

# Features and Specifications

## Purpose of cooling unit

- WM-4510~8510HZD cooling units are designed and used to provide a stable temperature between 50~65 °F for a properly insulated and sized space.
- The refrigerated space will maintain humidity within the range of 50~70% RH.
- These temperature and humidity ranges like in natural caves are optimized for long term storage of wine.

## Specialty of design

- The unit is self-contained and all-in-one ready for use. No copper tubing and drain line are required.
- Innovative control programming can adjust the humidity without an external humidifier.
- Both curved supply grille and front panel bring you dynamic style.
- Backward-curved impeller fans can duct the supply air and exhaust air each 50 ft in total.

## Flexibility of installation

- Adjustable speed evaporator fan allows for flexible installations: standard through-wall, through-wall with ductworks, in-cellar with ductworks and remote-mount with ductworks.
- Quiet and high speed condenser exhaust fan selection makes it work at both normal and extremely high ambient temperatures.

## Availability of options

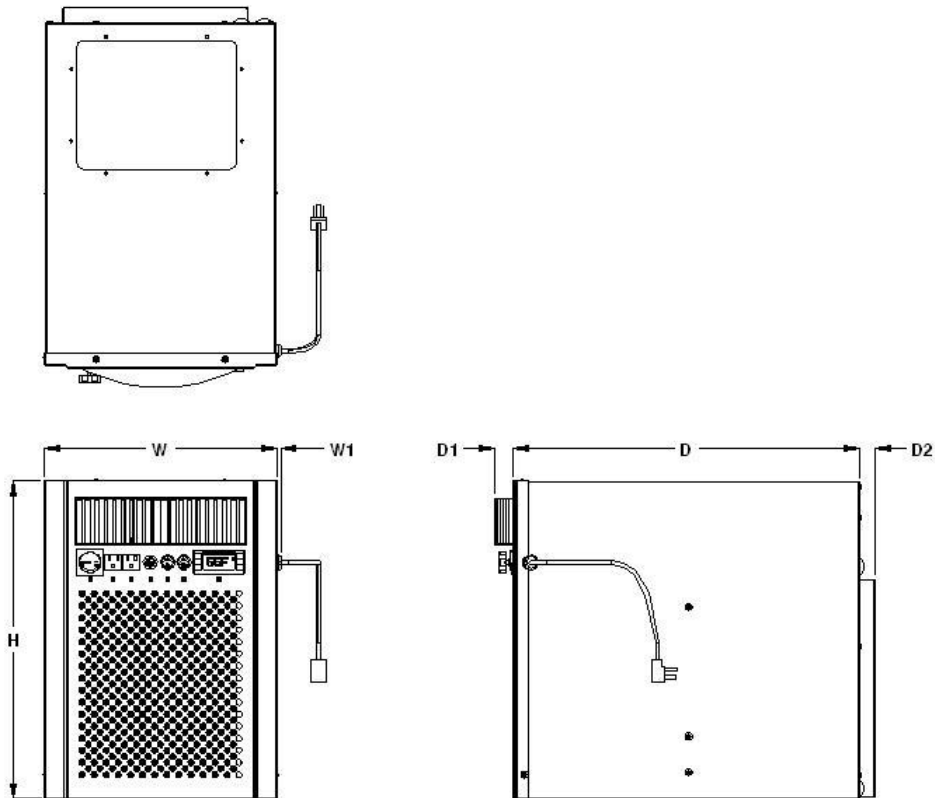
- Crankcase heater protects the compressor from slugging damage when the ambient temperature falls below 50°F.
- Low cellar temperature activated cellar heater outlet for an electric heater can be used in extreme low temperature condition to protect your wine from freezing.
- Low and high cellar temperature activated phone notification allows your expensive wine protected all the time.
- An independent humidifier can be hooked up to maintain the proper humidity as the customer requires in extremely dry conditions.
- Reusable condenser air filter keeps the condenser clean and maintains the cooling unit running efficiently.
- Optional left or right towards supply grille, top exhaust, side or rear power cord can meet your customized air supply and installation requirements.

The specifications and dimensions are listed as follows:

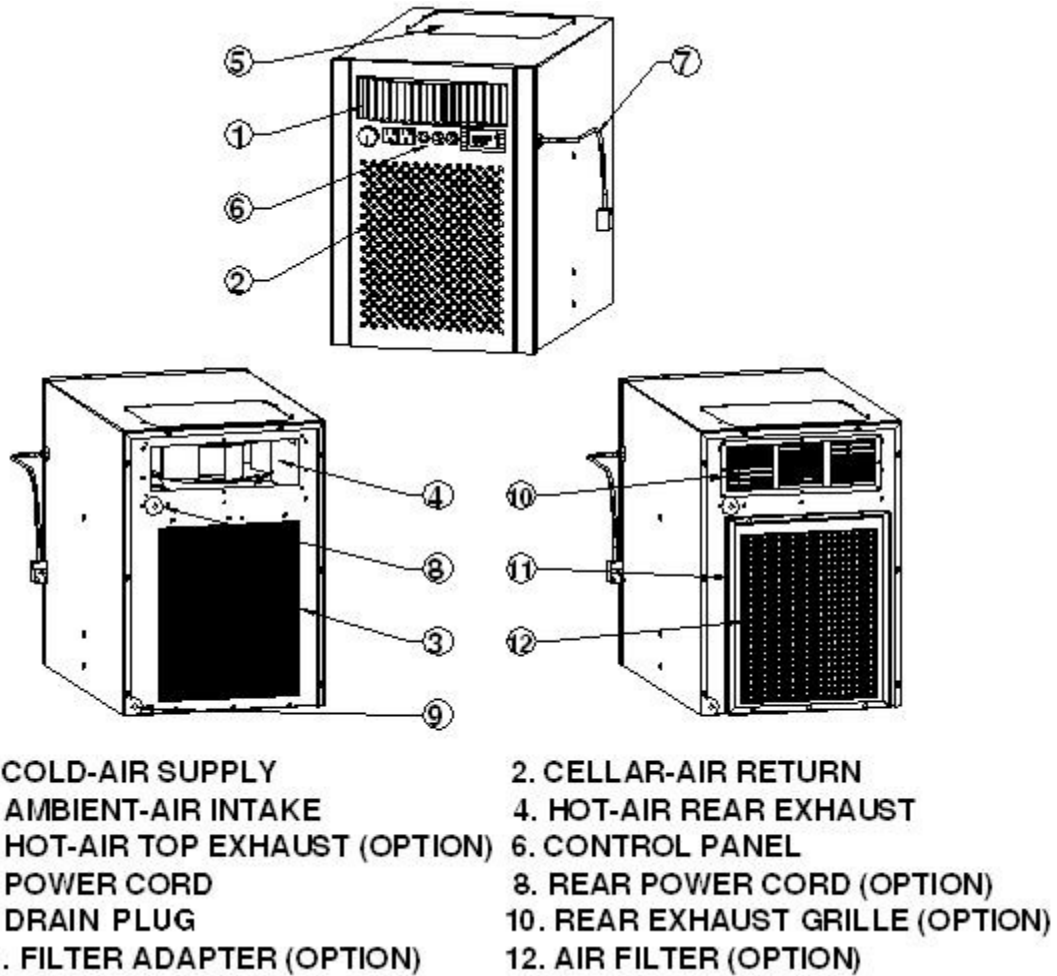
MODEL NO	CELLAR SIZE (cu ft)	AIR FLOW (cfm)	AIR FILTER ( nominal ")	DUCT (")	DIMENSIONS (") WxW1xDxD1xD2xH	ELECTRICAL RATING	WEIGHT (lb)
WM-4510HZD	1000	300	11.5x13.5x1	8	14.375x0.25x21.5 x1.25x1x20	115V/60Hz/8A	95
WM-6510HZD	1500	500	13.5x14.5x1	10	17.125x0.25x28.375 x1.25x1x22.125	115V/60Hz/14 A	140
WM-8510HZD	2000	500	13.5x14.5x1	10	17.125x0.25x28.375 x1.25x1x22.125	115V/60Hz/16 A	140

