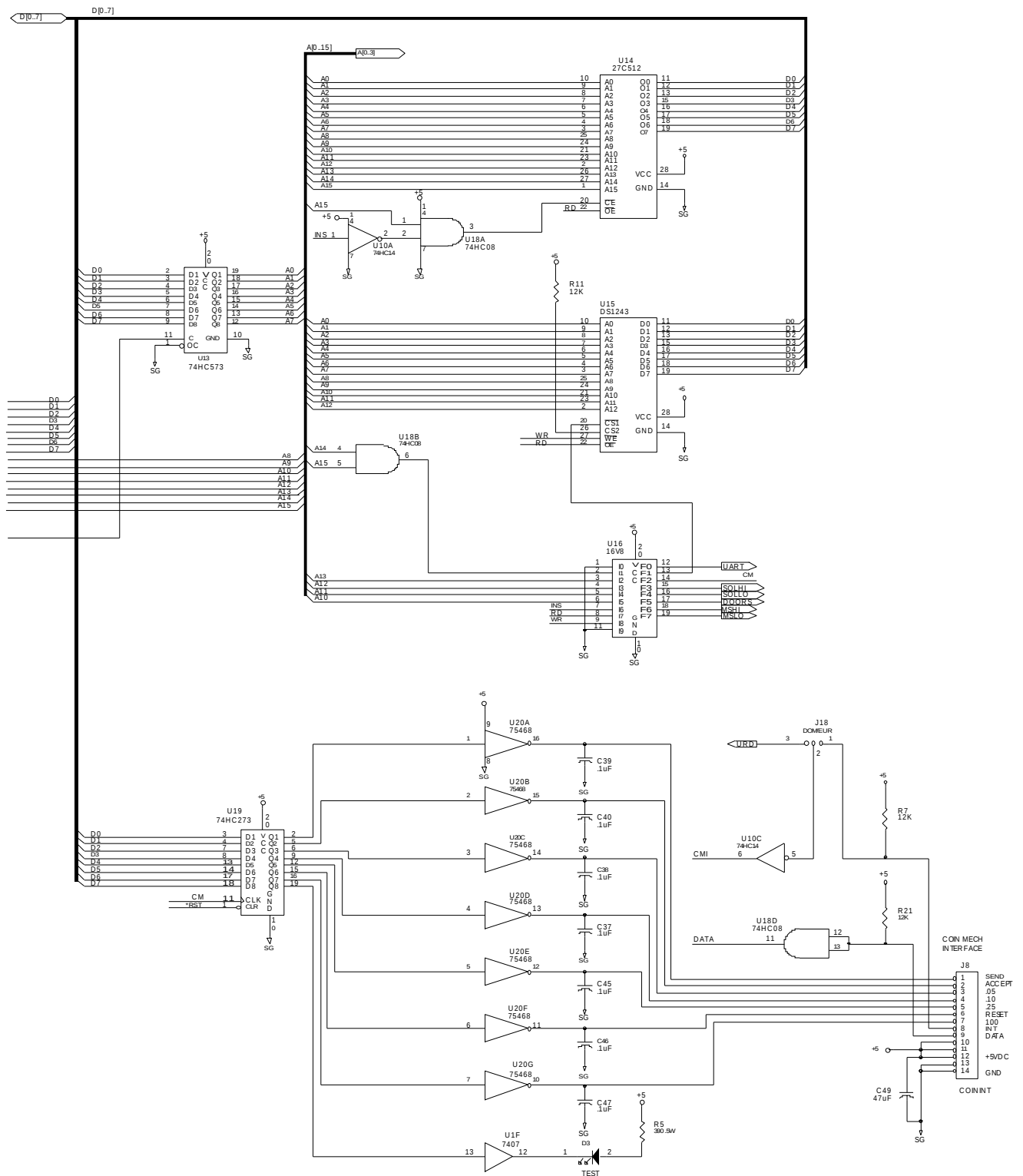
Figure 5-3. Power Supply Indicator Lights

Indicator Name	Color	Status	Function
+24VDC	Green	Always ON	Indicates Presence of +24 VDC
+5 VDC	Green	Always ON	Indicates Presence of +5 VDC
+24VPDC	Green	Always ON	Indicates Presence of +24 VPDC
-24VDC	Green	Always ON	Indicates Presence of -24 VDC
Refrigeration Control	Green	Usually ON	DMT Signal Okay When Lit
Defrost	Red	ON or OFF	Defrost Active When Lit
Shelf Direction	Red	ON or OFF	Shelf Running Reverse Direction When Lit
Shelf Drive	Red	ON or OFF	Shelf Motor Running When Lit
Compressor	Red	ON or OFF	Compressor Running When Lit
Lights	Green	Usually ON	Cabinet Lights ON When Lit

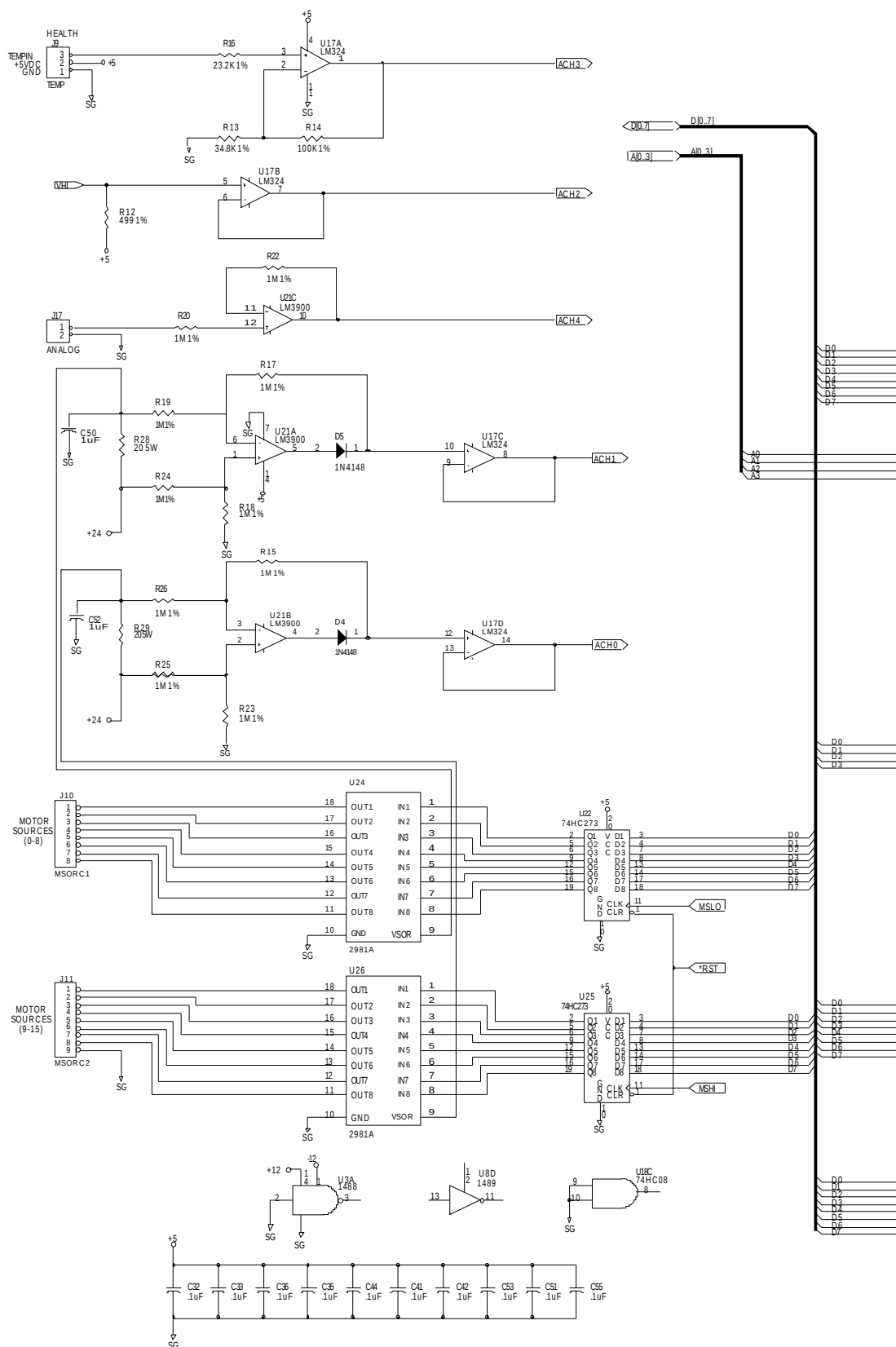


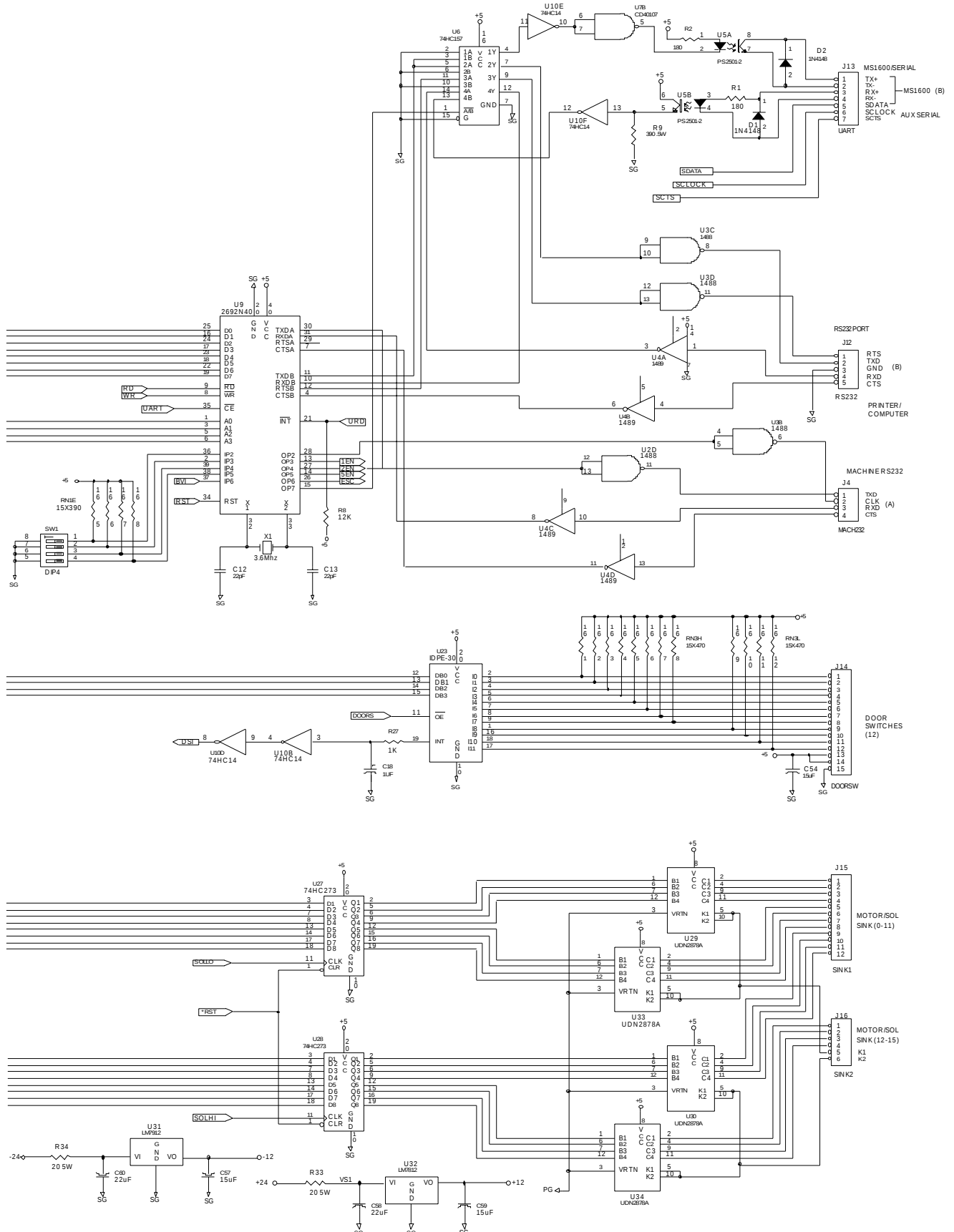




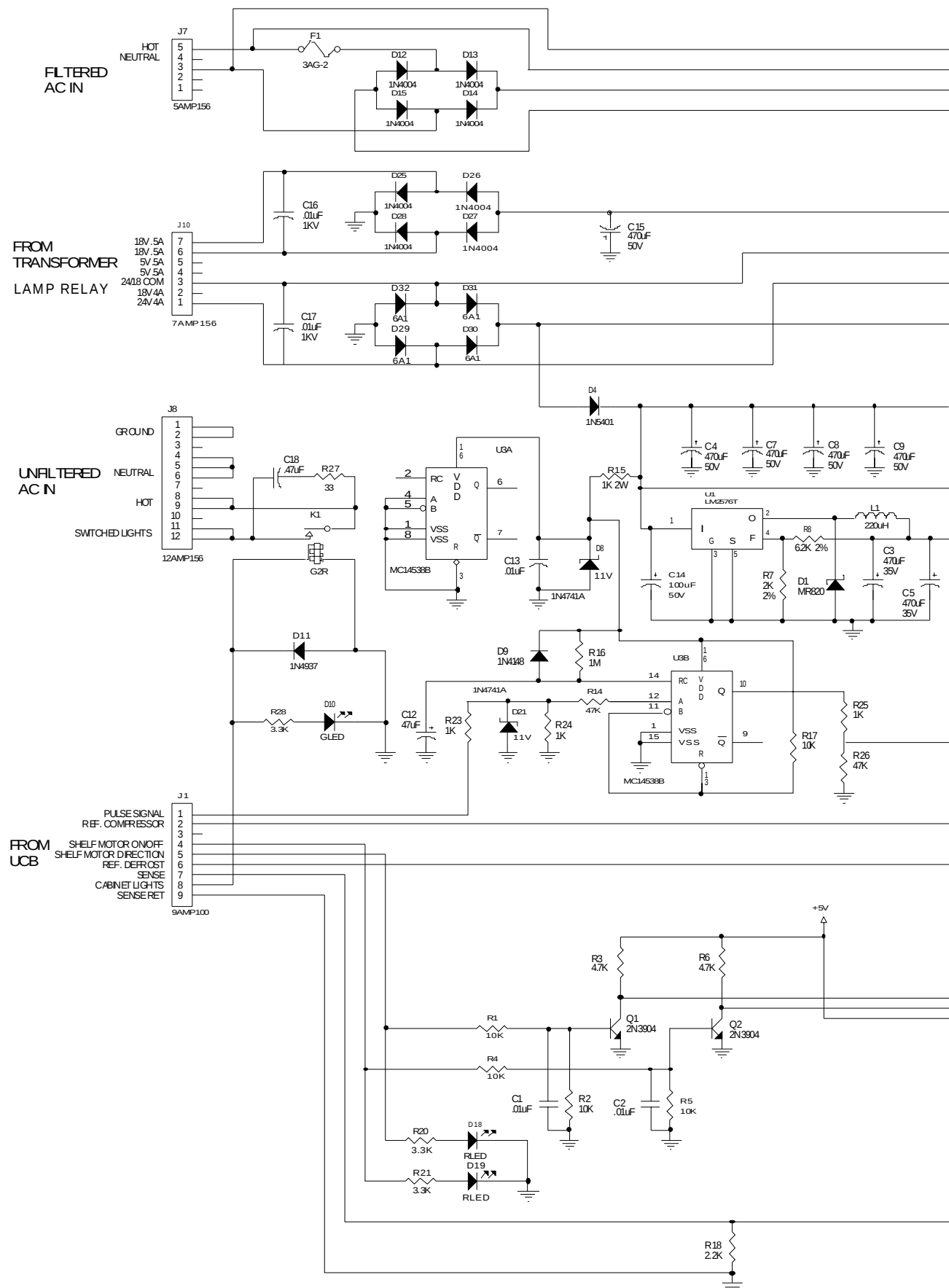


For Equivalent Engineering Drawing, See 28029500 D
Figure 5-5A. Universal Control Board Schematic, Sheet 1





