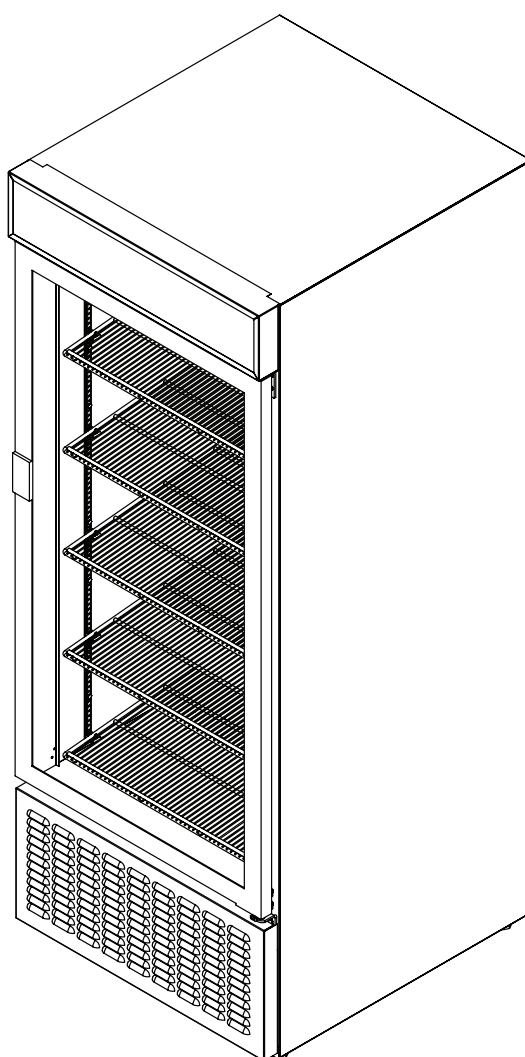


Royal Vision Cooler

Operation, Service, and Parts Manual



Manufactured by



Royal Vendors, Inc.

426 Industrial Boulevard
Kearneysville, West Virginia 25430-2776 USA

Telephone +1 304 728 8363 • Toll Free in North America 1 800 931 9214 • Fax +1 304 725 4016 • www.royalvendors.com



Royal Vendors, Inc. • 426 Industrial Boulevard • Kearneysville WV 25430-2776 • USA
Customer Service: +1 304 728 8363 or Toll Free in North America 1 800 931 9214 • Fax +1 304 725 4016

E-mail: technicalinquiry@royalvendors.com
parts@royalvendors.com

Website: www.royalvendors.com

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SAFETY INFORMATION

ROYAL VENDORS' COMMITMENT TO SAFETY

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

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

We recommend that persons servicing our equipment maintain a similar commitment to safety. Only personnel properly trained should have access to the interior electrical and / or mechanical parts of the machine. This will minimize the potential dangers that are inherent in electrical and mechanical devices. Royal has no control over the vender once it leaves the premises. It is the owner or lessor's responsibility to maintain the vender in a safe condition. See installation insert located in the new machine for proper installation procedures, and refer to the service manual for recommended maintenance procedures. If you have any questions, please contact the Technical Service Department at 1 800 931 9214 (*outside North America, dial +1 304 728 8363*).

SAFETY REGULATIONS

- Read the safety segment before installation or service.
- Test for proper grounding before installing the machine to reduce the risk of electrical shock and fire.
- Disconnect the power cord from the wall outlet before servicing the machine.
- Only fully-trained service technicians should service the machine when it has power.
- Remove any product before moving a machine.
- Use appropriate equipment when moving a machine.
- Always wear eye protection, and protect your hands, face, and body when working near the refrigeration system.
- Use only authorized replacement parts.
- Be aware of inherent dangers in rocking or tipping a machine.

SECTION 1: ELECTRICAL HAZARDS GENERAL ADVICE

Careless or improper handling of electrical circuits can result in injury or death. Anyone installing, repairing, loading, opening, or otherwise servicing a machine should be aware of this precaution. Apply all of the normal precautions when handling electrical circuits, such as:

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

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

SECTION 2: ELECTRICAL HAZARDS

1. Servicing with power off.

For maximum safety, unplug the power cord from the wall outlet before opening the machine's door. This will aid in avoiding electrical hazards. Service personnel should remain aware of possible hazards from hot components although electrical power is off.

2. Servicing with power on.

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

WARNINGS:

1. **ONLY FULLY-TRAINED SERVICE PERSONNEL SHOULD ACCOMPLISH SERVICING WITH POWER ON. SUCH SERVICE BY UNQUALIFIED INDIVIDUALS CAN BE DANGEROUS.**
2. LIGHTING CIRCUITS CAN BE HAZARDOUS. ALWAYS DISCONNECT THE MACHINE FROM THE WALL OUTLET BEFORE REPLACING A BULB OR SERVICING THE MACHINE IN THAT AREA.
3. NEVER USE A HOSE, PRESSURE WASHER, OR ANY CLEANING METHOD THAT COULD WET ELECTRICAL COMPONENTS. IF WATER CONTAMINATION OF ELECTRICAL COMPONENTS IS SUSPECTED, USE QUALIFIED ELECTRICAL TESTING EQUIPMENT AND TEST METHODS TO ASSURE THAT THE MACHINE IS NOT A HAZARD BEFORE APPLYING POWER FOR ANY REASON.

This equipment is intended for the storage and display of non-potentially hazardous bottled or canned products only.

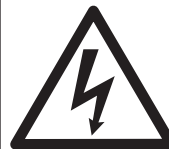
SPECIAL NOTE FOR EQUIPMENT EMPLOYING R290 (PROPANE) REFRIGERANT

1. Component parts must be replaced with like components.
2. Servicing shall be performed by factory-authorized personnel ONLY so as to minimize the risk of possible ignition due to incorrect parts or improper service.
3. Machines having flammable refrigerant, such as propane, are not intended for use in lobbies or locations of egress, such as a hallway or public corridor.



CAUTION FIRE HAZARD

Risk of fire or explosion due to puncture of refrigerant tubing. Follow handling instructions carefully. Flammable refrigerant used.



DANGER

Before servicing the unit, disconnect electrical service. Failure to do so could result in electrical shock or electrocution and could cause personal injury or death!



CAUTION

If an extension cord is necessary, use only the three-wire grounding type. The use of ungrounded cords or an overloaded circuit voids the compressor warranty.

GENERAL INFORMATION AND SETUP

INTRODUCTION

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

UNPACKING THE COOLER AND INSTALLING IT ON LOCATION UNWRAP THE VENDER

Unwrap the unit and remove the padding. Examine all packages for damage to packaging material. Damage to external packaging may have resulted in unit damage. Check packages for all accessories and components, including legs, casters, and shelves. File a claim immediately with the shipping company if the shipment is damaged or incomplete.

PLACE THE UNIT ON LOCATION

Units are designed for indoor placement only. Provide at least 4" (10 cm) of wall space behind the unit cabinet and any adjacent wall or fixture. Remove the shipping skids by inserting a claw hammer, crowbar, or similar device into the slot of each section to break it apart. Tilt the unit slightly to remove the separated pieces. Remove the cooler leveling legs, and place the protective sleeve over the threads of the legs. Replace the leveling legs with the protective sleeve in place, and be sure the cooler is level (*see following section*). The protective sleeves provide 3" (7.5 cm) clearance under the vender for cleaning.

LEVEL THE UNIT

To provide adequate condensate drainage and proper door alignment and operation of unit, the unit cabinet must be level. The leveling legs are factory-installed.

To remove the refrigeration deck:

Note: The refrigeration unit weighs in excess of 70 lbs (32 kg). Use caution when lifting the unit.

1. Remove power from the vender.
2. Remove the three screws that secure the left shroud.
3. Remove the three screws that secure the right shroud.
4. Remove the condensor pan and clip.
5. Remove the two screws that secure the unit's base plate.
6. Turn the lift rods to the upright position.
7. Slide the unit approximately half-way out.
8. Unplug the unit from the main junction block.
9. Disconnect the leads to the refrigeration control, and then pull them out of the wiring bushing.
10. Turn the lift rods all the way down.
11. Pull the unit completely out.
12. Installation of the new unit is the reverse of the removal process. Ensure that the unit slides within the cassette guides during installation.

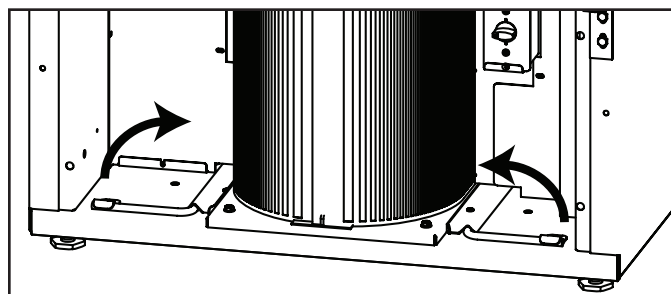
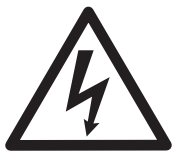


Figure 1. To remove the refrigeration deck, first pull the lifting rods forward and turn in the direction shown.

ROYAL VISION COOLER STANDARD PARTS

Parts	Factory Installed	Field Installed	Unit Size
			RVGVC 27
			Quantity
Refrigeration Deck	X		1
Shelves		X	5
Shelf Clips		X	20
Operation and Service Manual	-	-	1
Levelling Legs	X		4
Lamps	X		2
Leg Protective Sleeve		X	4

NOTE: Parts shown are for standard units. Quantity of shelves and clips may vary based on factory-supplied options.



DANGER

Before servicing the unit, disconnect electrical service. Failure to do so could result in electrical shock or electrocution and could cause personal injury or death!

To level the unit:

The door is spring-loaded and will not function properly without proper leveling of the cabinet. Using an adjustable wrench, adjust the leveling legs so that the unit sits approximately level to the floor and the door closes properly. For best door operation, adjust the leveling legs so that the cabinet has a 1/16" (2 mm) rake or slant from front to rear. Optional casters are available to replace the leveling legs.

INSTALL THE SHELVES

Product shelves and a bag containing shelf support clips are packed inside the unit. Refer to the table below to verify the quantity of shelves and shelf supporting clips.

To install the shelves:

1. Determine the proper location for the shelf clips. Refer to the numbers on the pilaster to ensure that all clips are properly located.
2. Insert the top tab of the shelf clip into the desired hole of the pilaster. The retaining tab should be facing upward, as shown in Figure 2.
3. Rotate the clip downward and insert the bottom tab into the appropriate hole on the pilaster. If necessary, squeeze the clip slightly during installation.
4. Install all remaining clips as described above.
5. Install the shelves onto the clips so that the product retention bars are facing upward. Be careful not to dislodge the clips during shelf installation.
6. Shelves must be placed so that the retaining tab on the shelf clip captures the shelf, as shown in Figure 3.
7. Before loading the shelf, ensure that the shelf is resting on each of the four clips and that the clips are installed as shown in Figures 2 and 3.

CONDENSATE DISPOSAL

The evaporator drain pan is located in the base of the refrigeration deck. Airflow in the deck compartment hastens condensate evaporation so that external drain plumbing is not required.



WARNING

Improper shelf clip installation may cause shelf and / or product to fall, which could result in personal injury or damage to the unit.



WARNING

Do not overload the shelves. The unit is designed to use all the shelves provided, installed in equally-spaced configuration. Failure to install shelves correctly could result in personal injury or damage to the unit. If fewer shelves or a different installation configuration is desired, contact the manufacturer to ensure that shelf overloading will not occur.

