YMGI, Engineered Comfort Products for A Sustainable and Efficient Green World!

INSTALLATION INSTRUCTIONS & USER MANUAL

DC INVERTER SPLIT TYPE HEAT PUMP (Down to -22°F Ambient) OUTDOOR CONDENSING UNIT

Model Numbers:

VRUO-2436HP-U2B(54)
VRUO-4860HP-U2B(54)

Thermostat-Controlled

Universal Outdoor Condenser Works With:

1. Any Brand of American Style Indoor Units, and
2. YMGI Indoor Unit Universal VRUI

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 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.

Servicer: 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.

TABLE OF CONTENTS

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:

⚠WARNING	Indicates a potentially hazardous situation which if not avoided could result in serious injury or even death.
⚠ CAUTION	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.
NOTICE	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

⚠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 an 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

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 trial 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, lightening, 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	Date Completed Registration Card Received:			
	Installation Invoice Attached to the Registration Card		Hired YMGI Recommended HVAC Contractor/Technician?		Warranty Approved		Warranty Denied	

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		

Contact at Installation Location:

Name:		Phone:		Fax:	
Address:		Email:			
City:		State (Province):		Country:	

Contact of the Installing HVAC Contractor/Technician:

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:					

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)

1) Did you install the whole system? If not, please note below. Yes / No / % of installation done by you (HVAC technician).	15) Where is the outdoor unit located? Ground / wall / balcony / roof / other location or pad Is the outdoor unit anchored to ground or secured onto wall bracket? Yes / No
2) What had been done, prior to your arrival?	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?
3) Did you read the User Manual and Installation Instructions before starting the installation? Yes / No	17) Were the refrigerant pipe ends capped or sealed, prior to running them through structures to keep debris from entering the copper lines?
4) Who unpacked the unit and accessory boxes to check for damage?	18) Have you checked both cooling and heating on all indoor units individually to ensure proper function? Yes / No
5) Supply electrical power V/Ph/Hz measured at wiring terminal block of Indoor unit: / Outdoor unit:	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
6) Incoming electrical power V/Ph/Hz measured at terminal blocks of Indoor unit: / Outdoor unit:	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?
7) Wire gauge, length and terminal colors between circuit breaker/disconnect switch to outdoor unit:	21) Did you check the compressor's start and stop sequences to determine proper functionality? Yes / No
8) Wire gauge, length and terminal colors between each indoor and outdoor unit: Unit A / Unit B / Unit C / Unit D	22) If copper length were not made to the supplied or recommended refrigerant pipe length, how much refrigerant added or deducted?
9) The size of HVAC circuit breaker/fuse or disconnect switch to the outdoor unit:	23) Measured refrigerant pressures at outdoor service suction valve, when unit was stabilized. Heat pump (PSI): / Cooling (PSI): / Outdoor Ambient Temp. (°F):
10) Are the inter-connecting wires and copper lines between indoor and outdoor units installed/covered/protected by line set covers, or anything else?	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
11) What is the refrigerant pipe length between each indoor unit and the outdoor unit? Unit A / Unit B / Unit C / Unit D	25) Have you checked all unit functions with customer present, and all functions are working correctly? Yes / No
12) Where is/are the indoor unit(s) located? (Bedroom, kitchen, etc.) Unit A / Unit B / Unit C / Unit D	26) Did you show the user how to operate the unit? Did he/she understand you? Yes / No / Yes / No
13) What is the elevation difference between each indoor unit and the outdoor unit? Unit A / Unit B / Unit C / Unit D	27) Do you provide regular one-year free technical service for this installation? Yes / No
14) Did you check the indoor unit for condensate leakage and refrigerant leakage, before and after connecting them? 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. Keeping the temperature difference between indoor and outdoor unit within 41°F.
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 UNITARY -22° F HEAT PUMP SYSTEM

The Unitary Heat Pump System is designed for high performance, easy installation and service. Each system consists of one indoor units and one outdoor unit, which are connected by one set of interconnecting 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 Unitary Heat Pump System
(Due to engineering and production improvements, unit appearance subject to change without prior notice)

Outdoor unit(s) provides the electrical and thermal power for the whole system. Electrical and thermal components such as compressors and motors and 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 bottom and then discharged from the top into the ventilation ducts. In cooling mode, air passing through coil is cooled; in heating mode, air passing through coil is heated. Air is filtered or treated by the built in filter (washable or enzyme equipped or electrostatic powered filter, varies from model to model), before being delivered to the air registers.


Apartments

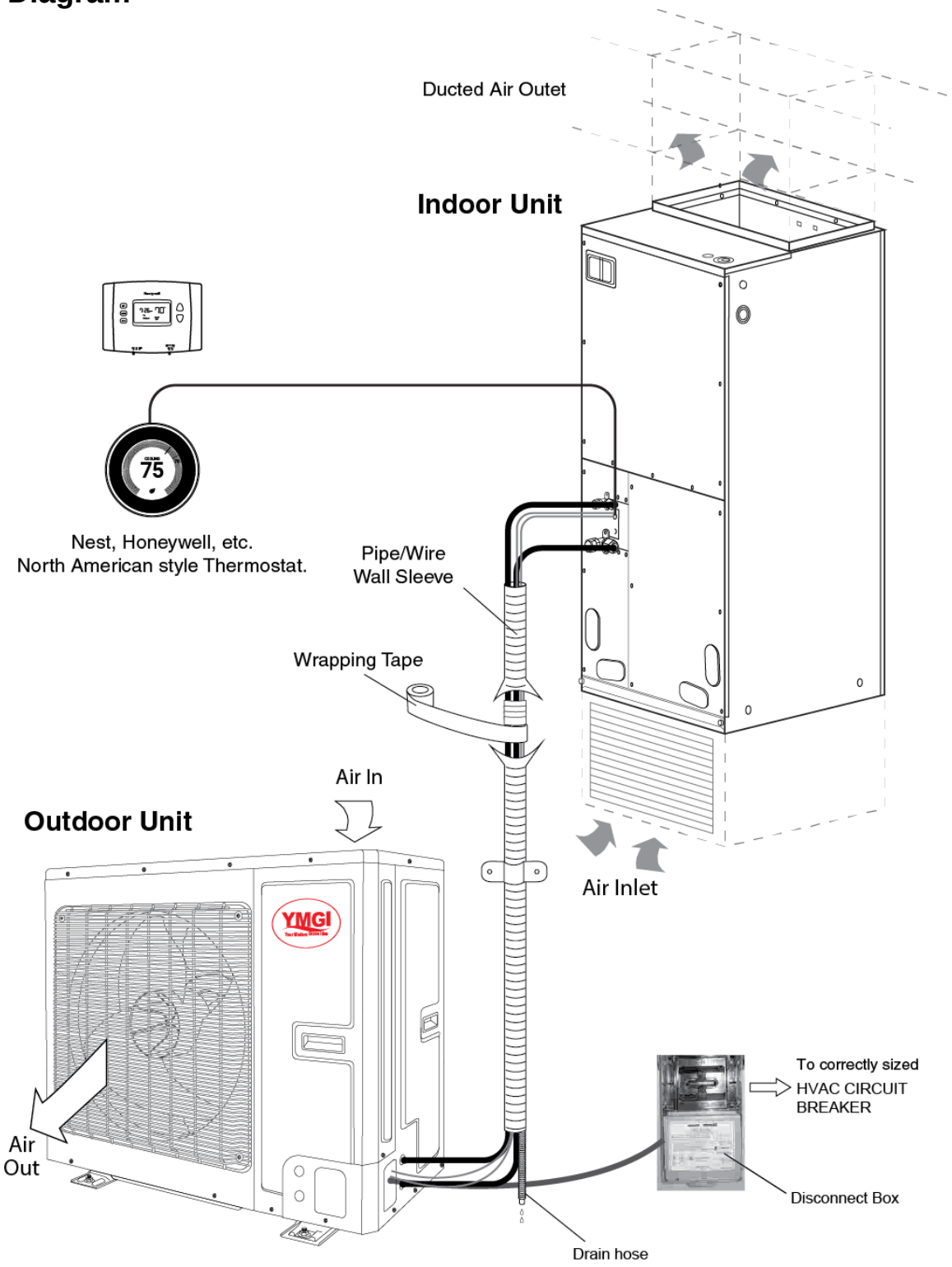

Offices, Restaurants, Gyms, etc.


Homes

These units are designed for applications at:

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

System Diagram



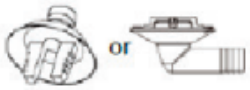
Notes: Actual unit/ part appearance and installation may vary from illustration.
Subject to continuous improvement and change without notice.

Product Introduction

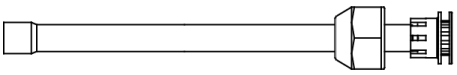
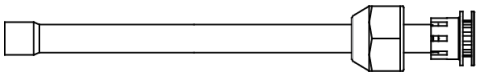
Operating Range

	Cooling	Heating
Outdoor temperature	5°F(-15°C)~118.4°F（48°C）	-22°F (-30°C)~75.2°F (24°C)

Standard Accessories

Outdoor Unit Accessories				
No.	**Name**	**Appearance**	**Qty.**	**Usage**
1	Drain Plug		3	To plug the unused drain hole
2	Drainage Connecter		1	To connect with the hard PVC drain pipe

Optional Accessories

Outdoor Unit Accessories				
No.	**Name**	**Appearance**	**Qty.**	**Usage**
1	Connection pipe		3	To connect with the unit and gas pipe
2	Connection pipe		1	To connect with the unit and liquid pipe

Installation Preparation

Selection of Installation Location

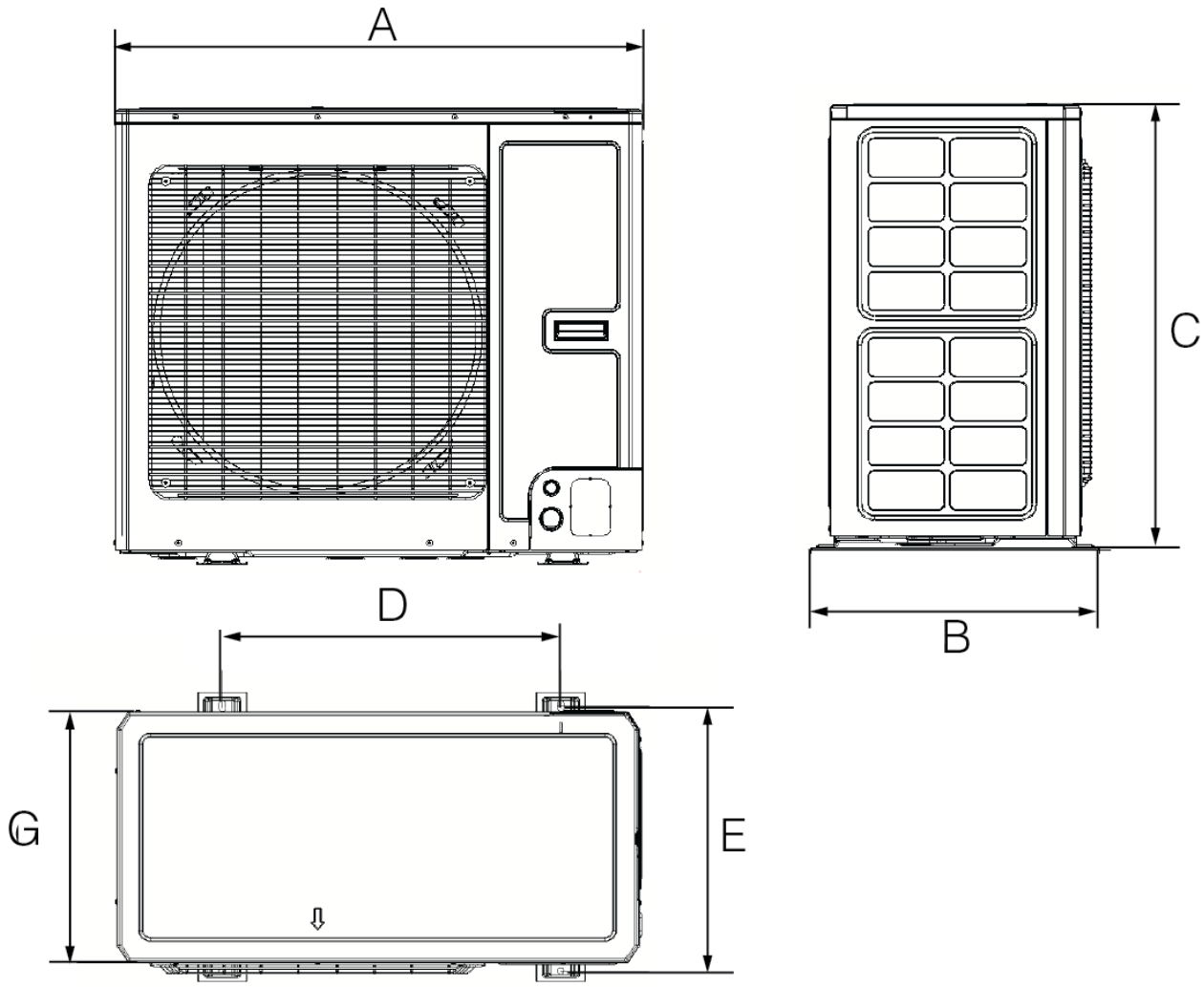
⚠WARNING	
①	The unit must be installed where strong enough to withstand the weight of the unit and fixed securely, otherwise the unit would topple or fall off.
②	Install the air conditioner at a place where the inclination is less than 5°.
③	Do not install the unit at a place with direct sunlight.
④	Do not install where there is the danger of combustible gas leakage
⑤	Do not install the unit at a place with leakage of inflammable gas.

