WINE GUARDIAN®

Through-the-Wall

Wine Cellar Cooling Systems
Installation, Operation and Maintenance Guide

Models: WG15 and WG25

Manufactured by: WineGuardian An Air Innovations Company
North Syracuse, NY USA
www.wineguardian.com www.airinnovations.com

Table of Contents

Introduction

Dear Customer,

Congratulations and thank you for purchasing a Wine Guardian cooling system. We believe it to be the best wine cellar cooling system on the market and hope that you will agree.

This guide is intended to help the installer and owner of the Wine Guardian cooling system to properly install and maintain the equipment. In order to ensure a long and trouble-free operation, please read this manual carefully, especially the safety instructions, and keep it for future reference.

Receiving, Inspecting and Unpacking the Wine Guardian System

Receiving and Inspecting the System

NOTE
Wine Guardian systems are factory assembled and tested prior to shipment.

Wine Guardian systems are shipped individually in corrugated boxes specially designed to protect the equipment during shipment.

- ✓ Before opening the container, 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.

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.

IMPORTANT
**** DO NOT LIFT THE UNIT UP FROM ITS PLASTIC FRONT PIECES TO AVOID DAMAGING THEM**

****THE UNIT SHOULD BE LIFTED FROM UNDERNEATH ITS BASE AT BOTH ENDS OF THE SYSTEM.**

Review the Packing Slip to Verify:

- ✓ Model number
- ✓ Factory-installed options
- ✓ System 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 (factory installed on condenser side)
- ✓ The Easy Mount™ Through-the-Wall mounting sleeve.
- ✓ Accessories such as condenser air duct collar or duct collar kit, and optional controls, if ordered.
- ✓ The EasyMount™ Through-the-Wall mounting sleeve.

General Description

The Through-the-Wall Wine Guardian cooling system is a professional grade, self-contained climate control system 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 environmentally friendly R-134a refrigerant. All 50Hz Wine Guardian equipment is CE certified. Each system is factory installed with a sealed, CE-approved power cord and plug that can be mounted on either end of the cooling system. Wine Guardian products are made in the USA.

The Wine Guardian Through-the-Wall system is completely self-contained and includes an integral air cooled condenser. The system is functionally divided into two sections, the evaporator or cooling section, and the condenser or heat rejection section. Each section contains a coil to add or remove heat and a fan to move the air through the coil and into our or out of the cellar or adjacent space.

Air from the cellar first enters the cooling coil. 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 internally evaporates as it comes in contact with the integral condensate removal coil. Air then enters the fan where it is pressured and discharged out of the system. The thermostat, located on the system, or through the optional remote interface controller, turns the cooling on and off as needed to maintain its set point.

The compressor and condenser section are activated whenever the system is cooling. The condenser fan draws air from the surrounding or ambient space. The airflows through the condenser coil where it absorbs heat from the refrigerant in the coil. The air is finally discharged out of the system by the condenser fan, and can be ducted outside or to an unused space by an optional condenser duct kit.

⚠CAUTION⚠

The air exhaust from the condenser fan is warm and can be 10 degrees C above the entering air temperature.

Wine Guardian Controls

Wine Guardian's digital electronic control series offers a versatile solution for controlling and monitoring your wine cellar temperature and humidity. This series consists of four controls; a main control board; a local user interface; a remote user interface; and a remote temperature and humidity sensor. The system only required the use of the main control board and one of the user interfaces (local or remote) to function. However, users have the following options to customize the control capabilities for their application: (See pg. 5 for description of control boards and optional sensors). The unit comes supplied standard with a communication port in the bottom of the condenser side control bracket to connect one of the above options.

The Wine Guardian's digital electronic controls are designed to control the operation of the compressor, condenser fan, evaporator fan, and optional humidifier. There also is pressure switch monitoring with a dry contact alarm output that will energize in the event of a pressure switch fault or a high/low temperature or humidity alarm. The local and remote user interface controls employ user-friendly, menu-driven programming features that can easily be accessed by holding the mode button on the control for 5 seconds. Once in the program menu, the user can scroll through the setting by pressing the mode button and can adjust each setting by using the up and down arrows. The programming mode allows the user to customize features such as °F or °C temperature scale, high/low temperature and humidity alarm set points, enable or disable an optional humidifier, and automatic or continuous fan option. To exit the programming mode the user may either hold the mode button for 5 seconds or the control will automatically store the settings and exit the programming mode after 10 seconds of inactivity. The standard local user interface control will also employ an ON/OFF button that turns the system on or off respectively.

Wine Guardian Controls

Main Control: Performs all switching functions and interfaces with inputs and outputs. It can connect to local or remote user interface, as well as remote temperature/humidity sensor.

Two way communications: local user interface reports settings back to main control, main control energizes outputs and reports alarms and temp/humidity readings to local user interface.

One way communication: remote temp/humidity sensor reports temp and humidity readings to main control.

Two way communications: remote user interface reports settings back to main control, main control energizes outputs and reports alarms and temp/humidity readings to remote user interface.

Local User Interface: Can be used with Main Control for adjusting settings, reading temp/humidity, and reading fault codes at the unit.

