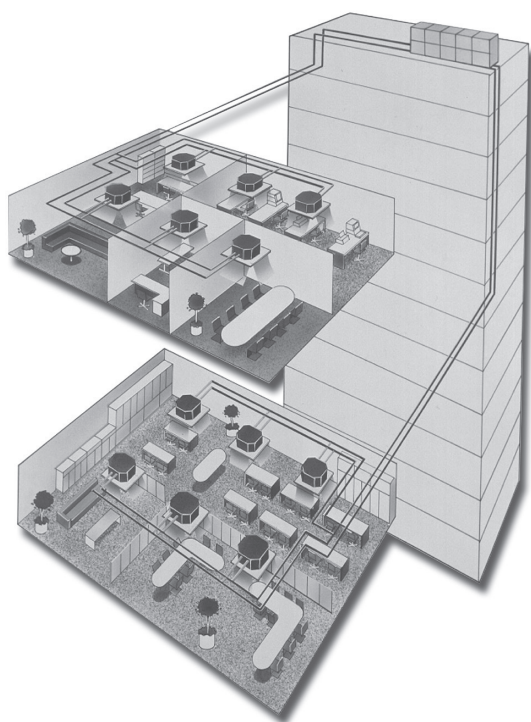


ENGINEERING MANUAL

INVERTER-DRIVEN MULTI-SPLIT SYSTEM HEAT RECOVERY AIR CONDITIONERS



Engineering Manual

< Outdoor Units >

208/230V

(H,Y)VAHR072B32S, (H,Y)VAHR096B32S,
(H,Y)VAHR120B32S, (H,Y)VAHR144B32S,
(H,Y)VAHR168B32S, (H,Y)VAHR192B32S,
(H,Y)VAHR216B32S, (H,Y)VAHR240B32S,
(H,Y)VAHR264B32S, (H,Y)VAHR288B32S,
(H,Y)VAHR312B32S, (H,Y)VAHR336B32S,
(H,Y)VAHR360B32S, (H,Y)VAHR384B32S,
(H,Y)VAHR408B32S, (H,Y)VAHR432B32S

460V

(H,Y)VAHR072B42S, (H,Y)VAHR096B42S,
(H,Y)VAHR120B42S, (H,Y)VAHR144B42S,
(H,Y)VAHR168B42S, (H,Y)VAHR192B42S,
(H,Y)VAHR216B42S, (H,Y)VAHR240B42S,
(H,Y)VAHR264B42S, (H,Y)VAHR288B42S,
(H,Y)VAHR312B42S, (H,Y)VAHR336B42S,
(H,Y)VAHR360B42S, (H,Y)VAHR384B42S,
(H,Y)VAHR408B42S, (H,Y)VAHR432B42S

575V

(H,Y)VAHR072B52S, (H,Y)VAHR096B52S,
(H,Y)VAHR120B52S, (H,Y)VAHR144B52S,
(H,Y)VAHR168B52S, (H,Y)VAHR192B52S,
(H,Y)VAHR216B52S, (H,Y)VAHR240B52S,
(H,Y)VAHR264B52S, (H,Y)VAHR288B52S,
(H,Y)VAHR312B52S, (H,Y)VAHR336B52S,
(H,Y)VAHR360B52S, (H,Y)VAHR384B52S,
(H,Y)VAHR408B52S, (H,Y)VAHR432B52S

IMPORTANT NOTICE AND SAFETY SUMMARY



1. Introduction

This Engineering Manual concentrates on heat recovery air conditioning units. Read this manual carefully before performing installations or operations.


This manual must be considered as a permanent part of the air conditioning equipment and must remain with the air conditioning equipment.

(Transportation/Installation Work) > (Refrigerant Piping Work) > (Electrical Wiring Work) > (Ref. Charge Work) > (Test Run) > (User)

2. Important Safety Instructions

Signal Words	
 WARNING	Indicates a hazardous situation that, if not avoided, could result in death or serious injury.
 CAUTION	Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates information considered important, but not hazard-related (for example, messages relating to property damage).

General Precautions

 WARNING	To reduce the risk of serious injury or death, read these instructions thoroughly and follow all warnings or cautions included in all manuals that accompanied the product and are attached to the unit. Refer back to these instructions as needed.
--	--

- This system must be installed by personnel certified by Johnson Controls-Hitachi Air Conditioning. Personnel must be qualified according to local codes and regulations. Incorrect installation could cause leaks, electric shock, fire or explosion. In areas where Seismic "Performance requirements are specified, the appropriate measures must be taken during installation to guard against possible damage or injury that might occur in an earthquake if the unit is not installed correctly, injuries may occur due to a falling unit.
- Use appropriate Personal Protective Equipment (PPE), such as gloves and protective goggles and, where appropriate, have a gas mask nearby. Also use electrical protection equipment and tools suited for electrical operation purposes. Keep a heat shields, fire blankets and a fire extinguisher nearby during brazing. Use care in handling, rigging, and setting of bulky equipment.
- When transporting, be careful when picking up, moving and mounting these units. Although the unit may be packed using plastic straps, do not use them for transporting the unit from one location to another. Do not stand on or put any material on the unit. Get a partner to help, and bend with your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut fingers, so wear protective gloves.
- Do not touch or adjust any safety devices inside the indoor or outdoor units. All safety features, disengagement, and interlocks must be in place and functioning correctly before the equipment is put into operation. If these devices are improperly adjusted or tampered with in any way, a serious accident can occur. Never bypass or jump-out any safety device or switch.
- Johnson Controls-Hitachi Air Conditioning will not assume any liability for injuries or damage caused by not following steps outlined or described in this manual. Unauthorized modifications to Johnson Controls-Hitachi Air Conditioning products are prohibited as they...
 - May create hazards which could result in death, serious injury, equipment damage or property damage.
 - Will void product warranties.
 - May invalidate product regulatory certifications.
 - May violate OSHA standards.

NOTICE

Take the following precautions to reduce the risk of property damage.

- Be careful that moisture, dust, or variant refrigerant compounds not enter the refrigerant cycle during installation work. Foreign matter could damage internal components or cause blockages.
- If air filters are required on this unit, do not operate the unit without the air filter set in place. If the air filter is not installed, dust may accumulate and breakdown may result.
- Do not install this unit in any place where silicon gases can coalesce. If the silicon gas molecules attach themselves to the surface of the heat exchanger, the finned surfaces will repel water. As a result, any amount of drainage moisture condensate can overflow from the condensate pan and could run inside of the electrical box, possibly causing electrical failures.
- When installing the unit in a hospital or other facility where electromagnetic waves are generated from nearby medical and/or electronic devices, be prepared for noise and electronic interference Electromagnetic Interference (EMI). Do not install where the waves can directly radiate into the electrical box, controller cable, or controller. Inverters, appliances, high-frequency medical equipment, and radio communications equipment may cause the unit to malfunction. The operation of the unit may also adversely affect these same devices. Install the unit at least 10 ft. (approximately 3m) away from such devices.
- When a wireless controller is used, locate at a distance of at least 3.3 ft. (approximately 1m) between the indoor unit and electric lighting. If not, the receiver part of the unit may have difficulty receiving operation commands.
- Do not install the unit in any location where animals and plants can come into direct contact with the outlet air stream. Exposure could adversely affect the animals and plants.
- Do not install the unit with any downward slope to the side of the drain adapter. If you do, you may have drain water flowing back which may cause leaks.
- Be sure the condensate hose discharges water properly. If connected incorrectly, it may cause leaks.
- Do not install the unit in any place where oil can seep onto the units, such as table or seating areas in restaurants, and so forth. For these locations or social venues, use specialized units with oil-resistant features built into them. In addition, use a specialized ceiling fan designed for restaurant use. These specialized oil-resistant units can be ordered for such applications. However, in places where large quantities of oil can splash onto the unit, such as a factory, even the specialized units cannot be used. These products must not be installed in such locations.
- If the wired controller is installed in a location where electromagnetic radiation is generated, make sure that the wired controller is shielded and cables are sleeved inside conduit tubing.
- If there is a source of electrical interference near the power supply, install noise suppression equipment (filter).
- During the test run, check the unit's operation temperature. If the unit is used in an environment where the temperature exceeds the operation boundary, it may cause severe damage. Check the operational temperature boundary in the manual. If there is no specified temperature, use the unit within the operational temperature boundary of 32 to 104°F (0 to 40°C).
- Read installation and appropriate user manuals for connection with PC or peripheral devices. If a warning window appears on the PC, the product stops, does not work properly or works intermittently, immediately stop using the equipment.

Installation Precautions

WARNING

To reduce the risk of serious injury or death, the following installation precautions must be followed.

- When installing the unit into...
 - A wall: Make sure the wall is strong enough to hold the unit's weight. It may be necessary to construct a strong wood or metal frame to provide added support.
 - A room: Properly insulate any refrigerant tubing run inside a room to prevent "sweating" that can cause dripping and water damage to walls, floors or property within the space.
 - Damp or uneven areas: Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the unit to prevent water damage and abnormal vibration.
 - An area with high winds: Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable wind baffle.
 - A snowy area: Install the outdoor unit on a raised platform that is higher than anticipated snow levels and drifting snow. Provide snow protection hood.
- If the remote sensors are not used with this controller, then do not install this controller...
 - in a room where there is no thermostat.
 - where the unit is exposed to direct sunshine or direct light.
 - where the unit will be in close proximity to a heat source.
 - where hot/cold air from the outdoors, or a draft from elsewhere (such as air vents, diffusers or grilles) can affect air circulation.
 - in areas with poor air circulation and ventilation.
- Do not install the unit in the following places. Doing so can result in an explosion, fire, deformation, corrosion, or product failure.
 - Explosive or flammable atmosphere.
 - Where fire, oil, steam, or powder can directly enter the unit, such as in close proximity or directly above a kitchen stove.
 - Where oil (including machinery oil) may be present.
 - Where corrosive gases such as chlorine, bromine, or sulfide can accumulate, such as near a hot tub or hot spring.
 - Where dense, salt-laden airflow is heavy, such as in coastal regions.
 - Where the air quality is of high acidity.
 - Where harmful gases can be generated from decomposition.
- Do not position the condensate pipe for the indoor unit near any sanitary sewers where corrosive gases may be present. If you do, toxic gases can seep into breathable air spaces and can cause respiratory injuries. If the condensate pipe is installed incorrectly, water leakage and damage to the ceiling, floor, furniture, or other possessions may result. If condensate piping becomes clogged, moisture can back up and can drip from the indoor unit. Do not install the indoor unit where such dripping can cause moisture damage or uneven locations: Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the unit to prevent water damage and abnormal vibration.
- Before performing any brazing work, be sure that there are no flammable materials or open flames nearby.
- Perform a test run to ensure normal operation. Safety guards, shields, barriers, covers, and protective devices must be in place while the compressor/unit is operating. During the test run, keep fingers and clothing away from any moving parts.
- Clean up the site when finished, remembering to check that no tools, metal scraps or bits of wiring have been left inside the unit being installed.
- During transportation, do not allow the backrest of the forklift make contact with the unit, otherwise, it may cause damage to the heat exchanger and also may cause injury when stopped or started suddenly.
- Remove gas inside the closing pipe when the brazing work is performed. If the brazing filler metal is melted with remaining gas inside, the pipes will be blown off and it may cause injury.
- Be sure to use nitrogen gas for an airtight test. If other gases such as oxygen gas, acetylene gas or fluorocarbon gas are accidentally used, it may cause explosion or gas intoxication.

After installation work for the system has been completed, explain the "Safety Precautions," the proper use and maintenance of the unit to the customer according to the information in all manuals that came with the system. All manuals and warranty information must be given to the user or left near the Indoor Unit.

Refrigerant Precautions

WARNING

To reduce the risk of serious injury or death, the following refrigerant precautions must be followed.

- As originally manufactured, this unit contains refrigerant installed by Johnson Controls-Hitachi Air Conditioning. Johnson Controls-Hitachi Air Conditioning uses only refrigerants that have been approved for use in the unit's intended home country or market. Johnson Controls-Hitachi Air Conditioning distributors similarly are only authorized to provide refrigerants that have been approved for use in the countries or markets they serve. The refrigerant used in this unit is identified on the unit's faceplate and/or in the associated manuals. Any additions of refrigerant into this unit must comply with the country's requirements with regard to refrigerant use and must be obtained from Johnson Controls-Hitachi Air Conditioning distributors. Use of any non-approved refrigerant substitutes will void the warranty and will increase the potential risk of equipment damage, property damage, personal injury or death.
- Take measures to ensure that the refrigerant limitations in ASHRAE Standard 15 (Canada: B52), or other local codes, are followed. Refrigerant gas has leaked during the installation work, ventilate the room immediately.
- Check the design pressure for this product is 601 psi (4.15MPa). The pressure of the refrigerant R410A is 1.4 times higher than that of the refrigerant R22. Therefore, the refrigerant piping for R410A shall be thicker than that for R22. Make sure to use the specified refrigerant piping. If not, the refrigerant piping may rupture due to an excessive refrigerant pressure. Besides, pay attention to the piping thickness when using copper refrigerant piping. The thickness of copper refrigerant piping differs depending on its material.
- The refrigerant R410A is adopted. The refrigerant oil tends to be affected by foreign matters such as moisture, oxide film or other non-condensables. Perform the installation work with care to prevent moisture, dust, or different refrigerant from entering the refrigerant cycle. Foreign matter can be introduced into the cycle from such parts as expansion valve and the operation may be unavailable.
- To avoid the possibility of different refrigerant or refrigerant oil being introduced into the cycle, the sizes of the charging connections have been changed from R407C type and R22 type. It is necessary to prepare the appropriate tools listed in Installation and Maintenance manual before performing installation work.
- Use refrigerant pipes and joints which are approved for use with R410A.
- A compressor/unit comprises a pressurized system. Never loosen threaded joints while the system is under pressure and never open pressurized system parts.
- Before installation is complete, make sure that the refrigerant leak test has been performed. If refrigerant gases escape into the air, turn OFF the main switch, extinguish any open flames and contact your service contractor. Refrigerant (Fluorocarbon) for this unit is odorless. If the refrigerant must leak and come into contact with open flames, toxic gas could be generated. Also, because the fluorocarbons are heavier than air, they settle to the floor, which could cause asphyxiation.
- When installing the unit, and connecting refrigerant piping, keep all piping runs as short as possible, and make sure to securely connect the refrigerant piping before the compressor starts operating. If the refrigerant piping is not connected and the compressor activates with the stop valve opened, the refrigerant cycle will become subjected to extremely high pressure, which can cause an explosion or fire.
- Tighten the flare nut with a torque wrench in the specified manner. Do not apply excessive force to the flare nut when tightening. If you do, the flare nut can crack and refrigerant leakage may occur.
- When maintaining, relocating, and disposing of the unit, dismantle the refrigerant piping after the compressor stops.
- When pipes are removed out from under the piping cover, after the insulation work is completed, cover the gap between the piping cover and pipes by a packing (field-supplied). If the gap is not covered, the unit may be damaged if snow, rain water or small animals enter the unit.
- Do not apply an excessive force to the spindle valve at the end of opening. Otherwise, the spindle valve flies out due to refrigerant pressure. At the test run, fully open the gas and liquid valves, otherwise, these devices will be damaged. (It is closed before shipment.)
- If the arrangement for outdoor units is incorrect, it may cause flowback of the refrigerant and result in failure of the outdoor unit.
- The refrigerant system may be damaged if the slope of the piping connection kit exceeds $\pm 15^\circ$.

Electrical Precautions



Take the following precautions to reduce the risk of electric shock, fire or explosion resulting in serious injury or death.

- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause property damage, serious injury or death.
- Perform all electrical work in strict accordance with this installation and maintenance manual and all the relevant regulatory standards.
- Before servicing, open and tag all disconnect switches. Never assume electrical power is disconnected. Check with meter and equipment.
- Only use electrical protection equipment and tools suited for this installation.
- Insulate a wired controller against moisture and temperature extremes.
- Use specified cables between units.
- The new air conditioner may not function normally in the following instances:
 - If electrical power for the new air conditioner is supplied from the same transformer as the external equipment* referred to below.
 - If the power supply cables for this external equipment* and the new air conditioner unit are located in close proximity to each other.

External Equipment*: (Example): A lift, container crane, rectifier for electric railway, inverter power device, arc furnace, electric furnace, large-sized induction motor and large-sized switch.

Regarding the cases mentioned above, surge voltage may be inducted into the power supply cables for the packaged air conditioner due to a rapid change in power consumption of the device and an activation of a switch.

Check field regulations and standards before performing electrical work in order to protect the power supply for the new air conditioner unit.
- Communication cabling shall be a minimum of AWG18 (0.82mm²), 2-Conductor, Stranded Copper. Shielded cable must be considered for applications and routing in areas of high EMI and other sources of potentially excessive electrical noise to reduce the potential for communication errors. When shielded cabling is applied, proper bonding and termination of the cable shield is required as per Johnson Controls-Hitachi Air Conditioning guidelines. Plenum and riser ratings for communication cables must be considered per application and local code requirements.
- The polarity of the input terminals is important, so be sure to match the polarity when using contacts that have polarity.
- Use an exclusive power supply for the air conditioner at the unit's rated voltage.
- Highly dangerous electrical voltages may be used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause property damage, serious injury or death.
- Before installing the controller or remote devices, ensure that the indoor and outdoor unit operation has been stopped. Further, be sure to wait at least five minutes before turning off the main power switch to the indoor or outdoor units. Otherwise, water leakage or electrical breakdown may result.
- Do not open the service cover or access panel to the indoor or outdoor units without turning OFF the main power supply. Before connecting or servicing the controller or cables to indoor or outdoor units, open and tag all disconnect switches. Never assume electrical power is disconnected. Check with a meter and equipment.
- This equipment can be installed with a Ground Fault Circuit Breaker (GFCI), which is a recognized measure for added protection to a properly grounded unit. Install appropriate sized breakers / fuses / overcurrent protection switches, and wiring in accordance with local, state and NEC codes and requirements. The equipment installer is responsible for understanding and abiding by applicable codes and requirements.

- CONTENTS -

1. General Information (Features).....	1-1
2. Outdoor Units.....	2-1
2.1 Unit Nomenclature.....	2-1
2.2 Line-up	2-3
2.3 General Data	2-7
2.4 Dimensional Data and Weights	2-19
2.4.1 Overall Dimensional and Weight Data	2-19
2.4.2 Outdoor Units.....	2-20
2.5 Structure.....	2-44
2.6 Component Data	2-48
2.7 Service Space	2-50
2.7.1 Walls on Two Sides.....	2-51
2.7.2 Walls on Three Sides.....	2-51
2.7.3 Walls on Four Sides.....	2-52
2.8 Center of Gravity	2-53
2.9 Electrical Data	2-55
2.10 Sound Data	2-57
2.11 Control System.....	2-65
2.11.1 Refrigerant Cycle	2-65
2.11.2 Control System	2-69
2.11.3 Standard Operation Sequence	2-79
2.11.4 Safety and Control Device Setting.....	2-93
2.11.5 Electrical Wiring Diagram	2-95
2.11.5.1 Outdoor Units	2-95
2.12 Operation Temperature Range.....	2-105
2.13 Combinations of Indoor Units and Outdoor Units.....	2-107
2.14 Piping Work.....	2-109
2.14.1 Piping Work between Outdoor Units.....	2-109
2.14.2 Piping Sizes between Outdoor Units	2-111
2.14.3 Piping Size and Multi-Kit Selection	2-113
2.14.4 Interchangeability between Change-Over Boxes (COBS_B21S and COBS_B22S).....	2-124
2.15 Electrical Wiring Connection	2-125
2.15.1 Power Supply Wiring	2-125
2.15.2 Electrical Characteristics	2-126
2.16 Additional Refrigerant Change Calculation	2-128

- CONTENTS -

3. Change-Over Box	3-1
3.1 Unit Nomenclature.....	3-1
3.2 Line-up	3-1
3.3 General Data	3-2
3.3.1 Model Type 1	3-2
3.3.2 Model Type 2	3-3
3.4 Dimensional Data	3-4
3.5 Sound Data	3-9
3.6 Refrigeration Cycle.....	3-10
3.7 Wiring Diagram.....	3-13
4. Optional Parts	4-1
4.1 Line Up	4-1
4.2 Outdoor Unit	4-2
4.2.1 Drain Adapter DBS-TP10A	4-2
4.2.2 Protection Net	4-3
4.2.3 Snow Protection Hood	4-5
4.2.4 Low Ambient Kit	4-8
4.2.4.1 Dimensional Data	4-8
4.2.4.2 Wiring Diagram	4-12
4.2.4.3 Installation Location and Precautions	4-13
4.2.4.4 Service Space	4-15
4.3 Piping Kit	4-18
4.3.1 Piping Connection Kit	4-22
4.3.2 Multi-Kit (Line Branch) for Heat Recovery System (3-Pipes Connection)	4-24
4.3.3 Multi-Kit (Line Branch) for Heat Recovery System (2-Pipes Connection)	4-28
4.3.4 Multi-Kit (Header Branch) for Heat Recovery System (3-Pipes Connection)	4-30
4.3.5 Multi-Kit (Header Branch) for Heat Recovery System (2-Pipes Connection)	4-31
5. Selection Data.....	5-1
5.1 Selection Guide	5-1
5.2 Outdoor Unit Capacity According to Temperature Condition and Connected IDU Capacity Ratio....	5-5
5.3 Correction Factor According to Piping Length.....	5-37
5.4 Correction Factor According to Defrosting Operation.....	5-41
5.5 Correction Factor According to Altitude	5-41

1. General Informations (Features)

VRF Air Conditioners

Johnson Controls-Hitachi Air Conditioning proudly introduces new Variable Refrigerant Flow (VRF) air conditioners, a highly-efficient and reliable air-conditioning system. Recently, increased numbers of buildings are requiring "Intelligent" facilities that include communication networks, office automation, and a comfortable environment. In particular, a comfortable environment is becoming more of a year-around requirement in office buildings.

The VRF multi-split system air conditioner meets these requirements. The proven combination of the scroll compressor and inverter provides the best air conditioning for small and medium office buildings.

■ VRF System

Johnson Controls-Hitachi Air Conditioning has developed the VRF system with its customers in mind. This system, which is unique in the world, allows the interconnection of indoor units for all our VRF air conditioners.

This system provides the consumer with greater flexibility for installation, which means that the air-conditioning systems will integrate better within complex facility structures.

■ Wide Product Range of Outdoor Units

Along with space, structure, and necessary functions, in line with evolution in building design, the requirements for air conditioning have also diversified.

New VRF air conditioners offer three modular outdoor units.

Because the most suitable unit can be selected from a wide range of heat recovery type models, you can create a custom air conditioning environment to satisfy your specific building conditions.

System Configuration

	Heat Recovery System
System / Appearance	<p>Refrigerant Piping (2 Pipes)</p> <p>Change-Over Box</p> <p>Indoor Units</p> <p>Outdoor Units</p> <p>Communication Line (H-LINK II)</p> <p>Piping Connection Kit</p> <p>Refrigerant Piping (3 Pipes)</p>
System Device	<div>Change-Over Box (Single Branch Type or Multiple Branch Type)</div>
	<div>Indoor Unit + Optional Controller + • Optional Decorative Panel for Cassette Type + [Other Optional Parts]</div>
	<div>Optional Multi-Kit For Branch Connection of Indoor Units</div>
	<div>Outdoor Unit + [Other Optional Parts (Snow Protection Hood, Drain Adapter, Protection Net and Low Ambient Kit)]</div>
	<div>Piping Connection Kit For Branch Connection of Outdoor Units Heat Recovery Type Applicable for 216MBH to 432MBH Outdoor Unit</div>

: Necessary Equipments for System

: Necessary Equipments depending on Usage Purpose

Series Line-Up

Outdoor Unit

Series	Outdoor Unit Capacity MBH (RT)															
	72 (6)	96 (8)	120 (10)	144 (12)	168 (14)	192 (16)	216 (18)	240 (20)	264 (22)	288 (24)	312 (26)	336 (28)	360 (30)	384 (32)	408 (34)	432 (36)
(H,Y)VAHR_B(3,4)1S	●	●	●	○	○	○	○	○	○	○	○	○	○	-	-	-
(H,Y)VAHR_B(3,4,5)2S	★	★	★	★	★	★	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆

● : (H,Y)VAHR_B(3,4)1S Line-up (Single Module)

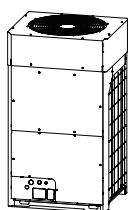
○ : (H,Y)VAHR_B(3,4)1S Line-up (Combination)

★ : (H,Y)VAHR_B(3,4,5)2S Line-up (Single Module)

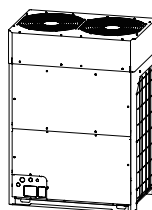
☆ : (H,Y)VAHR_B(3,4,5)2S Line-up (Combination)

- : Not available

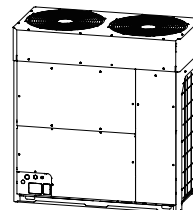
72 MBH



96, 120, 144 MBH



168, 192 MBH



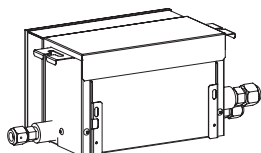
Change-Over Box

Series		Change-Over Box Capacity (Indoor Unit Maximum Connection Capacity) MBH				
		48	96	132	264	
COBS_B21S(C) Model		●	●	-	-	-
COBS_B22S(C) COBS_M_B22S Model	Single Branch Type	★	★	-	-	-
	Multiple Branch Type	-	-	★ (4 Branch)	★ (8 Branch)	★ (12 Branch)

● : COBS_B21S(C) Line-up (Single Module)

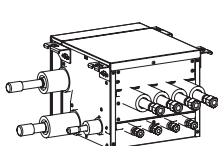
★ : COBS_B22S(C), COBS_M_B22S Line-up (Single Module)

Single Branch Type

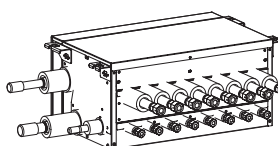


Multiple Branch Type

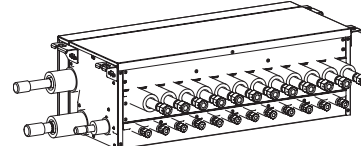
4 Branch



8 Branch

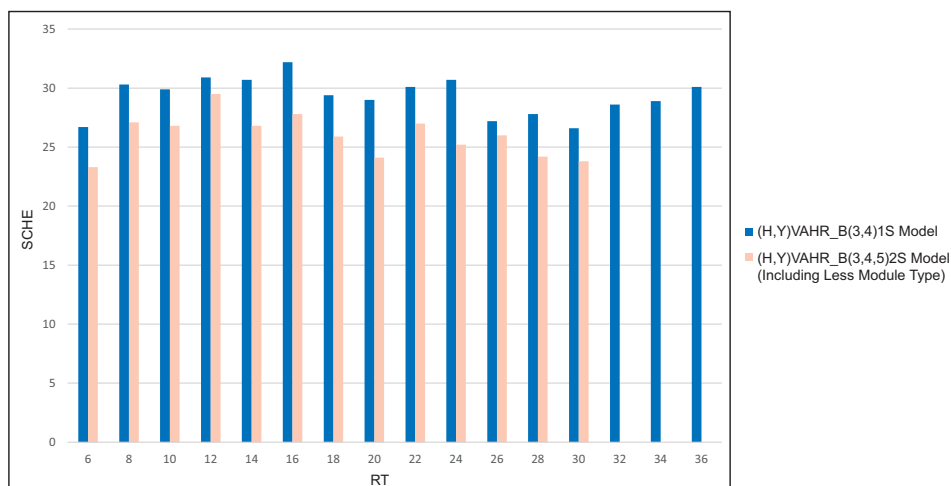


12 Branch



Improved Cooling and Heating Performance

SCHE (Simultaneous Cooling and Heating Efficiency) has been improved by improving performance of compressor and optimizing refrigerant cycle control.



Energy Saving Technology

Bell-mouth

< Long Bell-mouth Structure >

Creates smooth air flow and reduces fan input by adopting the multi-stage enhance structure.

Long Blade Propeller Fan

Multi-stage Enhanced Structure
Smooth air flow by distributing multipolar vortex.

Long Bell-mouth
Suppress leakage and effectively operate in wide range.

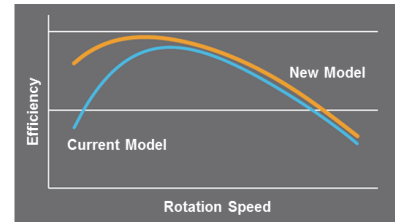


Compressor

< Improve Compressor Efficiency at Low Load Operation >

Optimizes oil rate by improving oil distribution to the compressor, expanding operation range at a low load operation.

Efficiency of Compressor (image)

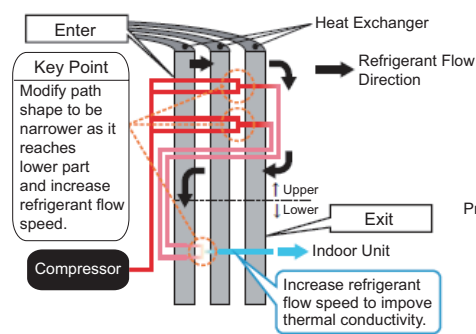


Heat Exchanger

< Improve Efficiency at Low Load Cooling Operation with New Path Structure >

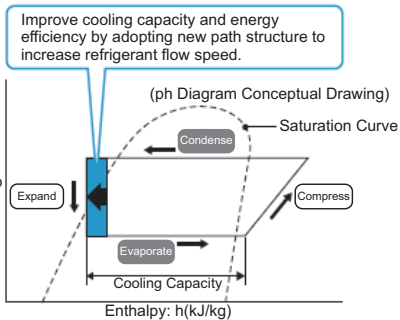
Adopts to the most effective heat exchanger path structure during low load cooling operation. The heat exchanger divides into the upper and lower parts, modifying the path shape to be narrower, as it reaches its lower part. The increased refrigerant flow speed improves thermal conductivity, energy efficiency, and cooling capacity.

• New Heat Exchanger Path Structure



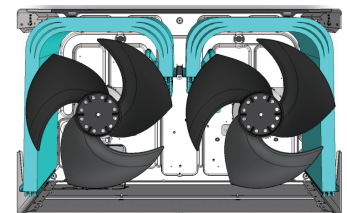
(Conceptual Drawing of High Efficiency Type)

• Operation Condition at Low Load Cooling Operation



< Σ Shape Heat Exchanger > [More than 8RT]

Adopts the two fan structure for improved efficiency at a low load operation and a Σ shape heat exchanger to maximize the effect of the two fan structure for better energy savings.

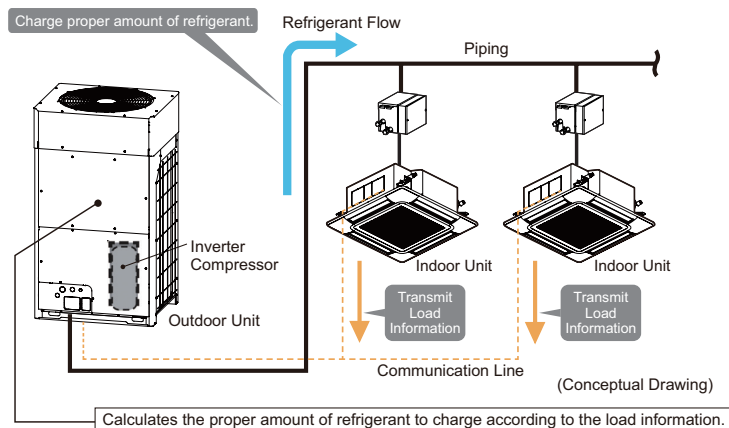


Operation Control

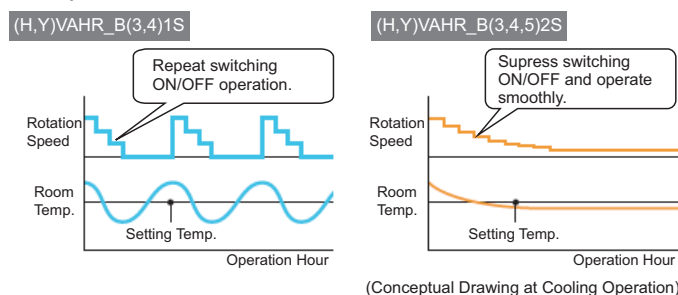
■ Smooth Drive Control System

Calculates the amount of refrigerant to charge the system according to the load information from the indoor units. Controls inverter compressor rotation speed and charges the proper amount of refrigerant to indoor unit per each load condition. Suppresses compressor switching ON/OFF at a low load operation for better energy efficiency with smooth operation.

■ Concept of Smooth Drive Control

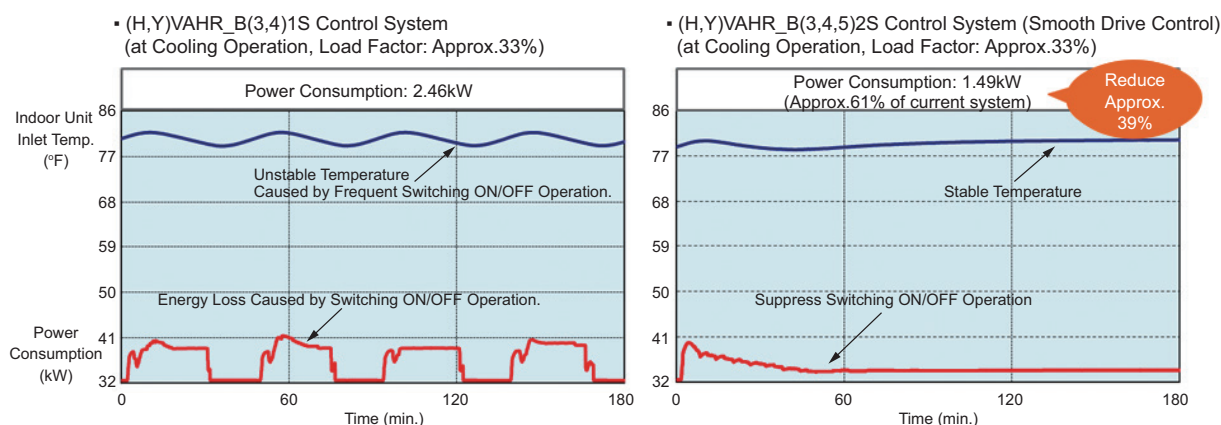


■ Comparison at Low Load Operation



● Verification Result of Energy Saving Effect from Smooth Drive Control

The verification result of energy saving effect at part load testing chamber is shown below. The “Smooth Drive Control System” suppresses the compressor switching ON/OFF operation and keeps room temperature stable. The reduction of power consumption has been verified.



The verification test has been implemented with the combination of current Japanese domestic model VRF outdoor unit (RAS-AP280DG3) and two Japanese domestic model VRF 4-way cassette indoor units (RCI-AP140K5)

Testing Condition

- Indoor Unit Inlet Temperature: 81°F (27°C) (Dry Bulb) / 66°F (19°C) (Wet Bulb)
- Ambient Temperature at Air Flow Volume “High”: 73°F (23°C) (Dry Bulb)
- Piping Length between Indoor Unit and Outdoor Unit: 49ft (15m)
- Testing Location: Environment Testing Facility at Kansai Denryoku (power supply company)

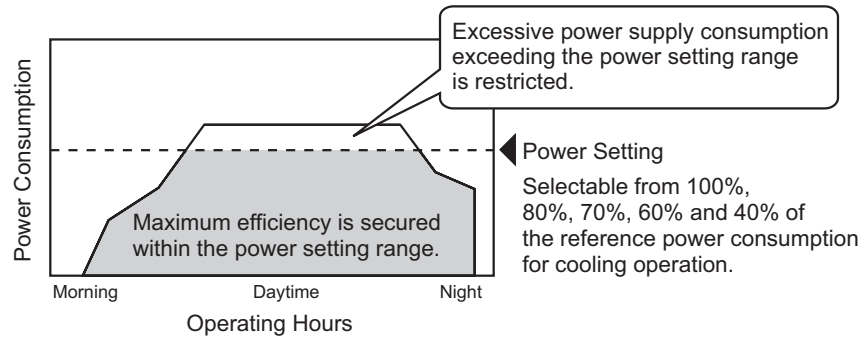
Energy-Saving Improvement through Schedule Setting of “Self-Demand Function”

“Self-Demand Function” saves capacity so as not to exceed demand current control based on the electric power data detected.

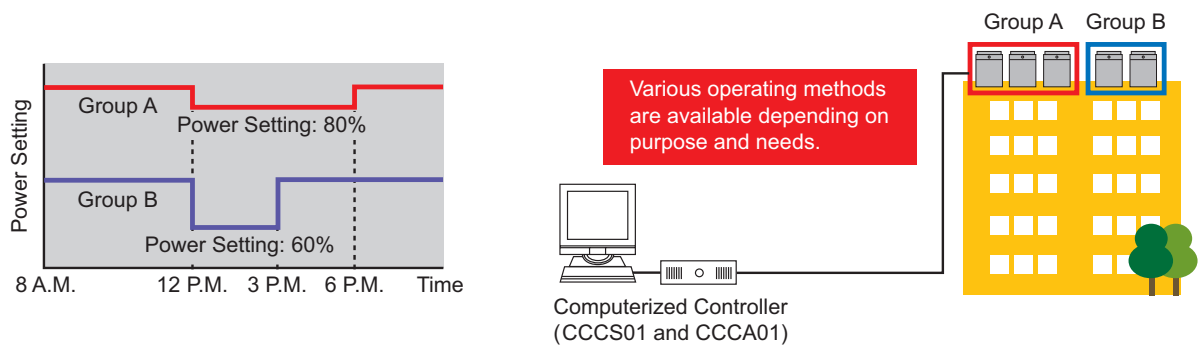
“Self-Demand Function” can be set for each outdoor unit from a Computerized Central Controller (CCCS01 and CCCA01) or Wired Controller (CIW01).

For small and medium buildings, it facilitates power saving. The energy-saving operation can be adjusted conforming to an operating environment and individual needs.

■ Self-Demand Function



Setting Example: Schedule Setting for Each Group by Computerized Controller

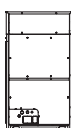
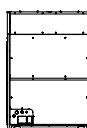
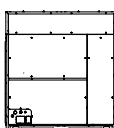
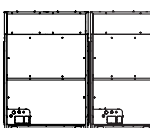
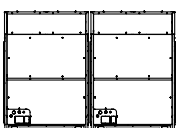
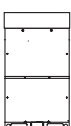
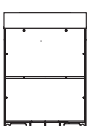
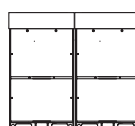
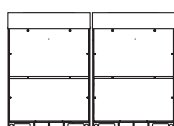
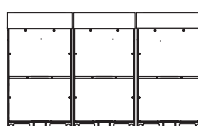
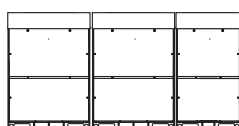


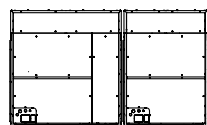
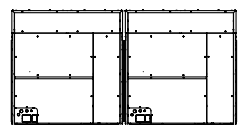
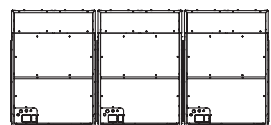
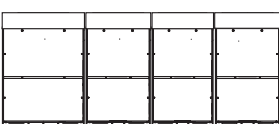
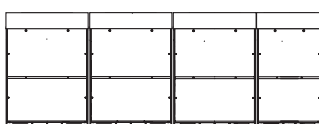
The specific outdoor unit and the period of time can be set from computerized controller.

Flexibility of Facility Design

■ Number of Module

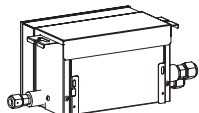
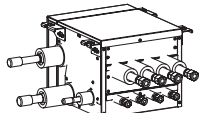
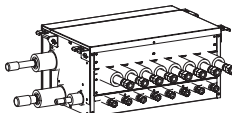
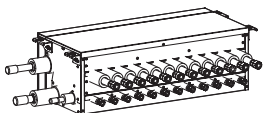
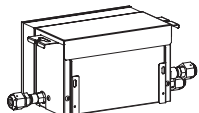
Referring to (H,Y)VAHR_B(3,4)1S, the number of outdoor unit is reduced.

RT	6	8 and 10	12	14 and 16	18	20 to 24
(H,Y)VAHR_B(3,4,5)2S Model	 1 Unit	 1 Unit	 1 Unit	 2 Units	 2 Units	
(H,Y)VAHR_B(3,4)1S Model	 1 Unit	 1 Unit	 2 Units	 2 Units	 3 Units	 3 Units

RT	26 and 28	30	32 to 36
(H,Y)VAHR_B(3,4,5)2S Model	 2 Units	 2 Units	 3 Units
(H,Y)VAHR_B(3,4)1S Model	 4 Units	 4 Units	

■ Single and Multiple Branch Type Change-Over Box

- Available to select from single branch type and multiple branch type to customize your own design.
- Line up 4-branch, 8-branch and 12-branch Change-Over Box for multiple branch type.

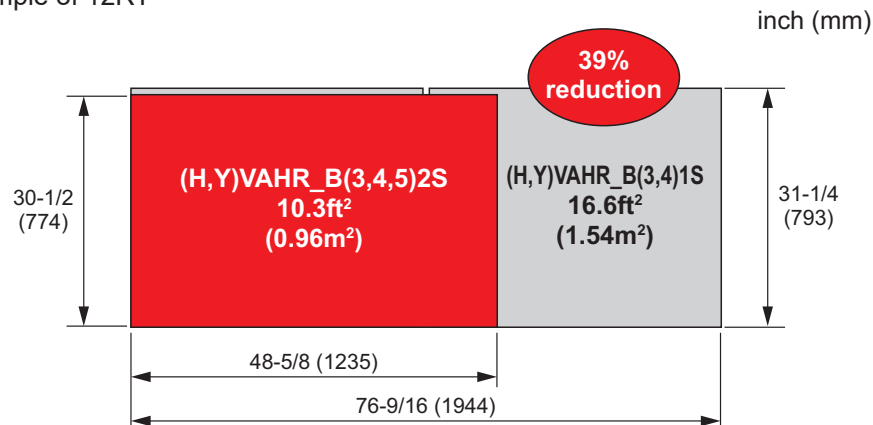
Type	Single Branch Type		Multiple Branch Type		
Indoor Unit Maximum Connection Capacity MBH	48	96	132	264	
			4 Branch	8 Branch	12 Branch
COBS_B22S(C) COBS_M_B22S Model					
COBS_B21S(C) Model					

FEATURES

■ Installation Space Reduction

Outdoor Unit

Example of 12RT

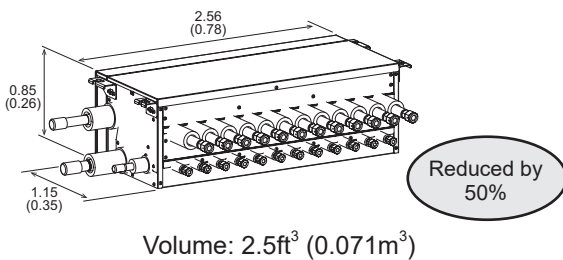


Change-Over Box

Unit: ft (m)

COBS_M_B22S Model

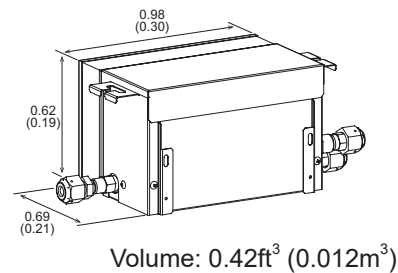
Multiple Branch Type (Example: 12 Branch)



➡ Volume of Change-Over Box per Indoor Unit
0.21ft³ (0.006m³) (-50%)

COBS_B21S Model

Single Branch Type



➡ Volume of Change-Over Box per Indoor Unit
0.42ft³ (0.012m³)

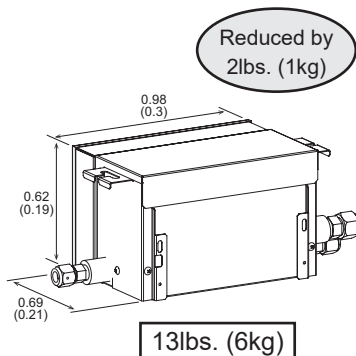
■ Lightweight Change-Over Box

Reduce Change-Over Box weight. The lightest multiple branch type in the class.

Unit: ft (m)

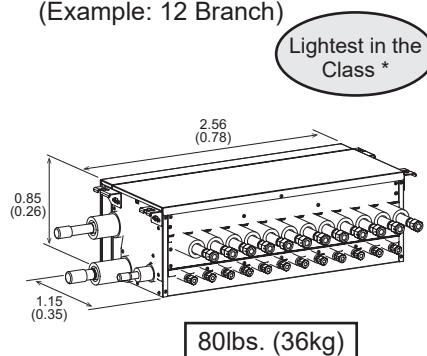
COBS_B22S Model

Single Branch Type



COBS_M_B22S Model

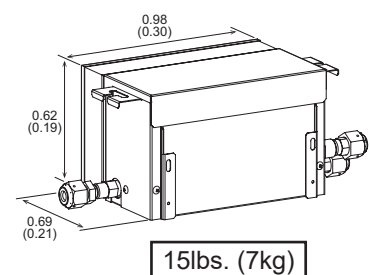
Multiple Branch Type
(Example: 12 Branch)



*As of June, 2017

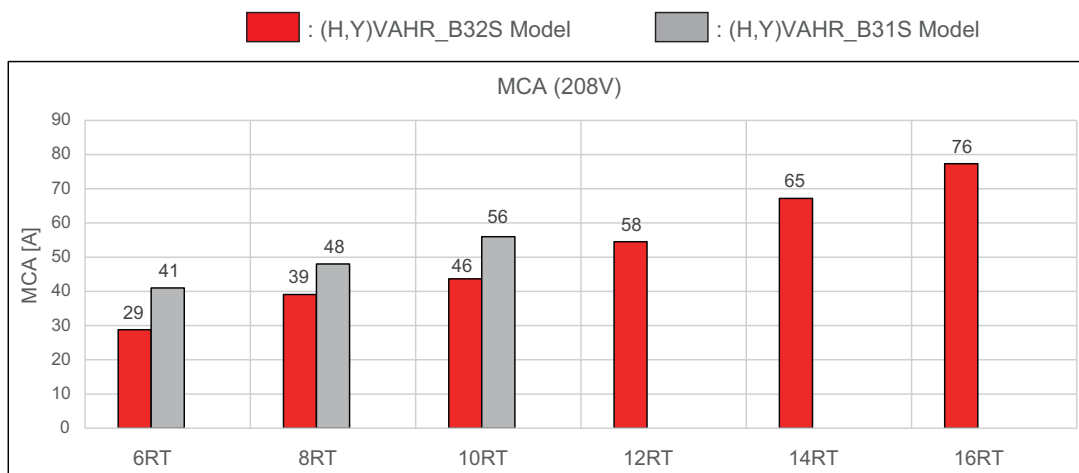
COBS_B21S Model

Single Branch Type



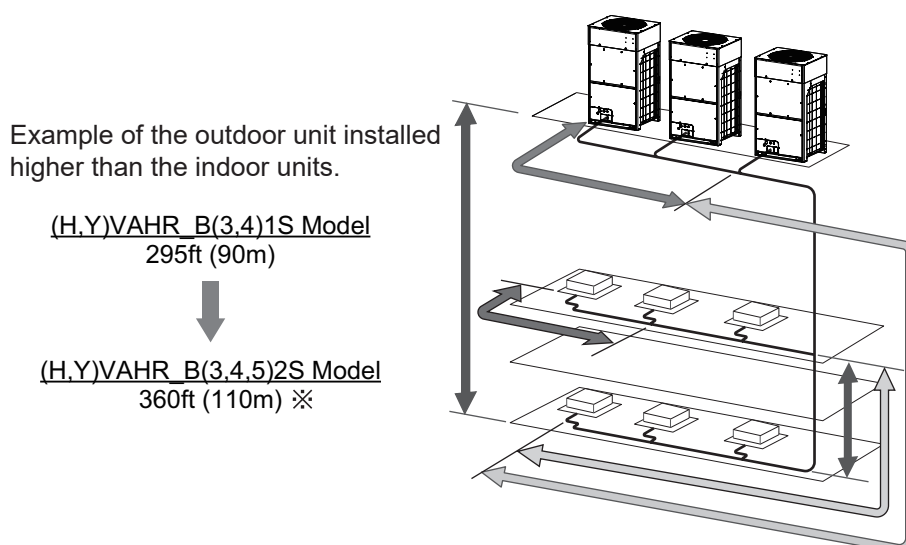
■ MCA Reduction

Large MCA (Minimum Circuit Ampacity) reduction enables to use the smaller conductor for field installation.



■ Increased Height Difference

- Height difference between outdoor unit and indoor unit is expanded up to 360 ft (110m).
(For outdoor unit installation higher or lower than the indoor unit.)



※ Contact your distributor or contractor if the height difference is over 164 ft (50m) when the outdoor unit is higher or over 131 ft (40m) when the outdoor unit is lower.
Refer to page 2-118 "Piping Work Conditions" for detail of this restriction.

- The piping limitation between indoor units connected to the same Change-Over Box (Single Branch Type) is increased up to 131 ft (40m).

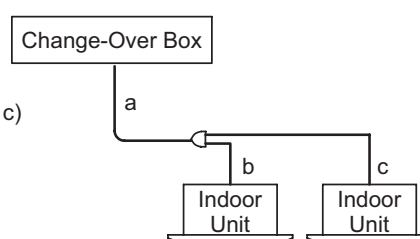
Example: COBS048B22S

Total Piping Length between Indoor Units Connected to the Same Change-Over Box (= a + b + c)

COBS_B21S Model
 98ft (30m)

➔

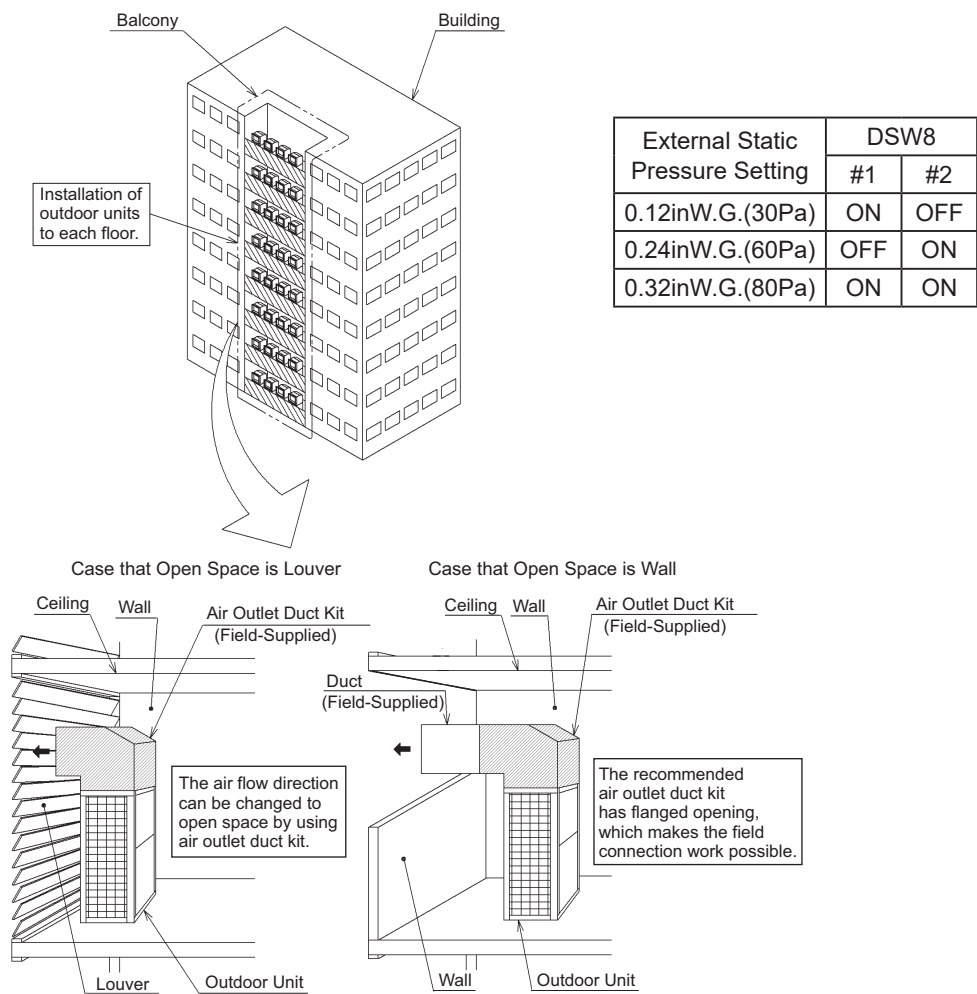
COBS_B22S Model
 131ft (40m)



FEATURES

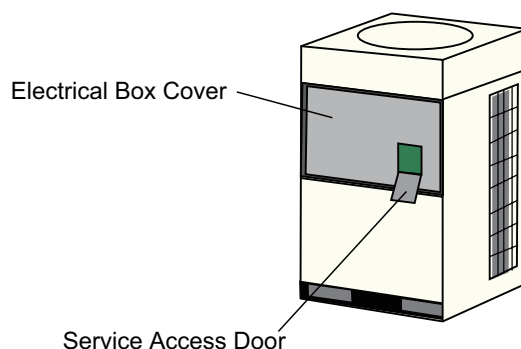
■ Adjustable External Static Pressure

Installation Example for Air Outlet Duct Kit (Field-Supplied)

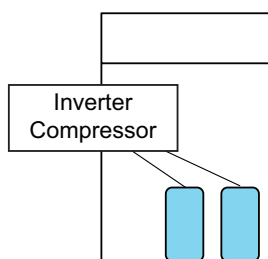
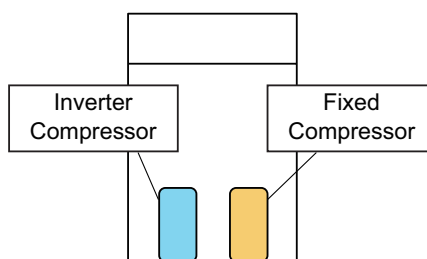


Improved Design

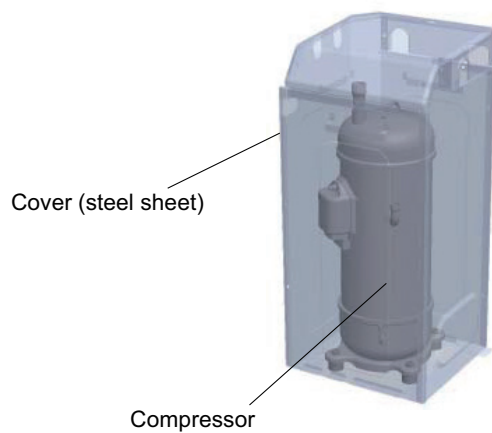
- Improvement of Servicing and Easy Maintenance
DIP switch setting and 7-Segment inspection is available without removing the electrical box cover.



- All Inverter-Type Compressors
Inverter compressor is adopted for all new models to increase efficiency.

(H,Y)VAHR_B(3,4,5)2S Model(H,Y)VAHR_B(3,4)1S Model

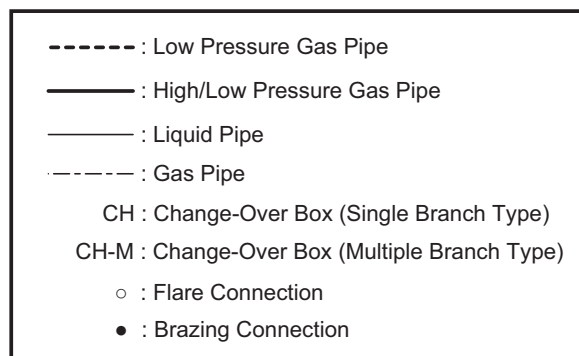
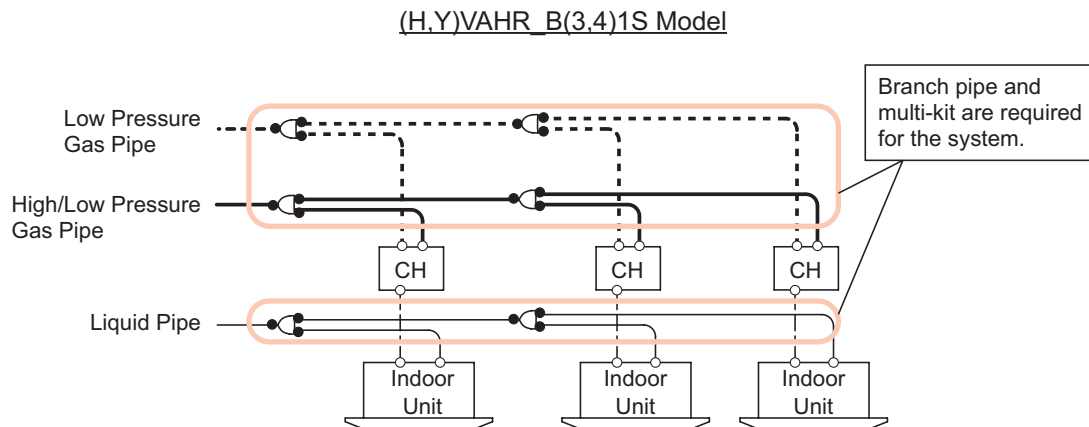
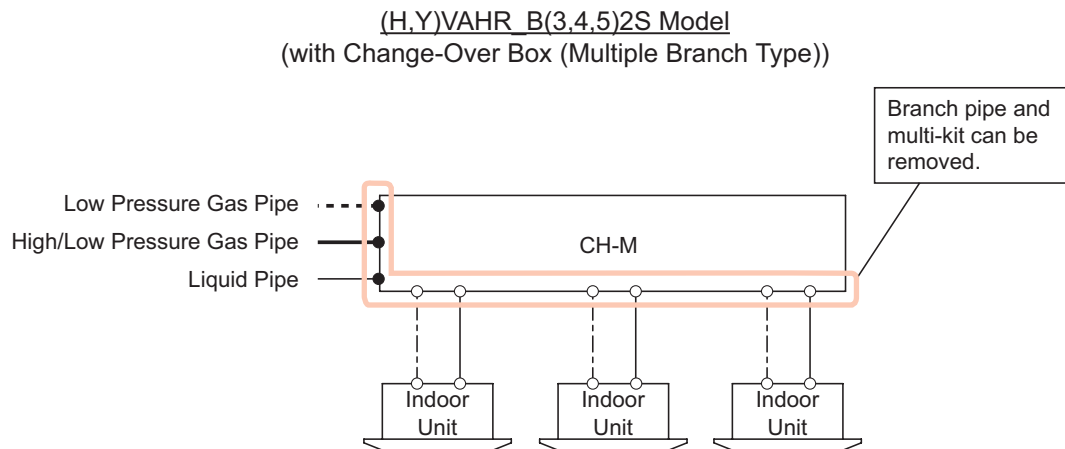
- Sound Noise Reduction
Sound noise is reduced by covering the compressor with metal sheet.

(H,Y)VAHR_B(3,4,5)2S Model(H,Y)VAHR_B(3,4)1S Model

FEATURES

■ Simplified Installation, Lower Cost

The interior and exit piping design of the multi-port change-over box allows for a more streamlined installation that can eliminate branch piping and multi-kits.



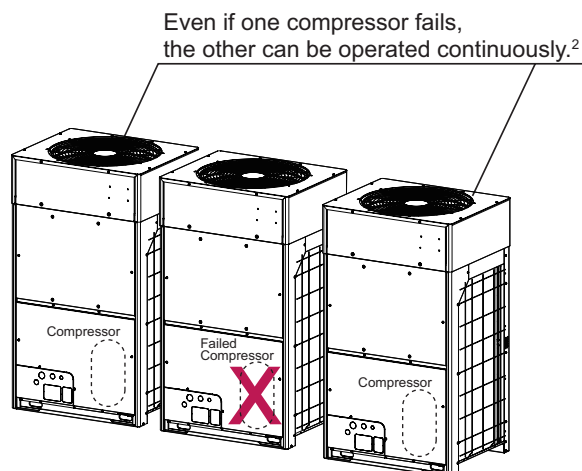
■ Alarm Log Tracking

If an alarm occurs during the cooling or heating operation, a data log is stored in the control PCB. This data can be used for quick troubleshooting of these alarms.

Backup Operation Function for Emergency

The Backup Operation Function prevents the system from coming to a complete stop when a compressor failure occurs. ¹

The wired controller starts an emergency operation after an alarm occurrence. ³

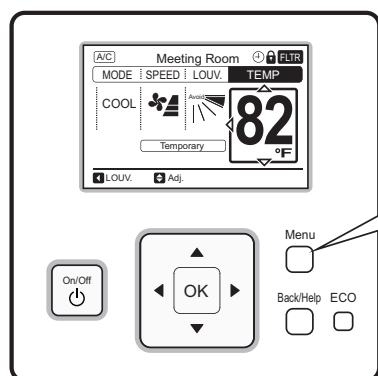


NOTE:

- 1: At least two outdoor units or a unit with two compressors are required for this function.
- 2: Do not perform an emergency operation for more than eight hours. Doing so may damage the unit.
- 3: An emergency operation can be performed when a specified alarm code occurs.

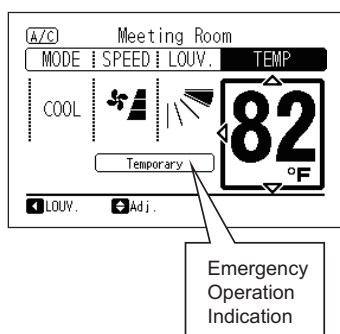
Refer to the following.

For CIW01



Starting for Emergency Operation

Press "Menu" button at least 3 seconds when the alarm code is indicated on the LCD.
To cancel emergency operation, turn OFF the main switch.



In these alarm code instances, emergency operation is possible.

Inverter Compressor Failure

- 06: Abnormality of Inverter Voltage
- 23: Abnormality of Discharge Gas Thermistor
- 48: Activation of Overcurrent Protection Device
- 51: Abnormality of Inverter Current Sensor
- 53: Inverter Error Signal Detection
- 54: Abnormality of Inverter Fin Temperature

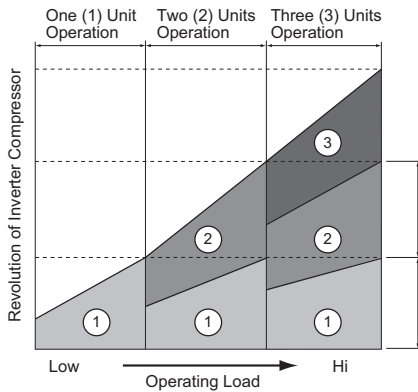
Compressor Rotation Operation for Outdoor Units

The compressor rotation operation time of each outdoor compressor leads to less wear of the compressor, extending the life of the outdoor unit.

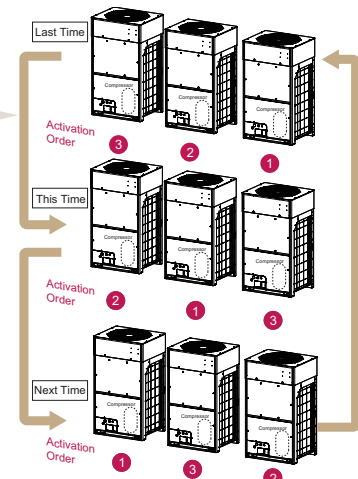
During a multiple unit operation, the same rotation frequency of the inverter compressor results in an equivalent load on each compressor.

Therefore, the load reduction of each compressor improves efficiency and operation.

Inverter Compressor Rotation Frequency Control (Example)



At the time of system start-up.



NOTE:

- 1: At least two outdoor units are required for this function.
- 2: Comparison between rotation operation function and non-rotation operation function based on the same system.

Noise Reduction Preference Mode

■ Noise Reduction Preference Mode (Optional Function)

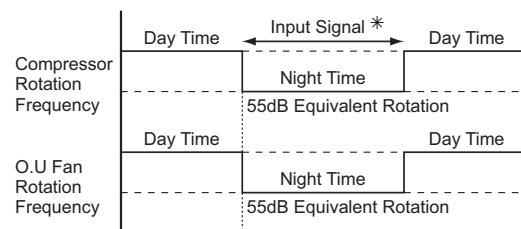
With the Noise Reduction Preference Mode, the sound pressure level for a particular time zone can be set based upon the usage environment. ¹

- Selecting from three Stages of Sound Pressure Level by setting from Outdoor Unit PCB External Input and Output Function

Control Function No.	Item	Sound Pressure Level (dB) (Approx. Value) ²
11	Noise Reduction Setting 1 (Standard Value -2dB)	58
12	Noise Reduction Setting 2 (Standard Value -5dB)	55
13	Noise Reduction Setting 3 (Standard Value -8dB)	52

Setting Example

Low-Sound Operation during Night Time only by Using Timer



*: Perform the electrical wiring work on-site when setting input signal.

NOTE:

- 1: A range of performance and operation is restricted because the rotation frequency of the compressor and outdoor fan is forcibly decreased.

Target Capacity of Each Setting

Noise Reduction Setting 1: 80% of Standard Capacity

Noise Reduction Setting 2: 60% of Standard Capacity

Noise Reduction Setting 3: 40% of Standard Capacity

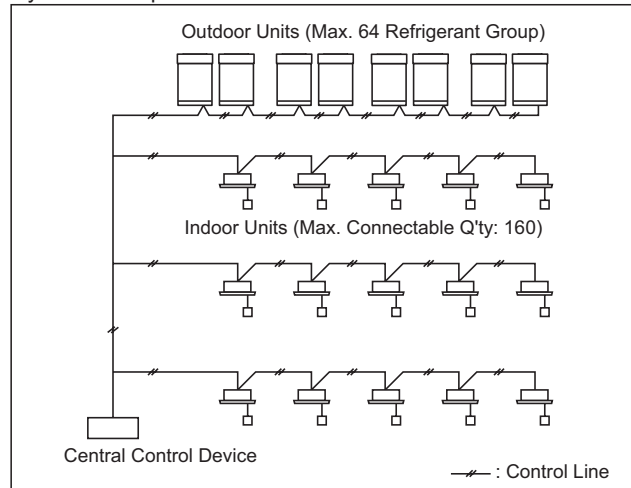
- 2: The table above shows an approximate value of 72 MBH model.

In some cases, the value may temporarily become higher than the approximate value on the table above because of an operating condition.

H-LINK II System

The VRF outdoor units are available for the H-LINK II transmission system. A maximum of 64 refrigerant groups and a maximum 160 indoor units can be controlled by only one central control device when the equipment (central control device, indoor units, wired controller) in the same transmission system all correspond to H-LINK II.

System Example



■ H-LINK II System

The H-LINK II wiring system requires only two communication cables to connect each indoor unit and outdoor unit for up to 64 refrigerant systems, and to connect wires for all indoor units and outdoor units.

Specifications

- Communication Cable: 2-Conductor, Stranded Copper
- Polarity of Communication Cable: Non-Polar Cable
- Maximum Outdoor Units to be Connected: 64 Units per System
- Maximum Indoor Units to be Connected: 160 Units per H-LINK II System
- Maximum Cable Length: Total 3,280 ft. (1,000m) (including central controller)
- Recommended Cable: Communication Cable with Shield, over AWG18 (Equivalent to KPEV-S)
- Voltage: DC5V

2. Outdoor Units

2.1 Unit Nomenclature

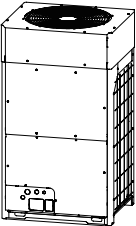
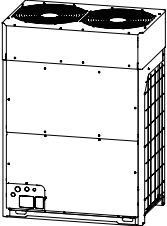
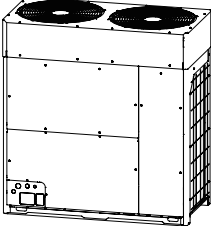
- Outdoor Units
Model Descriptions

Example

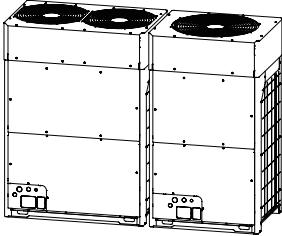
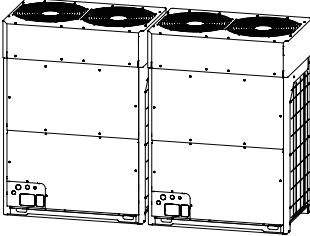
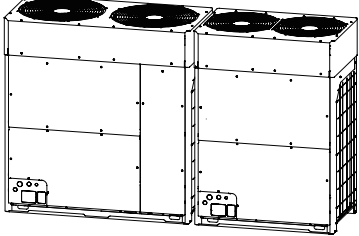
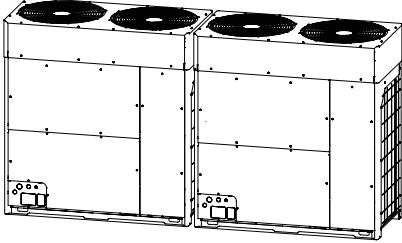
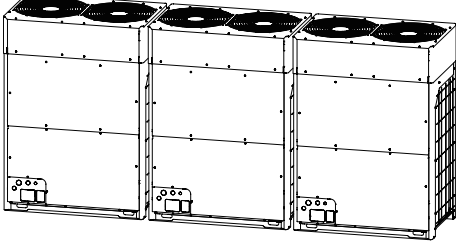
Nomenclature Description		H	V	A	HR	072	B	4	2	S
H = Hitachi Brand Y = York Brand	H									
VRF	V									
A = Air Source	A									
HR = Heat Recovery HP = Heat Pump	HR									
072 = 72 MBH = 6 RT 096 = 96 MBH = 8 RT 120 = 120 MBH = 10 RT 144 = 144 MBH = 12 RT 168 = 168 MBH = 14 RT 192 = 192 MBH = 16 RT 216 = 216 MBH = 18 RT 240 = 240 MBH = 20 RT 264 = 264 MBH = 22 RT 288 = 288 MBH = 24 RT 312 = 312 MBH = 26 RT 336 = 336 MBH = 28 RT 360 = 360 MBH = 30 RT 384 = 384 MBH = 32 RT 408 = 408 MBH = 34 RT 432 = 432 MBH = 36 RT	072									
B = R410A	B									
3 = 208/230Volts - 3Phase - 60Hz 4 = 460Volts - 3Phase - 60Hz 5 = 575Volts - 3Phase - 60Hz	4									
1 = Model Type 1 2 = Model Type 2	2									
S = Standard (Factory Options) CW = Low Ambient	S									

Base Unit

Unit: inch (mm)

6RT	8, 10, 12RT	14, 16RT
Outer Dimension: W38-3/8 x D30-1/2 x H66-1/4) (W975 x D774 x H1683)	Outer Dimension: W48-5/8 x D30-1/2 x H66-1/4) (W1235 x D774 x H1683)	Outer Dimension: W64 x D30-1/2 x H66-1/4) (W1625 x D774 x H1683)
		
(H,Y)VAHR072B32S (H,Y)VAHR072B42S (H,Y)VAHR072B52S	(H,Y)VAHR096, 120, 144B32S (H,Y)VAHR096, 120, 144B42S (H,Y)VAHR096, 120, 144B52S	(H,Y)VAHR168, 192B32S (H,Y)VAHR168, 192B42S (H,Y)VAHR168, 192B52S

Combination of Base Units

18RT	20, 22, 24RT	26, 28RT
		
(H,Y)VAHR216B32S (H,Y)VAHR216B42S (H,Y)VAHR216B52S	(H,Y)VAHR240, 264, 288B32S (H,Y)VAHR240, 264, 288B42S (H,Y)VAHR240, 264, 288B52S	(H,Y)VAHR312, 336B32S (H,Y)VAHR312, 336B42S (H,Y)VAHR312, 336B52S
30RT	32, 34, 36RT	
		
(H,Y)VAHR360B32S (H,Y)VAHR360B42S (H,Y)VAHR360B52S	(H,Y)VAHR384, 408, 432B32S (H,Y)VAHR384, 408, 432B42S (H,Y)VAHR384, 408, 432B52S	

2.2 Line-up

Voltage	Heat Recovery System	Capacity (MBH)	Tonnage (RT)	Combination
208/230V	(H,Y)VAHR072B32S	72	6	72
	(H,Y)VAHR096B32S	96	8	96
	(H,Y)VAHR120B32S	120	10	120
	(H,Y)VAHR144B32S	144	12	144
	(H,Y)VAHR168B32S	168	14	168
	(H,Y)VAHR192B32S	192	16	192
	(H,Y)VAHR216B32S	216	18	144 + 72
	(H,Y)VAHR240B32S	240	20	120 + 120
	(H,Y)VAHR264B32S	264	22	144 + 120
	(H,Y)VAHR288B32S	288	24	144 + 144
	(H,Y)VAHR312B32S	312	26	168 + 144
	(H,Y)VAHR336B32S	336	28	192 + 144
	(H,Y)VAHR360B32S	360	30	192 + 168
	(H,Y)VAHR384B32S	384	32	144 + 120 + 120
	(H,Y)VAHR408B32S	408	34	144 + 144 + 120
	(H,Y)VAHR432B32S	432	36	144 + 144 + 144
460V	(H,Y)VAHR072B42S	72	6	72
	(H,Y)VAHR096B42S	96	8	96
	(H,Y)VAHR120B42S	120	10	120
	(H,Y)VAHR144B42S	144	12	144
	(H,Y)VAHR168B42S	168	14	168
	(H,Y)VAHR192B42S	192	16	192
	(H,Y)VAHR216B42S	216	18	144 + 72
	(H,Y)VAHR240B42S	240	20	120 + 120
	(H,Y)VAHR264B42S	264	22	144 + 120
	(H,Y)VAHR288B42S	288	24	144 + 144
	(H,Y)VAHR312B42S	312	26	168 + 144
	(H,Y)VAHR336B42S	336	28	192 + 144
	(H,Y)VAHR360B42S	360	30	192 + 168
	(H,Y)VAHR384B42S	384	32	144 + 120 + 120
	(H,Y)VAHR408B42S	408	34	144 + 144 + 120
	(H,Y)VAHR432B42S	432	36	144 + 144 + 144
575V	(H,Y)VAHR072B52S	72	6	72
	(H,Y)VAHR096B52S	96	8	96
	(H,Y)VAHR120B52S	120	10	120
	(H,Y)VAHR144B52S	144	12	144
	(H,Y)VAHR168B52S	168	14	168
	(H,Y)VAHR192B52S	192	16	192
	(H,Y)VAHR216B52S	216	18	144 + 72
	(H,Y)VAHR240B52S	240	20	120 + 120
	(H,Y)VAHR264B52S	264	22	144 + 120
	(H,Y)VAHR288B52S	288	24	144 + 144
	(H,Y)VAHR312B52S	312	26	168 + 144
	(H,Y)VAHR336B52S	336	28	192 + 144
	(H,Y)VAHR360B52S	360	30	192 + 168
	(H,Y)VAHR384B52S	384	32	144 + 120 + 120
	(H,Y)VAHR408B52S	408	34	144 + 144 + 120
	(H,Y)VAHR432B52S	432	36	144 + 144 + 144

PRODUCT SPECIFICATION

Combinations for Heat Recovery Type

208/230V

Base Unit

Outdoor Unit Capacity (RT)	072MBH (6)	096MBH (8)	120MBH (10)
Model	(H,Y)VAHR072B32S	(H,Y)VAHR096B32S	(H,Y)VAHR120B32S

Outdoor Unit Capacity (RT)	144MBH (12)	168MBH (14)	192MBH (16)
Model	(H,Y)VAHR144B32S	(H,Y)VAHR168B32S	(H,Y)VAHR192B32S

Combination of Base Units

Outdoor Unit Capacity (RT)	216MBH (18)	240MBH (20)	264MBH (22)	288MBH (24)
Model	(H,Y)VAHR216B32S	(H,Y)VAHR240B32S	(H,Y)VAHR264B32S	(H,Y)VAHR288B32S
Combination	(H,Y)VAHR144B32S	(H,Y)VAHR120B32S	(H,Y)VAHR144B32S	(H,Y)VAHR144B32S
	(H,Y)VAHR072B32S	(H,Y)VAHR120B32S	(H,Y)VAHR120B32S	(H,Y)VAHR144B32S

Outdoor Unit Capacity (RT)	312MBH (26)	336MBH (28)	360MBH (30)
Model	(H,Y)VAHR312B32S	(H,Y)VAHR336B32S	(H,Y)VAHR360B32S
Combination	(H,Y)VAHR168B32S	(H,Y)VAHR192B32S	(H,Y)VAHR192B32S
	(H,Y)VAHR144B32S	(H,Y)VAHR144B32S	(H,Y)VAHR168B32S

Outdoor Unit Capacity (RT)	384MBH (32)	408MBH (34)	432MBH (36)
Model	(H,Y)VAHR384B32S	(H,Y)VAHR408B32S	(H,Y)VAHR432B32S
Combination	(H,Y)VAHR144B32S	(H,Y)VAHR144B32S	(H,Y)VAHR144B32S
	(H,Y)VAHR120B32S	(H,Y)VAHR144B32S	(H,Y)VAHR144B32S
	(H,Y)VAHR120B32S	(H,Y)VAHR120B32S	(H,Y)VAHR144B32S

The outdoor unit from 216 to 432MBH consists of the combination of 2 to 3 base units.
The combinations are only available as listed in the above table.

460V

Base Unit

Outdoor Unit Capacity (RT)	072MBH (6)	096MBH (8)	120MBH (10)
Model	(H,Y)VAHR072B42S	(H,Y)VAHR096B42S	(H,Y)VAHR120B42S

Outdoor Unit Capacity (RT)	144MBH (12)	168MBH (14)	192MBH (16)
Model	(H,Y)VAHR144B42S	(H,Y)VAHR168B42S	(H,Y)VAHR192B42S

Combination of Base Units

Outdoor Unit Capacity (RT)	216MBH (18)	240MBH (20)	264MBH (22)	288MBH (24)
Model	(H,Y)VAHR216B42S	(H,Y)VAHR240B42S	(H,Y)VAHR264B42S	(H,Y)VAHR288B42S
Combination	(H,Y)VAHR144B42S	(H,Y)VAHR120B42S	(H,Y)VAHR144B42S	(H,Y)VAHR144B42S
	(H,Y)VAHR072B42S	(H,Y)VAHR120B42S	(H,Y)VAHR120B42S	(H,Y)VAHR144B42S

Outdoor Unit Capacity (RT)	312MBH (26)	336MBH (28)	360MBH (30)
Model	(H,Y)VAHR312B42S	(H,Y)VAHR336B42S	(H,Y)VAHR360B42S
Combination	(H,Y)VAHR168B42S	(H,Y)VAHR192B42S	(H,Y)VAHR192B42S
	(H,Y)VAHR144B42S	(H,Y)VAHR144B42S	(H,Y)VAHR168B42S

Outdoor Unit Capacity (RT)	384MBH (32)	408MBH (34)	432MBH (36)
Model	(H,Y)VAHR384B42S	(H,Y)VAHR408B42S	(H,Y)VAHR432B42S
Combination	(H,Y)VAHR144B42S	(H,Y)VAHR144B42S	(H,Y)VAHR144B42S
	(H,Y)VAHR120B42S	(H,Y)VAHR144B42S	(H,Y)VAHR144B42S
	(H,Y)VAHR120B42S	(H,Y)VAHR120B42S	(H,Y)VAHR144B42S

The outdoor unit from 216 to 432MBH consists of the combination of 2 to 3 base units.
The combinations are only available as listed in the above table.

PRODUCT SPECIFICATION

575V

Base Unit

Outdoor Unit Capacity (RT)	072MBH (6)	096MBH (8)	120MBH (10)
Model	(H,Y)VAHR072B52S	(H,Y)VAHR096B52S	(H,Y)VAHR120B52S

Outdoor Unit Capacity (RT)	144MBH (12)	168MBH (14)	192MBH (16)
Model	(H,Y)VAHR144B52S	(H,Y)VAHR168B52S	(H,Y)VAHR192B52S

Combination of Base Units

Outdoor Unit Capacity (RT)	216MBH (18)	240MBH (20)	264MBH (22)	288MBH (24)
Model	(H,Y)VAHR216B52S	(H,Y)VAHR240B52S	(H,Y)VAHR264B52S	(H,Y)VAHR288B52S
Combination	(H,Y)VAHR144B52S	(H,Y)VAHR120B52S	(H,Y)VAHR144B52S	(H,Y)VAHR144B52S
	(H,Y)VAHR072B52S	(H,Y)VAHR120B52S	(H,Y)VAHR120B52S	(H,Y)VAHR144B52S

Outdoor Unit Capacity (RT)	312MBH (26)	336MBH (28)	360MBH (30)
Model	(H,Y)VAHR312B52S	(H,Y)VAHR336B52S	(H,Y)VAHR360B52S
Combination	(H,Y)VAHR168B52S	(H,Y)VAHR192B52S	(H,Y)VAHR192B52S
	(H,Y)VAHR144B52S	(H,Y)VAHR144B52S	(H,Y)VAHR168B52S

Outdoor Unit Capacity (RT)	384MBH (32)	408MBH (34)	432MBH (36)
Model	(H,Y)VAHR384B52S	(H,Y)VAHR408B52S	(H,Y)VAHR432B52S
Combination	(H,Y)VAHR144B52S	(H,Y)VAHR144B52S	(H,Y)VAHR144B52S
	(H,Y)VAHR120B52S	(H,Y)VAHR144B52S	(H,Y)VAHR144B52S
	(H,Y)VAHR120B52S	(H,Y)VAHR120B52S	(H,Y)VAHR144B52S

The outdoor unit from 216 to 432MBH consists of the combination of 2 to 3 base units.
The combinations are only available as listed in the above table.

2.3 General Data (1) 208/230V Type

Category		Ton		6RT		8RT		10RT		12RT		
Model (Combination)				(H,Y)VAHR072B32S		(H,Y)VAHR096B32S		(H,Y)VAHR120B32S		(H,Y)VAHR144B32S		
Model (Individual)		Unit A	(H,Y)VAHR072B32S		(H,Y)VAHR096B32S		(H,Y)VAHR120B32S		(H,Y)VAHR144B32S			
		Unit B	-		-		-		-			
		Unit C	-		-		-		-			
Power Supply				208/230V/ 3PH 60Hz		208/230V/ 3PH 60Hz		208/230V/ 3PH 60Hz		208/230V/ 3PH 60Hz		
Capacity ¹	Cooling	Capacity (Nominal)	Btu/h	(kW)	72,000	(21.1)	96,000	(28.1)	120,000	(35.2)	144,000	(42.2)
	Heating	Capacity (Nominal)	Btu/h	(kW)	81,000	(23.7)	108,000	(31.7)	135,000	(39.6)	162,000	(47.5)
Efficiency Ratings ² (Ducted)	Cooling	Capacity (Rated)	Btu/h	(kW)	69,000	(20.2)	92,000	(27.0)	114,000	(33.4)	138,000	(40.4)
		EER	Btu/Wh	(W/W)	12.2	(3.58)	12.4	(3.63)	12.4	(3.63)	11.2	(3.28)
		IEER	Btu/Wh	(Wh/Wh)	21.1	(6.18)	22.1	(6.48)	21.7	(6.36)	21.2	(6.21)
		Capacity (Rated)	Btu/h	(kW)	77,000	(22.6)	103,000	(30.2)	129,000	(37.8)	154,000	(45.1)
	Heating High	COP	W/W		3.54		3.65		3.55		3.40	
		Capacity	Btu/h	(kW)	56,000	(16.4)	76,000	(22.3)	92,000	(27.0)	110,000	(32.2)
	Heating Low	COP	W/W		2.38		2.36		2.30		2.15	
		Capacity	Btu/h	(kW)	56,000	(16.4)	76,000	(22.3)	92,000	(27.0)	110,000	(32.2)
	Heating and Cooling	SCHE	Btu/Wh	24.30		27.50		27.20		28.10		
		Capacity (Rated)	Btu/h	(kW)	69,000	(20.2)	92,000	(27.0)	114,000	(33.4)	138,000	(40.4)
Efficiency Ratings ² (Non-Ducted)	Cooling	EER	Btu/Wh	(W/W)	14.9	(4.37)	12.4	(3.63)	12.7	(3.73)	10.9	(3.18)
		IEER	Btu/Wh	(Wh/Wh)	26.5	(7.77)	23.9	(7.02)	24.4	(7.14)	23.9	(6.99)
		Capacity (Rated)	Btu/h	(kW)	77,000	(22.6)	103,000	(30.2)	129,000	(37.8)	154,000	(45.1)
		COP	W/W		4.25		3.77		3.84		3.42	
	Heating High	Capacity	Btu/h	(kW)	56,000	(16.4)	76,000	(22.3)	92,000	(27.0)	110,000	(32.2)
		COP	W/W		2.60		2.40		2.37		2.12	
	Heating Low	Capacity	Btu/h	(kW)	56,000	(16.4)	76,000	(22.3)	92,000	(27.0)	110,000	(32.2)
		COP	W/W		2.60		2.40		2.37		2.12	
	Heating and Cooling	SCHE	Btu/Wh	26.70		30.30		29.90		30.90		
		Capacity (Rated)	Btu/h	(kW)	69,000	(20.2)	92,000	(27.0)	114,000	(33.4)	138,000	(40.4)
Cooling Operating Range	Indoor	°F WB (°C WB)	59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)			
	Outdoor ³	°F DB (°C DB)	23(-5) ~ 122(50)		23(-5) ~ 122(50)		23(-5) ~ 122(50)		23(-5) ~ 122(50)			
	with Snow Protection Hood with Low Ambient Kit	°F DB (°C DB)	14(-10) ~ 109(43)		14(-10) ~ 109(43)		14(-10) ~ 109(43)		14(-10) ~ 109(43)			
Heating Operating Range	Indoor	°F DB (°C DB)	59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)			
	Outdoor ³	°F WB (°C WB)	-13(-25) ~ 59(15)		-13(-25) ~ 59(15)		-13(-25) ~ 59(15)		-13(-25) ~ 59(15)			
Cooling & Heating Operating Range	Cooling	Indoor	°F WB (°C WB)	59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		
		Outdoor ³	°F DB (°C DB)	23(-5) ~ 75(24)		23(-5) ~ 75(24)		23(-5) ~ 75(24)		23(-5) ~ 75(24)		
		with Snow Protection Hood	°F DB (°C DB)	14(-10) ~ 75(24)		14(-10) ~ 75(24)		14(-10) ~ 75(24)		14(-10) ~ 75(24)		
		with Low Ambient Kit	°F DB (°C DB)	-10(-23) ~ 75(24)		-10(-23) ~ 75(24)		-10(-23) ~ 75(24)		-10(-23) ~ 75(24)		
		Indoor	°F DB (°C DB)	59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		
		Outdoor ³	°F WB (°C WB)	22(-6) ~ 59(15)		22(-6) ~ 59(15)		22(-6) ~ 59(15)		22(-6) ~ 59(15)		
	Heating	Indoor	°F DB (°C DB)	59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		
		Outdoor ³	°F WB (°C WB)	12(-11) ~ 59(15)		12(-11) ~ 59(15)		12(-11) ~ 59(15)		12(-11) ~ 59(15)		
		with Snow Protection Hood	°F WB (°C WB)	-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		
		with Low Ambient Kit	°F WB (°C WB)	-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		
		Cabinet Color (Munsell Code)	-		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)	
		Outer Dimensions	Height	in (mm)	66-1/4 (1683)		66-1/4 (1683)		66-1/4 (1683)		66-1/4 (1683)	
Width	in (mm)		38-3/8 (975)		48-5/8 (1235)		48-5/8 (1235)		48-5/8 (1235)			
Depth	in (mm)		30-1/2 (774)		30-1/2 (774)		30-1/2 (774)		30-1/2 (774)			
Package Dimensions	Height	in (mm)	71-5/8 (1820)		71-5/8 (1820)		71-5/8 (1820)		71-5/8 (1820)			
	Width	in (mm)	40-9/16 (1030)		50-13/16 (1290)		50-13/16 (1290)		50-13/16 (1290)			
	Depth	in (mm)	31-7/8 (810)		31-7/8 (810)		31-7/8 (810)		31-7/8 (810)			
Weight	Net	lbs (kg)	527 (239)		598 (271)		730 (331)		732 (332)			
	Gross	lbs (kg)	567 (257)		642 (291)		774 (351)		776 (352)			
Connection Ratio	Standard (Extended) ⁴	%	130(150) - 70		130(150) - 65		130(150) - 60		130(150) - 55			
	Max. (Recommended) Indoor Units/System	Q ^{ty}	15 (8)		20 (8)		26 (8)		26 (10)			
Heat Exchanger	Type	-	Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube			
	Material	-	Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)			
Compressor	Type	Inverter 1	DC80PHD×1		DC80PHD×1		AA50PHD×2		AA50PHD×2			
	Inverter 2	-	-		-		-		-			
	Motor Output (Pole)	kW (Pole)	7.4(6)		9.5(6)		5.4(6)×2		6.4(6)×2			
	Start Method	-	inverter		inverter		inverter		inverter			
	Operation Range	%	10 ~ 100		8 ~ 100		7 ~ 100		6 ~ 100			
	Refrigeration Oil Type	-	FVC68D		FVC68D		FVC68D		FVC68D			
Crank Case Heater		-	W×Q ^{ty}		34.2 (230V) ×3		34.2 (230V) ×6		34.2 (230V) ×6			
Fan	Type	-	Propeller Fan		Propeller Fan		Propeller Fan		Propeller Fan			
	Motor Output (Pole)	kW (Pole)	0.42(8)		0.33(8)×2		0.39(8)×2		0.39(8)×2			
	Quantity	Q ^{ty}	1		2		2		2			
	Airflow Rate	cfm (m ³ /min)	6,707 (190)		8,437 (239)		9,037 (256)		9,037 (256)			
	External Static Pressure ⁷	in.W.G. (Pa)	0-0.32 (0-80)		0-0.32 (0-80)		0-0.32 (0-80)		0-0.32 (0-80)			
Electrical	Drive	-	Direct-drive		Direct-drive		Direct-drive		Direct-drive			
	Min Circuit Amps	A	29/26		39/35		46/42		58/52			
	Maximum Overcurrent Protective Device	A	40		50		60		70			
	Maximum Fuse Size	A	40		50		60		70			
Sound Pressure Level ⁸	Cooling (Night Shift)	dB (A)	60		63		63		65			
	Heating	dB (A)	60		63		63		65			
Protection Devices	Cycle	-	High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)			
	Inverter	-	Over-current protector		Over-current protector		Over-current protector		Over-current protector			
	Compressor	-	Over-heat protection		Over-heat protection		Over-heat protection		Over-heat protection			
	PCB	-	Over-heat protection		Over-heat protection		Over-heat protection		Over-heat protection			
Refrigerant	Type	-	R410A		R410A		R410A		R410A			
	Factory Charge Amount	lbs (kg)	15.9 (7.2)		19.6 (8.9)		21.8 (9.9)		23.6 (10.7)			
Refrigeration Oil	Factory Charge Amount	gal/Unit (L/Unit)	1.6 (6.0)		1.8 (6.9)		2.1 (7.9)		2.1 (7.9)			
Defrost Method		-	Reversed Refrigerant Cycle		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle			
Main Refrigerant Piping (Heat Recovery)	Low Pressure Gas Line	in (mm)	7/8 (22.2)		7/8 (22.2)		1-1/8 (28.58)		1-1/8 (28.58)			
	High/Low Pressure Gas Line	in (mm)	3/4 (19.05)		3/4 (19.05)		7/8 (22.2)		7/8 (22.2)			
	Liquid Line	in (mm)	1/2 (12.7)		1/2 (12.7)		1/2 (12.7)		5/8 (15.88)			

PRODUCT SPECIFICATION

Category			Ton	14RT		16RT		18RT (12RT+6RT)		20RT (10RT+10RT)	
Model (Combination)				(H,Y)VAHR168B32S		(H,Y)VAHR192B32S		(H,Y)VAHR126B32S		(H,Y)VAHR240B32S	
Model (Individual)			Unit A	(H,Y)VAHR168B32S		(H,Y)VAHR192B32S		(H,Y)VAHR144B32S		(H,Y)VAHR120B32S	
			Unit B	-		-		(H,Y)VAHR072B32S		(H,Y)VAHR120B32S	
			Unit C	-		-		-		-	
Power Supply				208/230V/ 3PH 60Hz		208/230V/ 3PH 60Hz		208/230V/ 3PH 60Hz		208/230V/ 3PH 60Hz	
Capacity ¹	Cooling	Capacity (Nominal)	Btu/h (kW)	168,000 (49.2)		192,000 (56.3)		216,000 (63.3)		240,000 (70.3)	
	Heating	Capacity (Nominal)	Btu/h (kW)	189,000 (55.4)		216,000 (63.3)		243,000 (71.2)		270,000 (79.1)	
Efficiency Ratings ² (Ducted)	Cooling	Capacity (Rated)	Btu/h (kW)	160,000 (46.9)		184,000 (53.9)		206,000 (60.4)		228,000 (66.8)	
		EER	Btu/Wh (W/W)	11.8 (3.46)		11.1 (3.25)		11.2 (3.28)		10.6 (3.11)	
		IEER	Btu/Wh (Wh/Wh)	21.4 (6.27)		20.8 (6.10)		20.7 (6.07)		21.0 (6.15)	
	Heating High	Capacity (Rated)	Btu/h (kW)	180,000 (52.8)		206,000 (60.4)		232,000 (68.0)		258,000 (75.6)	
		COP	W/W	3.56		3.38		3.51		3.51	
	Heating Low	Capacity	Btu/h (kW)	124,000 (36.3)		140,000 (41.0)		164,000 (48.1)		178,000 (52.2)	
		COP	W/W	2.40		2.15		2.29		2.27	
	Heating and Cooling	SCHE	Btu/Wh	27.90		29.30		26.70		26.40	
	Efficiency Ratings ² (Non-Ducted)	Cooling	Capacity (Rated)	Btu/h (kW)	160,000 (46.9)		184,000 (53.9)		206,000 (60.4)		228,000 (66.8)
EER			Btu/Wh (W/W)	11.6 (3.40)		10.6 (3.11)		10.9 (3.18)		11.1 (3.24)	
IEER			Btu/Wh (Wh/Wh)	23.4 (6.86)		21.4 (6.27)		20.9 (6.12)		20.8 (6.09)	
Heating High		Capacity (Rated)	Btu/h (kW)	180,000 (52.8)		206,000 (60.4)		232,000 (68.0)		258,000 (75.6)	
		COP	W/W	3.65		3.32		3.82		3.67	
Heating Low		Capacity	Btu/h (kW)	124,000 (36.3)		140,000 (41.0)		164,000 (48.1)		178,000 (52.2)	
		COP	W/W	2.16		2.05		2.32		2.35	
Heating and Cooling		SCHE	Btu/Wh	30.70		32.20		29.40		29.00	
Cooling Operating Range	Indoor	°F WB (°C WB)	59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		
		°F DB (°C DB)	23(-5) ~ 122(50)		23(-5) ~ 122(50)		23(-5) ~ 122(50)		23(-5) ~ 122(50)		
	Outdoor ³ with Snow Protection Hood with Low Ambient Kit	°F DB (°C DB)	14(-10) ~ 109(43)		14(-10) ~ 109(43)		14(-10) ~ 109(43)		14(-10) ~ 109(43)		
		°F DB (°C DB)	-10(-23) ~ 109(43)		-10(-23) ~ 109(43)		-10(-23) ~ 109(43)		-10(-23) ~ 109(43)		
Heating Operating Range		Indoor	°F DB (°C DB)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		
Cooling & Heating Operating Range	Cooling	Outdoor ³	°F WB (°C WB)		-13(-25) ~ 59(15)		-13(-25) ~ 59(15)		-13(-25) ~ 59(15)		
		Indoor	°F WB (°C WB)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		
		Outdoor ³	°F DB (°C DB)		23(-5) ~ 75(24)		23(-5) ~ 75(24)		23(-5) ~ 75(24)		
		with Snow Protection Hood with Low Ambient Kit	°F DB (°C DB)		14(-10) ~ 75(24)		14(-10) ~ 75(24)		14(-10) ~ 75(24)		
	Heating	°F DB (°C DB)	-10(-23) ~ 75(24)		-10(-23) ~ 75(24)		-10(-23) ~ 75(24)		-10(-23) ~ 75(24)		
		Indoor	°F DB (°C DB)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		
		Outdoor ³	°F WB (°C WB)		22(-6) ~ 59(15)		22(-6) ~ 59(15)		22(-6) ~ 59(15)		
		with Snow Protection Hood	°F WB (°C WB)		12(-11) ~ 59(15)		12(-11) ~ 59(15)		12(-11) ~ 59(15)		
		with Low Ambient Kit	°F WB (°C WB)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		
		°F WB (°C WB)	-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		
Cabinet Color (Munsell Code)			-	Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)	
Outer Dimensions	Height	in (mm)	66-1/4 (1683)		66-1/4 (1683)		66-1/4 (1683)		66-1/4 (1683)		
	Width	in (mm)	64 (1625)		64 (1625)		87-13/16 (2230)		98-1/16 (2490)		
	Depth	in (mm)	30-1/2 (774)		30-1/2 (774)		30-1/2 (774)		30-1/2 (774)		
Package Dimensions	Height	in (mm)	71-5/8 (1820)		71-5/8 (1820)		-		-		
	Width	in (mm)	66-1/8 (1680)		66-1/8 (1680)		-		-		
	Depth	in (mm)	31-7/8 (810)		31-7/8 (810)		-		-		
Weight	Net	lbs (kg)	860 (390)		860 (390)		732+527 (332+239)		730*2 (331*2)		
	Gross	lbs (kg)	911 (413)		911 (413)		776+567 (352+257)		774*2 (351*2)		
Connection Ratio	Standard (Extended) ⁴	%	130(150) - 55		130(150) - 55		130(150) - 60		130(150) - 60		
	Max. (Recommended) Indoor Units/System ⁵	Q ⁶ /ty	36 (12)		40 (14)		46 (18)		52 (18)		
Heat Exchanger	Type	-	Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube		
	Material	-	Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)		
Compressor	Type	Inverter 1	DC80PHD×2		DC80PHD×2		DC80PHD×1		AA50PHD×4		
		Inverter 2	-		-		AA50PHD×2		-		
	Motor Output (Pole)		kW (Pole)		7.1(6)×2		9.1(6)×2		6.4(6)×2+7.4(6)		(5.4(6)×2)×2
	Start Method		-		inverter		inverter		inverter		
	Operation Range		%		5 ~ 100		5 ~ 100		4 ~ 100		4 ~ 100
	Refrigeration Oil Type		-		FVC68D		FVC68D		FVC68D		FVC68D
Crank Case Heater			W×Q ⁶ /ty		34.2 (230V) ×6		34.2 (230V) ×6		34.2 (230V) ×9		34.2 (230V) ×12
Fan	Type	-	Propeller Fan		Propeller Fan		Propeller Fan		Propeller Fan		
	Motor Output (Pole)		kW (Pole)		0.48(8)×2		0.56(8)×2		(0.39(8)×2)+(0.42(8)		(0.39(8)×2)×2
	Quantity		Q ⁷ /ty		2		2		3		4
	Airflow Rate		cfm (m ³ /min)		11.614 (329)		12.284 (348)		9,037+6,707 (256+190)		9,037*2 (256*2)
	External Static Pressure ⁸		in.W.G. (Pa)		0-0.32 (0-80)		0-0.32 (0-80)		0-0.32 (0-80)		0-0.32 (0-80)
	Drive		-		Direct-drive		Direct-drive		Direct-drive		Direct-drive
Electrical	Min Circuit Amps		A		65/59		76/68		58+29/52+26		46+2/42×2
	Maximum Overcurrent Protective Device		A		80		90		70+40		60×2
	Maximum Fuse Size		A		80		90		70+40		60×2
Sound Pressure Level ⁹	Cooling (Night Shift)		dB (A)		64 59		66 59		66 59		66 60
	Heating		dB (A)		64		66		66		66
Protection Devices	Cycle		-		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)
	Inverter		-		Over-current protector		Over-current protector		Over-current protector		Over-current protector
	Compressor		-		Over-heat protection		Over-heat protection		Over-heat protection		Over-heat protection
	PCB		-		Over-heat protection		Over-heat protection		Over-heat protection		Over-heat protection
Refrigerant	Type		-		Over-current protection		Over-current protection		Over-current protection		Over-current protection
	R410A		R410A		R410A		R410A		R410A		R410A
Refrigerant	Factory Charge Amount		lbs (kg)		24.9 (11.3)		25.6 (11.6)		23.6+15.9 (10.7+7.2)		21.8×2 (9.9×2)
	Refrigeration Oil		gal/Unit (L/Unit)		2.2 (8.4)		2.2 (8.4)		2.1+1.6 (7.9+6.0)		2.1×2 (7.9×2)
Defrost Method			-		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle
Main Refrigerant Piping (Heat Recovery)	Low Pressure Gas Line		in (mm)		1-1/8 (28.58)		1-1/8 (28.58)		1-1/8 (28.58)		1-3/8 (34.93)
	High/Low Pressure Gas Line		in (mm)		7/8 (22.2)		7/8 (22.2)		7/8 (22.2)		1-1/8 (28.58)
	Liquid Line		in (mm)		5/8 (15.88)		5/8 (15.88)		3/4 (19.05)		3/4 (19.05)

Category			Ton		22RT (12RT+10RT)		24RT (12RT+12RT)		26RT (14RT+12RT)		28RT (16RT+12RT)		
Model (Combination)					(H,Y)VAHR264B32S		(H,Y)VAHR288B32S		(H,Y)VAHR312B32S		(H,Y)VAHR336B32S		
Model (Individual)			Unit A		(H,Y)VAHR144B32S		(H,Y)VAHR144B32S		(H,Y)VAHR168B32S		(H,Y)VAHR192B32S		
			Unit B		(H,Y)VAHR120B32S		(H,Y)VAHR144B32S		(H,Y)VAHR144B32S		(H,Y)VAHR144B32S		
			Unit C		-		-		-		-		
Power Supply					208/230V/ 3PH 60Hz		208/230V/ 3PH 60Hz		208/230V/ 3PH 60Hz		208/230V/ 3PH 60Hz		
Capacity ¹	Cooling	Capacity (Nominal)	Btu/h (kW)		264,000 (77.4)		288,000 (84.4)		312,000 (91.4)		336,000 (98.5)		
	Heating	Capacity (Nominal)	Btu/h (kW)		297,000 (87.0)		324,000 (95.0)		351,000 (102.9)		378,000 (110.8)		
Efficiency Ratings ² (Ducted)	Cooling	Capacity (Rated)	Btu/h (kW)		252,000 (73.9)		276,000 (80.9)		298,000 (87.3)		320,000 (93.8)		
		EER	Btu/Wh (W/Wh)		10.5 (3.08)		9.9 (2.90)		10.0 (2.93)		9.8 (2.87)		
		IEER	Btu/Wh (Wh/Wh)		20.8 (6.10)		20.7 (6.07)		19.5 (5.71)		19.1 (5.60)		
	Heating High	Capacity (Rated)	Btu/h (kW)		282,000 (82.6)		308,000 (90.3)		334,000 (97.9)		360,000 (105.5)		
		COP	W/W		3.56		3.42		3.31		3.32		
	Heating Low	Capacity	Btu/h (kW)		196,000 (57.4)		214,000 (62.7)		232,000 (68.0)		250,000 (73.3)		
		COP	W/W		2.26		2.24		2.12		2.25		
	Heating and Cooling	SCHE	Btu/Wh		27.40		27.90		24.70		25.30		
Efficiency Ratings ² (Non-Ducted)	Cooling	Capacity (Rated)	Btu/h (kW)		252,000 (73.9)		276,000 (80.9)		298,000 (87.3)		320,000 (93.8)		
		EER	Btu/Wh (W/Wh)		10.0 (2.93)		9.5 (2.78)		9.7 (2.83)		9.5 (2.78)		
		IEER	Btu/Wh (Wh/Wh)		21.1 (6.18)		19.4 (5.69)		20.3 (5.96)		20.8 (6.09)		
	Heating High	Capacity (Rated)	Btu/h (kW)		282,000 (82.6)		308,000 (90.3)		334,000 (97.9)		360,000 (105.5)		
		COP	W/W		3.70		3.42		3.37		3.27		
	Heating Low	Capacity	Btu/h (kW)		196,000 (57.4)		214,000 (62.7)		232,000 (68.0)		250,000 (73.3)		
		COP	W/W		2.26		2.21		2.05		2.31		
	Heating and Cooling	SCHE	Btu/Wh		30.10		30.70		27.20		27.80		
Cooling Operating Range			Indoor	°F WB (°C WB)	59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		
			Outdoor ³	°F DB (°C DB)	23(-5) ~ 122(50)		23(-5) ~ 122(50)		23(-5) ~ 122(50)		23(-5) ~ 122(50)		
			with Snow Protection Hood	°F DB (°C DB)	14(-10) ~ 109(43)		14(-10) ~ 109(43)		14(-10) ~ 109(43)		14(-10) ~ 109(43)		
			with Low Ambient Kit	°F DB (°C DB)	-10(-23) ~ 109(43)		-10(-23) ~ 109(43)		-10(-23) ~ 109(43)		-10(-23) ~ 109(43)		
Heating Operating Range			Indoor	°F DB (°C DB)	59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		
			Outdoor ³	°F WB (°C WB)	-13(-25) ~ 59(15)		-13(-25) ~ 59(15)		-13(-25) ~ 59(15)		-13(-25) ~ 59(15)		
Cooling & Heating Operating Range	Cooling	Indoor	°F WB (°C WB)	59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)	
		Outdoor ³	°F DB (°C DB)	23(-5) ~ 75(24)		23(-5) ~ 75(24)		23(-5) ~ 75(24)		23(-5) ~ 75(24)		23(-5) ~ 75(24)	
		with Snow Protection Hood	°F DB (°C DB)	14(-10) ~ 75(24)		14(-10) ~ 75(24)		14(-10) ~ 75(24)		14(-10) ~ 75(24)		14(-10) ~ 75(24)	
		with Low Ambient Kit	°F DB (°C DB)	-10(-23) ~ 75(24)		-10(-23) ~ 75(24)		-10(-23) ~ 75(24)		-10(-23) ~ 75(24)		-10(-23) ~ 75(24)	
	Heating	Indoor	°F DB (°C DB)	59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)	
		Outdoor ³	°F WB (°C WB)	22(-6) ~ 59(15)		22(-6) ~ 59(15)		22(-6) ~ 59(15)		22(-6) ~ 59(15)		22(-6) ~ 59(15)	
		with Snow Protection Hood	°F WB (°C WB)	12(-11) ~ 59(15)		12(-11) ~ 59(15)		12(-11) ~ 59(15)		12(-11) ~ 59(15)		12(-11) ~ 59(15)	
		with Low Ambient Kit	°F WB (°C WB)	-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)	
		Cabinet Color (Munsell Code)		-		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)	
		Outer Dimensions	Height	in (mm)	66-1/4 (1683)		66-1/4 (1683)		66-1/4 (1683)		66-1/4 (1683)		66-1/4 (1683)
Width	in (mm)		98-1/16 (2490)		98-1/16 (2490)		113-3/8 (2880)		113-3/8 (2880)		113-3/8 (2880)		
Depth	in (mm)		30-1/2 (774)		30-1/2 (774)		30-1/2 (774)		30-1/2 (774)		30-1/2 (774)		
Package Dimensions	Height	in (mm)	-		-		-		-		-		
	Width	in (mm)	-		-		-		-		-		
Weight	Net	lbs (kg)	732*730 (332*331)		732*2 (332*2)		860*732 (390*332)		860*732 (390*332)		860*732 (390*332)		
	Gross	lbs (kg)	776*774 (352*351)		776*2 (352*2)		911*776 (413*352)		911*776 (413*352)		911*776 (413*352)		
Connection Ratio	Standard (Extended) ⁴		%		130(150) - 55		130(150) - 55		130(150) - 55		130(150) - 55		
	Max. (Recommended) Indoor Units/System ⁵		Q/ty		56 (20)		59 (20)		64 (22)		64 (24)		
Heat Exchanger	Type		-		Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube		
	Material		-		Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)		
Compressor	Type	-	AA50PHD×4		AA50PHD×4		AA50PHD×4		DC80PHD×2		DC80PHD×2		
	Inverter 1	-	AA50PHD×2		AA50PHD×2		AA50PHD×2		AA50PHD×2		AA50PHD×2		
	Inverter 2	-	inverter		inverter		inverter		inverter		inverter		
	Motor Output (Pole)	kW (Pole)	(6.4(6)×2)+(5.4(6)×2)		(6.4(6)×2)×2		(7.1(6)×2)+(6.4(6)×2)		(9.1(6)×2)+(6.4(6)×2)		(9.1(6)×2)+(6.4(6)×2)		
	Start Method	-	FVC68D		FVC68D		FVC68D		FVC68D		FVC68D		
Crank Case Heater	Operation Range		%		3 ~ 100		3 ~ 100		3 ~ 100		3 ~ 100		
	Refrigeration Oil Type		-		FVC68D		FVC68D		FVC68D		FVC68D		
Fan	W×Q/ty		34.2 (230V) ×12		34.2 (230V) ×12		34.2 (230V) ×12		34.2 (230V) ×12		34.2 (230V) ×12		
	Type	-	Propeller Fan		Propeller Fan		Propeller Fan		Propeller Fan		Propeller Fan		
	Motor Output (Pole)	kW (Pole)	(0.39(8)×2)×2		(0.39(8)×2)×2		(0.48(8)×2)+(0.39(8)×2)		(0.56(8)×2)+(0.39(8)×2)		(0.56(8)×2)+(0.39(8)×2)		
	Quantity	Q/ty	4		4		4		4		4		
	Airflow Rate	cfm (m ³ /min)	9,037×2 (256×2)		9,037×2 (256×2)		11,614+9,037 (329+256)		12,284+9,037 (348+256)		12,284+9,037 (348+256)		
Electrical	External Static Pressure ⁷		in.W.G. (Pa)		0-0.32 (0-80)		0-0.32 (0-80)		0-0.32 (0-80)		0-0.32 (0-80)		
	Drive		-		Direct-drive		Direct-drive		Direct-drive		Direct-drive		
	Min Circuit Amps		A		58+46/52+42		58+58/59+52		65+58/68+52		76+58/68+52		
	Maximum Overcurrent Protective Device		A		70+60		70+2		80+70		90+70		
Sound Pressure Level ⁶	Maximum Fuse Size		A		70+60		70×2		80+70		90+70		
	Cooling (Night Shift)	dB (A)		67 60		68 60		68 61		69 61		69 61	
Protection Devices	Heating	dB (A)		-		68		68		69		69	
	Cycle	-		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)	
	Inverter	-		Over-current protector		Over-current protector		Over-current protector		Over-current protector		Over-current protector	
	Compressor	-		Over-heat protection		Over-heat protection		Over-heat protection		Over-heat protection		Over-heat protection	
	PCB	-		Over-heat protection		Over-heat protection		Over-heat protection		Over-heat protection		Over-heat protection	
Refrigerant	Type		-		Over-current protection		Over-current protection		Over-current protection		Over-current protection		
	R410A		R410A		R410A		R410A		R410A		R410A		
Refrigerant	Factory Charge Amount		lbs (kg)		23.6+21.8 (10.7+9.9)		23.6×2 (10.7×2)		24.9+23.6 (11.3+10.7)		25.6+23.6 (11.6+10.7)		
	Refrigeration Oil		gal/Unit (L/Unit)		2.1×2 (7.9×2)		2.1×2 (7.9×2)		2.2+2.1 (8.4+7.9)		2.2+2.1 (8.4+7.9)		
Defrost Method			-		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle		
Main Refrigerant Piping (Heat Recovery)	Low Pressure Gas Line		in (mm)		1-3/8 (34.93)		1-3/8 (34.93)		1-3/8 (34.93)		1-3/8 (34.93)		
	High/Low Pressure Gas Line		in (mm)		1-1/8 (28.58)		1-1/8 (28.58)		1-1/8 (28.58)		1-1/8 (28.58)		
	Liquid Line		in (mm)		3/4 (19.05)		3/4 (19.05)		3/4 (19.05)		3/4 (19.05)		

