Preferred Service

Service Manual

This manual is to be used by qualified appliance technicians only. Viking does not assume any responsibility for property damage or personal injury for improper service procedures done by an unqualified person.

2008 24 Inch Undercounter Refrigeration

This Base Manual covers general and specific information including, but not limited to the following models:

DFRD144
DFUR143
DFUR144
DFUW144
DUAR143
DUAR144
DURD144
DUWC144
VUAR143
VUAR144
VURD144
VUWC144

SMR-0003
July 2008

Important Information

Important Notices for Service Technicians

Viking Range Corporation will not be responsible for personal injury or property damage arising from service performed by anyone other than Viking Factory Authorized Service Agencies. Pride and workmanship go into every product to provide our customers with quality products. It is possible, however, that during its lifetime a product may require service. Products should be serviced only by a qualified service technician who is familiar with the safety procedures required in the repair and who is equipped with the proper tools, parts, testing instruments and the appropriate service information.

IT IS THE TECHNICIANS RESPONSIBILITY TO REVIEW ALL APPROPRIATE SERVICE INFORMATION BEFORE BEGINNING REPAIRS.

⚠ CAUTION

All safety information must be followed as provided in this document

⚠ WARNING

To avoid risk of electrical shock that can cause death or severe personal injury, disconnect unit from power before servicing unless testing requires power.

IMPORTANT: Wires removed during disassembly must be replaced on correct terminals to ensure proper grounding and polarization.

Contact Information:

For authorized technical assistance:

Viking Technical Service

1-800-914-4799

⚠

Safety Symbols

Recognize these Safety Symbols, Words, and Labels:

⚠ DANGER

DANGER-Immediate hazards which **WILL** result in **severe** personal injury or death.

⚠ WARNING

WARNING-Hazards or unsafe practices which **COULD** result in **severe** personal injury or death.

⚠ CAUTION

CAUTION-Hazards or unsafe practices which **COULD** result in minor personal injury, product or property damage.

Table of Contents

General Information

Unit Specifications

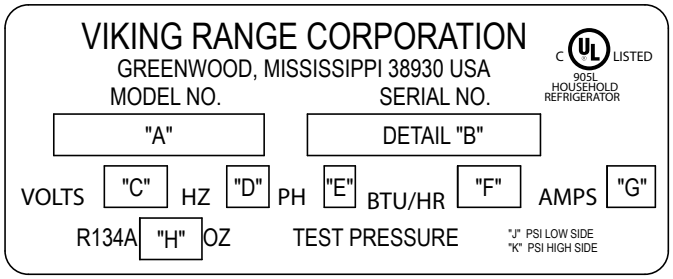
The unit specifications will vary among the models listed in this service manual. See chart below for unit specifications related to the model that you are servicing.

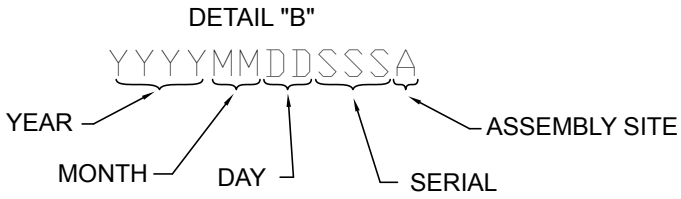
Wine Cellar, Beverage Center & Refrigerated Drawers Unit Specifications

Model	Cabinet Dimensions (in)			Weight (lbs)	Refrigerant Charge (oz)	Power Cord Length (ft)	Compressor Type	System Refrigerant Control	Temperature Control	Condenser Fan Motor	Evaporator Fan Motor
	Height	Width	Depth								
DFUW144 DUWC144 VUWC144	34	23 5/8	24 1/4	166	2.8	7	Piston type	Capillary tube	Electronic Control with LED display, thermistor input, and Tru Protect™	2.3 W 1300 RPM	12VDC
DFUR143/144 DUAR143/144 VUAR143/144	34	23 5/8	24 1/4	166	3.6						
DFRD144 DURD144 VURD144	34	23 7/8	24 1/4	170	3.6						

Serial Nameplate

The serial nameplate is located inside of the unit on the upper left hand wall. The serial number will need to be given when inquiring about the unit or ordering parts. See illustration below for a sample serial tag with manufacturing date code logic.





A	B	C	D	E	F	G	H	J	K
DFUW, DUWC, VUWC 144	Detail B	115	60	1	440	3.3	2.8	140	300
DFUR, DUAR, VUAR 143/144 DFRD, DURD, VURD 144	Detail B	115	60	1	440	3.3	3.6	140	300

Before Servicing

- Always disconnect power to any Viking product before attempting to service it. Always verify that power has been disconnected.
- If the unit has been running, use caution around the condenser and copper tubing. These areas may be very hot.
- Use caution around the condenser fins and baseplate edges. These areas are sharp.
- Refrigerant is under high pressure. Always evacuate any system before attempting to open it.
- Reasonable care and safe work methods should be practiced when working on any Viking product. Never work with energized electrical equipment in wet or damp areas.
- Use an appropriate work area and location when performing repairs. You will find that it is easier to repair undercounter units if they are set on a raised platform or workbench.
- Always wear protective safety glasses and gloves when working on any Viking product.
- Any refrigerant, whether CFC, HCFC, or HFC (R-12, R-22, or R-134a), must be recovered. Federal regulations prohibit the intentional venting or release of refrigerants during the service repair or disposal of an appliance.

Basic Refrigeration Tools

The following list contains some of the tools required for basic refrigeration repairs:

- Hoses with R-134a couplers (must meet standards for handling R-134a refrigerant)
- Approved and certified recovery system for R-134a
- Manifold gauge set for R-134a
- Charging cylinder with R-134a
- Weight scale (preferably in ounces to the nearest tenth of an ounce)
- Access valves
- Small and large tubing cutter
- Brazing torch
- Swaging tools
- Multimeter
- Leak detection equipment for detection of R-134a
- Standard hand tools (assorted Phillips and standard screwdrivers, sockets, Allen wrenches, adjustable wrenches, etc.)
- Rivet gun and assorted rivets
- Drill motor and assorted metal drills

Installation

- Unit can be installed freestanding or built-in. The front of the unit must be unobstructed for proper air circulation and operation at all times.
- Area should be ventilated and without extreme temperatures.
- Unit must be installed away from the elements of nature. Do NOT use the unit outdoors unless it is U.L. approved for outdoor use; doing so may void any warranties.
- Unit must be on a **LEVEL** surface capable of supporting the loaded weight of the unit.

WARNING

ELECTRICAL SHOCK HAZARD-Failure to follow these requirements could result in personal injury, electrical shock, or fire.

Electrical Requirements

- 115 VAC, 60 Hz., single phase power is needed
- Use an outlet with a 15 amp delayed action fuse or circuit breaker. **DO NOT PUT A FUSE ON THE NEUTRAL OR GROUND OF THE CIRCUIT**.
- Properly grounded outlet is required for this unit.
- It is recommended that a single circuit receptacle be used for this unit only. **DO NOT USE AN EXTENSION CORD**.

Sealed System Basics

The following should always be practiced with any sealed system that has been opened. **ONLY OPEN THE SEALED SYSTEM AS A LAST RESORT AND AS A FINAL DIAGNOSIS**. Always check other areas of operation such as wiring, airflow, thermostat, etc. before opening up the sealed system. Many times these areas can resemble sealed system problems. The diagnosis of a sealed system can be determined by accurate pressure and temperature measurements. Also, checking the evaporator frost pattern is a great way to tell if a charge is adequate within a system.

1. Use a leak detection system that will detect R-134a refrigerant. Leaks need to be found on any leaking system **BEFORE** the repair takes place.
2. The drier must be replaced anytime the sealed system is opened. Always use a new drier. Failure to do so may cause repeated system failure in the future.
3. Limit time the system is opened. **DO NOT EXPOSE THE OPEN SYSTEM FOR MORE THAN 15 MINUTES**. This will result in sealed system failure. Leave replacement parts sealed and/or pressurized until ready to install.
4. The compressor must be replaced if there is a low side leak. Moisture has been drawn into the system if the unit has been running for an extended period of time. Be sure to flush the system with dry nitrogen gas and evacuate to 50 microns before re-charging (see Low Side Leaks).
5. A new evaporator assembly must be ordered if the capillary tube is found to be plugged or severely restricted. Restrictions cannot be flushed out.
6. Be sure to purge the system with dry nitrogen gas after final brazing. This will flush out any air or moisture that may have entered the system before being absorbed into the ester oil.

