



YMGI: Your Modern Green Idea

## INSTALLER'S INSTRUCTION & USER'S MANUAL

Wall Mount Mini Split Systems  
SYMPHONY SOLO DC INVERTER SINGLE ZONE M1 (57)  
09-36k, 16 SEER Cooling and Heat Pump

### IDU Model Numbers:

WMMS-09E-V2A(57)2  
WMMS-12E-V2A(57)2  
WMMS-18E-V2B(57)3  
WMMS-24E-V2B(57)3  
WMMS-30E-V2B(57)3  
WMMS-36E-V2B(57)3

### ODU Model Numbers:

WMMS-09C-V2A(57)2  
WMMS-12C-V2A(57)2  
WMMS-18C-V2B(57)3  
WMMS-24C-V2B(57)3  
WMMS-30C-V2B(57)3  
WMMS-36C-V2B(57)3



Thank you for choosing this YMGI product. Please read the owner's manual carefully before installation and operation and retain for your records and future reference. If you need a replacement copy, please contact your local agent or visit [www.ymgigroup.com](http://www.ymgigroup.com) to download a current electronic version.

### NOTICE

This product is designed and manufactured to be free from any defects in material and workmanship during normal use and maintenance. Installation, operation, maintenance and repair must follow all standards and professional practices for regular cooling and heating equipment, such as NEC, State, or Local Codes and all related documents/manuals provided by YMGI. Failure to follow and adhere to all codes and documentation can cause damage to equipment, property even personal injury.

**Installer:** Currently licensed/certified HVAC technicians only. Must Read the manual and all provided documents prior to installation. Complete and fill out all required information on the warranty registration card.

**User:** Retain this manual and all supplied documents for your records and future reference.

**Service:** Use this manual for information concerning servicing and maintenance of this product.

### SAFETY WARNING

Only qualified technicians should install and service this equipment. The installation, startup, operation and servicing of this equipment can be hazardous and requires a HVAC professional who has been trained, licensed and certified. Installations, adjustments or any equipment alterations done by an unqualified person could result in serious injury and even death. When working on the equipment, observe all precautions in the provided documents, on the tags, stickers, and labels that are attached to or placed on the equipment.



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## Introduction

Read this manual carefully, making sure you understand all the instructions, practices and procedures contained in this manual. Be sure you are familiar with all the safety advisories that appear throughout this manual. Your personal safety depends upon your observance of all precautions contained in this manual.

Safety advisories appear throughout this manual and your personal safety and the proper operation of this appliance depend upon the strict observance of these precautions.

The 3 types of advisories are defined in the following table:

<b>⚠ WARNING</b>	Indicates a potentially hazardous situation which if not avoided could result in serious injury or even death.
<b>⚠ CAUTION</b>	Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe practices.
<b>NOTICE</b>	Indicates a situation that could result in equipment or property-damage only. It can also be used to call attention to important details within this manual.

## Important Environmental Concerns

Studies have shown that certain man-made chemicals can affect the earth's stratospheric ozone layer when released into the atmosphere. Refrigerants that contain Chlorine, Fluorine and Carbon (CFCs) and those containing Hydrogen, Chlorine, Fluorine and Carbon (HCFCs), may affect the ozone layer. Not all refrigerants have the same potential impact on the environment. YMGI Group advocates for the responsible handling of all refrigerants including industry replacements for CFCs such as HCFCs and HFCs.

## Responsible Refrigerant Practices

YMGI Group believes that responsible refrigerant practices are important to our customers, the HVAC/R industry and the environment. All HVAC/R technicians who handle refrigerants must be certified. The Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants, the equipment and tools necessary to perform these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to for responsible management of refrigerants. HVAC/R technicians must know the applicable laws and follow them.

## Disposal Notice

Do not dispose this product or its components as unsorted municipal waste, as they contain items that may require special treatment. Contact your local waste management company for details.

### **⚠ WARNING**

#### **Proper Field Wiring and Grounding Required!**

Failure to follow established electrical codes can result in death, serious personal injury and property damage. All field wiring **MUST** be performed by qualified personnel. Improperly installed and grounded field wiring poses **FIRE** and **ELECTROCUTION** hazards. To avoid these hazards, you **MUST** follow the requirements for field wiring installation and grounding as described in this manual and by NEC and your state and local electrical codes.

### **⚠ WARNING**

#### **Personal Protective Equipment (PPE) Required!**

Failure to wear proper PPE for the job being undertaken could result in serious injury or even death. Technicians must take the necessary precautions to protect themselves from potential electrical, mechanical, and chemical hazards and **MUST** follow all precautions in this manual and on the tags, stickers, and labels, as well as the instructions below:

- Before installing or servicing this unit, technicians **MUST** put on all PPE recommended for the work being undertaken. **ALWAYS** refer to appropriate Material Safety Data Sheets (MSDS) and Occupational Safety and Health Administration (OSHA) guidelines for proper PPE.
- When working with or around hazardous chemicals, **ALWAYS** refer to the appropriate MSDS sheets and OSHA guidelines for information on allowable personal exposure levels, proper respiratory protection, and handling recommendations.

If there is a risk of arc or flash, technicians **MUST** put on all PPE in accordance with NFPA 70E or other country-specific requirements for arc flash protection, **PRIOR** to servicing the unit.



## Copyright

This document and the information contained therein are the sole property of YMGI Group and shall not be used or reproduced in whole or in part, without the written permission of YMGI Group. YMGI Group reserves the right to revise this manual at any time and to make changes to its content without obligation to notify anyone about any modifications, revisions or changes.

### **⚠WARNING**

- Instructions for installation and use of this product are provided by the manufacturer.
- Installation must be performed by authorized and licensed personnel only and in accordance with all the requirements of this manual, the NEC, CEC and any state and local codes.
- For safe operation of this unit, please read and follow all instructions carefully.
- The total operation capacity of the indoor units should not exceed 120% of the total capacity of the outdoor units if all indoor units must operate at their peak capacities all the time. Otherwise, the heating and cooling operation will be diminished and less efficient which could damage the units.
- Any person responsible for system operation or system maintenance should retain this manual for reference.
- If the unit fails to operate normally, please contact your authorized system installer or HVAC professional as soon as possible and provide the following information:
  - Data on the unit (model number, serial number and owner's name).
  - A detailed description of the unit's problem before and after the problem occurred.
- To avoid personal injury or property damage, do not disassemble the unit yourself. If disassembly is required to check the unit, contact your authorized system installer or HVAC professional as they have the experience and training necessary to perform this task.

**Note:** Each unit has been thoroughly tested to ensure it operates correctly before leaving the factory.

### Basic Cautions and Warnings

#### **⚠CAUTION**

All units shall be installed by an experienced HVAC licensed contractor or technician. Read all manuals before installation, startup and operation.

#### **⚠CAUTION**

All NEC, state, local codes and installation instructions must be followed for all units, otherwise, the unit warranty will be void and could result in serious damage to people or property.

#### **⚠WARNING**

YMGI Group is not responsible for any damage or loss due to Do-It-Yourself (DIY), self-installation or any improper installation, improper operation, improper service or natural disasters of any kind.

#### **⚠WARNING**

Do not connect power to the unit until all wiring, tubing and all unit inspections and testing have been completed. Ground the unit according to the instructions and adhering to NEC, state and local codes.

#### **⚠WARNING**

All wiring connections must be correct and secure. Loose wire(s) or improper contacts may cause arcs or overheating which can result in a fire hazard.





## Note From YMGI – Must Read

Dear Customers, Purchasers, Installers, and Contractors

Thank you for choosing a YMGI product.

All YMGI's products are fully tested and have passed rigorous safety, performance and manufacturing standards before being packed and shipped. YMGI only uses suppliers that meet our strict standards for high quality and performance for all parts. YMGI also recognizes a quality installation is equally important therefore your system must be installed by a licensed HVAC professional. A quality installation ensures your unit will operate at its highest efficiency and peak performance for many years of worry free comfort; while a poor installation can result in unit failure and cause the unit to operate inefficiently, either immediately or over time, resulting in costly repairs.

Because a quality installation is so critical, YMGI provides detailed information in our manuals which will aid the installing technician and the owner of the unit(s).

At YMGI our goal is to ensure that your YMGI units are installed properly and correctly from the beginning.

The YMGI equipment you purchased is either a split-type or a self-contained cooling/heating system. These types of systems require a certified and licensed HVAC professional technician for proper installation. Only a certified and licensed HVAC professional technician will have the knowledge, experience, and attention for all required details to perform a complete and successful installation. This equipment is different from a window or portable type air conditioners you can purchase from local retail stores such as Home Depot, Lowe's, Sears, etc. which the manufacturer may not require certified and licensed personnel to install.

Reading and following YMGI Group recommendations and requirements contained in the following pages and other documents, is the first step to help ensure a smooth installation and proper operation of your unit for many years.

### **⚠WARNING**

YMGI doesn't recommend nor allow any do-it-yourself (DIY) installation (partially or fully). Due to the complexity of the installation of this product most DIY installations usually have problems, either immediate or near future. These problems can cost more to fix than any upfront savings. **YMGI warranty doesn't cover any DIY units.**

If you have any questions about your unit or if the unit has a problem, you should first check the manual. If you can't find a solution, then contact your local installer or service technician to schedule a service appointment. The technician can physically inspect the unit. If at the time of inspection, the installer or service technician has any questions about the unit, they can contact YMGI technical support division directly at:

**Toll Free Number: (866)833-3138 or Email: [techsp@ymgigroup.com](mailto:techsp@ymgigroup.com)**

### **IMPORTANT: YMGI Group is the MEDIA AUTHORITY:**

YMGI Group, located in O'Fallon, MO 63366 is the author of all media produced for its products and is the only party able to give any additional explanation for any data, definitions and or descriptions found within any of its media, including but not limited to YMGI product brochures, manuals, pamphlets, catalogs, and videos. YMGI's distributors, installers, dealers, agents, customers or any other third parties will not supersede YMGI in anyway concerning YMGI-published materials and their meaning. Any concerns or questions arising from YMGI distributors, installers, dealers, agents, customers or any other third parties, should be presented directly to YMGI. YMGI will respond to any concerns or questions, if necessary, about any of its media in writing.





## **NOTICE**

- Be sure to only hire a certified and currently licensed HVAC Company to complete 100% of the installation so that all details of the installation are performed correctly and completely.
- Be sure to have ONLY the licensed HVAC professional perform all aspects of the installation. Factory Warranty will be void if any portion of the installation is not performed by a licensed HVAC contractor/technician. DIY or partial DIY will also void ALL factory warranties.
- When hiring an HVAC technician that is offering their services as a "side job" and not hiring a licensed HVAC company may pose possible risk. This may result in an incomplete or unsatisfactory installation, no guarantee for workmanship and lack of maintenance and further service to your unit.
- Have the installation technician read in full the installation manual and all supplied documents for the product model you purchased. Details within the documentation contributes greatly to the success and quality of the installation. Experience with other manufacturers may not be applied fully to another manufacturer, although there will be similarities there will also be differences. Ignoring the provided installation procedures is an act of negligence and may cause unit failure or damage which could be irrevocable and permanent.
- It is possible for a licensed contractor/technician to make a mistake during the installation. YMGI doesn't supervise nor is able to control the contractor/technician's installation. It is critical that the installer take each variable into account during the initial installation. This will ensure a complete and professional installation and that all units work properly.

## **⚠WARNING**

**The following will damage the unit and its key components resulting in loss of factory warranty:**

1. Any foreign substances introduced into the system because of failure to seal the ends of the refrigeration piping before pulling the piping through any structures at time of installation.
2. Not installing an oil P-trap in the copper suction line where the indoor unit is located 18 feet or more below the outdoor unit.
3. Cross piping and/or cross wiring of any units including more than one single zone or a multi zone system.
4. Not conducting a positive leak check prior to the negative leak check.
5. Not conducting a positive leak check by charging the system with dry-nitrogen 350 PSI to hold for 3+ hours, and performing soap bubble testing.
6. Not conducting a negative leak check by evacuating the copper lines for 30 minutes for each zone. Vacuum must be held at 500 microns or better for at least 60 minutes, starting 60-minute timer after the vacuum pump is turned off.
7. Not selecting the correct size of wire or circuit breaker.
8. Not answering ALL questions in the technician's checklist located inside the warranty registration form.

## **⚠WARNING**

**The following may be overlooked, ignored, or considered unimportant during your installer's installation, but will cause your unit to underperform and may cause unit failure.**

1. Any kinks in or improper bending of the copper piping.
2. Any poorly formed flares or not centering the flare with the flare nut, or not tightening all connections.
3. Not testing each indoor unit individually.
4. Not reading technical data (temp/time/pressure/current) after the system is stabilized (normally the compressor needs to run at least 10 minutes before reading the data). If the data is read too early may lead to inaccurate assessments about the unit.

In an effort to help protect our customers from possible faulty installations that can lead to premature unit failure, YMGI provides the above information for you and the technician. You can observe while your system is being installed, even though your observation is not a guarantee your system is being or has been installed properly and professionally. With the information provided above, you will know some things to look for and questions you can ask. If at any time you feel there may be an issue with the installation, please have your technician contact YMGI at (866)833-3138 x 703 with any questions, issues or concerns you may have.





## INSTALLING TECHNICIAN/CONTRACTOR'S RESPONSIBILITIES

1. Discuss with the customer detailed information about the structure to be conditioned, local weather (typical design, extreme temperature/humidity conditions, cooling and heating hours), previous and existing HVAC equipment (if any), usage and dependence on new HVAC equipment or YMGI products.
2. Performing a cooling/heating load calculation by using commercially available professional programs/methods such as Right-J (Manual J) for residential HVAC applications and Right-CommLoad (ASHRAE RTS/CLTD) for light commercial and commercial HVAC applications.
3. Contact your YMGI distributor/sales department or contact the manufacturer directly to obtain additional information to fully understand your YMGI products, including but not limited to product features, cooling/heating performance at standard ratings/conditions and extreme conditions, allowed indoor and outdoor temperature and humidity ranges, installation, operation, maintenance, service, warranty, parts and any other issues pertaining to YMGI products.
4. Select the correct (most suitable) YMGI product unit models and accessories necessary for your HVAC applications and list them in the proposal/quote, in writing, on company's quotation form or letter head, based upon the information you collected from 1), 2) and 3).
5. List your currently valid HVAC license number and EPA number in your proposal/quote.
6. Make sure you are the only party to perform the entire installation and you will not sub-contract any part of the installation to any non-licensed parties or persons. You will be solely responsible for the entire installation that you have been contracted.
7. Make sure you have all the materials you need to properly, completely and correctly finish the installation. The YMGI units and accessories may be just a portion of what you will need for the project. When support issues arise, remember YMGI employees and YMGI distributors/sales, dealers and agents are not installers and may only provide suggestions. You are the only decision maker to determine what other materials you need to complete the installation.
8. When connecting electrical wires, follow all NEC, state and local codes and ensure the installation of all YMGI units and accessories meet these requirements.
9. Connect the unit to a correctly sized electrical power source. If the unit is installed in an area where lightning or storms occur frequently, a correctly sized and type of power surge protector must be installed between the outdoor unit and the power source.
10. Select the correct types and sizes of HVAC circuit breakers, disconnect switch boxes, wires and conduit from circuit breaker to disconnect box and then from disconnect box to outdoor unit.
11. Select the proper location for installing indoor units and outdoor units with all factory requirements being followed (cooling/heating air inlets and outlets are not blocked or restricted, mounting structure is secure, installation for convenience is considered, allow adequate clearance for maintenance/service and all applicable codes are met).
12. Cap/tape the two ends of every copper line before running them through any structure to keep any foreign substances from entering the pipe causing contamination. Label them A-A, B-B, C-C, D-D, or any other identifying marks on each pair of copper lines and wiring cable sets to keep from cross-piping or cross-wiring in multiple zone installations or where pipes for different single zone systems are close to one another.
13. Secure the wiring cables that connect between the indoor unit and outdoor unit, following all applicable NEC, state and local codes for your installation. If there is no special NEC, state or local codes to govern how these wires are to be installed, you can tape/cable tie them along with insulated copper line.
14. Tighten all pipe and wire connections ensuring there is no leakage or false connections.
15. Conduct a positive pressure leakage test, checking each of the inter-connecting copper lines between each indoor unit and outdoor unit by charging with dry-nitrogen at the outdoor unit's service port (note: do not back-seat stopping valve). A liquid soap solution shall be applied at all pipe connections to check for leakage. A 1/4" - 5/16" hose/valve adaptor may be needed if you have a 1/4" traditional manifold hose connection.
16. If there is no positive leaking, then conduct a negative pressure leakage test, checking all inter-connecting copper lines between each indoor unit and outdoor unit by pulling vacuum at the outdoor unit's service port (note: do not back-seat stopping valve) and checking that the vacuum level of 500 Microns can be held for at least 60 minutes.
17. If there is no leakage found at any of the refrigeration pipe connections, flip up the indoor unit's face panel and remove filter, carefully pour some clear water onto the up-right aluminum coil surface to test if the water can drain out of each the indoor unit's freely without finding any leakage.
18. If there is water leakage found, locate the source of the leak and correct it. Only after everything is clear, engage the correct electrical power to the system.
19. Then back-seat stopping valves of the outdoor unit to release refrigerant from the outdoor unit into the inter-connecting pipes and indoor unit.
20. Make sure both the indoor unit and outdoor unit are powered on correctly, operating the indoor unit in fan mode first. Then move on to test cooling, dehumidifying/drying, heating and other modes.
21. Read refrigerant pressures and pipe/valve temperatures only after the system is stabilized (normally 10 minutes after cooling/heating mode is started successfully). Record this data into the technician checklist in the lower half section of the Limited Product Warranty Registration Card/Form.
22. Adjust refrigerant charging level (remove refrigerant if pipe is shorter, the temperature is colder; add refrigerant if pipe is longer the temperature is warmer), following the manufacturer's instructions. If the average pipe length is shorter or longer than 25' and pressure/temperature readings at the outdoor unit service valves are not falling into normal ranges.
23. Explain to the user/owner about proper unit operation and maintenance. Leave your contact information to allow them to reach you. If the customer finds the unit doesn't work properly and cannot resolve the issue themselves, check the customer's units/parts/accessories and correct the issue if there is one. Communicate with YMGI-technical support line at (866)833-3138 x 703, if further help necessary.

Following these requirements will aid in ensuring that the units to be installed meet general HVAC practicing standards and necessary factory requirements. Finding any possible problems early, preventing any further damage to the unit will help to ensure a properly working unit for many years.





## LIMITED PRODUCT WARRANTY

Once the installation and successful testing of the system has been completely performed by a qualified licensed/certified HVAC technician/contractor, the registration card/form is filled out completely and correctly, and filed along with a valid installation invoice from the contractor within 7 days of the original installation, the following standard **Limited Product Warranty** is qualified: **7-years** on the **compressor** and **2-year** on **PARTS ONLY**. There is **no labor coverage**.

YMGI products are designed and manufactured free from defects in workmanship, and materials for normal use. However, if for any reason, including occasionally transporting between YMGI factories/warehouses and your delivery location, you discover the unit has issues, YMGI Group will help field a solution by following YMGI's established warranty procedures:

**Compressor:** YMGI will warrant the compressor of an YMGI-validated and approved warranty filing, for a period of 7 years from the date of successful installation at its original installation location.

**Parts:** YMGI will warrant parts of an YMGI-validated and approved warranty filing, for two years from the date of successful installation at original installation location.

All warranty compressors and parts replaced will become the sole property of YMGI Group and must be returned to YMGI Group upon request. Warranty parts may be new or refurbished. All parts are tested and approved before shipping.

**At no time does YMGI Group warrant labor cost of any type. Warranty will start from the date of successful installation at original installation location, or 90 days as of original shipping date from YMGI Group, whichever comes first.**

***This is a standard limited liability warranty and DOES NOT cover the following:***

- Any damage or repairs to properties, or persons as an incident of or consequence of improper faulty transportation, installation, operation, maintenance or service.
- Any damage caused by frozen or broken water hoses or refrigeration pipes in the event of equipment failure.
- Any damage due to floods, fire, wind, lightning, accidents, corrosive atmosphere or any other conditions beyond the control of YMGI Group.
- Any damage due to interruption or inadequate electrical service to equipment.
- Any products that are installed outside the US or Canada.
- Any unit that has been moved from its original installation address.
- Any labor costs associated with the installation or service of the unit.
- Poor unit performance due to improper unit selection (SEER, Unit size).

**To validate the above warranties, ALL of the following conditions must all be fulfilled:**

1. The unit was fully (100%) and successfully installed by a licensed or certified HVAC technician.
2. The unit was installed following all NEC, state and local codes.
3. The unit was installed following all the information within the Instructions and User Manuals provided by YMGI Group.
4. ALL fields, especially the technician-checklist, of the **Limited Warranty Registration Card/Form** were filled completely by the installing technician and signed by both the installing company technician and the unit owner.
5. The **Limited Warranty Registration Card/Form** and a copy of the original installing company's invoice have been received by YMGI Group-Warranty Dept., POB 1559, O'Fallon, MO 63366, within 7 days of successful installation.

**No warranty filing will be validated or approved, if any one of the above conditions are not met.  
Product registration doesn't guarantee the validity of this limited warranty statement.**





**Steps to follow for warranty part replacement:**

1. The installing or service technician must contact YMGI tech support at 1-866-833-3138 ext. 703 from the installation location to check and confirm with YMGI Technical support the exact part(s) needed to fix the problem(s).
2. YMGI will check the customer's warranty filing. There will be no charge for Parts with a validated and approved warranty. Any Parts that have not been validated and approved or have an invalid warranty filing resulting in an unapproved warranty request, will be charged accordingly.
3. ***YMGI will ground ship out the parts ASAP. Expedited shipping is available at the customer's expense.***
4. Replacement parts that have an approved warranty registration are to be warranted for the remainder of the 2-year on parts and a 7-year compressor warranty. Purchasing of replacement parts without a valid warranty filing or unapproved warranty request, will be sold as is and are not covered by any warranty.

YMGI is continually improving products with various engineering changes and these changes are made without prior notice. Such improvements or changes include but are not limited to product specification, appearance, functionality, size, packaging, etc. These improvements or changes will not void the limited warranty stated herein. YMGI is the final authority concerning this warranty policy.





# LIMITED PRODUCT WARRANTY REGISTRATION FORM

Top Portion and Keep Copy A is for YMGI Internal records. Copy B is for Installer to Fill out and Mail back to YMGI. Bottom Copy C for Customer records.