**NOTES:**

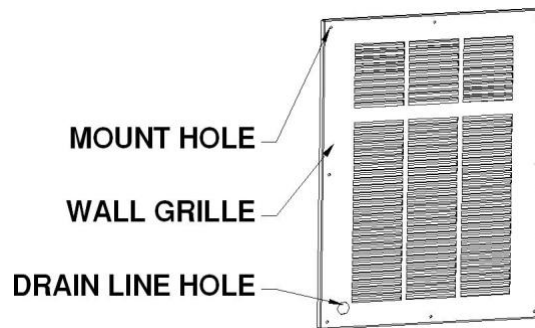
- See voltage, frequency and current specification on the label of the cooling unit.
- The rated capacity is determined using 55°F cellar temperature and 75°F ambient temperature with R13 interior insulation and R19 exterior insulation. Any lower cellar temperature, higher ambient temperature and less insulation will cause reducing capacity and may not maintain 55°F.
- The ambient temperatures shall not be higher than 100°F or lower than 50°F.
- If the cooling unit will operate below 50°F, install a low ambient condition kit.



**Fig. 1.1 Dimensions**



**Fig. 1.2 Feature descriptions**

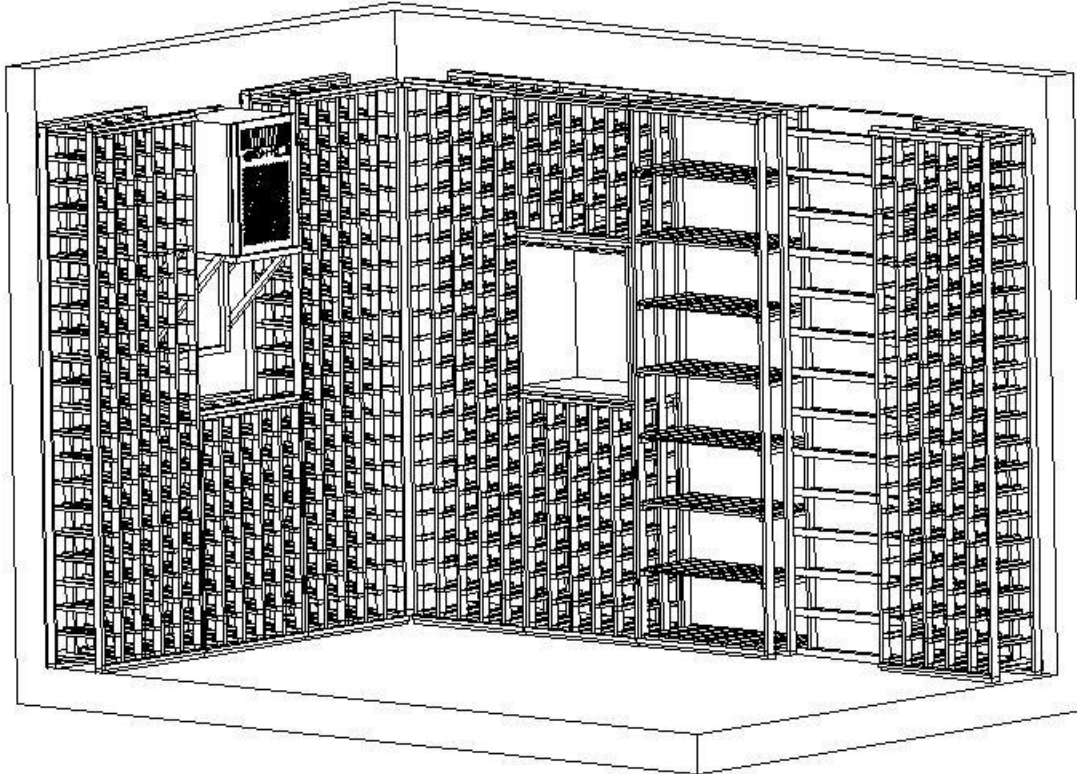


**Fig. 1.3 Exterior wall grille**

**NOTE:**  
 WM-4510HZD is 14.25" wide; WM-6510HZD and 8510HZD are 17" wide without the front cover.

# Installation Instructions

## 1. General Instructions



**Fig. 4.1 Cooling Unit Installation**

- 1) The cooling unit produces cooling supplied into the cellar, meanwhile it also generates heat that must be exhausted outside the cellar. So the cold-air supply and cellar-air return side must be separated from the hot-air exhaust and ambient-air intake side. Through-wall or through-duct installations can separate these two sides.
- 2) Furthermore, the condenser of cooling unit must intake adequate fresh ambient-air to work properly. The ambient-air intake and hot-air exhaust must not be short-circulated. Both of them must remain unobstructed 36" clearance all around. The area into which the hot air is exhausted must be well ventilated. If it is not, heat generated by the unit will build up and the unit may not operate properly.
- 3) Additionally, cold-air supply from the front grille must remain unobstructed 36" clearance.
- 4) The ambient temperatures shall not be above and below what are specified.
- 5) If the intake and exhaust are located outdoor, protection guards must be installed.
- 6) Secure the ducts with conduits to the walls and make sure they are not curled, twisted, bent and clogged.

## 2. Standard through-wall installation (Fig 4.2, 4.3, 4.4 & 4.5)

It is the standard installation when the cooling unit can exhaust the hot air to an adjacent space.