Diagnostic Information

Low Side leaks

Low side leaks consist of a break in the system at the evaporator, low side (suction) return line, or accumulator. If a leak is found in any of these areas, moisture has probably entered the system. The compressor and drier will have to be replaced and the system will need to be flushed thoroughly with nitrogen gas and evacuated to 50 microns before re-charging.

High Side Leaks

High side leaks consist of a break in the system at the condenser, high side tubing, drier, or capillary tube. If a leak is found in any of these areas, the system can be flushed with nitrogen gas, evacuated to 50 microns, and re-charged.

Restricted Capillary Tube

Moisture or other contaminants that enter the system can cause deposits in the system. These deposits will usually collect in the capillary tube and form a restriction that cannot be completely removed by flushing. If the capillary tube is found to be restricted, the evaporator, compressor, condenser, and drier should all be replaced.

Access Valves

A temporary access valve can be used to service or evaluate the system. From these access valves, you can evacuate, charge, and recover the system. The access valve can be installed on the compressor's process tube (this will also be a low pressure side). Be sure to cap off access valve while servicing. This will prevent contamination of the system and/or refrigerant from leaking. After servicing, the access valve should be removed. A pinch-off tool can be used to close the system to remove the access valve and then braze the hole for the access valve to seal the system. Be sure to leak check after brazing.

Evaporator Frost Pattern

Checking the evaporator frost pattern is a good way to quickly diagnose simple sealed system problems. This can be done by allowing the unit to run (at least 10 minutes) with the door open for at least 5 minutes. This will help speed up the normal frosting of the evaporator plate. By visually inspecting the evaporator and feeling it with your hands, you will see and feel frost across the plate. It is absolutely necessary for the frost to cover the entire evaporator plate. This will ensure the system has been charged to its specified amount or does not have a leak. A partial frost pattern may lead to excessive run times or even 100% run mode. This is because the frost does not reach the area of the evaporator thermistor, so it does not sense the temperature required to cycle the unit off.

Pressure and Temperature

There are two ways to measure temperature of the evaporator plate:

1. Use a thermocouple to measure the temperature of evaporator plate. Thermocouple must be secured to the evaporator when taking the measurement.
2. If there is proper contact between the thermistor and evaporator plate, thermistor resistance value can be corresponded to the temperature (See Thermistors).

NOTE: Temperature and pressure readings must be taken while unit is running. Use gauge pressure readings from the compressor's process tube (low side) access valve.

Pressure will vary depending upon the ambient temperature and current stage of operation for the unit. For example, the unit will have pressure between 0 and 5 psi just before entering the off cycle. Normal running pressures on the low side will average 5 to 10 lbs.

Temperature-Pressure Chart for R-134a

Degrees F	Pressure (psi) R-134a	Degrees F	Pressure (psi) R-134a
-12	1.1	36	31.3
-8	2.8	38	33.2
-4	4.5	40	35.1
0	6.5	42	37.0
2	7.5	44	39.1
4	8.5	46	41.1
6	9.6	48	43.3
8	10.8	50	45.5
10	12.0	52	47.7
12	13.1	56	52.3
14	14.4	60	57.5
16	15.7	64	62.7
18	17.0	68	68.3
20	18.4	72	74.2
22	19.9	76	80.3
24	21.4	80	86.8
26	22.9	84	93.6
28	24.5	88	100.7
30	26.1	92	108.2
32	27.8	96	116.1
34	29.5	100	124.3

If low side pressure is below pressure in chart above, check for the following:

1. A system leak
2. Capillary tube is restricted
3. Insufficient compressor (does not pump properly)

If low side pressure is above pressure in chart above, check for the following:

1. Restricted air flow
2. Dirty condenser coil
3. Overcharged system
4. Low side leak

Re-charging

Re-charging of the unit should be done only after diagnosing and repairing the system. Be sure to flush the system with dry nitrogen gas and evacuate to 50 microns before re-charging.

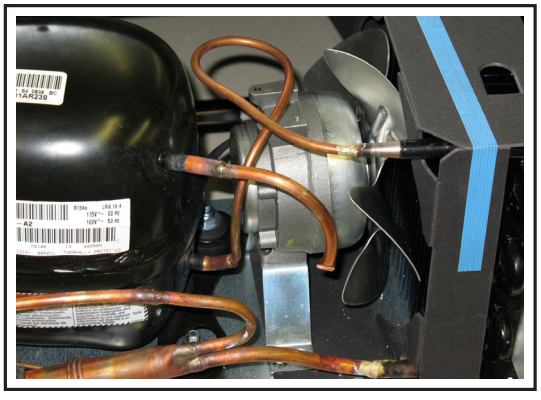
The method for re-charging the unit is by weight using vapor refrigerant. Using manifold gauge set-up, hook up charge hoses to the access valve on the compressor's process tube. If any access valve is attached to the high side process tube, remove it and then seal the tube by brazing before charging. Charge the unit to specified amount (see Unit Specifications for charge specifications per model).

After re-charging the system, check pressures (See Pressure and Temperature) for corresponding temperatures and pressures. If pressures are incorrect, check the sealed system, recover the charge, repair, evacuate, and then re-charge.

It is normal to have some condensation or slight frost on the suction line. Typically this will occur towards the end of a run cycle. If the frost continues down the suction line to the compressor, the system is overcharged. It is important that the insulation remains on the suction line and the capillary tube together after any repair and that it is sealed on both ends. Be sure to replace the refrigeration putty in the hole of the foam where the refrigerant lines go through the back of the unit. Spread the putty out evenly filling in the cracks to prevent air from leaking in and out.

Condenser

The condenser is a steel tube serpentine with copper alloy fins that removes heat from hot, high pressure vapor from the compressor. The most common trouble is lack of airflow from either a restricted intake or exhaust opening in the front of the unit. Lint, dust, hair, and dirt build-up needs to be removed from the condenser periodically to allow the unit to perform properly.



Compressor

The compressor is the heart of the refrigeration system. However, it relies on other parts of the system to function. Make certain that the other parts of the system are functioning correctly before determining that the compressor is faulty.

The following should be observed before concluding the compressor is faulty:

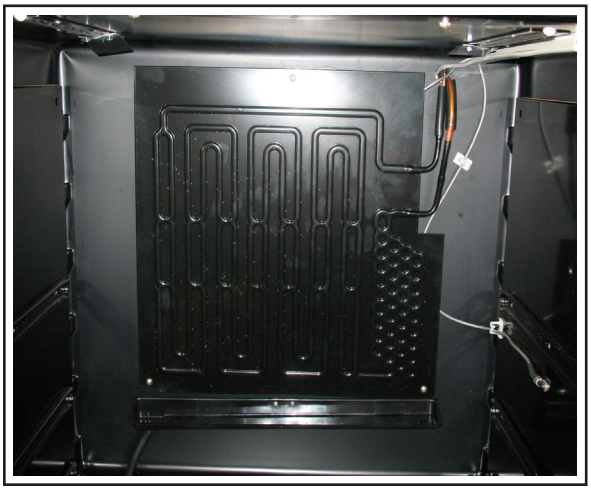
1. Low high side pressures, warm evaporator plate, cool condenser coil, or little or very low current draw from the unit will indicate a faulty compressor.
2. Check for continuity between the compressor terminals and the shell of the compressor. If continuity is found, the compressor is faulty and will need to be replaced.
3. Check for resistance between all compressor terminals. The resistance will vary from terminal to terminal and from compressor to compressor due to age and use. If no resistance is found, the compressor is faulty and will need to be replaced.