PRODUCT SPECIFICATION

Category		Ton		30RT (16RT+14RT)		32RT (12RT+10RT+10RT)		34RT (12RT+12RT+10RT)		36RT (12RT+12RT+12RT)	
Model (Combination)				(H,Y)VAHR360B32S		(H,Y)VAHR348B32S		(H,Y)VAHR448B32S		(H,Y)VAHR432B32S	
Model (Individual)		Unit A		(H,Y)VAHR192B32S		(H,Y)VAHR144B32S		(H,Y)VAHR144B32S		(H,Y)VAHR144B32S	
		Unit B		(H,Y)VAHR168B32S		(H,Y)VAHR120B32S		(H,Y)VAHR144B32S		(H,Y)VAHR144B32S	
		Unit C		-		(H,Y)VAHR120B32S		(H,Y)VAHR120B32S		(H,Y)VAHR144B32S	
Power Supply				208/230V/ 3PH 60Hz		208/230V/ 3PH 60Hz		208/230V/ 3PH 60Hz		208/230V/ 3PH 60Hz	
Capacity ¹	Cooling	Capacity (Nominal)	Btu/h (kW)	360,000 (105.5)	384,000 (112.5)	408,000 (119.6)	432,000 (126.6)	459,000 (134.5)	486,000 (142.4)	486,000 (142.4)	486,000 (142.4)
	Heating	Capacity (Nominal)	Btu/h (kW)	405,000 (118.7)	432,000 (126.6)	459,000 (134.5)	486,000 (142.4)	513,000 (150.3)	540,000 (158.2)	540,000 (158.2)	540,000 (158.2)
Efficiency Ratings ² (Ducted)	Cooling	Capacity (Rated)	Btu/h (kW)	344,000 (100.8)	366,000 (107.3)	380,000 (111.4)	400,000 (117.2)	400,000 (117.2)	400,000 (117.2)	400,000 (117.2)	400,000 (117.2)
		EER	Btu/Wh (W/W)	10.2 (2.99)	9.5 (2.78)	9.5 (2.78)	9.5 (2.78)	9.5 (2.78)	9.5 (2.78)	9.5 (2.78)	9.5 (2.78)
		IEER	Btu/Wh (Wh/Wh)	19.5 (5.71)	18.6 (5.45)	19.2 (5.63)	19.2 (5.63)	19.2 (5.63)	19.2 (5.63)	19.2 (5.63)	19.2 (5.63)
	Heating High	Capacity (Rated)	Btu/h (kW)	382,000 (112.0)	410,000 (120.2)	435,000 (127.5)	460,000 (134.8)	460,000 (134.8)	460,000 (134.8)	460,000 (134.8)	460,000 (134.8)
		COP	W/W	3.20	3.33	3.37	3.35	3.35	3.35	3.35	3.35
	Heating Low	Capacity	Btu/h (kW)	262,000 (76.8)	276,000 (80.9)	288,000 (84.4)	300,000 (87.9)	300,000 (87.9)	300,000 (87.9)	300,000 (87.9)	300,000 (87.9)
		COP	W/W	2.18	2.26	2.23	2.19	2.19	2.19	2.19	2.19
	Heating and Cooling	SCHE	Btu/Wh	24.20	26.00	26.30	27.40	27.40	27.40	27.40	27.40
Efficiency Ratings ² (Non-Ducted)	Cooling	Capacity (Rated)	Btu/h (kW)	344,000 (100.8)	366,000 (107.3)	380,000 (111.4)	400,000 (117.2)	400,000 (117.2)	400,000 (117.2)	400,000 (117.2)	400,000 (117.2)
		EER	Btu/Wh (W/W)	9.5 (2.78)	9.6 (2.81)	9.5 (2.78)	9.5 (2.78)	9.5 (2.78)	9.5 (2.78)	9.5 (2.78)	9.5 (2.78)
		IEER	Btu/Wh (Wh/Wh)	19.8 (5.81)	19.6 (5.75)	19.3 (5.67)	19.5 (5.72)	19.5 (5.72)	19.5 (5.72)	19.5 (5.72)	19.5 (5.72)
	Heating High	Capacity (Rated)	Btu/h (kW)	386,000 (113.1)	410,000 (120.2)	435,000 (127.5)	460,000 (134.8)	460,000 (134.8)	460,000 (134.8)	460,000 (134.8)	460,000 (134.8)
		COP	W/W	3.27	3.37	3.34	3.21	3.21	3.21	3.21	3.21
	Heating Low	Capacity	Btu/h (kW)	262,000 (76.8)	276,000 (80.9)	288,000 (84.4)	300,000 (87.9)	300,000 (87.9)	300,000 (87.9)	300,000 (87.9)	300,000 (87.9)
		COP	W/W	2.05	2.20	2.08	2.05	2.05	2.05	2.05	2.05
	Heating and Cooling	SCHE	Btu/Wh	26.60	28.60	28.90	30.10	30.10	30.10	30.10	30.10
Cooling Operating Range	Indoor	°F WB (°C WB)	59(15) ~ 73(23)	59(15) ~ 73(23)	59(15) ~ 73(23)	59(15) ~ 73(23)	59(15) ~ 73(23)	59(15) ~ 73(23)	59(15) ~ 73(23)	59(15) ~ 73(23)	59(15) ~ 73(23)
	Outdoor ³	°F DB (°C DB)	23(-5) ~ 122(50)	23(-5) ~ 122(50)	23(-5) ~ 122(50)	23(-5) ~ 122(50)	23(-5) ~ 122(50)	23(-5) ~ 122(50)	23(-5) ~ 122(50)	23(-5) ~ 122(50)	23(-5) ~ 122(50)
Heating Operating Range		with Snow Protection Hood with Low Ambient Kit	°F DB (°C DB)	14(-10) ~ 109(43)	14(-10) ~ 109(43)	14(-10) ~ 109(43)	14(-10) ~ 109(43)	14(-10) ~ 109(43)	14(-10) ~ 109(43)	14(-10) ~ 109(43)	14(-10) ~ 109(43)
			°F DB (°C DB)	-10(-23) ~ 109(43)	-10(-23) ~ 109(43)	-10(-23) ~ 109(43)	-10(-23) ~ 109(43)	-10(-23) ~ 109(43)	-10(-23) ~ 109(43)	-10(-23) ~ 109(43)	-10(-23) ~ 109(43)
Cooling & Heating Operating Range	Cooling	Indoor	°F DB (°C DB)	59(15) ~ 80(27)	59(15) ~ 80(27)	59(15) ~ 80(27)	59(15) ~ 80(27)	59(15) ~ 80(27)	59(15) ~ 80(27)	59(15) ~ 80(27)	59(15) ~ 80(27)
		Outdoor ³	°F WB (°C WB)	-13(-25) ~ 59(15)	-13(-25) ~ 59(15)	-13(-25) ~ 59(15)	-13(-25) ~ 59(15)	-13(-25) ~ 59(15)	-13(-25) ~ 59(15)	-13(-25) ~ 59(15)	-13(-25) ~ 59(15)
			°F WB (°C WB)	59(15) ~ 73(23)	59(15) ~ 73(23)	59(15) ~ 73(23)	59(15) ~ 73(23)	59(15) ~ 73(23)	59(15) ~ 73(23)	59(15) ~ 73(23)	59(15) ~ 73(23)
			°F DB (°C DB)	23(-5) ~ 75(24)	23(-5) ~ 75(24)	23(-5) ~ 75(24)	23(-5) ~ 75(24)	23(-5) ~ 75(24)	23(-5) ~ 75(24)	23(-5) ~ 75(24)	23(-5) ~ 75(24)
	Heating		with Snow Protection Hood with Low Ambient Kit	°F DB (°C DB)	14(-10) ~ 75(24)	14(-10) ~ 75(24)	14(-10) ~ 75(24)	14(-10) ~ 75(24)	14(-10) ~ 75(24)	14(-10) ~ 75(24)	14(-10) ~ 75(24)
				°F DB (°C DB)	-10(-23) ~ 75(24)	-10(-23) ~ 75(24)	-10(-23) ~ 75(24)	-10(-23) ~ 75(24)	-10(-23) ~ 75(24)	-10(-23) ~ 75(24)	-10(-23) ~ 75(24)
		Indoor	°F DB (°C DB)	59(15) ~ 80(27)	59(15) ~ 80(27)	59(15) ~ 80(27)	59(15) ~ 80(27)	59(15) ~ 80(27)	59(15) ~ 80(27)	59(15) ~ 80(27)	59(15) ~ 80(27)
		Outdoor ³	°F WB (°C WB)	22(-6) ~ 59(15)	22(-6) ~ 59(15)	22(-6) ~ 59(15)	22(-6) ~ 59(15)	22(-6) ~ 59(15)	22(-6) ~ 59(15)	22(-6) ~ 59(15)	22(-6) ~ 59(15)
Cabinet Color (Munsell Code)			-	Natural Gray (1.0Y8.5/0.5)	Natural Gray (1.0Y8.5/0.5)	Natural Gray (1.0Y8.5/0.5)	Natural Gray (1.0Y8.5/0.5)	Natural Gray (1.0Y8.5/0.5)	Natural Gray (1.0Y8.5/0.5)	Natural Gray (1.0Y8.5/0.5)	
			-	-	-	-	-	-	-	-	
Outer Dimensions	Height	in (mm)	66-1/4 (1683)	66-1/4 (1683)	66-1/4 (1683)	66-1/4 (1683)	66-1/4 (1683)	66-1/4 (1683)	66-1/4 (1683)	66-1/4 (1683)	66-1/4 (1683)
	Width	in (mm)	128-3/4 (3270)	147-7/16 (3745)	147-7/16 (3745)	147-7/16 (3745)	147-7/16 (3745)	147-7/16 (3745)	147-7/16 (3745)	147-7/16 (3745)	147-7/16 (3745)
	Depth	in (mm)	30-1/2 (774)	30-1/2 (774)	30-1/2 (774)	30-1/2 (774)	30-1/2 (774)	30-1/2 (774)	30-1/2 (774)	30-1/2 (774)	30-1/2 (774)
Package Dimensions	Height	in (mm)	-	-	-	-	-	-	-	-	-
	Width	in (mm)	-	-	-	-	-	-	-	-	-
	Depth	in (mm)	-	-	-	-	-	-	-	-	-
Weight	Net	lbs (kg)	860×2 (390×2)	732×730×2 (332×331×2)	732×730×2 (332×331×2)	732×730×2 (332×331×2)	732×730×2 (332×331×2)	732×730×2 (332×331×2)	732×730×2 (332×331×2)	732×730×2 (332×331×2)	732×730×2 (332×331×2)
	Gross	lbs (kg)	911×2 (413×2)	776×774×2 (352×351×2)	776×774×2 (352×351×2)	776×774×2 (352×351×2)	776×774×2 (352×351×2)	776×774×2 (352×351×2)	776×774×2 (352×351×2)	776×774×2 (352×351×2)	776×774×2 (352×351×2)
Connection Ratio	Standard (Extended) ⁴	%	130(150) - 55	130(150) - 55	130(150) - 55	130(150) - 55	130(150) - 55	130(150) - 55	130(150) - 55	130(150) - 55	130(150) - 55
	Max. (Recommended) Indoor Units/System ⁵	Q/ty	64 (28)	64 (30)	64 (30)	64 (30)	64 (30)	64 (30)	64 (30)	64 (30)	64 (30)
Heat Exchanger	Type	-	Multi-Pass Cross-Finned Tube	Multi-Pass Cross-Finned Tube	Multi-Pass Cross-Finned Tube	Multi-Pass Cross-Finned Tube	Multi-Pass Cross-Finned Tube	Multi-Pass Cross-Finned Tube	Multi-Pass Cross-Finned Tube	Multi-Pass Cross-Finned Tube	Multi-Pass Cross-Finned Tube
	Material	-	Cu-Al (Anti-corrosion)	Cu-Al (Anti-corrosion)	Cu-Al (Anti-corrosion)	Cu-Al (Anti-corrosion)	Cu-Al (Anti-corrosion)	Cu-Al (Anti-corrosion)	Cu-Al (Anti-corrosion)	Cu-Al (Anti-corrosion)	Cu-Al (Anti-corrosion)
Compressor	Type	Inverter 1	-	DC80PHD×4	AA50PHD×6	AA50PHD×6	AA50PHD×6	AA50PHD×6	AA50PHD×6	AA50PHD×6	AA50PHD×6
	Inverter 2	-	-	-	-	-	-	-	-	-	-
	Motor Output (Pole)	kW (Pole)	(9.1(6)×2)+(7.1(6)×2)	(6.4(6)×2)+(5.4(6)×2)×2	(6.4(6)×2)+(5.4(6)×2)×2	(6.4(6)×2)+(5.4(6)×2)×2	(6.4(6)×2)+(5.4(6)×2)×2	(6.4(6)×2)+(5.4(6)×2)×2	(6.4(6)×2)+(5.4(6)×2)×2	(6.4(6)×2)+(5.4(6)×2)×2	(6.4(6)×2)+(5.4(6)×2)×2
	Start Method	-	inverter	inverter	inverter	inverter	inverter	inverter	inverter	inverter	inverter
	Operation Range	%	3 ~ 100	2 ~ 100	2 ~ 100	2 ~ 100	2 ~ 100	2 ~ 100	2 ~ 100	2 ~ 100	2 ~ 100
Crank Case Heater	Refrigeration Oil Type	-	FVC68D	FVC68D	FVC68D	FVC68D	FVC68D	FVC68D	FVC68D	FVC68D	FVC68D
	W×Q/ty	-	34.2 (230V) ×12	34.2 (230V) ×18	34.2 (230V) ×18	34.2 (230V) ×18	34.2 (230V) ×18	34.2 (230V) ×18	34.2 (230V) ×18	34.2 (230V) ×18	34.2 (230V) ×18
Fan	Type	-	Propeller Fan	Propeller Fan	Propeller Fan	Propeller Fan	Propeller Fan	Propeller Fan	Propeller Fan	Propeller Fan	Propeller Fan
	Motor Output (Pole)	kW (Pole)	(0.56(8)×2)+(0.48(8)×2)	(0.39(8)×2)×3	(0.39(8)×2)×3	(0.39(8)×2)×3	(0.39(8)×2)×3	(0.39(8)×2)×3	(0.39(8)×2)×3	(0.39(8)×2)×3	(0.39(8)×2)×3
	Quantity	Q/ty	4	6	6	6	6	6	6	6	6
	Airflow Rate	cfm (m ³ /min)	12,284+11,614 (348+329)	9,037×3 (256×3)	9,037×3 (256×3)	9,037×3 (256×3)	9,037×3 (256×3)	9,037×3 (256×3)	9,037×3 (256×3)	9,037×3 (256×3)	9,037×3 (256×3)
	External Static Pressure ⁶	in.W.G. (Pa)	0-0.32 (0-80)	0-0.32 (0-80)	0-0.32 (0-80)	0-0.32 (0-80)	0-0.32 (0-80)	0-0.32 (0-80)	0-0.32 (0-80)	0-0.32 (0-80)	0-0.32 (0-80)
Electrical	Drive	-	Direct-drive	Direct-drive	Direct-drive	Direct-drive	Direct-drive	Direct-drive	Direct-drive	Direct-drive	Direct-drive
	Min Circuit Amps	A	76+65/68+59	58+46×2/52+42×2	58+46×2/52+42×2	58+2+46/52×2+42	58+2+46/52×2+42	58+3/52×3	58+3/52×3	58+3/52×3	58+3/52×3
	Maximum Overcurrent Protective Device	A	90+80	70+60×2	70+60×2	70+2+60	70+2+60	70×3	70×3	70×3	70×3
	Maximum Fuse Size	A	90+80	70+60×2	70+60×2	70+2+60	70+2+60	70×3	70×3	70×3	70×3
Sound Pressure Level ⁷	Cooling (Night Shift)	dB (A)	68	69	69	69	69	69	69	69	69
	Heating	dB (A)	68	69	69	69	69	69	69	69	69
Protection Devices	Cycle	-	High pressure switch at 601psi (4.15MPa)	High pressure switch at 601psi (4.15MPa)	High pressure switch at 601psi (4.15MPa)	High pressure switch at 601psi (4.15MPa)	High pressure switch at 601psi (4.15MPa)	High pressure switch at 601psi (4.15MPa)	High pressure switch at 601psi (4.15MPa)	High pressure switch at 601psi (4.15MPa)	High pressure switch at 601psi (4.15MPa)
	Inverter	-	Over-current protector	Over-current protector	Over-current protector	Over-current protector	Over-current protector	Over-current protector	Over-current protector	Over-current protector	Over-current protector
	Compressor	-	Over-heat protection	Over-heat protection	Over-heat protection	Over-heat protection	Over-heat protection	Over-heat protection	Over-heat protection	Over-heat protection	Over-heat protection
	PCB	-	Over-heat protection	Over-heat protection	Over-heat protection	Over-heat protection	Over-heat protection	Over-heat protection	Over-heat protection	Over-heat protection	Over-heat protection
	Type	-	Over-current protection	Over-current protection	Over-current protection	Over-current protection	Over-current protection	Over-current protection	Over-current protection	Over-current protection	Over-current protection
Refrigerant	Type	-	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
	Factory Charge Amount	lbs (kg)	25.6+24.9 (11.6+11.3)	23.6+21.8 (10.7+9.9)	23.6+21.8 (10.7+9.9)	23.6+21.8 (10.7+9.9)	23.6+21.8 (10.7+9.9)	23.6+21.8 (10.7+9.9)	23.6+21.8 (10.7+9.9)	23.6+21.8 (10.7+9.9)	23.6+21.8 (10.7+9.9)
Refrigeration Oil	Factory Charge Amount	gal/Unit (L/Unit)	2.2×2 (8.4×2)	2.1×3 (7.9×3)	2.1×3 (7.9×3)	2.1×3 (7.9×3)	2.1×3 (7.9×3)	2.1×3 (7.9×3)	2.1×3 (7.9×3)	2.1×3 (7.9×3)	2.1×3 (7.9×3)
	Defrost Method	-	Reversed Refrigerant Cycle	Reversed Refrigerant Cycle	Reversed Refrigerant Cycle	Reversed Refrigerant Cycle	Reversed Refrigerant Cycle	Reversed Refrigerant Cycle	Reversed Refrigerant Cycle	Reversed Refrigerant Cycle	Reversed Refrigerant Cycle
Main Refrigerant Piping (Heat Recovery)	Low Pressure Gas Line	in (mm)	1-3/8 (34.93)	1-5/8 (41.28)	1-5/8 (41.28)	1-5/8 (41.28)	1-5/8 (41.28)	1-5/8 (41.28)	1-5/8 (41.28)	1-5/8 (41.28)	1-5/8 (41.28)
	High/Low Pressure Gas Line	in (mm)	1-1/8 (28.58)	1-3/8 (34.93)	1-3/8 (34.93)	1-3/8 (34.93)	1-3/8 (34.93)	1-3/8 (34.93)	1-3/8 (34.93)	1-3/8 (34.93)	1-3/8 (34.93)
	Liquid Line	in (mm)	3/4 (19.05)	3/4 (19.05)	3/4 (19.05)	3/4 (19.05)	3/4 (19.05)	3/4 (19.05)	3/4 (19.05)	3/4 (19.05)	3/4 (19.05)

(2) 460V Type

Category			Ton		6RT		8RT		10RT		12RT		
Model (Combination)					(H,Y)VAHR072B42S		(H,Y)VAHR096B42S		(H,Y)VAHR120B42S		(H,Y)VAHR144B42S		
Model (Individual)			Unit A		(H,Y)VAHR072B42S		(H,Y)VAHR096B42S		(H,Y)VAHR120B42S		(H,Y)VAHR144B42S		
			Unit B		-		-		-		-		
			Unit C		-		-		-		-		
Power Supply					460V/ 3PH 60Hz		460V/ 3PH 60Hz		460V/ 3PH 60Hz		460V/ 3PH 60Hz		
Capacity ¹	Cooling	Capacity (Nominal)	Btu/h	(kW)	72,000	(21.1)	96,000	(28.1)	120,000	(35.2)	144,000	(42.2)	
	Heating	Capacity (Nominal)	Btu/h	(kW)	81,000	(23.7)	108,000	(31.7)	135,000	(39.6)	162,000	(47.5)	
Efficiency Ratings ² (Ducted)	Cooling	Capacity (Rated)	Btu/h	(kW)	69,000	(20.2)	92,000	(27.0)	114,000	(33.4)	138,000	(40.4)	
		EER	Btu/Wh	(W/W)	12.2	(3.58)	12.4	(3.63)	12.4	(3.63)	11.2	(3.28)	
		IEER	Btu/Wh	(Wh/Wh)	21.1	(6.18)	22.1	(6.48)	21.7	(6.36)	21.2	(6.21)	
	Heating High	Capacity (Rated)	Btu/h	(kW)	77,000	(22.6)	103,000	(30.2)	129,000	(37.8)	154,000	(45.1)	
		COP	W/W		3.54		3.65		3.55		3.40		
	Heating Low	Capacity	Btu/h	(kW)	56,000	(16.4)	76,000	(22.3)	92,000	(27.0)	110,000	(32.2)	
		COP	W/W		2.38		2.36		2.30		2.15		
	Heating and Cooling	SCHE	Btu/Wh		24.30		27.50		27.20		28.10		
Efficiency Ratings ² (Non-Ducted)	Cooling	Capacity (Rated)	Btu/h	(kW)	69,000	(20.2)	92,000	(27.0)	114,000	(33.4)	138,000	(40.4)	
		EER	Btu/Wh	(W/W)	14.9	(4.37)	12.4	(3.63)	12.7	(3.73)	10.9	(3.18)	
		IEER	Btu/Wh	(Wh/Wh)	26.5	(7.77)	23.9	(7.02)	24.4	(7.14)	23.9	(6.99)	
	Heating High	Capacity (Rated)	Btu/h	(kW)	77,000	(22.6)	103,000	(30.2)	129,000	(37.8)	154,000	(45.1)	
		COP	W/W		4.25		3.77		3.84		3.42		
	Heating Low	Capacity	Btu/h	(kW)	56,000	(16.4)	76,000	(22.3)	92,000	(27.0)	110,000	(32.2)	
		COP	W/W		2.60		2.40		2.37		2.12		
	Heating and Cooling	SCHE	Btu/Wh		26.70		30.30		29.90		30.90		
Cooling Operating Range	Indoor	°F WB (°C WB)	59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		
	Outdoor ³	°F DB (°C DB)	23(-5) ~ 122(50)		23(-5) ~ 122(50)		23(-5) ~ 122(50)		23(-5) ~ 122(50)		23(-5) ~ 122(50)		
	with Snow Protection Hood with Low Ambient Kit	°F DB (°C DB)	14(-10) ~ 109(43)		14(-10) ~ 109(43)		14(-10) ~ 109(43)		14(-10) ~ 109(43)		14(-10) ~ 109(43)		
Heating Operating Range	Indoor	°F DB (°C DB)	59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		
	Outdoor ³	°F WB (°C WB)	-13(-25) ~ 59(15)		-13(-25) ~ 59(15)		-13(-25) ~ 59(15)		-13(-25) ~ 59(15)		-13(-25) ~ 59(15)		
Cooling & Heating Operating Range	Cooling	Indoor	°F WB (°C WB)	59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)	
		Outdoor ³	°F DB (°C DB)	23(-5) ~ 75(24)		23(-5) ~ 75(24)		23(-5) ~ 75(24)		23(-5) ~ 75(24)		23(-5) ~ 75(24)	
		with Snow Protection Hood	°F DB (°C DB)	14(-10) ~ 75(24)		14(-10) ~ 75(24)		14(-10) ~ 75(24)		14(-10) ~ 75(24)		14(-10) ~ 75(24)	
		with Low Ambient Kit	°F DB (°C DB)	-10(-23) ~ 75(24)		-10(-23) ~ 75(24)		-10(-23) ~ 75(24)		-10(-23) ~ 75(24)		-10(-23) ~ 75(24)	
	Heating	Indoor	°F DB (°C DB)	59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)	
		Outdoor ³	°F WB (°C WB)	22(-6) ~ 59(15)		22(-6) ~ 59(15)		22(-6) ~ 59(15)		22(-6) ~ 59(15)		22(-6) ~ 59(15)	
		with Snow Protection Hood	°F WB (°C WB)	12(-11) ~ 59(15)		12(-11) ~ 59(15)		12(-11) ~ 59(15)		12(-11) ~ 59(15)		12(-11) ~ 59(15)	
		with Low Ambient Kit	°F WB (°C WB)	-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)	
		Cabinet Color (Munsell Code)		-		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)	
		Outer Dimensions	Height	in (mm)	66-1/4 (1683)		66-1/4 (1683)		66-1/4 (1683)		66-1/4 (1683)		66-1/4 (1683)
Width	in (mm)		38-3/8 (975)		48-5/8 (1235)		48-5/8 (1235)		48-5/8 (1235)		48-5/8 (1235)		
Depth	in (mm)		30-1/2 (774)		30-1/2 (774)		30-1/2 (774)		30-1/2 (774)		30-1/2 (774)		
Package Dimensions	Height	in (mm)	71-5/8 (1820)		71-5/8 (1820)		71-5/8 (1820)		71-5/8 (1820)		71-5/8 (1820)		
	Width	in (mm)	40-9/16 (1030)		50-13/16 (1290)		50-13/16 (1290)		50-13/16 (1290)		50-13/16 (1290)		
Weight	Depth	in (mm)	31-7/8 (810)		31-7/8 (810)		31-7/8 (810)		31-7/8 (810)		31-7/8 (810)		
	Net	lbs (kg)	534 (242)		611 (277)		734 (333)		737 (334)		737 (334)		
	Gross	lbs (kg)	573 (260)		655 (297)		778 (353)		781 (354)		781 (354)		
Connection Ratio	Standard (Extended) ⁴		%	130(150) - 70		130(150) - 65		130(150) - 60		130(150) - 55			
	Max. (Recommended) Indoor Units/System ⁵		Q'ty	15 (8)		20 (8)		26 (8)		26 (10)			
Heat Exchanger	Type		-	Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube			
	Material		-	Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)			
Compressor	Type	Inverter 1	-		DC80PHD×1		DC80PHD×1		AA50PHD×2		AA50PHD×2		
		Inverter 2	-		-		-		-		-		
	Motor Output (Pole)		kW (Pole)	7.4(6)		9.5(6)		5.4(6)×2		6.4(6)×2			
	Start Method		-	inverter		inverter		inverter		inverter			
	Operation Range		%	10 ~ 100		8 ~ 100		7 ~ 100		6 ~ 100			
Crank Case Heater	Refrigeration Oil Type		-	FVC68D		FVC68D		FVC68D		FVC68D			
			W×Q'ty	34.2 (230V) ×3		34.2 (230V) ×3		34.2 (230V) ×6		34.2 (230V) ×6			
Fan	Type	-	Propeller Fan		Propeller Fan		Propeller Fan		Propeller Fan				
	Motor Output (Pole)		kW (Pole)	0.42(8)		0.33(8)×2		0.39(8)×2		0.39(8)×2			
	Quantity		Q'ty	1		2		2		2			
	Airflow Rate		cfm (m ³ /min)	6,707 (190)		8,437 (239)		9,037 (256)		9,037 (256)			
	External Static Pressure ⁶		in.W.G. (Pa)	0-0.32 (0-80)		0-0.32 (0-80)		0-0.32 (0-80)		0-0.32 (0-80)			
Electrical	Drive		-	Direct-drive		Direct-drive		Direct-drive		Direct-drive			
	Min Circuit Amps		A	15		22		24		30			
	Maximum Overcurrent Protective Device		A	20		30		30		35			
	Maximum Fuse Size		A	20		25		30		35			
Sound Pressure Level ⁷	Cooling (Night Shift)		dB (A)	60		63		63		65			
	Heating		dB (A)	60		63		63		65			
Protection Devices	Cycle		-	High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)			
	Inverter		-	Over-current protector		Over-current protector		Over-current protector		Over-current protector			
	Compressor		-	Over-heat protection		Over-heat protection		Over-heat protection		Over-heat protection			
	PCB		-	Over-heat protection		Over-heat protection		Over-heat protection		Over-heat protection			
Refrigerant	Type		-	R410A		R410A		R410A		R410A			
	Factory Charge Amount		lbs (kg)	15.9 (7.2)		19.6 (8.9)		21.8 (9.9)		23.6 (10.7)			
Refrigeration Oil	Factory Charge Amount		gal/Unit (L/Unit)	1.6 (6.0)		1.8 (6.9)		2.1 (7.9)		2.1 (7.9)			
Defrost Method			-	Reversed Refrigerant Cycle		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle			
Main Refrigerant Piping (Heat Recovery)	Low Pressure Gas Line		in (mm)	7/8 (22.2)		7/8 (22.2)		1-1/8 (28.58)		1-1/8 (28.58)			
	High/Low Pressure Gas Line		in (mm)	3/4 (19.05)		3/4 (19.05)		7/8 (22.2)		7/8 (22.2)			
	Liquid Line		in (mm)	1/2 (12.7)		1/2 (12.7)		1/2 (12.7)		5/8 (15.88)			

PRODUCT SPECIFICATION

Category			Ton	14RT		16RT		18RT (12RT+6RT)		20RT (10RT+10RT)		
Model (Combination)				(H,Y)VAHR168B42S		(H,Y)VAHR192B42S		(H,Y)VAHR216B42S		(H,Y)VAHR240B42S		
Model (Individual)			Unit A	(H,Y)VAHR168B42S		(H,Y)VAHR192B42S		(H,Y)VAHR144B42S		(H,Y)VAHR120B42S		
			Unit B	-		-		(H,Y)VAHR072B42S		(H,Y)VAHR120B42S		
			Unit C	-		-		-		-		
Power Supply				460V/ 3PH 60Hz		460V/ 3PH 60Hz		460V/ 3PH 60Hz		460V/ 3PH 60Hz		
Capacity ¹	Cooling	Capacity (Nominal)	Btu/h	(kW)	168,000	(49.2)	192,000	(56.3)	216,000	(63.3)	240,000	(70.3)
	Heating	Capacity (Nominal)	Btu/h	(kW)	189,000	(55.4)	216,000	(63.3)	243,000	(71.2)	270,000	(79.1)
Efficiency Ratings ² (Ducted)	Cooling	Capacity (Rated)	Btu/h	(kW)	160,000	(46.9)	184,000	(53.9)	206,000	(60.4)	228,000	(66.8)
		EER	Btu/Wh	(W/Wh)	11.8	(3.46)	11.1	(3.25)	11.2	(3.28)	10.6	(3.11)
		IEER	Btu/Wh	(Wh/Wh)	21.4	(6.27)	20.8	(6.10)	20.7	(6.07)	21.0	(6.15)
		Capacity (Rated)	Btu/h	(kW)	180,000	(52.8)	206,000	(60.4)	232,000	(68.0)	258,000	(75.6)
	Heating High	COP	W/W		3.56		3.38		3.51		3.51	
		Capacity	Btu/h	(kW)	124,000	(36.3)	140,000	(41.0)	164,000	(48.1)	178,000	(52.2)
	Heating Low	COP	W/W		2.40		2.15		2.29		2.27	
		SCHE	Btu/Wh		27.90		29.30		26.70		26.40	
Efficiency Ratings ² (Non-Ducted)	Cooling	Capacity (Rated)	Btu/h	(kW)	160,000	(46.9)	184,000	(53.9)	206,000	(60.4)	228,000	(66.8)
		EER	Btu/Wh	(W/Wh)	11.6	(3.40)	10.6	(3.11)	10.9	(3.18)	11.1	(3.24)
		IEER	Btu/Wh	(Wh/Wh)	23.4	(6.86)	21.4	(6.27)	20.9	(6.12)	20.8	(6.09)
		Capacity (Rated)	Btu/h	(kW)	180,000	(52.8)	206,000	(60.4)	232,000	(68.0)	258,000	(75.6)
	Heating High	COP	W/W		3.65		3.32		3.82		3.67	
		Capacity	Btu/h	(kW)	124,000	(36.3)	140,000	(41.0)	164,000	(48.1)	178,000	(52.2)
	Heating Low	COP	W/W		2.16		2.05		2.32		2.35	
		SCHE	Btu/Wh		30.70		32.20		29.40		29.00	
Cooling Operating Range		Indoor	°F WB (°C WB)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)	
		Outdoor ³	°F DB (°C DB)		23(-5) ~ 122(50)		23(-5) ~ 122(50)		23(-5) ~ 122(50)		23(-5) ~ 122(50)	
		with Snow Protection Hood		°F DB (°C DB)		14(-10) ~ 109(43)		14(-10) ~ 109(43)		14(-10) ~ 109(43)		
		with Low Ambient Kit		°F DB (°C DB)		-10(-23) ~ 109(43)		-10(-23) ~ 109(43)		-10(-23) ~ 109(43)		
Heating Operating Range		Indoor	°F DB (°C DB)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)	
		Outdoor ³	°F WB (°C WB)		-13(-25) ~ 59(15)		-13(-25) ~ 59(15)		-13(-25) ~ 59(15)		-13(-25) ~ 59(15)	
		Indoor	°F WB (°C WB)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)	
		Outdoor ³	°F DB (°C DB)		23(-5) ~ 75(24)		23(-5) ~ 75(24)		23(-5) ~ 75(24)		23(-5) ~ 75(24)	
Cooling & Heating Operating Range		with Snow Protection Hood		°F DB (°C DB)		14(-10) ~ 75(24)		14(-10) ~ 75(24)		14(-10) ~ 75(24)		
				°F DB (°C DB)		-10(-23) ~ 75(24)		-10(-23) ~ 75(24)		-10(-23) ~ 75(24)		
				°F DB (°C DB)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		
				°F WB (°C WB)		22(-6) ~ 59(15)		22(-6) ~ 59(15)		22(-6) ~ 59(15)		
		with Low Ambient Kit		°F WB (°C WB)		12(-11) ~ 59(15)		12(-11) ~ 59(15)		12(-11) ~ 59(15)		
				°F WB (°C WB)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		
				°F WB (°C WB)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		
				°F WB (°C WB)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		
Cabinet Color (Munsell Code)			-		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)			
Outer Dimensions	Height	in (mm)	66-1/4 (1683)		66-1/4 (1683)		66-1/4 (1683)		66-1/4 (1683)			
	Width	in (mm)	64 (1625)		64 (1625)		87-13/16 (2230)		98-1/16 (2490)			
	Depth	in (mm)	30-1/2 (774)		30-1/2 (774)		30-1/2 (774)		30-1/2 (774)			
Package Dimensions	Height	in (mm)	71-5/8 (1820)		71-5/8 (1820)		-		-			
	Width	in (mm)	66-1/8 (1680)		66-1/8 (1680)		-		-			
	Depth	in (mm)	31-7/8 (810)		31-7/8 (810)		-		-			
Weight	Net	lbs (kg)	860 (390)		860 (390)		737+534 (334+242)		734×2 (333×2)			
	Gross	lbs (kg)	911 (413)		911 (413)		781+573 (354+260)		778×2 (353×2)			
Connection Ratio	Standard (Extended) ⁴		%		130(150) - 55		130(150) - 55		130(150) - 60			
	Max. (Recommended) Indoor Units/System ⁵		Q/ty		36 (12)		40 (14)		46 (18)			
Heat Exchanger	Type		-		Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube			
	Material		-		Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)			
Compressor	Type		-		DC80PHD×2		DC80PHD×2		DC80PHD×1			
	Inverter 1		-		-		-		AA50PHD×2			
	Inverter 2		-		-		-		-			
	Motor Output (Pole)	kW (Pole)	7.1(6)×2		9.1(6)×2		6.4(6)×2+7.4(6)		(5.4(6)×2)×2			
	Start Method		-		inverter		inverter		inverter			
Crank Case Heater	Operation Range		%		5 ~ 100		5 ~ 100		4 ~ 100			
	Refrigeration Oil Type		-		FVC68D		FVC68D		FVC68D			
	W×Q/ty		-		34.2 (230V) ×6		34.2 (230V) ×6		34.2 (230V) ×9			
Fan	Type		-		Propeller Fan		Propeller Fan		Propeller Fan			
	Motor Output (Pole)	kW (Pole)	0.48(8)×2		0.56(8)×2		(0.39(8)×2)+0.42(8)		(0.39(8)×2)×2			
	Quantity	Q/ty	2		2		3		4			
	Airflow Rate	cfm (m ³ /min)	11,614 (329)		12,284 (348)		9,037+6,707 (256+190)		9,037×2 (256×2)			
Electrical	External Static Pressure ⁷		in.W.G. (Pa)		0-0.32 (0-80)		0-0.32 (0-80)		0-0.32 (0-80)			
	Drive		-		Direct-drive		Direct-drive		Direct-drive			
	Min Circuit Amps		A		34		39		30+15			
	Maximum Overcurrent Protective Device		A		40		50		35+20			
Sound Pressure Level ⁶	Maximum Fuse Size		A		40		50		35+20			
	Cooling (Night Shift)	dB (A)	64		66		66		66			
Protection Devices	Heating		dB (A)		64		66		66			
	Cycle		-		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)			
	Inverter		-		Over-current protector		Over-current protector		Over-current protector			
	Compressor		-		Over-heat protection		Over-heat protection		Over-heat protection			
	PCB		-		Over-heat protection		Over-heat protection		Over-heat protection			
Refrigerant	Type		-		Over-current protection		Over-current protection		Over-current protection			
	Factory Charge Amount		lbs (kg)		24.9 (11.3)		25.6 (11.6)		23.6+15.9 (10.7+7.2)			
Refrigeration Oil	Factory Charge Amount		gal/Unit (L/Unit)		2.2 (8.4)		2.2 (8.4)		2.1+1.6 (7.9+6.0)			
Defrost Method			-		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle			
Main Refrigerant Piping (Heat Recovery)	Low Pressure Gas Line		in (mm)		1-1/8 (28.58)		1-1/8 (28.58)		1-1/8 (28.58)			
	High/Low Pressure Gas Line		in (mm)		7/8 (22.2)		7/8 (22.2)		1-1/8 (28.58)			
	Liquid Line		in (mm)		5/8 (15.88)		5/8 (15.88)		3/4 (19.05)			

NOTES:

1 Rating Conditions:

Cooling

Indoor Air Inlet Temperature: 80°F (26.7°C) DB

67°F (19.4°C) WB

Outdoor Air Inlet Temperature: 95°F (35.0°C) DB

Piping Length: 24ft. 7-3/16 in. (7.5m), Piping Lift: 0ft. (0m)

2 Efficiency ratings are based on the AHRI 1230 test standard.

3 There are some exceptions and notes for cooling, heating and cooling & heating operation range. For details, refer to "2.12 Operation Temperature Range".

4 For details, refer to "2.13 Combination of Indoor Units and Outdoor Units".

5 External static pressure can be changed by

Category	Ton		22RT (12RT+10RT)		24RT (12RT+12RT)		26RT (14RT+12RT)		28RT (16RT+12RT)	
Model (Combination)			(H,Y)VAHR264B42S		(H,Y)VAHR288B42S		(H,Y)VAHR312B42S		(H,Y)VAHR336B42S	
Model (Individual)	Unit A		(H,Y)VAHR144B42S		(H,Y)VAHR144B42S		(H,Y)VAHR168B42S		(H,Y)VAHR192B42S	
	Unit C		(H,Y)VAHR120B42S		(H,Y)VAHR144B42S		(H,Y)VAHR144B42S		(H,Y)VAHR144B42S	
Power Supply			460V/ 3PH 60Hz		460V/ 3PH 60Hz		460V/ 3PH 60Hz		460V/ 3PH 60Hz	
Capacity ¹	Cooling	Capacity (Nominal)	Btu/h	(kW)	264,000	(77.4)	288,000	(84.4)	312,000	(91.4)
	Heating	Capacity (Nominal)	Btu/h	(kW)	297,000	(87.0)	324,000	(95.0)	351,000	(102.9)
Efficiency Ratings ² (Ducted)	Cooling	Capacity (Rated)	Btu/h	(kW)	252,000	(73.9)	276,000	(80.9)	298,000	(87.3)
		EER	Btu/Wh	(W/W)	10.5	(3.08)	9.9	(2.90)	10.0	(2.93)
		IEER	Btu/Wh	(Wh/Wh)	20.8	(6.10)	20.7	(6.07)	19.5	(5.71)
		Capacity (Rated)	Btu/h	(kW)	282,000	(82.6)	308,000	(90.3)	334,000	(97.9)
	Heating High	COP	W/W		3.56		3.42		3.31	
		Capacity	Btu/h	(kW)	196,000	(57.4)	214,000	(62.7)	232,000	(68.0)
	Heating Low	COP	W/W		2.26		2.24		2.12	
		Capacity	Btu/h	(kW)	274,000	(80.3)	298,000	(87.3)	320,000	(93.8)
Efficiency Ratings ² (Non-Ducted)	Cooling	Capacity (Rated)	Btu/h	(kW)	252,000	(73.9)	276,000	(80.9)	298,000	(87.3)
		EER	Btu/Wh	(W/W)	10.0	(2.93)	9.5	(2.78)	9.7	(2.83)
		IEER	Btu/Wh	(Wh/Wh)	21.1	(6.18)	19.4	(5.69)	20.3	(5.96)
		Capacity (Rated)	Btu/h	(kW)	282,000	(82.6)	308,000	(90.3)	334,000	(97.9)
	Heating High	COP	W/W		3.70		3.42		3.37	
		Capacity	Btu/h	(kW)	196,000	(57.4)	214,000	(62.7)	232,000	(68.0)
	Heating Low	COP	W/W		2.26		2.21		2.05	
		Capacity	Btu/h	(kW)	274,000	(80.3)	298,000	(87.3)	320,000	(93.8)
Cooling Operating Range	Indoor	Indoor ³	°F WB (°C WB)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)	
		Outdoor ³	°F DB (°C DB)		23(-5) ~ 122(50)		23(-5) ~ 122(50)		23(-5) ~ 122(50)	
		with Snow Protection Hood	°F DB (°C DB)		14(-10) ~ 109(43)		14(-10) ~ 109(43)		14(-10) ~ 109(43)	
		with Low Ambient Kit	°F DB (°C DB)		-10(-23) ~ 109(43)		-10(-23) ~ 109(43)		-10(-23) ~ 109(43)	
	Heating	Indoor ³	°F WB (°C WB)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)	
		Outdoor ³	°F WB (°C WB)		-13(-25) ~ 59(15)		-13(-25) ~ 59(15)		-13(-25) ~ 59(15)	
		with Snow Protection Hood	°F WB (°C WB)		12(-11) ~ 59(15)		12(-11) ~ 59(15)		12(-11) ~ 59(15)	
		with Low Ambient Kit	°F WB (°C WB)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)	
Cooling & Heating Operating Range	Cooling	Indoor ³	°F WB (°C WB)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)	
		Outdoor ³	°F DB (°C DB)		23(-5) ~ 75(24)		23(-5) ~ 75(24)		23(-5) ~ 75(24)	
		with Snow Protection Hood	°F DB (°C DB)		14(-10) ~ 75(24)		14(-10) ~ 75(24)		14(-10) ~ 75(24)	
		with Low Ambient Kit	°F DB (°C DB)		-10(-23) ~ 75(24)		-10(-23) ~ 75(24)		-10(-23) ~ 75(24)	
	Heating	Indoor ³	°F WB (°C WB)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)	
		Outdoor ³	°F WB (°C WB)		22(-6) ~ 59(15)		22(-6) ~ 59(15)		22(-6) ~ 59(15)	
		with Snow Protection Hood	°F WB (°C WB)		12(-11) ~ 59(15)		12(-11) ~ 59(15)		12(-11) ~ 59(15)	
		with Low Ambient Kit	°F WB (°C WB)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)	
Cabinet Color (Munsell Code)			Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)	
Outer Dimensions	Height	in (mm)	66-1/4 (1683)		66-1/4 (1683)		66-1/4 (1683)		66-1/4 (1683)	
	Width	in (mm)	98-1/16 (2490)		98-1/16 (2490)		113-3/8 (2880)		113-3/8 (2880)	
	Depth	in (mm)	30-1/2 (774)		30-1/2 (774)		30-1/2 (774)		30-1/2 (774)	
Package Dimensions	Height	in (mm)	-	-	-	-	-	-	-	-
	Width	in (mm)	-	-	-	-	-	-	-	-
	Depth	in (mm)	-	-	-	-	-	-	-	-
Weight	Net	lbs (kg)	737+734 (334+333)		737×2 (334×2)		860+737 (390+334)		860+737 (390+334)	
	Gross	lbs (kg)	781+777 (354+353)		781×2 (354×2)		911+781 (413+354)		911+781 (413+354)	
Connection Ratio	Standard (Extended) ⁴		130(150) - 55		130(150) - 55		130(150) - 55		130(150) - 55	
	Max. (Recommended) Indoor Units/System ⁵		56 (20)		59 (20)		64 (22)		64 (24)	
Heat Exchanger	Type	-	Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube	
	Material	-	Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)	
Compressor	Type	Inverter 1	AA50PHD×4		AA50PHD×4		DC80PHD×2		DC80PHD×2	
		Inverter 2	-		-		AA50PHD×2		AA50PHD×2	
	Motor Output (Pole)	kW (Pole)	(6.4(6)×2)+(5.4(6)×2)		(6.4(6)×2)×2		(7.1(6)×2)+(6.4(6)×2)		(9.1(6)×2)+(6.4(6)×2)	
	Start Method	-	inverter		inverter		inverter		inverter	
	Operation Range	%	3 ~ 100		3 ~ 100		3 ~ 100		3 ~ 100	
Crank Case Heater	Refrigeration Oil Type		FVC68D		FVC68D		FVC68D		FVC68D	
	W×Q ⁶		34.2 (230V) ×12		34.2 (230V) ×12		34.2 (230V) ×12		34.2 (230V) ×12	
Fan	Type	-	Propeller Fan		Propeller Fan		Propeller Fan		Propeller Fan	
	Motor Output (Pole)	kW (Pole)	(0.39(8)×2)×2		(0.39(8)×2)×2		(0.48(8)×2)+(0.39(8)×2)		(0.56(8)×2)+(0.39(8)×2)	
	Quantity	Q ⁷	4		4		4		4	
	Airflow Rate	cfm (m ³ /min)	9,037×2 (256×2)		9,037×2 (256×2)		11,614+9,037 (329+256)		12,284+9,037 (348+256)	
	External Static Pressure ⁸	in.W.G. (Pa)	0-0.32 (0-80)		0-0.32 (0-80)		0-0.32 (0-80)		0-0.32 (0-80)	
Electrical	Drive	-	Direct-drive		Direct-drive		Direct-drive		Direct-drive	
	Min Circuit Amps	A	30×24		30×2		34×30		39×30	
	Maximum Overcurrent Protective Device	A	35×30		35×2		40×35		50×35	
Sound Pressure Level ⁹	Maximum Fuse Size	A	35×30		35×2		40×35		50×35	
	Cooling (Night Shift)	dB (A)	67		68		68		69	
Protection Devices	Heating	dB (A)	67		68		68		69	
	Cycle	-	High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)	
	Inverter	-	Over-current protector		Over-current protector		Over-current protector		Over-current protector	
	Compressor	-	Over-heat protection		Over-heat protection		Over-heat protection		Over-heat protection	
	PCB	-	Over-heat protection		Over-heat protection		Over-heat protection		Over-heat protection	
Refrigerant	Type	-	R410A		R410A		R410A		R410A	
	Factory Charge Amount	lbs (kg)	23.6+21.8 (10.7+9.9)		23.6×2 (10.7×2)		24.9+23.6 (11.3+10.7)		25.6+23.6 (11.6+10.7)	
Refrigeration Oil	Factory Charge Amount	gal/Unit (L/Unit)	2.1×2 (7.9×2)		2.1×2 (7.9×2)		2.2+2.1 (8.4+7.9)		2.2+2.1 (8.4+7.9)	
Defrost Method			Reversed Refrigerant Cycle		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle	
Main Refrigerant Piping (Heat Recovery)	Low Pressure Gas Line	in (mm)	1-3/8 (34.93)		1-3/8 (34.93)		1-3/8 (34.93)		1-3/8 (34.93)	
	High/Low Pressure Gas Line	in (mm)	1-1/8 (28.58)		1-1/8 (28.58)		1-1/8 (28.58)		1-1/8 (28.58)	
	Liquid Line	in (mm)	3/4 (19.05)		3/4 (19.05)		3/4 (19.05)		3/4 (19.05)	

NOTES:

1 Rating Conditions:

Cooling

Indoor Air Inlet Temperature: 80°F (26.7°C) DB

67°F (19.4°C) WB

Outdoor Air Inlet Temperature: 95°F (35.0°C) DB

Piping Length: 24ft. 7-3/16 in. (7.5m), Piping Lift: 0ft. (0m)

2 Efficiency ratings are based on the AHRI 1230 test standard.

3 There are some exceptions and notes for cooling, heating and cooling & heating operation range. For details, refer to "2.12 Operation Temperature Range".

4 For details, refer to "2.13 Combination of Indoor Units and Outdoor Units".

5 External static pressure can be changed by DSW setting.

6 Measure Point: 3.3ft. (1m) from the service cover surface and 4.9ft. (1.5m) from floor level

The operation sound is measured in an anechoic chamber. However, the actual operation sound may appear louder or with an echo because of surrounding environmental noise. Be sure to check environmental conditions before installation. The sound on the air inlet side is 8dB higher than on the front side.

PRODUCT SPECIFICATION

Category		Ton		30RT (16RT+14RT)		32RT (12RT+10RT+10RT)		34RT (12RT+12RT+10RT)		36RT (12RT+12RT+12RT)		
Model (Combination)				(H,Y)VAHR360B42S		(H,Y)VAHR384B42S		(H,Y)VAHR408B42S		(H,Y)VAHR432B42S		
Model (Individual)		Unit A		(H,Y)VAHR192B42S		(H,Y)VAHR144B42S		(H,Y)VAHR144B42S		(H,Y)VAHR144B42S		
		Unit B		(H,Y)VAHR168B42S		(H,Y)VAHR120B42S		(H,Y)VAHR144B42S		(H,Y)VAHR144B42S		
		Unit C		-		(H,Y)VAHR120B42S		(H,Y)VAHR120B42S		(H,Y)VAHR144B42S		
Power Supply				460V/ 3PH 60Hz		460V/ 3PH 60Hz		460V/ 3PH 60Hz		460V/ 3PH 60Hz		
Capacity ¹	Cooling	Capacity (Nominal)	Btu/h	(kW)	360,000	(105.5)	384,000	(112.5)	408,000	(119.6)	432,000	(126.6)
	Heating	Capacity (Nominal)	Btu/h	(kW)	405,000	(118.7)	432,000	(126.6)	459,000	(134.5)	486,000	(142.4)
Efficiency Ratings ² (Ducted)	Cooling	Capacity (Rated)	Btu/h	(kW)	344,000	(100.8)	366,000	(107.3)	380,000	(111.4)	400,000	(117.2)
		EER	Btu/Wh	(W/W)	10.2	(2.99)	9.5	(2.78)	9.5	(2.78)	9.6	(2.81)
		IEER	Btu/Wh	(Wh/Wh)	19.5	(5.71)	18.6	(5.45)	19.2	(5.63)	19.0	(5.57)
		Capacity (Rated)	Btu/h	(kW)	382,000	(112.0)	410,000	(120.2)	435,000	(127.5)	460,000	(134.8)
	Heating High	COP	W/W		3.20		3.33		3.37		3.35	
	Heating Low	COP	W/W		2.62,000 (76.8)		276,000 (80.9)		288,000 (84.4)		300,000 (87.9)	
	Heating and Cooling	SCHE	W/W		2.18		2.26		2.23		2.19	
			Btu/Wh		24.20		26.00		26.30		27.40	
Efficiency Ratings ² (Non-Ducted)	Cooling	Capacity (Rated)	Btu/h	(kW)	344,000	(100.8)	366,000	(107.3)	380,000	(111.4)	400,000	(117.2)
		EER	Btu/Wh	(W/W)	9.5	(2.78)	9.6	(2.81)	9.5	(2.78)	9.5	(2.78)
		IEER	Btu/Wh	(Wh/Wh)	19.8	(5.81)	19.6	(5.75)	19.3	(5.67)	19.5	(5.72)
		Capacity (Rated)	Btu/h	(kW)	386,000	(113.1)	410,000	(120.2)	435,000	(127.5)	460,000	(134.8)
	Heating High	COP	W/W		3.27		3.37		3.34		3.21	
	Heating Low	COP	W/W		262,000 (76.8)		276,000 (80.9)		288,000 (84.4)		300,000 (87.9)	
	Heating and Cooling	SCHE	W/W		2.05		2.20		2.08		2.05	
			Btu/Wh		26.60		28.60		28.90		30.10	
Cooling Operating Range	Indoor	Indoor	°F WB (°C WB)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)	
		Outdoor ³	°F DB (°C DB)		23(-5) ~ 122(50)		23(-5) ~ 122(50)		23(-5) ~ 122(50)		23(-5) ~ 122(50)	
		with Snow Protection Hood	°F DB (°C DB)		14(-10) ~ 109(43)		14(-10) ~ 109(43)		14(-10) ~ 109(43)		14(-10) ~ 109(43)	
		with Low Ambient Kit	°F DB (°C DB)		-10(-23) ~ 109(43)		-10(-23) ~ 109(43)		-10(-23) ~ 109(43)		-10(-23) ~ 109(43)	
Heating Operating Range	Indoor	Indoor	°F DB (°C DB)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)	
		Outdoor ³	°F WB (°C WB)		-13(-25) ~ 59(15)		-13(-25) ~ 59(15)		-13(-25) ~ 59(15)		-13(-25) ~ 59(15)	
		Indoor	°F WB (°C WB)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)	
		Outdoor ³	°F DB (°C DB)		23(-5) ~ 75(24)		23(-5) ~ 75(24)		23(-5) ~ 75(24)		23(-5) ~ 75(24)	
Cooling & Heating Operating Range	Cooling	with Snow Protection Hood	°F DB (°C DB)		14(-10) ~ 75(24)		14(-10) ~ 75(24)		14(-10) ~ 75(24)		14(-10) ~ 75(24)	
		with Low Ambient Kit	°F DB (°C DB)		-10(-23) ~ 75(24)		-10(-23) ~ 75(24)		-10(-23) ~ 75(24)		-10(-23) ~ 75(24)	
		Indoor	°F DB (°C DB)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)	
		Outdoor ³	°F WB (°C WB)		22(-6) ~ 59(15)		22(-6) ~ 59(15)		22(-6) ~ 59(15)		22(-6) ~ 59(15)	
	Heating	with Snow Protection Hood	°F WB (°C WB)		12(-11) ~ 59(15)		12(-11) ~ 59(15)		12(-11) ~ 59(15)		12(-11) ~ 59(15)	
		with Low Ambient Kit	°F WB (°C WB)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)	
		Indoor	°F WB (°C WB)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)	
		Outdoor ³	°F DB (°C DB)		23(-5) ~ 75(24)		23(-5) ~ 75(24)		23(-5) ~ 75(24)		23(-5) ~ 75(24)	
Cabinet Color (Munsell Code)		-		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)		
Outer Dimensions	Height	in	(mm)	66-1/4	(1683)	66-1/4	(1683)	66-1/4	(1683)	66-1/4	(1683)	
	Width	in	(mm)	128-3/4	(3270)	147-7/16	(3745)	147-7/16	(3745)	147-7/16	(3745)	
	Depth	in	(mm)	30-1/2	(774)	30-1/2	(774)	30-1/2	(774)	30-1/2	(774)	
Package Dimensions	Height	in	(mm)	-	-	-	-	-	-	-	-	
	Width	in	(mm)	-	-	-	-	-	-	-	-	
	Depth	in	(mm)	-	-	-	-	-	-	-	-	
Weight	Net	lbs	(kg)	860×2	(390×2)	737+734×2	(334+333×2)	737×2+734	(334×2+333)	737×3	(334×3)	
	Gross	lbs	(kg)	911×2	(413×2)	781+778×2	(354+353×2)	781×2+778	(354×2+353)	781×3	(354×3)	
Connection Ratio	Standard (Extended) ⁴	%		130(150) - 55		130(150) - 55		130(150) - 55		130(150) - 55		
	Max. (Recommended) Indoor Units/System ⁵	Q/ty		64 (28)		64 (30)		64 (30)		64 (30)		
Heat Exchanger	Type	-		Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube		
	Material	-		Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)		
Compressor	Type	-		DC80PHD×4		AA50PHD×6		AA50PHD×6		AA50PHD×6		
	Type	Inverter 1	-	-		-		-		-		
	Inverter 2	-		-		-		-		-		
	Motor Output (Pole)	kW (Pole)		(9.1(6)×2)+(7.1(6)×2)		(6.4(6)×2)+(5.4(6)×2)×2		(6.4(6)×2)×2+(5.4(6)×2)		(6.4(6)×2)×3		
	Start Method	inverter		inverter		inverter		inverter		inverter		
Operation Range	Refrigeration Oil Type	%		3 ~ 100		2 ~ 100		2 ~ 100		2 ~ 100		
		FVC68D		FVC68D		FVC68D		FVC68D		FVC68D		
Crank Case Heater		W×Q/ty		34.2 (230V) ×12		34.2 (230V) ×18		34.2 (230V) ×18		34.2 (230V) ×18		
Fan	Type	-		Propeller Fan		Propeller Fan		Propeller Fan		Propeller Fan		
	Motor Output (Pole)	kW (Pole)		(0.56(8)×2)+(0.48(8)×2)		(0.39(8)×2)×3		(0.39(8)×2)×3		(0.39(8)×2)×3		
	Quantity	Q/ty		4		6		6		6		
	Airflow Rate	cfm	(m ³ /min)	12,284+11,614 (348+329)		9,037×3 (256×3)		9,037×3 (256×3)		9,037×3 (256×3)		
External Static Pressure ⁶	Drive	in.W.G. (Pa)		0-0.32 (0-80)		0-0.32 (0-80)		0-0.32 (0-80)		0-0.32 (0-80)		
		-		Direct-drive		Direct-drive		Direct-drive		Direct-drive		
Electrical	Min Circuit Amps	A		39+34		30+24×2		30×2+24		30×3		
	Maximum Overcurrent Protective Device	A		50+40		35+30×2		35×2+30		35×3		
	Maximum Fuse Size	A		50+40		35+30×2		35×2+30		35×3		
Sound Pressure Level ⁶	Cooling (Night Shift)	dB (A)		68		69		69		70		
	Heating	dB (A)		68		69		69		70		
Protection Devices	Cycle	-		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)		
	Inverter	-		Over-current protector		Over-current protector		Over-current protector		Over-current protector		
	Compressor	-		Over-heat protection		Over-heat protection		Over-heat protection		Over-heat protection		
	PCB	-		Over-heat protection		Over-heat protection		Over-heat protection		Over-heat protection		
Refrigerant	Type	-		R410A		R410A		R410A		R410A		
	Factory Charge Amount	lbs	(kg)	25.6+24.9 (11.6+11.3)		23.6+21.8 (10.7+9.9)		23.6×2 +21.8 (10.7×2 +9.9)		23.6×3 (10.7×3)		
Refrigeration Oil	Factory Charge Amount	gal/Unit	(L/Unit)	2.2×2 (8.4×2)		2.1×3 (7.9×3)		2.1×3 (7.9×3)		2.1×3 (7.9×3)		
Defrost Method		-		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle		
Main Refrigerant Piping (Heat Recovery)	Low Pressure Gas Line	in	(mm)	1-3/8 (34.93)		1-5/8 (41.28)		1-5/8 (41.28)		1-5/8 (41.28)		
	High/Low Pressure Gas Line	in	(mm)	1-1/8 (28.58)		1-3/8 (34.93)		1-3/8 (34.93)		1-3/8 (34.93)		
	Liquid Line	in	(mm)	3/4 (19.05)		3/4 (19.05)		3/4 (19.05)		3/4 (19.05)		

(3) 575V Type

Category		Ton		6RT		8RT		10RT		12RT			
Model (Combination)				(H,Y)VAHR072B52S		(H,Y)VAHR096B52S		(H,Y)VAHR120B52S		(H,Y)VAHR144B52S			
Model (Individual)		Unit A		(H,Y)VAHR072B52S		(H,Y)VAHR096B52S		(H,Y)VAHR120B52S		(H,Y)VAHR144B52S			
		Unit B		-		-		-		-			
		Unit C		-		-		-		-			
Power Supply (Wiring Type)				575V 3PH 60Hz (3 Wires and 1 GND)		575V 3PH 60Hz (3 Wires and 1 GND)		575V 3PH 60Hz (3 Wires and 1 GND)		575V 3PH 60Hz (3 Wires and 1 GND)			
Capacity1		Cooling	Capacity (Nominal)	Btu/h (kW)	72,000 (21.1)	96,000 (28.1)		120,000 (35.2)		144,000 (42.2)			
		Heating	Capacity (Nominal)	Btu/h (kW)	81,000 (23.7)	108,000 (31.7)		135,000 (39.6)		162,000 (47.5)			
Efficiency Ratings2 (Ducted)		Cooling	Capacity (Rated)	Btu/h (kW)	69,000 (20.2)	92,000 (27.0)		114,000 (33.4)		138,000 (40.4)			
			EER	Btu/Wh (W/W)	12.2 (3.58)	12.4 (3.63)		12.4 (3.63)		11.2 (3.28)			
			IEER	Btu/Wh (Wh/Wh)	21.1 (6.18)	22.1 (6.48)		21.7 (6.36)		21.2 (6.21)			
			Capacity (Rated)	Btu/h (kW)	77,000 (22.6)	103,000 (30.2)		129,000 (37.8)		154,000 (45.1)			
		Heating High	COP	W/W		3.54		3.65		3.55		3.40	
			Capacity	Btu/h (kW)	56,000 (16.4)	76,000 (22.3)		92,000 (27.0)		110,000 (32.2)			
		Heating Low	COP	W/W		2.38		2.36		2.30		2.15	
			SCHE	Btu/Wh		24.30		27.50		27.20		28.10	
Efficiency Ratings2 (Non-Ducted)		Cooling	Capacity (Rated)	Btu/h (kW)	69,000 (20.2)	92,000 (27.0)		114,000 (33.4)		138,000 (40.4)			
			EER	Btu/Wh (W/W)	14.9 (4.37)	12.4 (3.63)		12.7 (3.73)		10.9 (3.18)			
			IEER	Btu/Wh (Wh/Wh)	26.5 (7.77)	23.9 (7.02)		24.4 (7.14)		23.9 (6.99)			
			Capacity (Rated)	Btu/h (kW)	77,000 (22.6)	103,000 (30.2)		129,000 (37.8)		154,000 (45.1)			
		Heating High	COP	W/W		4.25		3.77		3.84		3.42	
			Capacity	Btu/h (kW)	56,000 (16.4)	76,000 (22.3)		92,000 (27.0)		110,000 (32.2)			
		Heating Low	COP	W/W		2.60		2.40		2.37		2.12	
			SCHE	Btu/Wh		26.70		30.30		29.90		30.90	
Cooling Operating Range		Indoor	*F WB (°C WB)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		
		Outdoor3	*F DB (°C DB)		23(-5) ~ 122(50)		23(-5) ~ 122(50)		23(-5) ~ 122(50)		23(-5) ~ 122(50)		
		with Snow Protection Hood		*F DB (°C DB)		14(-10) ~ 109(43)		14(-10) ~ 109(43)		14(-10) ~ 109(43)			
		with Low Ambient Kit		*F DB (°C DB)		-10(-23) ~ 109(43)		-10(-23) ~ 109(43)		-10(-23) ~ 109(43)			
Heating Operating Range		Indoor	*F DB (°C DB)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		
		Outdoor3	*F WB (°C WB)		-13(-25) ~ 59(15)		-13(-25) ~ 59(15)		-13(-25) ~ 59(15)		-13(-25) ~ 59(15)		
		Indoor	*F WB (°C WB)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		
		Outdoor3	*F DB (°C DB)		23(-5) ~ 75(24)		23(-5) ~ 75(24)		23(-5) ~ 75(24)		23(-5) ~ 75(24)		
Cooling & Heating Operating Range		Cooling	with Snow Protection Hood		*F DB (°C DB)		14(-10) ~ 75(24)		14(-10) ~ 75(24)		14(-10) ~ 75(24)		
			with Low Ambient Kit		*F DB (°C DB)		-10(-23) ~ 75(24)		-10(-23) ~ 75(24)		-10(-23) ~ 75(24)		
			Indoor	*F DB (°C DB)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)	
			Outdoor3	*F WB (°C WB)		22(-6) ~ 59(15)		22(-6) ~ 59(15)		22(-6) ~ 59(15)		22(-6) ~ 59(15)	
		Heating	with Snow Protection Hood		*F WB (°C WB)		12(-11) ~ 59(15)		12(-11) ~ 59(15)		12(-11) ~ 59(15)		
			with Low Ambient Kit		*F WB (°C WB)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		
Cabinet Color (Munsell Code)				-		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)			
Outer Dimensions		Height	in (mm)	66-1/4 (1683)		66-1/4 (1683)		66-1/4 (1683)		66-1/4 (1683)			
		Width	in (mm)	38-3/8 (975)		48-5/8 (1235)		48-5/8 (1235)		48-5/8 (1235)			
		Depth	in (mm)	30-1/2 (774)		30-1/2 (774)		30-1/2 (774)		30-1/2 (774)			
Package Dimensions		Height	in (mm)	71-5/8 (1820)		71-5/8 (1820)		71-5/8 (1820)		71-5/8 (1820)			
		Width	in (mm)	40-9/16 (1030)		50-13/16 (1290)		50-13/16 (1290)		50-13/16 (1290)			
		Depth	in (mm)	31-7/8 (810)		31-7/8 (810)		31-7/8 (810)		31-7/8 (810)			
Weight		Net	lbs (kg)	534 (242)		611 (277)		734 (333)		737 (334)			
		Gross	lbs (kg)	573 (260)		655 (297)		778 (353)		781 (354)			
Connection Ratio		Standard (Extended)5		%		130(150) - 70		130(150) - 65		130(150) - 60			
		Max. (Recommended) Indoor Units/System6		Q'ty		15 (8)		20 (8)		26 (8)			
Heat Exchanger		Type		-		Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube			
		Material		-		Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)			
Compressor		Type	Inverter 1	-		DC80PHD×1		DC80PHD×1		AA50PHD×2			
			Inverter 2	-		-		-		-			
		Motor Output (Pole)	kW (Pole)		7.4(6)		9.5(6)		5.4(6)×2		6.4(6)×2		
		Start Method	-		inverter		inverter		inverter		inverter		
		Operation Range	%		10 ~ 100		8 ~ 100		7 ~ 100		6 ~ 100		
		Refrigeration Oil Type	-		FVC68D		FVC68D		FVC68D		FVC68D		
Crank Case Heater		W×Q'ty		34.2 (230V) ×3		34.2 (230V) ×3		34.2 (230V) ×6		34.2 (230V) ×6			
		Type	-		Propeller Fan		Propeller Fan		Propeller Fan		Propeller Fan		
		Motor Output (Pole)	kW (Pole)		0.42(8)		0.33(8)×2		0.39(8)×2		0.39(8)×2		
		Quantity	Q'ty		1		2		2		2		
		Airflow Rate	cfm (m3/min)		6,707 (190)		8,437 (239)		9,037 (256)		9,037 (256)		
Fan		External Static Pressure7		in.W.G. (Pa)		0-0.32 (0-80)		0-0.32 (0-80)		0-0.32 (0-80)			
		Drive	-		Direct-drive		Direct-drive		Direct-drive		Direct-drive		
Electrical		Min Circuit Amps	A		12		16		19		24		
		Maximum Overcurrent Protective Device	A		15		25		25		30		
		Maximum Fuse Size	A		15		25		25		30		
Sound Pressure Level8		Cooling (Night Shift)	dB (A)		60 54		63 57		63 57		65 57		
		Heating	dB (A)		60		63		63		65		
Protection Devices		Cycle	-		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)		
		Inverter	-		Over-current protection		Over-current protection		Over-current protection		Over-current protection		
		Compressor	-		Over-heat protection		Over-heat protection		Over-heat protection		Over-heat protection		
		PCB	-		Over-heat protection		Over-heat protection		Over-heat protection		Over-heat protection		
Refrigerant		Type	-		R410A		R410A		R410A		R410A		
		Factory Charge Amount	lbs (kg)		15.9 (7.2)		19.6 (8.9)		21.8 (9.9)		23.6 (10.7)		
Refrigeration Oil		Factory Charge Amount	gal/Unit (L/Unit)		1.6 (6.0)		1.8 (6.9)		2.1 (7.9)		2.1 (7.9)		
Defrost Method				-		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle			
Main Refrigerant Piping (Heat Recovery)		Low Pressure Gas Line	in (mm)		7/8 (22.2)		7/8 (22.2)		1-1/8 (28.58)		1-1/8 (28.58)		
		High/Low Pressure Gas Line	in (mm)		3/4 (19.05)		3/4 (19.05)		7/8 (22.2)		7/8 (22.2)		
		Liquid Line	in (mm)		1/2 (12.7)		1/2 (12.7)		1/2 (12.7)		5/8 (15.88)		

NOTES:

1 Rating Conditions:

Cooling

Indoor Air Inlet Temperature: 80°F (26.7°C) DB

67°F (19.4°C) WB

Outdoor Air Inlet Temperature: 95°F (35.0°C) DB

Piping Length: 24ft. 7-3/16 in. (7.5m), Piping Lift: 0ft. (0m)

2 Efficiency ratings are based on the AHRI 1230 test standard.

3 There are some exceptions and notes for cooling, heating and cooling & heating operation range. For details, refer to "2.12 Operation Temperature Range".

4 For details, refer to "2.13 Combination of Indoor Units and Outdoor Units".

5 External static pressure can be changed by DSW setting.

6 Measure Point: 3.3ft. (1m) from the service cover surface and 4.9ft. (1.5m) from floor level

The operation sound is measured in an anechoic chamber. However, the actual operation sound may appear louder or with an echo because of surrounding environmental noise. Be sure to check environmental conditions before installation. The sound on the air inlet side is 8dB higher than on the front side.

PRODUCT SPECIFICATION

Category			Ton		14RT		16RT		18RT (12RT+6RT)		20RT (10RT+10RT)	
Model (Combination)					(H,Y)VAHR168B52S		(H,Y)VAHR192B52S		(H,Y)VAHR216B52S		(H,Y)VAHR240B52S	
Model (Individual)			Unit A		(H,Y)VAHR168B52S		(H,Y)VAHR192B52S		(H,Y)VAHR216B52S		(H,Y)VAHR240B52S	
			Unit B		-		-		(H,Y)VAHR072B52S		(H,Y)VAHR210B52S	
			Unit C		-		-		-		-	
Power Supply (Wiring Type)					575V 3PH 60Hz (3 Wires and 1 GND)		575V 3PH 60Hz (3 Wires and 1 GND)		575V 3PH 60Hz (3 Wires and 1 GND)		575V 3PH 60Hz (3 Wires and 1 GND)	
Capacity1	Cooling	Capacity (Nominal)	Btu/h	(kW)	168,000	(49.2)	192,000	(56.3)	216,000	(63.3)	240,000	(70.3)
	Heating	Capacity (Nominal)	Btu/h	(kW)	189,000	(55.4)	216,000	(63.3)	243,000	(71.2)	270,000	(79.1)
Efficiency Ratings2 (Ducted)	Cooling	Capacity (Rated)	Btu/h	(kW)	160,000	(46.9)	184,000	(53.9)	206,000	(60.4)	228,000	(66.8)
		EER	Btu/Wh	(W/W)	11.8	(3.46)	11.1	(3.25)	11.2	(3.28)	10.6	(3.11)
		IEER	Btu/Wh	(Wh/Wh)	21.4	(6.27)	20.8	(6.10)	20.7	(6.07)	21.0	(6.15)
		Capacity (Rated)	Btu/h	(kW)	180,000	(52.8)	206,000	(60.4)	232,000	(68.0)	258,000	(75.6)
	Heating High COP			W/W	3.56		3.38		3.51		3.51	
	Heating Low COP	Capacity	Btu/h	(kW)	124,000	(36.3)	140,000	(41.0)	164,000	(48.1)	178,000	(52.2)
		COP		W/W	2.40		2.15		2.29		2.27	
	Heating and Cooling	SCHE		Btu/Wh	27.90		29.30		26.70		26.40	
Efficiency Ratings2 (Non-Ducted)	Cooling	Capacity (Rated)	Btu/h	(kW)	160,000	(46.9)	184,000	(53.9)	206,000	(60.4)	228,000	(66.8)
		EER	Btu/Wh	(W/W)	11.6	(3.40)	10.6	(3.11)	10.9	(3.18)	11.1	(3.24)
		IEER	Btu/Wh	(Wh/Wh)	23.4	(6.86)	21.4	(6.27)	20.9	(6.12)	20.8	(6.09)
		Capacity (Rated)	Btu/h	(kW)	180,000	(52.8)	206,000	(60.4)	232,000	(68.0)	258,000	(75.6)
	Heating High COP			W/W	3.65		3.32		3.82		3.67	
	Heating Low COP	Capacity	Btu/h	(kW)	124,000	(36.3)	140,000	(41.0)	164,000	(48.1)	178,000	(52.2)
Heating and Cooling	COP		W/W	2.16		2.05		2.32		2.35		
	SCHE		Btu/Wh	30.70		32.20		29.40		29.00		
Cooling Operating Range	Indoor		°F WB (°C WB)	59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		
	Outdoor3		°F DB (°C DB)	23(-5) ~ 122(50)		23(-5) ~ 122(50)		23(-5) ~ 122(50)		23(-5) ~ 122(50)		
		with Snow Protection Hood		°F DB (°C DB)	14(-10) ~ 109(43)		14(-10) ~ 109(43)		14(-10) ~ 109(43)		14(-10) ~ 109(43)	
		with Low Ambient Kit		°F DB (°C DB)	-10(-23) ~ 109(43)		-10(-23) ~ 109(43)		-10(-23) ~ 109(43)		-10(-23) ~ 109(43)	
Heating Operating Range		Indoor		°F DB (°C DB)	59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)	
		Outdoor3		°F WB (°C WB)	-13(-25) ~ 59(15)		-13(-25) ~ 59(15)		-13(-25) ~ 59(15)		-13(-25) ~ 59(15)	
Cooling & Heating Operating Range	Cooling	Indoor		°F WB (°C WB)	59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)	
		Outdoor3		°F DB (°C DB)	23(-5) ~ 75(24)		23(-5) ~ 75(24)		23(-5) ~ 75(24)		23(-5) ~ 75(24)	
		with Snow Protection Hood		°F DB (°C DB)	14(-10) ~ 75(24)		14(-10) ~ 75(24)		14(-10) ~ 75(24)		14(-10) ~ 75(24)	
		with Low Ambient Kit		°F DB (°C DB)	-10(-23) ~ 75(24)		-10(-23) ~ 75(24)		-10(-23) ~ 75(24)		-10(-23) ~ 75(24)	
	Heating	Indoor		°F DB (°C DB)	59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)	
		Outdoor3		°F WB (°C WB)	22(-6) ~ 59(15)		22(-6) ~ 59(15)		22(-6) ~ 59(15)		22(-6) ~ 59(15)	
		with Snow Protection Hood		°F WB (°C WB)	12(-11) ~ 59(15)		12(-11) ~ 59(15)		12(-11) ~ 59(15)		12(-11) ~ 59(15)	
		with Low Ambient Kit		°F WB (°C WB)	-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)	
Cabinet Color (Munsell Code)			-		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)	
Outer Dimensions	Height		in	(mm)	66-1/4	(1683)	66-1/4	(1683)	66-1/4	(1683)	66-1/4	(1683)
	Width		in	(mm)	64	(1625)	64	(1625)	87-13/16	(2230)	98-1/16	(2490)
	Depth		in	(mm)	30-1/2	(774)	30-1/2	(774)	30-1/2	(774)	30-1/2	(774)
Package Dimensions	Height		in	(mm)	71-5/8	(1820)	71-5/8	(1820)	-	-	-	-
	Width		in	(mm)	66-1/8	(1680)	66-1/8	(1680)	-	-	-	-
	Depth		in	(mm)	31-7/8	(810)	31-7/8	(810)	-	-	-	-
Weight	Net		lbs	(kg)	860	(390)	860	(390)	737+534	(334+242)	734+2	(333+2)
	Gross		lbs	(kg)	911	(413)	911	(413)	781+573	(354+260)	778+2	(353+2)
Connection Ratio		Standard (Extended)5	%		130(150) - 55		130(150) - 55		130(150) - 60		130(150) - 60	
		Max. (Recommended) Indoor Units/System6	Q/Ty		36 (12)		40 (14)		46 (18)		52 (18)	
Heat Exchanger		Type	-		Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube	
		Material	-		Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)	
Compressor		Type	-		DC80PHD×2		DC80PHD×2		DC80PHD×1		AA50PHD×1	
		Inverter 1	-		-		-		AA50PHD×2		-	
		Inverter 2	-		-		-		inverter		inverter	
		Motor Output (Pole)	kW (Pole)		7.1(6)×2		9.1(6)×2		6.4(6)×2+7.4(6)		(5.4(6)×2)×2	
		Start Method	-		inverter		inverter		inverter		inverter	
		Operation Range	%		5 ~ 100		5 ~ 100		4 ~ 100		4 ~ 100	
		Refrigeration Oil Type	-		FVC68D		FVC68D		FVC68D		FVC68D	
Crank Case Heater			W×Q/Ty		34.2 (230V) ×6		34.2 (230V) ×6		34.2 (230V) ×9		34.2 (230V) ×12	
Fan		Type	-		Propeller Fan		Propeller Fan		Propeller Fan		Propeller Fan	
		Motor Output (Pole)	kW (Pole)		0.48(8)×2		0.56(8)×2		(0.39(8)×2)+0.42(8)		(0.39(8)×2)×2	
		Quantity	Q/Ty		2		2		3		4	
		Airflow Rate	cfm		(m3/min)		11,614 (329)		12,284 (348)		9,037 +6,707 (256+190)	
		External Static Pressure7	in.W.G. (Pa)		0-0.32 (0-80)		0-0.32 (0-80)		0-0.32 (0-80)		0-0.32 (0-80)	
		Drive	-		Direct-drive		Direct-drive		Direct-drive		Direct-drive	
Electrical		Min Circuit Amps	A		27		32		24×12		19×2	
		Maximum Overcurrent Protective Device	A		35		40		30×15		25×2	
		Maximum Fuse Size	A		35		40		30×15		25×2	
Sound Pressure Level8	Cooling (Night Shift)		dB (A)		64 59		66 59		66 59		66 60	
	Heating		dB (A)		64		66		66		66	
Protection Devices	Cycle		-		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)	
	Inverter		-		Over-current protection		Over-current protection		Over-current protection		Over-current protection	
	Compressor		-		Over-heat protection		Over-heat protection		Over-heat protection		Over-heat protection	
	PCB		-		Over-current protection		Over-current protection		Over-current protection		Over-current protection	
Refrigerant	Type		-		R410A		R410A		R410A		R410A	
	Factory Charge Amount		lbs (kg)		24.9 (11.3)		25.6 (11.6)		23.6+15.9 (10.7+7.2)		21.8×2 (9.9×2)	
Refrigeration Oil	Factory Charge Amount		gal/Unit (L/Unit)		2.2 (8.4)		2.2 (8.4)		2.1+1.6 (7.9+6.0)		2.1×2 (7.9×2)	
Defrost Method			-		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle	
Main Refrigerant Piping (Heat Recovery)	Low Pressure Gas Line		in (mm)		1-1/8 (28.58)		1-1/8 (28.58)		1-1/8 (28.58)		1-3/8 (34.93)	
	High/Low Pressure Gas Line		in (mm)		7/8 (22.2)		7/8 (22.2)		7/8 (22.2)		1-1/8 (28.58)	
	Liquid Line		in (mm)		5/8 (15.88)		5/8 (15.88)		3/4 (19.05)		3/4 (19.05)	

NOTES:

- 1 Rating Conditions:

Cooling

Indoor Air Inlet Temperature: 80°F (26.7°C) DB
67°F (19.4°C) WB

Outdoor Air Inlet Temperature: 95°F (35.0°C) DB
Piping Length: 24ft. 7-3/16 in. (7.5m), Piping Lift: 0ft. (0m)

2 Efficiency ratings are based on the AHRI 1230 test standard.

3 There are some exceptions and notes for cooling, heating and cooling & heating operation range. For details, refer to "2.12 Operation Temperature Range".

4 For details, refer to "2.13 Combination of Indoor Units and Outdoor Units."

5 External static pressure can be changed by DSW setting.

6 Measure Point: 3.3ft. (1m) from the service cover surface and 4.9ft. (1.5m) from floor level

The operation sound is measured in an anechoic chamber. However, the actual operation sound may appear louder or with an echo because of surrounding environmental noise. Be sure to check environmental conditions before installation. The sound on the air inlet side is 8dB higher than on the front side.

Category		Ton		22RT (12RT+10RT)		24RT (12RT+12RT)		26RT (14RT+12RT)		28RT (16RT+12RT)	
Model (Combination)				(H,Y)VAHR264B52S		(H,Y)VAHR288B52S		(H,Y)VAHR312B52S		(H,Y)VAHR336B52S	
Model (Individual)		Unit A		(H,Y)VAHR144B52S		(H,Y)VAHR144B52S		(H,Y)VAHR168B52S		(H,Y)VAHR192B52S	
		Unit B		(H,Y)VAHR120B52S		(H,Y)VAHR144B52S		(H,Y)VAHR144B52S		(H,Y)VAHR144B52S	
		Unit C				-		-		-	
Power Supply (Wiring Type)				575V 3PH 60Hz (3 Wires and 1 GND)		575V 3PH 60Hz (3 Wires and 1 GND)		575V 3PH 60Hz (3 Wires and 1 GND)		575V 3PH 60Hz (3 Wires and 1 GND)	
Capacity1	Cooling	Capacity (Nominal)	Btu/h (kW)	264,000 (77.4)		288,000 (84.4)		312,000 (91.4)		336,000 (98.5)	
	Heating	Capacity (Nominal)	Btu/h (kW)	297,000 (87.0)		324,000 (95.0)		351,000 (102.9)		378,000 (110.8)	
Efficiency Ratings2 (Ducted)	Cooling	Capacity (Rated)	Btu/h (kW)	252,000 (73.9)		276,000 (80.9)		298,000 (87.3)		320,000 (93.8)	
		EER	Btu/Wh (W/W)	10.5 (3.08)		9.9 (2.90)		10.0 (2.93)		9.8 (2.87)	
		IEER	Btu/Wh (Wh/Wh)	20.8 (6.10)		20.7 (6.07)		19.5 (5.71)		19.1 (5.60)	
		Capacity (Rated)	Btu/h (kW)	282,000 (82.6)		308,000 (90.3)		334,000 (97.9)		360,000 (105.5)	
	Heating High	COP	W/W	3.56		3.42		3.31		3.32	
		Capacity	Btu/h (kW)	196,000 (57.4)		214,000 (62.7)		232,000 (68.0)		250,000 (73.3)	
	Heating Low	COP	W/W	2.26		2.24		2.12		2.25	
		Heating and Cooling	SCHE	Btu/Wh	27.40		27.90		24.70		25.30
Efficiency Ratings2 (Non-Ducted)	Cooling	Capacity (Rated)	Btu/h (kW)	252,000 (73.9)		276,000 (80.9)		298,000 (87.3)		320,000 (93.8)	
		EER	Btu/Wh (W/W)	10.0 (2.93)		9.5 (2.78)		9.7 (2.83)		9.5 (2.78)	
		IEER	Btu/Wh (Wh/Wh)	21.1 (6.18)		19.4 (5.69)		20.3 (5.96)		20.8 (6.09)	
		Capacity (Rated)	Btu/h (kW)	282,000 (82.6)		308,000 (90.3)		334,000 (97.9)		360,000 (105.5)	
	Heating High	COP	W/W	3.70		3.42		3.37		3.27	
		Capacity	Btu/h (kW)	196,000 (57.4)		214,000 (62.7)		232,000 (68.0)		250,000 (73.3)	
	Heating Low	COP	W/W	2.26		2.21		2.05		2.31	
		Heating and Cooling	SCHE	Btu/Wh	30.10		30.70		27.20		27.80
Cooling Operating Range		Indoor	°F WB (°C WB)	59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)	
		Outdoor3	°F DB (°C DB)	23(5) ~ 122(50)		23(5) ~ 122(50)		23(5) ~ 122(50)		23(5) ~ 122(50)	
		with Snow Protection Hood	°F DB (°C DB)	14(-10) ~ 109(43)		14(-10) ~ 109(43)		14(-10) ~ 109(43)		14(-10) ~ 109(43)	
		with Low Ambient Kit	°F DB (°C DB)	-10(-23) ~ 109(43)		-10(-23) ~ 109(43)		-10(-23) ~ 109(43)		-10(-23) ~ 109(43)	
Heating Operating Range		Indoor	°F DB (°C DB)	59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)	
		Outdoor3	°F WB (°C WB)	-13(-25) ~ 59(15)		-13(-25) ~ 59(15)		-13(-25) ~ 59(15)		-13(-25) ~ 59(15)	
Cooling & Heating Operating Range	Cooling	Indoor	°F WB (°C WB)	59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)		59(15) ~ 73(23)	
		Outdoor3	°F DB (°C DB)	23(5) ~ 75(24)		23(5) ~ 75(24)		23(5) ~ 75(24)		23(5) ~ 75(24)	
		with Snow Protection Hood	°F DB (°C DB)	14(-10) ~ 75(24)		14(-10) ~ 75(24)		14(-10) ~ 75(24)		14(-10) ~ 75(24)	
		with Low Ambient Kit	°F DB (°C DB)	-10(-23) ~ 75(24)		-10(-23) ~ 75(24)		-10(-23) ~ 75(24)		-10(-23) ~ 75(24)	
		Indoor	°F DB (°C DB)	59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)		59(15) ~ 80(27)	
		Outdoor3	°F WB (°C WB)	22(-6) ~ 59(15)		22(-6) ~ 59(15)		22(-6) ~ 59(15)		22(-6) ~ 59(15)	
	Heating	with Snow Protection Hood	°F WB (°C WB)	12(-11) ~ 59(15)		12(-11) ~ 59(15)		12(-11) ~ 59(15)		12(-11) ~ 59(15)	
		with Low Ambient Kit	°F WB (°C WB)	-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)		-11(-24) ~ 59(15)	
		Cabinet Color (Munsell Code)		-		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)	
						Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)	
Outer Dimensions	Height	in (mm)	66-1/4 (1683)		66-1/4 (1683)		66-1/4 (1683)		66-1/4 (1683)		
	Width	in (mm)	98-1/16 (2490)		98-1/16 (2490)		113-3/8 (2880)		113-3/8 (2880)		
	Depth	in (mm)	30-1/2 (774)		30-1/2 (774)		30-1/2 (774)		30-1/2 (774)		
Package Dimensions	Height	in (mm)	-		-		-		-		
	Width	in (mm)	-		-		-		-		
	Depth	in (mm)	-		-		-		-		
Weight	Net	lbs (kg)	737*734 (334*333)		737*2 (334*2)		860*737 (390*334)		860*737 (390*334)		
	Gross	lbs (kg)	781*777 (354*353)		781*2 (354*2)		911*781 (413*354)		911*781 (413*354)		
Connection Ratio	Standard (Extended)5	%	130(150) - 55		130(150) - 55		130(150) - 55		130(150) - 55		
	Max. (Recommended) Indoor Units/System6	Q/ty	56 (20)		59 (20)		64 (22)		64 (24)		
Heat Exchanger	Type	-	Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube		Multi-Pass Cross-Finned Tube		
	Material	-	Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)		Cu-Al (Anti-corrosion)		
Compressor	Type	-	AA50PHD×4		AA50PHD×4		DC80PHD×2		DC80PHD×2		
	Inverter 1	-	-		-		AA50PHD×2		AA50PHD×2		
	Inverter 2	-	-		-		-		-		
	Motor Output (Pole)	kW (Pole)	(6.4(6)×2)+(5.4(6)×2)		(6.4(6)×2)×2		(7.1(6)×2)+(6.4(6)×2)		(9.1(6)×2)+(6.4(6)×2)		
	Start Method	-	inverter		inverter		inverter		inverter		
	Operation Range	%	3 ~ 100		3 ~ 100		3 ~ 100		3 ~ 100		
Crank Case Heater	Refrigeration Oil Type	-	FVC68D		FVC68D		FVC68D		FVC68D		
	W×Q/ty		34.2 (230V) ×12		34.2 (230V) ×12		34.2 (230V) ×12		34.2 (230V) ×12		
Fan	Type	-	Propeller Fan		Propeller Fan		Propeller Fan		Propeller Fan		
	Motor Output (Pole)	kW (Pole)	(0.39(8)×2)×2		(0.39(8)×2)×2		(0.48(8)×2)+(0.39(8)×2)		(0.56(8)×2)+(0.39(8)×2)		
	Quantity	Q/ty	4		4		4		4		
	Airflow Rate	cfm (m3/min)	9,037*2 (256×2)		9,037*2 (256×2)		11,614 +9,037 (329+256)		12,284 +9,037 (348+256)		
	External Static Pressure7	in.W.G. (Pa)	0-0.32 (0-80)		0-0.32 (0-80)		0-0.32 (0-80)		0-0.32 (0-80)		
Electrical	Drive	-	Direct-drive		Direct-drive		Direct-drive		Direct-drive		
	Min Circuit Amps	A	24+19		24×2		27+24		32+24		
	Maximum Overcurrent Protective Device	A	30+25		30×2		35+30		40+30		
	Maximum Fuse Size	A	30+25		30×2		35+30		40+30		
Sound Pressure Level8	Cooling (Night Shift)	dB (A)	67 60		68 60		68 61		69 61		
	Heating	dB (A)	67		68		68		69		
Protection Devices	Cycle	-	High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)		High pressure switch at 601psi (4.15MPa)		
	Inverter	-	Over-current protection		Over-current protection		Over-current protection		Over-current protection		
	Compressor	-	Over-heat protection		Over-heat protection		Over-heat protection		Over-heat protection		
	PCB	-	Over-heat protection		Over-heat protection		Over-heat protection		Over-heat protection		
Refrigerant	Type	-	R410A		R410A		R410A		R410A		
	Factory Charge Amount	lbs (kg)	23.6+21.8 (10.7+9.9)		23.6×2 (10.7×2)		24.9+23.6 (11.3+10.7)		25.6+23.6 (11.6+10.7)		
Refrigeration Oil	Factory Charge Amount	gal/Unit (L/Unit)	2.1×2 (7.9×2)		2.1×2 (7.9×2)		2.2+2.1 (8.4+7.9)		2.2+2.1 (8.4+7.9)		
Defrost Method		-	Reversed Refrigerant Cycle		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle		
Main Refrigerant Piping (Heat Recovery)	Low Pressure Gas Line	in (mm)	1-3/8 (34.93)		1-3/8 (34.93)		1-3/8 (34.93)		1-3/8 (34.93)		
	High/Low Pressure Gas Line	in (mm)	1-1/8 (28.58)		1-1/8 (28.58)		1-1/8 (28.58)		1-1/8 (28.58)		
	Liquid Line	in (mm)	3/4 (19.05)		3/4 (19.05)		3/4 (19.05)		3/4 (19.05)		

PRODUCT SPECIFICATION

Category		Ton		30RT (16RT+14RT)		32RT (12RT+10RT+10RT)		34RT (12RT+12RT+10RT)		36RT (12RT+12RT+12RT)	
Model (Combination)				(H,Y)VAHR360B52S		(H,Y)VAHR384B52S		(H,Y)VAHR408B52S		(H,Y)VAHR432B52S	
Model (Individual)		Unit A		(H,Y)VAHR192B52S		(H,Y)VAHR144B52S		(H,Y)VAHR144B52S		(H,Y)VAHR144B52S	
		Unit B		(H,Y)VAHR168B52S		(H,Y)VAHR120B52S		(H,Y)VAHR144B52S		(H,Y)VAHR144B52S	
		Unit C		-		(H,Y)VAHR120B52S		(H,Y)VAHR120B52S		(H,Y)VAHR144B52S	
Power Supply (Wiring Type)				575V 3PH 60Hz (3 Wires and 1 GND)		575V 3PH 60Hz (3 Wires and 1 GND)		575V 3PH 60Hz (3 Wires and 1 GND)		575V 3PH 60Hz (3 Wires and 1 GND)	
Capacity1	Cooling	Capacity (Nominal)	Btu/h (kW)	360,000 (105.5)	384,000 (112.5)	408,000 (119.6)	432,000 (126.6)				
	Heating	Capacity (Nominal)	Btu/h (kW)	405,000 (118.7)	432,000 (126.6)	459,000 (134.5)	486,000 (142.4)				
Efficiency Ratings2 (Ducted)	Cooling	Capacity (Rated)	Btu/h (kW)	344,000 (100.8)	366,000 (107.3)	380,000 (111.4)	400,000 (117.2)				
		EER	Btu/Wh (W/W)	10.2 (2.99)	9.5 (2.78)	9.5 (2.78)	9.6 (2.81)				
		IEER	Btu/Wh (Wh/Wh)	19.5 (5.71)	18.6 (5.45)	19.2 (5.63)	19.0 (5.57)				
		Capacity (Rated)	Btu/h (kW)	382,000 (112.0)	410,000 (120.2)	434,000 (127.2)	460,000 (134.8)				
	Heating High	COP	W/W	3.20	3.33	3.37	3.35				
		Capacity	Btu/h (kW)	262,000 (76.8)	276,000 (80.9)	288,000 (84.4)	300,000 (87.9)				
	Heating Low	COP	W/W	2.18	2.26	2.23	2.19				
	Heating and Cooling	SCHE	Btu/Wh	24.20	26.00	26.30	27.40				
Efficiency Ratings2 (Non-Ducted)	Cooling	Capacity (Rated)	Btu/h (kW)	344,000 (100.8)	366,000 (107.3)	380,000 (111.4)	400,000 (117.2)				
		EER	Btu/Wh (W/W)	9.5 (2.78)	9.6 (2.81)	9.5 (2.78)	9.5 (2.78)				
		IEER	Btu/Wh (Wh/Wh)	19.8 (5.81)	19.6 (5.75)	19.3 (5.67)	19.5 (5.72)				
		Capacity (Rated)	Btu/h (kW)	386,000 (113.1)	410,000 (120.2)	434,000 (127.2)	460,000 (134.8)				
	Heating High	COP	W/W	3.27	3.37	3.34	3.21				
		Capacity	Btu/h (kW)	262,000 (76.8)	276,000 (80.9)	288,000 (84.4)	300,000 (87.9)				
	Heating Low	COP	W/W	2.05	2.20	2.08	2.05				
	Heating and Cooling	SCHE	Btu/Wh	26.60	28.60	28.90	30.10				
Cooling Operating Range	Indoor	*F WB (°C WB)	59(15) ~ 73(23)	59(15) ~ 73(23)	59(15) ~ 73(23)	59(15) ~ 73(23)					
		*F DB (°C DB)	23(-5) ~ 122(50)	23(-5) ~ 122(50)	23(-5) ~ 122(50)	23(-5) ~ 122(50)					
		with Snow Protection Hood	*F DB (°C DB)	14(-10) ~ 109(43)	14(-10) ~ 109(43)	14(-10) ~ 109(43)	14(-10) ~ 109(43)				
		with Low Ambient Kit	*F DB (°C DB)	-10(-23) ~ 109(43)	-10(-23) ~ 109(43)	-10(-23) ~ 109(43)	-10(-23) ~ 109(43)				
Cooling & Heating Operating Range	Cooling	Indoor	*F DB (°C DB)	59(15) ~ 80(27)	59(15) ~ 80(27)	59(15) ~ 80(27)	59(15) ~ 80(27)				
		Outdoor3	*F WB (°C WB)	-13(-25) ~ 59(15)	-13(-25) ~ 59(15)	-13(-25) ~ 59(15)	-13(-25) ~ 59(15)				
		Indoor	*F WB (°C WB)	59(15) ~ 73(23)	59(15) ~ 73(23)	59(15) ~ 73(23)	59(15) ~ 73(23)				
		Outdoor3	*F DB (°C DB)	23(-5) ~ 75(24)	23(-5) ~ 75(24)	23(-5) ~ 75(24)	23(-5) ~ 75(24)				
	Heating	Indoor	*F DB (°C DB)	14(-10) ~ 75(24)	14(-10) ~ 75(24)	14(-10) ~ 75(24)	14(-10) ~ 75(24)				
		with Snow Protection Hood	*F DB (°C DB)	-10(-23) ~ 75(24)	-10(-23) ~ 75(24)	-10(-23) ~ 75(24)	-10(-23) ~ 75(24)				
		Indoor	*F DB (°C DB)	59(15) ~ 80(27)	59(15) ~ 80(27)	59(15) ~ 80(27)	59(15) ~ 80(27)				
		Outdoor3	*F WB (°C WB)	22(-6) ~ 59(15)	22(-6) ~ 59(15)	22(-6) ~ 59(15)	22(-6) ~ 59(15)				
		with Snow Protection Hood	*F WB (°C WB)	12(-11) ~ 59(15)	12(-11) ~ 59(15)	12(-11) ~ 59(15)	12(-11) ~ 59(15)				
		with Low Ambient Kit	*F WB (°C WB)	-11(-24) ~ 59(15)	-11(-24) ~ 59(15)	-11(-24) ~ 59(15)	-11(-24) ~ 59(15)				
Cabinet Color (Munsell Code)				Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)		Natural Gray (1.0Y8.5/0.5)	
Outer Dimensions	Height	in (mm)	66-1/4 (1683)	66-1/4 (1683)	66-1/4 (1683)	66-1/4 (1683)	66-1/4 (1683)				
	Width	in (mm)	128-3/4 (3270)	147-7/16 (3745)	147-7/16 (3745)	147-7/16 (3745)	147-7/16 (3745)				
	Depth	in (mm)	30-1/2 (774)	30-1/2 (774)	30-1/2 (774)	30-1/2 (774)	30-1/2 (774)				
Package Dimensions	Height	in (mm)	-	-	-	-	-				
	Width	in (mm)	-	-	-	-	-				
	Depth	in (mm)	-	-	-	-	-				
Weight	Net	lbs (kg)	860×2 (390×2)	737×734×2 (334×333×2)	737×2+734 (334×2+333)	737×3 (334×3)	737×3 (334×3)				
	Gross	lbs (kg)	911×2 (413×2)	781×778×2 (354×353×2)	781×2+778 (354×2+353)	781×3 (354×3)	781×3 (354×3)				
Connection Ratio	Standard (Extended)5	%	130(150) - 55	130(150) - 55	130(150) - 55	130(150) - 55	130(150) - 55				
	Max. (Recommended) Indoor Units/System6	Q'ty	64 (28)	64 (30)	64 (30)	64 (30)	64 (30)				
Heat Exchanger	Type	-	Multi-Pass Cross-Finned Tube	Multi-Pass Cross-Finned Tube	Multi-Pass Cross-Finned Tube	Multi-Pass Cross-Finned Tube	Multi-Pass Cross-Finned Tube				
	Material	-	Cu-Al (Anti-corrosion)	Cu-Al (Anti-corrosion)	Cu-Al (Anti-corrosion)	Cu-Al (Anti-corrosion)	Cu-Al (Anti-corrosion)				
Compressor	Type	-	DC80PHD×4	AA50PHD×6	AA50PHD×6	AA50PHD×6	AA50PHD×6				
	Inverter 1	-	-	-	-	-	-				
	Inverter 2	-	-	-	-	-	-				
	Motor Output (Pole)	kW (Pole)	(9.1(6)×2)+(7.1(6)×2)	(6.4(6)×2)+(5.4(6)×2)×2	(6.4(6)×2)×2+(5.4(6)×2)	(6.4(6)×2)×3	(6.4(6)×2)×3				
	Start Method	-	inverter	inverter	inverter	inverter	inverter				
	Operation Range	%	3 ~ 100	2 ~ 100	2 ~ 100	2 ~ 100	2 ~ 100				
Refrigeration Oil Type		-	FVC68D	FVC68D	FVC68D	FVC68D	FVC68D				
Crank Case Heater			W×Q'ty	34.2 (230V) ×12	34.2 (230V) ×18	34.2 (230V) ×18	34.2 (230V) ×18				
Fan	Type	-	Propeller Fan	Propeller Fan	Propeller Fan	Propeller Fan	Propeller Fan				
	Motor Output (Pole)	kW (Pole)	(0.56(8)×2)+(0.48(8)×2)	(0.39(8)×2)×3	(0.39(8)×2)×3	(0.39(8)×2)×3	(0.39(8)×2)×3				
	Quantity	Q'ty	4	6	6	6	6				
	Airflow Rate	cfm (m3/min)	12,284 +11,614 (348+329)	9,037×3 (256×3)	9,037×3 (256×3)	9,037×3 (256×3)	9,037×3 (256×3)				
	External Static Pressure7	in.W.G. (Pa)	0-0.32 (0-80)	0-0.32 (0-80)	0-0.32 (0-80)	0-0.32 (0-80)	0-0.32 (0-80)				
Electrical	Drive	-	Direct-drive	Direct-drive	Direct-drive	Direct-drive	Direct-drive				
	Min Circuit Amps	A	32+27	24+19×2	24×2+19	24×3	24×3				
	Maximum Overcurrent Protective Device	A	40+35	30+25×2	30×2+25	30×3	30×3				
	Maximum Fuse Size	A	40+35	30+25×2	30×2+25	30×3	30×3				
Sound Pressure Level8	Cooling (Night Shift)	dB (A)	68 62	69 62	69 62	70 62	70 62				
	Heating	dB (A)	68	69	69	70	70				
Protection Devices	Cycle	-	High pressure switch at 601psi (4.15MPa)	High pressure switch at 601psi (4.15MPa)	High pressure switch at 601psi (4.15MPa)	High pressure switch at 601psi (4.15MPa)	High pressure switch at 601psi (4.15MPa)				
	Inverter	-	Over-current protection Over-heat protection	Over-current protection Over-heat protection	Over-current protection Over-heat protection	Over-current protection Over-heat protection	Over-current protection Over-heat protection				
	Compressor	-	Over-heat protection	Over-heat protection	Over-heat protection	Over-heat protection	Over-heat protection				
	PCB	-	Over-current protection	Over-current protection	Over-current protection	Over-current protection	Over-current protection				
Refrigerant	Type	-	R410A	R410A	R410A	R410A	R410A				
	Factory Charge Amount	lbs (kg)	25.6+24.9 (11.6+11.3)	23.6 +21.8×2 (10.7 +9.9×2)	23.6×2 +21.8 (10.7×2 +9.9)	23.6×3 (10.7×3)	23.6×3 (10.7×3)				
Refrigeration Oil	Factory Charge Amount	gal/Unit (L/Unit)	2.2×2 (8.4×2)	2.1×3 (7.9×3)	2.1×3 (7.9×3)	2.1×3 (7.9×3)	2.1×3 (7.9×3)				
Defrost Method				Reversed Refrigerant Cycle		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle		Reversed Refrigerant Cycle	
Main Refrigerant Piping (Heat Recovery)	Low Pressure Gas Line	in (mm)	1-3/8 (34.93)	1-5/8 (41.28)	1-5/8 (41.28)	1-5/8 (41.28)	1-5/8 (41.28)				
	High/Low Pressure Gas Line	in (mm)	1-1/8 (28.58)	1-3/8 (34.93)	1-3/8 (34.93)	1-3/8 (34.93)	1-3/8 (34.93)				
	Liquid Line	in (mm)	3/4 (19.05)	3/4 (19.05)	3/4 (19.05)	3/4 (19.05)	3/4 (19.05)				

NOTES:

1 Rating Conditions:

Cooling

Indoor Air Inlet Temperature: 80°F (26.7°C) DB

67°F (19.4°C) WB

Outdoor Air Inlet Temperature: 95°F (35.0°C) DB

Piping Length: 24ft. 7-3/16 in. (7.5m), Piping Lift: 0ft. (0m)

2 Efficiency ratings are based on the AHRI 1230 test standard.

3 There are some exceptions and notes for cooling, heating and cooling & heating operation range. For details, refer to "2.12 Operation Temperature Range".

4 For details, refer to "2.13 Combination of Indoor Units and Outdoor Units".

5 External static pressure can be changed by DSW setting.

6 Measure Point: 3.3ft. (1m) from the service cover surface and 4.9ft. (1.5m) from floor level

The operation sound is measured in an anechoic chamber. However, the actual operation sound may appear louder or with an echo because of surrounding environmental noise. Be sure to check environmental conditions before installation. The sound on the air inlet side is 8dB higher than on the front side.

2.4 Dimensional Data and Weights

2.4.1 Overall Dimensional and Weight Data

208V/230V

Model	Height [in (mm)]	Width* [in (mm)]	Depth [in (mm)]	Weight [lbs (kg)]
(H,Y)VAHR072B32S	66-1/4 (1683)	38-3/8 (975)	30-1/2 (774)	527 (239)
(H,Y)VAHR096B32S	66-1/4 (1683)	48-5/8 (1235)	30-1/2 (774)	598 (271)
(H,Y)VAHR120B32S	66-1/4 (1683)	48-5/8 (1235)	30-1/2 (774)	730 (331)
(H,Y)VAHR144B32S	66-1/4 (1683)	48-5/8 (1235)	30-1/2 (774)	732 (332)
(H,Y)VAHR168B32S	66-1/4 (1683)	64 (1625)	30-1/2 (774)	860 (390)
(H,Y)VAHR192B32S	66-1/4 (1683)	64 (1625)	30-1/2 (774)	860 (390)
(H,Y)VAHR216B32S	66-1/4 (1683)	87-13/16 (2230)	30-1/2 (774)	1259 (571)
(H,Y)VAHR240B32S	66-1/4 (1683)	98-1/16 (2490)	30-1/2 (774)	1460 (662)
(H,Y)VAHR264B32S	66-1/4 (1683)	98-1/16 (2490)	30-1/2 (774)	1462 (663)
(H,Y)VAHR288B32S	66-1/4 (1683)	98-1/16 (2490)	30-1/2 (774)	1464 (664)
(H,Y)VAHR312B32S	66-1/4 (1683)	113-3/8 (2880)	30-1/2 (774)	1592 (722)
(H,Y)VAHR336B32S	66-1/4 (1683)	113-3/8 (2880)	30-1/2 (774)	1592 (722)
(H,Y)VAHR360B32S	66-1/4 (1683)	128-3/4 (3270)	30-1/2 (774)	1720 (780)
(H,Y)VAHR384B32S	66-1/4 (1683)	147-7/16 (3745)	30-1/2 (774)	2192 (994)
(H,Y)VAHR408B32S	66-1/4 (1683)	147-7/16 (3745)	30-1/2 (774)	2194 (995)
(H,Y)VAHR432B32S	66-1/4 (1683)	147-7/16 (3745)	30-1/2 (774)	2196 (996)

460V, 575V

Model	Height [in (mm)]	Width* [in (mm)]	Depth [in (mm)]	Weight [lbs (kg)]
(H,Y)VAHR072B42S (H,Y)VAHR072B52S	66-1/4 (1683)	38-3/8 (975)	30-1/2 (774)	534 (242)
(H,Y)VAHR096B42S (H,Y)VAHR096B52S	66-1/4 (1683)	48-5/8 (1235)	30-1/2 (774)	611 (277)
(H,Y)VAHR120B42S (H,Y)VAHR120B52S	66-1/4 (1683)	48-5/8 (1235)	30-1/2 (774)	734 (333)
(H,Y)VAHR144B42S (H,Y)VAHR144B52S	66-1/4 (1683)	48-5/8 (1235)	30-1/2 (774)	737 (334)
(H,Y)VAHR168B42S (H,Y)VAHR168B52S	66-1/4 (1683)	64 (1625)	30-1/2 (774)	860 (390)
(H,Y)VAHR192B42S (H,Y)VAHR192B52S	66-1/4 (1683)	64 (1625)	30-1/2 (774)	860 (390)
(H,Y)VAHR216B42S (H,Y)VAHR216B52S	66-1/4 (1683)	87-13/16 (2230)	30-1/2 (774)	1271 (576)
(H,Y)VAHR240B42S (H,Y)VAHR240B52S	66-1/4 (1683)	98-1/16 (2490)	30-1/2 (774)	1468 (666)
(H,Y)VAHR264B42S (H,Y)VAHR264B52S	66-1/4 (1683)	98-1/16 (2490)	30-1/2 (774)	1471 (668)
(H,Y)VAHR288B42S (H,Y)VAHR288B52S	66-1/4 (1683)	98-1/16 (2490)	30-1/2 (774)	1474 (660)
(H,Y)VAHR312B42S (H,Y)VAHR312B52S	66-1/4 (1683)	113-3/8 (2880)	30-1/2 (774)	1597 (724)
(H,Y)VAHR336B42S (H,Y)VAHR336B52S	66-1/4 (1683)	113-3/8 (2880)	30-1/2 (774)	1597 (724)
(H,Y)VAHR360B42S (H,Y)VAHR360B52S	66-1/4 (1683)	128-3/4 (3270)	30-1/2 (774)	1720 (780)
(H,Y)VAHR384B42S (H,Y)VAHR384B52S	66-1/4 (1683)	147-7/16 (3745)	30-1/2 (774)	2205 (1000)
(H,Y)VAHR408B42S (H,Y)VAHR408B52S	66-1/4 (1683)	147-7/16 (3745)	30-1/2 (774)	2208 (1001)
(H,Y)VAHR432B42S (H,Y)VAHR432B52S	66-1/4 (1683)	147-7/16 (3745)	30-1/2 (774)	2211 (1002)

* : With a combination model, the above tables show an example width that has a 3/4 in. (20mm) clearance between the base units.

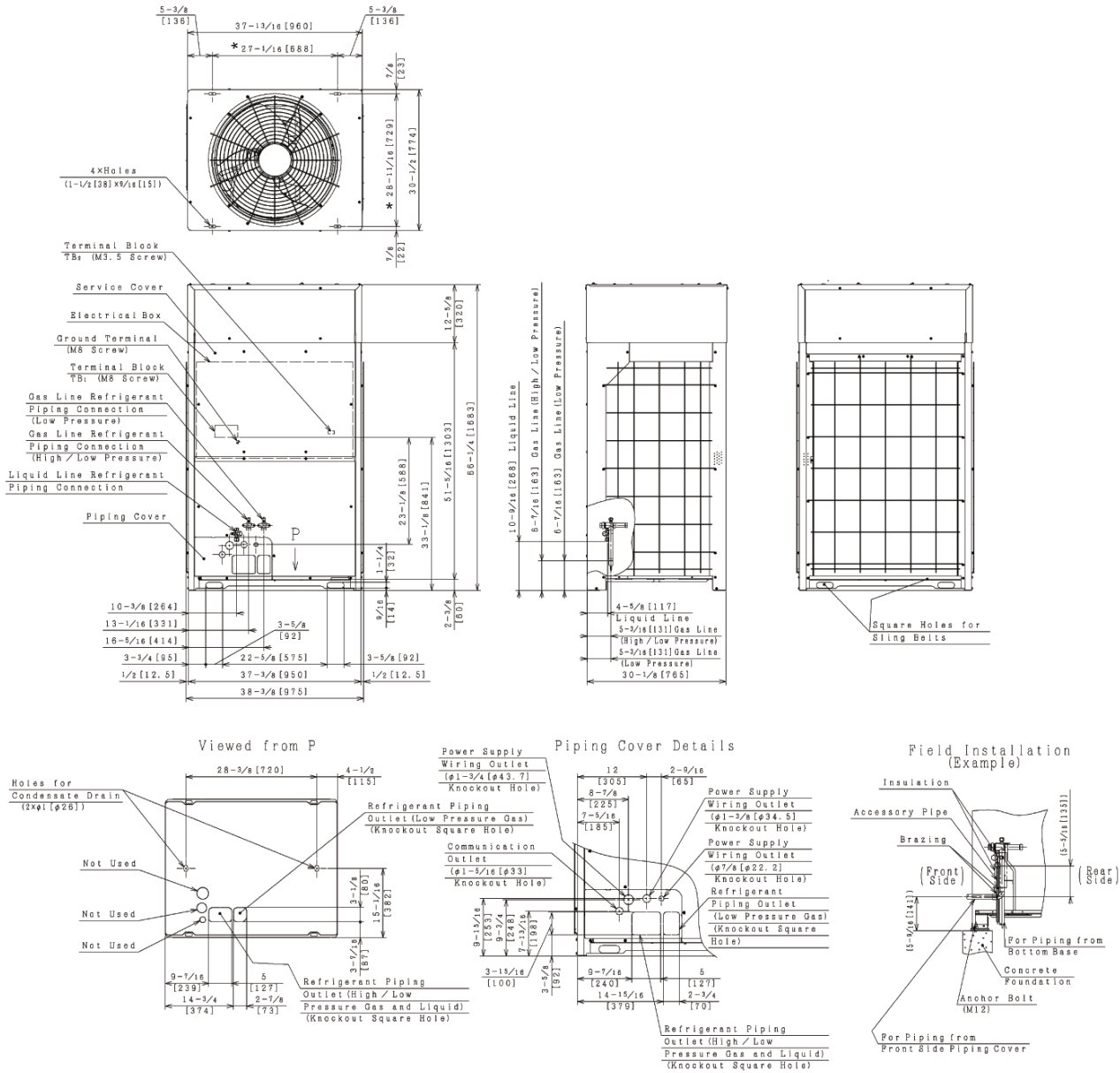
Additional clearances between the base units may be required for specific applications. Refer to the installation manual for required clearances between outdoor units.