Remote User Interface: Can be with Main Control for adjusting settings, reading temp/humidity, and reading fault codes in a remote location away from the unit.

Temperature/Humidity Sensor: Can be used in conjunction with the Main Control to report temp/humidity from inside the wine cellar without requiring a user interface to be located inside the wine cellar.

Standard Specifications

IMPORTANT
Design and specifications are subject to change without notice

The Wine Guardian System Contains

- ✓ A capillary tube expansion to control the flow of refrigeration into the evaporator coil
- ✓ A filter dryer to keep the refrigerant clean and free of contaminants
- ✓ Dual factory mounted plastic supply/return air grilles for evaporator and condenser air movement
- ✓ Movable supply air louvers for side-to-side directing of cold air into the wine cellar
- ✓ A manually reset, high-pressure switch on the condenser disharge to protect the compressor from high pressures
- ✓ Environmentally friendly-134a refrigerant
- ✓ An internally/externally mounted digital electronic control with many user-controlled settings
- ✓ Auxiliary drain port connection at condenser end of unit

All exterior framing of the Wine Guardian is powder coated, 1.6mm gauge aluminum to prevent rust and corrosion. All coils are copper tubes with aluminum fins. The evaporator is coated with an "E-coat" finish to prevent premature corrosion. The system uses an internal drain system to remove excess moisture and does not reintroduce it back into the cellar. An auxiliary drain port is located at the condenser end of the unit should there be a need to physically remove the excessive moisture.

Each system is provided with a pre-wired and tested electronic digital thermostat (local user interface) as standard, or an optional remote mounted thermostat (remote user interface) in the wine cellar. The thermostat has multiple control functions for the fan, operation, cooling (if equipped), and maintaining humidity.

Compressors are self-lubricating, permanently sealed, hermetic reciprocating type compressors, with internal overload protection and capacity 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 that can be connected on the cellar side or the condenser side of the unit. Units are shipped from the factory with a plug attached on the condenser side. All controls are 24-volt supplied from an internal transformer.

Accessories and Optional Equipment

Installation Sleeve

Each Wine Guardian system includes an EasyMount™ installation sleeve to be used in the mounting of the system through-the-wall at the desired location. The sleeve is essential for the proper support of the Wine Guardian system and ease of installation. The maximum dimensions of the wall opening should be 368mm wide by 413mm high.

For proper operation of the system, including drainage and undue noise and vibration, the Installation Sleeve must be mounted level within the wall cutout and securely fastened to the wall studs on either side of the sleeve as shown on page 18.

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 system, it is recommended that you purchase the extended, five-year warranty option.

Duct Collar Adapter

An optional duct collar kit is available for ease in directing the warm condenser air away from the through-the-wall unit mounting. The kit includes one (1) duct collar, 4.5-metres of 15cm round flexible ductwork and two (2) tie wraps for connection of the ductwork to the duct collar. The kit does not include connections at the tie-in point to the remote location or outdoors.

Remote Temperature/Humidity Controller (if supplied with humidifier)

The remote temperature/humidity controller (Remote Interface Controller) is intended to provide a means for user interface at a remote location. The controller can be used as a remote sensor/controller mounted within the wine cellar remote from the Through-the-Wall system. The controller can also be used as a remote indicator (without sensor) mounted directly outside of the wine cellar of the residence or building. The Remote Interface Controller includes a backlit face for temperature and humidity indication along with controller set-up and operational functions.

Remote Temperature/Humidity Sensor

The remote temperature/humidity sensor is intended to provide a means of sensing one or more locations within the wine cellar ands designed to work in conjunction with the Remote Interface Controller or Local Interface Controller integral to the Wine Guardian Through-the-Wall system. Multiple sensor readings are averaged and controlled to a single point. The sensors do not have any temperature or humidity indication and must be mounted within the wine cellar.

Humidity Option

An optional stand-alone humidifier comes fully assembled and tested for field installation. It automatically adds moisture into the cellar by the evaporation of water over a distribution pad.

***Humidifier Connection**: You can locate the low voltage connection for field optional remote humidifier on side of control panel on the wine cellar side of the WG cooling unit. The optional humidifier comes pre-wired to fit directly to this connection for the WG unit to control cellar humidity level desired.*

Overview of the Wine Guardian Unit

Refer to illustrations on page 9

Cabinet – The cabinet is constructed of aluminum with a powder coated finish for corrosion protection and an attractive, maintenance-free appearance. 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.

Evaporator Section – Wine cellar air is circulated through the evaporator section by a direct drive, permanently or lubricated motorized impeller blower. 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.

Electrical Controls –All solid state electronic controls are connected internally and/or externally through a phone cord-type connection. There is no need to open the chassis to access the factory mounted and wired control. All internal wiring is in accordance with the National Electrical Code. Wires are numbered and color coded to match the wiring diagrams.