Diagnostic Information

Evaporator

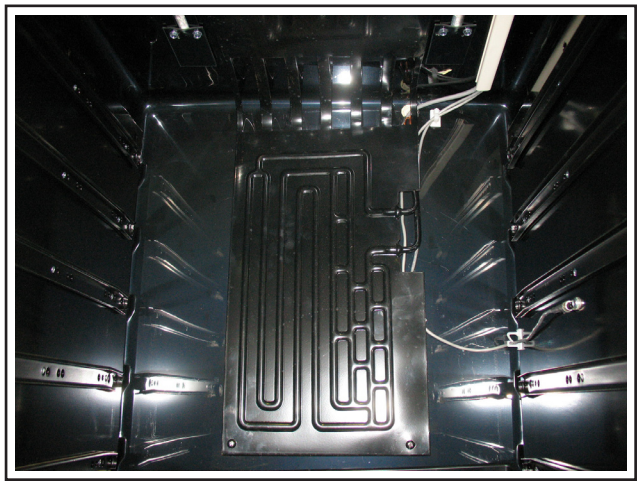
The evaporator uses evaporating refrigerant to remove heat from the inside of the unit ultimately making the interior cold. The shape and size of the evaporator may vary among the models covered by this service manual but the fundamentals are the same . The DFUW, DUWC, AND VUWC use a vertical right angle evaporator plate. The DFUR, DUAR, AND VUAR use a U-shaped plate. The DFRD, DURD, AND VURD use a multi-purpose evaporator plate.

It is normal for the evaporator to frost up during its run cycle. This frost will dissipate once the unit reaches its “cut out” temperature and the compressor and fan stop. This condensate water will flow to the rear of the machine in a condensate pan where it will be evaporated from compressor and fan heat. It is very important that the evaporator frosts in a uniform pattern across the plate (see Evaporator Frost Pattern). A partial frost pattern can lead to excessive run times and cooling issues.



Evaporator plate for DFRD, DURD, and VURD refrigerated drawers

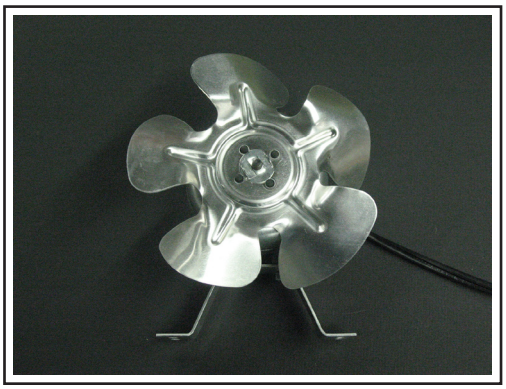
Evaporator plate for DFUR, DUAR, and, VUAR beverage centers



Evaporator plate for DFUW, DUWC, and VUWC wine coolers

Condenser Fan

The condenser fan is used to force air over the condenser coil. The fan will cycle on and off with the compressor which means that when the compressor is running so is the fan and when the compressor is not running neither is the fan (see illustration below).



1. Make sure the motor shaft turns freely. This can be done by rotating the fan blade by hand and observing any excessive resistance.
2. Check for resistance between terminals. If no resistance is found, replace the condenser fan.
3. Check for continuity between terminals and fan casing. If continuity is found, replace the condenser fan.
4. Check current draw. Typical current draw will be 0.15 amp without fan resistance. If current draw is 0.19 amp or more, check for resistance in air movement or objects touching the fan blade. If this is not found, replace the condenser fan.

Thermistors

The wine cellars, beverage centers, and refrigerated drawers utilize two thermistors: The evaporator thermistor and the display thermistor. Each thermistor has a different function for input to the electronic control.

Evaporator thermistor:
The evaporator thermistor turns the unit on and off. It is secured to the evaporator or cabinet liner.

Display thermistor:
The display thermistor is connected to the LED display and displays the temperature inside the unit on the display panel.

The following will happen in the event of one or both thermistors fail:

1. If the evaporator thermistor fails, all loads will be shut off and the unit will not run.
2. If the evaporator thermistor senses temperature outside of 0-140 degrees F, all loads will be shut off and the unit will not run.
3. The display panel will flash E3 for an evaporator thermistor failure and E4 for a display thermistor failure. If both thermistors fail, the error codes will be displayed sequentially. An audible alarm will also sound six times every minute if either one or both thermistors fails.

The thermistor can be checked by use of a multimeter with the ability to read resistance. To check the thermistor:

1. Disconnect and remove thermistor from unit.
2. Use a reference temperature point that is know (such as an ice bath) and measure the resistance across the wire leads.
3. Compare the recorded resistance with figure in Resistance versus Temperature Chart.

If measured resistance falls 4% or greater outside the resistance given below, the thermistor is bad and will need to be replaced.

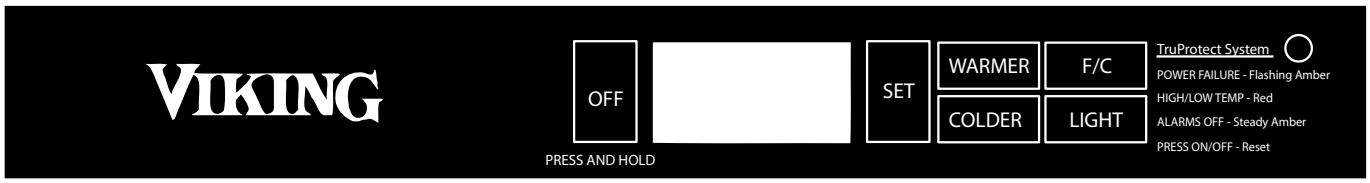
Resistance versus Temperature Chart

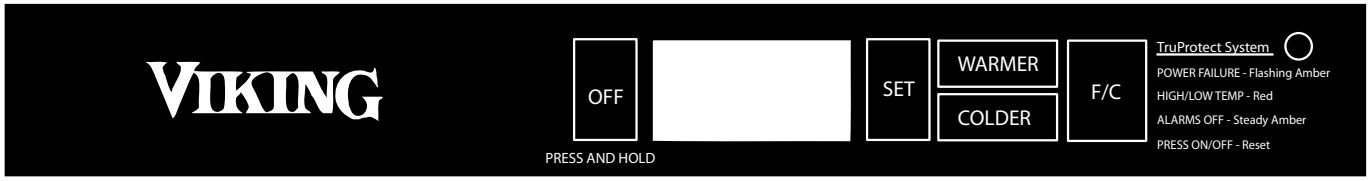
Temperature (C)	Temperature (F)	Resistance (K-OHMS)
-15	5	11.350
-10	14	8.918
-5	23	6.700
0	32	5.630
5	41	4.520
10	50	3.652
15	59	2.970
20	68	2.430
25	77	2.000

If the thermistor has been tested and is found to be good, check the temperature of the evaporator plate and the resistance of the thermistor. If the temperature of the evaporator plate does not correspond to a proper resistance from the thermistor, check for a proper and secure connection of the thermistor to the evaporator plate bracket.

Diagnostic Information

User Interface Panel and Tru Protect™ System





Overview

Viking's Tru Protect™ system informs the user if the unit is not functioning properly through both visual and audible alerts. The LED display panel displays a steady green light when the Tru Protect™ system is enabled.

Starting the Unit

To start the unit, push and hold for five (5) seconds the "ON/OFF" button located on the display panel. Upon turning the unit on, the display will read the actual temperature inside of the unit. If the interior temperature is greater than 99 degrees F, the display will flash 99 until the temperature drops to 99 degrees F.

Setting the Temperature Mode

The unit can display either Fahrenheit (F) or Celsius (C). To do so, press the " °F/C" button on the display panel.

Adjusting the Temperature Control

The temperature control is fully adjustable from the low 40s to the mid 60s in the wine cellars and beverage centers. The set point out of the factory is approximately 55 degrees F. The temperature control is adjustable from the low 30s to the high 40s in the refrigerated drawers. The set point out of the factory is approximately 38 degrees F. The range, whether it be for wine cellars and beverage centers or refrigerated drawers, allows flexibility of temperature preferences and provides the ideal wine aging or food storing temperatures. The temperature can be lowered or raised by first pressing the "SET" button on the display panel. A "SET" icon will be displayed. This icon will turn off 10 seconds after completing the adjustments. Pressing either the "WARMER" or "COLDER" buttons will raise or lower the set temperature by one (1) degree F or C (depending on the setting). NOTE: As with any refrigeration product, there is a slight temperature variance at different locations within the cabinet.