For YMGI Use Only	Date:	Shipping Packing List Number:	Registration Card Serial No.
	Did the Company Pay YMGI:	Unit(s) Work Successfully:	Yes/No
	Installation Invoice Attached to the Registration Card	Hired YMGI Recommended HVAC Contractor/Technician?	Warranty Approved
Outdoor Unit Serial Number :	Indoor Unit Serial Numbers:	Unit 1	Unit 6
		Unit 2	Unit 7
		Unit 3	Unit 8
		Unit 4	Unit 9
		Unit 5	Unit 10
<b>Contact at Installation Location:</b>			
Name:	Phone:	Fax:	
Address:	Email:		
City:	State (Province):	Country:	
<b>Contact of the Installing HVAC Contractor/Technician:</b>			
Technician Full Name (Print):	Phone:	Fax:	
HVAC Technician's Company:	Email:		
Company Address:	City:	State (Province):	
Currently Licensed/Certified HVAC Technician License or Certification Number:	License Approved/ Certified by:		
Official Phone # to Check the License Validity:			
<b>Checklist for Installing HVAC Technician to Verify Installation Quality, and for Warranty Processing Purpose (If not filled out completely by technician, warranty will be voided)</b>			
1) Did you install the whole system? If not, please note below.			
Yes	No	% of installation done by you (HVAC technician).	
2) What had been done, prior to your arrival?			
3) Did you read the User Manual and Installation Instructions before starting the installation?			
Yes	No		
4) Who unpacked the unit and accessory boxes to check for damage?			
5) Supply electrical power V/Ph/Hz measured at wiring terminal block of			
Indoor unit:	Outdoor unit:		
6) Incoming electrical power V/Ph/Hz measured at terminal blocks of			
Indoor unit:	Outdoor unit:		
7) Wire gauge, length and terminal colors between circuit breaker/disconnect switch to outdoor unit:			
8) Wire gauge, length and terminal colors between each indoor and outdoor unit:			
Unit A	Unit B	Unit C	Unit D
9) The size of HVAC circuit breaker/fuse or disconnect switch to the outdoor unit:			
10) Are the inter-connecting wires and copper lines between indoor and outdoor units installed/covered/protected by line set covers, or anything else?			
11) What is the refrigerant pipe length between each indoor unit and the outdoor unit?			
Unit A	Unit B	Unit C	Unit D
12) Where is/are the indoor unit(s) located? (Bedroom, kitchen, etc.)			
Unit A	Unit B	Unit C	Unit D
13) What is the elevation difference between each indoor unit and the outdoor unit?			
Unit A	Unit B	Unit C	Unit D
14) Did you check the indoor unit for condensate leakage and refrigerant leakage, before and after connecting them?			
Yes	No		
15) Where is the outdoor unit located? Is the outdoor unit anchored to ground or secured onto wall bracket?			
Ground wall balcony roof other location or pad		Yes	No
16) Have you checked to make sure there is no cross-piping and/or cross-wiring between any two indoor units (zones)? What was your procedure?			
17) Were the refrigerant pipe ends capped or sealed, prior to running them through structures to keep debris from entering the copper lines?			
18) Have you checked both cooling and heating on all indoor units individually to ensure proper function?			
Yes	No		
19) Did you charge the inter-connecting copper pipes and indoor unit with nitrogen to check for positive leakage (pressures 150-200PSI), before conducting a vacuum leak check?			
Yes	No		
20) Did you vacuum correctly to check the connecting pipes and indoor unit for leakage? What was the micron gauge reading, for how many minutes?			
21) Did you check the compressor's start and stop sequences to determine proper functionality?			
Yes	No		
22) If copper length were not made to the supplied or recommended refrigerant pipe length, how much refrigerant added or deducted?			
23) Measured refrigerant pressures at outdoor service suction valve, when unit was stabilized.			
Heat pump (PSI):	Cooling (PSI):	Outdoor Ambient Temp. (°F):	
24) What were the measured temperatures (probe not touching any metal):			
At cooling: indoor return air °F	Discharge air °F	and outdoor °F	
At heating: indoor return air °F	Discharge air °F	and outdoor °F	
25) Have you checked all unit functions with customer present, and all functions are working correctly?			
Yes	No		
26) Did you show the user how to operate the unit? Did he/she understand you?			
Yes	No	Yes	No
27) Do you provide regular one-year free technical service for this installation?			
Yes	No		
28) Do you list the working details in the invoice and leave a copy to the customer?			
Yes	No		
Installation Finished and Unit Works Successfully. Print Name of Installation HVAC Technician: Signature: Date and time:		Installation Finished and Unit Works Successfully. Print Name of Owner: Signature: Date and time:	
By signing above, I acknowledge the liability and responsibility for any false statement or omission of facts, and I authorize YMGI to verify the details provided above, and make its decision on warranty. I understand our filing or filling out of the warranty card/form DOES NOT imply automatic warranty approval, because warranty is approved only to qualified and successful installations by a qualified HVAC technician. I understand that the warranty (if approved) is a standard 5 year compressor and 1 year parts only, and does not include any labor coverage. I agree to and will follow all the contents contained in the Limited Product Warranty Policy of YMGI, and no other entity, stated in public, including but not limited to manuals, web site, email, etc.			
Important Note: A copy of the installing HVAC company's invoice to show all their work details, your payment proof, center copy B of this registration card filled out after a successful installation, all three (3) MUST be mailed together to Warranty Dept., YMGI Group, POB 1559, O'Fallon, MO 63366, for warranty processing. Customer keeps bottom copy C. YMGI will check against copy A that was kept at YMGI.			





## WHY DOES YMGI GROUP REQUIRE INSTALLATION AND SERVICE TO BE PERFORMED 100% BY CURRENTLY LICENSED OR CERTIFIED HVAC TECHNICIANS/CONTRACTORS?

### 1. Expertise and Safety:

They have the training and experience to accurately and safely install and service your equipment. The equipment runs with high-pressure refrigerant, oil and electrical current. The copper lines must be installed properly to prevent leakage and foreign substances from contaminating the refrigerant system.

### 2. You will save money in the long run:

If any problem occurs with the unit that has been fully installed by a currently licensed or certified technician/contractor, contact the original licensed or certified HVAC technician to evaluate the unit as they have the training and experience to correct the problem quickly and efficiently. A technician may be unwilling to repair an issue on a unit that they did not install. If you do find a technician willing to perform this service, there is an increased possibility of higher service fees, increased service visits, or delayed service from that technician.

### 3. It's the law!

The federal, state and/or local government and authorities have various governing laws or regulations, guidelines, ordinances, etc. These laws may require only licensed or certified professionals can install and service this type of high pressure HVAC equipment.

## SUGGESTIONS TO AID YOU IN HIRING AN HVAC CONTRACTOR:

1. Hire a currently practicing, licensed/certified HVAC professional technician/contractor. Technicians, who are no longer practicing (retired, etc.) in this field, may not have current technical knowledge or may lack experience on the equipment you have purchased.
2. Hiring a licensed technician to install your unit as a "side job" and not hiring a licensed HVAC company may pose possible risk. This may result in an incomplete or unsatisfactory installation, no guarantee for workmanship and lack of maintenance and further service to your unit.
3. Hire a technician/contractor who services customers in your local area and one you are familiar with. Local contractors have a faster response time and it will be easier for you to determine if they are reputable.
4. Use only a reputable licensed/certified HVAC installation professional to prevent any unexpected charges because of unethical business practices.
5. Check their references, verify they provide professional service for their customers. N.A.T.E or A.C.C.A certified technicians are strongly recommended.
6. Some contractors/technicians may not feel comfortable about installing equipment that has been purchased by someone other than themselves. They prefer to purchase and install the equipment themselves. You can contact YMGI directly to check and see if there are contractors in your area who have installed our products or any similar products.
7. Ask for a detailed quote for the complete installation project. A flat rate quote is the safest contract for both you and the contractor.
8. Local HVAC technicians may charge you on a project basis or on an hourly basis. It has been our general experience; **a full single head installation normally can cost \$800 to \$1500**. These costs are estimates, and your actual costs may differ due to your specific job requirements and installation location.
9. Number of hours can vary depending upon each individual situation, some factors are, but not limited to:
  - Difficulty or complexity of securely installing the indoor unit.
  - Difficulty or length of the inter-connecting pipes and wires to be installed.
10. A successful installation is dependent on all these suggestions and all the necessary steps are followed.
11. If the contractor(s)/technician(s) are experienced with the systems/brands you purchased. **You might save on the installation cost, but remember to always ask for and verify references.**
12. The contracts should list and detail all work to be performed and the standards they will follow. Some contractors are willing to include a 1-year installation/service warranty at no extra charge. Check to see if this is an available option. If available, make sure it is included in the contract.
13. Verify and confirm the installation is completed and all the unit functions have been tested and working properly. All items on the checklist should be checked and clearly marked in the warranty registration card/form, prior to paying the contractor in full.

The cost of not having your unit professionally installed can be more expensive than the additional cost of hiring a certified contractor. Protect your investment and warranty eligibility by doing it right the first time.



**⚠WARNING****Safety Precautions**

1. Follow these instructions to complete the necessary installation process. Carefully read this manual before installation and unit startup or servicing.
2. Wire size of power cord should be properly sized to meet the required electrical loads. Should the power cord get damaged, the power cord should be replaced with a manufacturer approved cable.
3. After connecting the power cord, attach the electric box cover and secure properly.
4. Always meet the nitrogen charge requirements when welding pipes.
5. Never short-circuit or cancel the pressure switch as this will result in damage to the unit.
6. Connect the wired controller before energizing, otherwise the wired controller cannot be used.
7. Before using the unit, verify the piping and wiring are correct. This will avoid water leakage, refrigerant leakage, electric shock, or fire etc.
8. Do not insert fingers or objects into the air outlet or inlet grille.
9. Open a door or window for ventilation for allowing fresh air to enter the room to avoid depleting the oxygen while gas/oil supplied heating equipment is used during the installation.
10. Never start up or shut off the unit by means of directly plugging into or unplugging the power cord from the power outlet.
11. Turn off the unit after it runs at least five minutes, otherwise it will influence the oil return of the compressor.
12. Do not allow children to operate this unit.
13. Do not operate this unit with wet hands.
14. Turn off the unit or disconnect the power supply before cleaning the unit. This will avoid possible electric shock or personnel injury.
15. Never spray or splash water towards the unit. This can cause a malfunction in the unit or can result in electric shock.
16. Do not expose the unit to moist or corrosive environments.
17. While operating in cooling mode, do not set the indoor unit's room temperature too low.
18. YMGI Group recommends that only properly trained and authorized personnel be allowed to repair or service the unit. Improper repairs or servicing can result in electric shock or fire hazards. Please contact YMGI Group if you need help locating a qualified repair or service technician.
19. Before installation, check the power supply to ensure it is sufficient to meet and is in accordance with the requirements specified on the nameplate of the unit. Ensure the power overload is functioning correctly and make sure it is properly maintained.
20. Installation must be performed only by an authorized installer or HVAC professional in accordance with the requirements set by the NEC and CEC. Do not attempt to install the unit yourself. Improper handling may result in water leakage, electric shock, fire, and voiding of the warranty.
21. Be sure to use only approved accessories and parts to prevent water leakage, electric shock and fire.
22. Make sure the unit is grounded properly prior to connecting to power source, to avoid electric shock. Do not connect the ground wire to a gas pipe, water pipe, lightning rod or telephone line.
23. Energize the unit for 8 hours before operation. Turn off or disconnect the power within 24 hours to prevent short-cycling (to protect the compressor).
24. If refrigerant leakage happens in a confined space during installation, ventilate immediately. Poisonous gases can occur if the refrigerant gas is exposed to fire.
25. Volatile liquids, such as paint thinners or solvents if exposed to the unit's surface will cause damage to the surface finish. Only use a soft cloth along with a mild non-abrasive detergent to clean the outer casing of the unit.
26. If the unit does not operate normally or if you notice any type of burning odor, power off the unit and turn off the main power supply, then immediately contact your YMGI authorized repair service center or HVAC professional.



**NOTICE**

***YMGI Group will not be responsible for any personal injury or any property damage caused by improper or incorrect installation, improper service or maintenance or by not following the instructions listed in this manual.***

**DO NOT** pull on the power supply cords or refrigeration lines that are connected to the indoor and outdoor units. Install the power supply cords and secure them into position. PVC line set cover is recommended for the outdoor unit to protect against rain, sunlight and accidental damage.

**DO NOT** allow cold air to blow directly onto people for a prolonged period, as this could make people cold and uncomfortable.

**DO NOT** undersize any of the power supply wires.

**DO NOT** connect several units to a single breaker. Don't undersize or oversize the circuit breaker. A poorly sized circuit breaker can cause unit failure and even fire.

**DO NOT** wire or open a unit while the unit is running. Make sure to disconnect the power supply and switch off all circuits prior to inspecting or servicing the unit. Inspecting and servicing the unit while the power supply is connected, and the circuits are switched on could cause an electrical shock or fire.

**DO NOT** install the indoor unit near any cooking surfaces, in direct sunlight or any ventilation systems. Poor placement could decrease efficiency and waste energy.

**DO NOT** install the unit in places where there is exposure to flammable materials or gas.

**DO NOT** apply chemical solvents, flammable insecticides, or abrasive materials directly on the unit. Clean the unit only with a soft dry cloth.

**DO NOT** install the unit in a damp laundry room or near flammable gas. All units must be protected by a certified electrical circuit breaker in accordance with all safety and electrical codes.

**DO NOT** use the system for anything other than what it was designed.

**DO NOT** store or install the units near food, paint, or other chemicals.

**DO NOT** use the unit in cool or dry mode for prolonged periods where humidity is higher than 90%.

**DO NOT** operate the unit for prolonged periods without refreshing ambient air. Open a door or window periodically to allow in fresh air.



## BRIEF INTRODUCTION TO MINI SPLIT WALL MOUNT SYSTEM

Mini Split Wall Mount Systems are designed for high performance, easy installation and service. Each system consists of one or several indoor units and one outdoor unit, which are connected by one set or several multiple sets of interconnection refrigerant pipes and electric wires.

As shown in the following sample picture of outdoor unit, air is drawn through the coil from the rear side and then discharged from the front side. In cooling mode, air passing through coil is heated; in heating mode, air passing through coil is cooled.



### Sample Wall Mount Mini Split System (For Continuous Engineering Improvement and Various Marketing Needs and Actual Part Availability, Unit Appearance Subject to Change or Update Continuously without Prior Notice)

Outdoor unit(s) provides the electrical and thermal power for the whole system. Electrical and thermal components such as compressors, motors, heat exchange coils and others, are incorporated into the cabinet in an optimized order. They can be either hung on the wall or installed on the ground. Once stacking or bracket kit is used, some outdoor units can be stacked 2 or 3 units high, depending upon unit size and applications. Air is discharged horizontally, quietly and smoothly. These units are a perfect fit in locations where installation and applications of general up-flow condensing units are limited, such as apartments, condos, lofts, multi-families and high-rise buildings and others named or unnamed.

Indoor unit(s) delivers the thermal and acoustical comfort to the rooms. Air is drawn through the coil from the front or topside and then discharged from the bottom. In cooling mode, air passing through coil is cooled; in heating mode, air passing through coil is heated. Air is cleaned or treated by the built in filter (washable, enzyme, or electrostatic filter types vary from model to model), before being delivered into the room, with more than enough comfort and care, at a wide angle (swing or not, varies from model to model).



Apartments



Hotels



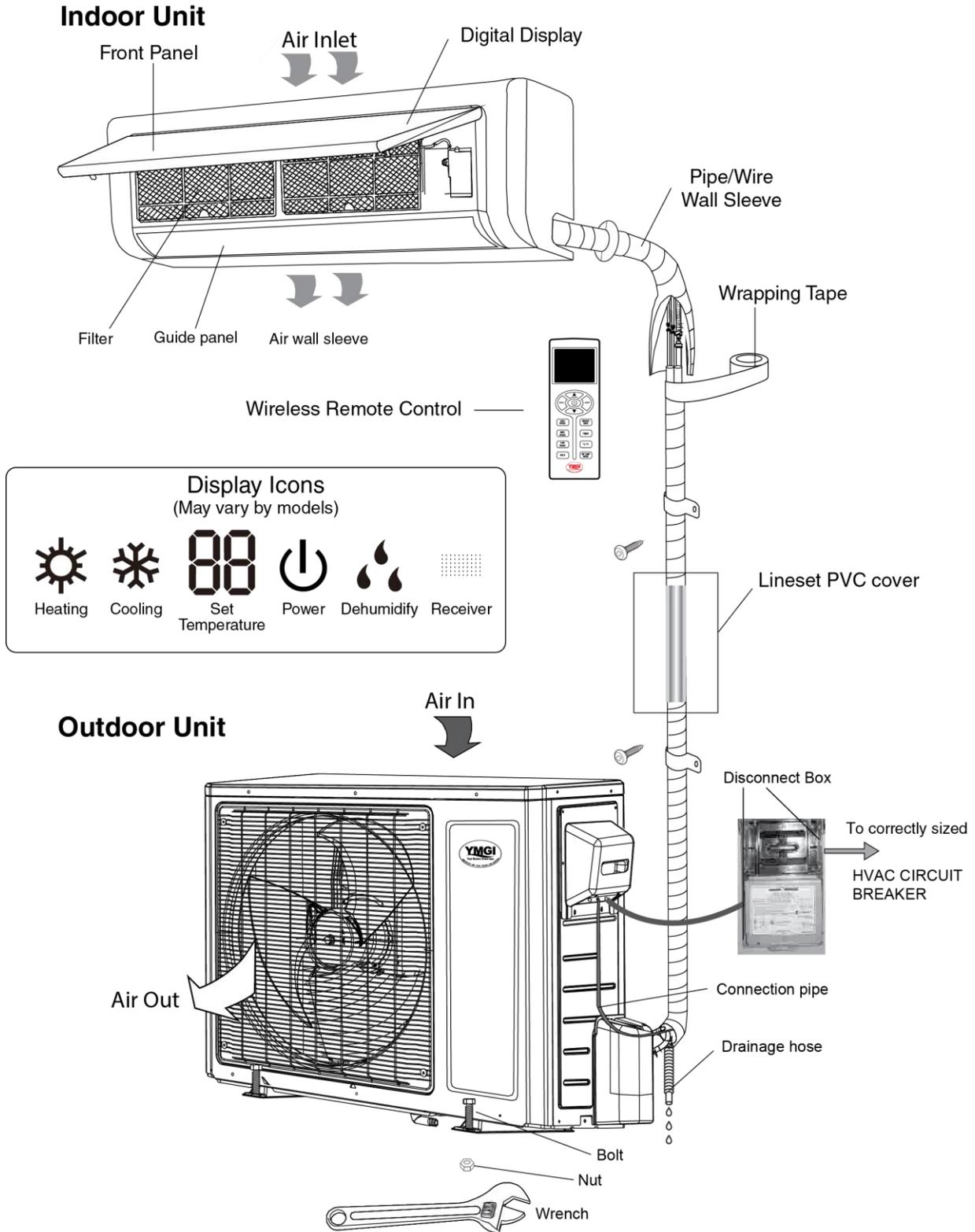
Homes

**NOTES: This ductless system is not designed to be incorporated or used with ducted returns or discharge tunnels. A single-zone unit SHOULD NOT be used for the cooling or heating load of more than one single story room. Several single-zone ductless systems or multiple-zone ductless systems would be proper in this application.**

These units are designed for applications in:

- Residential
- Institutional
- Commercial
- Light commercial
- Industrial
- Hospital

# SAMPLE LAYOUT OF INSTALLED SYSTEM



**Notes:** Actual unit/ part appearance and installation may vary from illustration. Subject to continuous improvement and change without notice.



# MINI WALL MOUNT SYSTEMS - SPECIFICATION BRIEFS

## Unit Specifications and Engineering Submittal

Model #	System		WMMS-09K-V2A(57)2	WMMS-12K-V2A(57)2	WMMS-18K-V2B(57)3	WMMS-24K-V2B(57)3	WMMS-30K-V2B(57)3	WMMS-36K-V2B(57)3
	Indoor Unit		WMMS-09E-V2A(57)2	WMMS-12E-V2A(57)2	WMMS-18E-V2B(57)3	WMMS-24E-V2B(57)3	WMMS-30E-V2B(57)3	WMMS-36E-V2B(57)3
	Outdoor Unit		WMMS-09C-V2A(57)2	WMMS-12C-V2A(57)2	WMMS-18C-V2B(57)3	WMMS-24C-V2B(57)3	WMMS-30C-V2B(57)3	WMMS-36C-V2B(57)3
Power supply	V/Ph/Hz		115V/1/60Hz	115V/1/60Hz	208-230V/1/60Hz	208-230V/1/60Hz	208-230V/1/60Hz	208-230V/1/60Hz
Cooling	Nominal Capacity	Btu/h	9000	12000	18000	22000	28000	32000
	Input	W	890	1180	1700	2310	2980	3600
	Rated current	Amp.	8.6	11.4	7.4	10.1	13.0	15.6
	EER	Btu/h.w	10.5	10.2	9.7	9.35	9.4	9.1
	SEER	Btu/h.w	16.0	16.0	16.0	15.0	15.0	16.0
Heating	Capacity	Btu/h	11000	13000	18000	22000	28000	33000
	Input	W	1020	1300	1600	2230	2730	3110
	Rated current	Amp.	9.9	12.5	7.1	9.7	11.9	13.5
	COP	W/W	3.16	3.16	3.20	3.20	3.00	3.10
	HSPF	Btu/h-w	8.20	8.20	8.50	8.50	8.50	9.50
Minimum Circuit Ampacity	Amp.		15	18	15	20	20	21
MAX HVAC Type Circuit Breaker	Amp.		20	30	20	30	30	30
Compressor	Model		5RS092ZJB21	5RS102ZBC21	ATD141RDPA8JT	ATD186UKQA9LT6	ATL232UDPC9AUL	ATL253UDPC9AUL
	Type		Rotary	Rotary	Rotary	Rotary	Rotary	Rotary
	Brand		Panasonic	Panasonic	HIGHLY	HIGHLY	HIGHLY	HIGHLY
	Capacity	Btu/h	7882	8922	5560	7200	22246	24430
	Input	W	915	1010	1255	1610	2070	2240
	Rated current(RLA)	Amp.	4.1	4.4	4.2	4.8	8.8	9.4
	Refrigerant oil/oil charge	ml	FV50S or equivalent 320ml	FV50S or equivalent 320ml	α68HES-H or equivalent 480±20ml	α68HES-H or equivalent 770±20ml	HAF68D1C or equivalent 630±20ml	HAF68D1C or equivalent 830±20ml
Indoor fan motor	Model		YDK-16-4 L4	YDK-16-4 L4	YDK-50C-4P 3 A050501000360-R0	YDK-50C-4P 1 A050501000342-R0	YDK-50C-4P 1	YDK-50C-4P 6
	Brand		CG	CG	CG	CG	CG	CG
	Input	W	40	40	54	70	86	99
	RLA	Amp.	0.30	0.30	0.22	0.31	0.42	0.49
	LRA	Amp.	0.32	0.32	0.41	0.42	0.71	0.77
	Winding Resistance	Ω	140/118.5	140/118.5	203/169	174/138.8	87.4/76.6	86.9/87.3
	Capacitor	uF	4	4	1.8	2	2.5	2.5
	Speed (Hi/Me/Lo)	rpm	1250±20 1100±30 800±40	1250±20 1100±30 800±40	1300±20 1150±20 1000±20	1350±20 1200±20 1050±20	1350±20 1150±20 910±20	1250±20 1050±20 900±20
Indoor air flow (Hi/Me/Lo)	CFM	524/285/207	353 / 311 / 206	471 / 417 / 362	588 / 524 / 459	735 / 626 / 490	824 / 692 / 593	
Indoor noise level (Hi/Me/Lo)	dB(A)	42	42	47	49	50	53	
Indoor unit	Dimension (W x D x H)	Inch	31 x 8 1/4 x 11	31 x 8 3/8 x 11	37 1/2 x 12 3/8 x 9 3/8	41 3/8 x 9 3/8 x 12 1/4	45 x 12 1/4 x 9 3/8	57 3/8 x 11 1/8 x 13 5/8
	Packing (W x D x H)	Inch	38x14x12	38x14x12	39x15x12	46x15x12	49x16x13	63x17x14
	Net/Gross weight	lbs.	22/26	22/26	29/33	33/37	39/45	53/60
Outdoor fan motor	Model		YDK-35-6HD 3 A050501000163-R0	YDK-35-6HD 3 A050501000163-R0	YDK-40-6C 1 H3 A050501000238-R0	YDK-60B-6C 030020236R	YDK-150-6CH 1	MDR-9538-910A
	Brand		CG	CG	CG	CG	CG	XN
	Input	W	79	79	85	156	238	100
	RLA	Amp.	0.66	0.66	0.37	0.68	1.04	/
	LRA	Amp.	0.86	0.86	0.60	0.89	1.33	/
Winding Resistance	Ω	52.5/51.5	52.5/51.5	107/100.8	66.2/69.4	49/49.3	/	