- 1) The cooling unit shall be mounted near the ceiling with equal distance from each side of the cellar.
- 2) Cut a rectangular opening between two wall studs. The dimensions of the opening shall be 1/4" larger than the width and height of the cooling unit; if top exhaust installation, cut another rectangular opening at the top of the cellar to the length and width of the top exhaust.
- 3) Construct a shelf as shown. The shelf must be capable of supporting the weight of the cooling unit and preventing it from moving.
- 4) Place the cooling unit on the shelf with the back of the unit flush with the outside of the wall.
- 5) Seal the clearance between the cooling unit and opening with a high quality weather stripping, polyurethane spray foam, or foam tape. Cover the seal with molding and attach the molding to the wall not the unit. If it is top exhaust installation, place more gaskets along the top exhaust at the top of the cooling unit.
- 6) Install the wall grille on the cellar exterior wall or install a rear exhaust grille and an air filter at the rear of the cooling unit.
- 7) Plug the unit into a properly grounded and dedicated outlet of adequate capacity.
- 8) Turn the evaporator fan control knob clockwise to the lowest speed position.

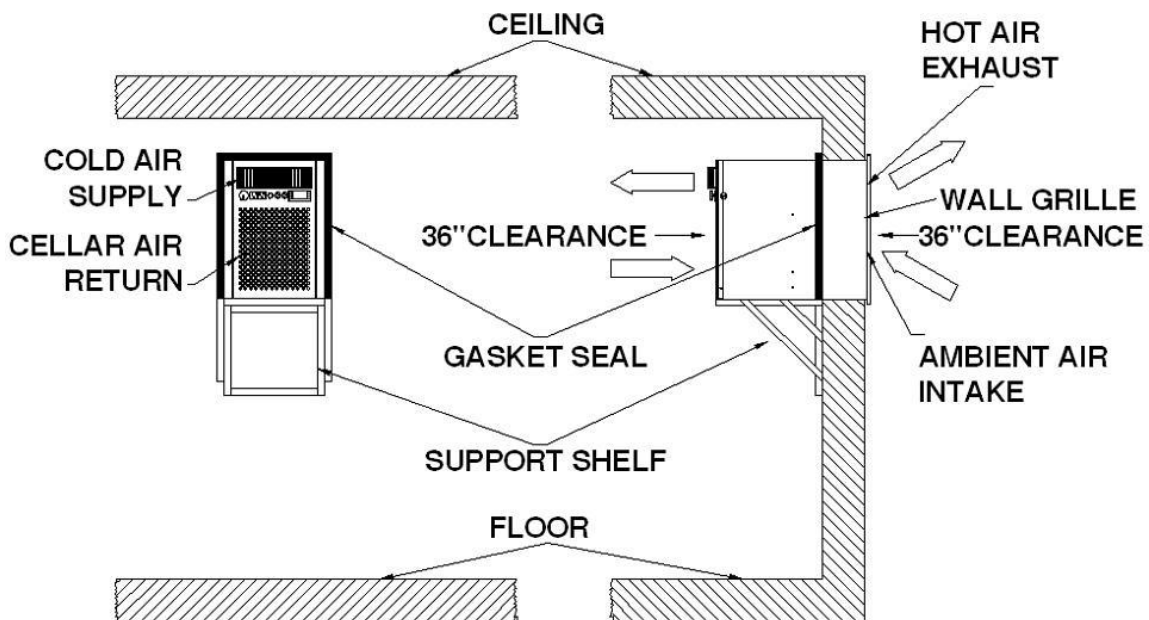
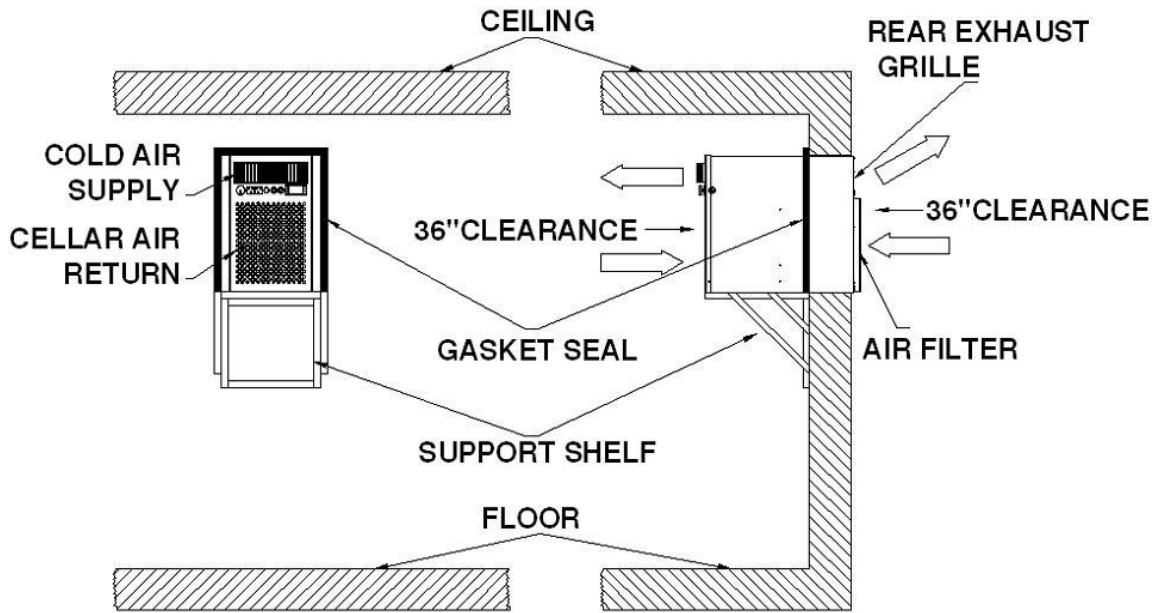
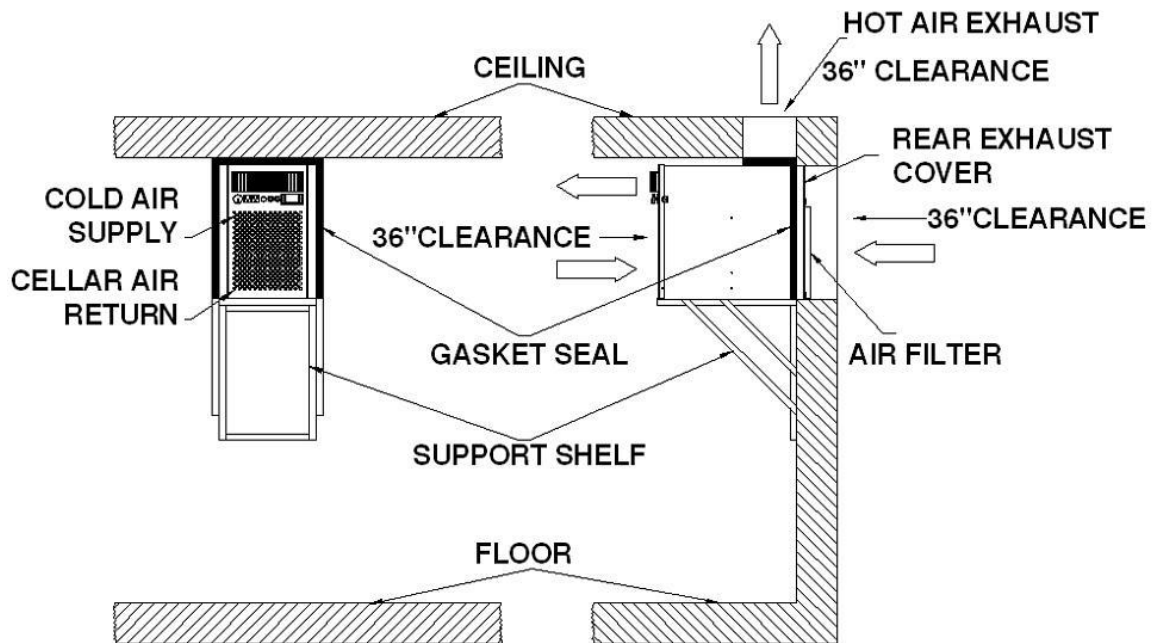