Interior Light and Switch

For Wine Cellars/Beverage Centers:

The light will automatically turn on when the door is opened and off when the door is closed. To engage the display light feature, press the "LIGHT" button on the display panel. The light will come on and stay on, even with the door closed, until the "LIGHT" button is pressed again.

For Refrigerated Drawers:

The light switch will automatically turn on the light when the drawer(s) is opened and off when the drawer(s) is closed. There are two light switches in each drawer unit: one on the top and one on the bottom. They are both located on the inside left hand of the drawers. In addition to turning the light on and off, the light switches also turn the display panel and interior fan(s) on and off.

Sabbath Mode

The unit is equipped with a Sabbath Mode of operation. When Sabbath Mode is enabled, the displays, audible alarms, lights, and all options are disabled. The user interface buttons remain enabled with audible key tones disabled.

Enabling Sabbath Mode:

Press and hold the "SET" button while pressing the " °F/C" button four (4) times within seven (7) seconds. The display will flash "SA" seven (7) times and then the unit will enter Sabbath Mode.

Disabling Sabbath Mode:

Press and hold the "SET" button while pressing the " °F/C" button four (4) times within seven (7) seconds.

1. Sabbath Mode automatically disables after 72 hours.
2. A power outage will not disable Sabbath Mode. Disabling can only be accomplished by the automatic time-out or by the user.
3. The display returns to operation prior to Sabbath Mode activation.

Warning Alarm

The Tru Protect™ system will inform you if the unit is not functioning properly. It provides both visual and audible alerts if the temperature rises above or falls below the set temperature, if there is a power failure, or if the door is left ajar.

1. Door Ajar: If the door is left open for more than five (5) minutes, an audible alarm will sound three (3) times every 30 seconds and the LED light will flash green. This will stop as soon as the door is closed.
2. High and Low Temperature: If the unit reaches a temperature either above or below the set point temperature for more than one (1) hour, an audible alarm will sound six (6) times every minute and the LED will flash red. This will continue until the alarm is reset. The alarm may occur when changing set-points in excess of 10 degrees F and/or high usage which is normal.
3. Power Failure: If the unit experiences a power failure, the LED will flash amber. This will continue until the alarm is reset. With a power failure, no audible signal is heard. The alarm may occur upon initial installation which is normal since the unit was run at the factory to verify quality.

Resetting the Alarms

Close door to reset Door Ajar alarm. Press the “ON/OFF” button for approximately one (1) second to reset all other audible and display alarms.

NOTE: Although pressing the “ON/OFF” button will reset the alarms, the alarm will resume if the “alarm condition” still exists.

Show Room Mode

Show Room Mode is used mainly by salespersons and distributors. When the unit is in Show Room Mode, it will operate as if functioning normally; however, the internal components will not run.

Enabling Show Room Mode:

To enable Show Room Mode, press and hold the “ON/OFF” button while performing a “Power On Reset” (POR), i.e. - disconnect and reconnect the power supply to the unit. When Show Room Mode is enabled, the compressor, condenser fan, internal fan(s), heater, reverse gas solenoid, and alarms are disabled. The display will show the last set point entered.

Disabling Show Room Mode:

To exit Show Room Mode, initiate a “Power On Reset” (POR) only.

Error Code Detection

The microprocessor in the control continually monitors critical refrigeration system components for proper operation. If component parameters exceed normal operating specifications, an audible alarm will sound six (6) times every minute and the display will automatically flash the respective error code. If multiple errors are noted with the unit, the error codes will be displayed sequentially. See chart below for respective error codes descriptions and the potential causes of failure.

Error Code Detection Reference

Error Code	Error Code Reference	Potential Causes of Failure
E1	Compressor fault (high/low amps)	1. Compressor wires disconnected. 2. Faulty compressor. 3. Faulty control. 4. Faulty compressor overload. 5. Faulty compressor PTC starter.
E2	Condenser fan motor fault (high/low amps)	1. Condenser fan motor wires disconnected. 2. Faulty condenser fan motor. 3. Faulty control.
E3	Evaporator thermistor “sensor B” fault (out-of-range)	1. Disconnected wire causing open. 2. Shorted thermistor wires. 3. Faulty thermistor.
E4	Display thermistor “sensor A” fault (out-of-range)	

Resetting Error Codes:

Error Codes can only be reset by disconnecting and reconnecting the power supply to the unit.

Diagnostic Information

Service Diagnostics Mode

Service Diagnostics Mode allows you to identify the firmware and software versions, test status of “model specific” system components and sensors, and change state of components where applicable (i.e. - compressor on/off, etc...).

Enabling Service Mode:
To enable Service Mode, press and hold the “WARMER” button while pressing the “COLDER” button four times within five seconds.

- You cannot enable Service Mode while in Set Mode.
- All system functions will remain in their current state while in Service Mode.
- Alarms are disabled during Service Mode and reset after exiting Service Mode.
- Service Mode will automatically disable after five (5) minutes of no keypad entry.

After entering Service Mode, the first number that you will see indicates the software model number for the particular unit you are servicing. For example, if you are servicing a 24 inch wine cellar (DFUW, DUWC, VUWC), the first number you will see is 11. See chart below for corresponding model and software reference.

Software Model Number

Model	Description	Software Model Number
DFUW, DUWC, VUWC	24 inch Wine Cellar	11
DFUR, DUAR, VUAR	24 inch Beverage Center	21
DFRD, DURD, VURD	24 inch Refrigerated Drawers	16

The second number you will see indicates the software version release. For example, if you see 44 on the display panel it indicates software version 4.4.

Diagnostics:
While in Service Mode, press the “SET” button to step through Tests 0-9. The first digit of the display will show the test number. The second digit indicates the current state of each component under test and is displayed as “1” being ON, CLOSED, or SHORTED and “0” being OFF or OPEN. Tests 0 and 1 reveal an open or shorted condition detected at the sensor inputs. Tests 2 through 6 allow you to turn loads ON with the “WARMER” button and OFF with the “COLDER” button. Tests 7 through 9 verify state change of the door switches and/or magnetic reed sensor. The component tests available are described in Available Component Tests chart.

Available Component Tests

Test #	Component Description	Available Status Indicators		
		OK	Off/Open	On/Shorted
0	Temp Sensor A - Evaporator	0-	00	01
1	Temp Sensor B - Display	1-	10	11
2	Compressor	n/a	20	21
3	Interior/Ice Maker Fan	n/a	30	31
4	Reverse Gas Solenoid	n/a	40	41
5	Condenser Fan	n/a	50	51
6	Mullion Heater	n/a	60	61
7	Door A Sense	n/a	70	71
8	Door B Sense	n/a	80	81
9	Door C Sense	n/a	90	91

Note: Must use magnet to change state of door C sense

Disabling Service Mode:
To exit service mode, press and hold the “WARMER” button while pressing the ”COLDER” button four (4) times within five (5) seconds.

- Service Mode will automatically disable after five (5) minutes of no keypad entry.