2.4.2 Outdoor Units

(1) 208/230V

Model: (H,Y)VAHR072B32S

inch (mm)

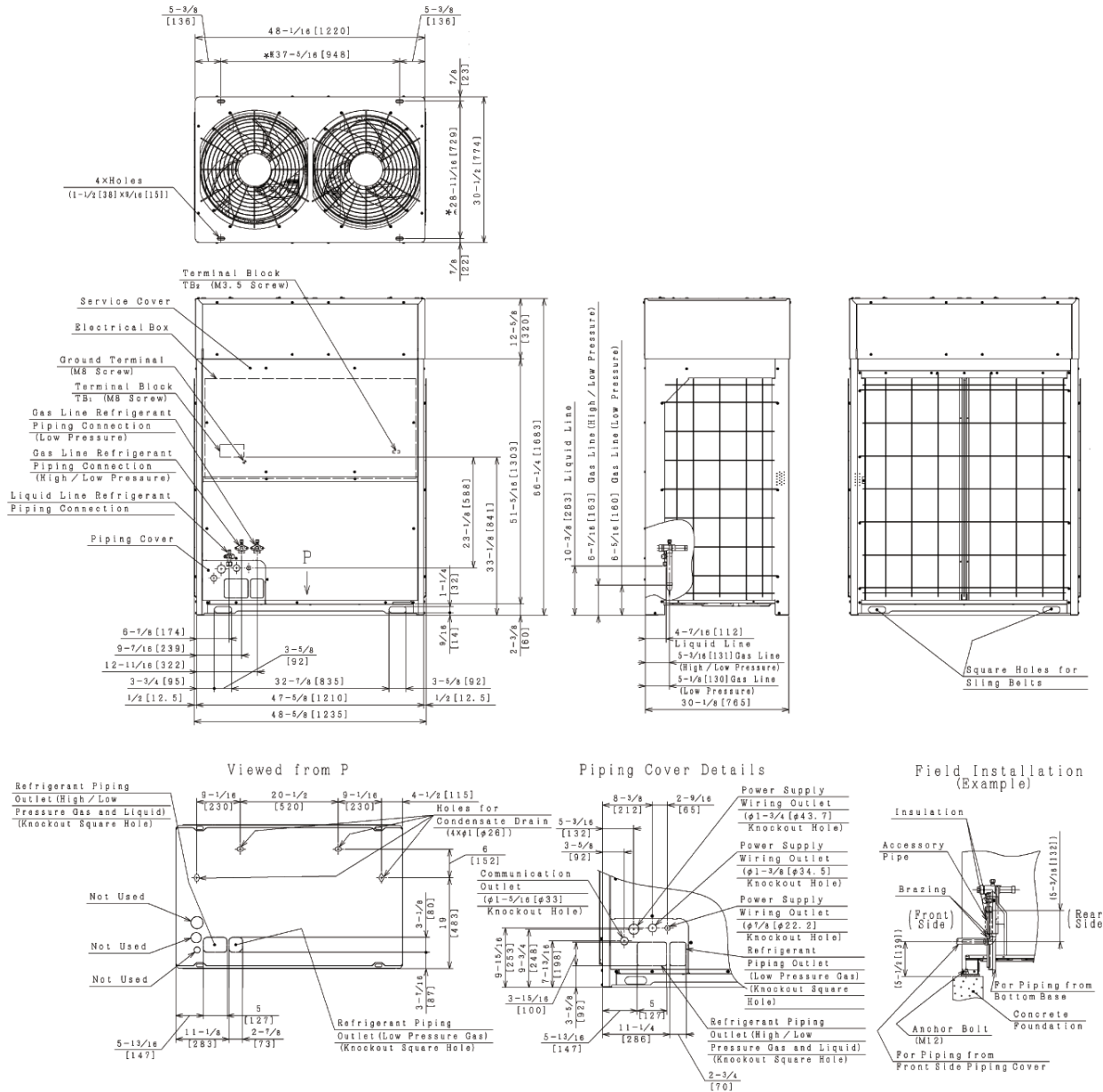


NOTES:

- Condensation is produced by the outdoor coil during heating and defrost operation.
 - Locate the unit where the system can be properly drained.
 - Condensate pipe must be installed in accordance with local and national codes.
 - Ensure the drain is sloped downward away from the outdoor for proper drainage.
 - When the outdoor unit is installed indoors, it may be necessary to provide a secondary condensate pan, condensate pump or optional drain adapter for condensate management.
 - Do not use the drain adapter (optional) in locations where the condensate line may freeze.
- The dimensions marked with an asterisk (*) indicate the mounting pitch dimensions for anchor bolts.

Model: (H,Y)VAHR096B32S, (H,Y)VAHR120B32S and (H,Y)VAHR144B32S

inch (mm)



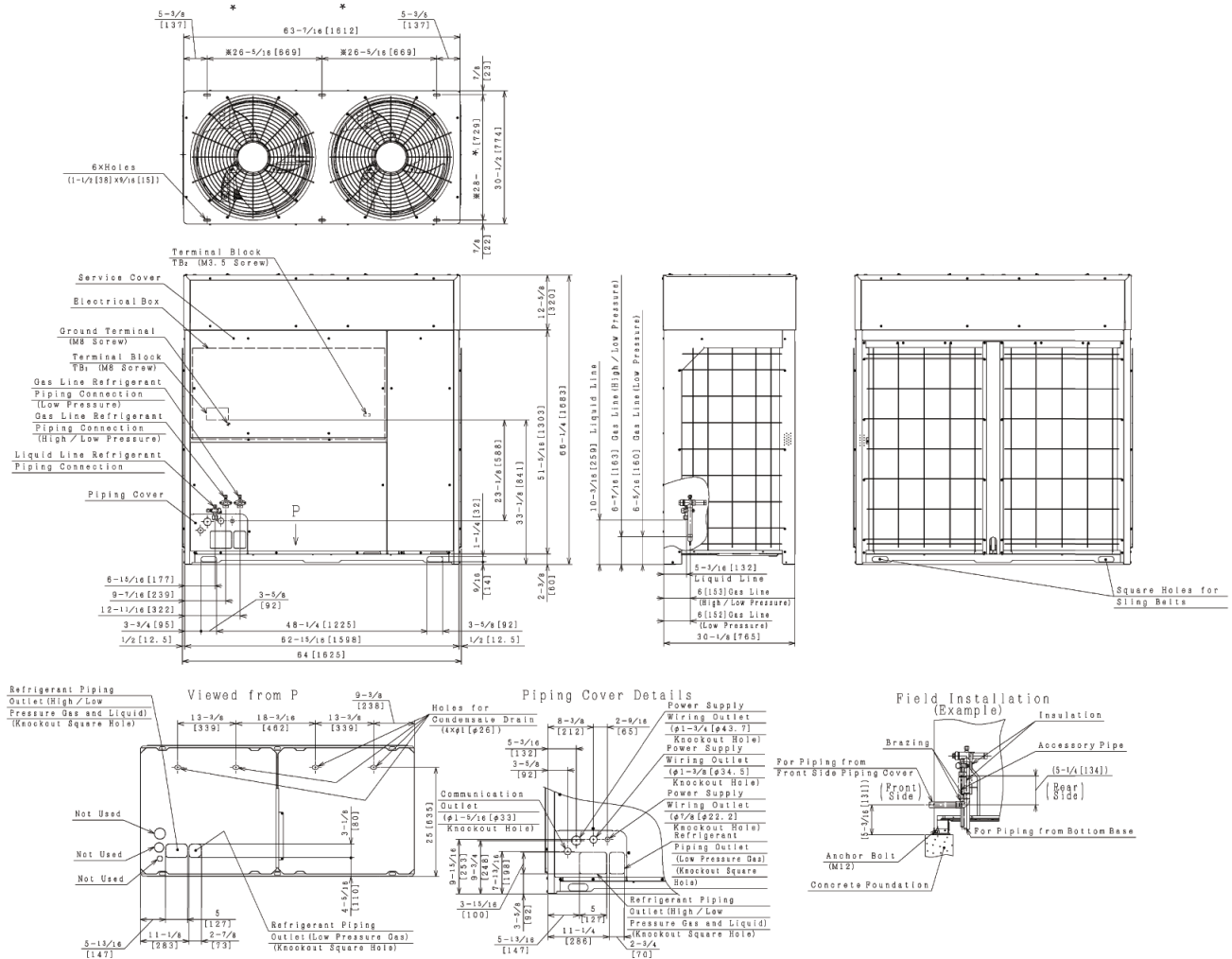
NOTES:

- Condensation is produced by the outdoor coil during heating and defrost operation.
 - Locate the unit where the system can be properly drained.
 - Condensate pipe must be installed in accordance with local and national codes.
 - Ensure the drain is sloped downward away from the outdoor for proper drainage.
 - When the outdoor unit is installed indoors, it may be necessary to provide a secondary condensate pan, condensate pump or optional drain adapter for condensate management.
 - Do not use the drain adapter (optional) in locations where the condensate line may freeze.
- The dimensions marked with an asterisk (*) indicate the mounting pitch dimensions for anchor bolts.

PRODUCT SPECIFICATION

Model: (H,Y)VAHR168B32S and (H,Y)VAHR192B32S

inch (mm)

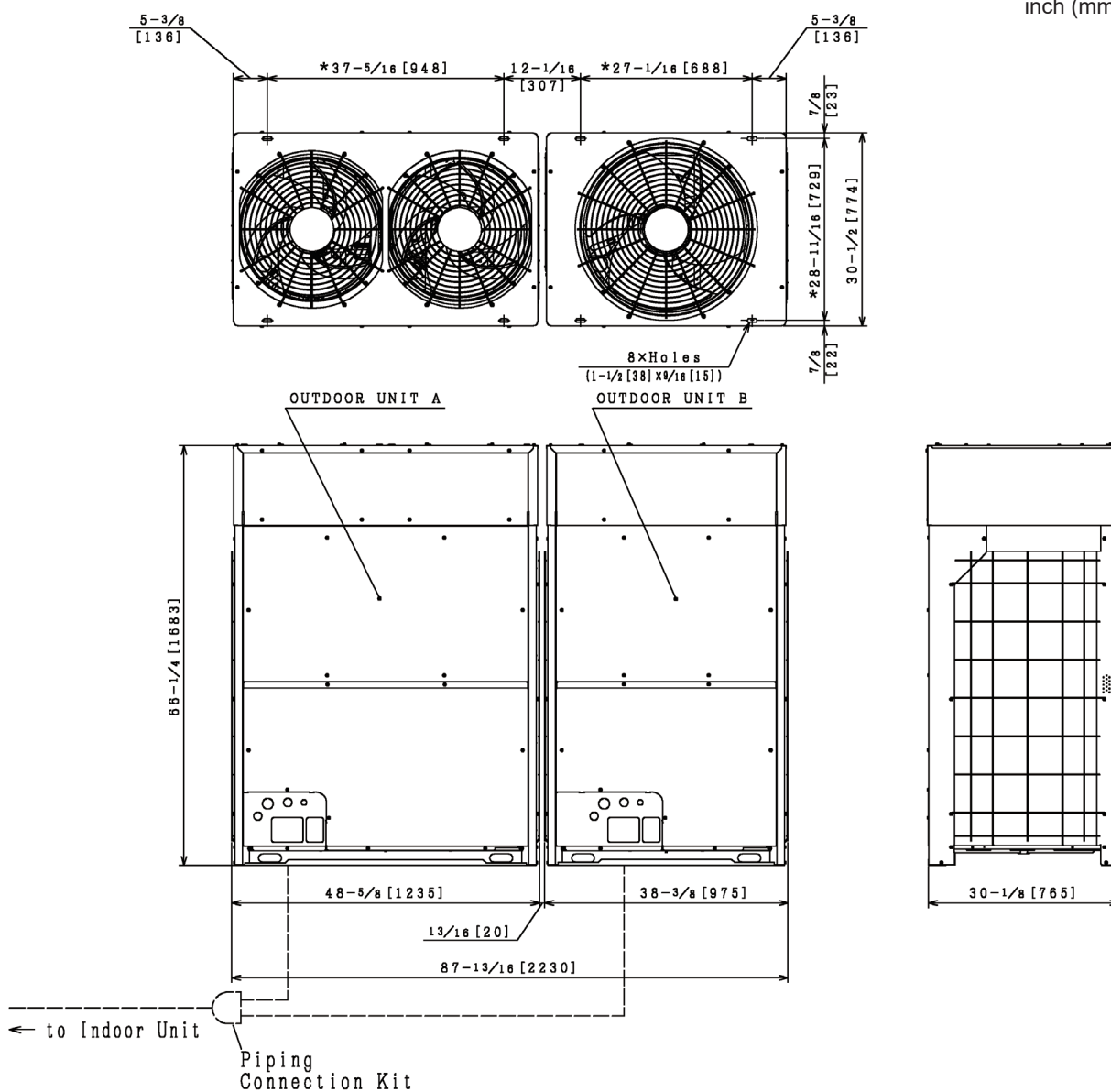


NOTES:

- Condensation is produced by the outdoor coil during heating and defrost operation.
 - Locate the unit where the system can be properly drained.
 - Condensate pipe must be installed in accordance with local and national codes.
 - Ensure the drain is sloped downward away from the outdoor for proper drainage.
 - When the outdoor unit is installed indoors, it may be necessary to provide a secondary condensate pan, condensate pump or optional drain adapter for condensate management.
 - Do not use the drain adapter (optional) in locations where the condensate line may freeze.
- The dimensions marked with an asterisk (*) indicate the mounting pitch dimensions for anchor bolts.

Model: (H,Y)VAHR216B32S

inch (mm)



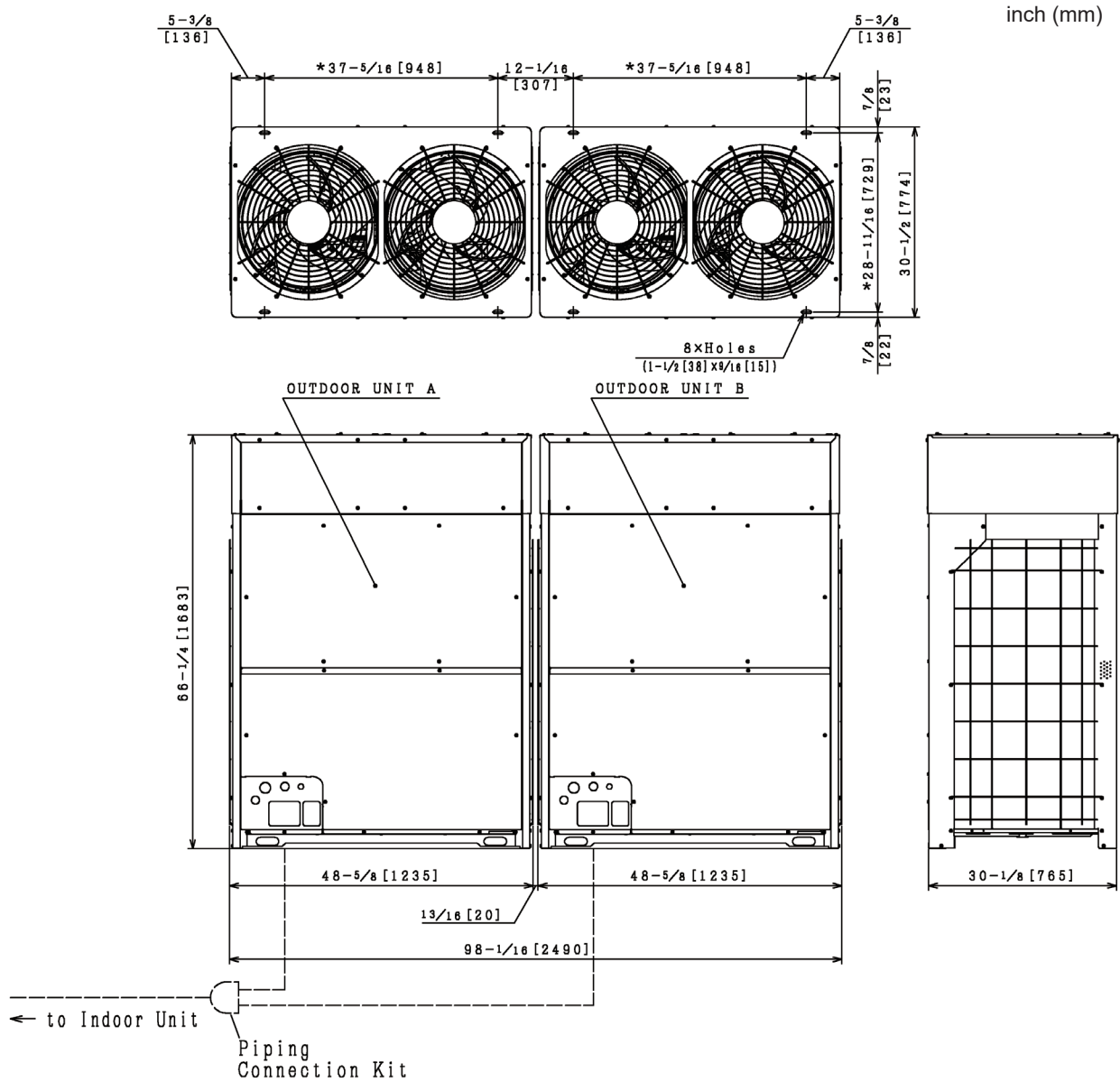
Outdoor Unit Model	Combination of Base Unit Models	
	OUTDOOR UNIT A	OUTDOOR UNIT B
(H,Y)VAHR216B32S	(H,Y)VAHR144B32S	(H,Y)VAHR072B32S

NOTES:

1. Outdoor unit A is the Main unit and outdoor unit B is the Sub unit. The Main unit is closest in piping to the indoor unit
2. If outdoor modules have different capacities, the largest capacity unit will be outdoor unit A (Main) and outdoor unit B (Sub) will be the smallest capacity. $A \geq B$.
3. Piping connection kits and piping sizes are identified in the "Installation Manual".
4. The dimensions marked with an asterisk (*) indicate the mounting pitch dimensions for anchor bolts.
5. This drawing shows that there is 13/16 inch [20mm] clearance between the outdoor units. If Snow Protection Hoods are installed on the outdoor units, a 2 inches [50mm] minimum clearance is required.
6. Modifications to the anchoring locations for the outdoor units are required for applications with clearances greater than 13/16 inch [20mm] between outdoor modules.
7. "Dimensional Drawing of Base Unit" is used for dimensions of the piping and wiring outlets.

PRODUCT SPECIFICATION

Model: (H,Y)VAHR240B32S, (H,Y)VAHR264B32S and (H,Y)VAHR288B32S

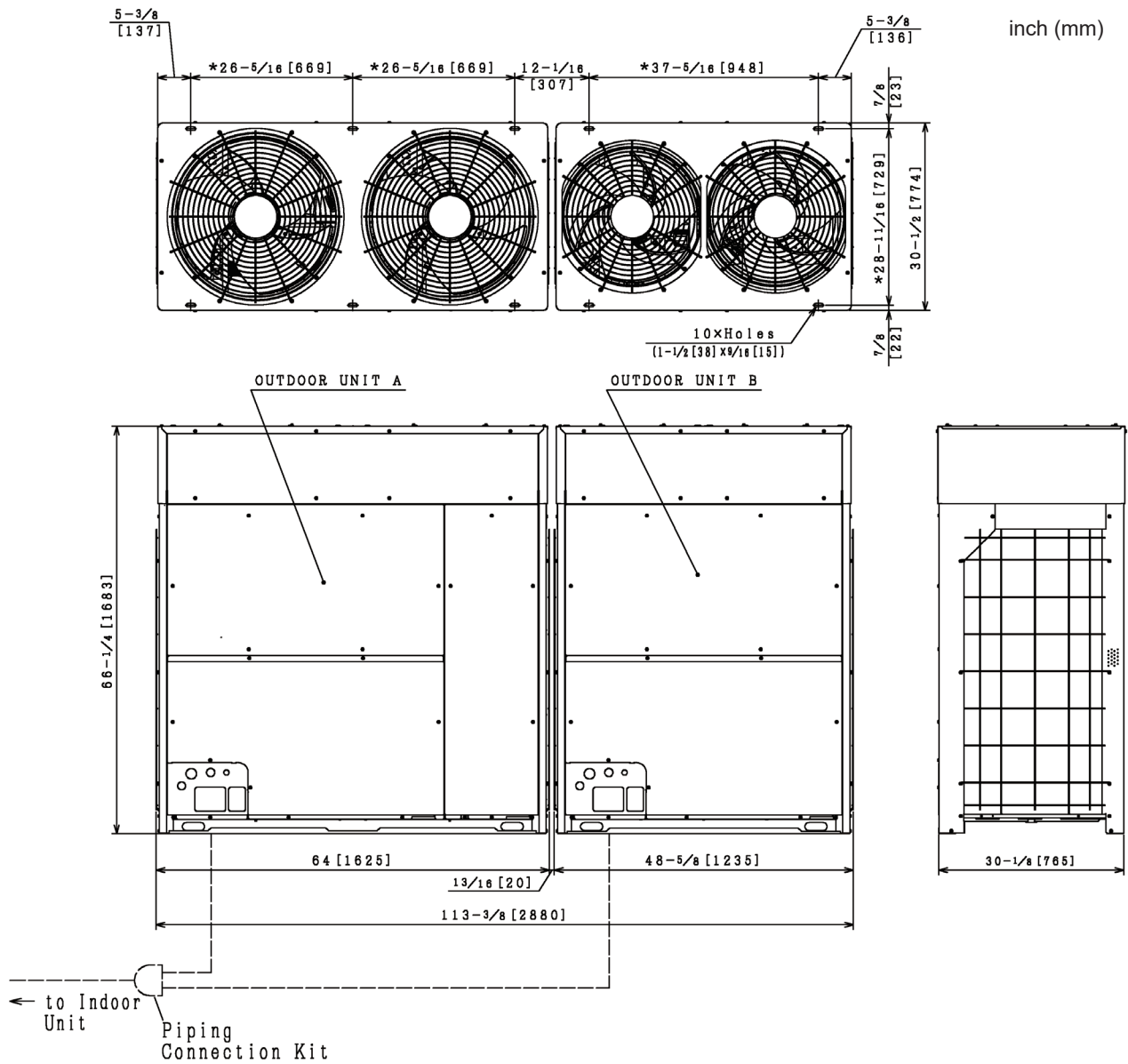


Outdoor Unit Model	Combination of Base Unit Models	
	OUTDOOR UNIT A	OUTDOOR UNIT B
(H,Y)VAHR240B32S	(H,Y)VAHR120B32S	(H,Y)VAHR120B32S
(H,Y)VAHR264B32S	(H,Y)VAHR144B32S	(H,Y)VAHR120B32S
(H,Y)VAHR288B32S	(H,Y)VAHR144B32S	(H,Y)VAHR144B32S

NOTES:

- Outdoor unit A is the Main unit and outdoor unit B is the Sub unit. The Main unit is closest in piping to the indoor unit.
- If outdoor modules have different capacities, the largest capacity unit will be outdoor unit A (Main) and outdoor unit B (Sub) will be the smallest capacity. $A \geq B$.
- Piping connection kits and piping sizes are identified in the "Installation Manual".
- The dimensions marked with an asterisk (*) indicate the mounting pitch dimensions for anchor bolts.
- This drawing shows that there is $13/16$ inch [20mm] clearance between the outdoor units. If Snow Protection Hoods are installed on the outdoor units, a 2 inches [50mm] minimum clearance is required.
- Modifications to the anchoring locations for the outdoor units are required for applications with clearances greater than $13/16$ inch [20mm] between outdoor modules.
- "Dimensional Drawing of Base Unit" is used for dimensions of the piping and wiring outlets.

Model: (H,Y)VAHR312B32S and (H,Y)VAHR336B32S

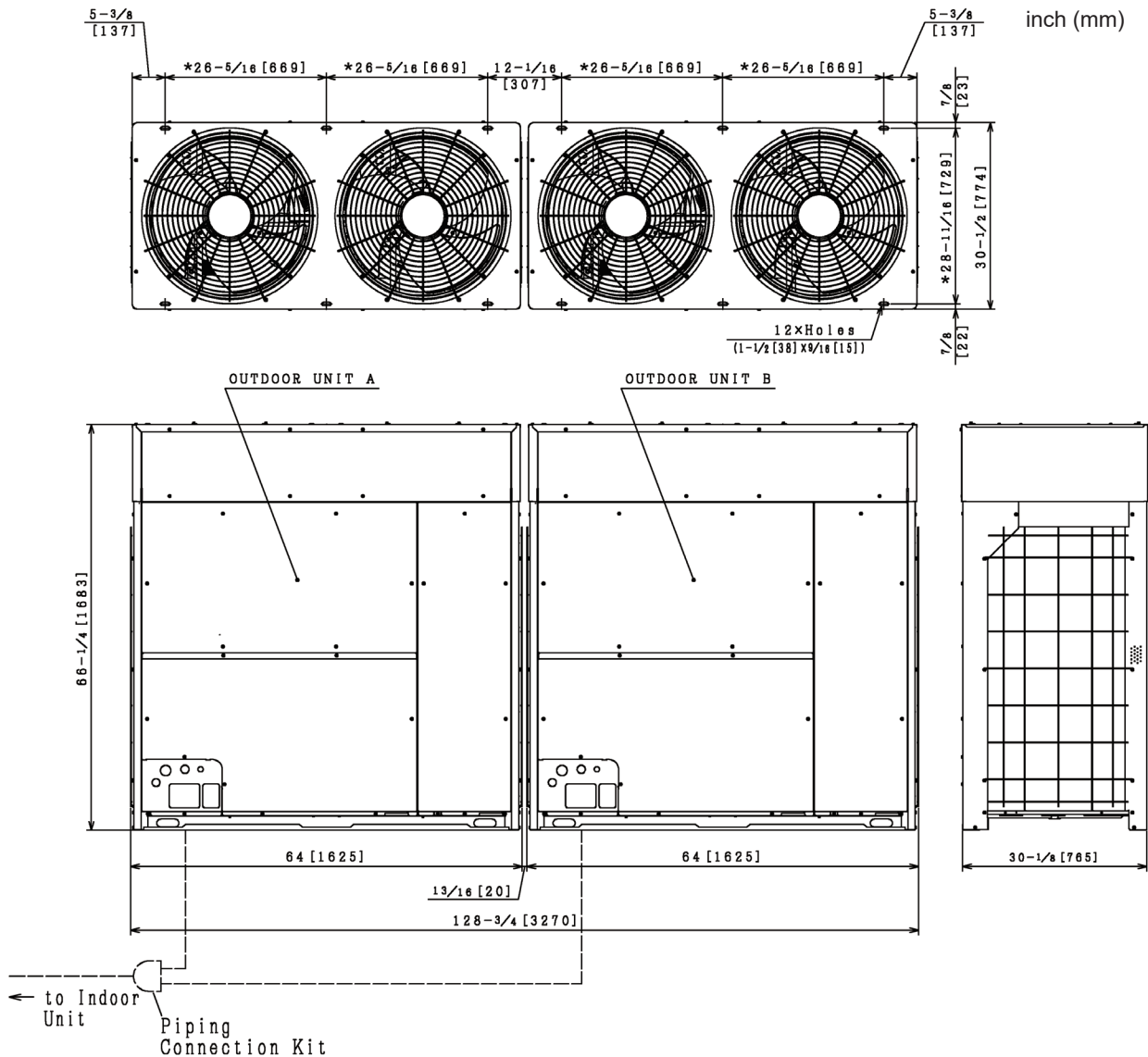


Outdoor Unit Model	Combination of Base Unit Models	
	OUTDOOR UNIT A	OUTDOOR UNIT B
(H,Y)VAHR312B32S	(H,Y)VAHR168B32S	(H,Y)VAHR144B32S
(H,Y)VAHR336B32S	(H,Y)VAHR192B32S	(H,Y)VAHR144B32S

- NOTES:**
- Outdoor unit A is the Main unit and outdoor unit B is the Sub unit. The Main unit is closest in piping to the indoor unit.
 - If outdoor modules have different capacities, the largest capacity unit will be outdoor unit A (Main) and outdoor unit B (Sub) will be the smallest capacity. A ≥ B.
 - Piping connection kits and piping sizes are identified in the "Installation Manual".
 - The dimensions marked with an asterisk (*) indicate the mounting pitch dimensions for anchor bolts.
 - This drawing shows that there is 13/16 inch [20mm] clearance between the outdoor units. If Snow Protection Hoods are installed on the outdoor units, a 2 inches [50mm] minimum clearance is required.
 - Modifications to the anchoring locations for the outdoor units are required for applications with clearances greater than 13/16 inch [20mm] between outdoor modules.
 - "Dimensional Drawing of Base Unit" is used for dimensions of the piping and wiring outlets.

PRODUCT SPECIFICATION

Model: (H,Y)VAHR360B32S

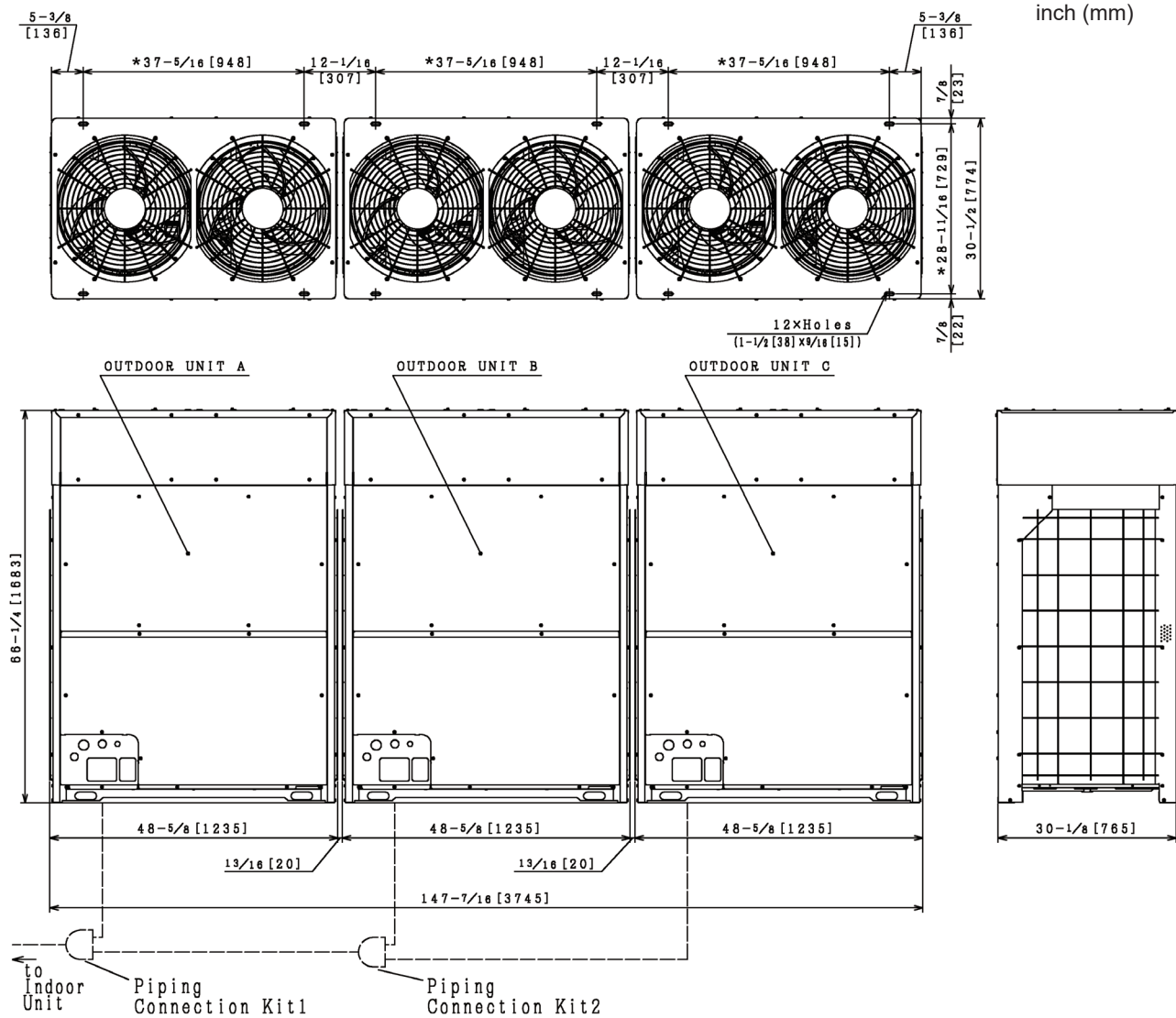


Outdoor Unit Model	Combination of Base Unit Models	
	OUTDOOR UNIT A	OUTDOOR UNIT B
(H,Y)VAHR360B32S	(H,Y)VAHR192B32S	(H,Y)VAHR168B32S

NOTES:

1. Outdoor unit A is the Main unit and outdoor unit B is the Sub unit. The Main unit is closest in piping to the indoor unit.
2. If outdoor modules have different capacities, the largest capacity unit will be outdoor unit A (Main) and outdoor unit B (Sub) will be the smallest capacity. $A \geq B$.
3. Piping connection kits and piping sizes are identified in the "Installation Manual".
4. The dimensions marked with an asterisk (*) indicate the mounting pitch dimensions for anchor bolts.
5. This drawing shows that there is 13/16 inch [20mm] clearance between the outdoor units. If Snow Protection Hoods are installed on the outdoor units, a 2 inches [50mm] minimum clearance is required.
6. Modifications to the anchoring locations for the outdoor units are required for applications with clearances greater than 13/16 inch [20mm] between outdoor modules.
7. "Dimensional Drawing of Base Unit" is used for dimensions of the piping and wiring outlets.

Model: (H,Y)VAHR384B32S, (H,Y)VAHR408B32S and (H,Y)VAHR432B32S



Outdoor Unit Model	Combination of Base Unit Models		
	OUTDOOR UNIT A	OUTDOOR UNIT B	OUTDOOR UNIT C
(H,Y)VAHR384B32S	(H,Y)VAHR144B32S	(H,Y)VAHR120B32S	(H,Y)VAHR120B32S
(H,Y)VAHR408B32S	(H,Y)VAHR144B32S	(H,Y)VAHR144B32S	(H,Y)VAHR120B32S
(H,Y)VAHR432B32S	(H,Y)VAHR144B32S	(H,Y)VAHR144B32S	(H,Y)VAHR144B32S

NOTES:

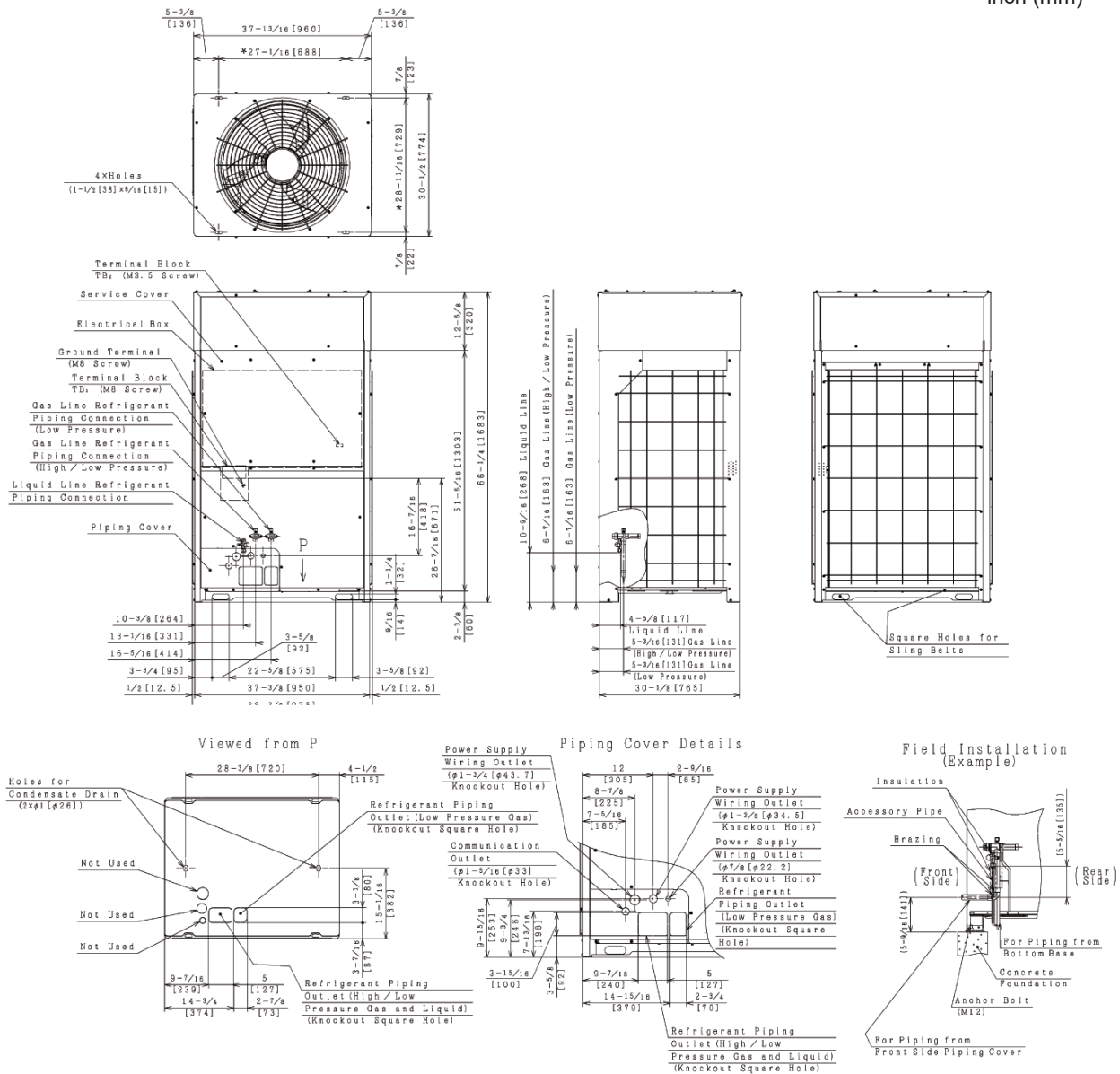
- Outdoor unit A is the Main unit and outdoor unit B and C are the Sub unit. The Main unit is closest in piping to the indoor unit.
- If outdoor modules have different capacities, the largest capacity unit is outdoor unit A (Main), outdoor unit B (Sub) is the next smallest capacity and outdoor unit C (Sub) is the smallest capacity. $A \geq B \geq C$.
- Piping connection kits and piping sizes are identified in the "Installation Manual".
- The dimensions marked with an asterisk (*) indicate the mounting pitch dimensions for anchor bolts.
- This drawing shows that there is $13\frac{1}{16}$ inch [20mm] clearance between the outdoor units. If Snow Protection Hoods are installed on the outdoor units, a 2 inches [50mm] minimum clearance is required.
- Modifications to the anchoring locations for the outdoor units are required for applications with clearances greater than $13\frac{1}{16}$ inch [20mm] between outdoor modules.
- "Dimensional Drawing of Base Unit" is used for dimensions of the piping and wiring outlets.

PRODUCT SPECIFICATION

(2) 460V

Model: (H,Y)VAHR072B42S

inch (mm)

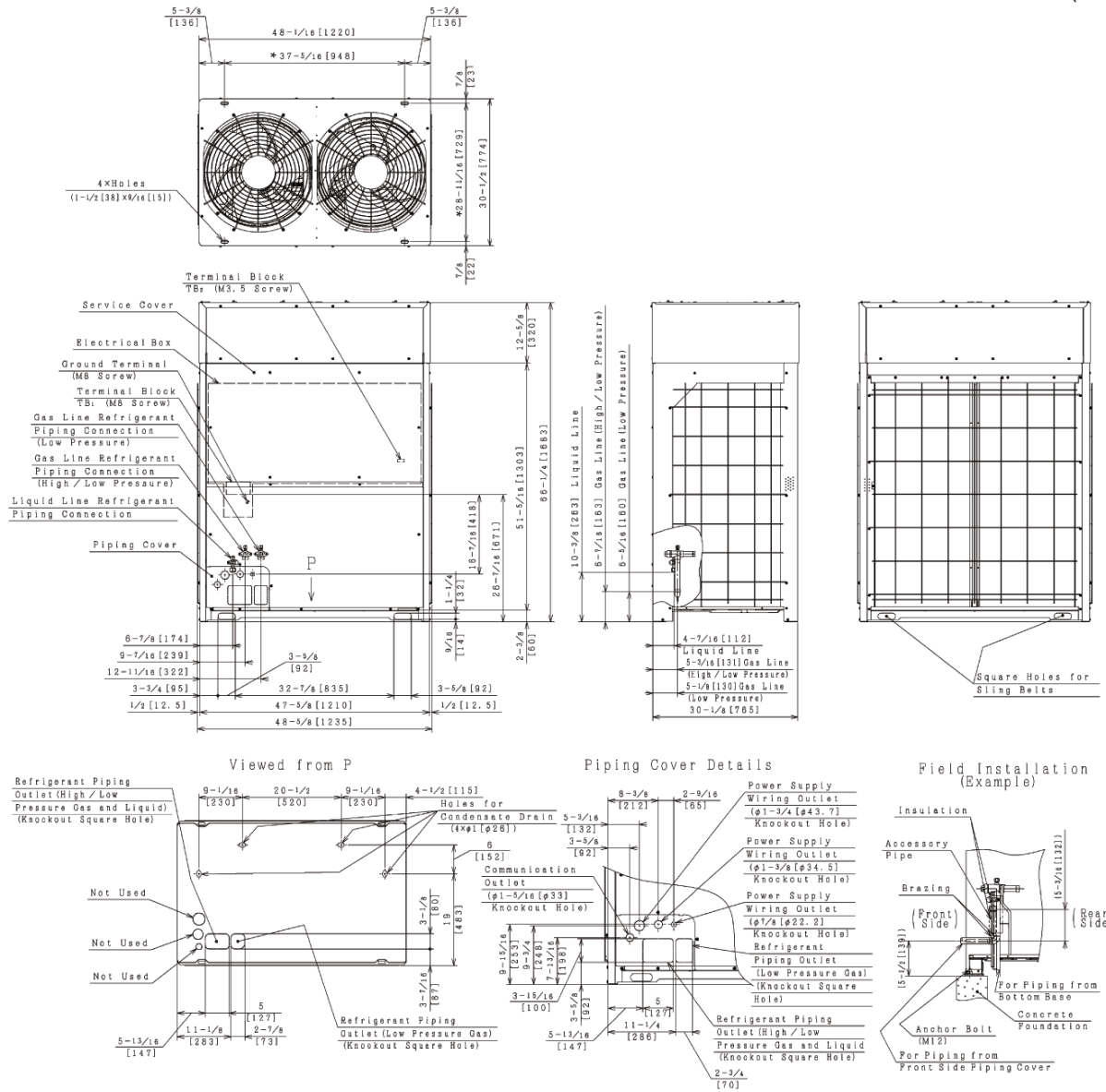


NOTES:

- Condensation is produced by the outdoor coil during heating and defrost operation.
 - Locate the unit where the system can be properly drained.
 - Condensate pipe must be installed in accordance with local and national codes.
 - Ensure the drain is sloped downward away from the outdoor for proper drainage.
 - When the outdoor unit is installed indoors, it may be necessary to provide a secondary condensate pan, condensate pump or optional drain adapter for condensate management.
 - Do not use the drain adapter (optional) in locations where the condensate line may freeze.
- The dimensions marked with an asterisk (*) indicate the mounting pitch dimensions for anchor bolts.

Model: (H,Y)VAHR096B42S, (H,Y)VAHR120B42S and (H,Y)VAHR144B42S

inch (mm)



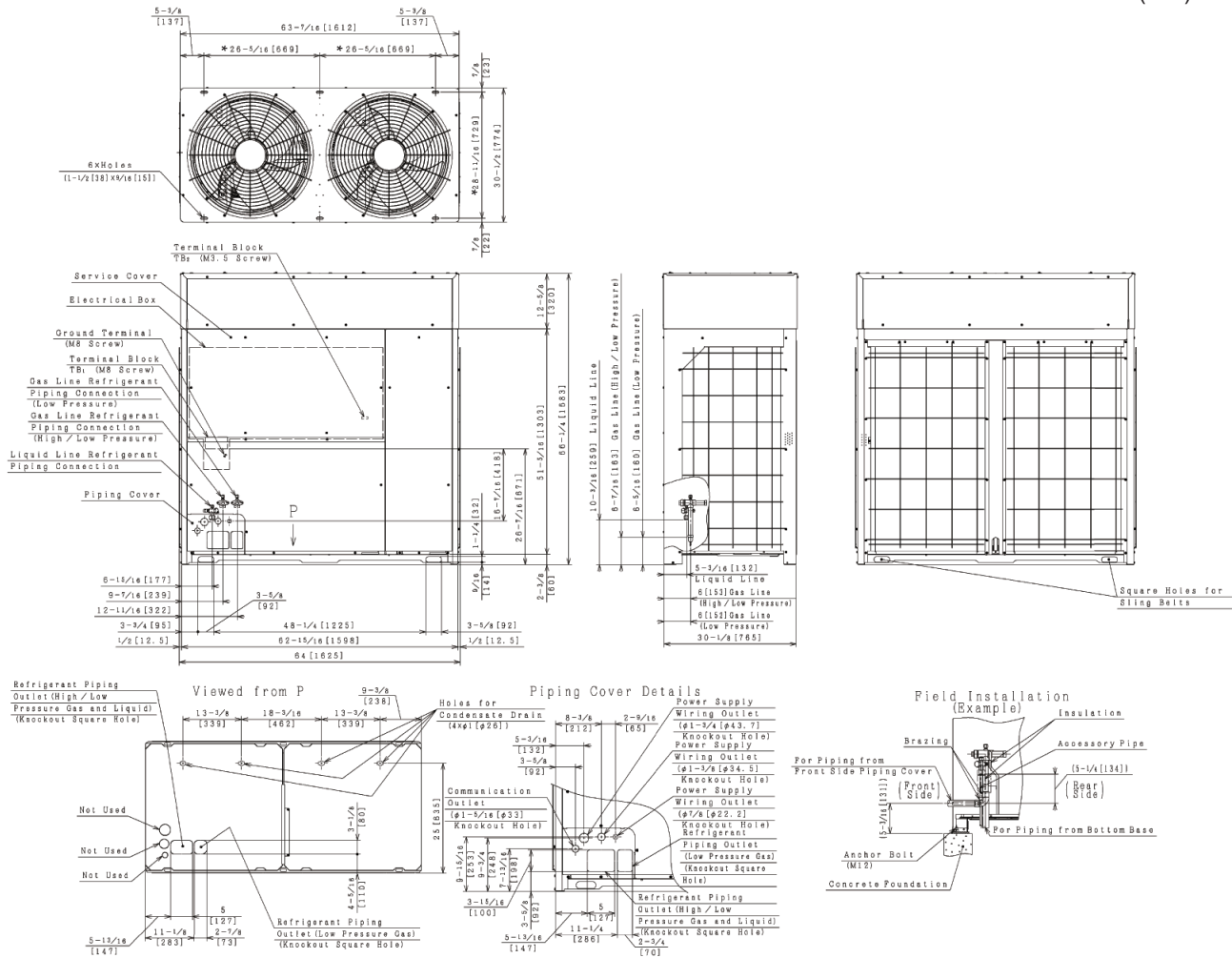
NOTES:

- Condensation is produced by the outdoor coil during heating and defrost operation.
 - Locate the unit where the system can be properly drained.
 - Condensate pipe must be installed in accordance with local and national codes.
 - Ensure the drain is sloped downward away from the outdoor for proper drainage.
 - When the outdoor unit is installed indoors, it may be necessary to provide a secondary condensate pan, condensate pump or optional drain adapter for condensate management.
 - Do not use the drain adapter (optional) in locations where the condensate line may freeze.
- The dimensions marked with an asterisk (*) indicate the mounting pitch dimensions for anchor bolts.

PRODUCT SPECIFICATION

Model: (H,Y)VAHR168B42S and (H,Y)VAHR192B42S

inch (mm)

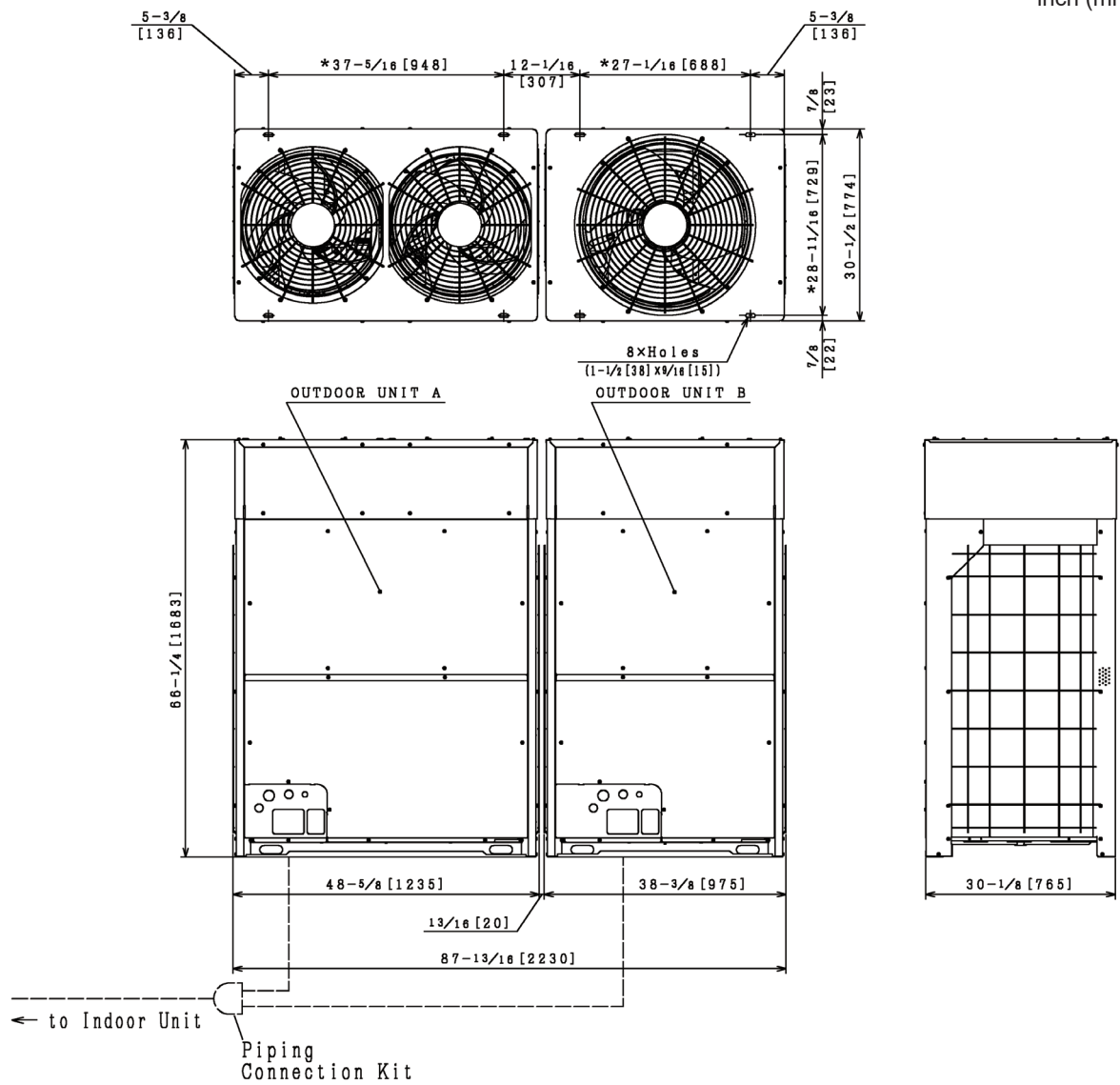


NOTES:

- Condensation is produced by the outdoor coil during heating and defrost operation.
 - Locate the unit where the system can be properly drained.
 - Condensate pipe must be installed in accordance with local and national codes.
 - Ensure the drain is sloped downward away from the outdoor for proper drainage.
 - When the outdoor unit is installed indoors, it may be necessary to provide a secondary condensate pan, condensate pump or optional drain adapter for condensate management.
 - Do not use the drain adapter (optional) in locations where the condensate line may freeze.
- The dimensions marked with an asterisk (*) indicate the mounting pitch dimensions for anchor bolts.

Model: (H,Y)VAHR216B42S

inch (mm)



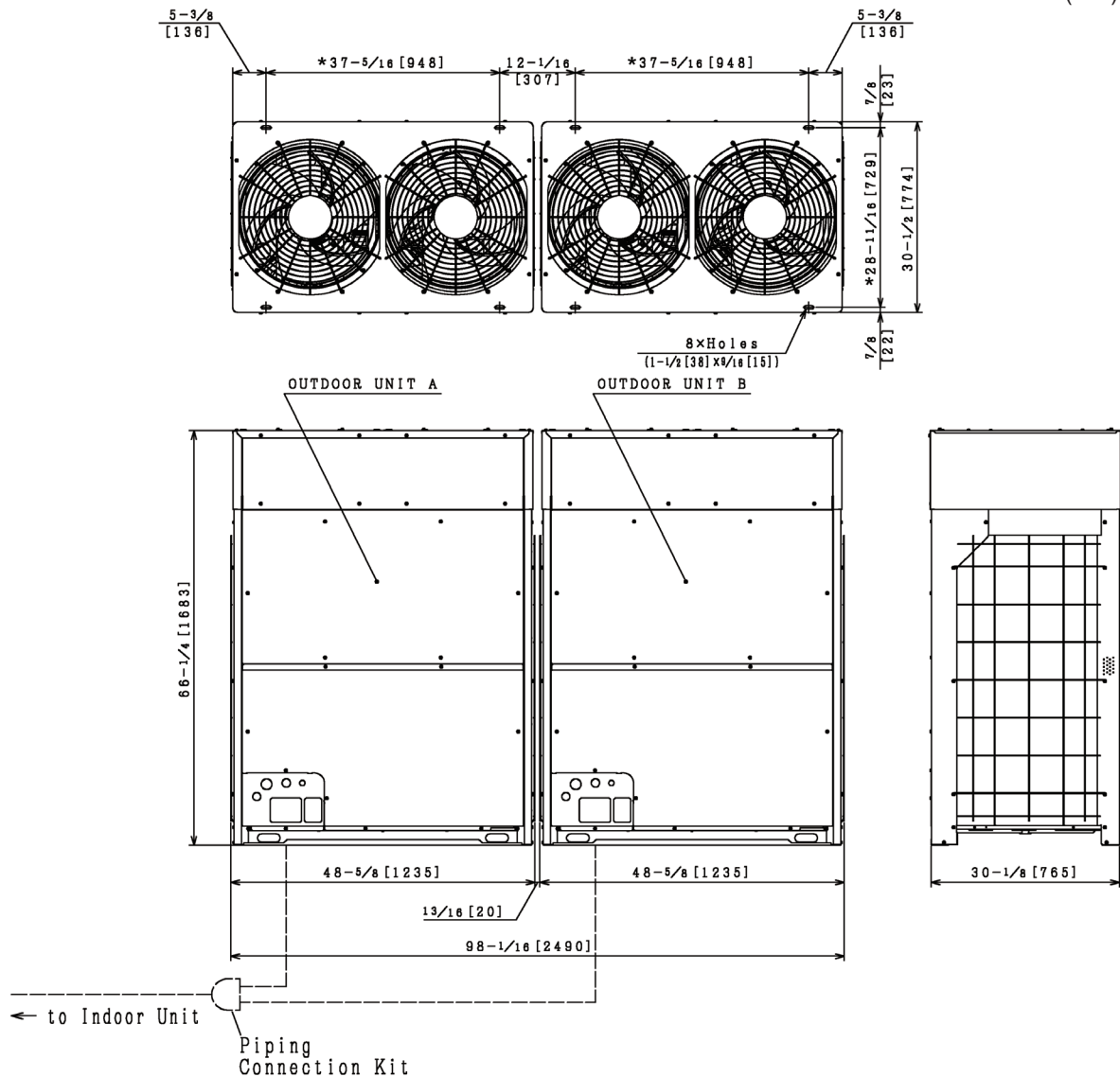
Outdoor Unit Model	Combination of Base Unit Models	
	OUTDOOR UNIT A	OUTDOOR UNIT B
(H,Y)VAHR216B42S	(H,Y)VAHR144B42S	(H,Y)VAHR072B42S

- NOTES:**
- Outdoor unit A is the Main unit and outdoor unit B is the Sub unit. The Main unit is closest in piping to the indoor unit.
 - If outdoor modules have different capacities, the largest capacity unit will be outdoor unit A (Main) and outdoor unit B (Sub) will be the smallest capacity. $A \geq B$.
 - Piping connection kits and piping sizes are identified in the "Installation Manual".
 - The dimensions marked with an asterisk (*) indicate the mounting pitch dimensions for anchor bolts.
 - This drawing shows that there is 13/16 inch [20mm] clearance between the outdoor units. If Snow Protection Hoods are installed on the outdoor units, a 2 inches [50mm] minimum clearance is required.
 - Modifications to the anchoring locations for the outdoor units are required for applications with clearances greater than 13/16 inch [20mm] between outdoor modules.
 - "Dimensional Drawing of Base Unit" is used for dimensions of the piping and wiring outlets.

PRODUCT SPECIFICATION

Model: (H,Y)VAHR240B42S, (H,Y)VAHR264B42S and (H,Y)VAHR288B42S

inch (mm)

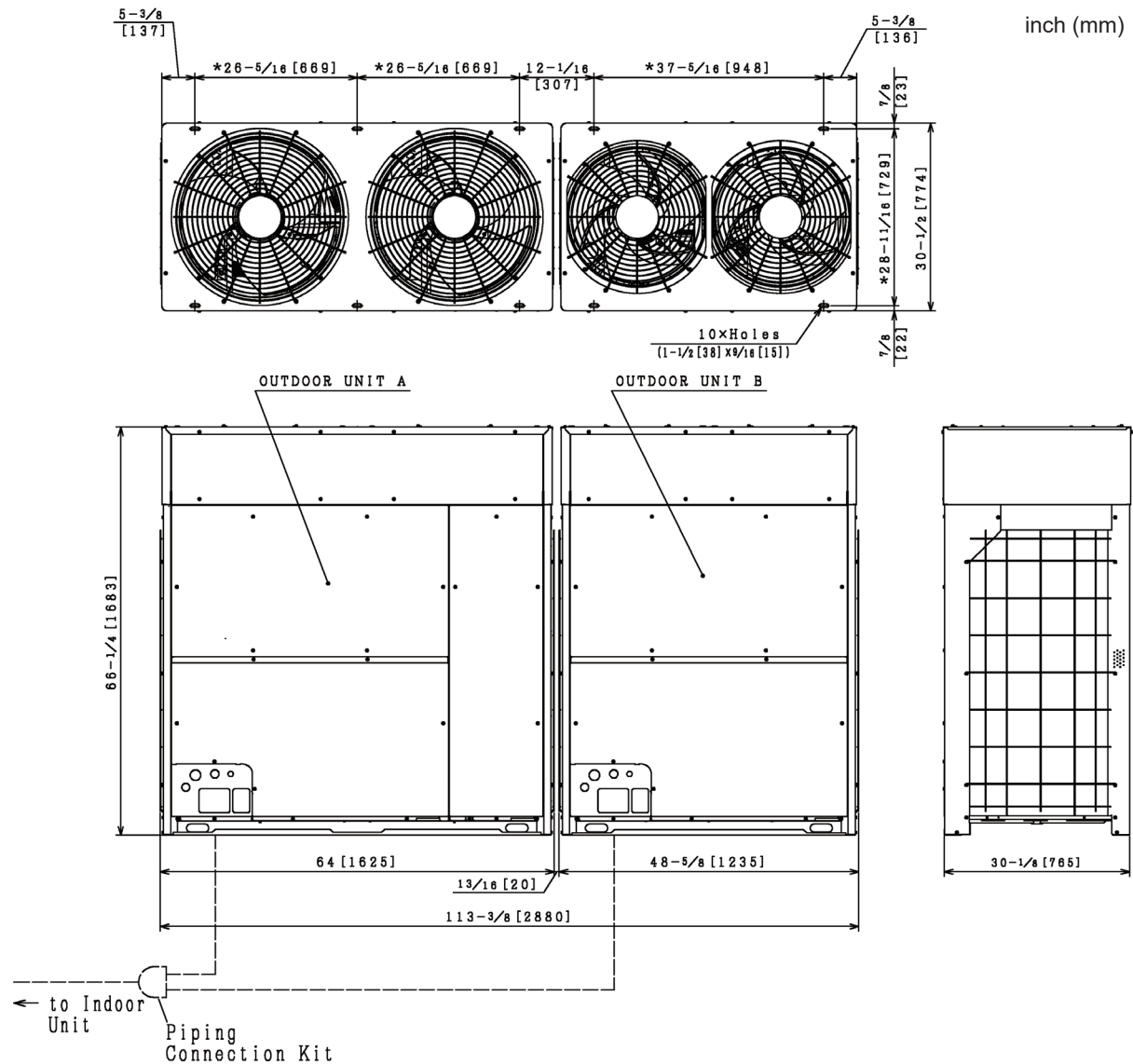


Outdoor Unit Model	Combination of Base Unit Models	
	OUTDOOR UNIT A	OUTDOOR UNIT B
(H,Y)VAHR240B42S	(H,Y)VAHR120B42S	(H,Y)VAHR120B42S
(H,Y)VAHR264B42S	(H,Y)VAHR144B42S	(H,Y)VAHR120B42S
(H,Y)VAHR288B32S	(H,Y)VAHR144B42S	(H,Y)VAHR144B42S

NOTES:

- Outdoor unit A is the Main unit and outdoor unit B is the Sub unit. The Main unit is closest in piping to the indoor unit.
- If outdoor modules have different capacities, the largest capacity unit will be outdoor unit A (Main) and outdoor unit B (Sub) will be the smallest capacity. $A \geq B$.
- Piping connection kits and piping sizes are identified in the "Installation Manual".
- The dimensions marked with an asterisk (*) indicate the mounting pitch dimensions for anchor bolts.
- This drawing shows that there is 13/16 inch [20mm] clearance between the outdoor units. If Snow Protection Hoods are installed on the outdoor units, a 2 inches [50mm] minimum clearance is required.
- Modifications to the anchoring locations for the outdoor units are required for applications with clearances greater than 13/16 inch [20mm] between outdoor modules.
- "Dimensional Drawing of Base Unit" is used for dimensions of the piping and wiring outlets.

Model: (H,Y)VAHR312B42S and (H,Y)VAHR336B42S



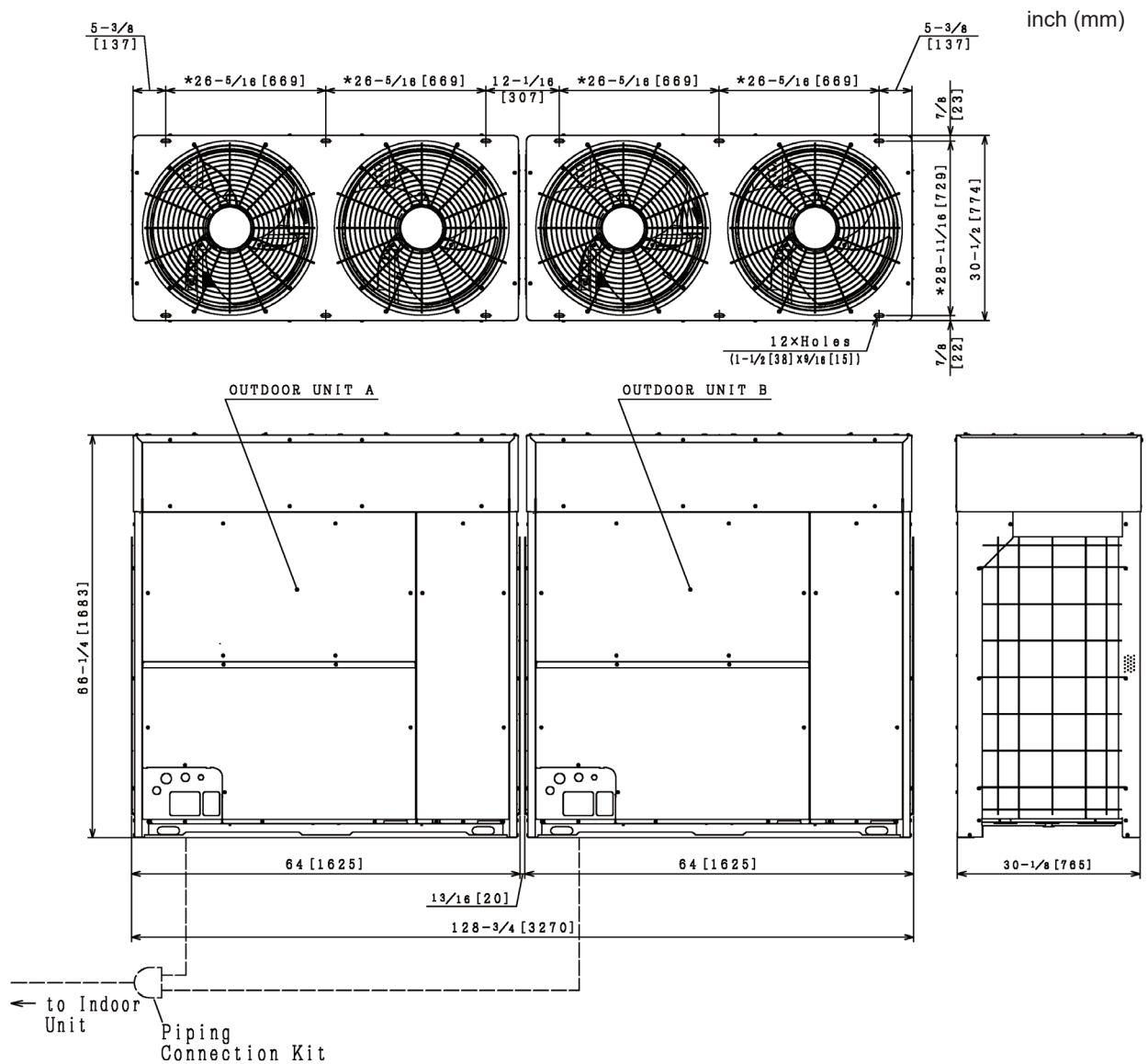
Outdoor Unit Model	Combination of Base Unit Models	
	OUTDOOR UNIT A	OUTDOOR UNIT B
(H,Y)VAHR312B42S	(H,Y)VAHR168B42S	(H,Y)VAHR144B42S
(H,Y)VAHR336B42S	(H,Y)VAHR192B42S	(H,Y)VAHR144B42S

NOTES:

- Outdoor unit A is the Main unit and outdoor unit B is the Sub unit. The Main unit is closest in piping to the indoor unit.
- If outdoor modules have different capacities, the largest capacity unit will be outdoor unit A (Main) and outdoor unit B (Sub) will be the smallest capacity. $A \geq B$.
- Piping connection kits and piping sizes are identified in the "Installation Manual".
- The dimensions marked with an asterisk (*) indicate the mounting pitch dimensions for anchor bolts.
- This drawing shows that there is 13/16 inch [20mm] clearance between the outdoor units. If Snow Protection Hoods are installed on the outdoor units, a 2 inches [50mm] minimum clearance is required.
- Modifications to the anchoring locations for the outdoor units are required for applications with clearances greater than 13/16 inch [20mm] between outdoor modules.
- "Dimensional Drawing of Base Unit" is used for dimensions of the piping and wiring outlets.

PRODUCT SPECIFICATION

Model: (H,Y)VAHR360B42S

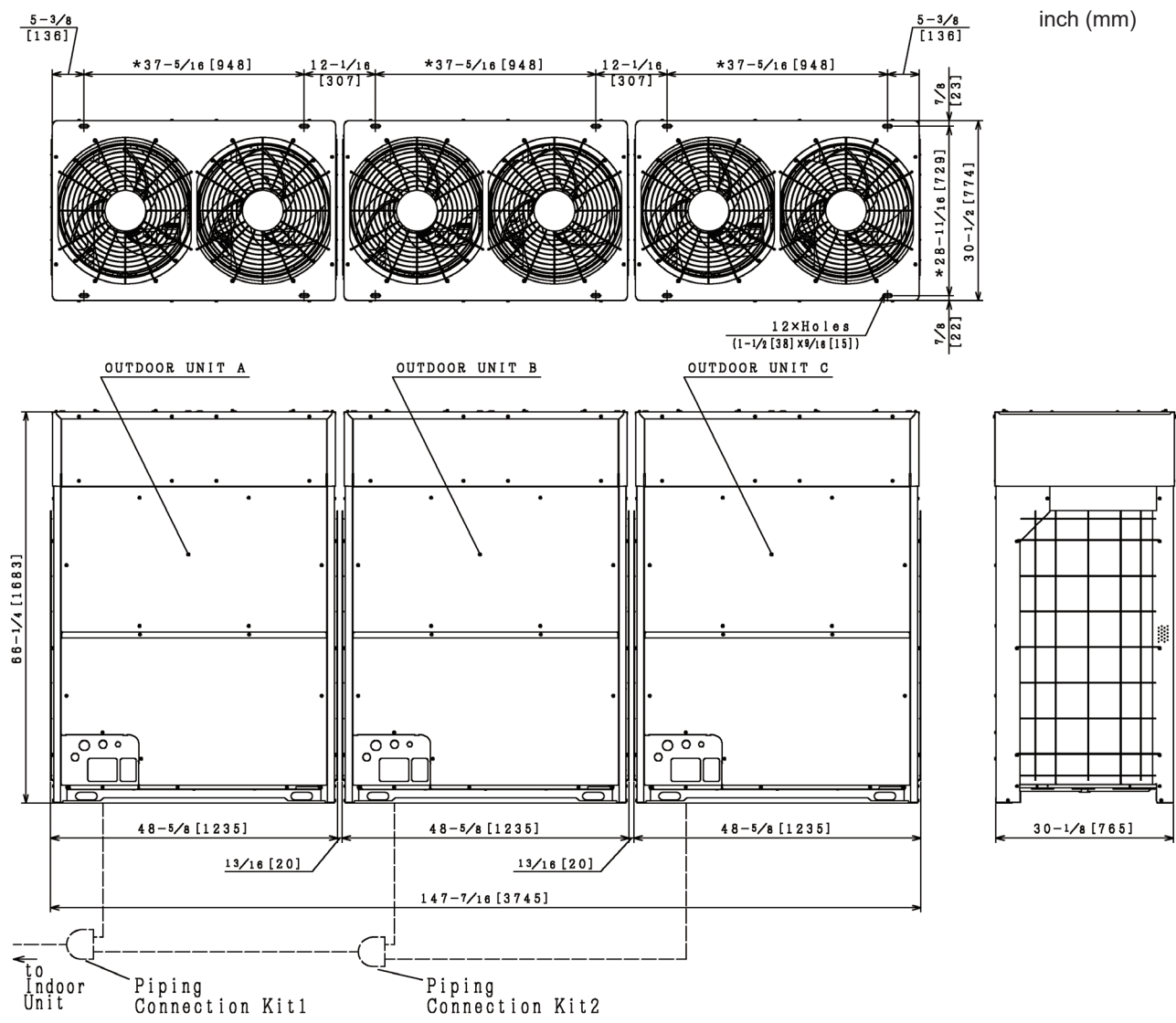


Outdoor Unit Model	Combination of Base Unit Models	
	OUTDOOR UNIT A	OUTDOOR UNIT B
(H,Y)VAHR360B42S	(H,Y)VAHR192B42S	(H,Y)VAHR168B42S

NOTES:

- Outdoor unit A is the Main unit and outdoor unit B is the Sub unit. The Main unit is closest in piping to the indoor unit.
- If outdoor modules have different capacities, the largest capacity unit will be outdoor unit A (Main) and outdoor unit B (Sub) will be the smallest capacity. $A \geq B$.
- Piping connection kits and piping sizes are identified in the "Installation Manual".
- The dimensions marked with an asterisk (*) indicate the mounting pitch dimensions for anchor bolts.
- This drawing shows that there is $13/16$ inch [20mm] clearance between the outdoor units. If Snow Protection Hoods are installed on the outdoor units, a 2 inches [50mm] minimum clearance is required.
- Modifications to the anchoring locations for the outdoor units are required for applications with clearances greater than $13/16$ inch [20mm] between outdoor modules.
- "Dimensional Drawing of Base Unit" is used for dimensions of the piping and wiring outlets.

Model: (H,Y)VAHR384B42S, (H,Y)VAHR408B42S and (H,Y)VAHR432B42S

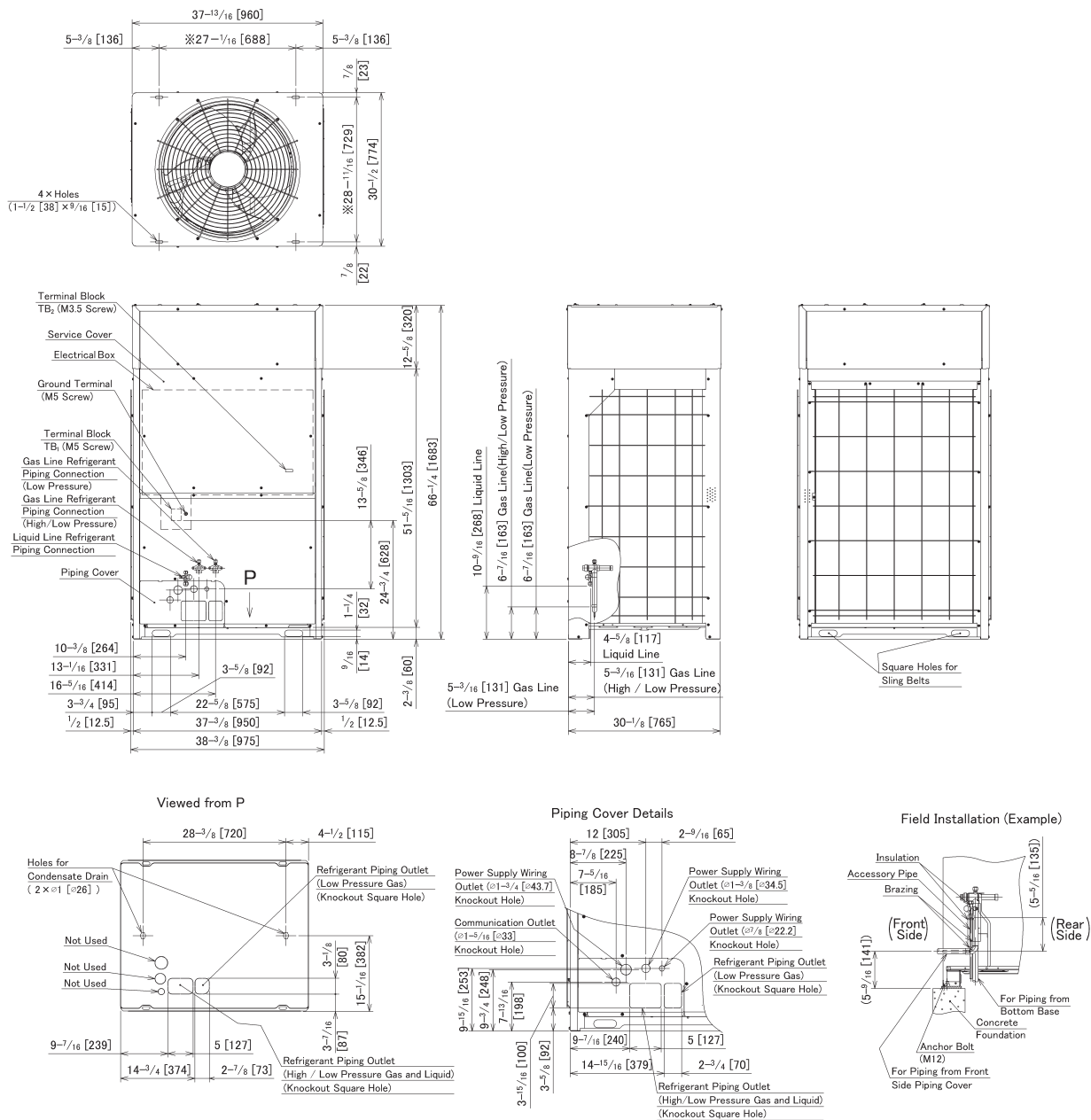


Outdoor Unit Model	Combination of Base Unit Models		
	OUTDOOR UNIT A	OUTDOOR UNIT B	OUTDOOR UNIT C
(H,Y)VAHR384B42S	(H,Y)VAHR144B32S	(H,Y)VAHR120B42S	(H,Y)VAHR120B42S
(H,Y)VAHR408B42S	(H,Y)VAHR144B32S	(H,Y)VAHR144B42S	(H,Y)VAHR120B42S
(H,Y)VAHR432B32S	(H,Y)VAHR144B42S	(H,Y)VAHR144B42S	(H,Y)VAHR144B42S

- NOTES:
- Outdoor unit A is the Main unit and outdoor unit B and C are the Sub unit. The Main unit is closest in piping to the indoor unit.
 - If outdoor modules have different capacities, the largest capacity unit is outdoor unit A (Main), outdoor unit B (Sub) is the next smallest capacity and outdoor unit C (Sub) is the smallest capacity. A ≥ B ≥ C.
 - Piping connection kits and piping sizes are identified in the "Installation Manual".
 - The dimensions marked with an asterisk (*) indicate the mounting pitch dimensions for anchor bolts.
 - This drawing shows that there is 13/16 inch [20mm] clearance between the outdoor units. If Snow Protection Hoods are installed on the outdoor units, a 2 inches [50mm] minimum clearance is required.
 - Modifications to the anchoring locations for the outdoor units are required for applications with clearances greater than 13/16 inch [20mm] between outdoor modules.
 - "Dimensional Drawing of Base Unit" is used for dimensions of the piping and wiring outlets.

(3) 575V

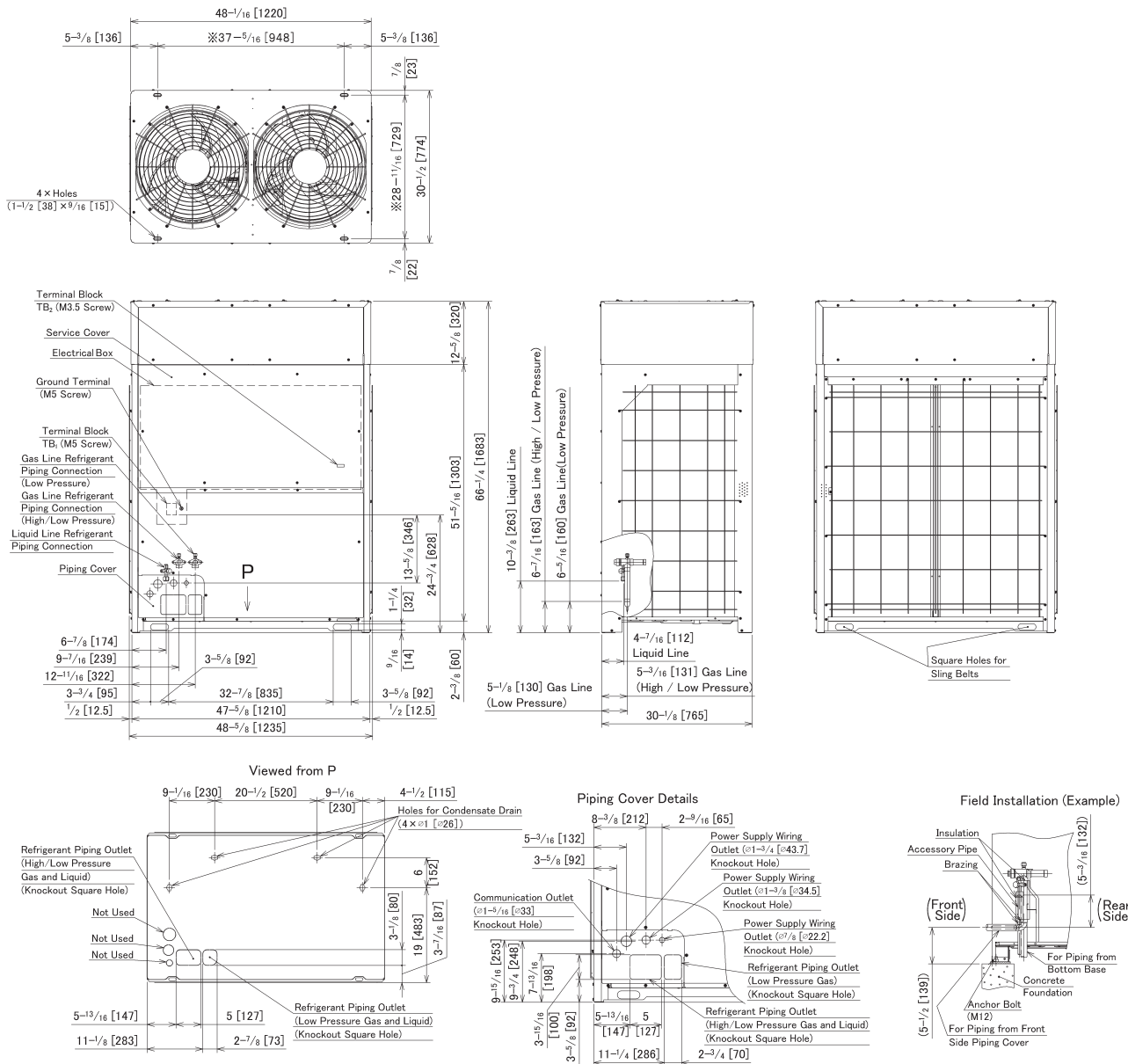
Model: (H,Y)VAHR072B52S



NOTES:

1. Condensation is produced by the outdoor coil during heating and defrost operation.
 - 1) Locate the unit where the system can be properly drained.
 - 2) Condensate pipe must be installed in accordance with local and national codes.
 - 3) Ensure the drain is sloped downward away from the outdoor for proper drainage.
 - 4) When the outdoor unit is installed indoors, it may be necessary to provide a secondary drain pan, condensate pump or optional drain adapter for condensate management.
 - 5) Do not use the drain adapter (optional) in locations where the drain line may freeze.
2. The dimensions marked with " * " indicate the mounting pitch dimensions for anchor bolts.

Model: (H,Y)VAHR096B52S, (H,Y)VAHR120B52S and (H,Y)VAHR144B52S

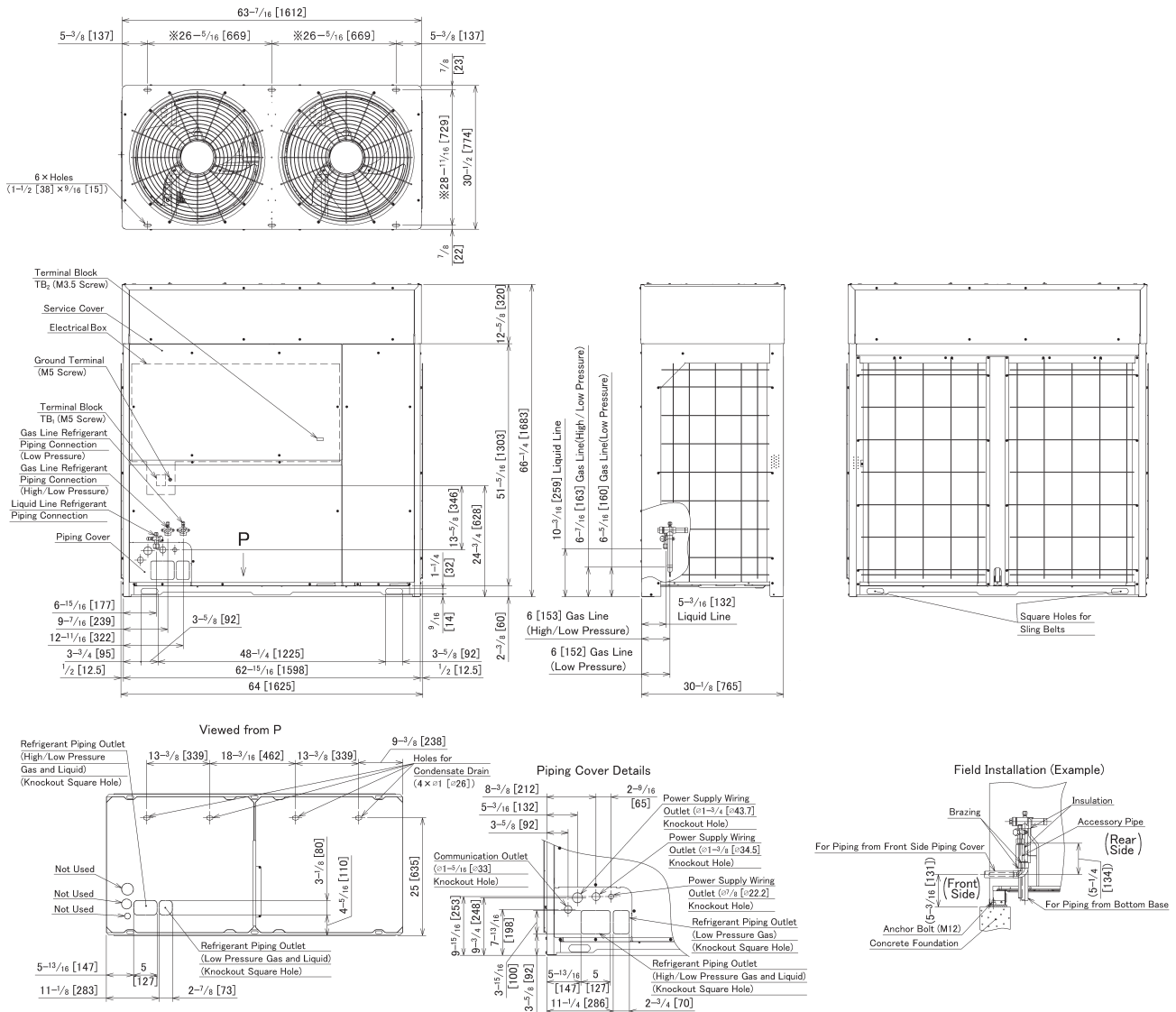


NOTES:

1. Condensation is produced by the outdoor coil during heating and defrost operation.
 - 1) Locate the unit where the system can be properly drained.
 - 2) Condensate pipe must be installed in accordance with local and national codes.
 - 3) Ensure the drain is sloped downward away from the outdoor for proper drainage.
 - 4) When the outdoor unit is installed indoors, it may be necessary to provide a secondary drain pan, condensate pump or optional drain adapter for condensate management.
 - 5) Do not use the drain adapter (optional) in locations where the drain line may freeze.
2. The dimensions marked with " * " indicate the mounting pitch dimensions for anchor bolts.

PRODUCT SPECIFICATION

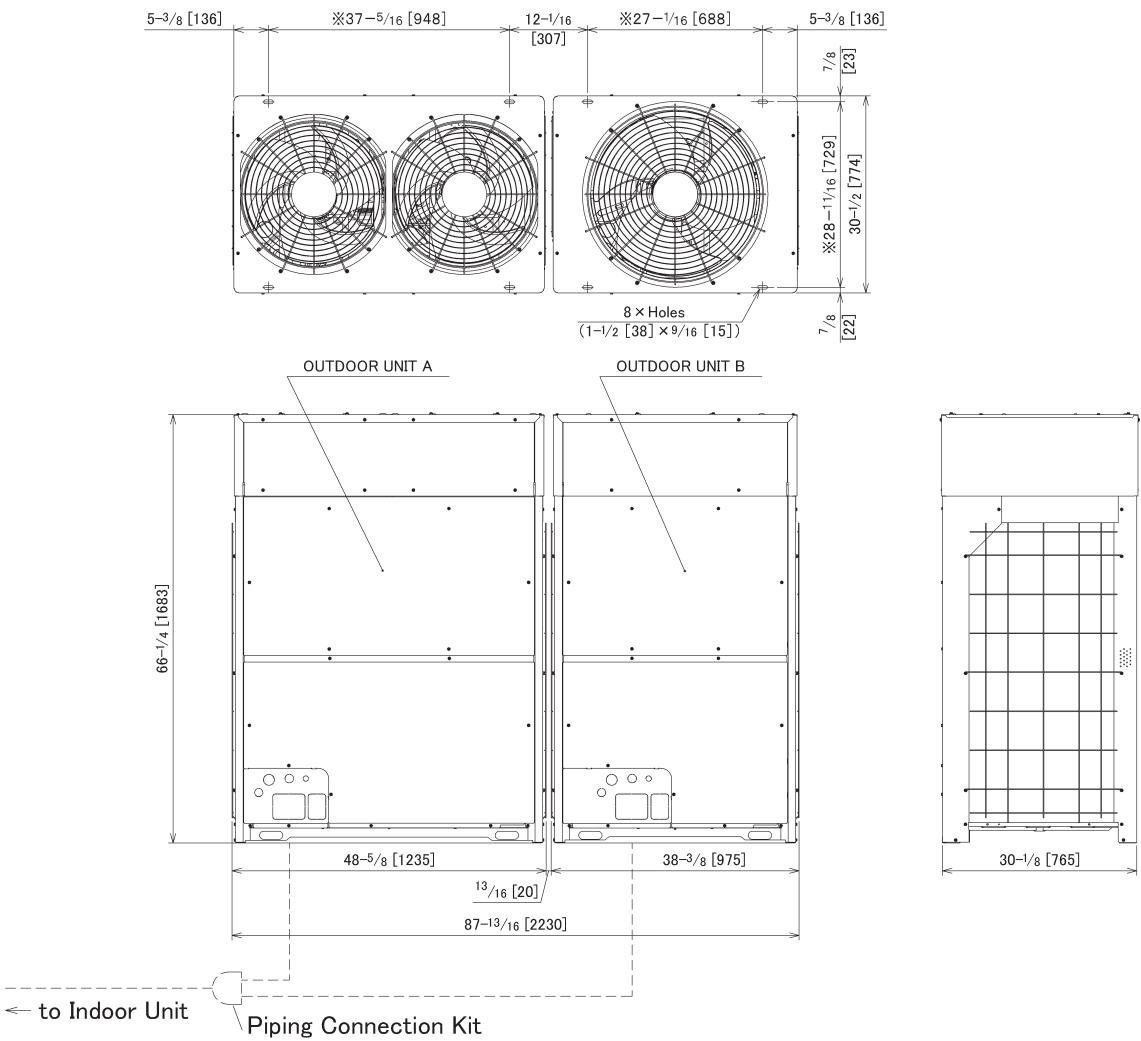
Model: (H,Y)VAHR168B52S and (H,Y)VAHR192B52S



NOTES:

- Condensation is produced by the outdoor coil during heating and defrost operation.
 - Locate the unit where the system can be properly drained.
 - Condensate pipe must be installed in accordance with local and national codes.
 - Ensure the drain is sloped downward away from the outdoor for proper drainage.
 - When the outdoor unit is installed indoors, it may be necessary to provide a secondary drain pan, condensate pump or optional drain adapter for condensate management.
 - Do not use the drain adapter (optional) in locations where the drain line may freeze.
- The dimensions marked with " * " indicate the mounting pitch dimensions for anchor bolts.

Model: (H,Y)VAHR216B52S

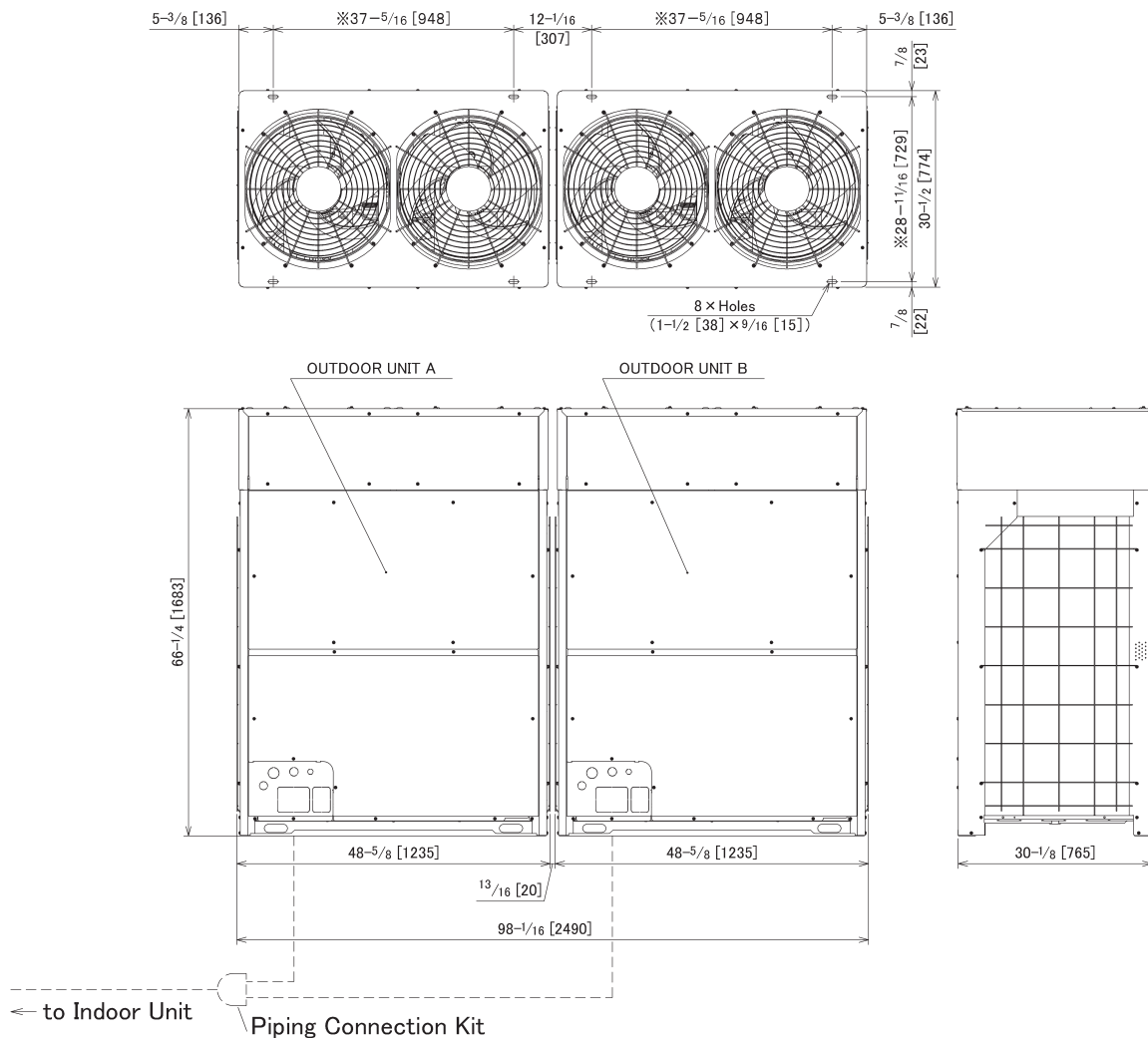


Outdoor Unit Model	Combination of Base Unit Models	
	OUTDOOR UNIT A	OUTDOOR UNIT B
(H, Y) VAHR216B52S	(H, Y) VAHR144B52S	(H, Y) VAHR072B52S

- NOTES:**
- Outdoor unit A is the Main unit and outdoor unit B is the Sub unit. The Main unit is closest in piping to the indoor unit.
 - If outdoor modules have different capacities, the largest capacity unit will be outdoor unit A (Main) and outdoor unit B (Sub) will be the smallest capacity. A ≥ B.
 - Piping connection kits and piping sizes are identified in the "Installation Manual".
 - The dimensions marked with " * " indicate the mounting pitch dimensions for anchor bolts.
 - This drawing shows that there is 13/16 inch [20mm] clearance between the outdoor units. If Snow Protection Hoods are installed on the outdoor units, 2 inches [50mm] minimum clearance is required.
 - Modifications to the anchoring locations for the outdoor units are required for applications with clearances greater than 13/16 inch [20mm] between outdoor modules.
 - "Dimensional Drawing of Base Unit" are used for dimensions of piping and wiring outlets.

PRODUCT SPECIFICATION

Model: (H,Y)VAHR240B52S, (H,Y)VAHR264B52S and (H,Y)VAHR288B52S

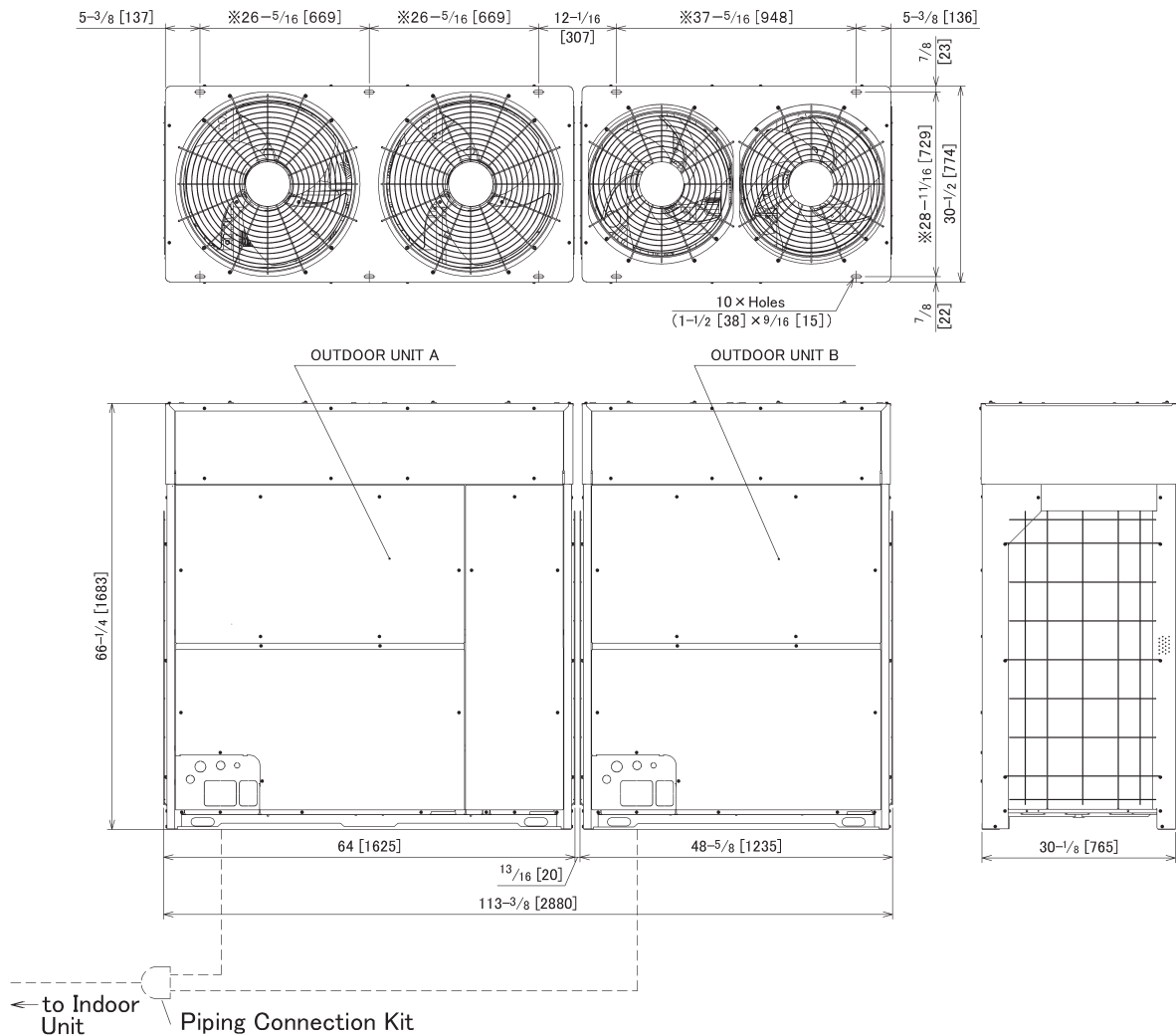


Outdoor Unit Model	Combination of Base Unit Models	
	OUTDOOR UNIT A	OUTDOOR UNIT B
(H, Y) VAHR240B52S	(H, Y) VAHR120B52S	(H, Y) VAHR120B52S
(H, Y) VAHR264B52S	(H, Y) VAHR144B52S	(H, Y) VAHR120B52S
(H, Y) VAHR288B52S	(H, Y) VAHR144B52S	(H, Y) VAHR144B52S

NOTES:

- Outdoor unit A is the Main unit and outdoor unit B is the Sub unit. The Main unit is closest in piping to the indoor unit.
- If outdoor modules have different capacities, the largest capacity unit will be outdoor unit A (Main) and outdoor unit B (Sub) will be the smallest capacity. $A \geq B$.
- Piping connection kits and piping sizes are identified in the "Installation Manual".
- The dimensions marked with " * " indicate the mounting pitch dimensions for anchor bolts.
- This drawing shows that there is $13\frac{1}{16}$ inch [20mm] clearance between the outdoor units. If Snow Protection Hoods are installed on the outdoor units, 2 inches [50mm] minimum clearance is required.
- Modifications to the anchoring locations for the outdoor units are required for applications with clearances greater than $13\frac{1}{16}$ inch [20mm] between outdoor modules.
- "Dimensional Drawing of Base Unit" are used for dimensions of piping and wiring outlets.

Model: (H,Y)VAHR312B52S and (H,Y)VAHR336B52S



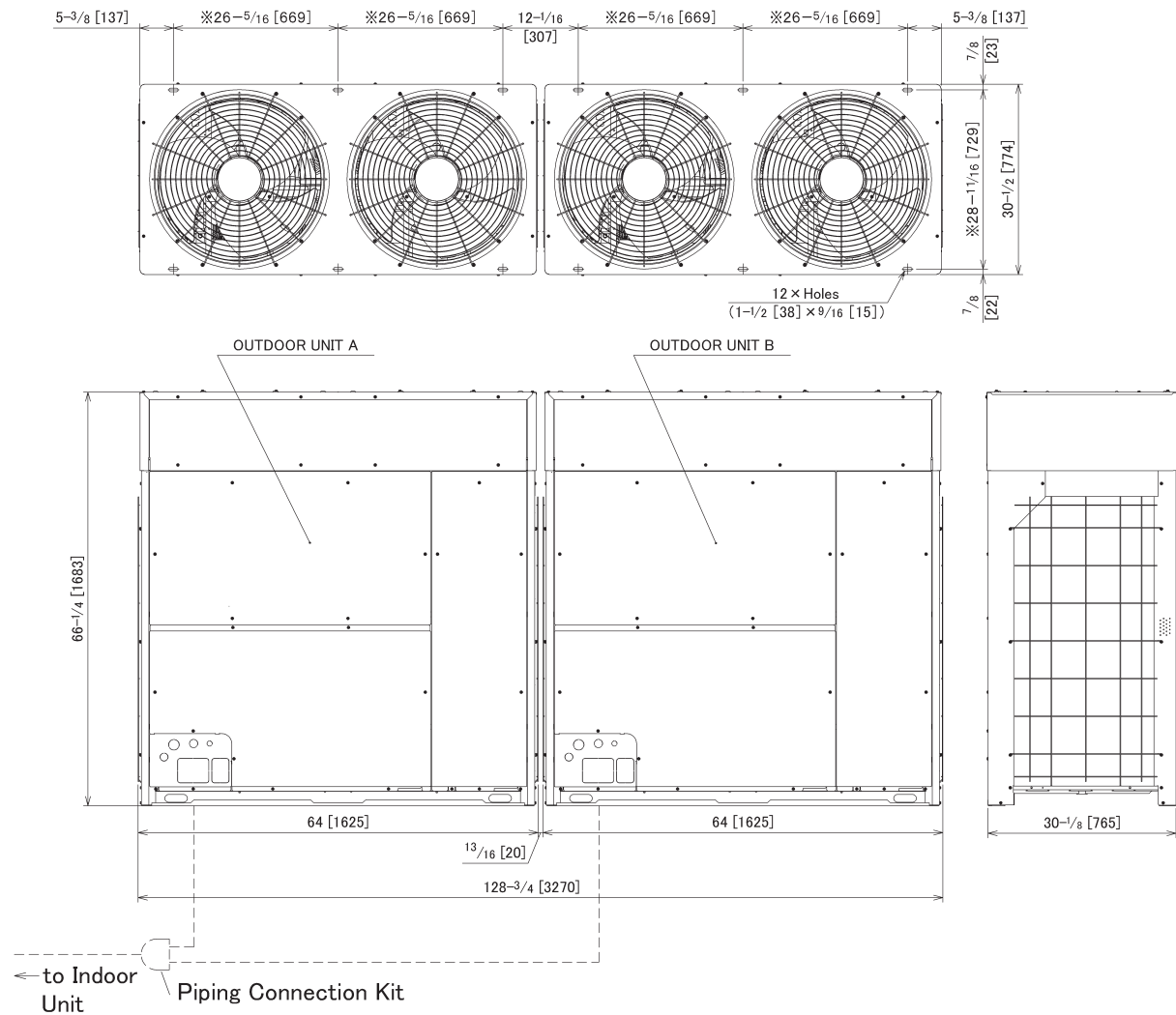
Outdoor Unit Model	Combination of Base Unit Models	
	OUTDOOR UNIT A	OUTDOOR UNIT B
(H, Y) VAHR312B52S	(H, Y) VAHR168B52S	(H, Y) VAHR144B52S
(H, Y) VAHR336B52S	(H, Y) VAHR192B52S	(H, Y) VAHR144B52S

NOTES:

1. Outdoor unit A is the Main unit and outdoor unit B is the Sub unit. The Main unit is closest in piping to the indoor unit.
2. If outdoor modules have different capacities, the largest capacity unit will be outdoor unit A (Main) and outdoor unit B (Sub) will be the smallest capacity. A ≥ B.
3. Piping connection kits and piping sizes are identified in the "Installation Manual".
4. The dimensions marked with " * " indicate the mounting pitch dimensions for anchor bolts.
5. This drawing shows that there is 13/16 inch [20mm] clearance between the outdoor units. If Snow Protection Hoods are installed on the outdoor units, 2 inches [50mm] minimum clearance is required.
6. Modifications to the anchoring locations for the outdoor units are required for applications with clearances greater than 13/16 inch [20mm] between outdoor modules.
7. "Dimensional Drawing of Base Unit" are used for dimensions of piping and wiring outlets.

PRODUCT SPECIFICATION

Model: (H,Y)VAHR360B52S

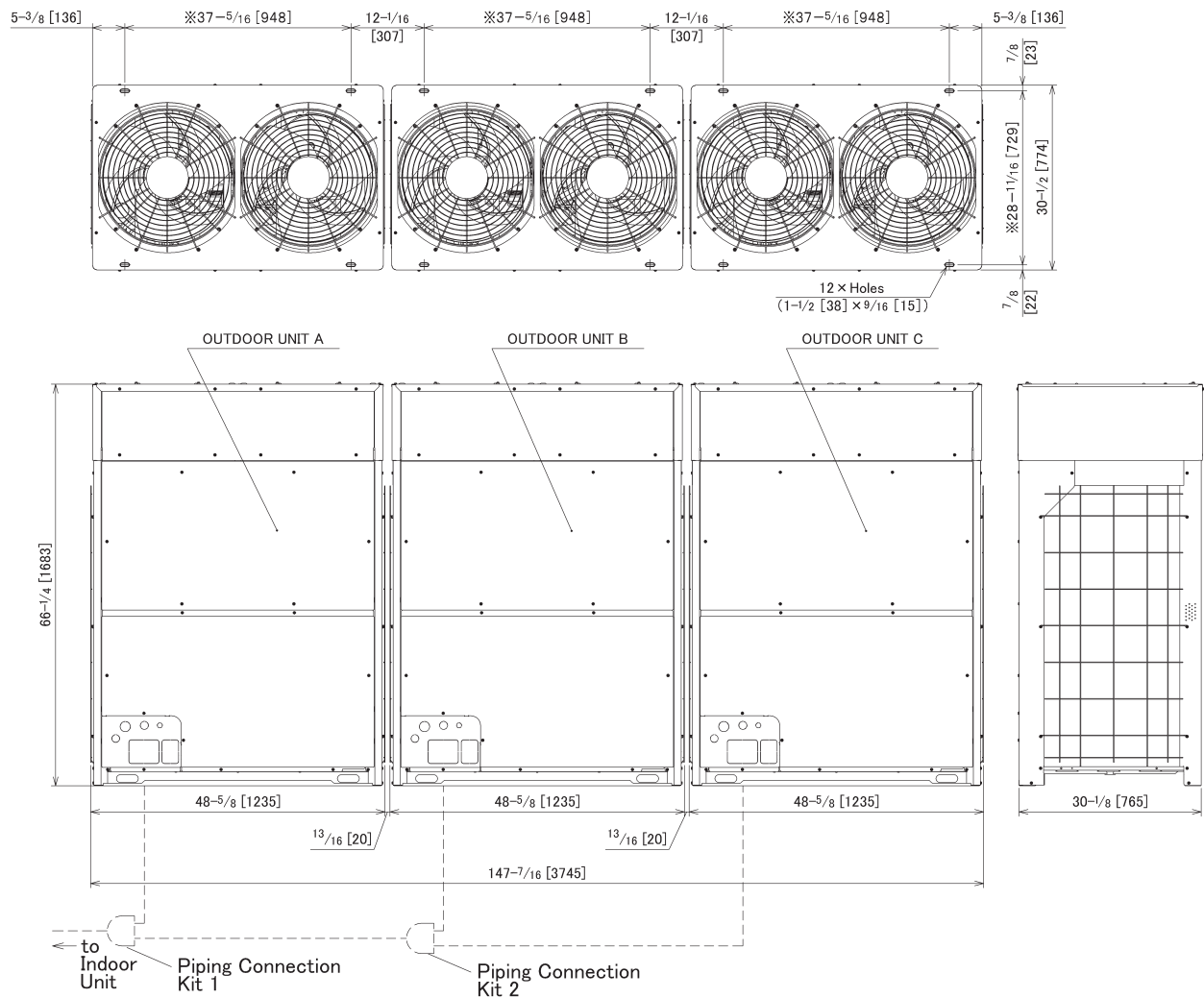


Outdoor Unit Model	Combination of Base Unit Models	
	OUTDOOR UNIT A	OUTDOOR UNIT B
(H, Y) VAHR360B52S	(H, Y) VAHR192B52S	(H, Y) VAHR168B52S

NOTES:

- Outdoor unit A is the Main unit and outdoor unit B is the Sub unit. The Main unit is closest in piping to the indoor unit.
- If outdoor modules have different capacities, the largest capacity unit will be outdoor unit A (Main) and outdoor unit B (Sub) will be the smallest capacity. $A \geq B$.
- Piping connection kits and piping sizes are identified in the "Installation Manual".
- The dimensions marked with " * " indicate the mounting pitch dimensions for anchor bolts.
- This drawing shows that there is 13/16 inch [20mm] clearance between the outdoor units. If Snow Protection Hoods are installed on the outdoor units, 2 inches [50mm] minimum clearance is required.
- Modifications to the anchoring locations for the outdoor units are required for applications with clearances greater than 13/16 inch [20mm] between outdoor modules.
- "Dimensional Drawing of Base Unit" are used for dimensions of piping and wiring outlets.

Model: (H,Y)VAHR384B52S, (H,Y)VAHR408B52S and (H,Y)VAHR432B52S



Outdoor Unit Model	Combination of Base Unit Models		
	OUTDOOR UNIT A	OUTDOOR UNIT B	OUTDOOR UNIT C
(H, Y) VAHR384B52S	(H, Y) VAHR144B52S	(H, Y) VAHR120B52S	(H, Y) VAHR120B52S
(H, Y) VAHR408B52S	(H, Y) VAHR144B52S	(H, Y) VAHR144B52S	(H, Y) VAHR120B52S
(H, Y) VAHR432B52S	(H, Y) VAHR144B52S	(H, Y) VAHR144B52S	(H, Y) VAHR144B52S

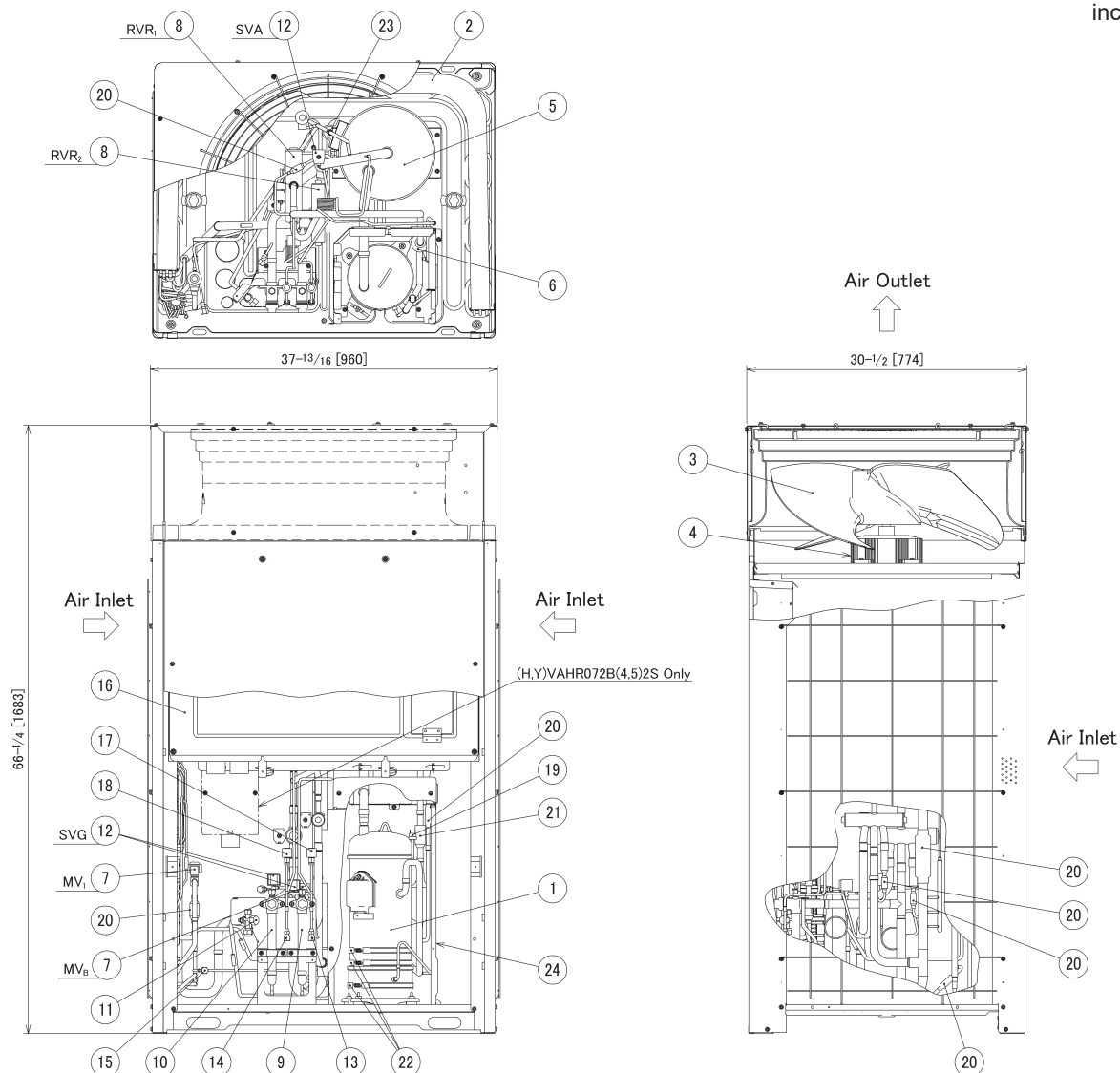
NOTES:

- Outdoor unit A is the Main unit and outdoor unit B and C are the Sub unit. The Main unit is closest in piping to the indoor unit.
- If outdoor modules have different capacities, the largest capacity unit is outdoor unit A (Main), outdoor unit B (Sub) is the next smallest capacity and outdoor unit C (Sub) is the smallest capacity. $A \geq B \geq C$.
- Piping connection kits and piping sizes are identified in the "Installation Manual".
- The dimensions marked with "*" indicate the mounting pitch dimensions for anchor bolts.
- This drawing shows that there is 13/16 inch [20mm] clearance between the outdoor units. If Snow Protection Hoods are installed on the outdoor units, 2 inches [50mm] minimum clearance is required.
- Modifications to the anchoring locations for the outdoor units are required for applications with clearances greater than 13/16 inch [20mm] between outdoor modules.
- "Dimensional Drawing of Base Unit" are used for dimensions of piping and wiring outlets.