		Capacitor	uF	8	8	3	4	5	/
		Speed	Rpm/M	900/600	900/600	670 /870	780±20	800/600	790
Outdoor air flow		CFM		1147 / 765	1147 / 765	1159 / 1200	2000 / 1538	2235 / 1676	2235 / 1676
Outdoor noise level		dB(A)		53 / 35	53 / 35	53 / 41	58 / 43	59 / 44	59 / 44
Outdoor unit	Dimension (W x D x H)	Inch		28.74" x 9.44" x 21.18"	31.96" x 10.11" x 21.25"	33.46" x 11.49" x 23.85"	35.82" x 13.38" x 27.51"	38.18" x 14.76" x 31.06"	38.18" x 14.76" x 31.06"
	Packing (W x D x H)	Inch		34x13x24	36x13x23	39x16x27	41.73x18.1x37.1	44x19x35	44x19x35
	Net/Gross weight	lbs.		60/64	71/75	88/99	114/127	132/143	152/163
R410A Refrigerant charge		Oz		31.68	39.52	45.92	68.68	70.56	116.48
Refrigerant precharge maximum pipe length		Ft.		25	25	25	25	25	25
Additional charge for each ft.		Oz		0.23	0.23	0.23	0.23	0.23	0.23
Design pressure		PSIG		510/250	510/250	510/250	510/250	510/250	510/250
Refrigerant piping	Liquid side/ Gas side	Inch		1/4"+3/8"	1/4"+3/8"	1/4"+1/2"	3/8"+5/8"	3/8"+5/8"	3/8"+5/8"
	Max. refrigerant pipe length	Ft.		49.2	49.2	49.2	49.2	49.2	49.2
	Max. difference in level	Ft.		16.4	16.4	16.4	16.4	16.4	16.4
Connection wires between IDU and ODU				4×AWG18	4×AWG18	4×AWG18	4×AWG18	4×AWG18	4×AWG18
Control Type				Remote Control					
Operation Temperature Ranges	Indoor (cooling/ heating)	°F		61~90	61~90	61~90	61~90	61~90	61~90
	Outdoor (cooling / heating)	°F		AC: 15~115 / HP: -4 ~ 75					
Application area (cooling standard)		Sq. ft.		129~200	172~300	258~450	344~600	398~700	463~850

**Notes:**

1. Performance rated for matched system at standard conditions-cooling ID 80/67°F, OD 95°F; heating ID 70/60°F, OD 47/43°F, 25 ft. copper lines and IDU 7ft. above ODU.  
Unit performance varies when weather changes from the standard one.
2. Select equipment capacity sizes per space load calculation schedule and cooling & heating hours. Not to over size or under size equipment.
3. Watch unit operation during extreme weather conditions in summer and winter. Wind baffle helps system cooling & heating performance in low ambient temperature ranges.
4. Heating capacities up to 85% @ 17°F ambient temperature, up to 60% @ -4°F varying upon geographic location and actual installation.

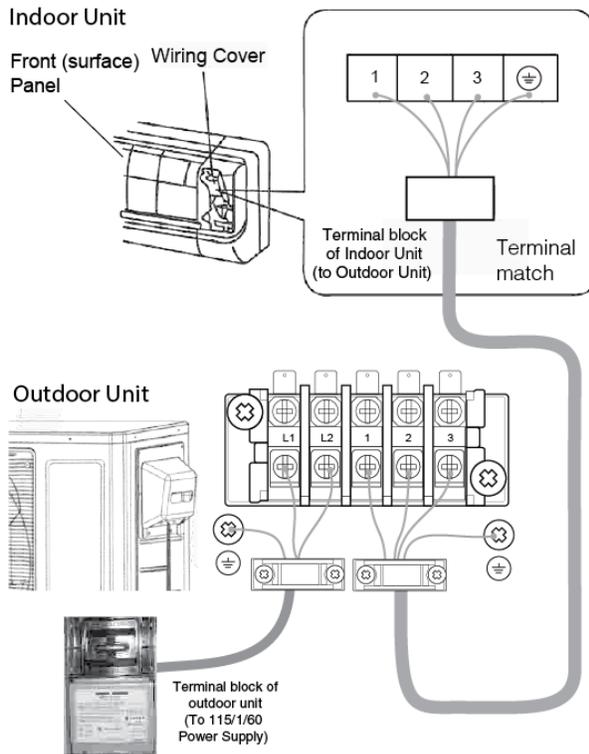


# CONNECTION OF WIRES

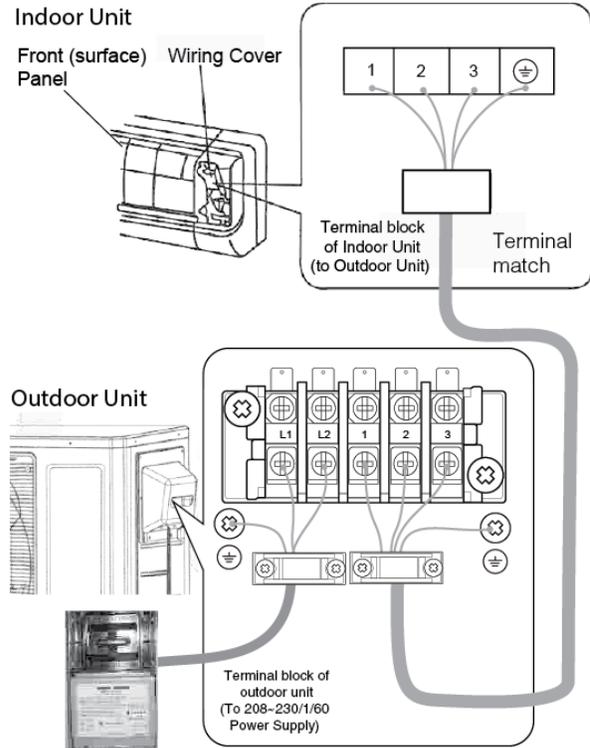
## WIRING AT INDOOR UNIT AND OUTDOOR UNITS

- Open the front cover panel.
- Remove screws from electrical box cover and put screws in secured position.
- Remove screws from fastener and put screws in secured position.
- Prepare wires of right size and grade.
- Recommend to use factory-provided wire/cables.
- Connected to the terminals following wiring diagrams (terminal or color matches).
- Clamp power/control wires to the structure to keep the tension from being transmitted to the wire connection.
- Replace screws or fasteners back to where they were.

09K, 12K Models (115/1/60)



18K, 24K, 30K, & 36K Models (208-230/1/60)



**Note:**

- The environment conditions must be taken into consideration when the connections of power cable are made (such as the ambient temperature, direct exposure to heat exposure to sunlight).
- The specifications for the power cable refer to the minimum values of the metal core wires, taking into consideration the voltage losses, the core wire of power cable must be one size larger than the specifications.
- The grounding wire must be connected to the indoor units and outdoor units.
- The laying of power cables must be done by qualified electricians and comply with the regulations of the local power supply authorities and with the standards of the electric appliance.

## PIPING AND WIRING SIZES

Model	Liquid / Gas Line	Min - Max Length	+/- Elevation	Power Wire Min. Disconnect Switch Box to Outdoor Unit	Power/ Control Wire Min. Outdoor Unit to Indoor Unit	Recommended HVAC Circuit Breaker/Fuse AMP (to Outdoor Unit)
09K	1/4" & 3/8"	15 - 49.2	16.4	L1/L2/G, 115V/1/60, 12AWG	1/2/3/G, 115V/1/60Hz, 4xAWG18	20
12K	1/4" & 3/8"	15 - 49.2	16.4	L1/L2/G, 115V/1/60, 10AWG	1/2/3/G, 115V/1/60Hz, 4xAWG18	30
18K	1/4" & 1/2"	15 - 49.2	16.4	L1/L2/G, 208-230/1/60, 12AWG	1/2/3/G, 208-230V/1/60Hz, 4xAWG18	20
24K	3/8" & 5/8"	15 - 49.2	16.4	L1/L2/G, 208-230/1/60, 10AWG	1/2/3/G, 208-230V/1/60Hz, 4xAWG18	30
30K	3/8" & 5/8"	15 - 49.2	16.4	L1/L2/G, 208-230/1/60, 10AWG	1/2/3/G, 208-230V/1/60Hz, 4xAWG18	30
36K	3/8" & 5/8"	15 - 49.2	16.4	L1/L2/G, 208-230/1/60, 10AWG	1/2/3/G, 208-230V/1/60Hz, 4xAWG18	30

## IMPORTANT NOTES FOR UNIT OPERATION AMBIENT & SIZING

Since the outdoor units can be installed on a wall or balcony (close to the indoor unit) the following are some benefits for contractors and customers:

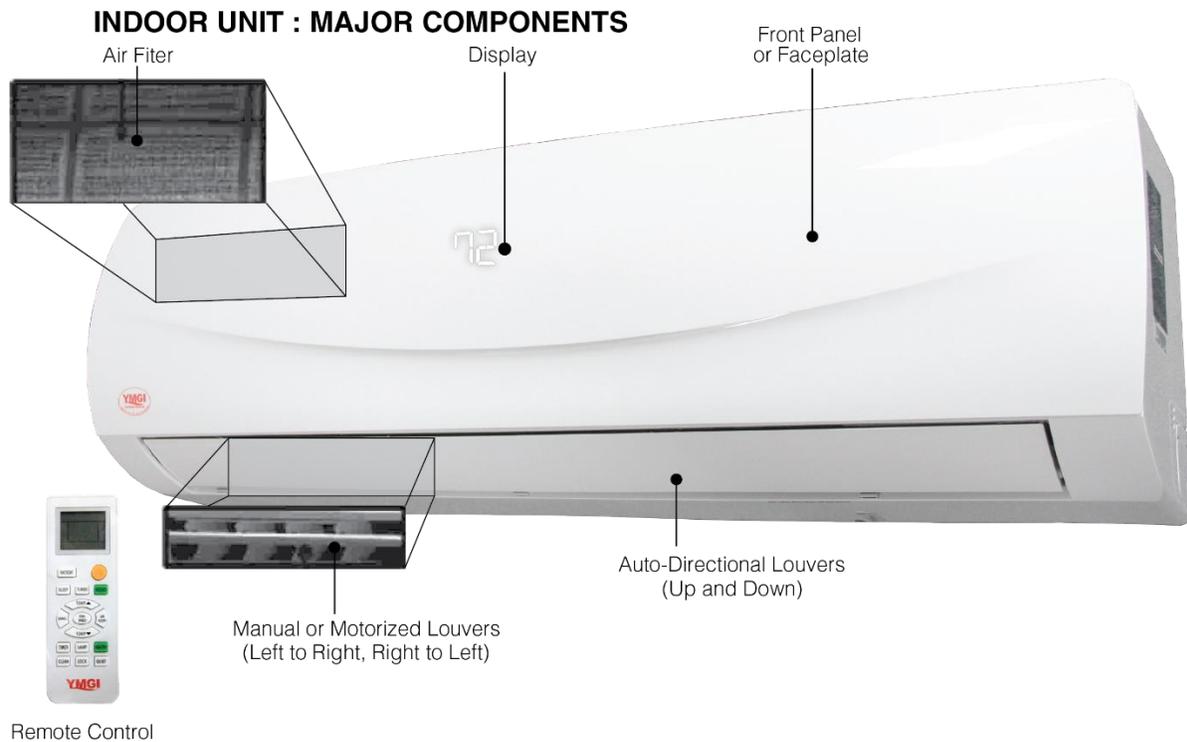
- Indoor unit operates much quieter than air diffuser of central air conditioning system.
- Connection pipes and refrigerant usage is much lower when compared to installing up-flow condensing units on the ground and long copper/wire lines needed between indoor and outdoor units.
- Installation work is easier and requires less time.
- Increased efficiency and lifetime of system.

YMGI Mini Split Wall Mount Systems are all heat pumps (some manufacturers make cooling only, and heat pumps with auxiliary electric heaters). These units can be easily wired. Either indoor unit or outdoor unit can be used with any matched comparable outdoor unit or indoor unit as long as they have matched size and control. Must refer to electrician before doing so.

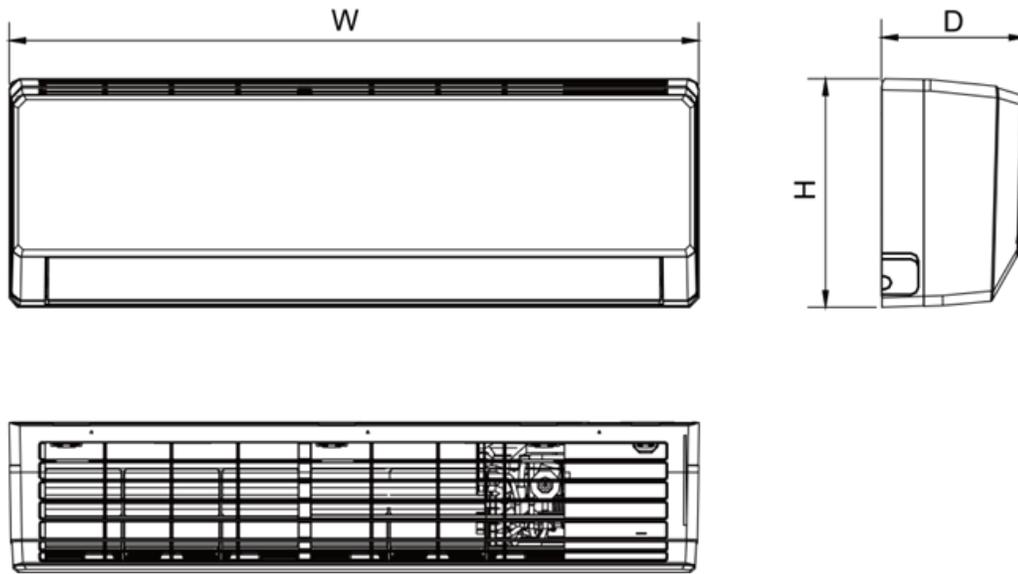
Each system is thoroughly tested before leaving the factory. Each unit is acoustically, thermally and systematically designed to give optimum quality and reliability.

Find the cooling/heating load capacity of the space where the unit will be in service. Select matched WMMS units for the space. Under sizing or over sizing equipment is NOT recommended.

### UNIT ENGINEERING SUBMITTALS-MECHANICAL

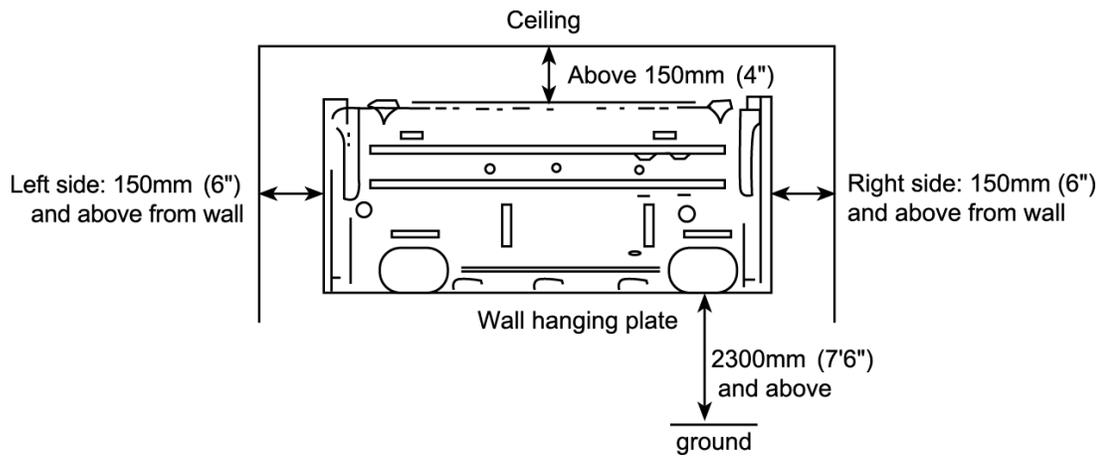


### UNIT ENGINEERING SUBMITTALS - DIMENSIONS – INDOOR UNITS



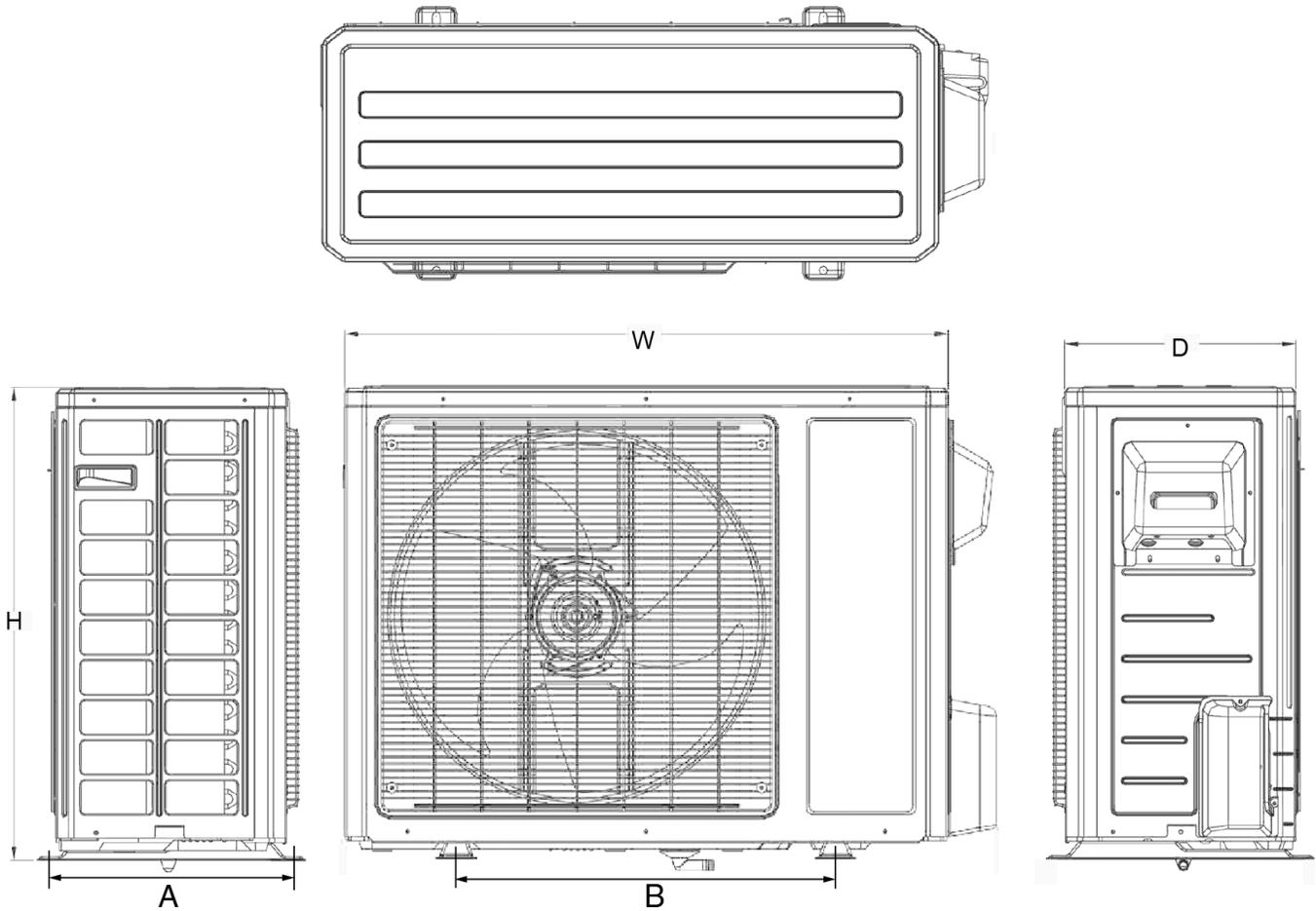
Model	W inches	H inches	D inches
WMMS-09E-V2A(57)2 WMMS-12E-V2A(57)2	31	11	8 3/8
WMMS-18E-V2B(57)3	37 1/2	11	9 3/8
WMMS-24E-V2B(57)3	41 3/8	12 3/8	9 3/8
WMMS-30E-V2B(57)3	45 1/2	12 3/8	9 3/8
WMMS-36E-V2B(57)3	57 3/8	13 5/8	11 1/8

### MOUNTING BRACKET CLEARENCE



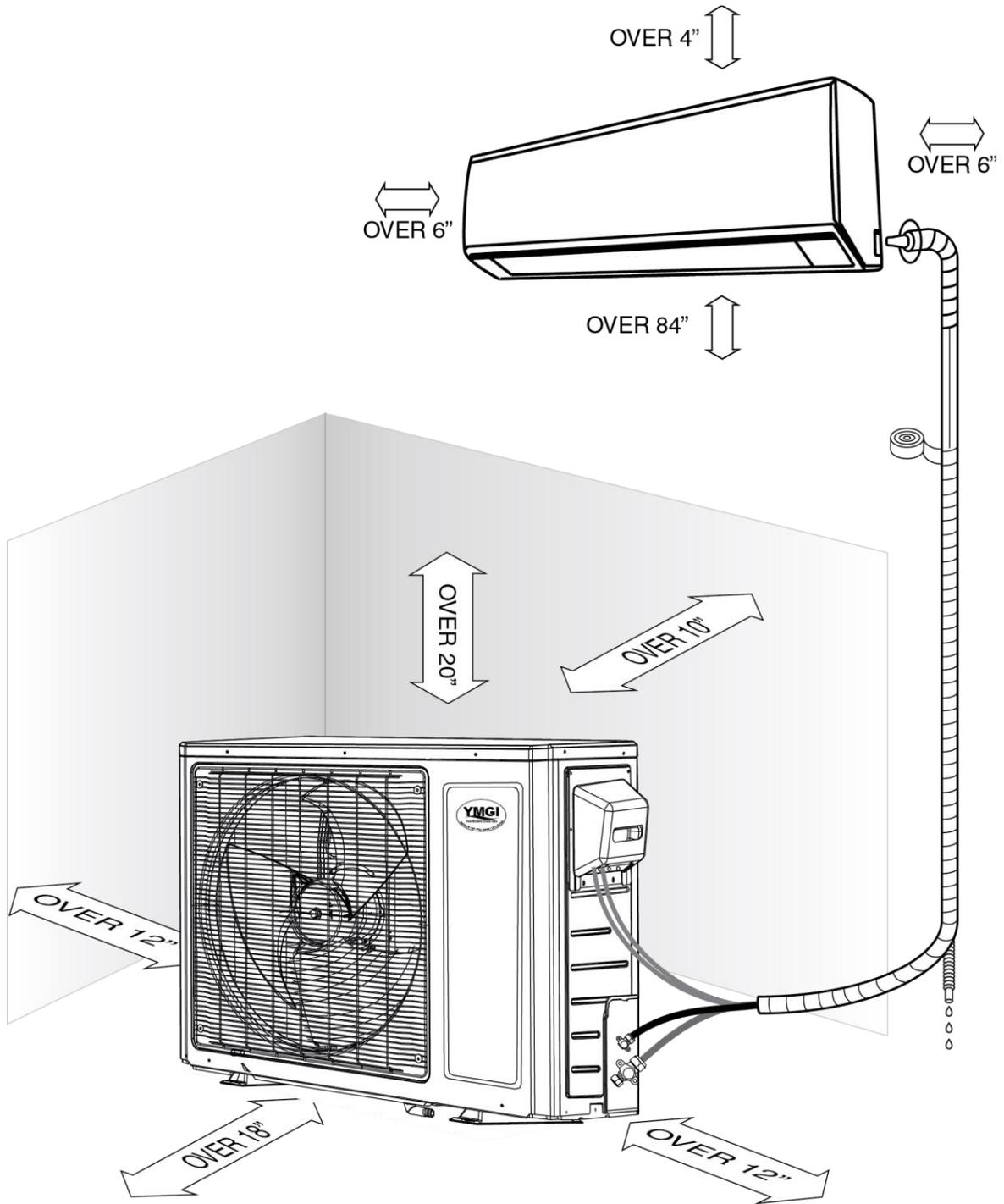
**Note:** Actual unit/part may appear differently than what is the above illustration.