For Equivalent Engineering Drawing, See 28029500 D
Figure 5-5B. Universal Control Board Schematic, Sheet 2



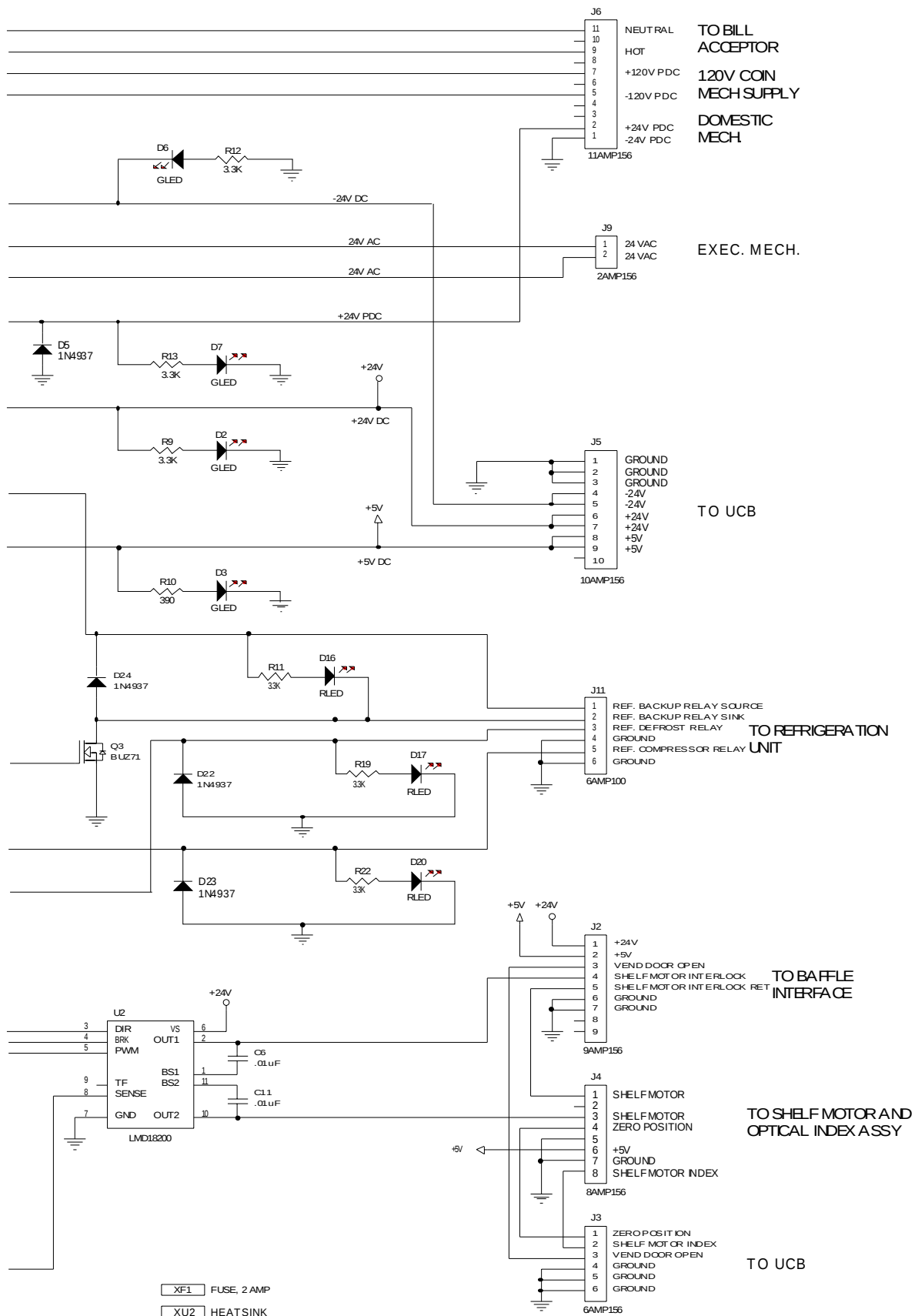
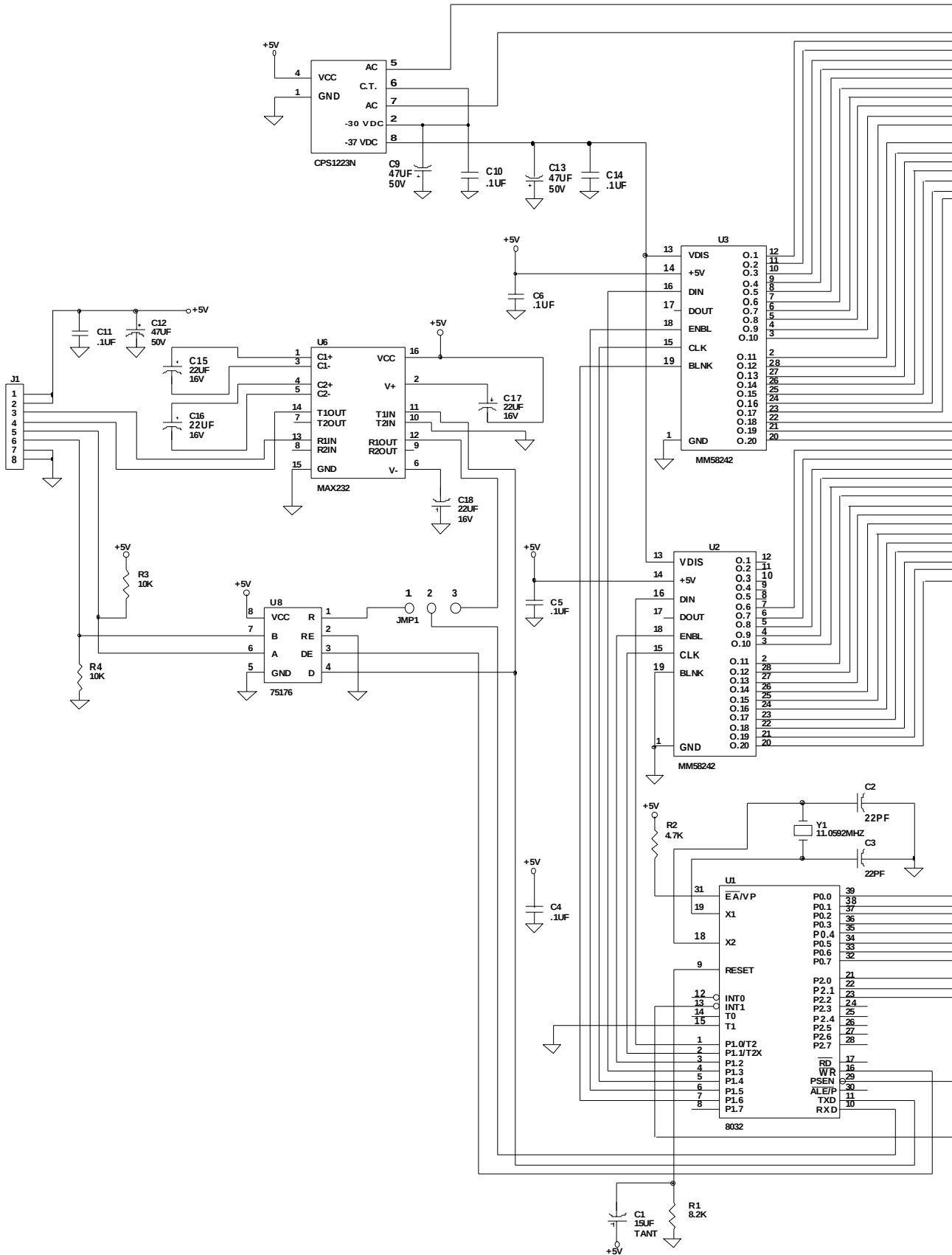
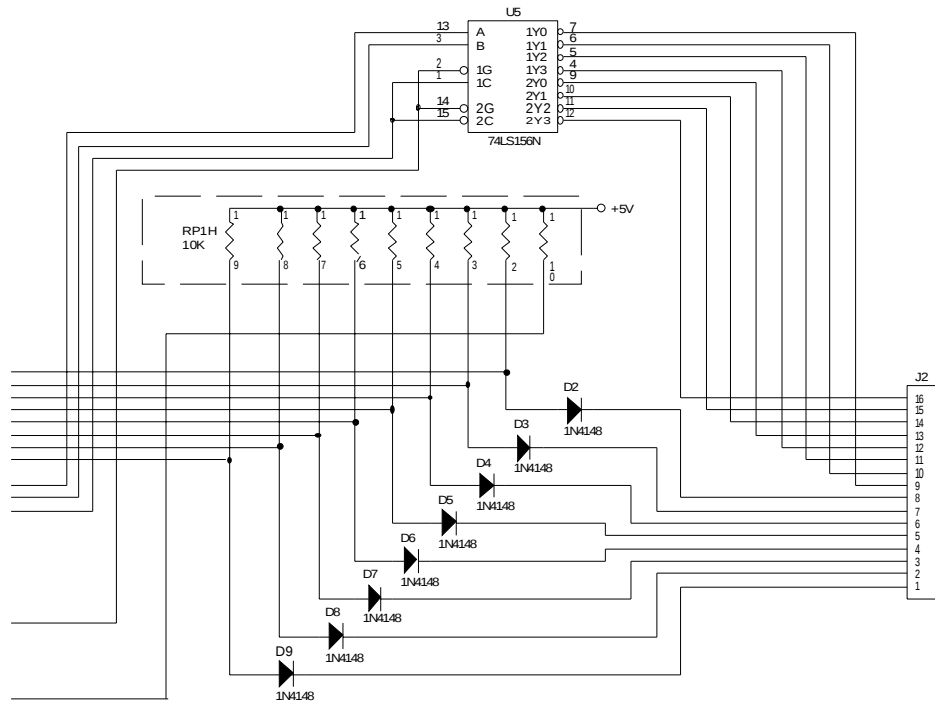
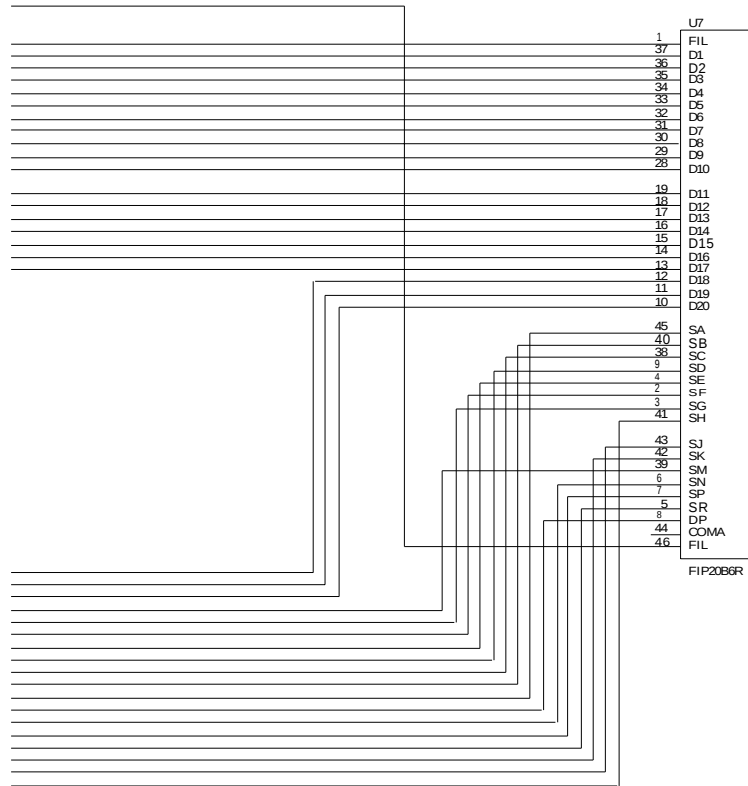
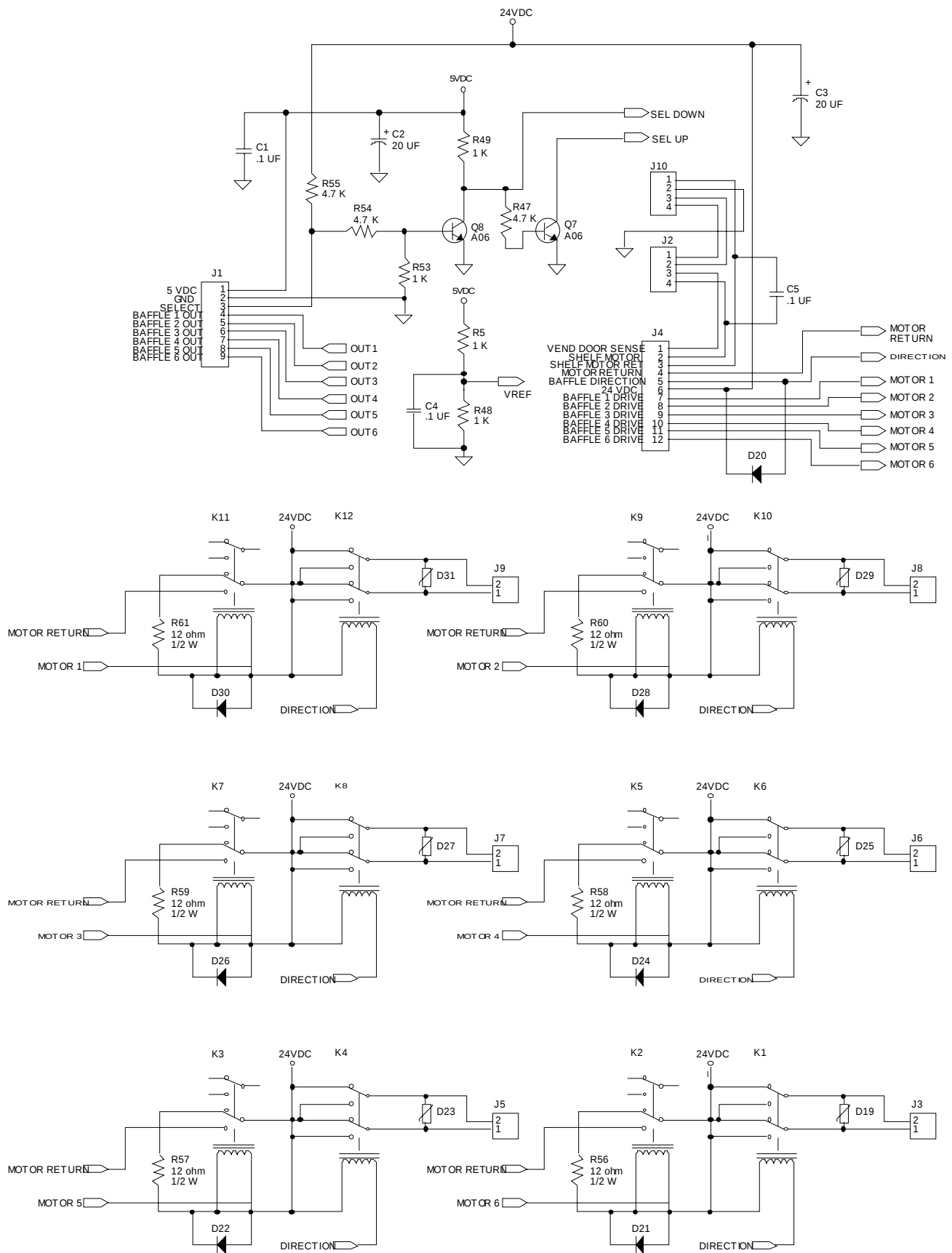