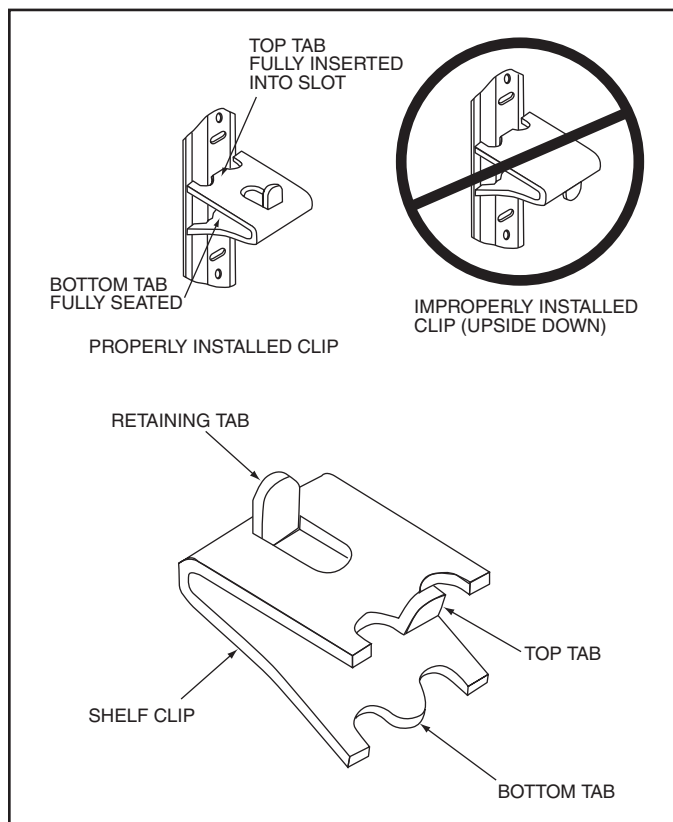


Figure 2. Shelf clip installation.

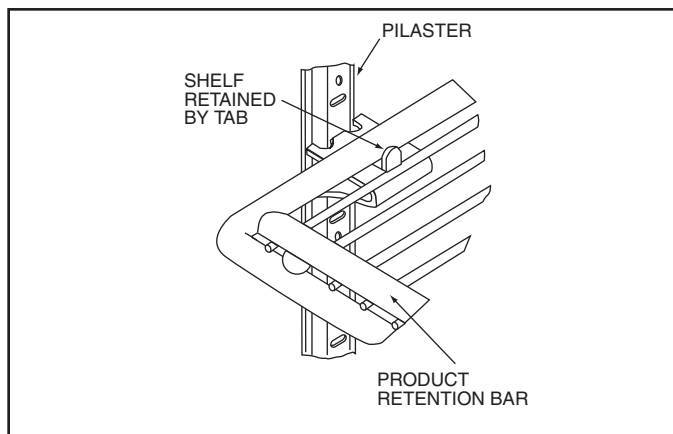


Figure 3. Proper installation of the shelf on the clip.

START-UP

PRELIMINARY CHECKS

Bi-pin lamp installation / verification (equipment with fluorescent lamps)

Before applying power to the unit, verify that all lamps have been properly installed and are fully engaged in the lamp holders. The RVC 27 has two lamps, one in the signboard and one inside the cooler.

To achieve proper lamp engagement, rotate the lamp 90 degrees from its insertion position until it snaps or clicks into place.

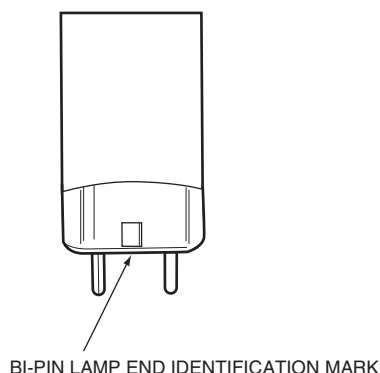
On units without safety shields, visually verify proper lamp installation by checking the identification mark on the end of the bulb. If the bulb has been properly installed, the mark will be centered between the halves of the lamp holder. (Refer to Figure 4.)

On units with safety shields, the identification mark cannot be seen. Verify manually that the lamp has been rotated and locked into place. (Refer to Figure 5.)

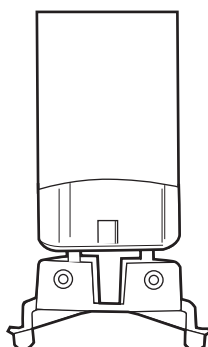


CAUTION

Improperly installed lamps may cause damage to the lighting circuit. Royal Vendors will not be responsible for equipment or component failures or other damages that arise from improper lamp installation.

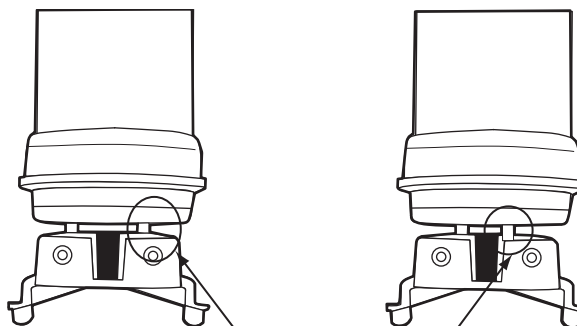


BI-PIN LAMP END IDENTIFICATION MARK



Properly installed lamp without shield. Verify identification mark is positioned as shown.

Figure 4. Installation of lamp without safety shield.



PINS MAY NOT BE VISIBLE IN ACTUAL INSTALLATION

Properly installed lamp with shield. Requires manual verification that lamp has been rotated and locked into place.

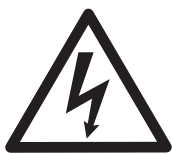
Improperly installed lamp with shield. Note that pins have not achieved full 90° rotation.

Figure 5. Installation of lamp with safety shield.

Electrical Supply and Connections

Check to be sure that the electrical service to the unit meets all local and national electrical codes. Unit electrical data is shown on the unit data label, located on the inside of the cabinet in the upper left-hand corner. Review this label before initiating electrical service. The voltage range of the power supply to the unit should be 105 to 125 volts. Refer to the table below for unit data.

NOTE: Other motors or heavy appliances should not be used on the same circuit with the cooler.



DANGER

Before servicing the unit, disconnect electrical service. Failure to do so could result in electrical shock or electrocution and could cause personal injury or death!



CAUTION

If an extension cord is necessary, use only the three-wire grounding type. The use of ungrounded cords or an overloaded circuit voids the compressor warranty.



CAUTION

Allow 24 hours between temperature control adjustments. Excessive tampering with the temperature control could lead to service difficulties.

RVC-027 UNIT DATA

Voltage AC Nominal Range	115 105-125
Frequency	60 Hz
SERIAL NUMBER 201713RA00001 AND AFTER	
Total Amps	5.9
Refrigerant Type Charge Amount	R290 2.89 oz. (82 g)
Design Pressure High Side / Low Side (psig)	380 / 156
SERIAL NUMBER 201712RA99999 AND BEFORE	
Total Amps	8.0
Refrigerant Type Charge Amount	R134a 6.5 oz. (184 g)
Design Pressure High Side / Low Side (psig)	300 / 156

INITIAL START-UP

Power Supply

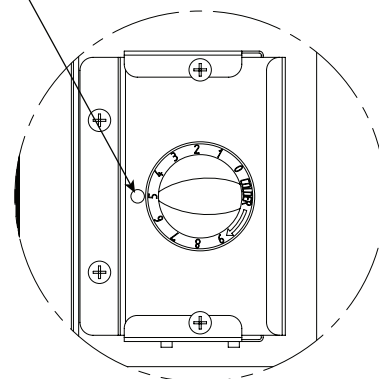
Connect the unit to the power supply. Check to verify that the compressor, lamps, and fans are running.

IMPORTANT: Low line voltage is often the cause of service complaints. Check to see that the line voltage is within the specified range with the unit running.

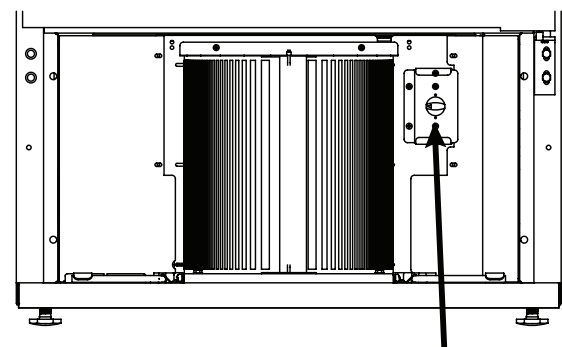
Temperature Control

The temperature control adjustment knob is located in the front right of the refrigeration deck. The dial is factory-set at position “5”, which should maintain product at approximately 38° F (3.5° C). For colder temperature, turn the adjustment knob clockwise. Adjust the temperature in small increments until the desired cabinet temperature is reached.

Thermostat set position



Set at position “5”, product should be maintained at a temperature of about 38° F (3.5° C). Turn the knob clockwise for colder temperature.



TEMPERATURE ADJUSTMENT KNOB

Figure 6. Temperature control adjustment knob location.

REFRIGERATION SYSTEM SERVICE

COMPONENTS

The Royal Vendors Cooler refrigeration system consists of a hermetically-sealed compressor and finned evaporator and condenser coils.

Capillary tube (serial numbers 201713 and after)

The capillary tube is located in the refrigerant line between the condensor and evaporator coils. The small-diameter tube is used as a metering device to control the flow of liquid refrigerant to the evaporator coil. This creates low pressure causing the refrigerant to vaporize and absorb heat as it passes through the evaporator coil.

Condenser

The condenser has finned coils which assist in removing heat from the refrigerant. The condenser requires periodic cleaning for maximum efficiency.

Condenser Fan Motor

The condenser fan motor assembly is mounted between the condenser and the compressor. Air is drawn through the condenser, over the body of the compressor, and out the rear of the unit compartment.

The motor is wired to cycle with the compressor, but it will continue to operate should the compressor cut out on the overload. The motor is permanently lubricated; therefore, oiling is not required or recommended.

Drier

The drier is installed in the system just before the capillary tube. The drier traps minute particles of foreign material and absorbs any moisture in the system.

Liquid Control and Heat Exchanger

Liquid refrigerant control to the evaporator of the system is accomplished by the use of a capillary tube. This capillary tube is soldered to the suction line to form a heat exchanger, which subcools the liquid refrigerant to maintain high efficiency within the system.

SERVICE AND TROUBLESHOOTING

Refrigeration Deck Removal

Note: The refrigeration unit weighs in excess of 70 lbs (32 kg). Use caution when lifting the unit.

1. Remove power from the vender.
2. Remove the three screws that secure the left shroud.
3. Remove the three screws that secure the right shroud.
4. Remove the condensor pan and clip.
5. Remove the two screws that secure the unit's base plate.
6. Turn the lift rods to the upright position.
7. Slide the unit approximately half-way out.
8. Unplug the unit from the main junction block.
9. Disconnect the leads to the refrigeration control, and then pull them out of the wiring bushing.
10. Turn the lift rods all the way down.
11. Pull the unit completely out.
12. Installation of the new unit is the reverse of the removal process. Ensure that the unit slides within the cassette guides during installation.



CAUTION FIRE HAZARD

Risk of fire or explosion due to puncture of refrigerant tubing. Follow handling instructions carefully. Flammable refrigerant used.



DANGER

Before servicing the unit, disconnect electrical service. Failure to do so could result in electrical shock or electrocution and could cause personal injury or death!



CAUTION

If an extension cord is necessary, use only the three-wire grounding type. The use of ungrounded cords or an overloaded circuit voids the compressor warranty.

REFRIGERATION CONTROLLER INFORMATION

(serial numbers beginning 201713RA00001 and after)

CAREL CONTROLLER

Operation of the Royal Vendors Cooler (201713 and after) is regulated by a Carel PJEZC electronic microprocessor controller with LED display.

DISPLAY AND FUNCTIONS

During normal operation, the controller displays the value of the probe set using parameter /4 (1 = ambient probe; 2 = second probe; 3 = third probe). In addition, the display has LEDs that indicate the activation of the control functions (as shown in the first table below), while the three buttons can be used to activate or deactivate some of the functions (as shown in the second table below).

LEDs and associated functions

Icon	Function	Normal operation			Start up
		ON	OFF	Blink	
	Compressor	on	off	request	ON
	Fan	on	off	request	ON
	Defrost	on	off	request	ON
AUX	Aux	Output on	Output off	-	ON
	Alarm	All	No alarm	-	ON
	Clock	RTC fitted and enabled, at least one time band set	RTC not fitted or disabled, not even one time band set	-	ON if RTC fitted

Table of functions activated by the buttons

Button		Normal operation		Start up	
		pressing the button alone	pressed together		
	up ON/OFF	more than 3 s: toggle ON / OFF	Pressed together start/stop continuous cycle	Pressed together start parameter reset structure	For 1 s display firmware vers. code
	down defrost	more than 3 s: start/stop defrost			
	set mute	- 1 s: display / set the set point - more than 3 s: access parameter setting menu (enter password '22') - mute audible alarm (buzzer)	-		For 1 s RESET current EZY set

Setting the set point

- Press SET for 1 second. The set point will start flashing after a few moments.
- Increase or decrease the value using the UP or DOWN buttons.
- Press SET to confirm the new value.
- Factory set point is 34° F (1° C).
- The set point can be adjusted from 32.0° F (0.0° C) to 37.5° F (3.1° C).