2.5 Structure

Model: (H,Y)VAHR072B(3, 4, 5)2S

inch (mm)

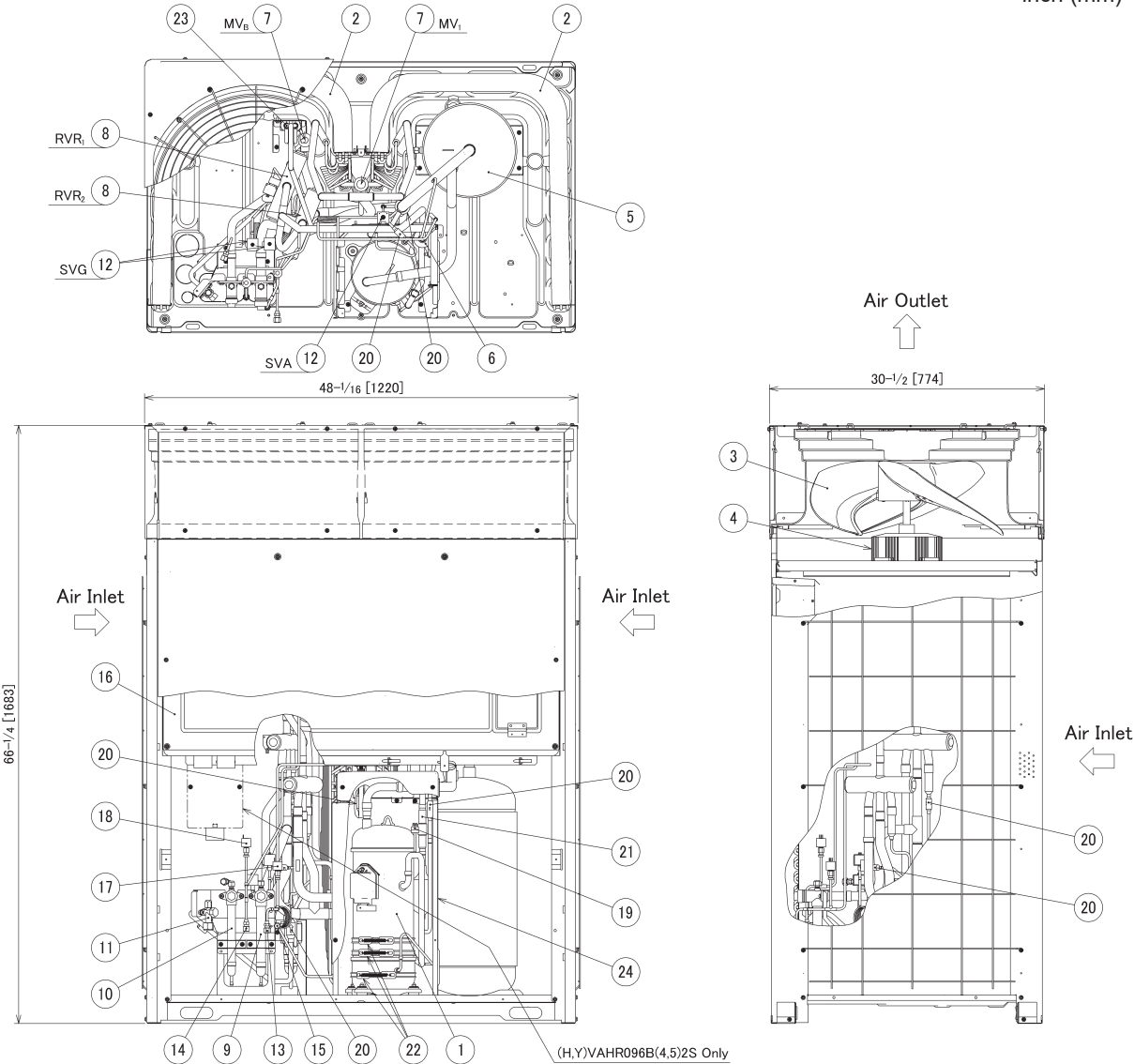


No.	Part Name
1	Compressor (Inverter)
2	Heat Exchanger
3	Propeller Fan
4	Fan Motor
5	Accumulator
6	Oil Separator
7	Electronic Expansion Valve (2pcs.)
8	Reversing Valve (2pcs.)
9	Stop Valve (Low Pressure Gas)
10	Stop Valve (High/Low Pressure Gas)
11	Stop Valve (Liquid)
12	Solenoid Valve (3pcs.)

No.	Part Name
13	Access Port (Low)
14	Access Port (High)
15	Access Port (for Oil)
16	Electrical Control Box
17	Low Pressure Sensor
18	High Pressure Sensor
19	High Pressure Switch for Protection
20	Strainer (5pcs.)
21	Check Valve
22	Crankcase Heater (3pcs.)
23	Double Tube Type Heat Exchanger
24	Compressor Cover

Model: (H,Y)VAHR096B(3, 4, 5)2S

inch (mm)



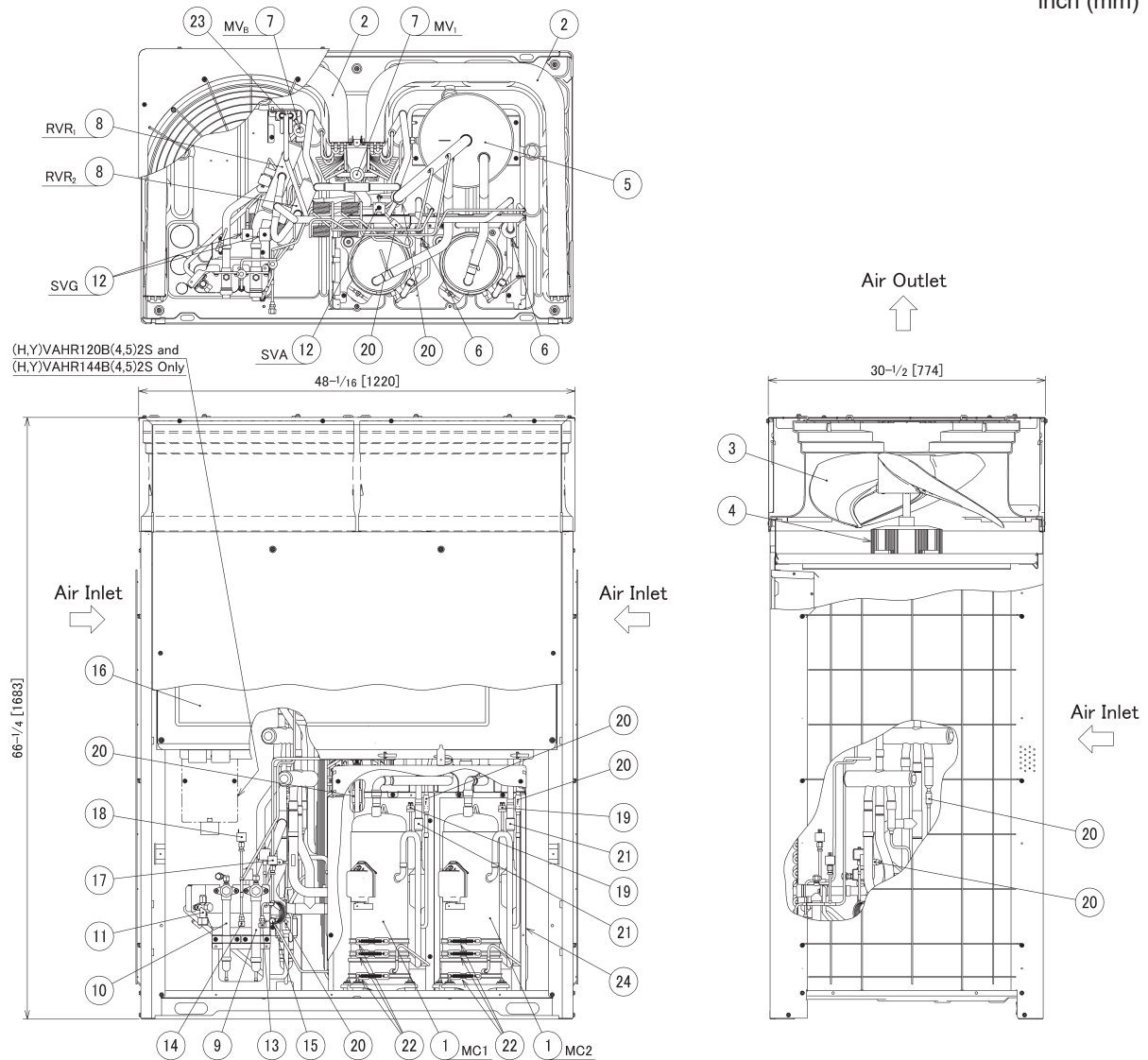
No.	Part Name
1	Compressor (Inverter)
2	Heat Exchanger
3	Propeller Fan
4	Fan Motor
5	Accumulator
6	Oil Separator
7	Electronic Expansion Valve (2pcs.)
8	Reversing Valve (2pcs.)
9	Stop Valve (Low Pressure Gas)
10	Stop Valve (High/Low Pressure Gas)
11	Stop Valve (Liquid)
12	Solenoid Valve (3pcs.)

No.	Part Name
13	Access Port (Low)
14	Access Port (High)
15	Access Port (for Oil)
16	Electrical Control Box
17	Low Pressure Sensor
18	High Pressure Sensor
19	High Pressure Switch for Protection
20	Strainer (5pcs.)
21	Check Valve
22	Crankcase Heater (3pcs.)
23	Double Tube Type Heat Exchanger
24	Compressor Cover

PRODUCT SPECIFICATION

Model: (H,Y)VAHR120B(3, 4, 5)2S and (H,Y)VAHR144B(3, 4, 5)2S

inch (mm)

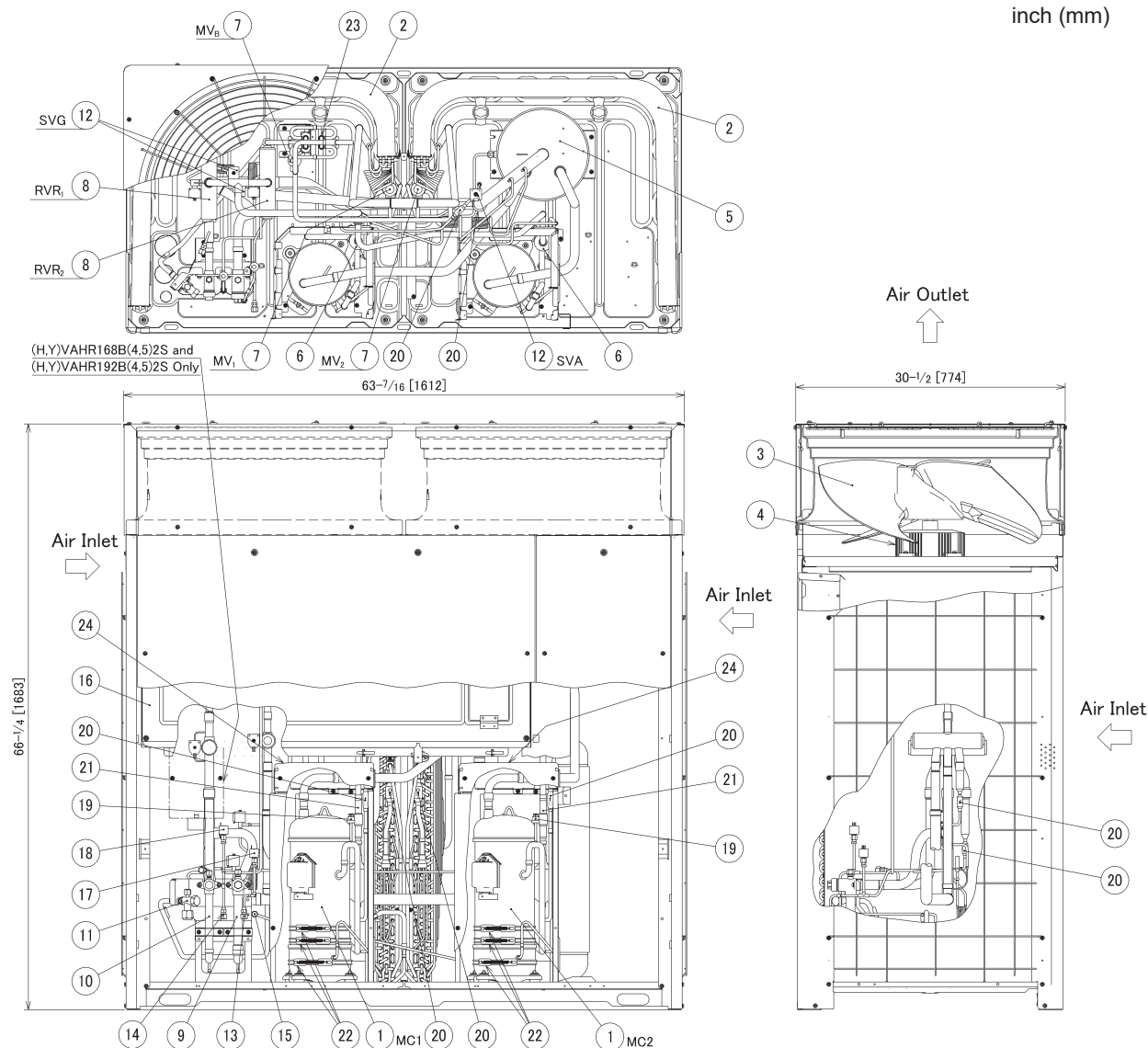


No.	Part Name
1	Compressor (Inverter) (2pcs.)
2	Heat Exchanger
3	Propeller Fan
4	Fan Motor
5	Accumulator
6	Oil Separator
7	Electronic Expansion Valve (2pcs.)
8	Reversing Valve (2pcs.)
9	Stop Valve (Low Pressure Gas)
10	Stop Valve (High/Low Pressure Gas)
11	Stop Valve (Liquid)
12	Solenoid Valve (3pcs.)

No.	Part Name
13	Access Port (Low)
14	Access Port (High)
15	Access Port (for Oil)
16	Electrical Control Box
17	Low Pressure Sensor
18	High Pressure Sensor
19	High Pressure Switch for Protection (2pcs.)
20	Strainer (6pcs.)
21	Check Valve (2pcs.)
22	Crankcase Heater (6pcs.)
23	Double Tube Type Heat Exchanger
24	Compressor Cover

Model: (H,Y)VAHR168B(3, 4, 5)2S and (H,Y)VAHR192B(3, 4, 5)2S

inch (mm)



No.	Part Name
1	Compressor (Inverter) (2pcs.)
2	Heat Exchanger
3	Propeller Fan
4	Fan Motor
5	Accumulator
6	Oil Separator
7	Electronic Expansion Valve (3pcs.)
8	Reversing Valve (2pcs.)
9	Stop Valve (Low Pressure Gas)
10	Stop Valve (High/Low Pressure Gas)
11	Stop Valve (Liquid)
12	Solenoid Valve (3pcs.)

No.	Part Name
13	Access Port (Low)
14	Access Port (High)
15	Access Port (for Oil)
16	Electrical Control Box
17	Low Pressure Sensor
18	High Pressure Sensor
19	High Pressure Switch for Protection (2pcs.)
20	Strainer (7pcs.)
21	Check Valve (2pcs.)
22	Crankcase Heater (6pcs.)
23	Double Tube Type Heat Exchanger
24	Compressor Cover

2.6 Component Data

Outdoor Heat Exchanger and Fan

Model		(H,Y)VAHR072B(3,4,5)2S	(H,Y)VAHR096B(3,4,5)2S	(H,Y)VAHR120B(3,4,5)2S
Heat Exchanger Type		Multi-Pass Cross Finned Tube		
Tube	Material	Copper Tube		
Outer Diameter	φin (mm)	1/4 (7.0)	1/4 (7.0)	1/4 (7.0)
Rows		3	3	3
Number of Tube/Coil		174	174	174
Fin	Material	Aluminum		
Pitch	in (mm)	1/16 (1.7)	1/16 (1.7)	1/16 (1.7)
Maximum Operating Pressure	psi (MPa)	601 (4.15)	601 (4.15)	601 (4.15)
Total Face Area	ft ² (m ²)	25.40 (2.36)	33.58 (3.12)	33.58 (3.12)
Number of Coil/Unit		1	2	2
Outdoor Fan		Large Diameter Fan (Propeller Fan)		
Number/Unit		1	2	2
Outer Diameter	φin (mm)	25-3/8 (644)	21-7/16 + 21-7/16 (544 + 544)	21-7/16 + 21-7/16 (544 + 544)
Nominal Airflow	cfm (m ³ /min)	6787 (180)	8437 (238)	9037 (256)
Outdoor Fan Motor		Drip-Proof Type Enclosure		
Starting Method		Inverter		
Nominal Output	W	420	330 + 330	390 + 390
Quantity		1	2	2
Insulation Class		E	E	E

Model		(H,Y)VAHR144B(3,4,5)2S	(H,Y)VAHR168B(3,4,5)2S	(H,Y)VAHR192B(3,4,5)2S
Heat Exchanger Type		Multi-Pass Cross Finned Tube		
Tube	Material	Copper Tube		
Outer Diameter	φin (mm)	1/4 (7.0)	1/4 (7.0)	1/4 (7.0)
Rows		3	3	3
Number of Tube/Coil		174	174	174
Fin	Material	Aluminum		
Pitch	in (mm)	1/16 (1.7)	1/16 (1.7)	1/16 (1.7)
Maximum Operating Pressure	psi (MPa)	601 (4.15)	601 (4.15)	601 (4.15)
Total Face Area	ft ² (m ²)	33.58 (3.12)	38.53 (3.58)	38.53 (3.58)
Number of Coil/Unit		2	2	2
Outdoor Fan		Large Diameter Fan (Propeller Fan)		
Number/Unit		2	2	2
Outer Diameter	φin (mm)	21-7/16 + 21-7/16 (544 + 544)	25-3/8 + 25-3/8 (644 + 644)	
Nominal Airflow	cfm (m ³ /min)	9037 (256)	11614 (329)	12284 (348)
Outdoor Fan Motor		Drip-Proof Type Enclosure		
Starting Method		Inverter		
Nominal Output	W	390 + 390	480 + 480	560 + 560
Quantity		2	2	2
Insulation Class		E	E	E

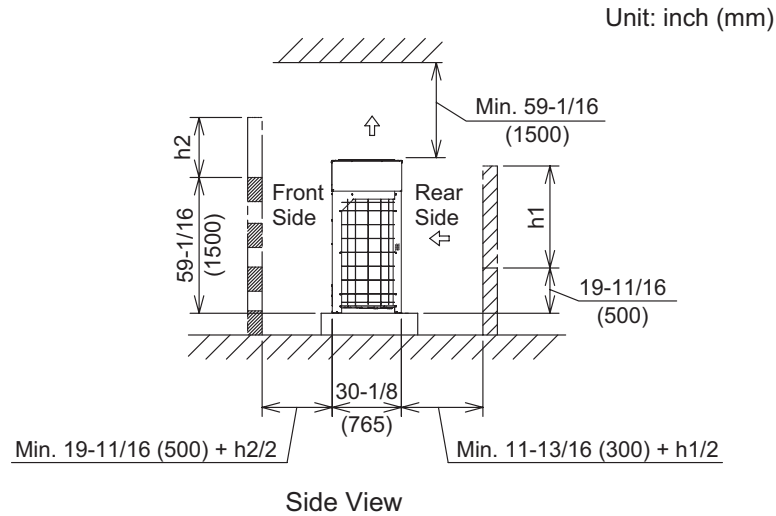
Outdoor Heat Exchanger and Fan

Model		(H,Y)VAHR216B(3,4,5)2S	(H,Y)VAHR240B(3,4,5)2S	(H,Y)VAHR264B(3,4,5)2S	(H,Y)VAHR288B(3,4,5)2S	(H,Y)VAHR312B(3,4,5)2S
Heat Exchanger Type		Multi-Pass Cross Finned Tube				
Tube Material		Copper Tube				
Outer Diameter	φin (mm)	1/4 (7.0)	1/4 (7.0)	1/4 (7.0)	1/4 (7.0)	1/4 (7.0)
Rows		3+3	3+3	3+3	3+3	3+3
Number of Tube/Coil		174+174	174+174	174+174	174+174	174+174
Fin Material		Aluminum				
Pitch	in (mm)	1/16 (1.7)	1/16 (1.7)	1/16 (1.7)	1/16 (1.7)	1/16 (1.7)
Maximum Operating Pressure	psi (MPa)	601 (4.15)	601 (4.15)	601 (4.15)	601 (4.15)	601 (4.15)
Total Face Area	ft ² (m ²)	33.58+25.40 (3.12+2.36)	33.58+33.58 (3.12+3.12)	33.58+33.58 (3.12+3.12)	33.58+33.58 (3.12+3.12)	38.53+33.58 (3.58+3.12)
Number of Coil/Unit		3	4	4	4	4
Outdoor Fan		Large Diameter Fan (Propeller Fan)				
Number/Unit		3	4	4	4	4
Outer Diameter	φin (mm)	21-7/16 + 21-7/16 + 25-3/8 (544+544+644)	21-7/16 + 21-7/16 + 21-7/16 + 21-7/16 (544+544+544+544)			25-3/8 + 25-3/8 + 21-7/16 + 21-7/16 (644+644+544+544)
Nominal Airflow	cfm (m ³ /min)	9037+6787 (256+180)	9037+9037 (256+256)	9037+9037 (256+256)	9037+9037 (256+256)	11614+9037 (329+256)
Outdoor Fan Motor		Drip-Proof Type Enclosure				
Starting Method		Inverter				
Nominal Output	W	390+390+420	390+390+390+390	390+390+390+390	390+390+390+390	480+480+390+390
Quantity		3	4	4	4	4
Insulation Class		E	E	E	E	E

Model		(H,Y)VAHR336B(3,4,5)2S	(H,Y)VAHR360B(3,4,5)2S	(H,Y)VAHR384B(3,4,5)2S	(H,Y)VAHR408B(3,4,5)2S	(H,Y)VAHR432B(3,4,5)2S
Heat Exchanger Type		Multi-Pass Cross Finned Tube				
Tube Material		Copper Tube				
Outer Diameter	φin (mm)	1/4 (7.0)	1/4 (7.0)	1/4 (7.0)	1/4 (7.0)	1/4 (7.0)
Rows		3+3	3+3	3+3+3	3+3+3	3+3+3
Number of Tube/Coil		174+174	174+174	174+174+174	174+174+174	174+174+174
Fin Material		Aluminum				
Pitch	in (mm)	1/16 (1.7)	1/16 (1.7)	1/16 (1.7)	1/16 (1.7)	1/16 (1.7)
Maximum Operating Pressure	psi (MPa)	601 (4.15)	601 (4.15)	601 (4.15)	601 (4.15)	601 (4.15)
Total Face Area	ft ² (m ²)	38.53+33.58 (3.58+3.12)	38.53+38.53 (3.58+3.58)	33.58+33.58+33.58 (3.12+3.12+3.12)	33.58+33.58+33.58 (3.12+3.12+3.12)	33.58+33.58+33.58 (3.12+3.12+3.12)
Number of Coil/Unit		4	4	6	6	6
Outdoor Fan		Large Diameter Fan (Propeller Fan)				
Number/Unit		4	4	6	6	6
Outer Diameter	φin (mm)	25-3/8 + 25-3/8 + 21-7/16 + 21-7/16 (644+644+544+544)	25-3/8 + 25-3/8 + 25-3/8 + 25-3/8 (644+644+644+644)	21-7/16 + 21-7/16 + 21-7/16 + 21-7/16 + 21-7/16 + 21-7/16 (544+544+544+544+544+544)		
Nominal Airflow	cfm (m ³ /min)	12284+9037 (348+256)	11614+11614 (329+329)	9037+9037+9037 (256+256+256)	9037+9037+9037 (256+256+256)	9037+9037+9037 (256+256+256)
Outdoor Fan Motor		Drip-Proof Type Enclosure				
Starting Method		Inverter				
Nominal Output	W	560+560+390+390	560+560+480+480	390+390+390+390+390+390		
Quantity		4	4	6	6	6
Insulation Class		E	E	E	E	E

2.7 Service Space

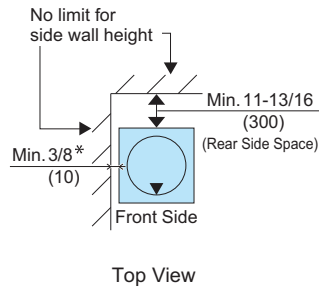
The outdoor unit needs to have a service space as follows.



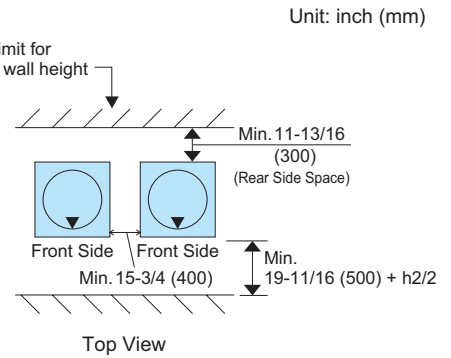
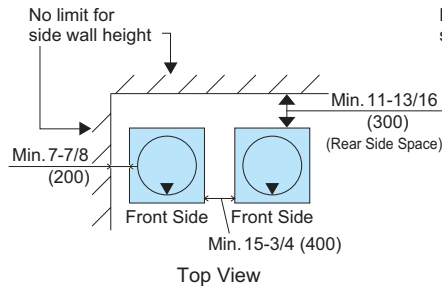
- If there are no walls on the front and rear sides, clearance for service access is required as follows:
 Front Side: Minimum 19-11/16 inches (500mm)
 Rear Side: Minimum 11-13/16 inches (300mm)
 Right and Left Sides: Minimum 3/8 inch (10mm)
 (when the snow protection hood (optional part) or the air outlet duct (field supplied) is mounted to the unit, a minimum gap of 1-15/16 inches (50mm) is required.)
- If the wall on the front side is over 59-1/16 inches (1,500mm) high, a clearance of (19-11/16 inches (500mm) + h2/2) is required for the front side.
- If the wall on the rear side is over 19-11/16 inches (500mm) high, a clearance of (11-13/16 inches (300mm) + h1/2) is required for the rear side.
- When the units are surrounded by walls on more than two sides, observe the necessary clearance as shown in the following illustrations.
- For walls on more than two sides, secure adequate clearance for service access space as shown in the following illustrations.
- If the space between the unit and an obstacle above the unit is less than 59-1/16 inches (1,500mm) or the space above the unit is closed, set up the duct at the air outlet side in order to prevent a short circuit.
- Make sure there is enough space to service the unit, if any of the four sides might need to be opened or removed.

2.7.1 Walls on Two Sides

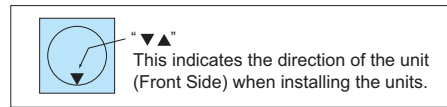
• Single Installation



• Multiple / Serial Installation

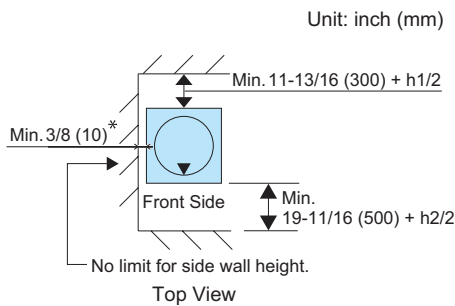


*If using the snow protection hood (optional part) or the air outlet duct (field supplied) is adopted, a minimum clearance of 2 inches (50mm) is required.



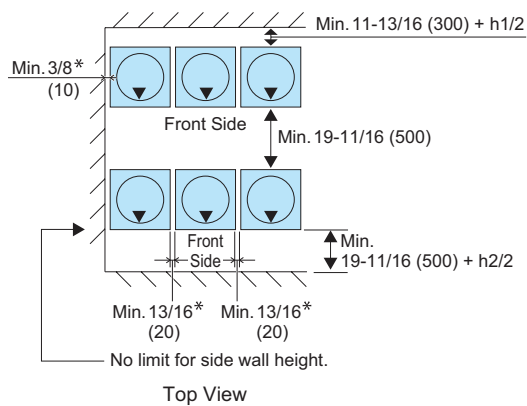
2.7.2 Walls on Three Sides

• Single Installation

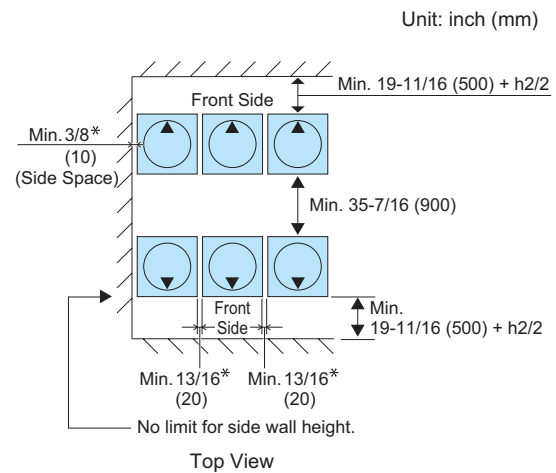


• Multiple / Serial Installation

Installation in the Same Direction



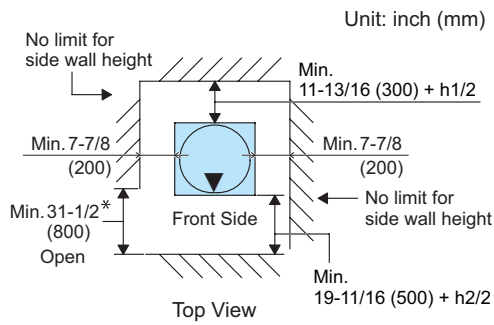
Rear to Rear Installation



* If the snow protection hood (optional part) or the air outlet duct (field supplied) is adopted, a minimum clearance of 2 inches (50mm) is required.

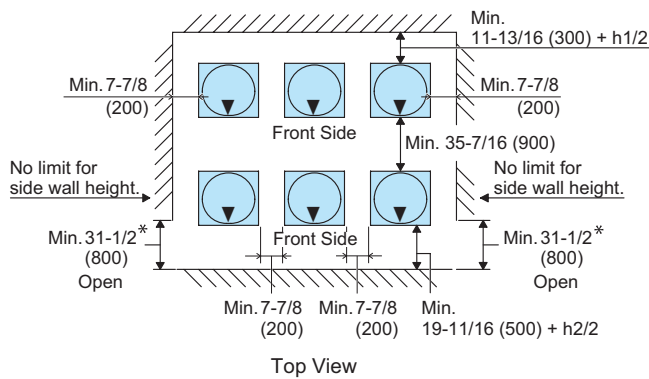
2.7.3 Walls on Four Sides

• Single Installation

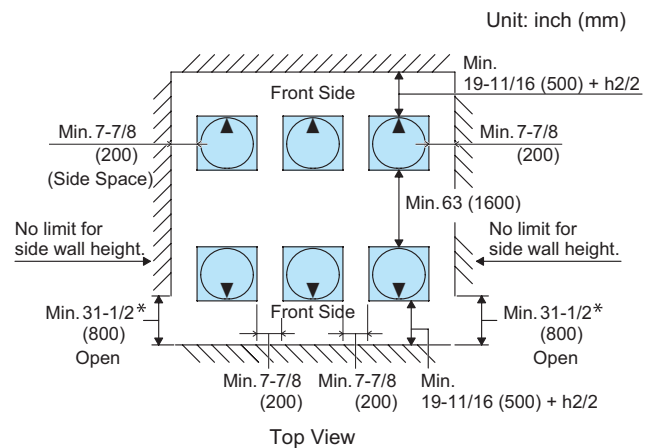


• Multiple / Serial Installation

Installation in the Same Direction



Rear to Rear Installation



* Partly open a wall if the unit is surrounded by walls on four sides.

NOTICE:

Keep the upper side open to prevent mutual interference between the inlet and outlet air of each outdoor unit.

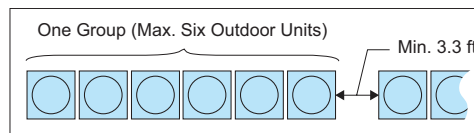
The figure indicates sufficient clearance around the outdoor units for operation and maintenance at typical installation conditions as follows.

[Operation Mode: Cooling Operation, Outside Temp.: 95°F (35°C)]

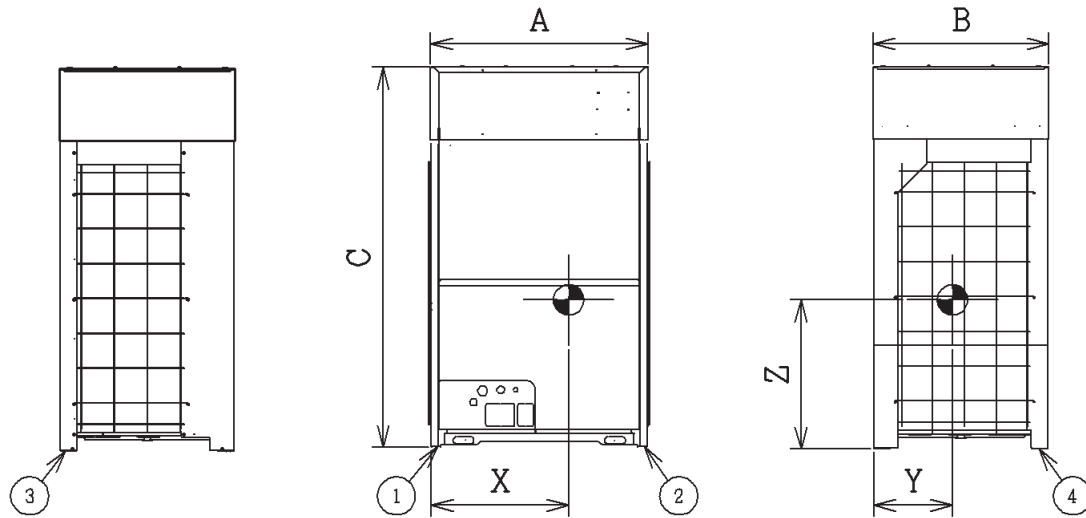
In the following situations when compared to the installation condition, an appropriate clearance dimension is required by calculating air flow current when

- the outdoor unit ambient temperature is higher
- a short circuit is likely to occur

For the multiple installation of units, one group will consist of a maximum of six outdoor units. Maintain a distance of 3.3 ft (1m) between each unit group.



2.8 Center of Gravity

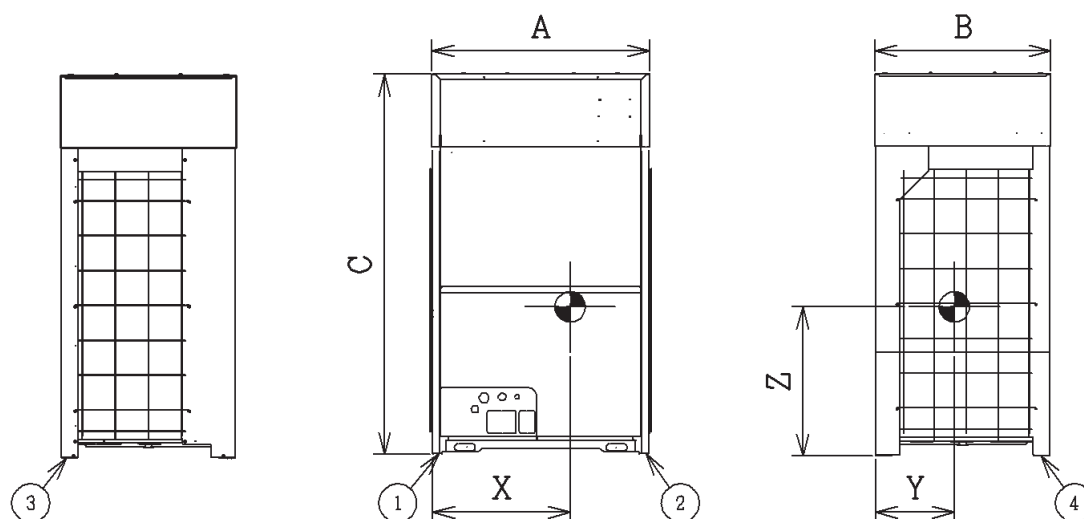


208 / 230V

Model	Voltage Type	Net Weight (lbs[kg])	Center of Gravity (inch[mm])			Outer Dimensions (inch[mm])			
			X	Y	Z	A	B	C	
(H,Y)VAHR072B32S	208/230V	527 [239]	21-1/4 [540]	13 [330]	24-5/8 [625]	38-3/8 [975]	30-1/2 [774]	66-1/4 [1683]	
(H,Y)VAHR096B32S		598 [271]	25-13/16 [655]	13-3/8 [340]	26-9/16 [675]	48-5/8 [1235]			
(H,Y)VAHR120B32S		730 [331]	27-3/8 [695]	12-13/16 [325]	25 [635]				48-5/8 [1235]
(H,Y)VAHR144B32S		732 [332]							
(H,Y)VAHR168B32S		860 [390]	32-7/8 [835]		24-3/16 [615]	64 [1625]			
(H,Y)VAHR192B32S									

Model	Voltage Type	Amplitude Value ($\times 10^{-3}$ inch [μm])				Outer Dimensions (inch [mm])			
		①	②	③	④	①	②	③	④
(H,Y)VAHR072B32S	208/230V	0.12 [3]	0.24 [6]	0.47 [12]	0.12 [3]	79.0	85.0	91.1	79.0
(H,Y)VAHR096B32S		0.20 [5]	0.35 [9]	0.59 [15]	0.24 [6]	86.7	91.8	96.3	88.3
(H,Y)VAHR120B32S		0.20 [5]	0.35 [9]	0.59 [15]	0.24 [6]	87.9	93.0	97.5	89.5
(H,Y)VAHR144B32S		0.20 [5]	0.35 [9]	0.59 [15]	0.24 [6]	87.9	93.0	97.5	89.5
(H,Y)VAHR168B32S		0.43 [11]	0.20 [5]	0.71 [18]	0.31 [8]	89.6	82.8	93.9	86.9
(H,Y)VAHR192B32S		0.43 [11]	0.20 [5]	0.71 [18]	0.31 [8]	90.5	83.7	94.8	87.8

PRODUCT SPECIFICATION



460V, 575V

Model	Voltage Type	Net Weight (lbs[kg])	Center of Gravity (inch[mm])			Outer Dimensions (inch[mm])		
			X	Y	Z	A	B	C
(H,Y)VAHR072B42S (H,Y)VAHR072B52S	460V, 575V	534 [242]	21-7/16 [545]	13 [330]	25 [635]	38-3/8 [975]	30-1/2 [774]	66-1/4 [1683]
(H,Y)VAHR096B42S (H,Y)VAHR096B52S		611 [277]	26 [660]	13-3/8 [340]	26-15/16 [685]	48-5/8 [1235]		
(H,Y)VAHR120B42S (H,Y)VAHR120B52S		734 [333]	27-3/8 [695]	12-13/16 [325]	25-3/8 [645]			
(H,Y)VAHR144B42S (H,Y)VAHR144B52S		737 [334]						
(H,Y)VAHR168B42S (H,Y)VAHR168B52S		860 [390]	33-1/16 [840]		24-5/8 [625]	64 [1625]		
(H,Y)VAHR192B42S (H,Y)VAHR192B52S								

Model	Voltage Type	Amplitude Value ($\times 10^{-3}$ inch [μm])				Outer Dimensions (inch [mm])			
		①	②	③	④	①	②	③	④
(H,Y)VAHR072B42S (H,Y)VAHR072B52S	460V, 575V	0.24 [6]	0.28 [7]	0.12 [3]	0.28 [7]	85.0	86.4	79.0	86.4
(H,Y)VAHR096B42S (H,Y)VAHR096B52S		0.20 [5]	0.12 [3]	0.12 [3]	0.12 [3]	86.7	82.3	82.3	82.3
(H,Y)VAHR120B42S (H,Y)VAHR120B52S		0.28 [7]	0.24 [6]	0.31 [8]	0.20 [5]	91.6	90.2	92.7	88.7
(H,Y)VAHR144B42S (H,Y)VAHR144B52S		0.28 [7]	0.24 [6]	0.31 [8]	0.20 [5]	91.6	90.2	92.7	88.7
(H,Y)VAHR168B42S (H,Y)VAHR168B52S		0.08 [3]	0.16 [8]	0.31 [27]	0.04 [6]	75.7	81.7	87.7	69.7
(H,Y)VAHR192B42S (H,Y)VAHR192B52S		0.08 [3]	0.16 [8]	0.31 [27]	0.04 [6]	75.7	81.7	87.7	69.7

2.9 Electrical Data

208/230V 60Hz

Model	Unit Main Power			Applicable Voltage		Power Supply		Compressor		Fan Motor
	VOL	PH	Hz	Max.	Min.	MCA [A]	MOP [A]	MOC [A]	LRA [A]	OPT [kW]
(H,Y)VAHR072B32S	208/230	3	60	253	188	29/26	40/40	22.6	50	0.75
(H,Y)VAHR096B32S						39/35	50/50	30.7	50	0.75+0.75
(H,Y)VAHR120B32S						46/42	60/50	20.2+20.2	54+54	0.75+0.75
(H,Y)VAHR144B32S						58/52	70/70	25.5+25.5	54+54	0.75+0.75
(H,Y)VAHR168B32S						65/59	80/80	28.6+28.6	50+50	0.75+0.75
(H,Y)VAHR192B32S						76/68	90/90	33.4+33.4	50+50	0.75+0.75
(H,Y)VAHR216B32S						58+29 /52+26	70+40 /70+40	25.5+25.5+22.6	54+54+50	0.75+0.75+0.75
(H,Y)VAHR240B32S						46+46 /42+42	60+60 /50+50	20.2+20.2+20.2+20.2	54+54+ 54+54	0.75+0.75+0.75+0.75
(H,Y)VAHR264B32S						58+46 /52+42	70+60 /70+50	25.5+25.5+20.2+20.2	54+54+ 54+54	0.75+0.75+0.75+0.75
(H,Y)VAHR288B32S						58+58 /52+52	70+70 /70+70	25.5+25.5+25.5+25.5	54+54+ 54+54	0.75+0.75+0.75+0.75
(H,Y)VAHR312B32S						65+58 /59+52	80+70 /80+70	28.6+28.6+25.5+25.5	50+50 +54+54	0.75+0.75+0.75+0.75
(H,Y)VAHR336B32S						76+58 /68+52	90+70 /90+70	33.4+33.4+25.5+25.5	50+50 +54+54	0.75+0.75+0.75+0.75
(H,Y)VAHR360B32S						76+65 /68+59	90+80 /90+80	33.4+33.4+28.6+28.6	50+50 +50+50	0.75+0.75+0.75+0.75
(H,Y)VAHR384B32S						58+46+46 /52+42+42	70+60+60 /70+50+50	25.5+25.5+20.2+20.2+20.2+20.2	54+54+54+ 54+54+54	0.75+0.75+0.75+0.75+0.75+0.75
(H,Y)VAHR408B32S						58+58+46 /52+52+42	70+70+60 /70+70+50	25.5+25.5+25.5+25.5+20.2+20.2	54+54+54+ 54+54+54	0.75+0.75+0.75+0.75+0.75+0.75
(H,Y)VAHR432B32S						58+58+58 /52+52+52	70+70+70 /70+70+70	25.5+25.5+25.5+25.5+25.5+25.5	54+54+54+ 54+54+54	0.75+0.75+0.75+0.75+0.75+0.75

460V 60Hz

Model	Unit Main Power			Applicable Voltage		Power Supply		Compressor		Fan Motor
	VOL	PH	Hz	Max.	Min.	MCA [A]	MOP [A]	MOC [A]	LRA [A]	OPT [kW]
(H,Y)VAHR072B42S	460	3	60	506	414	15	20	11.5	47	0.75
(H,Y)VAHR096B42S						22	30	17.1	47	0.75+0.75
(H,Y)VAHR120B42S						24	30	10.4+10.4	32+32	0.75+0.75
(H,Y)VAHR144B42S						30	35	13.2+13.2	32+32	0.75+0.75
(H,Y)VAHR168B42S						34	40	14.8+14.8	47+47	0.75+0.75
(H,Y)VAHR192B42S						39	50	17.3+17.3	47+47	0.75+0.75
(H,Y)VAHR216B42S						30+15	35+20	13.2+13.2+11.5	32+32+47	0.75+0.75+0.75
(H,Y)VAHR240B42S						24+24	30+30	10.4+10.4+10.4+10.4	32+32+ 32+32	0.75+0.75+0.75+0.75
(H,Y)VAHR264B42S						30+24	35+30	13.2+13.2+10.4+10.4	32+32+ 32+32	0.75+0.75+0.75+0.75
(H,Y)VAHR288B42S						30+30	35+35	13.2+13.2+13.2+13.2	32+32+ 32+32	0.75+0.75+0.75+0.75
(H,Y)VAHR312B42S						34+30	40+35	14.8+14.8+13.2+13.2	47+47+ 32+32	0.75+0.75+0.75+0.75
(H,Y)VAHR336B42S						39+30	50+35	17.3+17.3+13.2+13.2	47+47+ 32+32	0.75+0.75+0.75+0.75
(H,Y)VAHR360B42S						39+34	50+40	17.3+17.3+14.8+14.8	47+47+ 47+47	0.75+0.75+0.75+0.75
(H,Y)VAHR384B42S						30+24+24	35+30+30	13.2+13.2+10.4+10.4+10.4+10.4	32+32+32+ 32+32+32	0.75+0.75+0.75+0.75+0.75+0.75
(H,Y)VAHR408B42S						30+30+24	35+35+30	13.2+13.2+13.2+13.2+10.4+10.4	32+32+32+ 32+32+32	0.75+0.75+0.75+0.75+0.75+0.75
(H,Y)VAHR432B42S						30+30+30	35+35+35	13.2+13.2+13.2+13.2+13.2+13.2	32+32+32+ 32+32+32	0.75+0.75+0.75+0.75+0.75+0.75

VOL: Rated Unit Power Supply Voltage (V)
 PH: Phase (φ)
 HZ: Frequency (Hz)
 MCA: Minimum Circuit Ampacity (A)
 MOP: Maximum Overcurrent Protection (A)

MOC: Maximum Operating Current (A)
 LRA: Locked Rotor Ampacity (A)
 OPT: Rated Motor Output (kW)

NOTES:

- Power supply voltage must be satisfied with the following.
 Supply Voltage: Rated Voltage within ±10%
 Starting Voltage: Rated Voltage within -15%
 Operating Voltage: Rated Voltage within ±10%
 Imbalance between Phases: Within 3%
- The compressor is started by an inverter, resulting in extremely low starting current.

575V 60Hz

Model	Unit Main Power			Applicable Voltage		Power Supply		Compressor		Fan Motor
	VOL	PH	Hz	Max.	Min.	MCA [A]	MOP [A]	MOC [A]	LRA [A]	OPT [kW]
(H,Y)VAHR072B52S	575	3	60	660	518	12	15	9.1	24.0	0.75
(H,Y)VAHR096B52S						16	25	12.5	24.0	0.75
(H,Y)VAHR120B52S						19	25	8.3+8.3	19.5+19.5	0.75+0.75
(H,Y)VAHR144B52S						24	30	10.5+10.5	19.5+19.5	0.75+0.75
(H,Y)VAHR168B52S						27	35	11.8+11.8	24.0+24.0	0.75+0.75
(H,Y)VAHR192B52S						32	40	13.8+13.8	24.0+24.0	0.75+0.75
(H,Y)VAHR216B52S						24+12	30+15	10.5+9.1	19.5+19.5+24.0	0.75+0.75+0.75
(H,Y)VAHR240B52S						19+19	25+25	8.3+8.3+8.3+8.3	19.5+19.5+ 19.5+19.5	0.75+0.75+0.75+0.75
(H,Y)VAHR264B52S						24+19	30+25	10.5+10.5+8.3+8.3	19.5+19.5+ 19.5+19.5	0.75+0.75+0.75+0.75
(H,Y)VAHR288B52S						24+24	30+30	10.5+10.5+10.5+10.5	19.5+19.5+ 19.5+19.5	0.75+0.75+0.75+0.75
(H,Y)VAHR312B52S						27+24	35+30	11.8+11.8+10.5+10.5	24.0+24.0+ 19.5+19.5	0.75+0.75+0.75+0.75
(H,Y)VAHR336B52S						32+24	40+30	13.8+13.8+10.5+10.5	24.0+24.0+ 19.5+19.5	0.75+0.75+0.75+0.75
(H,Y)VAHR360B52S						32+27	40+35	13.8+13.8+11.8+11.8	24.0+24.0+ 24.0+24.0	0.75+0.75+0.75+0.75
(H,Y)VAHR384B52S						24+19+19	30+25+25	10.5+10.5+8.3+8.3+8.3+8.3	19.5+19.5+19.5+ 19.5+19.5+19.5	0.75+0.75+0.75+0.75+0.75+0.75
(H,Y)VAHR408B52S						24+24+19	30+30+25	10.5+10.5+10.5+10.5+8.3+8.3	19.5+19.5+19.5+ 19.5+19.5+19.5	0.75+0.75+0.75+0.75+0.75+0.75
(H,Y)VAHR432B52S						24+24+24	30+30+30	10.5+10.5+10.5+10.5+10.5+10.5	19.5+19.5+19.5+ 19.5+19.5+19.5	0.75+0.75+0.75+0.75+0.75+0.75

VOL: Rated Unit Power Supply Voltage (V)

PH: Phase (~)

HZ: Frequency (Hz)

MCA: Minimum Circuit Ampacity (A)

MOP: Maximum Overcurrent Protection (A)

MOC: Maximum Operating Current (A)

LRA: Locked Rotor Ampacity (A)

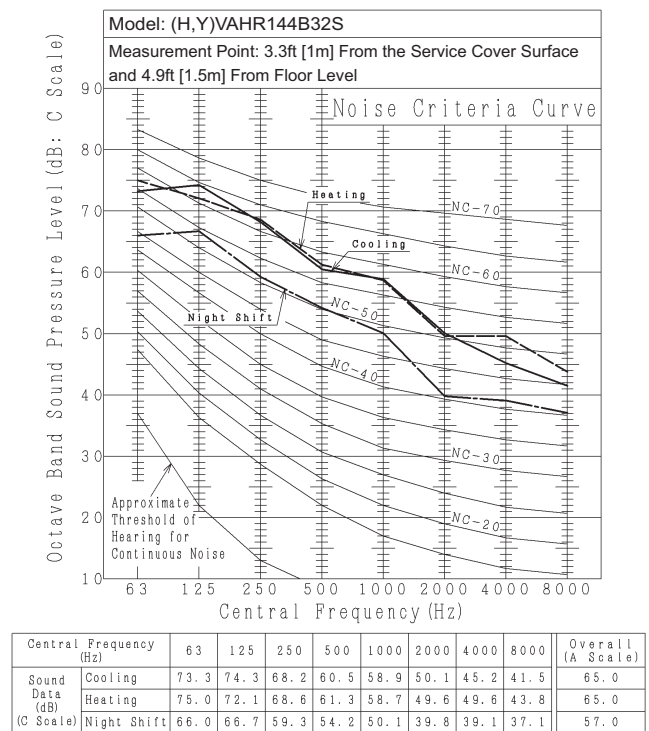
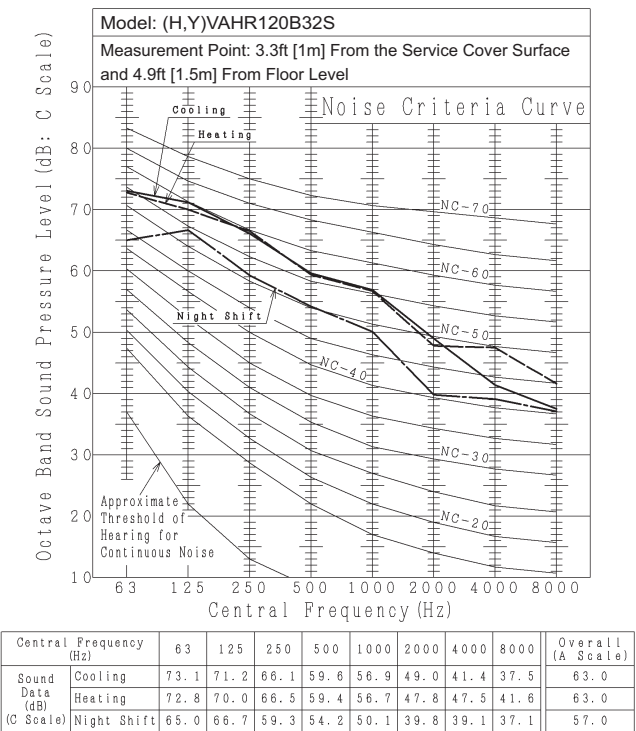
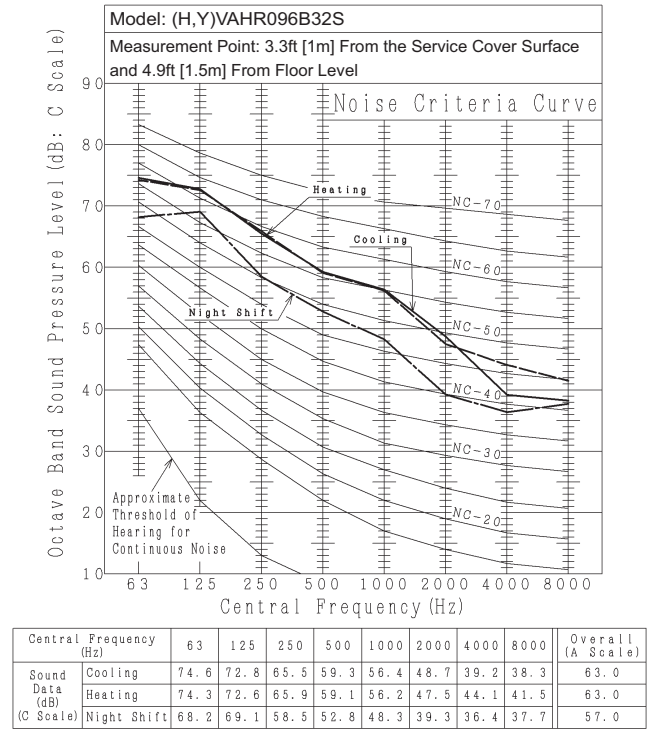
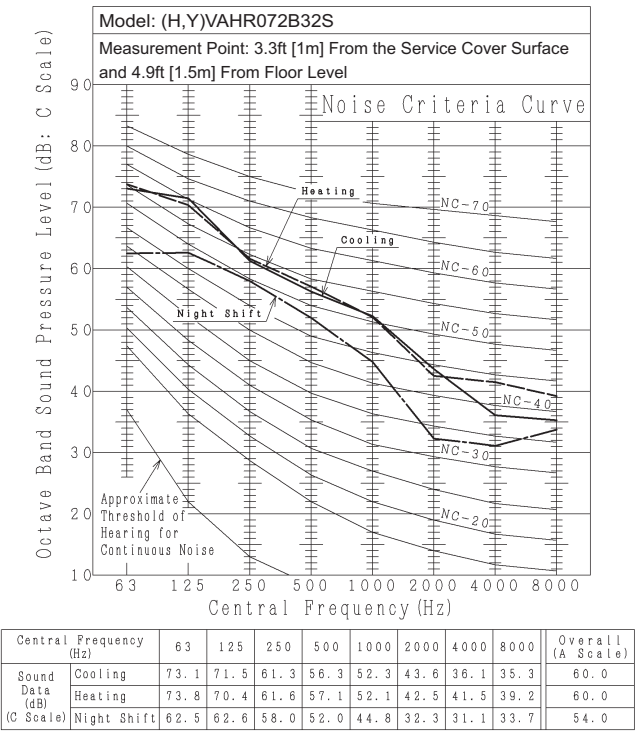
OPT: Rated Motor Output (kW)

NOTES:

- Power supply voltage must be satisfied with the following.
Supply Voltage: 575V -10%, 600V +10%
Starting Voltage: Rated Voltage within -15%
Operating Voltage: Rated Voltage within ±10%
Imbalance between Phases: Within 3%
- The compressor is started by an inverter, resulting in extremely low starting current.

2.10 Sound Data

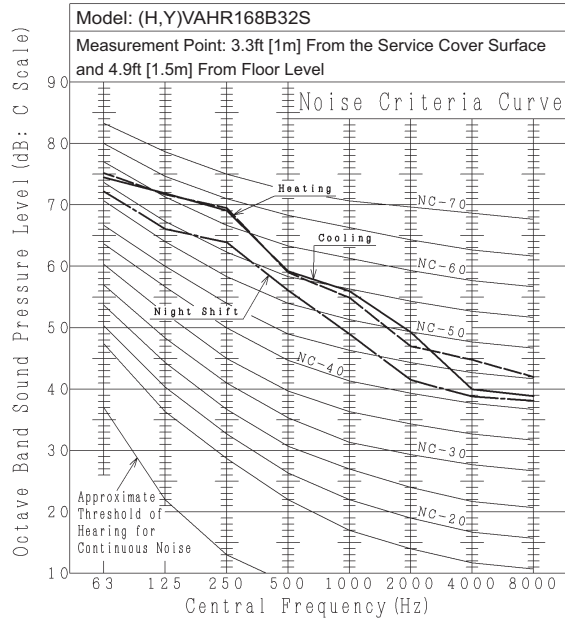
208 / 230V Type



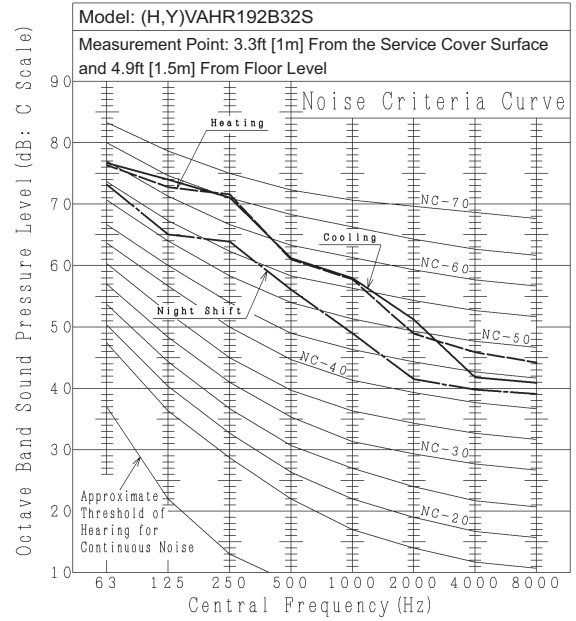
NOTICE:

The sound data is measured in an anechoic chamber. However, the actual operation sound may appear louder or with an echo because of surrounding environmental noise. Be sure to check environmental conditions before installation. The sound of the air inlet side may be 8dB higher than that of the front side.

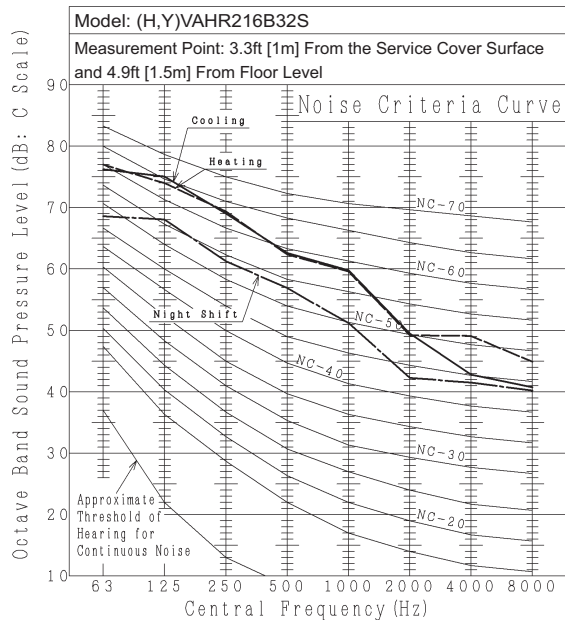
PRODUCT SPECIFICATION



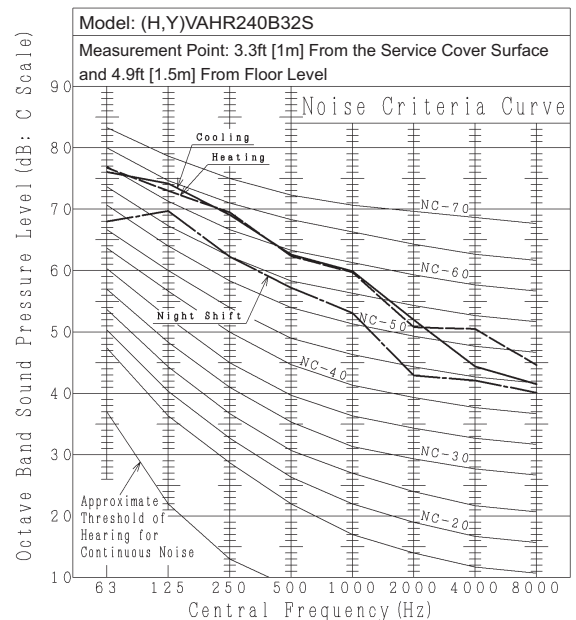
Central Frequency (Hz)	63	125	250	500	1000	2000	4000	8000	Overall (A Scale)
Sound Data (dB)									
Cooling	74.5	71.9	69.1	59.2	56.0	49.3	40.0	38.9	64.0
Heating	75.2	71.7	69.5	59.0	54.9	47.0	44.8	42.0	64.0
Night Shift	72.2	66.1	63.9	56.1	49.0	41.5	38.8	38.1	59.0



Central Frequency (Hz)	63	125	250	500	1000	2000	4000	8000	Overall (A Scale)
Sound Data (dB)									
Cooling	76.7	74.0	71.1	61.2	58.0	51.2	41.8	40.9	66.0
Heating	76.4	72.8	71.6	61.0	57.8	48.9	45.9	44.2	66.0
Night Shift	73.2	65.1	63.9	56.1	49.0	41.5	39.8	39.1	59.0



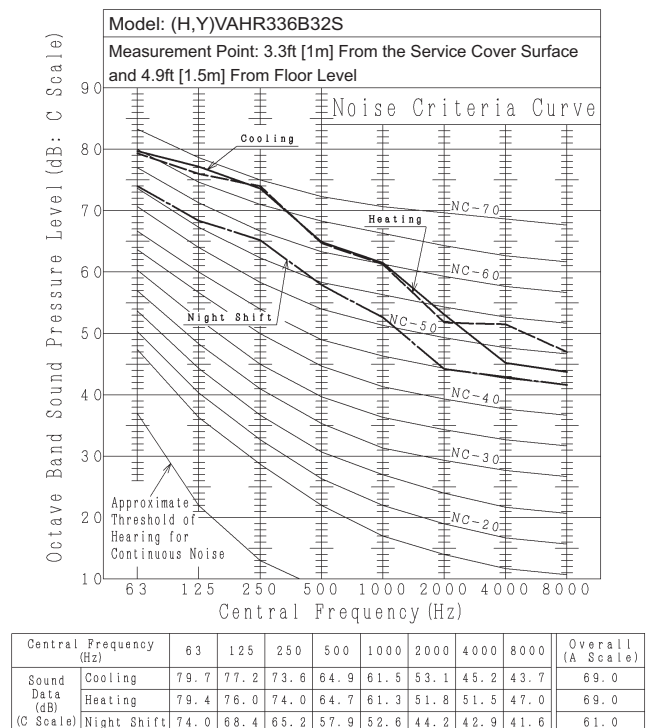
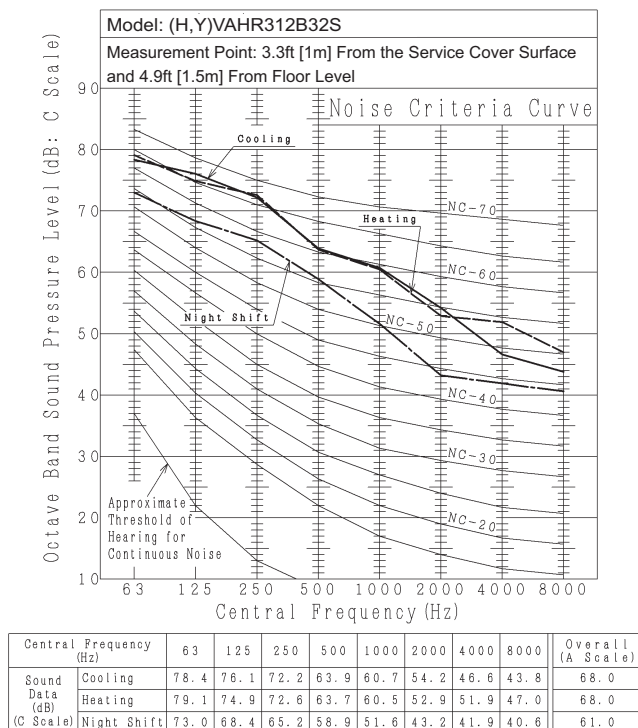
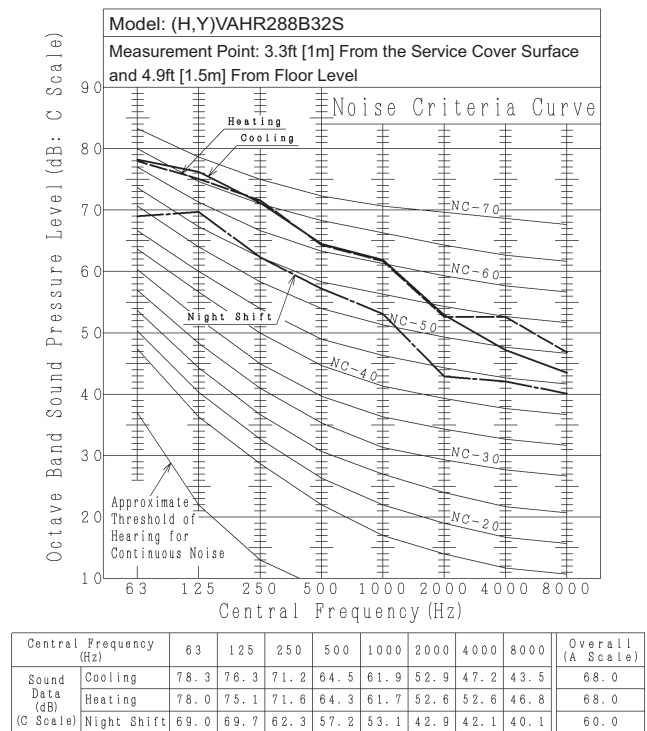
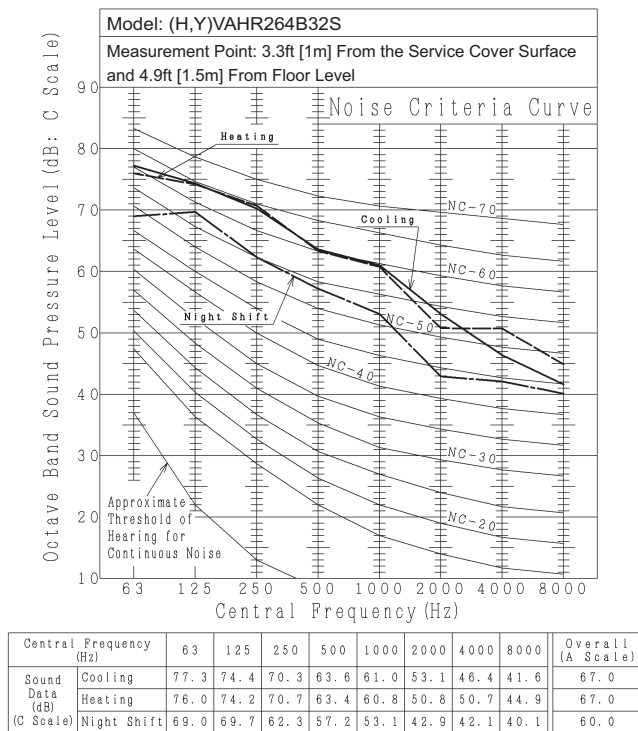
Central Frequency (Hz)	63	125	250	500	1000	2000	4000	8000	Overall (A Scale)
Sound Data (dB)									
Cooling	76.3	75.1	69.0	62.6	59.8	49.5	42.8	40.7	66.0
Heating	77.0	74.0	69.4	62.4	59.6	49.2	49.1	44.9	66.0
Night Shift	68.6	68.1	61.3	56.9	51.2	42.3	41.5	40.2	59.0



Central Frequency (Hz)	63	125	250	500	1000	2000	4000	8000	Overall (A Scale)
Sound Data (dB)									
Cooling	76.1	74.2	69.1	62.6	59.9	52.0	44.4	41.5	66.0
Heating	76.8	73.0	69.5	62.4	59.7	50.8	50.5	44.6	66.0
Night Shift	68.0	69.7	62.3	57.2	53.1	42.9	42.1	40.1	60.0

NOTICE:

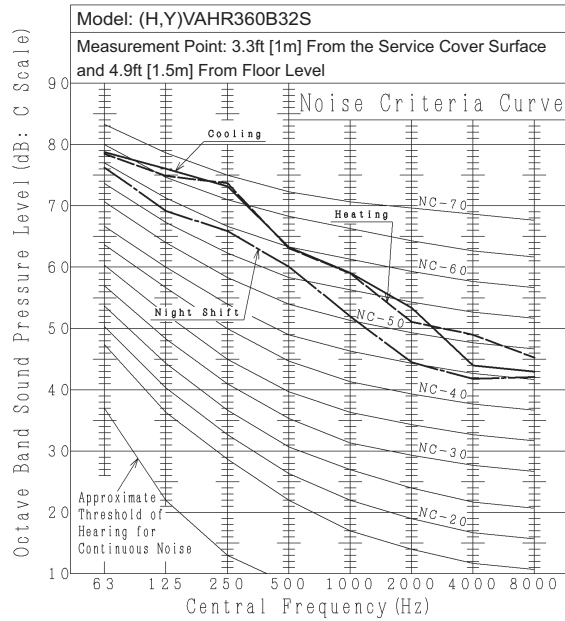
The sound data is measured in an anechoic chamber. However, the actual operation sound may appear louder or with an echo because of surrounding environmental noise. Be sure to check environmental conditions before installation. The sound of the air inlet side may be 8dB higher than that of the front side.



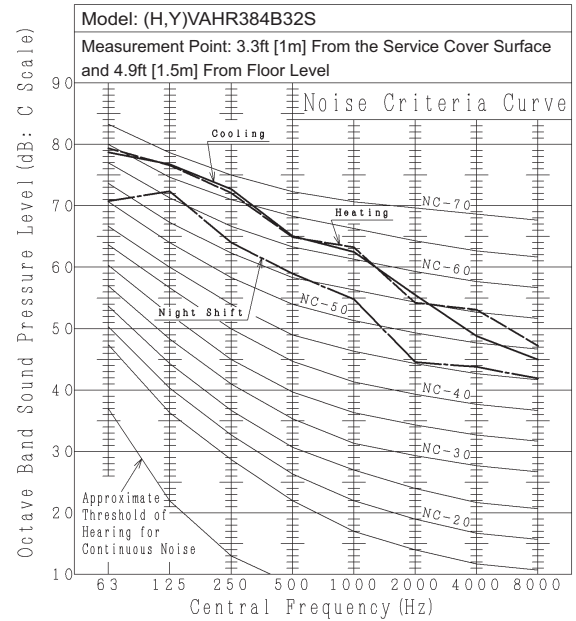
NOTICE:

The sound data is measured in an anechoic chamber. However, the actual operation sound may appear louder or with an echo because of surrounding environmental noise. Be sure to check environmental conditions before installation. The sound of the air inlet side may be 8dB higher than that of the front side.

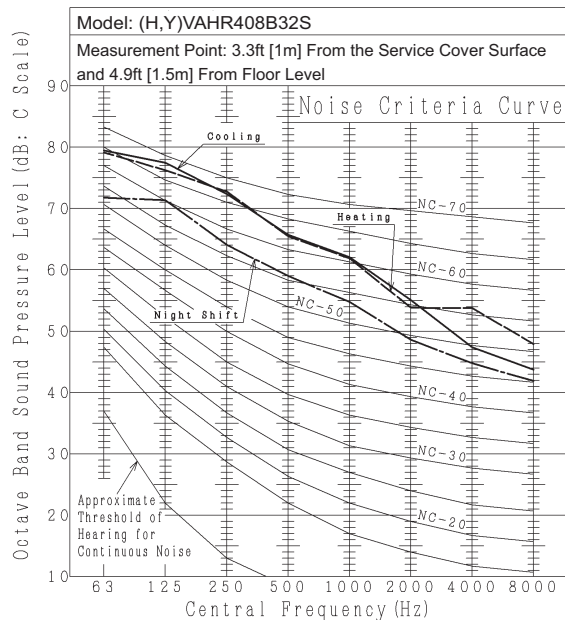
PRODUCT SPECIFICATION



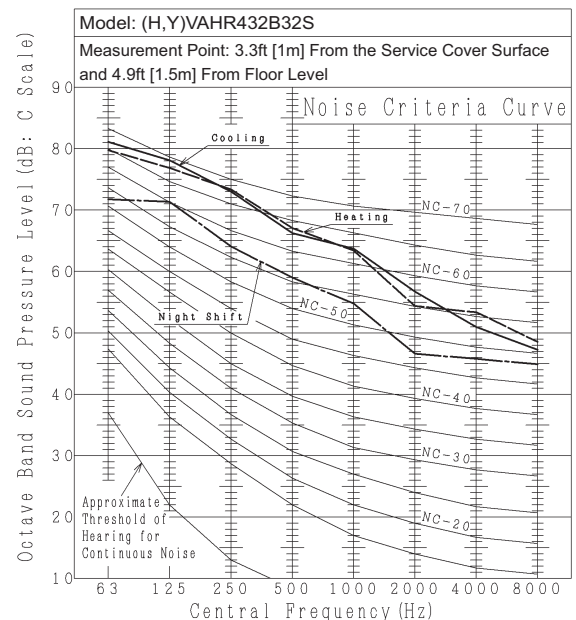
Central Frequency (Hz)	63	125	250	500	1000	2000	4000	8000	Overall (A Scale)
Sound Data (dB)									
Cooling	78.8	76.1	73.2	63.3	59.1	53.4	44.0	43.0	68.0
Heating	78.5	74.9	73.7	63.1	59.0	51.1	49.0	45.3	68.0
Night Shift	76.3	69.2	65.9	60.1	52.0	44.5	41.8	42.1	62.0



Central Frequency (Hz)	63	125	250	500	1000	2000	4000	8000	Overall (A Scale)
Sound Data (dB)									
Cooling	78.7	76.8	72.7	65.1	62.5	55.5	48.8	45.0	69.0
Heating	79.4	76.6	72.1	64.9	63.3	54.2	53.1	47.2	69.0
Night Shift	70.8	72.4	64.1	59.0	54.8	44.6	43.8	41.9	62.0



Central Frequency (Hz)	63	125	250	500	1000	2000	4000	8000	Overall (A Scale)
Sound Data (dB)									
Cooling	79.5	77.5	72.4	65.7	62.1	55.1	47.4	43.7	69.0
Heating	79.2	76.3	72.8	65.5	61.9	53.8	53.8	48.0	69.0
Night Shift	71.8	71.4	64.1	59.0	54.8	48.6	44.8	41.9	62.0

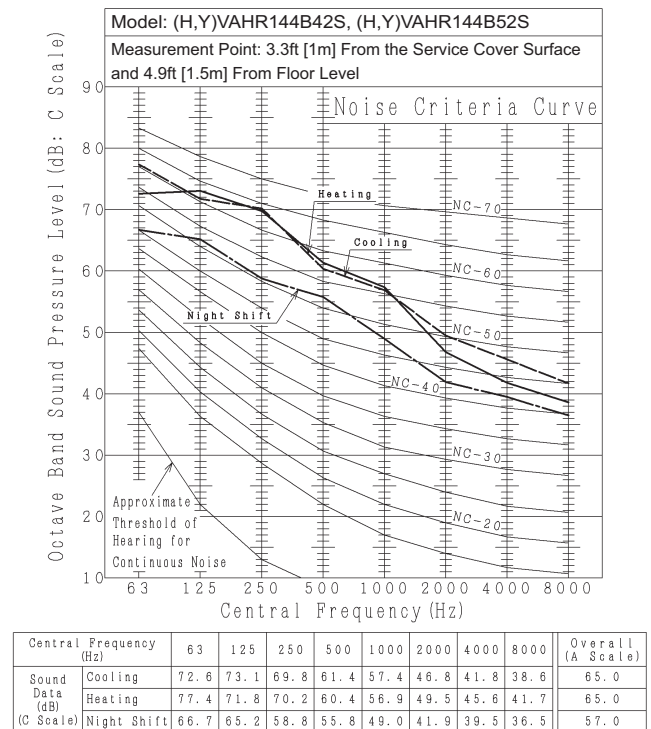
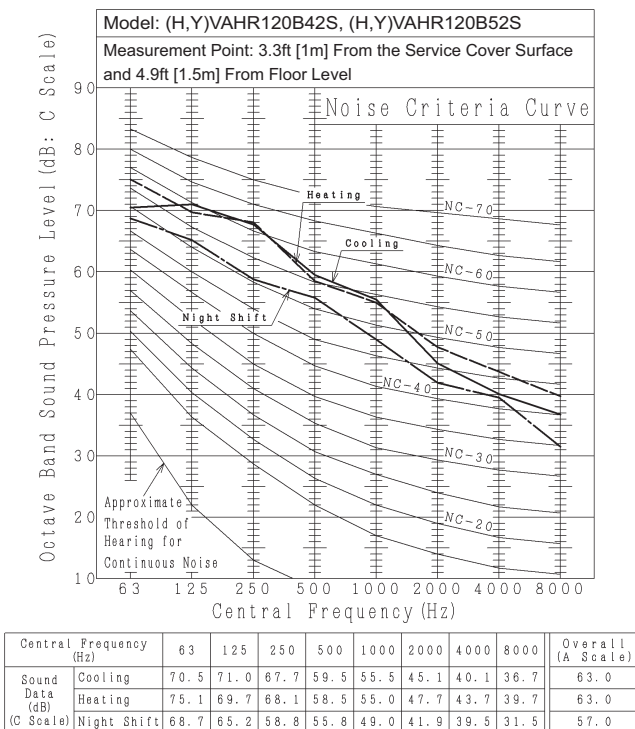
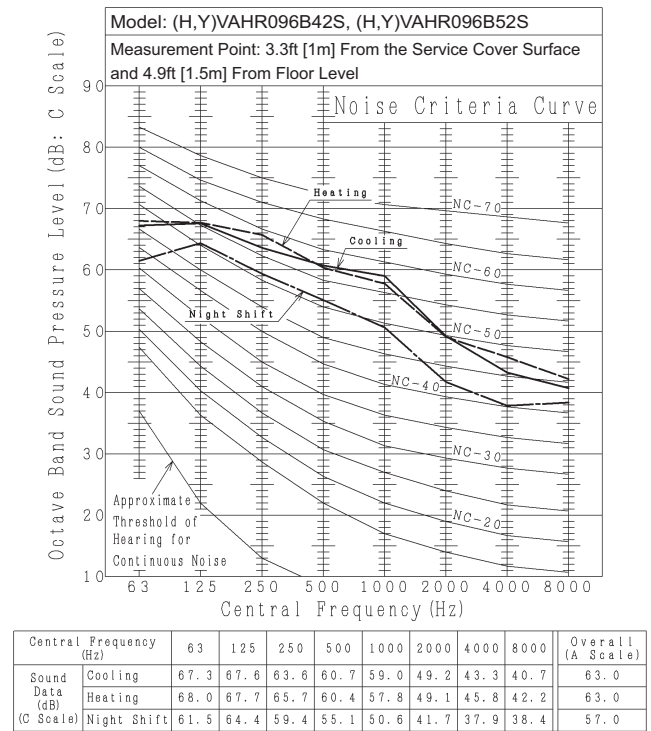
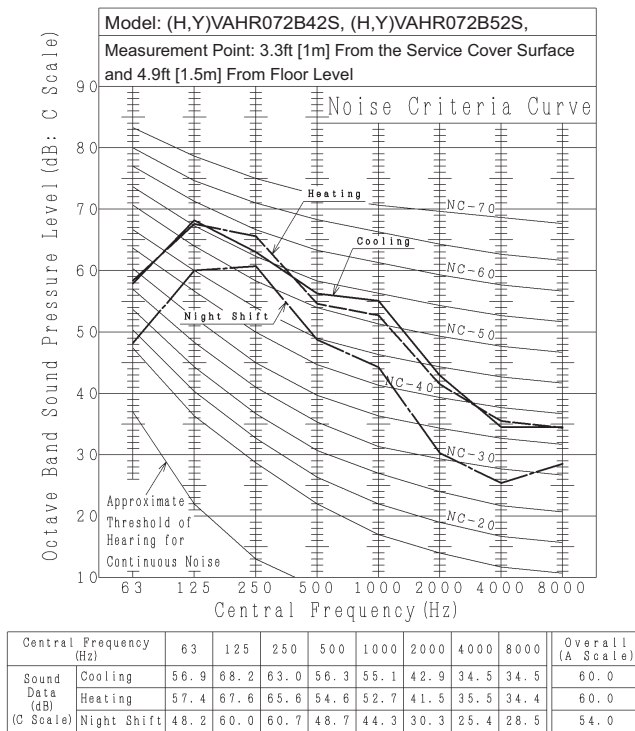


Central Frequency (Hz)	63	125	250	500	1000	2000	4000	8000	Overall (A Scale)
Sound Data (dB)									
Cooling	81.1	78.1	73.0	66.3	63.7	56.7	51.0	47.3	70.0
Heating	79.8	76.9	73.4	67.1	63.5	54.4	53.4	48.6	70.0
Night Shift	71.8	71.4	64.1	59.0	54.8	46.6	45.8	44.9	62.0

NOTICE:

The sound data is measured in an anechoic chamber. However, the actual operation sound may appear louder or with an echo because of surrounding environmental noise. Be sure to check environmental conditions before installation. The sound of the air inlet side may be 8dB higher than that of the front side.

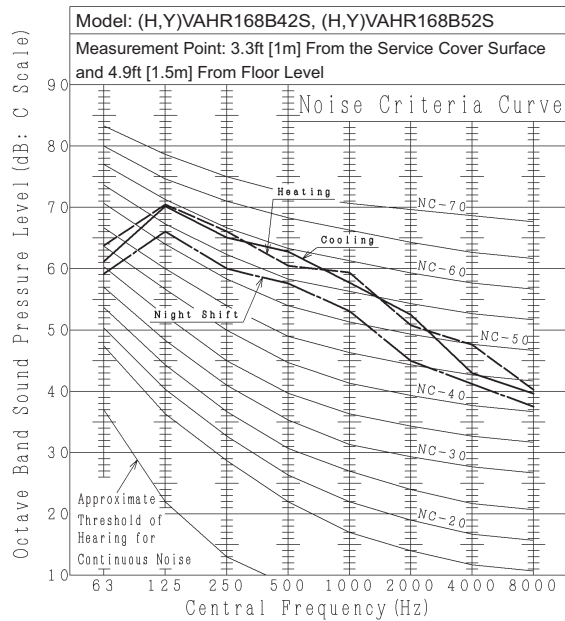
(2) 460V Type, 575V Type



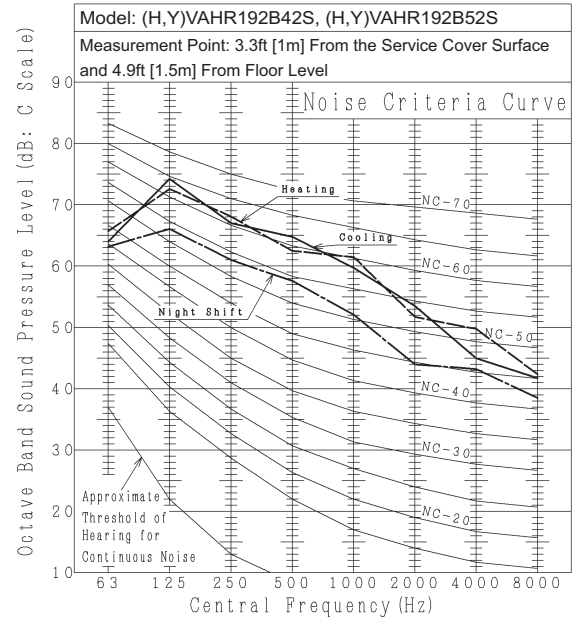
NOTICE:

The sound data is measured in an anechoic chamber. However, the actual operation sound may appear louder or with an echo because of surrounding environmental noise. Be sure to check environmental conditions before installation. The sound of the air inlet side may be 8dB higher than that of the front side.

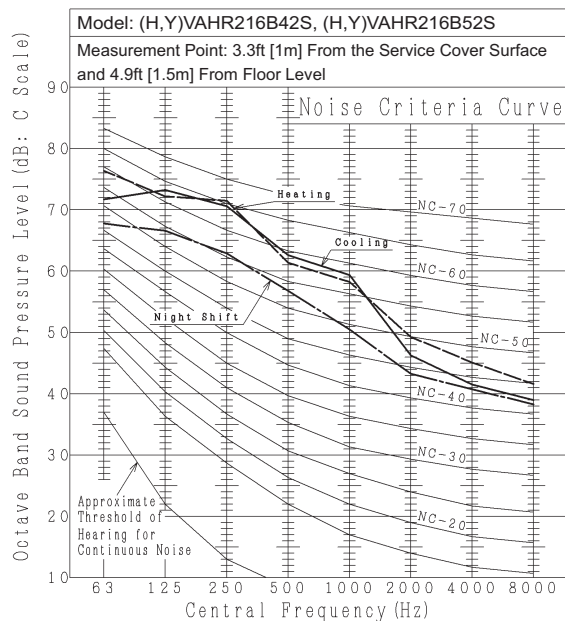
PRODUCT SPECIFICATION



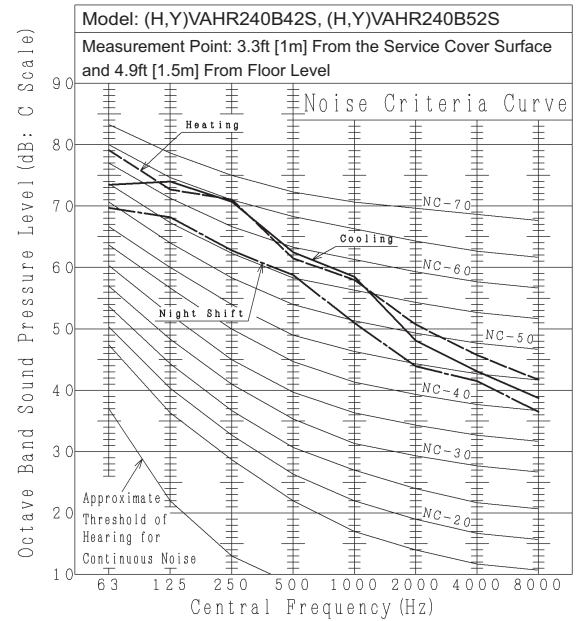
Central Frequency (Hz)	63	125	250	500	1000	2000	4000	8000	Overall (A Scale)
Sound Data (dB) (C Scale)									
Cooling	61.2	70.2	65.1	62.8	57.7	52.5	43.0	39.6	64.0
Heating	63.8	70.5	66.1	60.5	59.4	50.8	47.6	40.3	64.0
Night Shift	59.2	66.1	60.0	57.6	53.1	45.0	41.2	37.5	59.0



Central Frequency (Hz)	63	125	250	500	1000	2000	4000	8000	Overall (A Scale)
Sound Data (dB) (C Scale)									
Cooling	64.0	73.3	67.0	64.8	59.7	53.5	45.0	41.7	66.0
Heating	65.7	72.6	68.1	62.5	61.5	51.7	49.8	42.4	66.0
Night Shift	63.2	66.1	61.0	57.6	52.1	44.0	43.2	38.5	59.0



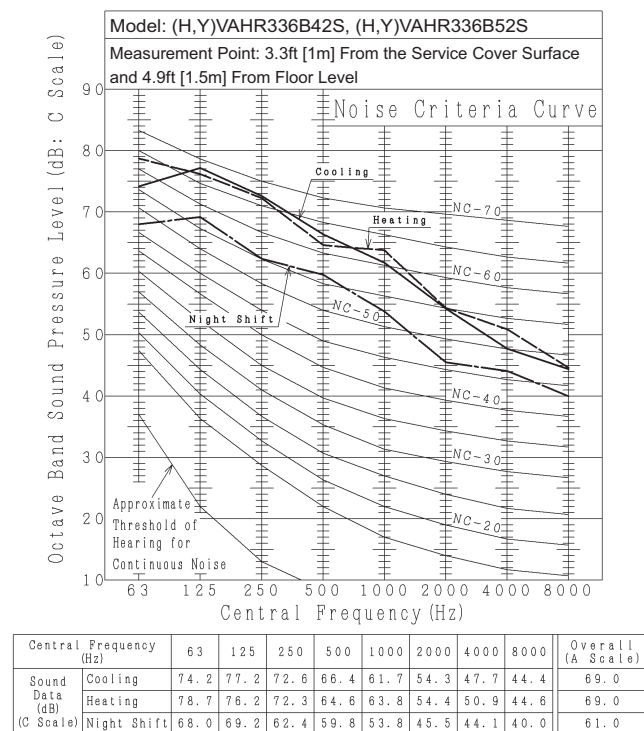
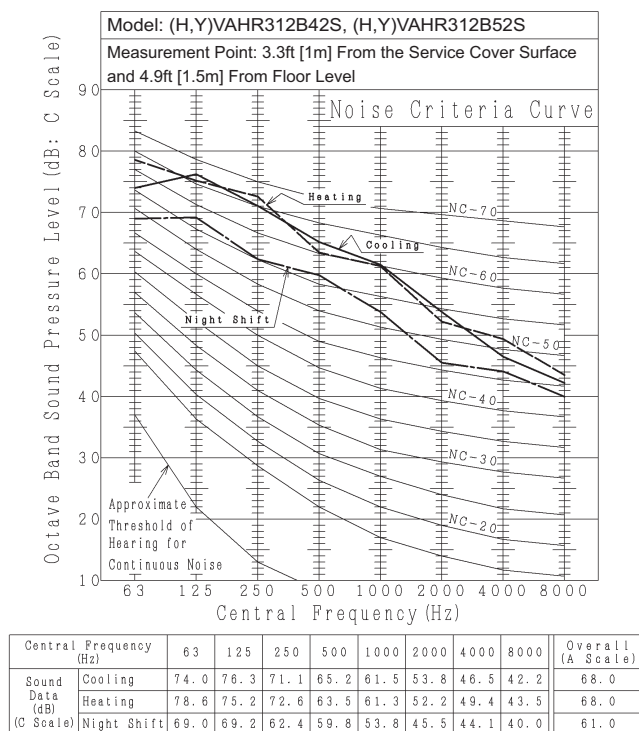
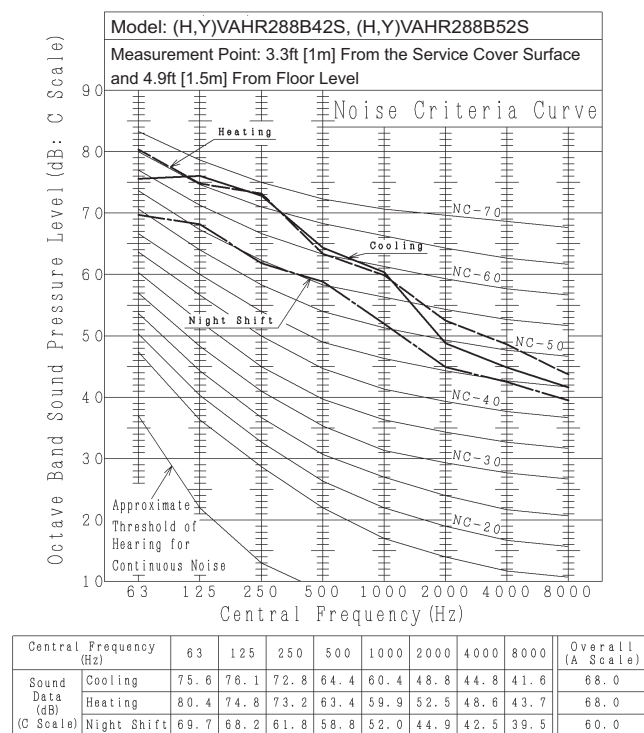
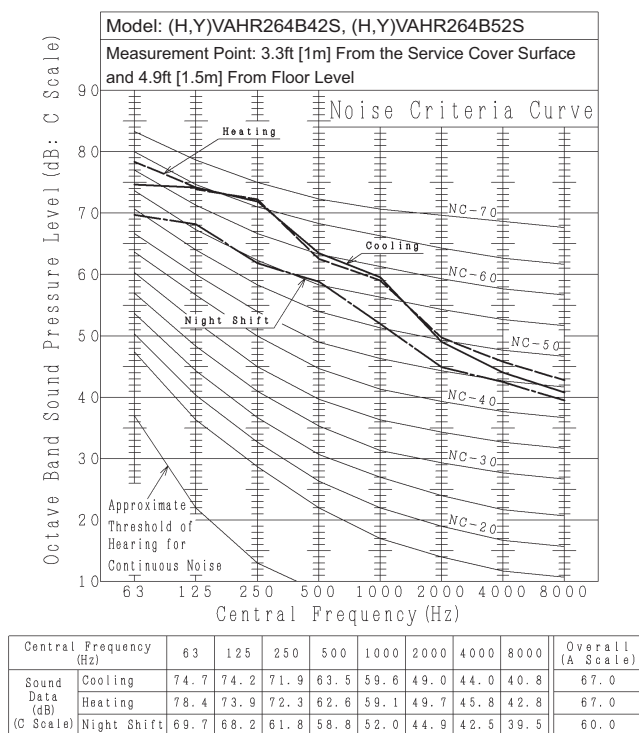
Central Frequency (Hz)	63	125	250	500	1000	2000	4000	8000	Overall (A Scale)
Sound Data (dB) (C Scale)									
Cooling	71.7	73.3	70.6	62.6	59.4	46.3	41.5	39.0	66.0
Heating	76.4	72.2	71.5	61.4	58.3	49.3	45.1	41.6	66.0
Night Shift	67.8	66.6	62.9	56.8	50.5	43.3	40.7	38.3	59.0



Central Frequency (Hz)	63	125	250	500	1000	2000	4000	8000	Overall (A Scale)
Sound Data (dB) (C Scale)									
Cooling	73.5	74.0	70.7	62.5	58.5	48.1	43.1	38.7	66.0
Heating	79.1	72.7	71.1	61.5	58.0	50.7	45.7	41.7	66.0
Night Shift	69.7	68.2	62.8	58.8	51.0	43.9	41.5	36.5	60.0

NOTICE:

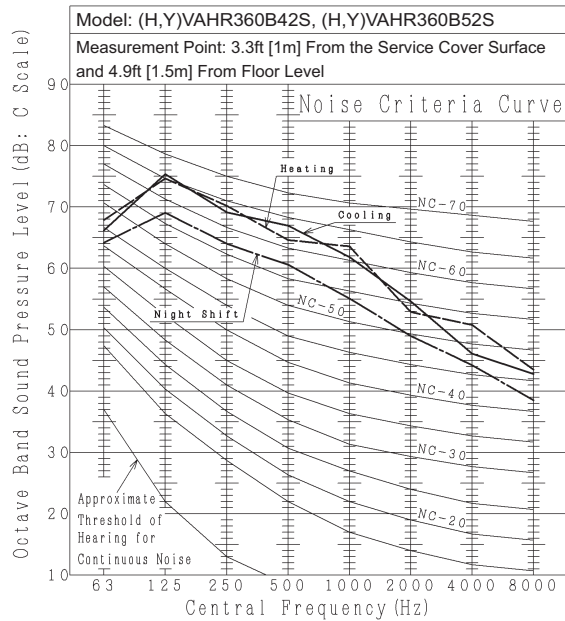
The sound data is measured in an anechoic chamber. However, the actual operation sound may appear louder or with an echo because of surrounding environmental noise. Be sure to check environmental conditions before installation. The sound of the air inlet side may be 8dB higher than that of the front side.



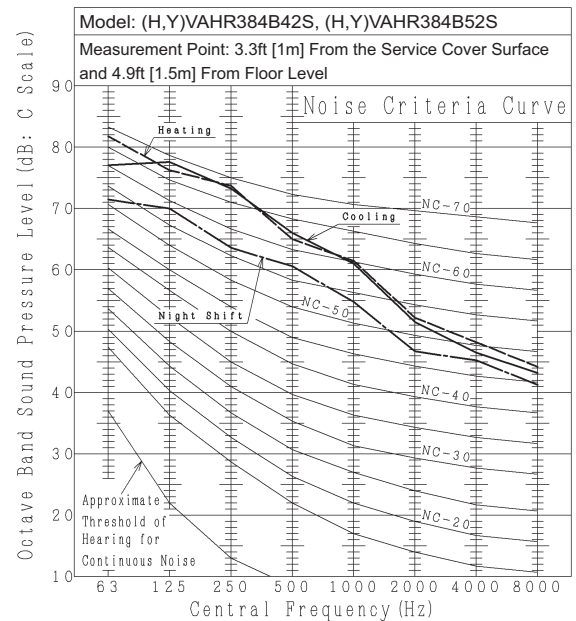
NOTICE:

The sound data is measured in an anechoic chamber. However, the actual operation sound may appear louder or with an echo because of surrounding environmental noise. Be sure to check environmental conditions before installation. The sound of the air inlet side may be 8dB higher than that of the front side.

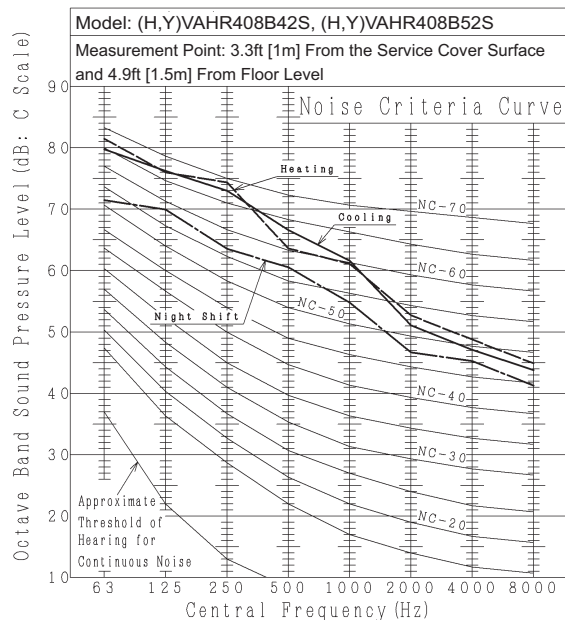
PRODUCT SPECIFICATION



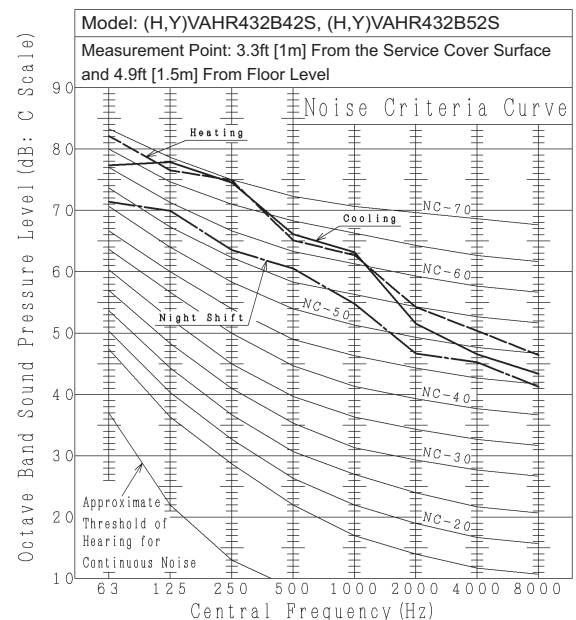
Central Frequency (Hz)	63	125	250	500	1000	2000	4000	8000	Overall (A Scale)
Sound Data (dB) (C Scale)									
Cooling	66.2	75.4	69.2	66.9	61.8	54.6	46.1	42.8	68.0
Heating	67.9	74.7	70.2	64.6	63.6	52.9	50.8	43.5	68.0
Night Shift	64.2	69.1	64.0	60.6	55.1	49.0	44.2	38.5	62.0



Central Frequency (Hz)	63	125	250	500	1000	2000	4000	8000	Overall (A Scale)
Sound Data (dB) (C Scale)									
Cooling	77.1	77.6	73.3	66.0	61.0	51.5	46.5	43.2	69.0
Heating	81.8	76.3	73.7	65.0	61.5	52.2	48.2	44.2	69.0
Night Shift	71.5	70.0	63.6	60.6	54.8	46.7	45.3	41.3	62.0



Central Frequency (Hz)	63	125	250	500	1000	2000	4000	8000	Overall (A Scale)
Sound Data (dB) (C Scale)									
Cooling	79.8	76.3	73.0	66.6	61.6	51.1	47.1	43.8	69.0
Heating	81.5	76.0	74.4	63.6	61.1	52.7	48.8	44.9	69.0
Night Shift	71.5	70.0	63.6	60.6	54.8	46.7	45.3	41.3	62.0



Central Frequency (Hz)	63	125	250	500	1000	2000	4000	8000	Overall (A Scale)
Sound Data (dB) (C Scale)									
Cooling	77.4	77.9	74.6	66.2	63.2	51.6	46.6	43.4	70.0
Heating	82.2	76.6	75.0	65.2	62.7	54.3	50.4	46.5	70.0
Night Shift	71.5	70.0	63.6	60.6	54.8	46.7	45.3	41.3	62.0

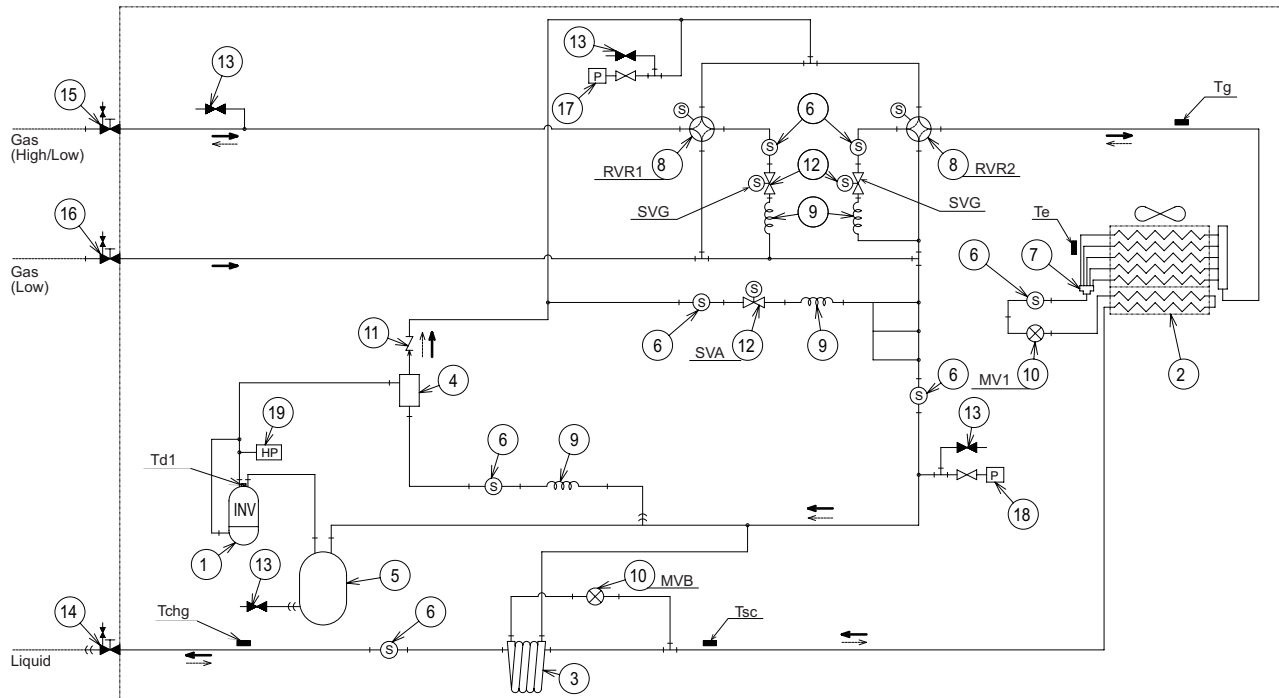
NOTICE:

The sound data is measured in an anechoic chamber. However, the actual operation sound may appear louder or with an echo because of surrounding environmental noise. Be sure to check environmental conditions before installation. The sound of the air inlet side may be 8dB higher than that of the front side.