Figure 5-6. Power Supply Schematic



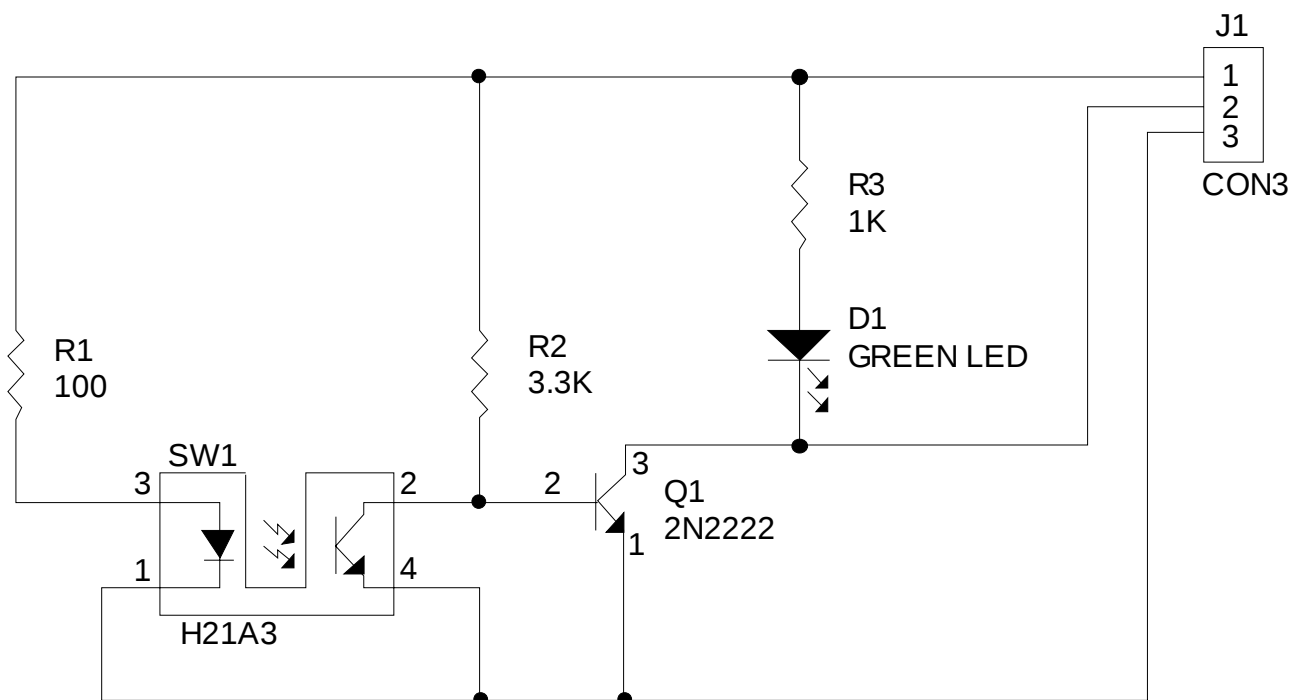


For Equivalent Engineering Drawing, See 28096900
Figure 5-7. Message Center Display Board



900-65001 A

Optical Sensor Schematic



For Equivalent Engineering Drawing, See 28038300

Figure 5-9. Optical Sensor Schematic

900-65001 A

Section 6

PARTS CATALOG

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Optional Kits

Part No.	Description	Function
65079034	RBA-7 Bill Acceptor	Allows 4-way Acceptance
548-06000	Printer Harness Kit	Allows MIS retrieval via printer
551-06000	MARS VFM3 Adapter Kit	MARS B/A Usage

Parts Catalog

INTRODUCTION

This parts catalog contains a list of replacement parts that are available for the vendor. Each list contains an index of the part, the part number, a description of the part and the quantity required for the assembly. Separate parts of riveted or welded assemblies are not available from the factory as replacement parts.

Parts Callout

Each table in the Parts Callout contains four columns. Following is a description of each column in the order of appearance on the Parts Callout tables.

Fig. and Index No.

This column lists the Figure number as the first entry on each page. An index number keys the part to the Figure.

Part No.

This column lists the part number of the item that should be used for ordering. The same part, whenever used, retains the same number.

Description

This column gives the name of the assembly or part.

Quantity per Assembly

This column contains the exact quantity of the item required for its next higher assembly.

ORDERING REPLACEMENT PARTS

All parts must be ordered from an authorized Rowe Distributor. Parts orders are often delayed because of inadequate or incomplete ordering information. Be sure to include all required information which consists of:

1. The part number and description exactly as it appears in the Parts Catalog. State color if applicable.
2. Quantity being ordered.
3. Model and Serial Number of vendor for which the part is required. This is necessary because of manufacturing changes.
4. Complete shipping address.
5. Specify shipping instructions. It is advisable to indicate an alternate shipping method if the packages may exceed the size and weight limits established by the shipping agency of your choice.

650 Trim Panels

650 Trim Panels

Index No.	Description	Rowe Genesis	Imperial Crown	Award All Walnut	Series 2000
1	Trim - Door - Vertical	983-101	983-101	983-101	983-102
2	Overlay - Vertical L.H.	985-69-9	985-69-12	985-69-2	985-69-141
3	Trim - Door Vertical	983-249	983-248	983-248	983-249
4	Overlay - Center	985-44-9	985-44-78	985-44-78	985-44-78
5	Trim - Door - Horizontal	983-244	983-243	983-243	983-244
6	Overlay - Bottom (Main Door)	505-1402	985-37-2	985-37-2	985-37-141
7	Trim - Door Bottom (Main Door)	550-473-309	550-473-246	550-473-246	550-473-309
8	Trim - Door Bottom (Service Door)	551-406-309	551-406-246	551-406-246	551-406-309
9	Overlay - Bottom (Service Door)	694-1405	985-63-2	985-63-2	985-63-141
10	Trim - Panel - Horizontal	983-238	983-239	983-239	983-238
11	Overlay - Coin Return	907-1097	907-1097	907-1097	907-1097
12	Overlay - Service. Door w/B.A.	551-53-9	551-53-12	551-53-2	551-53-141
	Overlay - Service. Door w/o B.A.	551-20503-9	551-20503-12	551-20503-2	551-20503-141
13	Overlay - Vertical R.H.	985-70-9	985-70-12	985-70-2	985-70-141
14	Overlay - Bill Insert	550-591	550-591	550-591	550-591
15	Overlay - Bezel - Selector	548-421	548-421	548-421	548-421
16	Overlay - Bezel - Top	548-451	548-451	548-451	548-451
17	Insert Header (Service Door)	985-40-9	985-40-2	985-40-2	985-40-9
18	Channel - Header (Service Door)	983-35	983-35	983-35	983-34
19	Trim - Door - Vertical	983-1000	983-1001	983-1001	983-1000
20	Overlay - Door - Top	550-469-9	550-469-78	550-469-78	550-469-78
21	Insert Header (Main Door)	985-45-9	985-45-2	985-45-2	985-45-9
22	Channel - Header (Main Door)	983-40	983-40	983-40	983-41

Panel Styling Suffix Numbers

There are many combinations of panel and overlay finishes based on styling or individual company preferences. Part numbers for the styling overlays and panels are generally the same with the exception of last dash number which denotes the finish of the part.

NOTE:

Start with the basic part number obtained from Fig. 1 (Page 6-4) and substitute the last dash number for the "finish" desired.

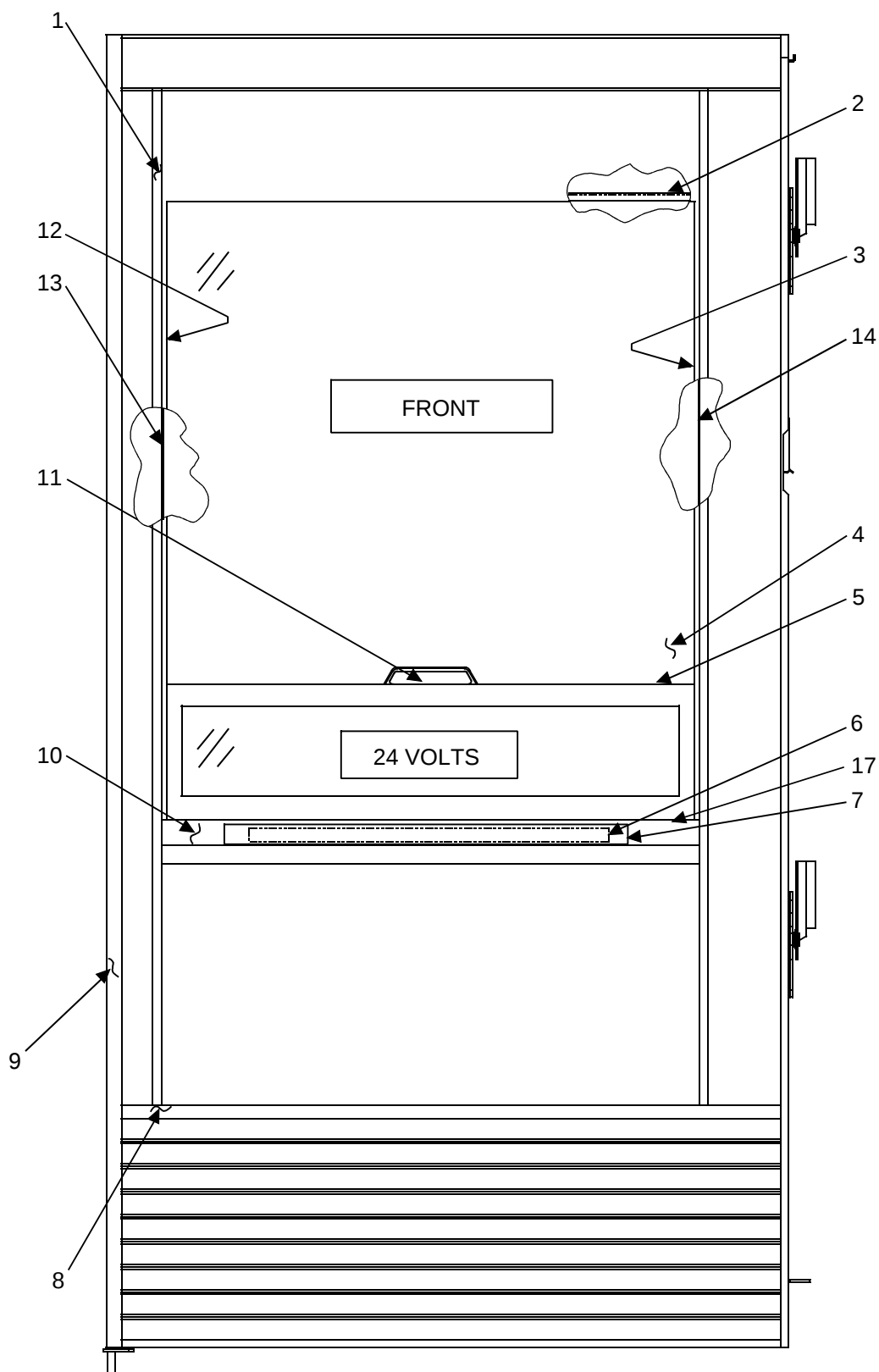
HORIZONTAL PANELS

- 1 Roweswood
- 2 Presidential Walnut
- 7 Pearlescence
- 9 Black
- 15 Stainless Steel Mylar
- 29 Teak
- 78 Sterling Royse
- 141 Dove Archos
- 142 Pewter

VERTICAL PANELS

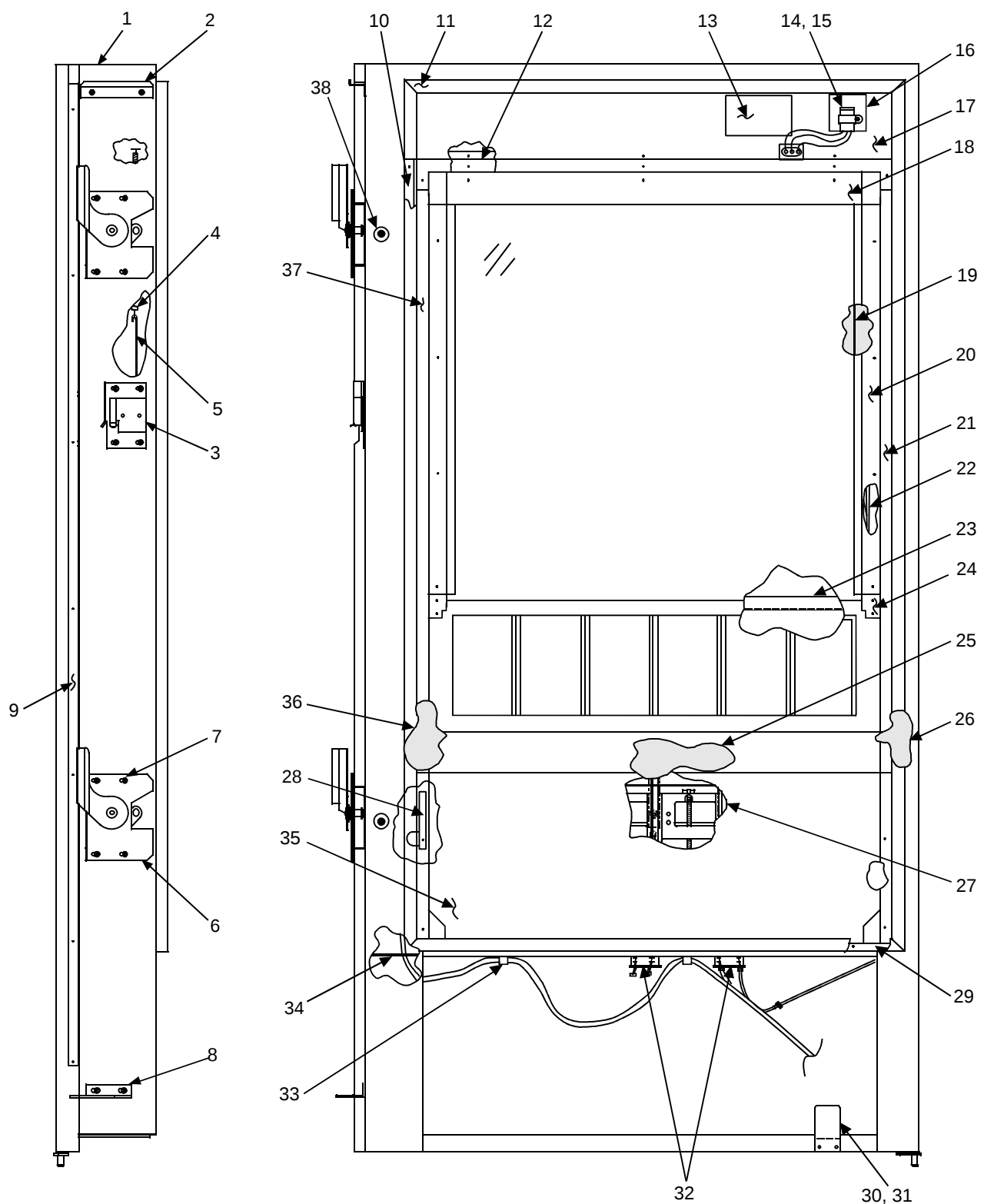
- 2 Presidential Walnut
- 7 Pearlescence
- 9 Black
- 12 Port - Au - Prince
- 13 Stainless Steel
- 15 Stainless Steel Mylar
- 29 Teak
- 78 Sterling Royse
- 141 Dove Archos
- 142 Pewter

