WINE GUARDIAN® | Sentinel Series

Ducted Split

Wine Cellar Cooling Systems

Installation, Operation and Maintenance Manual

60Hz Models: DS025

50Hz Models: WGS40

Manufactured by

AIR INNOVATIONS Syracuse, NY

wineguardian.com airinnovations.com

Edition 09-2021 (Original Instructions)

Part No. 15H0326-00

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Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

RSS GEN (English)

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

RSS GEN (French)

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Directory of Terms

Ambient Air – The surrounding area outside the cellar such as a room, basement, garage or outdoors.

CACLS – Cubic liters per second. A unit of measurement for the amount of air handled by the fan.

CFM – Cubic feet per minute. A unit of measurement for the amount of air handled by the fan.

Condensate / Condensation – The water formed out of the air when it is cooled below a certain temperature (called dew point). Often referred to as “sweating” on pipes and cold surfaces. This water collects at the bottom of the evaporator or cooling coil and drains out of the unit through the drain line.

Condenser (Heat Rejection) Section / Coil – The Condenser Section uses the compressor, condenser coil and fan to remove heat from the refrigerant to the ambient air *outside* the wine cellar. The word condenser refers to the condensation of the refrigerant from gas to liquid phase.

CE– Certificate of European conformity

CSA/ETL – Canadian Standard Association/Electric Testing Laboratory

Exhaust Air – The air leaving the evaporator or condenser section of the Wine Guardian unit.

Evaporator (Cooling) Section / Coil – The Evaporator Section uses the cooling coil and the fan to remove heat from the air *inside* the wine cellar to the refrigerant, cooling the air and condensing moisture out of the air. The word evaporator refers to the evaporation of the refrigerant from liquid to gas phase in the coil. The Evaporator Section is connected to or inside the wine cellar.

Flexible Duct – Round ducts with steel reinforced plastic liners, a layer of insulation and an outer plastic layer used to convey the air from the unit to the cellar or ambient space.

Grille or Diffuser – Inlet or outlet plates to direct the airflow or protect the inside of the unit.

Heat Gain / Loss – The amount of cooling or heating expressed in watts transferred between the wine cellar and the ambient space. The Wine Guardian must offset this load.

Inlet Air – The air entering the evaporator and condenser sections of the Wine Guardian unit.

Inlet Air – The air returning from the wine room to the Wine Guardian fan coil.

I.D. – Inside diameter

NEC – National Electrical Code

O.D. – Outside diameter

Psig Pounds – Force per square inch gauge

NEC – National Electrical Code

Recovery – The amount of cooling the unit does to return the cellar to its set point temperature after some new load is introduced, such as people or new cases of warm wine entering the cellar.

Return Air - The air leaving the cellar and returning to the inlet of the evaporator coil.

TXV – Thermal Expansion Valve

VAC – Volts alternating current

SP – Static pressure. Unit of measurement (inches of water column) of the pressure of the air handled by the fan.

Set Point – The desired temperature or humidity set on the thermostat or humidistat.
Supply Air - The air entering the cellar from the discharge of the evaporator coil.

Receiving, Inspecting and Unpacking the Wine Guardian Unit

IMPORTANT

This appliance is not intended for use by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

NOTE: Wine Guardian units are factory assembled and tested prior to shipment. The Wine Guardian Ducted Split System consists of two separate components, the Wine Guardian fan coil and condensing unit.

Each Wine Guardian component is shipped in a corrugated box. A shipment may include one or more boxes containing accessories.

- ✓ Lift at the designated handhold locations only or fully support from underneath.
- ✓ Before opening, inspect the packing crates or boxes for obvious signs of damage or mishandling.
- ✓ Write any discrepancy or visual damage on the bill of lading before signing.
- ✓ Inspect all equipment for any sign of damage caused during transit.
- ✓ Report all visual or concealed damage to the carrier and file a claim immediately.
- ✓ Thoroughly inspect the contents for any visible damage or loose parts.

IMPORTANT

If this procedure is not followed, the shipping company may reject the claim and the consignee may suffer the loss. Do not return the shipment to the factory.

Review the Packing Slip to Verify

- ✓ Model number
- ✓ Factory installed options
- ✓ Unit accessories

If any items listed on the packing slip do not match your order information, contact the place of purchase immediately.

Check the unit for

- ✓ An electrical power cord
- ✓ A remote interface controller with communication cable plugged into side of unit
- ✓ A drain line coming out of the unit
- ✓ One supply duct collar and one return duct collar

Check the condensing unit for:

- ✓ Weatherproof enclosure, top and sides

General Description

IMPORTANT

Design and specifications are subject to change without notice

The Wine Guardian cooling unit is a professional grade, American-manufactured, split two-piece climate control unit designed specifically for the storage of wine at cellar temperatures. It is designed for easy installation and operation. Wine Guardian uses digital electronic controls and R-134a refrigerant. The entire Wine Guardian fan coil section and the condensing unit is tested at the factory. All components are of a high quality standard commercial grade.

The entire system is approved by ETL according to UL 1995 and CSA safety standards. All wiring complies with NEC. Each Wine Guardian fan coil section is furnished with a sealed, UL-approved power cord and plug.

All Wine Guardian 50Hz units carry the CE mark. Each unit is furnished with a sealed, CE-approved power cord.

The Wine Guardian Ducted Split System Contains

1. **A Wine Guardian Fan Coil Unit with**:
   - ✓ A thermal expansion valve to control the flow of refrigerant into the evaporator coil
   - ✓ A built-in condensate drain trap. No external trap is required.
   - ✓ A removable control panel for ease of service
   - ✓ Supply duct collar
   - ✓ Return duct collar
   - ✓ Remote interface controller and control cable

2. A Condensing Unit with:

- ✓ A filter dryer to keep the refrigerant clean and free of contaminants
- ✓ A sight glass to observe the level of refrigerant
- ✓ A manual reset high pressure switch on the discharge to protect the compressor from high

  pressures.
- ✓ Auto reset low pressure switch
- ✓ 24-volt contactor for control of fan coil unit
- ✓ Outdoor enclosure
- ✓ Crankcase heater
- ✓ Low ambient refrigeration controls (see page 11 for Xtreme Low Ambient option)

Wine Guardian Fan Coil Unit

The Wine Guardian fan coil unit meets its rated capacities for total BTU/H and CFM (watts and M^3/h for 50Hz) at design cellar conditions and external static pressures. The fan coil unit is capable of rated CFM (M^3/h for 50Hz) against the static pressure imposed by recommended ductwork. The fan is a motorized impeller type, statically and dynamically balanced, and uses permanently lubricated direct drive motors requiring no maintenance.

The Wine Guardian fan coil section operates as air passes through the cooling coil and is cooled by the refrigerant inside the coil. This causes any excess humidity in the air to condense and be captured in the drain pan and piped outside the unit. Air then enters the fan where it is pressurized and discharged out of the unit through one of five openings. Optional heating coils are located between the cooling coil and the fan. These coils heat the air to prevent low temperatures in the cellar.

All exterior framing of the Wine Guardian is powder coated aluminum to prevent rust and corrosion. All coils are aluminum tubes with aluminum fins. The unit uses an external drain to remove excess moisture and not reintroduce it into the cellar or ambient space. Removable, multiple access doors are provided to facilitate cleaning and maintenance, duct connections, and access to components and wiring.

Each unit is provided with a pre-wired and tested remote interface controller for remote mounting within the wine cellar. The remote interface controller has multiple control functions for cooling, heating, and operation. It has a fully automatic mode to switch between heating and cooling.

Electrical Controls

The main electrical control board and components are located on a separate panel accessible through a side door panel or by removal of the on/off panel from the system chassis. All wiring is in accordance with the NEC. Wires are numbered and color coded to match the wiring diagrams.

Electric power is supplied by a single factory-furnished cord and plug. All external controls are digital and proprietary to Wine Guardian products. Only approved communication cable (RJ-9) and Wine Guardian controllers are suitable for proper system operation.

Condensing Unit

Compressors are self-lubricating, permanently sealed, hermetic reciprocating-type compressors, with internal overload protection and capacitor start. The condensing unit includes a two-year warranty. Compressors are mounted on rubber-in-shear isolators to reduce noise and vibration. Additional features include a liquid line filter drier, Sporlan Head Master Controls, a liquid line receiver and refrigerant sight glass. Each unit is housed in a painted aluminum enclosure suitable for outdoor installation. The outdoor enclosure has adequate area for ventilation and refrigerant piping penetrations.

All units come factory-configured with low-ambient protection for exposure to cold weather. This feature controls the system pressures to prevent evaporator coil freezing (based on head pressure) and heats the compressor coil reservoir.

Standard Specifications

NOTE: Design and specifications are subject to change without notice.

The Wine Guardian Unit Contains

- ✓ A thermal expansion valve to control the flow of refrigerant into the evaporator coil
- ✓ A manual reset high pressure switch to protect the system from high pressures
- ✓ The unit uses only R-134a refrigerant
- ✓ A built-in condensate drain trap. (no external trap is required)

The Wine Guardian 60Hz models meets or exceeds its rated capacities for total BTU/H and CFM at design cellar conditions and external static pressures. **The Wine Guardian 50Hz models** meets or exceeds its rated capacities for total watts and cubic liters per second at design cellar conditions and external static pressures. Both the evaporator and condenser fans are capable of rated CFM against the external static pressure imposed by recommended ductwork. Both fans are motorized impeller plug fans, statically and dynamically balanced, and use permanently lubricated, direct drive motors that require no maintenance.

All exterior framing of the Wine Guardian is powder coated aluminum to prevent rust and corrosion. All coils are aluminum tubes with aluminum fins. The unit uses an external drain to remove excess moisture and not reintroduce it into the cellar or ambient space. Removable, multiple access doors are provided to facilitate cleaning and maintenance, duct connections, and access to components and wiring.

The condenser coils have pre-filters on the inlet to prevent dust and dirt from fouling the coils, thereby reducing capacity. Each unit has at least three discharge outlets on both the evaporator and the condenser coils to facilitate custom installations. Water-cooled units have copper straight tube connections for both cooling water inlet and outlet.

Each unit is provided with a pre-wired and tested electronic digital thermostat for remote mounting in the cellar. The thermostat has multiple control functions for the fans, cooling and heating. It has a fully automatic mode to switch between heating and cooling.

Compressors are rotary, self-lubricating, permanently sealed, hermetic reciprocating type compressors, with internal overload protection and capacitor start with a minimum of one-year manufacturer's warranty and an optional five-year warranty. Compressors are mounted on rubber-in-shear isolators to reduce noise and vibration.

Electric power is supplied by a single factory furnished cord and plug. All external controls are digital and proprietary to Wine Guardian products. Only approved communication cable and Wine Guardian controllers are suitable for proper system operation.

Accessories and Optional Equipment

All Wine Temperatures (AWT) *(available for both air-cooled and water-cooled systems)*

An optional serving temperature defrost sensor and electric heating element are installed during production. The electric heating option is factory installed and includes primary and secondary over-temperature protection devices per UL and NEC.

Extreme Climate Protection (only available with air-cooled systems)

This bundle includes both a factory installed Low Ambient, and a factory installed High Ambient upgrade. Low Ambient makes the Wine Guardian capable of exposure to low ambient temperatures. This feature controls the condenser fan operation based on head pressure and heats the oil reservoir, as well including a 3R Condenser Fan. This bundle is recommended whenever the system will experience condenser inlet temperatures below 40 degrees F (4 degrees C) or about 100 degrees F (37 degrees C) to protect the system itself. This bundle will protect the system from temperatures as low as -20 degrees F (-29 degrees C) or as high as 125 degrees F (52 degrees C)

- Check valve – installed in the liquid line between the head pressure control valve and receiver
- Fan cycling switch
- Heater – for the receiver with thermostat control
- Adjustable low-pressure cutout timer.

Ultimate Bundle (only available with air-cooled systems)

This bundle includes everything from both the All Wine Temperatures bundle and the Extreme Climate Protection bundle.

Humidifier and Humidistat

Another popular option for the Wine Guardian is a humidifier. The humidifier is available as a freestanding unit powered by the Wine Guardian system, as freestanding unit with its own power cord and humidistat or as an integrated unit that bolts to the side of any Wine Guardian ducted system. The Wine Guardian humidifier requires a water supply and drain for operation.

Duct Collar Kits

Ducting for the Wine Guardian is sold in kits by size for each unit. Each kit contains two adapter collars, one 25-foot (7.3 meters) length of round flexible duct and two straps. The number of duct kits needed depends on the layout. The size of the kit depends on the model Wine Guardian selected. Follow installation instructions carefully. Poorly or incorrectly installed ducts can degrade the performance of your unit dramatically.

Extended Compressor Warranty

The Wine Guardian uses only the best commercially available compressors on the market. However, since the compressor is the single most expensive component in the unit, it is recommended that you purchase the extended warranty option.

CAUTION

CAREFULLY FOLLOW THE INSTALLATIONS INSTRUCTIONS INCLUDED WITH THE HUMIDIFIER. REFER TO THE INSTRUCTIONS CONTAINED IN THE BOX FOR THE HUMIDISTAT.

Overview of the Wine Guardian Unit

Cabinet – The cabinet is constructed of aluminum with a powder coated finish for corrosion protection. The access doors and duct collars are constructed of durable composite material. Areas in contact with cold temperatures are lined with insulation to prevent condensation.

Condensing Section – Ambient air is circulated through the condenser section by a direct drive, permanently lubricated, motorized impeller blower. This section also contains the compressor and the electrical controls. If the water-cooled option is purchased, a heat exchanger is used in place of the condenser coil and blower.

Evaporator Section – Cellar air is circulated through the evaporator section by another blower the same as above. The large evaporator coil face area eliminates condensate carry-over, reduces air pressure drop and optimizes heat transfer. A drain pan is located directly below the coil to capture condensate and is fabricated from aluminum to prevent rust and corrosion. The electric heating coil, if ordered, is factory installed between the evaporator coil and the blower and is complete with contactor(s) and limit controls.

Electrical Controls – Most of the electrical components and controls are in a separate area accessible on the side of the unit. All wiring is in accordance with the NEC. Wires are numbered and color coded to match the wiring diagrams.

Factory Tested – All Wine Guardian units are factory run-tested and checked for operational performance.

Filters – Nominal 1-inch (25mm) thick filter is provided on the condenser inlet to protect the coils from dust and dirt. This filter is washable and reusable.

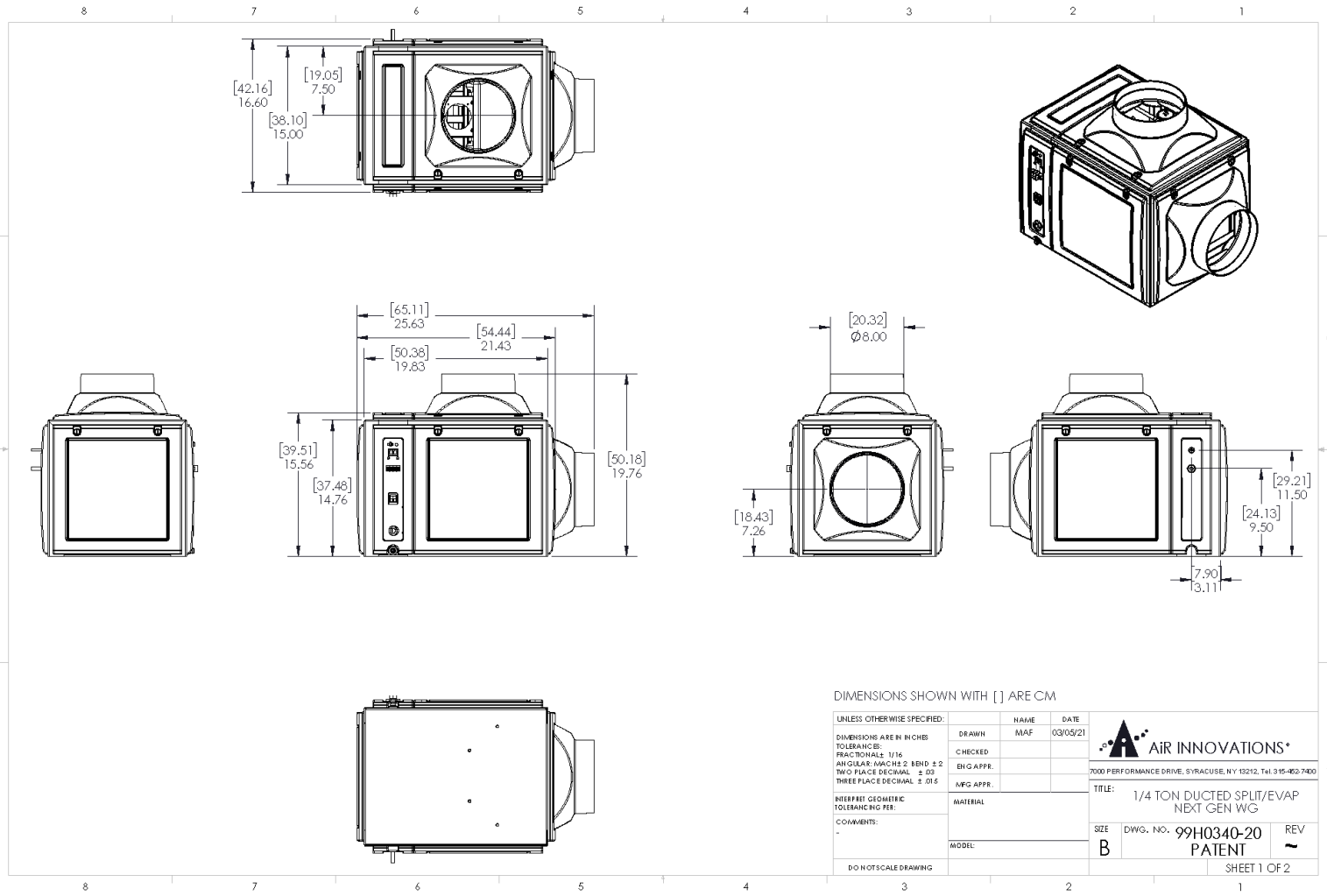
Humidity Option – The optional humidifier comes fully assembled and tested for field installation onto the Wine Guardian without any additional electrical power wiring. It automatically adds moisture into the cellar by the evaporation of water over a distribution pad. The same Wine Guardian thermostat controller supplied with the Wine Guardian unit automatically controls humidity as well as temperature.