2.11 Control System

2.11.1 Refrigerant Cycle

Model: (H,Y)VAHR072B32S, (H,Y)VAHR072B42S and (H,Y)VAHR072B52S

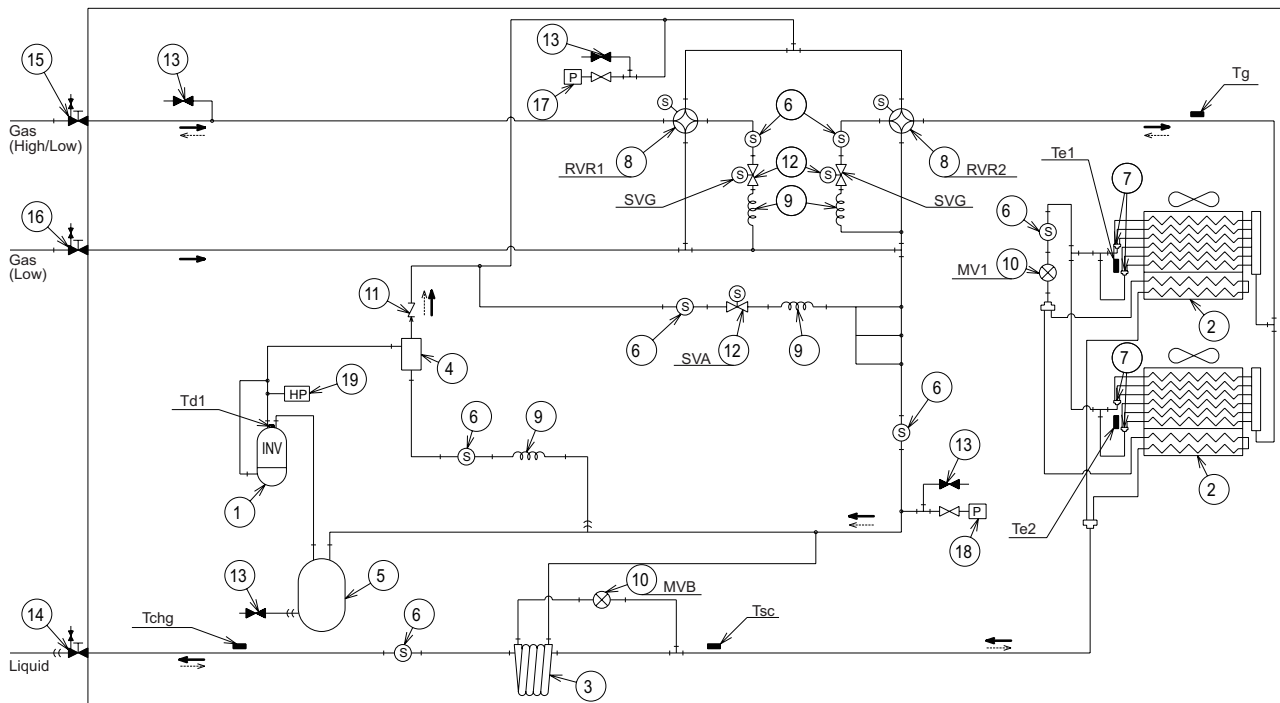


- ← : Refrigerant Flow Direction (Cooling)
- : Refrigerant Flow Direction (Heating)
- : Field Refrigerant Piping
- : Flare Connection
- : Brazing Connection
- : Thermistor

Mark	Part Name
①	Compressor
②	Heat Exchanger
③	Double Tube Type Heat Exchanger
④	Oil Separator
⑤	Accumulator
⑥	Strainer
⑦	Distributor
⑧	Reversing Valve
⑨	Capillary Tube
⑩	Electronic Expansion Valve
⑪	Check Valve
⑫	Solenoid Valve
⑬	Access Port
⑭	Stop Valve for Liquid Line
⑮	Stop Valve for Gas (High/Low) Line
⑯	Stop Valve for Gas (Low) Line
⑰	Sensor for Refrigerant Pressure (High Pressure Sensor)
⑱	Sensor for Refrigerant Pressure (Low Pressure Sensor)
⑲	High Pressure Switch for Protection

Mark	Name
Td1	Thermistor for Upper Side of Compressor 1
Tg	Thermistor for Heat Exchanger Gas Side
Te	Thermistor for Heat Exchanger Liquid Side
Tsc	Thermistor for Subcooler
Tchg	Thermistor for Liquid Stop Valve

Model: (H,Y)VAHR096B32S, (H,Y)VAHR096B42S and (H,Y)VAHR096B52S

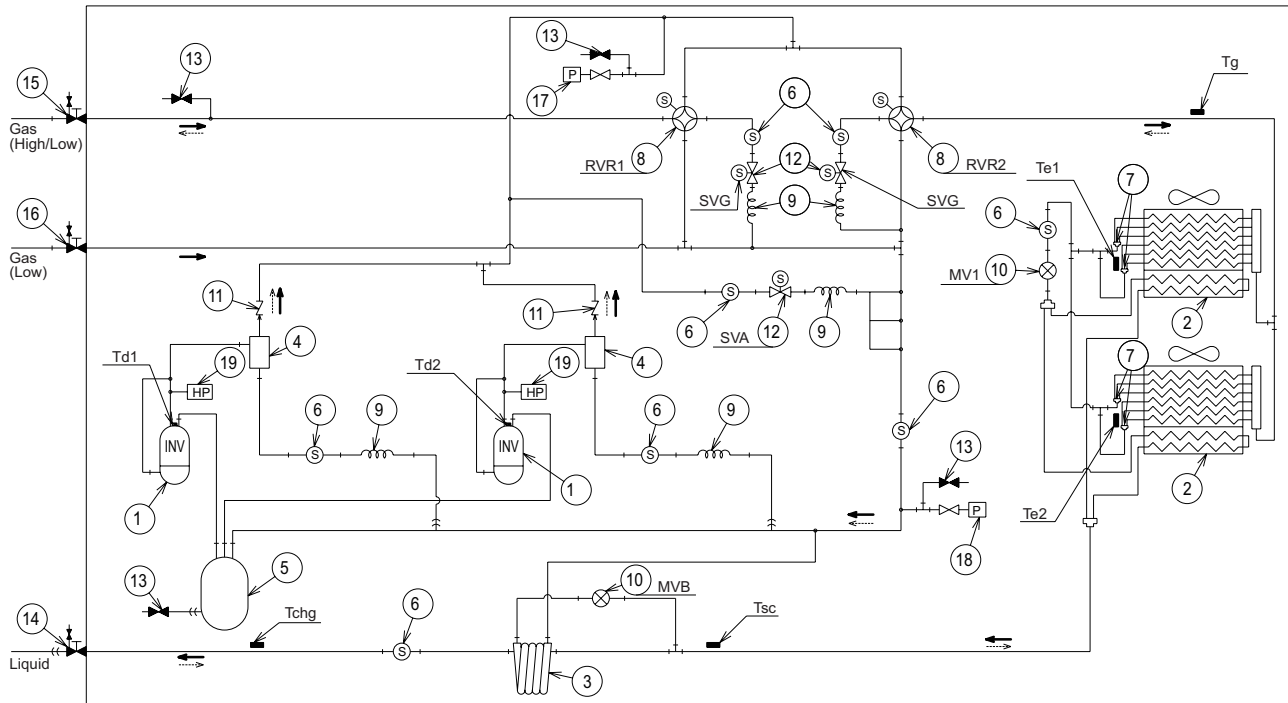








- ← : Refrigerant Flow Direction (Cooling)
- ← : Refrigerant Flow Direction (Heating)
- : Field Refrigerant Piping
- : Flare Connection
- : Brazing Connection
- : Thermistor

Mark	Part Name
①	Compressor
②	Heat Exchanger
③	Double Tube Type Heat Exchanger
④	Oil Separator
⑤	Accumulator
⑥	Strainer
⑦	Distributor
⑧	Reversing Valve
⑨	Capillary Tube
⑩	Electronic Expansion Valve
⑪	Check Valve
⑫	Solenoid Valve
⑬	Access Port
⑭	Stop Valve for Liquid Line
⑮	Stop Valve for Gas (High/Low) Line
⑯	Stop Valve for Gas (Low) Line
⑰	Sensor for Refrigerant Pressure (High Pressure Sensor)
⑱	Sensor for Refrigerant Pressure (Low Pressure Sensor)
⑲	High Pressure Switch for Protection

Mark	Name
Td1	Thermistor for Upper Side of Compressor 1
Tg	Thermistor for Heat Exchanger Gas Side
Te1	Thermistor for Heat Exchanger 1 Liquid Side
Te2	Thermistor for Heat Exchanger 2 Liquid Side
Tsc	Thermistor for Subcooler
Tchg	Thermistor for Liquid Stop Valve

Model: (H,Y)VAHR120B32S, (H,Y)VAHR144B32S, (H,Y)VAHR120B42S, (H,Y)VAHR144B42S, (H,Y)VAHR120B52S and (H,Y)VAHR144B52S

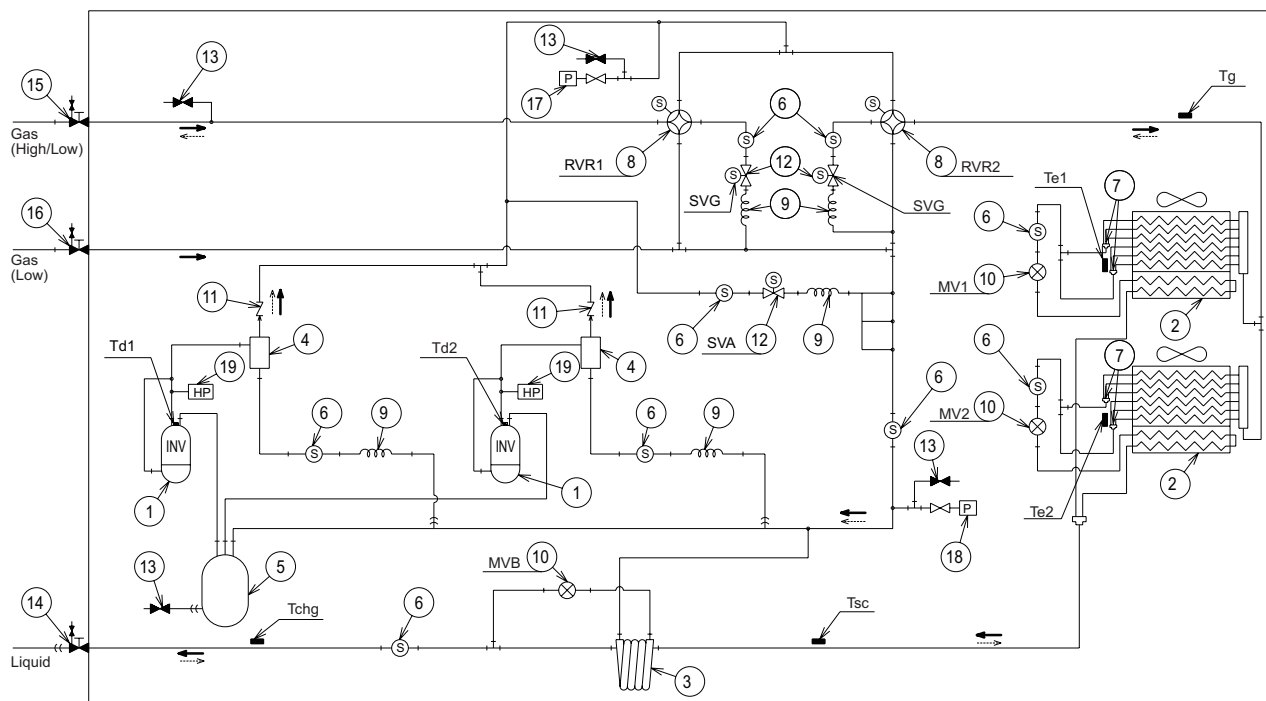


 : Refrigerant Flow Direction (Cooling)
 : Refrigerant Flow Direction (Heating)
 : Field Refrigerant Piping
 : Flare Connection
 : Brazing Connection
 : Thermistor

Mark	Part Name
①	Compressor
②	Heat Exchanger
③	Double Tube Type Heat Exchanger
④	Oil Separator
⑤	Accumulator
⑥	Strainer
⑦	Distributor
⑧	Reversing Valve
⑨	Capillary Tube
⑩	Electronic Expansion Valve
⑪	Check Valve
⑫	Solenoid Valve
⑬	Access Port
⑭	Stop Valve for Liquid Line
⑮	Stop Valve for Gas (High/Low) Line
⑯	Stop Valve for Gas (Low) Line
⑰	Sensor for Refrigerant Pressure (High Pressure Sensor)
⑱	Sensor for Refrigerant Pressure (Low Pressure Sensor)
⑲	High Pressure Switch for Protection

Mark	Name
Td1	Thermistor for Upper Side of Compressor 1
Td2	Thermistor for Upper Side of Compressor 2
Tg	Thermistor for Heat Exchanger Gas Side
Te1	Thermistor for Heat Exchanger 1 Liquid Side
Te2	Thermistor for Heat Exchanger 2 Liquid Side
Tsc	Thermistor for Subcooler
Tchg	Thermistor for Liquid Stop Valve

Model: (H,Y)VAHR168B32S, (H,Y)VAHR192B32S, (H,Y)VAHR0168B42S, (H,Y)VAHR192B42S,
(H,Y)VAHR0168B52S, (H,Y)VAHR192B52S



- ← : Refrigerant Flow Direction (Cooling)
- : Refrigerant Flow Direction (Heating)
- : Field Refrigerant Piping
- : Flare Connection
- : Brazing Connection
- : Thermistor

Mark	Part Name
①	Compressor
②	Heat Exchanger
③	Double Tube Type Heat Exchanger
④	Oil Separator
⑤	Accumulator
⑥	Strainer
⑦	Distributor
⑧	Reversing Valve
⑨	Capillary Tube
⑩	Electronic Expansion Valve
⑪	Check Valve
⑫	Solenoid Valve
⑬	Service Port
⑭	Stop Valve for Liquid Line
⑮	Stop Valve for Gas (High/Low) Line
⑯	Stop Valve for Gas (Low) Line
⑰	Sensor for Refrigerant Pressure (High Pressure Sensor)
⑱	Sensor for Refrigerant Pressure (Low Pressure Sensor)
⑲	High Pressure Switch for Protection

Mark	Name
Td1	Thermistor for Upper Side of Compressor 1
Td2	Thermistor for Upper Side of Compressor 2
Tg	Thermistor for Heat Exchanger Gas Side
Te1	Thermistor for Heat Exchanger 1 Liquid Side
Te2	Thermistor for Heat Exchanger 2 Liquid Side
Tsc	Thermistor for Subcooler
Tchg	Thermistor for Liquid Stop Valve

2.11.2 Control System

Cycle Control

Control Device	Control				
	Cooling Operation *		Heating Operation, Heat Recovery System		Defrosting
	Control Category	Purpose of Control	Control Category	Purpose of Control	Condition
Inverter Frequency of Compressor	Total I.U. Operating Capacity	Inverter Frequency Control is carried out to bring the I.U. air inlet temperature to temperature setpoint.	Total I.U. Operating Capacity	Inverter Frequency Control is carried out to bring the I.U. air inlet temperature to temperature setpoint.	All of the compressors: ON
Electronic Expansion Valve for O.U. Heat Exchanger	Capacity Control	Fully open	O.U. Heat Exchanger SH	PI control is carried out to achieve the targeted value of O.U. heat exchanger SH.	Fully open
Electronic Expansion Valve for Supercooling Heat Exchanger	Tsc - Tchg	PI Control is carried out to achieve the target value of Tsc - Tchg.	Tchg - Tsc	PI Control is carried out to achieve the target value of Tchg - Tsc.	Tsc - Tchg
Electronic Expansion Valve for I.U. Heat Exchanger	I.U. Heat Exchanger SH	PI control is carried out to achieve the targeted value of I.U. heat exchanger SH.	I.U. Heat Exchanger SC	Controls supercooling of I.U. liquid thermistor to achieve the targeted value.	I.U. Heat Exchanger SH Control
Outdoor Fan	Pd Control	PI control is carried out to achieve the targeted value of Pd.	Ps Control	PI control is carried out to achieve the targeted value of Ps.	Stop
Gas Bypass Valve (SVA)	1. Pd Increase Protection 2. Ps Decrease Protection	1. Pd>522psi (3.6MPa): Open 2. Ps<29psi (0.20MPa): Open	1. Pd Increase Protection 2. Ps Decrease Protection	1. Pd>508psi (3.5MPa): Open 2. Ps<14psi (0.1MPa): Open	Closed

(*): Dry operation is included in the cooling operation.

Pd: Discharge Pressure
 Ps: Suction Pressure
 SH: Superheat
 Tsc: Subcooler Temperature
 Tchg: Liquid Stop Valve Temperature
 I.U.: Indoor Unit
 O.U.: Outdoor Unit

Compressor Operation Control

(1) Compressor Rotation Control

This compressor rotation control is performed in order to make the compressor operating time equal for each outdoor unit.

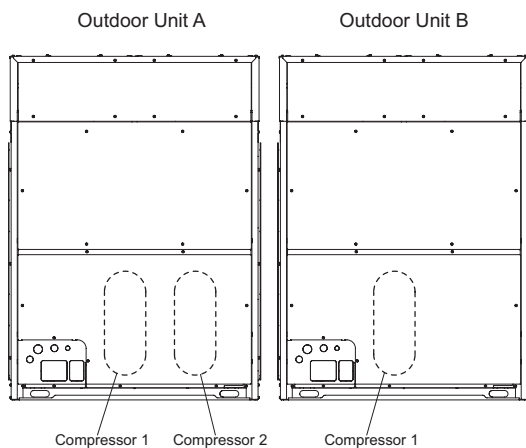
This control is performed during the outdoor unit thermo-OFF or switch OFF.

When turning ON the outdoor unit, the inverter compressor with the shortest operating time (average operating time for the outdoor unit with two inverter compressors) will operate first.

At least 2 outdoor units are required for this function.

The operating sequence of compressor rotation control is as follows.

(H,Y)VAHR216B(3,4,5)2S



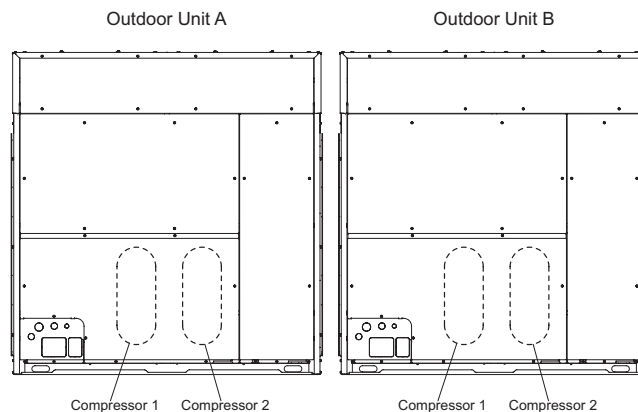
Compressor Operating Sequence

	Outdoor Unit A		Outdoor Unit B
	Compressor 1	Compressor 2	Compressor 1
Last Time	1	3	2
This Time	2	3	1
Next Time	1	3	2

NOTE:

When turning ON the outdoor unit A, the inverter compressor 1 or 2 with the shortest operating time will operate first.

(H,Y)VAHR240B(3,4,5)2S / (H,Y)VAHR264B(3,4,5)2S / (H,Y)VAHR288B(3,4,5)2S / (H,Y)VAHR312B(3,4,5)2S
(H,Y)VAHR336B(3,4,5)2S / (H,Y)VAHR360B(3,4,5)2S



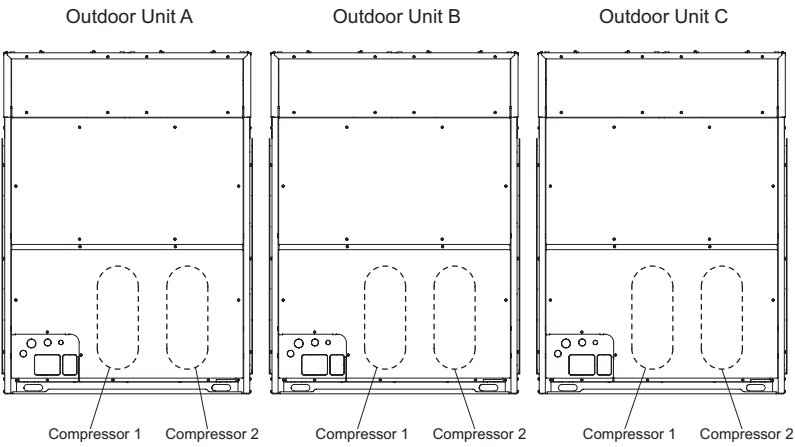
Compressor Operating Sequence

	Outdoor Unit A		Outdoor Unit B	
	Compressor 1	Compressor 2	Compressor 1	Compressor 2
Last Time	1	3	2	3
This Time	2	3	1	3
Next Time	1	3	2	3

NOTE:

When turning ON the outdoor units, the inverter compressor of each outdoor unit with the shortest operating time will operate first.

(H,Y)VAHR384B(3,4,5)2S / (H,Y)VAHR408B(3,4,5)2S / (H,Y)VAHR432B(3,4,5)2S



Compressor Operating Sequence

	Outdoor Unit A		Outdoor Unit B		Outdoor Unit C	
	Compressor 1	Compressor 2	Compressor 1	Compressor 2	Compressor 1	Compressor 2
Last Time	1	4	2	4	3	4
This Time	3	4	1	4	2	4
Next Time	2	4	3	4	1	4

NOTE:
When turning ON the outdoor units, the inverter compressor of the outdoor unit A and B with the shortest operating time will operate first.

(2) Compressor Frequency Control

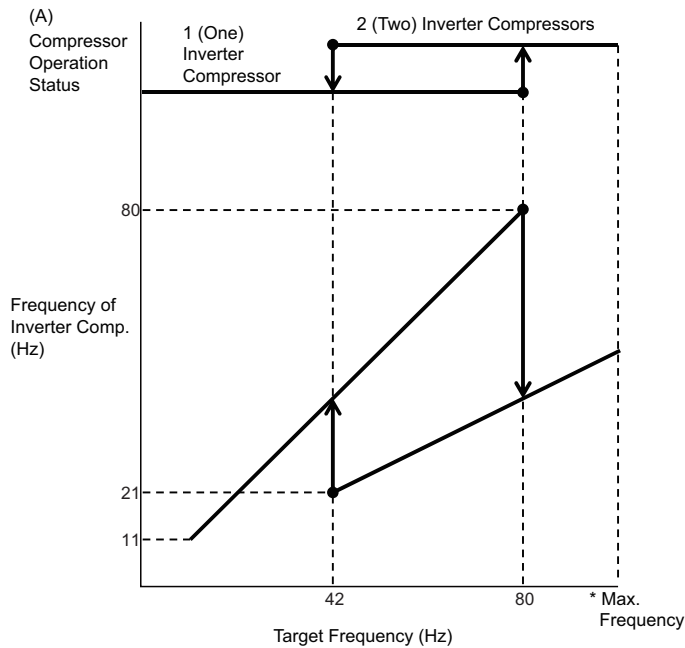
Compressor Operation Control is to adjust the output frequency of an Inverter Compressor according to Target Frequency.

(Target Frequency is determined by capacity control according to cooling and heating loads.)

Therefore, when the load is smaller, all compressors may not operate.

■ Single outdoor unit with two inverter compressors installed

(H,Y)VAHR120B(3,4,5)2S / (H,Y)VAHR144B(3,4,5)2S

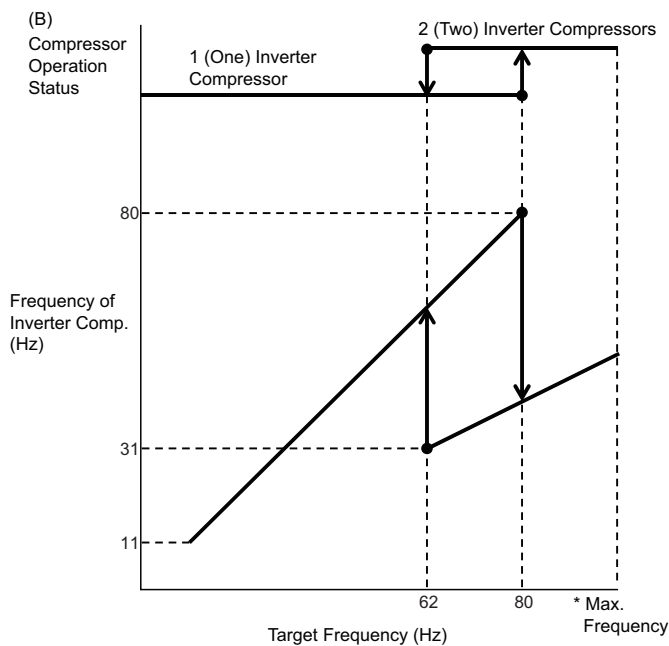


Target Frequency [Hz]	Each Compressor Frequency [Hz]					
	Increase Direction			Decrease Direction		
	Comp. Operation Status	No.1 Comp.	No.2 Comp.	Comp. Operation Status	No.1 Comp.	No.2 Comp.
11.0	1	11.0	—	1	11.0	—
41.0	1	41.0	—	1	41.0	—
42.0	1	42.0	—	2	21.0	21.0
80.0	1	80.0	—	2	40.0	40.0
81.0	2	40.5	40.5	2	40.5	40.5
⋮	⋮	⋮	⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮	⋮	⋮	⋮

NOTE:

Refer to page 2-75 for the maximum frequency.

(H,Y)VAHR168B(3,4,5)2S / (H,Y)VAHR192B(3,4,5)2S



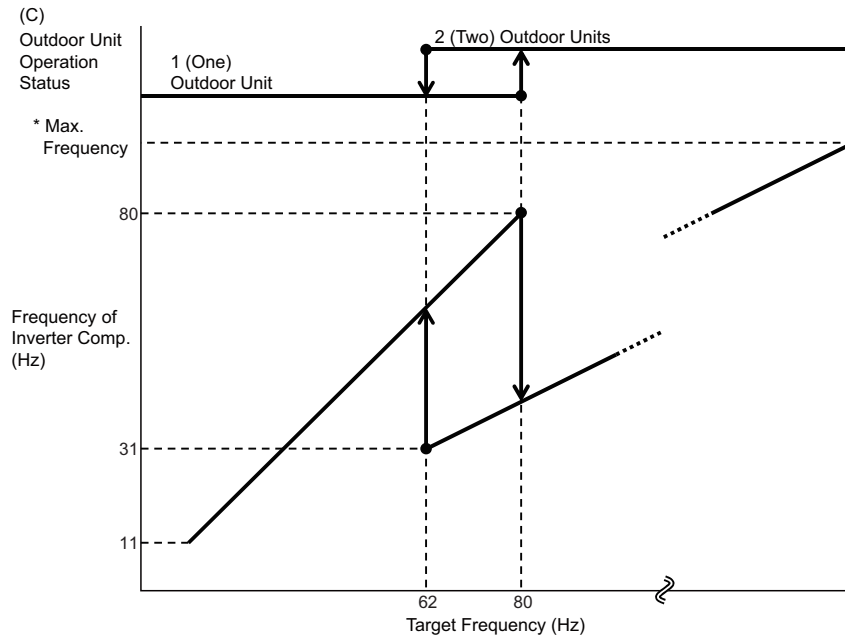
Target Frequency [Hz]	Each Compressor Frequency [Hz]					
	Increase Direction			Decrease Direction		
	Comp. Operation Status	No.1 Comp.	No.2 Comp.	Comp. Operation Status	No.1 Comp.	No.2 Comp.
11.0	1	11.0	—	1	11.0	—
61.0	1	61.0	—	1	61.0	—
62.0	1	62.0	—	2	31.0	31.0
80.0	1	80.0	—	2	40.0	40.0
81.0	2	40.5	40.5	2	40.5	40.5
⋮	⋮	⋮	⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮	⋮	⋮	⋮

NOTE:

Refer to page 2-75 for the maximum frequency.

■ Multiple outdoor units installed

(H,Y)VAHR216B(3,4,5)2S / (H,Y)VAHR240B(3,4,5)2S / (H,Y)VAHR264B(3,4,5)2S / (H,Y)VAHR288B(3,4,5)2S
(H,Y)VAHR312B(3,4,5)2S / (H,Y)VAHR336B(3,4,5)2S / (H,Y)VAHR360B(3,4,5)2S

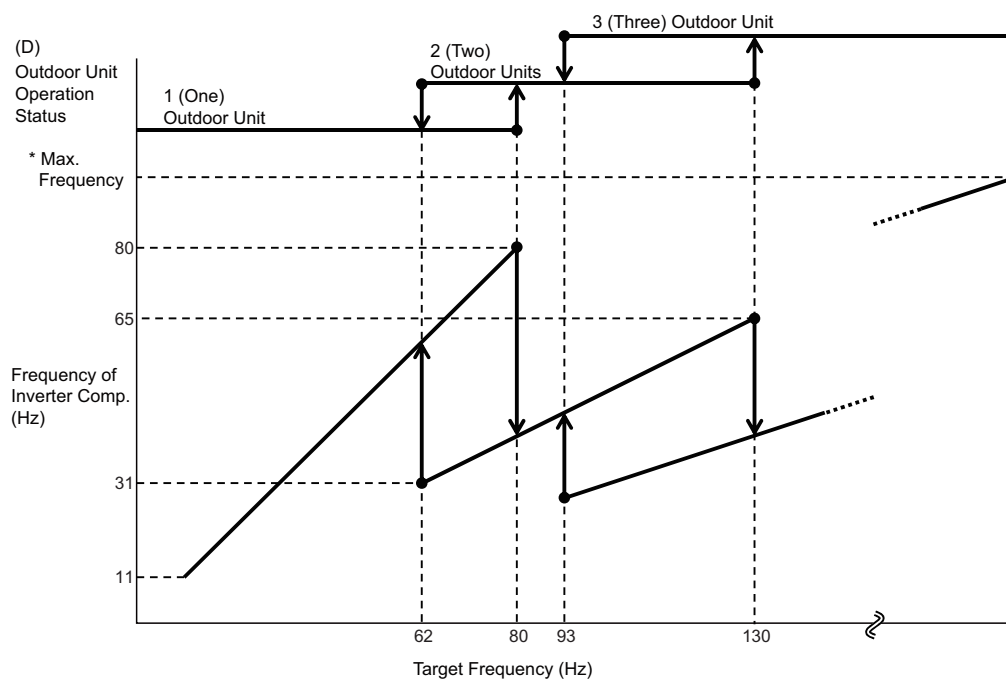


Target Frequency [Hz]	Each Compressor Frequency [Hz]					
	Increase Direction			Decrease Direction		
	Outdoor Unit Operation Status	Outdoor Unit (A)	Outdoor Unit (B)	Outdoor Unit Operation Status	Outdoor Unit (A)	Outdoor Unit (B)
11.0	1	11.0	—	1	11.0	—
61.0	1	61.0	—	1	61.0	—
62.0	1	62.0	—	2	31.0	31.0
80.0	1	80.0	—	2	40.0	40.0
81.0	2	40.5	40.5	2	40.5	40.5
⋮	⋮	⋮	⋮	⋮	⋮	⋮
⋮	⋮	⋮	⋮	⋮	⋮	⋮

NOTE:

Refer to page 2-75 for the maximum frequency.

(H,Y)VAHR384B(3,4,5)2S / (H,Y)VAHR408B(3,4,5)2S / (H,Y)VAHR432B(3,4,5)2S



Target Frequency [Hz]	Each Compressor Frequency [Hz]							
	Increase Direction				Decrease Direction			
	Outdoor Unit Operation Status	Outdoor Unit (A)	Outdoor Unit (B)	Outdoor Unit (C)	Outdoor Unit Operation Status	Outdoor Unit (A)	Outdoor Unit (B)	Outdoor Unit (C)
11.0	1	11.0	—	—	1	11.0	—	—
61.0	1	61.0	—	—	1	61.0	—	—
62.0	1	62.0	—	—	2	31.0	31.0	—
80.0	1	80.0	—	—	2	40.0	40.0	—
81.0	2	40.5	40.5	—	2	40.5	40.5	—
92.0	2	46.0	46.0	—	2	46.0	46.0	—
93.0	2	46.5	46.5	—	3	31.0	31.0	31.0
130.0	2	65.0	65.0	—	3	43.3	43.3	43.3
131.0	3	43.6	43.6	43.6	3	43.6	43.6	43.6
•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•

NOTE:

Refer to page 2-75 for the maximum frequency.

Combination of Base Units and Maximum Frequency

Model	Combination of Base Units	Maximum Frequency [Hz]
(H,Y)VAHR216B(3,4,5)2S	144	200
	072	110
(H,Y)VAHR240B(3,4,5)2S	120	175
	120	175
(H,Y)VAHR264B(3,4,5)2S	144	200
	120	175
(H,Y)VAHR288B(3,4,5)2S	144	200
	144	200
(H,Y)VAHR312B(3,4,5)2S	168	250
	144	200
(H,Y)VAHR336B(3,4,5)2S	192	260
	144	200
(H,Y)VAHR360B(3,4,5)2S	192	260
	168	250
(H,Y)VAHR384B(3,4,5)2S	144	200
	120	175
	120	175
(H,Y)VAHR408B(3,4,5)2S	144	200
	144	200
	120	175
(H,Y)VAHR432B(3,4,5)2S	144	200
	144	200
	144	200

NOTE:

The frequency in the table above indicates the total frequency of an outdoor unit if the unit has two compressors.

(3) Compressor Capacity Control

The operating speed of the compressor is determined according to the temperature difference (ΔT) between setting temperature and indoor unit air inlet temperature detected by each indoor unit under cooling/heating thermo-ON operation and the variation of ΔT to control compressor frequency.

The frequency is calculated as follows:

Current Frequency \times Coefficient Based on the Temperature

(for Cooling Operation)

The coefficient becomes larger when the value of ΔT (the temperature difference between setting temperature and air inlet temperature is large) or variation of ΔT is larger.

The coefficient becomes smaller when the value of ΔT (the temperature difference between setting temperature and air inlet temperature is small) or variation of ΔT is smaller.

(for Heating Operation)

The coefficient becomes larger when the value of ΔT (the temperature difference between setting temperature and air inlet temperature is large) or variation of ΔT is larger.

The coefficient becomes smaller when the value of ΔT (the temperature difference between setting temperature and air inlet temperature is small) or variation of ΔT is smaller.

NOTE:

The temperature of the thermistor in the wired controller is utilized instead of indoor unit air inlet temperature when the thermistor in the wired controller is set by functional setting mode.

PRODUCT SPECIFICATION

■ Heat Exchanger Mode Control

In accordance with the connectable indoor unit operation mode, the outdoor unit heat exchanger will be switched as shown in the table below.

O.U. Heat Exchanger Mode at Cooling: Condenser **COND**

O.U. Heat Exchanger Mode at Heating: Evaporator **EVAP**

(1) The Number of Outdoor Unit: 1 (one)

Heat Exchanger Mode		Cooling Mode	Mainly Cooling Mode		Mainly Heating Mode	Heating Mode	Defrosting Mode
		COND	D1	D1-1	D4	EVAP	DEF1
Heat Exchanger Condition		COND	COND	cond	EVAP	EVAP	COND
Reversing Valve	RVR2	OFF	OFF	OFF	ON	ON	OFF
	RVR1	ON	OFF	OFF	OFF	OFF	ON
Expansion Valve	MV1	Fully Open	Pd	Pd	Heat Exchanger SH	Heat Exchanger SH	Fully Open
	MVB	Tsc - Tchg	Tsc - Tchg	Fully Closed	Tchg - Tsc	Tchg - Tsc	Tsc - Tchg

(2) The Number of Outdoor Unit: 2 (two)

Heat Exchanger Mode		Cooling Mode	Mainly Cooling Mode		Mainly Heating Mode		Heating Mode	Defrosting Mode
		COND	D1	D2	D3	D4	EVAP	DEF2
								With Change-Over Box
Main Outdoor Unit	Heat Exchanger Condition	COND	COND	COND	cond	EVAP	EVAP	COND/EVAP
	Reversing Valve	RVR2	OFF	OFF	OFF	OFF	ON	ON/OFF
		RVR1	ON	OFF	OFF	OFF	OFF	OFF
	Expansion Valve	MV1	Pd	Pd	Pd	Pd	Heat Exchanger SH	Heat Exchanger SH
		MVB	Tsc - Tchg	Tsc - Tchg	Tsc - Tchg	Fully Closed	Tchg - Tsc	Tchg - Tsc
								Fully Open/Heat Exchanger SH
Sub Outdoor Unit 1	Heat Exchanger Condition	COND	COND	evap	EVAP	EVAP	EVAP	COND/EVAP
	Reversing Valve	RVR2	OFF	OFF	ON	ON	ON	ON/OFF
		RVR1	ON	OFF	OFF	OFF	OFF	OFF
	Expansion Valve	MV1	Pd	Pd	Fully Closed	Heat Exchanger SH	Heat Exchanger SH	Heat Exchanger SH
		MVB	Tsc - Tchg	Tsc - Tchg	Fully Closed	Tchg - Tsc	Tchg - Tsc	Tchg - Tsc
								Fully Open/Heat Exchanger SH

(3) The Number of Outdoor Unit: 3 (three)

Heat Exchanger Mode		Cooling Mode	Mainly Cooling Mode			Mainly Heating Mode				Heating Mode	Defrosting Mode
		COND	D1	D2-1	D2-2	D2-3	D3-1	D3-2	D4	EVAP	DEF2 With Change-Over Box
Main Outdoor Unit	Heat Exchanger Condition	COND	COND	COND	COND	cond	cond	cond	EVAP	EVAP	COND/EVAP
	Reversing Valve	RVR2	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF/ON
		RVR1	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
	Expansion Valve	MV1	Pd	Pd	Pd	Pd	Pd	Pd	Heat Exchanger SH	Heat Exchanger SH	Fully Open/Heat Exchanger SH
		MVB	Tsc - Tchg	Tsc - Tchg	Tsc - Tchg	Tchg - Tsc	Tchg - Tsc	Tchg - Tsc	Tchg - Tsc	Tchg - Tsc	Tsc - Tchg/Tchg - Tsc
Sub Outdoor Unit 1	Heat Exchanger Condition	COND	COND	evap	evap	EVAP	EVAP	EVAP	EVAP	EVAP	COND/EVAP
	Reversing Valve	RVR2	OFF	OFF	ON	ON	ON	ON	ON	ON	OFF/ON
		RVR1	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
	Expansion Valve	MV1	Pd	Pd	Fully Closed	Fully Closed	Heat Exchanger SH	Heat Exchanger SH	Heat Exchanger SH	Heat Exchanger SH	Fully Open/Heat Exchanger SH
		MVB	Tsc - Tchg	Tsc - Tchg	Fully Closed	Fully Closed	Tchg - Tsc	Tchg - Tsc	Tchg - Tsc	Tchg - Tsc	Tsc - Tchg/Tchg - Tsc
Sub Outdoor Unit 2	Heat Exchanger Condition	COND	COND	COND	evap	evap	EVAP	EVAP	EVAP	EVAP	COND/EVAP
	Reversing Valve	RVR2	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF/ON
		RVR1	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
	Expansion Valve	MV1	Pd	Pd	Pd	Fully Closed	Fully Closed	Heat Exchanger SH	Heat Exchanger SH	Heat Exchanger SH	Fully Open/Heat Exchanger SH
		MVB	Tsc - Tchg	Tsc - Tchg	Tsc - Tchg	Fully Closed	Fully Closed	Tchg - Tsc	Tchg - Tsc	Tchg - Tsc	Tsc - Tchg/Tchg - Tsc

NOTES:

1. Condition of Heat Exchanger

COND : Use as Condenser

cond : Avoid the use of Heat Exchanger (under a high pressure condition)

EVAP : Use as Evaporator

evap : Avoid the use of Heat Exchanger (under a low pressure condition)

2. Control Method of Expansion Valve

Tsc - Tchg and Tchg - Tsc: PI control is carried out to achieve the target value of temperature difference between Tsc and Tchg.

Heat Exchanger SH: PI control is carried out to achieve the targeted value of outdoor heat exchanger SH.

Pd: Normally, fully open. (The opening is dependent upon the refrigerant cycle condition.)

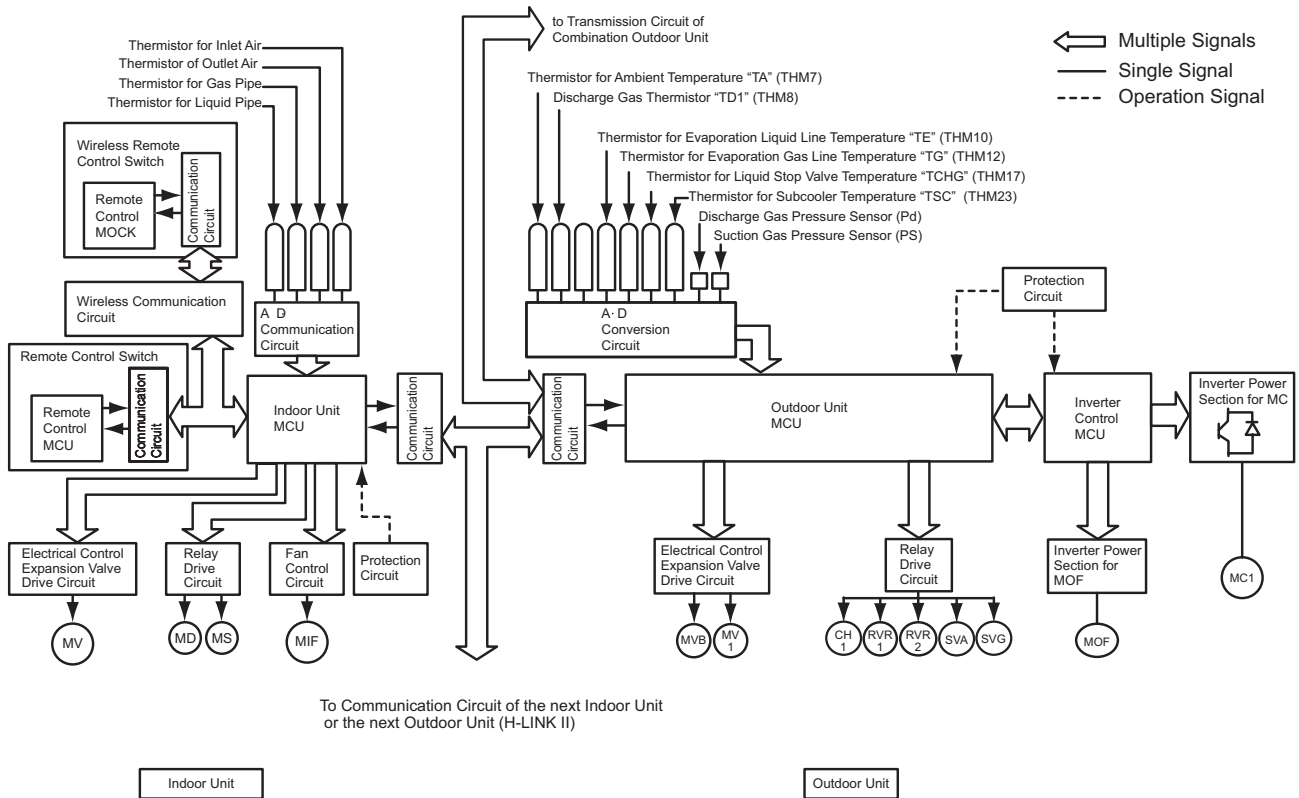
PI control is performed to achieve the targeted value of discharge pressure when discharge pressure decreases.

TsSH: PI control is performed to achieve the targeted value of TsSH of the compressor.

3. D1, D1-1, D2, D2-1, D2-2, D2-3, D3, D3-1, D3-2, D4, EVAP, DEF1 and DEF2 are the reference numbers.

The figure below is a representation of the control system.

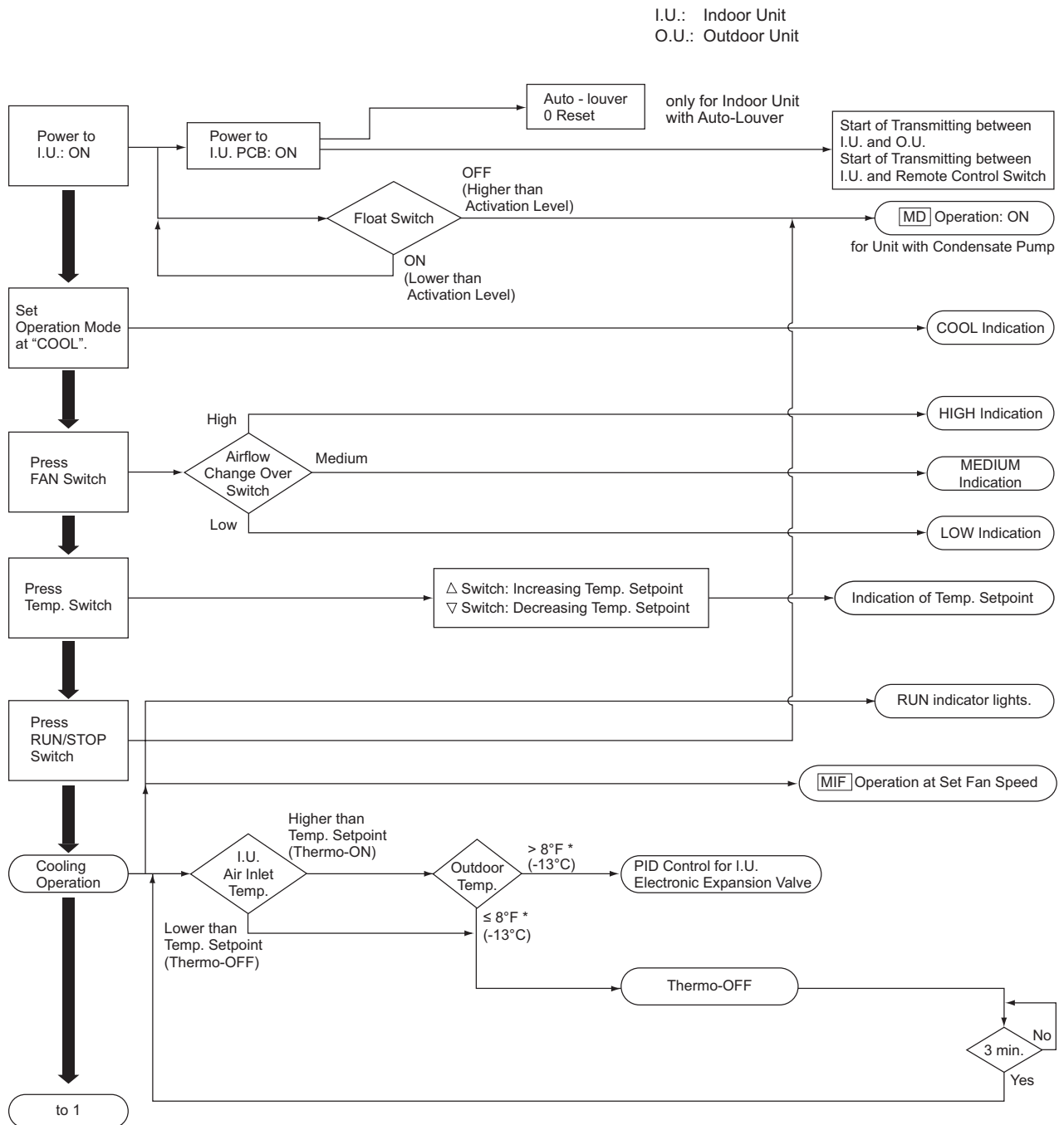
Example: Combination of Base Units, (H,Y)VAHR072B(3,4,5)2S + Indoor Unit



Symbol	Name
THM	Thermistor
MCU	Microcontroller
MC1	DC Motor (for Inverter Compressor)
MOF	DC Motor (for Outdoor Fan)
MIF	Motor (for Indoor Fan)
MS	Motor (for Auto-Louver)
MD	Motor (for Condensate Pump)
MV	Electronic Expansion Valve (for Indoor Unit)
MV1	Electronic Expansion Valve (for Outdoor Unit)
MVB	Electronic Expansion Valve for Supercooling Heat Exchanger
SVA	Solenoid Valve (to bypass high/low pressure)
SVG	Solenoid Valve (for blocking high/low pressure)
RVR2	Reversing Valve
RVR1	Reversing Valve
CH1	Crankcase Heater

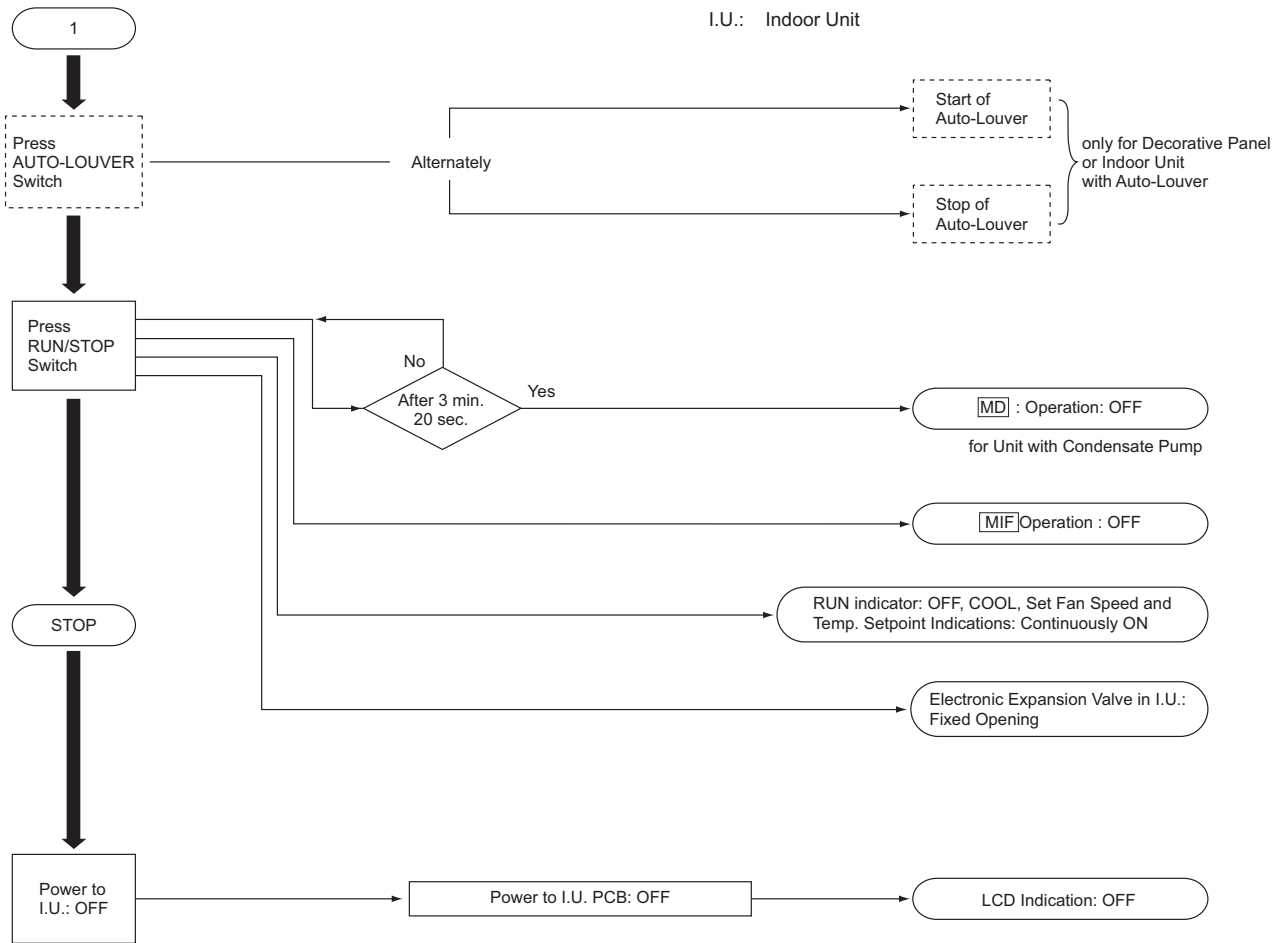
2.11.3 Standard Operation Sequence

Cooling Operation



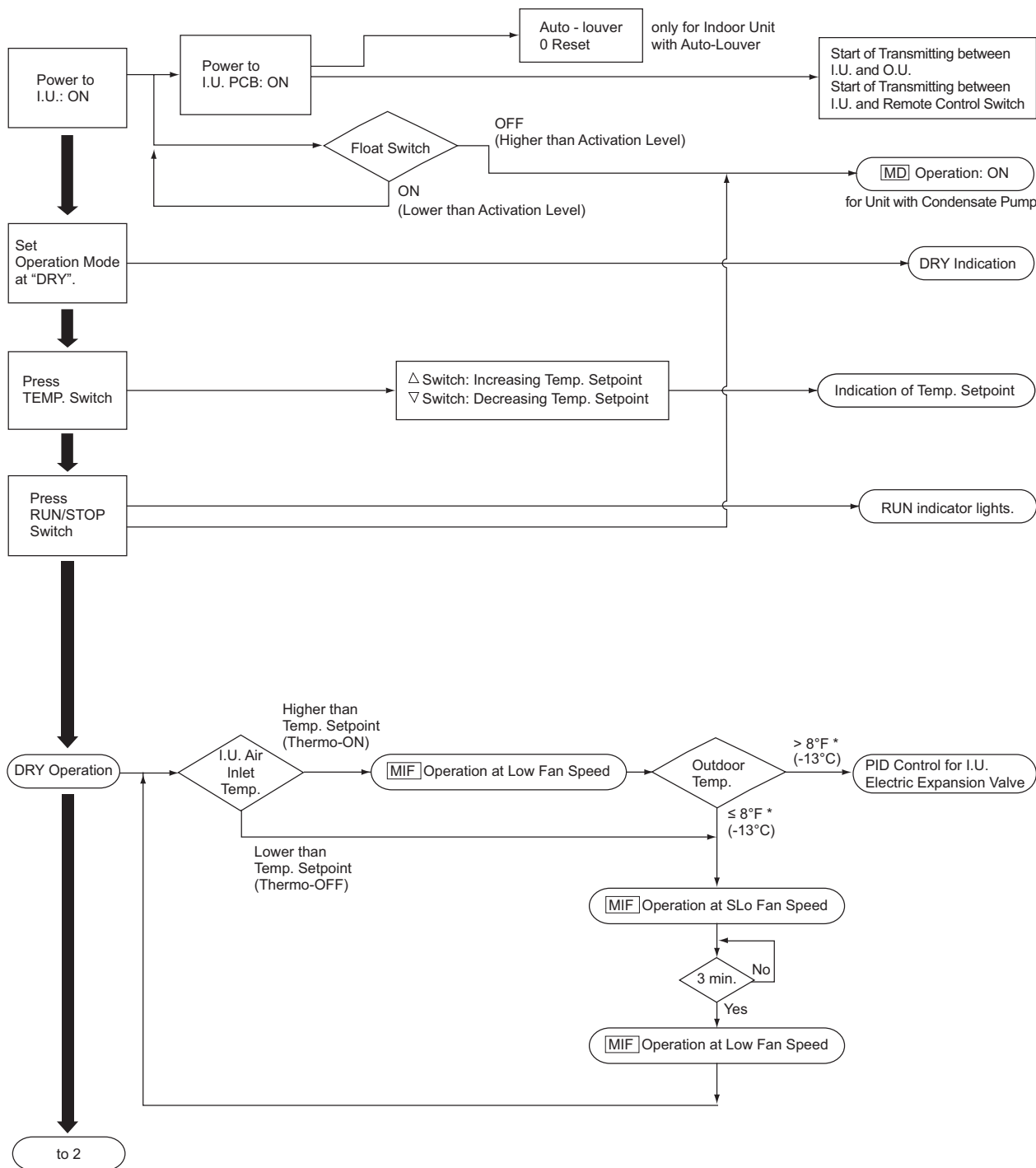
*: When Low Ambient Kit is installed (with DIP switch setting) this temperature becomes -15°F (-26°C).

Cooling Operation



Dry Operation

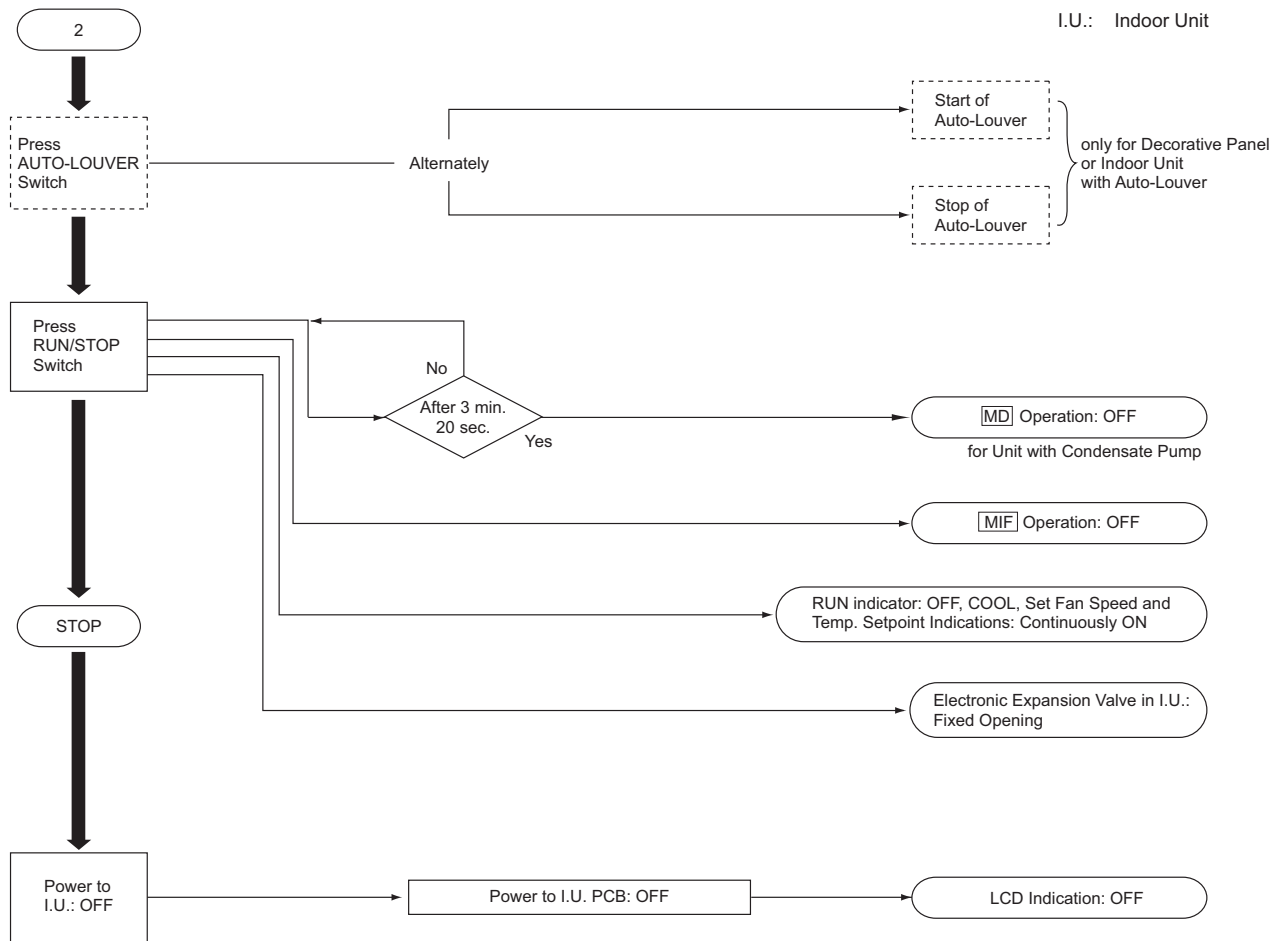
I.U.: Indoor Unit
O.U.: Outdoor Unit



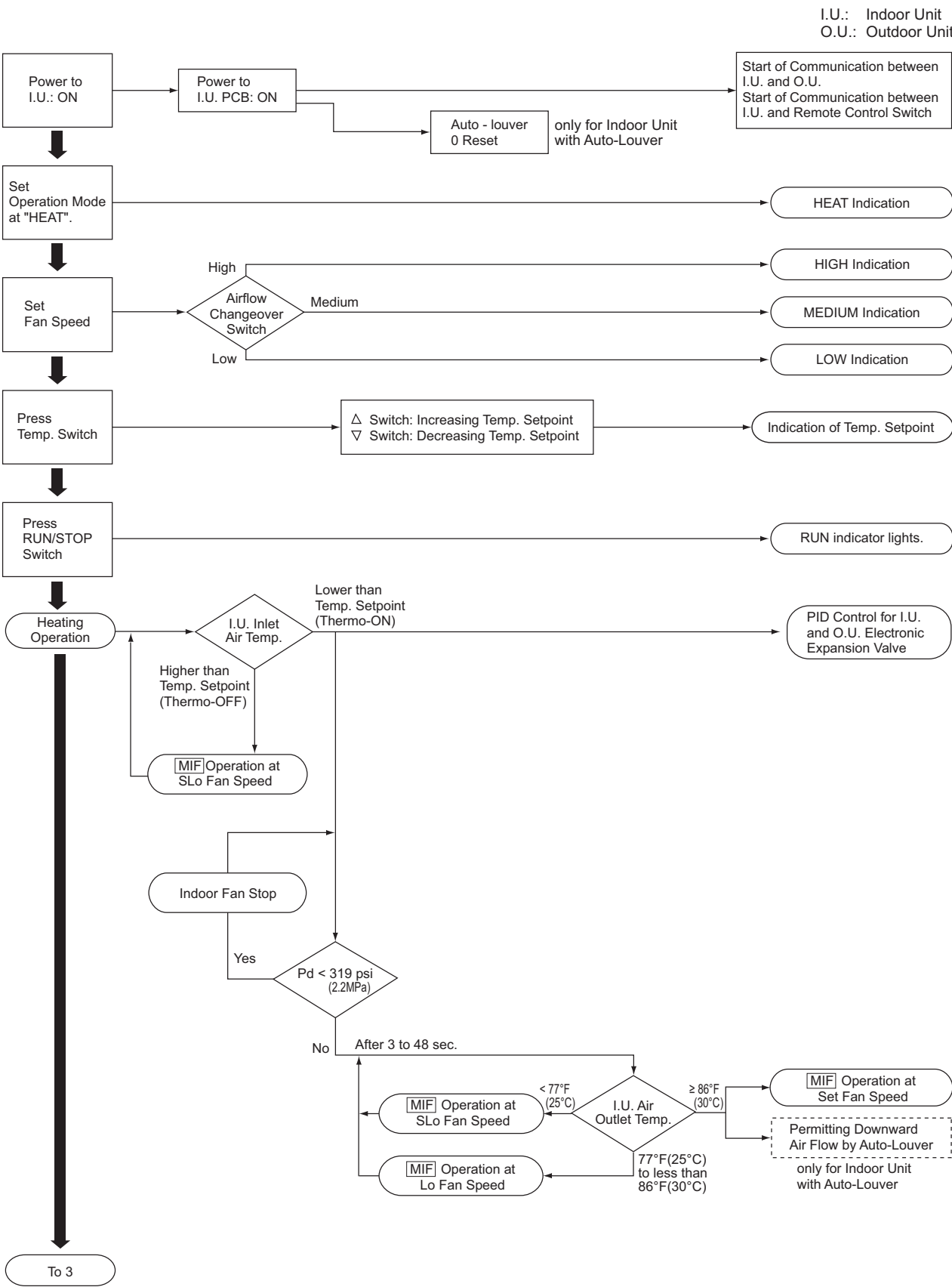
*: When Low Ambient Kit is installed (with DIP switch setting) this temperature becomes -15°F (-26°C).

PRODUCT SPECIFICATION

Dry Operation

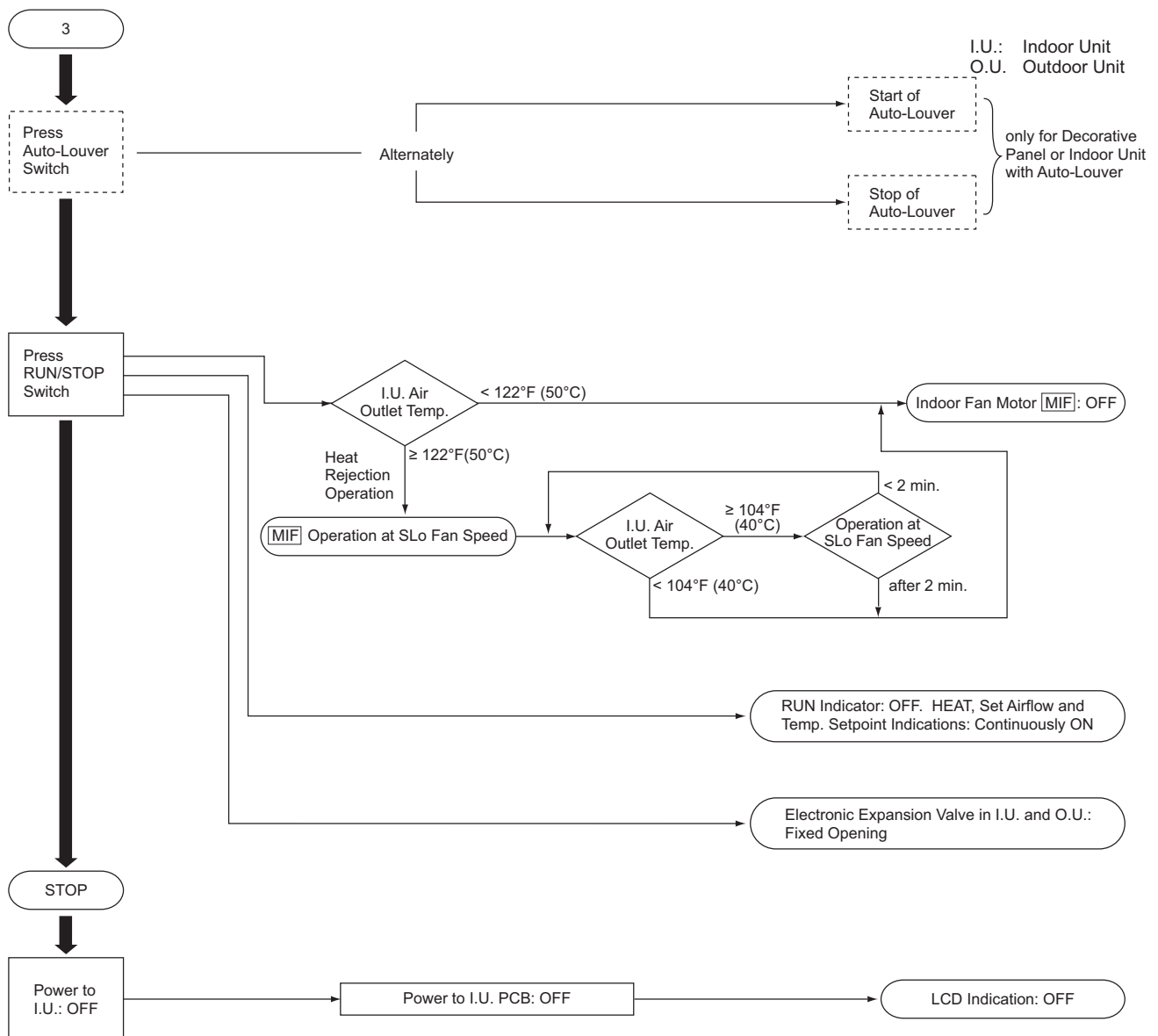


Heating Operation

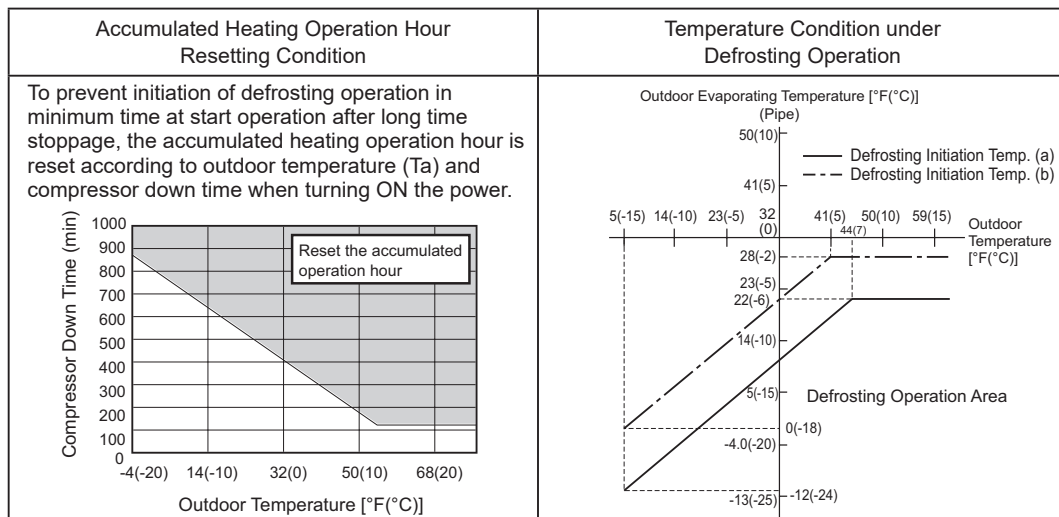
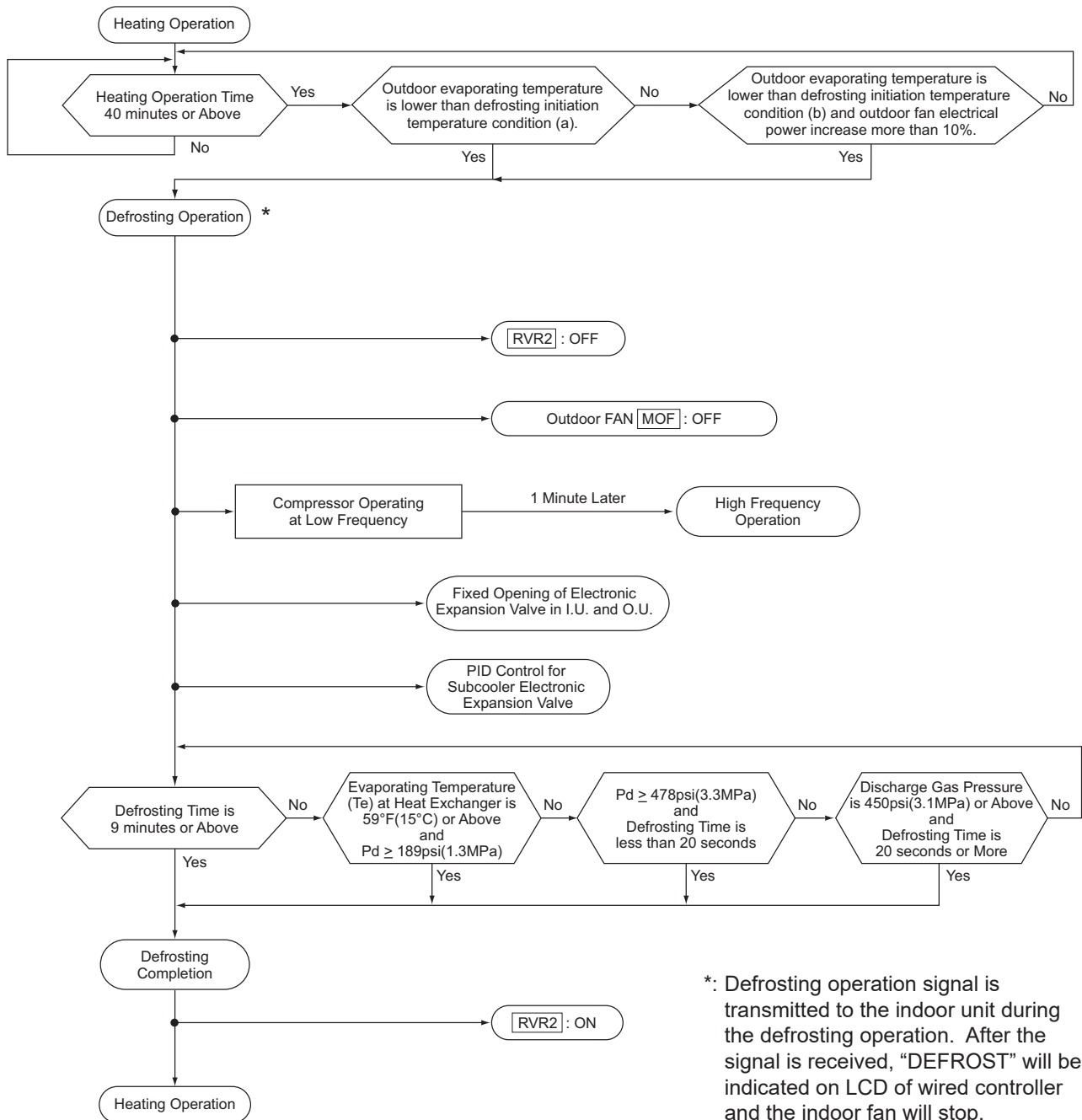


PRODUCT SPECIFICATION

Heating Operation



Defrosting Operation



Protection Control

- Whenever protection control sequences are activated, the corresponding code is displayed on the 7-segment LED array of the main control board.
- Protection control code is displayed when a unit protection mode has been initiated. The code will disappear once the cause of protection has been addressed.

Indicated Contents

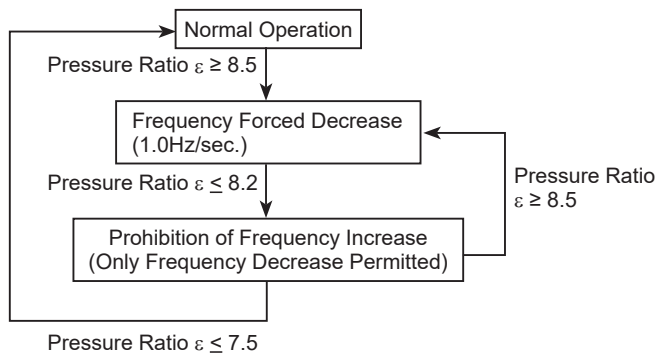
Indication	Protection Control Contents	Code During Override (Degeneration) Control
P01	Pressure Ratio Protection Control	Pc1
P02	High Pressure Increase Protection Control	Pc2
P03	Inverter Current Protection Control	Pc3
P04	Inverter Fin Temperature Increase Protection Control	Pc4
P05	Discharge Temperature Increase Protection Control	Pc5
P06	Low Pressure Decrease Protection Control	—
P09	High Pressure Decrease Protection Control	
P0A	Demand Current Control	
P0d	Low Pressure Increase Protection Control	

(1) P01: Pressure Ratio Protection Control

(a) Pressure Ratio Increase Protection Control

Pressure Ratio Increase Protection Control is performed in order to protect the compressor from an increase of pressure ratio.

Details of Control



NOTE:

1. With a combination of base units, the control in the figure is performed for the entire number of outdoor units to be connected.
2. The pressure ratio is calculated in each outdoor unit, and this control uses the maximum value.

$$\varepsilon = (Pd [\text{psi}] + 15) / (Ps [\text{psi}] + 9)$$

$$\varepsilon = (Pd [\text{MPa}] + 0.1) / (Ps [\text{MPa}] + 0.06)$$

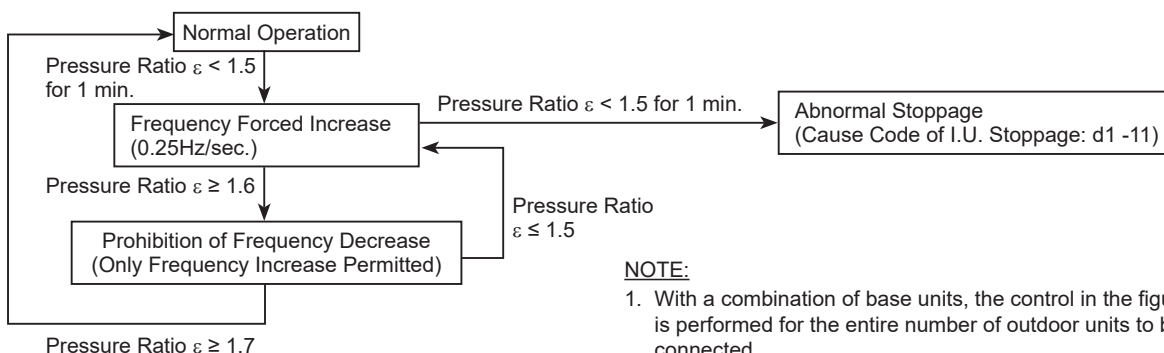
Pd: Detected Value of High Pressure Sensor [psi]

Ps: Detected Value of Low Pressure Sensor [psi]

(b) Low Compression Ratio Protection Function

This function is activated to protect the compressor during occurrences of low compression ratio.

Details of Control



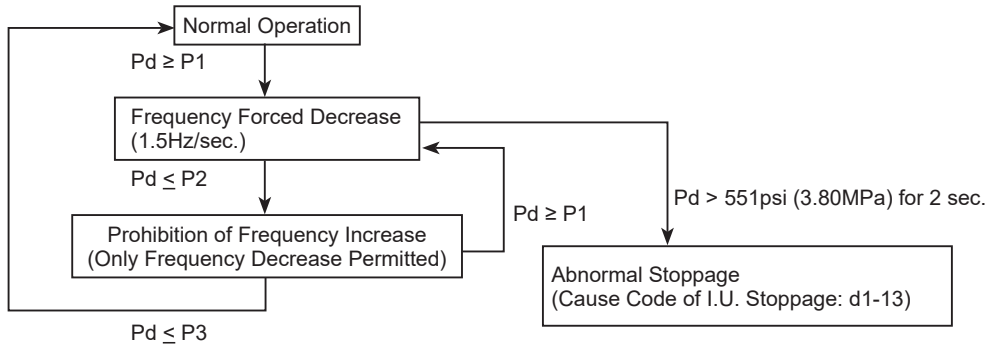
NOTE:

1. With a combination of base units, the control in the figure is performed for the entire number of outdoor units to be connected.
2. The pressure ratio is calculated in each outdoor unit, and this control uses the minimum value.

(2) P02: High Pressure Increase Protection Control

High Pressure Protection Control is performed in order to prevent activation of a protection device caused by a high pressure increase during an abnormality and to protect the compressor from an excessive increase of discharge pressure.

Details of Control



Control Value	[psi(MPa)]		
Operation Mode	P1	P2	P3
Cooling	500 (3.45)	493 (3.40)	464 (3.20)
Heating	486 (3.35)	479 (3.30)	450 (3.10)

NOTE:

1. With a combination of base units, the control in the figure is performed for the entire number of outdoor units to be connected.
2. High pressure is detected in each outdoor unit, and this control uses the maximum value.

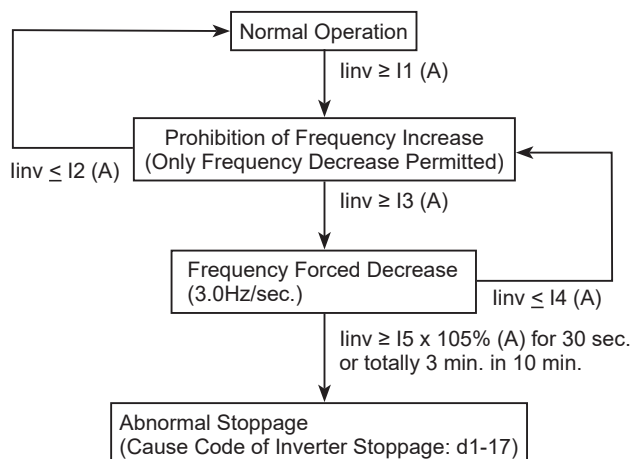
Pd: Detected Value of High Pressure Sensor [psi(MPa)]

(3) P03: Inverter Current Protection Control

Inverter Current Protection Control is performed in order to prevent an inverter trip caused by an increase of inverter secondary current value.

(a) Inverter Secondary Current Protection

Details of Control



Control Value

208 / 230V

Model	I1	I2	I3	I4	I5
(H,Y)VAHR120B32S (H,Y)VAHR144B32S	36.5	35.5	38.0	37.0	38.0
(H,Y)VAHR072B32S (H,Y)VAHR096B32S (H,Y)VAHR168B32S (H,Y)VAHR192B32S	45.5	44.5	47.0	46.0	48.0

460V

Model	I1	I2	I3	I4	I5
(H,Y)VAHR120B42S (H,Y)VAHR144B42S	18.0	17.5	19.0	18.5	19.5
(H,Y)VAHR072B42S (H,Y)VAHR096B42S (H,Y)VAHR168B42S (H,Y)VAHR192B42S	23.0	22.5	24.0	23.5	26.0

575V

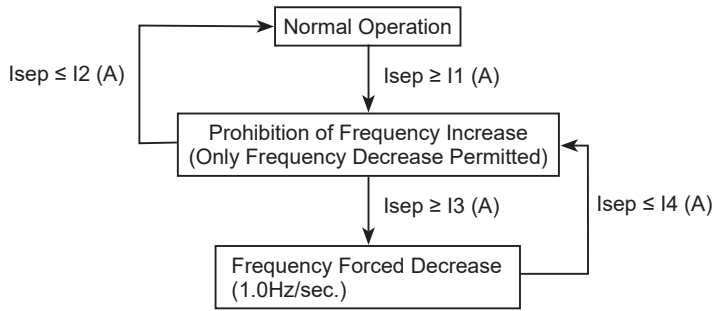
Model	I1	I2	I3	I4	I5
(H,Y)VAHR120B52S (H,Y)VAHR144B52S	18.0	17.5	19.0	18.5	19.0
(H,Y)VAHR072B52S (H,Y)VAHR096B52S (H,Y)VAHR168B52S (H,Y)VAHR192B52S	23.0	22.5	24.0	23.5	24.0

NOTE:

1. With a combination of base units, the control in the figure is performed for each outdoor unit connected. When there is outdoor unit in Prohibition of Frequency Increase, all the outdoor units in operation are prohibited to increase frequency. When there is outdoor unit in Frequency Forced Decrease, all the outdoor units in operation are forced to decrease frequency.
2. In the case of two inverter PCBs installed in an outdoor unit, the max. current value detected at each inverter PCB is utilized.
linv: Detected Value of Inverter Secondary Current Sensor[A]

(b) Primary Current Protection for each Inverter PCB

Details of Control



NOTE:

1. With a combination of base units, the control in the figure is performed for each outdoor unit connected. When there is outdoor unit in Prohibition of Frequency Increase, all the outdoor units in operation are prohibited to increase frequency. When there is outdoor unit in Frequency Forced Decrease, all the outdoor units in operation are forced to decrease frequency.
2. In the case of two inverter PCBs installed in an outdoor unit, the max. current value detected at each inverter PCB is utilized.
Isep: Inverter Primary Current[A]

Control Value

208 / 230V

Model	I1	I2	I3	I4
(H,Y)VAHR120B32S	39.5	38.0	40.0	39.5
(H,Y)VAHR144B32S				
(H,Y)VAHR072B32S	49.5	48.0	50.0	49.5
(H,Y)VAHR096B32S				
(H,Y)VAHR168B32S				
(H,Y)VAHR192B32S				

460V

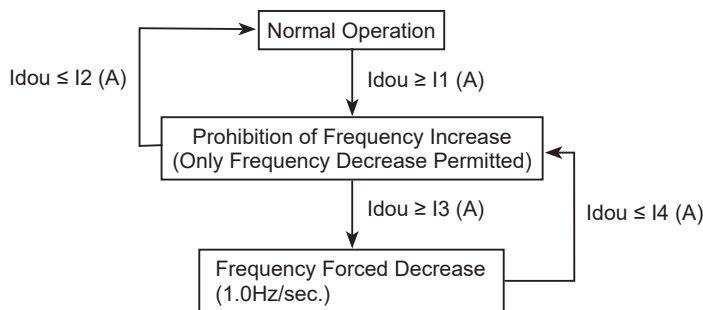
Model	I1	I2	I3	I4
(H,Y)VAHR072B42S	24.5	23.5	25.0	24.5
(H,Y)VAHR096B42S				
(H,Y)VAHR120B42S				
(H,Y)VAHR144B42S				
(H,Y)VAHR168B42S				
(H,Y)VAHR192B42S				

575V

Model	I1	I2	I3	I4
(H,Y)VAHR072B52S	21.0	20.0	21.5	21.0
(H,Y)VAHR096B52S				
(H,Y)VAHR120B52S				
(H,Y)VAHR144B52S				
(H,Y)VAHR168B52S				
(H,Y)VAHR192B52S				

(c) Primary Current Protection for each Outdoor Unit

Details of Control



NOTE:

1. With a combination of base units, the control in the figure is performed for each outdoor unit connected. When there is outdoor unit in Prohibition of Frequency Increase, all the outdoor units in operation are prohibited to increase frequency. When there is outdoor unit in Frequency Forced Decrease, all the outdoor units in operation are forced to decrease frequency.

Idou: Total Value of Primary Current of all the Inverter PCB in an Outdoor Unit[A]

Control Value

208V

Model	I1	I2	I3	I4
(H,Y)VAHR072B32S	22.0	20.5	22.5	22.0
(H,Y)VAHR096B32S	29.7	28.2	30.2	29.7
(H,Y)VAHR120B32S	39.3	37.8	39.8	39.3
(H,Y)VAHR144B32S	49.9	48.4	50.4	49.9
(H,Y)VAHR168B32S	56.1	54.6	56.6	56.1
(H,Y)VAHR192B32S	65.7	64.2	66.2	65.7

230V

Model	I1	I2	I3	I4
(H,Y)VAHR072B32S	19.9	18.4	20.4	19.9
(H,Y)VAHR096B32S	26.9	25.4	27.4	26.9
(H,Y)VAHR120B32S	35.6	34.1	36.1	35.6
(H,Y)VAHR144B32S	45.1	43.6	45.6	45.1
(H,Y)VAHR168B32S	50.8	49.3	51.3	50.8
(H,Y)VAHR192B32S	59.5	58.0	60.0	59.5

460V

Model	I1	I2	I3	I4
(H,Y)VAHR072B42S	11.2	10.2	11.7	11.2
(H,Y)VAHR096B42S	15.2	14.2	15.7	15.2
(H,Y)VAHR120B42S	20.2	19.2	20.7	20.2
(H,Y)VAHR144B42S	25.7	24.7	26.2	25.7
(H,Y)VAHR168B42S	29.0	28.0	29.5	29.0
(H,Y)VAHR192B42S	34.0	33.0	34.5	34.0

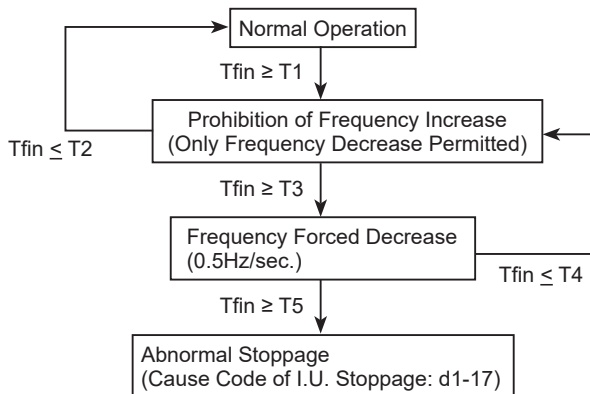
575V

Model	I1	I2	I3	I4
(H,Y)VAHR072B52S	8.9	7.9	9.4	8.9
(H,Y)VAHR096B52S	12.1	11.1	12.6	12.1
(H,Y)VAHR120B52S	16.1	15.1	16.6	16.1
(H,Y)VAHR144B52S	20.5	19.5	21.0	20.5
(H,Y)VAHR168B52S	23.1	22.1	23.6	23.1
(H,Y)VAHR192B52S	27.1	26.1	27.6	27.1

(4) P04: Inverter Fin Temperature Increase Protection Control

Inverter Fin Temperature Increase Protection Control is performed in order to prevent an inverter trip caused by a temperature increase of the inverter fin.

Detail of Control



Control Value
208/230V

[°F(°C)]

Model	T1	T2	T3	T4	T5
(H,Y)VAHR120B32S	208	205	212	208	223
(H,Y)VAHR144B32S	(98)	(96)	(100)	(98)	(106)
(H,Y)VAHR072B32S	217	214	221	217	232
(H,Y)VAHR096B32S	(103)	(101)	(105)	(103)	(111)
(H,Y)VAHR168B32S					
(H,Y)VAHR192B32S					

460V, 575V

[°F(°C)]

Model	T1	T2	T3	T4	T5
(H,Y)VAHR072B42S to (H,Y)VAHR192B42S	216	212	220	216	230
(H,Y)VAHR072B52S to (H,Y)VAHR192B52S	(102)	(100)	(104)	(102)	(110)

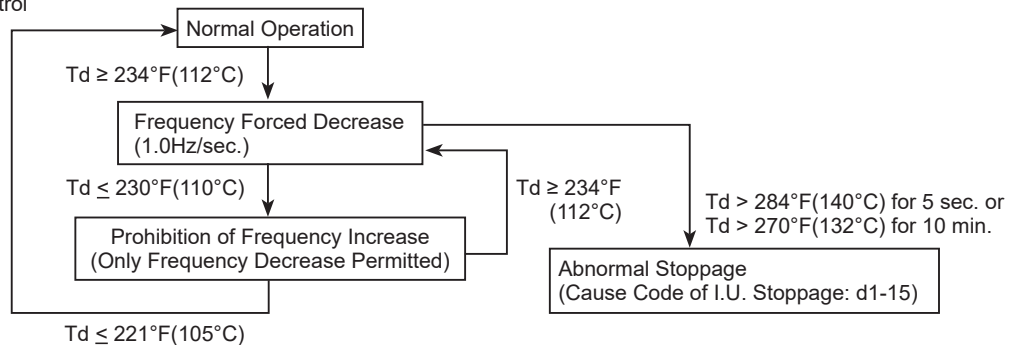
NOTE:

- In the case of a combination of base units, the control in the figure is performed for each outdoor unit connected. When there is outdoor unit in Prohibition of Frequency Increase, all the outdoor units in operation are prohibited to increase frequency. When there is outdoor unit in Frequency Forced Decrease, all the outdoor units in operation are forced to decrease frequency.
- In the case of two inverter PCBs installed in an outdoor unit, the max. temperature detected at each inverter PCB is utilized.
Tfin: Inverter Fin Temperature Sensor Detected Value

(5) P05: Discharge Temperature Increase Protection Control

Discharge Temperature Increase Protection Control is performed in order to protect the compressor motor coil from an increase of discharge temperature during an abnormality.

Details of Control



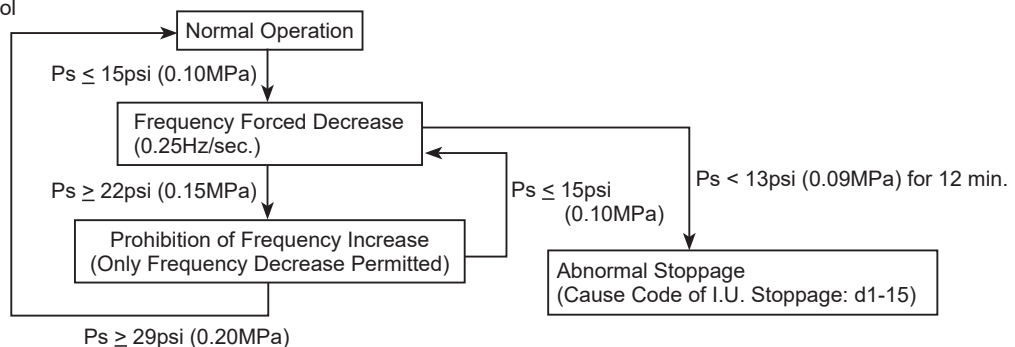
NOTE:

- With a combination of base units, the control in the figure is performed for the entire number of outdoor units to be connected.
- Discharge temperature is detected in each outdoor unit, and this control uses the maximum value.
- In the case of two inverter compressors installed in an outdoor unit, the max. temperature detected at each inverter compressor is utilized.
Td: Detected Value of Discharge Gas Thermistor [°F(°C)]

(6) P06: Low Pressure Decrease Protection Control

Low Pressure Decrease Protection Control is performed in order to protect the compressor from a transitional decrease of suction pressure.

Details of Control



NOTE:

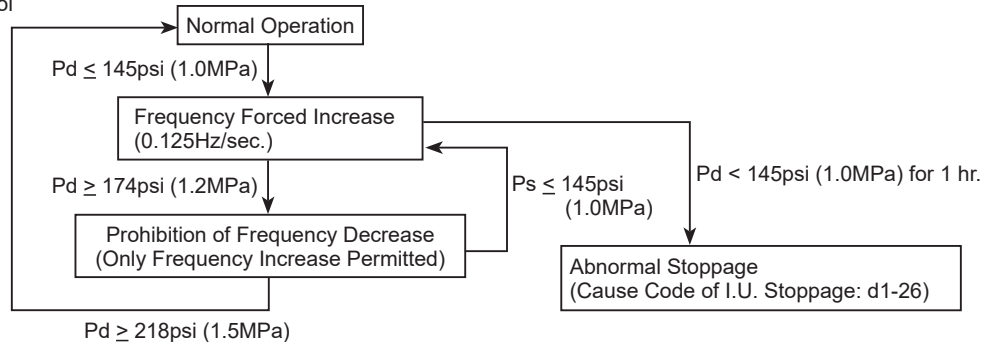
- With a combination of base units, the control in the figure is performed for the entire number of outdoor units to be connected.
- Low pressure is detected in each outdoor unit, and this control uses the minimum value.
Ps: Detected Value of Low Pressure Sensor [psi(MPa)]

(7) P09: High Pressure Decrease Protection Control

When decreasing high pressure, the compressor operation frequency is controlled by this protection control for the following purposes.

- To prevent insufficient refrigerant supply to indoor units installed at different height locations.
- To keep the refrigerant oil supply in the compressor.

Details of Control



NOTE:

1. With a combination of base units, the control in the figure is performed for the entire number of outdoor units to be connected.
2. High pressure is detected in each outdoor unit, and this control uses the minimum value.

Pd: Detected Value of High Pressure Sensor [psi(MPa)]

(8) P0A: Demand Current Control

The compressor operation frequency is controlled to set at the setting value of the outdoor unit inverter primary current (40% to 100% of rated current of cooling operation). This function is detailed in the "External Input and Output Setting". Refer to the Service Manual for details.

Operating Conditions

The demand current control can be performed under the following conditions.

- (a) The demand signal is input from the centralized operation controller.
- (b) The demand signal is input at the external input terminals of the outdoor unit from external equipment such as a building management system or a utility with a smart meter.
- (c) The demand function settings are set from the outdoor unit PCB.
- (d) The wave function is set from the outdoor unit PCB.
- (e) The demand signal is input from the indoor unit (wired controller).

If the operation current exceeds each setting function value, the compressor operation frequency is controlled.

Cancellation Condition

The input signal is stopped at each condition (a) to (e).

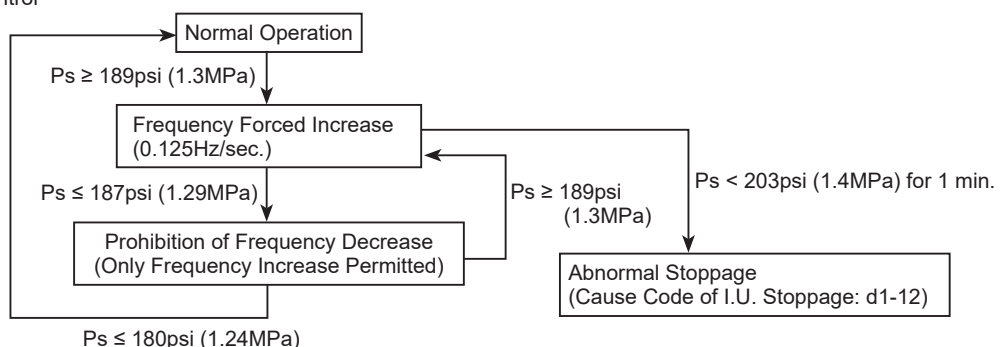
NOTE:

This function is not available when the compressor starts or during a defrosting operation.

(9) P0d: Low Pressure Increase Protection Control

The compressor operation frequency is controlled to protect the compressor from suction pressure transitional increasing.

Details of Control



NOTE:

1. With a combination of base units, the control in the figure is performed for the entire number of outdoor units to be connected.
2. Low pressure is detected in each outdoor unit, and this control uses the maximum value.

Ps: Detected Value of Low Pressure Sensor [psi(MPa)]

(10) Priority of Protection Control

If two or more protection controls meet a condition, the protection controls perform according to the following.

Rank Order.	Indication	Protection Control Performed
1	P01	Pressure Ratio Protection Control
2	P02	High Pressure Increase Protection Control
3	P03	Inverter Current Protection Control
4	P04	Inverter Fin Temperature Increase Protection Control
5	P05	Discharge Temperature Increase Protection Control
6	P06	Low Pressure Decrease Protection Control
7	P0A	Demand Current Control
8	P0d	Low Pressure Increase Protection Control
9	P09	High Pressure Decrease Protection Control

		② Lower Rank Order of Protection Control Function			
		Forced Decrease	Forced Increase	Prohibition of Increase	Prohibition of Decrease
① Higher Rank Order of Protection Control Function	Forced Decrease	①	①	①	①
	Forced Increase	①	①	①	①
	Prohibited Increase	②	①	② *	①
	Prohibited Decrease	②	②	②	②

*: Discharge Temperature Increase Protection Control (P05) is higher than the following protection controls.

a) Low Pressure Decrease Protection Control (P06)

b) Demand Current Control (P0A)

(11) Override (Degeneration) Control

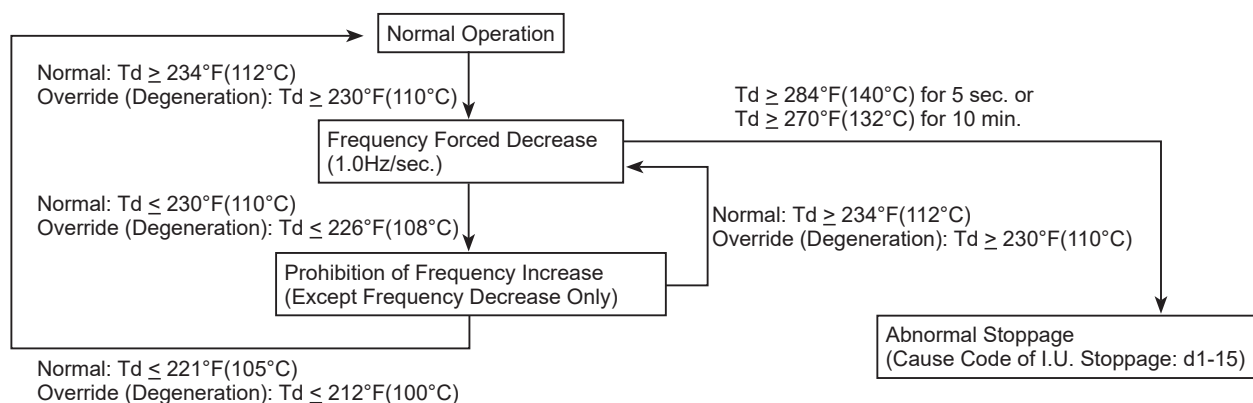
Override (Degeneration) Control is performed to change the protection control range.

This control sequence will suppress re-occurring alarms in response to repeated equipment restarts during protection control conditions listed below.

Related Protection Control

- (1) Pressure Ratio Decrease Protection Control (P01)
- (2) High Pressure Increase Protection Control (P02)
- (3) Inverter Current Protection Control (P03)
- (4) Inverter Fin Temperature Increase Protection Control (P04)
- (5) Discharge Temperature Increase Protection Control (P05)

Example of Discharge Temperature Increase Protection Control



(12) Oil Return Control

Oil return control is performed in order to avoid insufficient oil supply to the compressor caused by long time low frequency operation. This control is utilized to return the oil flow out to the indoor unit side from the compressor.

Activating Condition

This control function is started the compressor runs below the specified speed for 1 hour continuously (refer to the table below).

Compressor Speed for Oil Return Control (Hz)

Capacity [MBH]	Cooling Operation	Heating Operation
072, 096	50	54
120 to 192	66	72
216 to 288	96	108
312 ≤	132	156

Detail of Control**Compressor:**

Increase the compressor speed above the required value to return the oil to the compressor

Expansion Valve:

(In the Case of Cooling Operation) Open the expansion valve of the indoor unit under thermo-ON.

(In the Case of Heating Operation) Open the expansion valve of the outdoor unit.

Deactivating Condition

This control function is canceled when the oil return control continues for more than 60 sec. (for cooling operation) /120sec. (for heating operation).

2.11.4 Safety and Control Device Setting

208/230V 60Hz

Model		(H,Y)VAHR072B32S	(H,Y)VAHR096B32S	(H,Y)VAHR120B32S	(H,Y)VAHR144B32S	(H,Y)VAHR168B32S	(H,Y)VAHR192B32S
High Pressure Increase Protection		Automatic Reset, Non-Adjustable					
High Pressure Increase Protection Control	psi (MPa)	551 (3.80)	551 (3.80)	551 (3.80)	551 (3.80)	551 (3.80)	551 (3.80)
Pressure Switch		(for each compressor)					
Cut-Out	psi (MPa)	601 -7 -21 (4.15 -0.05) -0.15)	601 -7 -21 (4.15 -0.05) -0.15)	601 -7 -21 (4.15 -0.05) -0.15)	601 -7 -21 (4.15 -0.05) -0.15)	601 -7 -21 (4.15 -0.05) -0.15)	601 -7 -21 (4.15 -0.05) -0.15)
Cut-In	psi (MPa)	464 ±21 (3.20 ±0.15)	464 ±21 (3.20 ±0.15)	464 ±21 (3.20 ±0.15)	464 ±21 (3.20 ±0.15)	464 ±21 (3.20 ±0.15)	464 ±21 (3.20 ±0.15)
For Inverter Compressor		Automatic Reset, Non-Adjustable					
Over Current							
Inverter Current Protection Control	A	48	48	38	38	48	48
Fuse	A	50	50	40	40	50	50
Over Heat		Automatic Reset, Non-Adjustable					
Discharge Temperature Increase Protection Control							
for 5sec	°F (°C)	284 (140)	284 (140)	284 (140)	284 (140)	284 (140)	284 (140)
for 10min	°F (°C)	270 (132)	270 (132)	270 (132)	270 (132)	270 (132)	270 (132)
For Fan Motor		Automatic Reset, Non-Adjustable					
Over Current Protection Control	A	7	7	7	7	7	7
Fuse	A	10	10	10	10	10	10

460V 60Hz

Model		(H,Y)VAHR072B42S	(H,Y)VAHR096B42S	(H,Y)VAHR120B42S	(H,Y)VAHR144B42S	(H,Y)VAHR168B42S	(H,Y)VAHR192B42S
High Pressure Increase Protection		Automatic Reset, Non-Adjustable					
High Pressure Increase Protection Control	psi (MPa)	551 (3.80)	551 (3.80)	551 (3.80)	551 (3.80)	551 (3.80)	551 (3.80)
Pressure Switch		(for each compressor)					
Cut-Out	psi (MPa)	601 -7 -21 (4.15 -0.05) -0.15)	601 -7 -21 (4.15 -0.05) -0.15)	601 -7 -21 (4.15 -0.05) -0.15)	601 -7 -21 (4.15 -0.05) -0.15)	601 -7 -21 (4.15 -0.05) -0.15)	601 -7 -21 (4.15 -0.05) -0.15)
Cut-In	psi (MPa)	464 ±21 (3.20 ±0.15)	464 ±21 (3.20 ±0.15)	464 ±21 (3.20 ±0.15)	464 ±21 (3.20 ±0.15)	464 ±21 (3.20 ±0.15)	464 ±21 (3.20 ±0.15)
For Inverter Compressor		Automatic Reset, Non-Adjustable					
Over Current							
Inverter Current Protection Control	A	26	26	19.5	19.5	26	26
Fuse	A	25	25	25	25	25	25
Over Heat		Automatic Reset, Non-Adjustable					
Discharge Temperature Increase Protection Control							
for 5sec	°F (°C)	284 (140)	284 (140)	284 (140)	284 (140)	284 (140)	284 (140)
for 10min	°F (°C)	270 (132)	270 (132)	270 (132)	270 (132)	270 (132)	270 (132)
For Fan Motor		Automatic Reset, Non-Adjustable					
Over Current Protection Control	A	3.5	3.5	3.5	3.5	3.5	3.5
Fuse	A	5	10	5	5	5	5

575V 60Hz

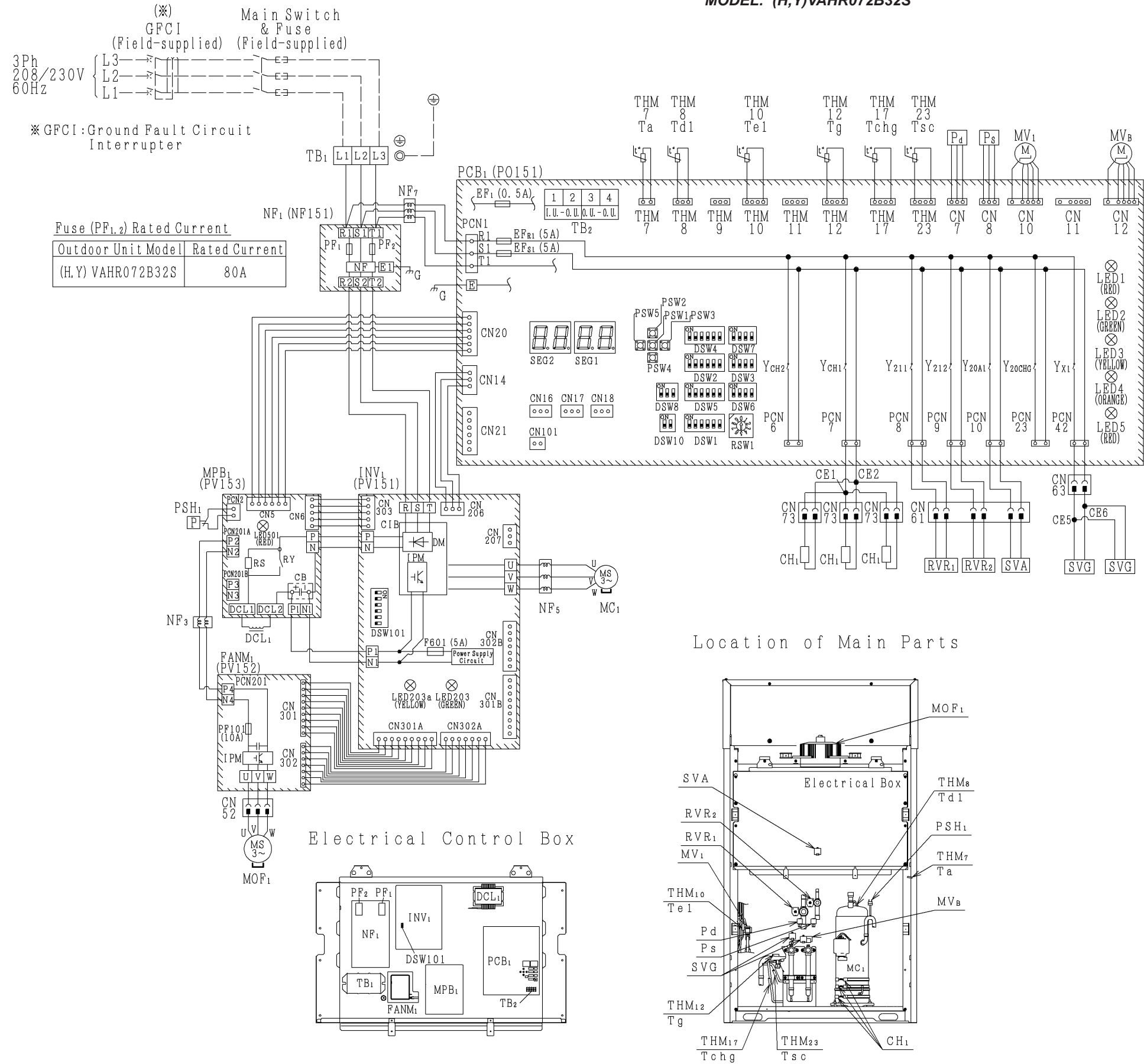
Model		(H,Y)VAHP072B52S	(H,Y)VAHP096B52S	(H,Y)VAHP120B52S	(H,Y)VAHP144B52S	(H,Y)VAHP168B52S	(H,Y)VAHP192B52S
High Pressure Increase Protection		Automatic Reset, Non-Adjustable					
High Pressure Increase Protection Control	psi (MPa)	551 (3.80)	551 (3.80)	551 (3.80)	551 (3.80)	551 (3.80)	551 (3.80)
Pressure Switch		(for each compressor)					
Cut-Out	psi (MPa)	601 -7 -21 (4.15 -0.05) -0.15)	601 -7 -21 (4.15 -0.05) -0.15)	601 -7 -21 (4.15 -0.05) -0.15)	601 -7 -21 (4.15 -0.05) -0.15)	601 -7 -21 (4.15 -0.05) -0.15)	601 -7 -21 (4.15 -0.05) -0.15)
Cut-In	psi (MPa)	464 ±21 (3.20 ±0.15)	464 ±21 (3.20 ±0.15)	464 ±21 (3.20 ±0.15)	464 ±21 (3.20 ±0.15)	464 ±21 (3.20 ±0.15)	464 ±21 (3.20 ±0.15)
For Inverter Compressor		Automatic Reset, Non-Adjustable					
Over Current							
Inverter Current Protection Control	A	24.0	24.0	19.0	19.0	24.0	24.0
Fuse	A	25	25	25	25	25	25
Over Heat		Automatic Reset, Non-Adjustable					
Discharge Temperature Increase Protection Control							
for 5sec	°F (°C)	284 (140)	284 (140)	284 (140)	284 (140)	284 (140)	284 (140)
for 10min	°F (°C)	270 (132)	270 (132)	270 (132)	270 (132)	270 (132)	270 (132)
For Fan Motor		Automatic Reset, Non-Adjustable					
Over Current Protection Control	A	3.5	3.5	3.5	3.5	3.5	3.5
Fuse	A	5	10	5	5	5	5

2.11.5 Electrical Wiring Diagram

2.11.5.1 Outdoor Units

(1) 208 / 230V 60Hz

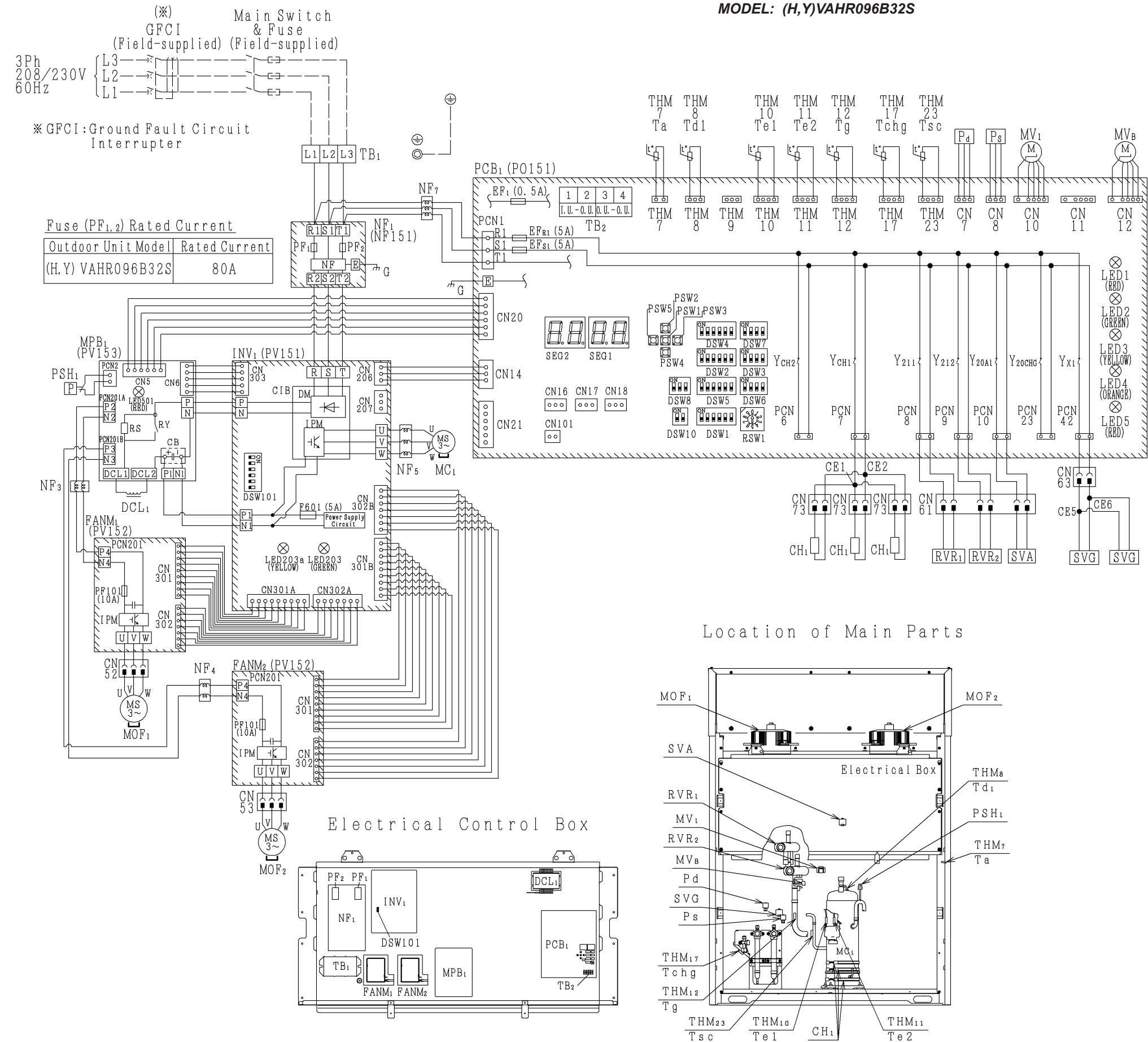
MODEL: (H,Y)VAHR072B32S



Mark	Name
MC ₁	Motor for Compressor
MOF ₁	Motor for Outdoor Fan
CH ₁	Crankcase Heater
RVR _{1,2}	Reversing Valve Relay
SVA, SVG	Solenoid Valve
MV _{1,B}	Electronic Expansion Valve
P _{d,s}	Sensor for Refrigerant Pressure
THM _{7~23}	Thermistor
PSH ₁	Pressure Switch for Protection
NF _{3,5,7}	Noise Filter
PCB ₁	Control PCB
INV ₁	Inverter PCB
FANM ₁	Fan Controller
MPB ₁	Main Power PCB
NF ₁	Noise Filter (PCB)
EF _{R1,s1,1}	Fuse on PCB ₁
PF _{1,2}	Fuse on NF
PF ₁₀₁	Fuse on FANM
F ₆₀₁	Fuse on INV
CIB	Converter Inverter Brake Module
IPM	Intelligent Power Module
DCL ₁	Reactor
CB	Capacitor
RS	Resistor
RY	Relay
TB ₁	Terminal Block for Power Supply Wiring
TB ₂	Terminal Block for Communication Wiring
⊕.G	Ground
CN ₁₆	Connector for External Output
CN _{17,18}	Connector for External Input
LED _{1~5}	Signal Light on PCB ₁
LED _{203,203a}	Signal Light on INV
LED ₅₀₁	Signal Light on MPB
CN ₁₀₁	Connector for H-LINKII

—	: Factory Wiring
---	: Field Wiring
—□—	: Connector
○	: Connector on PCB
▨	: Printed Circuit Board (PCB ₁)

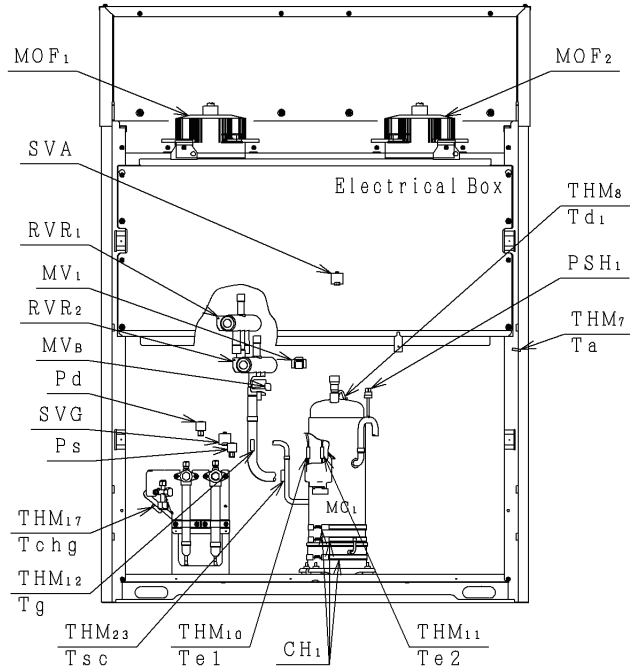
MODEL: (H,Y)VAHR096B32S



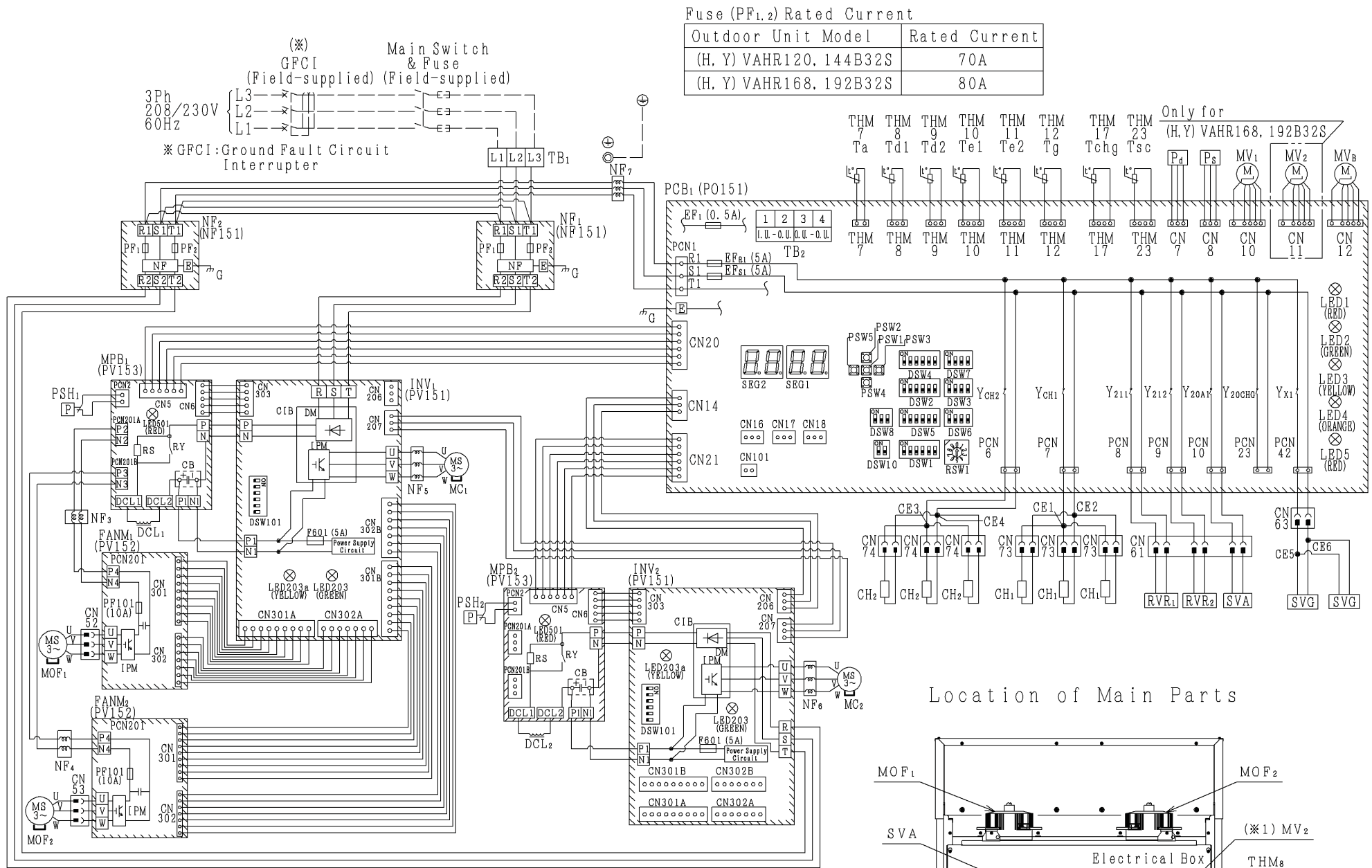
Mark	Name
MC ₁	Motor for Compressor
MOF _{1,2}	Motor for Outdoor Fan
CH ₁	Crankcase Heater
RVR _{1,2}	Reversing Valve Relay
SVA, SVG	Solenoid Valve
MV _{1,B}	Electronic Expansion Valve
Pd, s	Sensor for Refrigerant Pressure
THM ₇₋₂₃	Thermistor
PSH ₁	Pressure Switch for Protection
NF _{3-5,7}	Noise Filter
PCB ₁	Control PCB
INV ₁	Inverter PCB
FANM _{1,2}	Fan Controller
MPB ₁	Main Power PCB
NF ₁	Noise Filter (PCB)
EF _{1, s1, 1}	Fuse on PCB ₁
PF _{1, 2}	Fuse on NF
PF ₁₀₁	Fuse on FANM
F ₆₀₁	Fuse on INV
CIB	Converter Inverter Brake Module
IPM	Intelligent Power Module
DCL ₁	Reactor
CB	Capacitor
RS	Resistor
RY	Relay
TB ₁	Terminal Block for Power Supply Wiring
TB ₂	Terminal Block for Communication Wiring
⊕. G	Ground
CN ₁₆	Connector for External Output
CN _{17,18}	Connector for External Input
LED ₁₋₅	Signal Light on PCB ₁
LED _{203, 203a}	Signal Light on INV
LED ₅₀₁	Signal Light on MPB
CN ₁₀₁	Connector for H-LINK