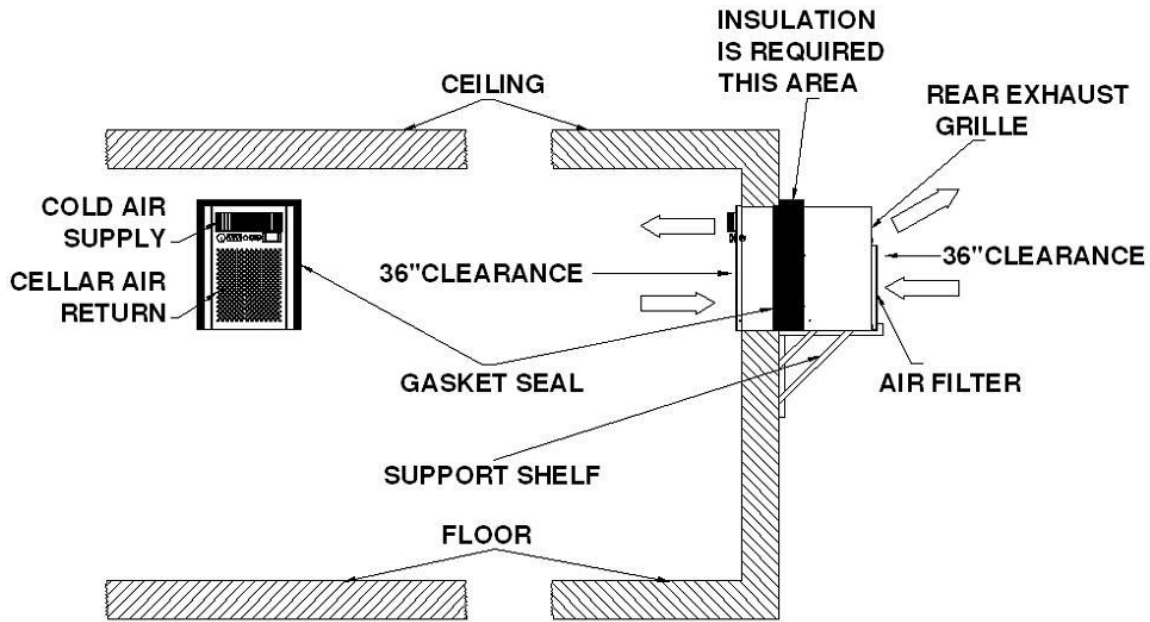
Fig. 4.2 Flush to the outside of wall with wall grille



**Fig. 4.3 Flush to the outside of wall with air filter & rear exhaust grille**



**Fig. 4.4 Top exhaust with air filter & rear exhaust cover**



**Fig. 4.5 Flush to the racks or the inside of wall with air filter & rear exhaust grille**

**NOTE: Insulate any cold surfaces of cooling unit for better performance if exposed to the outside.**

### **3. Through-wall installation with hot-air exhaust and ambient-air intake ducts (Fig. 4.6 & 4.7)**

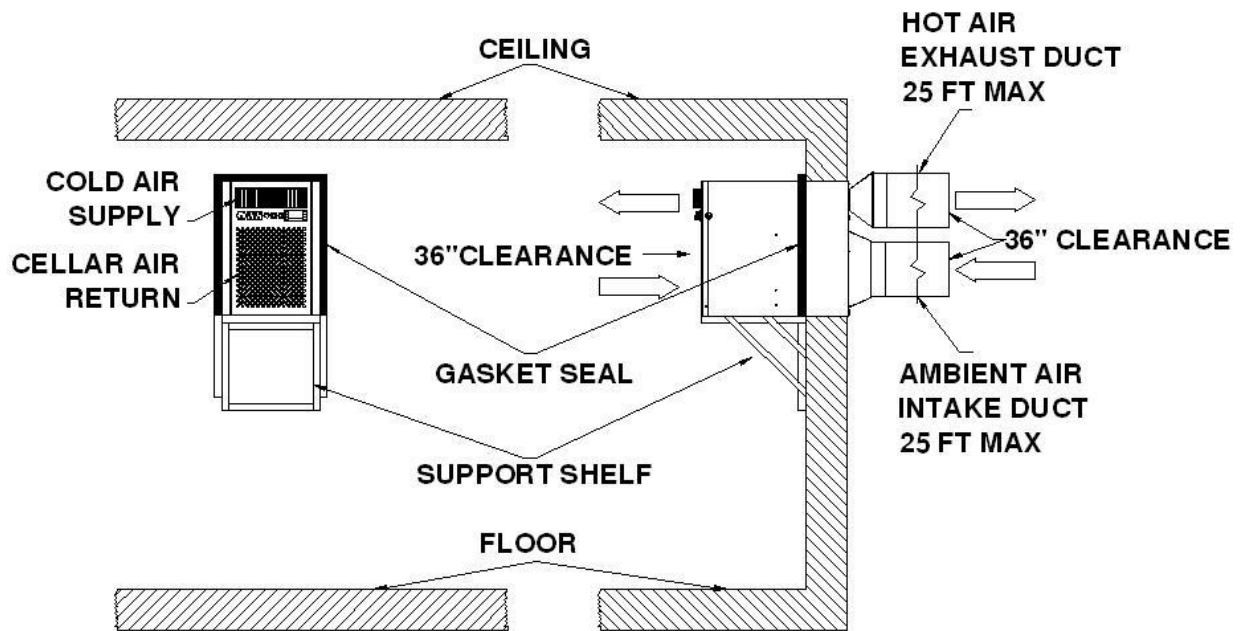
It is the installation when the cooling unit can not exhaust the hot air to an adjacent space.