Internal Drain Trap - Water condensate from the evaporator coil fills the trap and forms a seal to prevent air from being drawn back through the drain tube. This allows the drain pan to drain freely. No external trap is required.

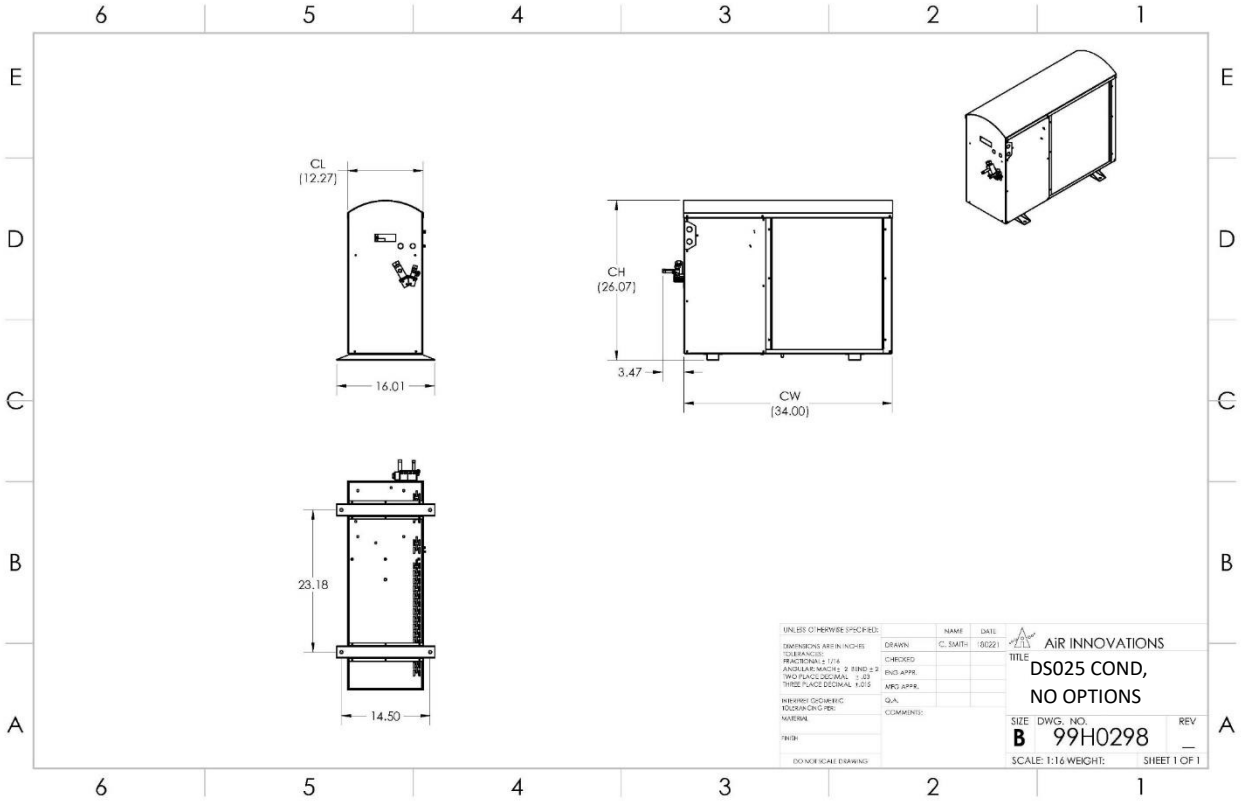
Refrigerant Circuit – The factory charged circuit includes a thermal expansion valve with an external equalizer, sight glass with moisture indicator, a filter dryer, an automatic low-pressure switch, and a manual reset high pressure switch. For the Extreme Climate Protection option, an automatic pressure switch controls the operation of the condenser blower, and a heating element is added to the compressor oil reservoir. **See Fig 1 - Refrigeration Illustration on next page.**

Supply/return grilles – A composite single direction grille is provided on the outlet of condenser section. One grille is provided on an outlet. The grille is interchangeable with access doors to control and direct the airflow.

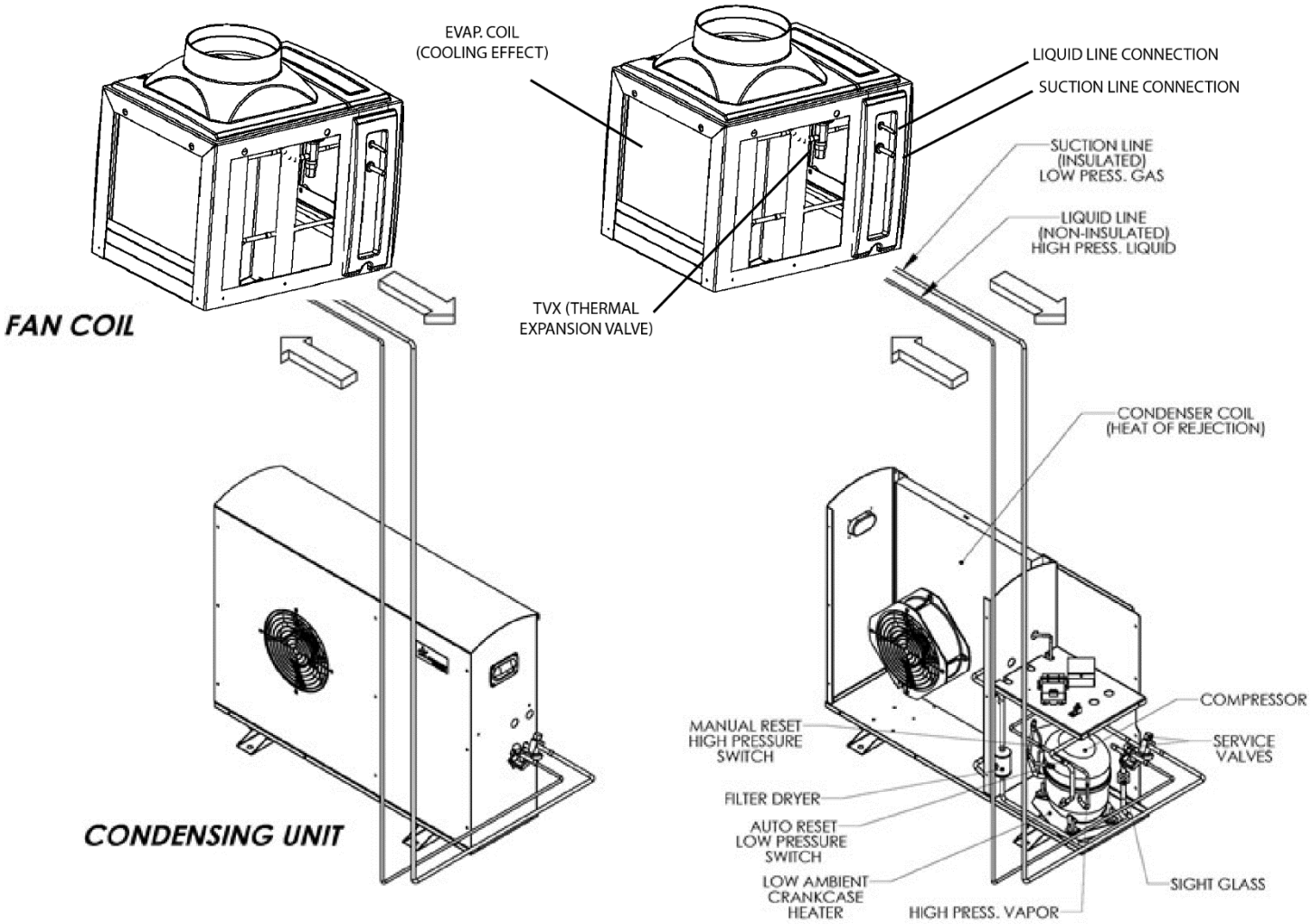
Overview Illustration of the Wine Guardian Fan Coil
Fig. 1



Overview Illustration of the Condensing Unit

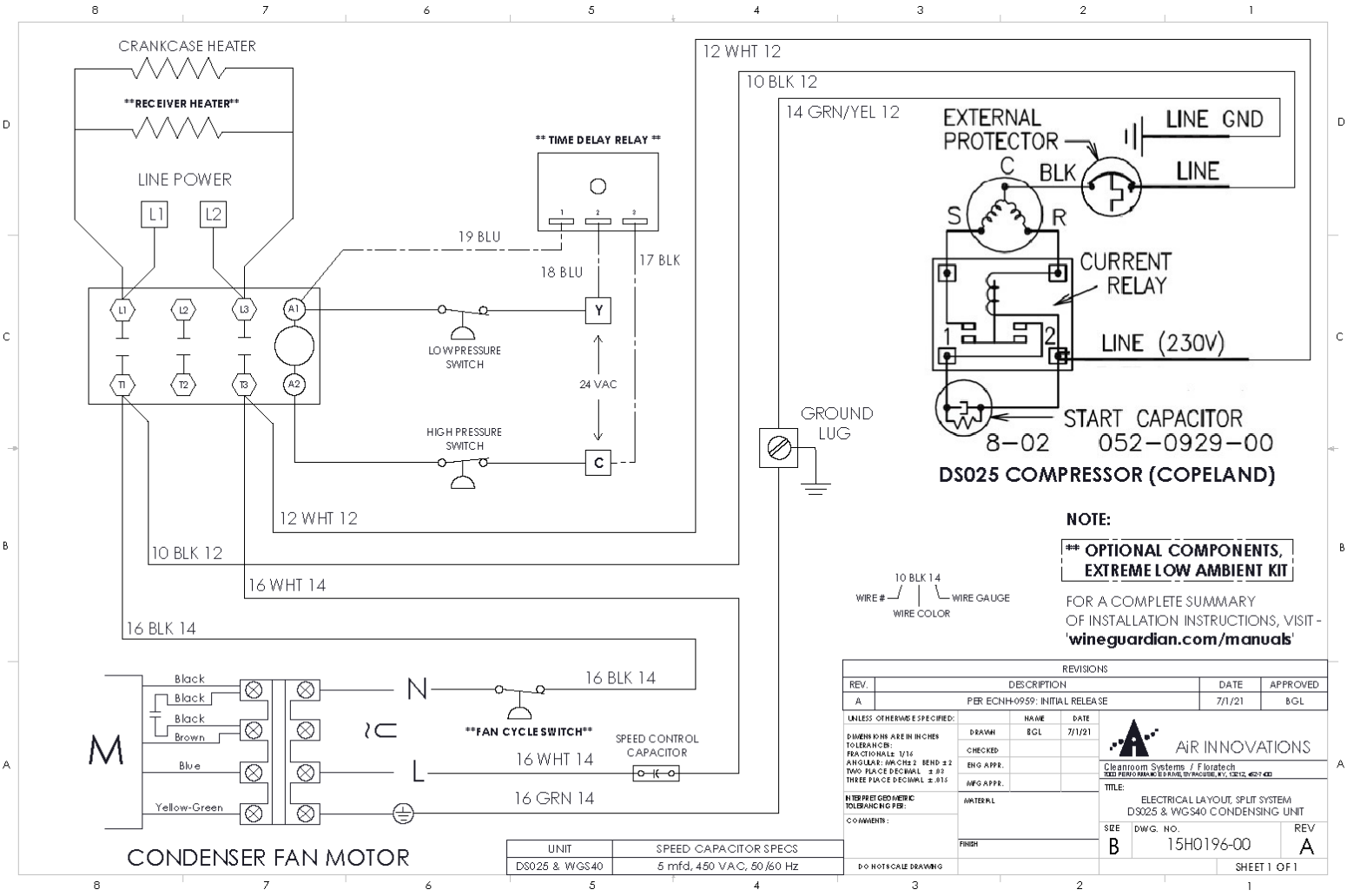


Refrigeration Illustration of the system



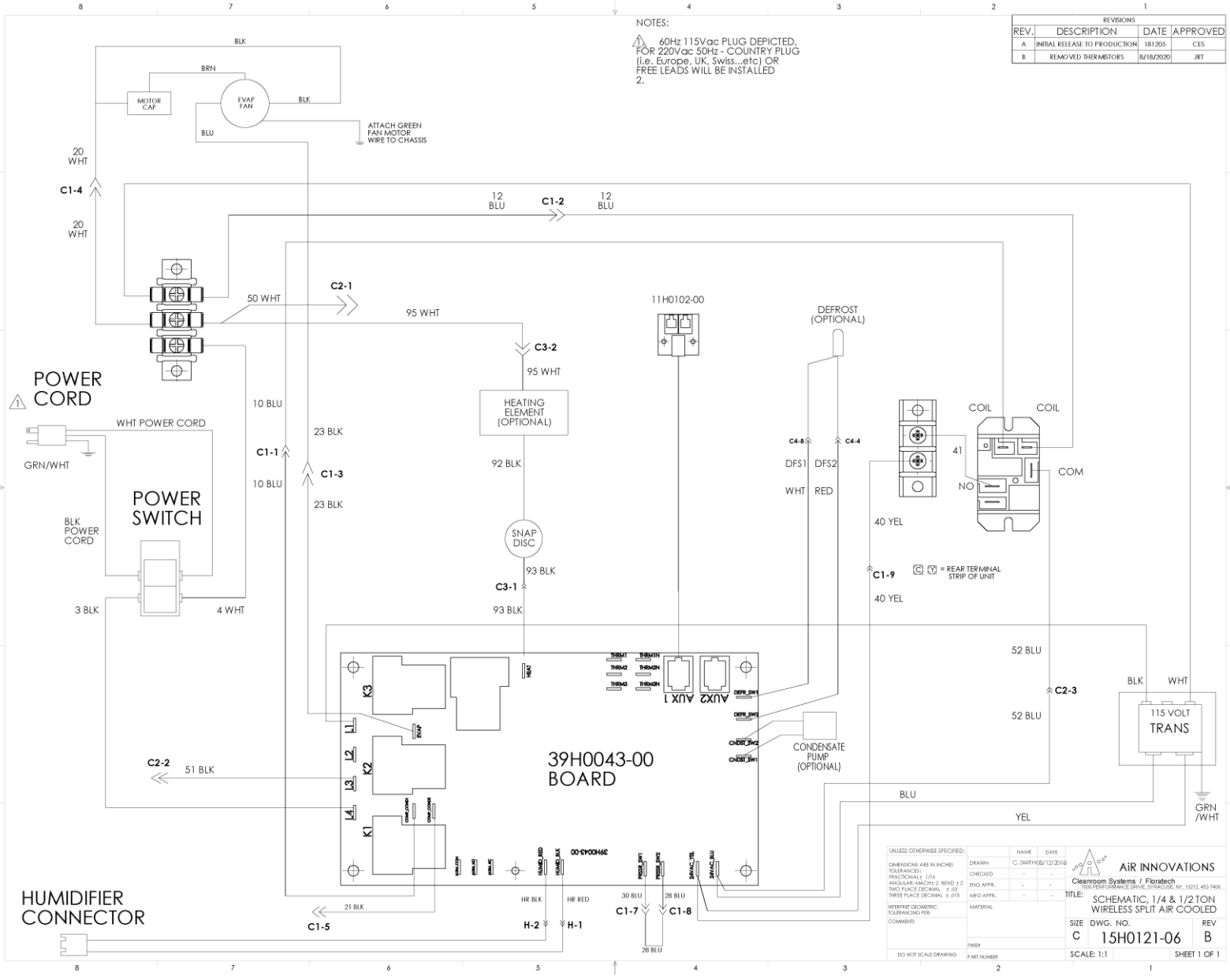
Wiring diagram for DS025, WGS40

Fig.5



Wiring diagram for DS025, WGS40 (cont.)

Fig. 6



Wine Guardian Specifications sheet – 60Hz models

Ducted Split System	
Model Number	***DS025***
Performance	
Net Cooling * Total Sensible	Total/Sensible @208-230V
@10°F (minus 12°C) condenser inlet air	4100/3178 BTUH
@40°F (4°C) condenser inlet air	3793/3178 BTUH
@60°F (15°C) condenser inlet air	3485/3075 BTUH
@70°F (21°C) condenser inlet air	3690/3075 BTUH
@80°F (27°C) condenser inlet air	3485/3178 BTUH
@100°F (32°C) condenser inlet air	3178/2768 BTUH
@115°F (46°C) condenser inlet air	2973/2563 BTUH
@122°F (50°C) condenser inlet air	2460/2460 BTUH
Controls	
Type	Room mounted non-programmable combination thermostat humidistat
Temperature Accuracy/RH% Accuracy	+/- 1 Deg F / +/- 10% RH
Fan-coil Section	
Fan Motor Size	90 Rated Watts
Rated Air Flow (free blow)	236 CFM
Rated Air Flow @ Max allow pressure loss	226 @ 0.10"wc / CFM
Heat (Option)	
Type	Electric
Capacity	1000 Watts
Humidifier (Option)	
Type	Removeable drip pad with integral fan
Capacity - water temp of 60°F (15°C)	0.42 lbs/hr
Capacity - water temp of 90°F (32°C)	0.97 lbs/hr
Capacity - water temp of 120°F (49°C)	1.11 lbs/hr
Electrical Requirements - Evaporator Section	
Power	115 Volts/1 phase/60Hz
Current Draw - Cooling mode	0.8 Amps
Current Draw - Heating mode	9.4 Amps
Minimum Circuit Size (w/heat option)	11.6Amps
Optional Humidifier	0.3 Amps
Cabinet - Evaporator Section	
Fan coil construction	Aluminum chassis & UL rated plastic panels
Finish	Gray metal epoxy powder coat/textured PVC Acrylic blend
Weight	80lbs
Length	21.43 inches
Width	16.60 inches
Height	15.56 inches
Condensate Drain	0.5 inches
Condensing Unit	***DS025 Cond***
Nominal Compressor	3.1 Amps
Fan Motor Size	75 Watts
Rated Air Flow (free blow)	275 CFM
Weight	75 lbs
Enclosure - Condensing Unit	
Construction	Aluminum
Finish	Anodized
Width	12 inches
Length	34 inches
Height	26 inches
Electrical Requirements - Condensing Unit	
Power	208/230 Volts/1 Phase/60Hz
MCA	4.2 Amps
MOP	8.0 Amps
Agency Approval(s)	ETLc
1. Net cooling capacity at entering temperature and humidity conditions of 57 Deg F (14 Deg C) and 55% RH at rated airflow. Reduce capacity by 3% for each 10% reduction in evaporator airflow.	
2. Wine Guardian reserves the right to make changes to this document without prior notice at its sole discretion.	
3. All ratings at sea level.	
4. All btuh capacity and airflow (CFM) values shown are at tested 230v applied on 208/230v rated units (Condensing units and larger evaporators). If field application allows 208v applied to the units dual rated, you can generally expect 2.5%-3.0% decreases in values shown.	