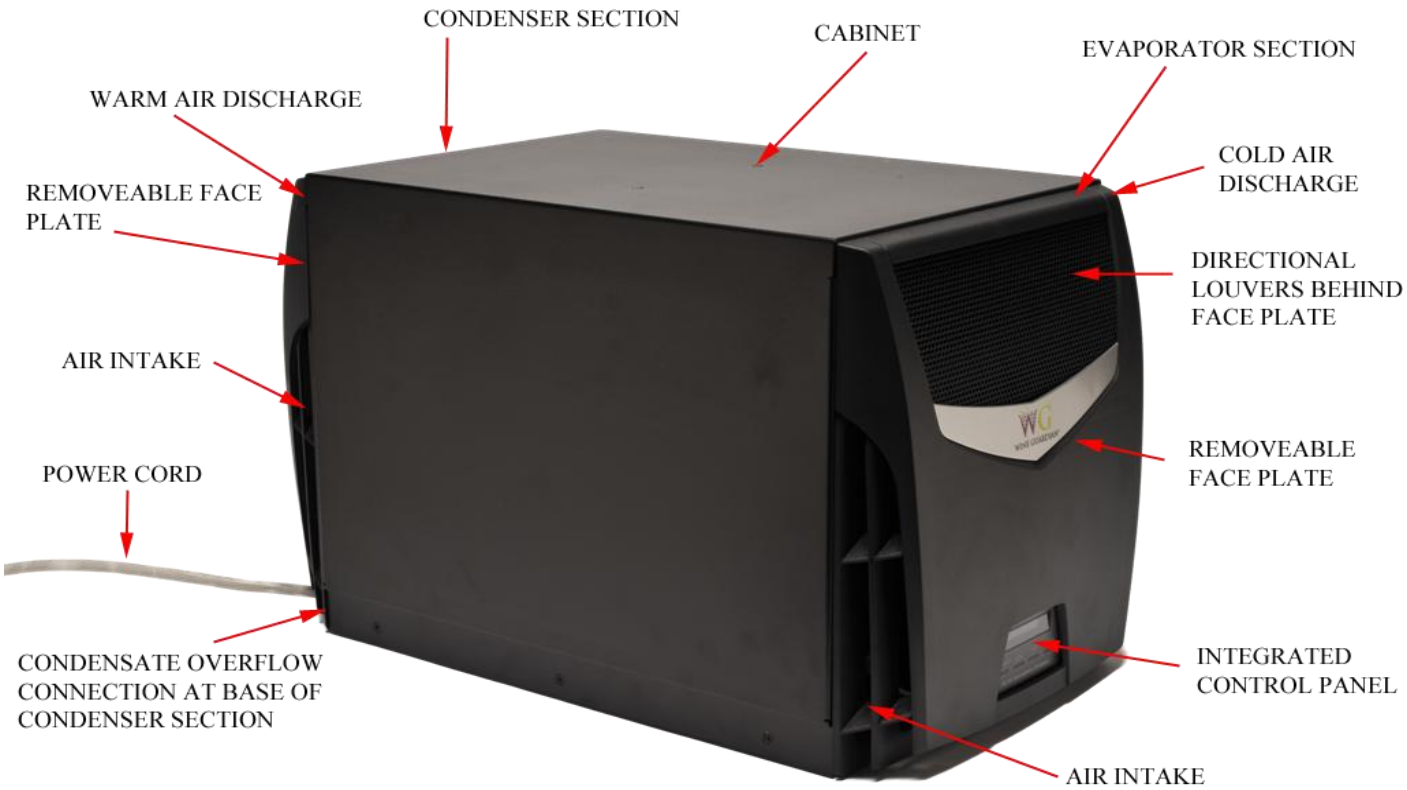
Factory Tested – All Wine Guardian units are factory run-tested and checked for operational performance.

Internal Drain – Condensate from the evaporator coil is directed to the condensate removal system at the condenser end of the unit. This allows the drain pan to drain freely. No external trap is required.

Refrigerant Circuit – The factory-charged circuit includes a capillary tube expansion device, a filter dryer, and a manual reset high pressure switch. **See Refrigeration Illustration on page 9.**

Supply/return grilles – These are made of rugged ABS plastic and factory mounted to automatically seal to the chassis. Air is introduced through the sides and bottom and discharged through the front perforated section.

Directional Louvers – Two directional louvers are located within the evaporator supply air discharge opening on the Wine Guardian unit and can be accessed by removal of the wine cellar side faceplate. The louvers are designed to be manually adjusted to direct air flow from side-to-side or straight on. The louvers can help direct cold air into the center of the wine cellar should the Through-the-Wall unit be mounted in a corner of the room.


CONDENSER SECTION
CABINET
EVAPORATOR SECTION
WARM AIR DISCHARGE
COLD AIR DISCHARGE
REMOVEABLE FACE PLATE
DIRECTIONAL LOUVERS BEHIND FACE PLATE
AIR INTAKE
REMOVEABLE FACE PLATE
POWER CORD
CONDENSATE OVERFLOW CONNECTION AT BASE OF CONDENSER SECTION
INTEGRATED CONTROL PANEL
AIR INTAKE

Safety

The following is suggested before installing or maintaining the Wine Guardian System:

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

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.

HIGH VOLTAGE - RISK OF SERIOUS INJURY OR DEATH
High voltages are present in the cabinets
TURN OFF ALL POWER BEFORE OPENING PANELS
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:

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 practices.