- 1) The cooling unit shall be mounted near the ceiling with equal distance from each side of the cellar.
- 2) Cut a rectangular opening between two wall studs. The dimensions of the opening shall be 1/4" larger than the width and height of the cooling unit.
- 3) Construct a shelf as shown. The shelf must be capable of supporting the weight of the cooling unit and preventing it from moving.
- 4) Place the cooling unit on the shelf with the back of the unit flush with the outside of the wall.
- 5) Seal the clearance between the cooling unit and opening with a high quality weather stripping, polyurethane spray foam, or foam tape. Cover the seal with molding and attach the molding to the wall not the unit.
- 6) Attach the duct hoods to the rear of the cooling unit with screws (Use #8 x 1/2" screws only).
- 7) Attach the insulated ducts to the hoods with adhesive tapes.
- 8) Secure the ducts with conduits to the cellar exterior walls and make sure they are not curled, twisted, bent and clogged.

- 9) Install an air filter at the rear of the cooling unit.
- 10) Plug the unit into a properly grounded and dedicated outlet of adequate capacity.
- 11) Turn on the high condenser fan switch.
- 12) Turn the evaporator fan control knob clockwise to the lowest speed position.

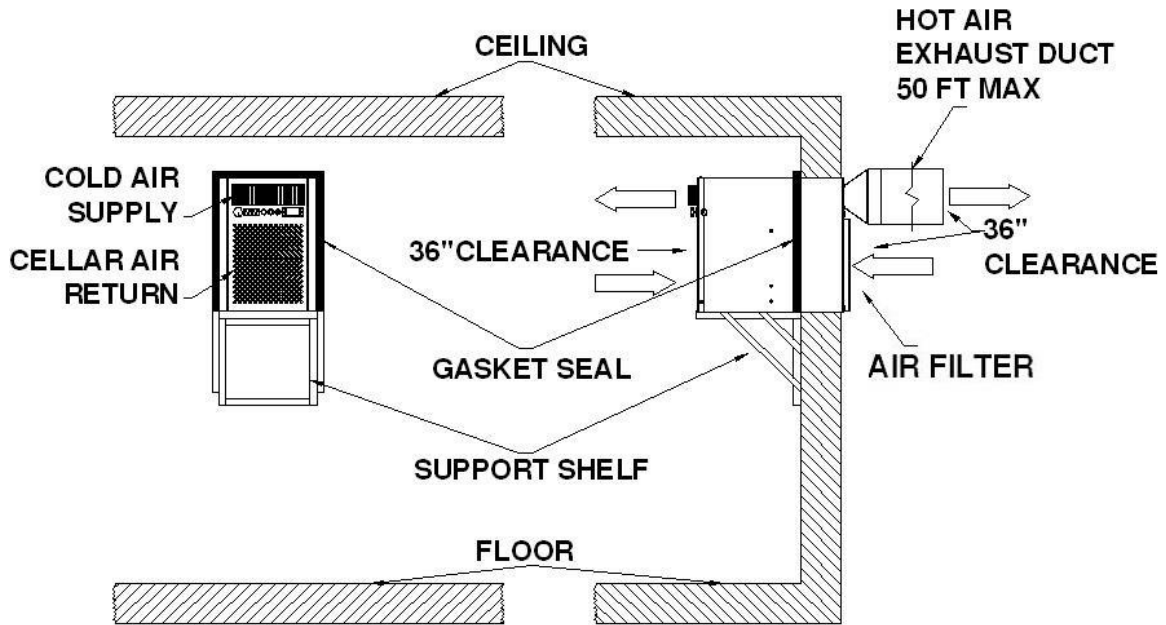
**NOTE:**

- The exhaust and intake ducts can be combined maximum 50 ft long.
- The cooling unit can also be installed with its front flush with the racks or the inside of the wall. Insulate any cold surfaces of cooling unit for better performance if exposed to the outside.