## UNIT ENGINEERING SUBMITTALS - DIMENSIONS – OUTDOOR UNITS



Model	Dimensions (In)					Weight (lbs.)	
	W	H	D	A	B	Net	Gross
09K	28.74"	21.18"	9.44"	10.94"	16.53"	60	64
12K	31.96"	21.25"	10.11"	10.94"	20.07"	71	75
18K	33.46"	23.85"	11.49"	12.67"	19.88"	88	99
24K	35.82"	27.51"	13.38"	14.13"	25.39"	114	127
<b>30K</b>	38.18"	31.06"	14.76"	15.47"	27.83"	132	143
<b>36K</b>	38.18"	31.06"	14.76"	15.47"	27.83"	152	163

# INSTALLATION CLEARANCE REQUIREMENTS GENERAL

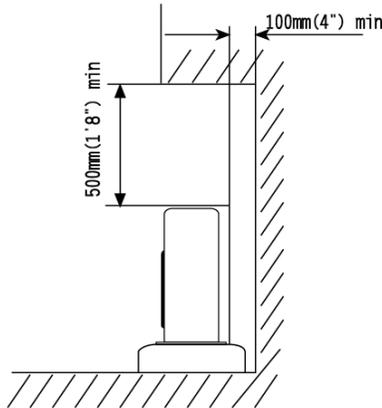


# INSTALLATION CLEARANCE REQUIREMENTS-OUTDOOR UNIT

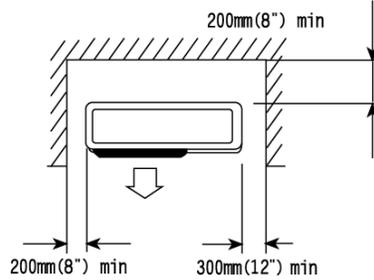
## MAKE SURE OF ENOUGH SPACE FOR INSTALLATION AND MAINTENANCE

To take into consideration the operational convenience and safety in installation, it is recommended to ensure enough space between the unit and the walls.

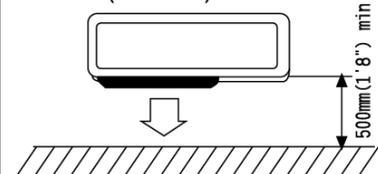
1. When there are obstacles above the unit



2. When the front (air outlet) is open

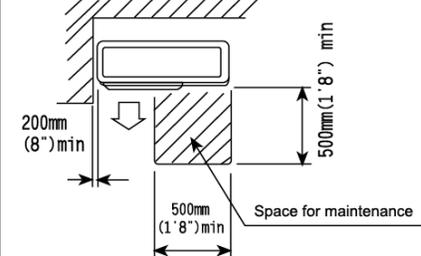


3. When there are obstacles only in the front (air outlet)

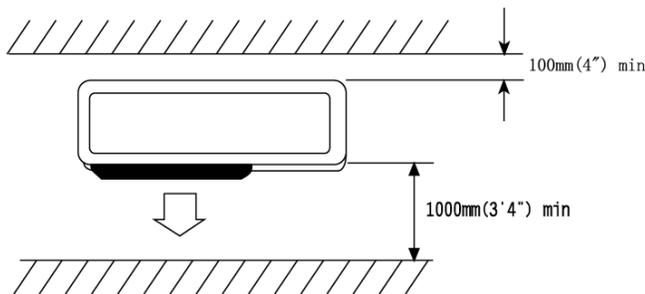


### Space for maintenance

Shown as in the following figure. Keep the maintenance space in front of the unit.

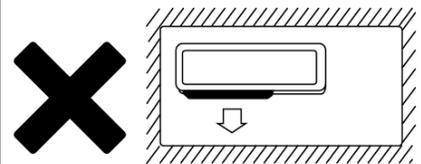


4. When there are obstacles at the front and rear sides.



5. When there are obstacles all around the unit on four sides.

Although the top side is open, the installation is not to be done if there are obstacles all around.



● At least two sides should be kept open.

## RECOMMENDED TOOLS FOR INSTALLATION



### 1) Mounting Indoor & Outdoor Units and Running Piping/Wiring

- Ruler (Not Shown)
- Stud-Finder
- Dry-Wall Saw
- Electric Drill
- 3" Hole Saw
- Drill Extension
- Hammer Drill and Bit (Not Shown)
- Measuring Tape
- Level
- Flash Light
- Screw Driver (Phillip's and Flat)
- Hammer
- Knife
- Scissors
- Safety Glasses
- Dust Mask
- Gloves
- Ladder

### 2) Refrigeration Related Work

- Individual wrench Set (Use Two at One Time)
- Flare-Nut Tool Set (Not Shown)
- Hex Head Allen Wrench Sets (Metric and Imperial)
- Brazing Rods and Brazing Torch
- Outfit for AC Application (Not Shown)
- Brazing Flux
- Nitrogen Cylinder for Positive Pressure Leakage Check (Not Shown)
- Soap Bubble for Positive Pressure Leakage Check (Not Shown)
- Vacuum Pump for Negative Pressure Leakage Check
- Helium Refrigerant for Minor Leakage Check (Not Shown)
- Manifold

### 3) Electrical Related Installation

- Wire Cutter
- Wire Stripper
- Sharp Plier
- Cable Ties
- Black Tape for Electrical Use
- Electrical Meter

### 4) Trial Running Units and Inspection

- Clamp Meter (Not Shown)
- Manifold
- Infra Thermometer (Not Shown)



## **⚠ CAUTION**

**All Units Shall Be Installed by Licensed Contractors or Technicians.**

**Read Manuals before Installation.**

- The location and structure should also be convenient for both installation and service.
- The location should NOT be where discharge air and noise could annoy a neighbor.
- The location should NOT be where drain may cause any damage to property or annoy a neighbor.
- The location should NOT be where brazing work may cause fire or smoke to the surrounding materials.
- The location should NOT be near flammable gases.
- The location should NOT be in or close to corrosive gases.
- The location should NOT be where children can access.

## **⚠ CAUTION**

### **CAUTION & SUGGESTIONS TO FOLLOW PRIOR TO INSTALLATION**

- Check the unit for damage and missing parts or accessories. If there is damage found or parts are found missing, call the distributor right away.
- Spin fan wheels or blades to check if they can rotate freely. If the fan wheel scratches the housing, call the distributor right away and do not proceed with the installation until it is fixed.
- Check the unit to make sure no foreign materials have been left inside the unit.
- Check to be sure you have all the additional parts and accessories that are required for the installation and those provided with the unit.
- It is strongly recommended to only use YMGI supplied or approved parts and accessories.
- Be sure a properly sized circuit breaker is installed for the electric power supplying the units.
- Pre-build the support platform on the ground or bracket for the wall before or during construction and before installation.
- Read installation instructions for all units thoroughly.
- Ask rep./distributor/YMGI Group anything you are not sure about.
- Get your tools and parts ready and start the installation.

### **BASIC REQUIREMENTS FOR THE INSTALLATION LOCATION**

- Choose a location where there are no strong heat sources, vapors, flammable gas or volatile objects.
- Choose a location where there are no high-frequency waves being generated by radio equipment, welders and medical equipment.
- Choose a location where there are not a lot of salinities, such as coastal areas.
- Choose a location where there is no oil (machine oil) contained in the air.
- Choose a location where there is no Sulfur gas present, such as areas close to hot springs.
- Choose a location where there is no other special circumstance.

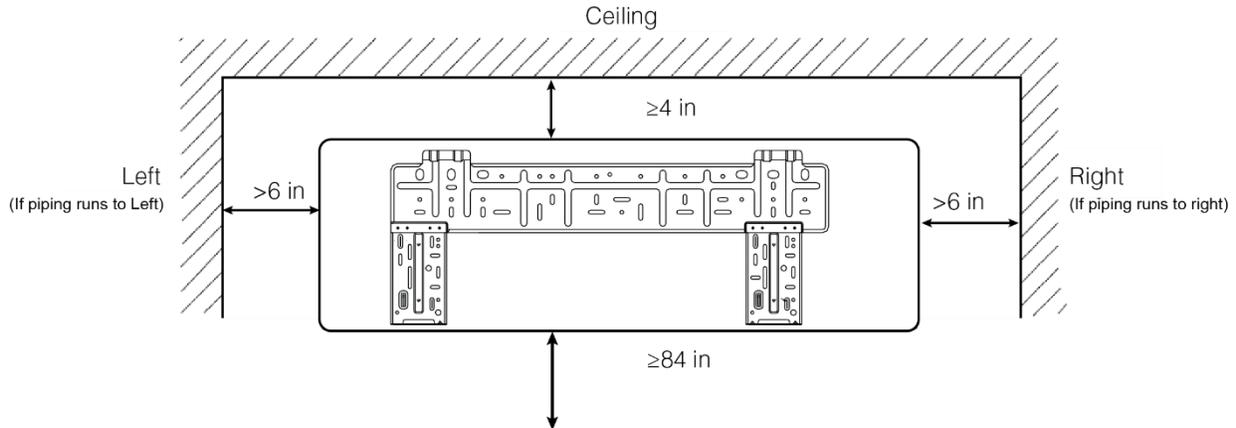
### **SELECTION OF INDOOR UNIT INSTALLING LOCATION**

- The air inlet and outlet vent should be far from any obstructions, making sure that the air can be blown through the entire room.
- Select a location where the condensate water can be easily drained, and can be easily connected to the outdoor unit.
- Select a location where children cannot reach the unit.
- Select a location that is strong enough to support the full weight of the unit and the vibration which will allow the unit to operate more quietly.
- Be sure to leave enough space to allow access for routine maintenance. The height of the installed location should be 78 inches or more from the floor.
- Select a place about 3 feet or more away from television or any other electric appliances.
- Select a place where the filter can be easily maintained.
- Make sure that the indoor unit is installed in accordance with the dimensioned diagram.

## INSTALLATION - INDOOR UNIT

### MAKE SURE OF ENOUGH SPACE FOR INSTALLATION AND MAINTENANCE

To take into consideration the operational convenience and safety in installation, it is recommended to ensure enough space between the unit and the walls.



**Attention:** If there are some additional function devices to install on the unit, be sure to add to the installation space for the function devices.

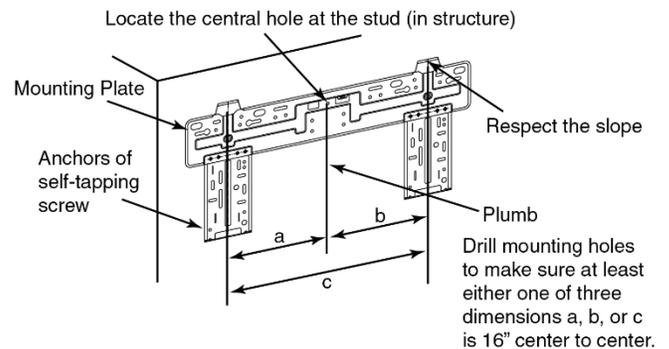
### INSTALL THE WALL MOUNTING PLATE

- Prior to installing the mounting plate, check the unit and make sure the unit is in good condition and ready to install.
- Check to make sure the installation location is strong enough to hold the weight of the whole unit and is in a location that is convenient to install, maintain, service and close to the outdoor unit.
- Install the indoor unit. Use enough anchor bolts to secure the mounting plates to the wall for indoor units. The mounting plate should be level and secure and ready to receive the indoor unit.

#### Install Mounting Plate and Drill Hole for Combination of Copper Line/Wire Cable/Drain Hose

#### NOTES:

Anchors must be put into the holes, where the solid arrows are pointing, as shown, to secure the mounting plate firmly and to hold the weight of the indoor unit. If more screws/anchors are required, make sure, to keep the two holes close to each other, at least 2 inches apart. The mounting plate should be attached to the structural part of the wall. Minimum clearance, as shown, is required to ensure proper airflow and allows enough room for easier service.

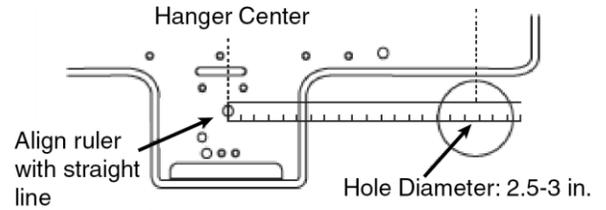


#### Steps to Mount Plate

- Mark all drill positions. At least 8 anchor holes are required, 2 at each of the 4 perimeter corners of the plate. These are needed to secure the plate, where the bold arrows are pointing, as shown in the picture above. Refer to the specification sheet for unit weight so that enough anchors are installed at the proper locations.
- Pre-drill guiding holes which are marked for anchors or screws on the wall.
- Confirm the position of the holes and finish drilling to the depth required for anchors (NOT for screws).
- Align the mounting plate holes with the holes drilled on the wall and put anchors or screws into the holes to secure the mounting plate.

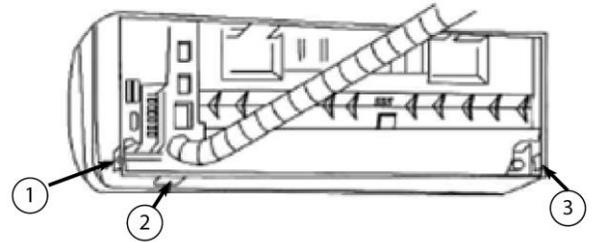
## DRILL 3 INCH HOLE FOR PIPING/WIRING/DRAIN

- Locate the center where the hole will need to be drilled.
- Drill the holes of 2.5 – 3 Inches in diameter. A down pitch of about 1/4 inch per foot, as illustrated, is needed for the hole, to drain the condensate properly.



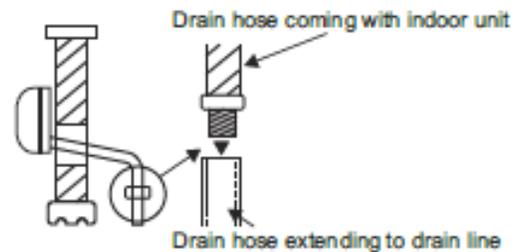
## PREPARE INDOOR UNIT- COPPER LINE SET/DRAIN HOSE

- If pipes need to come out of the right side (facing the front of indoor unit) of the indoor unit, snap off portion (1) on plastic casing.
- If pipes need to come out of the bottom side (facing the front of indoor unit) of the indoor unit, snap off portion (2) on plastic casing.
- If pipes need to come out of the left side (facing the front of indoor unit) of the indoor unit, snap off portion (3) on plastic casing.
- If pipes need to be rerouted to a different direction from the one preset at factory (towards left side, if facing the front cover of indoor unit), lay the indoor unit down on a soft cushion or foam. Don't rub the plastic casing.
- To keep from damaging the pipes, bend the copper tubing set gently and slowly (A 90° bend should take a minimum of 10 seconds), by firmly holding the pipe at the root of the original 90° bend. Don't rub the two copper lines while bending. It is better to cut off the insulation and bend the two pipes individually and not together.
- If the pipes need to come out of the rear side (facing the front of the indoor unit) of the indoor unit, there is no need to snap off anything.



## INSTALL THE INDOOR DRAIN PIPE

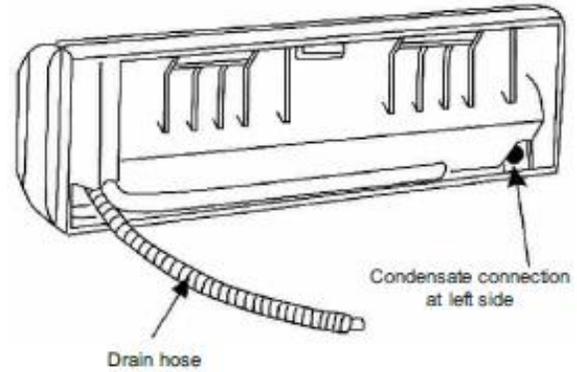
- The drain hose must be placed beneath the copper pipes and **MUST NOT** be kinked or bent sharply.
- Do not pull the drain hose too hard, as it may break.
- Before passing the drain hose through the hole, wrap it with insulation to keep it from possible damage.
- The copper pipe and the drain hose must be wrapped with piping wrap.
- The insulation pad (underlay) should be used where the pipe contacts the wall.



### REFIT DRAIN HOSE FROM THE RIGHT TO THE LEFT SIDE

If the drain hose needs to be refitted from its original position (right side) to left side of the indoor unit, careful handling is necessary as not to damage the unit.

- Refitting method: remove the drain hose from its original position, without breaking the hose. Remove the plug at the left side. Apply water-resistant glue to fit the drain hose and the fitting before securing it.
- Apply water-resistant glue onto the plug and fit it back into the condensate connection at right side.

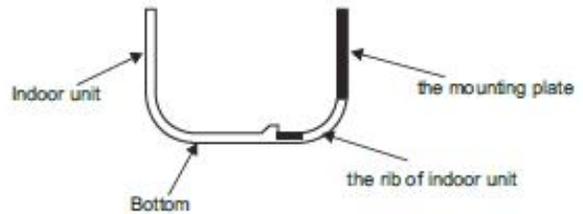


**NOTES:** One can use a clamp to further secure the connections.

### HANG INDOOR UNIT

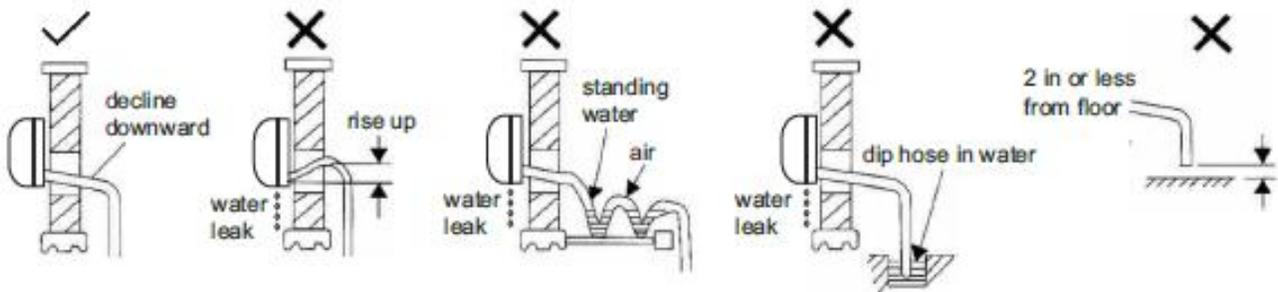
Run copper set/wire cables/drain hose through the wall hole and hang the indoor unit onto the mounting plate (place the hook on the mounting plate into the hanging rib at rear side of plastic casing).

- Snap the plastic casing bottom into the mounting plate, gently.



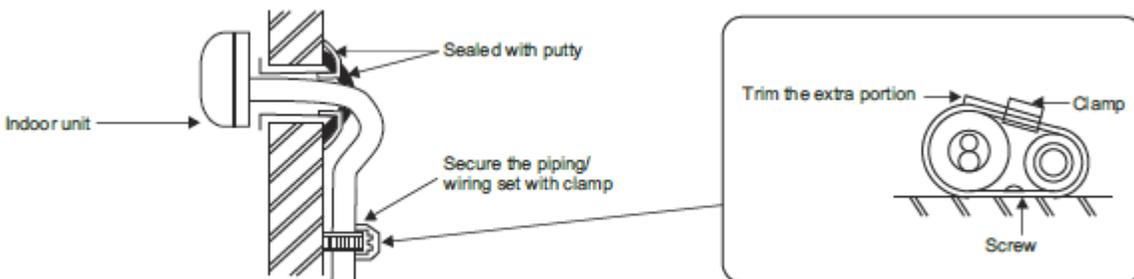
### SHAPE THE DRAIN HOSE

- To drain the condensate easily, the drain hose should be angled downward (pitched towards the drain direction at 1/4" per foot).
- Figures below from the 2nd to 5th show some incorrect practices.
- The drain hose may be extended using the hose supplied with the installation list.



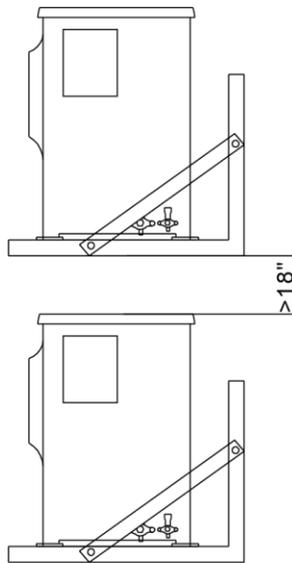
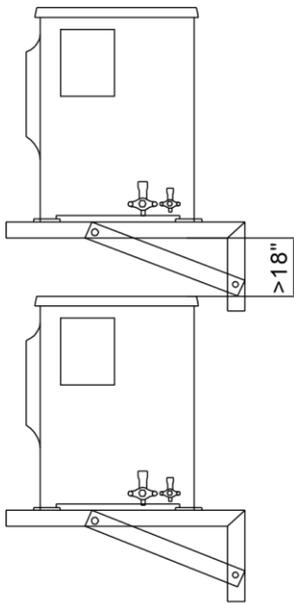
### STUFF AND SEAL THE HOLE FOR COPPER LINE SET/WIRE and CABLE/DRAIN HOSE

- Use putty to seal the wall hole.
- Use a clamp (pipe fastener) to secure the pipe at the specified location.