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.

Lockout/Tagout Procedure

1) Turn the system to off at the local interface controller (the display will indicate the system is off).

2) Unplug the unit from the electrical outlet and cover the outlet to prevent accidently plugging in the system.

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 system. When performing maintenance, always use the Lockout/Tagout procedure, which is described in this chapter. Observe the maintenance safety guidelines in the Wine Guardian manual.

IMPORTANT

The equipment described in this manual uses electricity. When using this equipment, be sure to follow the safety procedures outlined 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 system.

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 (if equipped) must be disconnected prior to servicing. Electric heaters may start automatically, disconnect all power and control circuits prior to servicing the system 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 free-wheeling after the power is disconnected. Allow the fans to stop completely before servicing the system to avoid cuts or dismemberment.

Rotating Fan Blades are present in the Wine Guardian system. 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 system. 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.

On/Off Switch

To shut down all high volt power internally, the power cord must be removed from power outlet.

Energy Type	Voltage
Hazard	Electrocution, electrical burns and shock
Magnitude	230 Vac, 1 phase, 50 cycles
Control Method	Disconnect power cord and On/Off Switch

- **Never** reach into the system while the fan is running.
- **Avoid** risk of fire or electric shock. **Do not** expose the system to **rain** or **moisture**.

- All supports for the system **must** be capable of safely supporting the equipment's weight and any additional live or dead loads encountered.
- All supports for the system **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.

- **Do not** block any supply or return air opening. Install in accordance with the instructions in the Wine Guardian manual.
- **Protect the power cord** from being walked on or pinched, particularly at the outlet plug, convenience receptacles, and the point where it exits the system.
- **Only** use attachments/accessories specified by the manufacturer.
- **Always** operate this equipment from a 220/240 Vac, 1 phase 50Hz power sources only.
- **Always ground the outlet** to provide adequate protections against voltage surges and built-up static charges.
- **Refer all servicing to qualified service personnel.** Servicing is required when the system has been damaged in any way, such as:
    - ✓ Power supply cord or plug is damaged
    - ✓ Liquid has been spilled or objects have fallen into the system
    - ✓ The system has been exposed to rain or moisture
    - ✓ The system does not operate normally
    - ✓ The system 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 system:

- ✓ Set the system on the floor or a sturdy level surface
- ✓ Plug in the system
- ✓ Press the on/off switch, control illuminates. This indicates the system has power.
- ✓ **The built in timer prevents short cycling and keeps the system from turning on right away.** The system comes on and runs as long as the temperature of the space is above the thermostat set point. After several minutes, cold air comes out of the system from the evaporator section side and hot air comes from the condenser section. Listen for any unusual noise or vibration.

Air Flow Illustration

WARNING

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, it may cause damage to the equipment and voids 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

Required Tools

drill / Phillips head | Level | stud finder | tape measure | square | drywall screws

Urethane caulk | hand saw | drywall saw | heavy duty snap knife

Addressing Items in the Planning Process

- ✓ Where to locate the unit? *It can be mounted flush with the racking or flush with the wall on the wine cellar side.*
- ✓ How to mount the unit? *A mounting EasyMount™ kit is supplied.*
- ✓ Locate the electrical power outlet close to the unit, in cellar or out. **Do not use an extension cord!**
- ✓ Factory supplied power cord on condenser side of the unit. *It is preferred to be on the condenser side of the unit, the cord can be moved to accommodate wine cellar side if need be.*
- ✓ Does the condenser heat exhaust need to be ducted away? *An optional kit is available.*
- ✓ Where to locate the thermostat, if remote interface control is ordered? *Thermostat should be located midpoint on a wall within the wine cellar and provide sufficient access and exposure to airflow.*
- ✓ How to install the drain line. *Run to an open floor drain, container, or condensate pump.*
- ✓ Are all the parts here to complete the installation? *Installation sleeve, gasket, sealant fasteners*

Performing a Pre-installation Check

- ✓ Check for the properly sized breaker as dictated by the system rating plate data.
- ✓ Is the cellar built with adequate insulation and vapor barriers? *See the Wine Cellar Design Guide at the Wine Guardian's web site www.wineguardian.com for more information.*

Locating the System

Wine Guardian systems are typically installed at the user's eye level for ease of operation. The Through-the-Wall system discharges warm air from its condenser end so this should be considered when determining the location for the system. Locating the system adjacent to a mechanical room or in close proximity to an exterior wall may be required if ducting the warm condenser air is being considered. The warmer condenser air can be ducted up to 4.5 metres away. Be sure to install wire nuts onto the black and white wire leads at the condenser end, once the cord is removed.

Power Cord Location

As previously noted, the power cord is factory wired on the condenser side of the system. If you require the cord on the wine cellar side for plugging into an available outlet, this can be accomplished by removing the 3-wire leads (ground included) and moving the cord with connector to the opposite side control bracket and wire nutting the black and white wires to the factory supplied leads. The wires must have the terminations cut off and stripped first. Then screw the ground lead to the hole supplied in the control bracket.

You must then move the red voltage switch in the opposite direction as from the factory to move the internal power from the condenser side to the wine cellar side.