Wine Guardian Specifications sheet – 50Hz models

Ducted Split Systems - 50Hz	
Model Number	***WGS40***
Performance	
Net Cooling * Total Sensible	Total/Sensible @220-2400V
@10°F (minus 12°C) condenser inlet air	1140/879 Watts
@40°F (4°C) condenser inlet air	1140/937 Watts
@60°F (15°C) condenser inlet air	1115/860 Watts
@70°F (21°C) condenser inlet air	1110/850 Watts
@80°F (27°C) condenser inlet air	1055/835 Watts
@100°F (32°C) condenser inlet air	965/730 Watts
@115°F (46°C) condenser inlet air	850/675 Watts
@122°F (50°C) condenser inlet air	640/640 Watts
Controls	
Type	Room mounted non-programmable combination thermostat humidistat
Temperature Accuracy/RH% Accuracy	+/- 1 Deg F / +/- 10% RH
Fan-coil Section	
Fan Motor Size	85 Rated Watts
Rated Air Flow (free blow)	390 M^3h
Rated Air Flow @ Max allow pressure loss	374 M^3h
Heat (Option)	
Type	Electric
Capacity	1000 Watts
Humidifier (Option)	
Type	Removeable drip pad with integral fan
Capacity - water temp of 60°F (15°C)	.19 kg/hr
Capacity - water temp of 90°F (32°C)	.44 kg/hr
Capacity - water temp of 120°F (49°C)	0.5 kg/hr
Electrical Requirements - Evaporator Section	
Power	220-240Volts/1 phase/50Hz
Current Draw - Cooling mode	0.4 Amps
Current Draw - Heating mode	4.75 Amps
Minimum Circuit Size (w/heat option)	5.84 Amps
Optional Humidifier	0.3 Amps
Cabinet - Evaporator Section	
Fan coil construction	Aluminum chassis & UL rated plastic panels
Finish	Gray metal epoxy powder coat/textured PVC Acrylic blend
Weight	36kg
Length	54.43 cm
Width	42.16 cm
Height	39.52 cm
Condensate Drain	12.7 mm
Condensing Unit	***WGS40 Cond***
Nominal Compressor	2.6 Amps
Fan Motor Size	68 Watts
Rated Air Flow (free blow)	850 M^3h
Weight	34 kg
Enclosure - Condensing Unit	
Construction	Aluminum
Finish	Anodized
Length	86.4 cm
Width	30.5 cm
Height	66 cm
Electrical Requirements - Condensing Unit	
Power	220-240 Volts/1 Phase/50Hz
MCA	3.7 Amps
MOP	6.0 Amps
Agency Approval(s)	CE

1. Net cooling capacity at entering temperature and humidity conditions of 57 Deg F (14 Deg C) and 55% RH at rated airflow. Reduce capacity by 3% for each 10% reduction in evaporator airflow.

2. Wine Guardian reserves the right to make changes to this document without prior notice at its sole discretion.

3. All ratings at sea level.

Safety

Before installing or maintaining the Wine Guardian unit do the following:

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.

IMPORTANT

The equipment described in this manual uses electricity. Be sure to follow the safety procedures outlined in the Wine Guardian Manual.

Safety Message Conventions

Safety messages contained in this manual, **DANGER**, **WARNING**, and **CAUTION** are bold and highlighted in red for quick identification.

Danger

A Danger message indicates an imminently hazardous situation which, if not avoided, results in death or serious injury. Messages identified by the word **DANGER** are used sparingly and only for those situations presenting the most serious hazards.

Following is a typical example of a Danger message as it could appear in the manual

DANGER

HIGH VOLTAGE - RISK OF SERIOUS INJURY OR DEATH
High voltages are present in the cabinets.
Before opening panels turn off all power.
Use the Lockout/Tagout procedure.

Warning

A Warning message indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Following is a typical example of a Warning message as it could appear in the manual:

WARNING

RISK OF PERSONAL INJURY OR DAMAGE TO EQUIPMENT
Modification to the equipment may cause injury.

Caution

A Caution message indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practice

Following is a typical example of a Caution message as it could appear in the manual:

CAUTION

RISK OF PERSONAL INJURY OR DAMAGE TO EQUIPMENT

Improper installation may result in the equipment malfunctioning and a safety hazard. Read all of the installation instructions before installing the Wine Guardian unit.

Lockout/Tagout Procedure

1. Turn off the power switch (indicator light should be off)
2. Unplug the unit from the electrical outlet and cover the outlet to prevent accidently plugging in the unit.

Safety Considerations

The equipment covered by this manual is designed for safe and reliable operation when installed and operated within its designed specifications. To avoid personal injury or damage to equipment or property when installing or operating this equipment, it is essential that qualified, experienced personnel perform these functions, using good judgment and safe practices. See the following cautionary statements.

Installation and maintenance of this equipment is to be performed only by qualified personnel who are familiar with local codes and regulations and are experienced with this type of equipment.

Safety Hazards

Exposure to safety hazards is limited to maintenance personnel working in and around the unit. When performing maintenance, always use the Lockout/Tagout procedure, which is described in this chapter. Observe the maintenance safety guideline in the Wine Guardian Manual.

Electrical Hazards

Working on the equipment may involve exposure to dangerously high voltage. Make sure you are aware of the level of electrical hazard when working on the system. Observe all electrical warning labels on the unit.

Electrical Shock Hazards

All power must be disconnected prior to installation and servicing this equipment. More than one source of power may be present. Disconnect all power sources to avoid electrocution or shock injuries.

Hot Parts Hazards

Electric resistance heating elements must be disconnected prior to servicing. Electric heaters may start automatically, disconnect all power and control circuits prior to servicing the unit to avoid burns.

Moving Parts Hazards

The motor and blower must be disconnected prior to opening access panels. The motor can start automatically. Disconnect all power and control circuits prior to servicing to avoid serious injuries or possible dismemberment.

The fans are freewheeling after the power is disconnected. Allow the fans to stop completely before servicing the unit to avoid cuts or dismemberment.

Rotating fan blades are present in the Wine Guardian unit. Sticking a hand into an exposed fan while under power could result in serious injury. Be sure to use the Lockout/Tagout procedure when working in this area or remove the power cord.

Equipment Safety Interlocks

There are no electrical safety lockouts installed within the unit. The power cord attached to the control box must be disconnected from the power sources prior to working on any part of the electrical system.

Main Power Switch

The main power switch is located on the side of the Wine Guardian unit. **(See Overview Illustration on page 12)** It shuts off the power to the unit.

Energy Type **Electrical**

Hazard .....Electrocution, electrical burns and shock

Magnitude .....120 VAC and 230 VAC, 1 phase, 60 cycles

.....230 volts AC 1 phase, 50 cycles

Control Method .....Disconnect power cord and On/Off switch

- **Never** reach into a unit while the fan is running.
- **Never** open an access door to a fan while the fan is running.
- **Disconnect** the power cord switch before working on the unit. The unit may have more than one power source to disconnect.
- **Avoid** risk of fire or electric shock. **Do not** expose the unit to **rain** or **moisture**.

DANGER

WARNING

- **Check** weights to be sure that the rigging equipment can support and move the Wine Guardian unit safely. Note any specific rigging and installation instructions located in the Installation section of the Wine Guardian Manual.
- All supports for the unit **must** be capable of safely supporting the equipment's weight and any additional live or dead loads encountered.
- All supports for the unit **must** be designed to meet applicable local codes and ordinances.
- **Do not** remove access panels until fan impellers have completely stopped. Pressure developed by moving impellers can cause excessive force against the access panels.
- Fan impellers continue to turn (free wheel) after the power is shut off.

CAUTION

- **Clean** only with a dry cloth**.**
- **Never** pressurize equipment above specified test pressure. See Wine Guardian Specification Sheet
- **Do not use the Wine Guardian near water.**

- **Do not** block any supply or return air register or duct. Install in accordance with the instructions in the Wine Guardian Manual. Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- **Protect** the power cord from being walked on or pinched, particularly at the outlet plugs, convenience receptacles, and the point where it exits the unit.
- **Only** use attachments/accessories specified by the manufacturer.
- **Always** operate this equipment from a 120 VAC, 1 phase, and 60Hz power sources only or 230 VAC, 1 phase 50Hz power sources only
- **Always** ground the outlet to provide adequate protection against voltage surges and built-up static charges.
- **Refer all** servicing to qualified service personnel. Servicing is required when the unit has been damaged in any way such as:

    - ✓ The power supply cord or plug is damaged.
    - ✓ Liquid has been spilled or objects have fallen into the unit.
    - ✓ The unit has been exposed to rain or moisture.
    - ✓ The unit does not operate normally.
    - ✓ The unit has been dropped.

Installation

CAUTION
SHARP EDGES
RISK OF SERIOUS INJURY
Sharp edges are present inside the Wine Guardian system.

Pre-installation Test

Test the system before installing it to check for non-visible shipping damage. **To test the Wine Guardian fan coil section:**

- ✓ Set the system on the floor or a sturdy level surface.
- ✓ Ensure the control cable and remote interface controller are plugged into one of the com ports.
- ✓ Plug in the system.
- ✓ Press the on/off switch to see if the control illuminates. This indicates the system has power.
- ✓ **A built-in timer within the controller prevents short cycling and keeps the system from turning on right away.** After a five-minute period, the fan should turn on and start to deliver air. Listen for any unusual noise or vibration.

Air Flow Diagram

Fig. 1

RISK OF PERSONAL INJURY OR DAMAGE TO EQUIPMENT

Modification to the equipment may cause injury or damage to the equipment.

DANGER

- ✓ This equipment is heavy. Place the unit on the floor or on a level and stable surface that can support the full weight of the unit.
- ✓ Do not modify the equipment. Modifications may cause damage to the equipment and will void the warranty.
- ✓ Never place anything on top of the unit.
- ✓ Never block or cover any of the openings or outlets to the unit.
- ✓ Never allow anything to rest on or roll over the power cord.
- ✓ Never place the unit where the power cord is subject to wear or abuse.
- ✓ Do not use extension cords.
- ✓ Never overload wall outlets.
- ✓ Do not remove or open any cover unless the unit is turned off and the power cord is plugged in.
- ✓ Use only dedicated power outlet boxes of the correct capacity and configuration for the unit model.

CAUTION

RISK OF PERSONAL INJURY OR DAMAGE TO EQUIPMENT

Improper installation may result in the equipment malfunctioning and a safety hazard.
Read all of the installation instructions before installing the Wine Guardian unit

Planning the Installation

IMPORTANT
Installation of residential and commercial split systems must be performed by qualified
service technicians with proper training in the installation, start up, service, and repair of these systems. Certification to handle refrigerants is also required.

Addressing Items in the Planning Process

- ✓ Where to locate the fan coil unit? Should it be built into the wine cellar or mounted remote and ducted into the cellar?
- ✓ How to mount the fan coil unit?
- ✓ Decide where to locate the supply and return grilles in the room to achieve the temperature gradient and circulation preferred.
- ✓ Locate the electrical power outlet close to the unit. **Do not use an extension cord!**
- ✓ Locate the condensing unit in a clean and well-ventilated area.
- ✓ Where to locate the remote interface controller and/or remote sensors?
- ✓ Where to run the drain line?
- ✓ Are all the parts available to complete the installation?

Performing a Pre-Installation Check

- ✓ Check for the proper installation of the electrical plug configuration.
- ✓ Check for the properly sized breakers for both the condensing unit and fan coil section.
- ✓ Is the cellar built with adequate insulation and vapor barriers?
- ✓ Are ducts installed above the ceiling or in accessible places properly sized before being covered?
- ✓ Is enough space available around the units for service and repair?

Installing the Fan Coil Unit

Wine Guardian fan coil units are typically installed indoors located near the cellar to minimize the duct runs. Each unit is provided with one entering or return air inlet and five possible supply air outlets. A maximum cumulative total length of flexible ductwork, for both supply and return ducts (including bends) of 25 feet (7.62 meters) is recommended. If longer runs are needed, use more than one supply opening to reduce the airflow in each duct by one-half, or install rigid ductwork that is typically less restrictive. Do not exceed 50 feet (15.2 meters) of total ductwork without using of booster fans. **See Recommended Flexible Ductwork Sizing Chart on page 37.**

Provide a three-foot clearance around the unit for removal of ductwork, or access for unit maintenance. If the humidifier is used, provide access space in front of it for service. (See separate humidifier manual.)

The fan coil unit can be located either above, or below the condensing unit in height. Wine Guardian strongly suggests that any height difference be kept as minimal as possible.

The fan coil unit is equipped with an On/Off switch, two communication ports, and an optional humidifier connection. One communication port is always used for the factory-supplied remote interface controller and is supplied with 50 feet (15.2) of communication cable (RJ-9). The second communication port can be used for other factory options, such as remote temperature/humidity sensors.

CAUTION

RISK OF PERSONAL INJURY OR DAMAGE TO EQUIPMENT

Check supporting structure for load bearing capacity to support the Wine Guardian. All supports must be designed to meet applicable local codes and ordinances. If in doubt, consult a qualified architect, engineer or contractor.

NOTE: Review Fig. 1 through Fig. 4 on the following pages before mounting the unit.

Floor Mounting

Mount the Wine Guardian fan coil on a plywood surface at least 12 inches (30.4cm) above the floor to keep it away from water. Allow adequate space for the external drain.

Wall Mounting

If the unit is mounted onto a wall, provide adequate support on both ends of the unit to accommodate the weight of the system. Use knee braces to transfer the load of the unit to the wall. A shelf can be constructed to support the unit or a wall mount kit can be purchased through a Wine Guardian distributor.

Ceiling Mounting

Construct a structurally sound, level platform to place the unit on when hanging it from the ceiling joists. The Wine Guardian is NOT designed to be suspended from the top of the unit; it must be supported from the bottom. Place the unit on a platform to ensure that the unit is supported on all four corners. Leave adequate space on the top of the unit to remove the access doors for service.

In all cases the unit must be level to within +/- 0.25 inches (+/- 6.35mm) end-to-end and +/- 1/8 inches (+/- 3.18mm) side-to-side for proper operation. Locate the unit as close to the wine cellar as possible to reduce the length of the duct runs. If possible, use short and straight ducting on all ductwork runs.

Typical Mounting Arrangements

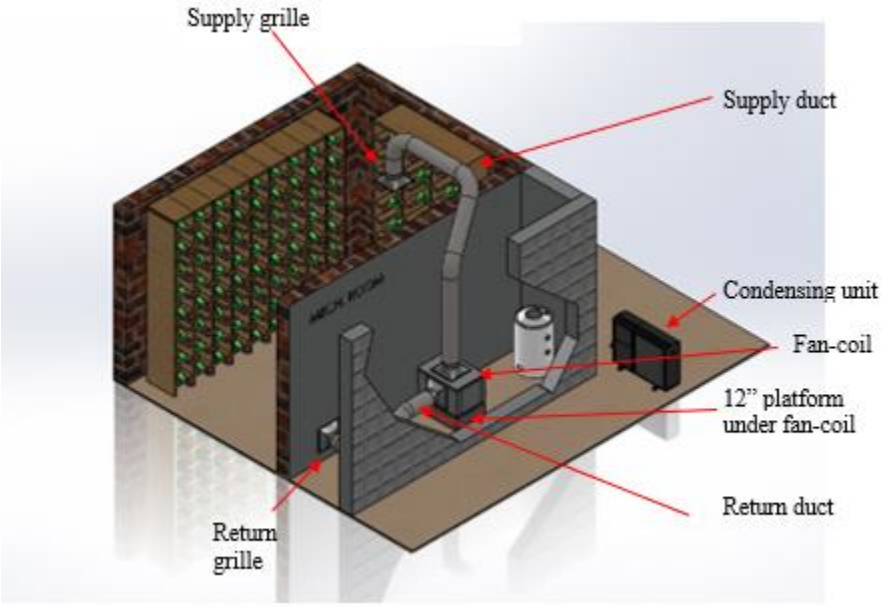
The following illustrations are suggested mounting arrangements. These illustrations are not intended to be complete and detailed installation drawings. For questions or help regarding installation, contact a Wine Guardian distributor or email (info@wineguardian.com) a sketch of the proposed area where the unit is to be installed.

Handling and Installation

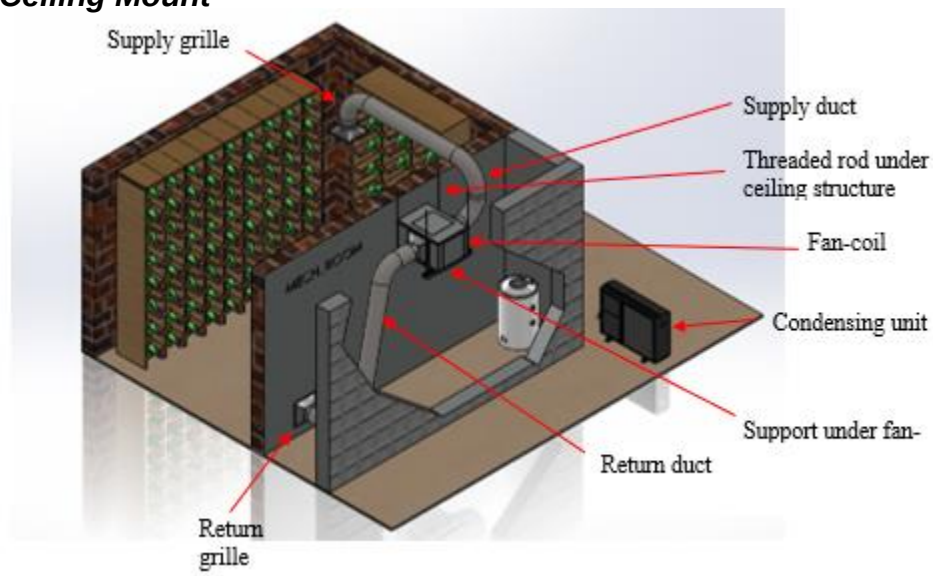
1) Mount unit on solid, level surface.
2) Allow sufficient space for access to unit and accessories.
3) Provide proper electrical service.
4) Provide water to humidifier. (If applicable)
5) Install drain line with proper pitch.