Ordering Parts

The following information will need to be given when inquiring about service parts:

- Model and serial number located on the serial nameplate (see Introduction, Serial Nameplate)
- Color of the model
- Metal or plastic grille
- Type of door

To order parts, call or write:

Viking Range Corporation
Customer Service
111 Front Street
Greenwood, Mississippi 38930 USA
662.455.1200

For product information, call 1.888.VIKNG1 (845.4641) or visit the Viking Web Site at vikingrange.com

Troubleshooting Procedures

⚠ WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit, unless test procedures require power to be connected. Discharge capacitor through a resistor before attempting to service. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

PROBLEM	POSSIBLE CAUSE	CORRECTION
Unit does not operate.	1. The unit is unplugged.	Plug in the unit.
	2. Did not hold the “ON/OFF” button long enough on the display panel.	Press and hold the “ON/OFF” button for five seconds.
Unit does not display Celsius (C).	1. Did not press the “ °F/C” button on the display panel.	Press the “ °F/C” button to toggle between F and C.
Temperature controls are not raising or lowering the set temperature on the unit.	1. Did not press and hold the “SET” button on the display panel while pressing either the “WARMER” or “COLDER” button.	Press and hold the “SET” button and press either the “WARMER” or “COLDER” button. This will raise or lower the set temperature by one degree F or C (depending upon the setting).
Display light feature is not engaged.	1. Display light feature engaged (for Wine Cellars and Beverage Centers).	Press the “LIGHT” button. The light will come on and stay on with the door closed until the “LIGHT” button is pressed again.
	2. The light bulb is burned out.	Replace the light bulb and then press “LIGHT” button.
Door is closed but the light is still on inside of the unit.	1. Did not press the “LIGHT” button before the door was last closed.	Press “LIGHT” button to disengage light.
Sabbath Mode is not engaging.	1. Did not press the “ °F/C” button on the display panel four times within seven seconds.	Press and hold the “SET” button while pressing the “ °F/C” button four times within seven seconds. The display will flash “SA” seven times and the unit will enter Sabbath Mode.
Sabbath Mode automatically disabled.	1. Sabbath Mode automatically disables after 72 hours.	Restart Sabbath Mode by pressing and holding the “SET” button while pressing the “ °F/C” button four times within seven seconds.
Sabbath Mode is not disabling.	1. Did not press the “ °F/C” button on the display panel four times within seven seconds.	Press and hold the “SET” button while pressing the “ °F/C” button four times within seven seconds. NOTE: Sabbath Mode will automatically disable after 72 hours.
Audible alarm sounding three times every 30 seconds and LED light flashing green.	1. Door Ajar alarm.	Close the door.
Audible alarm sounding six times every minute and LED light flashing red.	1. High and Low Temperature alarm.	Press the “ON/OFF” button for approximately one second to reset audible and display alarms. NOTE: Although pressing the “ON/OFF” button will reset the alarms, the alarm will resume if alarm condition still exists.

Troubleshooting Procedures

WARNING

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PROBLEM	POSSIBLE CAUSE	CORRECTION
LED light flashing amber and no audible signal heard.	1. Power Failure alarm. NOTE: This alarm will occur upon initial installation which is normal since the unit was run at the factory to verify quality.	Press the “ON/OFF” button for approximately one second to reset audible and display alarms. NOTE: Although pressing the “ON/OFF” button will reset the alarms, the alarm will resume if alarm condition still exists.
Want to give a customer demonstration but Show Room Mode is not enabling.	1. Did not perform a “Power On Reset” (POR).	To enable, press and hold the “ON/OFF” button on the display panel while performing a “Power On Reset” (POR), i.e. - disconnect and reconnect power supply to the unit.
Compressor, condenser fan, internal fan(s), heater, reverse gas solenoid, and alarms are not working but the display is functioning normally.	1. Show Room Mode enabled.	To exit, press and hold the “ON/OFF” button while performing a “Power On Reset” (POR), i.e. - disconnect and reconnect power supply to the unit.
E1 error code on display panel and audible alarm sounding six times every minute (Compressor fault - high/low amps).	1. Compressor wires disconnected.	Check wiring diagram on back of unit and reconnect wires.
	2. Faulty compressor.	Replace compressor.
	3. Faulty control.	Replace control.
	4. Faulty compressor overload.	Replace overload.
	5. Faulty compressor PTC starter.	Replace PTC starter.
E2 error code on display panel and audible alarm sounding six times every minute (Condenser fan motor fault - high/low amps).	1. Condenser fan motor wires disconnected.	Check wiring diagram on back of unit and reconnect wires.
	2. Faulty condenser fan motor.	Replace condenser fan motor.
	3. Faulty control.	Replace control.
E3 error code on display panel and audible alarm sounding six times every minute (Evaporator thermistor “sensor B” fault).	1. Disconnected wire causing open.	Check wiring diagram on back of unit and reconnect wires.
	2. Shorted thermistor wires.	Replace thermistor.
	3. Faulty thermistor.	Replace thermistor.
E4 error code on display panel and audible alarm sounding six times every minute (Display thermistor “sensor A” fault).	1. Disconnected wire causing open.	Check wiring diagram on back of unit and reconnect wires.
	2. Shorted thermistor wires.	Replace thermistor.
	3. Faulty thermistor.	Replace thermistor.
Service Mode is not engaging.	1. Did not press the “WARMER” and “COLDER” buttons the correct amount of times in the allotted time period.	To enable, press and hold the “WARMER” button while pressing the “COLDER” button four times within five seconds.
Service Mode disabled automatically.	1. After five minutes of no keypad entry, Service Mode will automatically disable.	To restart, press and hold the “WARMER” button while pressing the “COLDER” button four times within five seconds.

WARNING

To avoid risk of electrical shock, personal injury, or death, disconnect electrical power source to unit, unless test procedures require power to be connected. Discharge capacitor through a resistor before attempting to service. Ensure all ground wires are connected before certifying unit as repaired and/or operational.

PROBLEM	POSSIBLE CAUSE	CORRECTION
Service Mode is not disabling.	1. Did not press the “WARMER” and “COLDER” buttons the correct amount of times in the allotted time period.	To exit, press and hold the “WARMER” button while pressing the “COLDER” button four times within five seconds.
LED is not displaying a steady green light on the display panel.	1. Tru Protect™ was disabled.	Press and hold the “SET” button for five seconds. NOTE: Steady green light on the LED indicates Tru Protect™ engaged.
Tru Protect™ will not disable.	1. Did not hold the “SET” button on the display panel long enough.	Press and hold the “SET” button for five seconds. NOTE: Steady amber light on the LED indicates Tru Protect™ disabled.
Software model number does not match the unit purchased, i.e. - 11 should correspond to a 24 in. wine cellar.	1. Wrong unit software installed.	Call Viking Customer Service to obtain new user interface.
Temperature range for the unit does not correspond to the temperature range given by Viking (out-of-range).	1. Wrong unit software installed.	Call Viking Customer Service to obtain new user interface.

Component Testing Procedures

⚠ WARNING

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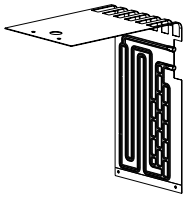
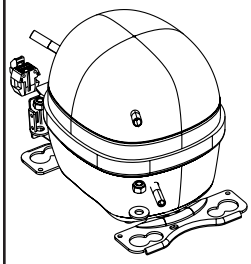
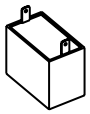
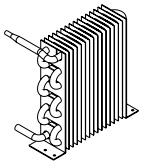
Component	Test Procedure	Service Action
 Evaporator Plate	Perform visual check of frost pattern on evaporator plate.....	• A uniform frost pattern indicates a satisfactory flow of refrigerant through evaporator. • An incomplete or uneven frost pattern indicates a possible blockage in evaporator or a low refrigerant charge in the system.
 Compressor	1. Disconnect power to unit. 2. Discharge run capacitor by shorting across terminals with a resistor 1 minute (some models) 3. Remove leads from compressor terminals. 4. Set ohmmeter to lowest scale. 5. Check for resistance/continuity across the following: • Start winding/Run winding (See Compressor section)..... • Run/Common/Start terminals to compressor housing.....	• If run winding or start winding reads high to infinite resistance (open), replace compressor. • If run winding or start winding reads no resistance (dead short), replace compressor. • If continuity to ground is found in any of the three terminals, replace compressor.
 Run Capacitor (some models)	1. Disconnect power to unit. 2. Remove capacitor from circuit. 3. Discharge capacitor by shorting terminals with a resistor for 1 minute. 4. Check resistance across capacitor terminals with ohmmeter set to kΩ scale.....	• Good - needle swings to zero and slowly moves back to infinity. • Open - needle does not move. Replace run capacitor. • Shorted - needle moves to zero and stays. Replace run capacitor. • High resistance leak - needle jumps to zero and then moves back to constant high resistance (not infinity). Replace run capacitor.
 Condenser	Perform visual check to ensure that sufficient airflow passes over the condenser.....	• Ensure that there is no blockage of the intake or exhaust side of condenser. • Ensure that condenser is free of dust, lint, or hair that may hinder heat transfer.