Main Door Assembly, Exterior



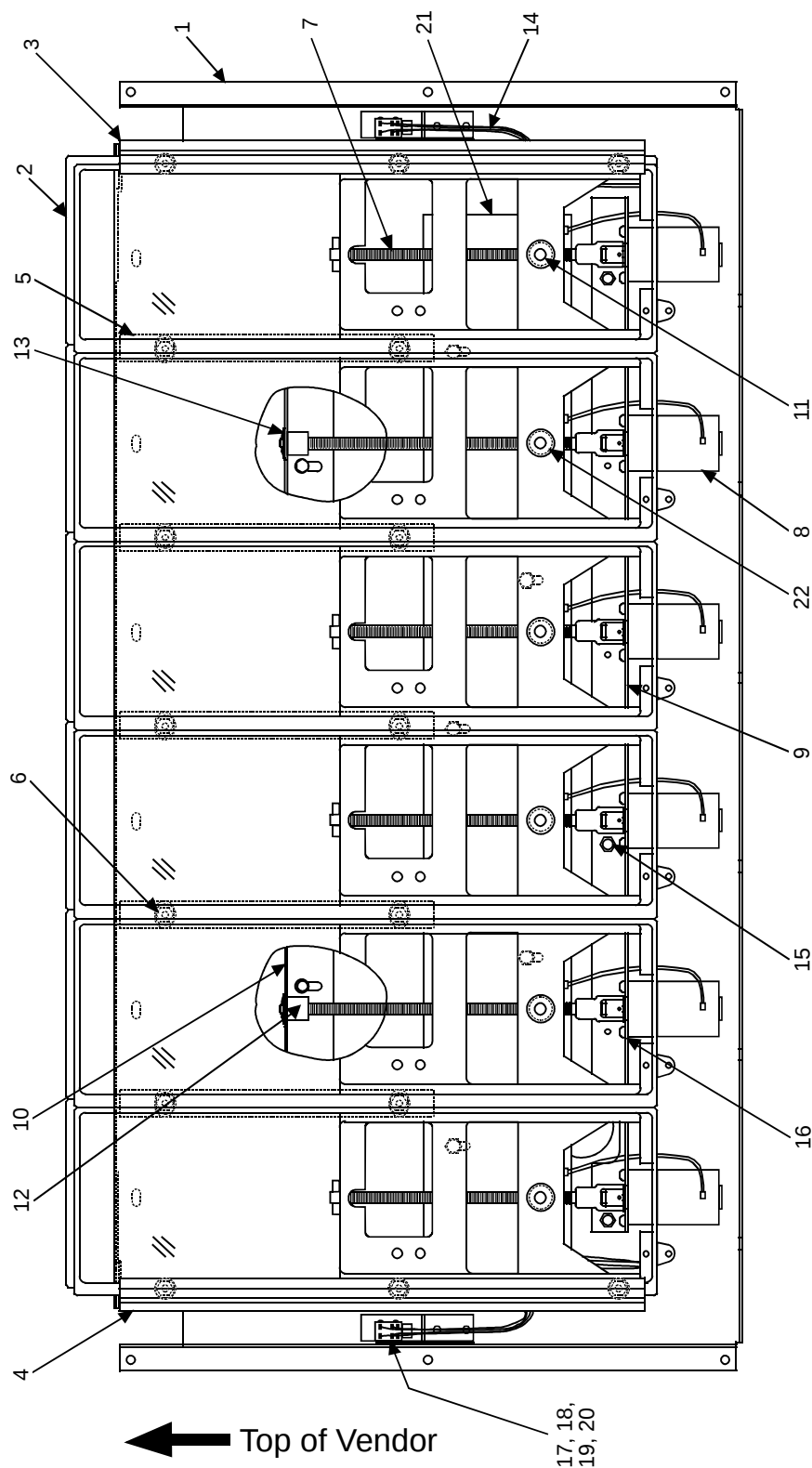
Index No.	Part Number	Description	Quantity Per Assembly
	55001420	Main Door F/A	REF
1	98300354	Retainer - Trim 50.5"	2
2	55000486	Plastic Light Shield (Lens)	1
3	55000472	Panel - Display, Right Side	1
4	55001410	Heated Insulated Glass Assembly	1
5	55001433	Delivery Door Assembly	1
6	55101803	Heater - Strip 24V 10W	1
7	90702249	Label - Operating Instructions	1
8	98300346	Retainer - Trim	3
9	98300325	Retainer - Trim 65"	2
10	55000598	Extrusion - Front	1
11	90702250	Label - Lift/Close	1
12	55000471	Panel - Display, Left Side	1
13	55001421	Glass Side Support L.H.	1
14	55001422	Glass Side Support R.H.	1
15	91700116	Lamp - Fluorescent (F20T12CW) (Not Shown)	1
16	79400461	Starter - FS-2 (Not Shown)	1
17	55000640	Breaker, Delivery Door Stop	1

Main Door Assembly, Interior



Index No.	Part Number	Description	Quantity Per Assembly
	55001420	Door Final Assembly	REF
1	55101401246	Door W/A	1
2	55100402	Bracket - Security, Top, Main Door	1
3	55101412	Lock Bracket W/A	1
4	55100413	Spring - Delivery Door	2
5	55000903	Rod - Spring Tension	2
6	55001413	Latch R/A - Door	2
7	92100293	Screw - STD #8-32 x 5/8" SEMS HW	8
8	55100407	Bracket - Lock Rod	1
9	55100403	Bracket - Security, Main Door	1
10	55000480	Strip - Gasket Mounting, Side	2
11	55000415	Gasket - Door	1
12	55000495	Breaker Strip, Panel Top	1
13	90702219	Label - Food Content	1
14	97500602	Clip -TY 5, Nylon	1
15	54801818	PCB Assembly, Temperature Probe	1
16	54800506	Insulator - Sensor	1
17	55000567	Panel - Door Top Rear	1
18	55001430	Lamp Access Assembly	1
19	55001880	Heater - Wire	1
20	55000483	Retainer - Glass Vertical	2
21	55000420	Extrusion - Left Side	1
22	55000551	Insulation - Glass Sides	2
23	55000404	Frame - Glass Mounting, Bottom	1
24	55100409	Support - Glass	1
25	55100533	Insulation - Baffle Assembly, Center	1
26	55000536	Insulation - Baffle Assembly, Left	1
27	55001432	Baffle Assembly	1
28	55000484	Breaker Strip, Baffle Plate	2
29	55000481	Strip - Gasket Mounting, Bottom	1
30	48500407	Plate - Interlock	1
31	55100411	Spacer - Actuator	1
32	44801532	Transformer	2
33	97500549	Tie Wrap, Nylon	3
34	55000485	Cover - Harness	2
35	55001501	Security Cover Weld Assembly	1
36	55100537	Insulation - Baffle Assembly, Right	1
37	55000421	Extrusion - Right Side	1
38	70704402	Bumper, 5/16" Tall	2
39	55001428	Light Shield Retainer	1

Baffle Assembly



Index No.	Part Number	Description	Quantity Per Assembly
	55001432	Baffle Assembly	REF
1	55001006	Baffle Plate Weld Assembly	1
2	55001007	Baffle & Flag Assembly	6
3	55000407	Guide - Baffle, L.H.	1
4	55000409	Guide - Baffle, R.H.	1
5	55000408	Guide - Baffle, Center	5
6	88684810	#10-24 x 5/8" HEX WRHS	16
7	55001005	Screw & Coupling Assembly	6
8	55001892	Motor & Hub Assembly	6
9	55000624	Angle - Motor Mounting	1
10	55000825	Angle - Thrust Bearing	1
11	55000626	Nut - Baffle	6
12	55000627	Thrust Bearing	6
13	94100097	Speed Nut	6
14	55001899	Harness - Baffle Switch	2
15	80443004	#8-32 x 1/4" HWHMS (Swage Form)	14
16	80542305	#6-32 x 5/16" SEMS Slotted Machine Screw	12
17	55000636	Bracket - Switch	2
18	92100626	#2-58 x 5/8" Phillips Pan Head Machine Screw	4
19	55001876	Switch Assembly - Delivery Door	2
20	93901304	Fishpaper Insulator	2
21	62000301	Circuit Board Assembly - Baffle	1
22	91600114	Grommet	6

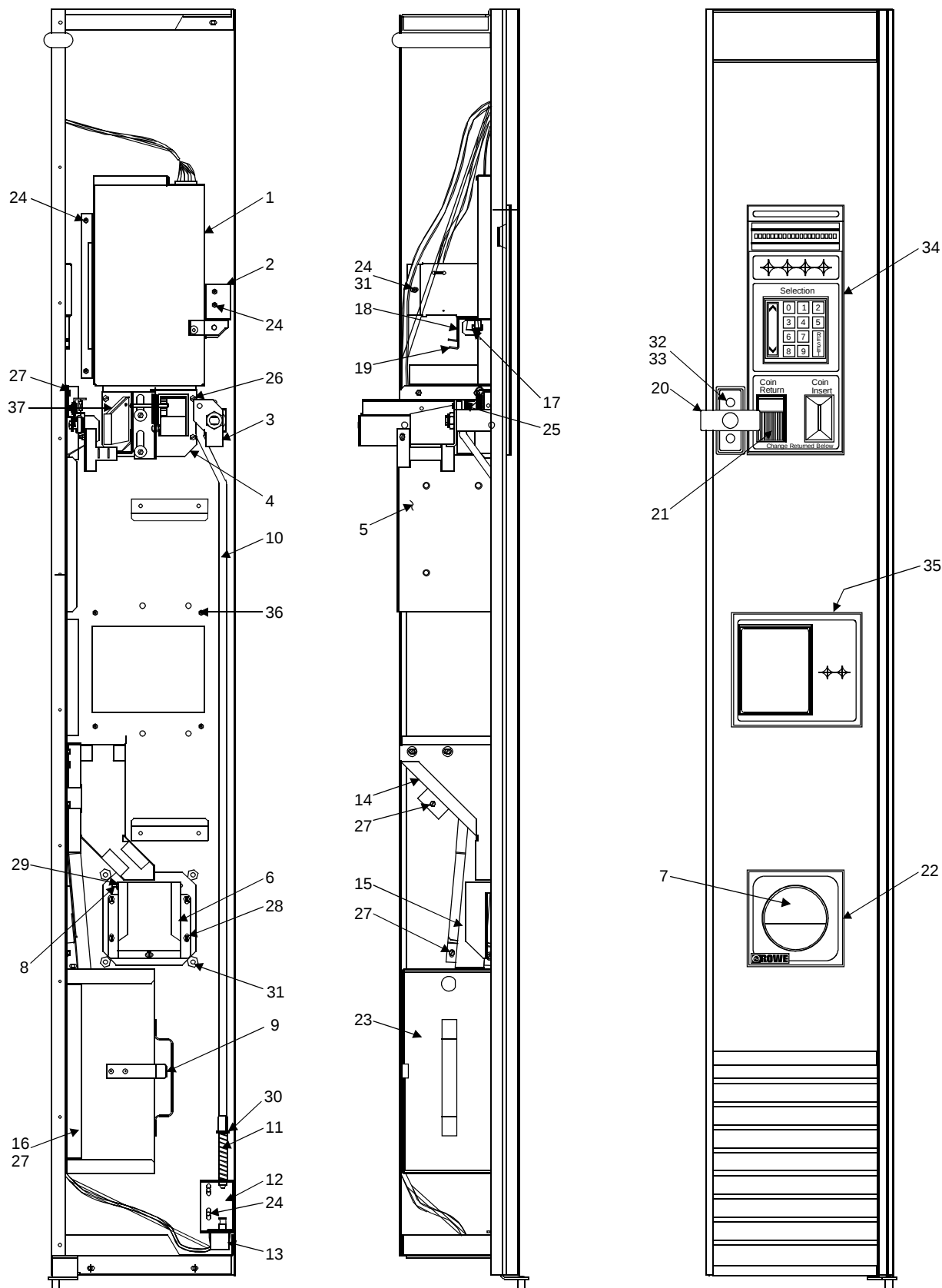
Delivery Door Assembly

Index No.	Part Number	Description	Quantity Per Assembly
	55001433	Delivery Door Assembly - Complete	
1	55000639	Frame - Delivery Door	1
2	55000424	Seal - Delivery Door	1
3	55000425	Gasket - Delivery Door, Top	1
4	55000429	Strip - Delivery Door, Top	1
5	55000430	Strip - Delivery Door, Bottom	1
6	55001411	Heated Insulated Glass Assembly	1
7	30749101	Housing - Plug, 2 circuit	1
8	55000634	Channel - Delivery Door	2
9	55000635	Bearing - Knob	2
10	87843000	Nut - #8-32 KEPS Hex Head Machine Screw	4
11	80443706	Screw - #10-24 x 3/8" HEX WHMS	2
12	93400486	Screw - #8 X 15/32, Self-Tapping, TY-Z	12

Main Power Switch

Index No.	Part Number	Description	Quantity Per Assembly
	55001858	Switch Panel Assembly - Complete	REF
1	301-01711	Switch, Main Line	1
	939-01252	Insulation, Fishpaper - Main Line Switch	1
2	921-00287	Screw	2
3	950-00349	Lockwasher	2
4	912-00047	Circuit Breaker, Refrigeration Unit - 15 Amps	1
5	912-00050	Circuit Breaker, Vend Power - 7 Amps	1
6	950-00110	Washer	2
7	448-12848	Switch, Refrigeration Compressor	1
8	448-02819	Spring, Refrigeration Compressor Switch Actuator	1
9	979-01275	Receptacle, Refrigeration Power Cord	1
10	979-01207	Socket - Vend Circuit Harness Plug	1
11	55001805	Switch Panel w/ Silkscreen	1