**Fig. 4.6 Flush to the outside of wall with hot-air exhaust & ambient-air intake ducts**



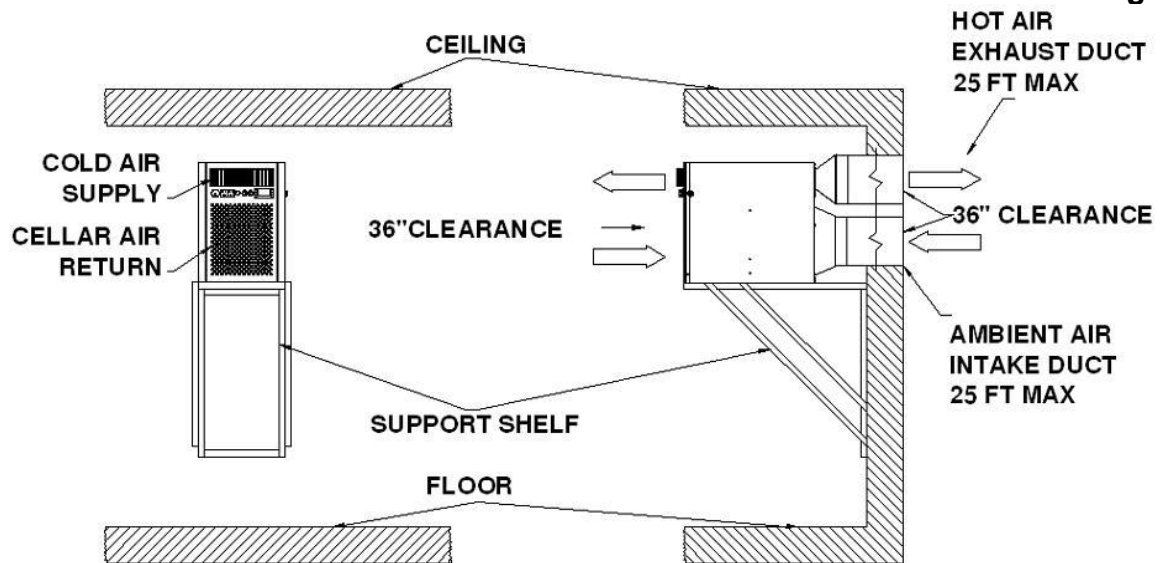


**Fig. 4.7 Flush to the outside of wall with hot-air exhaust duct & air filter**

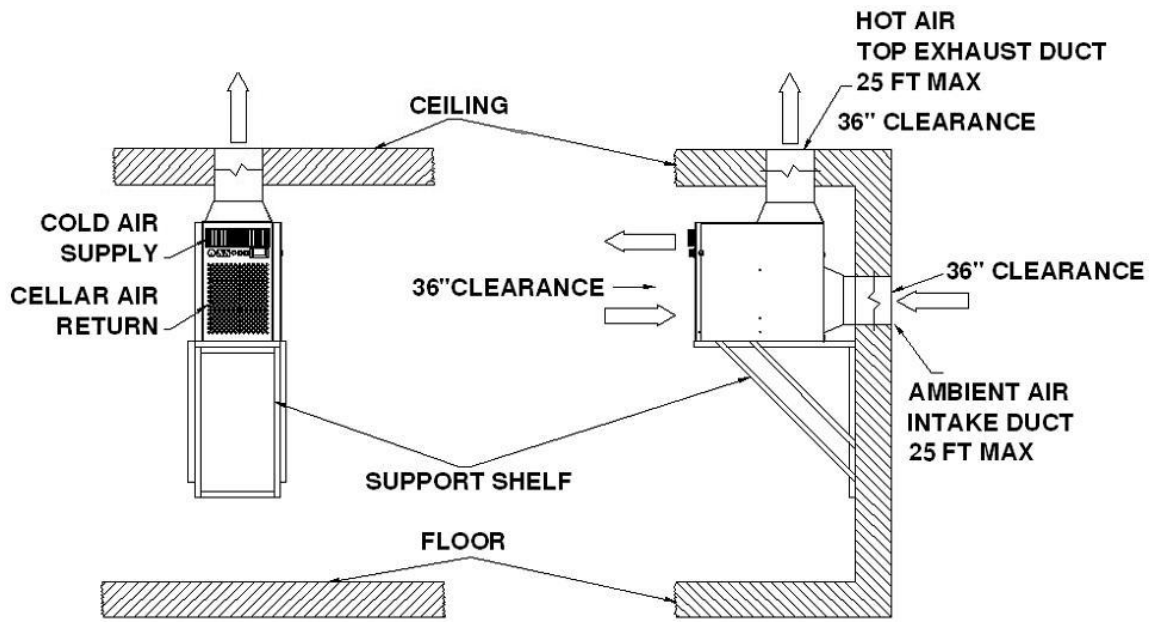
**4. In-cellar installation with hot-air exhaust and ambient-air intake ducts (Fig. 4.8, 4.9, 4.10 & 4.11)**

It is the installation when the cooling unit is installed away from the wall.

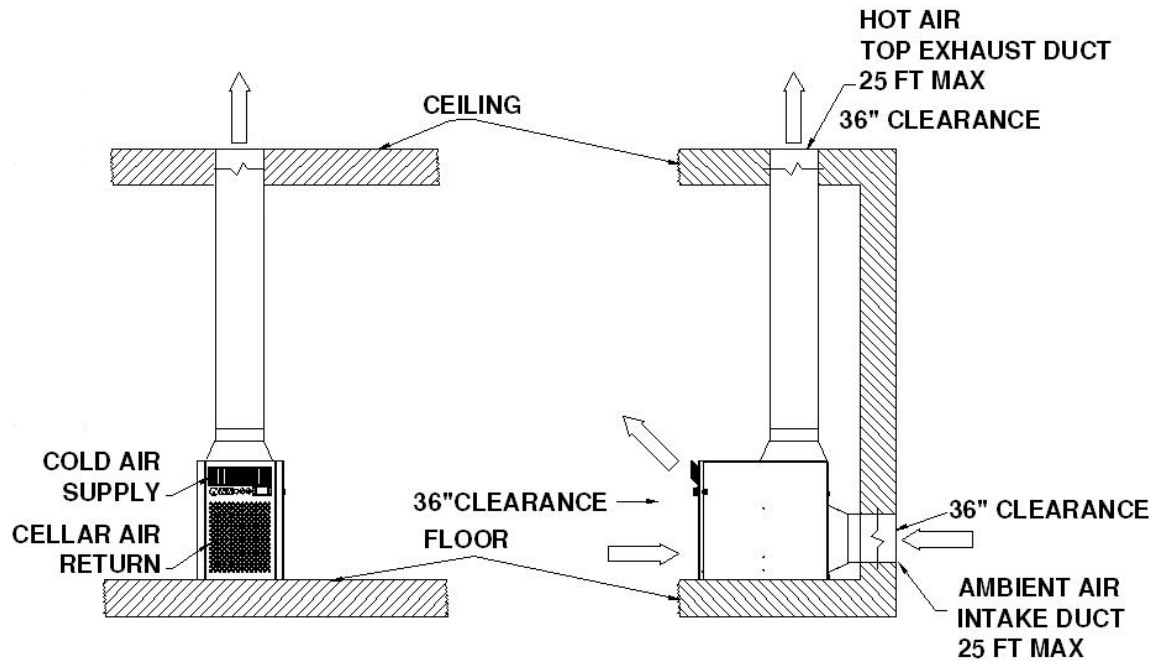
**NOTE: The exhaust and intake ducts can be combined maximum 50 ft long.**



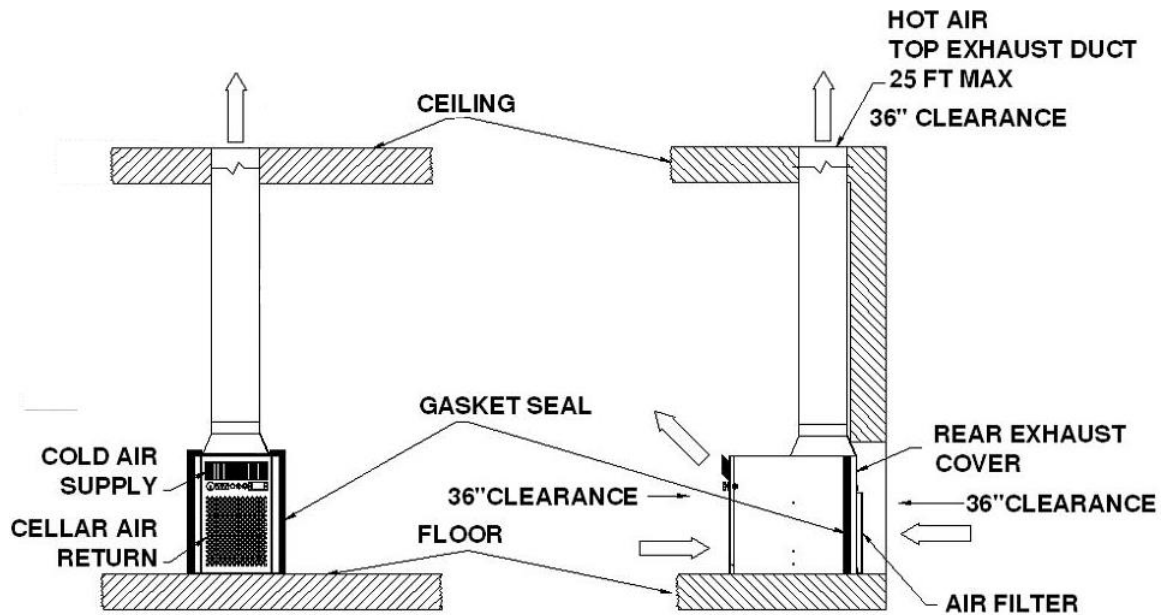
**Fig. 4.8 In-cellar with hot-air exhaust & ambient-air intake ducts**