Switching the device ON or OFF

Press UP for more than 3 seconds. The control and defrost algorithms are now disabled and the instrument displays the message "OFF", alternating with the temperature read by the set probe.

Manual defrost

Press DOWN for more than 3 seconds. **NOTE:** Defrost starts only if the temperature conditions are valid.

Defrost interval

Serial numbers 201713 and after: The defrost mode is activated every three hours 20 minutes

Serial numbers 201712 and before: The defrost mode is activated every four hours.

Continuous cycle

Press UP and DOWN together for more than 3 seconds.

Table of alarms

Alarm code	Buzzer and alarm relay	LED	Description	Parameters involved
E0	active	ON	probe 1 error=control	-
E1	inactive	ON	probe 2 error=defrost	[d0 = 0/1]
E2	inactive	ON	probe 3 error=condenser	[A4=10]
IA	active	ON	external alarm	[A4=1] [+A7]
dOr	active	ON	open door alarm	[A4=7/8][+A7]
LO	active	ON	low temperature alarm	[AL] [Ad]
HI	active	ON	high temperature alarm	[AH] [Ad]
EE	inactive	ON	unit parameter error	-
EF	inactive	ON	operating parameter error	-
Ed	inactive	ON	defrost ended by timeout	[dP] [dt] [d4] [A8]
dF	inactive	OFF	defrost running	[d6=0]
cht	inactive	ON	condenser dirty pre-alarm	[A4=10]
CHt	active	ON	condenser dirty alarm	[A4=10]
EtC	inactive	ON	clock alarm	if bands active

REFRIGERATION CONTROLLER OPERATION

A. POWER UP.

At time of power up or after a power interruption, the controller will display three flashing horizontal bars for one second, followed by the internal cabinet temperature. Then, for a period of four minutes, the compressor and evaporator fan will remain off and the compressor icon will flash. After the four-minute compressor protection delay, the cooler will start normal cooling operations (see below).

B. COOLING MODE.

1. The setpoint is factory set at 34° F (1° C) and is adjustable by the end user by pressing and holding the set button for one second until the set point starts flashing. Once the set point is flashing, its value can be increased or decreased by pressing the up or down button, respectively. Once the desired setpoint is displayed, it will be saved in the controller by pressing and releasing the set button.
2. During initial cool-down and until the set point is reached, the compressor, evaporator fan, and their respective icons will be ON. The display will show the internal cabinet temperature.
3. Once the setpoint is reached and for a period of 15 minutes, the compressor, fan, and their respective icons will be OFF. The display will show the internal cabinet temperature. After 15 minutes, and until the temperature rises to the setpoint plus 4.2° F (2.3° C), the evaporator fan will be ON at low speed. The fan icon will also be on and the display will show the internal cabinet temperature.
4. Once the temperature reaches the setpoint plus 4.2° F (2.3° C), the system will return to the mode above (at B.2.).

C. DOOR OPENING.

1. If the compressor and evaporator fan are ON when the door is opened, the compressor and its icon will remain ON while the evaporator fan turns OFF and the fan icon flashes for one minute. During that minute, the display will show the internal cabinet temperature. After the one-minute period, the compressor and its icon will be turned OFF, and the display will flash "DooR" while the compressor and fan icons flash. There will be a one-minute minimum compressor OFF time. If the door is kept open more than one minute, the compressor may not restart immediately when the door is closed.
2. If the compressor and fan are OFF during the door opening, no changes are made to the status of the components, and the display will show the internal cabinet temperature. If the door remains open longer than one minute, the display will flash "DooR".
3. If only the fan is ON when the door is opened, the fan will turn OFF while the fan icon flashes. The display will show the internal cabinet temperature. If the door remains open longer than one minute, the display will flash "DooR" and the fan will remain OFF.
4. It is absolutely not recommended that the door remain open longer than one minute, as this may adversely affect the normal operations of the health timer door lock.

D. DEFROST.

1. The cooler is equipped with a defrost probe attached to one of the refrigerant tubing hair pins located at one extremity of the evaporator. When this probe reaches a temperature ("d10") the cooler will go into defrost mode. This temperature "d10" is factory set at 21° F (-6.1° C) and is adjustable by the end user.
2. The defrost will end when the defrost probe reaches a temperature of 39° F (3.9° C) or for a maximum duration ("dp"). This maximum defrost duration "dp" is factory set at 25 minutes and is adjustable by the end user.
3. During defrost, the displayed temperature is frozen to its value at the start of defrost. It will remain frozen to this value until after the defrost ends and the internal temperature reaches the setpoint.
4. During defrost the defrost icon will flash.
5. It is not possible to start a manual defrost by pressing on the defrost button for more than three seconds unless the defrost probe temperature is below value "d10".

REFRIGERATION SYSTEM SERVICE AND ANALYSIS		
PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
Compressor will not start; does not hum.	1. Line cord not plugged in. 2. Temperature control stuck in open position. 3. Wiring improper or loose.	1. Plug in the cord. 2. Repair or replace temperature control. 3. Check wiring against schematic.
Compressor will not start; hums but trips on overload protector.	1. Low voltage to unit. 2. Start capacitor defective. 3. Improperly wired.	1. Determine reason and correct. 2. Replace the capacitor. 3. Check wiring against schematic.
Compressor starts but does not switch off or start winding.	1. Low voltage to unit. 2. Run capacitor defective. 3. Compressor motor winding is defective or shorted.	1. Determine reason and correct. 2. Replace the capacitor. 3. Determine cause, correct, and replace compressor.
Compressor starts and runs, but short-cycles on overload protector.	1. Additional current passing through overload protector. 2. Low voltage to unit. 3. Overload protector defective. 4. Run capacitor defective. 5. Excessive discharge pressure. 6. Compressor too hot.	1. Check wiring schematic. Check for added fan motors, pumps, etc., connected to wrong side or protector. 2. Determine reason and correct. 3. Check current and replace protector. 4. Replace the capacitor. 5. Check ventilation, restrictions in cooling medium, restrictions in refrigeration system. 6. Check airflow across condenser.
Unit runs but short-cycles.	1. Overload protector. 2. Cold control. 3. Bad refrigeration unit.	1. Check wiring schematic for correct wiring. 2. Change cold control setting. 3. Replace the refrigeration unit.
Unit operates too long or continuously.	1. Dirty condenser. 2. Cold control contacts stuck or frozen. 3. Evaporator fan not working. 4. Bad refrigeration unit.	1. Clean condenser. 2. Replace cold control. 3. Check evaporator fan wiring. If correct, replace evaporator fan. 4. Replace refrigeration unit.
Cabinet temperature too high.	1. Cold control setting too high. 2. Inadequate cabinet air circulation. 3. Dirty evaporator. 4. Dirty condenser. 5. Inadequate air circulation at refrigeration deck.	1. Reset cold control. 2. Check evaporator fan motor. 3. Clean evaporator. 4. Clean condenser. 5. Check condenser fan motor.
Cooler freezing beverages.	Cold control set incorrectly.	Reset cold control.
Unit is noisy.	1. Loose parts or mountings. 2. Tubing rattling. 3. Bent fan blade causing vibration. 4. Fan motor bearings worn.	1. Find and tighten. 2. Reform to be free of contact. 3. Replace blade. 4. Replace motor.

MAINTENANCE

LAMP REPLACEMENT

Remove the lamps by rotating 90 degrees to align the lamp pins with the holder slots. Refer to “Bi-pin fluorescent lamp installation / verification” on page 8 for further information on lamp removal.

CONDENSATE REMOVAL

The evaporator drain pan is located in the base of the refrigeration deck. Airflow in the deck compartment hastens condensate evaporation so that external drain plumbing is not required. In general, this renders the condensate pan maintenance-free.

CONDENSER

The condenser should be inspected periodically for accumulation of debris, which should be removed. A vacuum cleaner or wire brush can be used to remove debris. Be careful to not bend the condenser fins.

CABINET EXTERIOR

Cabinets should be cleaned with a solution of mild soap and water or mild household cleaner. Do not use caustic soap or abrasive cleaners, since these might damage the cabinet finish. Do not use steel wool, or rusting might occur.

INTERIOR SURFACE

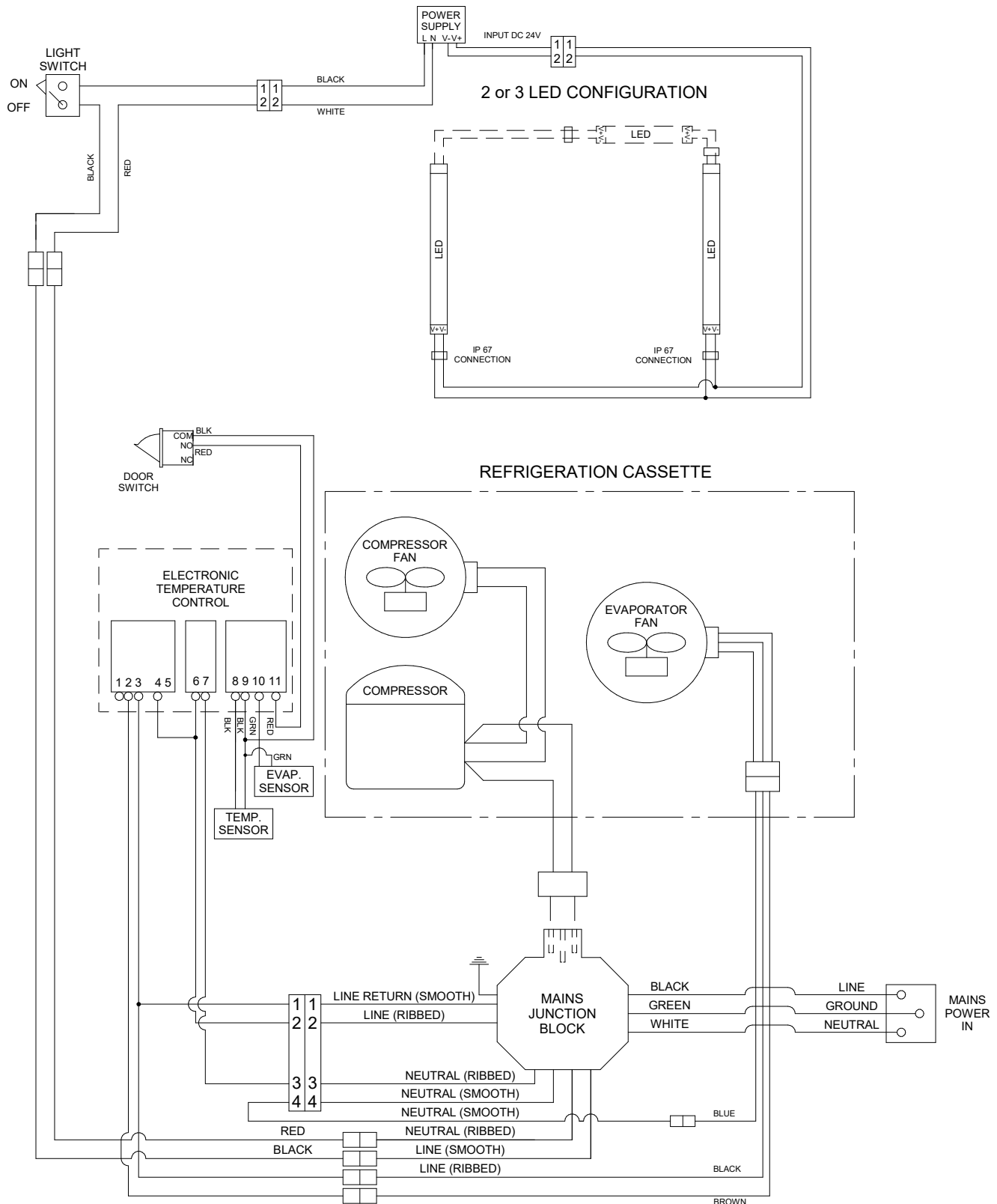
The inside of the cabinet is coated with powder-coat paint. To clean, use a mild soap and water solution or mild household cleaner.