## INSTALLATION OF OUTDOOR UNIT

It is strongly suggested to install the outdoor unit above the ground, either on a platform or brackets as shown below. Heat pump unit must be lifted up from ground level, allowing any condensate to drain out of the drain pan in condensing unit. Otherwise, condensate may ice up causing damage to the unit. We suggest using YMGI brackets and condensate drainage fitting accessories.



Stainless Steel Brackets with Accessories



Heavy-Duty PVC Riser for Ground Mounting



Coated Brackets with Accessories

\*Actual unit/parts look/installation may vary from illustrations

### INSTALLATION & PICTURES-WALL MOUNT BRACKET FOR OUTDOOR UNIT(S) (PART VARIES UPON MODELS/AVAILABILITY)

- Select a secured location where the outdoor unit can be installed properly.
- Orient the unit rear side (intake grill) towards wall and front side (discharge grill) away from wall.
- For ground installation, use factory-provided riser and accessories. Do not bolt unit feet directly onto ground.
- Riser or brackets should be levelled at outdoor unit foot surfaces. Secure unit foot by tightening bolts, nuts and anti-vibration pads.
- For ground installation, it is recommended to use YMGI optional accessories like risers.

## WIRING OUTDOOR UNIT

### CONNECT WIRING BETWEEN OUTDOOR UNIT AND INDOOR UNIT

- Check the nameplate for rated electrical data. Connect unit to the correct electrical power source.
- Select power wire of proper type and size. YMGI suggests using UL approved 105°C/221°F multi-strand copper wire for outdoor use. Refer to the following tables, for proper selection of wire gauge, size and circuit breaker.

## OUTDOOR WIRING: OUTDOOR-INDOOR UNIT & DISCONNECT SWITCH BOX/CIRCUIT BREAKER/FUSE

- Remove the wiring diagram cover from where the handle for moving unit is located.
- Follow the wiring diagrams on the unit or the wiring diagram manual that comes with the indoor unit to get familiar with the wiring and make sure everything is correct. If there is any discrepancy, always use the diagram that is attached to the units.
- Connect wires between indoor unit and outdoor units. Connect power wire from Outdoor unit to Indoor unit. Connect control wires from Indoor unit to Outdoor unit. Pass wire through certified wire pipes, harnesses and knockouts. Enough length should be left for future servicing. Only copper wire is allowed.
- Strictly follow NEC, state, or local codes to select wires, circuit breaker, conduits while performing installation work.
- Bring in line-voltage power input wires from circuit breaker to line-voltage wire terminal block at outdoor unit. Pass through certified wire pipes, harnesses and knockouts. Enough length shall be left for future service. Only copper wire is allowed.



Disconnect switch box for outdoor unit



Non-Metallic Power Whip for Outdoor Use  
(Field-Supplied, Not Spliced and Not Knotted,  
Water-Proof Sealed Tight, UL Approved)

## PIPING AND WIRING SIZES

Model	Liquid / Gas Line	Min - Max Length	+/- Elevation	Power Wire Min. Disconnect Switch Box to Outdoor Unit	Power/ Control Wire Min. Outdoor Unit to Indoor Unit	Recommended HVAC Circuit Breaker/Fuse AMP (to Outdoor Unit)
09K	1/4" & 3/8"	15 - 49.2	16.4	L1/L2/G, 115V/1/60, 12AWG	1/2/3/G, 115V/1/60Hz, 4xAWG18	20
12K	1/4" & 3/8"	15 - 49.2	16.4	L1/L2/G, 115V /1/60, 10AWG	1/2/3/G, 115V/1/60Hz, 4xAWG18	30
18K	1/4" & 1/2"	15 - 49.2	16.4	L1/L2/G, 208-230/1/60, 12AWG	1/2/3/G, 208-230V/1/60Hz, 4xAWG18	20
24K	3/8" & 5/8"	15 - 49.2	16.4	L1/L2/G, 208-230/1/60, 10AWG	1/2/3/G, 208-230V/1/60Hz, 4xAWG18	30
30K	3/8" & 5/8"	15 - 49.2	16.4	L1/L2/G, 208-230/1/60, 10AWG	1/2/3/G, 208-230V/1/60Hz, 4xAWG18	30
36K	3/8" & 5/8"	15 - 49.2	16.4	L1/L2/G, 208-230/1/60, 10AWG	1/2/3/G, 208-230V/1/60Hz, 4xAWG18	30

## CONNECT REFRIGERANT PIPES BETWEEN THE INDOOR AND OUTDOOR UNITS

First, connect the copper tubes at indoor unit. Bend the pipes accordingly using pipe bending tools. Do NOT hand bend the pipes, as this could kink the pipe. Extra length is required for future service.

## REFRIGERANT PIPES

For a distance other than 25' between indoor and horizontal venting condensing units, refer to the following table for copper sizes.

### Refrigerant Valve and Pipe Size/Length

Btu/h	Valve Size	Line Sizes at Different Lengths		Add Ref. Ozs/ft beyond 25'
	Liquid Gas	15 – 30 ft.	31 – 75 ft.	
09K	1/4", 3/8"	1/4", 3/8"	1/4", 1/2"	0.23
12K	1/4", 3/8"	1/4", 3/8"	1/4", 1/2"	0.23
18K	1/4", 1/2"	1/4", 1/2"	1/4", 5/8"	0.23
24K	3/8", 5/8"	3/8", 5/8"	3/8", 3/4"	0.23
30K	3/8", 5/8"	3/8", 5/8"	3/8", 3/4"	0.23
36K	3/8", 5/8"	3/8", 5/8"	3/8", 3/4"	0.23

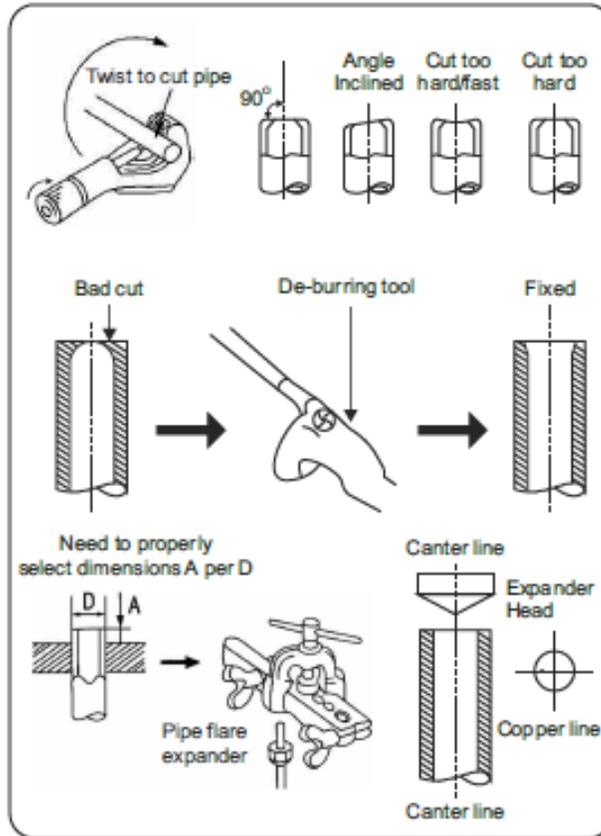
**Note:** Charge refrigerant (in cooling mode) gradually, starting from 30% calculated amount. Wait for 5 minutes before system pressure is stabilized and add more, to reach the suction pressure in the table above.

### Running Interconnecting Refrigerant Lines:

Use clean refrigeration grade copper pipe only. Keep the copper lines from kinking and transmitting any noise to walls, cabinets, etc. Pipe length not to exceed 50 feet, elevation not to exceed 35 feet. Insulate both the liquid and gas copper lines with at least 3/8-inch-thick insulation tubes. Band, tape and secure the refrigerant lines. Support copper lines at a proper distance apart to keep the tubes from sagging.

### CUT REFRIGERANT PIPE

Make sure where the pipe is to be cut is straight and smooth. Engage the cutting blade. The cutting blade must be straight and perpendicular to the pipe surface. Don't cut too fast or apply too much pressure. Turn and tighten the tube cutter slowly. Remove residual and de-bur the cut edge. The cut edge should be smooth and clean.

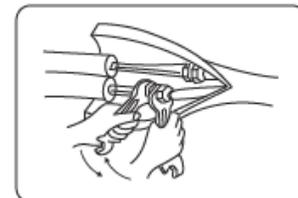


### Connect Copper Pipes-Flare/Nut Connection at Indoor and Outdoor Units

Proper torque should be applied to create a good connection at the female nut, flare and male nut, as recommended in the following table. Too much torque may damage and break the flare/nut seal. Too little torque may not ensure a good seal. ALWAYS use a pair of wrenches when tightening.

### Refrigerant Pipe Flare/Nut Connection Tightening Torque

Flare Nut	Tightening Torque
1/4" – 3/8"	25 ft. lbs. (350 kg-cm)
1/4" – 1/2"	40 ft. lbs. (560 kg-cm)
1/2" – 3/4"	60 ft. lbs. (840 kg-cm)
7/8" – 1 1/8"	110 ft. lbs. (1540 kg-cm)

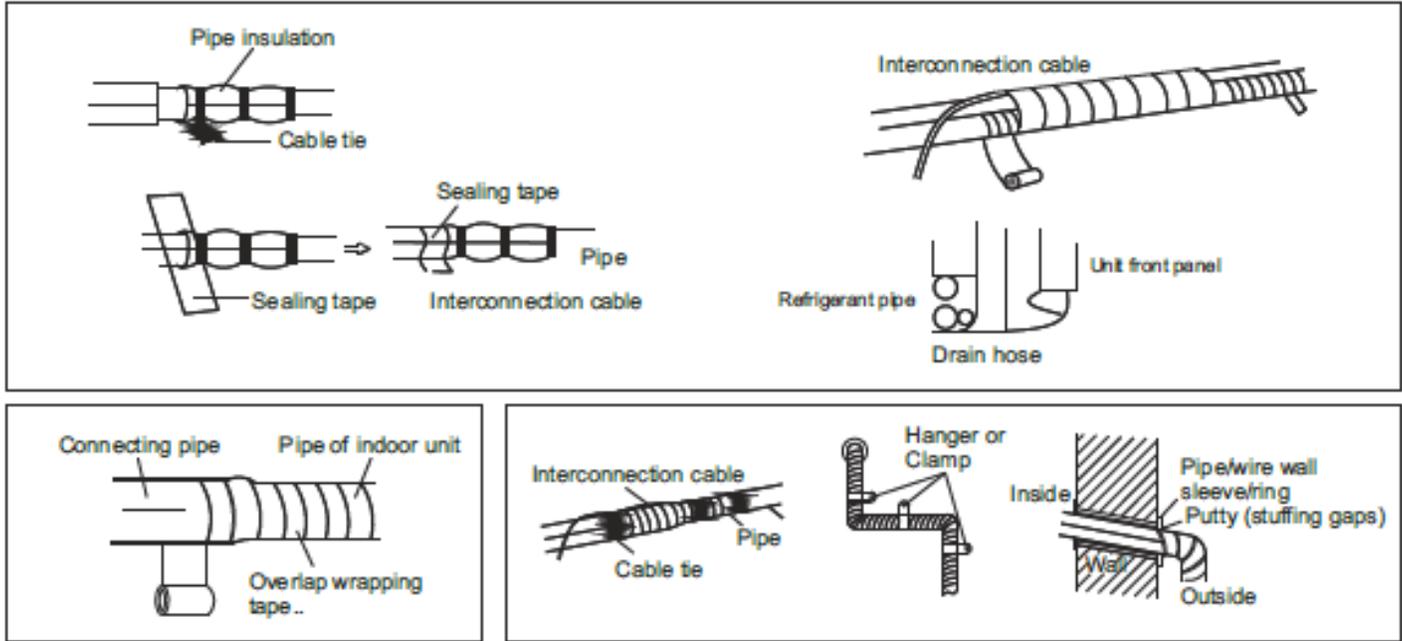


### Connect Copper Pipes-Sweat Connection

In this case, wrap a wet rag around the pipe to protect the valves or other components from being overheated. When using flux, rub the tube surface using steel wool to remove any oxidation. Then clean and dry to protect the system from any possible contamination.

### CONNECT REFRIGERANT PIPES BETWEEN THE INDOOR AND OUTDOOR UNITS

#### Seal Copper Line Set/Wire and Cable/Drain Hose Line Combination



- Run cables along with the refrigeration copper line sets and secure them with tape, 6 feet apart.
- Wrap tape tight (cover a third of the width of the wrapping tape applied early) to ensure a good seal.
- Tape and seal the end of the wrapping tape.
- Shape the pipe combination gently, without causing kinking, sharp bends, or other damage to it.
- Fix the pipe combination securely on the external wall with proper clamps, 6 feet apart.
- Fill the gap between the wall hole and wall sleeve with putty to keep rain or dust from entering inside.

### PIPING GUIDE

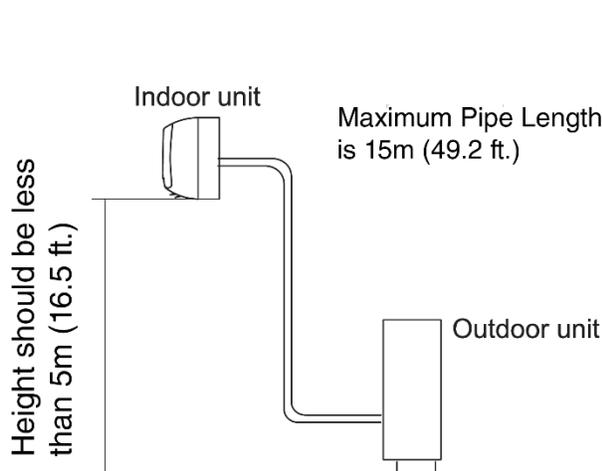
Set the packed pipes in a vertical position and then unwind them slowly.			Do not unwind only one end of the coiled pipes.
Use pulley or a bending tool to ensure a safe bending radius.			Do not make any sharp or small radius bends.
May also use rolling wheel to reduce internal pipe tension and avoid possible deformation.			Do not bend long sections of pipe without using bending tools.
Use an elbow tool for consistent bending radius.			Do not make bends that are less than 90 degrees.
Maintain the minimum bending radius.			Do not bend shot pipes.

### PIPING AND WIRING SIZES-UNITS

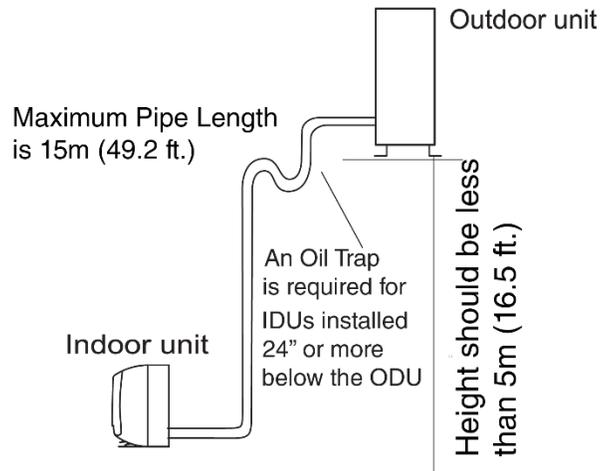
Model	Liquid / Gas Line	Min - Max Length	+/- Elevation	Power Wire Min. Disconnect Switch Box to Outdoor Unit	Power/ Control Wire Min. Outdoor Unit to Indoor Unit	Recommended HVAC Circuit Breaker/Fuse AMP (to Outdoor Unit)
09K	1/4" & 3/8"	15 - 49.2	16.4	L1/L2/G, 115V/1/60, 12AWG	1/2/3/G, 115V/1/60Hz, 4xAWG18	20
12K	1/4" & 3/8"	15 - 49.2	16.4	L1/L2/G, 115V /1/60, 10AWG	1/2/3/G, 115V/1/60Hz, 4xAWG18	30
18K	1/4" & 1/2"	15 - 49.2	16.4	L1/L2/G, 208-230/1/60, 12AWG	1/2/3/G, 208-230V/1/60Hz, 4xAWG18	20
24K	3/8" & 5/8"	15 - 49.2	16.4	L1/L2/G, 208-230/1/60, 10AWG	1/2/3/G, 208-230V/1/60Hz, 4xAWG18	30
30K	3/8" & 5/8"	15 - 49.2	16.4	L1/L2/G, 208-230/1/60, 10AWG	1/2/3/G, 208-230V/1/60Hz, 4xAWG18	30
36K	3/8" & 5/8"	15 - 49.2	16.4	L1/L2/G, 208-230/1/60, 10AWG	1/2/3/G, 208-230V/1/60Hz, 4xAWG18	30

- The indoor unit and the outdoor unit can be at different heights either above or below each other. The height for the difference must follow the stated requirements shown in the table below.
- Keep bending of the piping line to a minimum to avoid any possible negative impacts on the performance of the units.
- Make a P-trap if the elevation drop difference is more than 24 inches, as illustrated below.

#### Indoor Unit is higher than Outdoor Unit



#### Outdoor Unit is higher than Indoor Unit



# INSTALLATION OF ACCESSORIES

Layout line set covers before installing copper/wires.

Seal Copper Line Set/Wire Cable/Drain Hose Line Combination:

- Use factory-recommended components, as briefly illustrated below.
- Cover line set in a sequence, either from indoor to outdoor, or the other way.
- Secure line set covers onto the wall using factory-recommended accessories.

## LINE SET COVERS

### ⚠ CAUTION

Do not damage line sets.



## OUTDOOR UNIT FOOT RISER OR BRACKETS

### BRKT-XXXX-SC1

- Made of steel.
- Coated with weatherproof polyester powder.

Model	Size(Inch)		Capacity	
	A	B	LBs	Btu/h
BRKT-0918-SC1	17.7	15.4	320	09K-18K
BRKT-1860-SC	21.7	18.3	360	18K-60K



### BRKT-XXXX-ST1

- Made of stainless steel.

Model	Size(Inch)		Capacity	
	A	B	LBs	Btu/h
BRKT-0918-ST1	17.7	15.4	320	09K-18K
BRKT-1860-ST1	21.7	18.3	360	18K-60K



### RIST-XXXX-PVC

- **Foot Riser**
- **Accessories: End Caps (Optional)**
- Shock-proof PVC, Weatherproof & UV resistant.
- Supplied with fastening screws and anchor bolts.
- Easy to install.
- Honeycomb structure acts as an anti-vibration & humming absorption for quiet operation.

Model	Size(Inch)				Capacity	
	A	B	C	D	LBs	Btu/h
RIST-0918-PVC	14.2	3.7	3.1	4.1	220	09K-18K
RIST-1860-PVC	17.7	3.7	3.1	4.1	260	18K-60K



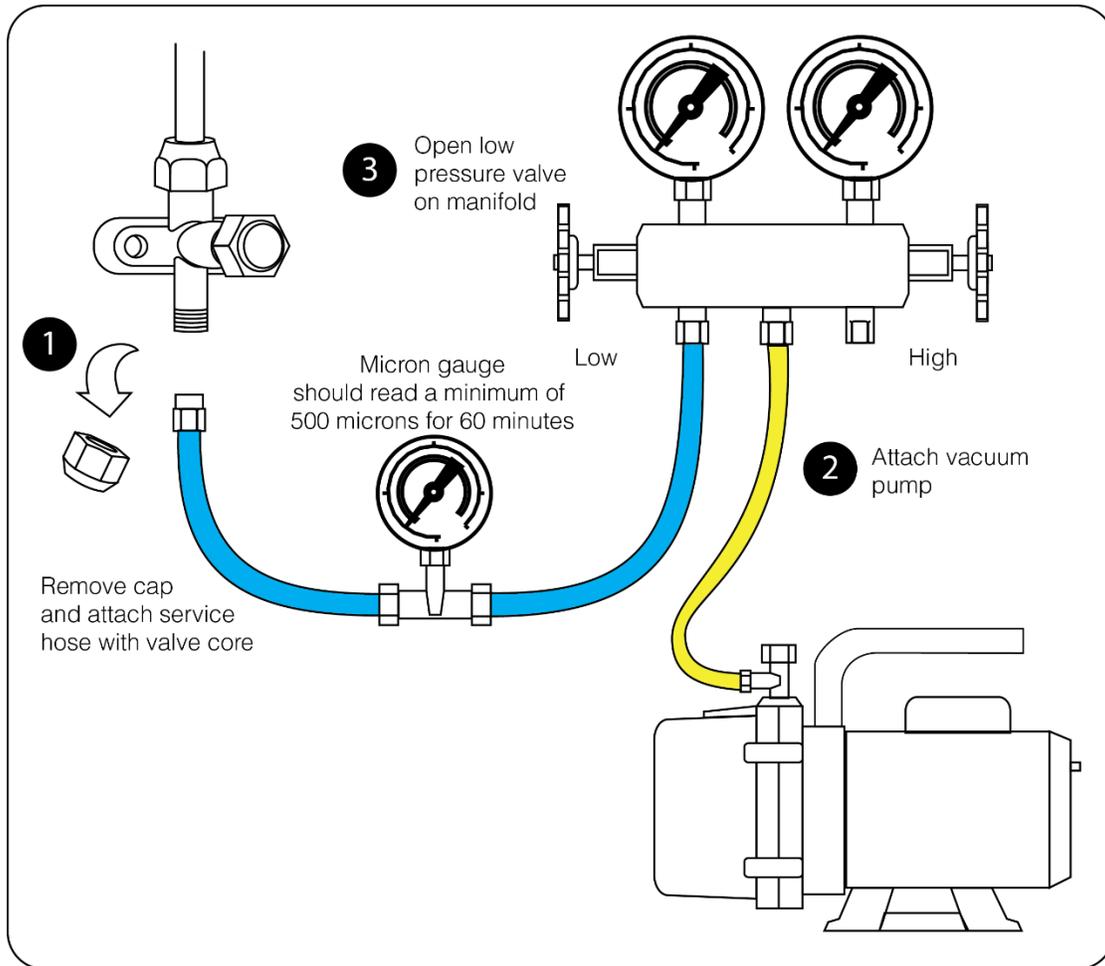
# VACUUM TESTING AND CHARGING

## CHECK LEAKAGE BEFORE CHARGING IDU

### VACUUM REFRIGERANT PIPES

Evacuate the pipes between indoor and outdoor units, using vacuum pump and manifold/gauge set, to a minimum of 500 microns (service valves remain front seated). Turn off manifold valve (low) to check if the vacuum level is maintained for a minimum of 60 minutes. Be certain there is no pressure in the system when repairing a leak.

### Vacuum and Check Leakage before Releasing Refrigerant from Outdoor Unit to Indoor Unit



For Multi-Zone systems repeat this process for each zone with indoor units attached to it.