Floor Mount

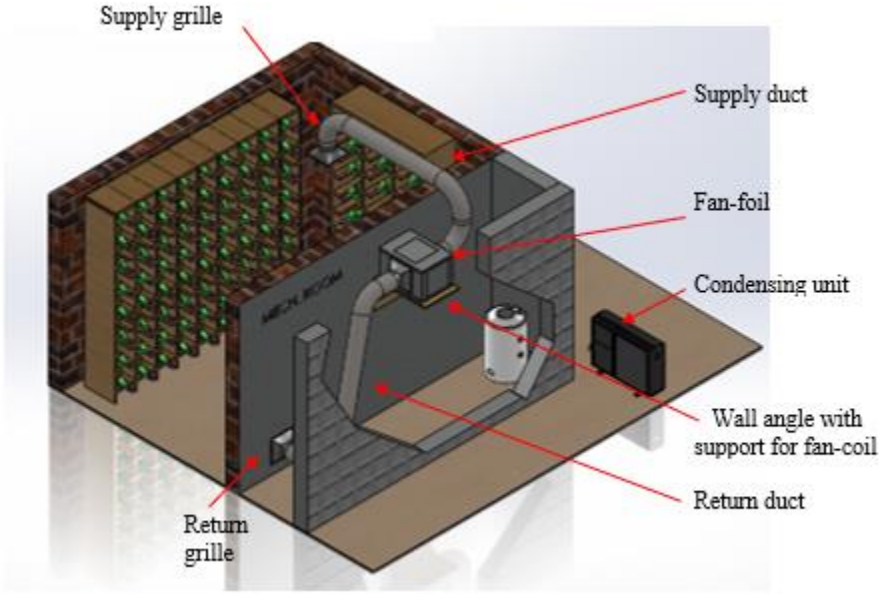
Supply air at ceiling, low wall return



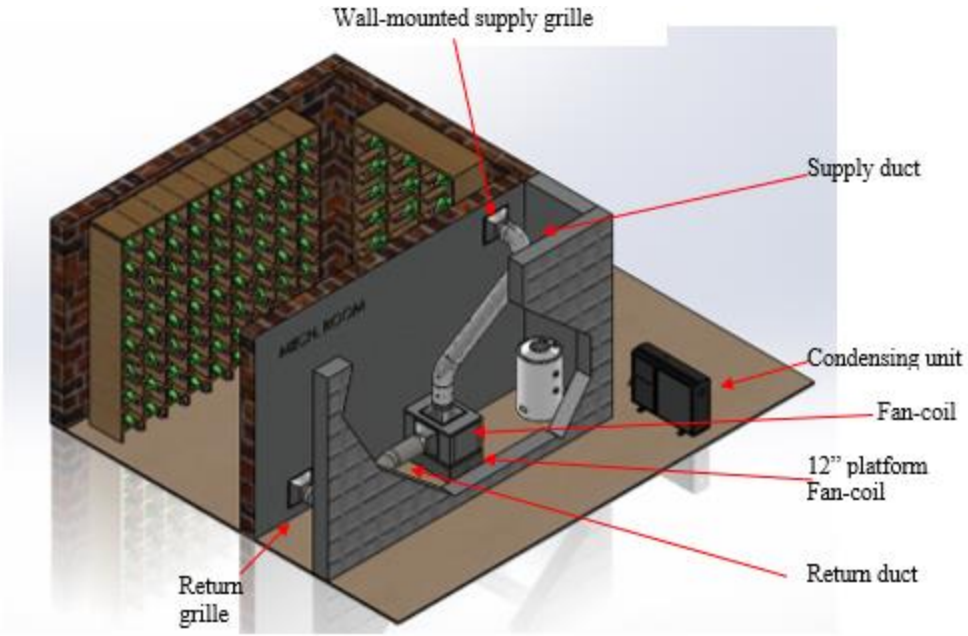
Ceiling Mount



Wall Mount



Optional ductwork connection on same wall



Installing the Ductwork and Grilles

Duct Collars

One inlet duct collar and one evaporator outlet are supplied with each fan coil unit as standard equipment from the factory. The duct collars are removable. The return air, or inlet duct collar must connect to the return air outlet from the wine cellar. Any of the five supply air outlets on the unit can be used for the ductwork to the supply grille(s) inside the wine cellar. The factory installed supply duct collar can be relocated to any of the five openings as needed.

Use ductwork to connect the unit to the supply and return outlets in the wine cellar. Use only insulated ductwork to minimize cooling loses, prevent sweating, and to reduce noise.

NOTE: Do not exceed a total of 25 feet (7.62 meters) of ductwork run (combined supply and return).

Table 2

Recommended Insulated Flexible Ductwork Sizing Chart for the Evaporator (cooling) Coil			
Model#	**Outlet (Supply air) Single**	**Outlet (Supply air) Double**	**Inlet (Return Air) Single**
DS025/WGS40	8 inches /20.3cm	6 inches /15.2cm	8 inches /20.3cm

CAUTION

RISK OF DAMAGE TO EQUIPMENT
Avoid crimping the flexible ducts. This chokes down the inside area and reduces the airflow, causing the unit to operate erratically.
Be sure all ducts and surface in contact with the airflow are insulated and have a vapor barrier on the outside surface.

NOTE: Uninsulated ducts and surfaces cause bare exposed metal surfaces to sweat, further degradation of the insulation and a loss of equipment cooling capacity.

Location of Supply and Return Grilles

Locate supply and return grilles inside the cellar to create an airflow pattern that maximizes air circulation in the room. Avoid short circulating of the air.

- ✓ Do not install the return air grilles directly on the floor as the grilles will collect dust from the floor.
- ✓ Do not locate the supply or return air grille where there are blocked by bottles, boxes or cases.
- ✓ Do not locate the supply air grille where it blows directly on the remote interface controller.

General Duct Recommendations

- ✓ Support the flexible duct often to prevent sags or bends.
- ✓ Stretch the duct to make for a smoother interior for less air resistance.
- ✓ For a 90-degree bend, insert a metal elbow inside the flexible duct to avoid crimping.
- ✓ Do not squeeze or reduce the inside diameter of the ducts. This restricts the airflow.
- ✓ Use short and straight ductwork.
- ✓ Review the configuration schematic on the Overview sketch on page 13 for information about which panels are available for duct connections and service.
- ✓ Remove the panels or grilles from the openings to connect the ductwork.
- ✓ Check that all the fan blades move freely.
- ✓ Check for loose foreign objects in any of the air paths.
- ✓ Connect the round flexible ducts to the Wine Guardian using the duct collars provided with the duct accessory kit.
- ✓ Pull the outer plastic wrapping and insulation away from the end of the duct to expose the reinforced inside duct liner.
- ✓ Use tie straps of clamp around the **inside liner** to fasten the duct collar.

NOTE: Do not clamp around the outside insulation. It compresses and loosens over time.

- ✓ Secure the duct collar to the unit using the screws provided. Be careful not to damage or bend the gasket.

Reducing Noise from the Unit

Consider noise when locating the unit close to the cellar or an adjacent occupied space. A piece of one – or two-inch dense rubber or Styrofoam with foil face in between the unit and the wall absorbs and reduces the noise from the unit. In case of air noise use larger grilles or block the noise with a solid piece of wood or Styrofoam. Sound usually travels as a line of sight. Sound is reduced when it turns a corner, such as passing through a bend in ductwork. If the unit is supported from a wall or joist, place a rubber pad under the unit to reduce vibration transmission.

Mounting the Unit

CAUTION

RISK OF PERSONAL INJURY OR DAMAGE TO EQUIPMENT

Check supporting structure for load bearing capacity to support the Wine Guardian.
All supports must be designed to meet applicable local codes and ordinances.
If in doubt, consult a qualified architect, engineer or contractor.

NOTE: Review the mounting illustrations on page 52 before mounting the unit.

Floor Mounting

Mount the Wine Guardian on the floor but elevate it on frame with a plywood surface to keep it away from water. Allow adequate space for the external drain.

Wall Mounting

If the unit is mounted through the wall, adequately support it on both sides of the wall. Use floor or knee braces to transfer the load of the unit to the floor or wall.

Ceiling Mounting

Construct a structurally sound, level platform to place the unit on when hanging it from the ceiling joists. The Wine Guardian is NOT designed to be suspended from the top of the unit; it must be supported from the bottom. Place the unit on a platform to ensure that the unit is supported on all for corners. Leave adequate space on the top of the unit to remove the access doors for service.

In all cases the unit must be level to within plus or minus one-quarter inch (6mm) end-to-end and plus or minus one-eighth inch (3mm) side-to-side for proper operation. Locate the unit as close to the wine cellar as possible to reduce the length of the duct runs. If possible, use short and straight ducting on all ductwork. The addition of quarter-inch (6mm) thick rubber pads helps prevent the transmission of vibration and noise.

Installing the Condensate Drain Connection

The Wine Guardian unit provides dehumidification for the inside of the wine cellar. It cools the air down to the dew point corresponding to the temperature set point of the thermostat. If the vapor barrier of the wine cellar is poorly constructed or excess moisture is in the basement, the unit has to remove excessive amounts of moisture from the wine cellar. The moisture appears in the condensate drain of the unit.

NOTE: If moisture becomes excessive, install a room type dehumidifier to dehumidify the basement to not overload your Wine Guardian.

Installing the Condensate Drain Connection

The Wine Guardian unit provides dehumidification for the inside of the wine cellar. It cools the air down to the dew point corresponding to the temperature setpoint of the remote interface controller. If the vapor barrier of the wine cellar is poorly constructed or excess moisture is in the basement, the unit may remove excessive amounts of moisture from the wine cellar. The moisture appears in the condensate drain of the unit.

NOTE: If moisture becomes excessive, install a room type dehumidifier to dehumidify the basement to not overload your Wine Guardian.

Installing the Drain Line

- ✓ The drain line must extend from the unit to an external drain or disposal site. Do not use drain tubing any smaller than one-half inch inside dimension on the unit.
- ✓ If no drain is available, use a bucket. Do not extend the drain below the rim of the bucket. Empty the bucket periodically.

The Wine Guardian unit is provided with a built-in drain trap. The drain trap creates a water seal to prevent air from backing up into the drain pan and causing the drain pan to overflow. Do not create secondary traps in the external drain line.

Allow enough height for the drain line to function properly. If draining into a nearby sink, the unit must be elevated higher than the rim of the sink for the water to drain by gravity. Install with a one-quarter inch per linear foot of pitch. **Do not** tie the condensate drain line directly into the sanitary sewer system. See Accessories and Optional Equipment on page 11 for information about the condensate pump.

Priming the Drain Trap

The internal drain trap primes itself automatically once the unit has run for a period of time and after the unit cycles off. This can be confirmed by water dripping from the drain.

Wiring the Unit for Power

DANGER

ELECTRICAL SHOCK HAZARD
RISK OF SERIOUS INJURY OR DEATH
The electrical outlet and wiring installation must meet the national and local building codes.

DO:

- ✓ Match the electrical wiring to the cord provided on the Wine Guardian.
- ✓ Provide dedicated circuit and wiring for the system.
- ✓ Match the wiring and breaker size to the rated load as shown on the serial plate and in this guide. See sample serial plate illustration on the following page.

Model# D025	WINE GUARDIAN	Serial# XXXXXXXXXX	
Electrical	115/1/60		8.7
Locked Rotor Amps	29	Humidifier Amps (opt.)	0.3
Compressor RLA	7.2	Crankcase Htr. Amps (opt.)	0.4
Condenser Fan Amps	0.7	Min. Circuit Amps (w/o opt.)	10.6
Evaporator Fan Amps	0.7	**Refrigerant**	R-134-A
Condensate Heater	N/A	System Charge	1lb. 3oz.
Total Unit Amps (w/o opt.)	8.6	Test Pressure	275psi

7000 Performance Drive, North Syracuse, New York 13212
Ph:800-535-3295 * 315-452-7400 * Fax: 315-452-7420

Sample serial plate

AiR INNOVATIONS®

MODEL # **D025** P/N: **99H0250-00**
FCC ID: 2AQX3-WG
IC ID: 24453-2AQX3WG

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
1) This device may not cause harmful interference, and
2) This device must accept any interference received, including interference that may cause undesired operation.

15H0246 REV. A

Sample FCC Label

DO NOT:

- ✓ DO NOT MODIFY THE PLUGS IN ANY WAY!
- ✓ Do not use extension cords.

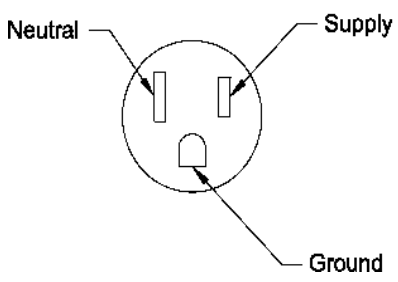
IMPORTANT
The electrical power supply must be either 115 volts or 230-volt AC, 1 phase, 60 cycle, depending on the model of the unit, and cannot vary more than plus or minus 4% or damage may occur to the unit.

Plug the unit into the wall outlet. Gently pull on the plug to make sure it is tight.

Fig.1 Plug configurations

Required For:
Models D025

-115VAC, 60Hz



Installing the Condensing Unit

- Condensing units are factory assembled with an aluminum outdoor enclosure for protection from the elements.
- A minimum of 12 inches (30cm) is required around the perimeter of the condensing unit for proper airflow across the coil, and to provide an adequate discharge airflow path. Any obstructions to this airflow will result in a decrease in performance, and possibly premature failure due to a buildup of high pressure within the system.
- The condensing unit is designed to operate in ambient temperatures ranging from 0°F-115°F (minus -18°C - 46°C), as it is supplied with many standard features to assist full operation in this wide range.
- Mount the condensing unit above normal snowfall levels, so as to allow uninhibited winter operation. A buildup of snow or any obstruction to airflow will result in a decrease in performance and possible premature failure due to an increasingly high pressure within the system.

Installation of Interconnecting Refrigerant Lines (Suction and Liquid)

NOTE: The interconnecting copper refrigerant lines shall be supplied by the installer. The larger suction line must be fully insulated along its complete length from condensing unit to fan coil unit. There is a factory-installed liquid line filter-drier inside the condensing unit; therefore, no additional drier is needed for proper operation. A liquid line moisture/sight glass is factory installed in the condensing unit to assist in monitoring the refrigerant charge, and the state of the refrigerant in the system.

- Keep horizontal and vertical distances between the indoor and outdoor section as close as possible to minimize refrigerant charge required. This will reduce system issues related to oil management that can impair performance and jeopardize the compressor's lubrication.
- Provide a one-inch pitch in suction and liquid line toward the evaporator for every 10 feet (3 meters) of run to prevent any refrigerant that condenses in the suction line from flowing to the compressor when the unit is off. These two lines can be routed together and wrapped together, as long as the suction line is fully insulated as previously directed.
- Suction line riser traps are not required if the riser is properly sized to maintain refrigerant velocity. Adding a trap will only increase pressure drop.
- Prevent dips, sags, or other low spots that will trap refrigerant oil, which is an issue especially with long horizontal runs. Use hard refrigerant copper for longer horizontal runs to prevent potential oil return problems. (see sample piping chart on page 40)
- When sweat connections are made in the connecting lines, be sure that the inside of the tubing is clean before installing the unit. Use a dry nitrogen bleed during brazing. Note that compressor suction and discharge valves should be

open to atmosphere no longer than 15 minutes. Compressors with POE (polyolester) oil will quickly become contaminated when opened to atmosphere. On any installation, the use of a suction line filter, liquid line filter drier and moisture indicator is recommended. If the suction line is larger than one-quarter inch, a vibration eliminator should be installed close to the motor compressor in a horizontal parallel to the compressor, crankshaft or in a vertical position 90 degrees to compressor crankshaft.

NOTE: The suction line should be clamped near the inlet end of the vibration eliminator. The vibration eliminator is located between the clamp and the compressor.