Selection of Installation Location for Outdoor Unit (Select a location pursuant to the following condition).

1. Noise and air flow produced by the outdoor unit will not disturb the neighbors.
2. Select a location that is safe and away from animals and plants. If not, please add safety fences to protect the unit.
3. Install at a place with good ventilation. Make sure the outdoor unit stays at a well-ventilated place with no obstacles nearby that may obstruct the air inlet and outlet.
4. The installation location should be able to withstand the weight and vibration of outdoor unit and allow the installation to be carried out safely.
5. Avoid installing at a place with leakage of inflammable gas, oil smoke or corrosive gas.
6. Keep it away from strong wind because strong wind will affect the outdoor fan and lead to insufficient air flow volume and thus affecting the unit's performance.
7. Away from any object that may get the air conditioner generating noise.
8. Install the outdoor unit at a place where condensate can be easily drained.

UNIT ENGINEERING SUBMITTALS-MECHANICAL

OUTDOOR UNIT



	Dimensions In. (mm)					
Model	**A**	**B**	**C**	**D**	**E**	**G**
VRUO-2436HP-U2B(54)	37″ (940)	20-7/8″ (530)	32-1/4″ (820)	24″ (610)	19-1/8″ (486)	18-1/8″ (460)
VRUO-4860HP-U2B(54)	39 3/8”	?	53 47/64”	?	?	14 9/16”

(54) ODU 2436HP and 4860HP Specification Sheet

Model					VRUO-2436HP-U2B(54)	VRUO-4860HP-U2B(54)
Total Capacity			Cooling	kW	7.03	14.07
				Btu/h	24000	48000
			Heating	kW	7.03	14.07
				Btu/h	24000	48000
EER / C.O.P				W/W	3.66/4.20	3.22/3.60
				Btu/h.W	12.50/14.33	11.00/12.28
SEER / HSPF				Btu/h.W	20.00/10.50	18.00/10.50
Energy Class				—	/	/
Electrical Data	Power supply			V-Hz-Ph	208/230-60-1	208/230-60-1
	Power input[1]		Cooling	kW	1.92	4.36
			Heating	kW	1.67	3.91
	Rated Power input[2]		Cooling	kW	3.20	6.40
			Heating	kW	4.20	6.80
	Input current[1]		Cooling	A	7	18
			Heating	A	7	18
	Rated current[2]		Cooling	A	13	30
			Heating	A	17	31
	Max. Overcurrent Protection			A	35	45
	Min/Max Voltage			V	187/253	187/253
	Power cord spec			mm^2 x pcs	/	
Sound Pressure Level (H/M/L)*				dB (A)	55	58
Sound Power Level (H/M/L)*				dB (A)	65	68
Refrigerant	Type			—	R410A	R410A
	Charge			oz	148.15	220.46
	Throttling Method			—	Electronic Expansion Valve	Electronic Expansion Valve
Compressor	Trademark			—	Gree	Gree
	Manufacturer			—	Gree	Gree
	Model			—	QXFT-F310zN450	QXAU-F516zX440A
	Type			—	Inverter Rotary	Inverter Rotary
	Quantity			—	1	1
	Capacity			W	10600	17800
	Power Input			W	3680	6000
	Run Capacitor			µF (MFD)	/	/
	Rated Load Amp (RLA)			A	7	13
	Locked rotor Amp (L.R.A)			A	/	/
	Thermal protector			—	Internal	Internal
	Crankcase			W	40	40
	Refrigerant oil		Type	—	FW68DA or equivalent	FW68DA or equivalent
			Charge Volume	L	1.12	1.35
Air Flow Volume				CFM	3000	4700
				m^3/h	5100	7990

Fan Motor	Model		—	B-SWZ150A	SWZ150D
	Drive Type		—	Direct Drive	Direct Drive
	Speed (H/M/L)*		rpm	700	800
	Power Output		PH	0.2	1/5X2
	Full Load Amp(FLA)		A	/	/
	Insulation class		—	B	B
	Safe class		—	IP44	IP44
	Capacitor		uF	/	/
Fan	Type		—	Axial-flow	Axial-flow
	Quantity		—	1	2
	Diameter-Height		inch	φ21.65-7	φ20.47-6
Condenser	Material		—	Inner Groove Copper Tube-Aluminum Fin	Inner Groove Copper Tube-Aluminum Fin
	Face Area		sq.ft	1.7	1.7
			m^2	4.6	4.6
	Pipe Diameter		in.	Φ 5/16	φ5/16
	Number of rows			2	3
	Tube pitch(a)x row pitch(b)		in.	55/64 × 3/4	55/64 × 3/4
	Fins per Inch(FPI)		—	18	17
	Fin type		—	Ripple	Ripple
	Number of circuits		—	5	9
	Length(L) x Height(H) x Width(W)		In.	45 7/16 × 31 3/16 × 1 1/2	37 61/64 × 51 31/32 × 2 1/4
Permissible Excessive Operating Pressure for Discharge Side			Mpa	3.8	3.8
Permissible Excessive Operating Pressure for Suction Side			Mpa	1.7	1.7
Operation temp		Cooling	°F	5 ~ 129.2	5 ~ 129.2
		Heating	°F	-22 ~ 75.2	-22 ~ 75.2
Defrosting Method			—	Automatic Defrosting	Automatic Defrosting
Isolation			—	I	I
Moisture Protection			—	IPX4	IPX4
Overload Protector			—	/	/
Dimension	Outline dimension (W×D×H)		In.	37 1/64” × 18 7/64” × 32 9/32”	39 3/8” × 14 9/16” × 53 47/64”
	Package dimension (L×W×H)		In.	42 41/64” × 22 9/16” × 38 5/16”	45 25/64” × 19 13/32” × 59 1/4"
Weight	Net Weight		lbs.	217.16	308.65
	Gross Weight		lbs.	240.3	337.31
Connection Pipe	Valve Connection Type		—	Screw Connection or Solder Connection	Screw Connection or Solder Connection
	Length		ft.	25	25
	Gas additional charge		g/m	30	30
	Outer Diameter	Liquid Pipe	Inch	3/8"	3/8"
		Gas Pipe	Inch	3/4"	3/4"
	Max Distance	Height	ft.	49.21	49.21
		Length	ft.	98.4	98.4

Notes:

1. The cooling capacity stated above is measured under following conditions:
   Indoor Condition: 27°C（81°F）DB/19°C（66.6°F）WB.
   Outdoor Condition: 35°C（95.4°F）DB/24°C（75.6°F）WB.
2. Noise is tested in the semi-anechoic room, so it will be slightly higher in operation due to environmental change.
3. "1" is tested under standard conditions.
   "2" is tested under rated conditions according to CE/Eurovent standard:
4. * Fan different speed

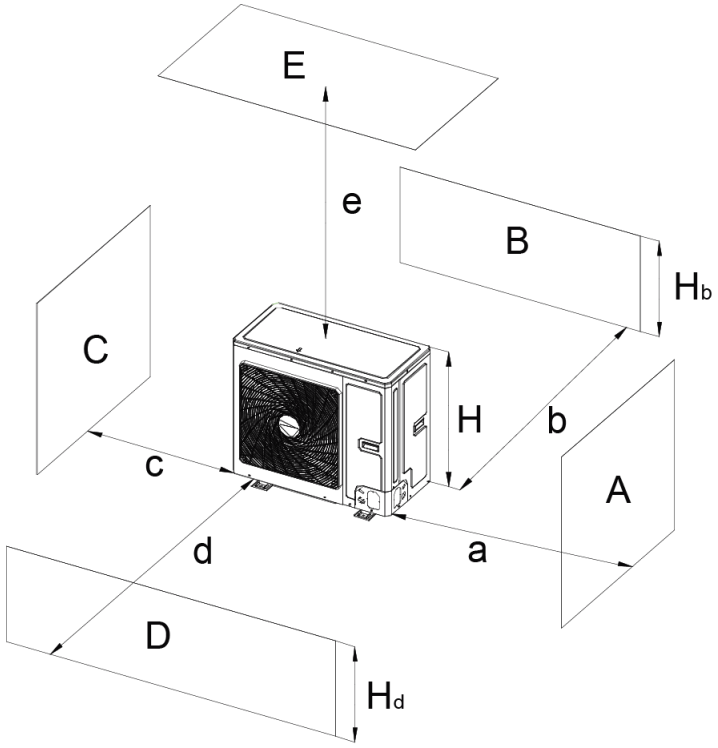
Diagram of Unit Installation Space and Clearances

1. Diagram of installation space and location for outdoor unit

Note:
For best performance of the outdoor unit, make sure its installation space conforms to the following installation dimensions.

When one outdoor unit is to be installed

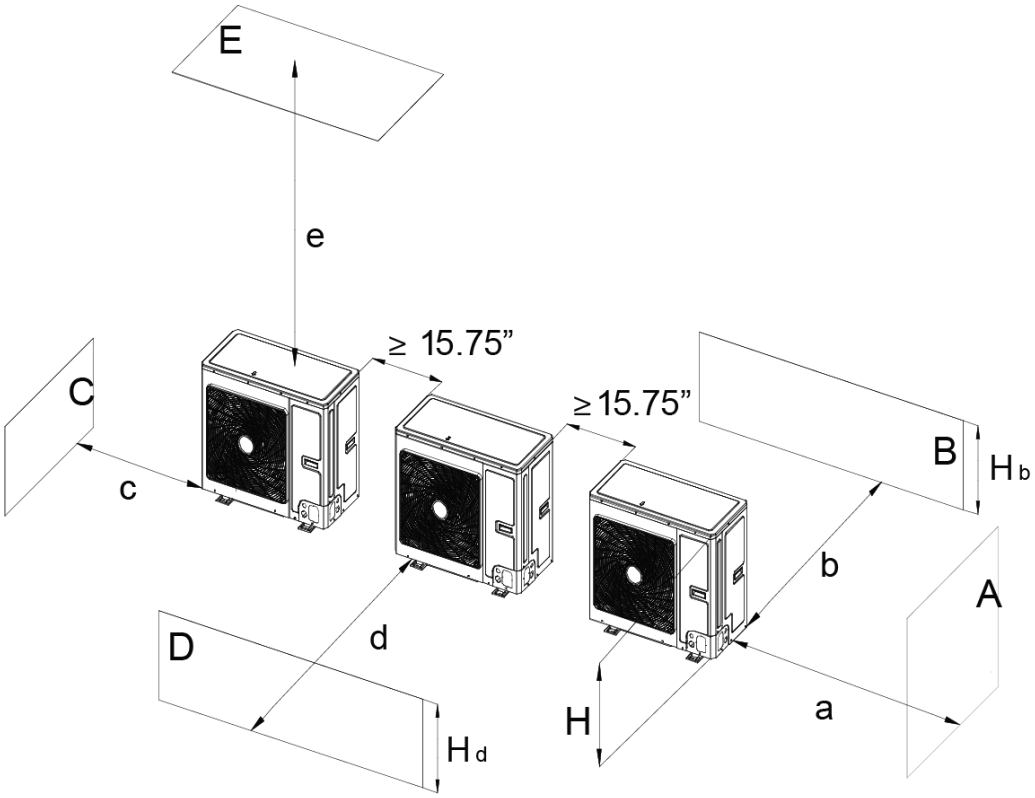
Units (in.)