***Voltage Switch**: It is set from factory to supply power to the line cord wired to condenser side of unit. If you need power cord moved to wine cellar side of of unit, you must move the switch to the opposite direction from factory setting, which now will be facing the evaporator side fo the unit (in wine cellar).*

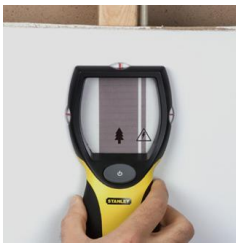
Grilles

Factory supplied and installed for proper air intake and discharge for optimal system performance.

Mounting the System

Follow the steps below for installation of the Wine Guardian Through-the-Wall unit.

Step 1



Find wall stud locations. If both wine cellar side and finished basement side of walls have drywall already installed it is important to locate the wall studs in the area chosen to mount the Through-the-Wall system. Use of any high quality stud finder is recommended for locating the center and edges of the wall studs on the wine cellar wall. Once located, the stud edges should be clearly marked prior to following Step 2 below.

Step 2

Preparing wall penetration for Installation Sleeve. Mark the penetration dimensions on the wall (wine cellar and finished basement side) at the desired mounting location for the Wine Guardian Through-the-Wall unit. Keep in mind the ideal height should be at eye level to the user. The unit controls should be reachable upon installation completion. The wall penetration should be no more than 368mm wide by 413mm high stud-to-stud dimension so modifying stud locations is not required.

⚠ CAUTION ⚠

RISK OF PERSONAL INJURY OR DAMAGE TO EQUIPMENT

Ensure that the area chosen does not have electrical or plumbing interference within the wall or along the outside of the wall. Failure to do so could cause property damage or personal injury. If the wall does include electrical wiring or plumbing DO NOT CONTINUE. Contact a qualified electrician or plumber to relocate these services or choose an alternate location for mounting the WG system.

Step 3

Slide the EasyMount™ sleeve through the wall penetration so that the flanged area of the sleeve sits flush with the surface of the wall. Ensure the EasyMount™ sleeve is level and plumb prior to fastening to the existing studs.

IMPORTANT

The Installation Sleeve must be installed level within the wall opening to provide proper operation of the Wine Guardian system. Failure to do so may result in improper drainage, excessive ware, vibration and noise.

⚠ CAUTION ⚠

RISK OF PERSONAL INJURY OR DAMAGE TO EQUIPMENT

Flange side of the sleeve must be mounted on side of wall you intend to have the WG flush mounted.

Step 4

Fasten the EasyMount™ sleeve to the wall studs through the six (6) pre-drilled holes located on either side of the EasyMount™ sleeve. Start by inserting a wood screw into the lower pre-drilled holes on both sides of the sleeve, and tighten until snug. Do not over tighten. Then insert screws into the upper pre-drilled holes on both sides of the sleeve, continue to middle set of holes. Ensure screws are flush with wall sleeve inside surface. Do not over tighten.

Step 5

Slide the Wine Guardian Through-the-Wall system through the EasyMount™ sleeve to the desired depth. Please note the Through-the-Wall system must be slid so that the power cord side is last, not first, to enter the sleeve. Do not slide the system past the desired flush mounting point.

Step 6

Seal joint between EasyMount™ sleeve and Wine Guardian system on the flange side of system with a latex caulk to ensure a tight seal and prevent the system from horizontal movement. After caulking add the kit supplied self adhesive insulate strips tight to the chassis and cover the wall sleeve flanges to prevent possible sweating.

Installing the Condensate Overflow

Condensate generation is a natural by-product of air conditioning systems. The Wine Guardian cooling coils are designed with the understanding that optimal wine cellar humidity levels are between 55% RH and 70% RH. If the vapor barrier of the wine cellar is poorly constructed or excessive moisture is in the basement or surrounding area then the cooling coil may generate excessive amounts of moisture. The condensate will appear in the form of water at the cooling coil drain pan and eventually will travel to the condensate removal system located below the compressor. The Wine Guardian system features an auxiliary drainport connection located at the condenser end of the system directly below the plastic face plate. In the event there is excessive moisture we recommend connecting the drainport as indicated on the following page.

Installing the Drain Line

- ✓ The drain line must extend from the system to an external drain or disposal site. Do not use drain tubing any smaller than 6.35mm inside dimension on the system.
- ✓ If no floor drain is available, use a bucket. Do not extend the drain below the rim of the bucket. Empty the bucket periodically.

Allow enough height for the drain line to function properly. If draining into a nearby sink, the system must be elevated higher than the rim of the sink in order for the water to drain by gravity. Install with a ¼ inch per linear foot of pitch. See Accessories and Optional Equipment section 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 system cycles off. This is confirmed by water dripping from the drain.

Wiring the System for Power

WARNING

ELECTRICAL SHOCK HAZARD

The electrical outlet and wiring installation must meet the national and local building codes.

DO:

- ✓ Match the electrical outlet to the plug 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 below.