Split System Interconnecting Line Sizing Chart

Table 3

60Hz Models

Model	Liquid Line (OD)	Liquid connection at evaporator (OD)	Suction line (OD)	Min. Suction line insulation thickness (in)	Suction connection at evaporator (OD)	Maximum "total" line length	Maximum lift (height)
D025	1/4"	1/4"	3/8"	3/8"	3/8"	50'	15'

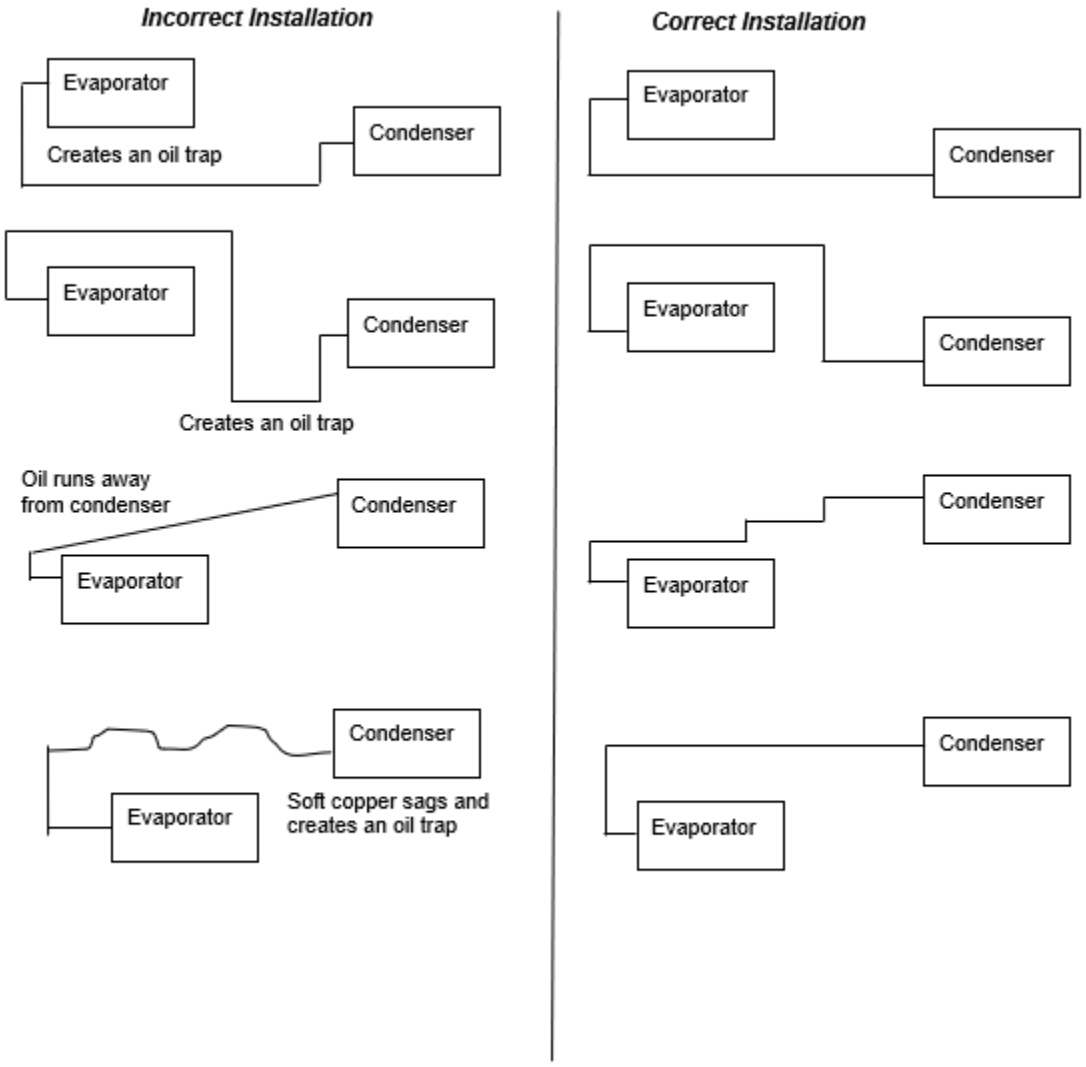
50Hz Models

Model	Liquid Line (OD)	Liquid connection at evaporator (OD)	Suction line (OD)	Min. Suction line insulation thickness (in)	Suction connection at evaporator (OD)	Maximum "total" line length	Maximum lift (height)
WGS40	0.635cm	0.635cm	0.952cm	0.952cm	0.952cm	15.24 meters	4.57 meters

Notes:

- ***Line lengths are expressed in equivalent feet = actual run length + fitting allowances (i.e. ~5' for each bend/elbow allowance).***
- ***Use only refrigeration grade dehydrated tubing.***
- ***Install refrigeration piping per local codes and ASHRAE guidelines.***

Sample Piping Configurations



Leak Checking and Evacuation Process

- Pressurize and leak test the interconnecting lines, including the fan coil unit, fittings, and brazed joints using the intended operating refrigerant, nitrogen, or dry air for leak testing. A pressure equal to the low side test pressure marked on the unit nameplate is recommended for leak testing. Repair any leaks found. Connect a good vacuum pump to both the low and high side service valves while still in their factory supplied position, isolating the refrigerant charge in the condensing unit. Draw a deep vacuum of at least 15pp microns. Do not use the motor compressor to pull a vacuum and do not operate the motor compressor in a vacuum.

- Evacuate the system to hold at 500 microns and break the vacuum by releasing the factory refrigerant charge in the condensing unit to interconnect lines and fan coil unit by opening service valves. Remove the vacuum pump. The system is now ready for optimal charging. Refer to pages 46-47 of this manual for correct refrigerant charging based on your interconnect length. Charge the system with the correct amount of refrigerant and mark the amount, with a ballpoint pen, in the space provided on the unit nameplate.

NOTE: When charging through the suction service valve the refrigerant should be charged in vapor form. NEVER CHARGE IN LIQUID FORM. Refrigerant should always be charged through a dryer. Charging in liquid form may damage the valve plate assembly as well as scrub the oil out of the compressor bearings.

WARNING

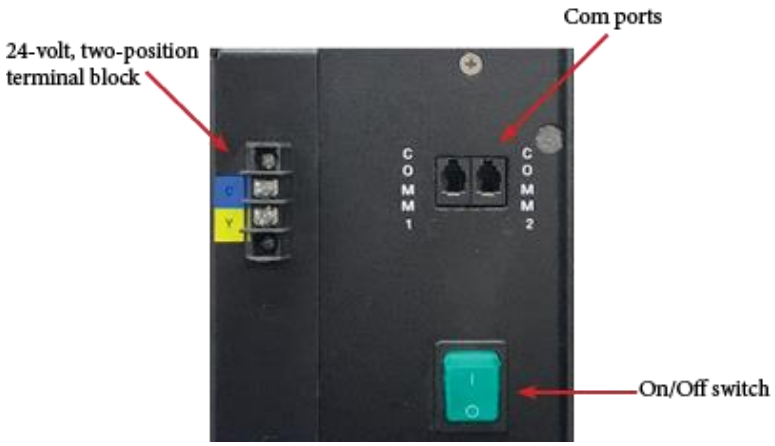
NON-AZEOTROPES MUST BE CHARGED IN THE LIQUID PHASE ONLY. TO AVOID COMPRESSOR DAMAGE, LIQUID MUST ALWAYS BE CHARGED INTO THE HIGH SIDE OR INTO AN ACCUMULATOR.

NOTE: Be sure there is not an overcharge of refrigerant. An overcharge might permit liquid refrigerant to enter the motor compressor and damage the valves, rods, pistons, etc.

Wiring

- Wire the system as per the supplied wiring schematics starting on page 19 of this manual.
- The DS fan coil unit is powered through a factory-supplied power cord (for DS models, WGS is hard connected) but you will need to run 24-volt power wires from the low voltage terminal block on the fan coil to the terminal block in the junction box in the condensing unit labeled Y & C. This can be typical controller wire or 18-gauge insulated wire. (see Fig.2 & 3 on the following page)

Fig 1



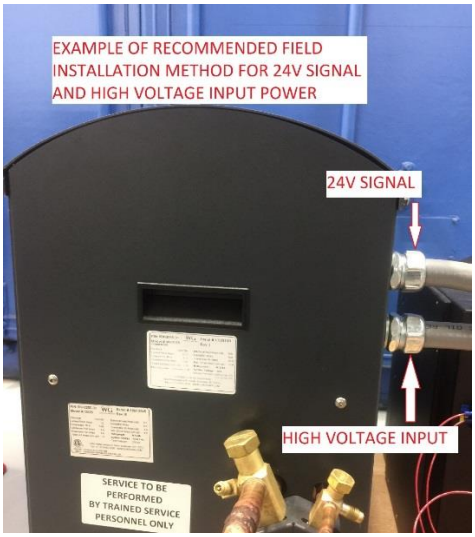


Fig 2

Fig. 3

- The condensing unit needs to be hard-wired for the rated high voltage to be brought to the factory-installed contactor in chassis cabinet to the line side (L1 & L3) of the contactor. Use table 1 to identify the minimum recommended AWG, **USE COPPER WIRE ONLY**. Run a ground lead to be connected to the condensing unit Ground lead/LUG. There is a separate ground lug for the condensing unit internal components (See Fig 3). The load side of the factory-installed contactor will be factory-wired.
- Turn on power to the condensing unit 24 hours prior to system start-up to allow crankcase heater to warm up compressor crankcase.

Unit	Recommended Minimum AWG
DS025; WGS40	16

Refrigerant Charging

NOTE: Models DS, and WGS utilize a Headmaster control valve to control head pressure at low ambient applications, therefore require a specific initial charging procedure as outlined below.

Determining the amount of charge – **Low ambient and extreme low ambient (XLA) systems** - When “refrigerant side” head pressure control is utilized on a system, one of the most important factors is determining the total system refrigerant charge. While on most packaged units the amount of charge is listed on the unit, the required charge for a field built-up system cannot be listed by the manufacturer. Charge is usually added when the system is started up until “proper” system performance is reached. However, this is not satisfactory and if the system is to function properly year-round, the correct amount of extra charge must be calculated ahead of time.

SEE PAGE 50 FOR DESIGNED AMOUNTS OF REFRIGERANT CHARGE FOR YOUR SPECIFIC MODEL SYSTEM*

Procedures for Charging System with Head Pressure Control

NOTE: When charging any system with head pressure control the outdoor ambient temperature must be known.

Charging of Systems with Head Pressure Control in temperatures above 70° F (21°C) --After normal evacuation procedures:

1. Connect refrigerant cylinder to liquid line service valve port.
2. Charge liquid refrigerant into the high side of the system. Weighing the charge is recommended.
3. Remove the refrigerant drum and connect it to the suction service valve.
4. Charge refrigerant vapor into the low side. Do not allow **liquid** refrigerant into the low side.
5. Start the system.
6. Observe sight glass (factory-installed) to see if system is filling with refrigerant for normal refrigeration cycle.

CAUTION

BUBBLES IN THE *SIGHT GLASS* CAN BE CAUSED BY FLASHING DUE TO PRESSURE DROP FROM PIPE OR ACCESSORY LOSSES, ETC.

7. If the **Sight glass** shows bubbles, more refrigerant may be required, while allowing sufficient time for the refrigerant to stabilize and clear the **Sight glass.** Use supplied information on the following pages for proper final charge.

Charging of Systems with Sporlan Head Pressure Control in temperatures below 70° F (21°C) (After normal evacuation procedures):

NOTE: When charging in ambient below 70°F (21°C) the procedure is very critical. Be sure to adhere to the following steps. Failure to do so will result in overcharging the system.

1. **You must power the condensing unit up to 24hrs prior to complete system energize to allow compressor oil crankcase to warm. If not done hours in advance of the system/compressor start-up, there is risk of premature compressor failure, that would not be covered under warranty.**
2. Follow instructions 1 through 7 above.
3. If the valve setting is correct for the system being charged, it is quite likely that some refrigerant will be backed up into the condenser and the **Sight glass** will indicate bubbles in the liquid line.

4. Add more refrigerant, while allowing sufficient time for the refrigerant to stabilize and clear the **Sight glass.** Use supplied information on the following pages for proper final charge.
5. At this point the system is correctly charged for this type of head pressure control at the ambient temperature that exists while the charging procedure is taking place.
6. If the system is designed to operate at ambient below the ambient that exits during charging, additional charge may have to be added now.

Good system performance during low ambient operation depends on proper refrigerant charge, therefore, it is very important that this phase of the installation procedure be done carefully. Poor system performance is often caused by over or under charging of refrigerant and may be the most overlooked.

With the system started

- After following instructions on the previous page Charging for Systems with Head Pressure Control, with refrigerant tank now connected to suction line (low side) port to add remaining charge in a gas state, refer to the provided charts for proper system operating points as equated to ambient temperature with wine cellar at normal conditions of 57° F (13°C) / 55%RH. Refer to Split Systems Operations chart on page 40 for system pressures, sub-cooling, and superheat values to allow you to charge your system correctly.

- In addition to using the Systems Operations Chart, there is a liquid line moisture/sight glass located in the condensing (outdoor) unit as a useful guide to help determine if the system has been sufficiently charged. HOWEVER, a full sight glass or a glass with bubbles does not necessarily indicate the system is properly charged or undercharged. There may be other factors affecting sight glass, so do not charge by sight glass method only. A full sight glass-matched with proper system pressures, sub-cooling, and superheat values is the proper method for confirming that the system charge is correct for your application.

If you are not sure how to measure superheat or sub-cooling:

Superheat

- Get an accurate suction line temperature on the suction line as close to the compressor inlet as possible. At same time, attach a compound pressure gauge set to the system so as to read the low side suction pressure at the suction service valve port (back seated valve stem to allow un-restricted refrigerant flow from evaporator back to the compressor). Convert suction pressure to a saturated temperature as derived from a pressure/temperature chart. Since the suction line temperature is the higher value, subtract the saturated temperature from it to derive your superheat. If your wine cellar is already at specified conditions e.g., 57° F (13°C), 55% RH), and if your superheat is very low, or zero, you may have overcharged your system.

Sub-Cooling

- With your compound pressure gauge set still installed with the high side connect to the valve port on the liquid receiver (back seated valve stem to allow un-restricted refrigerant flow from condenser to evaporator). Convert this liquid pressure to a saturated temperature from pressure/temperature chart. Next, obtain your liquid line temperature by getting an accurate reading on the liquid line BEFORE the TXV expansion on the indoor side. Obtain this

temperature entering the evaporator unit. Subtract the liquid line temperature from the saturated liquid temperature to derive the system sub-cooling.

System Charging Amount:

Note: Each DS & WGS Model condensing unit is shipped with 16oz/.453kg of refrigerant charge already, to be taken into account for below total amounts based on 25'/7.62 meters interconnect length.

For system charge adjustments compared to 25'/7.62 meters factory baseline:

DS025, WGS40 if 1/4"/.635cm OD (outside diameter) liquid line, adjustments will be ~ .50oz/foot & .0465kg/meter

For reference: Suggested total system charge based on factory testing using 25 feet (7.62 meters) of interconnected piping in table below.

DS025	59-ounce total charge
WGS40	58-ounce total charge (1.64 kg)

Examples of adjustments:

(Less than 25'/7.62 meters): If a WGS40 system that is only 15'/4.57 meters (10'/3.05 meters less than factory charge baseline from table above) in total length. At .50oz/foot & .0465kg/meter adjustment, that equals a decrease in total system charge from factory baseline of 5oz /.142kg. Now a total system charge of 53oz/1.498kg. You then can subtract the initial factory charge of 16oz/.453kg from this new total, and that is the amount you ADD to the system upon start-up.

In this example = 37oz/1.045kg ADDED

(Greater than 25'/7.62 meters): If a WGS40 system that is 35'/10.67 meters (10'/3.05 meters greater than factory charge baseline from table above) in total length. At .50oz/foot & .0465kg/meter adjustment, that equals an increase in total system charge from factory baseline of 5oz /.142kg. Now a total system charge of 63oz/1.78kg. You then can subtract the initial factory charge of 16oz/.453kg from this new total, and that is the amount you ADD to the system upon start-up.

In this example = 47oz/1.327kg ADDED

Additional Charge for Xtreme Low Ambient Systems (XLA Option)

For systems that have Wine Guardian's XLA option installed. Add the following additional charge to the system.

DS025	4.0 oz
WGS40	4.0 oz

Once the system has been charged compare the high side system pressure to the "discharge line pressure" found on the "Split System Operations Chart" on page 50 for proper operation. If actual discharge pressures do not match the chart then compare subcooling values as additional charge may be needed.

Split System Operations Chart

******* Operation data is based on typical wine cellar conditions of 57°F (14 Deg C)DB/49°FWB (55%RH)

DS025				
OD Ambient (F)	**Suction (psig)**	**Discharge (psig)**	**Suction Superheat (F)**	**Sub-cooling (F)**
10 ºF / -12 ºC	21	100	7 ºF / -14 ºC	23 ºF / -5 ºC
40 ºF / 4 ºC	24	104	13 ºF / -10 ºC	24 ºF / -4 ºC
60 ºF / 15 ºC	24	107	22 ºF / -5 ºC	20 ºF / -6 ºC
70 ºF / 21 ºC	24	108	25 ºF / -4 ºC	18 ºF / -7 ºC
80 ºF / 26 ºC	24	108	31 ºF / -1 ºC	16 ºF / -8 ºC
100 ºF / 37 ºC	27	150	38 ºF / 3 ºC	19 ºF / -7 ºC
115 ºF / 46 ºC	30	190	40 ºF / 4 ºC	21 ºF / -6 ºC
WGS40				
OD Ambient (F)	**Suction (psig)**	**Discharge (psig)**	**Suction Superheat (F)**	**Sub-cooling (F)**
10 ºF / -12 ºC	23	95	6 ºF / -14 ºC	17 ºF / -8 ºC
40 ºF / 4 ºC	26	102	12 ºF / 11ºC	26 ºF / -3 ºC
60 ºF / 15 ºC	28	105	19 º F / -7 ºC	20 ºF / -6 ºC
70 ºF / 21 ºC	28	107	22 ºF / -5 ºC	18 ºF / -7 ºC
80 ºF / 26 ºC	28	106	27 ºF / -3 ºC	15 ºF / -9 ºC
100 ºF / 37 ºC	30	144	36 ºF / 2 ºC	16 ºF / -8 ºC
115 ºF / 46 ºC	32	180	37 ºF / 3 ºC	20 ºF / -7 ºC

Installing the Thermostat and Communication Cable

The Wine Guardian Wireless-to-base Remote Interface Controller is a combination temperature and humidity controller with single stage cooling, heating, and humidity control. Its capacitive touch screen incorporates an on/off switch, adjustment arrows and settings buttons for ease of use and programming. The controller can be installed one of two ways:

Wired (recommended) – wired directly to the Wine Guardian unit through an RJ-9 communication cable. 50' (15.25 meters) of control cable is included with each controller with longer lengths available as an option.

IMPORTANT

Whenever possible we strongly suggest wiring the Remote Interface Controller directly to the Wine Guardian unit to avoid periodic battery changes and uninterrupted service.

Wirelessly - connects wirelessly to the Wine Guardian unit by Radio Frequency connectivity through one of twelve selectable channels.

IMPORTANT

Wireless installation may result in limited communication range and connectivity issues depending upon building construction and distance between Wine Guardian unit and Remote Interface Controller and/or Remote Sensors.

The Wine Guardian Wireless-to-base Remote Interface Controller is a configurable device that can be fine-tuned through a series of individual settings. The controller incorporates eight (8) key temperature, humidity and system alarm points. Remote alarm indication is possible through terminal point connections at our main control board.