A~E	HbHdH		(in.)				
			a	b	c	d	e
B	—			≥4”			
A,B,C,	—		≥12”	≥4”	≥4”		
B,E	—			≥4”			≥39.5”
A,B,C,E	—		≥12”	≥6”	≥6”		≥39.5”
D	—					≥39.5”	
D,E	—					≥39.5”	≥39.5”
B,D	$H_b < H_d$	$H_d > H$		≥4”		≥39.5”	
	$H_b > H_d$	$H_d < H$		≥4”		≥39.5”	
B,D,E	$H_b < H_d$	$H_b \leq 1/2H$		≥10”		≥78.75”	≥39.5”
		$1/2H < H_b \leq H$		≥10”		≥78.75”	≥39.5”
		$H_b > H$		Prohibited			
	$H_b > H_d$	$H_d \leq 1/2H$		≥4”		≥78.75”	≥39.5”
		$1/2H < H_d \leq H$		≥8”		≥78.75”	≥39.5”
		$H_d > 1/2H$	Prohibited				

When two or more outdoor units are to be installed side by side

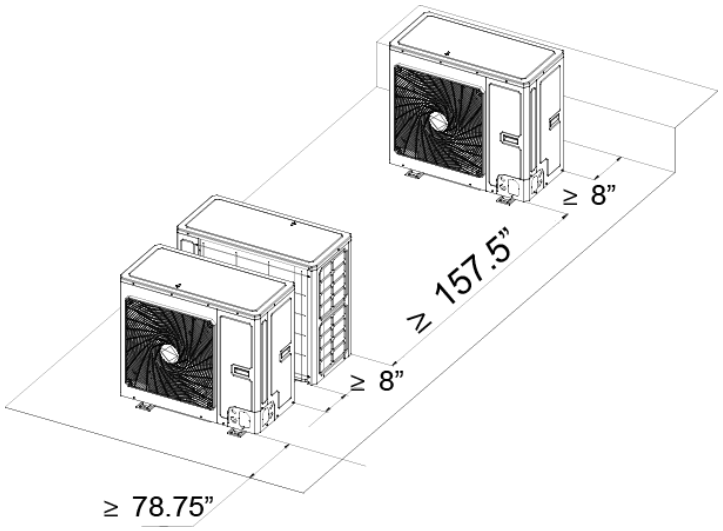
Units (in.)

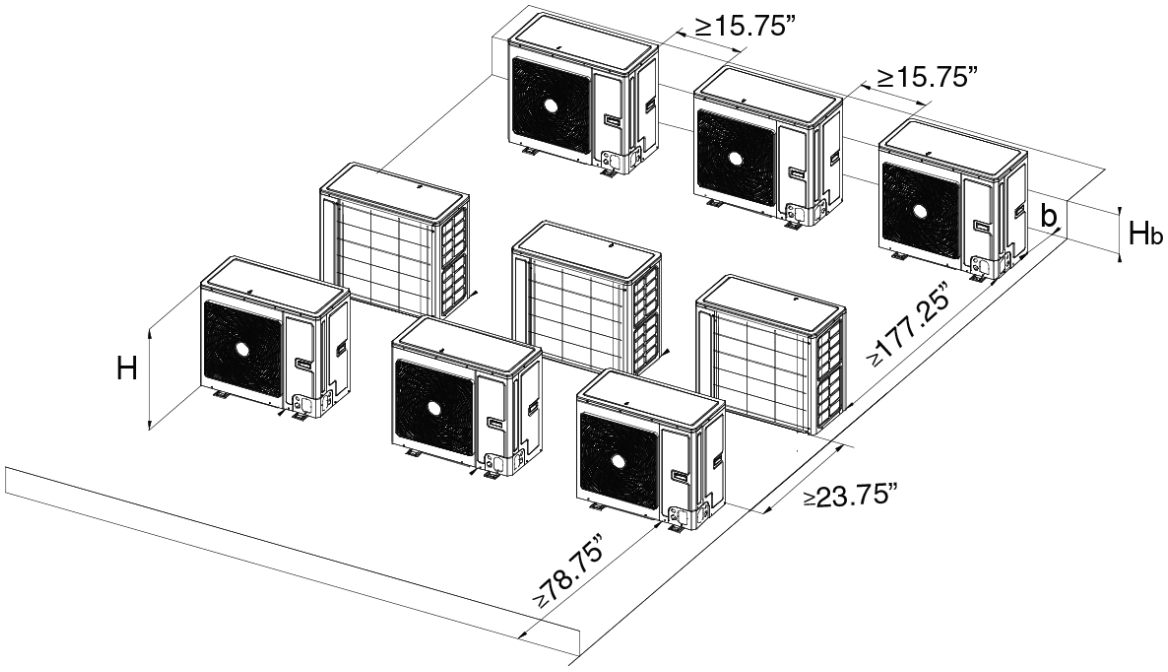


A~E	Hb Hd H		(in.)				
			a	b	c	d	e
A,B,C,	—		≥12”	≥12”	≥39.5”		
A,B,C,E	—		≥12”	≥12”	≥39.5”		≥39.5”
D	—					≥78.75”	
D,E	—					≥78.75”	≥39.5”
B,D	$H_b < H_d$	$H_d > H$		≥12”		≥78.75”	
	$H_b > H_d$	$H_d < H$		≥10”		≥78.75”	
		$1/2H < H_d \leq H$		≥12”		≥98.5”	
B,D,E	$H_b < H_d$	$H_b \leq 1/2H$		≥12”		≥78.75”	≥39.5”
		$1/2H < H_b \leq H$		≥12”		≥98.5”	≥39.5”
		$H_b > H$		Prohibited			
	$H_b > H_d$	$H_d \leq 1/2H$		≥10”		≥98.5”	≥39.5”
		$1/2H < H_d \leq H$		≥12”		≥98.5”	≥39.5”
		$H_d > 1/2H$	Prohibited				

When outdoor units are installed in rows

Units (in.)

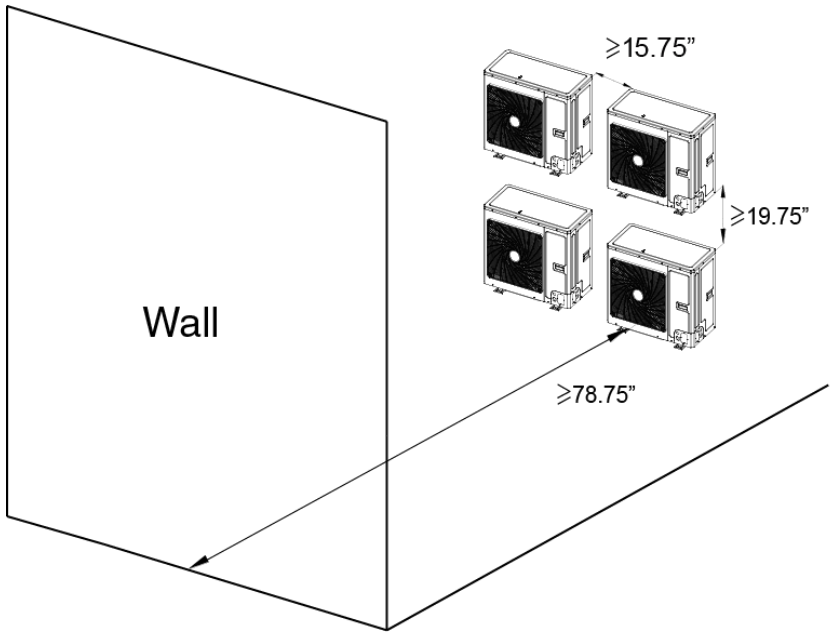


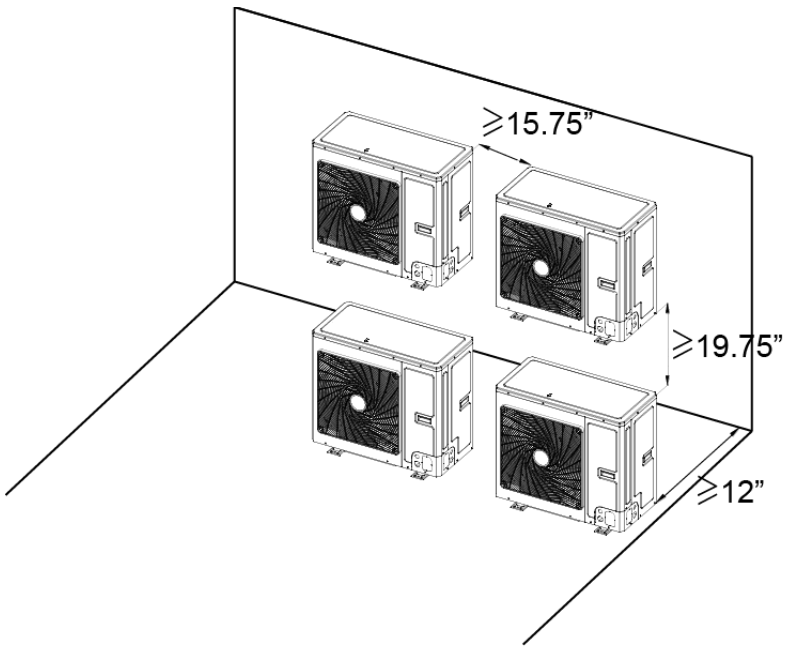


H_b H	(in.)
$H_b \leq 1/2H$	B ≥10”
$1/2H < H_b \leq H$	B ≥ 12”
$H_b > H$	Prohibited

When outdoor units are installed one above another

Units (mm)





RECOMMENDED TOOLS FOR INSTALLATION

1. **Mounting Indoor & Outdoor Units and Running Piping/Wiring**
   Ruler
   Stud-Finder
   Dry-Wall Saw
   Electric Drill
   3” Hole Saw
   Drill Extension
   Hammer Drill and Bit
   Measuring Tape
   Level
   Flash Light
   Screw Driver (Phillips and Flat)
   Hammer
   Knife
   Scissors
   Goggled Glasses
   Mask
   Gloves
   Ladder

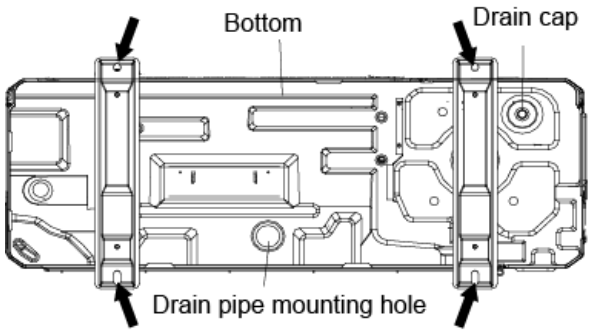
2. **Refrigeration Related Work**
   Flat Surface Wrench (Two)
   Flare-Nut Tool Set
   Hex Head Key Set
   Torch for AC Application
   Heat Absorption Flux
   Nitrogen
   Soap Bubble
   Vacuum Pump
   Helium Leakage Check
   Manifold

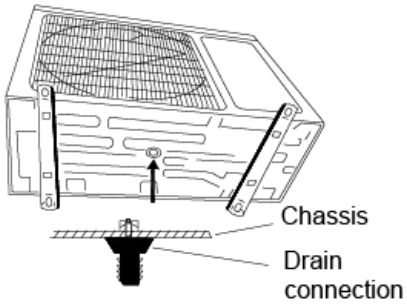
3. **Electrical Related Installation**
   Wire Cutter
   Wire Stripper
   Sharp Plier
   Cable Ties
   Black Tape for Electrical Use
   Electrical Meter

4. **Trial Running Units and Inspection**
   Clamp Meter
   Manifold
   Infrared Thermometer

Outdoor Unit Installation

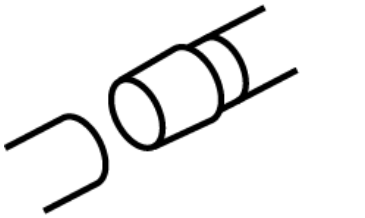
1. If the outdoor unit is installed on a solid ground such as a concrete pad, use M10 screw bolts and nuts to secure the unit and make sure the unit stands erect and level.
2. Do not install it on top of the building.
3. If it vibrates and causes noise, please add rubber cushion between the outdoor unit and the installation base.
4. When the outdoor unit is in heating or defrosting, it needs to drain water. When installing the drain pipe, plug the accompanied drainage connector to the drainage hole on the chassis of the outdoor unit. Then connect a drain hose to the drainage connector (If drainage connector is used, the outdoor unit should be at least 10cm from the installation ground. See the following figures).