**Fig. 4.9 In-cellar with hot-air top exhaust duct to attic & ambient-air intake ducts**



**Fig. 4.10 Floor-mount with hot-air top exhaust duct to attic & ambient-air intake duct**



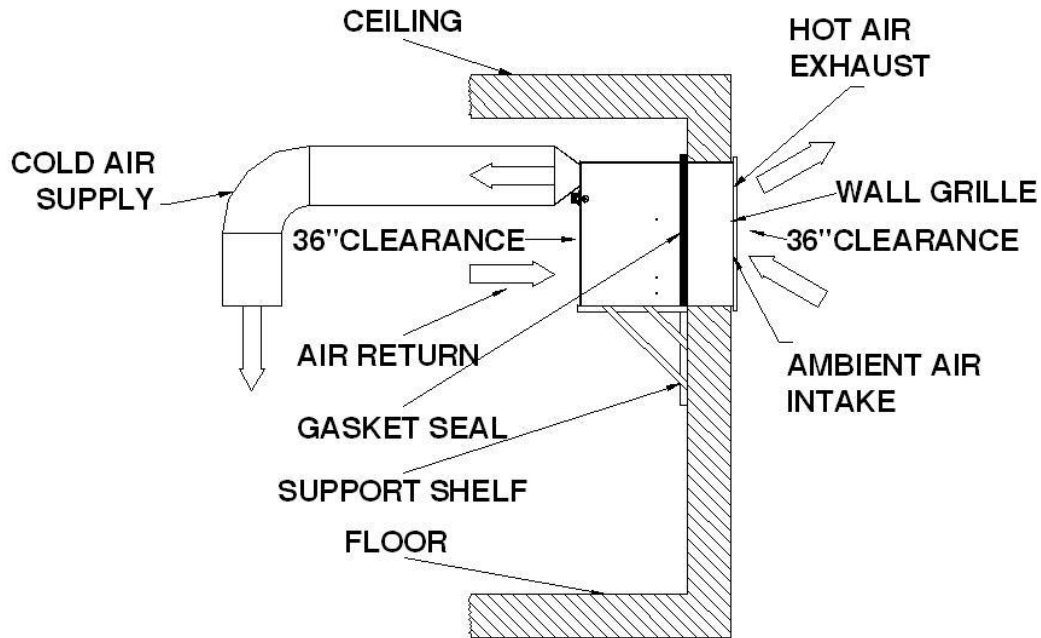
**Fig. 4.11 Floor-mount with hot-air top exhaust duct to attic & air filter & rear exhaust cover**

#### **5. Through-wall installation with cold-air supply ducts (Fig 4.12)**

It is the installation when the cooling unit is located away from the wine rack.

**NOTE:**

- The supply duct can be maximum 50 ft long.
- The cooling unit can also be installed with other configurations shown above.



**Fig. 4.12 Flush to the outside of wall with cold-air supply duct & wall grille**

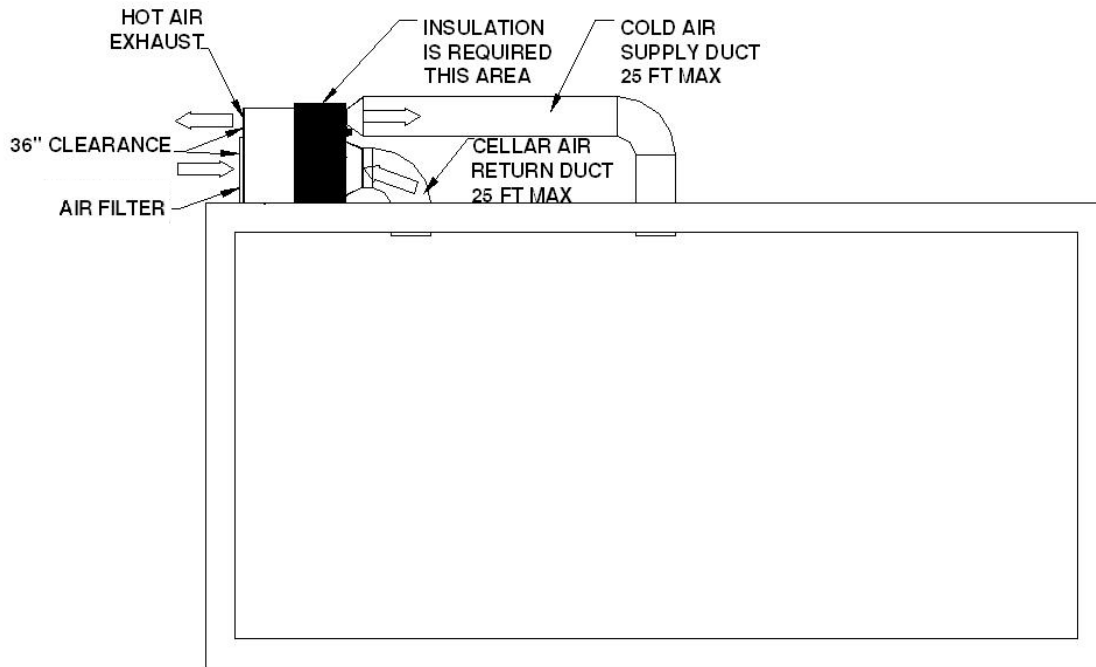
**6. Remote installation with cold-air supply and cellar-air return ducts only (Fig. 4.13)**

It is the installation when the cooling unit can not be installed inside the wine room but it can exhaust the hot air to an adjacent space.

**NOTES:**

- **The supply and return ducts can be combined maximum 50 ft long.**
- **Insulate the cold side of cooling unit for better performance.**
- **If the air probe is in a return duct, the evaporator fans shall be running all the time. Meanwhile the set-point shall be adjusted accordingly due to the temperature differential between return duct air and the cellar air.**

- 1) Cut two circular openings at the wine cellar ceiling or wall as illustrated.
- 2) Secure the cooling unit on the top of the wine cellar or other strong flat places
- 3) Remove the front cover of the cooling unit.
- 4) Attach the duct hoods to the front the cooling unit with screws (Use #8 x 1/2L screws only).
- 5) Attach the insulated ducts to the hoods with adhesive tapes.
- 6) Secure the ducts with conduits to the wine cellar ceiling and exterior walls and make sure they are not curled, twisted, bent and clogged.
- 7) Install a rear exhaust grille and an air filter at the rear of the cooling unit.
- 8) Plug the unit into a properly grounded and dedicated outlet of adequate capacity.
- 9) Turn the evaporator fan control knob counter-clockwise to achieve the required air flow CFM.