Service Door Assembly

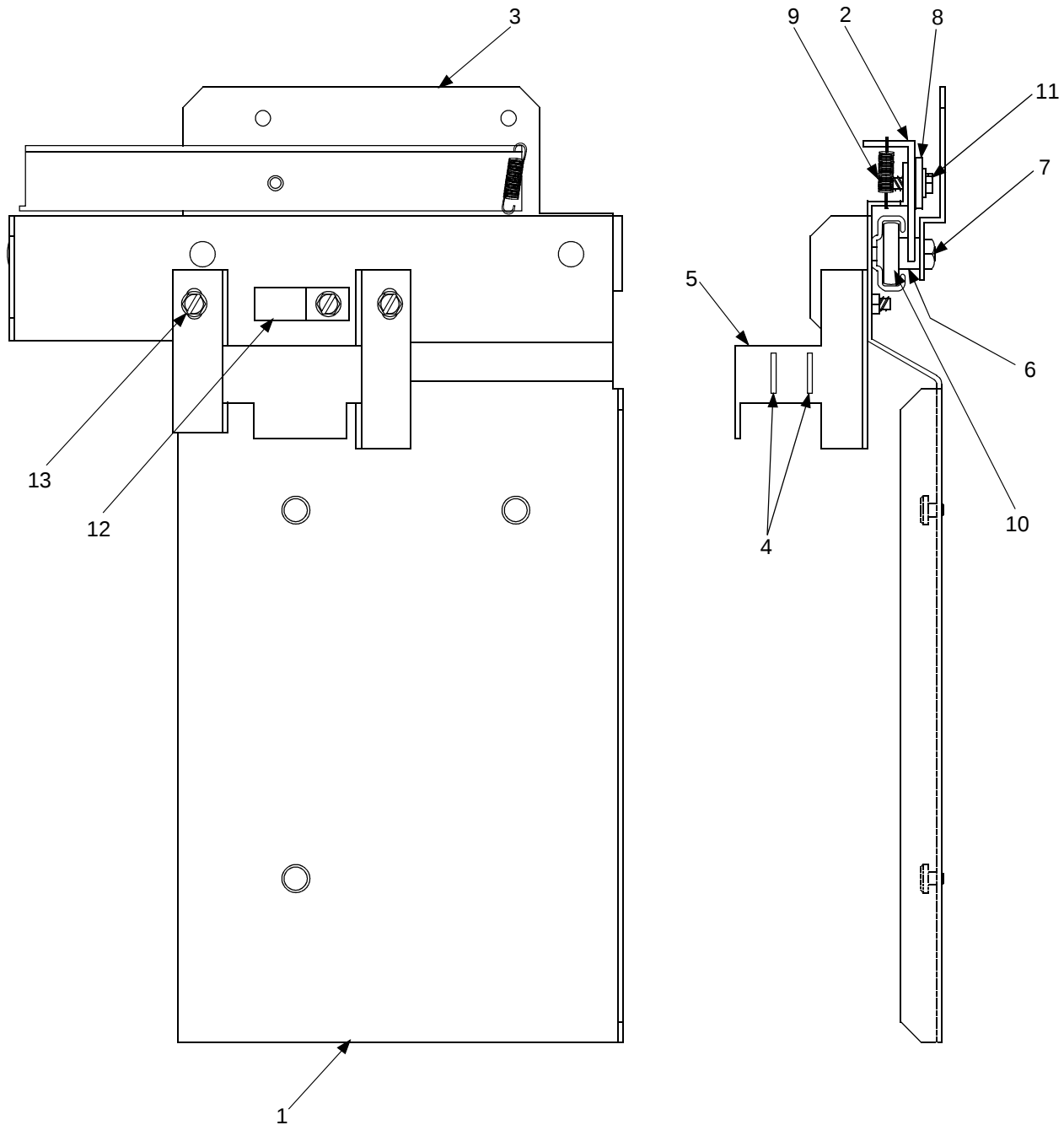


Index No.	Part Number	Description	Quantity Per Assembly
	55101501	Service Door Final Assembly	REF
1	50001025	Message Center Assembly	1
2	55101518	Latch - Message Center	1
3	55101516	Locking Cam R/A	1
4	55101510	Coin Insert and Return Assembly	1
5	55101508	Coin Mech Mounting Plate Assembly	1
6	44821510	Coin Cup Assembly (Rear)	1
7	49000409	Flap - Coin Return Cup	1
8	49000424	Pivot Shaft - C/R Flap	1
9	55100534	Spring - Catch	1
10	55100528	Rod - Lock	1
11	22106901	Spring - Lock Bar	1
12	55100529	Guide - Lock Rod	1
13	44701869	Switch - Service	1
14	55101513	Coin Return Chute W/A	1
15	55101514	Coin Chute - Lower W/A	1
16	55101517	Nest - Coin Box Mounting	1
17	40800431	Torque Knob	1
18	44802477	Retainer - Coin Mech Plug 12 pin	1
19	54800499	Retainer - Coin Mech Plug 15 pin	1
20	47901420	Handle Assembly - Popout	1
21	49000470	Slide - Coin Return	1
22	49000408	Bezel - Coin Return Cup	1
23	59301904	Cash Box W/A	1
24	92400054	Nut - 8-32 Type 6	8
25	93300007	Retaining Clip - Type 10	1
26	93400314	Screw - 8-32 x 3/8", Type 2	4
27	93400307	Screw - SEMS 8-32 x 3/8", Type 2	12
28	93400320	Screw - SEMS 6-32 X 5/16, Type 2	5
29	94100008	Speed Nut, Type 6	1
30	95000057	Washer - 3/8" Flat	1
31	92400176	Nut - 3/16" Type 11	4
32	90300016	Bolt - Carriage 10-24 X 5/8", Type 1	2
33	92400037	Nut - KEPS 10-24, Type 6	2
34	54800449	Bezel, Coin Insert	1
35	44802525	Bezel, Bill Insert	1
36	93400383	Screw, Bezel Mounting	4
37	49000584	Gate, Coin Insert	1
38	55100527	Nest, B/A Mounting (Not Shown)	1
39	55100532	Harness Retainer - Zee (Not Shown)	1

Message Center Assembly

Index No.	Part Number	Description	Quantity Per Assembly
	50001025	Message Center Assembly - Complete	REF
1	50000101	Housing - Message Center	1
2	50000121	Overlay - Message Center	1
3	50001023	PCB Assembly - Keyboard	1
4	28096701	PCB Assembly - Display UCB	1
5	50001024	Harness Assembly - Message Center	1
6	55100800	Cover - Message Center	1
7	91400007	Fastener - Push	4
8	93400307	Screw - SEMS #8 X 3/8"	7
9	30743207	Push Button - Reset	1
10	30838126	Push Button - Number Series (Set - Nos. 0-9)	1
11	90702220	Label - Rotator	1
12	54800801	Push Button - Rocker	1
13	54800833	Grid - Button Keypad	1
14	93400167	Screw - #8 X 1/2"	2
15	54800432	Hinge - Message Center	1
16	30837101	Switch - Keyboard	13
17	55100802	Housing - Keyboard	1

Coin Mech Mounting Plate Assembly



Index No.	Part Number	Description	Quantity Per Assembly
	55101508	Coin Mech Mounting Assembly	REF
1	55101509	Coin Mech Mounting Plate R/A	1
2	55100523	Latch - Coin Mech Slide	1
3	55100524	Bracket - Coin Mech Slide	1
4	55100525	Baffle - Coin Guide	2
5	55100526	Stop - Coin Mech	1
6	70121401	Spacer	2
7	87844400	10-32 KEPS Hex Machine Screw	2
8	48500026	Bushing - Unlatch	1
9	44800514	Latch Spring	1
10	30858801	Bar Assembly - Slide	1
11	93400307	Screw, SEMS S/T #8 X 3/8"	2
12	70093401	Cable Clamp (17/32)	1
13	92100210	Screw, 8-32 x 7/16"	2

Cabinet Assembly

Index No.	Part Number	Description	Quantity Per Assembly
	55101920	Cabinet Assembly	REF
1	55101910	Sliding Panel	1
2	70712301	Slide - Jonathan	1
3	92100525	Screw - Machine 10-32 x 5/16" H	4
4	49000356	Guide - Slide Panel Rear	1
5	44812306	Screen - Rear Weld	1
6	55000910	Cover - Wire	1
7	55000914	Hook - Door	2
8	49000351	Wear Strip (Nylon)	1
9	49000329	Bracket Glide	1
10	55000915	Cover - Vertical Harness	1
11	54800452	Housing - Zero Position Switch	1
12	54801816	Switch - Zero Position Assembly	1
13	54800453	Pad, Retaining, Zero Position Switch	1
14	55100101	Spacer, Zero Position Switch	1
15	55000485	Harness Cover Plate	1
16	55101802	Motor & Optic Switch Assembly	1
17	21200328	Spring, Extension	1
18	55000906	Bracket - Motor Mounting	1
19	92400062	Nut - 1/4-20 Type 6	4
20	55000319	Breaker, Top & Bottom	1
21	55000320	Breaker, Left & Right	1
22	91600202	Insulator Grommet	22
23	55000100	Drive Shaft - Upper	1
24	93300064	Retaining Ring, TY-10	4
25	55000101	Bearing	4
26	55000905	Key - Sprocket	3
27	55000909	Bracket - Lamp	1
28	91700201	Lamp Safety Sleeve	2
29	91700116	Lamp - Fluorescent (F20T12CW)	2
30	55000908	Air Duct - Bottom	1
31	55000907	Air Duct - Top	1
32	55000113	Drive Shaft - Lower	1
33	44802819	Spring - Interlock Switch	1
34	55000337	Liner, Top & Bottom	2
35	55000339	Liner, L.H.	1
36	55000338	Liner, R.H.	1
37	55000325	Liner, Back	1
38	44800935	Chain - Door Stop	1
39	55100103	Shield - Screen	1
40	55001906	Screen W/A - Intake	1
41	40801316	Leg Assembly (Includes Leveler)	4
42	40800352	Leg Leveler Only	4
43	91600100	Plug - Liner (Not Shown)	2
44	55000335	Louver - Evaporator (Not Shown)	1
45	44701869	Switch, Main Door Open	1
46	50501815	Filter Assembly/Power Cord (Not Shown)	1

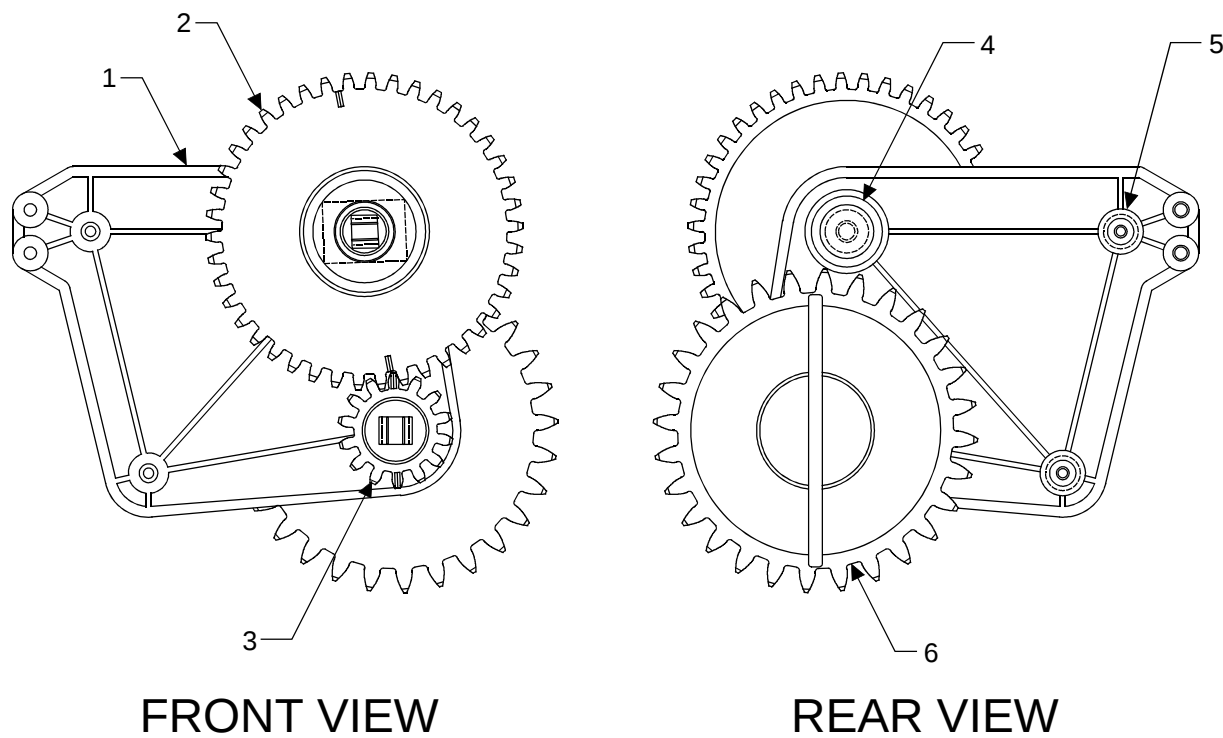
Motor & Hub Assembly

Index No.	Part Number	Description	Quantity Per Assembly
	55101802	Motor and Optic Switch Assembly	REF
1	92100407	1/4-20 X 3/8" Machine Screw	4
2	55101801	Motor - Shelf	1
3	55000819	Plate - Motor Mounting	1
4	55001864	Optical Cycle Cam	1
5	94700026	Set Screw	1
6	55000805	Seal - Drive Motor	1
7	91500018	Groove Pin	1
8	93400307	#8-32 X 3/8" Self-Tapping Screw	3
9	55001849	PCB Assembly - Optical Sensor	1
10	92100605	#8-32 X 3/4" Machine Screw	1
11	55000818	Bracket - Mounting - Optical PCB	1
12	95000386	.005 Thick Wave Washer	1
13	48500026	Bushing	1
14	49000353	Spring	1
15	55000904	Coupling - Drive	1
16	30749001	Housing - Cap, 2-pin	1
17	70097501	Contact Pin	2

Drive Assembly

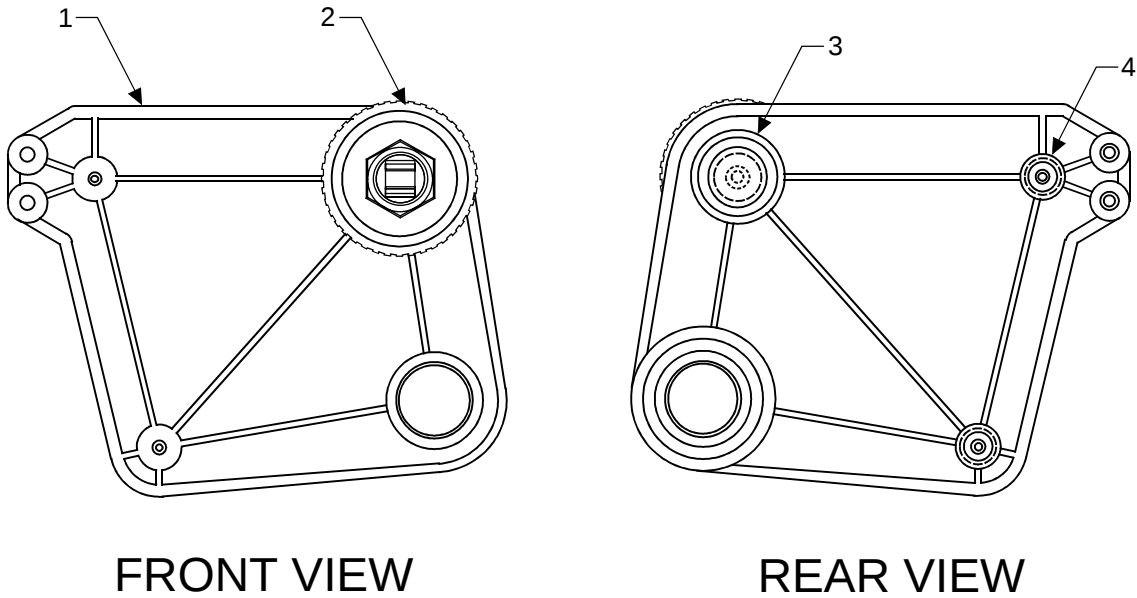
Index No.	Part Number	Description	Quantity Per Assembly
1	55000102	Sprocket - 30 Tooth	4
2	55001000	Carrier Assembly - Left (See <i>Figure 6-14</i> for Detail)	16
3	55001001	Carrier Assembly - Right (See <i>Figure 6-15</i> for Detail)	16
4	55001914	Carrier Retainer Assembly	4
5	55000110	Gear - Track	4
6	93400484	Screw - S/T 1/4-20 x 3/4", TY-23	32
7	55001002	Chain Assembly	2