Connection Pipe Installation

Installation Notice and Requirement on Connection Pipe



Installation method: Connect the connection pipes first to the unit. When bending a connection pipe, be careful not to damage the pipe. Do not over-tighten the screw nut, otherwise leakage will occur. Besides, the outside of connection pipe should be added with a layer of insulating cotton to protect it from mechanical damage during installation, maintenance and transportation.

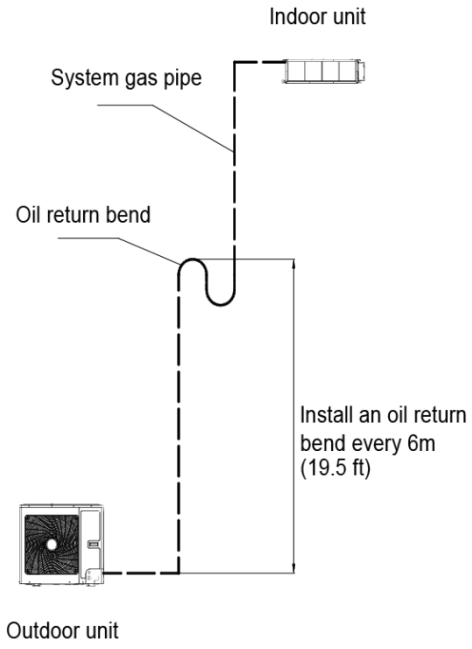
Model	Size of Fitting Pipe(in.)		Maximum pipe length ft. (m)	Biggest drop between indoor and outdoor units ft. (m
	Liquid pipe	Gas pipe		
VRUO-2436HP-U2B(54)	3/8	3/4	98.4 (30)	49.21 (15)
VRUO-4860HP-U2B(54)	3/8	3/4	98.4 (30)	49.21 (15)

Connection pipe should adopt water-proof insulating material. Its wall thickness should be 0.5-1.0mm and the pipe wall should be able to withstand 6.0MPa. The longer the connection pipe is the worse cooling and heating performance it has.

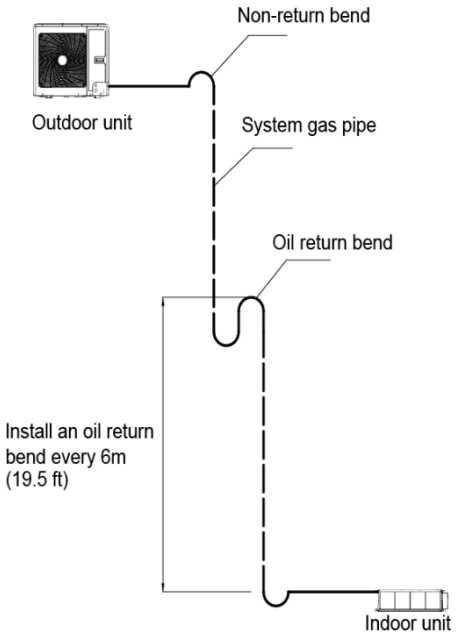
When the drop between indoor and outdoor units is larger than 10m, an oil return bend should be added every 6 meters.

The requirement on the adding of oil return bend is as below:

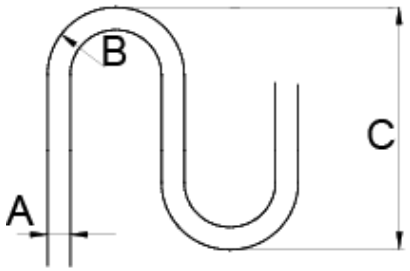
1. **Outdoor unit is beneath the indoor unit**.
   There's no need to add non-return bend at the lowest or highest position of the vertical pipe, as shown below:



2. **Outdoor unit is above the indoor unit.**
   It's necessary to add oil return bend and non-return bend at the lowest and highest position of the vertical pipe, as shown below:



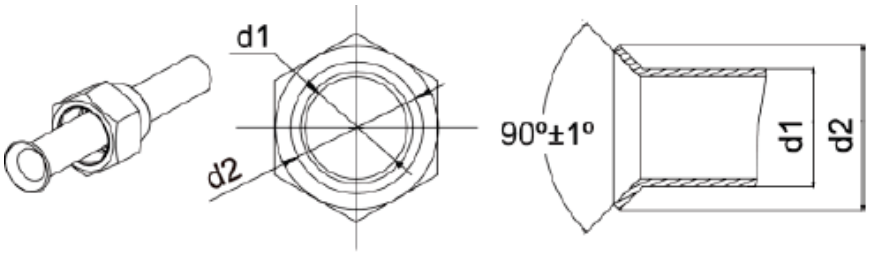
Dimensions for the making of oil return bend are as follows:



A		B	C
mm	In.	(mm) | in.	(mm) | in.
Φ12	1/2	≥26 | ≥1.02”	≤150 | ≤5.9”
Φ16	5/8	≥33 | ≥ 1.3”	≤150 | ≤5.9”
Φ19	3/4	≥34 | ≥1.34”	≤150 | ≤5.9”

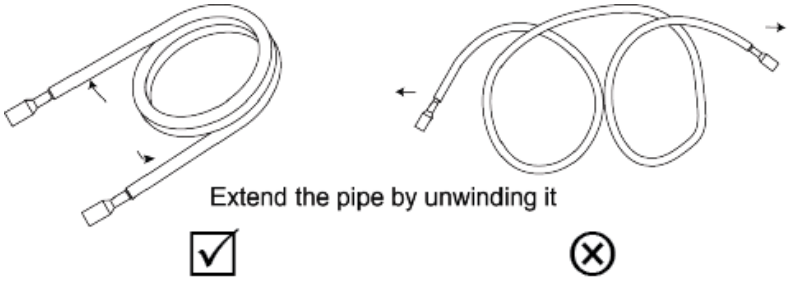
Pipe Flaring

1. Cut the connection pipe with a pipe cutter.
2. The mouth of connection pipe should face downward. Remove burrs with the cut surface so that the chips do not enter the pipe.
3. Remove the cut-off valve of outdoor unit and take out the flare nut from the bag of indoor unit accessories. Then fit the flare nut on the pipe and use a flaring tool to flare the mouth of connection pipe.
4. Check whether the flaring part has cracked. (See the figure below).



Pipe Bending

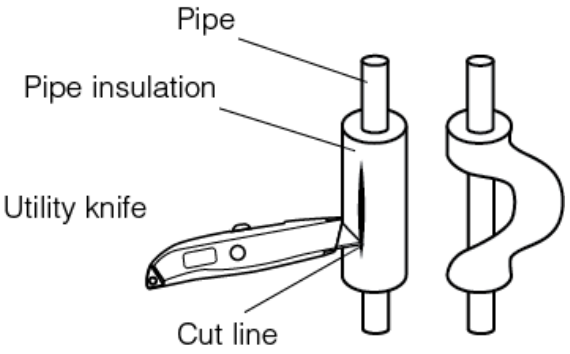
1. The pipes are shaped by your hands. Be careful not to collapse, crush or kink them



2. Do not bend the pipes in an angle more than 90°.

3. If the pipe is repeatedly bent or extended, it will become hard and difficult to be bent or extended. So do not bend or extend the pipe for more than 3 times.

4. When bending the pipe, do not bend it excessively, or it may break. As shown in the illustration, use a sharp cutter to cut the heat insulating pipe and bend it after the pipe is exposed. After bending, place the heat insulating pipe back on the pipeline and fix it with adhesive tape.

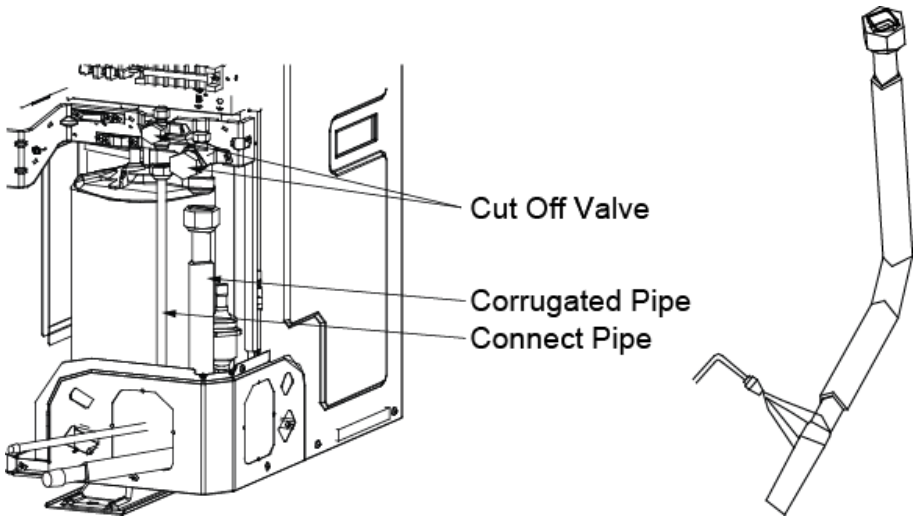


Connection Pipe of the Units

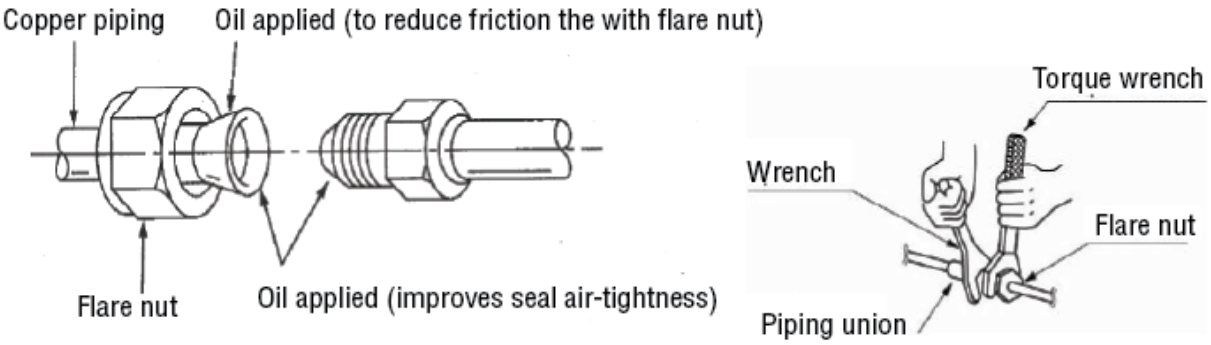
1	Connect the pipe to the unit. Please follow the instructions stated in the figures below. Use both spanner and torque wrench.
2	When connecting the tapered screw nut, first apply chilled machine oil on its inner and outer surface and then screw it up for 3~4 circles.
3	Confirm the tightening torque by referring to the following table (If the screw nut is over-twisted, it may be damaged and cause leakage).
4	Check whether gas leakage occurs to the connection pipe and then apply thermal insulation, as shown below.
5	Wind sponge around the joint of gas pipe and heat insulation sheath of gas collecting pipe.
6	Be sure to connect gas pipe after liquid pipe is connected.