Component Testing Procedures

WARNING

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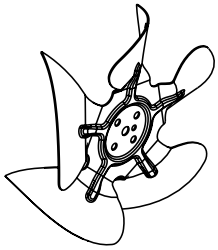
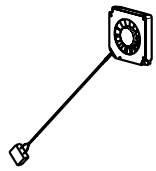
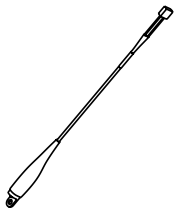
Component	Test Procedure	Service Action
 Condenser Fan	1. Inspect fan to ensure that it is mechanically sound. Rotate blades while feeling for resistance to movement ..... 2. Check for resistance between fan terminals ..... 3. Check for continuity between each terminal and fan chassis ..... 4. Check current draw.....	• Ensure that fan as free of any debris, dirt, or lint that might hinder rotation. • Replace fan if dead short is found across fan terminals. • Replace fan if continuity is found between terminal and fan chassis. • Typical current draw is 0.15 amps for fan without increased mechanical resistance. If observed current is at or above 0.19 amps, replace fan.
 Evaporator Fan	1. Check for voltage at fan terminals ... 2. Check for resistance between fan terminals ..... 3. Check for continuity between each terminal and fan chassis	• 12VDC • Replace fan if dead short is found across fan terminals. • Replace fan if continuity is found between terminal and fan chassis.
 Display Thermistor	1. Disconnect and remove thermistor from unit. 2. Use a known reference temperature point (i.e. an ice bath). 3. Measure resistance across wire leads. 4. Compare measurement with values in Resistance versus Temperature Chart (see Thermistors)	• If observed resistance is greater than 4% out of spec, replace thermistor.
 Evaporator Thermistor	1. Disconnect and remove thermistor from unit. 2. Use a known reference temperature point (i.e. an ice bath). 3. Measure resistance across wire leads. 4. Compare measurement with values in Resistance versus Temperature Chart (see Thermistors)	• If observed resistance is greater than 4% out of spec, replace thermistor.

Component Testing Procedures

WARNING

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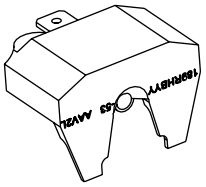
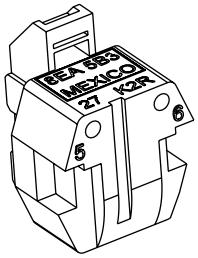
Component	Test Procedure	Service Action
 Overload	1. Remove overload from circuit and allow 2 min. to cool. 2. Check resistance between overload terminals	If terminals read open or dead short, replace overload.
 PTC Starter	1. Remove overload from circuit and allow 2 min. to cool. 2. Check resistance between overload terminals	If terminals read open or dead short, replace overload.

WARNING

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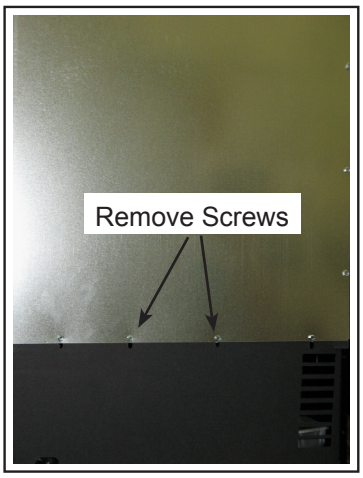
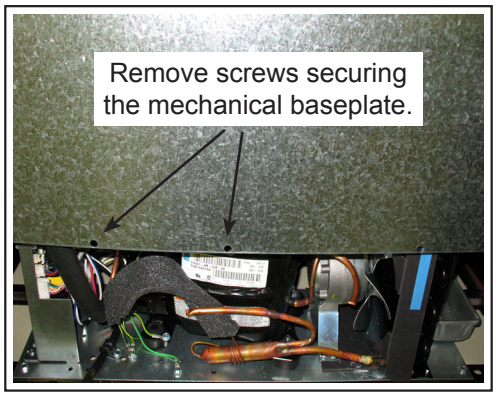
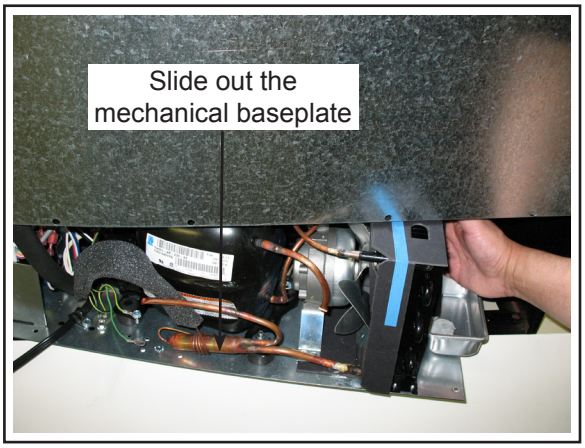
Mechanical Baseplate:

To gain access to mechanical baseplate, remove the screws that hold the lower shroud in place and then remove the shroud (see illustration below). To facilitate working on any component mounted to the mechanical base, remove the screws that hold the baseplate to the chair frame and slide out the baseplate enough to allow working room required (see illustration below).







Disassembly

WARNING

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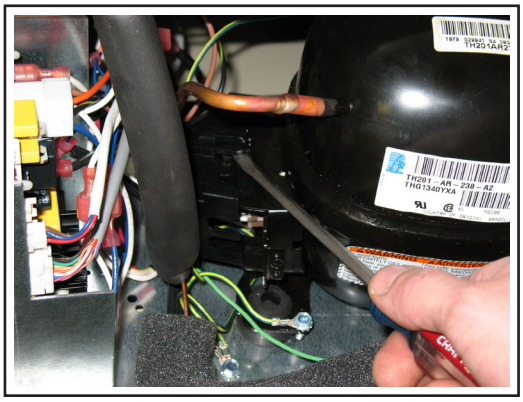
Compressor

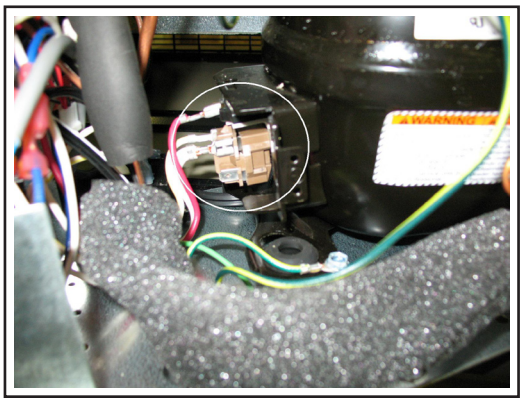
Removing the compressor

1. Disconnect power to the unit.
2. Remove the back panel and lower shroud.
3. Remove the screws that hold the baseplate to the chair frame of the unit and slide out the mechanical baseplate.
4. Install sealed system access valve(s) and recover refrigerant. After recovering, be sure to cap off the access valve(s) to prevent contamination of the system.
5. Remove the cap from the rear of the compressor to expose the starter and overload.
6. Disconnect the PTC starter and overload from the compressor by pulling off. Disconnect the wires from the starter and overload.
7. Un-braze and remove capillary tube from drier assembly.
8. Un-braze and remove suction line at compressor.
9. Un-braze high side line from the compressor going to the condenser.
10. Remove compressor by removing the three lock nuts on the mounting plate of the compressor. Lift the compressor off of the carriage bolts.

Installing the Compressor:

1. Install the four rubber grommets in the bottom of the new compressor and install the three sleeves where the carriage bolts will be located. Mount the new compressor and install the three washers and lock nuts and tighten to 45 in-lbs. DO NOT REMOVE THE RUBBER PLUGS AT THE TUBE STUBS ON THE COMPRESSOR AT THIS TIME.
2. Install and braze new drier assembly to condenser. Then install and braze capillary tube to drier. Remove the plug for the high side line to condenser. Install and braze the line to the compressor.
3. Remove the plug for the process tube on the compressor. Install and braze process tube. Be sure to cap off end to prevent any contamination.
4. Remove the plug for the suction line on the compressor. Install and braze the suction line from the evaporator. BE SURE TO ALSO REINSTALL THE SUCTION LINE AND TUBING HARNESS INSULATION TUBES.
5. Reinstall the PTC starter and overload and wire according to the wiring diagram.
6. Reinstall the compressor cap.
7. Reinstall the screws that secure the baseplate to the chair frame of the unit. Be sure to fasten down the ground wire to the baseplate.
8. Charge the unit.
9. Reinstall back panel and lower shroud to complete installation.