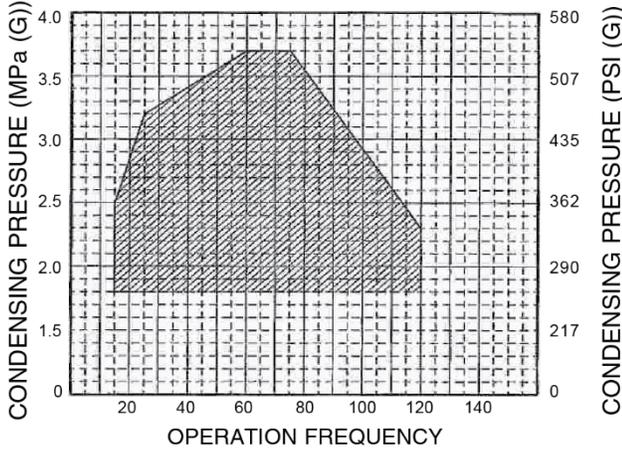
If all zones are not being used, check the flared nuts on the unused valves, and ensure that they are tightened to avoid any potential system leaks.



# SYSTEM INSPECTION AND TRIAL RUNNING

## CHECK SYSTEM THOROUGHLY

Check system thoroughly to make sure the unit is ready for trial running: check wires, pipes, air intake, discharge, power, thermostat, and others necessary components.



## ADJUST REFRIGERANT GUIDELINE

Right amount of refrigerant is very important. It is one of the basics to ensure a safe operation over time.

Normally single zone outdoor unit is pre-charged with refrigerant for 25ft inter-connecting copper (liquid) line.

Multiple zone outdoor unit is pre-charged for various lengths of copper (liquid) line for allowed quantity of indoor units, following specs or engineering submittal.

For single zone unit or multiple zone multiple compressor unit, normally the outdoor unit is pre-charged for 25ft line sets. If the copper line is longer or shorter than 25ft, you will need to add or deduct refrigerant, following general rule of thumb for rough adjustment:

- 1/4" liquid line unit: 0.23 Oz/ft.
- 3/8" liquid line unit: 0.4 OZ/ft.
- 1/2" liquid line unit: 1.2 OZ/ft.

For multiple zone one compressor unit, if the copper line is longer or shorter than the length at which pre-charged refrigerant is good for, as listed in the engineering submittal or related labels or tables, need to add or deduct refrigerant, following 0.23 OZ/ft. rule of thumb for rough adjustment.

In all situations, the minimum copper line (liquid or gas) length for each indoor unit is 15ft.

For a better adjustment, combine above guideline with the indoor or outdoor (ambient) temperature-refrigerant pressure chart, or generally 8-12F super-heat method.

## PRESSURE CHECKING

System pressure checking should be a must-do job during trial running of initial installation, and compressor/refrigerant-related troubleshooting. It is a more accurate refrigerant adjusting method than rough refrigerant addition or deduction guideline shown above.

In some cases, if the service valve on unit is 5/16" and your service valve connection is 1/4", need to use a 5/16"-1/4" adaptor so that you can connect to your manifold. Need to pay attention to use the right manifold that is rated for the refrigerant in the unit, and pay attention to connect to the right hose (blue hose for low pressure, red hose for high pressure, yellow hose for vacuum or charging or deduction). Not recommended to put hose onto service valve while compressor is running. Remove hose quickly and carefully to avoid air suck-in, refrigerant leakage, or any refrigerant-freezing burn.

The following curves are only reference for system pressure checking. Actual pressures may vary upon many factors such as inter-connecting pipe length, refrigerant charge / leakage level, elevation difference between indoor unit and outdoor unit, tool calibration, reading error, and so on.

# SYSTEM INSPECTION AND TRIAL RUNNING

## Reference Temperature-Pressure Table (Split Condensing Unit-R410A AC)

Product Series: YMGI Group-Mini Split Version: 01/11/2010

Outdoor Dry-Bulb (F)	15	25	35	50	55	60	67	75	82	90	95	100	105	110	115
Outdoor Dry-Bulb (C)	-9.4	-3.9	1.7	10.0	12.8	15.6	19.4	23.9	27.8	32.2	35.0	37.	40.6	43.3	46.1
Outdoor Wet-Bulb (F)	13.6	23.0	30.2	42.8	46.9	51.1	59.5	66.6	64.9	71.2	75.0	79.0	82.9	86.9	90.7
Outdoor Wet-Bulb (C)	-10.2	-5	-1.0	6.0	8.3	10.6	15.3	19.2	18.3	21.8	23.9	26.1	28.3	30.5	32.6
Indoor Dry-Bulb	80°F (26.7°C)														
Indoor Wet-Bulb	67°F (19.4°C)														
Discharge-PSI/F	74/21.2	84/27.1	105/35.1	115/38.5	125/42.8	130/45.5	140/48.2	146/51.2	156/54.3	166/57.5	175/61.2	180/62.5	186/63.7	189/64.5	191/64.9
Suction-PSI/F	60/46.2	70/53.5	85/55.2	92/55.7	98/56.1	103/56.7	110/56.9	115/57.1	120/57.5	128/57.8	135/57.9	136/58.6	137/59.1	139/59.3	140/59.5
	<b>Suggest to Add on Low Ambient Control. If Still in Need of AC for Long Time in Cold Weather. Closely Check/Watch Refrigerant Charge Level</b>							<b>Warning: R410A refrigerant bears higher pressures than R22. Refrigerant should only handled by a Licensed HVAC technician.</b>							





**Reference Temperature-Pressure Table (Split Condensing Unit, R410A-Heat Pump)**  
**Product Series: YMGI Group-Mini Split System Version: 01/11/2010**

Outdoor Dry-Bulb (F)	0	5	10	17	25	30	35	40	45	47	55	62
Outdoor Dry-Bulb (C)	-17.8	-15	-12.2	-8.3	-3.9	-1.1	1.7	4.4	7.2	8.3	12.8	16.7
Outdoor Wet-Bulb (F)	-0.8	4.1	8.8	15	22.8	27.5	28.9	36.3	41.0	43.0	50.4	56.5
Outdoor Wet-Bulb (C)	-18.2	-15.5	-12.9	-9.4	-5.1	-2.5	-1.7	2.4	5	6.1	10.2	13.6
Indoor Dry-Bulb	70°F (21.1°C)											
Indoor Wet-Bulb	60°F (15.6°C)											
Discharge-PSI/F	260/84	269/90	284.5/95	290/102	296/111	304/128	304/133	330/138	345/142	354/149	400/149	440/176
Suction-PSI/F	246/72	255/78	270/86	278/89	285/92	290/95	310/98	318/100	330/102	340/104	380/107	425/113

**CHECK AFTER INSTALLATION AND TEST OPERATION**

Items to be checked	Possible Problems or Consequences
Has the unit been positioned firmly?	The unit may drop, shake or emit noise.
Have you done the refrigerant leakage test?	It may cause insufficient cooling (heating), or compressor overheating, or other unit malfunctions.
Is heat insulation sufficient?	It may cause unexpected condensate and dripping.
Is drainage pipe tested?	It may cause leakage or unexpected dripping.
Is the voltage in accordance with the rated voltage marked on the nameplate?	It may cause unit malfunction or damage to the part/unit.
Are the electrical wires and pipes connection installed correctly and securely?	It may cause unit malfunction or damage to the part/unit.
Has the unit been connected to a secure ground connection?	It may cause electric leakage.
Is the power cord specified properly per NEC codes?	It may cause wire to overheat or even catch fire.
Has the air inlet and outlet been cleared?	It may cause insufficient cooling/heating capacity, and unexpected noise.
Has the refrigerant pressure been checked or refrigerant been adjusted accordingly?	It may generate unexpected noise, freezing pipe, capacity issues, compressor or system damage or even worse.
Has the installing technician filled all the fields in the checklist inside the warranty registration card?	If not filed or not filled completely or correctly, your factory warranty may not be qualified.



## TEST OPERATION

### Before test operation

1. Do not turn on power before installation is finished completely.
2. Electric wires must be connected correctly and securely.
3. Cut-off valves of the connection pipes should be back seated/turned on.
4. All the left over installation material scraps must be cleared away from the unit before initial start-up.

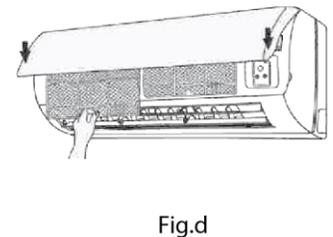
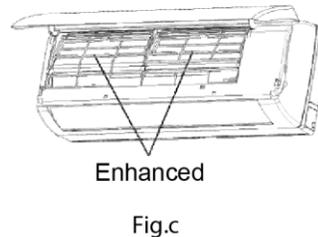
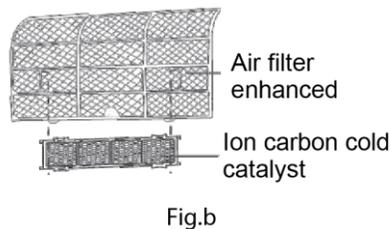
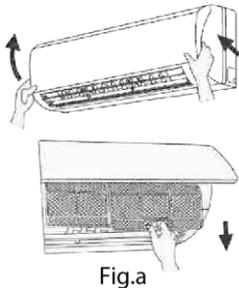
### Test operation method

1. Switch on power, press "ON/OFF" button on the wireless remote control to start the operation.
2. Press MODE button, to select the COOL, HEAT (not available for cooling only unit's ), FAN and so on to check :
  - All the functions (to make sure the unit functions correctly and properly).
  - Refrigerant (pressures/temperatures at service values/pipes should be good).
  - Drainage (condensate/water flow should be dripping out of drainage pipe ONLY).
  - Noise (there should be not any abnormal sound).

## INSTALLATION AND MAINTENANCE OF ENHANCED FILTER

### INSTALLATION INSTRUCTIONS

1. Forcibly lift up the panel at a specific angle from the two ends of the front panel following the arrow direction. Then pull the air filter downwards to remove it. (Figure a)
2. Mount the healthy filter onto the air filter, (Figure b). If the air filter cannot be installed, please mount the healthy filter on the front case. (Figure c)
3. Mount the air filter properly along the arrow direction in Figure d, and then close the panel cover.



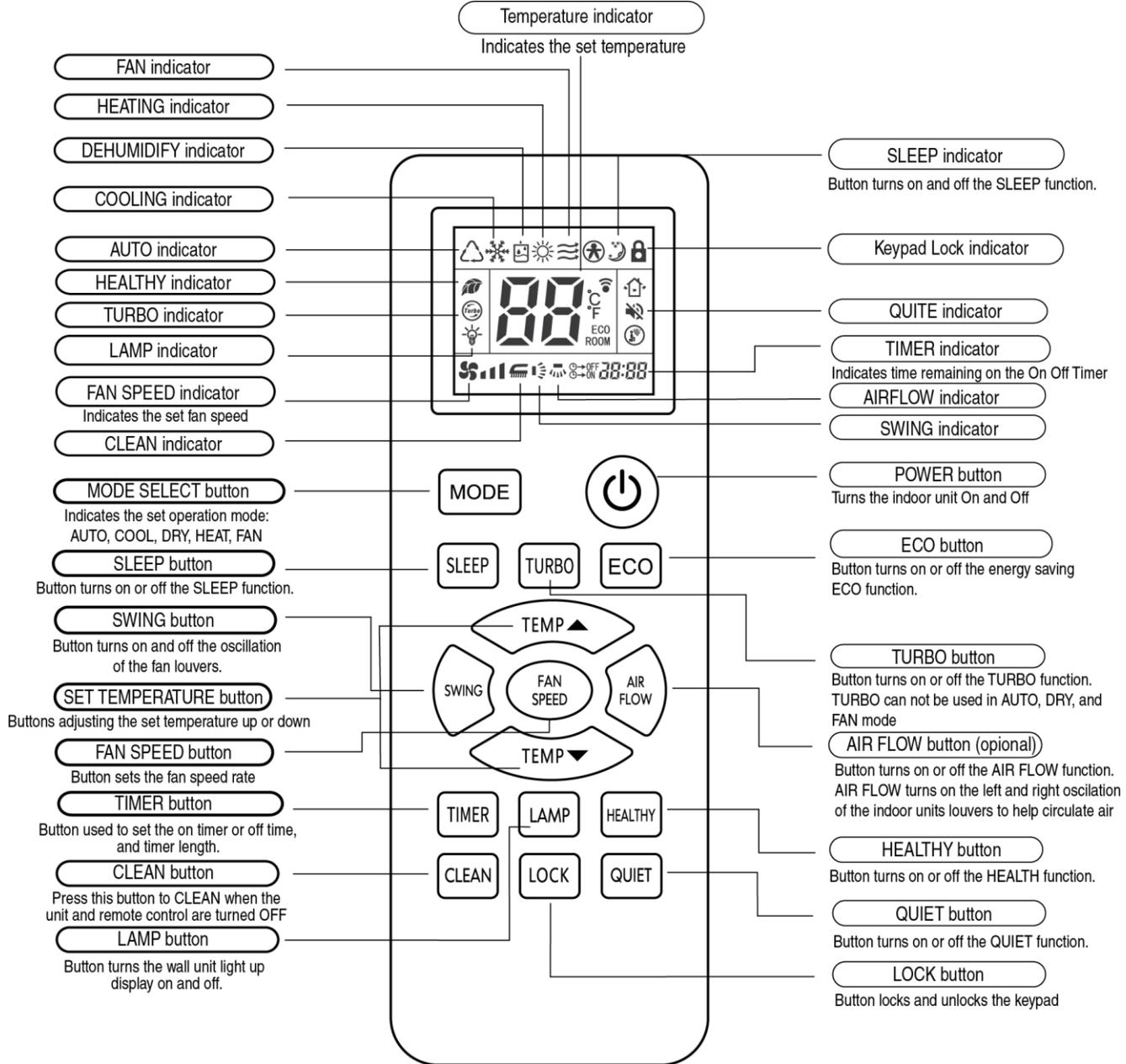
### CLEANING AND MAINTENANCE (Regular Filter and/or Other Enhanced Filters)

Always remove the filters, and enhanced filters before cleaning them. Do not use water to clean a silver ion filter. The active carbon, photo catalyst, low temperature conversion (LTC) catalyst, formaldehyde eliminator, ca-techin or mite killing filters can be cleaned with water, but do not use hard/sharp tools to clean those filter types. Dry and reinstall it after cleaning. Make sure to replace securely and properly.

### FILTER LIFETIME

The washable filter will last a long time. But some (enhanced) filters may only have a lifetime of about one year under normal conditions. As far as the silver ion filter, it will become invalid when its surface becomes black (green).

## Buttons on Remote Controller



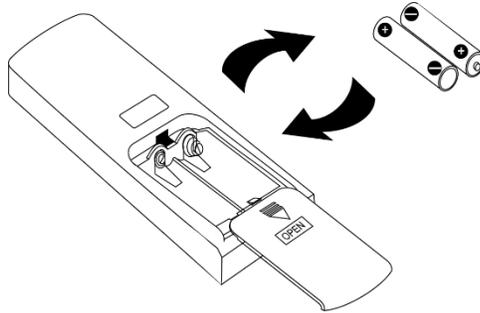
- °C to °F - To change temperature settings from Celsius to Fahrenheit, press the **TURBO** button and the **TEMP▲** button simultaneously.
- 10°C Setting - press the **TURBO** button and the **TEMP▼** button simultaneously to start or stop the 10°C Function.

### Note:

- Above figure shows all indicators for the purpose of illustration, but when in use, only the activated function icons are indicated. When air-conditioner is in cooling only mode, the HEAT icon indicates the fan status.
- When TURBO operation is selected, room temperature cannot be changed. If you would like to adjust the room temperature, turn off the TURBO function.

## CHANGING BATTERIES AND NOTICES

- 1) Press gently along the arrowhead direction to push the back cover open on the remote control.
- 2) Take out the old batteries. (As shown in figure)
- 3) Insert two new AAA1.5V dry batteries, and pay attention to the polarity. (As shown in figure)
- 4) Attach the back cover of wireless remote control. (As shown in figure)



### NOTICE:

- During operation, point the remote control signal sender at the receiving window on indoor unit.
- The distance between signal sender and receiving window should be no more than 25 ft., and there should be no obstacles between them.
- Signal may be interfered easily in the room where there is fluorescent lamp or wireless telephone; remote controller should be close to indoor unit during operation.
- Replace new batteries of the same model when replacement is required.
- When you will not be using the remote for prolonged periods, please take out the batteries.
- If the display on remote controller is fuzzy or there's no display, please replace batteries.

### NOTE:

When changing the batteries, do not use the old or different batteries, otherwise, it can cause the remote control to malfunction. The operation should be in its receiving range. It should be placed 36 inches away from a TV set or stereo. If the wireless remote control cannot operate normally, please take the batteries out, wait 30 seconds and reinsert them. If the remote still doesn't operate normally, please change the batteries. If the wireless remote control will not be used for an extended period, it is recommended to remove the batteries. Leaving the batteries in could cause them to leak. This will cause damage to the remote control.

## CLEANING AND CARE

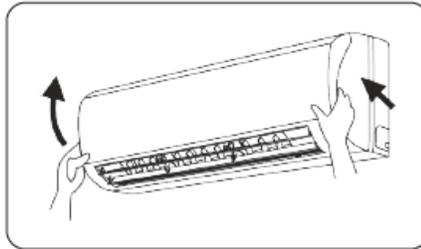
### ⚠ CAUTION

- Turn the unit power off and unplug the power cord before cleaning the air conditioner. Failure to do so can result in electric shock.
- Never sprinkle water on the indoor unit for cleaning because it can cause an electric shock.
- Volatile liquids (e.g. thinner or gasoline) will damage the air conditioner. (So, wipe the units with a dry soft cloth, or a cloth slightly moistened with water or a mild nonabrasive cleanser.)

### CLEAN THE FRONT PANEL (MAKE SURE TO TAKE IT OFF BEFORE CLEANING)

#### Take off the front panel

Along the direction of arrows, lift the front panel up, meanwhile hold both slots of the front panel and remove.



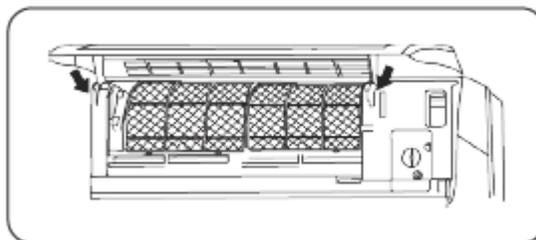
#### Washing

Clean with a soft brush, water and neutral detergent and then dry it. (Note: Before cleaning the unit, please remove the display box first, then wash the panel. (If the unit has displayed on the front panel.) Never use water that has a temperature above 113°F to wash the panel or it could cause deformation or discoloration.)



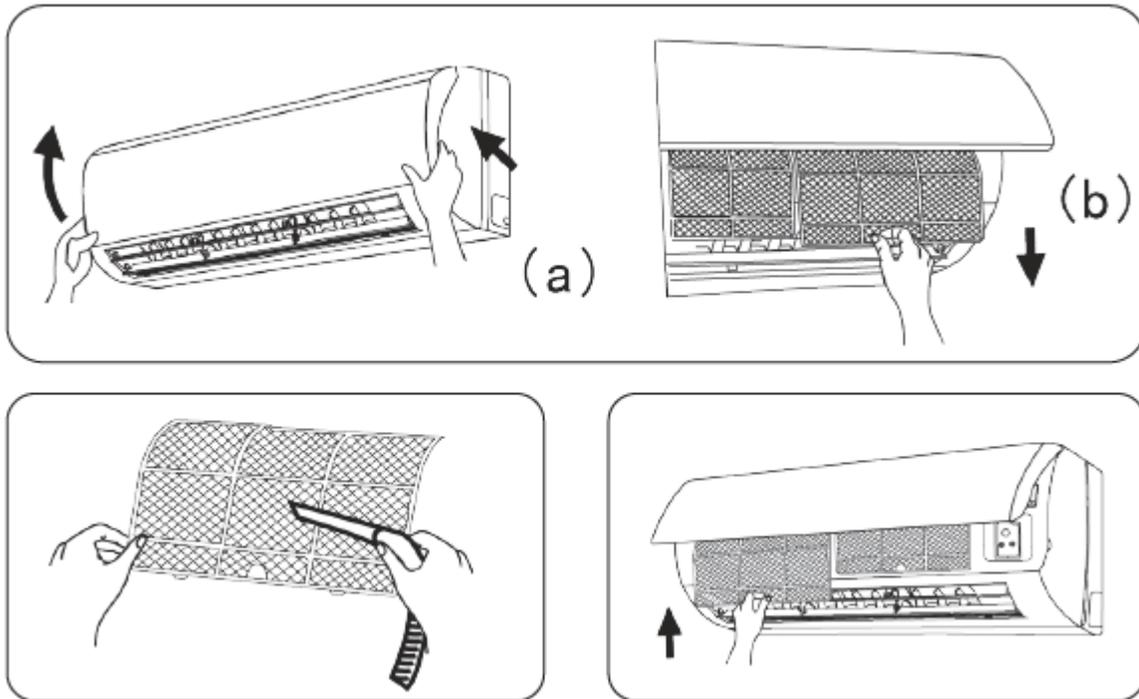
#### Install front panel

Place two supports of the front panel into the slots, along the direction of arrows to cover and clasp the front panel. As show in figure.



## CLEANING THE AIR FILTERS (RECOMMENDED ONCE EVERY THREE MONTHS)

**Note:** If the unit is in a dusty area, the air filters should be cleaned more often. After taking off the filter, be sure not to touch the fin on the indoor unit as this can cause injury.



### To Remove the Air Filter

By holding onto the bottom slot of the air filter slightly push the filter in an upward motion at a slight angle and then pull downward carefully.

### Cleaning

To clean the dust adhering to the filters, you can either use a vacuum cleaner, or wash them with warm water and a neutral detergent, the water should be below 113°F. When the filters have been cleaned, air dry completely out of direct sunlight.

**NOTE:** Never use water hotter than 113°F to wash the unit or the filters as this can discolor and/or deform the unit. Never dry the filters by a fire or open flame as this can be dangerous. Always air dry the filters.

### Reinsert the filters

Reinsert the filters aligning with the arrow head, then cover the surface panel and clasp it.

### CHECK BEFORE COOLING/HEATING SEASON COMES:

1. If the unit is still connected to the correct electric power V/Ph/Hz.
2. If the unit is still securely fastened.
3. If the batteries of remote controller are good.
4. If the filter is loaded and clean
5. If the intake and discharge vents are clear from any obstructions.