Solder Connection

Screw on the flare nut of the flaring connecting pipe on the outdoor unit valve.



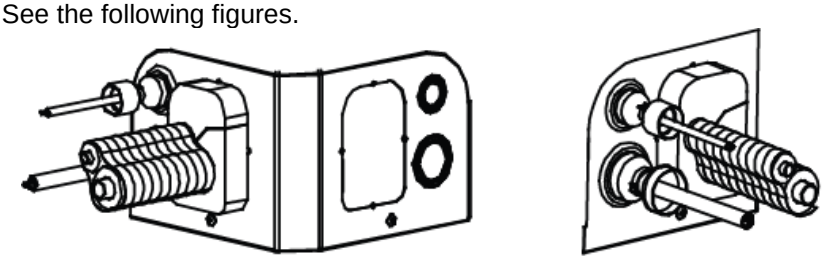
Screw Connection



Pipe diameter (in.)	Tightening torque (N·m)
1/4	15-30
3/8	35-40
1/2	45-50
5/8	60-65
3/4	70-75
7/8	80-85

Sealing of the Knock-off Hole

With the built-in valve model, pipe connection during the installation process, where the connection pipe is passing through the knock-out holes, seal the unused knock-out holes of the outdoor unit with insulated cotton to prevent small animals from entering. See the following figures.



Connection Pipe Vacuum Pumping and Leak Detection

Vacuum Pumping

NOTICE

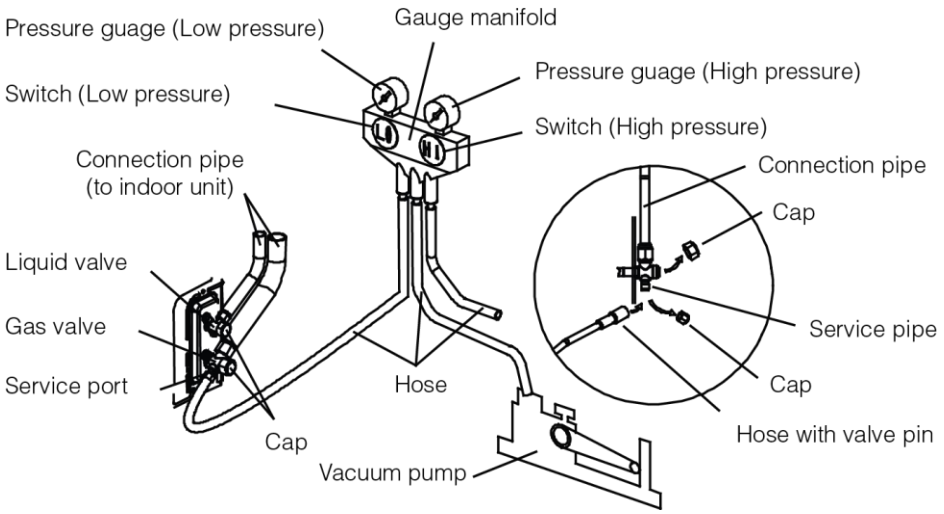
Make sure the outlet of vacuum pump is away from fire source and is well-ventilated.

1. Remove the caps of the liquid valve, gas valve and also the service port.
2. Connect the hose at the low pressure side of the manifold valve assembly to the service port of the unit's gas valve, and meanwhile the gas and liquid valves should be kept closed in case of refrigerant leak.
3. Connect the hose used for evacuation to the vacuum pump.
4. Open the switch at the lower pressure side of the manifold valve assembly and start the vacuum pump. Meanwhile, the switch at the high pressure side of the manifold valve assembly should be kept closed, otherwise evacuation would fail.
5. The evacuation duration depends on the unit's capacity, generally.

Model	Time(min)
VRUO-2436HP-U2B(54)	30
VRUO-4860HP-U2B(54)	30

And verify if the pressure gauge at the low pressure side of the manifold valve assembly reads -0.1Mp (-75cmHg), if not, it indicates there is leak somewhere. Then, close the switch fully and then stop the vacuum pump.

6. Wait for 10 min to see if the system pressure can remain unchanged. During this time, the reading of the pressure gauge at the low pressure side cannot be larger than 0.005Mp (0.38cmHg).
7. Slightly open the liquid valve and let some refrigerant go to the connection pipe to balance the pressure inside and outside of the connection pipe, so that air will not come into the connection pipe when removing the hose. **Note**: The gas and liquid valve can be opened fully only after the manifold valve assembly is removed.
8. Place back the caps of the liquid valve, gas valve and also the service port.



NOTICE

For large-size units, there are maintenance ports for liquid valve and gas valve. During evacuation, you may connect the two hoses of the branch valve assembly to the maintenance ports to speed up the evacuation.

Adding Refrigerant

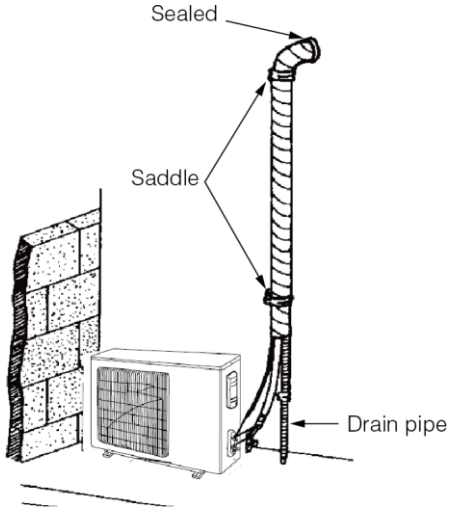
See the following table for the amount of additional refrigerant.

Model	Standard Pipe Length	Unnecessary Charge Pipe Length	Additional Refrigerant Amount for Extra Pipe
VRUO-2436HP-U2B(54)	7.5m	≤9.5m	54 g/m
	24.6 ft.	≤ 31.68 ft.	1.9 oz. / 3.28 ft.
VRUO-4860HP-U2B(54)	7.5m	≤9.5m	54 g/m
	24.6 ft.	≤ 31.68 ft.	1.9 oz. / 3.28 ft.

Installation of Drain Pipe

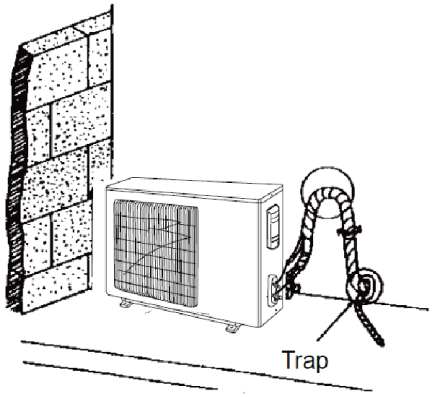
Outdoor Side Drainage Pipe

1. If the outdoor unit is underneath the indoor unit, arrange the pipeline according to the following diagram.
    1) Drain hose should be placed on the ground and its end should not be immersed into water. The whole pipeline should be supported and fixed onto the wall.
    2) Wind the insulating tape from bottom to top.
2. The whole pipeline should be wound with insulating tape and fixed onto the wall with saddles.



If the outdoor unit is above the indoor unit, arrange the pipeline according to the following diagram.

3) Wind the insulating tape from bottom to top.
4) The whole pipeline should be wound together to avoid water returning to the room.
5) Use saddles to fix the whole pipeline onto the wall.



HANDLING

- After having removed the packaging, check that the contents are intact and complete.
- The outdoor unit must always be kept upright.
- Handling must be done by suitably equipped qualified technician using equipment that is suitable for the weight of the appliance.

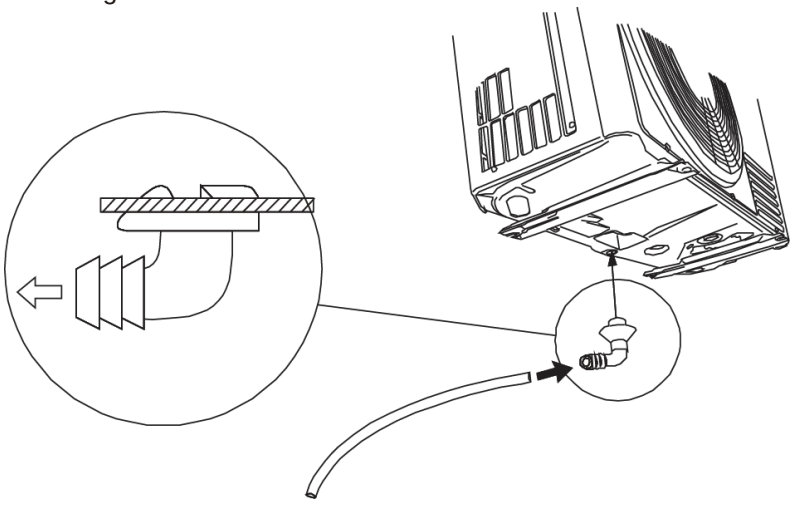
INSTALLING OUTDOOR UNIT

- Use bolts to secure the unit to a flat, solid floor.
- When mounting the unit on a wall or the roof, make sure the support is firmly secured so that it cannot move in the event of intense vibrations or a strong wind.

* Do not install the outdoor unit in pits or air vents.
* Do not install the outdoor unit where it is exposed to direct sunlight.

INSTALLING THE PIPES

- Use suitable connecting pipes and equipment for the refrigerant R410A.
- The refrigerant pipes must not exceed the maximum lengths given in the technical data table.
- Connect all the refrigerant pipes and joints.
- Tighten the connections using two wrenches working in opposite directions.



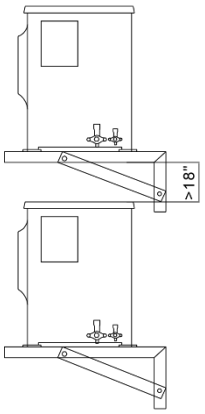
Install the drain fitting and the drain hose (for heat pump models only)

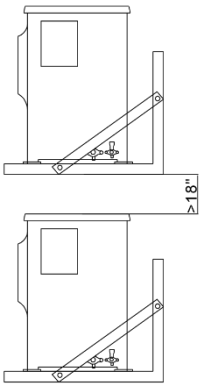
Condensation is produced and flows from the outdoor unit when the appliance is operated in the heating mode. Install a drain fitting and a drain hose to channel the any condensate water. Install the drain fitting and rubber washer on the outdoor unit chassis and connect a drain hose to it as shown in the figure.

ELEVATING OUTDOOR UNIT

Strongly suggest to install the outdoor unit above the ground either on a raised platform or brackets as shown below.