In most applications, the remote interface controller will be mounted within the wine cellar. The remote interface controller can also be mounted directly outside of the wine cellar or in any other room of the home or building. When mounted outside of the wine cellar, a remote sensor kit or a second wireless remote interface must be purchased and installed within the wine cellar.

IMPORTANT

Regardless of wired or wireless each, Wine guardian System can have a maximum of two (2) Remote Interface Controllers and three (3) Remote Sensors.

Additional Remote Interface:

Prior to adding an additional remote interface to the system, you will have to change setting 30 on the first control to give it a different address. Refer back to page **50** for instructions on how to access the interface Settings and get to Setting 30 (shown on page 56).

Controller Specification

Application	**WG only, single stage cooling or heating Humidification**
Programmable	**No**
Change over	**Auto or manual, Fan ON or AUTO**
Color	**Black (only)**
User interface	**Touch screen**
Auto defrost control	**Yes, with Serving temp option**
Connection	**Communicating – RJ-9 cable**
Wireless-to-base communication range	**40’ line of site**
Wireless-to-base channels	**12**
Remote sensors	**Yes, wired or wireless**
Temperature adjustment	**34 to 97 Deg F (1 to 36 Deg C)**
Temperature tolerance	**+/- 2 Deg F (+/- 1.1 Deg C)**
Humidity adjustment	**2% to 93% RH**
Humidity tolerance	**+/- 10% RH**
System temperature diagnostics	**Not Available**
Alarms	**High temp, low temp. High humidity, low humidity. High pressure fault. Condensate, Defrost and Communication error**

Mounting the Remote Interface Controller (Wired)

Fig. 1

Fig. 2

Fig. 3

Fig. 4

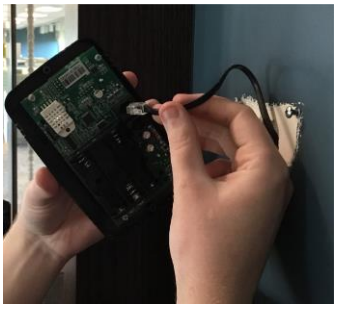


Fig. 5

1. Disconnect the communication cable from the side of
   the Wine Guardian unit and the remote interface controller. (Fig. 1)
   a. Route the communication cable within the wall
      and/or ceiling structure of the wine cellar to the desired controller mounting location.
   b. Plan on mounting the remote interface controller on a solid surface away from doors, corners, air outlets, drafts or heat generating equipment. Do not mount the remote interface controller directly on an outside wall, a wall adjacent to a boiler room, or other hot area. Use a piece of foam insulation behind the sensor to insulate it from a hot or cold surface. The recommended height is four to five feet above the finished floor.

2. Remove the back plate of the controller (Fig. 2) by removing two (2) screws that hold it in place on the remote interface. Place the back plate against the wall and mark the location of the two mounting points (Fig. 3). Also mark the location of the penetration for the communication cable as this area will require sufficient clearance for the cable to exit the wall and attach to the back of the controller.
3. Drill two one-eighth inch holes and insert anchors at the marked locations. Anchors may not be required if securing to a wall stud or racking system. Insert the screws into the holes and test fit the backing plate to ensure it mounts easily onto the two screws and slides down onto the slotted opening freely (Fig. 4).
4. Re-install plastic face plate on to backing plate.
5. Plug in the communication cable to the back of the remote interface controller backing plate. (Fig. 5)
   a. If using multiple Remote Interfaces either connect each Sensor to each other in series using RJ9 cable or purchase a RJ9 Splitter to be used on the unit.

6. Attach the Controller to the wall
7. Re-attach the communication cable to the side of the Wine Guardian cooling unit.

Mounting the Remote Interface Controller (Wireless)

Fig. 1

Fig. 2

Fig. 3

Fig. 4

1. Disconnect the controller wire from the side of the Wine Guardian unit and save for future use.

2. Plan on mounting the remote interface controller on a solid surface away from doors, corners, air outlets, drafts or heat generating equipment. Do not mount the remote interface controller directly on an outside wall, a wall adjacent to a boiler room, or other hot area. Use a piece of foam insulation behind the sensor to insulate it from a hot or cold surface. The recommended height is four to five feet above the finished floor.

3. Unscrew and remove the back plate from the Remote Interface Controller (Fig. 1)

4. Place the back plate against the wall and mark the mounting points at the desired location. (Fig. 2)

5. Drill two one-eighth inch holes and insert anchors within the mounting surface. Anchors may not be required if securing to a wall stud or racking system. Insert the screws into the holes and test fit the backing plate for mounting to ensure it mounts easily onto the two screws and slides down onto the slotted openings freely (Fig. 3)

6. Reattached the back plate to the Remote Interface Controller. (Fig. 4)

7. Insert the three AA batteries.
(Only applicable with wireless installations)

8. The system will automatically acknowledge a wireless device (Remote Interface or Remote Sensor). Go to Setting “30” to define the Remote User Interface use.

9. Attach controller to the wall.

Installation of the Wine Guardian Remote Sensor

The wireless remote sensor is a combination temperature and humidity sensor only. It is designed to be mounted within the wine cellar and can be used in combination with the remote interface controller or up to two additional remote sensors to read and control multiple areas within the wine cellar.

For a wired application you will require a RJ-9 communication cable.

Mounting the Wired Remote Sensor (Wired)

Fig. 1

Fig. 2

1. Disconnect the communication cable from the side of the Wine Guardian unit and the remote sensor. Route the communication cable within the wall and/or ceiling structure of the wine cellar to the desired controller mounting location.

2. Plan on mounting the remote sensor on a solid surface away from doors, corners, air outlets, drafts or heat generating equipment. Do not mount the remote sensor directly on an outside wall, a wall adjacent to a boiler room, or other hot area. Use a piece of foam insulation behind the sensor to insulate it from a hot or cold surface. The recommended height is four to five feet above the finished floor.

3. Remove the remote sensor's face plate (Fig. 1) and mark the mounting points at the desired location within the wine cellar (Fig. 2). Also, mark the location of the communication cable connection as this area will require sufficient clearance, for the cable to exit the wall and attach to the back of the sensor.

Fig. 3

4. Drill two one-eighth inch holes and insert anchors within the mounting surface. Anchors may not be required if securing to a wall stud or racking system. Insert the screws into the holes and test fit the backing plate for mounting to ensure it mounts easily onto the two screws and slides down onto the slotted openings freely. (Fig. 3)

Fig. 4

5. Plug in the communication cable to the remote
sensor and mount the Remote Sensor to the wall. (Fig. 3)

6. Reattach the sensor's faceplate (Fig. 4)

Fig. 5

7. If multiple sensors are being used either connect each Sensor to each other in series using RJ9 cable or purchase a RJ9 Splitter

(Fig. 5) to be connected to the unit.

Mounting the Remote Sensor (Wireless)

Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

1. Disconnect the controller wire from the side of Wine Guardian unit and save for future use.

2. Plan on mounting the remote sensor on a solid surface away from doors, corners, air outlets, drafts or heat generating equipment. Do not mount the remote sensor directly on an outside wall, wall adjacent to a boiler room, or other hot area as this runs the risk of influencing its temperature readings. The recommended height is four to five feet above the finished floor.

3. Remove the sensor face plate (Fig. 1). Mark the mounting points at the desired location within the wine cellar (Fig. 2).

4. Drill two one-eighth inch holes and insert anchors within the mounting surface. Anchors may not be required if securing to a wall stud or racking system. Insert screws to secure the sensor to the wall to ensure it mounts easily onto the two screws and slides down onto the slotted openings freely.

5. Input the three AA batteries. (Fig. 3)
   (Only applicable with wireless installations)

6. Pair the sensor with the unit
   (See Page 45 for Pairing Instructions)

NOTE: Once Paired the Remote Interface's readings will be included into the system's temperature and humidity averages.

7. Mount the Remote Sensor on the wall (Fig. 4)

8. Reattach the sensor's faceplate (Fig. 5)

Remote Sensor Pairing Instructions – Multiple Sensors (Wireless)

Fig. 1

Fig. 2

If using multiple remote temperature/humidity sensors in your application, refer to the figures and the procedure below to change each remote sensor's device number (Three Remote Sensors maximum). Each Remote Sensor must have its own device number and must also be on the same RF channel (Setting 31) as the system they are being paired with.

1. To change the remote sensor's device number, see the following instructions:

   a. Use a pin to press the button for about half a second and release (Fig. 1).

   b. Observe the LED on the side of the remote sensor (Fig. 2). The LED will flash once for a Device #1, twice for a #2, three times for a #3. At any time, while in this mode press the button once to change the device number. Once each remote sensor has its own unique device number simply wait for the LED to stop flashing and the setting will be saved.

2. To change the remote sensor's RF channel, see the following instructions:

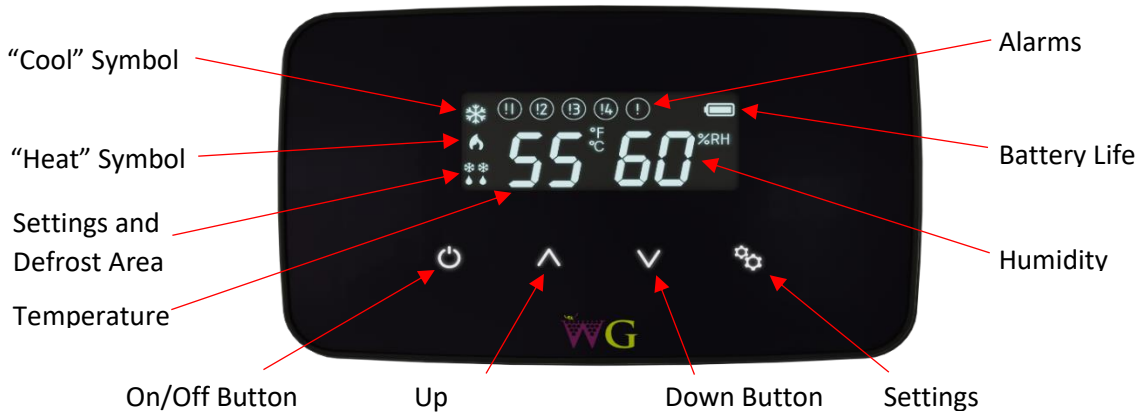
NOTE: Check what RF Channel the System is set to using Setting 31 to more easily connect your Remote Sensors.

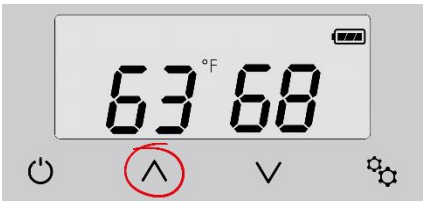
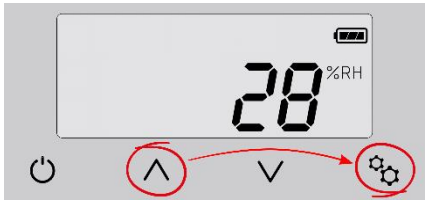
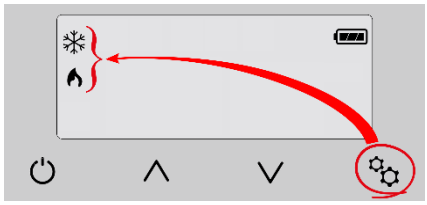
   a. Use a pin to press the red button at the back of the Remote Sensor for 5 seconds until the LED blinks rapidly then release the button.

   b. The LED will flash a number of times to portray which RF channel it is set to and repeat a total of 3 times.

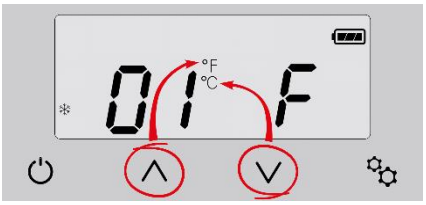
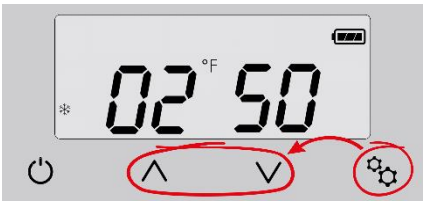
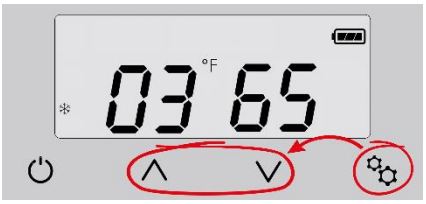
   c. To change the RF channel, press the button once to increment the RF channel. There are 12 possible RF channels. All Remote Sensors will need to be on the same channel for the system to detect them. To save the RF channel setting simply wait for the mode to time out by not pressing the button.

Standard Controller Functions

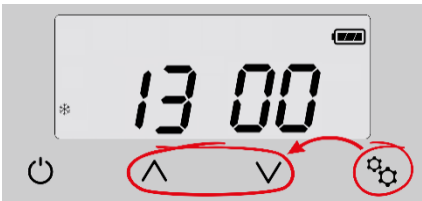


How To:		
Turn system on/off		• Press the "On/Off" button once. **Note: There is a five (5) minute time delay before the system turns on or turns off.**
Change temperature		• Press the "Up" arrow once. The display will show the existing temperature setpoint. • Press the up or down arrow buttons to adjust the temperature to the desired set point.
Change humidity		• Press the "Up" arrow once. This display will show the existing temperature setpoint. • Press the "Settings" button once to display the "Humidity" setpoint. • Press the "Up" or "Down" arrows to adjust the humidity to the desired set point. **Note: A Wine Guardian humidifier must be installed and Setting 6 set to "1" or "2" before the controller will let you change percent humidity.**
Change Settings Cooling/ Heating / Auto		• Press the Setting button once to display the setting function at the bottom of the screen. • Press the Settings button again to scroll through settings for cool only, heat only or heat/cool only (auto mode).

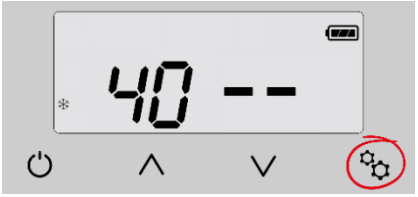
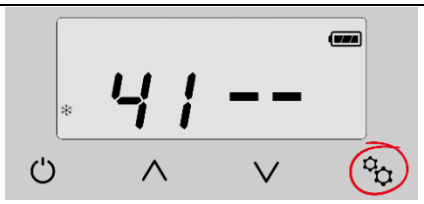
***Settings – Press and hold the "Settings" button for five (5) seconds to access the following settings*.**

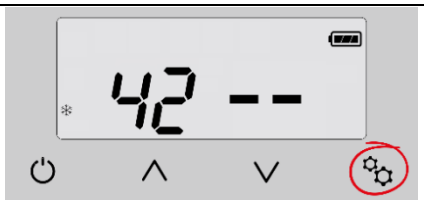
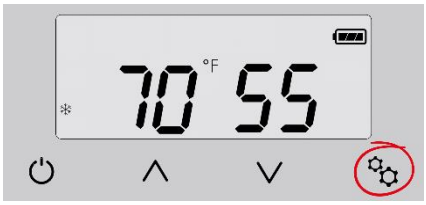
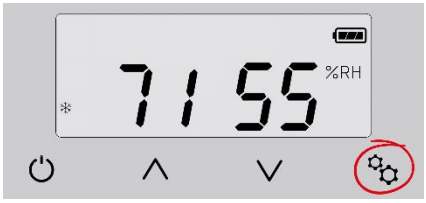
Degrees F or Degrees C		**Setting 1** • Press the "Up" arrow to change temperature from °F to °C. • Press the "Down" arrow to change temperature from °C to °F.
Low temperature alarm setpoint		**Setting 2** • Press "Settings" button to advance to Setting 2. • Press the "Up" or "Down" arrow buttons to adjust to the desired setpoint. Factory default is 50°F (10°C).
High temperature alarm setpoint		**Setting 3** • Press "Settings" button to advance to Setting 3. • Press the "Up" or "Down" arrow buttons to adjust to the desired setpoint. Factory default is 65°F (18°C).
Low humidity alarm set point		**Setting 4** • Press "Settings" button to advance to Setting 4. • Press the "Up" or "Down" arrow buttons to adjust to the desired setpoint. Factory default is 5%.
High humidity alarm setpoint		**Setting 5** • Press "Settings" button to advance to Setting 5. • Press the up or down arrow buttons to adjust to the desired setpoint. Factory default is 95%.
Add or remove humidifier		**Setting 6** • Press "Settings" button to advance to Setting 6. • Press the "Up" or "Down" arrow buttons to adjust to the desired setpoint. Factory default is zero (0). Zero (0) = No humidifier One (1) = Integral Wine Guardian mounted humidifier Two (2) = Stand-alone remote mounted humidifier

Fan AUTO or ON		**Setting 7** • Press “Settings” button to advance to Setting 7. • Press the “Up” or “Down” arrow buttons to adjust number to the desired set point. Factory default is zero (0). Zero (0) = Auto–fan only turns on when there is a call for cooling or heating One (1) = Fan On–fan remains on continuously
Compressor anti-short cycling		**Setting 8** • Press “Settings” button to advance to Setting 8. • Press the “Up” or “Down” arrow buttons to adjust to the desired time in one-minute increments. Maximum is 10 minutes; minimum is 3 minutes. Factory default is 5 minutes. Compressor anti-short cycling time is the amount of allowable time between compressor stop and restart. Rapid start/stop of compressors can cause premature failure. **WINE GUARDIAN DOES NOT RECOMMEND SETTINGS LOWER THAN FACTORY DEFAULT.**
Defrost sensor enable/disable		**Setting 9** • Press “Settings” button to advance to Setting 9. • Press the “Up” or “Down” arrow buttons to adjust to the desired setpoint. 1 will equal enabled and a 0 (zero) will equal disabled.
Defrost cut-in temperature		**Setting 10** • Press "Settings" button to advance to Setting 10. • Press the “Up” or “Down” arrow buttons to adjust to the desired setpoint. This setting is adjustable from 25°F to 40°F. Factory default is 39°F. There must be at least a 1°F difference between defrost cut-in and cut-out set points.