—	: Factory Wiring
---	: Field Wiring
—□—	: Connector
○	: Connector on PCB
▨	: Printed Circuit Board (PCB ₁)

Location of Main Parts



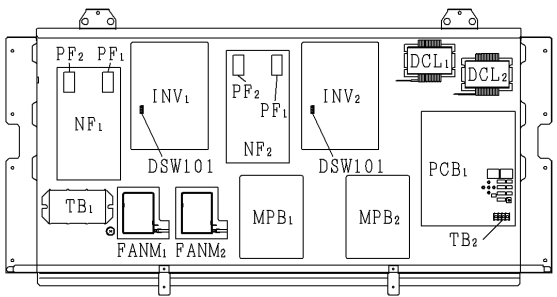
MODELS: (H,Y)VAHR120B32S, (H,Y)VAHR144B32S, (H,Y)VAHR168B32S and (H,Y)VAHR192B32S



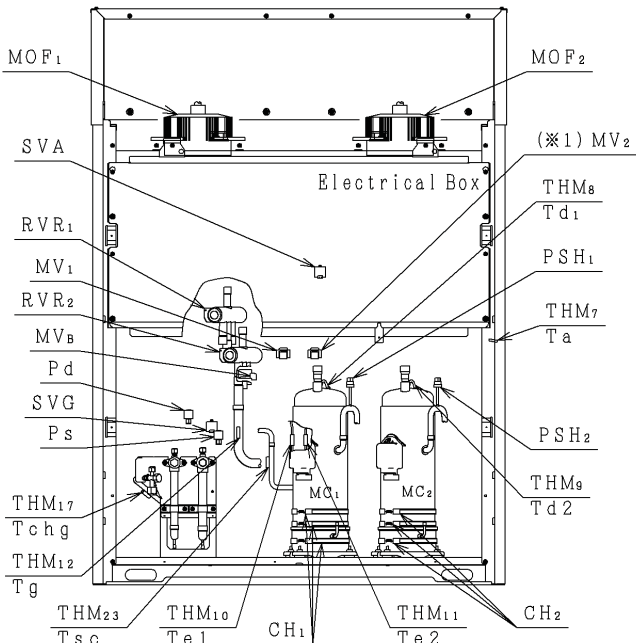
Fuse (PF _{1,2}) Rated Current	
Outdoor Unit Model	Rated Current
(H, Y) VAHR120, 144B32S	70A
(H, Y) VAHR168, 192B32S	80A

Mark	Name
MC _{1,2}	Motor for Compressor
MOF _{1,2}	Motor for Outdoor Fan
CH _{1,2}	Crankcase Heater
RVR _{1,2}	Reversing Valve Relay
SVA, SVG	Solenoid Valve
MV _{1,2,B}	Electronic Expansion Valve
Pd, s	Sensor for Refrigerant Pressure
THM _{7~23}	Thermistor
PSH _{1,2}	Pressure Switch for Protection
NF _{3~7}	Noise Filter
PCB ₁	Control PCB
INV _{1,2}	Inverter PCB
FANM _{1,2}	Fan Controller
MPB _{1,2}	Main Power PCB
NF _{1,2}	Noise Filter (PCB)
EF _{R1, s1, 1}	Fuse on PCB ₁
PF _{1,2}	Fuse on NF
PF ₁₀₁	Fuse on FANM
F ₆₀₁	Fuse on INV
CIB	Converter Inverter Brake Module
IPM	Intelligent Power Module
DCL _{1,2}	Reactor
CB	Capacitor
RS	Resistor
RY	Relay
TB ₁	Terminal Block for Power Supply Wiring
TB ₂	Terminal Block for Communication Wiring
⊕, G	Ground
CN ₁₆	Connector for External Output
CN _{17,18}	Connector for External Input
LED _{1~5}	Signal Light on PCB ₁
LED _{203, 203a}	Signal Light on INV
LED ₅₀₁	Signal Light on MPB
CN ₁₀₁	Connector for H-LINKII

Electrical Control Box



Location of Main Parts

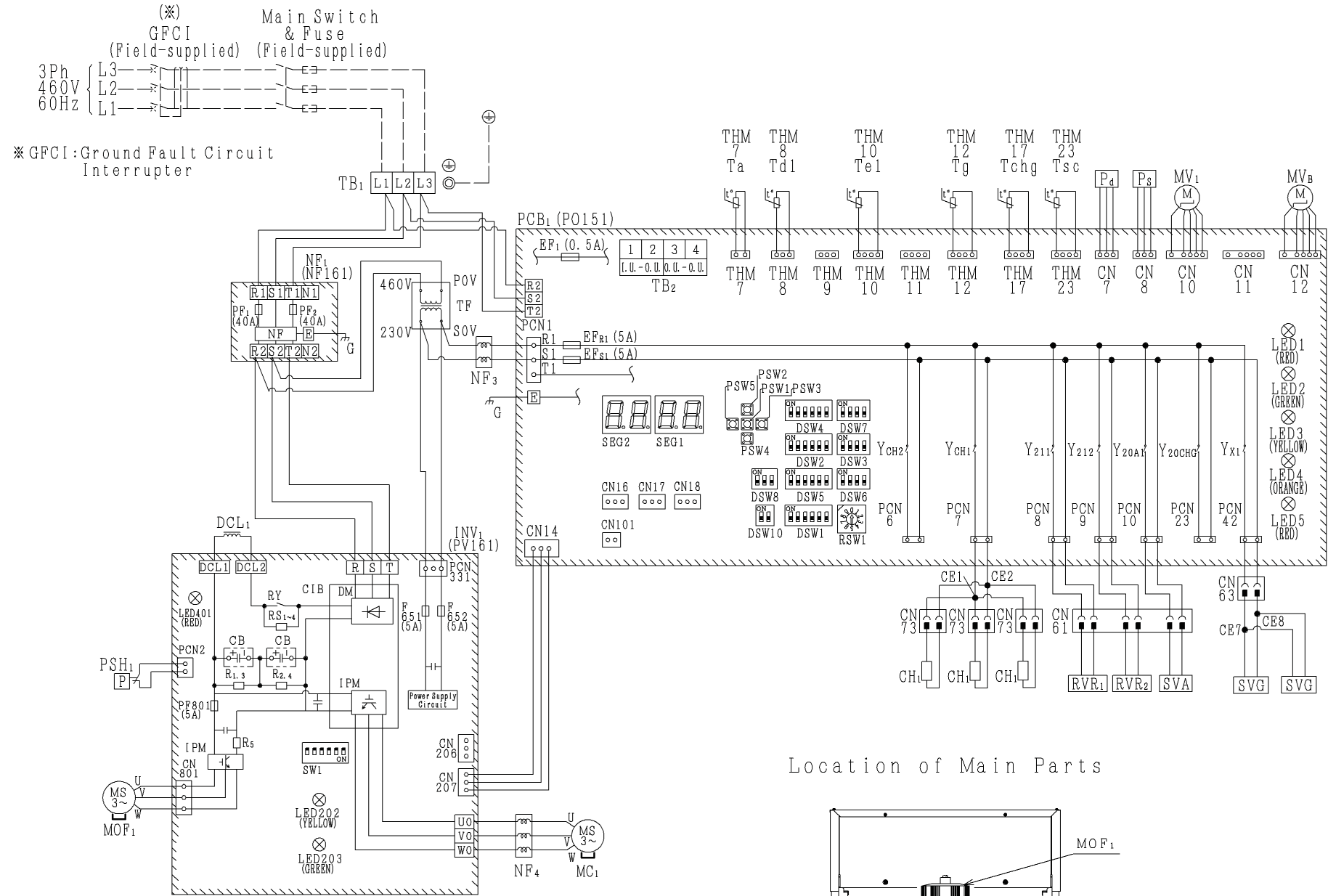


(※1) Only for (H,Y) VAHR168,192B32S

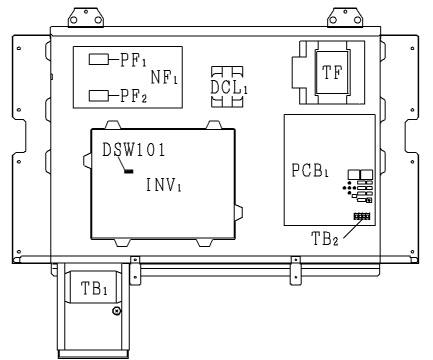
—	: Factory Wiring
---	: Field Wiring
—□—	: Connector
○	: Connector on PCB
▨	: Printed Circuit Board (PCB ₁)

(2) 460V 60Hz

MODEL: (H,Y)VAHR072B42S



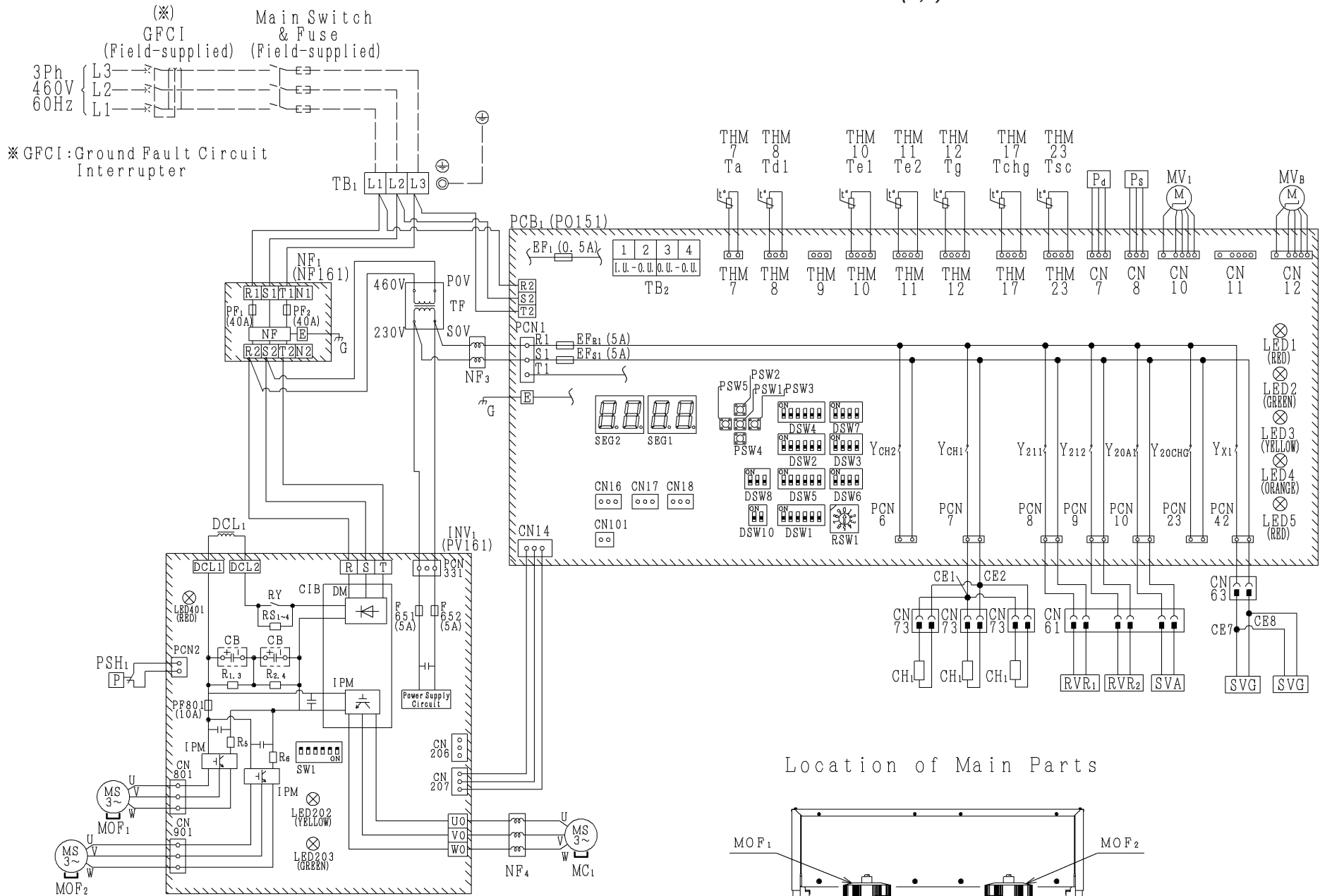
Electrical Control Box



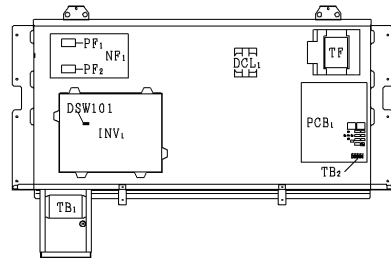
Mark	Name
MC ₁	Motor for Compressor
MOF ₁	Motor for Outdoor Fan
CH ₁	Crankcase Heater
RVR _{1,2}	Reversing Valve Relay
SVA, SVG	Solenoid Valve
MV _{1,B}	Electronic Expansion Valve
Pd, s	Sensor for Refrigerant Pressure
THM _{7~23}	Thermistor
PSH ₁	Pressure Switch for Protection
NF _{3,4}	Noise Filter
PCB ₁	Control PCB
INV ₁	Inverter PCB
NF ₁	Noise Filter (PCB)
EF _{R1, S1, 1}	Fuse on PCB ₁
PF _{1,2}	Fuse on NF
FU _{651, 652}	Fuse on INV
PF ₈₀₁	Fuse on INV
CIB	Converter Inverter Brake Module
IPM	Intelligent Power Module
DCL ₁	Reactor
CB	Capacitor
RS _{1~4, R_{1~4}}	Resistor
RY	Relay
TF	Transformer
TB ₁	Terminal Block for Power Supply Wiring
TB ₂	Terminal Block for Communication Wiring
⊕, G	Ground
CN ₁₆	Connector for External Output
CN _{17,18}	Connector for External Input
LED _{1~5}	Signal Light on PCB ₁
LED _{202, 203, 401}	Signal Light on INV
CN ₁₀₁	Connector for H-LINKII

—————	: Factory Wiring
-----	: Field Wiring
—□—	: Connector
○	: Connector on PCB
▨	: Printed Circuit Board (PCB ₁)

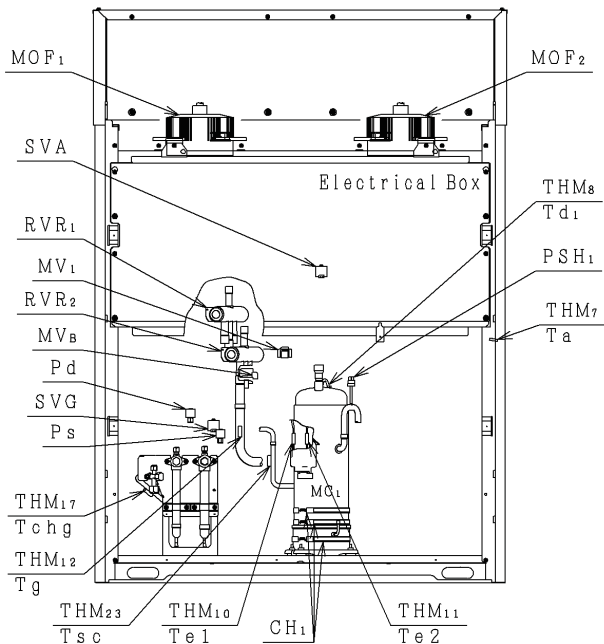
MODEL: (H,Y)VAHR096B42S



Electrical Control Box



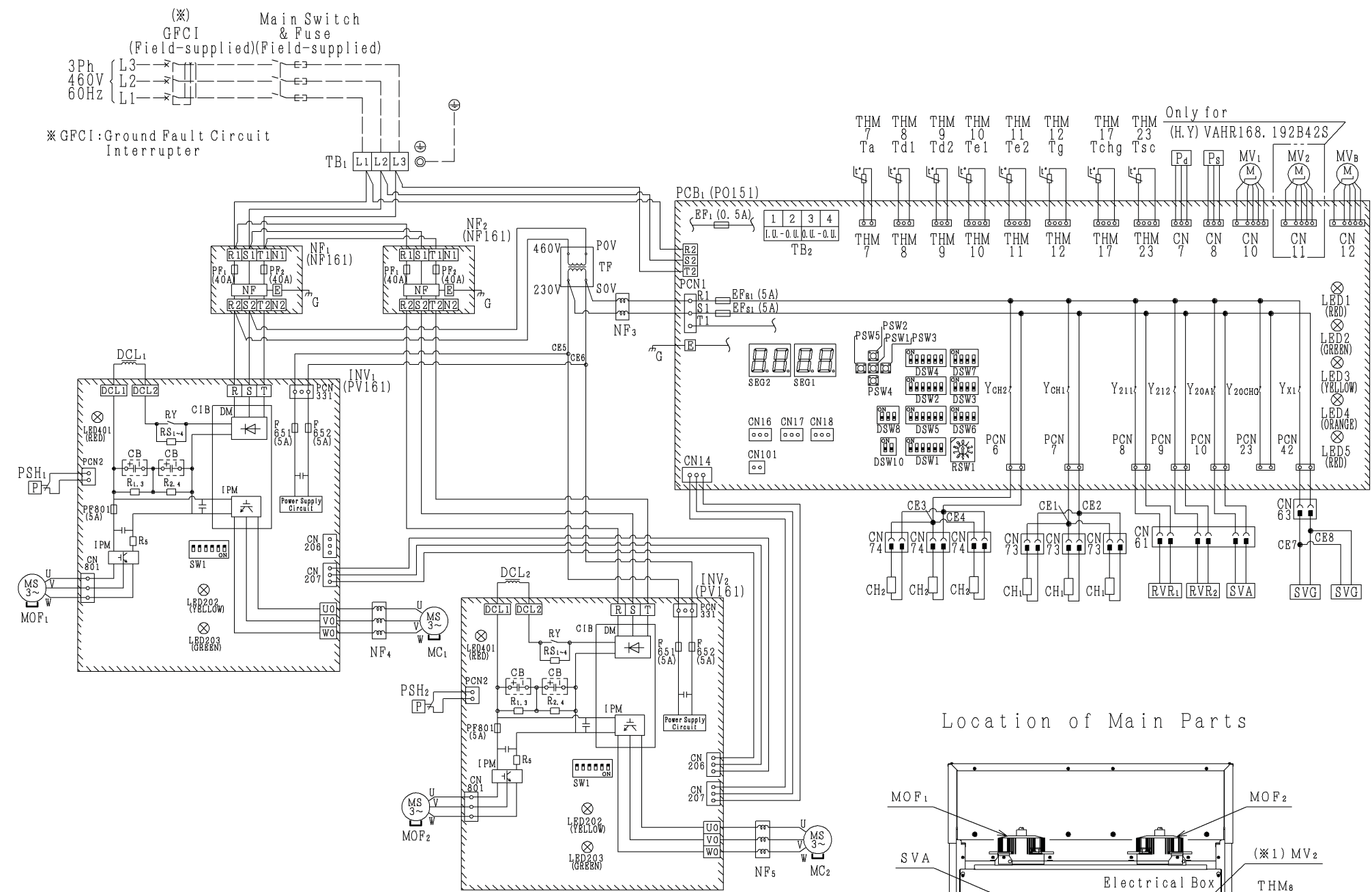
Location of Main Parts



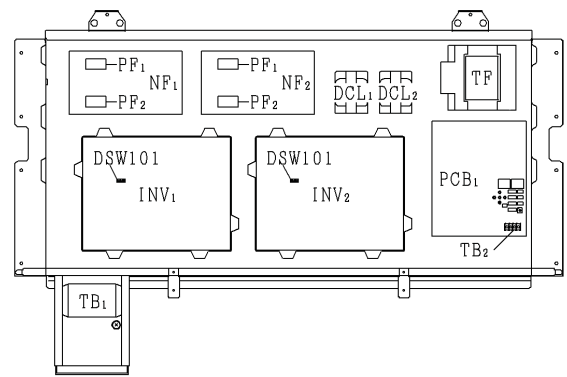
Mark	Name
MC ₁	Motor for Compressor
MOF _{1,2}	Motor for Outdoor Fan
CH ₁	Crankcase Heater
RVR _{1,2}	Reversing Valve Relay
SVA, SVG	Solenoid Valve
MV _{1,B}	Electronic Expansion Valve
Pd, s	Sensor for Refrigerant Pressure
THM ₇₋₂₃	Thermistor
PSH ₁	Pressure Switch for Protection
NF _{3,4}	Noise Filter
PCB ₁	Control PCB
INV ₁	Inverter PCB
NF ₁	Noise Filter (PCB)
EFR _{1,S1,1}	Fuse on PCB ₁
PF _{1,2}	Fuse on NF
FU _{651,652}	Fuse on INV
PF ₈₀₁	Converter Inverter Brake Module
CIB	Converter Inverter Brake Module
IPM	Intelligent Power Module
DCL ₁	Reactor
CB	Capacitor
RS ₁₋₄ , R ₁₋₄	Resistor
RY	Relay
TF	Transformer
TB ₁	Terminal Block for Power Supply Wiring
TB ₂	Terminal Block for Communication Wiring
⊕, G	Ground
CN ₁₆	Connector for External Output
CN _{17,18}	Connector for External Input
LED ₁₋₅	Signal Light on PCB ₁
LED _{202,203,401}	Signal Light on INV
CN ₁₀₁	Connector for H-LINKII

- : Factory Wiring
- : Field Wiring
- : Connector
- : Connector on PCB
- ▨ : Printed Circuit Board (PCB₁)

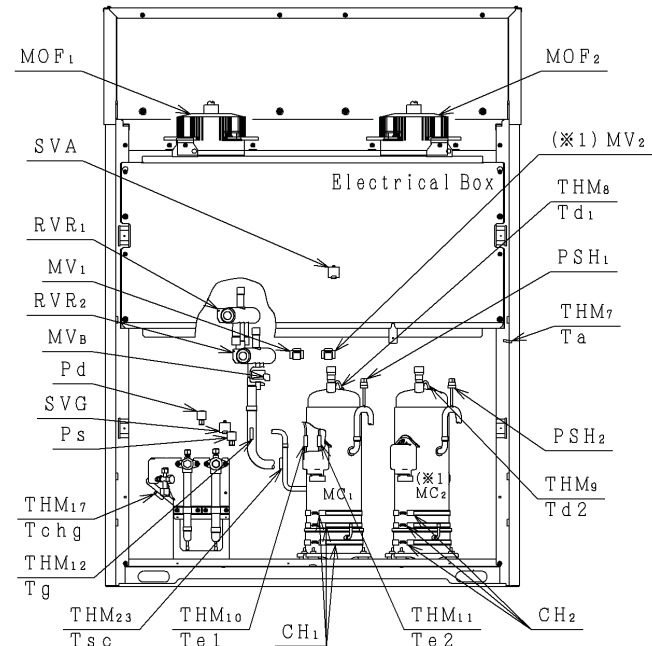
MODELS: (H,Y)VAHR120B42S, (H,Y)VAHR144B42S, (H,Y)VAHR168B42S and (H,Y)VAHR192B42S



Electrical Control Box



Location of Main Parts



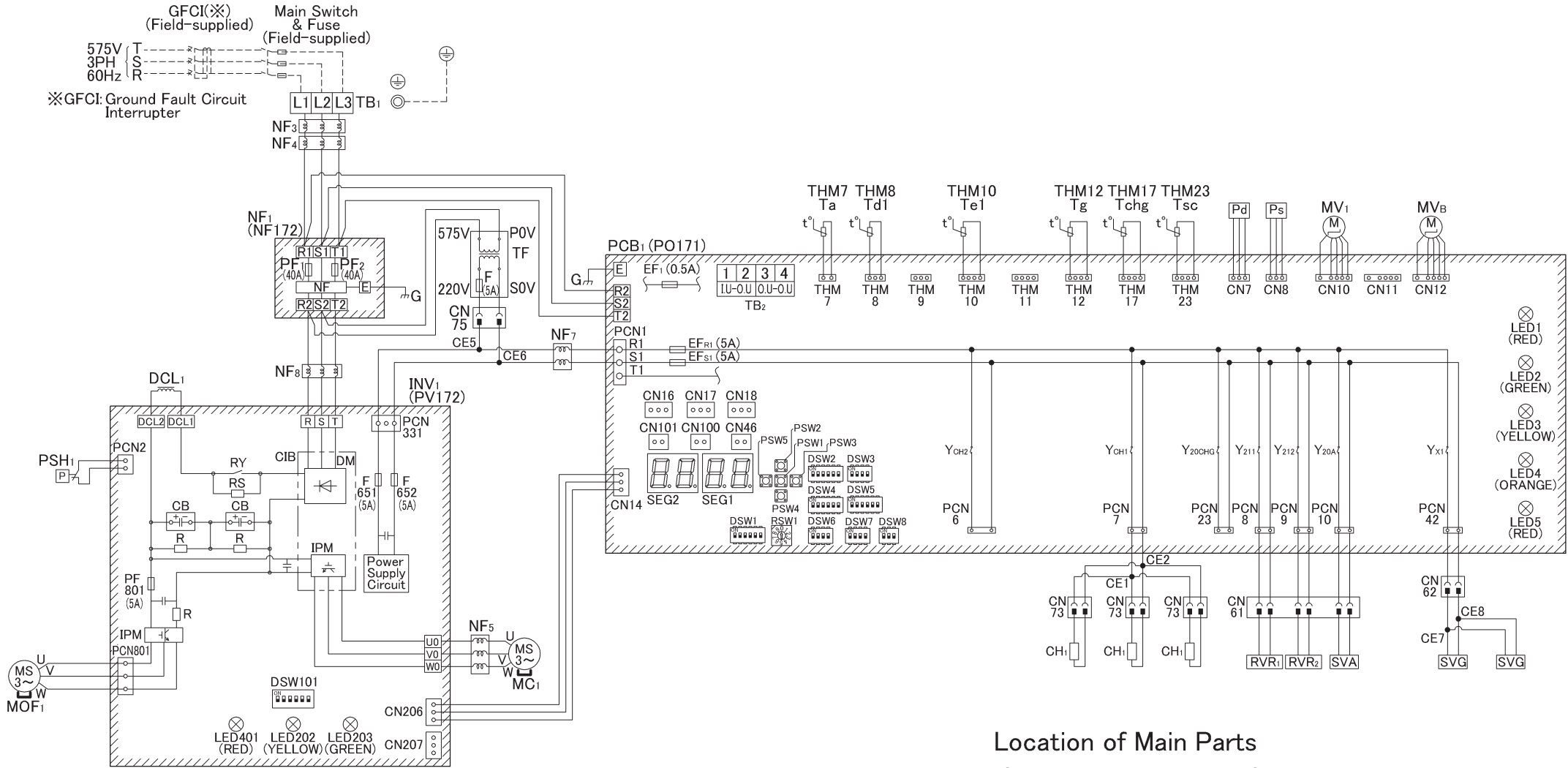
(※1) Only for (H,Y) VAHR168, 192B42S

Mark	Name
MC _{1.2}	Motor for Compressor
MOF _{1.2}	Motor for Outdoor Fan
CH _{1.2}	Crankcase Heater
RVR _{1.2}	Reversing Valve Relay
SVA, SVG	Solenoid Valve
MV _{1.2.B}	Electronic Expansion Valve
Pd, s	Sensor for Refrigerant Pressure
THM ₇₋₂₃	Thermistor
PSH _{1.2}	Pressure Switch for Protection
NF ₃₋₅	Noise Filter
PCB ₁	Control PCB
INV _{1.2}	Inverter PCB
NF _{1.2}	Noise Filter (PCB)
EF _{R1.S1.1}	Fuse on PCB ₁
PF _{1.2}	Fuse on NF
FU _{651.652}	Fuse on INV
PF ₈₀₁	Fuse on INV
CIB	Converter Inverter Brake Module
IPM	Intelligent Power Module
DCL _{1.2}	Reactor
CB	Capacitor
RS ₁₋₄ , R ₁₋₄	Resistor
RY	Relay
TF	Transformer
TB ₁	Terminal Block for Power Supply Wiring
TB ₂	Terminal Block for Communication Wiring
⊕, G	Ground
CN ₁₆	Connector for External Output
CN _{17.18}	Connector for External Input
LED ₁₋₅	Signal Light on PCB ₁
LED _{202.203.401}	Signal Light on INV
CN ₁₀₁	Connector for H-LINKII

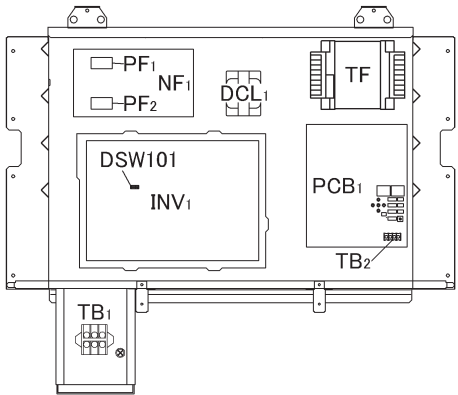
- : Factory Wiring
- : Field Wiring
- : Connector
- : Connector on PCB
- ▨: Printed Circuit Board (PCB₁)

(3) 575V 60Hz

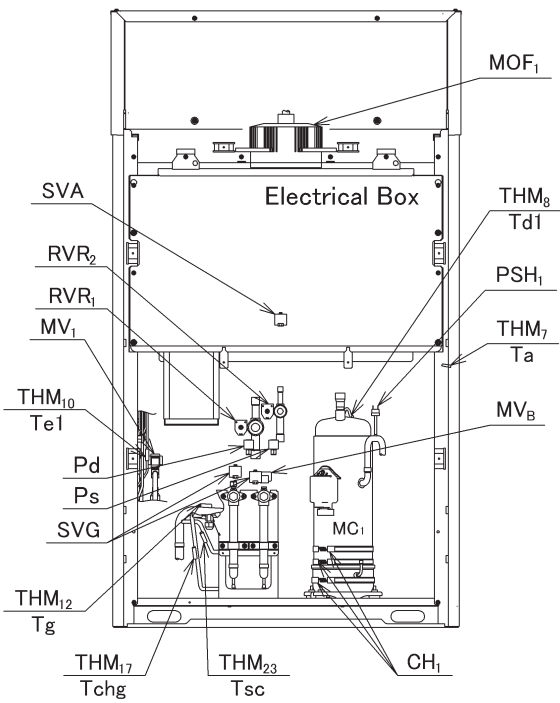
MODEL: (H,Y)VAHR072B52S



Electrical Box



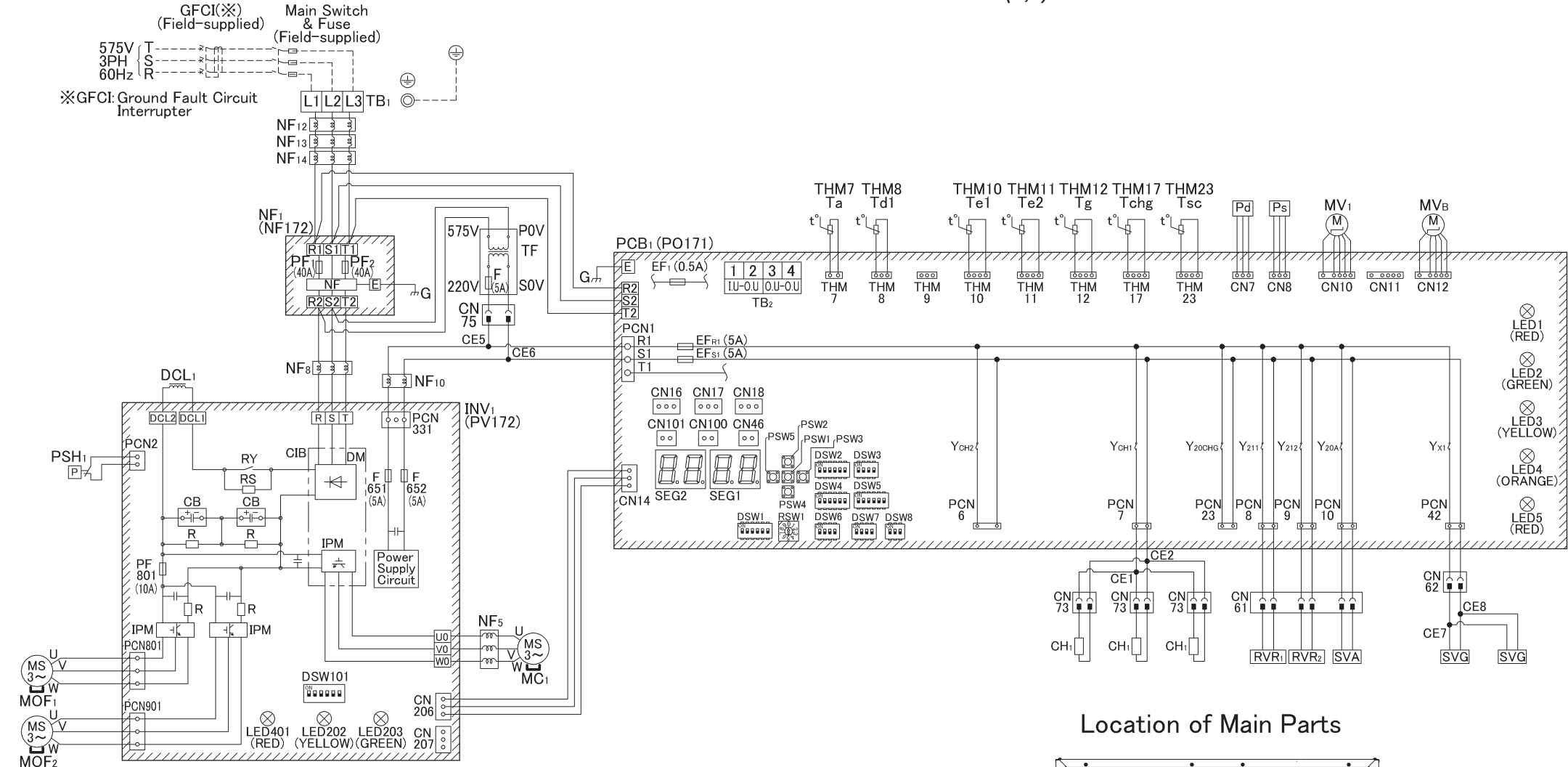
Location of Main Parts



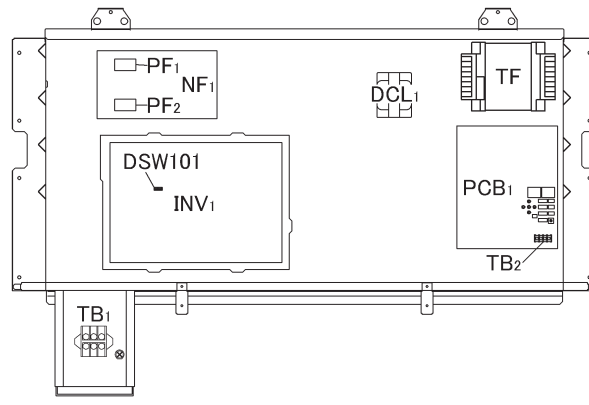
Mark	Name
MC ₁	Motor for Compressor
MOF ₁	Motor for Outdoor Fan
CH ₁	Crankcase Heater
RVR _{1,2}	Reversing Valve Relay
SVA, SVG	Solenoid Valve
MV _{1, B}	Electronic Expansion Valve
Pd, s	Sensor for Refrigerant Pressure
THM _{7~23}	Thermistor
PSH _i	Pressure Switch for Protection
NF _{3~5, 7, 8}	Noise Filter
PCB ₁	Control PCB
INV ₁	Inverter PCB
NF ₁	Noise Filter (PCB)
EF _{R1, S1, 1}	Fuse on PCB ₁
F _{651, 652}	Fuse on INV
PF ₈₀₁	Fuse on INV
F	Fuse on TF
CIB	Converter Inverter Brake Module
IPM	Intelligent Power Module
DCL ₁	Reactor
CB	Capacitor
RS, R	Resistor
RY	Relay
TF	Transformer
TB ₁	Terminal Block for Power Supply Wiring
TB ₂	Terminal Block for Communication Wiring
⊕, G	Ground
CN ₁₆	Connector for External Output
CN _{17, 18}	Connector for External Input
LED _{1~5}	Signal Light on PCB ₁
LED _{202, 203, 401}	Signal Light on INV
CN ₁₀₁	Connector for H-LINK II

—	: Factory Wiring
- - - -	: Field Wiring
□	: Connector
○	: Connector on PCB
▨	: Printed Circuit Board (PCB ₁)

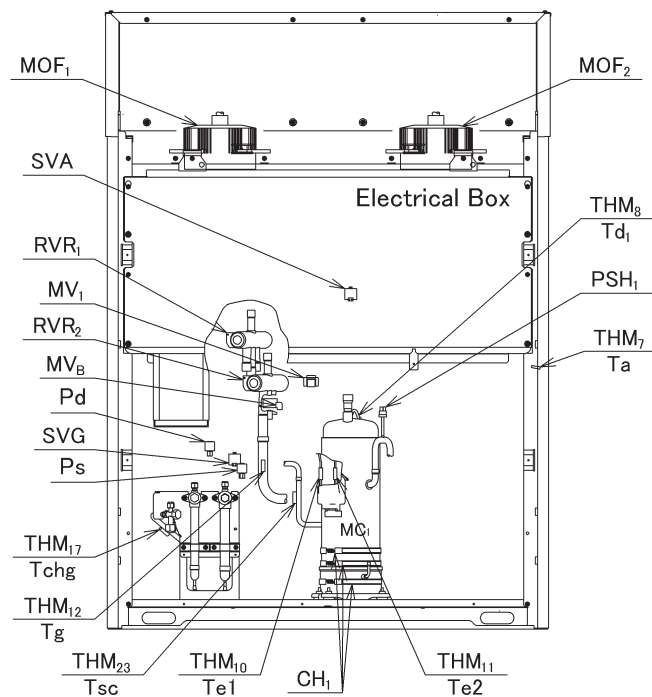
MODEL: (H,Y)VAHR096B52S



Electrical Box



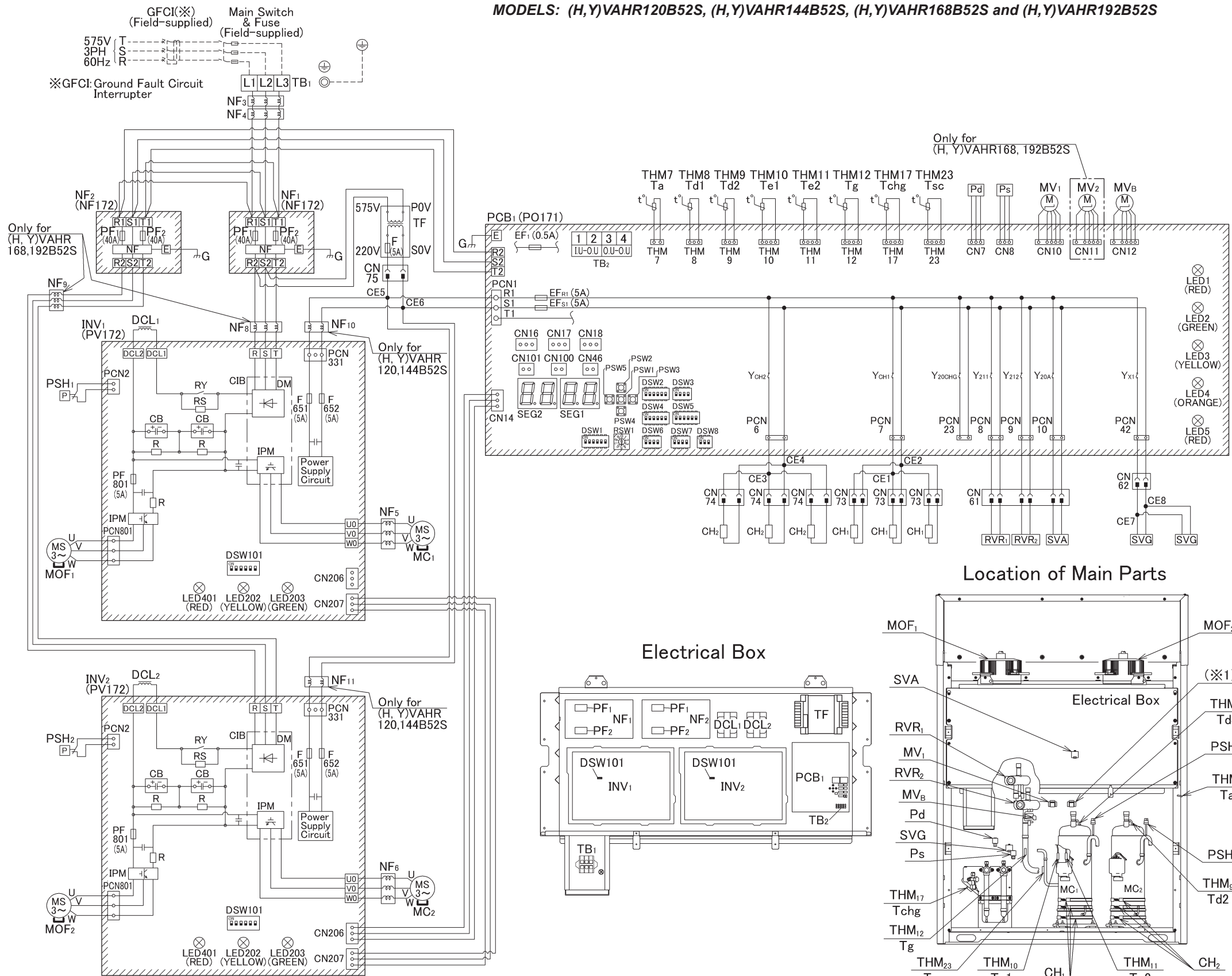
Location of Main Parts



Mark	Name
MC ₁	Motor for Compressor
MOF _{1,2}	Motor for Outdoor Fan
CH ₁	Crankcase Heater
RVR _{1,2}	Reversing Valve Relay
SVA, SVG	Solenoid Valve
MV _{1,B}	Electronic Expansion Valve
Pd, s	Sensor for Refrigerant Pressure
THM _{7~23}	Thermistor
PSH ₁	Pressure Switch for Protection
NF _{5,8,10,12~14}	Noise Filter
PCB ₁	Control PCB
INV ₁	Inverter PCB
NF ₁	Noise Filter (PCB)
EF _{R1, S1, 1}	Fuse on PCB ₁
PF _{1,2}	Fuse on NF
F _{651, 652}	Fuse on INV
PF ₈₀₁	Fuse on INV
F	Fuse on TF
CIB	Converter Inverter Brake Module
IPM	Intelligent Power Module
DCL ₁	Reactor
CB	Capacitor
RS, R	Resistor
RY	Relay
TF	Transformer
TB ₁	Terminal Block for Power Supply Wiring
TB ₂	Terminal Block for Communication Wiring
⊕, G	Ground
CN ₁₆	Connector for External Output
CN _{17, 18}	Connector for External Input
LED _{1~5}	Signal Light on PCB ₁
LED _{202,203,401}	Signal Light on INV
CN ₁₀₁	Connector for H-LINK II

—	: Factory Wiring
- - - -	: Field Wiring
— □ —	: Connector
○	: Connector on PCB
▨	: Printed Circuit Board (PCB ₁)

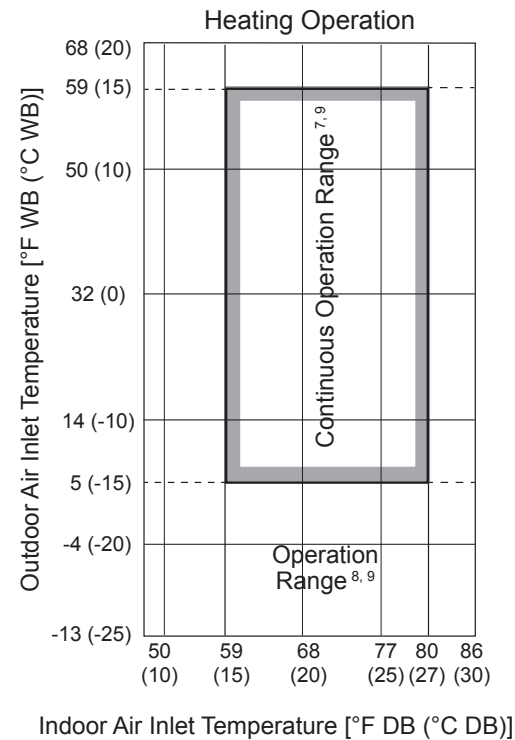
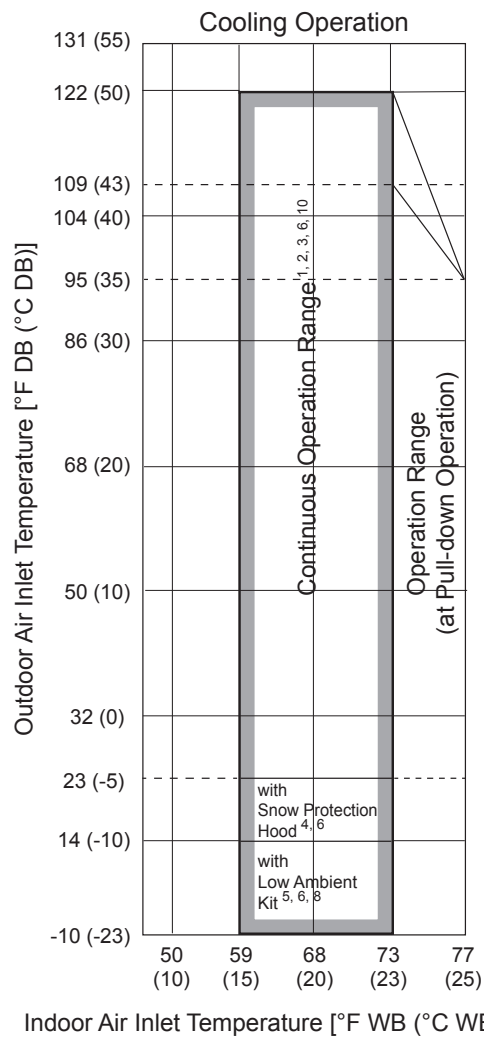
MODELS: (H,Y)VAHR120B52S, (H,Y)VAHR144B52S, (H,Y)VAHR168B52S and (H,Y)VAHR192B52S



Mark	Name
MC _{1,2}	Motor for Compressor
MOF _{1,2}	Motor for Outdoor Fan
CH _{1,2}	Crankcase Heater
RVR _{1,2}	Reversing Valve Relay
SVA, SVG	Solenoid Valve
MV _{1,2,B}	Electronic Expansion Valve
Pd, s	Sensor for Refrigerant Pressure
THM _{7~23}	Thermistor
PSH _{1,2}	Pressure Switch for Protection
NF _{3~6,8~11}	Noise Filter
PCB ₁	Control PCB
INV _{1,2}	Inverter PCB
NF _{1,2}	Noise Filter (PCB)
EF _{R1,S1,1}	Fuse on PCB ₁
PF _{1,2}	Fuse on NF
F _{651,652}	Fuse on INV
PF ₈₀₁	Fuse on INV
F	Fuse on TF
CIB	Converter Inverter Brake Module
IPM	Intelligent Power Module
DCL _{1,2}	Reactor
CB	Capacitor
RS, R	Resistor
RY	Relay
TF	Transformer
TB ₁	Terminal Block for Power Supply Wiring
TB ₂	Terminal Block for Communication Wiring
⊕, G	Ground
CN ₁₆	Connector for External Output
CN _{17,18}	Connector for External Input
LED _{1~5}	Signal Light on PCB ₁
LED _{202,203,401}	Signal Light on INV
CN ₁₀₁	Connector for H-LINK II

—	: Factory Wiring
- - -	: Field Wiring
—○—	: Connector
—□—	: Connector on PCB
▨	: Printed Circuit Board (PCB ₁)

2.12 Operation Temperature Range



Cooling Operation Range		Indoor	°F WB (°C WB)	59 (15) ~ 73 (23)
		Outdoor ^{1, 2, 3, 6, 10}	°F DB (°C DB)	23 (-5) ~ 122 (50)
		with Snow Protection Hood ^{4, 6}	°F DB (°C DB)	14 (-10) ~ 109 (43)
		with Low Ambient Kit ^{5, 6, 8}	°F DB (°C DB)	-10 (-23) ~ 109 (43)
Heating Operation Range		Indoor	°F DB (°C DB)	59 (15) ~ 80 (27)
		Outdoor ^{7, 8, 9}	°F WB (°C WB)	-13 (-25) ~ 59 (15)
Cooling & Heating Operation Range	Cooling	Indoor	°F WB (°C WB)	59 (15) ~ 73 (23)
		Outdoor ^{1, 2, 3, 6, 10}	°F DB (°C DB)	23 (-5) ~ 75 (24)
		with Snow Protection Hood ^{4, 6}	°F DB (°C DB)	14 (-10) ~ 75 (24)
		with Low Ambient Kit ^{5, 6, 8}	°F DB (°C DB)	-10 (-23) ~ 75 (24)
	Heating	Indoor	°F DB (°C DB)	59 (15) ~ 80 (27)
		Outdoor ^{7, 10}	°F WB (°C WB)	22 (-6) ~ 59 (15)
		with Snow Protection Hood ^{4, 6}	°F WB (°C WB)	12 (-11) ~ 59 (15)
		with Low Ambient Kit ^{5, 6, 8}	°F WB (°C WB)	-11 (-24) ~ 59 (15)

1. When the system meets the following conditions, the outdoor unit may be thermo-OFF to prevent the compressor from failure.
 - Total capacity of the operating indoor unit is larger than capacity of outdoor unit; and
 - Outdoor air temperature is 100°F DB (38°C DB) or more.
2. If the installation takes place under either one of the following conditions, the maximum connectable indoor unit capacity ratio is 100%.
 - Outdoor air temperature is 109°F (43°C) or more during cooling operation; or
 - Outdoor air temperature is 14°F (-10°C) or less during cooling operation.
3. When installing the snow protection hood or low ambient kit, the upper limit of outdoor air temperature must be 109°F (43°C).
4. When the outdoor air temperature is 23°F (-5°C) or less during the outdoor unit cooling operation, the minimum connectable indoor unit capacity is 18MBH.
In this case, installing the snow protection hood (optional part) is required.
5. When the outdoor air temperature is 14°F (-10°C) or less during the outdoor unit cooling operation, the minimum connectable indoor unit capacity is 18MBH.
In this case, installing the Low Ambient Kit (optional part) is required.
6. When operating the outdoor unit under the low cooling load conditions and in the low outdoor air temperature, (approx. 50°F DB (10°C DB) or less), the indoor unit will be Thermo-OFF to prevent the heat exchanger of the indoor unit from frost.
Depending on the operating condition, the outlet air temperature of the indoor unit may be excessively low. Pay attention to the direction of the outlet air. Do not place items near the air outlet and under the indoor unit as they may be damaged by condensates that may form if the humidity or the latent heat load is continuously high.
(for example:
 - using at kitchen or gymnasium; or
 - using at the room that has high population density or introduces outside air; or
 - using humidifier together; or
 - using combustion heater like gas heater together))
7. When operating the outdoor unit under the low heating load conditions and the outdoor temperature is 59°F DB (15°C DB) or more, the outdoor unit will be Thermo-OFF to protect the compressor from failure.
8. Operation in the outdoor temperature of 5~-13°F WB (-15~-25°C WB) is assumed to limited conditions such as start-up in early morning. Extended operation in this condition may shorten the life of the compressor.
9. When the outdoor air temperature is 14°F (-10°C) or less, or under the high heating load conditions, the total indoor unit capacity must be less than 100% of the outdoor unit capacity, and the total piping length must be less than 984 ft (300m).
10. There are some limitations of the Height Difference between Outdoor Units and Indoor Units.
Refer to Section 2.14.3 "Piping Size and Multi-kit Selection", for details.

2.13 Combinations of Indoor Units and Outdoor Units

Table 2.1 Indoor Unit Model List

Indoor Unit Model			Capacity (MBH)													
			6	8	12	15	18	24	27	30	36	48	54	60	72	96
Ducted	Ducted (High Static)	(H,Y)IDH_B21S					○	○		○	○	○			○	○
		(H,Y)IDH_B22S				○	○	○	○	○	○	○	○			
	Ducted (Medium Static)	(H,Y>IDM_B21S	○	○	○	○	○	○		○	○	○				
		(H,Y)IDM_B22S	○	○	○	○	○	○	○	○	○	○	○			
	Ducted (Slim)	(H,Y)IDS_B21S	○	○	○	○	○									
	Ducted (EconoFresh)	(H,Y)IDM_B21E								○	○	○				
	Air Handler with DX-Kit	(H,Y)MAHP_(B,C,D)21S					○	○		○	○	○		○		
Non-Ducted	Ceiling-Mounted 4-Way Cassette	(H,Y)IC4_B21S		○	○	○	○	○		○	○	○				
	Ceiling-Mounted 4-Way Cassette Mini	(H,Y)ICM_B21S		○	○	○	○									
	Ceiling-Mounted 2-Way Cassette	(H,Y)IC2_B21S					○	○								
	Ceiling-Mounted 1-Way Cassette	(H,Y)IC1_B21S	○	○	○	○										
	Wall Mount	TIWM_B21S	○	○	○	○	○	○		○						
		TIWM_B22S	○	○	○	○	○	○		○						
	Ceiling Suspended	(H,Y)ICS_B21S				○		○		○	○					
	Floor Exposed	(H,Y)IFE_B21S	○	○	○	○										
	Floor Concealed	(H,Y)IFC_B21S	○	○	○	○										

○ : Available

NOTICE:

For connection to a Ducted (EconoFresh), see below.

- Ducted (EconoFresh) only:
Total capacity of Ducted (EconoFresh) is 70%~100% of the outdoor unit capacity.
- Ducted (EconoFresh) + Other Standard Indoor Unit:
Total capacity of Ducted (EconoFresh) is 30% or below the outdoor unit capacity.
and
Total capacity of indoor unit, including Ducted (EconoFresh) is 70%~100% of the outdoor unit capacity.

- The number of indoor units that can be connected to an outdoor unit is as defined in Table 2.2:
Comply with the following conditions when installing the unit.
- A maximum and minimum total capacity against the nominal outdoor unit capacity can be obtained through combination of indoor units.

Table 2.2 System Combination

Model: (H,Y)VAHR_B(3,4,5)2S

Outdoor Unit Capacity (MBH)	Minimum Capacity at Individual Operation (MBH)	Maximum Number of Connectable I.U.	Recommended Number of Connected I.U.	Connectable Indoor Unit Capacity Ratio	
				Maximum ^{2,3,4,5}	Minimum
72	6 ¹	15	8	130%	70%
96		20	8	130%	65%
120		26	8	130%	60%
144		26	10	130%	55%
168		36	12	130%	55%
192		40	14	130%	55%
216		46	18	130%	60%
240		52	18	130%	60%
264		56	20	130%	55%
288		59	20	130%	55%
312		64	22	130%	55%
336		64	24	130%	55%
360		64	28	130%	55%
384		64	30	130%	55%
408		64	30	130%	55%
432		64	30	130%	55%

1. When the outdoor air temperature is 23°F (-5°C) or less during the outdoor unit cooling operation, the minimum connectable indoor unit capacity is 18 MBH. For detail, refer to Section 2.12 "Operation Temperature Range".
2. When the outdoor air temperature is 109°F (43°C) or more, or 14°F (-10°C) or less during the outdoor unit cooling operation, the maximum connectable indoor unit capacity ratio is 100%.
3. When the outdoor air temperature is 14°F (-10°C) or less, or under the high heating load conditions, the total indoor unit capacity must be less than 100% of the outdoor unit capacity, and the total piping length must be less than 984 ft (300m).
4. When the number of connected indoor unit (I.U.) is within the recommended, the maximum connectable indoor unit capacity ratio is available up to 150%.
5. There are some limitations of the Height Difference between Outdoor Units and Indoor Units. Refer to Section 2.14.3 "Piping Size and Multi-kit Selection", for details.

NOTICE:

The connectable indoor unit capacity ratio can be calculated as follows:

$$\text{Connectable Indoor Unit Capacity Ratio} = \text{Total Indoor Unit Capacity} / \text{Total Outdoor Unit Capacity}$$

In a system where all the indoor units operate simultaneously, the total indoor unit capacity must be less than the outdoor unit capacity. Otherwise, a decrease in operating performance and an increase in the operating limit can result in an overload.

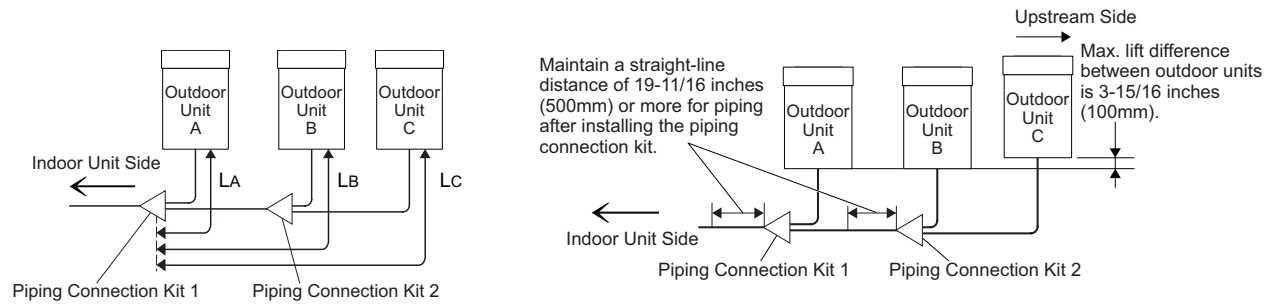
In a system where all the indoor units do not operate simultaneously, the total indoor unit capacity is available up to 150% against the outdoor unit capacity.

The air flow volume for indoor units of 6 and 8 MBH is set higher than that for indoor units of 12 MBH or more. Make sure to select appropriate indoor units for installation where a cold draft may occur during heating operation. If installing indoor units in such locations, refer to the recommended number of indoor units that can be connected.

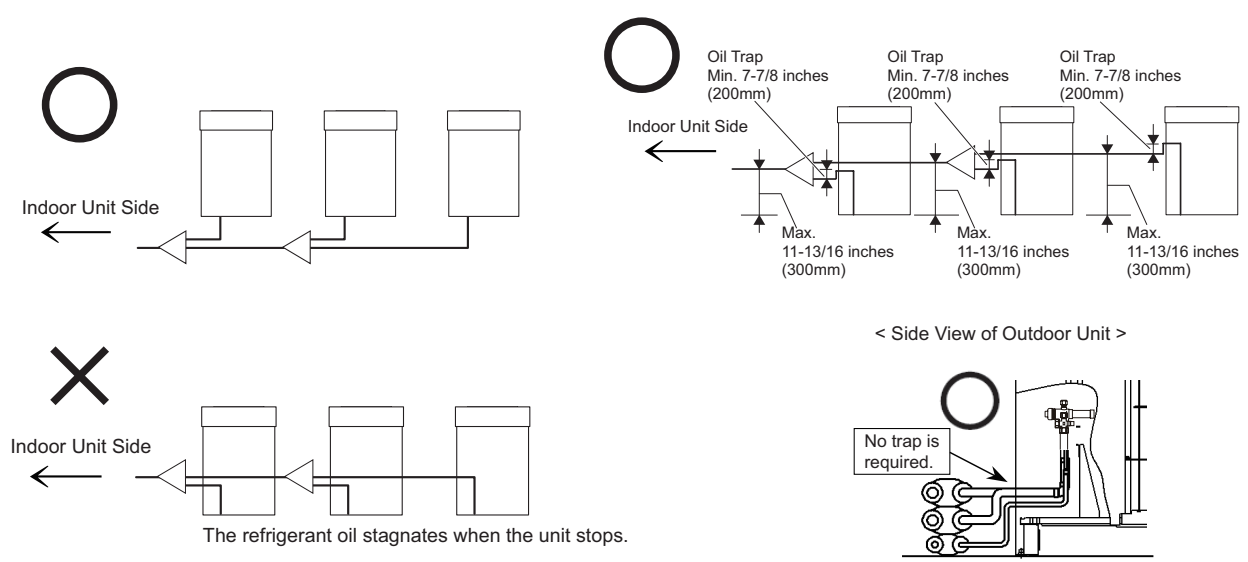
2.14 Piping Work

2.14.1 Piping Work between Outdoor Units

- (1) Piping length between piping connection kit 1 and each outdoor unit must be $LA \leq LB \leq LC \leq 32.8 \text{ ft (10m)}$.
Maintain a straight-line distance of 19-11/16 inches (500mm) or more for piping after the piping connection kit 1.



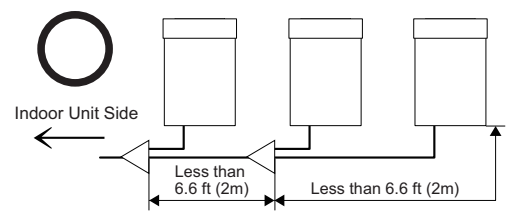
- (2) Place the piping connection kit lower than the outdoor unit piping connection. When the piping connection kit is installed higher than the outdoor unit piping connection, maintain a maximum clearance of 11-13/16 inches (300mm) between the piping connection kit and the bottom of the outdoor unit. Also, install an oil trap (minimum 7-7/8 inches (200mm)) for the gas piping between the piping connection kit and the outdoor unit.



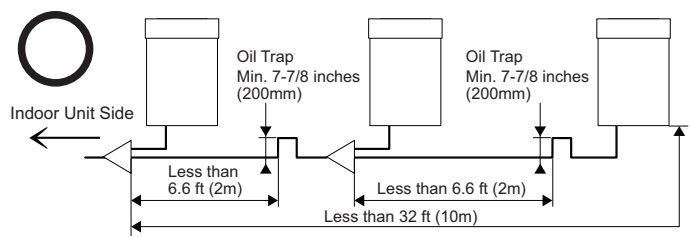
The refrigerant oil stagnates in the stopped outdoor unit during system operation.

- (3) Install an oil trap for the gas piping when the piping length between the piping connection kits, or the outdoor unit and the piping connection kit is 6.6 ft (2m) or more to prevent any accumulation of refrigerant oil.

• Less than 6.6 ft (2m)

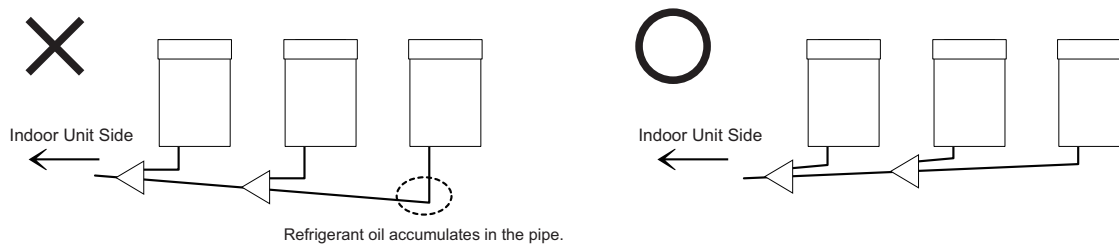


• 6.6 ft (2m) or More

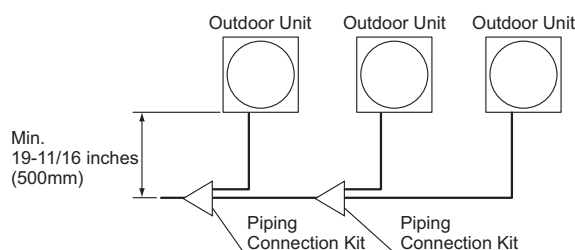


PRODUCT SPECIFICATION

- (4) Place the outdoor unit pipe horizontally or with the pipe slanted downward towards the indoor unit side so that accumulation of refrigerant oil does not occur in the pipe.

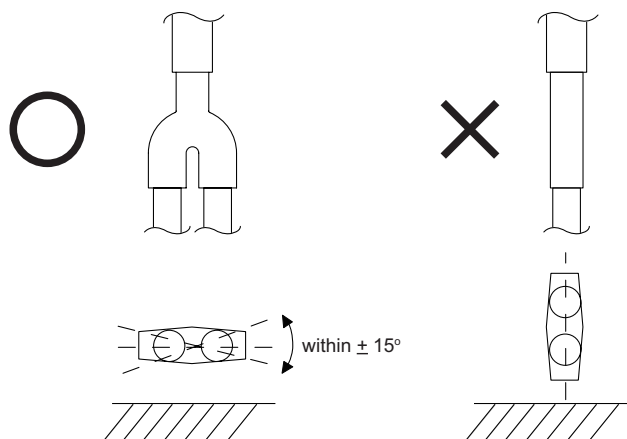


- (5) For servicing, if the pipe is installed in front of the outdoor unit, make sure a minimum clearance of 19-11/16 inches (500mm) between the outdoor unit and each piping connection kit. (When the compressor is replaced, ensure a minimum clearance of 19-11/16 inches (500mm).)



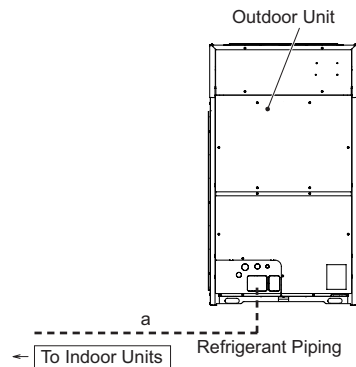
- (6) Direction of Piping Connection Kit

Place the piping connection kit so it is parallel to the ground (the slope must be within $\pm 15^\circ$) as shown in the figure.



2.14.2 Piping Sizes between Outdoor Units

Base Unit



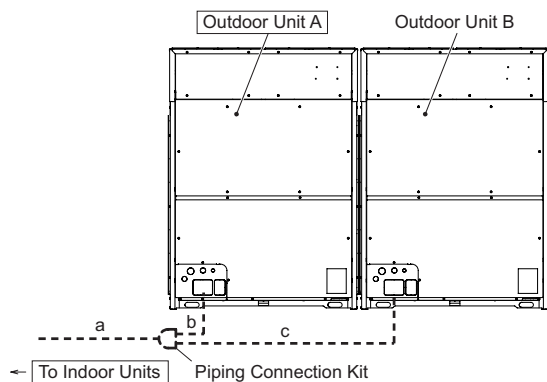
inch (mm)

Model		72	96	120	144	168	192
Piping Size	a	7/8 (22.2)	7/8 (22.2)	1-1/8 (28.58)	1-1/8 (28.58)	1-1/8 (28.58)	1-1/8 (28.58)
	High/Low Pressure Gas	3/4 (19.05)	3/4 (19.05)	7/8 (22.2)	7/8 (22.2)	7/8 (22.2)	7/8 (22.2)
	Liquid	1/2 (12.7)	1/2 (12.7)	1/2 (12.7)	5/8 (15.88)	5/8 (15.88)	5/8 (15.88)

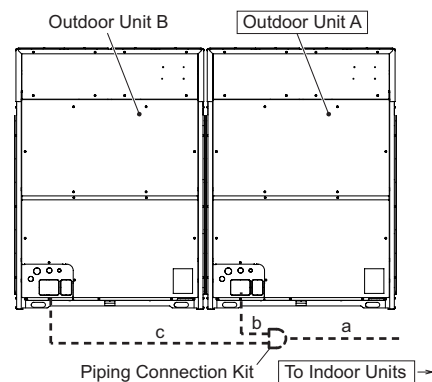
Two Unit Combination

The following drawing is for a 288 model combination.

(Indoor Unit on Left Side)



(Indoor Unit on Right Side)



inch (mm)

Model		216	240	264	288	312	336	360
Combination Unit	Outdoor Unit A	144	120	144	144	168	192	192
	Outdoor Unit B	72	120	120	144	144	144	168
Piping Connection Kit		MC-NP21SX1						
Piping Size	a	Low Pressure Gas	1-1/8 (28.58)	1-3/8 (34.93)	1-3/8 (34.93)	1-3/8 (34.93)	1-3/8 (34.93)	1-3/8 (34.93)
		High/Low Pressure Gas	7/8 (22.2)	1-1/8 (28.58)	1-1/8 (28.58)	1-1/8 (28.58)	1-1/8 (28.58)	1-1/8 (28.58)
		Liquid	3/4 (19.05)	3/4 (19.05)	3/4 (19.05)	3/4 (19.05)	3/4 (19.05)	3/4 (19.05)
	b	Low Pressure Gas	1-1/8 (28.58)	1-1/8 (28.58)	1-1/8 (28.58)	1-1/8 (28.58)	1-1/8 (28.58)	1-1/8 (28.58)
		High/Low Pressure Gas	7/8 (22.2)	7/8 (22.2)	7/8 (22.2)	7/8 (22.2)	7/8 (22.2)	7/8 (22.2)
		Liquid	5/8 (15.88)	1/2 (12.7)	5/8 (15.88)	5/8 (15.88)	5/8 (15.88)	5/8 (15.88)
	c	Low Pressure Gas	7/8 (22.2)	1-1/8 (28.58)	1-1/8 (28.58)	1-1/8 (28.58)	1-1/8 (28.58)	1-1/8 (28.58)
		High/Low Pressure Gas	3/4 (19.05)	7/8 (22.2)	7/8 (22.2)	7/8 (22.2)	7/8 (22.2)	7/8 (22.2)
		Liquid	1/2 (12.7)	1/2 (12.7)	1/2 (12.7)	5/8 (15.88)	5/8 (15.88)	5/8 (15.88)

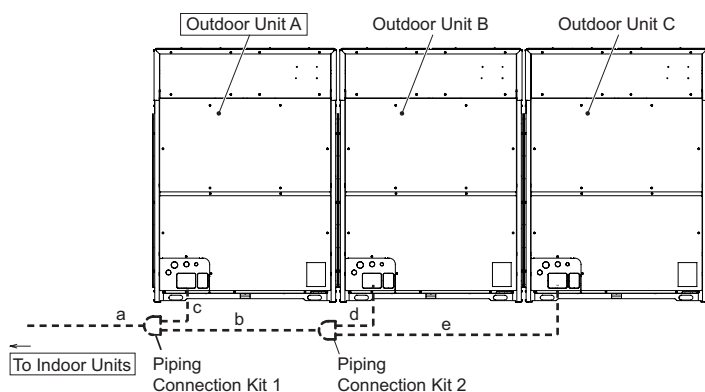
PRODUCT SPECIFICATION

Install the outdoor unit and piping connections in accordance to whatever is applicable to your situation. Refer to the table for the outdoor unit model, the piping connection kit model, and the piping diameter.

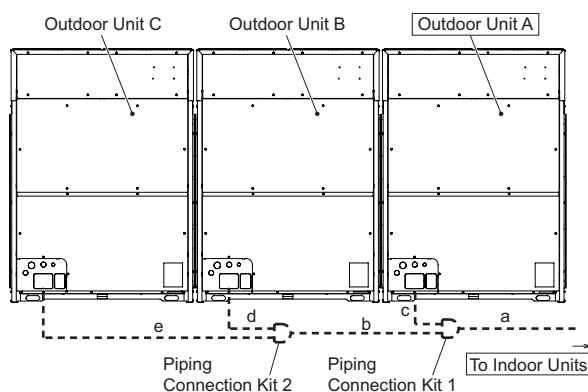
Three Unit Combination

The following drawing is for a 432 model combination.

(Indoor Unit on Left Side)



(Indoor Unit on Right Side)

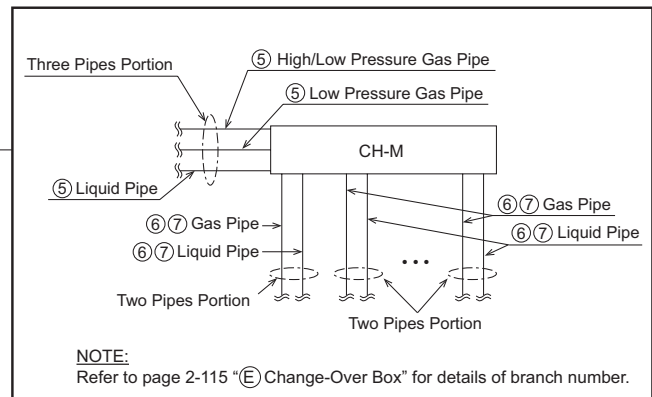
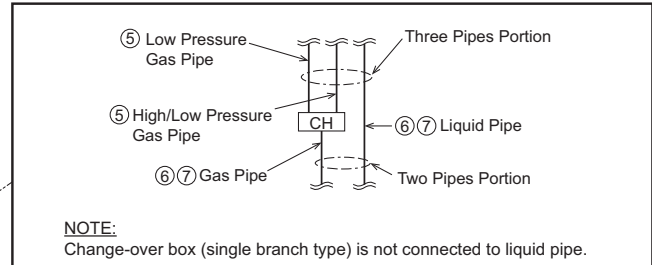
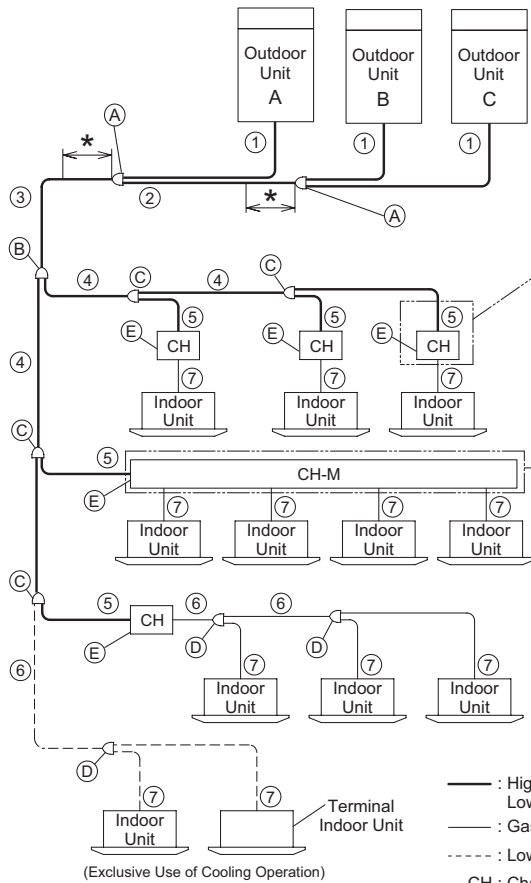


		inch (mm)			
Model		384	408	432	
Combination Unit	Outdoor Unit A	144	144	144	
	Outdoor Unit B	120	144	144	
	Outdoor Unit C	120	120	144	
Piping Connection Kit		MC-NP30SX1			
Piping Size	a	Low Pressure Gas	1-5/8 (41.28)	1-5/8 (41.28)	1-5/8 (41.28)
		High/Low Pressure Gas	1-3/8 (34.93)	1-3/8 (34.93)	1-3/8 (34.93)
		Liquid	3/4 (19.05)	3/4 (19.05)	3/4 (19.05)
	b	Low Pressure Gas	1-3/8 (34.93)	1-3/8 (34.93)	1-3/8 (34.93)
		High/Low Pressure Gas	1-1/8 (28.58)	1-1/8 (28.58)	1-1/8 (28.58)
		Liquid	3/4 (19.05)	3/4 (19.05)	3/4 (19.05)
	c	Low Pressure Gas	1-1/8 (28.58)	1-1/8 (28.58)	1-1/8 (28.58)
		High/Low Pressure Gas	7/8 (22.2)	7/8 (22.2)	7/8 (22.2)
		Liquid	5/8 (15.88)	5/8 (15.88)	5/8 (15.88)
	d	Low Pressure Gas	1-1/8 (28.58)	1-1/8 (28.58)	1-1/8 (28.58)
		High/Low Pressure Gas	7/8 (22.2)	7/8 (22.2)	7/8 (22.2)
		Liquid	1/2 (12.7)	5/8 (15.88)	5/8 (15.88)
	e	Low Pressure Gas	1-1/8 (28.58)	1-1/8 (28.58)	1-1/8 (28.58)
		High/Low Pressure Gas	7/8 (22.2)	7/8 (22.2)	7/8 (22.2)
		Liquid	1/2 (12.7)	1/2 (12.7)	5/8 (15.88)

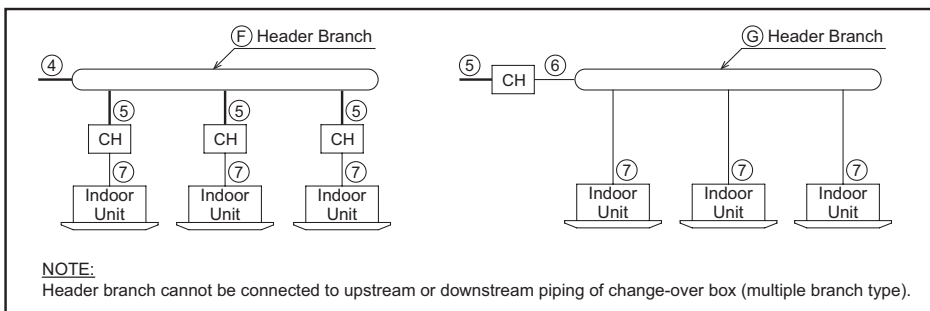
2.14.3 Piping Size and Multi-Kit Selection

For selecting the pipe sizes ① between the outdoor unit and the piping connection kit, and the pipe size ② between the piping connection kits and piping connection kit (A), refer to Section 2.14.2 "Piping Size between Outdoor Units."

★ Maintain a straight-line distance of 19-11/16 inches (500mm) or more for piping after the piping connection kit.



If header branch is used instead of (C) (D) multi-kit.

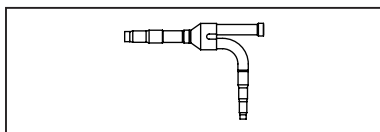


PRODUCT SPECIFICATION

Multi-Kit (Optional Parts)

Line Branch

Branch using Multi-Kit (MW Model)



If ③ “Multi-Kit after First Branch” is larger than ② “Multi-Kit for First Branch”, use the same model as ② “Multi-Kit for First Branch”.

② Multi-Kit for First Branch

Outdoor Unit Capacity (MBH)	Model
72 - 120	MW-NP452X3 ^{*1}
144 - 192	MW-NP562X3 ^{*1}
216 - 432	MW-NP902X3 ^{*1}

NOTE:

The change-over box (multiple branch type) or header branch can also be used instead of the multi-kit as first branch.

③ Multi-Kit after First Branch (Three Pipes Portion)

Total Indoor Unit Capacity (MBH)	Model
≤ 47	MW-NP142X3 ^{*1}
48 - 95	MW-NP282X3 ^{*1}
96 - 143	MW-NP452X3 ^{*1}
144 - 215	MW-NP562X3 ^{*1}
≥ 216	MW-NP902X3 ^{*1}

*1 X2 type is to be used in place of X3 type:

The piping kits for X2 model number MW-NP142X2, MW-NP282X2, MW-NP452X2, MW-NP562X2 and MW-NP902X2 are to be used in place of the piping kits for the X3 model numbers, MW-NP142X3, MW-NP282X3, MW-NP452X3, MW-NP562X3 and MW-NP902X3, as noted.

④ Multi-Kit after First Branch (Two Pipes Portion)

Total Indoor Unit Capacity (MBH)	Model
≤ 95	MW-NP282A3 ^{*2}
96 - 143	MW-NP452A3 ^{*2}
144 - 215	MW-NP692A3 ^{*2}
≥ 216	MW-NP902A3 ^{*2}

*2 A2 type is to be used in place of A3 type:

The piping kits for A2 model number MW-NP282A2, MW-NP452A2, MW-NP692A2 and MW-NP902A2 are to be used in place of the piping kits for the A3 model numbers, MW-NP282A3, MW-NP452A3, MW-NP692A3 and MW-NP902A3, as noted.

Refer to the figure at the beginning of section 2.14.3.

Ⓔ Change-Over Box

• Single Unit for 1 Branch

Model	Indoor Unit Side Branch Number	Indoor Unit Maximum Connection Capacity	Indoor Unit Maximum Connection Capacity for 1 Branch
COBS048B21S	1	≤ 54	≤ 54
COBS048B22S	1	≤ 54	≤ 54
COBS096B21S	1	≤ 96	≤ 96
COBS096B22S	1	≤ 96	≤ 96
COB04M132B22S	4	≤ 132	≤ 96 ^{*3}
COB08M264B22S	8	≤ 264	≤ 96 ^{*3}
COB12M264B22S	12	≤ 264	≤ 96 ^{*3}

^{*3} Upto two 60, 72 or 96 type indoor units can be connected to the change-over box within the “Indoor Unit Maximum Connection Capacity” shown in above table.

Make sure to increase the pipe connection size by using the appropriate accessory pipe.

• Multiple Units for 1 Branch

Model	Indoor Unit Side Branch Number	Maximum Number of Connected Indoor Units for 1 Branch	Indoor Unit Maximum Connection Capacity	Indoor Unit Maximum Connection Capacity for 1 Branch
COBS048B21S ^{*4}	1	7	≤ 41	≤ 41
COBS048B22S	1	7	≤ 41	≤ 41
COBS096B21S ^{*4}	1	8	≤ 71	≤ 71
COBS096B22S	1	8	≤ 71	≤ 71
COB04M132B22S	4	6	≤ 114	≤ 41
COB08M264B22S	8	6	≤ 216	≤ 41
COB12M264B22S	12	6	≤ 216	≤ 41

^{*4} If the number of connected indoor unit exceeds four, the upstream or downstream piping of change-over box (Piping Size ⑤⑥⑦) need to change the size respectively. Refer to page 2-117 ⑤ “Diameter of Pipe between Change-Over Box and Multi-kit” for details.

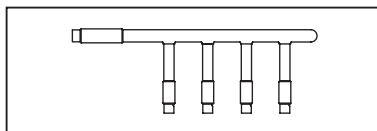
Only single unit per branch is allowed to be connected.

NOTE:

Refer to the section 2.14.4

Header Branch

Branch using Multi-Kit (MH Model)



Ⓕ for Three Pipes Portion

Total Indoor Unit Capacity (MBH)	No. of Header Branches	Model
36 - 72	8	MH-NP288X

Ⓖ for Two Pipes Portion

Total Indoor Unit Capacity (MBH)	No. of Header Branches	Model
36 - 60	4	MH-NP224A
36 - 72	8	MH-NP288A

PRODUCT SPECIFICATION

Refer to the figure at the beginning of section 2.14.3.

Piping Size Unit: inch (mm)

- ③ Main Pipe Diameter
(Base Unit or Piping Connection Kit 1 to First Branch)

Model: (H,Y)VAHR_B(3,4,5)2S

inch (mm)

Outdoor Unit Capacity (MBH)	Low Pressure Gas	High/Low Pressure Gas	Liquid	
			Maximum Equivalent Piping Length	
			< 328 ft (100m)	≥ 328 ft (100m) ^{*5}
72, 96	7/8 (22.2)	3/4 (19.05)	1/2 (12.7)	5/8 (15.88)
120	1-1/8 (28.58)	7/8 (22.2)	1/2 (12.7)	5/8 (15.88)
144 - 192	1-1/8 (28.58)	7/8 (22.2)	5/8 (15.88)	3/4 (19.05)
216	1-1/8 (28.58)	7/8 (22.2)	3/4 (19.05)	3/4 (19.05)
240, 264	1-3/8 (34.93)	1-1/8 (28.58)	3/4 (19.05)	3/4 (19.05)
288 - 360	1-3/8 (34.93)	1-1/8 (28.58)	3/4 (19.05)	7/8 (22.2)
384 - 432	1-5/8 (41.28)	1-3/8 (34.93)	3/4 (19.05)	7/8 (22.2)

*5 In some cases, it is required to prepare the reducer (field-supplied).

- ④ Diameter of Pipe after First Branch ^{*6}

inch (mm)

Total Indoor Unit Capacity (MBH)	Low Pressure Gas	High/Low Pressure Gas	Liquid	
			Height Difference H2, H4 ≤ 49 ft (15m)	Height Difference H2, H4 > 49 ft (15m) ^{*7}
≤ 47	5/8 (15.88)	1/2 (12.7)	3/8 (9.52)	1/2 (12.7)
48 - 71	3/4 (19.05)	5/8 (15.88)	3/8 (9.52)	1/2 (12.7)
72 - 95	7/8 (22.2)	3/4 (19.05)	3/8 (9.52)	1/2 (12.7)
96 - 119	7/8 (22.2)	3/4 (19.05)	1/2 (12.7)	5/8 (15.88)
120 - 143	1-1/8 (28.58)	7/8 (22.2)	1/2 (12.7)	5/8 (15.88)
144 - 215	1-1/8 (28.58)	7/8 (22.2)	5/8 (15.88)	3/4 (19.05)
216 - 299	1-3/8 (34.93)	1-1/8 (28.58)	3/4 (19.05)	7/8 (22.2)
≥ 300	1-5/8 (41.28)	1-3/8 (34.93)	3/4 (19.05)	7/8 (22.2)

*6 If the size of ④ "Diameter of Pipe after First Branch" is larger than the size of ③ "Main Pipe Diameter", adjust the size of ④ "Diameter of Pipe after First Branch" to the same size as ③ "Main Pipe Diameter".

*7 In some cases, it is required to prepare the reducer (field-supplied).

⑤ Diameter of Pipe between Change-Over Box and Multi-Kit

For Change-Over Box (Model Type 1)

inch (mm)

Change-Over Box Model	Total Indoor Unit Capacity (MBH)	Low Pressure Gas ^{*8}	High/Low Pressure Gas ^{*8}
COB048/096B21S	≤ 29	5/8 (15.88) [5/8 (15.88)]	1/2 (12.7) [1/2 (12.7)]
	30 - 59	3/4 (19.05) [7/8 (22.2)]	5/8 (15.88) [3/4 (19.05)]
	60 - 96	7/8 (22.2) [1-1/8 (28.58)]	3/4 (19.05) [7/8 (22.2)]

 For Change-Over Box (Model Type 2) ^{*9}

inch (mm)

Change-Over Box Model	Total Indoor Unit Capacity (MBH)	Low Pressure Gas	High/Low Pressure Gas	Liquid ^{*10}	
				Height Difference H2, H4 ≤ 49 ft (15m)	Height Difference H2, H4 > 49 ft (15m) ^{*11}
COBS048/096B22S COB04M132B22S COB08/12M264B22S	≤ 47	5/8 (15.88)	1/2 (12.7)	3/8 (9.52)	1/2 (12.7)
	48 - 71	3/4 (19.05)	5/8 (15.88)	3/8 (9.52)	1/2 (12.7)
	72 - 95	7/8 (22.2)	3/4 (19.05)	3/8 (9.52)	1/2 (12.7)
	96 - 119	7/8 (22.2)	3/4 (19.05)	1/2 (12.7)	5/8 (15.88)
	120 - 143	1-1/8 (28.58)	7/8 (22.2)	1/2 (12.7)	5/8 (15.88)
	144 - 215	1-1/8 (28.58)	7/8 (22.2)	5/8 (15.88)	3/4 (19.05)
	216 - 264	1-3/8 (34.93)	1-1/8 (28.58)	3/4 (19.05)	7/8 (22.2)

^{*8} If the number of connected indoor unit exceeds four, the low pressure gas and high/low pressure gas pipes need to change the size in the square bracket. In addition, the gas and liquid pipes of ⑥ "Diameter of Pipe (Two Pipes Portion)" and ⑦ "Diameter of Pipe Connected to Indoor Unit (Two Pipes Portion)" need to increase one size respectively. In this case, prepare a field-supplied reducer.

^{*9} If the size of ⑤ "Diameter of Pipe between Change-Over Box and Multi-Kit" is larger than the size of ③ "Main Pipe Diameter", adjust the size of ⑤ "Diameter of Pipe between Change-Over Box and Multi-Kit" to the same size as ③ "Main Pipe Diameter"

^{*10} Change-Over Box (COBS048/096B22S) is not connected to liquid pipe.

^{*11} In some cases, it is required to prepare the reducer (field-supplied).

⑥ Diameter of Pipe (Two Pipes Portion)

inch (mm)

Total Indoor Unit Capacity (MBH)	Gas ^{*12}	Liquid	
		Height Difference H2, H4 ≤ 49 ft (15m)	Height Difference H2, H4 > 49 ft (15m) ^{*13}
≤ 47	5/8 (15.88)	3/8 (9.52)	1/2 (12.7)
48 - 71	3/4 (19.05)	3/8 (9.52)	1/2 (12.7)
72 - 95	7/8 (22.2)	3/8 (9.52)	1/2 (12.7)
96 - 119	7/8 (22.2)	1/2 (12.7)	5/8 (15.88)
120 - 143	1-1/8 (28.58)	1/2 (12.7)	5/8 (15.88)
144 - 215	1-1/8 (28.58)	5/8 (15.88)	3/4 (19.05)
216 - 299	1-3/8 (34.93)	3/4 (19.05)	7/8 (22.2)
≥ 300	1-5/8 (41.28)	3/4 (19.05)	7/8 (22.2)

^{*12} For the exclusive use of cooling operation, connect the low pressure gas pipe to the gas pipe of line branch or header branch for two pipes portion.

^{*13} In some cases, it is required to prepare the reducer (field-supplied).

⑦ Diameter of Pipe Connected to Indoor Unit (Two Pipes Portion)

The pipe diameter must be the same as the indoor unit pipe connection size.

inch (mm)

Indoor Unit Capacity (MBH)	Gas ^{*14}	Liquid	
		Height Difference H2, H4 ≤ 49 ft (15m)	Height Difference H2, H4 > 49 ft (15m) ^{*16}
6 - 15	1/2 (12.7)	1/4 (6.35) ^{*15}	3/8 (9.52)
18 - 54	5/8 (15.88)	3/8 (9.52)	1/2 (12.7)
60 - 72	3/4 (19.05)	3/8 (9.52)	1/2 (12.7)
96	7/8 (22.2)	3/8 (9.52)	1/2 (12.7)

^{*14} For the exclusive use of cooling operation, connect the low pressure gas pipe to the gas pipe of the indoor unit.

^{*15} When liquid piping length is longer than 49ft (15m), use 3/8inch (9.52mm) diameter pipe to connect to the indoor unit (two pipes portion).

^{*16} In some cases, it is required to prepare the reducer (field-supplied).

PRODUCT SPECIFICATION

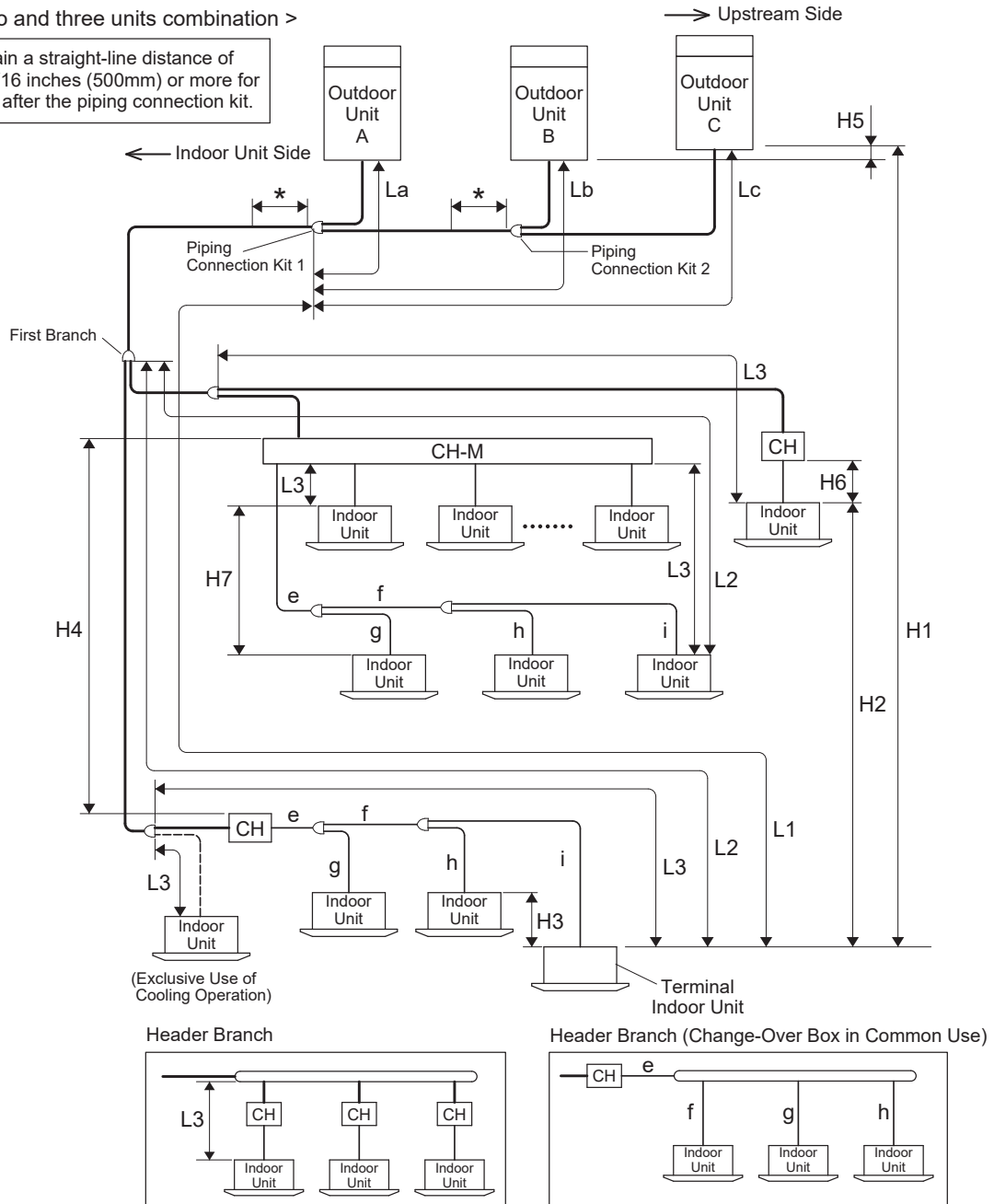
• Piping Work Conditions

Comply with the following when installing the unit.

Indicate what installer must comply with. This is not an example of compliance. Describe the limitation shown in the drawing.

< For two and three units combination >

* Maintain a straight-line distance of 19-11/16 inches (500mm) or more for piping after the piping connection kit.



— : High/Low Pressure Gas Pipe, Low Pressure Gas Pipe, Liquid Pipe

— : Gas Pipe, Liquid Pipe

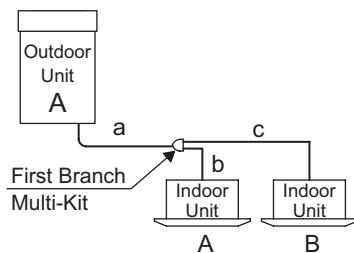
----- : Low Pressure Gas Pipe, Liquid Pipe

CH : Change-Over Box (Single Branch Type)

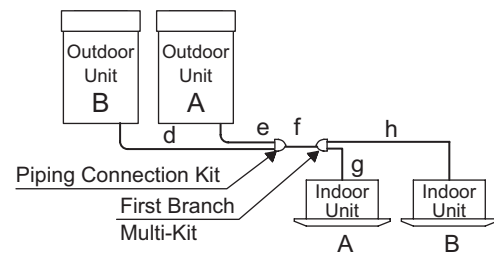
CH-M : Change-Over Box (Multiple Branch Type)

Item	Mark		Details
Total Piping Length	Ex1	a+b+c	The total amount of all piping actual length.
	Ex2	d+e+f+g+h	
Maximum Piping Length	Ex1	a+c	The actual pipe length between the stop valve of the outdoor unit or the piping connection kit 1 and the terminal indoor unit.
	Ex2	f+h	
Piping Length	-		The actual length of pipe that takes no account for equivalent lengths for pressure drops of elbows.
Equivalent Piping Length	-		The combination of the straight pipe length plus the equivalent length of elbows and other pressure drop calculations.

Example1) If a Line Branch Including Main Branch



Example 2) If Utilizing a Piping Connection Kit



• Piping Work Conditions

Item		Mark	Allowable Piping Length	
			≤ the recommended number of connected indoor units	> the recommended number of connected indoor units
Total Piping Length		-	≤ 3,281 ft (1,000m)	≤ 984 ft (300m)
Maximum Piping Length	Actual Length	L1	≤ 541 ft (165m)	≤ 541 ft (165m)
	Equivalent Length		≤ 623 ft (190m)	≤ 623 ft (190m)
Maximum Piping Length between Multi-kit of 1st Branch and Each Indoor Unit		L2	≤ 295 ft (90m)	≤ 131 ft (40m)
Maximum Piping Length between Each Multi-kit/Change-Over Box (Multiple Branch Type) and Each Indoor Unit		L3 ¹³	≤ 131 ft (40m)	≤ 98 ft (30m)
Total Piping Length between Change-Over Box and Each Indoor Unit per Branch		e+f+g+h+i	≤ 131 ft (40m)	≤ 98 ft (30m)
Piping Length between Piping Connection Kit 1 and Each Outdoor Unit		La, Lb, Lc	≤ 32 ft (10m)	≤ 32 ft (10m)
Height Difference between Outdoor Units and Indoor Units	O.U. is Higher	H1	≤ 164 ft (50m) (360 ft (110m)) ¹⁰	≤ 164 ft (50m) (360 ft (110m)) ¹⁰
	O.U. is Lower		≤ 131 ft (40m) (360 ft (110m)) ¹¹	≤ 131 ft (40m) (360 ft (110m)) ¹¹
Height Difference between Indoor Units		H2	≤ 98 ft (30m) ^{14, 15}	≤ 49 ft (15m)
Height Difference between Indoor Units Connected to Same Branch of Change-Over Box		H3	≤ 13 ft (4m)	≤ 13 ft (4m)
Height Difference between Change-Over Box		H4	≤ 98 ft (30m) ¹⁴	≤ 49 ft (15m)
Height Difference between Outdoor Units		H5	≤ 0.3 ft (0.1m)	≤ 0.3 ft (0.1m)
Height Difference between Change-Over Box and Indoor Unit		H6	See Notice 12 below	See Notice 12 below
Height Difference between Indoor Units Connected to Each Branch of Same Change-Over Box (Multiple Branch Type)		H7	≤ 49 ft (15m)	≤ 49 ft (15m)

NOTICE

Comply with the following conditions when installing the unit.

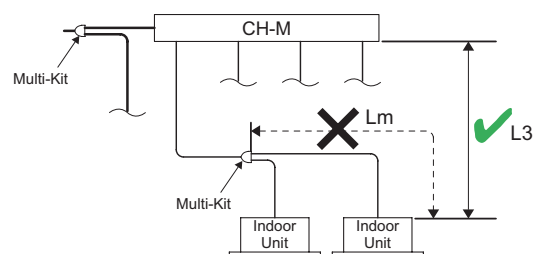
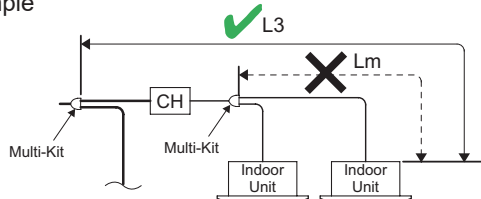
- For a combination of two or three outdoor units, the outdoor unit "A" must be connected to the piping connection of Kit 1. (Refer to Section 2.14.2 for outdoor unit models.) Refer to the Piping Kit Installation Manual for piping details.
- The piping length between outdoor units must be $L_a \leq L_b \leq L_c \leq 32 \text{ ft (10m)}$.
(If the piping length is incorrect, there may be a failure of outdoor units caused by returned refrigerant.)
- Maintain a straight-line distance of 19-11/16 inches (500mm) or more for pipe after installing the piping connection kit.
- For the exclusive use of cooling operation only, connect indoor units with low pressure gas pipe and liquid pipe (without Change-Over Box). The total capacity of the exclusive cooling operation must be smaller than 50% of the total indoor unit capacity.
- The condition of refrigerant piping installation is different depending on the number of indoor units that are connected. Refer to Table 2.2 "System Combination" above for details.
- Allowable total piping length may not exceed 3,281 ft (1,000m) because of the limitation of maximum additional refrigerant amount as described in the following table. Make sure that the additional refrigerant volume does not exceed the maximum additional refrigerant amount as shown below.

Outdoor Unit Capacity (MBH)	72	96 - 144	168	192	216 - 432
Max. Additional Refrigerant Charge: lbs (kg)	79.4 (36)	88.2 (40)	112.5 (51)	114.7 (52)	138.9 (63)

When the outdoor air temperature is 14°F (-10°C) or less, or under the high heating load conditions, the total indoor unit capacity must be less than 100% of the outdoor unit capacity, and the total piping length must be less than 984 ft (300m).

- If the piping length (L3) between each multi-kit and indoor unit is considerably longer than other indoor unit, refrigerant may not flow well, and may lessen the unit's performance compared to other models.
(Recommended Piping Length: Within 49 ft (15m))
- When the piping length from the multi-kit to the first branch and to the terminal indoor unit exceeds 131 ft (40m), refer to "Piping Branch Restrictions," Section 2.14.3.
- When completing on-site piping, install bent piping or horizontal loop piping to absorb any expansion or contraction due to changing temperatures.
- When the height difference is longer than 164 ft (50m) and up to 360 ft (110m) (in case the outdoor unit is higher, "O.U. is Higher"), there are following restrictions.
 - Maximum outdoor temperature for cooling operation must be within 109°F DB (43°C DB).
 - When operating the outdoor unit in the outdoor air temperature approx. 14°F (-10°C) or less, the height difference must be below 164ft (50m).
 - Maximum connectable indoor units capacity ratio must be within 100%.
 - When operating the outdoor unit under the high cooling load conditions or in the high outdoor air temperature (approx. 100°F (38°C) or more), the capacity may decrease significantly due to the compressor protection controls compared to the installation condition of height difference below 164 ft (50m). When the outdoor air temperature is 100°F DB (38°C DB) or more, the outdoor unit will function as Thermo-OFF to protect the compressor from failure.
 - Use of outdoor unit function setting item "nU" (Priority Capacity Mode) may be invalid.
 - Contact your distributor or contractor for details of setting.
- When the height difference is longer than 131 ft (40m) and up to 360 ft (110m) (in case the outdoor unit is lower, "O.U. is Lower"), there are following restrictions.
 - Maximum outdoor temperature for cooling operation must be 109°F DB (43°C DB) or less.
 - Minimum outdoor temperature for cooling operation must be 50°F DB (10°C DB) or more.
 - Minimum outdoor temperature for simultaneous operation must be 50°F DB (10°C DB) or more.
 - Contact your distributor or contractor for details of setting.
- When the piping height difference between change-over box and indoor unit over 49ft (15m), the performance may decrease. (Recommended Height Difference: Within 49ft (15m))
- The piping length calculation is not included the multi-kit between change-over box and indoor unit(s). (Lm in following examples are NOT L3.)
- If the height difference between indoor units or the height difference between Change-Over Box exceed 49 ft (15m), the liquid lines after the Multi-kit of first branch must be selected according to Height Difference between Indoor Units or Change-Over Box Restriction.

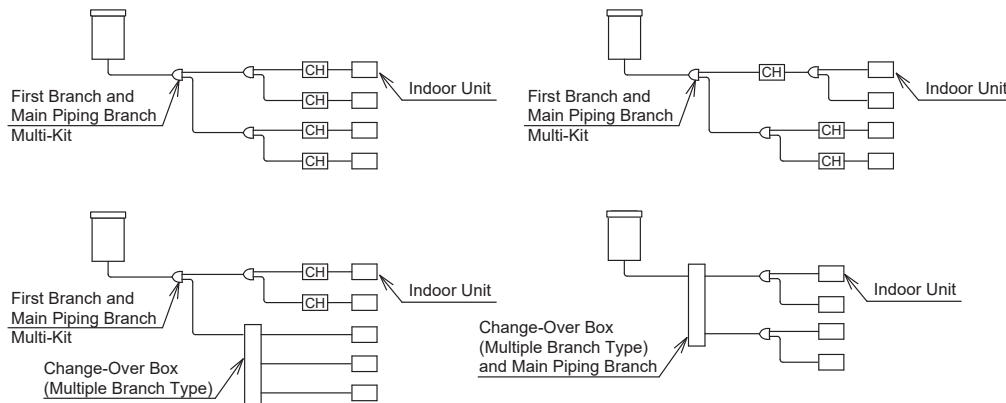
Example



● Piping Branch Restriction

* Main Piping Branch:

Both branches of piping from a multi-kit are connected to the next multi-kits.
(including change-over box (multiple branch type).)



In the following instances, there is no limit to the number of main piping branches.

If the piping length L2 from the multi-kit at the first branch to the farthest indoor unit is over 131.2 ft (40m), follow the instructions below when performing the field-supplied piping work.

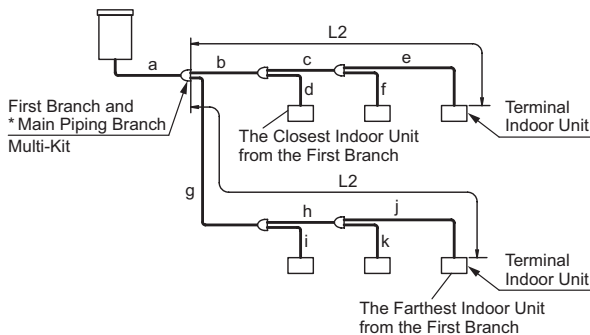
If the installation contains a main piping branch

And, any piping length between the first branch to each indoor units (L2) is over 131.2 ft (40m).

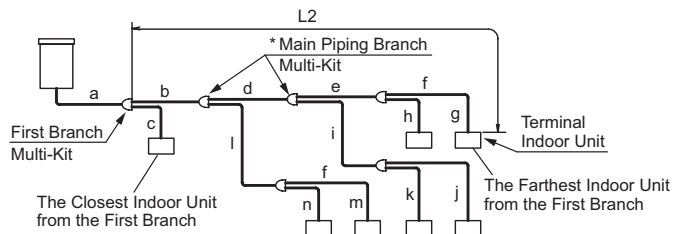
Then the difference between closest L2 and the farthest L2 (terminal unit) cannot be greater than 131.2 ft (40m).

Piping Length from the Multi-Kit at the first branch to the terminal Indoor Unit is within 131.2 - 295.3 ft (40 - 90m)

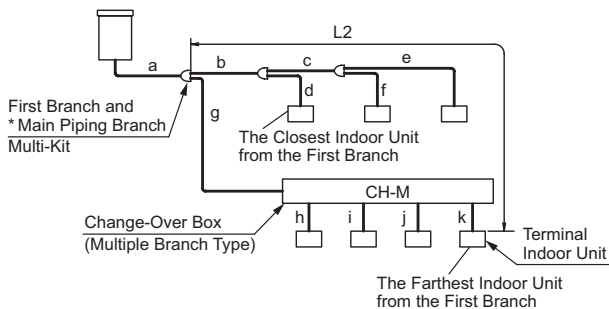
$$(g+h+j)-(b+d) \leq 131.2 \text{ ft (40m)}$$



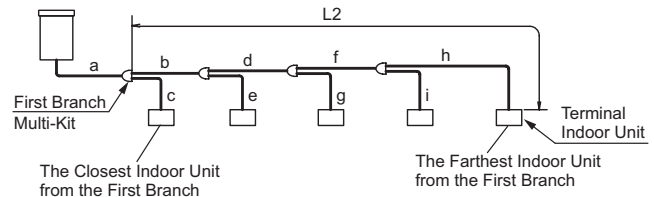
$$(b+d+e+f+g) - c \leq 131.2 \text{ ft (40m)}$$



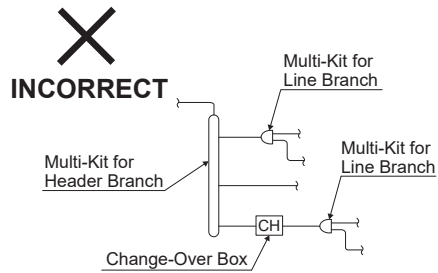
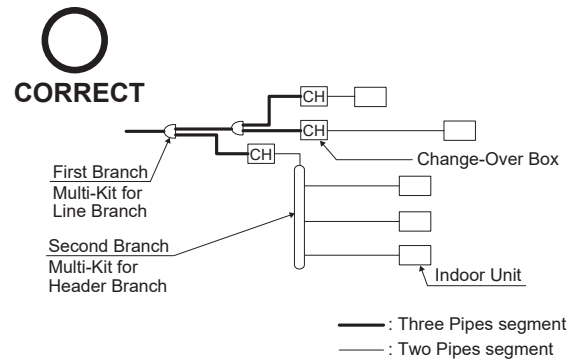
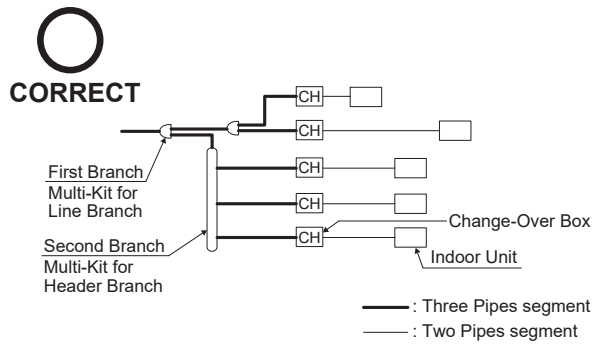
$$(g+k) - (b+d) \leq 131.2 \text{ ft (40m)}$$



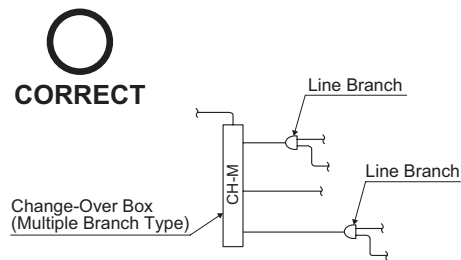
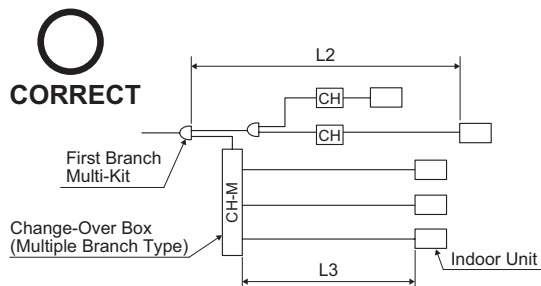
Installation without Main Piping Branch: Unrestricted



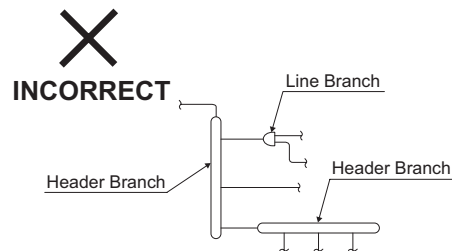
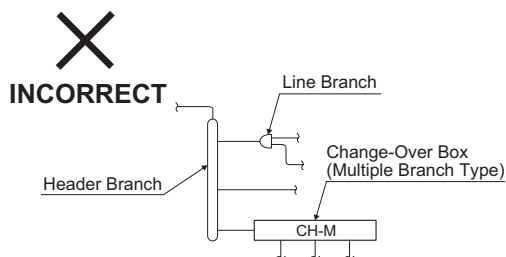
Header branch can be used with a line branch at the three pipes segment and two pipes segment.
Header branch can also be used after the second branch. Do not connect a line branch to a header branch.



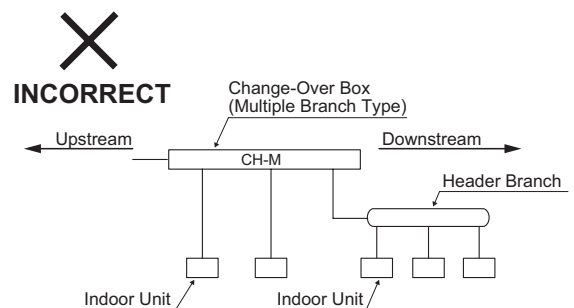
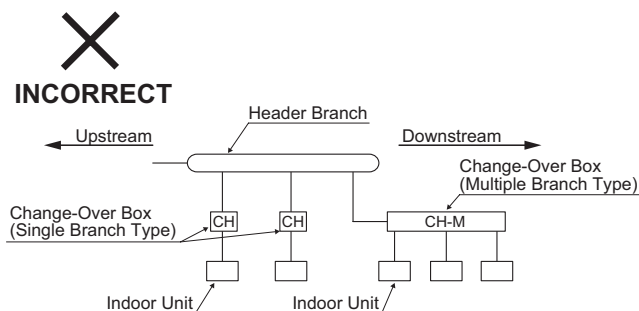
If the change-over box (multiple branch type) is connected, the following restrictions apply.



Header branch can not be connected before and after change-over box (multiple branch type).
Also, header branch can not connect to another header branch.