Carrier Assembly - Left



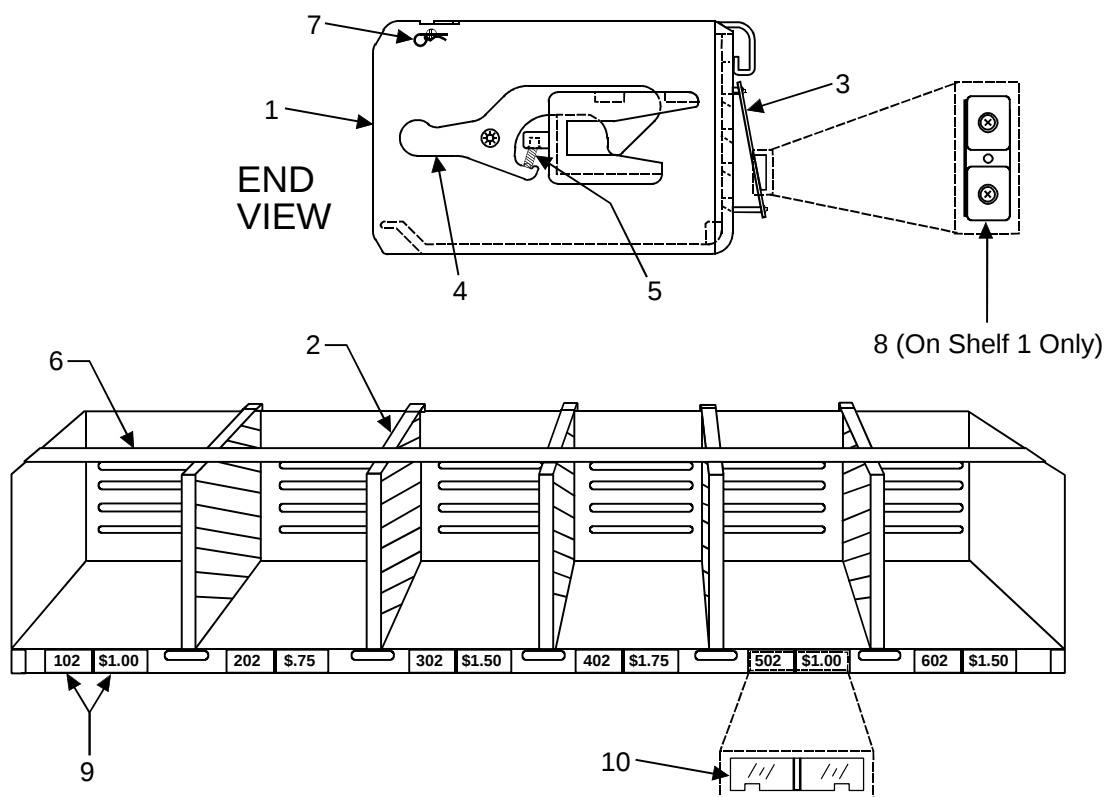
Index No.	Part Number	Description	Quantity Per Assembly
	55001000	Carrier Assembly - L/H	REF
1	55000106	Carrier - Shelf	1
2	55000105	Hub - Gear, Shelf, L/H	1
3	55000104	Gear, Idler, Small	1
4	55000109	Retainer - Hub, Shelf	1
5	55000108	Roller - Shelf Carrier	2
	941-27	Speed Nut	2
6	55000107	Gear, Idler, Large	1

Carrier Assembly - Right



Index No.	Part Number	Description	Quantity Per Assembly
	55001001	Carrier Assembly - R/H	REF
1	55000106	Carrier - Shelf	1
2	55000103	Hub - Shelf, R/H	1
3	55000109	Retainer - Hub, Shelf	1
4	55000108	Roller - Shelf Carrier	2
	941-27	Speed Nut	2

Shelf Assembly



Index No.	Part Number	Description	Quantity Per Assembly
	55001600	Shelf Assembly	REF
1	55000612	Product Shelf	1
2	55000607	Shelf Divider	4
3	55000609	Shelf Back	1
4	55000606	Latch	2
5	55000611	Spring, Shelf Latch	2
6	55000610	Divider Lockbar	1
7	90500051	Hitch Pin	2
8	55101001	Magnet Assembly Zero Position (On Shelf #1 Only)	REF
9	55101915	Selection Label & Price Card Assortment	1 Set
10	55000629	Label Retainer	6

Sliding Panel Assembly

Index No.	Part Number	Description	Quantity Per Assembly
	55101910	Sliding Panel Assembly	REF
1	55101911	Sliding Panel W/A	1
2	50001000016	Universal Control Board	16
3	55001890	Power Supply	1
4	55021510	Transformer Assembly	1
5	55101806	Ballast Assembly (U.S. & Canada)	1
6	55100801	Service Box	1
7	97901275	Socket Assembly - 120V	1
8	49400915	Friction Spring	1

Power Supply Assembly

Index No.	Part Number	Description	Quantity Per Assembly
1	62000101	CBA 650 Power Supply	1
2	59301817	MFAB Assembly - Base & Stud	1
3	93901502	Insulator - Fishpaper Whole	1
4	55000630	Cover - Power Supply	1
5	93400151	Screw - S/T #8 x 1/4" Type 2	4
6	92100258	Screw - #6-32 x 3/8" HWHMS	4

Transformer Assembly

Index No.	Part Number	Description	Quantity Per Assembly
	55021510B	Transformer and Bracket Assembly	REF
1	91600071	Grommet	2
2	55001868	Transformer Assembly	REF
3	55000578	Bracket - Transformer Mounting	1
4	92400054	Nut - #8-32 KEPS	2
5	70073609	Circuit Breaker - 6 Amp	3
6	70073605	Circuit Breaker - 2 Amp	2
7	55001871	Filter and Harness Assembly	1
8	92100258	Screw - #6-32 x 3/8"	2
9	93400250	Self-Tapping Screw	3
10	55000585	Cover	1

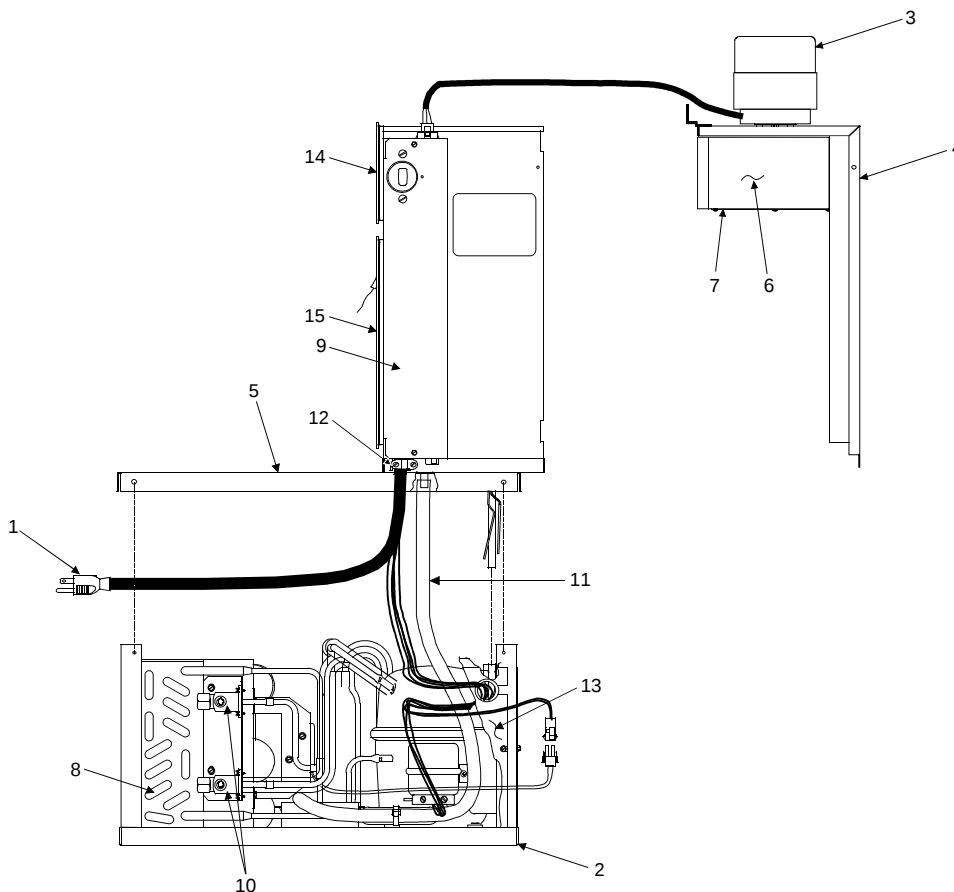
Ballast & Socket Assembly

Index No.	Part Number	Description	Quantity Per Assembly
	55001425	Ballast & Socket Assembly	REF
1	55000490	Bracket-Lamp Socket Mounting	1
2	97600018	Socket - Starter	1
3	85351608	#4 x 1/2 R.H.P.H. Self-Tapping Screw	2
4	97500549	Cable Tie	3
5	40801815	Ballast Assembly	1
6	85663006	#8 x 3/8" H.W.H. Self-Tapping Screw	2
7	93902056	Tubing - 5/16" I.D. x 2.75 Long	1
8	30749102	Connector - Terminal Housing, 3-Position Plug	1
9	97600017	Socket, Lamp	2
10	80651106	#4-36 x 3/8" Hex HD Machine Screw	4
11	93900632	Tubing - 21" long	1

Power Cord/Filter Assembly

Index No.	Part Number	Description	Quantity Per Assembly
	50501815	Power Cord/Filter Assembly	REF
1	50501837	Jumper - Ground	1
2	70713002	EMI Filter - 115-240V 15A	1
3	50501814	Power Cord Assembly	1
4	91600016	Strain Relief	1
5	93400151	Screw #8-32 x 1/4"	1
6	92400054	Nut - #8-32 KEPS	2
7	50501838	Harness Assembly - EMI Filter	1
8	59100903	Cover, Filter Box	1
9	59100904	Bracket, Filter Box	1

Refrigeration Unit, Sheet 1



Index No.	Part Number	Description	Quantity Per Assembly
	55001200	Refrigeration Unit - Complete	REF
1	55001802	Power Cord	1
2	55001201	Base Weld Assembly	1
3	55001211	Blower Motor	1
4	55001209	Cover Evaporator	1
5	55001205	Cover Weld Assembly	1
6	55001212	Scroll	1
7	55001210	Blower Wheel (Not Shown)	1
	55000265	Inlet Ring (Not Shown)	1
8	55001202	Condenser Coil	1
9	55000248	Relay Box Cover	1
10	44812211	Valve Assembly, Service	1
11	86903111	Tubing - Vinyl	16"
12	97500514	Cable Clamp	1
13	55000207	Cover - Front	1
14	55000241	Gasket - Outlet	1
15	55000242	Gasket - Intake	1

Refrigeration Unit, Sheet 2

Index No.	Part Number	Description	Quantity Per Assembly
	55001200	Refrigeration Unit - Complete	REF
1	55001205	Housing - Evaporator and Condenser Cover	1
2	55000241	Gasket - Evaporator Outlet	1
3	55001207	Evaporator Drip Tray Assembly	1
4	55001222	Evaporator	1
5	55000242	Gasket - Evaporator Intake (Not Shown)	1
6	70718301	Hole Plug	2
7	55001218	Tube/Capillary Assembly	1
8	55001246	Switch Assembly - Thermostat	1
9	55001215	Cartridge - Heater	2
10	91600081	Grommet	3
11	44801829	Thermostat - Cold Control	1
12	80063004	Screw, Thermostat Mounting	2
13	55001862	Power Cord	1
14	70706502	Relay - Backup	1
15	93808001	Relay - Compressor	1
16	93808001	Relay - Defrost	1
17	70096102	Block - Terminal, 2 Position	1
18	93902197	Tubing - Insulating	1
19	55001233	Heater Strip	1

Refrigeration Unit, Sheet 3

Index No.	Part Number	Description	Quantity Per Assembly
	55001200	Refrigeration Unit - Complete	REF
1	55001201	Base - Refrigeration Unit W/A	1
2	55001202	Condenser	1
3	55000205	Shroud - Condenser Fan	1
4	50800219	Fan - Condenser	1
5	55000204	Bracket, Condenser Fan Mounting	1
6	59521515001	Motor, Condenser Fan	1
7	11100901	Tray - Evaporator Drip	1
8	55000208302	Bracket - Drip Pan Mounting	1
9	11101217	Accumulator	1
10	55000239	Tubing - Accumulator to Tee	1
11	55000238	Tubing - Compressor to Accumulator	1
12	55001204	Compressor	1
13	98100930	Solder Tee - 3/8" I.D. x 3/8" I.D. x 1/4" I.D.	1
14	50800224	Tubing - Suction Line, Compressor to Tee	1
15	93902195	Tubing - 3/8" I.D. x 5/8" O.D. Clear Vinyl	1
16	55001213	Drier - 10 gram	1
17	55001203	Bracket & Tube Assembly, Drip Pan Mounting	1
18	55001219	Tubing - Discharge	1
19	91600071	Grommet - 59/64 I.D.	1
20	55000255	Tubing - Condenser to Drier	1
21	44812220	Cap - Seal Gasket	2
22	44812219	Valve Core	2
23	93901298	Insulation - Tubing, Black	A/R
24	55000254	Tubing, Tee to Valve (High Side)	1
25	55000253	Tubing, Tee to Condenser	1
26	55000251	Tubing, Tee to Valve (Low Side)	1

Opto-Circuit Board Assembly, Sheet 1

Opto-Circuit Board Assembly, Sheet 2

Ref. No.	Description	Reference	Part Number
C1	Capacitor - Monolithic Ceramic	.1 μ F	70028511
C2	Capacitor - Electrolytic 50 VDC 20%	22 μ F	70028107
C3	Capacitor - Electrolytic 50 VDC 20%	22 μ F	70028107
C4	Capacitor - Monolithic Ceramic	.1 μ F	70028511
C5	Capacitor - Ceramic Disc 1 KV 20%	.01 μ F	70022508
D1	Diode - Silicon	1N4148	70035012
D2	Diode - Light Emitting Red Diffused		70035305
D3	Diode - Silicon	1N4148	70035012
D4	Diode - Silicon	1N4148	70035012
D5	Diode - Light Emitting Red Diffused		70035305
D6	Diode - Silicon	1N4148	70035012
D7	Diode - Silicon	1N4148	70035012
D8	Diode - Light Emitting Red Diffused		70035305
D9	Diode - Silicon	1N4148	70035012
D10	Diode - Silicon	1N4148	70035012
D11	Diode - Light Emitting Red Diffused		70035305
D12	Diode - Silicon	1N4148	70035012
D13	Diode - Silicon	1N4148	70035012
D14	Diode - Light Emitting Red Diffused		70035305
D15	Diode - Silicon	1N4148	70035012
D16	Diode - Silicon	1N4148	70035012
D17	Diode - Light Emitting Red Diffused		70035305
D18	Diode - Silicon	1N4148	70035012
D19	Transient Suppressor	1.5KE36CA	70037513
D20	Diode - Silicon	1N4937	70035022
D21	Diode - Silicon	1N4937	70035022
D22	Diode - Silicon	1N4937	70035022
D23	Transient Suppressor	1.5KE36CA	70037513
D24	Diode - Silicon	1N4937	70035022
D25	Transient Suppressor	1.5KE36CA	70037513
D26	Diode - Silicon	1N4937	70035022
D27	Transient Suppressor	1.5KE36CA	70037513
D28	Diode - Silicon	1N4937	70035022
D29	Transient Suppressor	1.5KE36CA	70037513
D30	Diode - Silicon	1N4937	70035022
D31	Transient Suppressor	1.5KE36CA	70037513
J1	Header - Polarized 9-Position	.100 Rt. Angle	70086609
J2	Header - Polarized 4-Position	.100 Rt. Angle	70086604
J3	Header - Polarized 2-Position	.100 Rt. Angle	70086602
J4	Header - Polarized 12-Position	.100 Rt. Angle	70086612
J5	Header - Polarized 2-Position	.100 Rt. Angle	70086602
J6	Header - Polarized 2-Position	.100 Rt. Angle	70086602
J7	Header - Polarized 2-Position	.100 Rt. Angle	70086602
J8	Header - Polarized 2-Position	.100 Rt. Angle	70086602
J9	Header - Polarized 2-Position	.100 Rt. Angle	70086602
J10	Header - Polarized 4-Position	.100 Rt. Angle	70086604