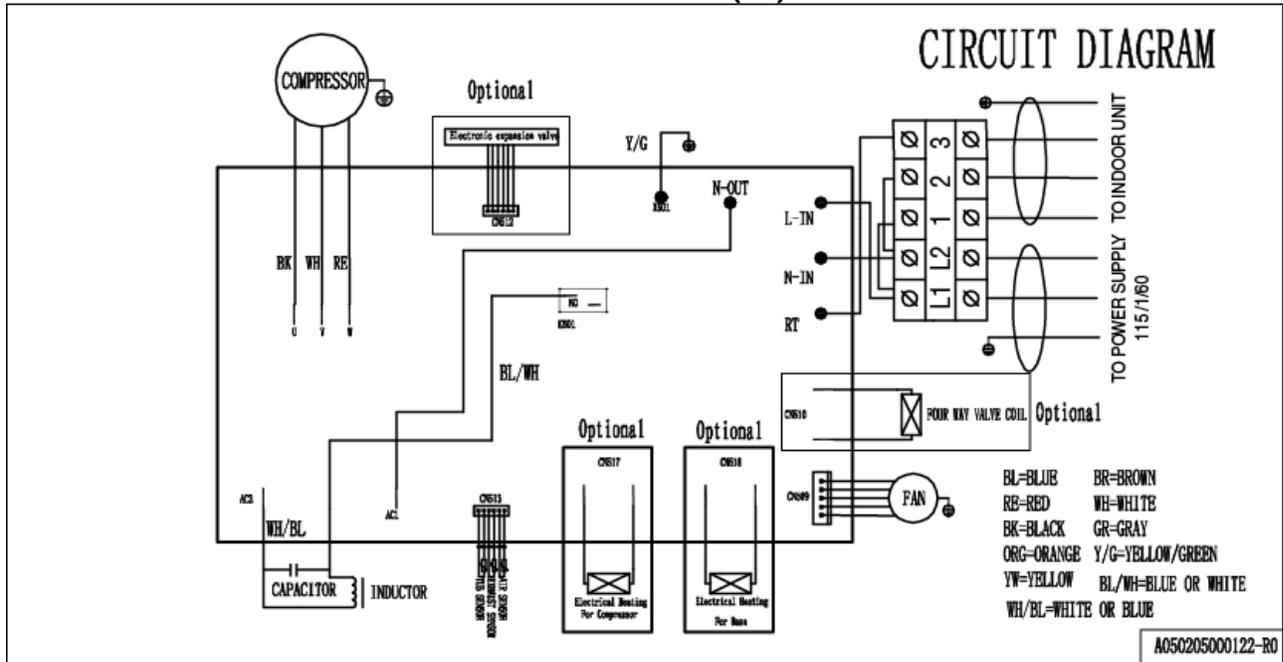


### IF THE SYSTEM IS GOING TO BE UNUSED FOR A PROLONGED PERIOD

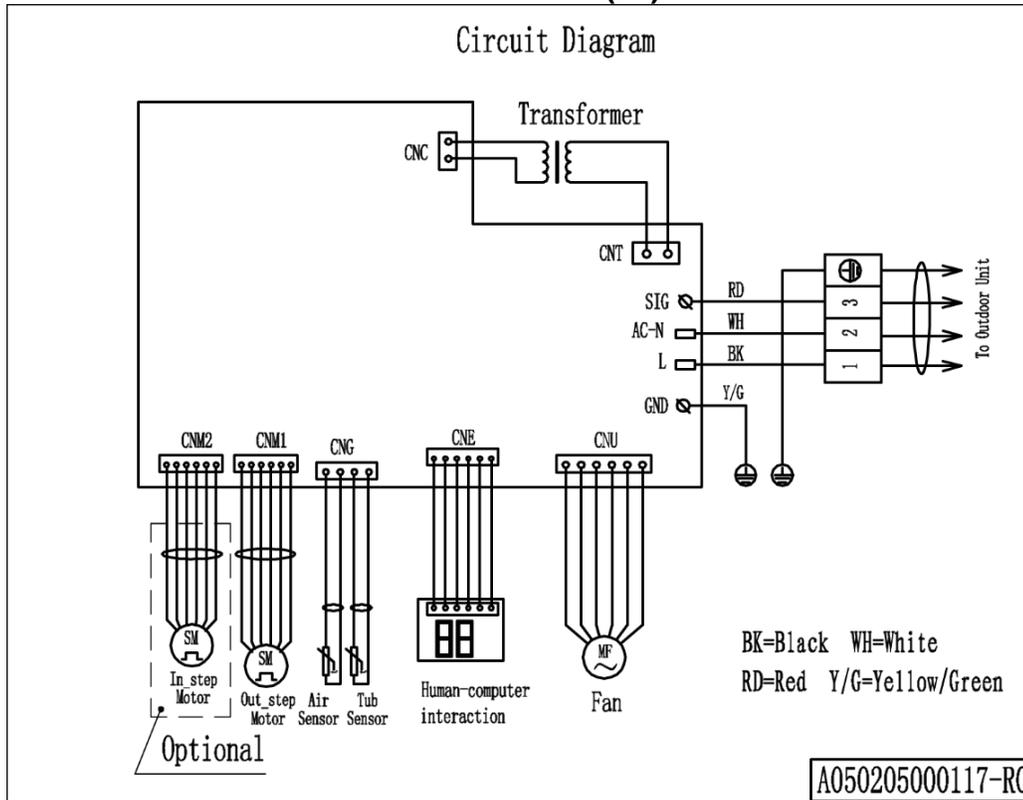
1. Turn main power off by disconnecting electrical power disconnect switch.
2. Clean filter and unit.
3. Cover the unit to keep dust or moisture out of the unit.

# WIRING DIAGRAMS

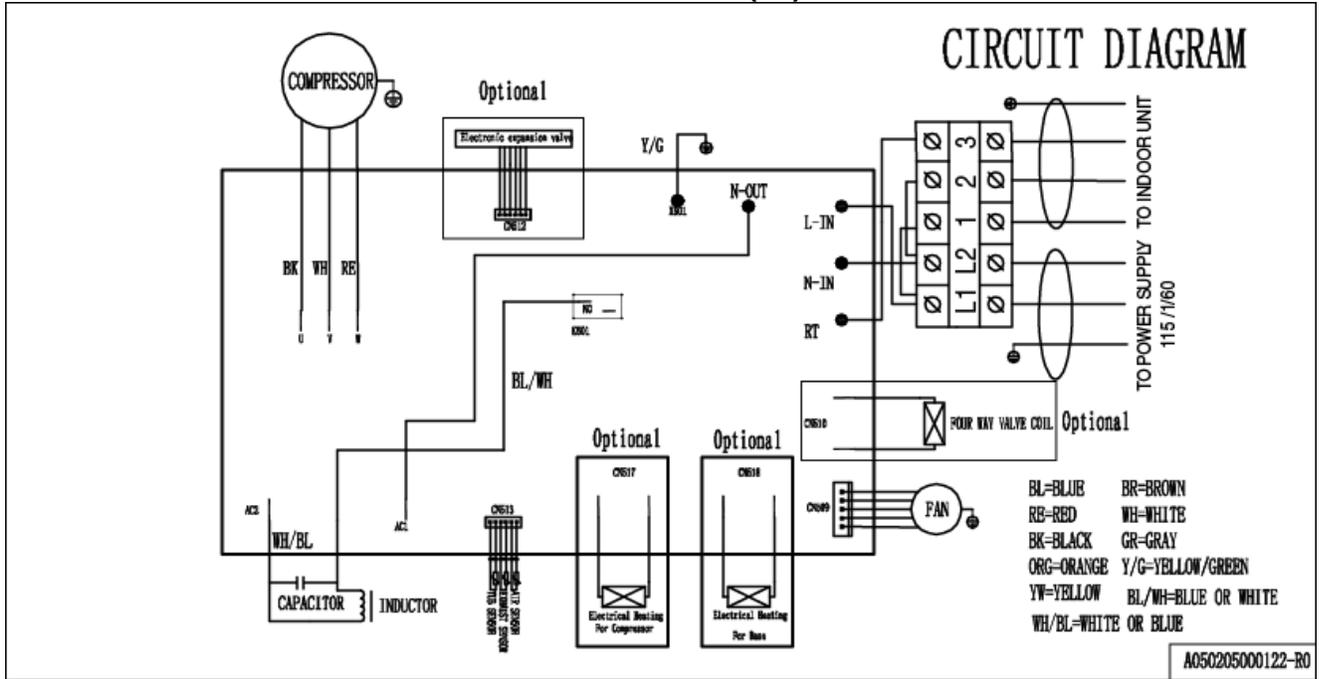
**WMMS-09C-V2A(57)2**



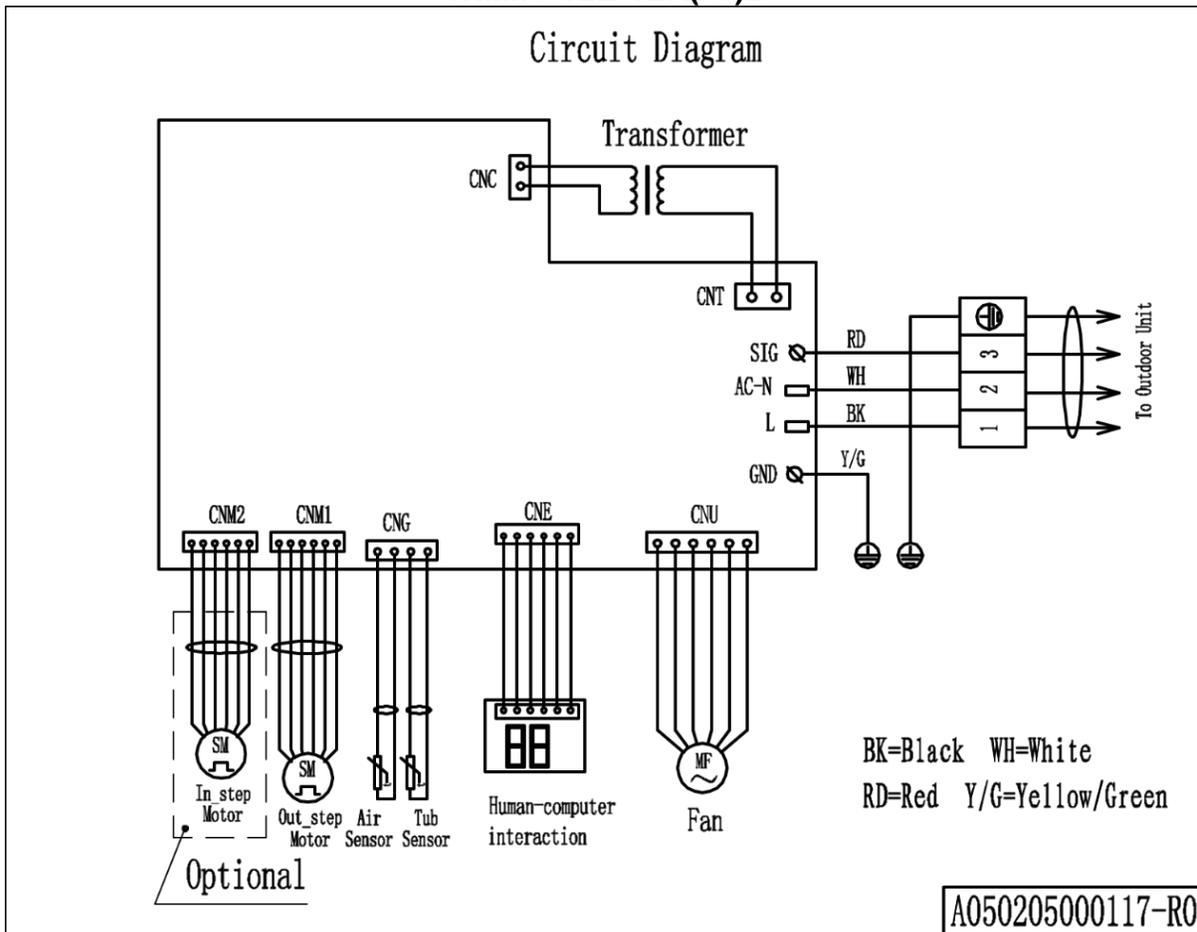
**WMMS-09E-V2A(57)2**



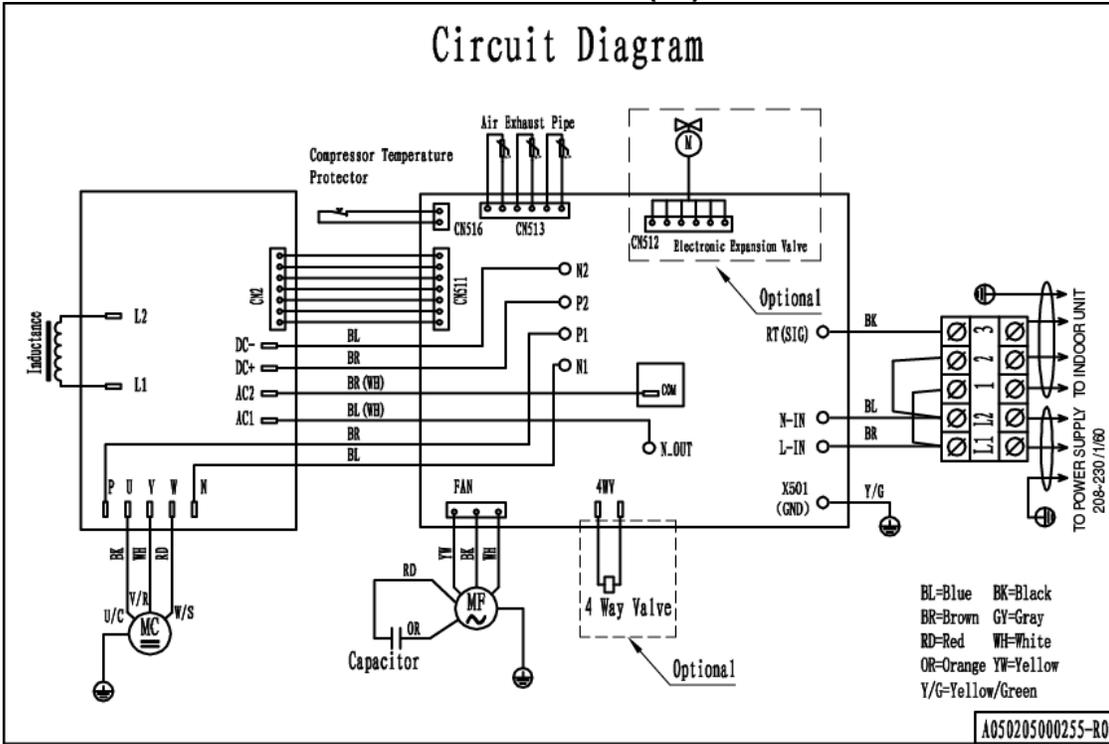
### WMMS-12C-V2A(57)2



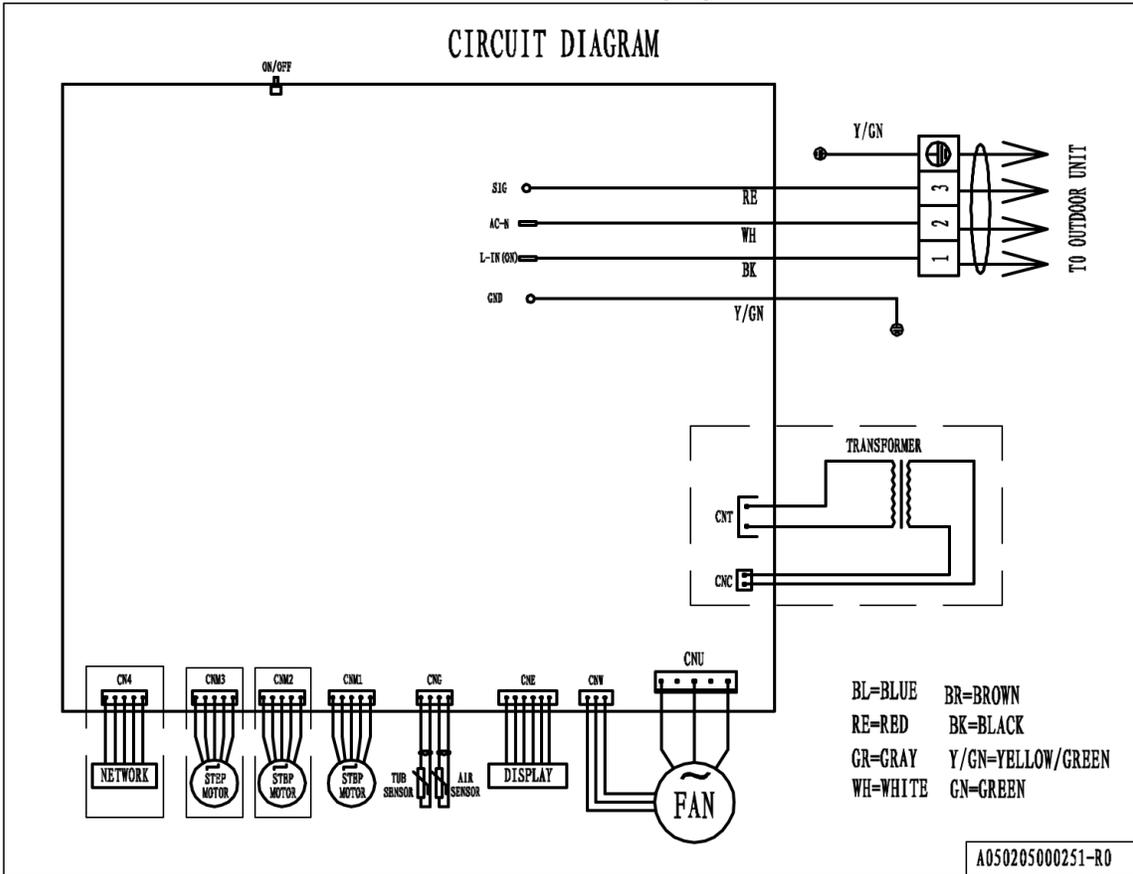
### WMMS-12E-V2A(57)2



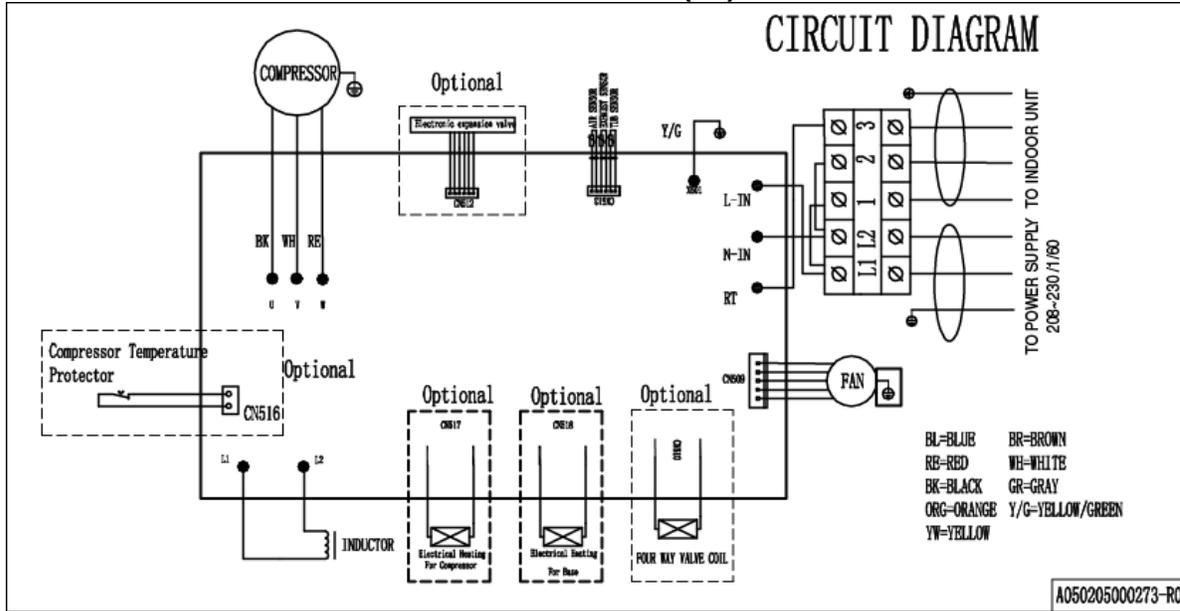
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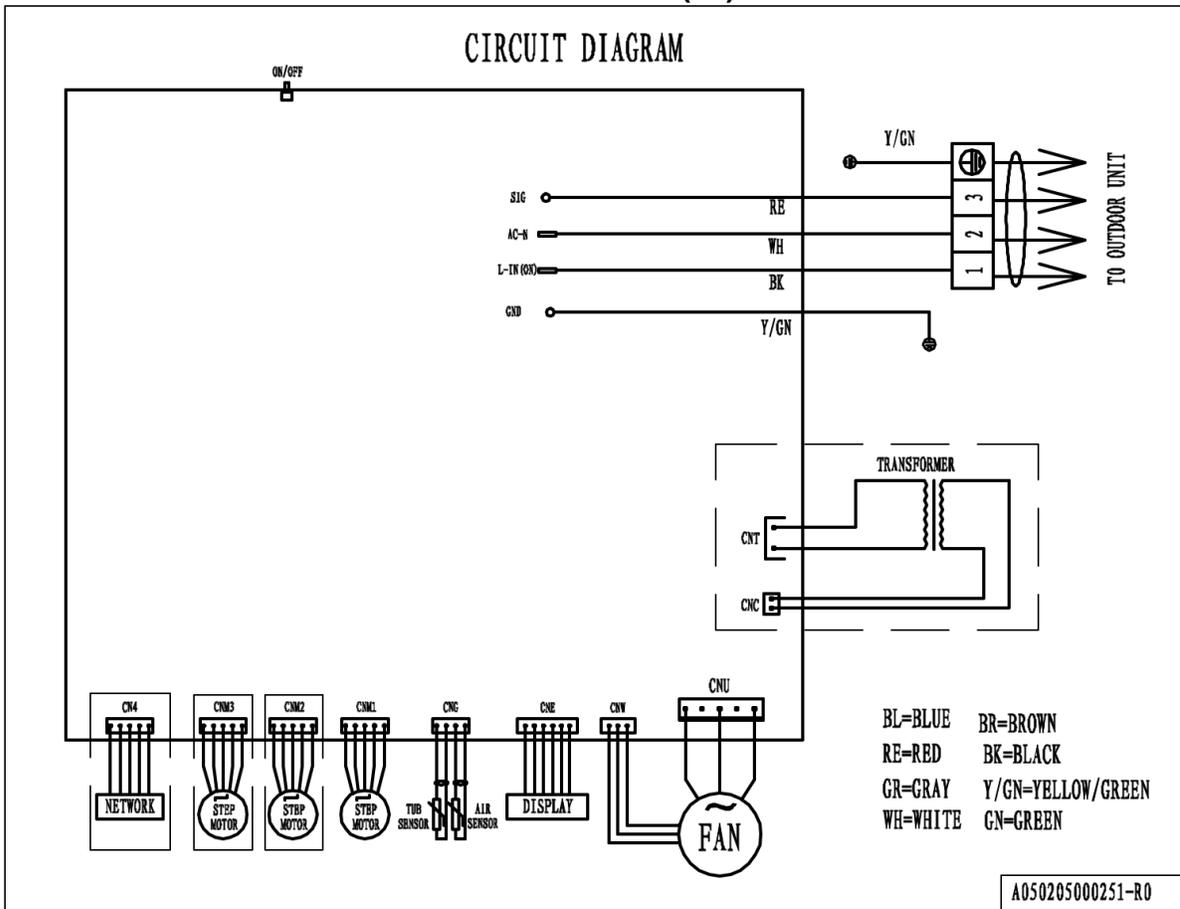
### WMMS-18E-V2B(57)3