Model No. WG15		Serial No.	
Electrical	240/1/50	Electric Heat Amps (Opt.)	2.1
Locked Rotor Amps	9		
Compressor RLA	0.9		
Condenser Fan Amps	0.2	Min. Circuit Amps (w/o opt.)	2.9
Evaporator Fan Amps	0.2	**Refrigerant**	R-134-A
Condensate Heater	N/A	System Charge	256 g
Total Unit Amps (w/o opt.)	1.3	Test Pressure	1896 k Pa

Air Innovations, 7000 Performance Drive, North Syracuse, New York 13212
00 1 315-452-7400 * Fax: 00 1 315-452-7420 *WG15 is Patent Pending*

DO NOT:

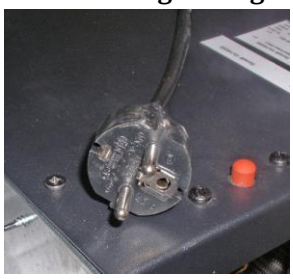
- ✓ DO NOT MODIFY THE PLUGS IN ANY WAY!
- ✓ Do not use extension cords.

IMPORTANT

The electrical power supply must be 220/240 volt AC 1 phase 50 cycle, depending on the model of the system, and cannot vary more than +/- 4% or damage may occur to the unit.

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

Electrial Plug Configuration



This is the configuration of the factory supplied plug for European applications. Alterations to this plug for alternative power sources would require factory approval.

Control Options and Wiring

Each Wine Guardian system comes with a local interface mounted on the front of the unit. It is wired at the factory for testing prior.

Remote Interface Controller (Optional)

A phone cord-style communication cable is required to connect from remote interface controller supplied on the main chassis7.62 meters of control cord is supplied with the option.

Remote Temperature/ Humidity Sensor (Optional)

Mount the thermostat on a solid surface away from doors, corners, air outlets, drafts or heat generating equipment. Do not mount the thermostat directly on an outside wall or wall adjacent to a boiler room. Use a piece of foam insulation behind the thermostat to insulate it from a hot or cold surface. The recommended height is 1.2 meters to 1.5 meters above the floor.

.NOTE: Keep the thermostat guide in a folder along with the Wine Guardian Manual for future reference.

Starting-up and Operating the Wine Guardian

Control Settings

The control has been wired and set up in the factory for testing with default settings. It is an electronic digital thermostat for one-stage cooling. No additional adjustments should be necessary except adjusting the cellar temperature to your preference. If additional adjustments or changes are necessary, please refer to the configuration settings section in this manual.

Controller Functions

ON/OFF – The ON/OFF button will be used to turn the system on or off. When set to the off mode the control will not allow any of the outputs to energize effectively locking the system out. It will not allow any outputs to energize until the system is turned on with the ON/OFF button. It should be noted that high voltage will still be present at the main control board when the system is set to off even though the control will not allow it to switch to the outputs.

UP Arrow – The UP arrow will allow the user to increase settings.

DOWN Arrow – The DOWN arrow will allow the user to decrease settings.

MODE – The MODE button will be used to select between HEAT, COOL and AUTO MODE, as well as entering the configuration settings. Holding the MODE button for 5 seconds will enter configuration mode. Once in configuration mode the user can adjust settings by pressing the UP or DOWN arrows. Pressing the MODE button once will advance to the next configuration settings. Holding the MODE button for 5 seconds while in configuration mode will store all changes and exit configuration mode.

For cooling operation only: Cooling is set at 13°C from the factory. This can be changed by hitting the UP or DOWN arrow, but please refer to configuration setting numbers 2 and 3 for limitations in comparison to the High and Low temperature alarm settings.

For units with optional humidifier controlled by TTW WG: The RH% is factory set at 55%. This can be changed by making sure that setting 6 is changed to "1" and then using UP/DOWN arrows to get access to one of the modes, then press the MODE button to access RH% setting. If no humidifier is attached, the control will read RH%, but will not be controlling it.

Changing fan operation: The default setting from the factory is "AUTO" fan. If desired it can be changed to fan "ON" by accessing configuration setting number 7.

Configuration Settings

Setting 1

Setting 1 will allow the user to select the Fahrenheit or Celsius temperature scale. It will toggle between F and C when the UP or DOWN arrows are pressed. The default is C.

Setting 2

Setting 2 will be the low temperature alarm set point. The minimum setting for this feature will be 0°C. There must be at least a 2°C difference between the low and high temperature alarm set points and at least a 2°C difference between the actual temperature set point and the alarm set point. Default setting is 10°C.

Setting 3

Setting 3 will be the high temperature alarm set point. The maximum setting for this feature will be 38°C. There must be at least a 4°C difference between the low and high temperature alarm set points and at least a 2°C difference between the actual temperature set point. Default is 18°C.

Setting 4

Setting 4 will be the low humidity alarm set point. The minimum setting for this feature is 5%RH. There must be at least a 4%RH difference between the low and high humidity alarm set point and at least a 2%RH difference between the actual humidity set point and the alarm set point. Default is 5%.

Setting 5

Setting 5 will be the high humidity alarm set point. The maximum setting for this feature is 95%RH. There must be at least a 4%RH difference between the low and high humidity alarm set points and at least a 2%RH difference between the actual humidity set point and the alarm set point. Default is 95%.