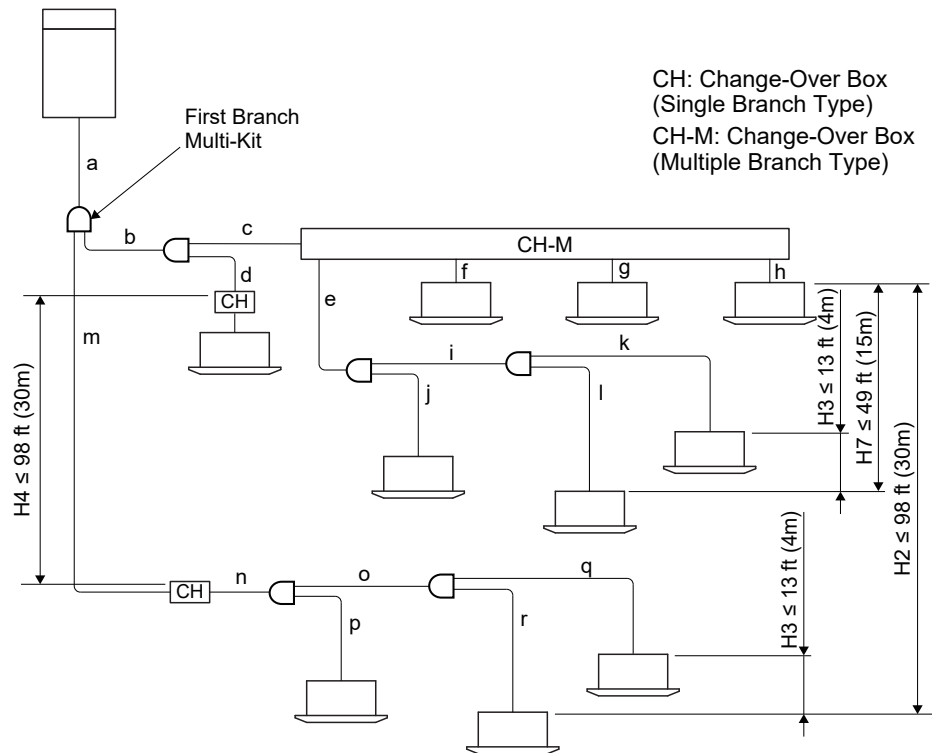


Header branch cannot be connected to upstream or downstream piping of change-over box (multiple branch type).



● Height Difference between Indoor Units or Change-Over Boxes Restriction

If the height difference between the indoor units or the height difference between Change-Over Boxes exceed 49 ft (15m), the liquid lines after the Multi-kit of first branch must be selected according to restrictions below.



If the height difference H2 or H4 is within 49 - 98 ft (15 - 30m).

- If the height difference H2 or H4 exceed 49 ft (15m), the liquid lines after the Multi-kit of first branch must be selected according to Table ④ “Diameter of Pipe after First Branch” - Table ⑦ “Diameter of Pipe Connected to Indoor Unit (Two Pipes Portion)”.

After selecting the size according to Table ④ “Diameter of Pipe after First Branch”, if the size of “a” is smaller than the size of “b or m”, adjust the size of “a” so it is the same size as “b or m”.





If the size of “a” is larger than the size indicated in Table ③ “Main Pipe Diameter” of (Maximum Equivalent Piping Length ≥ 328 ft (100m)), adjust the size of “a” so it is the same size according to Table ③ “Main Pipe Diameter” of (Maximum Equivalent Piping Length ≥ 328 ft (100m)).

In this instance, if the size of “b - r” is larger than the size of each before the branch, adjust the size of “b - r” to the same size as each one before the branch.

2.14.4 Interchangeability between Change-Over Boxes (COBS_B21S and COBS_B22S)

- Change-over box (COBS_B22S) is compatible with the outdoor unit (H,Y)VAHR_B(3,4,5)2S.
- Change-over box (COBS_B21S) is compatible with the outdoor unit (H,Y)VAHR_B(3,4)1S when there is no Change-over box (COBS_B22S) in the same system.
- Change-over box (COBS_B21S) is compatible with the outdoor unit (H,Y)VAHR_B(3,4,5)2S with limitations of the operating temperature range and the connectable indoor unit capacity ratio. See the following table "Limitations for Combination of Change-Over Box (COBS_B21S) and Outdoor Unit (H,Y)VAHR_B(3,4,5)2S" for details.
- Change-over boxes (COBS_B21S and COBS_B22S) cannot be used in the same system together.
- Production of Change-over box (COBS_B21S) is discontinued. However, servicing and maintenance is provided until further notice. Regarding order requests for the Change-over box (COBS_B21S), contact Tech Support at: 1-844-873-4445 (option 2).

Determining Propriety of Connection between
Change-Over Box and VRF Outdoor Unit (Heat Recovery)

Model of Change-Over Box and VRF Outdoor Unit				Change-Over Box			
				COB_B21S		COB_B22S	
				Single Branch Type	Multiple Branch Type	Single Branch Type	Multiple Branch Type
				COBS048B21S/C COBS096B21S/C	-	COBS048B22S/C COBS096B22S/C	COB04M132B22S COB08M264B22S COB12M264B22S
VRF Outdoor Unit (Heat Recovery)	(H,Y)VAHR_B(3,4)1S	208/230V	(H,Y)VAHR072B31S (H,Y)VAHR096B31S (H,Y)VAHR120B31S	 Available		 Not Available	
		460V	(H,Y)VAHR072B41S (H,Y)VAHR096B41S (H,Y)VAHR120B41S				
	(H,Y)VAHR_B(3,4,5)2S (This Manual)	208/230V	(H,Y)VAHR072B32S (H,Y)VAHR096B32S (H,Y)VAHR120B32S (H,Y)VAHR144B32S (H,Y)VAHR168B32S (H,Y)VAHR192B32S	 Available		 Available	
			(H,Y)VAHR072B42S (H,Y)VAHR096B42S (H,Y)VAHR120B42S (H,Y)VAHR144B42S (H,Y)VAHR168B42S (H,Y)VAHR192B42S				
		460V	(H,Y)VAHR072B52S (H,Y)VAHR096B52S (H,Y)VAHR120B52S (H,Y)VAHR144B52S (H,Y)VAHR168B52S (H,Y)VAHR192B52S				
		575V	(H,Y)VAHR072B52S (H,Y)VAHR096B52S (H,Y)VAHR120B52S (H,Y)VAHR144B52S (H,Y)VAHR168B52S (H,Y)VAHR192B52S				
			(H,Y)VAHR072B52S (H,Y)VAHR096B52S (H,Y)VAHR120B52S (H,Y)VAHR144B52S (H,Y)VAHR168B52S (H,Y)VAHR192B52S				
			(H,Y)VAHR072B52S (H,Y)VAHR096B52S (H,Y)VAHR120B52S (H,Y)VAHR144B52S (H,Y)VAHR168B52S (H,Y)VAHR192B52S				

Limitations for Combination of Change-Over Box (COBS_B21S) and Outdoor Unit (H,Y)VAHR_B(3,4,5)2S

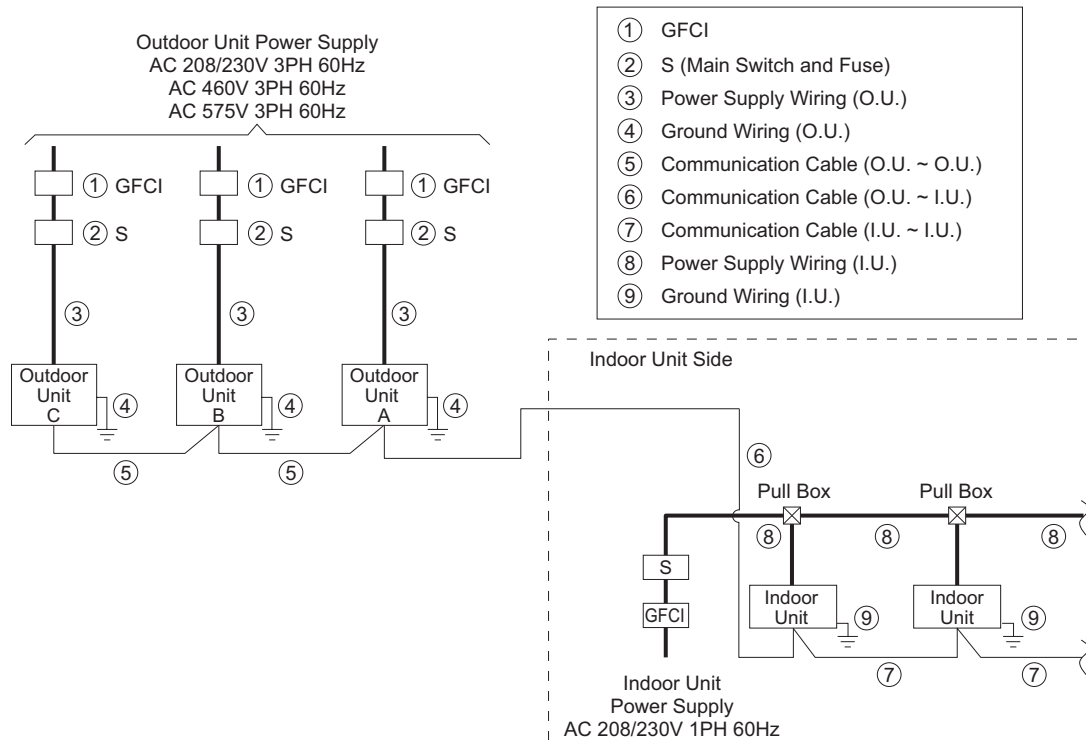
Temperature	Cooling Operation Range	Indoor	°F WB (°C WB)	59 (15) ~ 73 (23)
		Outdoor	°F DB (°C DB)	23 (-5) ~ 109 (43)
	Heating Operation Range	Indoor	°F DB (°C DB)	59 (15) ~ 80 (27)
		Outdoor	°F WB (°C WB)	-4 (-20) ~ 59 (15)
	Cooling & Heating Operation Range	Indoor (Cooling Mode)	°F WB (°C WB)	59 (15) ~ 73 (23)
		Indoor (Heating Mode)	°F DB (°C DB)	59 (15) ~ 80 (27)
		Outdoor	°F DB (°C DB)	23 (-5) ~ 75 (24)
			°F WB (°C WB)	22 (-6) ~ 59 (15)
Connectable Indoor Unit Capacity Ratio		Maximum	100%	
		Minimum	Depending on Outdoor Units (Refer to Table 2.2 for details.)	

DB: Dry Bulb, WB: Wet Bulb

2.15 Electrical Wiring Connection

2.15.1 Power Supply Wiring

Supply the power supplies to each outdoor unit and indoor unit group respectively.
Using this method is a basic principle of power supply wiring.



2.15.2 Electrical Characteristics

Note the following when selecting wiring:

208/230V

Model	Outdoor Unit							INV Comp. 1		INV Comp. 2	
	Hz (Hz)	Voltage (V)	Max. (V)	Min. (V)	MCA (A)	MOP (A)	Max. Fuse (A)	RLA (A)	LRA (A)	RLA (A)	LRA (A)
(H,Y)VAHR072B32S	60	208/230	253	188	29/26	40/40	40/40	22.6/20.4	50	-	-
(H,Y)VAHR096B32S	60	208/230	253	188	39/35	50/50	50/50	30.7/27.8	50	-	-
(H,Y)VAHR120B32S	60	208/230	253	188	46/42	60/50	60/50	20.2/18.3	54	20.2/18.3	54
(H,Y)VAHR144B32S	60	208/230	253	188	58/52	70/70	70/70	25.5/23.1	54	25.5/23.1	54
(H,Y)VAHR168B32S	60	208/230	253	188	65/59	80/80	80/80	28.6/25.9	50	28.6/25.9	50
(H,Y)VAHR192B32S	60	208/230	253	188	76/68	90/90	90/90	33.4/30.2	50	33.4/30.2	50

Model	Fan Motor 1		Fan Motor 2		Wiring Size		
	Output (kW)	FLA* (A)	Output (kW)	FLA* (A)	Power Supply Wiring (AWG)	Ground Wiring (AWG)	Communication Cable (AWG)
(H,Y)VAHR072B32S	0.75	3.2/3.2	-	-	10/10	10/10	18
(H,Y)VAHR096B32S	0.75	2.1/2.1	0.75	2.1/2.1	8/8	8/8	18
(H,Y)VAHR120B32S	0.75	2.1/2.1	0.75	2.1/2.1	6/6	6/6	18
(H,Y)VAHR144B32S	0.75	2.1/2.1	0.75	2.1/2.1	4/4	4/4	18
(H,Y)VAHR168B32S	0.75	3.6/3.6	0.75	3.6/3.6	4/4	4/4	18
(H,Y)VAHR192B32S	0.75	3.6/3.6	0.75	3.6/3.6	2/4	2/4	18

460V

Model	Outdoor Unit							INV Comp. 1		INV Comp. 2	
	Hz (Hz)	Voltage (V)	Max. (V)	Min. (V)	MCA (A)	MOP (A)	Max. Fuse (A)	RLA (A)	LRA (A)	RLA (A)	LRA (A)
(H,Y)VAHR072B42S	60	460	506	414	15	20	20	11.5	47	-	-
(H,Y)VAHR096B42S	60	460	506	414	22	30	30	17.1	47	-	-
(H,Y)VAHR120B42S	60	460	506	414	24	30	30	10.4	32	10.4	32
(H,Y)VAHR144B42S	60	460	506	414	30	35	35	13.2	32	13.2	32
(H,Y)VAHR168B42S	60	460	506	414	34	40	40	14.8	47	14.8	47
(H,Y)VAHR192B42S	60	460	506	414	39	50	50	17.3	47	17.3	47

Model	Fan Motor 1		Fan Motor 2		Wiring Size		
	Output (kW)	FLA* (A)	Output (kW)	FLA* (A)	Power Supply Wiring (AWG)	Ground Wiring (AWG)	Communication Cable (AWG)
(H,Y)VAHR072B42S	0.75	1.7	-	-	14	14	18
(H,Y)VAHR096B42S	0.75	0.9	0.75	0.9	12	12	18
(H,Y)VAHR120B42S	0.75	1.0	0.75	1.0	12	12	18
(H,Y)VAHR144B42S	0.75	1.0	0.75	1.0	10	10	18
(H,Y)VAHR168B42S	0.75	1.9	0.75	1.9	8	8	18
(H,Y)VAHR192B42S	0.75	1.9	0.75	1.9	8	8	18

* : FLA Value is after inverter.

MCA: Minimum Circuit Ampacity (A)

MOP: Maximum Overcurrent Protective Device (A)

RLA: Rated Load Ampacity (A)

LRA: Locked Rotor Ampacity (A)

FLA: Full Load Ampacity (A)

575V

Model	Outdoor Unit							INV Comp. 1		INV Comp. 2	
	Hz (Hz)	Voltage (V)	Max. (V)	Min. (V)	MCA (A)	MOP (A)	Max. Fuse (A)	RLA (A)	LRA (A)	RLA (A)	LRA (A)
(H,Y)VAHR072B52S	60	575	660	518	12	15	15	9.1	24	-	-
(H,Y)VAHR096B52S	60	575	660	518	16	25	25	12.5	24	-	-
(H,Y)VAHR120B52S	60	575	660	518	19	25	25	8.3	19.5	8.3	19.5
(H,Y)VAHR144B52S	60	575	660	518	24	30	30	10.5	19.5	10.3	19.5
(H,Y)VAHR168B52S	60	575	660	518	27	35	35	11.8	24	11.8	24
(H,Y)VAHR192B52S	60	575	660	518	32	40	40	13.8	24	13.8	24

Model	Fan Motor 1		Fan Motor 2		Wiring Size		
	Output (kW)	FLA* (A)	Output (kW)	FLA* (A)	Power Supply Wiring (AWG)	Ground Wiring (AWG)	Communication Cable (AWG)
(H,Y)VAHR072B52S	0.75	1.7	-	-	16	16	18
(H,Y)VAHR096B52S	0.75	0.9	0.75	0.9	14	14	18
(H,Y)VAHR120B52S	0.75	1.0	0.75	1.0	12	12	18
(H,Y)VAHR144B52S	0.75	1.0	0.75	1.0	12	12	18
(H,Y)VAHR168B52S	0.75	1.9	0.75	1.9	10	10	18
(H,Y)VAHR192B52S	0.75	1.9	0.75	1.9	8	8	18

* : FLA Value is after inverter.

MCA: Minimum Circuit Ampacity (A)

MOP: Maximum Overcurrent Protective Device (A)

RLA: Rated Load Ampacity (A)

LRA: Locked Rotor Ampacity (A)

FLA: Full Load Ampacity (A)

2.16 Additional Refrigerant Charge Calculation

(1) Calculating Method of Additional Refrigerant Charge [WT lbs (kg)]

No.	Symbol	Step	Additional Charge																																														
1	W1	<div>Additional Refrigerant Charge Calculation for Liquid Piping [W1 lbs (kg)]</div> <table><tr><th>Pipe Diameter [inch (mm)]</th><th>Total Piping Length [ft (m)]</th><th>Refrigerant Charge for 1 ft Pipe [lbs/ft (kg/m)]</th><th>Additional Charge [lbs (kg)]</th></tr><tr><td>7/8 (22.2)</td><td></td><td>× 0.24 (0.36) =</td><td></td></tr><tr><td>3/4 (19.05)</td><td></td><td>× 0.17 (0.26) =</td><td></td></tr><tr><td>5/8 (15.88)</td><td></td><td>× 0.11 (0.17) =</td><td></td></tr><tr><td>1/2 (12.7)</td><td></td><td>× 0.074 (0.11) =</td><td></td></tr><tr><td>3/8 (9.52)</td><td></td><td>× 0.038 (0.056) =</td><td></td></tr><tr><td>1/4 (6.35)</td><td></td><td>× 0.016 (0.024) =</td><td></td></tr><tr><td colspan="4">Total Additional Charge For Liquid Piping =</td></tr></table> <div>If the calculated charge above is less than the charge shown in the table below, then add W1 as the additional refrigerant charge shown below.</div> <table><tr><th>Outdoor Unit Capacity (MBH)</th><td>072-144</td><td>168, 192</td><td>216-288</td><td>312, 336</td><td>360</td><td>384-432</td></tr><tr><th>Minimum Additional Ref. Charge [lbs (kg)]</th><td>6.6 (3.0)</td><td>8.8 (4.0)</td><td>13.2 (6.0)</td><td>15.4 (7.0)</td><td>17.6 (8.0)</td><td>19.8 (9.0)</td></tr></table>	Pipe Diameter [inch (mm)]	Total Piping Length [ft (m)]	Refrigerant Charge for 1 ft Pipe [lbs/ft (kg/m)]	Additional Charge [lbs (kg)]	7/8 (22.2)		× 0.24 (0.36) =		3/4 (19.05)		× 0.17 (0.26) =		5/8 (15.88)		× 0.11 (0.17) =		1/2 (12.7)		× 0.074 (0.11) =		3/8 (9.52)		× 0.038 (0.056) =		1/4 (6.35)		× 0.016 (0.024) =		Total Additional Charge For Liquid Piping =				Outdoor Unit Capacity (MBH)	072-144	168, 192	216-288	312, 336	360	384-432	Minimum Additional Ref. Charge [lbs (kg)]	6.6 (3.0)	8.8 (4.0)	13.2 (6.0)	15.4 (7.0)	17.6 (8.0)	19.8 (9.0)	lbs (kg)
Pipe Diameter [inch (mm)]	Total Piping Length [ft (m)]	Refrigerant Charge for 1 ft Pipe [lbs/ft (kg/m)]	Additional Charge [lbs (kg)]																																														
7/8 (22.2)		× 0.24 (0.36) =																																															
3/4 (19.05)		× 0.17 (0.26) =																																															
5/8 (15.88)		× 0.11 (0.17) =																																															
1/2 (12.7)		× 0.074 (0.11) =																																															
3/8 (9.52)		× 0.038 (0.056) =																																															
1/4 (6.35)		× 0.016 (0.024) =																																															
Total Additional Charge For Liquid Piping =																																																	
Outdoor Unit Capacity (MBH)	072-144	168, 192	216-288	312, 336	360	384-432																																											
Minimum Additional Ref. Charge [lbs (kg)]	6.6 (3.0)	8.8 (4.0)	13.2 (6.0)	15.4 (7.0)	17.6 (8.0)	19.8 (9.0)																																											
2	W2	<div>Depending on connection of indoor unit capacity, additional refrigerant charge is required. Select adequate refrigerant charge from the table below.</div> <div>Additional Refrigerant Charge for Each Indoor Unit Connected [W2 lbs (kg)]</div> <table><tr><th>Indoor Unit Capacity (MBH)</th><td>006, 008</td><td>012-054</td></tr><tr><th>Additional Ref. Charge [lbs (kg)/unit]</th><td>0.7 (0.3)</td><td>1.1 (0.5)</td></tr></table> <div>Maximum additional refrigerant charge must not exceed 13.2 lbs (6.0kg).</div>	Indoor Unit Capacity (MBH)	006, 008	012-054	Additional Ref. Charge [lbs (kg)/unit]	0.7 (0.3)	1.1 (0.5)	lbs (kg)																																								
Indoor Unit Capacity (MBH)	006, 008	012-054																																															
Additional Ref. Charge [lbs (kg)/unit]	0.7 (0.3)	1.1 (0.5)																																															
3	W3	<div>Calculation Method for Additional Refrigerant Charge [W3 lbs (kg)]</div> <div>The additional refrigerant charge must be 2.2 lbs (1.0kg) per indoor unit which is 060 MBH or more.</div> <div><div></div> unit × 2.2 lbs (1.0kg)/unit = <div></div></div>	lbs (kg)																																														
4	W4	<div>The Ratio of Indoor Unit Connection Capacity (Indoor Unit Total Capacity/Outdoor Unit Capacity) Additional Charge [W4 lbs (kg)]</div> <div>Determine the ratio of indoor unit connection capacity.</div> <table><tr><th>Condition</th><th>Additional Charge [lbs (kg)]</th></tr><tr><td>I.U. Capacity Ratio is less than 100%</td><td>0.0 (0.0)</td></tr><tr><td>I.U. Capacity Ratio is 100% or more</td><td>1.1 (0.5)</td></tr></table>	Condition	Additional Charge [lbs (kg)]	I.U. Capacity Ratio is less than 100%	0.0 (0.0)	I.U. Capacity Ratio is 100% or more	1.1 (0.5)	lbs (kg)																																								
Condition	Additional Charge [lbs (kg)]																																																
I.U. Capacity Ratio is less than 100%	0.0 (0.0)																																																
I.U. Capacity Ratio is 100% or more	1.1 (0.5)																																																
5	W5	<div>Depending on connection of outdoor unit model, additional refrigerant charge is required. Select adequate refrigerant charge from the table below. [W5 lbs (kg)]</div> <table><tr><th>Outdoor Unit Model</th><th>Additional Charge [lbs (kg)]</th></tr><tr><td>(H,Y)VAHR192B(3,4,5)2S</td><td rowspan="3">2.2 (1.0)</td></tr><tr><td>(H,Y)VAHR336B(3,4,5)2S</td></tr><tr><td>(H,Y)VAHR360B(3,4,5)2S</td></tr></table>	Outdoor Unit Model	Additional Charge [lbs (kg)]	(H,Y)VAHR192B(3,4,5)2S	2.2 (1.0)	(H,Y)VAHR336B(3,4,5)2S	(H,Y)VAHR360B(3,4,5)2S	lbs (kg)																																								
Outdoor Unit Model	Additional Charge [lbs (kg)]																																																
(H,Y)VAHR192B(3,4,5)2S	2.2 (1.0)																																																
(H,Y)VAHR336B(3,4,5)2S																																																	
(H,Y)VAHR360B(3,4,5)2S																																																	
6	W6	<div>If Change-Over Boxes Multiple Branch type are connected, additional refrigerant charge is required. Select adequate refrigerant charge from the table below. [W6 lbs (kg)]</div> <table><tr><th>Change-Over Box Model</th><th>Additional Charge [lbs (kg)/unit]</th></tr><tr><td>COB04M132B22S</td><td>0.3 (0.1)</td></tr><tr><td>COB08M264B22S</td><td>0.5 (0.2)</td></tr><tr><td>COB12M264B22S</td><td>0.7 (0.3)</td></tr></table>	Change-Over Box Model	Additional Charge [lbs (kg)/unit]	COB04M132B22S	0.3 (0.1)	COB08M264B22S	0.5 (0.2)	COB12M264B22S	0.7 (0.3)	lbs (kg)																																						
Change-Over Box Model	Additional Charge [lbs (kg)/unit]																																																
COB04M132B22S	0.3 (0.1)																																																
COB08M264B22S	0.5 (0.2)																																																
COB12M264B22S	0.7 (0.3)																																																
7	WT	<div>Calculation of Additional Charge [WT lbs (kg)] = W1 + W2 + W3 + W4 + W5 + W6 =</div>	lbs (kg)																																														

Ensure that the total additional charge WT does not exceed the maximum additional refrigerant charge as shown in the table on the following page.

Max. Additional Refrigerant Charge Quantity Allowed

Outdoor Unit Capacity (MBH)	072	096 - 144	168	192	216 - 432
Max. Additional Ref. Charge [lbs (kg)]	79.4 (36.0)	88.2 (40.0)	112.5 (51.0)	114.7 (52.0)	138.9 (63.0)

Initial Ref. Charge Amount of O.U. (Before Shipment) [W0 lbs (kg)]

Outdoor Unit Capacity (MBH)	072	096	120	144	168	192
W0 Outdoor Unit Ref. Charge [lbs (kg)]	15.9 (7.2)	19.6 (8.9)	21.8 (9.9)	23.6 (10.7)	24.9 (11.3)	25.6 (11.6)

W0 is the outdoor unit refrigerant charge prior to shipment.

If there is a combination of base units, calculate the total refrigerant charge prior to shipment of those combined outdoor units.

(2) Record of Additional Charge

Total refrigerant charge of this system is calculated in the following formula.

$$\text{Total Ref. Charge} = \text{WT lbs (kg)} + \text{W0 lbs (kg)} = \boxed{} \text{ lbs (} \boxed{} \text{ kg)}$$

When refrigerant is recovered or charged due to repairs, operating, or adjusting the unit, record the refrigerant quantity again.

- Special Attention Regarding Refrigerant Gas Leakage**

Make sure that the entire VRF system meets ASHRAE Standard 15, or any local codes, regarding Safety. The ASHRAE Standard 15-2013 provides safeguards for life, limb, health, property, and prescribes safety requirements.

The standard is recognized as the main guide for personal safety involving refrigeration systems. It strives to ensure a safe application of refrigerant systems by limiting the maximum charge as follows so that a complete discharge due to a leak into a small, occupied, and enclosed room can never exceed the allowable limit for the room.

3. Change-Over Box

3.1 Unit Nomenclature

Nomenclature Description		COB	S	048	B	2	1	S
Unit Type COB = Change-Over Box	COB							
Number of Ports S = Single Port 04M = 4 Branches 08M = 8 Branches 12M = 12 Branches	S							
Capacity (MBH) 048 = Max. 48 (MBH) 096 = Max. 96 (MBH) 132 = Max. 132 (MBH) 264 = Max. 264 (MBH)	048							
Refrigerant Type B = for R410A	B							
Voltage 2 = 208/230V - 1 ϕ - 60Hz	2							
1 = Model Type 1 2 = Model Type 2	1							
Factory Options S = Standard C = Chicago	S							

3.2 Line-up

Type	Capacity		Model
	RT	MBH	
Change-Over Box	4	48	COBS048B21S
	4	48	COBS048B22S
	4	48	COBS048B22C
	8	96	COBS096B21S
	8	96	COBS096B22S
	8	96	COBS096B22C
	11	132	COB04M132B22S
	22	264	COB08M264B22S
	22	264	COB12M264B22S

3.3 General Data

3.3.1 Model Type 1

Model Name			COBS048B21S/C	COBS096B21S/C
Power Supply			208/230V 1PH 60Hz	208/230V 1PH 60Hz
Power Consumption		W	20	20
Connectable Indoor Unit Total Capacity	more than 2 Units	MBH	≤ 41	42 - 71 *
	1 Unit	MBH	≤ 48	49 - 96
Number of Connectable Indoor Unit			1 - 7	1 - 8
Dimension	Height	in (mm)	7-1/2 (191)	7-1/2 (191)
	Width	in (mm)	11-7/8 (301)	11-7/8 (301)
	Depth	in (mm)	8-7/16 (214)	8-7/16 (214)
Net Weight		lb (kg)	15 (7)	15 (7)
Refrigerant		–	R410A	R410A
Min Circuit Amps		A	0.1	0.1
Recommended Fuse/Breaker Size		A	15	15
Maximum Fuse Size		A	15	15
Refrigerant Piping (from Outdoor Unit)	Gas Line (Low Pressure)	φin (φmm)	3/4 (19.05)	3/4 (19.05)
	Gas Line (High/Low Pressure)	φin (φmm)	5/8 (15.88)	5/8 (15.88)
	Liquid Line	φin (φmm)	–	–
Refrigerant Piping (from Indoor Unit)	Gas Line	φin (φmm)	5/8 (15.88)	3/4 (19.05)
	Liquid Line	φin (φmm)	–	–

*: 60MBH type indoor unit can not be connected to single branch of this change-over box, if multiple indoor units are connected.

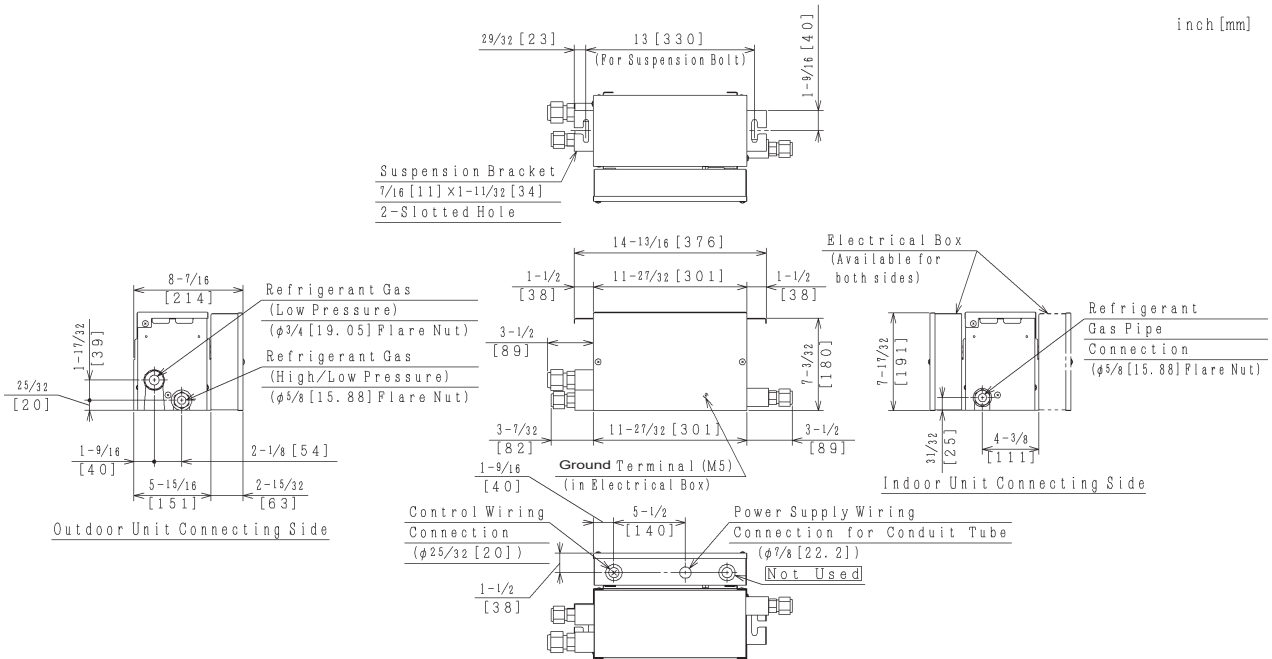
3.3.2 Model Type 2

Type			Single Branch		Multiple Branch		
Model			COBS048B22S/C	COBS096B22S/C	COB04M132B22S	COB08M264B22S	COB12M264B22S
Power Supply			AC 1Phase, 208/230V, 60Hz				
Power Consumption		W	5	5	11.2	22.4	33.6
Number of Branches (for Indoor Unit)			1	1	4	8	12
Single Unit Per Branch	Maximum Total Capacity of All Connected Indoor Units	MBH	≤ 54	≤ 96	≤ 132	≤ 264	≤ 264
	Maximum Total Capacity of Connected Indoor Units Per Branch	MBH	≤ 54	≤ 96	≤ 96 ¹	≤ 96 ¹	≤ 96 ¹
Multiple Units Per Branch	Maximum Number of Connected Indoor Units Per Branch	-	7	8	6	6	6
	Maximum Total Capacity of All Connected Indoor Units	MBH	≤ 41	≤ 71	≤ 114	≤ 216	≤ 216
	Maximum Total Capacity of Connected Indoor Units Per Branch	MBH	≤ 41	≤ 71 ³	≤ 41	≤ 41	≤ 41
Outer Dimensions	Height	in. (mm)	7-1/2 (191)	7-1/2 (191)	10-1/4 (260)	10-1/4 (260)	10-1/4 (260)
	Width	in. (mm)	11-7/8 (301)	11-7/8 (301)	11-15/16 (303)	21-3/8 (543)	30-13/16 (783)
	Depth	in. (mm)	8-7/16 (214)	8-7/16 (214)	13-7/8 (352)	13-7/8 (352)	13-7/8 (352)
Net Weight		lbs. (kg)	13 (6)	13 (6)	31 (14)	56 (25)	80 (36)
Refrigerant		-	R410A				
Minimum Circuit Ampacity		A	0.1	0.1	0.2	0.4	0.6
Recommended Fuse/Breaker Size		A	15	15	15	15	15
Maximum Fuse Size		A	15	15	15	15	15
Refrigerant Piping (from Outdoor Unit)	Gas Line (High/Low Pressure)	in. (mm)	5/8 (15.88)	5/8 (15.88)	7/8 (22.2)	7/8 (22.2)	1 ² (25.4) ²
	Gas Line (Low Pressure)	in. (mm)	3/4 (19.05)	3/4 (19.05)	1 ² (25.4) ²	1-1/8 (28.58)	1-1/8 (28.58)
	Liquid Line	in. (mm)	-	-	1/2 (12.7)	1/2 (12.7)	5/8 (15.88)
Refrigerant Piping (from Indoor Unit)	Gas Line	in. (mm)	5/8 (15.88)	3/4 (19.05)	5/8 (15.88)	5/8 (15.88)	5/8 (15.88)
	Liquid Line	in. (mm)	-	-	3/8 (9.53)	3/8 (9.53)	3/8 (9.53)

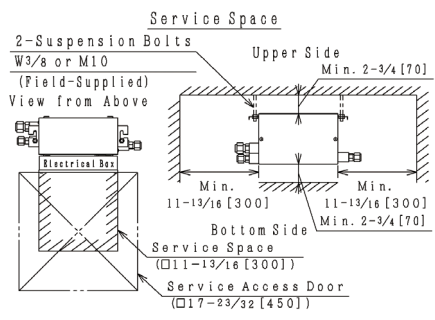
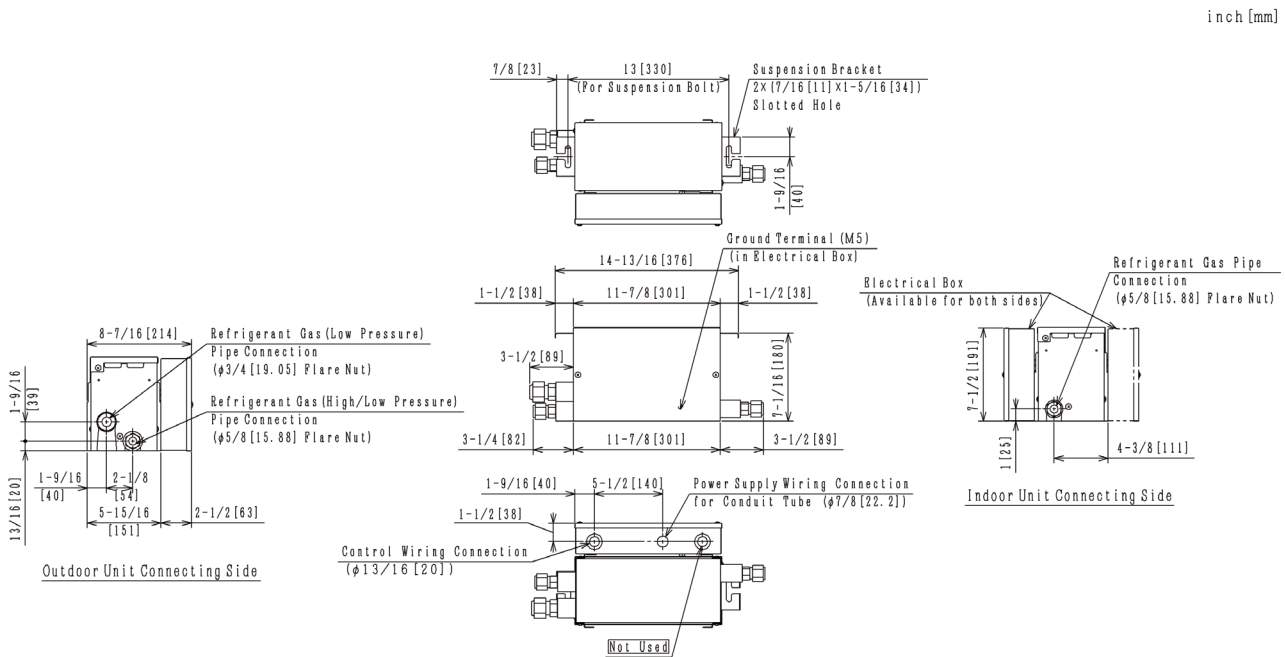
1. Up to two 60, 72, 96MBH type indoor units can be connected to the change-over box within the "Maximum Total Capacity of All Connected Indoor Units" shown in above table. Make sure to increase the pipe connection size by using the appropriate accessory pipe.
2. Apply reducer (accessory pipe) for changing the pipe size to $\phi 7/8$ inch (22.2mm) for field pipe connection.
3. 60MBH type indoor unit can not be connected to single branch of this change-over box, if multiple indoor units are connected.

3.4 Dimensional Data

COBS048B21S



COBS048B22S

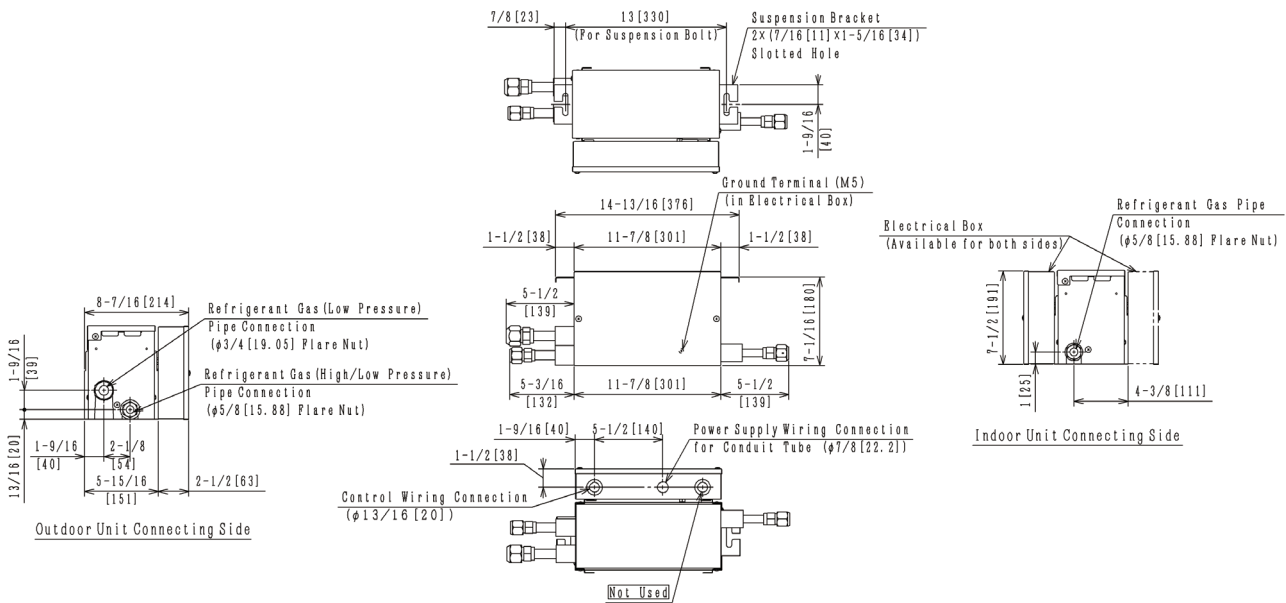


NOTE:

1. Change-Over Box is composed of mechanical parts such as electronic expansion valves for switching cooling/heating operation. Therefore, make sure to install the service access doors on the electrical box side and indoor unit connecting side.
2. Operating sound and refrigerant flow sound may be heard from the Change-Over Box when the electronic expansion valves in the Change-Over Box are activated for RUN/STOP, Thermo-ON/OFF, defrosting or switching operation. Therefore, install the Change-Over Box in the ceiling of corridor so the refrigerant flow sound may not heard in the room. As for the ceiling material, select a material like a plaster board (at least 3/8inch (9mm)) which minimizes operation sound.
3. Do not install the Change-Over Box in a place near bed room or hospital rooms since the refrigerant flow sound may be heard from the Change-Over Box when switching between cooling/heating operation.
4. Make sure liquid pipe is correctly installed to the appropriate unit.

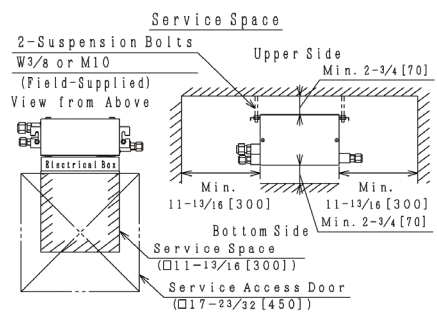
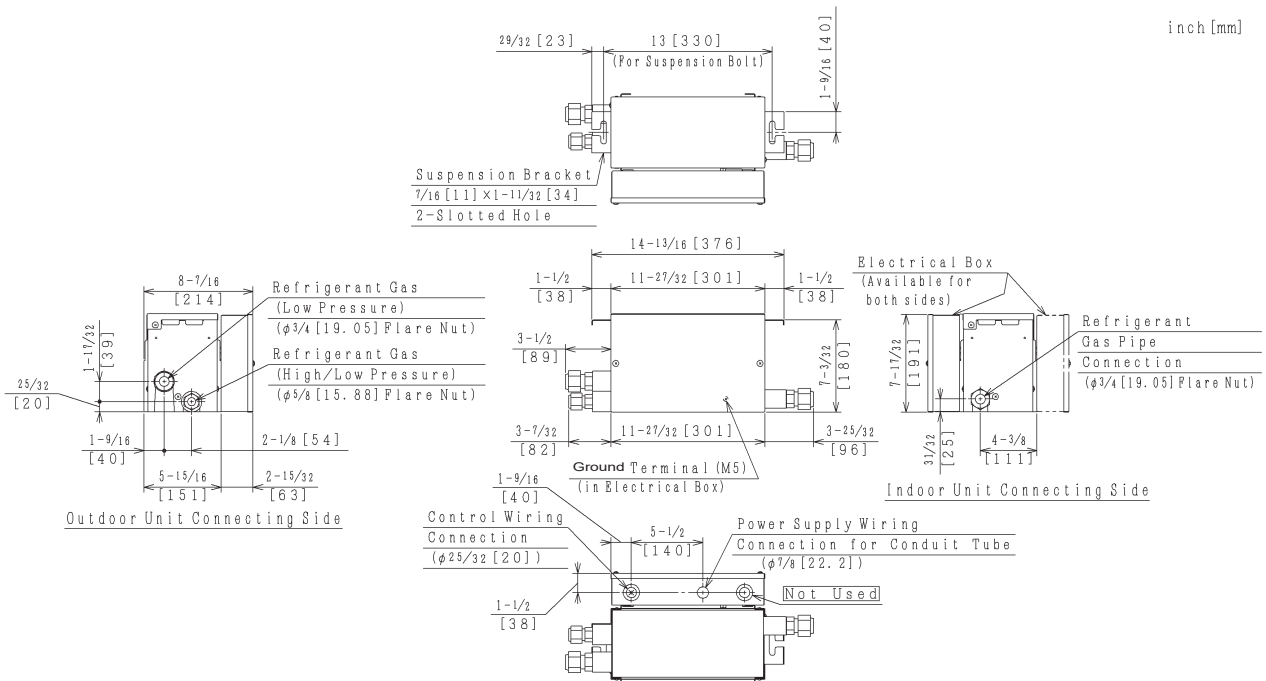
COBS048B22C

inch [mm]



COBS096B21S

inch [mm]



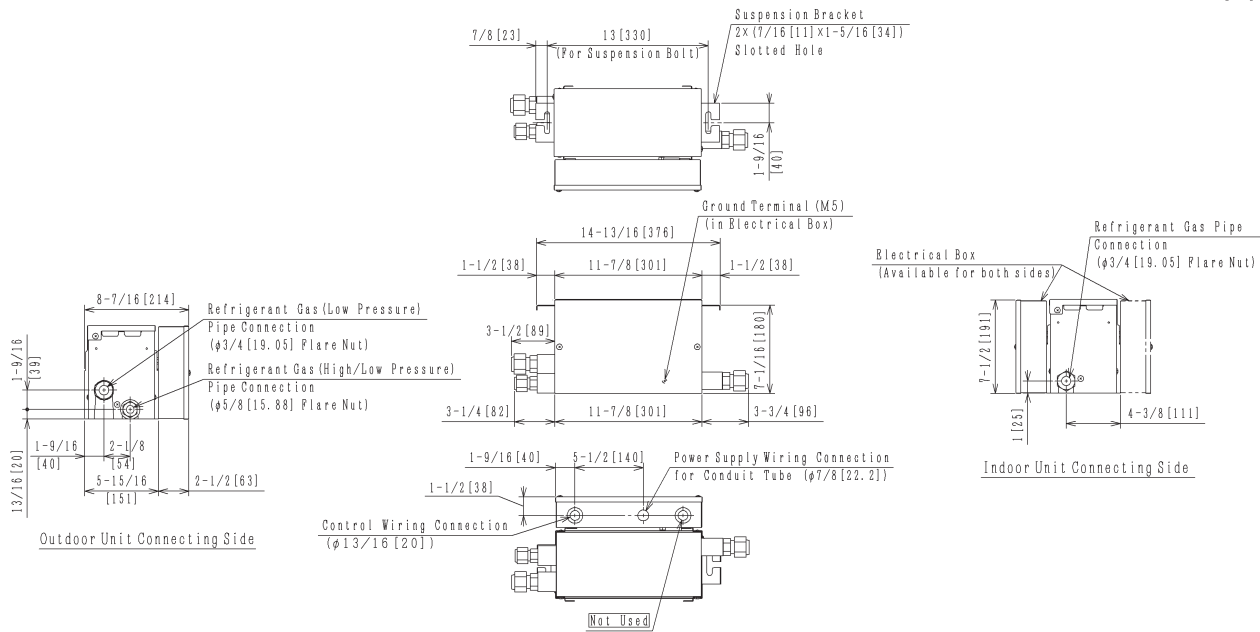
NOTE:

1. Change-Over Box is composed of mechanical parts such as electronic expansion valves for switching cooling/heating operation. Therefore, make sure to install the service access doors on the electrical box side and indoor unit connecting side.
2. Operating sound and refrigerant flow sound may be heard from the Change-Over Box when the electronic expansion valves in the Change-Over Box are activated for RUN/STOP, Thermo-ON/OFF, defrosting or switching operation. Therefore, install the Change-Over Box in the ceiling of corridor so the refrigerant flow sound may not heard in the room. As for the ceiling material, select a material like a plaster board (at least 3/8inch (9mm)) which minimizes operation sound.
3. Do not install the Change-Over Box in a place near bed room or hospital rooms since the refrigerant flow sound may be heard from the Change-Over Box when switching between cooling/heating operation.
4. Make sure liquid pipe is correctly installed to the appropriate unit.

CHANGE-OVER BOX

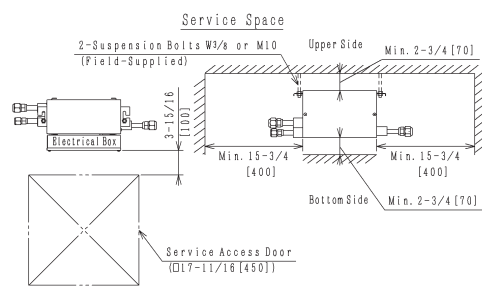
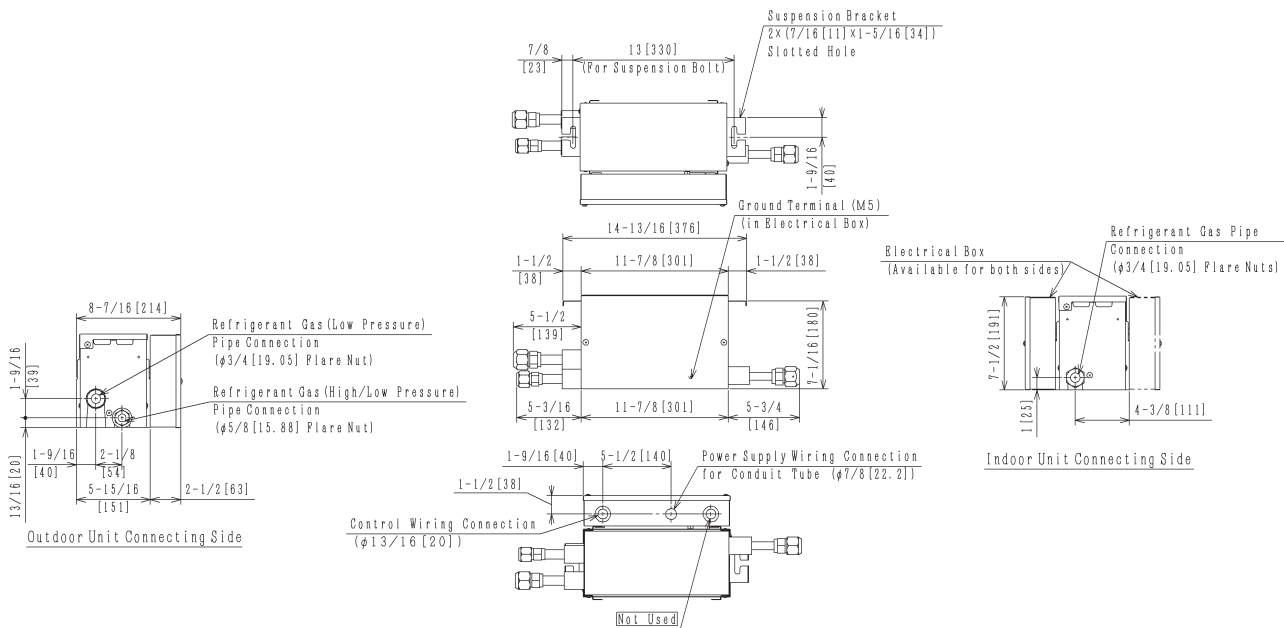
COBS096B22S

inch [mm]



COBS096B22C

inch [mm]

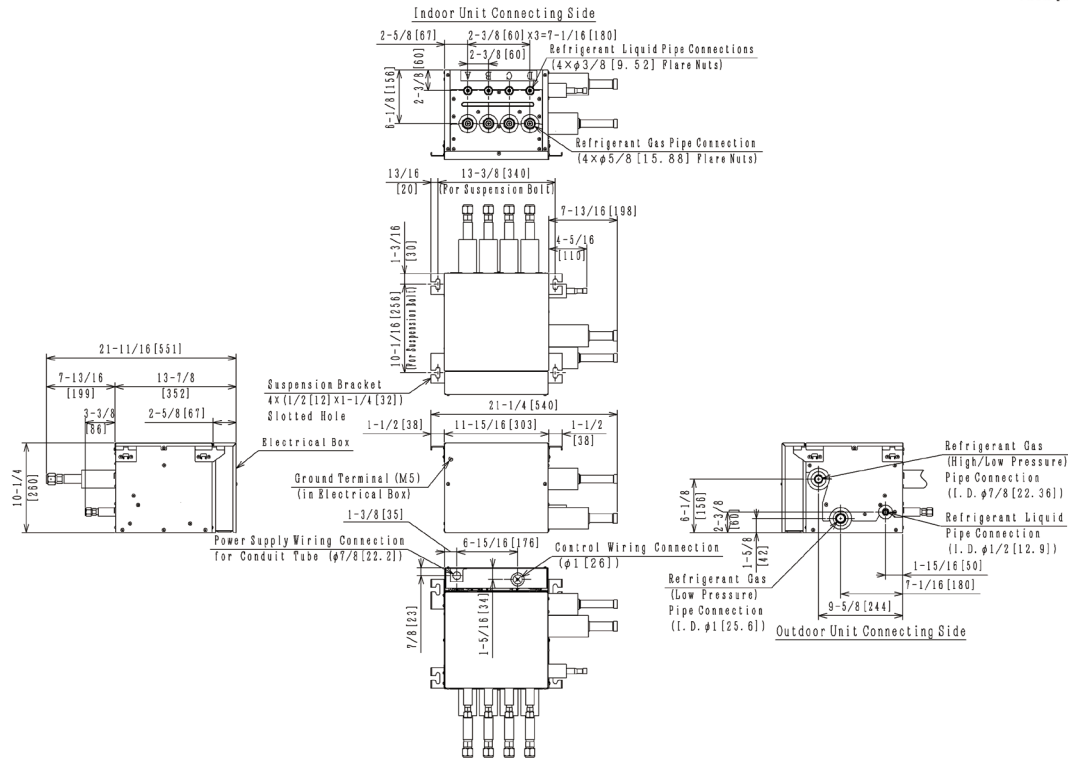


NOTE:

1. Change-Over Box is composed of mechanical parts such as electronic expansion valves for switching cooling/heating operation. Therefore, make sure to install the service access doors on the electrical box side and indoor unit connecting side.
2. Operating sound and refrigerant flow sound may be heard from the Change-Over Box when the electronic expansion valves in the Change-Over Box are activated for RUN/STOP, Thermo-ON/OFF, defrosting or switching operation. Therefore, install the Change-Over Box in the ceiling of corridor so the refrigerant flow sound may not heard in the room. As for the ceiling material, select a material like a plaster board (at least 3/8inch (9mm)) which minimizes operation sound.
3. Do not install the Change-Over Box in a place near bed room or hospital rooms since the refrigerant flow sound may be heard from the Change-Over Box when switching between cooling/heating operation.
4. Make sure liquid pipe is correctly installed to the appropriate unit.

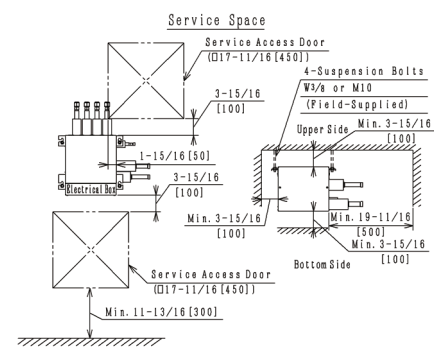
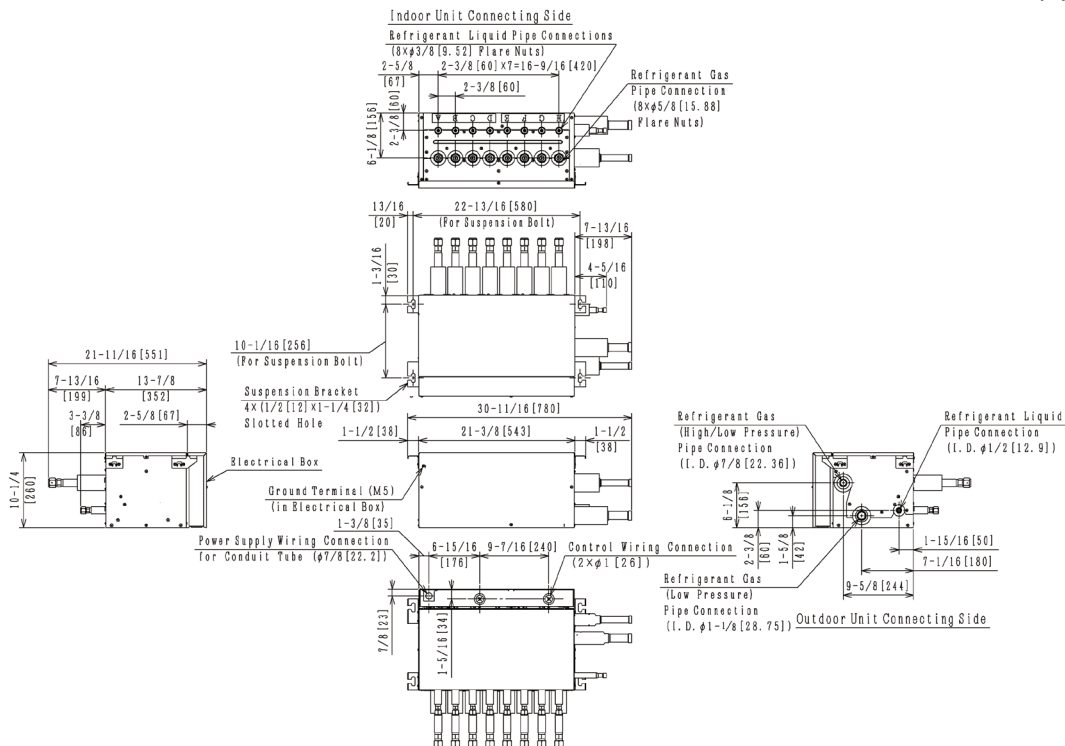
COB04M132B22S

inch [mm]



COB08M264B22S

inch [mm]



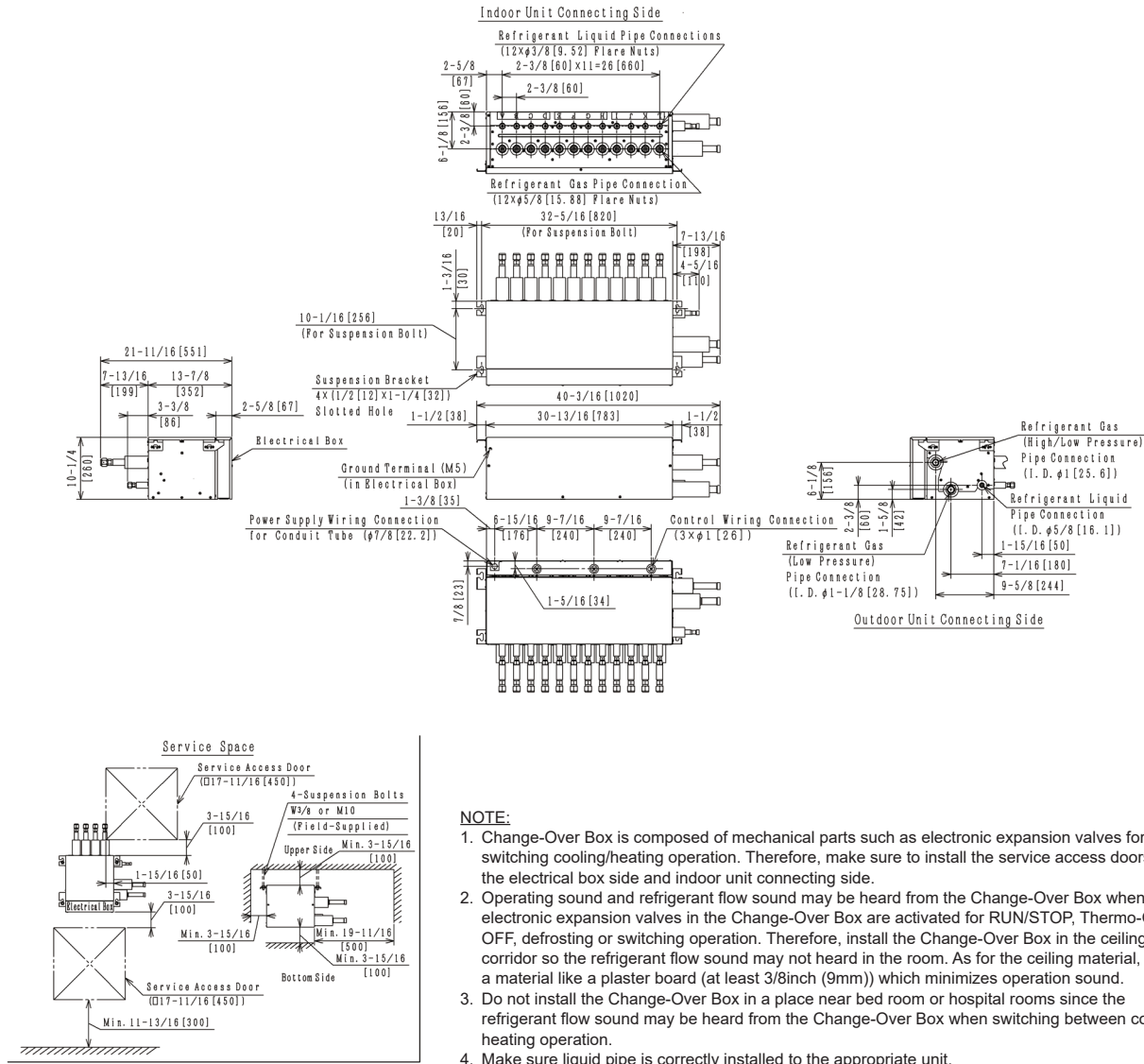
NOTE:

1. Change-Over Box is composed of mechanical parts such as electronic expansion valves for switching cooling/heating operation. Therefore, make sure to install the service access doors on the electrical box side and indoor unit connecting side.
2. Operating sound and refrigerant flow sound may be heard from the Change-Over Box when the electronic expansion valves in the Change-Over Box are activated for RUN/STOP, Thermo-ON/OFF, defrosting or switching operation. Therefore, install the Change-Over Box in the ceiling of corridor so the refrigerant flow sound may not heard in the room. As for the ceiling material, select a material like a plaster board (at least 3/8inch (9mm)) which minimizes operation sound.
3. Do not install the Change-Over Box in a place near bed room or hospital rooms since the refrigerant flow sound may be heard from the Change-Over Box when switching between cooling/heating operation.
4. Make sure liquid pipe is correctly installed to the appropriate unit.

CHANGE-OVER BOX

COB12M264B22S

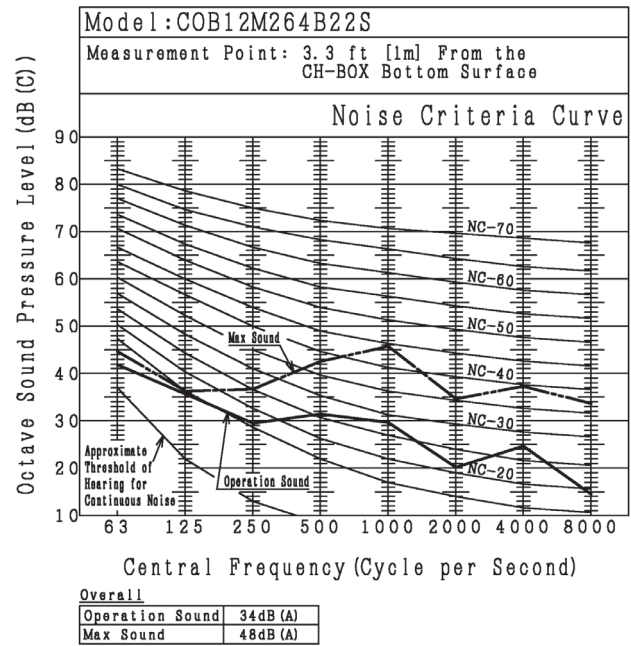
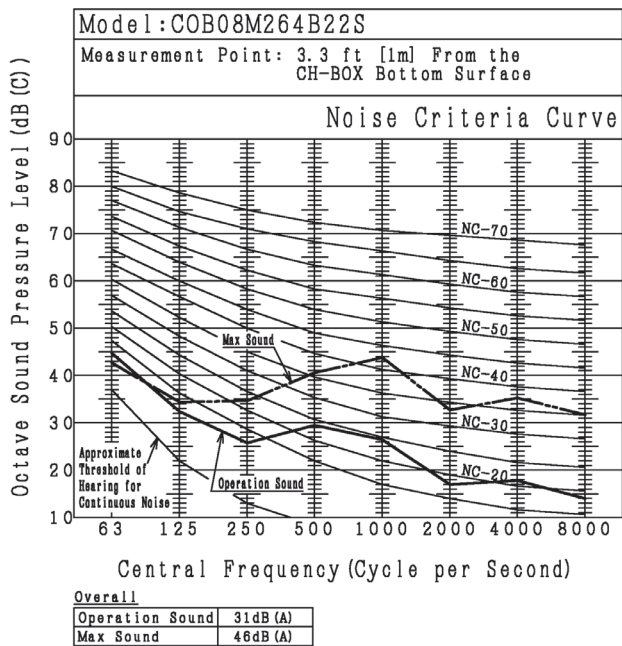
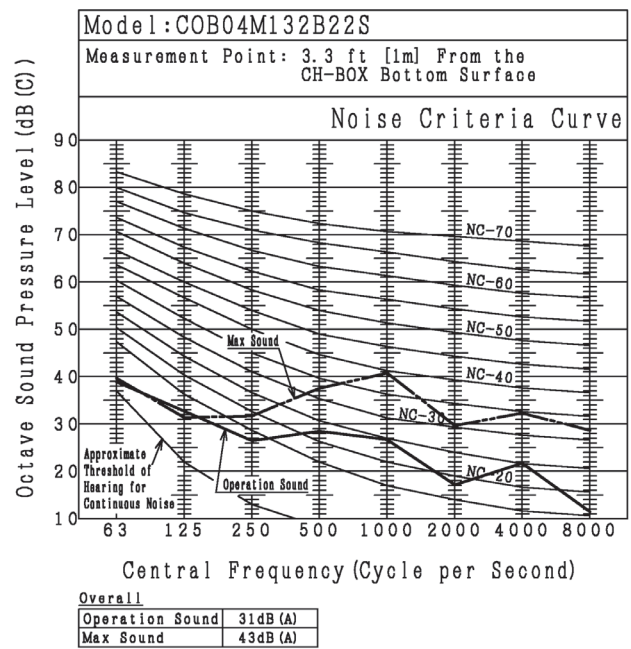
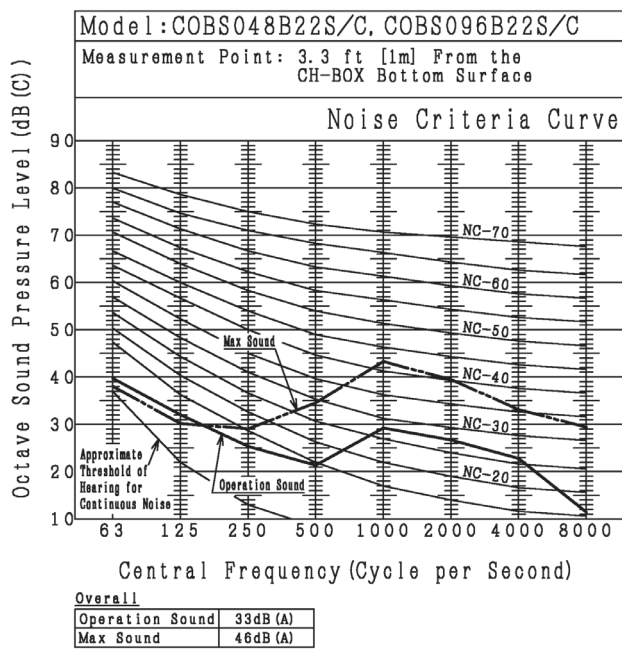
inch [mm]



NOTE:

1. Change-Over Box is composed of mechanical parts such as electronic expansion valves for switching cooling/heating operation. Therefore, make sure to install the service access doors on the electrical box side and indoor unit connecting side.
2. Operating sound and refrigerant flow sound may be heard from the Change-Over Box when the electronic expansion valves in the Change-Over Box are activated for RUN/STOP, Thermo-ON/OFF, defrosting or switching operation. Therefore, install the Change-Over Box in the ceiling of corridor so the refrigerant flow sound may not heard in the room. As for the ceiling material, select a material like a plaster board (at least 3/8inch (9mm)) which minimizes operation sound.
3. Do not install the Change-Over Box in a place near bed room or hospital rooms since the refrigerant flow sound may be heard from the Change-Over Box when switching between cooling/heating operation.
4. Make sure liquid pipe is correctly installed to the appropriate unit.

3.5 Sound Data

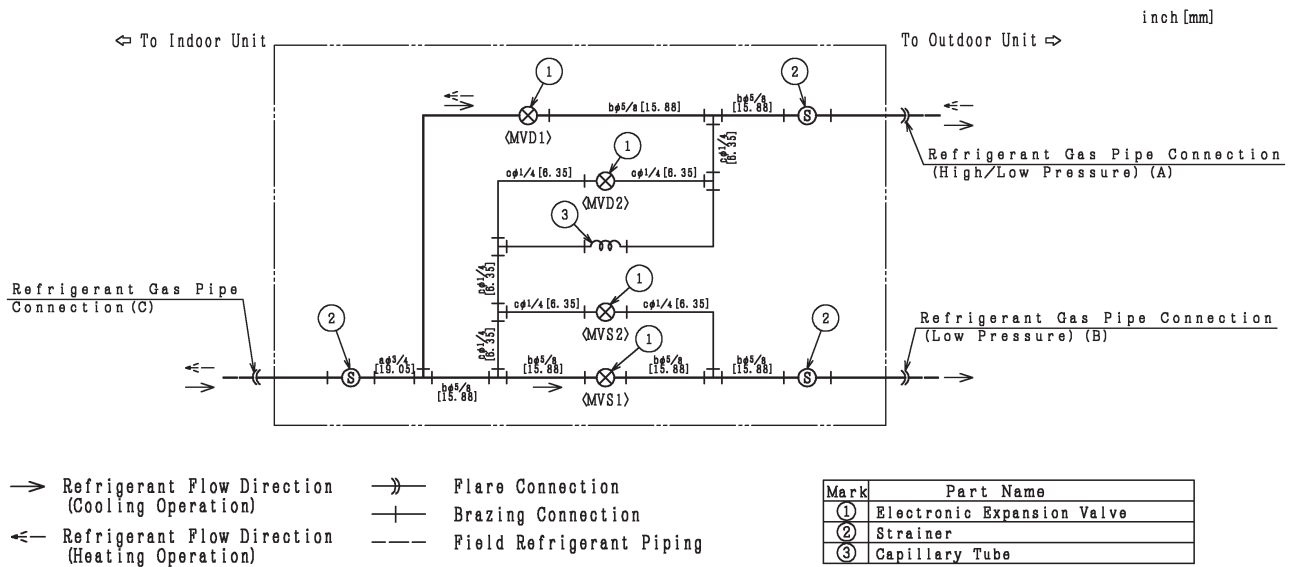


NOTES:

1. The readings were taken in anechoic chamber. Sound in actual status may get bigger due to surroundings noise or echo. Take noise source into consideration to look for proper installation location.
2. CH-Box operation sound may be heard even if the indoor unit has stopped while the outdoor units are in operation and the other indoor units are at Thermo-ON.
3. "Operation sound" is the CH-Box operation sound when the whole system is in either cooling or heating operation. (Not in cooling and heating operation)
4. "Maximum sound" is the maximum value of CH-Box operation sound while the unit is in cooling and heating operation or defrosting.
5. The maximum sound may be exceeded during transient operation such as switching to Defrosting Mode. Ensure the installation place. Do not install the CH-Box in a place near bedrooms or hospital rooms. (Refer to the Installation manual.)

3.6 Refrigeration Cycle

COBS048B21S and COBS096B21S



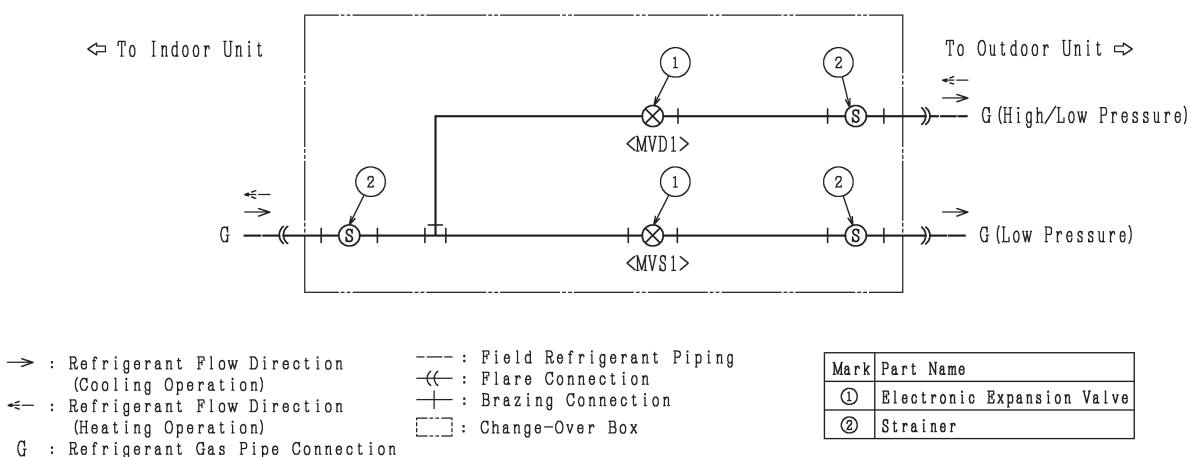
Symbol (Outer diameter x Thickness)	(A)	(B)	(C)
Model			
COBS048B21S	5/8x3/64 [15.88x1.2]	3/4x1/16 [19.05x1.65]	5/8x3/64 [15.88x1.2]
COBS096B21S	5/8x3/64 [15.88x1.2]	3/4x1/16 [19.05x1.65]	3/4x1/16 [19.05x1.65]

Mark	Material Size O.D. x Thickness	Material
a	3/4 x 1/16 [19.05 x 1.65]	Copper Tube C1220T-0
b	5/8 x 3/64 [15.88 x 1.2]	
c	1/4 x 1/32 [6.35 x 0.7]	

NOTE:

Refer to 3-6 "Wiring Diagram" for details on <MVS1>, <MVS2>, <MVD1> and <MVD2>.

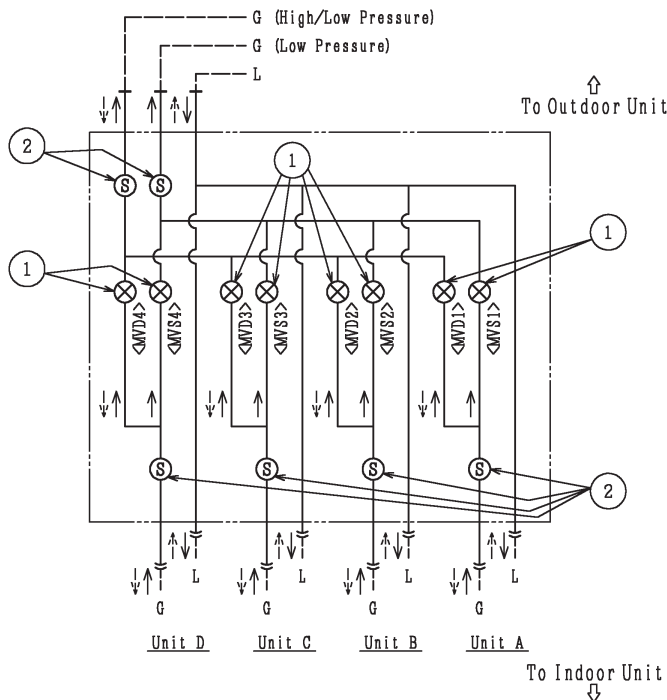
COBS048B22S, COBS096B22S, COBS048B22C and COBS096B22C



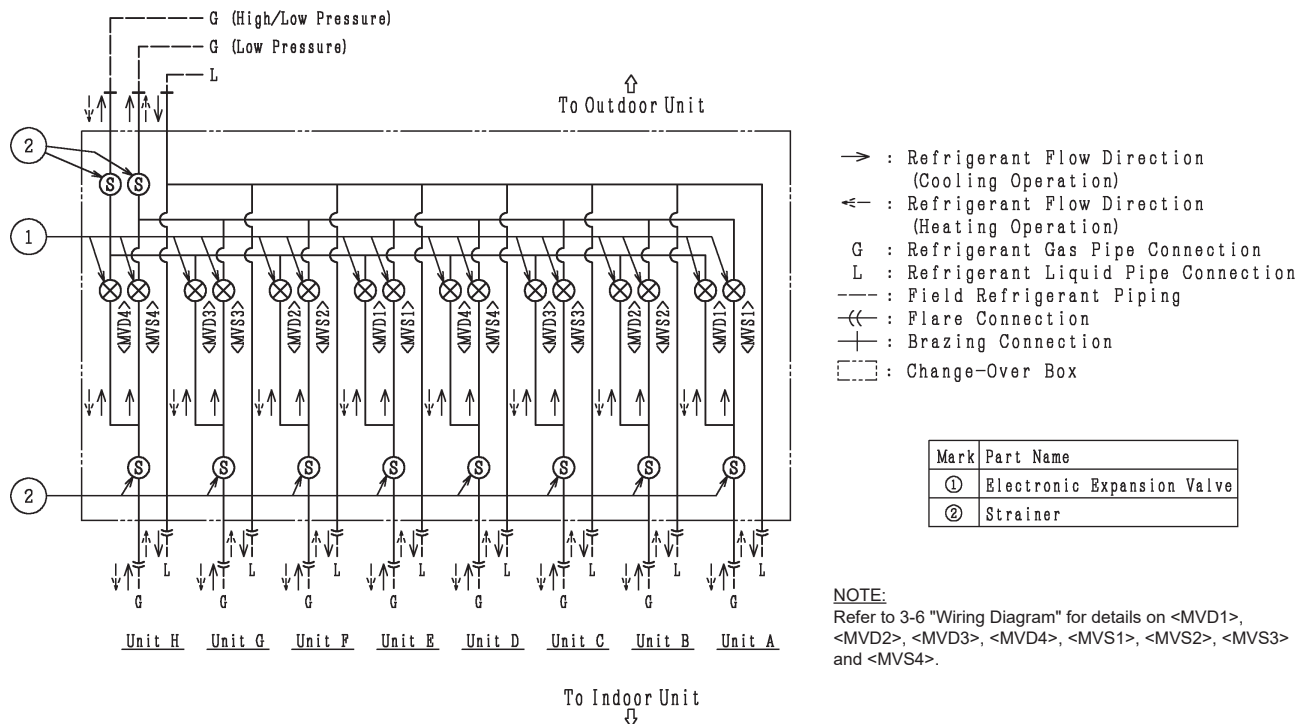
NOTE:

Refer to 3-6 "Wiring Diagram" for details on <MVD1> and <MVS1>.

COB04M132B22S

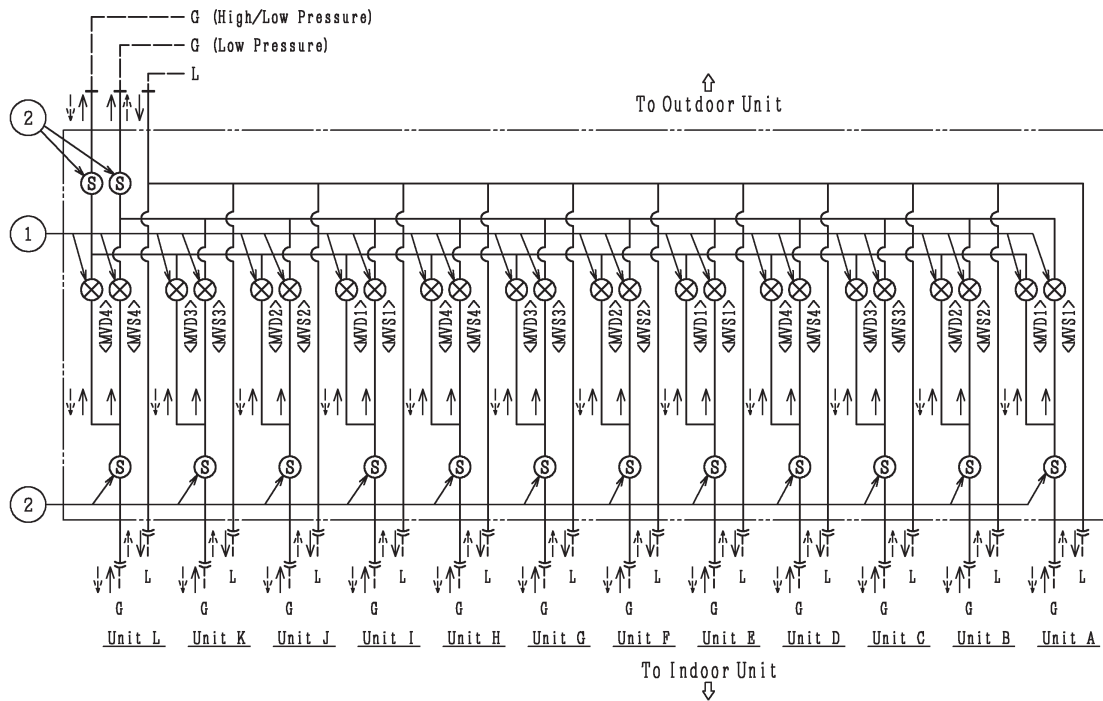


COB08M264B22S



CHANGE-OVER BOX

COB12M264B22S



→ : Refrigerant Flow Direction
(Cooling Operation)

← : Refrigerant Flow Direction
(Heating Operation)

G : Refrigerant Gas Pipe Connection

L : Refrigerant Liquid Pipe Connection

— : Field Refrigerant Piping

⊞ : Flare Connection

⊕ : Brazing Connection

□ : Change-Over Box

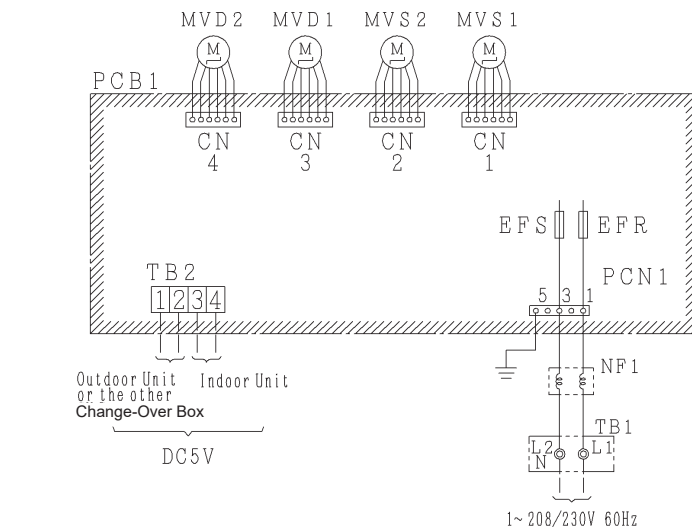
Mark	Part Name
①	Electronic Expansion Valve
②	Strainer

NOTE:

Refer to 3-6 "Wiring Diagram" for details on <MVD1>, <MVD2>, <MVD3>, <MVD4>, <MVS1>, <MVS2>, <MVS3> and <MVS4>.

3.7 Wiring Diagram

COBS048B21S and COBS096B21S



Mark	Name	Remark
PCB1	Printed Circuit Board	
TB1	Terminal Block	Main Power
TB2	Terminal Block	Operating Line
MVD1, MVS1	Electronic Expansion Valve	
MVD2, MVS2		
NF1	Noise Filter	
EFR, EFS	Fuse	

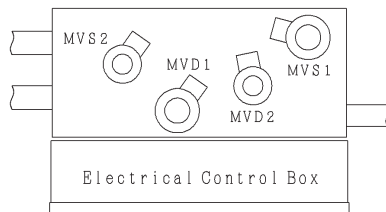
Mark	Torque to tighten the terminal
TB1	0.7~1.0 (lbf·ft) [1.0~1.3 (N·m)]
TB2	0.7~1.0 (lbf·ft) [1.0~1.3 (N·m)]

—: Factory Wiring

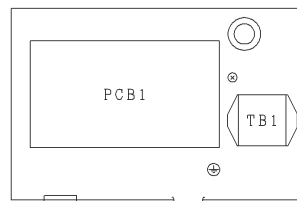
- - -: Field Wiring

Note:

1. All the field wiring and equipment must comply with local codes.

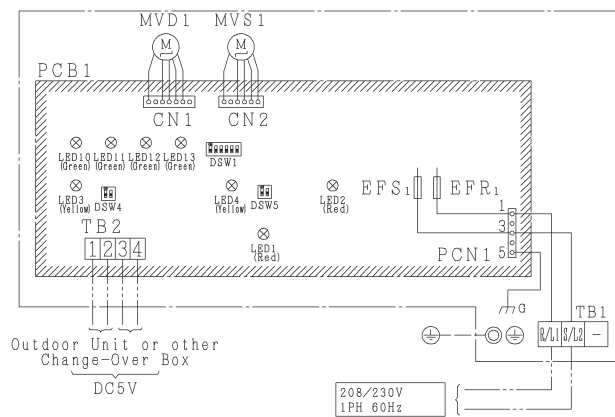


Arrangement of Electronic Expansion Valves (View from Above)



Electrical Control Box

COBS048B22S, COBS096B22S, COBS048B22C and COBS096B22C



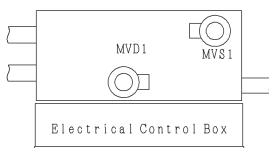
Mark	Name	Remark
PCB1	Printed Circuit Board	
TB1	Terminal Block	for Power Supply
TB2	Terminal Block	for Communication
MVD1, MVS1	Electronic Expansion Valve	
EFR1, EFS1	Fuse	
LED1	LED [Red]	Power Status
LED2	LED [Red]	DC Power Status
LED3	LED [Yellow]	Communication [Outdoor Unit]
LED4	LED [Yellow]	Communication [Indoor Unit]
LED10~13	LED [Green]	
DSW1	DIP Switch	
DSW4	DIP Switch	Communication [Outdoor Unit]
DSW5	DIP Switch	Communication [Indoor Unit]

Mark	Torque to tighten the terminal
TB1	0.7~1.0 (lbf·ft) [1.0~1.3 (N·m)]
TB2	0.5~0.8 (lbf·ft) [0.7~1.1 (N·m)]

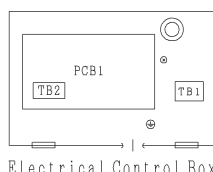
—: Factory Wiring - - -: Ground Wiring
 - - -: Change-Over Box - - -: Field Wiring
 □: Main PCB

Note:

1. All the field wiring and equipment must comply with local codes.

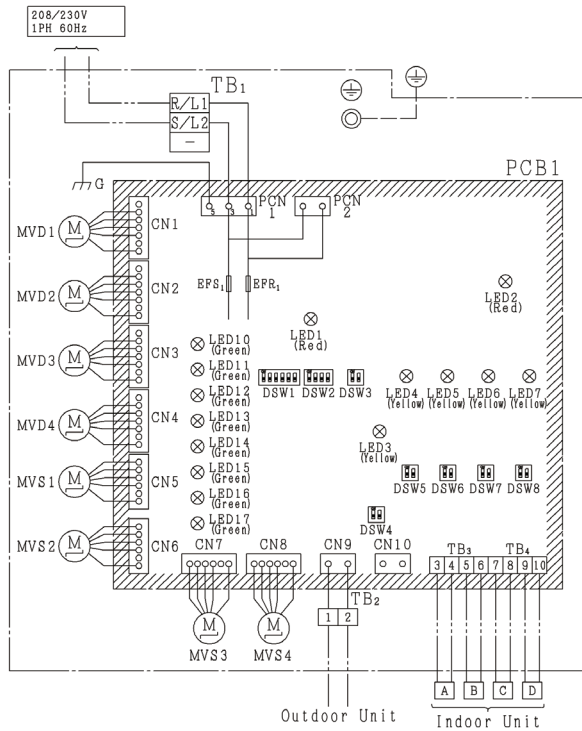


Arrangement of Electronic Expansion Valves (View from Above)

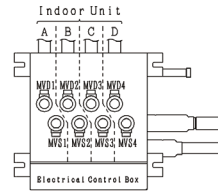


Electrical Control Box

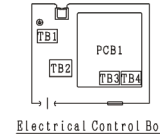
COB04M132B22S



Mark	Name	Remark
PCB1	Printed Circuit Board	
TB1	Terminal Block	for Power Supply
TB2	Terminal Block	for Communication (Outdoor Unit)
TB3, 4	Terminal Block	for Communication (Indoor Unit)
MVD1~4	Electronic Expansion Valve	
MVS1~4	Electronic Expansion Valve	
EPR1, EFS1	Fuse	
LED1	LED (Red)	Power Status
LED2	LED (Red)	DC Power Status
LED3	LED (Yellow)	Communication (Outdoor Unit)
LED4~7	LED (Yellow)	Communication (Indoor Unit)
LED10~17	LED (Green)	
DSW1~3	DIP Switch	
DSW4	DIP Switch	Communication (Outdoor Unit)
DSW5~8	DIP Switch	Communication (Indoor Unit)



Arrangement of Electronic Expansion Valves (View from Above)



Electrical Control Box

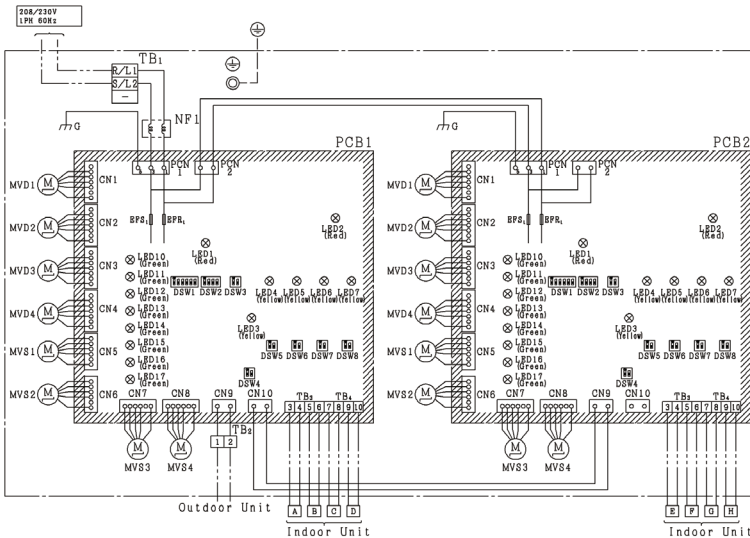
Mark	Torque to tighten the terminal	Screw Size
TB1	0.7~1.0 (lb·ft) (1.0~1.3 (N·m))	M4
TB2	0.7~1.0 (lb·ft) (1.0~1.3 (N·m))	M3.5
TB3, 4	0.5~0.8 (lb·ft) (0.7~1.1 (N·m))	M3.5

Indoor Unit	Mark
Indoor Unit A	TB3-3 MVD1
Indoor Unit B	TB3-4 MVS1
Indoor Unit C	TB3-5 MVD2
Indoor Unit D	TB3-6 MVS2
Indoor Unit E	TB4-7 MVD3
Indoor Unit F	TB4-8 MVS3
Indoor Unit G	TB4-9 MVD4
Indoor Unit H	TB4-10 MVS4

—: Factory Wiring —: Ground Wiring
---: Change-Over Box ---: Field Wiring

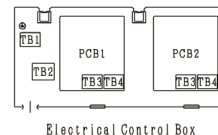
Note:
1. All the field wiring and equipment must comply with local codes.

COB08M264B22S

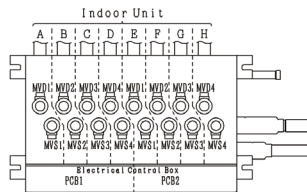


Mark	Torque to tighten the terminal	Screw Size
TB1	0.7~1.0 (lb·ft) (1.0~1.3 (N·m))	M4
TB2	0.7~1.0 (lb·ft) (1.0~1.3 (N·m))	M3.5
TB3, 4	0.5~0.8 (lb·ft) (0.7~1.1 (N·m))	M3.5

Indoor Unit	Mark
Indoor Unit A	TB3-3 MVD1
Indoor Unit B	TB3-4 MVS1
Indoor Unit C	TB3-5 MVD2
Indoor Unit D	TB3-6 MVS2
Indoor Unit E	TB4-7 MVD3
Indoor Unit F	TB4-8 MVS3
Indoor Unit G	TB4-9 MVD4
Indoor Unit H	TB4-10 MVS4



Electrical Control Box



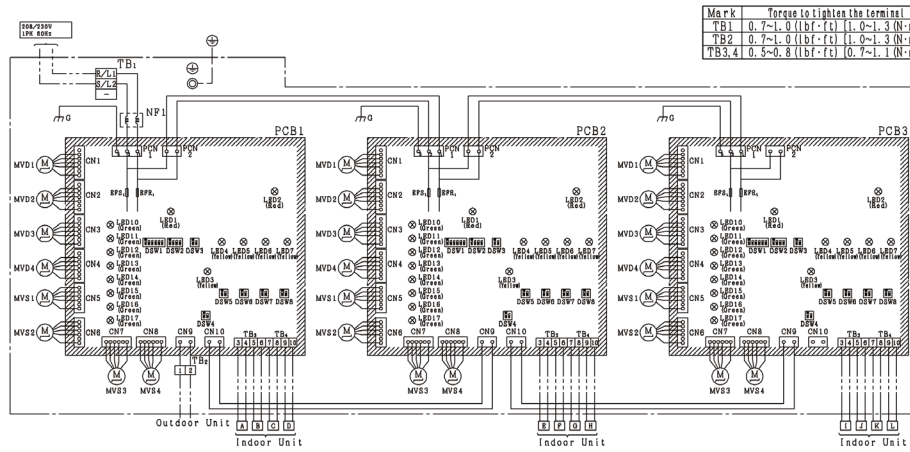
Arrangement of Electronic Expansion Valves (View from Above)

—: Factory Wiring —: Ground Wiring
---: Change-Over Box ---: Field Wiring

Note:
1. All the field wiring and equipment must comply with local codes.

Mark	Name	Remark
PCB1, 2	Printed Circuit Board	
TB1	Terminal Block	for Power Supply
TB2	Terminal Block	for Communication (Outdoor Unit)
TB3, 4	Terminal Block	for Communication (Indoor Unit)
MVD1~4	Electronic Expansion Valve	
MVS1~4	Electronic Expansion Valve	
NF1	Noise Filter	
EPR1, EFS1	Fuse	
LED1	LED (Red)	Power Status
LED2	LED (Red)	DC Power Status
LED3	LED (Yellow)	Communication (Outdoor Unit)
LED4~7	LED (Yellow)	Communication (Indoor Unit)
LED10~17	LED (Green)	
DSW1~3	DIP Switch	
DSW4	DIP Switch	Communication (Outdoor Unit)
DSW5~8	DIP Switch	Communication (Indoor Unit)

COB12M264B22S



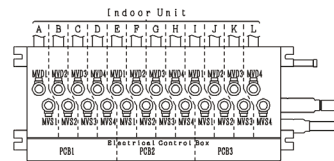
Mark	Force to tighten the terminal	Screw Size
TB1	0.7~1.0 (lb·ft) [1.0~1.3 (N·m)]	M4
TB2	0.7~1.0 (lb·ft) [1.0~1.3 (N·m)]	M4
TB3,4	0.5~0.8 (lb·ft) [0.7~1.1 (N·m)]	M3.5

Indoor Unit	Mark	
Indoor Unit A	TB3-3	MVD1
Indoor Unit B	TB3-4	MVS1
Indoor Unit C	TB3-5	MVD2
Indoor Unit D	TB3-6	MVS2
Indoor Unit E	TB4-7	MVD3
Indoor Unit F	TB4-8	MVS3
Indoor Unit G	TB4-9	MVD4
Indoor Unit H	TB4-10	MVS4
Indoor Unit I	TB3-3	MVD1
Indoor Unit J	TB3-4	MVS1
Indoor Unit K	TB3-5	MVD2
Indoor Unit L	TB3-6	MVS2
Indoor Unit M	TB4-7	MVD3
Indoor Unit N	TB4-8	MVS3
Indoor Unit O	TB4-9	MVD4
Indoor Unit P	TB4-10	MVS4

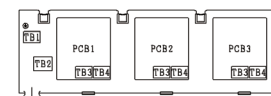
—: Factory Wiring
 ---: Change-Over Box
 ---: Ground Wiring
 ---: Field Wiring
 ---: Main PCB

Note:
 1. All the field wiring and equipment must comply with local codes.

Mark	Name	Remark
PCB1~3	Printed Circuit Board	
TB1	Terminal Block	for Power Supply
TB2	Terminal Block	for Communication (Outdoor Unit)
TB3,4	Terminal Block	for Communication (Indoor Unit)
MVD1~4	Electronic Expansion Valve	
MVS1~4	Electronic Expansion Valve	
NP1	Noise Filter	
RFR, EFS	Fuse	
LED1	LED (Red)	Power Status
LED2	LED (Red)	DC Power Status
LED3	LED (Yellow)	Communication (Outdoor Unit)
LED4~7	LED (Yellow)	Communication (Indoor Unit)
LED10~17	LED (Yellow)	
DSW1~3	DIP Switch	
DSW4	DIP Switch	Communication (Outdoor Unit)
DSW5~8	DIP Switch	Communication (Indoor Unit)



Arrangement of Electronic Expansion Valves (View from Above)



Electrical Control Box

4. Optional Parts

4.1 Line Up

Item No.	Type	Adopting Model Name	Item No.	Optional Parts		Optional Parts Model Name	Compatible with O.U. Size
4.2	Outdoor Unit	(H,Y)VAHR 072~192B(3,4,5)2S	4.2.1	Drain Adapter		DBS-TP10A	For 072 to 192
			4.2.2	Protection Net	Protection Net (Rear)	PN-TP20BA	For 072 only
					Protection Net (Rear)	PN-TP20BB	For 096 and 144
					Protection Net (Rear)	PN-TP20BC	For 168 and 192
					Protection Net (Side)	PN-TP20R	For 072 to 192
					Protection Net (Left)	PN-TP20L	For 072 only
			4.2.3	Snow Protection Hood	Snow Protection Hood (Upper)	ASG-TP50FAS	For 072 only
					Snow Protection Hood (Upper)	ASG-TP50FBS	For 096 to 144
					Snow Protection Hood (Upper)	ASG-TP50FCS	For 168 and 192
					Snow Protection Hood (Rear)	ASG-TP50BAS	For 072 only
					Snow Protection Hood (Rear)	ASG-TP50BBS	For 096 to 144
					Snow Protection Hood (Rear)	ASG-TP50BCS	For 168 and 192
					Snow Protection Hood (Side)	ASG-TP50RS	For 072 to 192
					Snow Protection Hood (Left)	ASG-TP50LS	For 072 only
					Toppling Prevention Tool	ASG-SW20A	For 072 to 192
			4.2.4	Low Ambient Kit	Low Ambient Kit (Upper)	LAK-DAMPER-S-01	For 072 only
					Low Ambient Kit (Upper)	LAK-DAMPER-M-01	For 096 to 144
					Low Ambient Kit (Upper)	LAK-DAMPER-L-01	For 168 and 192
					Low Ambient Kit (Rear)	LAK-BACK-S-01	For 072 only
					Low Ambient Kit (Rear)	LAK-BACK-M-01	For 096 to 144
					Low Ambient Kit (Rear)	LAK-BACK-L-01	For 168 and 192
					Low Ambient Kit (Side)	LAK-SIDE-01	For 072 to 192
					Low Ambient Kit (Left)	LAK-6T-LEFT-01	For 072 only
					Toppling Prevention Tool	ASG-SW20A	For 072 to 192
					Protection Screen for Low Ambient Kit (Upper)	LAK-NET-S-01	For 072 only
						LAK-NET-M-01	For 096 to 144
						LAK-NET-L-01	For 168 and 192
4.3	Piping Kit	—			4.3.1	Piping Connection Kit for Heat Recovery System (3-Pipes Connection)	MC-NP21SX1 ³
			MC-NP30SX1 ³	For 3 Module O.U. System			
			4.3.2	Multi-Kit (Line Branch) for Heat Recovery System (3-Pipes Connection)	MW-NP142X3 ¹	—	
					MW-NP282X3 ¹	—	
					MW-NP452X3 ¹	—	
					MW-NP562X3 ¹	—	
					MW-NP902X3 ¹	—	
			4.3.3	Multi-Kit (Line Branch) for Heat Recovery System (2-Pipes Connection)	MW-NP282A3 ²	—	
					MW-NP452A3 ²	—	
					MW-NP692A3 ²	—	
					MW-NP902A3 ²	—	
			4.3.4	Multi-Kit (Header Branch) for Heat Recovery System (3-Pipes Connection)	MH-NP288X	—	
			4.3.5	Multi-Kit (Header Branch) for Heat Recovery System (2-Pipes Connection)	MH-NP224A	—	
					MH-NP288A	—	

¹ X3 type is to be used in place of X2 type:

The piping kits for X3 model numbers MW-NP142X3, MW-NP282X3, MW-NP452X3, MW-NP562X3 and MW-NP902X3 are to be used in place of the piping kits for the X2 model numbers, MW-NP142X2, MW-NP282X2, MW-NP452X2, MW-NP562X2 and MW-NP902X2, as noted.

² A3 type is to be used in place of A2 type:

The piping kits for A3 model numbers MW-NP282A3, MW-NP452A3, MW-NP692A3 and MW-NP902A3 are to be used in place of the piping kits for the A2 model numbers, MW-NP282A2, MW-NP452A2, MW-NP692A2 and MW-NP902A2, as noted.

³ SX1 type is to be used in place of SX type:

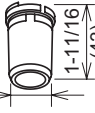


The piping kits for SX1 model numbers MC-NP21SX1, MC-NP30SX1 are to be used in place of the piping kits for the SX model numbers, MC-NP21SX and MC-NP30SX, as noted.

4.2 Outdoor Unit

4.2.1 Drain Adapter DBS-TP10A

The drain adapter is for the condensate pipe connection when the outdoor unit bottom base is used as a condensate pan.

Unit: inch (mm)

No.	Accessory	Qty	Remarks
①	Drain Adapter (VP20 Equivalent)  Outer Diameter $\phi 1$ ($\phi 25$) Inner Diameter $\phi 13/16$ ($\phi 20$)	2	Connection for Condensate Piping
②	Rubber Cap 	4	Fitting for ① Adapter and ③ Cap
③	Drain Cap 	2	Plug for Future Use

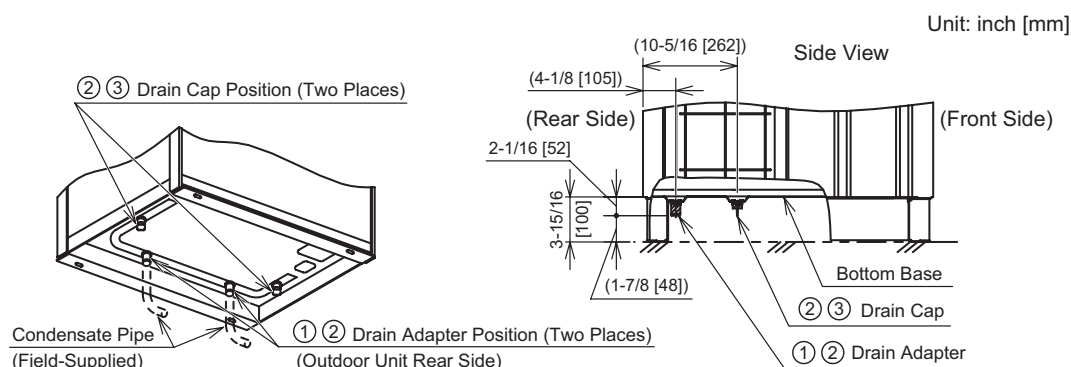
CAUTION

Place the outdoor unit on a flat foundation or block and place it at least 4 inches (100mm) higher than the ground. For smooth drainage, install the outdoor unit with a slight downward slope on the drainage side (rear side).

Installation Position

Example

Capacity: 72,000 Btu/h



Condensate Treatment

Condensate is discharged during heating and defrosting operation. (Even rain water can be discharged.) Note the following.

- (1) Choose a place that is well drained or provide a drain ditch.
- (2) If the unit is installed above places where people might be, an additional condensate pan is required.
- (3) Do not use a drain adapter in a cold area. The condensate in the condensate pipe may freeze and crack the pipe.

4.2.2 Protection Net

The protection net is intended to protect the outdoor unit heat exchanger from external damages.