UNDERNEATH COOLER

Underneath the cooler can be cleaned by hand or by using an appropriate cleaning tool up to 1 1/2” thick. Use a mild soap and water solution or mild household cleaner.

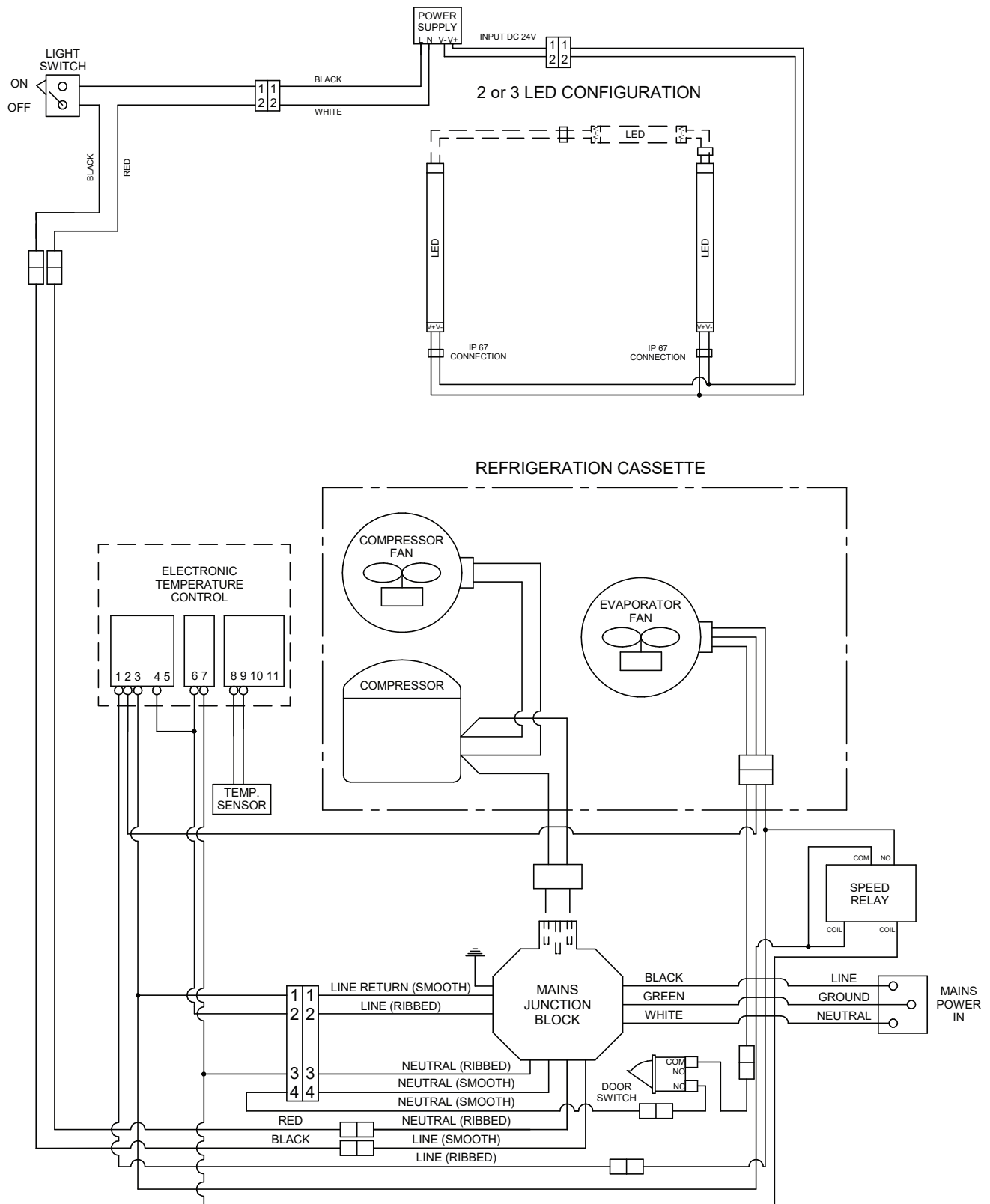
WIRING DIAGRAM

(serial numbers 201725RA00062 and after)

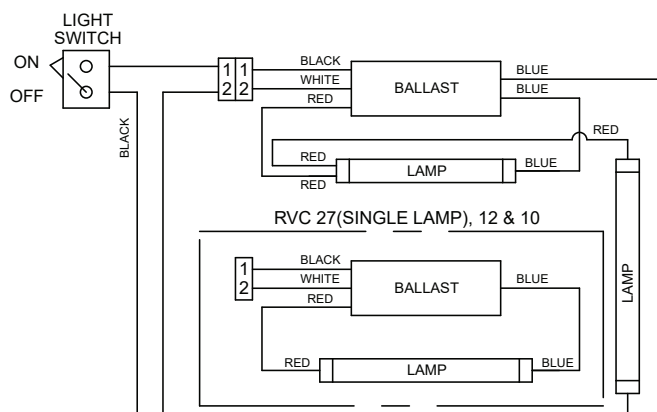


WIRING DIAGRAM

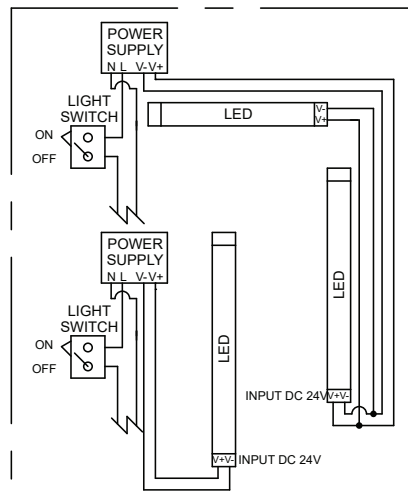
(serial numbers 201713RA00001 to 201725RA00061)



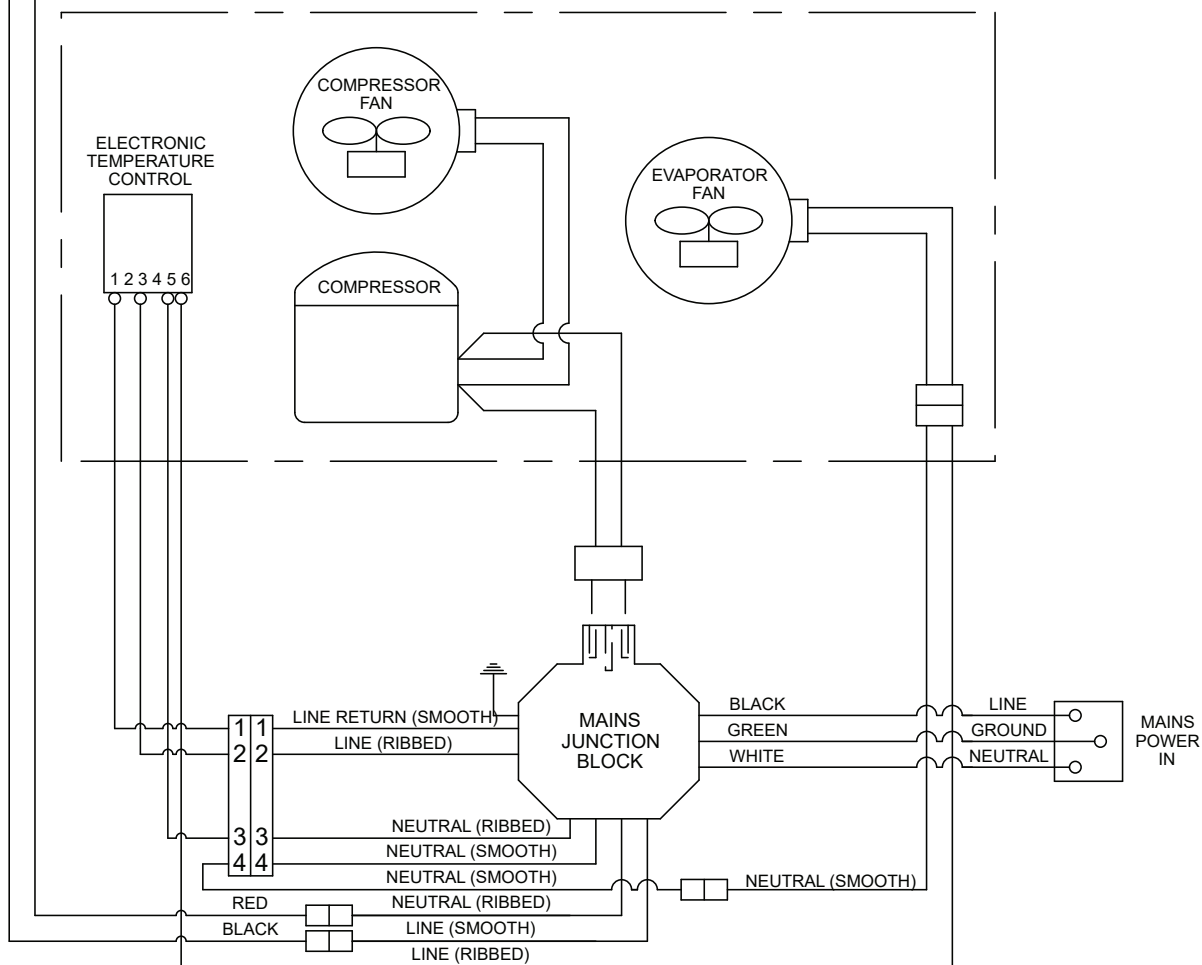
(serial numbers 2013 to 201712RA99999)