WARNING

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Condenser

Removing the condenser

1. Disconnect power to the unit.
2. Remove back panel and lower shroud.
3. Remove the screws that hold the baseplate to the chair frame of the unit and slide out the mechanical baseplate.
4. Install sealed system access valve(s) and recover refrigerant. After recovering, be sure to cap off the access valve(s) to prevent contamination of the system.
5. Remove the condenser fan by removing the four screws on the fan mounting bracket at the baseplate. The fan wire leads can be left connected. Set the fan assembly to the side out of the mechanical.
6. Remove the condenser fan shroud.
7. Un-braze capillary tube from drier assembly.
8. Un-braze high side tubing from the compressor.
9. Remove the condenser and drier assembly.

Installing the condenser

- Reverse the removal procedure for installation.
- Always install a new drier after opening the sealed system.
- Be sure to flush the system and evacuate to 50 microns before weight charging.
- If contamination was found or determined, the evaporator should also be replaced at this time.

Condenser Fan

1. Disconnect power to the unit.
2. Remove access panel and rear panel.
3. Remove the grille by removing the screws and disconnecting the wires to the rocker switch. Be sure to mark where these wires go for reassembly.
4. Take out the screws that secure the top of the electrical bracket located in the front of the mechanical area.
5. Remove the screws that secure the baseplate to the cabinet on the bottom of the unit.
6. Gently slide the mechanical out the back of the unit to gain access to the condenser fan.
7. Disconnect the neutral white wire lead (black ribbed wire) and hot wire lead (black smooth wire) from the wire harness.
8. Remove the condenser fan.
9. Reverse the removal procedure for installation.

Thermistors

1. Disconnect power.
2. Remove back panel and lower shroud.
3. Disconnect the evaporator thermistor connector at the electronic controller.
4. Remove evaporator thermistor by removing the screw securing it.
5. Feed the thermistor wire out through the opening in the back of the unit.
6. Reverse the removal procedure for installation.

Lights

For Wine Cellars:

The wine cellars are equipped with two 6 watt tube lights located on the inside top of the cabinet.

Replacing the Tube Light:

1. Disconnect power to the unit.
2. Remove the bulb from the channel in which it sits. Each light is fit snugly into the channel so you might need to use a screwdriver or knife to help loosen it.
3. Once the bulb is out of the channel, unplug it from the connector and set it aside.
4. Plug the new bulb into the connector and press the bulb snugly into the channel. You might need to press or tap firmly to place the bulb back in the channel.
5. Reconnect power to the unit and check to see if the light tube operates properly.

For Beverage Centers:

The beverage centers are equipped with a 15 watt light bulb located behind the display housing on the inside top of the cabinet.

Replacing the Light Bulb:

1. Disconnect power to the unit.
2. Unscrew the old light bulb located behind the display housing.
3. Set the old light bulb aside to discard.
4. Screw the new light bulb into place.
5. Reconnect power to the unit and check to see if the light bulb operates properly.

For Refrigerated Drawers:

The refrigerated drawers are equipped with two LED lights: one on the inside top of the drawer and one on the underside of the divider.

Disassembly

WARNING

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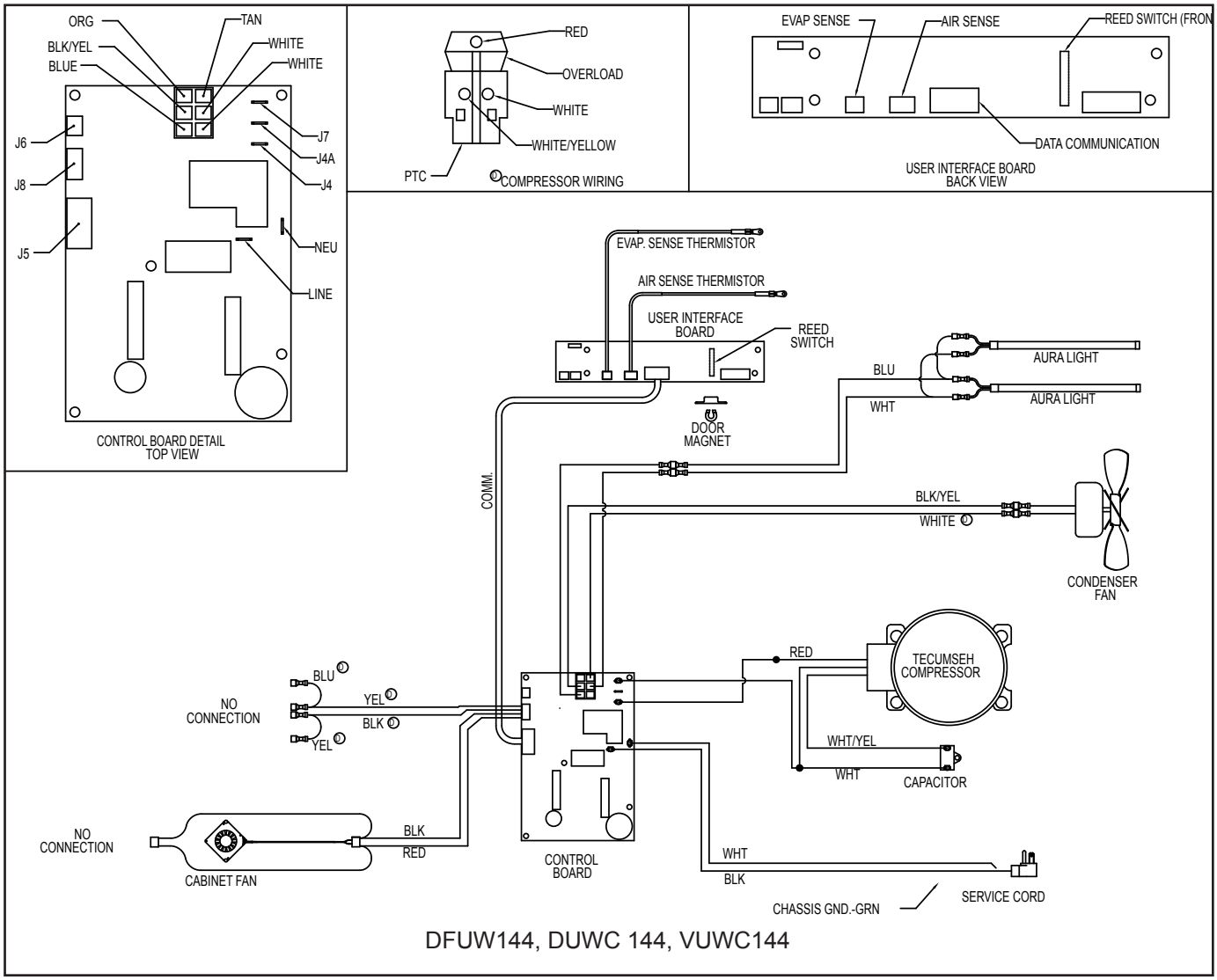
Replacing the Top LED Light:

1. Loosen the screws to the control housing. You do not need to remove them.
2. Pull the control housing forward out of the screw slots.
3. Look inside the control housing and remove the wire connector to the light.
4. Press down and out on the LED bulb and lens. You will need to press the release tab on the lens.
5. Remove old bulb and set aside.
6. Insert new bulb and reverse steps 1-4 to complete.

Replacing the Divider LED Light:

1. Remove screws to the divider section and pull the divider out from the unit.
2. Flip the divider over for easier access to the lens assembly. Be careful not to disturb other wiring inside the unit.
3. Press in on the lens release tabs while simultaneously prying the lens upward using a flat-blade screwdriver. The release tabs are located at the midpoint of the front and rear edge of the lens.
4. Unhook lens from wire connector and remove it from the divider. Discard the lens.
5. Attach wire connector to new lens and snap lens back into place.
6. Reattach divider section to the unit.