Defrost cut-out temperature		**Setting 11** • Press "Settings" button to advance to Setting 11. • Press the “Up” or “Down” arrow buttons to adjust to the desired setpoint. This setting is adjustable from 35°F to 50°F. Factory default is 40°F. **Note: This setpoint must be 1°F/°C higher than setting 10.** **Note: If °C is selected and then switched back to °F the default cut-out will change to 41°F.**
Defrost check interval		**Setting 12** • Press "Settings" button to advance to Setting 12. • Press the “Up” or “Down” arrow buttons to adjust to the desired setpoint. This setting is adjustable from 30 min at 0 (zero), 1 hour at 1, and then in 1 hour increments up to a maximum of 12 hours at 12.
Room temperature offset		**Setting 13** • Press “Settings” button to advance to Setting 13. • Press the “Up” or “Down” buttons to adjust to the desired set point. Maximum setting is +5°F, minimum setting is -5°F. Factory default is zero (0). Room temperature offset changes the actual display reading (temperature only) by the value of this setting. Example: Sensor reading = 55°F (13°C) Setting 15 set to +4 Display reading = 59°F (15°C)
RH offset		**Setting 14** • Press “Settings” button to advance to Setting 14 • Press the “Up” or “Down” buttons to adjust to the desired setpoint. This setting allows the adjustment of %RH reading by +/-10%. Factory default is 0%RH.

Differential temperature adjustment		**Setting 15** • Press “Settings” button to advance to Setting 15 • Press the “Up” or “Down” buttons to adjust to the desired setpoint. This setting changes the system/compressor turn-on temperature above setpoint. Factory default is 1°F. Example: Sensor reading = 55°F (13°C) Setting 17 set to +3°F System/compressor turns on at 58°F (14°C)
Temperature dead band		**Setting 16** • Press “Settings” button to advance to Setting 16. • Press the “Up” or “Down” buttons to adjust to the desired setpoint. This setting is the minimal allowable temperature difference between heating and cooling setpoints. Maximum is 5°F (3°C), minimum is 1°F (1°C). Factory default is 2°F (1°C).
Condensate switch		**Setting 17** • Press “Settings” button to advance to Setting 17. • Press the “Up” or “Down” buttons to adjust to the desired setpoint. This setting disables or enables the Condensate switch. 0 (zero) is disabled, 1 is enabled. Factory default is 0.
Reserved		**Settings 18 & 19** Reserved for additional fields.
System type defaults		**Setting 20** System setting. **DO NOT CHANGE.**
Reserved		**Settings 21-29** Reserved for additional fields.

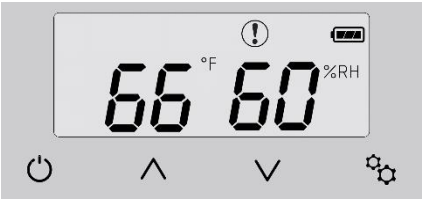
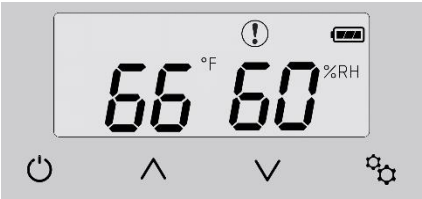
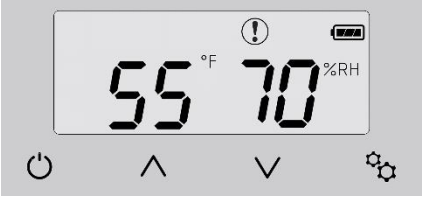
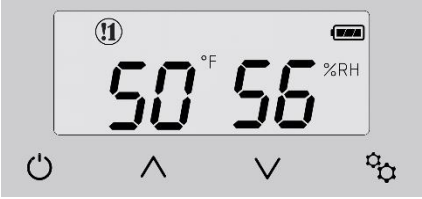
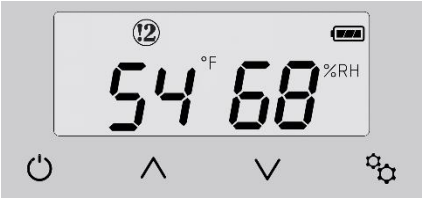
Define remote user interface		**Setting 30** • Press “Settings” button to advance to Setting 30 • Press the “Up” or “Down” buttons to adjust to the desired setpoint. 1 = Remote User interface #1 mounted within the wine room space and enabled 2 = Remote User interface #2 mounted within the wine room space and enabled 3 = Remote User Interface #1 disabled - will display only and can be mounted outside of wine room 4 = Remote User Interface #2 disabled - will display only and can be mounted outside of wine room
RF channel select		**Setting 31** • Press “Settings” button to advance to Setting 31. • Press the “Up” or “Down” buttons to adjust to the desired setpoint. Each system needs all devices to be on the same RF channel. 0 = RF disabled - system must be hardwired 1 through 12 = RF enabled and 12 channels available
Reserved		**Settings 32-39** Reserved for additional fields.
Thermistor 1 ***No Longer Applicable***		**Setting 40** • Press “Settings” button to advance to Setting 40. Not Available Reserved for Thermistor
Thermistor 2 ***No Longer Applicable***		**Setting 41** • Press “Settings” button to advance to Setting 41. Not Available Reserved for Thermistor

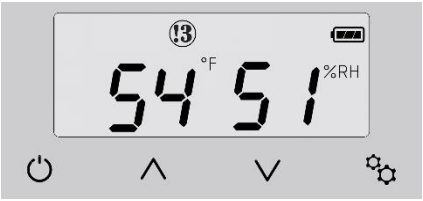
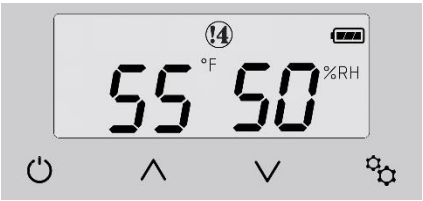
Thermistor 3 ***No Longer Applicable***		**Setting 42** • Press “Settings” button to advance to Setting 42. Not Available Reserved for Thermistor
Thermistor 4 ***No Longer Applicable***		**Setting 43** • Press “Settings” button to advance to Setting 43. No setting adjustment. Displays the defrost sensor temperature.
Reserved		**Setting 44-49** Reserved for additional fields.
Output test		**Setting 50** • Press “Settings” button to advance to Setting 50. • Press the “Up” or “Down” buttons to adjust to the desired setpoint. Steps through relays as output test. 0 = Disabled 1 = Enabled
Reserved		**Setting 51-69** Reserved for additional fields.
Default temperature		**Setting 70** • Press “Settings” button to advance to Setting 70. No setting adjustment. Initial temperature set point. Will revert to this setting upon loss of power.
Default %RH		**Setting 71** • Press “Settings” button to advance to Setting 71. No setting adjustment. Initial relative humidity set point. Will revert to this setting upon loss of power.

Default mode		**Setting 72** • Press “Settings” button to advance to Setting 72. • Press the “Up” or “Down” buttons to adjust to the desired setpoint. Initial mode set point. Will revert to this setting upon loss of power. 1 = Auto 2 = Cool 3 = Heat
Fan AUTO or ON		**Setting 7** • Press “Settings” button to advance to Setting 7. • Press the “Up” or “Down” arrow buttons to adjust number to the desired set point. Factory default is zero (0). Zero (0) = Auto–fan only turns on when there is a call for cooling or heating One (1) = Fan On–fan remains on continuously
Compressor anti-short cycling		**Setting 8** • Press “Settings” button to advance to Setting 8. • Press the “Up” or “Down” arrow buttons to adjust to the desired time in one-minute increments. Maximum is 10 minutes; minimum is 3 minutes. Factory default is 5 minutes. Compressor anti-short cycling time is the amount of allowable time between compressor stop and restart. Rapid start/stop of compressors can cause premature failure. **WINE GUARDIAN DOES NOT RECOMMEND SETTINGS LOWER THAN FACTORY DEFAULT.**
Defrost sensor enable/disable		**Setting 9** • Press “Settings” button to advance to Setting 9. • Press the “Up” or “Down” arrow buttons to adjust to the desired setpoint. 1 will equal enabled and a 0 (zero) will equal disabled.

Defrost cut-in temperature		**Setting 10** • Press "Settings" button to advance to Setting 10. • Press the “Up” or “Down” arrow buttons to adjust to the desired setpoint. This setting is adjustable from 25°F to 40°F. Factory default is 39°F. There must be at least a 1°F difference between defrost cut-in and cut-out set points.

Alarm Codes

High temperature alarm **Flashing temperature number**		Flashing temperature number along with (!) symbol will remain on screen until temperature falls below the High Temperature Alarm set point (Setting 3).
Low temperature alarm **Flashing temperature number**		Flashing temperature number along with (!) symbol will remain on screen until temperature rises above the Low Temperature Alarm set point (Setting 2).
High humidity alarm **Flashing humidity number**		Flashing humidity number along with (!) symbol will remain on screen until humidity falls below the High Humidity Alarm setpoint (Setting 5).
Low humidity alarm **Flashing humidity number**		Flashing humidity number along with (!) symbol will remain on screen until humidity rises above the Low Humidity Alarm set point (Setting 4).
!1 = High Pressure Switch Fault		**THIS ALARM FORCES THE SYSTEM TO SHUT DOWN** (!1) will remain on screen until the High Pressure reset switch has been reset. See the trouble shooting guide page 57 for “Instructions to Reset High Pressure Switch”.
!2 = CS (Condensate Switch Fault)		**THIS ALARM FORCES THE SYSTEM TO SHUT DOWN** (!2) will remain on screen until the CS (condensate switch) fault is resolved and reset.

!3 = Defrost Sensor Fault		**THE SYSTEM REMAINS OPERATIONAL DURING THIS ALARM** Defrost sensor has been shorted, disconnected or open. (!3) will remain on screen until the defrost sensor issue has been resolved.
!4 = Communication loss		**THE SYSTEM REMAINS OPERATIONAL DURING THIS ALARM** Bad or no data transfer between sensing device and main control board. “!4” will remain on screen until communication is re-established.

!WARNING!

Only one Unit can be set up at a time. Ensure other units are unplugged while pairing a unit to ensure there are no communication issues between Wine Guardian Units

Installing the Ductwork and Grilles

Use ductwork to connect the unit to the supply and return outlets in the wine cellar. Use only insulated ductwork to minimize cooling loses, prevent sweating, and to reduce noise.

Use ductwork on the condenser section to redirect or absorb sound, to bring in outside air to the unit inlet, and/or to exhaust the hot air out of the ambient space.

NOTE: Do not exceed a total of 25 feet for combined supply and return duct work

Recommended Insulated Flexible Ductwork Sizing Chart

Ductwork Diameters (inches) - Wine Guardian 60 Hz. Units				
Model #	Evaporator (cold air side)		Condenser (hot air side)	
	Single Duct Run	Double Duct Run	Single Duct Run	Double Duct Run
DS025	8	6	8	6
Ductwork Diameters (millimeters) - Wine Guardian 50 Hz. Units				
Model #	Evaporator (cold air side)		Condenser (hot air side)	
	Single Duct Run	Double Duct Run	Single Duct Run	Double Duct Run
WGS40	203.2	152.4	203.2	152.4
*It is best to oversize ductwork if exact ductwork diameters are not readily available or easily accessible (50 Hz. Only).				

Notes:

The above referenced 60 Hz sizes are internal diameter in inches and the 50Hz are in millimeters (mm). If a single supply is used out of the unit but then splits into two ducts, the size above that is recommended for double is used after the split.

⚠ CAUTION ⚠

RISK OF DAMAGE TO EQUIPMENT
Avoid crimping the flexible ducts. This chokes down the inside area and reduces the airflow causing the unit to operate erratically.
Be sure all ducts and surface in contact with the airflow are insulated and have a vapor barrier on the outside surface.

NOTE: Uninsulated ducts and surfaces cause bare exposed metal surfaces to sweat, further degradation of the insulation and a loss of equipment cooling capacity.

Location of Supply and Return Grilles

Locate the supply and return grilles inside the cellar to create an airflow pattern that maximizes air circulation in the room. Avoid short circulating of the air.

Do Not:

- Install the return air grilles directly on the floor as the grilles will collect dust from the floor.
- Locate the supply or return air grille where it is blocked by bottles, boxes, or cases.
- Locate the supply air grille where it blows directly on the thermostat.

Relocating a grille on the Wine Guardian

1) Remove the fasteners from the grille.
2) Remove the fasteners from the access door panel to be replaced by the grille.
3) Relocate the outlet grille to its new location and secure in place using its fasteners.
4) Replace the access door panel where grille was located.

General Duct Recommendation

✓ Support the flexible duct often to prevent sags or bends.

✓ Stretch the duct to make for a smoother interior with less air resistance.

✓ For a 90-degree bend, insert a metal elbow inside the flexible duct to avoid crimping.

✓ Do not squeeze or reduce the inside diameter of the ducts. This restricts the airflow.

✓ Use short and straight ductwork.

✓ Review the configuration schematic on the Overview Sketch on page 12 for information about which panels are available for duct connections and service.

✓ Remove the panels or grilles from the openings to connect the ductwork.

✓ Check that all the fan blades move freely.

✓ Check for loose foreign objects in any of the air paths.

✓ Connect the round flexible ducts to the Wine Guardian using the duct collars that are provided with the duct accessory kit.

✓ Pull the outer plastic wrapping and insulation away from the end of the duct to expose the reinforced inside duct liner.

✓ Use tie straps of clamp around the **inside liner** to fasten the duct collar.

Do not clamp around the outside insulation. It compresses and loosens over time.

- ✓ Secure the duct collar to the unit using the screws provided. Be careful not to damage or bend the gasket.

Using Ductwork

Cold Air to/from Wine Cellar

- ✓ Connect the supply air ductwork from the cellar to the supply air duct collar at the Wine Guardian unit.
- ✓ Connect the return air ductwork from the cellar to the return air duct collar at the Wine Guardian unit.

Warm Air to/from Condenser

- ✓ Connect ductwork on the condenser to direct heat and the air noise away from occupants.
- ✓ Connect ductwork to another space within the basement or to the outdoors if the heat being exhausted is undesirable.

Inspection and Start Up Checklists

Receiving and Inspecting

- ✓ Unit received undamaged
- ✓ Unit received complete as ordered including accessories

Handling and Installing

- ✓ Unit mounted on solid level surface
- ✓ Sufficient space allowed for access to unit and accessories
- ✓ Proper electrical service provided
- ✓ Water provided to humidifier
- ✓ Drain lines and trap installed properly
- ✓ Ductwork, fittings and grilles installed properly
- ✓ All cold duct surfaces insulated
- ✓ No obstructions to air flow around condensing unit

Starting-up the Unit

- ✓ General visual inspection looks good.
- ✓ All wiring connections checked
- ✓ All ducts, grilles and panels in place
- ✓ Start unit
- ✓ Check ducts and connections for air leaks
- ✓ Balance air distribution
- ✓ Confirm condenser airflow is unrestricted
- ✓ Verify cooling and heating operation
- ✓ Check for excessive noise or vibration

WG SPLIT SYSTEM START-UP CHECKLIST

System Information

Fan Coil Serial Number: (Located to the right of the main control panel)	Condenser Serial Number: (Label located near refrigerant piping)

Customer Information

First Name:		Last Name:
Address:		City:
State:	Zip:	Date of Purchase:
Email:		Phone #:

Installer Information

Company Name: License#		Date of Startup:
Address		Technician:
City		Certification ID Number
State:	Zip:	Certification Source (e.g. NATE):
Company Phone #:		Technician Phone #:
Company Email:		Technician Email:

Email completed form to service@wineguardian.com

Pre-Start-Up
Is there any shipping damage? If so, Where?
Will this damage prevent unit start-up?
Check power supply. Does it agree with unit?
Has the ground wire been connected?
Has the circuit protection been sized and installed properly?
Are the power wires to the unit sized and installed properly?
Have compressor hold down bolts been loosened (snubber washers are snug, but not tight)?
Controls
Are thermostat and indoor fan control wiring connections made and checked?
Are all wiring terminals (including main power supply) tight?
Has crankcase heater been energized for 24 hours?
Indoor Unit
Has water been placed in drain pan to confirm proper drainage?
Piping
Have leaks checks been made at compressor, outdoor and indoor coils, TXVs (Thermostatic Expansion Valves), Filter Driers, with a leak detector?
Locate, Repair, and Report any leaks.
Have service valves been opened?
Check Voltage L1: L3:
Start-up After at least 10 minutes running time, record the following measurements
Suction Pressure:
Suction line temperature:
Discharge pressure:
Discharge line temperature:
Entering outdoor unit air temperature:
Leaving outdoor unit air temperature:
Indoor unit enter-air DB (dry bulb) temperature:
Indoor unit leaving-air WB (wet bulb) temperature:
Indoor unit leaving-air DB (dry bulb) temperature:
Indoor unit leaving-air WB (wet bulb) temperature:
Compressor Amps

Starting-up and Operating the Wine Guardian Split System

Now that the installation is complete, check to make sure all ductwork and electrical connections are secure.

Replace all panels that were removed during installation. Check that all the openings in the unit are covered with a blank panel, a ductwork connection or a grille.

CAUTION

RISK OF PERSONAL INJURY

COVER ALL OPENINGS OF THE UNIT TO PREVENT A HAND OR FINGER FROM ACCESS INSIDE THE UNIT.

Turn on the Unit

Plug in the unit. Turn on the rocker switch on the side of the unit. The rocker switch lights up to indicate power to the unit. The unit may not come on right away due to the timer built into the circuiting to prevent short cycling.

Testing the Fan

(Configuration Setting 7)

Factory default is “AUTO” fan operation. To change the fan setting, refer to page 52 of this manual.

- ✓ ON means the fan runs continuously and indicates that the power is on and the control circuit is energized and operating.
- ✓ AUTO means the fan runs only when the remote interface controller is calling for cooling, heating, or the humidistat is calling for humidification.

Running the Unit

- ✓ Check unit to confirm the compressor is running, such as the hum of the compressor or cool air leaving the unit.
- ✓ Check for any unusual noise or vibration, such as clanking or rubbing.