OPTIONAL 24VDC LED CONFIGURATIONS (1 & 2 LAMP)
LAMP ORIENTATION MAY VARY BY MODEL

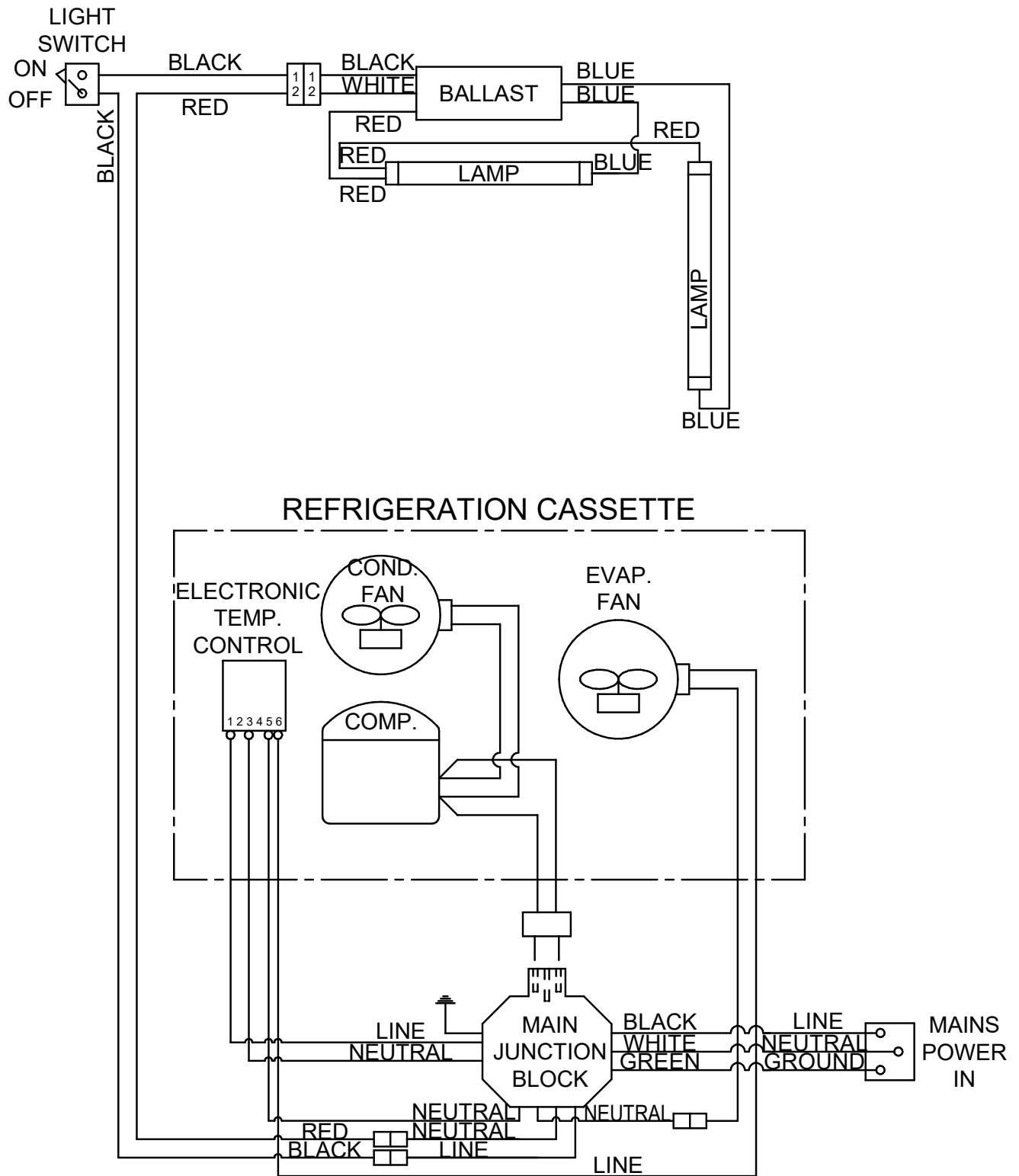


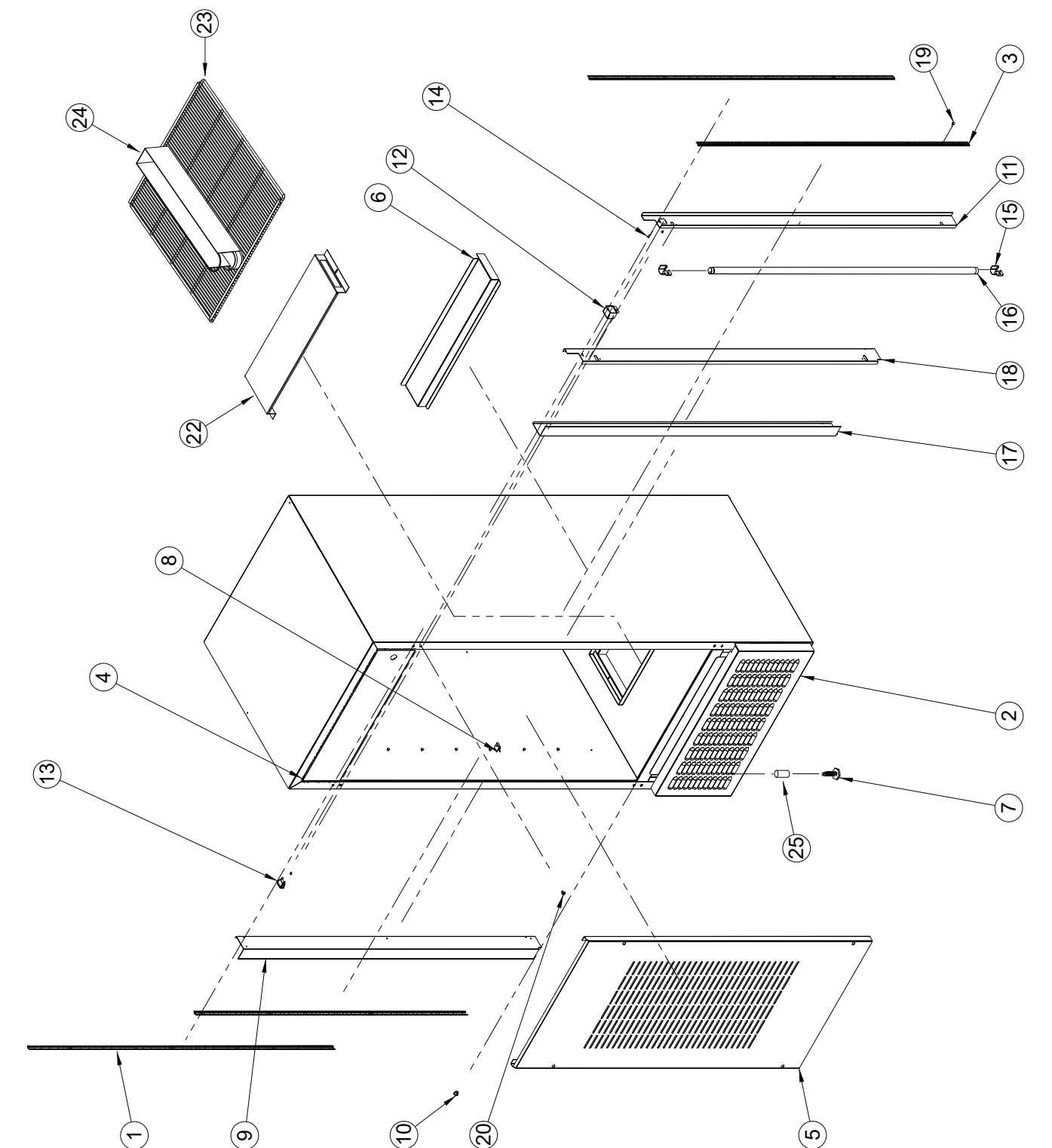
REFRIGERATION CASSETTE



WIRING DIAGRAM

(serial numbers prior to 2013)



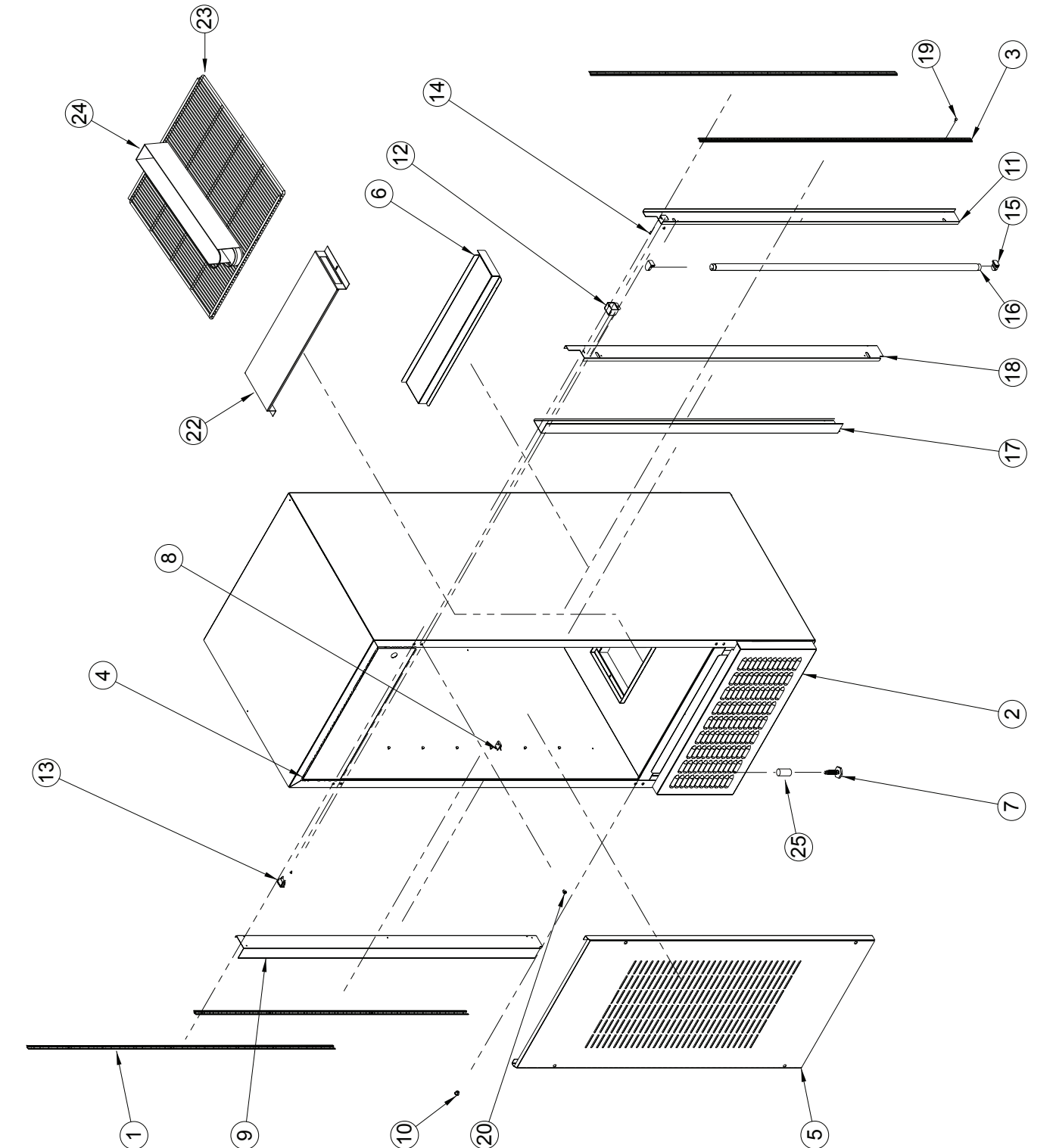


RVC-027 CABINET PARTS

(serial number 201713RA00001 and after)

Item	Description	Part Number
1	Key Hole Pilaster Rear, 54"	810338
2	Front Refrigeration Cover, 027, Standard.....	370017
	- Health Timer Cooler	370037
3	Key Hole Pilaster Front, 48"	810337
4	Refrigeration Panel Assembly Foamed	370232
5	Air Duct Back, 027	370000
6	Air Duct Cover Rear	370001
7	Leveling Leg, Extended	803117
8	Pilaster Clip	810339
9	Lamp Bracket Panel Right.....	370076
10	Open / Closed Bushing, 1/2"	916120
11	Lamp Bracket Panel Cover, Right, Header, LED	370078
	- Base, Right, Full-length Door, No Flange.....	370077
	- Cover, Right, Full-length Door, LED	370079
	- Cover, Left, Full-length Door, LED.....	370082
	- Vertical Panel Bracket, Left, Full-length, LED	397323
12	Lamp Switch Mounting Bracket, models without Header.....	370083
	- Models with Header.....	370084
13	Switch (<i>rocker switch</i>).....	835062
14	Sems Screw, #8-32 x 3/8"	901011
15	Lamp Clamp	916219
16	Lamp, LED, 48"	841055
	- 24"	841056
17	Lamp Bracket Panel Left	397307
18	Lamp Bracket Panel Cover Left.....	370081
19	Screw, Pilaster Locator.....	902048
20	Rivnut, 1/4"-20	908024
21	Thermometer (<i>not shown</i>)	812421
22	Fan Screen Cover	370010
23	Shelf, 30" x 30"	811072
24	Shelf Filler.....	See Note
25	Leveling Leg Protective Sleeve	915753
•	Safety Sleeve Tube Protector, 48" Lamp.....	816168
•	Harness, Cooler Cordset (to wall outlet).....	842603
•	Main Wiring Harness (inside cabinet).....	842767
•	Switch, On-Off (<i>rocker switch</i>)	835062
•	Harness, Line, to Switch and Ballast	842695
•	Fan Control Harness	855007
•	Wiring Cover, with Hole	370237
•	Wiring Cover, without Hole	370240
•	LED Power Supply	382904
•	Carel Refrigeration Control, RVC-027, R290	822168
•	Speed Relay (<i>serial numbers 201713RA00001 to 201725RA00061 only</i>).....	836293

NOTE: This part is not available as a purchase item from Royal Vendors.