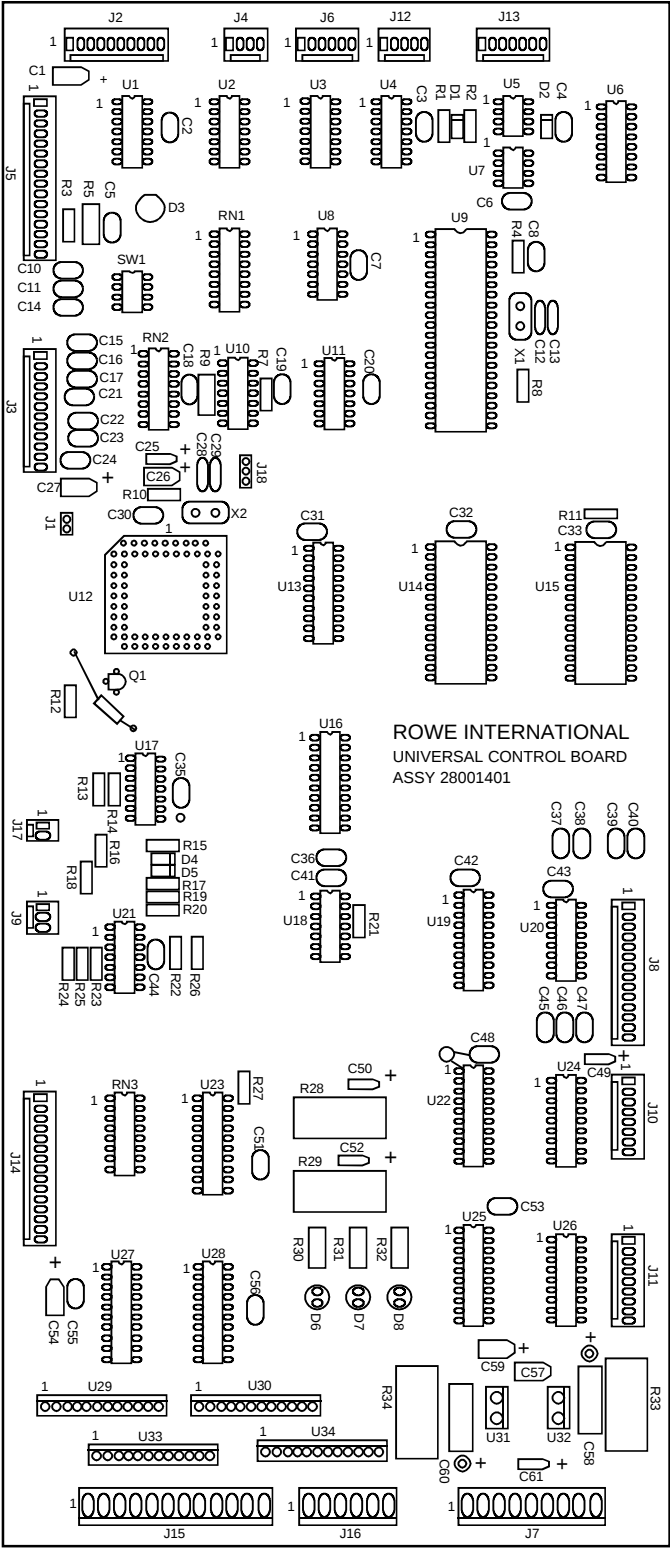
Opto-Circuit Board Assembly, Sheet 3

Ref. No.	Description	Reference	Part Number
K1	Relay - D.P.D.T.	24VDC	25195801
K2	Relay - D.P.D.T.	24VDC	25195801
K3	Relay - D.P.D.T.	24VDC	25195801
K4	Relay - D.P.D.T.	24VDC	25195801
K5	Relay - D.P.D.T.	24VDC	25195801
K6	Relay - D.P.D.T.	24VDC	25195801
K7	Relay - D.P.D.T.	24VDC	25195801
K8	Relay - D.P.D.T.	24VDC	25195801
K9	Relay - D.P.D.T.	24VDC	25195801
K10	Relay - D.P.D.T.	24VDC	25195801
K11	Relay - D.P.D.T.	24VDC	25195801
K12	Relay - D.P.D.T.	24VDC	25195801
Q1	Transistor - Silicon NPN	MPSA06	70030008
Q2	Transistor - Silicon NPN	MPSA06	70030008
Q3	Transistor - Silicon NPN	MPSA06	70030008
Q4	Transistor - Silicon NPN	MPSA06	70030008
Q5	Transistor - Silicon NPN	MPSA06	70030008
Q6	Transistor - Silicon NPN	MPSA06	70030008
Q7	Transistor - Silicon NPN	MPSA06	70030008
Q8	Transistor - Silicon NPN	MPSA06	70030008
R1	Resistor - Carbon Film 1/2W 5%	2.2 K Ω	79904222
R2	Resistor - Carbon Film 1/2W 5%	2.2 K Ω	79904222
R3	Resistor - Carbon Film 1/4W 5%	1 K Ω	79901102
R4	Resistor - Carbon Film 1/4W 5%	560 Ω	79901561
R5	Resistor - Carbon Film 1/4W 5%	1 K Ω	79901102
R6	Resistor - Carbon Film 1/4W 5%	1 K Ω	79901102
R7	Resistor - Carbon Film 1/4W 5%	1 K Ω	79901102
R8	Resistor - Carbon Film 1/4W 5%	47 K Ω	79901473
R9	Resistor - Carbon Film 1/4W 5%	47 K Ω	79901473
R10	Resistor - Carbon Film 1/4W 5%	1 K Ω	79901102
R11	Resistor - Carbon Film 1/2W 5%	2.2 K Ω	79904222
R12	Resistor - Carbon Film 1/2W 5%	2.2 K Ω	79904222
R13	Resistor - Carbon Film 1/4W 5%	1 K Ω	79901102
R14	Resistor - Carbon Film 1/4W 5%	560 Ω	79901561
R15	Resistor - Carbon Film 1/4W 5%	1 K Ω	79901102
R16	Resistor - Carbon Film 1/4W 5%	47 K Ω	79901473
R17	Resistor - Carbon Film 1/4W 5%	47 K Ω	79901473
R18	Resistor - Carbon Film 1/4W 5%	1 K Ω	79901102
R19	Resistor - Carbon Film 1/2W 5%	2.2 K Ω	79904222
R20	Resistor - Carbon Film 1/2W 5%	2.2 K Ω	79904222
R21	Resistor - Carbon Film 1/4W 5%	1 K Ω	79901102
R22	Resistor - Carbon Film 1/4W 5%	560 Ω	79901561
R23	Resistor - Carbon Film 1/4W 5%	1 K Ω	79901102
R24	Resistor - Carbon Film 1/4W 5%	47 K Ω	79901473
R25	Resistor - Carbon Film 1/4W 5%	47 K Ω	79901473
R26	Resistor - Carbon Film 1/4W 5%	1 K Ω	79901102
R27	Resistor - Carbon Film 1/2W 5%	2.2 K Ω	79904222
R28	Resistor - Carbon Film 1/2W 5%	2.2 K Ω	79904222

Opto-Circuit Board Assembly, Sheet 4

Ref. No.	Description	Reference	Part Number
R29	Resistor - Carbon Film 1/4W 5%	1 K Ω	79901102
R30	Resistor - Carbon Film 1/4W 5%	560 Ω	79901561
R31	Resistor - Carbon Film 1/4W 5%	1K Ω	79901102
R32	Resistor - Carbon Film 1/4W 5%	47 K Ω	79901473
R33	Resistor - Carbon Film 1/4W 5%	47 K Ω	79901473
R34	Resistor - Carbon Film 1/4W 5%	1 K Ω	79901102
R35	Resistor - Carbon Film 1/2W 5%	2.2 K Ω	79904222
R36	Resistor - Carbon Film 1/2W 5%	2.2 K Ω	79904222
R37	Resistor - Carbon Film 1/4W 5%	1 K Ω	79901102
R38	Resistor - Carbon Film 1/4W 5%	560 Ω	79901561
R39	Resistor - Carbon Film 1/4W 5%	1 K Ω	79901102
R40	Resistor - Carbon Film 1/4W 5%	47 K Ω	79901473
R41	Resistor - Carbon Film 1/4W 5%	47 K Ω	79901473
R42	Resistor - Carbon Film 1/4W 5%	1 K Ω	79901102
R43	Resistor - Carbon Film 1/2W 5%	2.2 K Ω	79904222
R44	Resistor - Carbon Film 1/2W 5%	2.2 K Ω	79904222
R45	Resistor - Carbon Film 1/4W 5%	1 K Ω	79901102
R46	Resistor - Carbon Film 1/4W 5%	560 Ω	79901561
R47	Resistor - Carbon Film 1/4W 5%	4.7 K Ω	79901472
R48	Resistor - Carbon Film 1/4W 5%	1 K Ω	79901102
R49	Resistor - Carbon Film 1/4W 5%	1 K Ω	79901102
R50	Resistor - Carbon Film 1/4W 5%	1 K Ω	79901102
R51	Resistor - Carbon Film 1/4W 5%	47 K Ω	79901473
R52	Resistor - Carbon Film 1/4W 5%	47 K Ω	79901473
R53	Resistor - Carbon Film 1/4W 5%	4.7 K Ω	79901472
R54	Resistor - Carbon Film 1/4W 5%	4.7 K Ω	79901472
R55	Resistor - Carbon Film 1/4W 5%	1 K Ω	79901102
R56	Resistor - Carbon Comp/Metal Oxide 1/2W 10%	10 Ω	79908100
R57	Resistor - Carbon Comp/Metal Oxide 1/2W 10%	10 Ω	79908100
R58	Resistor - Carbon Comp/Metal Oxide 1/2W 10%	10 Ω	79908100
R59	Resistor - Carbon Comp/Metal Oxide 1/2W 10%	10 Ω	79908100
R60	Resistor - Carbon Comp/Metal Oxide 1/2W 10%	10 Ω	79908100
R61	Resistor - Carbon Comp/Metal Oxide 1/2W 10%	10 Ω	79908100
S1	Photocoupler - Optical Switch	LTH301-07	70033605
S2	Photocoupler - Optical Switch	LTH301-07	70033805
S3	Photocoupler - Optical Switch	LTH301-07	70033605
S4	Photocoupler - Optical Switch	LTH301-07	70033605
S5	Photocoupler - Optical Switch	LTH301-07	70033805
S6	Photocoupler - Optical Switch	LTH301-07	70033605
S7	Photocoupler - Optical Switch	LTH301-07	70033805
S8	Photocoupler - Optical Switch	LTH301-07	70033605
S9	Photocoupler - Optical Switch	LTH301-07	70033805
S10	Photocoupler - Optical Switch	LTH301-07	70033605
S11	Photocoupler - Optical Switch	LTH301-07	70033605
S12	Photocoupler - Optical Switch	LTH301-07	70033605
U1	I.C. - Quad Comparator	LM3302	70036801
U2	I.C. - Quad Comparator	LM3302	70036801
U3	I.C. - Quad Comparator	LM3302	70036801

Universal Control Board, Sheet 1



Universal Control Board, Sheet 2

Ref. No.	Description	Reference	Part Number
C1	Capacitor - 15V 10%	15 μ F	70025302
C2	Capacitor - 50 V 10%	.1 μ F	70028649
C3	Capacitor - 50 V 10%	.1 μ F	70028649
C4	Capacitor - 50 V 10%	.1 μ F	70028649
C5	Capacitor - 50 V 10%	.1 μ F	70028649
C6	Capacitor - 50 V 10%	.1 μ F	70028649
C7	Capacitor - 50 V 10%	.1 μ F	70028649
C8	Capacitor - 50 V 10%	.1 μ F	70028649
C9	Not Used		
C10	Capacitor - 50 V 10%	.1 μ F	70028649
C11	Capacitor - 50 V 10%	.1 μ F	70028649
C12	Capacitor - 50 V 10%	22 PF	70028705
C13	Capacitor - 50 V 10%	22 PF	70028705
C14	Capacitor - 50 V 10%	.1 μ F	70028649
C15	Capacitor - 50 V 10%	.1 μ F	70028649
C16	Capacitor - 50 V 10%	.1 μ F	70028649
C17	Capacitor - 50 V 10%	.1 μ F	70028649
C18	Capacitor - 35 V 10%	1 μ F	70025301
C19	Capacitor - 50 V 10%	.1 μ F	70028649
C20	Capacitor - 50 V 10%	.1 μ F	70028649
C21	Capacitor - 50 V 10%	.1 μ F	70028649
C22	Capacitor - 50 V 10%	.1 μ F	70028649
C23	Capacitor - 50 V 10%	.1 μ F	70028649
C24	Capacitor - 50 V 10%	.1 μ F	70028649
C25	Capacitor - 35 V 10%	1 μ F	70025301
C26	Capacitor - 15V 10%	15 μ F	70025302
C27	Capacitor - 15V 10%	15 μ F	70025302
C28	Capacitor - 50 V 10%	22 PF	70028705
C29	Capacitor - 50 V 10%	22 PF	70028705
C30	Capacitor - 50 V 10%	.1 μ F	70028649
C31	Capacitor - 50 V 10%	.1 μ F	70028649
C32	Capacitor - 50 V 10%	.1 μ F	70028649
C33	Capacitor - 50 V 10%	.1 μ F	70028649
C34	Not Used		
C35	Capacitor - 50 V 10%	.1 μ F	70028649
C36	Capacitor - 50 V 10%	.1 μ F	70028649
C37	Capacitor - 50 V 10%	.1 μ F	70028649
C38	Capacitor - 50 V 10%	.1 μ F	70028649
C39	Capacitor - 50 V 10%	.1 μ F	70028649
C40	Capacitor - 50 V 10%	.1 μ F	70028649
C41	Capacitor - 50 V 10%	.1 μ F	70028649
C42	Capacitor - 50 V 10%	.1 μ F	70028649
C43	Capacitor - 50 V 10%	.1 μ F	70028649
C44	Capacitor - 50 V 10%	.1 μ F	70028649
C45	Capacitor - 50 V 10%	.1 μ F	70028649
C46	Capacitor - 50 V 10%	.1 μ F	70028649
C47	Capacitor - 50 V 10%	.1 μ F	70028649
C48	Capacitor - 50 V 10%	.1 μ F	70028649
C49	Capacitor - 10 V 10%	47 μ F	70025303