Setting 6

Setting 6 will be the humidifier internal/external/off feature. If set to 0 “off”, the humidifier output, set point adjustments and alarms will be disabled. If set to 1 “external”, the user will be able to enter humidity set point in the user interface and the humidifier output will energize based on that set point. The control will not energize the evaporator fan for an external humidifier. The user interfaces will always display the RH% even if this feature is set to off. Default is 0 disabled for Wine Guardian applications. A 1 will equal enabled external, and a 0 will equal disabled..

Setting 7

Setting 7 will be the fan auto/on feature. The user will have the option to set the fan operation to auto in which case it will only turn on with a call for heating, cooling or humidifier. They may also set the fan to on which will cause the fan to run continuously. The default will be 0 auto.

Setting 8

Setting 8 will be the service menu code screen. The user will be required to enter a code to access any further features.

Consult factory, if required to change any of the remaining settings

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Setting 9

Setting 9 will be the adjustable anit-short cycle delay for the compressor. It will be adjustable from 0-10 minutes in 1 minute increments. The default is 5 minutes for all systems.

Setting 10

Setting 10 will allow the user to select the type of interface sensor they will be using local interface, remote interface, remote sensor or they will be averaging the sensors. The default will be local interface for all systems.

Note: Settings 11 through 14 will be locked out for Wine Guardian.

Setting 15

Setting 15 will be the room sensor calibration. This setting will allow the user to adjust the room temperature reading by ±3°C. Default setting will be 0°C for all systems.

Setting 16

Setting 16 will be the differential temperature adjustment. This setting will allow the user to adjust the turn on differential from 1°C to 1°C (the turn off differential is fixed at 1°C). Default is 1°C for all systems.

Setting 17

Setting 17 will be the deadband setting, which is the minimum allowable temperature difference between the heating and cooling set points. This will be adjustable from 1°C to 2°C. Default is 1°C for all systems.

Setting 18

Setting 18 will be the test mode setting. When set to on, the control will automatically turn on all outputs with the exception of electric heat. Default is 0 off. A 1 will equal enabled and a 0 will equal disabled.

Setting 19

The set temperature range is 0°C - 37°C, however the range is initially limited to 11°C - 17°C because of the default low temperature alarm set at 10°C, and the default high temperature alarm set at 18°C. The set point from the factory will be 13°C, the humidity set range is 5%- 95% with a default set point of 55%. The control will default to auto change over mode, and the fan auto/on feature is defaulted to auto. All other setting are to remain as listed above.

Testing the Fan

Scroll through configurations settings to 7 for "On" or "Auto" operation. It is factory default to "Auto".

- 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 thermostat is calling for cooling or humidification.

Running the System

Plug in the system. Touch the ON/OFF button on the front panel. The display lights up to indicate power to the system. The system may not come on right away due to the timer built into the circuiting to prevent short-cycling. **There is a 5-minute compressor/condenser fan time delay on initial start-up to prevent short-cycling.**

- ✓ Check system to confirm the compressor is running. When the compressor is on the system will blow cold air to the wine cellar and warm air from the condenser section.
- ✓ Check for any unusual noise or vibration, such as blanking or rubbing.

Important: It is normal for the display to read a "high temperature" default alarm upon initial start-up while trying to pull the wine cellar down to operating conditions as factory default is set at 50°C and it is likely the cellar may be above this condition upon initial start-up in a new application. The system will continue to cool until it gets within 2 % +/- of the set point.

Initially, the system may run continuously for several hours, up to a day or more, while it lowers the cellar temperature. Once the system reaches the set point temperature, it shuts off and starts to cycle on and off as it continues to lower the cellar temperature to the set point. The cellar air reaches set point before the bottles. If the cellar temperature started at 24°C, the supply air temperature discharged from the system will probably be between 13°C and 16°C colder. As the cellar temperature decreases to 14°C, the supply temperature will be between 6°C and 8°C.

Cycling the System

The fans continue to free-wheel for several minutes when the unit cycles off, if fan set to "auto" only. This is normal.

Regulating the Wine Cellar Temperature

To keep the entire wine cellar at the same temperature, set the thermostat to run the supply fan continuously, and not just when there is a call for cooling. Set Fan switch to ON instead of AUTO.

Changing the Air Flow Direction

The grilles furnished with Wine Guardian are single directional, but the wine cellar airflow can be directed manually by setting the louvers behind the plastic panel to the desired direction. You must first remove the 2 screws at the bottom of the plastic front panel to gain access to the louvers.

Maintenance

General

WARNING

BEFORE PERFORMING MAINTENANCE ON THE SYSTEM, 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 removing end panels or cover.

CAUTION

SHARP EDGES
RISK OF SEROUS INJURY

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

Maintenance on Wine Guardian system 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 system.

CAUTION

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 system.

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 system may be required due to dust or dirt in the air stream.

Maintenance Schedule

Monthly

(Or quarterly depending on experience with individual cellar)

- ✓ Check for noise or vibration.
- ✓ Check for short-cycling of the system – a turning on and off of the compressor unit more than eight (8) times/hour.