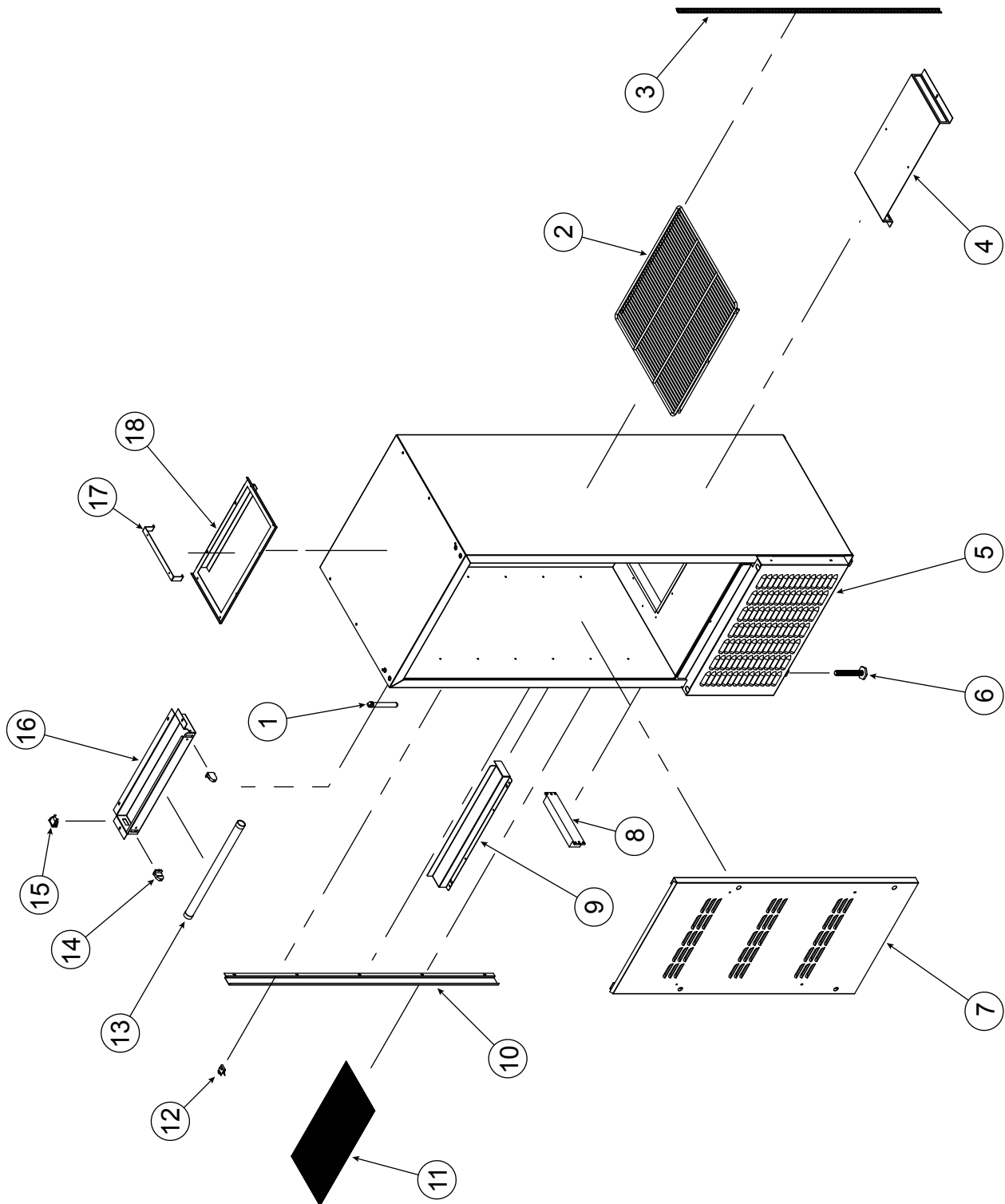
RVC-027 CABINET PARTS

(serial number 201712RA99999 and before)

Item	Description	Part Number
1	Key Hole Pilaster Rear, 54"	810338
2	Front Refrigeration Cover, 027, Standard.....	370017
	- Health Timer Cooler	370037
3	Key Hole Pilaster Front, 48"	810337
4	Refrigeration Panel Assembly Foamed	370232
5	Air Duct Back, 027	370000
6	Air Duct Cover Rear	370001
7	Leveling Leg, Extended	803117
8	Pilaster Clip	810339
9	Lamp Bracket Panel Right.....	370004
10	Open / Closed Bushing, 1/2"	916120
11	Lamp Bracket Panel Cover Right	370005
12	Lamp Switch Mounting Bracket	370006
13	Switch, Black	835027
14	Sems Screw, #8-32 x 3/8"	901011
15	Lampholder, Fluorescent Lighting	842565
	- LED Lighting.....	842578
16	Lamp, 48", Fluorescent.....	See Note
	- LED	841041
17	Lamp Bracket Panel Left	370007
18	Lamp Bracket Panel Cover Left.....	370008
19	Screw, Pilaster Locator.....	902048
20	Rivnut, 1/4"-20	908024
21	Thermometer (<i>not shown</i>)	812421
22	Fan Screen Cover	370010
23	Shelf, 30" x 30"	811072
24	Shelf Filler.....	See Note
25	Leveling Leg Protective Sleeve	915753
•	Safety Sleeve Tube Protector, 48" Lamp.....	816168
•	Harness, Cooler Cordset (to wall outlet).....	842603
•	Main Wiring Harness (inside cabinet).....	842767
•	Switch, On-Off	835027
•	Harness, Line, to Switch and Ballast	842695
•	Wiring Cover, with Hole	370237
•	Wiring Cover, without Hole	370240
•	LED Power Supply	382904

NOTE: This part is not available as a purchase item from Royal Vendors.

RVC-012 / RVC-010 CABINET PARTS



RVC-012 / RVC-010 CABINET PARTS

Item	Description	Part Number
1	Thermometer	812421
2	Shelf, 24" x 24"	811076
3	Key Hole Pilaster, RVC-012 (42")	810345
	- RVC-010 (34")	810348
4	Fan Screen Cover	371309
5	Front Refrigeration Cover	371002
6	Leveling Leg, Extended	803117
7	Air Duct Back, RVC-012	371000
	- RVC-010	372000
8	Ballast	838050
9	Air Duct Bottom	371001
10	Lamp Harness Channel, RVC-012 (62")	371004
	- RVC-010 (54")	372001
11	Fan Screen	371307
12	Pilaster Clip	810339
13	Lamp	See Note
14	Lampholder	842565
15	Switch, Black	835027
16	Lamp Panel	371003
17	Fan Screen Support	371313
18	Evaporator Air Block	371312
•	Leveling Leg Protective Sleeve	915753
•	Harness, Cooler Cordset (to wall outlet)	842603
•	Main Wiring Harness (inside cabinet)	842767

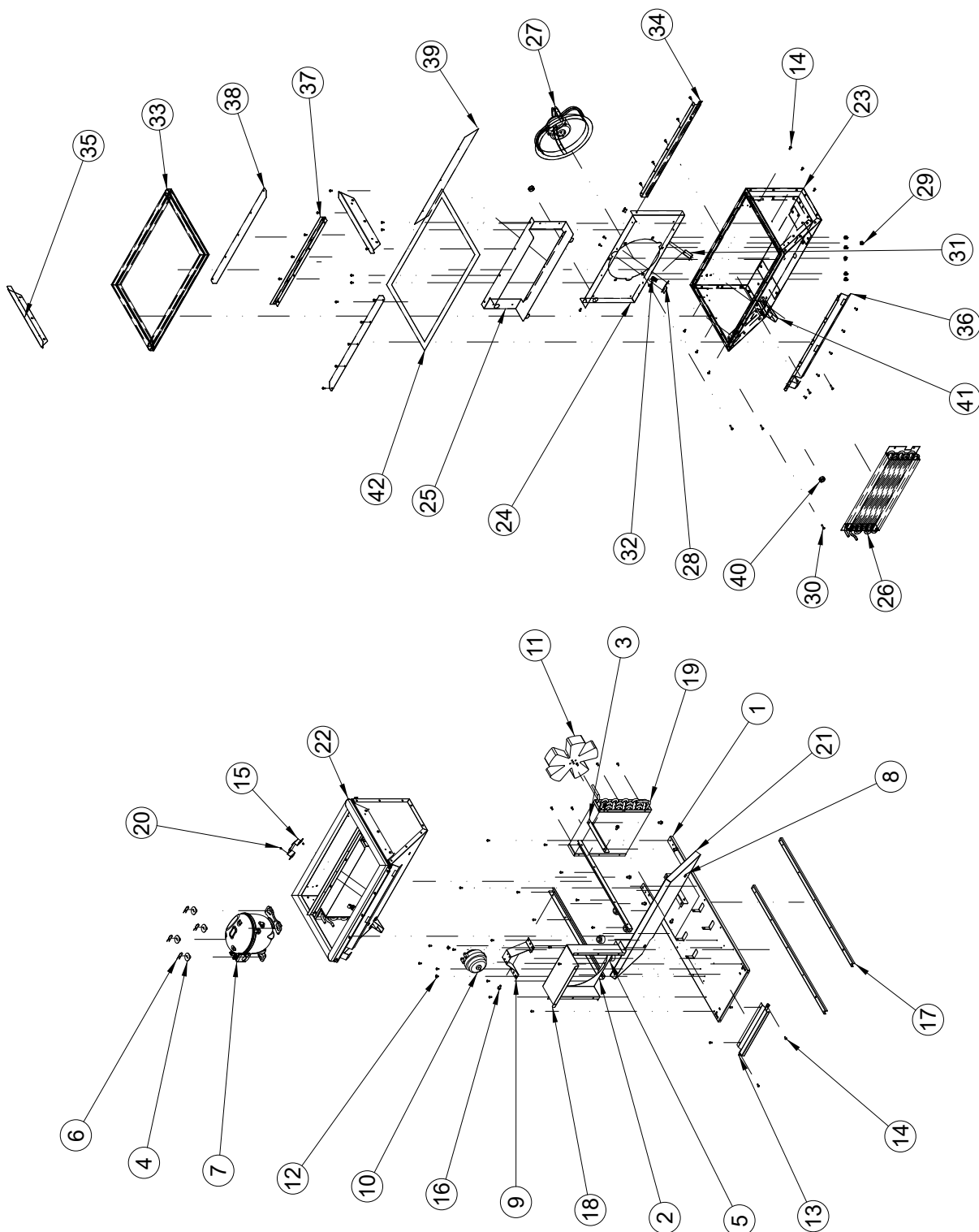
NOTE: This part is not available as a purchase item from Royal Vendors.

RVC-027 REFRIGERATION UNIT (serial number 201713RA00001 and after)



CAUTION FIRE HAZARD

Risk of fire or explosion due to puncture of refrigerant tubing. Follow handling instructions carefully. Flammable refrigerant used.



RVC-027 REFRIGERATION UNIT

(serial number 201713RA00001 and after)