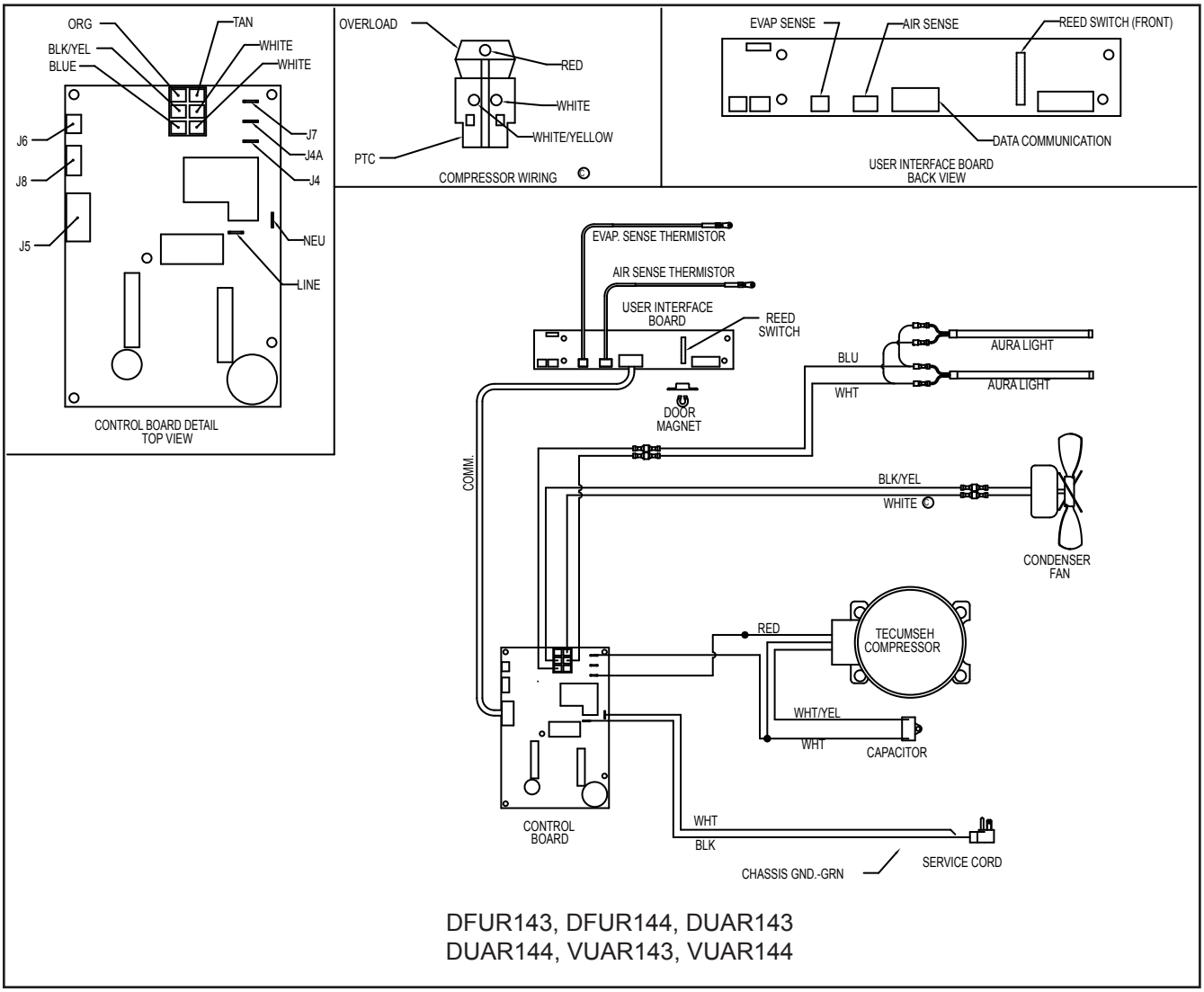
Wine Cellar Wiring Schematic



DFUW144, DUWC 144, VUWC144

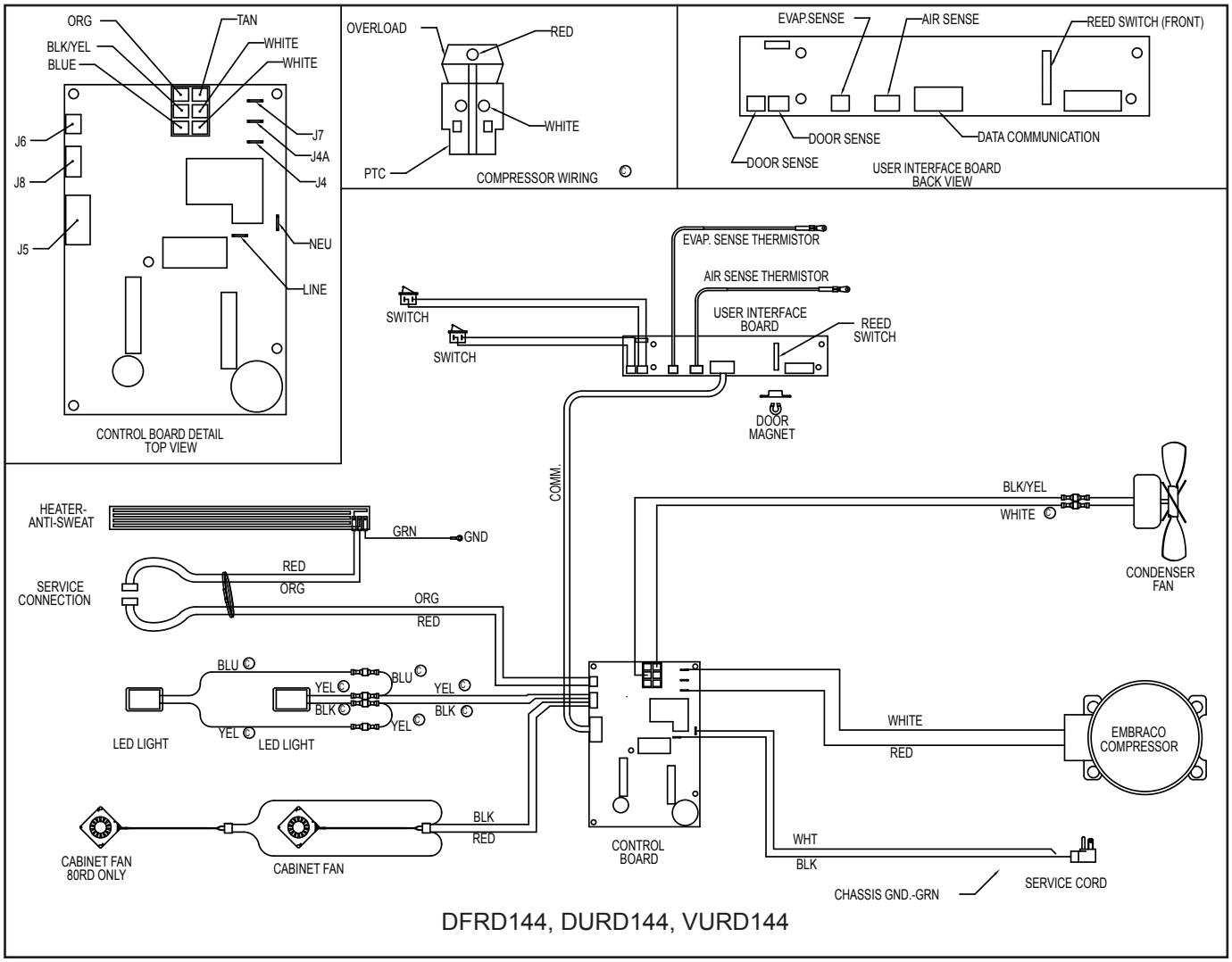
Wiring Diagrams and Schematics

Beverage Center Wiring Schematic



DFUR143, DFUR144, DUAR143
DUAR144, VUAR143, VUAR144

Refrigerated Drawer Wiring Schematic



DFRD144, DURD144, VURD144