Heat pump units must be elevated above ground level due to condensate that must be drained out of the drain pan of the condensing unit. If the condensate cannot drain properly, it may accumulate and result in an ice buildup that can cause damage to the condensing unit.
We suggest using YMGI mounting brackets and condensate drainage fitting accessories





Stainless Steel Brackets with Accessories

Heavy-Duty PVC Riser for Ground Mounting

Coated Brackets with Accessories

Electrical Installation

Requirement and Notice on Electrical Installation

⚠WARNING

1. The electrical installation for the air conditioner should observe the following requirements:
2. The electrical installation must be conducted by professionals in compliance with local laws and regulations and the instructions in this manual. Never extend the power cord. The electric circuit must be equipped with a circuit breaker and air switch both with sufficient capacity.
3. The unit's operating power must be within the nominal range stated in the instruction manual. Use a specialized power circuit for the air conditioner. Do not draw power from another power circuit.
4. The air conditioner circuit should be at least 1.5m away from any inflammable surface.
5. The external power cord, the temperature controller wire and outdoor unit must be effectively fixed.
6. The external power cord, the temperature controller wire and outdoor unit can't directly contact any hot objects. For example: they must not contact chimney pipes, warm gas pipes or other hot objects.
7. The external power cord, and the temperature controller wire and outdoor unit must not be squeezed. Never pull, stretch or bend the wires.
8. The external power cord, the temperature controller wire and outdoor unit must not collide with any metal beam or edge on the ceiling, or touch any metal burrs or sharp metal edge around.
9. Connect wires correspondingly by referring to the circuit diagram labeled on the unit or electric box. Screws must be tightened up. Slipped screws must be replaced by specialized flat-head screws.
10. Please use the power cables that are delivered along with the air conditioner. Do not change the power cables arbitrarily. Do not change the length and terminals of the power cables. If you want to change the power cables, please contact YMGI's local service center.
11. Wiring terminals should be connected firmly to the terminal board. Loose connection is forbidden.
12. After the electrical installation is finished, please use wire clamps to secure the power cord, the temperature controller wire and outdoor unit. Make sure the wires are not clamped too tight.
13. The wire gauge of power cord should be large enough. Damaged power cord or other wires must be replaced by specialized wires. Wiring work must be done according to national wiring rules and regulations.
14. This outdoor unit has a heating four-way valve.

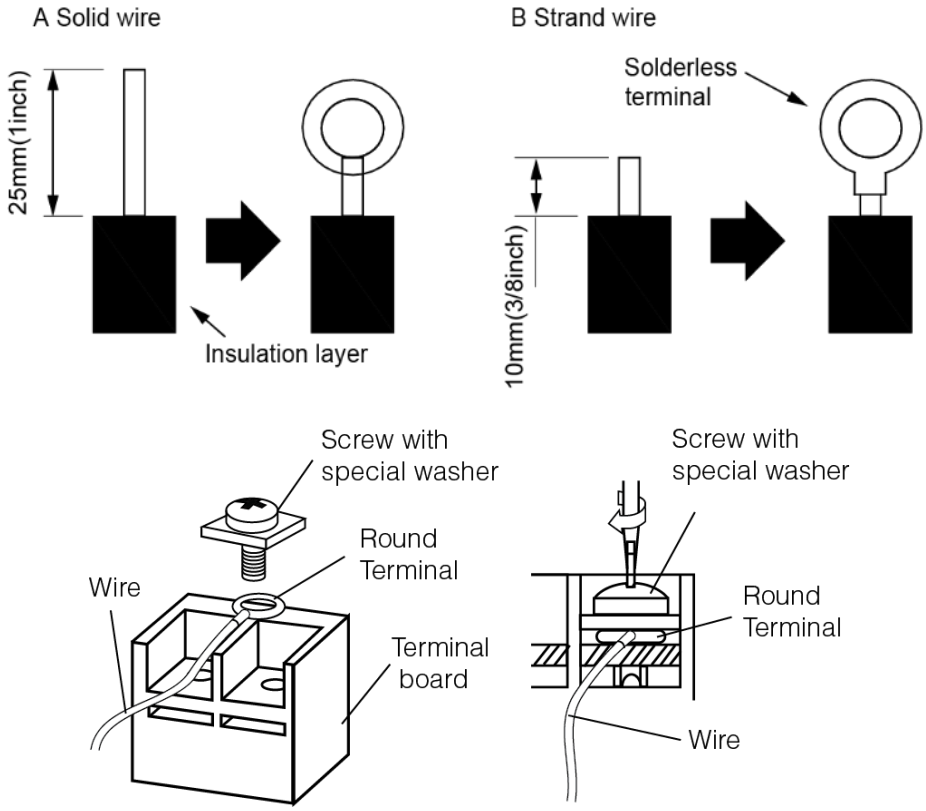
Electrical Parameters

Model	Power supply	Max Fuse Size / Fusible Max. (A)	Max Circuit Breaker Size / (A)	Min. Circuit Ampacity (A)
VRUO-2436HP-U2B(54)	208/230V-1Ph-60Hz	50	50	29
VRUO-2436HP-U2B(54)	208/230V-1Ph-60Hz	50	50	29

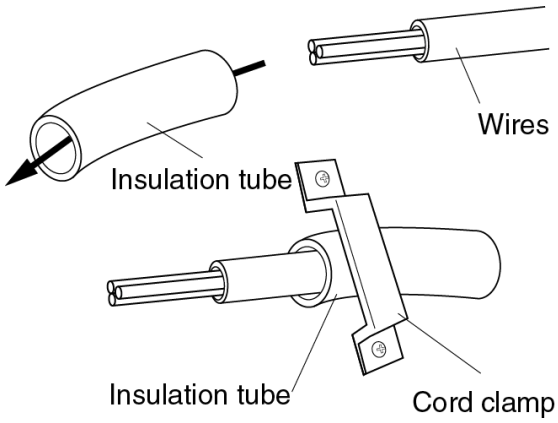
Connection of Power Cord and Temperature Controller Wire

1. For solid wires (as shown below):
   1) Use wire cutters to cut off the wire end and then peel away about 25mm of the insulation layer.
   2) Use a screwdriver to unscrew the terminal screw on the terminal board.
   3) Use nippers to bend the solid wire into a ring that fits the terminal screw.
   4) Form a proper ring and then put it on the terminal board. Use a screwdriver to tighten up the terminal screw.

2. For strand wires (as shown below):
   1) Use wire cutters to cut off the wire ends and then peel away about 10mm of the insulation layer.
   2) Use a screwdriver to unscrew the terminal screw on the terminal board.
   3) Use a round terminal fastener or clamp to fix the round terminal firmly on the peeled wire end.
   4) Locate the round terminal conduit. Use a screwdriver to replace it and tighten up the terminal screw (as shown below).

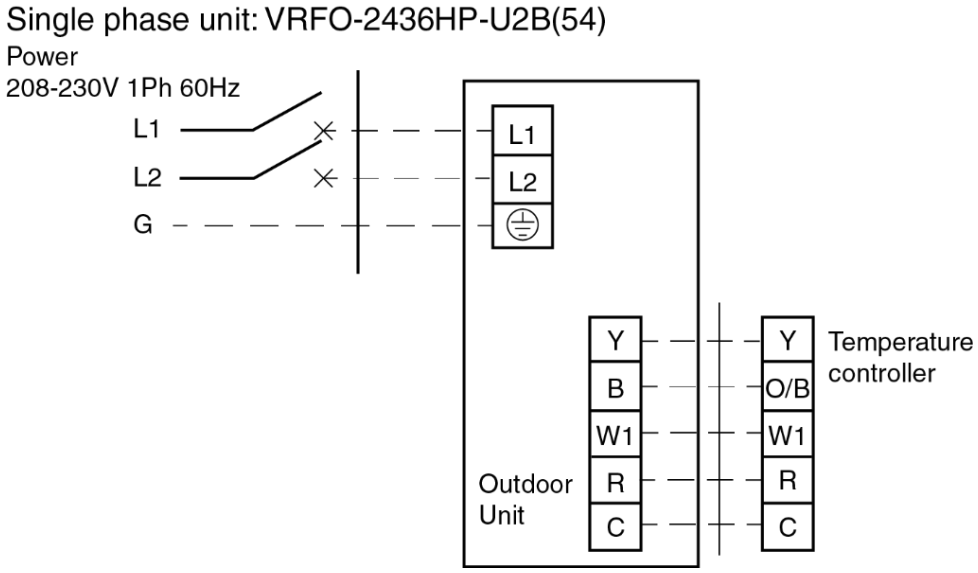


3. How to connect the temperature controller wire and power cord.
   Lead the temperature controller wire and power cord through the insulation tube. Then fix the wires with wire clamps (as shown in the following figure.)



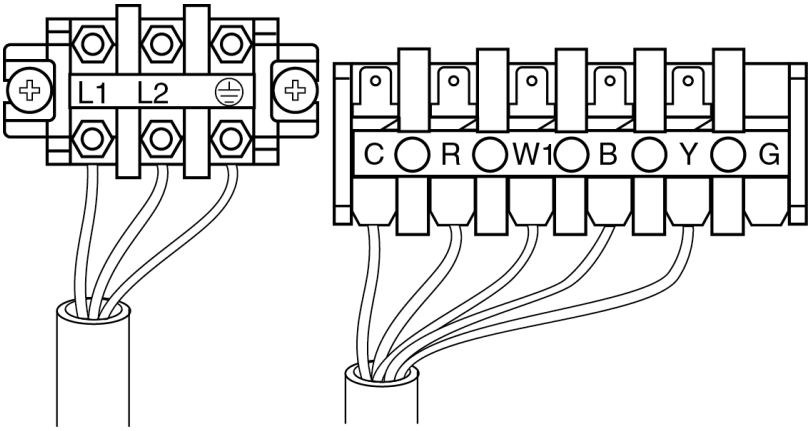
⚠WARNING	
①	Before working on unit, please make sure the unit is turned off.
②	Incorrect wire connection may burn out the electrical components.
③	Connect the wires firmly to the wiring box. Incomplete installation may create a fire hazard
④	Please use wire clamps to secure the external covers of temperature controller wires. (Insulators must be clamped securely, otherwise, electric leakage may occur.)
⑤	Ground wire should be connected.

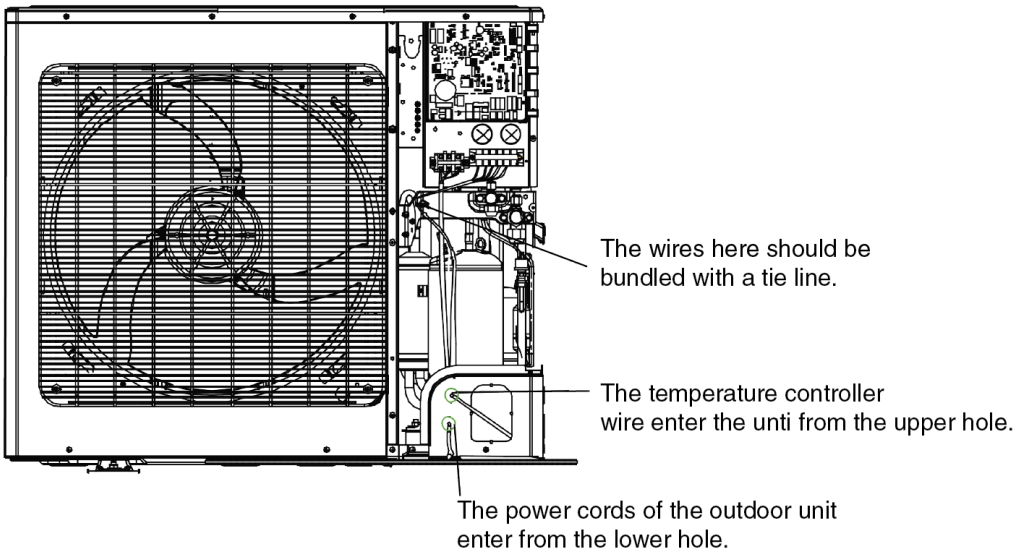
Wiring of Outdoor Unit
Single-phase unit: VRUO-2436HP-U2B(54)



⚠WARNING	
①	High and low voltage wires should be led through separate rubber rings of the electric box cover.
②	Do not bundle up the temperature controller wires or lay them side by side, otherwise errors can occur.
③	High and low voltage wires should be secured separately. Secure the former ones with big clamps and the latter ones with small clamps.
④	Use screws to tighten up the temperature controller wires and power cords of the units on the terminal board. Wrong connection may lead to fire hazard.
⑤	If the temperature controller wires of the units and power cords are not correctly connected, the air conditioner may be damaged.
⑥	Ground the units through connecting the ground wire.
⑦	The units should comply with applicable local and national rules and regulations on power consumption.
⑧	When connecting the power cord, make sure the phase sequence of the power supply matches with the corresponding terminals, otherwise the compressor will get reversed and operate abnormally.

Remove the big handle/front panel of the outdoor unit and insert one end of the Temperature controller cord and the power cord to the terminal board.
Single-phase unit: VRUO-2436HP-U2B(54)





Power cord should be secured along with the right side plate and fixed to the hook with a wire clamp so as to avoid contacting the pipeline. The temperature controller wire should also be laid along with the right side plate but away from the power cord.