### WMMS-24C-V2B(57)3

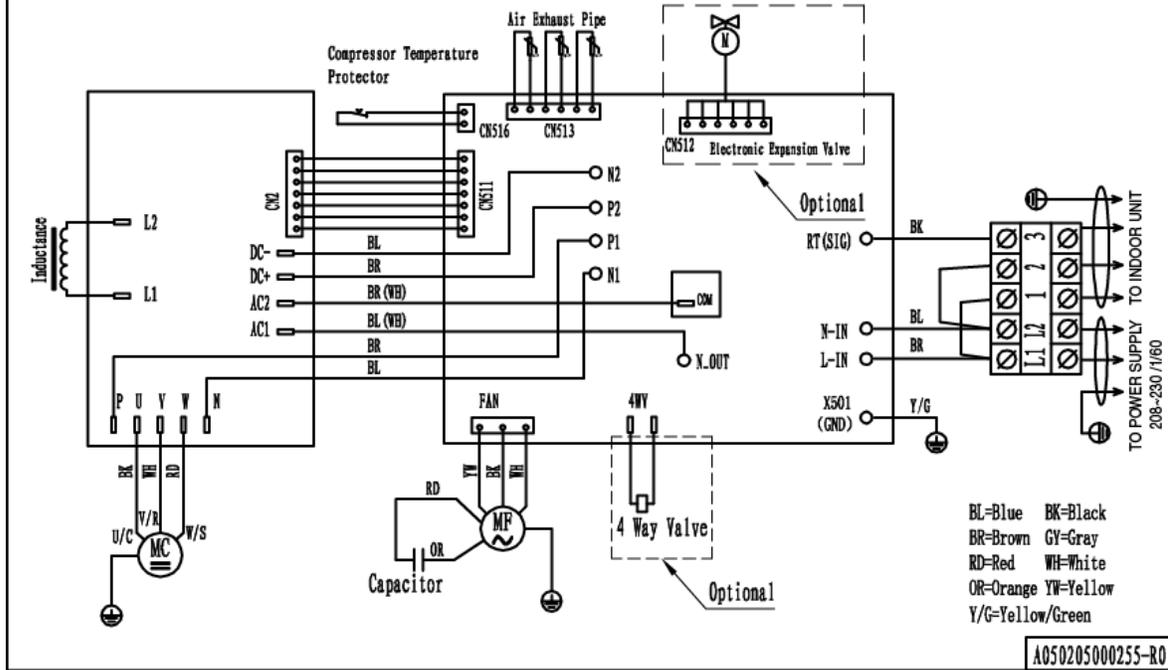


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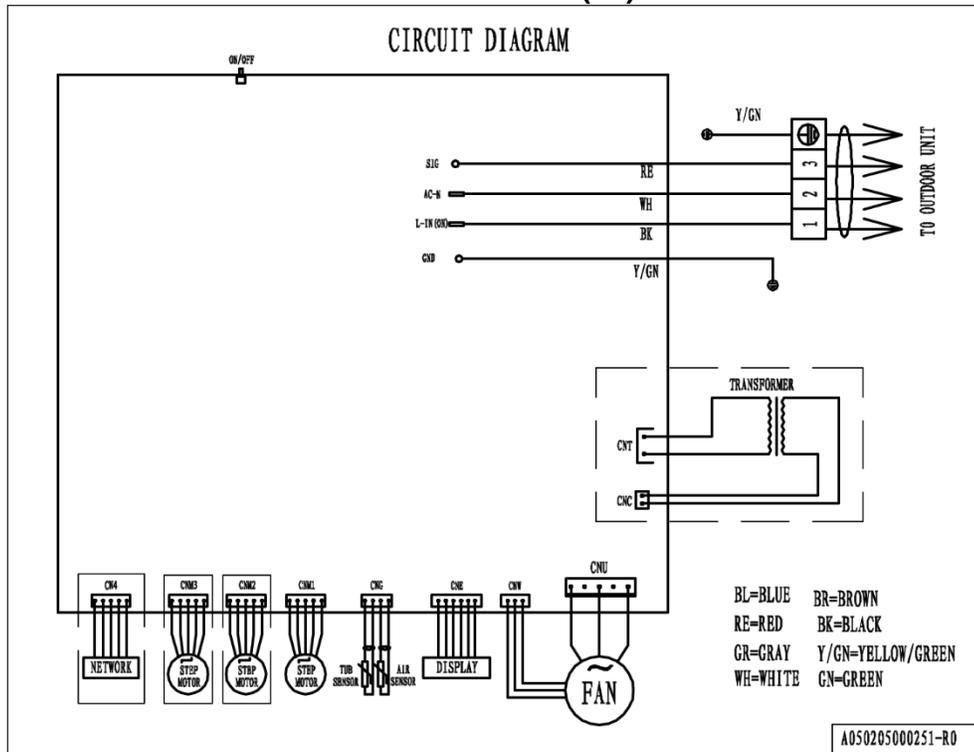
### WMMS-30C-V2B(57)3

## Circuit Diagram

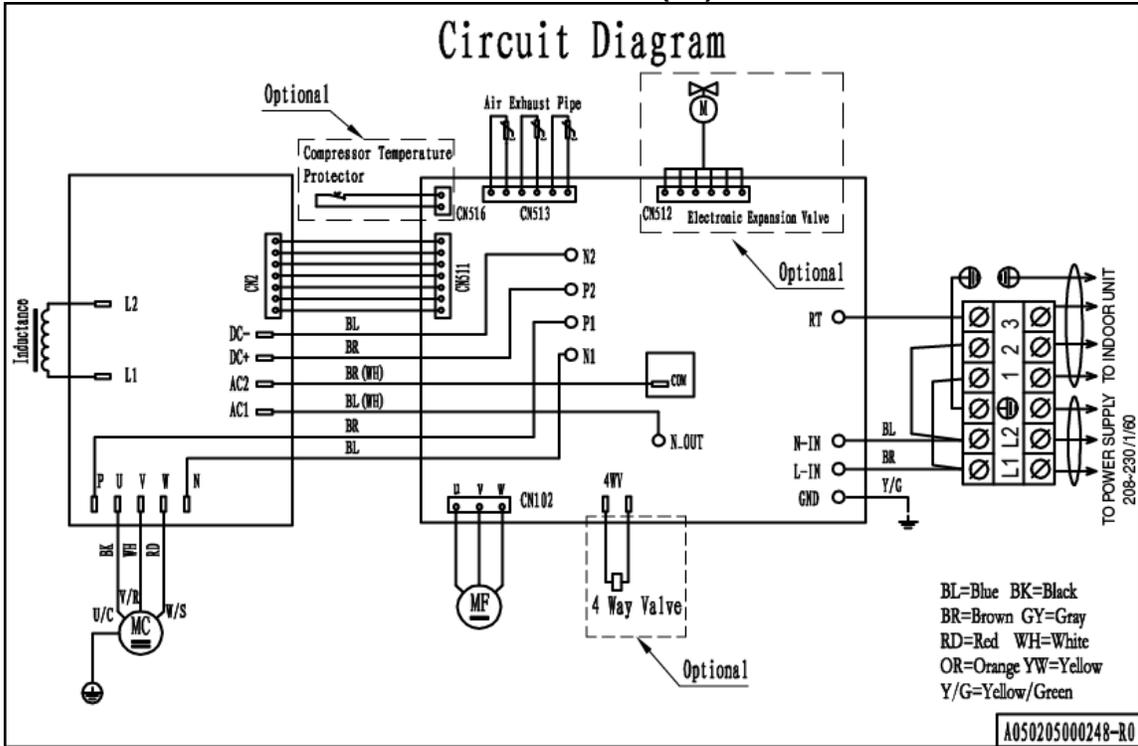


### WMMS-30E-V2B(57)3

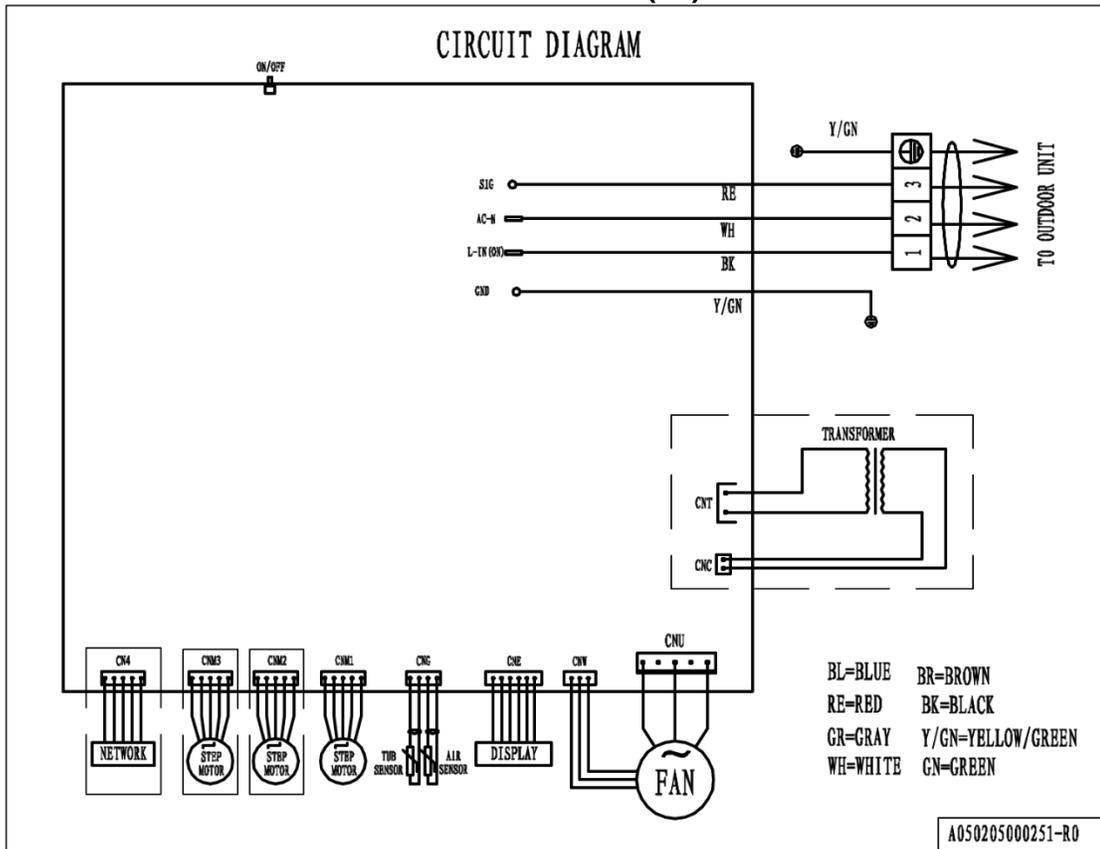
## CIRCUIT DIAGRAM



### WMMS-36C-V2B(57)3



### WMMS-36E-V2B(57)3



## PROTECTION AND ERROR CODES

### Self-Diagnostic Functions

Self-check information	Self-check code of running lights	Digital display self-check code
Defrost Indication	Blink 1 time / 1 sec	dF or Heating icon flashes
Anti-cold wind	Blink 1 time / 1 sec	Fan motor icon does not light up
Room temperature sensor fault	Blink 1 time / 8 sec	E2
Coil temperature sensor	Blink 2 times / 8 sec	E3
External feedback sensor fault	Blink 7 times / 8 sec	E7
Outdoor tube temperature sensor fault	Blink 4 times / 8 sec	E1
EEPROM Communication failure	Blink 6 times / 8 sec	E6
Outdoor ambient temperature exceeds units operating range	Blink 1 time / 1 sec	FF

**Note:** Above self-diagnostic information is commonly applicable in most air conditioner models, but some units do have different codes. Please refer to the User's Manual or contact YMGI for more information

### Fault Code Display Table.

Check parts	Serial number	Malfunction content	Indoor unit display status Code
Indoor parts	1	The communication faults in the indoor and outdoor units	F1
	2	Indoor ambient temp. sensor fault	F2
	3	Indoor coil temperature sensor fault (Includes: Inlet, middle of pipe, outlet.)	F3
	4	Indoor fan fault	F4
Outdoor parts	1	Outdoor module fault	F5
	2	Outdoor ambient temp. sensor fault	F6
	3	Outdoor coil temp. sensor fault	F7
	4	Compressor discharge temp. sensor fault	F9
	5	Compressor drive abnormal fault	FC
	6	Phase lacking or phase sequence fault	FD
	7	Outdoor DC motor	FH

**Note:**

The above error code information is applicable to several models of air conditioners, but because of product changes or improvements, they can change. Please refer to the User's Manual for more information, or have a technician contact YMGI.

## Protection Display Table.

Check parts	Serial number	Protection content	Indoor unit display status Code
Indoor parts	1	Evaporator temp protection	P1
Outdoor parts	1	Overheat, over current protection of inverter module	P2
	2	Over current protection	P3
	3	Compressor discharging temp. protection	P4
	4	Overheat of compressor top protection	P5
	6	Power supply over current/ over voltage protection	P7
	9	High temp of condenser protection	PA
	10	High temp of outdoor ambient protection	PC

**Note:**

The above error code information is applicable to several models of air conditioners, but because of product changes or improvements, they can change. Please refer to the User's Manual for more information, or have a technician contact YMGI.

### Resistance-temperature characteristic table (R-T CONVERSION TABLE) 5k

Temp °F	Resistance Min (KΩ)	standard (KΩ)	Resistance Max (KΩ)	Voltage value 5V、4.3K		Temp °F	Resistance Min (KΩ)	standard (KΩ)	Resistance Max (KΩ)	Voltage value 5V、4.3K	
				drop down	pull up					drop down	pull up
-22	51.195	52.840	54.521	0.38	4.62	78.8	4.771	4.821	4.871	2.36	2.64
-20.2	48.659	50.232	51.805	0.39	4.61	80.6	4.599	4.649	4.699	2.40	2.60
-18.4	46.299	47.772	49.248	0.41	4.59	82.4	4.434	4.485	4.535	2.45	2.55
-16.6	44.071	45.452	46.832	0.43	4.57	84.2	4.277	4.327	4.377	2.49	2.51
-14.8	41.968	43.261	44.554	0.45	4.55	86	4.126	4.176	4.226	2.54	2.46
-13	39.981	41.193	42.405	0.47	4.53	87.8	3.981	4.031	4.081	2.58	2.42
-11.2	38.102	39.238	40.375	0.49	4.51	89.6	3.842	3.892	3.942	2.62	2.38
-9.4	36.326	37.391	38.457	0.52	4.48	91.4	3.709	3.759	3.808	2.67	2.34
-7.6	34.646	35.645	36.645	0.54	4.46	93.2	3.581	3.631	3.680	2.71	2.29
-5.8	33.055	33.993	34.931	0.56	4.44	95	3.495	3.508	3.557	2.77	2.23
-4	31.550	32.430	34.310	0.59	4.41	96.8	3.340	3.389	3.438	2.80	2.20
-2.2	30.097	30.923	31.748	0.61	4.39	98.6	3.226	3.275	3.323	2.84	2.16
-0.4	28.722	29.497	30.271	0.64	4.36	100.4	3.117	3.165	3.213	2.88	2.12
1.4	27.420	28.147	28.873	0.66	4.34	102.2	3.012	3.06	3.107	2.92	2.08
3.2	26.186	26.868	27.55	0.69	4.31	104	2.912	2.959	3.006	2.96	2.04
5	25.017	25.657	26.297	0.72	4.28	105.8	2.815	2.861	2.908	3.00	2.00
6.8	23.908	24.509	25.11	0.75	4.25	107.6	2.722	2.768	2.814	3.04	1.96
8.6	22.857	23.421	23.98	0.78	4.22	109.4	2.633	2.678	2.724	3.08	1.92
10.4	21.859	22.389	22.918	0.81	4.19	111.2	2.547	2.529	2.637	3.12	1.88
12.2	20.912	21.409	21.907	0.84	4.16	113	2.464	2.509	2.553	3.16	1.84
14	20.013	20.48	20.917	0.87	4.13	114.8	2.385	2.429	2.473	3.20	1.80
15.8	19.116	19.584	20.023	0.90	4.10	116.6	2.308	2.352	2.395	3.23	1.77
17.6	18.322	18.734	19.146	0.93	4.07	118.4	2.235	2.278	2.231	3.27	1.73
19.4	17.540	17.927	18.314	0.97	4.03	120.2	2.164	2.207	2.249	3.30	1.70
21.2	16.797	17.160	17.524	1.00	4.00	122	2.096	2.138	2.180	3.34	1.66
23	16.090	16.431	16.733	1.04	3.96	123.8	2.030	2.071	2.112	3.37	1.63
24.8	15.418	15.739	16.060	1.07	3.93	125.6	1.966	2.006	2.047	3.41	1.59
26.6	14.779	15.080	15.382	1.11	3.89	127.4	1.904	1.944	1.984	3.44	1.54
28.4	14.170	14.454	14.737	1.15	3.85	129.2	1.844	1.884	1.923	3.48	1.52
30.2	13.591	13.857	14.124	1.18	3.82	131	1.787	1.826	1.865	3.51	1.49
32	13.040	13.290	13.54	1.22	3.78	132.8	1.732	1.770	1.809	3.54	1.16
33.8	12.505	12.739	12.974	1.26	3.74	134.6	1.679	1.717	1.754	3.57	1.43
35.6	11.995	12.215	12.436	1.30	3.70	136.4	1.628	1.665	1.702	3.60	1.40
37.4	11.509	11.717	11.924	1.34	3.66	138.2	1.579	1.615	1.652	3.63	1.37
39.2	11.047	11.241	11.436	1.38	3.62	140	1.531	1.567	1.603	3.66	1.34
41	10.606	10.789	10.971	1.42	3.58	141.8	1.485	1.521	1.556	3.69	1.31
42.8	10.186	10.357	10.529	1.47	3.53	143.6	1.441	1.476	1.511	3.72	1.28
44.6	9.785	9.945	10.107	1.51	3.49	145.4	1.399	1.433	1.467	3.75	1.25
46.4	9.403	9.554	9.705	1.55	3.45	147.2	1.357	1.391	1.425	3.78	1.22
48.2	9.038	9.180	9.322	1.59	3.41	149	1.318	1.351	1.384	3.80	1.20
50	8.690	8.823	8.956	1.64	3.36	150.8	1.279	1.312	1.344	3.83	1.17
51.8	8.357	8.482	8.607	1.68	3.32	152.6	1.242	1.274	1.306	3.86	1.14
53.6	8.040	8.157	8.274	1.73	3.27	154.4	1.206	1.237	1.269	3.88	1.12
55.4	7.736	7.816	7.957	1.77	3.23	156.2	1.171	1.202	1.233	3.91	1.09
57.2	7.446	7.550	7.653	1.81	3.19	158	1.137	1.168	1.199	3.93	1.07
59	7.169	7.226	7.363	1.86	3.14	159.8	1.105	1.135	1.165	3.96	1.04
60.8	6.900	6.991	7.082	1.90	3.10	161.6	1.074	1.103	1.133	3.98	1.02
62.6	6.644	6.729	6.814	1.95	3.05	163.4	1.043	1.072	1.101	4.00	1.00
64.4	6.398	6.478	6.558	1.99	3.01	165.2	1.014	1.043	1.071	4.02	0.98
66.2	6.163	6.238	6.313	2.04	2.96	167	0.986	1.014	1.042	4.05	0.95
68	5.938	6.008	6.078	2.09	2.91	168.8	0.959	0.986	1.014	4.07	0.93
69.8	5.723	5.789	5.854	2.13	2.87	170.6	0.932	0.959	0.986	4.09	0.91
71.6	5.517	5.578	5.64	2.18	2.82	172.4	0.907	0.933	0.960	4.11	0.89
73.4	5.320	5.377	5.484	2.22	2.78	174.2	0.882	0.908	0.934	4.13	0.87
75.2	5.131	5.185	5.238	2.27	2.73	176	0.858	0.884	0.910	4.15	0.85
77	4.950	5	5.05	2.31	2.69	177.8					



**Resistance-temperature characteristic table (R-T CONVERSION TABLE) 50k**

RB25B=50KΩ±2% BB25/85 B=3950K±2% (T/°F Rcen)							
Temp °F	Resistance Ω	Temp °F	Resistance Ω	Temp °F	Resistance Ω	Temp °F	Resistance Ω
-40	1666.000	33.8	152.800	107.6	24.590	181.4	5.796
-38.2	1558.000	35.6	145.300	109.4	23.630	183.2	5.612
-36.4	1458.000	37.4	138.300	111.2	22.720	185	5.433
-34.6	1366.000	39.2	131.700	113	21.840	186.8	5.255
-32.8	1279.000	41	125.400	114.8	21.010	188.6	5.082
-31	1199.000	42.8	119.400	116.6	20.210	190.4	4.916
29.2	1124.000	44.6	113.800	118.4	19.440	192.2	4.755
-27.4	1055.000	46.4	108.400	120.2	18.710	194	4.600
-25.6	989.900	48.2	103.400	122	18.010	195.8	4.451
-23.8	929.400	50	98.580	123.8	17.370	197.6	4.306
-22	873.000	51.8	94.040	125.6	16.750	199.4	4.167
-20.2	820.400	53.6	89.730	127.4	16.160	201.2	4.032
-18.4	771.300	55.4	85.640	129.2	15.590	203	3.902
-16.6	725.500	57.2	81.760	131	15.040	204.8	3.776
-14.8	682.700	59	78.080	132.8	14.520	206.6	3.655
-13	642.600	60.8	74.590	134.6	14.010	208.4	3.537
-11.2	605.200	62.6	71.270	136.4	13.520	210.2	3.424
-9.4	570.200	64.4	68.120	138.2	13.050	212	3.315
-7.6	537.400	66.2	65.120	140	12.600	213.8	3.209
-5.8	506.700	68	62.280	141.8	12.170	215.6	3.107
-4	477.900	69.8	59.570	143.6	11.750	217.4	3.009
-2.2	450.900	71.6	57.000	145.4	11.350	219.2	2.914
-0.4	425.600	73.4	54.550	147.2	10.960	221	2.822
1.4	401.900	75.2	52.220	149	10.590	222.8	2.733
3.2	379.600	77	50.000	150.8	10.230	224.6	2.647
5	358.700	78.8	47.860	152.6	9.884	226.4	2.565
6.8	339.100	80.6	45.830	154.4	9.551	228.2	2.484
8.6	320.700	82.4	43.890	156.2	9.231	230	2.407
10.4	303.500	84.2	42.040	158	8.922	231.8	2.332
12.2	287.200	86	40.280	159.8	8.625	233.6	2.260
14	271.900	87.8	38.610	161.6	8.339	235.4	2.190
15.8	257.600	89.6	37.010	163.4	8.063	237.2	2.122
17.6	244.100	91.4	35.490	165.2	7.797	239	2.057
19.4	231.300	93.2	34.040	167	7.541	240.8	1.994
21.2	219.400	95	32.660	168.8	7.294	242.6	1.933
23	208.100	96.8	31.340	170.6	7.056	244.4	1.874
24.8	197.400	98.6	30.080	172.4	6.826	246.2	1.817
26.6	187.400	100.4	28.880	174.2	6.605	248	1.761
28.4	178.000	102.2	27.730	176	6.329		
30.2	169.100	104	26.630	177.8	6.186		
32	160.600	105.8	25.590	179.6	5.988		











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