**Fig. 4.13 Cold-air supply and cellar-air return ducts only**

**7. Remote installation with cold-air supply, cellar-air return, hot-air exhaust and ambient-air intake ducts (Fig. 4.14 & 4.15)**

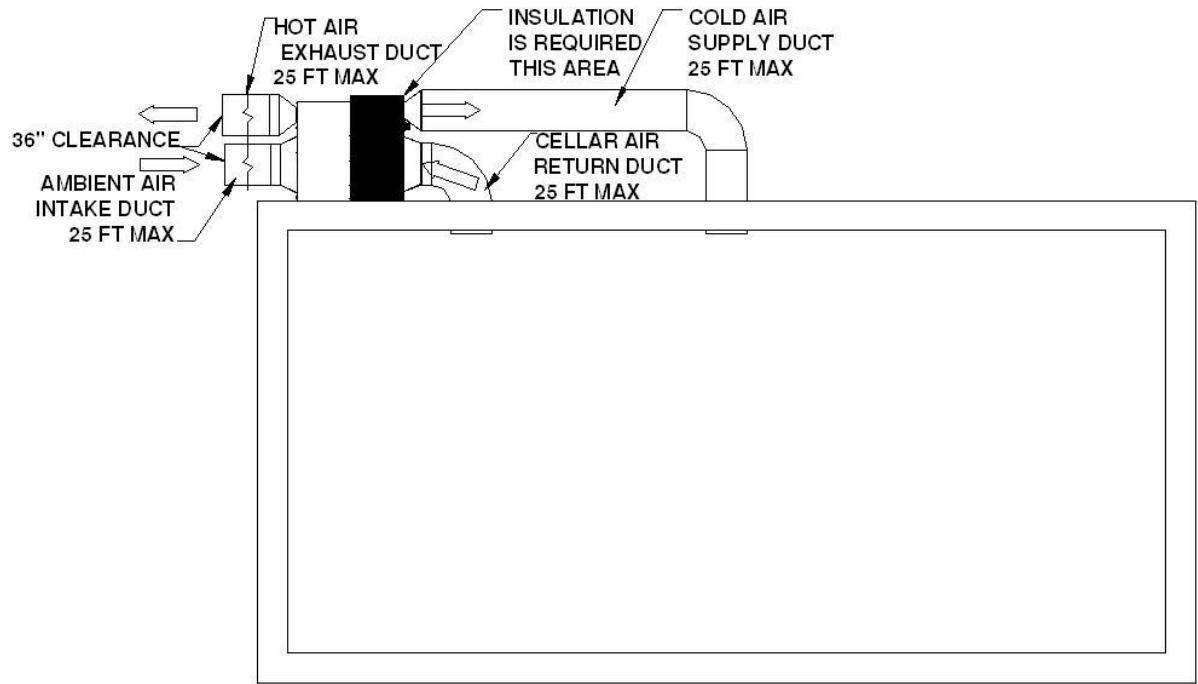
It is the installation when the cooling unit can not be installed inside the wine room and it can not exhaust the hot air to an adjacent space.

**NOTES:**

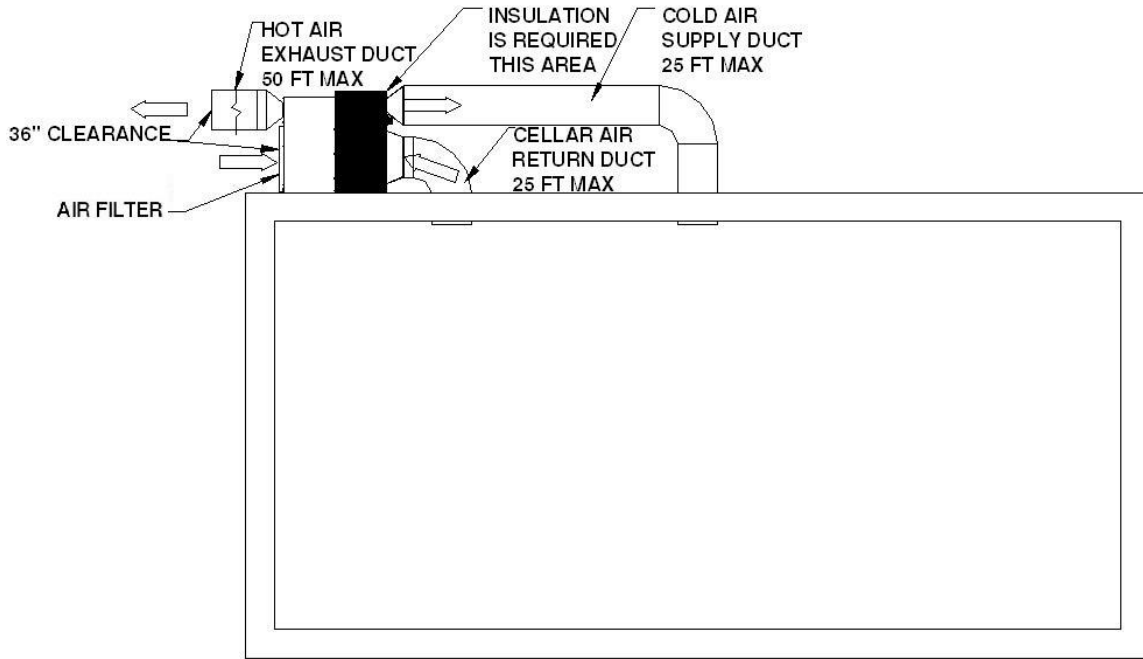
- **The supply and return ducts can be combined maximum 50 ft long.**
- **The exhaust and intake ducts can be combined maximum 50 ft long.**
- **Insulate the cold side of cooling unit for better performance.**
- **If the air probe is in a return duct, the evaporator fans shall be running all the time. Meanwhile the set-point shall be adjusted accordingly due to the temperature differential between return duct air and the cellar air.**

- 1) Cut two circular openings at the wine cellar ceiling or wall as illustrated.
- 2) Secure the cooling unit on the top of the wine cellar or other strong flat places
- 3) Remove the front cover of the cooling unit.
- 4) Attach the duct hoods to the front and rear of the cooling unit with screws (Use #8 x ½L screws only).
- 5) Attach the insulated ducts to the hoods with adhesive tapes.
- 6) Secure the ducts with conduits to the wine cellar ceiling and exterior walls and make sure they are not curled, twisted, bent and clogged.
- 7) Install an air filter at the rear of the cooling unit.

- 8) Plug the unit into a properly grounded and dedicated outlet of adequate capacity.
- 9) Turn on the high condenser fan switch.
- 10) Turn the evaporator fan control knob counter-clockwise to achieve the required air flow CFM.



**Fig. 4.14 Cold-air supply, cellar-air return, hot-air exhaust and ambient-air intake ducts**



**Fig. 4.15 Cold-air supply, cellar-air return and hot-air exhaust ducts**