Check after Installation

Check These Items after Installation

Check items	Possible events due to improper installation
Is the main body installed securely?	The unit may fall down, vibrate or produce noise.
Did you do water leakage test?	Cooling capacity may become unsatisfactory.
Is the unit well insulated from heat?	Condensate, water drops may occur.
Does water drainage flow well?	Condensate, water drops may occur.
Is the voltage consistent with that stated on the nameplate?	The unit may fail or its components may get burned.
Are the wires and pipes installed correctly?	The unit may fail or its components may get burned.
Has the unit been safely grounded?	Risk of electric leakage.
Do the specifications of wires comply with the requirement?	The unit may fail or its components may get burned.
Is there any obstacle blocking the air inlet and outlet of the units?	Cooling capacity may become unsatisfactory.
Have you recorded the length of refrigerant pipe and the refrigerant charging amount?	The refrigerant charging amount can't be controlled

Test Running

Preparation before connecting the power:

1. Power must not be connected if the installation work is not completed.
2. Control circuit is correct and all the wires are firmly connected.
3. Cut-off valves of the gas pipe and liquid pipe are open.
4. The inside of the unit should be clean. Take irrelevant objects out if there is any.
5. After checking, re-install the front side plate.

Operation after connecting the power:

1. If all the above works are finished, power on the unit.
2. If the outside temperature is more than 30°C, heating mode can't be enabled.
3. Make sure the units can run normally.
4. If there's sound of liquid shock when the compressor is running, then stop the air conditioner immediately. Wait until the electric heating belt is heated enough, and then restart the air conditioner

NOTICE

1. If you use the remote control to turn off the unit and then immediately turn the unit on again, the compressor will need 3 minutes to restart. Even if you press "ON/OFF" button on the remote control, it will not start up right away.
2. If there's no display on the wired control, it's probably because the connection wire between the units and the temperature controller are not connected. Please check again.

INSTALLATION OF ACCESSORIES

CONNECT REFRIGERANT PIPES

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

Maintenance

Failures Not Caused by Faults of the AC Unit

If your air conditioner fails to function normally, please first check the following items before maintenance:

Problem	Cause	Corrective measure
The air conditioner can't run.	If you turn off the unit and then immediately turn it on, in order to protect the compressor and avoid system overload, compressor will delay running for 3min.	Please wait for a while.
	Wire connection is wrong.	Connect wires according to the wiring diagram.
	Fuse or circuit breaker is broken.	Replace the fuse or switch on the circuit breaker.
	Power failure.	Restart after power is resumed.
	Power plug is loose.	Re-insert the power plug.
	Remote control has low battery.	Replace the batteries.
Bad cooling or heating effect.	Air inlet and outlet of the units have been blocked.	Clear the obstacles and keep the room for the units well ventilated.
	Improper temperature setting	Reset a proper temperature.
	Fan speed is too low.	Reset a proper fan speed.
	Air flow direction is not right.	Change the direction of air louvers.
	Doors or windows are open.	Close them.
	Exposed under direct sunshine.	Put on curtains or louvers in front of the windows.
	Too many heat sources in the room.	Remove unnecessary heat sources.
	Filter is blocked or dirty.	Send for a professional to clean the filter.
	Air inlets or outlets of the units are blocked.	Clear away obstacles that are blocking the air inlets and outlets of the units.
Mist comes from the air conditioner.	During operation.	If the unit is running under high humidity, the wet air in the room will be quickly cooled down.
The air conditioner generates excessive noise.	System switches to heating mode after defrosting.	Defrosting process will generate some water, which will turn to water vapor.
	The air conditioner is buzzing at the beginning of operation.	Temperature control will be buzzing when it starts working. The noise will become quieter after operating for about 1 minute..
Dust comes from the air conditioner.	When the unit is turned on, it purrs.	When the system is just started, the refrigerant is not stable. About 30s later, the purr of the unit becomes low.
	About 20 seconds after the unit first enables the heating mode or there is refrigerant brushing sound when defrosting under heating.	It's the sound of 4-way valve switching direction. The sound will disappear after the valve changes its direction.
	There is hissing sound when the unit is started or stopped and a slight hissing sound during and after operation.	It's the sound of gaseous refrigerant that stops flowing and the sound of drainage system.
	There is a sound of crunching during and after operation.	Because of temperature change, front panel and other components may be swelled up and cause abrasion sound.
	There is a hissing sound when the unit is turned on or suddenly stopped during operation or after defrosting.	Because refrigerant suddenly stops flowing or changes the flow direction.
	The unit starts operation after being unused for a long time.	Dust inside the units come out together with the air.
The air conditioner generates an odor.	During operation.	The room smell or the smell of cigarette comes out through the units.

NOTICE

Check the above items and use the corresponding corrective measures. If the air conditioner continues to function poorly or improperly, stop the air conditioner immediately and a YMGI's authorized HVAC technician and have them repair the unit.

Error Codes

⚠WARNING	
①	If the unit operates abnormally (for example, bad odor), please stop the unit immediately and shut off or disconnect power. Contact YMGI's authorized service center. If the unit continues to run abnormally, it can damage the unit and/or cause electric shock or create a fire hazard.
②	Do not attempt to repair the air conditioner yourself. Improper maintenance or repair can cause electric shock or fire hazard. Please contact YMGI's authorized service center and send for professional service staff to repair.

If the display panel or wired control displays an error code, please refer to the error code meaning stated in the following table.

No.	Error Code	Error
1	E1	Compressor high pressure protection
2	E4	Compressor air discharge high-temperature protection
3	E3	Compressor low pressure protection, refrigerant lack protection and refrigerant collecting mode
4	F2	Condenser temperature sensor error
5	F3	Outdoor ambient temperature sensor error
6	F4	Discharge temperature sensor error
7	F6	ODU tube temperature sensor error
8	EE	ODU memory chip error
9	PF	Electric box sensor error
10	H3	Compressor overload protection
11	H4	Overload
12	H5	IPM protection
13	H6	DC fan error
14	H7	Driver out-of-step protection
15	HC	Pfc protection
16	Lc	Startup failure
17	Ld	Compressor phase-sequence protection
18	LF	Power protection
19	U7	4–way valve switch-over error
20	P0	Driver reset protection
21	P5	Over-current protection
22	P6	Master control and driver communication error
23	P7	Driver module sensor error
24	P8	Driver module high temperature protection
25	P9	Zero-crossing protection
26	PA	AC current protection
27	Pc	Driver current error
28	Pd	Sensor connection protection
29	PE	Temperature drift protection
30	PL	Bus low-voltage protection
31	PH	Bus high-voltage protection
32	PU	Charge loop error
33	PP	Input voltage error
34	ee	Drive memory chip error
35	C4	ODU jumper cap error

NOTICE

When the unit is connected with the wired controller, the error code will be simultaneously shown on it.

Unit Maintenance

⚠WARNING	
①	Only professionals should perform regular maintenance.
②	Before contacting any wire, make sure power is cut off.
③	Do not let any inflammable objects near the unit.
④	Do not use organic solvent to clean the air conditioner.
⑤	If you need to replace a component, please ask a professional to repair with a component supplied by the original manufacturer so as to ensure the unit's quality.
⑥	Improper operation may get the unit broken, hit by electric shock or cause fire.
⑦	Do not make the air conditioner wet or electric shock may be lead, Ensure that the air conditioner will not be cleaned by water rinsing under any circumstance.

NOTICE	
①	Before cleaning, please make sure the unit is stopped. Cut the circuit breaker and remove the power socket, otherwise, electric shock may occur.
②	Do not wash the air conditioner with water, otherwise fire hazard or electric shock may occur.
③	When cleaning the filter, please be careful of your steps. If you need to work high above the ground, please be extremely careful.

Heat Exchanger of Outdoor Unit

Perform cleaning for the heat exchanger of outdoor unit periodically, clean it once at least in every two months. Clean the dust and debris on the surface of the heat exchanger with a nylon brush and dust pan, or if there's compressed air source; use compressed air to blow the dust off of the surface of the heat exchanger. Do NOT use tap water for cleaning.

Drainage Pipe

Regularly check to see if the drainage pipe is blocked or obstructing the drainage of condensate water.

Notices at the Beginning of the Using Season

1. Check if the air inlet/outlet of the units are blocked.
2. Check if the ground connection is reliable.
3. Check the battery of remote controller. If battery is old or dead, replaced it.
4. Check if the air filter screen is properly installed.
5. If starting up again after long-term shut down, preset the power switch of air conditioner to "ON" status before 8 hours of operation, to preheat the crankcase of outdoor compressor.
6. Check if the installation of outdoor unit is in good working order. If not, please contact with an HVAC technician.

End of the Using Season Maintenance

1. Cut off the main power of air conditioner;
2. Clean the dust and sundries in outdoor unit;
3. If the outdoor unit is rusty, coat the rusty location with paint to prevent it from expanding

Parts Replacement

Parts are available from YMGI Group. To order parts please contact us at (866)833-3138 or 636-272-6800.

Notice on Maintenance

Information on Servicing

The manual contains specific information for service personnel who should be instructed to ensure the following when servicing an appliance that employs a flammable refrigerant.

General Work Area

Maintenance staff and others working in the installation area should be instructed on the nature of work being carried out. Work in confined spaces should be avoided. The area around the workspace should be sectioned off. Ensure that the conditions within the area have been made safe for control of flammable material.

Ventilated Area

Ensure that the unit is in an open area that it is adequately ventilated before opening the system or conducting any hot work. A degree of ventilation should continue while the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

Checking the Refrigeration Equipment

Where electrical components are being replaced, they should be fit for the purpose and to the correct specification. At all times the manufacturer's maintenance and service guidelines should be followed. If in doubt consult YMGI's technical department for assistance.

The following checks shall be applied to installations using flammable refrigerants:

1. The ventilation machinery and outlets are operating adequately and are not obstructed.
2. If an indirect refrigerating circuit is being used, the secondary circuit should be checked for the presence of refrigerant.
3. Markings on the equipment continue to be visible and legible. Markings and signs that are illegible should be corrected.
4. Refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

Checks to electrical devices

Repair and maintenance to electrical components should include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply should be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution should be used. This should be reported to the owner of the equipment so all parties are advised.

Initial safety checks should include:

1. That capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking.
2. That no live electrical components and wiring are exposed while charging, recovering or purging the system.
3. That there is continuity of the unit being grounded.

Repairs to Sealed Components

Electrical Safety

From the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection should be located at the most critical point, to warn of a potentially hazardous situation.

Particular Attention

Electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of nuts, etc.

Ensure that apparatus is mounted securely.

Ensure that seals or sealing materials have not degraded such that they no longer serve the purpose of preventing the ingress of flammable atmospheres. Replacement parts should be in accordance with the manufacturer's specifications.

NOTICE

The use of silicon sealant may inhibit the effectiveness of some types of leak detection equipment. Intrinsically safe components do not have to be isolated prior to working on them.

Repair to Intrinsically Safe Components

Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.

Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus should be at the correct rating.

Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

Cabling

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of ageing or continual vibration from sources such as compressors or fans.

Charging Procedures

In addition to conventional charging procedures, the following requirements should be followed.

1. Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines should be as short as possible to minimize the amount of refrigerant contained in them.
2. Cylinders shall be kept upright.
3. Ensure that the refrigeration system is grounded prior to charging the system with refrigerant.
4. Label the system when charging is complete (if not already).
5. Extreme care shall be taken not to overfill the refrigeration system.
6. Prior to recharging the system it shall be pressure tested with OFN. The system shall be leak tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its details. It is recommended good practice that all refrigerant are recovered safely. Prior to the task being carried out, an oil and refrigerant sample should be taken in case analysis is required prior to re-use of reclaimed refrigerant. It is essential that electrical power is available before the task is started:

1. Become familiar with the equipment and its operation.
2. Isolate system electrically.
3. Before attempting the procedure ensure that:
    1. Mechanical handling equipment is available, if required, for handling refrigerant cylinders.
    2. All personal protective equipment is available and being used correctly.
    3. The recovery process is supervised at all times by a competent person.
    4. Recovery equipment and cylinders conform to the appropriate standards.
4. Pump down refrigerant system, if possible.
5. If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
6. Make sure that cylinder is situated on the scales before recovery takes place.
7. Start the recovery machine and operate in accordance with manufacturer's instructions.
8. Do not overfill cylinders. (No more than 80% volume liquid charge).
9. Do not exceed the maximum working pressure of the cylinder, even temporarily.
10. When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
11. Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

Labelling
Equipment should be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed.