Yearly

(In addition to monthly)

- ✓ Check evaporator and condenser coils 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 system by vacuuming or wiping it down.
- ✓ Check for loose insulation, fasteners, gaskets or connections.
- ✓ Check the wiring connections and integrity or cords.
- ✓ Examine condenser duct (if option is used) for any cracks or breach.

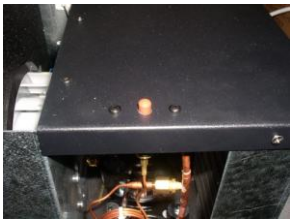
High Pressure Switch has Shut the System Down

Every Wine Guardian system 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 coil 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 through the unit.	Remove the obstruction in the duct or grille or clean the coil. Then restart the system after resetting the high pressure switch.

Instructions to Reset High Pressure Switch

- ✓ Turn the Wine Guardian system off at the control panel (local or remote interface).
- ✓ Locate the high pressure reset switch which is located within the air outlet section at the condenser side of the system. The switch has a red push button and is accessible by removing the plastic end cover. (see image→)
- ✓ Remove the condenser side plastic access panel.
- ✓ Push in the button until it locks into position.
- ✓ Place the condenser side plastic panel back on.
- ✓ Restart the unit at the control panel (local or remote interface)



Alarm Annunciation

When an alarm condition occurs, the control will flash the backlight on the display in addition to annunciating the actual fault on the screen. The user can make the backlight flashing stop by pressing a button on the local user interface. However, the alarm annunciation will not actually clear on the display until the fault is corrected.

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.

Typical Start-up Problems

Possible Cause	***Solution***
Incorrect thermostat or humidistat	Check the thermostat and humidistat setup for the application. Read the thermostat troubleshoot guidelines in the Thermostat Installation and Operating Instructions.
Changed settings on the thermostat	A common problem is not waiting long enough for the internal timers to complete their timed delay. Allow 5 minutes for compressor to start.

Unit Does not Start-up

Thermostat light is off ***Possible Cause***	***Solution***
Voltage switch not in correct position No power to outlet Unit not plugged in	Check position of voltage switch Check circuit breaker and wiring Plug in the unit
Thermostat light is on ***Possible Cause***	***Solution***
Thermostat is not set up properly	Check thermostat set up in the guide

Unit is Operating and Blows Evaporator Air, but the Supply Air is not Colder than the Return Air from the Cellar

Possible Cause	***Solution***
Thermostat not set up properly	Check thermostat setup in the manufacture's thermostat guide
Compressor not operating	High pressure switch open (button up) (see below)
Condenser airflow is blocked	Remove blockage Clean coil (if needed)
Head Pressure (HP) switch is open	Reset HP switch – ***see reset instructions on page ??***

Problems Controlling Cellar Temperature

***Problems are occurring even though the unit seems to be fully operational – evaporator fan blows air into the cellar and compressor and condenser fans run*

Cellar temperature is low (below 11°C when unit is running ***Possible Cause***	***Solution***
Thermostat set too low on cooling	Reset thermostat to higher cooling temperature
Thermostat not controlling temperature	Wiring integrity compromised (shorted), replace wiring
Cellar temperature is too cold (below 11°C) when unit is not running ***Possible Cause***	***Solution***
Too much heat loss to adjacent spaces	Increase insulation around the ductwork and doorways Add heater
Cellar temperature is too high, but supply air is cold ***Possible Cause***	***Solution***
Not enough evaporator airflow	Remove blockage in supply or return Check and clean coil Coil frozen – shut off unit for two hours
Cellar heat loads are too high	Install additional insulation Replace with larger sized unit

Problems Controlling Cellar Humidity

Humidity too low or supply air is too cold, without optional Standalone humidifier ***Possible Cause***	***Solution***
Not enough evaporator airflow	Remove blockage in supply or return ductwork Check and clean coil Coil frozen – shut off system for two hours
Defective or incorrect expansion device or coils	Call factory for service
Humidity too low, without optional humidifier ***Possible Cause***	***Solution***
No moisture being added to cellar	Add Wine Guardian humidifier or room humidifier
Humidity too low with optional humidifier – read humidifier troubleshooting ***Possible Cause***	***Solution***
Humidifier not operating	Check wiring for loose, broke or frayed connections Check humidistat set up Check for water flow & solenoid valve operation
Humidifier operating	Check for water being hot Check drop pad – replace if scaled No vapor barrier installed 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

Problems Controlling Cellar Humidity

Humidity too high when unit is not running ***Possible Cause***	***Solution***
System needs to run to dehumidify	Lower room temperature setpoint. Seal openings around doors (gasket and sweep)
Humidity too high when unit is running and cooling ***Possible Cause***	***Solution***
Too much moisture in cellar	Poor vapor barrier installation Humidifier malfunction refer to the humidifier instructions Add dehumidifier to surrounding space

Other Miscellaneous Problems

System is leaking water ***Possible Cause***	***Solution***
Condensate pan plugged Unit not level	Remove blockage and clean Level with shims
System is running properly, but the sounds of unit is objectionable ***Possible Cause***	***Solution***
Noise is from airflow	Duct airflow from condenser to outdoors