Initially, the unit may run continuously for several hours, up to a day or more, while it lowers the cellar temperature. Once the unit reaches the setpoint temperature, it shuts off and starts to cycle on and off as it continues to lower the bottle temperature to the setpoint. The cellar air reaches set point before the bottles. If the cellar temperature started at 75°F (23° C) the supply air temperature discharged from the unit will probably be 12 degrees to 15 degrees colder. As the cellar temperature decreases to 55°F (13°C) the supply temperature differential decreases 8 to 12 degrees colder.

NOTE: Temp flashes when cellar temperature falls below 65° F (18°C).
See page 56 for Hi Temp Alarm details.

Cycling the Unit

The fans continue to free-wheel for several minutes when the unit cycles off. This is normal. If the unit is furnished with an Xtreme low ambient control, the condenser fan also cycles on and off during cooling. This maintains the head pressure on the compressor under Xtreme low ambient conditions and is normal. The bottom of the compressor stays warm even when the unit is off to keep the lubricating oil warm and separated from the refrigerant.

Setting the Remote Interface Controller

Normal settings are between 54 and 58 Deg F (12-14 Deg C).

Regulating the Wine Cellar Temperature

Wine cellars have a natural temperature gradient of approximately 5 to 10 degrees between floor and ceiling. To increase or decrease the temperature in various zones, change the air flow patterns.

To keep the entire wine cellar at the same temperature, set the remote interface controller to run the supply fan continuously and not just when the cooling is operating. Set Setting 7 to Setting 1.

NOTE: To monitor the Cellar Temperature, place thermometers in various locations in the cellar to monitor the temperature zones. Change the temperature in various zones by shifting the air flow patterns.

Changing the Air Flow Direction

The optional grilles furnished with Wine Guardian are single directional. Rotate the grilles to change the direction of the air flow.

When using multiple supply ductwork, it is necessary to balance the air flow between the ductwork. If too much air flows though one duct but not enough air flows from the other duct, install a damper or other restriction into the duct with too much air. That will force more air to flow out the other duct.

Maintenance

General

WARNING

BEFORE PERFORMING MAINTENANCE ON THE UNIT, READ AND UNDERSTAND THE SAFETY INFORMATION CONTAINED WITHIN THE SAFETY CHAPTER OF THE WINE GUARDIAN MANUAL.

DANGER

HIGH VOLTAGE - RISK OF SERIOUS INJURY OR DEATH

HIGH VOLTAGES ARE PRESENT IN THE CABINETS. TURN OFF ALL POWER. USE THE LOCKOUT/TAGOUT PROCEDURE BEFORE OPENING PANELS.

CAUTION

SHARP EDGES

RISK OF SEROUS INJURY

SHARP EDGES ARE PRESENT ON THE FAN WHEELS, HOUSING, FINS AND COILS.

NOTE: Maintenance on Wine Guardian units requires working with high voltage and sheet metal with possible sharp edges. Only qualified personnel should perform maintenance. Some tasks require knowledge of mechanical and electrical methods. Make sure you are familiar with all hazards, general safety related procedures, and safety labels on the unit.

EXPOSURE TO MICROBIAL GROWTH (MOLD) CAN CAUSE SERIOUS HEALTH PROBLEMS

NOTE: Standing water in drain pans promote microbial growth (mold) that cause unpleasant odors and serious health-related indoor air quality problems. If mold is found, remove it immediately and sanitize that portion of the unit.

The Wine Guardian is designed for minimum maintenance. The refrigerant system is hermetically sealed and requires no maintenance. The fans are permanently lubricated and require no maintenance. Some maintenance to the unit may be required due to dust or dirt in the air stream.

CAUTION

SHARP EDGES RISK OF SERIOUS INJURY

SHARP EDGES ARE PRESENT ON THE FINS AND COILS.

Cleaning the Condensate Drain System

The condensate drain system traps dust and dirt. Clean the drain system once a year.

1. Shut off the rocker switch and unplug the unit.
2. Remove the duct on the evaporator inlet.
3. Inspect the drain pan under the coil.
4. If drain pan appears soiled, pour some hot water mixed with liquid bleach (diluted solution) along the length of the pan to flush the dirt down the drain tube.
5. Continue this treatment until the drain appears clean and free of dirt.
6. Reinstall or duct collar.
7. Plug in the unit and restart.

Cleaning the Humidifier **(optional)**

If the unit was furnished with a humidifier, it requires periodic maintenance. Follow the instructions in the humidifier guide.

All Wine Temperatures (AWT)

The heating coil is located between the evaporator coil and blower inside the transition duct. It contains the heating element and high temperature limit switches. The heating coil is wired to work in conjunction with the thermostat. Since the thermostat prevents the heating and cooling circuits from being energized at the same time, no additional power wiring is needed. We do recommend using the AUTO mode on the thermostat so it can switch from heating to cooling automatically. If using either the heat or cool only mode, the thermostat will **not** switch automatically.

No additional maintenance is required for the heating coil. To test the heating coil operation, set the thermostat on HEAT and set the temperature above the cellar temperature. The supply air temperature should rise above the return air temperature by an amount shown in the specifications.

Extreme Climate Protection

The purpose of the Extreme Climate Protection is to protect the compressor and refrigerant system. It has two distinct components, a crankcase heater to keep the oil in the compressor warm and prevent slugging on system start-up and a head pressure control to cycle the condenser fan on and off automatically to maintain system head pressure.

To confirm that the system is working, feel the bottom of the heater when the compressor unit has cycled off. When the unit starts, the condenser fan does not start at the same time as the compressor. The condenser fan starts after the head pressure has built up. As the unit is running the condenser fan cycles off and on while it holds the head pressure within a fixed range. The amount of cycling (frequency and duration) depends on the air temperature. The colder the air, the more frequent the cycling and with a longer duration.

Maintenance Schedule

Monthly

- ✓ (or quarterly depending on experience with individual cellar)

  Check and drain trap – clean if needed.
- ✓ Check for noise or vibration.
- ✓ Check for short-cycling of the unit – a turning on and off of the compressor unit more than eight times/hour.

Yearly

(in addition to monthly)

- ✓ Check evaporator and condensing unit for dirt – use a vacuum with a brush attachment to clean the coils.
- ✓ Clean condensate pan under the evaporator coil by flushing. Be careful to keep the drain pans clear of any and all debris.
- ✓ Inspect cabinet for corrosion or rusting – clean and paint.
- ✓ Inspect for dirt buildup on or inside the unit. Clean unit by vacuuming or wiping it down.
- ✓ Check for loose insulation, fasteners, gaskets or connections.
- ✓ Check the wiring connections and integrity or cords.
- ✓ Examine ducts for any cracks or breach.
- ✓ Check fan and solenoid on humidifier.
- ✓ Replace humidifier pad (if used).

Troubleshooting

WARNING

BEFORE PROCEEDING, READ AND UNDERSTAND THE SAFETY INFORMATION CONTAINED IN THE SAFETY SECTION OF THE WINE GUARDIAN MANUAL.

IMPORTANT

This section is intended as a diagnostic aid only. For detailed repair or parts replacement procedures, contact a qualified service company. Check the following table for some solutions before calling a service technician.

Replacement components must be properly rated.

Typical Start-up Problems	
Possible Cause Loose, improper, or defective thermostat or humidistat cable	**Solution** Check power, and thermostat or humidistat cable
Incorrect thermostat or humidistat (optional) settings	Check the thermostat and optional humidistat set up for the application
Changed settings on the thermostat	A common problem is not waiting long enough for the internal timers to complete their timed delay
Unit Does Not Start-up	
Power Switch Light is Off	
Possible Cause: • Switch not on • No power to outlet • Unit not plugged in	**Solution:** • Turn on switch • Check circuit breaker and wiring • Plug in the unit
Power switch light is on, and the thermostat light is off	
Possible Cause • No power to the thermostat	**Solution:** • Check wiring for loose, broken, or frayed connections • Check wiring for proper splicing • Remote interface controller may be faulty
Power switch light is on, and the thermostat light is on	
Possible Cause • Thermostat is not set up properly	**Solution** • Check thermostat set-up in the manual

Unit is operating and blows evaporator air, but the supply air is not colder than the return air from the cellar	
Possible Cause: • Thermostat not set up properly • Compressor not operating • Condenser Airflow is blocked • Possible Refrigerant Leak	**Solution:** • Check thermostat set-up in manual • Contact an HVAC Technician • Remove Blockage

Problems Controlling Cellar Temperature

Note: Problems are occurring even though the unit seems to be fully operational evaporator fan blows air into the cellar and the compressor and condenser fan runs.

Cellar Temperature too cold (below 51°F or 10°C) when unit is running	
Possible Cause: • Thermostat set point too low on cooling • Heating coil (optional) not operating • Thermostat set point too low on heating • Thermostat not controlling temperature • Thermostat mounted in improper location	**Solution:** • Reset thermostat to higher temperature • Check for temperature rise across coil
Cellar Temperature too cold (below 51°F or 10°C) when unit is not running	
Possible Cause: • Too much heat loss to adjacent spaces • Cellar loads are too high	**Solution:** • Increase insulation around the ductwork • Check and clean filter and coil • Coil frozen – shut off unit for two hours • Install additional Insulation of the cellar • Replace with a larger sized unit

Problems Controlling Cellar Humidity

Humidity too low or supply air is too cold, without optional humidifier	
Possible Cause:	**Solution:**
Not enough Evaporator Airflow	Remove blockage in supply or return ductwork Check and clean filter and coil
Defective thermal expansion valve	If under warranty call for service If not under warranty call a refrigeration technicia
Temperature set too cold	Raise temperature setpoint at thermostat
Humidity too low, without optional humidifier	
Possible Cause:	**Solution:**
No moisture being added to cellar	Add Wine Guardian humidifier or a room humidifi
Humidity too low with optional humidifier	
Possible Cause:	**Solution:**
Humidifier not operating	Check wiring for loose, broken, or frayed connections
Humidifier operating	Check humidistat set up Check for water flow and solenoid valve operatio Check for water being hot Check drip pad – replace if scaled No vapor barrier around cellar
Humidity too high when unit is running but not cooling	
Possible Cause:	**Solution:**
Compressor not operating	Check and reset high limit switch Clear blockage of condenser airflow
Ambient temperature is too high	Reduce temperature or draw condenser air from another space
Humidity too high when unit is not running	
Possible Cause:	**Solution**:
Unit needs to run to dehumidify	Run unit. Seal openings around doors (gasket ar sweep)
Humidity too high when unit is running and cooling	
Possible Cause:	**Solution:**
Too much moisture in Cellar	Poor vapor barrier installation Humidifier malfunctions refer to the humidifier instructions. Add dehumidifier to surrounding space

Other Miscellaneous Problems

Unit is leaking water	
Possible Cause: Piping from unit to drain is trapped Trap plugged Condensate pan plugged Unit not level	**Solution:** Re-pipe to remove external traps Clean trap Remove blockage and clean Level with shims
Unit is running properly, but the sound of the unit is objectionable	
Possible Cause: Noise is from airflow Noise if from unit	**Solution:** Redirect airflow Add baffles Add insulated ductwork Add sound baffle between unit and occupied

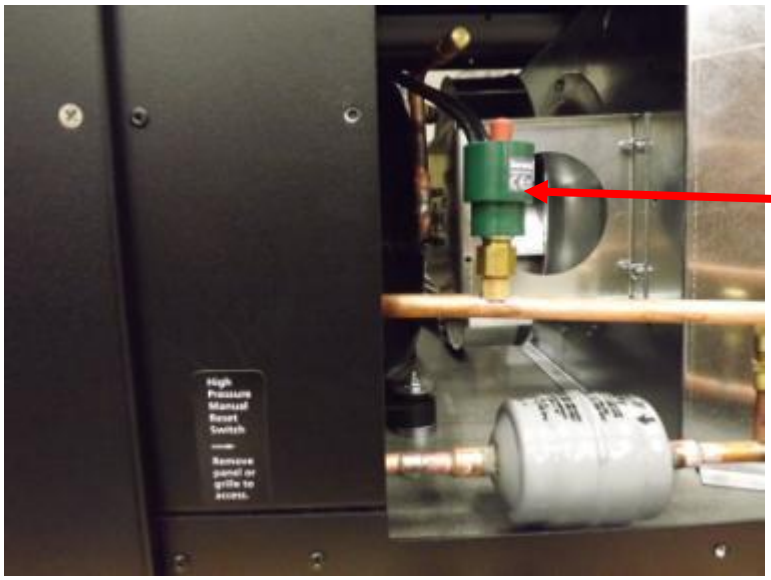
High Pressure Switch Has Shut Down the Unit

Every Wine Guardian unit has a manual reset high pressure switch in the refrigeration system. This switch shuts the compressor and condenser down if the head pressure in the system is too high. It is intended to protect the compressor. Restricted airflow through the condenser is the most common reason for the pressure to become too high. This can be caused by dust covering the filter or an obstruction blocking the airflow in the duct or grille.

Possible Cause	**Solution**
Head pressure in unit is too high because an obstruction is restricting air flow	Remove the obstruction in the duct or grille or clean the filter. Then restart the unit after resetting the high-pressure switch

Instructions to Reset High Pressure Switch

1. Remove the access panel, grille or duct collar at the condenser opening labeled
   "Manual Reset High Pressure Switch → Remove panel to access"
2. Locate the high-pressure switch near the compressor (a cylindrical device piped into the refrigeration system with two wires a red button on the top).
3. Push in the button until it locks into position.
4. Push the rocker switch to restart the unit.



Advanced Troubleshooting

IMPORTANT

This section is intended for qualified refrigeration service technicians only.

The technician should repeat all the previous troubleshooting steps before taking action on these more

Evaporator coil is freezing	
Possible Cause:	**Solution:**
Charge too low	Check sight glass Check for leaks Add refrigerant
Static Pressure too high	Run a static pressure calculation to see if there is too much ductwork, update the duct run accordingly.
High pressure switch keeps tripping Even After Checking for Obstructions and Dirty Filters/Coils	
Possible Cause:	**Solution:**
Condenser fan not operating	Repair or replace
Defective Switch	Replace
Unit cycles on and off more than 8 times/hr	
Possible Cause:	**Solution:**
Thermostat malfunctioning	Check the thermostat guide for thermostat information
Low suction pressure	Check low pressure switch Check pressure and adjust superheat
High pitched or loud rubbing noise, clanking, or vibration	
Possible Solution:	**Solution:**
Fans loose or malfunctioning	Repair or replace
Excessive compressor vibration	Replace
Replacing the blowers Note: When replacing the fan or motor, replace the fan and motor as a unit. Do not remove the motor from the impeller wheel.	

Contact and Warranty Information

Contact Information

Wine Guardian

7000 Performance Drive
North Syracuse, NY 13212
Toll free: (800) 825-3268

or

Help.wineguardian.com

Normal business hours are 8 a.m. to 5 p.m. Eastern, Monday-Friday.

Web site: www.airinnovations.com
Email: info@airinnovations.com

Warranty and Warranty Procedure

The Wine Guardian unit serial number is on the serial plate and noted on all packing lists and bills of lading and, along with the shipping date, is kept on file at Wine Guardian for warranty purposes. **All correspondence regarding warranty must include the model number and serial number of the unit involved.** Note that the warranty is null and void if the serial number on the unit or compressor is altered, removed or defaced. All inquires or correspondence regarding warranty should be handled in accordance with the "Warranty" and directed to:

Wine Guardian

7000 Performance Drive
North Syracuse, New York 13212
Attn: Service Department
Toll Free: (800) 825-3268
Fax (315) 452-7420

This procedure includes but is not limited to:

- Obtaining authorization from Wine Guardian prior to incurring any charges for repair or replacement under warranty.
- Or returning prepaid within 30 days any and all defective parts.

Warranty

GENERAL

Wine Guardian warrants, to the original buyer, its goods and all parts thereof to be free from defects in material and workmanship for a period of two (2) years from the date of invoicing assuming **NORMAL USE AND SERVICE.**

LIABILITY

Wine Guardian liability shall be limited to the repair or replacement (at its option) of any part, which, at our sole discretion, is determined to be defective. The purchaser shall pay all transportation costs.

Additionally, if a malfunction occurs within the first year from the date of invoice, **Wine Guardian** will reimburse the reasonable cost of labor required for the repair or replacement provided authorization is obtained from one of our authorized representatives prior to incurring any labor charges.

LIMITATIONS OF LIABILITY

THESE WARRANTIES ARE MADE IN LIEU OFF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND IN LIEU OF ANY OTHER OBLIGATION OR LIABILITY, INCLUDING LIABILITY FOR ANY INCIDENTAL OR CONSQUENTIAL DAMAGES. **Wine Guardian** will not be responsible for any costs or liabilities whatsoever resulting from improper installation or service of its equipment. In the event that **Wine Guardian** or its distributors are found liable for damage based on any defect or nonconformity in the products, their total liability for each defective product shall not exceed the purchase price of such defective products. No person or representative is authorized to change these warranties or assume any other obligations or liabilities for **Wine Guardian** in connection with the sale of its systems.

INDEMNIFICATION

Purchaser agrees to indemnify, hold harmless and defend seller and its officers, directors, agents and employees from and against any and all claims, liabilities, costs and expenses arising out of or related to Purchaser's use of the goods, or in any way involving injury to person or property or accident occasioned by the goods sold by **Wine Guardian** to Purchaser.

FOREIGN GOVERNMENT AND INDIAN NATIONS

If Purchaser is a foreign government or an Indian nation, Purchaser hereby expressly waives its defense of sovereign immunity in the event of a dispute between Purchaser and **Wine Guardian** regarding this invoice and Purchaser expressly acquiesces to the jurisdiction of the federal and state courts of the United States.

SEVERABILITY

If one or more of the provisions contained in this contract shall for any reason be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any provision of this contract, but this contract shall be construed as if such invalid, illegal or unenforceable provision had never been contained.

ADDITONAL REQUIREMENTS

If a defect covered by the Warranty occurs, contact Wine Guardian for authorization to proceed with corrective action. Do not return any parts or incur any charges for which you expect to be reimbursed under this Warranty without receiving this authorization. If parts are replaced under this Warranty, the defective parts must be returned prepaid within 30 days. This warranty shall be null and void in its entirety if the Serial Number on the air conditioner or compressor is altered, removed or defaced.