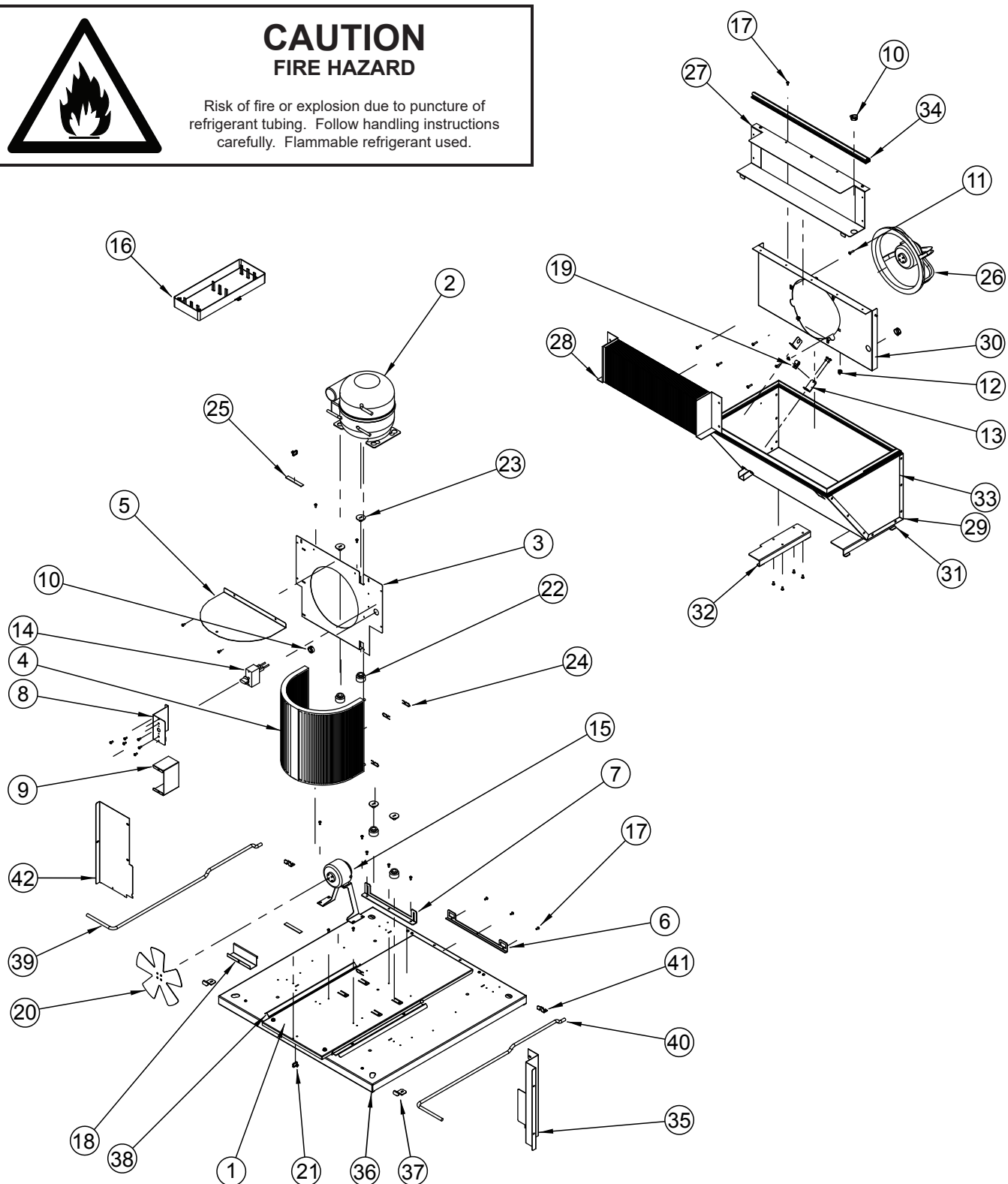
Item	Description	Part Number
•	Refrigeration Assembly <i>(includes items 1-36 below)</i>	370600
1	Refrigeration Base Plate.....	370611
2	Evaporator Box Mounting Bracket.....	370607
3	Evaporator Box Mounting Angle.....	370620
4	Grommet Plug	815017
5	Grommet, Compressor	916015
6	Compression Clip	914002
7	Compressor, 1/3+ HP	819086
8	Screw, 1/4"-20 x 1.5"	901174
9	Condensor Fan Bracket.....	371425
10	Condensor Fan Motor.....	839063
11	Condensor Fan Blade.....	810014
12	Sems Screw, #8-32 x 1/2"	901006
13	Handle, Refrigeration Base Plate	370638
14	Screw, #8-32 x 3/8"	901011
15	Sensor Clip Mounting Bracket Assembly.....	286010
16	Screw, 1/4" x 1/2", Hex Head.....	901061
17	Refrigeration Base Plate Stiffener	370633
18	Condensor Shroud	370654
19	Condensor, Upright, R290	820057
20	Pop Rivet, 1/4" x 0.256"	908004
21	Evaporator Box Foam.....	370670
22	Evaporator Box Assembly <i>(includes items 23-42 below)</i>	370602
23	Evaporator Box, Foamed.....	370601
24	Evaporator Fan Mounting Plate.....	370653
25	Evaporator Mounting Bracket, Bottom.....	370651
26	Evaporator, R290.....	820055
27	Evaporator Fan.....	839126
28	Inner Box Gasket Support	370668
29	Expansion Nut, #8	906054
30	Screw, #8 x 3/4"	902022
31	Temperature Sensor Mounting Bracket.....	370433
32	Cable Clamp.....	916014
33	Evaporator Box Gasket	815850
34	Evaporator Box Handle	370623
35	Evaporator Box Gasket Clamp, Side.....	370621
36	Evaporator Box Retainer Bracket.....	370622
37	Evaporator Air Block Assembly.....	370624
38	Gasket Clamp.....	370648
39	Evaporator Air Block	370652
40	Bushing.....	916071
41	Condensate Drain.....	370663
42	Black Foam Tape.....	829082
•	Harness, Temperature Sensor.....	842896
•	Harness, Defrost Sensor	842999

(serial number 201712RA99999 and before)



CAUTION
FIRE HAZARD

Risk of fire or explosion due to puncture of refrigerant tubing. Follow handling instructions carefully. Flammable refrigerant used.

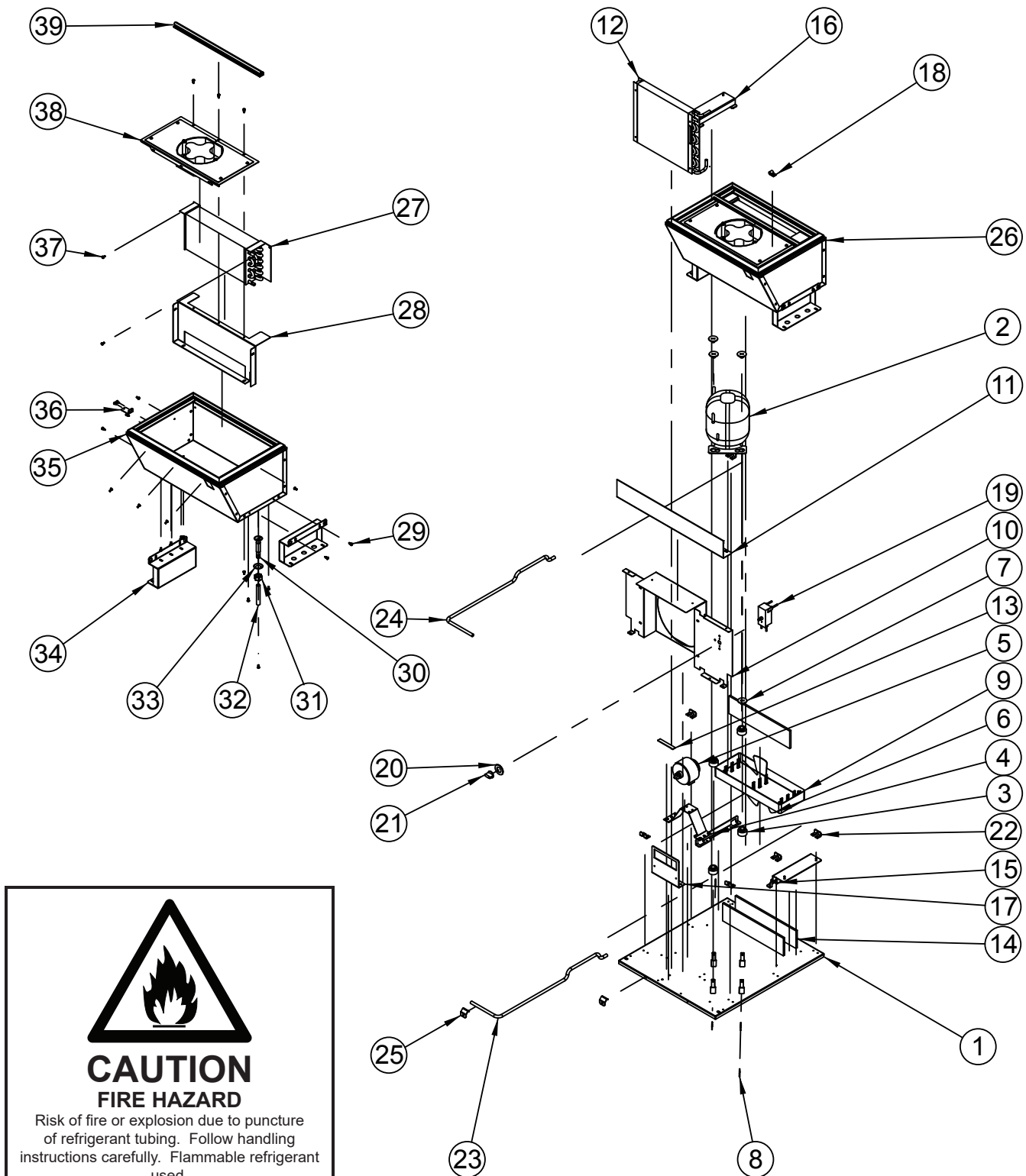


RVC-027 REFRIGERATION UNIT

(serial number 201712RA99999 and before)

Item	Description	Part Number
•	Refrigeration Assembly <i>(includes items 1-36 below)</i>	370440
1	Refrigeration Base Plate	370401
2	Compressor, 1/3+ HP	819042
3	Condensor Shroud	370419
4	Condensor, Upright	820007
5	Condensor Top	370426
6	Guide Plate	370416
7	Guide Plate Angle	370417
8	Refrigeration Control Mounting Bracket	370432
9	Refrigeration Control Cover	370434
10	Bushing	916071
11	Screw, #8 x 3/4"	902022
12	Expansion Nut, #8	906054
13	Temperature Sensor Mounting Bracket	370433
14	Cold Control, Electronic	822088
15	Condensor Fan Motor	839010
16	Condensate Pan	815368
17	Screw, #8-32 x 3/8"	901011
18	Condensate Pan Clamp	370430
19	Cable Clamp	916014
20	Condensor Fan Blade	810014
21	Cable Tie, 5", Nylon, Black	916063
22	Grommet, Compressor	916015
23	Grommet Plug	815017
24	Compression Clip	914002
25	Sealer Gum, 3" x 1/2" x 1/16"	829003
26	Evaporator Fan	839036
27	Evaporator Mounting Bracket, Bottom	370413
28	Evaporator	820002
29	Evaporator Box Foamed Assembly	370402
30	Evaporator Fan Mounting Plate	370412
31	Guide Angle Right	370414
32	Guide Angle Left	370415
33	Gasket, Evaporator Box	815748
34	Gasket, Center Evaporator Box	815749
35	Condensor Baffle	370418
36	Base Plate	370205
37	Rod Clamp	370422
38	Cassette Guide	370222
39	Refrigeration Box Lift Rod Left	811073
40	Refrigeration Box Lift Rod Right	811077
41	Lift Rod Bracket	370420
42	Condensor Baffle Left	370428
•	Temperature Sensor, Defrost (mounted on Evaporator)	822086
•	Temperature Sensor, Compressor (mounted on top of the Refrigeration Assembly)	822078
•	Refrigeration Access Door Assembly, Left (not part of Refrigeration Assembly)	370445
•	Refrigeration Access Door Assembly, Right (not part of Refrigeration Assembly)	370446

RVC-012 / RVC-010 REFRIGERATION UNIT



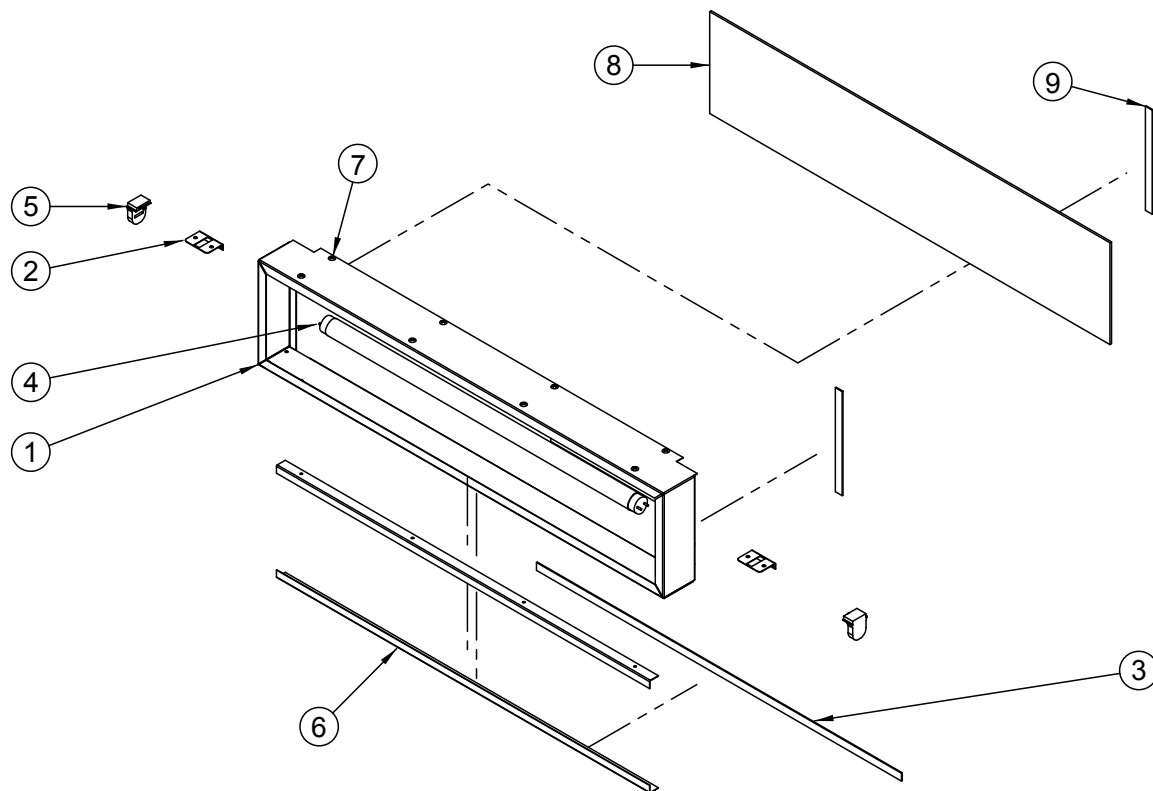
CAUTION FIRE HAZARD

Risk of fire or explosion due to puncture of refrigerant tubing. Follow handling instructions carefully. Flammable refrigerant used.