Recovery
When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.

When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge are available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant).

Cylinders should be complete with pressure relief valve and associated shut-off valves in good working order.
In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses should be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained Consult manufacturer if in doubt.

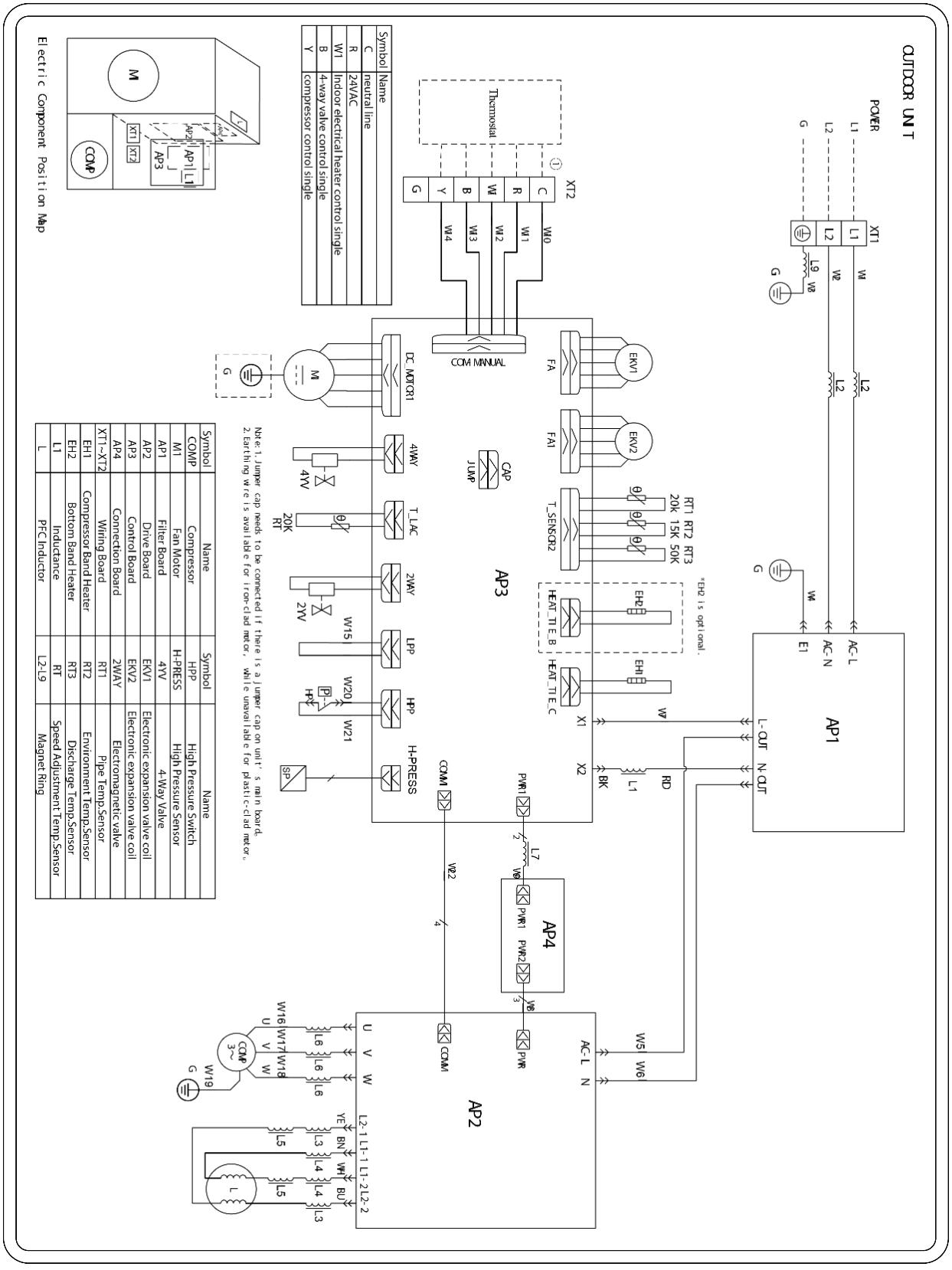
The recovered refrigerant should be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant Waste Transfer Notice arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.

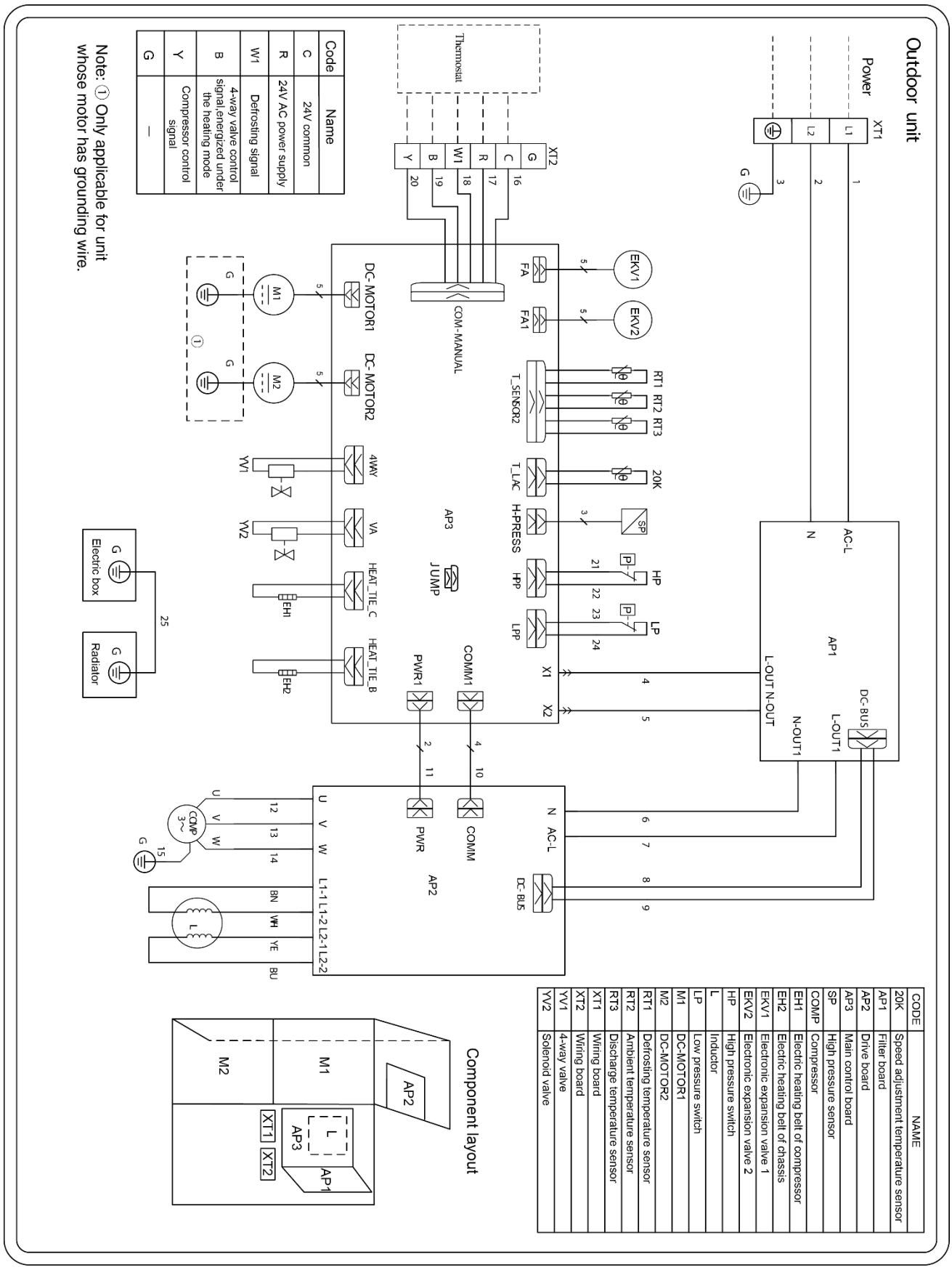
After-Sales Services
Any quality or other issues encountered in the purchased air conditioner, please contact YMGI for after-sales service. Please contact us at (866)833-3138 or 636-272-6800.

WIRING DIAGRAM

VRUO-2436HP-U2B(54)



VRUO-4860HP-U2B(54)



Code	Name
C	24V common
R	24V AC power supply
W1	Defrosting signal
B	4-way valve control signal,energized under the heating mode
Y	Compressor control signal
G	—

CODE	NAME
20K	Speed adjustment temperature sensor
AP1	Filter board
AP2	Drive board
AP3	Main control board
SP	High pressure sensor
COMP	Compressor
EH1	Electric heating belt of compressor
EH2	Electric heating belt of chassis
EKV1	Electronic expansion valve 1
EKV2	Electronic expansion valve 2
HP	High pressure switch
L	Inductor
LP	Low pressure switch
M1	DC-MOTOR1
M2	DC-MOTOR2
RT1	Defrosting temperature sensor
RT2	Ambient temperature sensor
RT3	Discharge temperature sensor
XT1	Wiring board
XT2	Wiring board
YV1	4-way valve
YV2	Solenoid valve

USER NOTES AND INSTALLATION/SERVICE/MAINTENANCE NOTES

Installation Company: _____

Technician Name: _____

Phone: _____

Email: _____

INSTALLATION NOTES

Please record any questions or problems you have experienced as a unit history:

No.	Date	Notes	Asked Your Technician for Help?	Asked YMGI Tech. contacted for help?

USER NOTES

Please record any questions or problems you have experienced as a unit history:

No.	Date	Company Name, Technician Name, Phone & HVAC License #	Job Not Performed by Technician	Technician Checklist Completed Fully?

SERVICE / MAINTENANCE NOTES

No.	Date	Type of Service / Maintenance	Company Name, Technician Name, Phone & HVAC License #

This VRUO Outdoor unit can work with any Indoor Unit Air Handler of any other major North American brand.



YMGI is dedicated to designing, manufacturing and distributing the highest quality, energy saving and environmentally friendly air conditioner and heat pump products, while providing the best service and support to all of our customers. Our mission is to help build a sustainable, efficient and green world.

YMGI Symphony-Ductless & Ducted Heat Pump & Heat Recovery:

- **Symphony SOLAR DC Inverter**
  (56) Single PV, (79) Single PH 12-18K Btu/h
  (86) Single Zone All DC 09-24K Btu/h
  (55) Multi Zone Solar VRF 3, 4, 8, 16, and 24 Ton.
- **Symphony SOLO DC Inverter**
  (57)2,3 Single Zone 16 SEER, 09-36K Btu/h
  (58)4, (78)1-Single Zone 18-23 SEER, 09-36K Btu/h
- **Symphony CHOIR DC Inverter**
  (46)2 DC Inverter Multiple Zone 15 SEER, 2x09K and 2x12K Btu/h
  (59)2S-DC Inverter Multiple Zone 16 SEER 6x09K to 9x09K Btu/h
  (59)4-DC Inverter Multiple Zone 21 SEER 2x09K to 5x12K Btu/h
- **Symphony VRF - DC Inverter HP, Heat Recovery, and Solar. Up to 64 zones.**
- **Symphony HARMONY-Packaged Self-Contained**
  42”x16” PTAC/PTHP Electric Heater or Hot Water Coil, and VPAK
- **Symphony CONDUCTOR-Split Type Condensing Units**
  Side Discharge VRUI & VRUO

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