Universal Control Board, Sheet 3

Ref. No.	Description	Reference	Part Number
C50	Capacitor - 35 V 10%	1 μ F	70025301
C51	Capacitor - 50 V 10%	.1 μ F	70028649
C52	Capacitor - 35 V 10%	1 μ F	70025301
C53	Capacitor - 50 V 10%	.1 μ F	70028649
C54	Capacitor - 15V 10%	15 μ F	70025302
C55	Capacitor - 50 V 10%	.1 μ F	70028649
C56	Capacitor - 50 V 10%	.1 μ F	70028649
C57	Capacitor - 15V 10%	15 μ F	70025302
C58	Capacitor - 50 V Rad.	22 μ F	70028201
C59	Capacitor - 15V 10%	15 μ F	70025302
C60	Capacitor - 50 V Rad.	22 μ F	70028201
C61	Capacitor - 10 V 10%	47 μ F	70025303
X1	Xtal - Quartz, LS - .190	3.6864MHz	25167318
X2	Xtal - Quartz	10MHz	25167327
D1	Diode - Silicon	1N4148	70035012
D2	Diode - Silicon	1N4148	70035012
D3	Diode - Light Emitting Red Diffused		70035303
D4	Diode - Silicon	1N4148	70035012
D5	Diode - Silicon	1N4148	70035012
D6	Diode - Light Emitting Red Diffused		70035303
D7	Diode - Light Emitting Red Diffused		70035303
D8	Diode - Light Emitting Red Diffused		70035303
J1	Header - Polarized 6-Position		70076406
J2	Header - Polarized 10-Position		70076410
J3	Header - Polarized 12-Position		70076412
J4	Header - Polarized 4-Position		70076404
J5	Header - Polarized 16-Position		70076416
J6	Header - Polarized 6-Position		70076406
J7	Header - Polarized 9-Position		70080509
J8	Header - Polarized 14-Position		70076414
J9	Header - Polarized 3-Position		70076403
J10	Header - Polarized 8-Position		70076408
J11	Header - Polarized 9-Position		70076409
J12	Header - Polarized 5-Position		70076405
J13	Header - Polarized 7-Position		70076407
J14	Header - Polarized 15-Position		70076415
J15	Header - Polarized 12-Position		70080512
J16	Header - Polarized 6-Position		70080506
J17	Header - Polarized 2-Position		70076402
J18	Header - Polarized 3-Position		70078703
Q1	I.C. - Under Volt Sensor	MC3406AP-5	30800243
R1	Resistor - Carbon Film $\frac{1}{4}$ W 5%	180 Ω	79901181
R2	Resistor - Carbon Film $\frac{1}{4}$ W 5%	180 Ω	79901181
R3	Resistor - Carbon Film $\frac{1}{4}$ W 5%	12K Ω	79901123

Universal Control Board, Sheet 4

Ref. No.	Description	Reference	Part Number
R4	Resistor - Carbon Film 1/4W 5%	1 K Ω	79901102
R5	Resistor - Carbon Film 1/2W 5%	390 Ω	79904391
R6	Resistor - Carbon Film 1/4W 5%	1 K Ω	79901102
R7	Resistor - Carbon Film 1/4W 5%	12 K Ω	799001123
R8	Resistor - Carbon Film 1/4W 5%	12 K Ω	799001123
R9	Resistor - Carbon Film 1/2W 5%	390 Ω	79904391
R10	Resistor - Carbon Film 1/4W 5%	12 K Ω	799001123
R11	Resistor - Carbon Film 1/4W 5%	12 K Ω	799001123
R12	Resistor - Carbon Film 1/4W 1%	499 Ω	799124990
R13	Resistor - Carbon Film 1/4W 1%	34.8 K Ω	799123462
R14	Resistor - Carbon Film 1/4W 1%	100 K Ω	799121003
R15	Resistor - Carbon Film 1/4W 1%	1 M Ω	799121004
R16	Resistor - Carbon Film 1/4W 1%	23.2 K Ω	799122322
R17	Resistor - Carbon Film 1/4W 1%	1 M Ω	799121004
R18	Resistor - Carbon Film 1/4W 1%	1 M Ω	799121004
R19	Resistor - Carbon Film 1/4W 1%	1 M Ω	799121004
R20	Resistor - Carbon Film 1/4W 1%	1 M Ω	799121004
R21	Resistor - Carbon Film 1/4W 5%	12 K Ω	799001123
R22	Resistor - Carbon Film 1/4W 1%	1 M Ω	799121004
R23	Resistor - Carbon Film 1/4W 1%	1 M Ω	799121004
R24	Resistor - Carbon Film 1/4W 1%	1 M Ω	799121004
R25	Resistor - Carbon Film 1/4W 1%	1 M Ω	799121004
R26	Resistor - Carbon Film 1/4W 1%	1 M Ω	799121004
R27	Resistor - Carbon Film 1/4W 5%	1 K Ω	79901102
R28	Resistor - Carbon Film 5W 5%	20 Ω	70714201
R29	Resistor - Carbon Film 5W 5%	20 Ω	70714201
R30	Resistor - Carbon Film 1/2W 5%	3.9 K Ω	79904392
R31	Resistor - Carbon Film 1/2W 5%	3.9 K Ω	79904392
R32	Resistor - Carbon Film 1/2W 5%	390 Ω	79904391
R33	Resistor - Carbon Film 5W 5%	20 Ω	70714201
R34	Resistor - Carbon Film 5W 5%	20 Ω	70714201
SW1	Dip Switch		70043008
U1	I.C. - Hex Buffer Open	7407	70036309
U2	I.C. - Quad Line Driver	MC1488P	30800271
U3	I.C. - Quad Line Driver	MC1488P	30800271
U4	I.C. - Quad Receiver	MC1489P	30800272
U5	I.C. - 2 Channel Optocoupler	PS2501-2	70033714
U6	I.C. - Quad 2 Input Multiplexer	74HC157	79940157
U7	I.C. - Dual 2 Input Nand GT. CMOS	40107	7994040107
U8	I.C. - Quad Receiver	MC1489P	30800272
U9	I.C. - Dual Uart	SCC2692ACIN40	70034704
U10	I.C. - Hex Schmitt-Trig Inverter CMOS	74HC14	79940014
U11	I.C. - Hex Schmitt-Trig Inverter CMOS	74HC14	79940014
U12	Microprocessor	88C196	70039405
U13	I.C. - Octal D-Latch Tri-State	74HC573	79940573
U14	E-PROM	27C512	79800419
U15	I.C. - SRAM Bat. 8K x 8 w/RTC	DS1243Y	70036609

Universal Control Board, Sheet 5

U16	I.C. - UCB - Programmed	GAL16V8	28027101
U17	I.C. - Quad OP Amp	LM324	30800216
U18	I.C. - Quad 2 Input and Gate CMOS	74HC08	79940008
U19	I.C. - Octal D-Flip Flop w/Clear	74HC273	79940273
U20	I.C. - Darlington Array	UCN2003A	70036901
U21	I.C. - Quad 2 Input	LM3900	30800270
U22	I.C. - Octal D-Flip Flop w/Clear	74HC273	79940273
U23	I.C. - Encoder, Priority IDPE-30	GAL16V8	70037145
U24	I.C. - High Current Source Driver UDN2981A	70036906	
U25	I.C. - Octal D-Flip Flop w/Clear	74HC273	79940273
U26	I.C. - High Current Source Driver UDN2981A	70036906	
U27	I.C. - Octal D-Flip Flop w/Clear	74HC273	79940273
U28	I.C. - Octal D-Flip Flop w/Clear	74HC273	79940273
U29	I.C. - Quad - High Current, Darlington	UDN2878W	70036908
U30	I.C. - Quad - High Current, Darlington	UDN2878W	70036908
U31	I.C. - Voltage Regulator, -12V	LM7912	70036521
U32	I.C. - Voltage Regulator, 12V Linear	LM340T12	70036518
U33	I.C. - Quad - High Current, Darlington	UDN2878W	70036908
U34	I.C. - Quad - High Current, Darlington	UDN2878W	70036908
XU-12	Socket - IC		25236201
XU14	Socket - IC		70073928
XU15	Socket - IC		70073929

Power Supply Circuit Board Assembly, Sheet 1

Power Supply Circuit Board Assembly, Sheet 2

Ref. No.	Description	Reference	Part Number
C1	Capacitor - Ceramic Disc 1 KV 20%	.01 μ F	70022508
C2	Capacitor - Ceramic Disc 1 KV 20%	.01 μ F	70022508
C3	Capacitor - Electrolytic 50 VDC 20%	470 μ F	70028118
C4	Capacitor - Electrolytic 50 VDC 20%	470 μ F	70028118
C5	Capacitor - Electrolytic 50 VDC 20%	470 μ F	70028118
C6	Capacitor - Ceramic Disc 1 KV 20%	.01 μ F	70022508
C7	Capacitor - Electrolytic 50 VDC 20%	470 μ F	70028118
C8	Capacitor - Electrolytic 50 VDC 20%	470 μ F	70028118
C9	Capacitor - Electrolytic 50 VDC 20%	470 μ F	70028118
C10	Not Used		
C11	Capacitor - Ceramic Disc 1KV 20%	.01 μ F	70022508
C12	Capacitor - Electrolytic 35 VDC 20%	47 μ F	70028109
C13	Capacitor - Ceramic Disc 1KV 20%	.01 μ F	70022508
C14	Capacitor - Electrolytic 50 VDC 20%	100 μ F	70028012
C15	Capacitor - Electrolytic 50 VDC 20%	470 μ F	70028118
C16	Capacitor - Ceramic Disc 1KV 20%	.01 μ F	70022508
C17	Capacitor - Ceramic Disc 1KV 20%	.01 μ F	70022508
C18	Capacitor - Metalized Polyester 25OVAC	.47 μ F	70024024
D1	Diode - Silicon	MR820	70035017
D2	Diode - Light Emitting Green Clear		70035312
D3	Diode - Light Emitting Green Clear		70035312
D4	Diode - Silicon	1N5404	70035006
D5	Diode - Silicon	1N4937	70035022
D6	Diode - Light Emitting Green Clear		70035312
D7	Diode - Light Emitting Green Clear		70035312
D8	Diode - Zener 11 V 1W 10%	1N4741	70035534
D9	Diode - Silicon	1N4148	70035007
D10	Diode - Light Emitting Green Clear		70035312
D11	Diode - Silicon	1N4741	70035022
D12	Diode - Silicon	1N4004	70035005
D13	Diode - Silicon	1N4004	70035005
D14	Diode - Silicon	1N4004	70035005
D15	Diode - Silicon	1N4004	70035005
D16	Diode - Light Emitting Green Clear		70035312
D17	Diode - Light Emitting Red Diffused		70035305
D18	Diode - Light Emitting Red Diffused		70035305
D19	Diode - Light Emitting Red Diffused		70035305
D20	Diode - Light Emitting Red Diffused		70035305
D21	Diode - Zener 11 V 1W 10%	1N4741	70035534
D22	Diode - Silicon	1N4937	70035022
D23	Diode - Silicon	1N4937	70035022
D24	Diode - Silicon	1N4937	70035022
D25	Diode - Silicon	1N4004	70035005
D26	Diode - Silicon	1N4004	70035005
D27	Diode - Silicon	1N4004	70035005
D28	Diode - Silicon	1N4004	70035005
D29	Diode - Silicon 100V 6 Amp	6A1	70035018
D30	Diode - Silicon 100V 6 Amp	6A1	70035018
D31	Diode - Silicon 100V 6 Amp	6A1	70035018
D32	Diode - Silicon 100V 6 Amp	6A1	70035018
F1	Fuse - 2 Amp Fast Blow		70072001

Power Supply Circuit Board Assembly, Sheet 3

Ref. No.	Description	Reference	Part Number
J1	Header - Polarized	.100 9-Position	70076409
J2	Header - Polarized Locking Ramp .156 9-Position	70080509	
J3	Header - Polarized Locking Ramp .156 6-Position	70080506	
J4	Header - Polarized Locking Ramp .156 8-Position	70080508	
J5	Header - Polarized Locking Ramp .156 10-Position	70080510	
J6	Header - Polarized Locking Ramp .156 11 -Position	70080511	
J7	Header - Polarized Locking Ramp .156 5-Position	70080505	
J8	Header - Polarized Locking Ramp .156 12-Position	70080512	
J9	Header - Polarized Locking Ramp .156 2-Position	70080502	
J10	Header - Polarized Locking Ramp .156 7-Position	70080507	
J11	Header	.100 6-Position	70076406
K1	Relay - SPDT		70042407
LI	Inductor		21513502
Q1	Transistor - Silicon NPN	2N3904	70702901
Q2	Transistor - Silicon NPN	2N3904	70702901
Q3	Transistor - N Channel Power FET	BUZ71A	70031203
R1	Resistor - Carbon Film $\frac{1}{4}$ W 5%	10 K Ω	79901103
R2	Resistor - Carbon Film $\frac{1}{4}$ W 5%	10 K Ω	79901103
R3	Resistor - Carbon Film $\frac{1}{4}$ W 5%	4.7 K Ω	79901472
R4	Resistor - Carbon Film $\frac{1}{4}$ W 5%	10 K Ω	79901103
R5	Resistor - Carbon Film $\frac{1}{4}$ W 5%	10 K Ω	79901103
R6	Resistor - Carbon Film $\frac{1}{4}$ W 5%	4.7 K Ω	79901472
R7	Resistor - Carbon Film $\frac{1}{4}$ W 2%	2 K Ω	79902202
R8	Resistor - Carbon Film $\frac{1}{4}$ W 2%	6.2 K Ω	79902622
R9	Resistor - Carbon Film $\frac{1}{4}$ W 5%	3.3 K Ω	79901332
R10	Resistor - Carbon Film $\frac{1}{4}$ W 5%	390 Ω	79901391
R11	Resistor - Carbon Film $\frac{1}{4}$ W 5%	3.3 K Ω	79901332
R12	Resistor - Carbon Film $\frac{1}{4}$ W 5%	3.3 K Ω	79901332
R13	Resistor - Carbon Film $\frac{1}{4}$ W 5%	3.3 K Ω	79901332
R14	Resistor - Carbon Film $\frac{1}{4}$ W 5%	47 K Ω	79901473
R15	Resistor - Wirewound 2W 10%	1 K Ω	79920102
R16	Resistor - Carbon Film $\frac{1}{4}$ W 5%	1 M Ω	79901105
R17	Resistor - Carbon Film $\frac{1}{4}$ W 5%	10 K Ω	79901103
R18	Resistor - Carbon Film $\frac{1}{4}$ W 5%	2.2 K Ω	79901222
R19	Resistor - Carbon Film $\frac{1}{4}$ W 5%	3.3 K Ω	79901332
R20	Resistor - Carbon Film $\frac{1}{4}$ W 5%	3.3 K Ω	79901332
R21	Resistor - Carbon Film $\frac{1}{4}$ W 5%	3.3 K Ω	79901332
R22	Resistor - Carbon Film $\frac{1}{4}$ W 5%	3.3 K Ω	79901332
R23	Resistor - Carbon Film $\frac{1}{4}$ W 5%	1 K Ω	79901102
R24	Resistor - Carbon Film $\frac{1}{4}$ W 5%	1 K Ω	79901102
R25	Resistor - Carbon Film $\frac{1}{4}$ W 5%	1 K Ω	79901102
R26	Resistor - Carbon Film $\frac{1}{4}$ W 5%	47 K Ω	79901473
R27	Resistor - Flameproof $\frac{1}{2}$ W 5%	33 Ω	79908330
R28	Resistor - Carbon Film $\frac{1}{4}$ W 5%	3.3 K Ω	79901332
U1	I.C. - Voltage Regulator (Switching)	LM2576-ADJ	70036520
U2	I.C. - Driver, H-Bridge	LMD18200	30800283
U3	I.C. - Dual Monostable Multivibrator	MC14538B	70034538

Harness List

Harness Assembly Description	Part Number
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Main Door	55001881
Heaters & Lamp	55101804
Ballast	55001844
UCB to Power Supply	55001894
Interconnect	55001898
Power Supply J1	55001855
UCB J12 to Printer & D	50801829
UCB Power	55101805
Cabinet	55001882
Shelf Motor	55001888
Message Center	50001024
Rowe Bill Acceptor Adapter	55001897
Service Door	55001883
Refrigeration Connector	55001859
Relay Control	55001860
Power Cord	55001862
Refrigeration to Compressor Cord	55001861
Convenience Outlet	55101812
Power Cord Assembly with Ground Lug	50501814
EMI Filter to Refrigeration	50501838

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