RVC-012 / RVC-010 REFRIGERATION UNIT

Item	Description	Part Number
•	Refrigeration Assembly.....	371400
1	Refrigeration Base Plate.....	371401
2	Compressor, 1/6 HP.....	819049
3	Grommet, Compressor.....	916015
4	Condensor Fan Bracket.....	371425
5	Evaporator Fan.....	839063
6	Condensor Fan Blade.....	810014
7	Grommet Plug.....	815017
8	Compression Clip.....	914002
9	Condensate Pan.....	815368
10	Condensor Shroud.....	371402
11	Condensor Baffle Top.....	371407
12	Condensor.....	820014
13	Sealer Gum, 3" x 1/2" x 1/16".....	829003
14	Cellulose Sponge.....	815037
15	Guide Plate Angle.....	371404
16	Guide Angle S/A.....	371409
17	Condensor Guard.....	371408
18	Cable Clamp.....	916014
19	Cold Control, Electronic.....	822088
20	Knob Plate.....	822082
21	Hand Knob, Black.....	822081
22	Lift Rod Bracket.....	370420
23	Refrigeration Box Lift Rod Right.....	811075
24	Refrigeration Box Lift Rod Left.....	811074
25	Rod Clamp.....	370422
26	Evaporator Box Assembly (<i>includes items 27-39</i>).....	371420
27	Evaporator.....	820013
28	Evaporator Mounting Bracket.....	371422
29	Self-drilling Screw, #8-18 x 1/2".....	902004
30	Drain Tube.....	815134
31	Hex Nut, 5/8"-11.....	905016
32	PVC Hose, 1/2" x 3.25".....	371424
33	Drain Tube Gasket.....	929015
34	Evaporator Box Lift Bracket.....	371406
35	Evaporator Box, Foamed.....	371415
36	Temperature Sensor Mounting Bracket.....	370433
37	Screw, #8-32 x 3/8".....	901011
38	Evaporator Fan Housing Assembly.....	371430
39	Evaporator Box Gasket.....	815752
•	Temperature Sensor, Defrost (mounted on Evaporator).....	822086
•	Temperature Sensor, Compressor (mounted on top of the Refrigeration Assembly).....	822078

RVC-027 UPPER LIGHTING PANEL ASSEMBLY

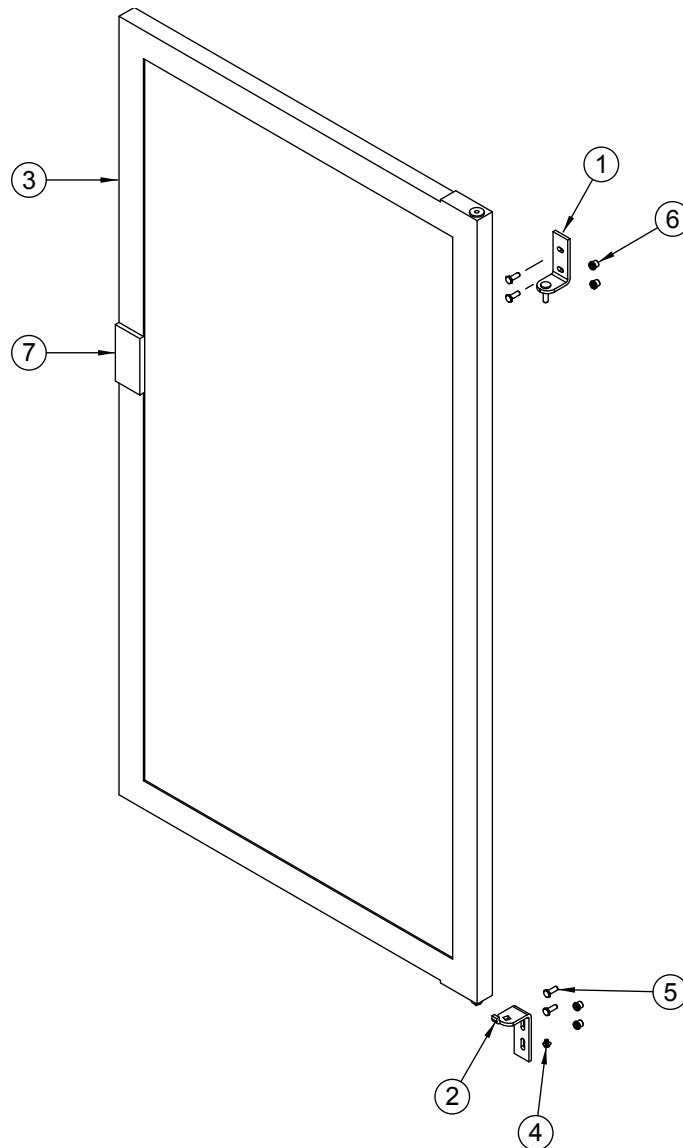


Item	Description	Part Number
1	Sign Frame	370218
2	Lamp Holder Bracket (201712 and before)	356576
3	Sealer Gum, 3" x 1/2" x —"	829—
4	LED (201713 and after)	841056
	- Lamp, 24" (201712 and before)	See Note 1
5	Lamp Clamp	916219
	- Lampholder (201712 and before)	842565
6	Sign Retainer	370217
7	Screw, #8 x 3/8"	902046
8	Sign Top	See Note 2
9	Sealer Gum, 3" x 1/2" x 1/16"	829003
•	Electronic Ballast	838036

NOTE 1: This part is not available as a purchase item from Royal Vendors.

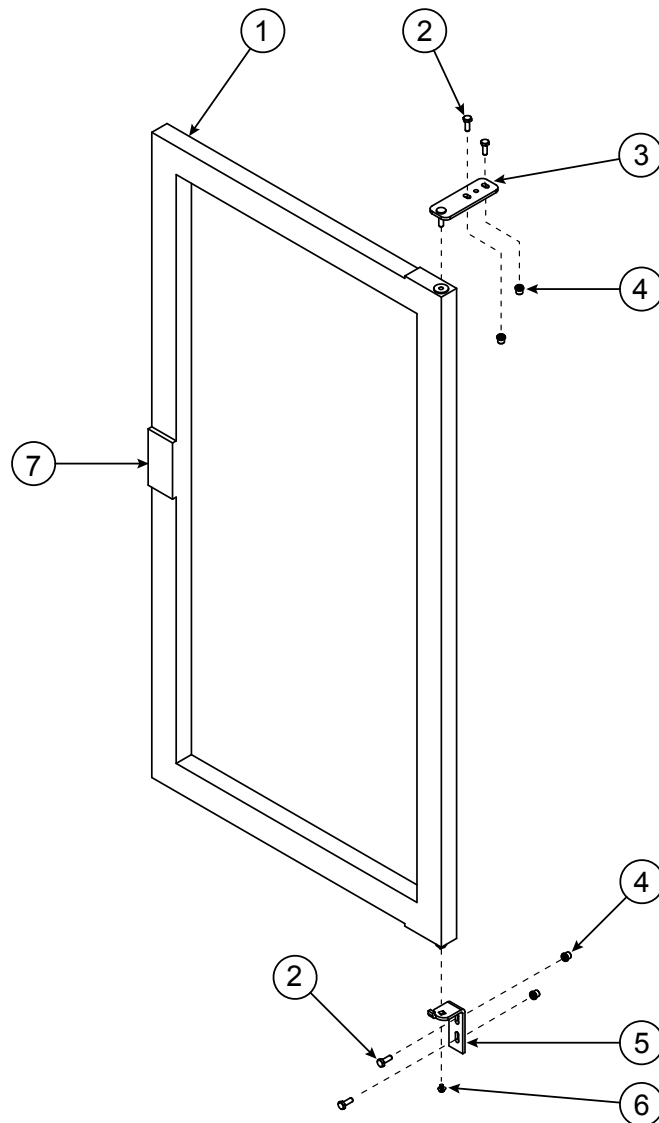
NOTE 2: Please contact Royal Vendors' Service Parts Department for sign part numbers.

RVC-027 DOOR ASSEMBLY



Item	Description	Part Number
1	Top Door Hinge.....	810340
2	Bottom Door Hinge, Right-handed Door.....	810341
	- Left-handed Door	810376
3	Door, Cooler, with Magnetic Gasket, Header (<i>includes Item 7, below</i>)	849922
	- Full Length (no header, <i>includes Item 7, below</i>).....	852061
4	Screw, Door Bottom.....	—
5	Machine Screw, 1/4"-20 x 3/4", Hex Head, Black	901127
6	Rivnut, 1/4"-20	908024
7	Door Handle	815781
•	Gasket, 027 models with header	815761
	- 027 models, full-length door	815788

RVC-012 / RVC-010 DOOR ASSEMBLY



Item	Description	Part Number
1	Door, Cooler, with Magnetic Gasket, RVC-012 (includes Item 7, below)	849945
	- RVC-010 (includes Item 7, below).....	849946
2	Machine Screw, 1/4"-20 x 3/4", Hex Head, Black.....	901127
3	Top Door Hinge.....	810346
4	Rivnut, 1/4"-20.....	908024
5	Bottom Door Hinge, Right-handed Door.....	810341
	- Left-handed Door	810376
6	Screw, Door Bottom.....	—
7	Door Handle	815781
•	Gasket, 010 models.....	815789
	- 012 models.....	815790

WARRANTY AND CREDIT / RETURN POLICY

- UNITED STATES CUSTOMERS ONLY -

NOTE: *This policy applies to new cooler and freezer sales only. Stock service parts are covered under a separate one-year warranty policy.*

WARRANTIES (to the original purchaser and to one end-user, when obtained from the original purchaser)

Royal Vendors warrants coolers and freezers for five years. The warranty for the refrigeration system, consisting of the evaporator and condenser fan motors, compressor, evaporator, condenser, and the refrigerant tubing, will be for five years. Refrigeration warranties will follow the serial number of the original unit. If the unit fails while under warranty, the same serial number will be attached to the replacement unit to track warranty status. Any unauthorized tampering or cutting (tapping) will void the warranty. LED lighting, plus the Health Safety Controller board (if so equipped), are warranted for three years. All other parts, except fluorescent light bulbs and finish, are warranted for one year.

Royal Vendors' obligation under warranty is limited to repairing or replacing the subject part at our option, when upon examination it was determined by Royal Vendors to be defective. Royal Vendors will pay shipping charges on all parts covered under this warranty when transportation has been made the most economical way. Labor charges to diagnose, repair, remove, or reinstall any part(s) are specifically excluded from warranty coverage.

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

CREDIT AND REPLACEMENT POLICY

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

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

HOW TO READ THE SERIAL NUMBER

The first four numbers represent the year the machine was produced.

The fifth and sixth numbers represent the week within the year the machine was produced.

The letters represent the machine's model number.

The last five numbers are the number of the machine built during that production week.



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