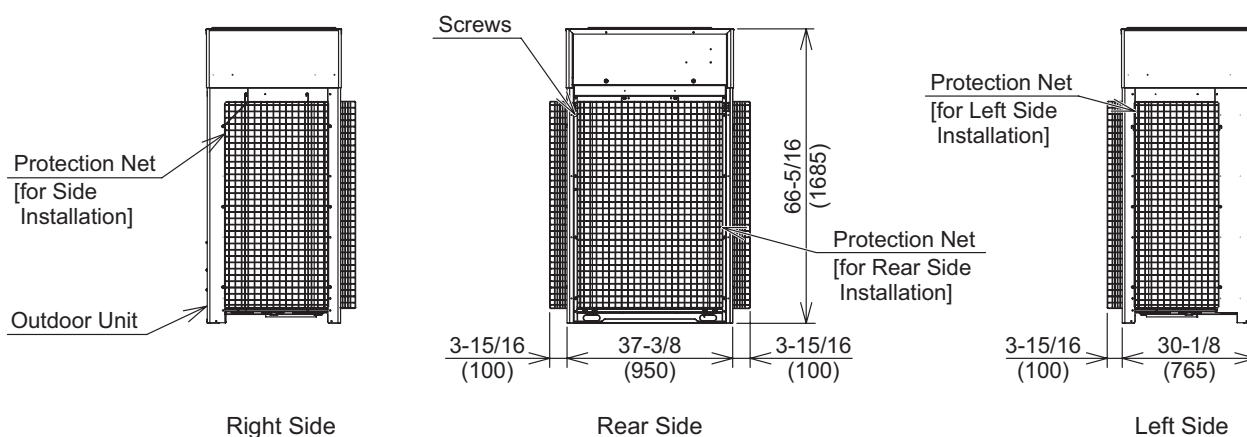
Available Combinations

Applicable Outdoor Unit (Representative Model)	Model		
	(H,Y)VAHR072B32S	(H,Y)VAHR096 - 144B32S	(H,Y)VAHR168, 192B32S
	(H,Y)VAHR072B42S	(H,Y)VAHR096 - 144B42S	(H,Y)VAHR168, 192B42S
	(H,Y)VAHR072B52S	(H,Y)VAHR096 - 144B52S	(H,Y)VAHR168, 192B52S
Protection Net for Rear Side	PN-TP20BA	PN-TP20BB	PN-TP20BC
Protection Net for Left Side	PN-TP20L	PN-TP20R	
Protection Net for Right Side	PN-TP20R		

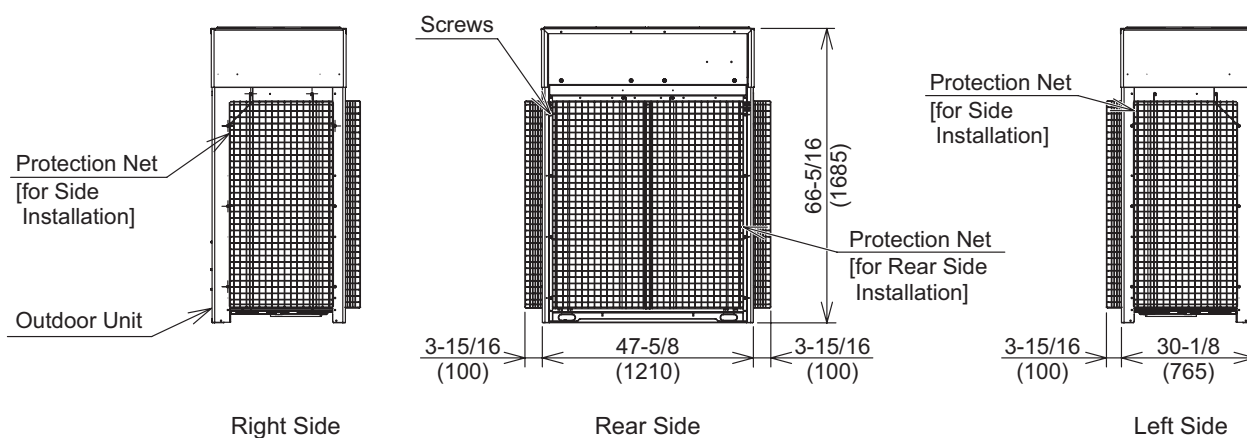
Installation Appearance

Unit: inch (mm)

• O.U. Size 72MBH



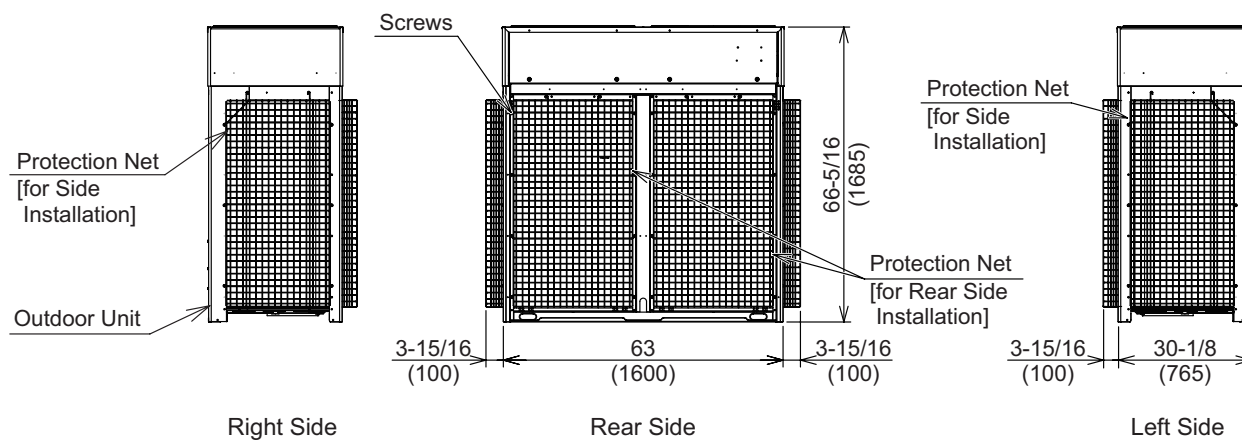
• O.U. Size 96, 120 and 144MBH



OPTIONAL PARTS

- O.U. Size 168 and 192MBH

Unit: inch (mm)



4.2.3 Snow Protection Hood

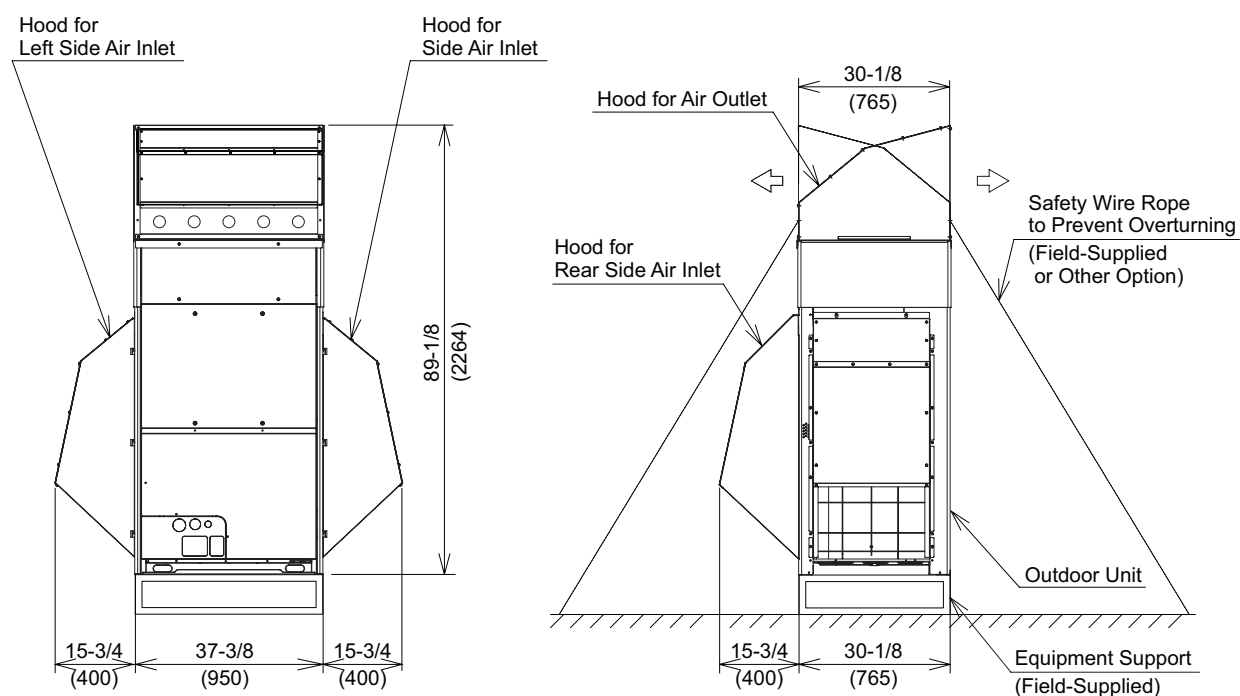
Available Combinations

Applicable Outdoor Unit	Model		
	O.U. Size 72MBH	O.U. Size 96 to 144MBH	O.U. Size 168 and 192MBH
Hood for Upper Air Outlet	ASG-TP50FAS	ASG-TP50FBS	ASG-TP50FCS
Hood for Rear Side Air Inlet	ASG-TP50BAS	ASG-TP50BBS	ASG-TP50BCS
Hood for Left Side Air Inlet	ASG-TP50LS	ASG-TP50RS	
Hood for Right Side Air Inlet	ASG-TP50RS		
Toppling Prevention Tool	ASG-SW20A		

Installation Appearance

- O.U. Size 72MBH

Unit: inch (mm)



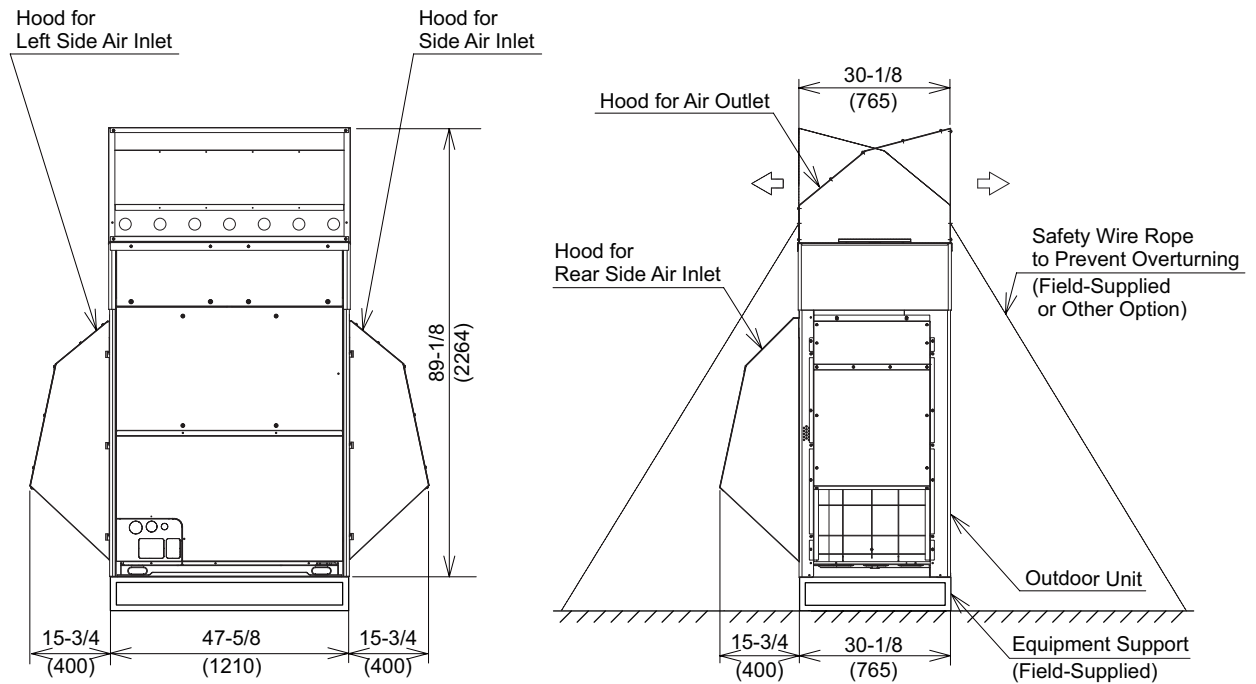
Available Combinations

Applicable Outdoor Unit (Representative Model)	Model
	(H,Y)VAHR072B32S (H,Y)VAHR072B42S (H,Y)VAHR072B52S
Hood for Air Outlet	ASG-TP50FAS
Hood for Rear Side Air Inlet	ASG-TP50BAS
Hood for Left Side Air Inlet	ASG-TP50LS
Hood for Right Side Air Inlet	ASG-TP50RS

OPTIONAL PARTS

- O.U. Size 96, 120 and 144MBH

Unit: inch (mm)

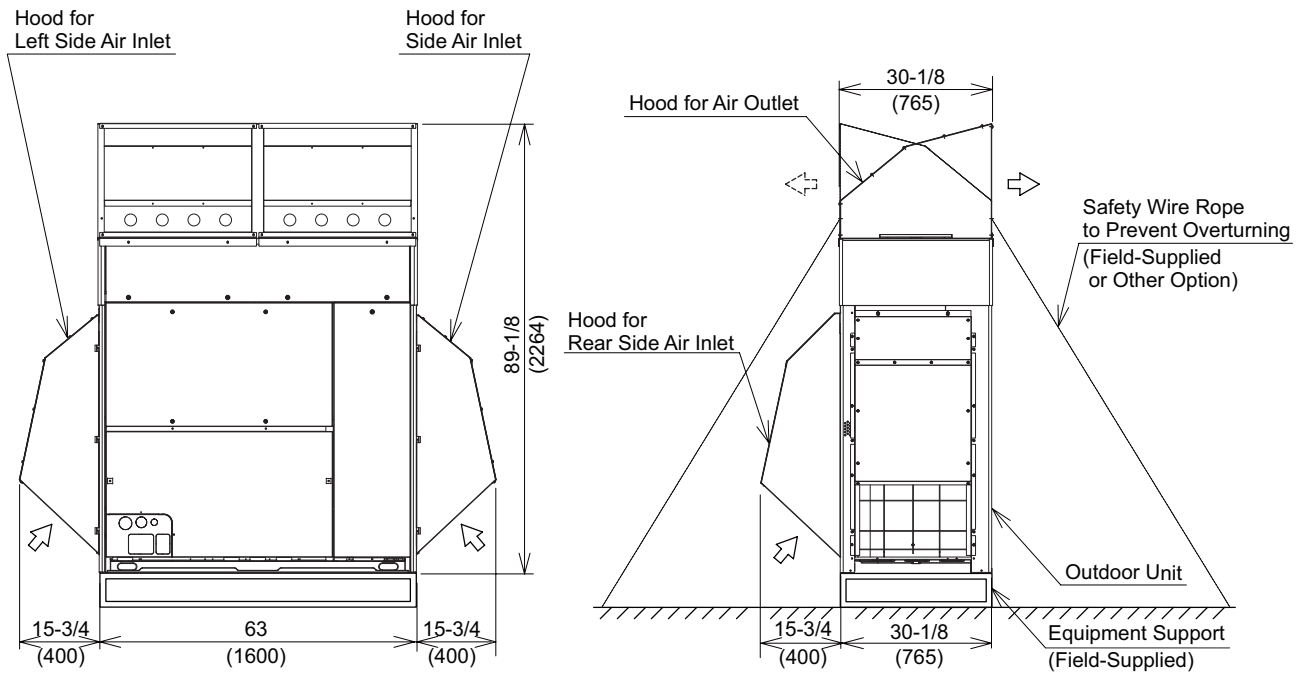


Available Combinations

Applicable Outdoor Unit (Representative Model)	Model
	(H,Y)VAHR096 - 144B32S (H,Y)VAHR096 - 144B42S (H,Y)VAHR096 - 144B52S
Hood for Air Outlet	ASG-TP50FBS
Hood for Rear Side Air Inlet	ASG-TP50BBS
Hood for Left Side Air Inlet	ASG-TP50RS
Hood for Right Side Air Inlet	ASG-TP50RS

• O.U. Size 168 and 192MBH

Unit: inch (mm)



Available Combinations

Applicable Outdoor Unit (Representative Model)	Model
	(H,Y)VAHR168, 192B32S (H,Y)VAHR168, 192B42S (H,Y)VAHR168, 192B52S
Hood for Air Outlet	ASG-TP50FCS
Hood for Rear Side Air Inlet	ASG-TP50BCS
Hood for Left Side Air Inlet	ASG-TP50RS
Hood for Right Side Air Inlet	ASG-TP50RS

OPTIONAL PARTS

4.2.4 Low Ambient Kit

4.2.4.1 Dimensional Data

Available Combinations

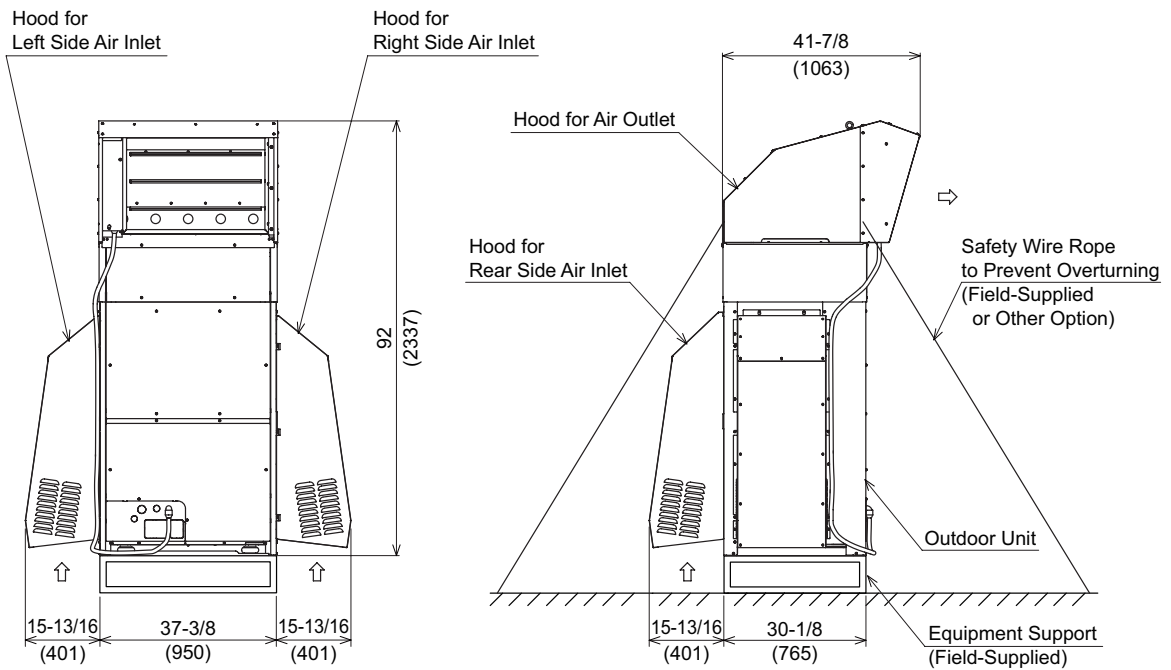
Applicable Outdoor Unit	Model		
	O.U. Size 72MBH	O.U. Size 96 to 144MBH	O.U. Size 168 and 192MBH
Hood for Upper Air Outlet	LAK-DAMPER-S-01	LAK-DAMPER-M-01	LAK-DAMPER-L-01
Hood for Rear Side Air Inlet	LAK-BACK-S-01	LAK-BACK-M-01	LAK-BACK-L-01
Hood for Left Side Air Inlet	LAK-6T-LEFT-01	LAK-SIDE-01	
Hood for Right Side Air Inlet	LAK-SIDE-01		
Protection Screen	LAK-NET-S-01	LAK-NET-M-01	LAK-NET-L-01
Toppling Prevention Tool	ASG-SW20A		

Installation Appearance

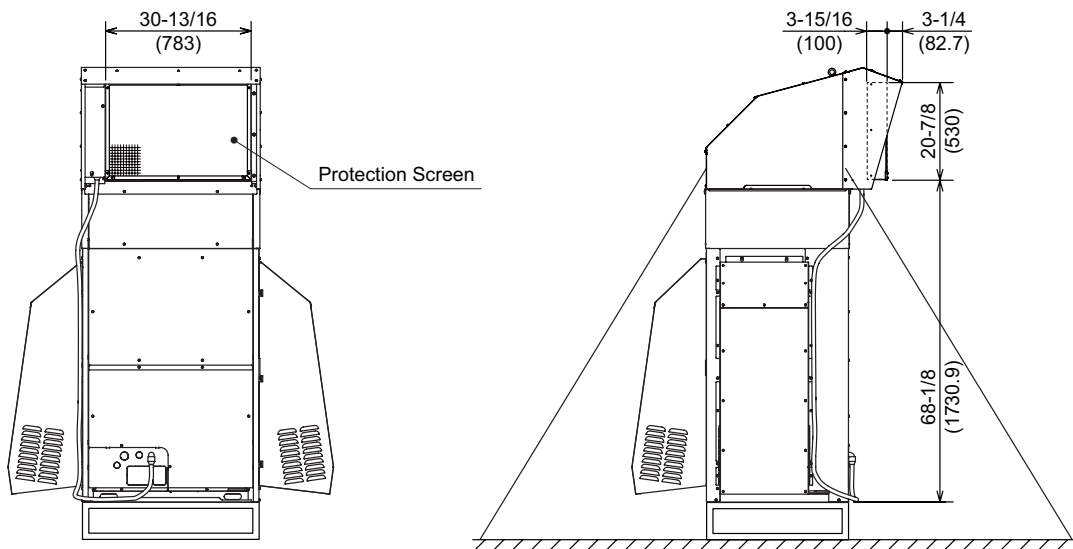
- O.U. Size 72MBH

Unit: inch (mm)

Without Protection Screen



With Protection Screen



Available Combinations

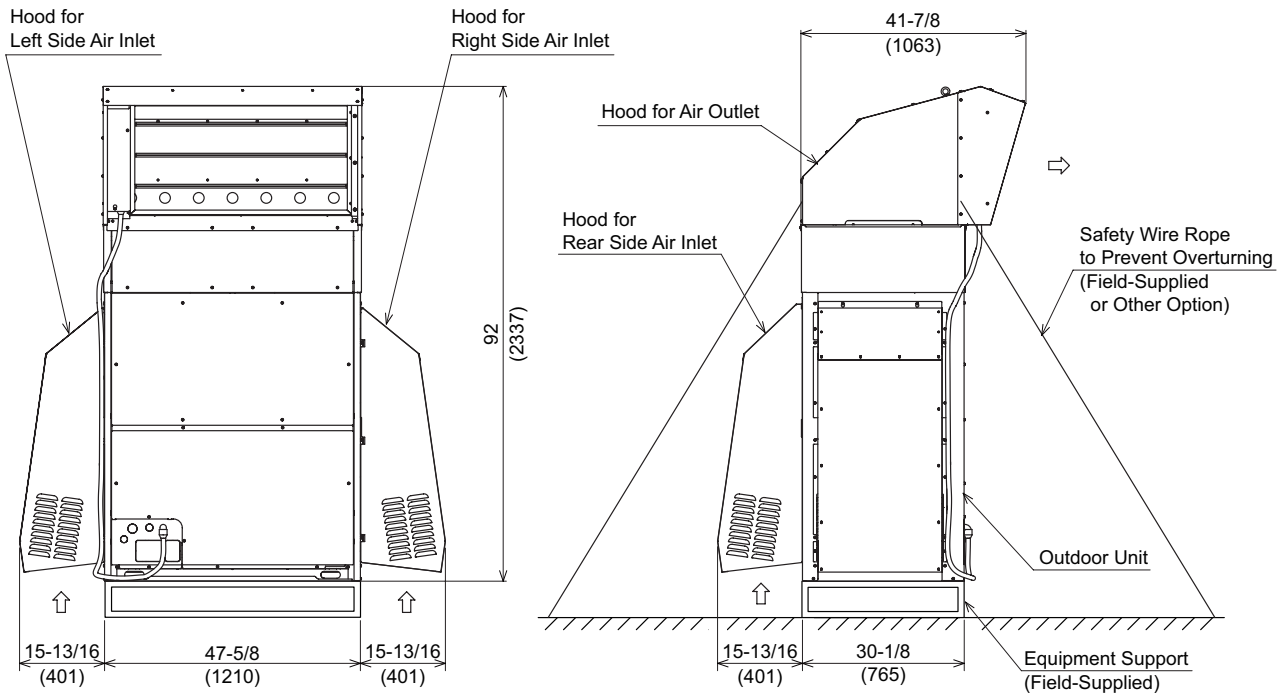
Applicable Outdoor Unit (Representative Model)	Model
	(H,Y)VAHR072B32S
	(H,Y)VAHR072B42S
	(H,Y)VAHR072B52S
Hood for Upper Air Outlet	LAK-DAMPER-S-01
Hood for Rear Side Air Inlet	LAK-BACK-S-01
Hood for Left Side Air Inlet	LAK-6T-LEFT-01
Hood for Right Side Air Inlet	LAK-SIDE-01
Protection Screen	LAK-NET-S-01

OPTIONAL PARTS

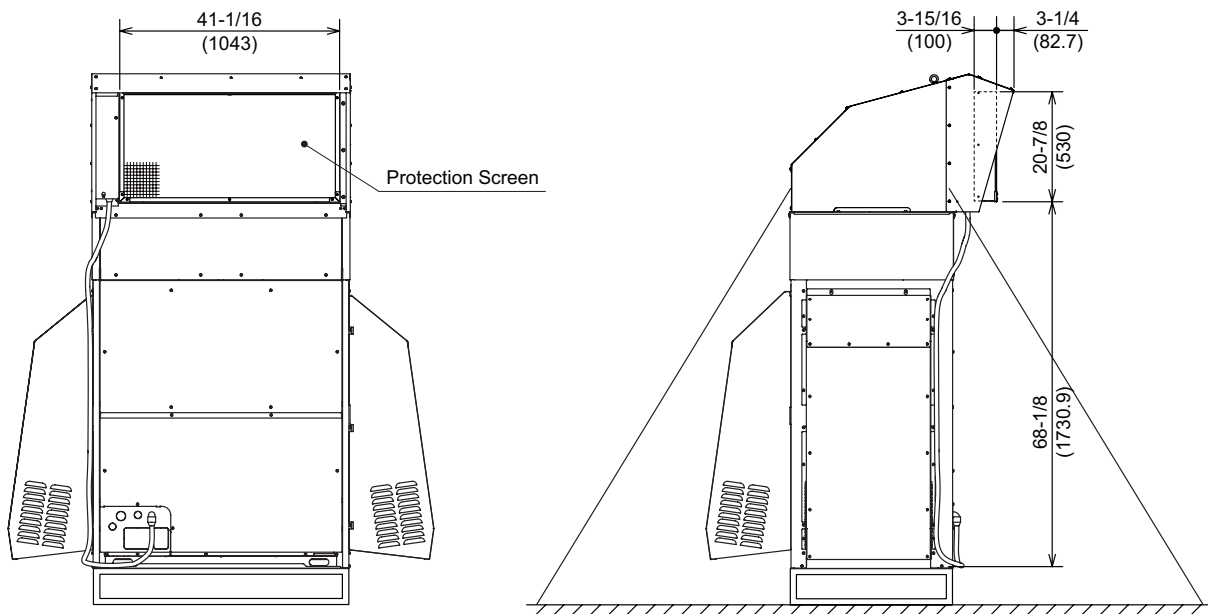
• O.U. Size 96, 120 and 144MBH

Unit: inch (mm)

Without Protection Screen



With Protection Screen



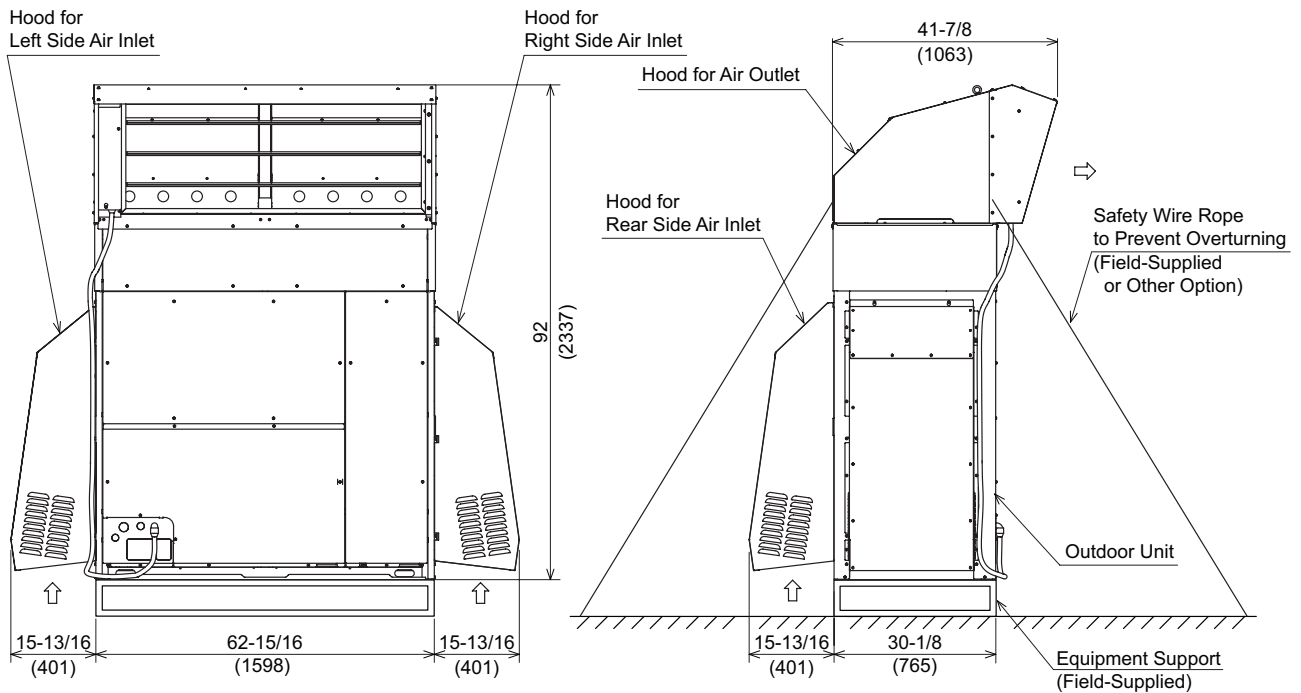
Available Combinations

Applicable Outdoor Unit (Representative Model)	Model
	(H,Y)VAHR096 - 144B32S (H,Y)VAHR096 - 144B42S (H,Y)VAHR096 - 144B52S
Hood for Upper Air Outlet	LAK-DAMPER-M-01
Hood for Rear Side Air Inlet	LAK-BACK-M-01
Hood for Left Side Air Inlet	LAK-SIDE-01
Hood for Right Side Air Inlet	LAK-SIDE-01
Protection Screen	LAK-NET-M-01

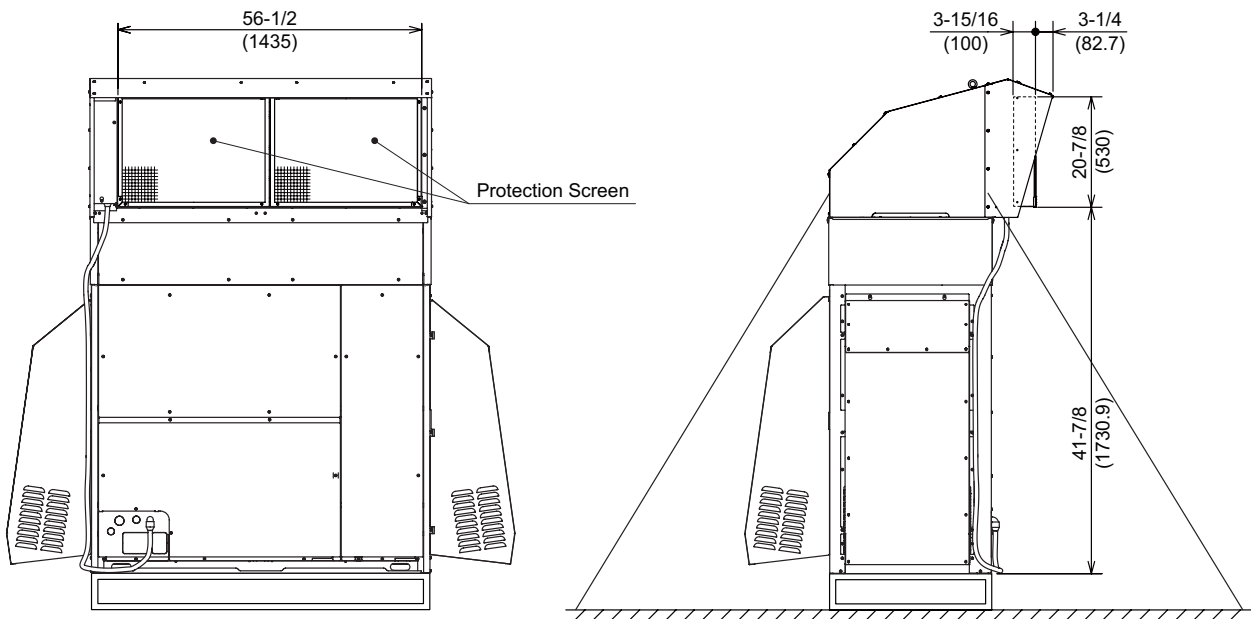
• O.U. Size 168 and 192MBH

Unit: inch (mm)

Without Protection Screen



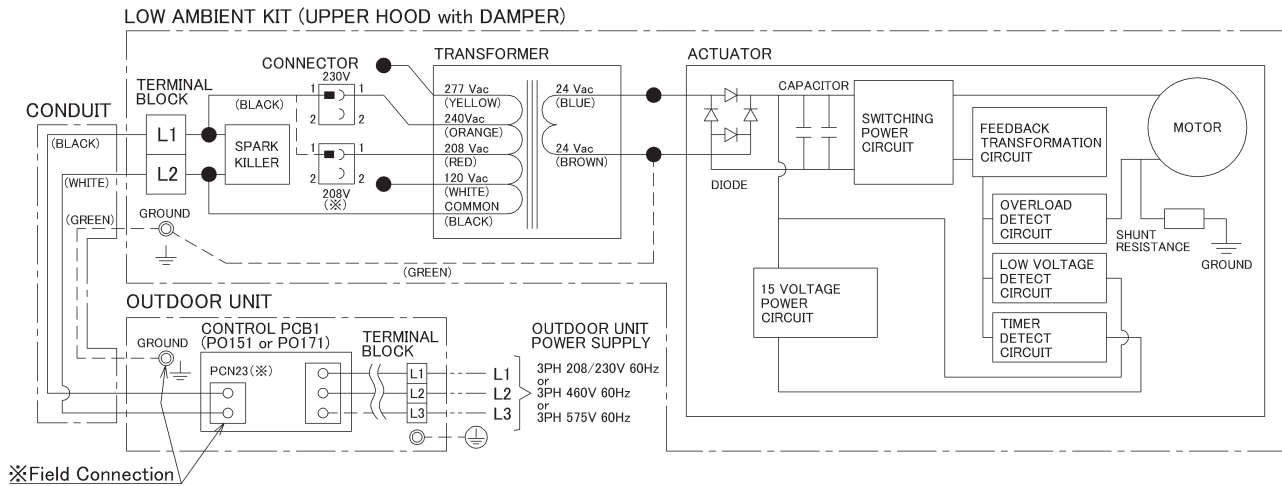
With Protection Screen



Available Combinations

Applicable Outdoor Unit (Representative Model)	Model
	(H,Y)VAHR168, 192B32S
	(H,Y)VAHR168, 192B42S
	(H,Y)VAHR168, 192B52S
Hood for Air Outlet	LAK-DAMPER-L-01
Hood for Rear Side Air Inlet	LAK-BACK-L-01
Hood for Left Side Air Inlet	LAK-SIDE-01
Hood for Right Side Air Inlet	LAK-SIDE-01
Protection Screen	LAK-NET-L-01

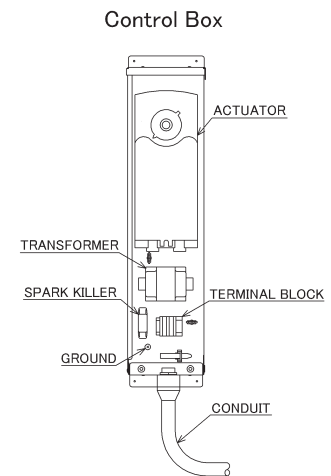
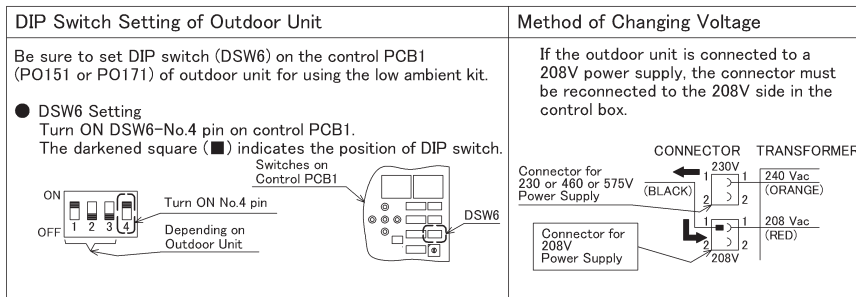
4.2.4.2 Wiring Diagram



—— : Factory Wiring
 - - - : Ground Wiring
 — — : Field Wiring
 ※ : Field Connection

NOTE:

1. All the field wiring and equipment must comply with local codes.



4.2.4.3 Installation Location and Precautions

⚠ WARNING

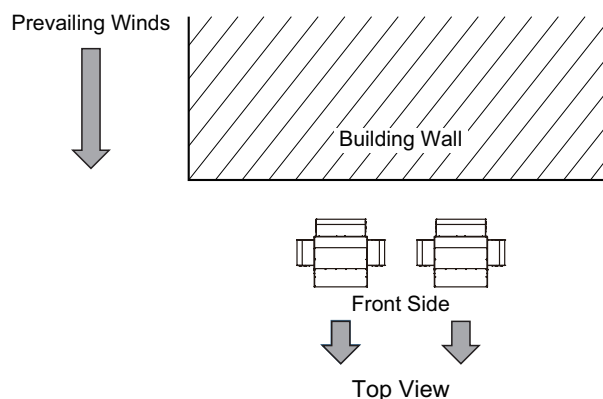
To reduce the risk of serious injury or death, the following installation precautions must be followed.

- Install the optional screen (model name: LAK-NET-(S,M,L)-01) to prevent serious injury from accidental contact to the damper.
- When installing the unit into...
 - Damp or uneven areas: Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the unit to prevent water damage and abnormal vibration.
 - An area with high winds: Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable wind baffle (field-supplied).
- Do not install the unit in the following places. Doing so can result in an explosion, fire, deformation, corrosion, or product failure.
 - Explosive or flammable atmosphere
 - Where a fire, oil, steam or powder can directly enter the unit, such as nearby or above a kitchen stove.
 - Where oil (including machinery oil) may be present.
 - Where corrosive gases such as chlorine, bromine, or sulfide can accumulate, such as near a hot tub or hot spring.
 - Where dense, salt-laden airflow is heavy, such as in coastal regions.
 - Where the air quality is of high acidity.
 - Where harmful gases can be generated from decomposition.
- During heating or defrosting operation, condensate water is discharged. Provide adequate drainage around the foundation. If installing the unit on a roof or a balcony, provide the additional drainage around the foundation to prevent water from dripping on walkways, people, property, and preventing ice from forming during freezing temperatures creating slip hazards.
- Perform a test run to ensure normal operation. Safety guards, shields, barriers, covers, and protective devices must be in place while the compressor/unit is operating. During the test run, keep fingers and clothing away from any moving parts.
- Clean up the site when finished, remembering to check that no tools, metal scraps, or bits of wiring have been left behind inside the unit being installed.

After installation work for the system is completed, explain the “Safety Precautions,” the proper use and maintenance of the unit to the customer according to the information in all manuals that comes with the system. Be sure to give all manuals and warranty information to the customer, or leave them near the unit.

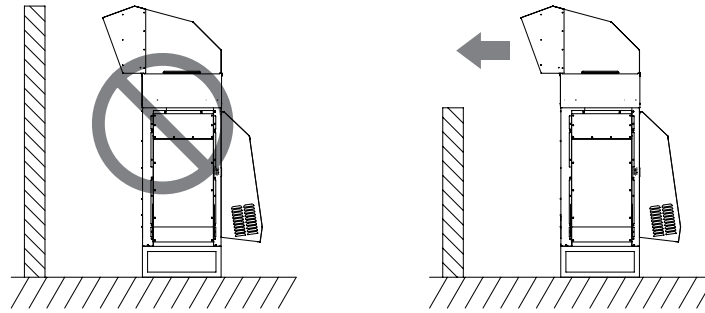
Locate outdoor units in an area protected from prevailing wind.

Never install the direction of the outlet air toward the windward side.

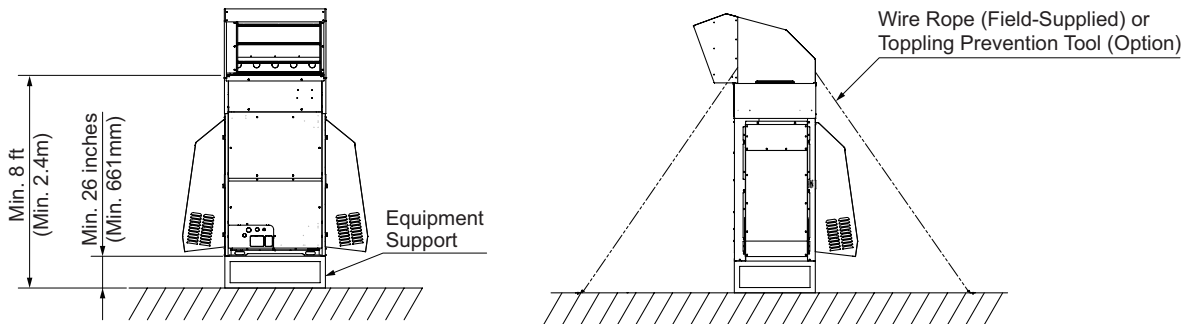


OPTIONAL PARTS

The wall in front of the outlet hood must be short enough to allow the hood to discharge the air out and over the enclosure walls to prevent air recirculation.



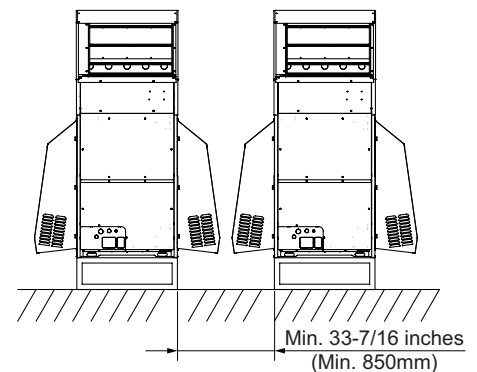
When the low ambient kit is used, the equipment support must elevate the unit at least 12 inches (305mm) above the maximum expected snow accumulation depth or 26 inches (661mm) above floor or grade level, whichever is higher. If the optional screen is attached to the low ambient kit, the equipment support must elevate the unit at least 12 inches (305mm) above floor, grade level or the maximum expected snow accumulation depth.



NOTES:

- The equipment support must be an open construction to minimize snow drifting and/or ice formation during defrost.
- The wire rope (field-supplied) or toppling prevention tool (optional: ASG-SW20A) must be attached to the low ambient kit for prevention of outdoor unit from overturning.

When installing outdoor modules side by side with sufficient spacing, attach the left and right hood to each outdoor unit as shown in the right figure.

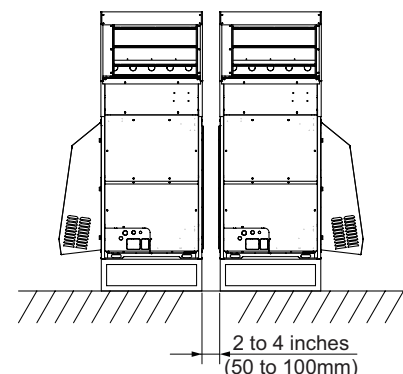


* Limited Space Installation

When the installation space of the outdoor unit is limited and the outdoor unit is located in an area with no seasonal or strong wind, it is possible to set space between the units 2 to 4 inches (50 to 100mm) without attaching a hood between the units as shown in the right figure.

In this case, the service of the damper actuator must be carried out by removing the upper hood of the unit on the left side of the unit to be serviced.

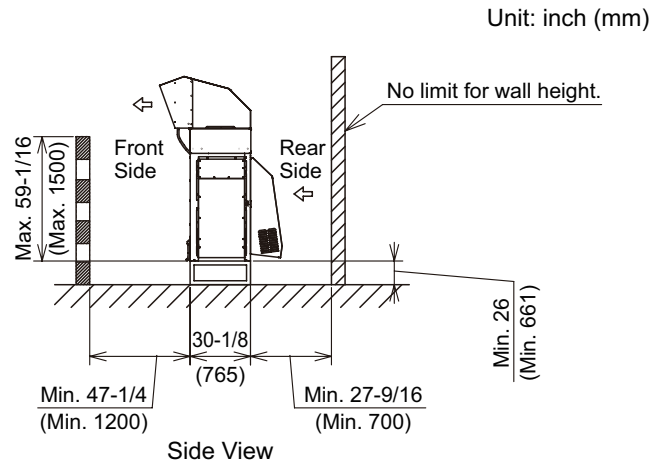
Space between the units must not exceed 4 inches (100mm) for this installation.



4.2.4.4 Service Space

When installing an outdoor unit, allow sufficient clearance as follows:

- If there is insufficient clearance for air inlets and outlets, it may result in a performance drop-off and mechanical issues due to insufficient air intake.
- Additionally, adequate clearance is required for service maintenance access.



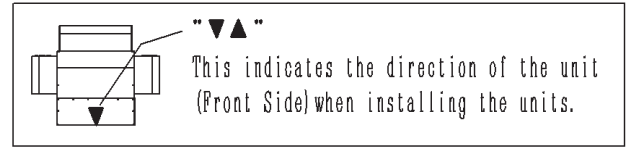
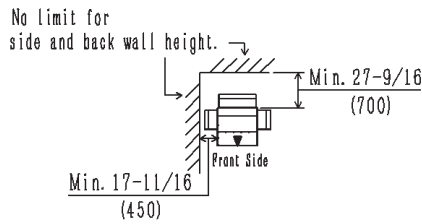
- If there are no walls on the front and rear sides, clearance for service access is required as follows:
 - * Front Side: Minimum 47-1/4 inches (1200mm)
 - * Rear Side: Minimum 27-9/16 inches (700mm)
 - * Right and Left Sides: Minimum 17-11/16 inches (450mm)
 - * Upper Side: Installation must be conducted where there are no obstacles.
- When the wall in front of the unit is taller than 59-1/16 inches (1500mm), the clearance (distance) from the wall must be more than 157-1/2 inches (4000mm).

1) Walls on Two Sides

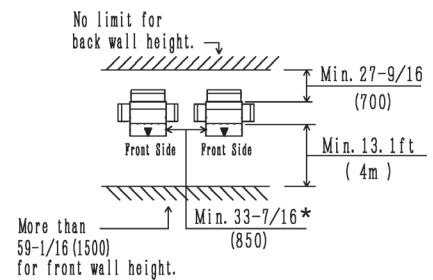
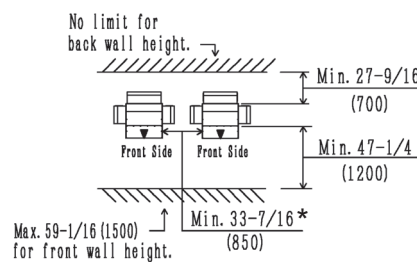
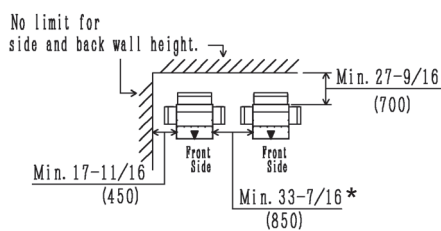
If units are installed adjacent to tall buildings where there are two open sides, the minimum rear side clearance must be at least 27-9/16 inches (700mm).

• Single Installation

Unit: inch (mm)



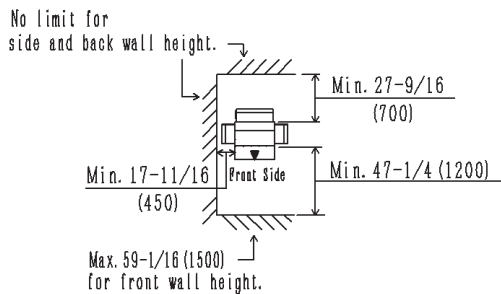
• Multiple / Serial Installation



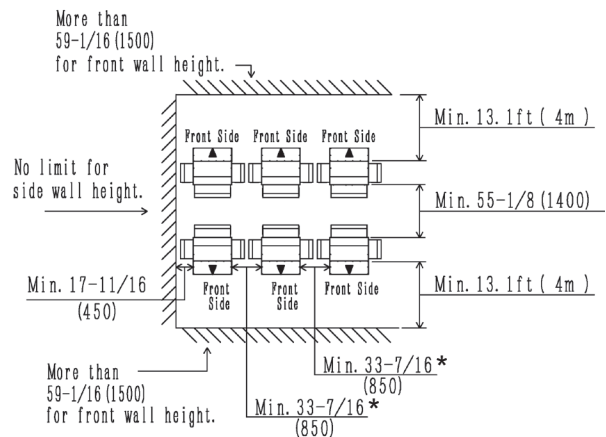
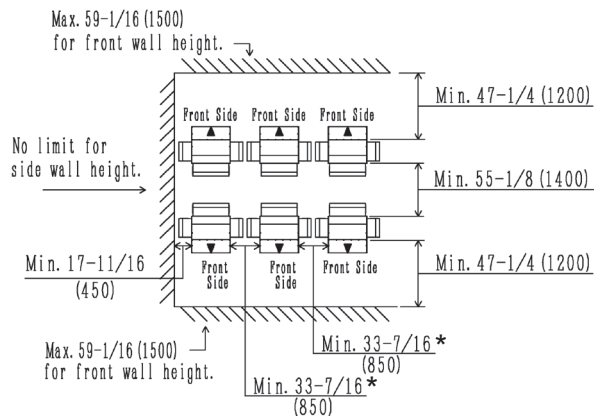
2) Walls on Three Sides

• Single Installation

Unit: inch (mm)



• Multiple / Serial Installation

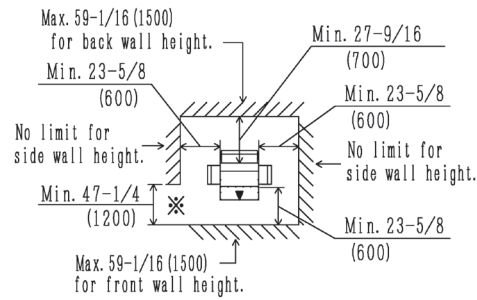


* Limited space installation rule can be applied.

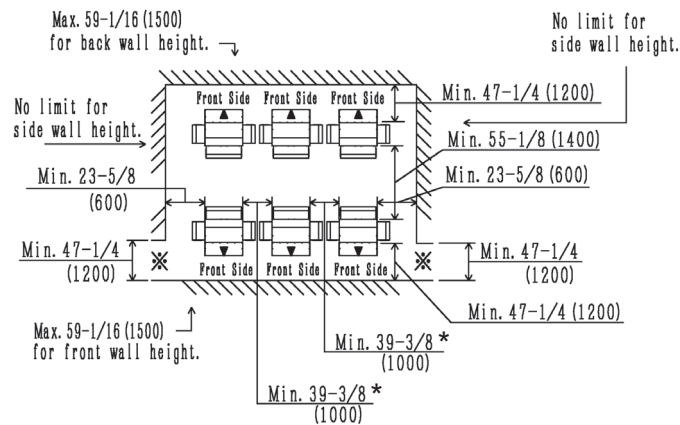
3) Walls on Four Sides

• Single Installation

Unit: inch (mm)



• Multiple / Serial Installation



※ Create wall openings when outdoor units are surrounded by walls on four sides.

* Limited space installation rule can be applied.

NOTICE:

1. Keep the upper side open to prevent mutual interference between the inlet and outlet air of each outdoor unit.
2. The figure indicates sufficient clearance around the outdoor units for operation and maintenance at typical installation conditions as follows.

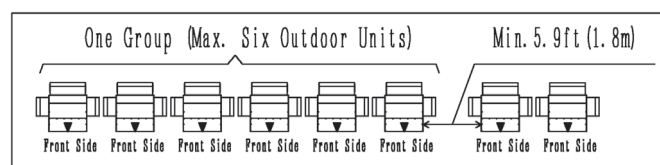
[Operation Mode: Cooling Operation, Outside Temp.: 95°F (35°C)]

In the following situations when compared to the installation condition, an appropriate clearance dimension is required by calculating air flow current when

* the outdoor unit ambient temperature is higher

* a short circuit is likely to occur

3. For the multiple installation of units, one group will consist of a maximum of six outdoor units. Maintain a distance of Min. 5.9 ft (1.8m) between each unit group.



4.3 Piping Kit

Item		Model
Piping Connection Kit	for Heat Recovery System (3-Pipes Connection)	MC-NP21SX1 ^{*3}
		MC-NP30SX1 ^{*3}
Multi-Kit	Line Branch for Heat Recovery System (3-Pipes Connection)	MW-NP142X3 ^{*1}
		MW-NP282X3 ^{*1}
		MW-NP452X3 ^{*1}
		MW-NP562X3 ^{*1}
		MW-NP902X3 ^{*1}
	Line Branch for Heat Recovery System (2-Pipes Connection)	MW-NP282A3 ^{*2}
		MW-NP452A3 ^{*2}
		MW-NP692A3 ^{*2}
		MW-NP902A3 ^{*2}
	Header Branch for Heat Recovery System (3-Pipes Connection)	MH-NP288X
	Header Branch for Heat Recovery System (2-Pipes Connection)	MH-NP224A
		MH-NP288A

^{*1} X3 type is to be used in place of X2 type:

The piping kits for X3 model numbers MW-NP142X3, MW-NP282X3, MW-NP452X3, MW-NP562X3 and MW-NP902X3 are to be used in place of the piping kits for the X2 model numbers, MW-NP142X2, MW-NP282X2, MW-NP452X2, MW-NP562X2 and MW-NP902X2, as noted.

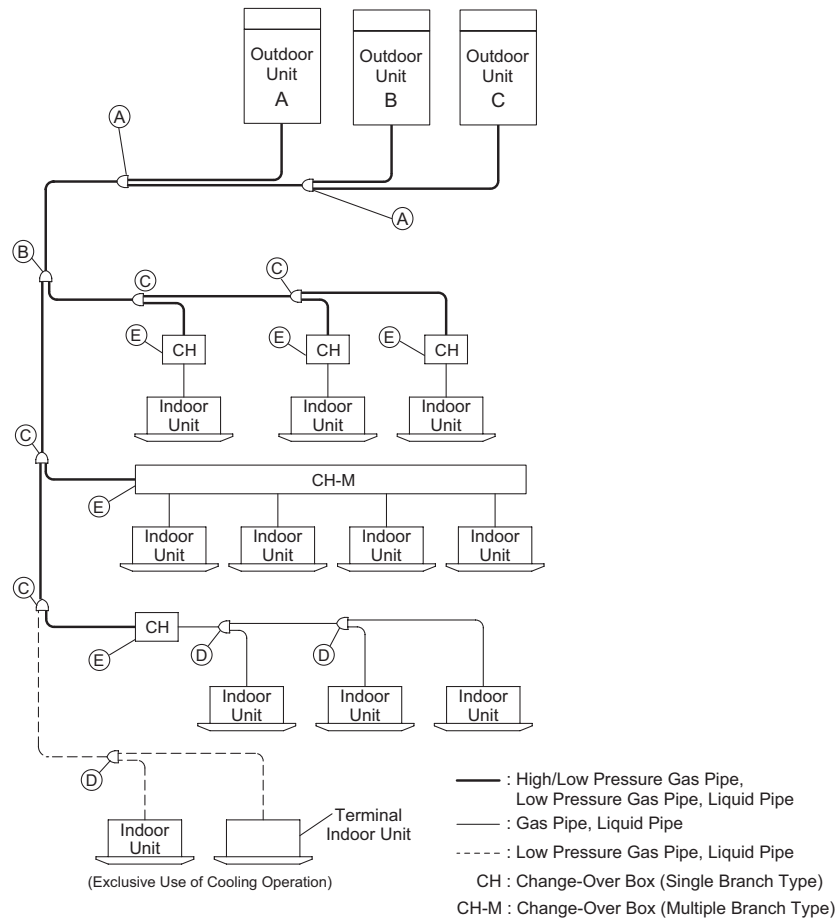
^{*2} A3 type is to be used in place of A2 type:

The piping kits for A3 model numbers MW-NP282A3, MW-NP452A3, MW-NP692A3 and MW-NP902A3 are to be used in place of the piping kits for the A2 model numbers, MW-NP282A2, MW-NP452A2, MW-NP692A2 and MW-NP902A2, as noted.

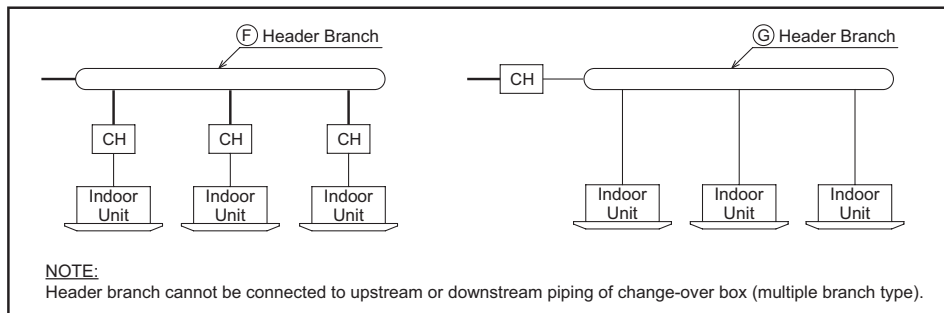
^{*3} SX1 type is to be used in place of SX type:

The piping kits for SX1 model numbers MC-NP21SX1 and MC-NP30SX1 are to be used in place of the piping kits for the A2 model numbers, MC-NP21SX and MC-NP30SX, as noted.

■ Piping Kit Selection



If header branch is used instead of ③ ④ multi-kit.



OPTIONAL PARTS

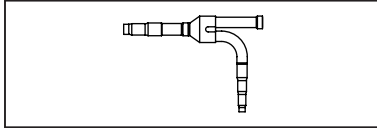
Piping Connection Kit

Ⓐ Piping Connection Kit

Outdoor Unit Capacity (MBH)	Model
216 - 360	MC-NP21SX1 ^{*3}
384 - 432	MC-NP30SX1 ^{*3}

Line Branch

Branch using Multi-Kit (MW Model)



If Ⓒ “Multi-Kit after First Branch” is larger than Ⓑ “Multi-Kit for First Branch”, use the same model as Ⓑ “Multi-Kit for First Branch”.

Ⓑ Multi-Kit for First Branch

Outdoor Unit Capacity (MBH)	Model
72 - 120	MW-NP452X3 ^{*1}
144 - 192	MW-NP562X3 ^{*1}
216 - 432	MW-NP902X3 ^{*1}

NOTE:

The change-over box (multiple branch type) or header branch can also be used instead of the multi-kit as first branch.

Ⓒ Multi-Kit after First Branch (Three Pipes Portion)

Total Indoor Unit Capacity (MBH)	Model
≤ 47	MW-NP142X3 ^{*1}
48 - 95	MW-NP282X3 ^{*1}
96 - 143	MW-NP452X3 ^{*1}
144 - 215	MW-NP562X3 ^{*1}
≥ 216	MW-NP902X3 ^{*1}

Ⓓ Multi-Kit after First Branch (Two Pipes Portion)

Total Indoor Unit Capacity (MBH)	Model
≤ 95	MW-NP282A3 ^{*2}
96 - 143	MW-NP452A3 ^{*2}
144 - 215	MW-NP692A3 ^{*2}
≥ 216	MW-NP902A3 ^{*2}

*1 X3 type is to be used in place of X2 type:

The piping kits for X3 model numbers MW-NP142X3, MW-NP282X3, MW-NP452X3, MW-NP562X3 and MW-NP902X3 are to be used in place of the piping kits for the X2 model numbers, MW-NP142X2, MW-NP282X2, MW-NP452X2, MW-NP562X2 and MW-NP902X2, as noted.

*2 A3 type is to be used in place of A2 type:

The piping kits for A3 model numbers MW-NP282A3, MW-NP452A3, MW-NP692A3 and MW-NP902A3 are to be used in place of the piping kits for the A2 model numbers, MW-NP282A2, MW-NP452A2, MW-NP692A2 and MW-NP902A2, as noted.

*3 SX1 type is to be used in place of SX type:

The piping kits for SX1 model numbers MC-NP21SX1 and MC-NP30SX1 are to be used in place of the piping kits for the A2 model numbers, MC-NP21SX and MC-NP30SX, as noted.

⑤ Change-Over Box

● Single Unit for 1 Branch

Model	Indoor Unit Side Branch Number	Indoor Unit Maximum Connection Capacity	Indoor Unit Maximum Connection Capacity for 1 Branch
COBS048B21S	1	≤ 54	≤ 54
COBS048B22S	1	≤ 54	≤ 54
COBS096B21S	1	≤ 96	≤ 96
COBS096B22S	1	≤ 96	≤ 96
COB04M132B22S	4	≤ 132	≤ 96 ^{*3}
COB08M264B22S	8	≤ 264	≤ 96 ^{*3}
COB12M264B22S	12	≤ 264	≤ 96 ^{*3}

^{*3} Upto two 60, 72 or 96 type indoor units can be connected to the change-over box within the "Indoor Unit Maximum Connection Capacity" shown in above table.

Make sure to increase the pipe connection size by using the appropriate accessory pipe.

● Multiple Units for 1 Branch

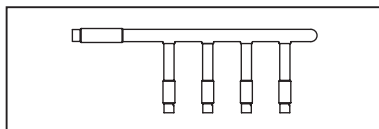
Model	Indoor Unit Side Branch Number	Maximum Number of Connected Indoor Units for 1 Branch	Indoor Unit Maximum Connection Capacity	Indoor Unit Maximum Connection Capacity for 1 Branch
COBS048B21S ^{*4}	1	7	≤ 41	≤ 41
COBS048B22S	1	7	≤ 41	≤ 41
COBS096B21S ^{*4}	1	8	≤ 71	≤ 71
COBS096B22S	1	8	≤ 71	≤ 71
COB04M132B22S	4	6	≤ 114	≤ 41
COB08M264B22S	8	6	≤ 216	≤ 41
COB12M264B22S	12	6	≤ 216	≤ 41

^{*4} If the number of connected indoor unit exceeds four, the upstream or downstream piping of change-over box (Piping Size ⑤⑥⑦) need to change the size respectively. Refer to page 2-117 ⑤ "Diameter of Pipe between Change-Over Box and Multi-kit" for details.

Only single unit per branch is allowed to be connected.

Header Branch

Branch using Multi-Kit (MH Model)



⑥ for Three Pipes Portion

Total Indoor Unit Capacity (MBH)	No. of Header Branches	Model
36 - 72	8	MH-NP288X

⑦ for Two Pipes Portion

Total Indoor Unit Capacity (MBH)	No. of Header Branches	Model
36 - 60	4	MH-NP224A
36 - 72	8	MH-NP288A

4.3.1 Piping Connection Kit

MC-NP21SX, MC-NP30SX, MC-NP21SX1 and MC-NP30SX1

Piping Connection Size

The ends of the piping connection kits are finished as shown in the following figures. Cut the end of the pipe to get the right pipe size.

(1) MC-NP21SX and MC-NP30SX

Unit: inch, ID: Inner Diameter, OD: Outer Diameter

Model	Branch Pipe for Low Pressure Gas Line	Branch Pipe for High/Low Pressure Gas Line	Branch Pipe for Liquid Line	Reducer for Low Pressure Gas Line	Reducer for High/Low Pressure Gas Line	Reducer for Liquid Line
MC-NP21SX						
MC-NP30SX	<p>(To Piping Connection Kit 2)</p>	<p>(To Piping Connection Kit 2)</p>	<p>(To Piping Connection Kit 2)</p>			
	<p>(To Piping Connection Kit 1)</p>	<p>(To Piping Connection Kit 1)</p>	<p>(To Piping Connection Kit 1)</p>			

NOTE:

Refer to the "Installation Manual for Piping Connection Kit" for more details.

(2) MC-NP21SX1 and MC-NP30SX1

Unit: inch, ID: Inner Diameter, OD: Outer Diameter

Model	Branch Pipe for Low Pressure Gas Line	Branch Pipe for High/Low Pressure Gas Line	Branch Pipe for Liquid Line	Reducer for Low Pressure Gas Line	Reducer for High/Low Pressure Gas Line	Reducer for Liquid Line
MC-NP21SX1						
MC-NP30SX1	Piping Connection Kit 1 	(To Piping Connection Kit 2) 	(To Piping Connection Kit 2) 			
	Piping Connection Kit 2 					

※ : In MC-NP30SX1, pipe diameter for Low Pressure Gas (Piping Connection Kit 1 and 2) and High/Low Pressure Gas (Piping Connection Kit 1) is different. Use care to their installation.

4.3.2 Multi-Kit (Line Branch) for Heat Recovery System (3-Pipes Connection)

MW-NP142X2, MW-NP282X2, MW-NP452X2, MW-NP562X2 and MW-NP902X2
 MW-NP142X3, MW-NP282X3, MW-NP452X3, MW-NP562X3 and MW-NP902X3

Piping Connection Size

The ends of the multi-kits are finished as shown in the following figures. Cut the end of the pipe to meet with the pipe size.



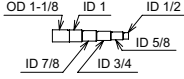

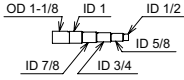


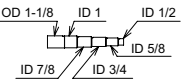
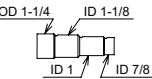
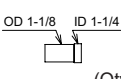
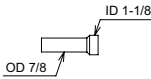

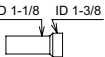
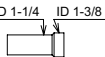
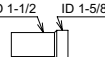
(1) MW-NP142X2, MW-NP282X2, MW-NP452X2, MW-NP562X2 and MW-NP902X2

Model	Branch Pipe for Low Pressure Gas Line	Branch Pipe for High/Low Pressure Gas Line	Branch Pipe for Liquid Line
MW-NP142X2			
MW-NP282X2			
MW-NP452X2			
MW-NP562X2			
MW-NP902X2			

NOTE:

Refer to the "Installation Manual for Multi-Kit" for more details.

Unit: inch, ID: Inner Diameter

Model	Reducer for Gas Line			Reducer for Liquid Line	
MW-NP142X2	—	—	—	 (Qty.: 2)	
MW-NP282X2	—	—	—		
MW-NP452X2		—	—		
MW-NP562X2		—	—		
MW-NP902X2	 (Qty.: 2)		 (Qty.: 2)		
		 (Qty.: 3)	 (Qty.: 2)	 (Qty.: 2)	

NOTE:

Refer to the "Installation Manual for Multi-Kit" for more details.

Unit: inch, ID: Inner Diameter, OD: Outer Diameter





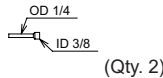
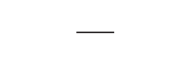



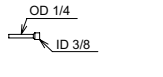
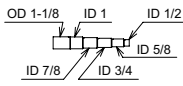



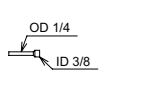
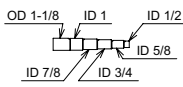




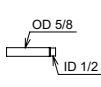
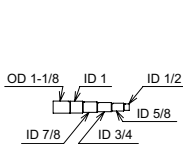
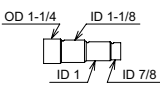
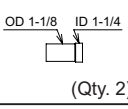
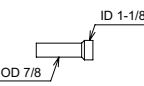
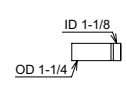
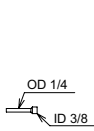
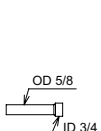
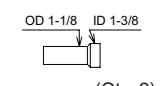
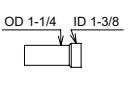
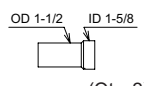
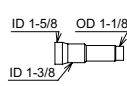
(2) MW-NP142X3, MW-NP282X3, MW-NP452X3, MW-NP562X3 and MW-NP902X3

Model	Branch Pipe for Low Pressure Gas Line	Branch Pipe for High/Low Pressure Gas Line	Branch Pipe for Liquid Line
MW-NP142X3			
MW-NP282X3			
MW-NP452X3			
MW-NP562X3			
MW-NP902X3			

NOTE:

Refer to the "Installation Manual for Multi-Kit" for more details.

Unit: inch, ID: Inner Diameter

Model	Reducer for Gas Line				Reducer for Liquid Line		
MW-NP142X3							
MW-NP282X3							
MW-NP452X3							
MW-NP562X3							
MW-NP902X3							
							

NOTE:

Refer to the “Installation Manual for Multi-Kit” for more details.

Unit: inch, ID: Inner Diameter, OD: Outer Diameter

4.3.3 Multi-Kit (Line Branch) for Heat Recovery System (2-Pipes Connection)

MW-NP282A2, MW-NP452A2, MW-NP692A2 and MW-NP902A2

MW-NP282A3, MW-NP452A3, MW-NP692A3 and MW-NP902A3

Piping Connection Size

The ends of the multi-kits are finished as shown in the following figures. Cut the end of the pipe to get the right pipe size.

(1) MW-NP282A2, MW-NP452A2, MW-NP692A2 and MW-NP902A2

Model	Branch Pipe for Gas Line	Branch Pipe for Liquid Line	Reducer for Gas Line	Reducer for Liquid Line
MW-NP282A2				(Qty.: 2)
MW-NP452A2				 (Qty.: 2)
MW-NP692A2			 (Qty.: 2)	 (Qty.: 2)
MW-NP902A2			 (Qty.: 2)	 (Qty.: 2)

NOTE:

Refer to the "Installation Manual for Multi-Kit" for more details.

Unit: inch, ID: Inner Diameter, OD: Outer Diameter

(2) MW-NP282A3, MW-NP452A3, MW-NP692A3 and MW-NP902A3

Model	Branch Pipe for Gas Line	Branch Pipe for Liquid Line	Reducer for Gas Line	Reducer for Liquid Line
MW-NP282A3				
MW-NP452A3				
MW-NP692A3				
MW-NP902A3				

NOTE:
Refer to the "Installation Manual for Multi-Kit" for more details.

Unit: inch, ID: Inner Diameter, OD: Outer Diameter

4.3.4 Multi-Kit (Header Branch) for Heat Recovery System (3-Pipes Connection) MH-NP288X

Piping Connection Size

The ends of the multi-kits are finished as shown in the following figures. Cut the end of the pipe to get the right pipe size.

Name of Parts	MH-NP288X		
Low Pressure Gas Line			
High/Low Pressure Gas Line			
Liquid Line			
Expander	(For Low Pressure Gas Line) Qty: 2 (For End of Multi-Kit Connection)	(For High/Low Pressure Gas Line) Qty: 8 (For End of Multi-Kit Connection) Qty: 1 (For End of Multi-Kit Connection)	(For Liquid Line) Qty: 10 (2: For End of Multi-Kit Connection 8: For Unit Piping Connection)
Closing Pipe	(For Low Pressure Gas Line) Qty: 6	(For High/Low Pressure Gas Line) Qty: 6	(For Liquid Line) Qty: 6

NOTE:

Refer to the "Installation Manual for Multi-Kit" for more details.

Unit: inch, ID: Inner Diameter, OD: Outer Diameter

4.3.5 Multi-Kit (Header Branch) for Heat Recovery System (2-Pipes Connection) MH-NP224A and MH-NP288A

Piping Connection Size

The ends of the multi-kits are finished as shown in the following figures. Cut the end of the pipe to get the right pipe size.

Models	Gas Line	Liquid Line	Expander	Closing Pipe
MH-NP224A			(For Gas Line)	<p>Qty.: 2</p>
			(For Liquid Line)	(For Liquid Line)
MH-NP288A			(For Gas Line)	<p>Qty.: 6</p>
			(For Liquid Line)	(For Liquid Line)
MH-NP224A			(For Gas Line)	<p>Qty.: 2</p>
			(For Liquid Line)	(For Liquid Line)
MH-NP288A			(For Gas Line)	<p>Qty.: 6</p>
			(For Liquid Line)	(For Liquid Line)
MH-NP224A			(For Gas Line)	<p>Qty.: 2</p>
			(For Liquid Line)	(For Liquid Line)
MH-NP288A			(For Gas Line)	<p>Qty.: 6</p>
			(For Liquid Line)	(For Liquid Line)
MH-NP224A			(For Gas Line)	<p>Qty.: 2</p>
			(For Liquid Line)	(For Liquid Line)
MH-NP288A			(For Gas Line)	<p>Qty.: 6</p>
			(For Liquid Line)	(For Liquid Line)

Unit: inch, ID: Inner Diameter, OD: Outer Diameter

NOTE:

Refer to the "Installation Manual for Multi-Kit" for more details.

5. Selection Data

5.1 Selection Guide

(1) Key for Terms Used for Indoor Units

Nomenclature Description		H	I	C4	012	B	2	1	S
H = Hitachi Brand Y = York Brand T = Tag in the Bag	H								
Indoor Unit	I								
Indoor Unit Type C4 = 4-Way Cassette Type C2 = 2-Way Cassette Type C1 = 1-Way Cassette Type CM = 4-Way Cassette Mini Type CS = Ceiling Suspended Type FE = Floor Exposed Type FC = Floor Concealed Type DH = Ducted High Static Type DM = Ducted Medium Static Type DS = Ducted Slim Type WM = Wall Mount Type	C4								
Capacity (MBH)	012								
Refrigerant Type B = R410A	B								
Power Supply 2 = 208/230Volts - 1Phase - 60Hz	2								
1 = Model Type 1 2 = Model Type 2	1								
S = Standard Type E = Economizer Type	S								

(2) Nominal Capacity of Indoor Units

Capacity		006	008	012	015	018	024
Nominal Cooling Capacity	Btu/h (kW)	6,000 (1.8)	8,000 (2.3)	12,000 (3.5)	15,000 (4.4)	18,000 (5.3)	24,000 (7.0)
Nominal Heating Capacity	Btu/h (kW)	6,700 (2.0)	9,000 (2.6)	13,500 (4.0)	17,000 (5.0)	20,000 (5.9)	27,000 (7.9)

Capacity		030	036	048	060	072	096
Nominal Cooling Capacity	Btu/h (kW)	30,000 (8.8)	36,000 (10.5)	48,000 (14.1)	60,000 (17.6)	72,000 (21.1)	96,000 (28.2)
Nominal Heating Capacity	Btu/h (kW)	34,000 (10.0)	40,000 (11.7)	54,000 (15.8)	64,000 (18.8)	81,000 (23.8)	108,000 (31.7)

SELECTION DATA

(3) Key for Terms Used for Outdoor Unit

Nomenclature Description		H	V	A	HR	072	B	4	2	S
H = Hitachi Brand Y = York Brand	H									
VRF	V									
A = Air Source	A									
HR = Heat Recovery	HR									
072 = 72 MBH = 6RT 096 = 96 MBH = 8RT 120 = 120 MBH = 10RT 144 = 144 MBH = 12RT 168 = 168 MBH = 14RT 192 = 192 MBH = 16RT 216 = 216 MBH = 18RT 240 = 240 MBH = 20RT 264 = 264 MBH = 22RT 288 = 288 MBH = 24RT 312 = 312 MBH = 26RT 336 = 336 MBH = 28RT 360 = 360 MBH = 30RT	072									
B = R410A	B									
3 = 208/230Volts - 3Phase - 60Hz 4 = 460Volts - 3Phase - 60Hz 5 = 575Volts - 3Phase - 60Hz	4									
2 = Model Type 2	2									
S = Standard (Factory Options)	S									

(4) Nominal Capacity of Outdoor Unit

Item		(H,Y)VAHR072B32S (H,Y)VAHR072B42S (H,Y)VAHR072B52S	(H,Y)VAHR096B32S (H,Y)VAHR096B42S (H,Y)VAHR096B52S	(H,Y)VAHR120B32S (H,Y)VAHR120B42S (H,Y)VAHR120B52S	(H,Y)VAHR144B32S (H,Y)VAHR144B42S (H,Y)VAHR144B52S	(H,Y)VAHR168B32S (H,Y)VAHR168B42S (H,Y)VAHR168B52S
Nominal Cooling Capacity	Btu/h (kW)	72,000 (21.1)	96,000 (28.1)	120,000 (35.2)	144,000 (42.2)	168,000 (49.2)
Nominal Heating Capacity	Btu/h (kW)	81,000 (23.7)	108,000 (31.7)	135,000 (39.6)	162,000 (47.5)	189,000 (55.4)

Item		(H,Y)VAHR192B32S (H,Y)VAHR192B42S (H,Y)VAHR192B52S	(H,Y)VAHR216B32S (H,Y)VAHR216B42S (H,Y)VAHR216B52S	(H,Y)VAHR240B32S (H,Y)VAHR240B42S (H,Y)VAHR240B52S	(H,Y)VAHR264B32S (H,Y)VAHR264B42S (H,Y)VAHR264B52S	(H,Y)VAHR288B32S (H,Y)VAHR288B42S (H,Y)VAHR288B52S
Nominal Cooling Capacity	Btu/h (kW)	192,000 (56.3)	216,000 (63.3)	240,000 (70.3)	264,000 (77.4)	288,000 (84.4)
Nominal Heating Capacity	Btu/h (kW)	216,000 (63.3)	243,000 (71.2)	270,000 (79.1)	297,000 (87.0)	324,000 (95.0)

Item		(H,Y)VAHR312B32S (H,Y)VAHR312B42S (H,Y)VAHR312B52S	(H,Y)VAHR336B32S (H,Y)VAHR336B42S (H,Y)VAHR336B52S	(H,Y)VAHR360B32S (H,Y)VAHR360B42S (H,Y)VAHR360B52S	(H,Y)VAHR384B32S (H,Y)VAHR384B42S (H,Y)VAHR384B52S	(H,Y)VAHR408B32S (H,Y)VAHR408B42S (H,Y)VAHR408B52S
Nominal Cooling Capacity	Btu/h (kW)	312,000 (91.4)	336,000 (98.5)	360,000 (105.5)	384,000 (112.5)	408,000 (119.5)
Nominal Heating Capacity	Btu/h (kW)	351,000 (102.9)	378,000 (110.8)	405,000 (118.7)	432,000 (126.0)	459,000 (134.5)

Item		(H,Y)VAHR432B32S (H,Y)VAHR432B42S (H,Y)VAHR432B52S
Nominal Cooling Capacity	Btu/h (kW)	432,000 (126.6)
Nominal Heating Capacity	Btu/h (kW)	486,000 (142.4)

Nominal Capacity of Outdoor Unit is under the condition that the total indoor unit capacity is same as outdoor unit capacity.

(5) Given Condition (Example)

● Estimated Load

Item		Room (1)	Room (2)	Room (3)	Room (4)
Estimated Cooling Load	Btu/h (kW)	17,500 (5.1)	22,000 (6.4)	22,000 (6.4)	24,000 (7.0)
Estimated Heating Load	Btu/h (kW)	18,000 (5.3)	22,000 (6.4)	22,000 (6.4)	27,000 (7.9)

Item		Room (5)	Room (6)	Room (7)
Estimated Cooling Load	Btu/h (kW)	30,000 (8.8)	32,000 (9.4)	34,000 (10.0)
Estimated Heating Load	Btu/h (kW)	34,000 (10.0)	36,000 (10.6)	36,000 (10.6)

● Temperature Condition

Cooling		Heating	
Outdoor Coil Air Inlet		Outdoor Coil Air Inlet	
Dry Bulb: 100°F (38°C)		Dry Bulb: 37°F (2.8°C)	
Indoor Coil Air Inlet		Wet Bulb: 35°F (1.7°C)	
Dry Bulb: 75°F (24°C)		Indoor Coil Air Inlet	
Wet Bulb: 63°F (17°C)		Dry Bulb: 68°F (20°C)	

● Altitude Condition: 1000 ft (305m)

Heat Recovery System (3 Pipes)

Equivalent Piping Length between Indoor Units and Outdoor Unit: 200 ft (61m)

Piping Lift: 50 ft (15m)

Power Source: 60Hz

(6) Selecting Matching Indoor Units and Nominal Capacity

Select Ducted Medium Type Indoor Units (Example)

Item		Room (1)	Room (2)	Room (3)	Room (4)
Selected Model		HIDM024B21S	HIDM030B21S	HIDM030B21S	HIDM036B21S
Nominal Cooling Capacity	Btu/h (kW)	24,000 (7.0)	30,000 (8.8)	30,000 (8.8)	36,000 (10.6)
Nominal Heating Capacity	Btu/h (kW)	27,000 (7.9)	34,000 (10.0)	34,000 (10.0)	40,000 (11.7)

Item		Room (5)	Room (6)	Room (7)	Total
Selected Model		HIDM048B21S	HIDM048B21S	HIDM048B21S	(1) ~ (7)
Nominal Cooling Capacity	Btu/h (kW)	48,000 (14.1)	48,000 (14.1)	48,000 (14.1)	264,000 (77.4)
Nominal Heating Capacity	Btu/h (kW)	54,000 (15.8)	54,000 (15.8)	54,000 (15.8)	297,000 (87.0)

Item		Outdoor Unit
Selected Model		HVAHR240B32S
Nominal Cooling Capacity	Btu/h (kW)	240,000 (70.3)
Nominal Heating Capacity	Btu/h (kW)	270,000 (79.1)

Connected Indoor Unit Capacity Ratio = 110%

SELECTION DATA

(7) Actual Capacity

In the example, the total indoor unit capacity is 264MBH

(= 24MBH + 30MBH + 30MBH + 36MBH + 48MBH + 48MBH + 48MBH),

and outdoor unit capacity is 240MBH.

Therefore, the connected indoor unit capacity ratio is 110%.

a) Actual Capacity of Outdoor Unit

Maximum Actual Capacity of Outdoor Unit

= ① Outdoor Unit Capacity According to Temperature Condition and Connected IDU Capacity Ratio

× ② Correction Factor According to Piping Length and Lift

× ③ Correction Factor According to Defrosting Operation (only heating)

× ④ Correction Factor According to Altitude

	①	②	③	④
Cooling	223 MBH	0.91	-	0.97
Heating	316 MBH	0.96	0.86	0.97
Note	Section 5.2	Section 5.3	Section 5.4	Section 5.5

Maximum Actual Capacity of Outdoor Unit

Cooling = 223,000Btu/h × 0.91 × 0.97 = 196,842Btu/h

Heating = 316,000Btu/h × 0.96 × 0.86 × 0.97 = 253,063Btu/h

b) Actual Capacity of Each Indoor Unit

Actual Capacity of Each Indoor Unit

= Actual Capacity of Outdoor Unit × Each Indoor Unit Capacity ÷ Total Indoor Unit Capacity

Result

Item			Room (1)	Room (2)	Room (3)	Room (4)
Selected Model			HIDM024B21S	HIDM030B21S	HIDM030B21S	HIDM036B21S
Actual Capacity	Actual Maximum Cooling Capacity	Btu/h (kW)	17,895 (5.2)	22,368 (6.6)	22,368 (6.6)	26,842 (7.9)
	Actual Maximum Heating Capacity	Btu/h (kW)	23,006 (6.7)	28,757 (8.4)	28,757 (8.4)	34,509 (10.1)
Design Load	Estimated Cooling Load	Btu/h (kW)	17,500 (5.1)	22,000 (6.4)	22,000 (6.4)	24,000 (7.0)
	Estimated Heating Load	Btu/h (kW)	18,000 (5.3)	22,000 (6.4)	22,000 (6.4)	27,000 (7.9)

Item			Room (5)	Room (6)	Room (7)	Total
Selected Model			HIDM048B21S	HIDM048B21S	HIDM048B21S	(1) ~ (7)
Actual Capacity	Actual Maximum Cooling Capacity	Btu/h (kW)	35,789 (10.5)	35,789 (10.5)	35,789 (10.5)	196,842 (57.7)
	Actual Maximum Heating Capacity	Btu/h (kW)	46,011 (13.5)	46,011 (13.5)	46,011 (13.5)	253,063 (74.2)
Design Load	Estimated Cooling Load	Btu/h (kW)	30,000 (8.8)	32,000 (9.4)	34,000 (10.0)	182,000 (53.3)
	Estimated Heating Load	Btu/h (kW)	34,000 (10.0)	36,000 (10.6)	36,000 (10.6)	195,000 (57.1)

5.2 Outdoor Unit Capacity According to Temperature Condition and Connected IDU Capacity Ratio

(H,Y)VAHR072B(3,4,5)2S

Cooling Capacity

Connection ratio	Outdoor air temp	Indoor air temp. °FWB																Connection ratio	Outdoor air temp	Indoor air temp. °FWB															
		59				61				63				65						67				69				71				73			
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP				
%	°FDB	MWH	kW	MWH	kW	MWH	kW	MWH	kW	MWH	kW	MWH	kW	MWH	kW	MWH	kW	MWH	kW	MWH	kW	MWH	kW	MWH	kW	MWH	kW	MWH	kW						
150	-10	76.1	3.0	79.1	3.0	79.1	3.0	82.1	3.0	85.2	2.9	91.2	2.8	94.2	2.8	97.3	2.7	-10	59.9	2.5	62.9	2.4	66.0	2.4	69.0	2.4	72.0	2.4	75.0	2.3	78.0	2.3	81.1	2.2	
	-4	76.1	3.0	79.1	3.0	82.1	3.0	85.2	2.9	88.2	2.9	91.2	2.8	94.2	2.8	97.3	2.7	-4	59.9	2.5	62.9	2.4	66.0	2.4	69.0	2.4	72.0	2.4	75.0	2.3	78.0	2.3	81.1	2.2	
	14	76.1	3.0	79.1	3.0	82.1	3.0	85.2	2.9	88.2	2.9	91.2	2.8	94.2	2.8	97.3	2.7	14	59.9	2.5	62.9	2.4	66.0	2.4	69.0	2.4	72.0	2.4	75.0	2.3	78.0	2.3	81.1	2.2	
	23	76.1	3.0	79.1	3.0	82.1	3.0	85.2	2.9	88.2	2.9	91.2	2.8	94.2	2.8	97.3	2.7	23	59.9	2.5	62.9	2.5	66.0	2.4	69.0	2.4	72.0	2.4	75.0	2.3	78.0	2.3	81.1	2.2	
	32	76.1	3.1	79.1	3.1	82.1	3.0	85.2	3.0	88.2	3.0	91.2	2.9	94.2	2.9	97.3	2.8	32	59.9	2.5	62.9	2.5	66.0	2.5	69.0	2.4	72.0	2.4	75.0	2.4	78.0	2.3	81.1	2.3	
	42	76.1	3.3	79.1	3.2	82.1	3.2	85.2	3.1	88.2	3.1	91.2	3.1	94.2	3.0	97.3	3.0	42	59.9	2.7	62.9	2.6	66.0	2.6	69.0	2.6	72.0	2.5	75.0	2.5	78.0	2.5	81.1	2.4	
	50	76.1	3.5	79.1	3.4	82.1	3.4	85.2	3.3	88.2	3.3	91.2	3.2	94.2	3.2	97.3	3.2	50	59.9	2.8	62.9	2.8	66.0	2.8	69.0	2.7	72.0	2.7	75.0	2.7	78.0	2.6	81.1	2.6	
	58	76.1	3.8	79.1	3.7	82.1	3.7	85.2	3.6	88.2	3.6	91.2	3.5	94.2	3.5	97.3	3.4	58	59.9	3.1	62.9	3.0	66.0	3.0	69.0	3.0	72.0	2.9	75.0	2.9	78.0	2.8	81.1	2.8	
	66	76.1	3.9	79.1	3.9	82.1	3.8	85.2	3.8	88.2	3.7	91.2	3.7	94.2	3.6	97.3	3.6	66	59.9	3.2	62.9	3.2	66.0	3.1	69.0	3.1	72.0	3.1	75.0	3.0	78.0	3.0	81.1	2.9	
	62	76.1	4.1	79.1	4.1	82.1	4.0	85.2	4.0	88.2	3.9	91.2	3.9	94.2	3.8	97.3	3.7	62	59.9	3.4	62.9	3.3	66.0	3.3	69.0	3.3	72.0	3.2	75.0	3.2	78.0	3.1	81.1	3.1	
	70	76.1	4.4	79.1	4.3	82.1	4.3	85.2	4.2	88.2	4.2	91.2	4.1	94.2	4.0	97.3	4.0	70	59.9	3.6	62.9	3.5	66.0	3.5	69.0	3.4	72.0	3.4	75.0	3.3	78.0	3.3	81.1	3.2	
	74	76.1	4.6	79.1	4.6	82.1	4.5	85.2	4.5	88.2	4.4	91.2	4.3	94.2	4.3	97.3	4.2	74	59.9	3.8	62.9	3.7	66.0	3.7	69.0	3.6	72.0	3.6	75.0	3.5	78.0	3.5	81.1	3.4	
	78	76.1	4.9	79.1	4.9	82.1	4.8	85.2	4.7	88.2	4.7	91.2	4.6	94.2	4.5	97.3	4.5	78	59.9	4.0	62.9	4.0	66.0	3.9	69.0	3.9	72.0	3.8	75.0	3.8	78.0	3.7	81.1	3.6	
	86	76.1	5.2	79.1	5.1	82.1	5.1	85.2	5.0	88.2	5.0	91.2	4.9	94.2	4.8	97.3	4.8	86	59.9	4.3	62.9	4.2	66.0	4.2	69.0	4.1	72.0	4.1	75.0	4.0	78.0	3.9	81.1	3.8	
	90	75.2	6.0	78.0	5.9	80.8	5.9	83.5	5.8	86.3	5.7	89.1	5.6	91.9	5.5	94.6	5.4	90	59.9	4.9	62.9	4.8	66.0	4.8	69.0	4.7	72.0	4.7	75.0	4.6	78.0	4.5	81.1	4.4	
	95	73.2	6.6	75.9	6.5	78.7	6.4	81.5	6.3	84.3	6.2	87.0	6.1	89.8	6.0	92.6	5.9	95	59.9	5.4	62.9	5.3	66.0	5.2	68.9	5.2	72.0	5.1	74.5	5.0	77.2	4.9	80.0	4.8	
100	71.1	7.1	73.9	7.1	76.7	7.0	79.4	6.9	82.2	6.8	85.0	6.7	87.8	6.6	90.5	6.5	100	58.5	5.8	61.3	5.8	64.1	5.7	66.9	5.6	69.6	5.6	72.4	5.5	75.2	5.4	78.0	5.3		
106	68.7	7.7	71.4	7.7	74.2	7.7	76.9	7.7	79.7	7.6	82.5	7.6	85.3	7.5	88.1	6.9	106	56.1	6.5	58.9	6.4	61.6	6.3	64.4	6.3	67.2	6.2	70.0	6.1	72.7	6.0	75.5	5.9		
110	67.0	7.7	69.8	7.7	72.6	7.7	75.3	7.4	78.1	7.0	80.9	6.7	83.7	6.5	86.5	6.2	110	54.4	7.0	57.2	6.9	60.0	6.8	62.8	6.7	65.5	6.6	68.3	6.5	71.1	6.4	73.9	6.2		
114	65.5	7.5	68.3	7.5	71.1	7.5	73.9	7.5	76.7	7.5	79.5	7.5	82.3	7.5	85.1	7.5	114	52.9	7.3	55.7	7.2	58.5	7.2	61.3	7.1	64.1	7.0	66.9	6.9	69.7	6.8	72.5	6.7		
118	61.8	6.5	61.8	6.3	61.8	6.0	61.8	5.7	61.8	5.4	61.8	5.2	61.8	5.0	61.8	4.8	118	51.2	6.5	53.9	6.3	56.7	6.0	59.5	5.7	61.8	5.4	61.8	5.2	61.8	5.0	61.8	4.8		
122	50.4	5.6	50.4	5.3	50.4	5.1	50.4	4.9	50.4	4.6	50.4	4.5	50.4	4.3	50.4	4.1	122	49.5	5.6	50.4	5.3	50.4	5.1	50.4	4.9	50.4	4.6	50.4	4.5	50.4	4.3	50.4	4.1		
140	-10	73.1	2.9	76.1	2.9	79.1	2.9	82.2	2.8	85.2	2.8	88.2	2.7	91.2	2.7	94.2	2.6	-10	52.7	2.2	55.7	2.2	58.8	2.2	61.8	2.1	64.8	2.1	67.8	2.1	70.8	2.0	73.9	2.0	
	-4	73.1	2.9	76.1	2.9	79.1	2.9	82.2	2.8	85.2	2.8	88.2	2.7	91.2	2.7	94.2	2.6	-4	52.7	2.2	55.7	2.2	58.8	2.2	61.8	2.1	64.8	2.1	67.8	2.1	70.8	2.0	73.9	2.0	
	14	73.1	2.9	76.1	2.9	79.1	2.9	82.2	2.8	85.2	2.8	88.2	2.7	91.2	2.7	94.2	2.6	14	52.7	2.2	55.7	2.2	58.8	2.2	61.8	2.1	64.8	2.1	67.8	2.1	70.8	2.0	73.9	2.0	
	23	73.1	2.9	76.1	2.9	79.1	2.9	82.2	2.8	85.2	2.8	88.2	2.7	91.2	2.7	94.2	2.7	23	52.7	2.2	55.7	2.2	58.8	2.2	61.8	2.2	64.8	2.1	67.8	2.1	70.8	2.1	73.9	2.0	
	32	73.1	3.0	76.1	3.0	79.1	3.0	82.2	2.9	85.2	2.9	88.2	2.9	91.2	2.9	94.2	2.9	32	52.7	2.3	55.7	2.3	58.8	2.3	61.8	2.3	64.8	2.2	67.8	2.2	70.8	2.1	73.9	2.1	
	42	73.1	3.2	76.1	3.1	79.1	3.1	82.2	3.0	85.2	3.0	88.2	3.0	91.2	2.9	94.2	2.9	42	52.7	2.4	55.7	2.4	58.8	2.3	61.8	2.3	64.8	2.3	67.8	2.2	70.8	2.2	73.9	2.2	
	50	73.1	3.3	76.1	3.3	79.1	3.3	82.2	3.2	85.2	3.2	88.2	3.1	91.2	3.1	94.2	3.0	50	52.7	2.5	55.7	2.5	58.8	2.5	61.8	2.5	64.8	2.4	67.8	2.4	70.8	2.3	73.9	2.3	
	58	73.1	3.6	76.1	3.6	79.1	3.5	82.2	3.5	85.2	3.5	88.2	3.4	91.2	3.3	94.2	3.3	58	52.7	2.8	55.7	2.7	58.8	2.7	61.8	2.7	64.8	2.6	67.8	2.6	70.8	2.5	73.9	2.5	
	62	73.1	3.8	76.1	3.8	79.1	3.7	82.2	3.7	85.2	3.6	88.2	3.6	91.2	3.5	94.2	3.4	62	52.7	2.9	55.7	2.9	58.8	2.8	61.8	2.8	64.8	2.8	67.8	2.7	70.8	2.7	73.9	2.6	
	66	73.1	4.0	76.1	4.0	79.1	3.9	82.2	3.9	85.2	3.8	88.2	3.7	91.2	3.7	94.2	3.6	66	52.7	3.0	55.7	3.0	58.8	3.0	61.8	2.9	64.8	2.9	67.8	2.8	70.8	2.8	73.9	2.8	
	70	73.1	4.2	76.1	4.2	79.1	4.1	82.2	4.1	85.2	4.0	88.2	4.0	91.2	3.9	94.2	3.8	70	52.7	3.2	55.7	3.2	58.8	3.1	61.8	3.1	64.8	3.1	67.8	3.0	70.8	3.0	73.9	2.9	
	74	73.1	4.4	76.1	4.4	79.1	4.3	82.2	4.3	85.2	4.2	88.2	4.2	91.2	4.1	94.2	4.0	74	52.7	3.4	55.7	3.4	58.8	3.3	61.8	3.3	64.8	3.2	67.8	3.2	70.8	3.1	73.9	3.1	
	78	73.1	4.8	76.1	4.7	79.1	4.6	82.2	4.6	85.2	4.5	88.2	4.5	91.2	4.4	94.2	4.3	78	52.7	3.6	55.7	3.6	58.8	3.5	61.8	3.5	64.8	3.4	67.8	3.4	70.8	3.3	73.9	3.3	
	82	73.1	5.1	76.1	5.0	79.1	5.0	82.2	4.9	85.2	4.8	88.2	4.7	91.2	4.7	94.2	4.6	82	52.7	3.9	55.7	3.8	58.8	3.8	61.8	3.7	64.8	3.7	67.8	3.6	70.8	3.6	73.9	3.5	
	86	73.1	5.4	76.1	5.4	79.1	5.3	82.2	5.2	85.2	5.2	88.2	5.1	91.2	5.0	94.2	4.9	86	52.7	4.1	55.7	4.1	58.8	4.0	61.8	4.0	64.8	3.9	67.8	3.9	70.8	3.8	73.9	3.7	
	90	72.9	5.8	75.7	5.7	78.5	5.7	81.3	5.6	84.0	5.5	86.8	5.4	89.6	5.3	92.4	5.2	90	52.7	4.4	55.7	4.4	58.8	4.3	61.8	4.2	64.8	4.2	67.8	4.1	70.8	4.1	73.9	4.0	
95	70.9	6.3	73.7	6.3	76.4	6.2	79.2	6.1	82.0	6.0	84.8	5.9	87.6	5.8	90.4	5.7	95	52.7	4.8	55.7	4.8	58.8	4.7	61.8	4.6	64.8	4.6	67.8	4.5	70.8	4.4	73.9	4.4		
100	68.8	6.9	71.6	6.8	74.4	6.7	77.2	6.7	79.9	6.6	82.7	6.5	85.5	6.4	88.3	6.2	100	52.1	5.2	54.8	5.2	57.6	5.1	60.4	5.1	63.2	5.0	65.9	4.9	68.7	4.8	71.5	4.7		
106	66.4	7.7	69.2	7.6	71.9	7.5	74.7	7.4	77.4	7.3	80.3	7.2	83.0	7.1	85.8	6.9	106	50.8	5.8	52.4	5.8	55.1	5.7	57.8	5.6	60.									

TC: Total Capacity
IP: Input Power

NOTES:

1. The table shows the normal value of a cooling operation.
2. The value in the table shows when the system is operating under the following conditions.
The total piping length: 24.6ft. (7.5m), The height difference: 0ft (0m)
3. In a heat recovery system, the value in the table indicates when all the indoor units are operating in cooling mode.

SELECTION DATA

(H,Y)VAHR096B(3,4,5)2S

Cooling Capacity

Connection ratio	Outdoor air temp	Indoor air temp. °FWB																Connection ratio	Outdoor air temp	Indoor air temp. °FWB															
		59		61		63		65		67		69		71		73				59		61		63		65		67		69		71		73	
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP		
%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW		
150	-10	101	4.4	106	4.3	110	4.3	114	4.2	118	4.2	122	4.1	126	4.0	130	4.0	-10	79.9	3.6	83.9	3.5	87.9	3.5	92.0	3.5	96.0	3.4	100	3.4	104	3.3	108	3.2	
	-4	101	4.4	106	4.3	110	4.3	114	4.2	118	4.2	122	4.1	126	4.0	130	4.0	-4	79.9	3.6	83.9	3.5	87.9	3.5	92.0	3.5	96.0	3.4	100	3.4	104	3.3	108	3.2	
	14	101	4.4	106	4.3	110	4.3	114	4.2	118	4.2	122	4.1	126	4.0	130	4.0	14	79.9	3.6	83.9	3.5	87.9	3.5	92.0	3.5	96.0	3.4	100	3.4	104	3.3	108	3.2	
	23	101	4.4	106	4.4	110	4.3	114	4.2	118	4.2	122	4.1	126	4.1	130	4.0	23	79.9	3.6	83.9	3.6	87.9	3.5	92.0	3.5	96.0	3.4	100	3.4	104	3.3	108	3.3	
	32	101	4.5	106	4.5	110	4.4	114	4.3	118	4.3	122	4.2	126	4.1	130	4.1	32	79.9	3.7	83.9	3.6	87.9	3.6	92.0	3.5	96.0	3.5	100	3.4	104	3.4	108	3.3	
	42	101	4.7	106	4.7	110	4.6	114	4.6	118	4.5	122	4.4	126	4.4	130	4.3	42	79.9	3.9	83.9	3.8	87.9	3.8	92.0	3.7	96.0	3.7	100	3.6	104	3.6	108	3.5	
	50	101	5.0	106	5.0	110	4.9	114	4.9	118	4.8	122	4.7	126	4.6	130	4.6	50	79.9	4.1	83.9	4.1	87.9	4.0	92.0	4.0	96.0	3.9	100	3.8	104	3.8	108	3.7	
	58	101	5.4	106	5.4	110	5.3	114	5.3	118	5.2	122	5.1	126	5.0	130	4.9	58	79.9	4.4	83.9	4.4	87.9	4.3	92.0	4.3	96.0	4.2	100	4.2	104	4.1	108	4.0	
	62	101	5.7	106	5.6	110	5.6	114	5.5	118	5.4	122	5.3	126	5.3	130	5.2	62	79.9	4.7	83.9	4.6	87.9	4.6	92.0	4.5	96.0	4.4	100	4.4	104	4.3	108	4.2	
	66	101	6.0	106	5.9	110	5.9	114	5.8	118	5.7	122	5.6	126	5.5	130	5.4	66	79.9	4.9	83.9	4.8	87.9	4.8	92.0	4.7	96.0	4.7	100	4.6	104	4.5	108	4.4	
	70	101	6.3	106	6.3	110	6.2	114	6.1	118	6.0	122	5.9	126	5.8	130	5.7	70	79.9	5.2	83.9	5.1	87.9	5.1	92.0	5.0	96.0	4.9	100	4.9	104	4.8	108	4.7	
	74	101	6.7	106	6.6	110	6.6	114	6.5	118	6.4	122	6.3	126	6.2	130	6.1	74	79.9	5.5	83.9	5.4	87.9	5.4	92.0	5.3	96.0	5.2	100	5.1	104	5.1	108	5.0	
	78	101	7.1	106	7.1	110	7.0	114	6.9	118	6.8	122	6.7	126	6.6	130	6.5	78	79.9	5.8	83.9	5.8	87.9	5.7	92.0	5.6	96.0	5.6	100	5.5	104	5.4	108	5.3	
	82	101	7.6	106	7.5	110	7.4	114	7.3	118	7.2	122	7.1	126	7.0	130	6.9	82	79.9	6.2	83.9	6.1	87.9	6.1	92.0	6.0	96.0	5.9	100	5.8	104	5.7	108	5.6	
	86	101	8.1	106	8.0	110	7.9	114	7.8	118	7.7	122	7.6	126	7.5	128	7.4	86	79.9	6.6	83.9	6.6	87.9	6.5	92.0	6.4	96.0	6.3	100	6.2	104	6.1	108	6.0	
	90	100	8.7	104	8.6	108	8.5	111	8.4	115	8.3	119	8.1	123	8.0	126	7.9	90	79.9	7.1	83.9	7.0	87.9	6.9	92.0	6.9	96.0	6.8	100	6.7	104	6.6	108	6.5	
95	97.5	9.5	101	9.4	105	9.3	109	9.2	112	9.1	116	8.9	120	8.8	124	8.6	95	79.9	7.8	83.9	7.7	87.9	7.6	91.9	7.5	96.0	7.4	99.3	7.3	103	7.2	107	7.0		
100	94.8	10.4	98.5	10.2	102	10.1	106	10.0	110	9.9	113	9.7	117	9.5	121	9.4	100	78.8	8.5	81.7	8.4	85.4	8.3	89.1	8.2	92.8	8.1	96.6	7.9	100	7.8	104	7.7		
140	-10	97.5	4.2	102	4.2	106	4.1	110	4.1	114	4.0	118	4.0	122	3.9	126	3.8	-10	70.3	3.2	74.3	3.2	78.3	3.1	82.4	3.1	86.4	3.1	90.4	3.0	94.5	3.0	98.5	2.9	
	-4	97.5	4.2	102	4.2	106	4.1	110	4.1	114	4.0	118	4.0	122	3.9	126	3.8	-4	70.3	3.2	74.3	3.2	78.3	3.1	82.4	3.1	86.4	3.1	90.4	3.0	94.5	3.0	98.5	2.9	
	14	97.5	4.2	102	4.2	106	4.1	110	4.1	114	4.0	118	4.0	122	3.9	126	3.8	14	70.3	3.2	74.3	3.2	78.3	3.1	82.4	3.1	86.4	3.1	90.4	3.0	94.5	3.0	98.5	2.9	
	23	97.5	4.3	102	4.2	106	4.2	110	4.1	114	4.1	118	4.0	122	3.9	126	3.9	23	70.3	3.2	74.3	3.2	78.3	3.2	82.4	3.1	86.4	3.1	90.4	3.0	94.5	3.0	98.5	2.9	
	32	97.5	4.4	102	4.3	106	4.3	110	4.2	114	4.1	118	4.0	122	4.0	126	3.9	32	70.3	3.3	74.3	3.3	78.3	3.2	82.4	3.2	86.4	3.1	90.4	3.0	94.5	3.0	98.5	2.9	
	42	97.5	4.6	102	4.5	106	4.5	110	4.4	114	4.4	118	4.3	122	4.2	126	4.1	42	70.3	3.5	74.3	3.5	78.3	3.4	82.4	3.3	86.4	3.3	90.4	3.3	94.5	3.2	98.5	3.0	
	50	97.5	4.9	102	4.8	106	4.7	110	4.7	114	4.6	118	4.6	122	4.5	126	4.4	50	70.3	3.7	74.3	3.7	78.3	3.6	82.4	3.6	86.4	3.5	90.4	3.5	94.5	3.4	98.5	3.3	
	58	97.5	5.3	102	5.2	106	5.1	110	5.1	114	5.0	118	4.9	122	4.8	126	4.8	58	70.3	4.0	74.3	4.0	78.3	3.9	82.4	3.9	86.4	3.8	90.4	3.8	94.5	3.7	98.5	3.6	
	62	97.5	5.5	102	5.5	106	5.4	110	5.3	114	5.3	118	5.2	122	5.1	126	5.0	62	70.3	4.2	74.3	4.2	78.3	4.1	82.4	4.1	86.4	4.0	90.4	3.9	94.5	3.9	98.5	3.8	
	66	97.5	5.8	102	5.7	106	5.7	110	5.6	114	5.5	118	5.4	122	5.3	126	5.3	66	70.3	4.4	74.3	4.4	78.3	4.3	82.4	4.3	86.4	4.2	90.4	4.1	94.5	4.1	98.5	4.0	
	70	97.5	6.1	102	6.1	106	6.0	110	5.9	114	5.8	118	5.7	122	5.6	126	5.5	70	70.3	4.7	74.3	4.6	78.3	4.6	82.4	4.5	86.4	4.4	90.4	4.4	94.5	4.3	98.5	4.2	
	74	97.5	6.5	102	6.4	106	6.3	110	6.3	114	6.2	118	6.1	122	6.0	126	5.9	74	70.3	4.9	74.3	4.9	78.3	4.8	82.4	4.8	86.4	4.7	90.4	4.6	94.5	4.5	98.5	4.4	
	78	97.5	6.9	102	6.8	106	6.7	110	6.7	114	6.6	118	6.5	122	6.4	126	6.3	78	70.3	5.1	74.3	5.1	78.3	5.0	82.4	5.0	86.4	4.9	90.4	4.8	94.5	4.7	98.5	4.6	
	82	97.5	7.4	102	7.3	106	7.2	110	7.1	114	7.0	118	6.9	122	6.8	126	6.7	82	70.3	5.6	74.3	5.5	78.3	5.5	82.4	5.4	86.4	5.3	90.4	5.2	94.5	5.2	98.5	5.1	
	86	97.5	7.9	102	7.8	106	7.7	110	7.6	114	7.5	118	7.4	122	7.2	126	7.1	86	70.3	6.0	74.3	5.9	78.3	5.8	82.4	5.8	86.4	5.7	90.4	5.6	94.5	5.5	98.5	5.4	
	90	97.5	8.4	101	8.3	105	8.2	108	8.1	112	8.0	116	7.9	120	7.7	124	7.6	90	70.3	6.4	74.3	6.3	78.3	6.2	82.4	6.2	86.4	6.1	90.4	6.0	94.5	5.9	98.5	5.8	
95	94.3	9.2	98.2	9.1	102	9.0	106	8.9	109	8.8	113	8.6	117	8.5	121	8.3	95	70.3	7.0	74.3	6.9	78.3	6.8	82.4	6.7	86.4	6.6	90.4	6.5	94.5	6.4	98.5	6.3		
100	91.5	10.0	95.5	9.9	99.2	9.8	103	9.7	107	9.5	110	9.4	114	9.2	118	9.0	100	69.4	7.6	73.1	7.5	76.5	7.4	80.5	7.3	84.2	7.3	87.9	7.1	91.6	7.0	95.3	6.9		
130	-10	86.8	10.4	92.2	10.4	96.9	10.4	101.4	10.4	106.4	10.4	111.4	10.4	116.4	10.4	121.4	10.4	-10	60.7	2.9	64.7	2.9	68.7	2.8	72.8	2.8	76.8	2.7	80.8	2.7	84.9	2.6	88.9	2.6	
	-4	86.8	10.4	92.2	10.4	96.9	10.4	101.4	10.4	106.4	10.4	111.4	10.4	116.4	10.4	121.4	10.4	-4	60.7	2.9	64.7	2.9	68.7	2.8	72.8	2.8	76.8	2.7	80.8	2.7	84.9	2.6	88.9	2.6	
	14	86.8	10.4	92.2	10.4	96.9	10.4	101.4	10.4	106.4	10.4	111.4	10.4	116.4	10.4	121.4	10.4	14	60.7	2.9	64.7	2.9	68.7	2.8	72.8	2.8	76.8	2.7	80.8	2.7	84.9	2.6	88.9	2.6	
	23	86.8	10.4	92.2	10.																														

(H,Y)VAHR120B(3,4,5)2S

Cooling Capacity

Connection ratio	Outdoor air temp.	Indoor air temp. °FWB																Connection ratio	Outdoor air temp.	Indoor air temp. °FWB															
		59		61		63		65		67		69		71		73				59		61		63		65		67		69		71		73	
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP		
%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW		
150	-10	127	5.5	132	5.4	137	5.3	142	5.3	147	5.2	152	5.1	157	5.0	162	4.9	-10	99.8	4.5	105	4.4	110	4.3	115	4.3	120	4.2	125	4.2	130	4.1	135	4.0	
	-4	127	5.5	132	5.4	137	5.3	142	5.3	147	5.2	152	5.1	157	5.0	162	4.9	-4	99.8	4.5	105	4.4	110	4.3	115	4.3	120	4.2	125	4.2	130	4.1	135	4.0	
	14	127	5.5	132	5.4	137	5.3	142	5.3	147	5.2	152	5.1	157	5.0	162	4.9	14	99.8	4.5	105	4.4	110	4.3	115	4.3	120	4.2	125	4.2	130	4.1	135	4.0	
	23	127	5.5	132	5.4	137	5.3	142	5.3	147	5.2	152	5.1	157	5.0	162	4.9	23	99.8	4.5	105	4.4	110	4.3	115	4.3	120	4.2	125	4.2	130	4.1	135	4.0	
	32	127	5.6	132	5.5	137	5.5	142	5.4	147	5.3	152	5.2	157	5.2	162	5.1	32	99.8	4.6	105	4.5	110	4.4	115	4.4	120	4.4	125	4.3	130	4.2	135	4.1	
	42	127	5.9	132	5.8	137	5.7	142	5.7	147	5.6	152	5.5	157	5.4	162	5.3	42	99.8	4.8	105	4.7	110	4.7	115	4.6	120	4.6	125	4.5	130	4.4	135	4.3	
	50	127	6.3	132	6.2	137	6.1	142	6.0	147	6.0	152	5.9	157	5.8	162	5.7	50	99.8	5.1	105	5.0	110	5.0	115	4.9	120	4.9	125	4.8	130	4.7	135	4.6	
	58	127	6.8	132	6.7	137	6.6	142	6.5	147	6.5	152	6.3	157	6.2	162	6.1	58	99.8	5.5	105	5.4	110	5.4	115	5.3	120	5.3	125	5.2	130	5.1	135	5.0	
	62	127	7.1	132	7.0	137	6.9	142	6.8	147	6.8	152	6.6	157	6.5	162	6.4	62	99.8	5.8	105	5.7	110	5.7	115	5.6	120	5.5	125	5.4	130	5.3	135	5.2	
	66	127	7.5	132	7.4	137	7.3	142	7.2	147	7.1	152	7.0	157	6.9	162	6.8	66	99.8	6.1	105	6.0	110	6.0	115	5.9	120	5.8	125	5.7	130	5.6	135	5.5	
	70	127	7.9	132	7.8	137	7.7	142	7.6	147	7.5	152	7.4	157	7.3	162	7.1	70	99.8	6.4	105	6.4	110	6.3	115	6.2	120	6.1	125	6.0	130	5.9	135	5.8	
	74	127	8.4	132	8.3	137	8.2	142	8.1	147	8.0	152	7.8	157	7.7	162	7.6	74	99.8	6.8	105	6.7	110	6.7	115	6.6	120	6.5	125	6.4	130	6.3	135	6.2	
	78	127	8.8	132	8.7	137	8.7	142	8.6	147	8.5	152	8.3	157	8.2	162	8.0	78	99.8	7.3	105	7.2	110	7.1	115	7.0	120	6.9	125	6.8	130	6.7	135	6.6	
	82	127	9.5	132	9.4	137	9.2	142	9.1	147	9.0	152	8.9	157	8.7	162	8.6	82	99.8	7.7	105	7.6	110	7.5	115	7.4	120	7.3	125	7.2	130	7.1	135	7.0	
	86	127	10.1	132	10.0	137	9.9	142	9.8	147	9.6	151	9.5	156	9.3	161	9.1	86	99.8	8.3	105	8.2	110	8.1	115	8.0	120	7.9	125	7.7	130	7.6	135	7.5	
	90	125	10.8	130	10.7	135	10.6	139	10.4	144	10.3	149	10.1	153	10.0	158	9.8	90	99.8	8.8	105	8.7	110	8.6	115	8.5	120	8.4	125	8.3	130	8.1	135	8.0	
95	122	11.8	127	11.7	131	11.5	136	11.4	140	11.3	145	11.1	150	10.9	154	10.7	95	99.8	9.7	105	9.5	110	9.4	115	9.3	120	9.2	124	9.0	129	8.9	133	8.7		
100	119	12.9	123	12.7	128	12.6	132	12.4	137	12.3	142	12.1	146	11.9	151	11.7	100	97.6	10.5	102	10.4	107	10.3	111	10.1	116	10.0	121	9.8	125	9.7	130	9.5		
106	114	13.7	119	13.7	124	13.7	128	13.7	133	13.6	138	13.4	142	13.2	147	13.0	106	93.5	11.7	98.1	11.6	103	11.4	107	11.3	112	11.1	117	11.0	121	10.8	125	10.6		
110	112	13.7	116	13.7	121	13.7	126	13.7	131	13.7	136	13.7	141	13.7	146	13.6	110	93.5	12.2	98.1	12.1	104	11.9	108	11.7	113	11.6	118	11.5	123	11.4	127	11.2		
114	109	13.6	114	13.0	118	12.4	123	11.9	128	11.3	133	10.9	138	10.4	143	9.9	114	88.0	13.5	92.6	13.0	97.2	12.4	102	11.9	107	11.3	111	10.9	116	10.4	120	9.9		
118	91.5	9.7	91.5	9.3	91.5	8.9	91.5	8.5	91.5	8.1	91.5	7.8	91.5	7.4	91.5	7.1	118	85.3	9.7	89.9	9.3	91.5	8.9	91.5	8.5	91.5	8.1	91.5	7.8	91.5	7.4	91.5	7.1		
122	60.1	5.9	60.1	5.6	60.1	5.4	60.1	5.1	60.1	4.9	60.1	4.7	60.1	4.5	60.1	4.3	122	60.1	5.9	60.1	5.6	60.1	5.4	60.1	5.1	60.1	4.9	60.1	4.7	60.1	4.5	60.1	4.3		
140	-10	122	5.3	127	5.2	132	5.1	137	5.1	142	5.0	147	4.9	152	4.8	157	4.8	-10	87.8	4.0	92.9	4.0	97.9	3.9	103	3.9	108	3.8	113	3.8	118	3.7	123	3.6	
	-4	122	5.3	127	5.2	132	5.1	137	5.1	142	5.0	147	4.9	152	4.8	157	4.8	-4	87.8	4.0	92.9	4.0	97.9	3.9	103	3.9	108	3.8	113	3.8	118	3.7	123	3.6	
	14	122	5.3	127	5.2	132	5.1	137	5.1	142	5.0	147	4.9	152	4.8	157	4.8	14	87.8	4.0	92.9	4.0	97.9	3.9	103	3.9	108	3.8	113	3.8	118	3.7	123	3.6	
	23	122	5.3	127	5.2	132	5.2	137	5.1	142	5.0	147	5.0	152	4.9	157	4.8	23	87.8	4.0	92.9	4.0	97.9	3.9	103	3.9	108	3.8	113	3.8	118	3.7	123	3.6	
	32	122	5.4	127	5.3	132	5.3	137	5.2	142	5.2	147	5.1	152	5.0	157	4.9	32	87.8	4.1	92.9	4.1	97.9	4.0	103	4.0	108	3.9	113	3.9	118	3.8	123	3.7	
	42	122	5.7	127	5.6	132	5.6	137	5.5	142	5.4	147	5.3	152	5.2	157	5.1	42	87.8	4.3	92.9	4.3	97.9	4.2	103	4.2	108	4.1	113	4.1	118	4.0	123	3.9	
	50	122	6.0	127	6.0	132	5.9	137	5.8	142	5.8	147	5.7	152	5.6	157	5.5	50	87.8	4.6	92.9	4.5	97.9	4.5	103	4.4	108	4.4	113	4.3	118	4.2	123	4.2	
	58	122	6.5	127	6.5	132	6.4	137	6.3	142	6.2	147	6.1	152	6.0	157	5.9	58	87.8	5.0	92.9	4.9	97.9	4.9	103	4.8	108	4.7	113	4.7	118	4.6	123	4.5	
	62	122	6.9	127	6.8	132	6.7	137	6.6	142	6.5	147	6.4	152	6.3	157	6.2	62	87.8	5.2	92.9	5.2	97.9	5.1	103	5.0	108	5.0	113	4.9	118	4.8	123	4.7	
	66	122	7.2	127	7.1	132	7.0	137	7.0	142	6.9	147	6.8	152	6.6	157	6.5	66	87.8	5.5	92.9	5.4	97.9	5.4	103	5.3	108	5.2	113	5.1	118	5.1	123	5.0	
	70	122	7.6	127	7.5	132	7.4	137	7.3	142	7.3	147	7.1	152	7.0	157	6.9	70	87.8	5.8	92.9	5.7	97.9	5.7	103	5.6	108	5.5	113	5.4	118	5.3	123	5.2	
	74	122	8.1	127	8.0	132	7.9	137	7.8	142	7.7	147	7.6	152	7.4	157	7.3	74	87.8	6.3	92.9	6.1	97.9	6.0	103	5.9	108	5.9	113	5.8	118	5.7	123	5.6	
	78	122	8.6	127	8.5	132	8.4	137	8.3	142	8.2	147	8.0	152	7.9	157	7.8	78	87.8	6.8	92.9	6.5	97.9	6.4	103	6.3	108	6.2	113	6.1	118	6.0	123	5.9	
	82	122	9.1	127	9.0	132	8.9	137	8.8	142	8.7	147	8.6	152	8.4	157	8.3	82	87.8	7.0	92.9	6.9	97.9	6.8	103	6.7	108	6.6	113	6.5	118				

SELECTION DATA

(H,Y)VAHR144B(3,4,5)2S

Cooling Capacity

Connection ratio	Outdoor air temp.	Indoor air temp. °FWB												Connection ratio	Outdoor air temp.	Indoor air temp. °FWB																		
		59				61				63						59				61				63										
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP									
%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW							
150	-10	152	7.6	158	7.6	164	7.5	170	7.4	176	6.9	182	7.2	189	7.0	195	6.9	-10	120	6.0	126	5.9	132	5.8	138	5.7	144	5.7	150	5.6	156	5.5	162	5.4
	-4	152	7.6	158	7.6	164	7.5	170	7.4	176	6.9	182	7.2	189	7.0	195	6.9	-4	120	6.0	126	5.9	132	5.8	138	5.7	144	5.7	150	5.6	156	5.5	162	5.4
	14	152	7.6	158	7.6	164	7.5	170	7.4	176	6.9	182	7.2	189	7.0	195	6.9	14	120	6.0	126	5.9	132	5.8	138	5.7	144	5.7	150	5.6	156	5.5	162	5.4
	23	152	7.9	158	7.8	164	7.7	170	7.6	176	7.1	182	7.4	189	7.2	195	7.1	23	120	6.0	126	5.9	132	5.8	138	5.8	144	5.7	150	5.6	156	5.5	162	5.4
	32	152	8.3	158	8.2	164	8.1	170	8.0	176	7.5	182	7.7	189	7.5	195	7.4	32	120	6.4	126	6.3	132	6.2	138	6.1	144	6.0	150	5.9	156	5.8	162	5.7
	42	152	8.8	158	8.7	164	8.6	170	8.5	176	8.0	182	8.2	189	8.1	195	7.9	42	120	6.8	126	6.7	132	6.6	138	6.5	144	6.5	150	6.4	156	6.3	162	6.2
	50	152	9.5	158	9.4	164	9.3	170	9.2	176	8.6	182	8.9	189	8.7	195	8.6	50	120	7.4	126	7.3	132	7.2	138	7.1	144	7.0	150	6.9	156	6.8	162	6.7
	58	152	10.0	158	9.8	164	9.7	170	9.6	176	9.0	182	9.3	189	9.2	195	9.0	58	120	7.8	126	7.7	132	7.6	138	7.5	144	7.4	150	7.3	156	7.1	162	7.0
	62	152	10.5	158	10.3	164	10.2	170	10.1	176	9.5	182	9.8	189	9.6	195	9.5	62	120	8.2	126	8.1	132	8.0	138	7.9	144	7.8	150	7.6	156	7.5	162	7.4
	70	152	11.1	158	10.9	164	10.8	170	10.7	176	10.0	182	10.4	189	10.2	195	10.0	70	120	8.6	126	8.5	132	8.4	138	8.3	144	8.2	150	8.1	156	7.9	162	7.8
	74	152	11.7	158	11.6	164	11.4	170	11.3	176	10.6	182	11.0	189	10.8	195	10.6	74	120	9.1	126	9.0	132	8.9	138	8.8	144	8.7	150	8.5	156	8.4	162	8.3
	78	152	12.5	158	12.3	164	12.2	170	12.0	176	11.3	182	11.7	189	11.5	195	11.3	78	120	9.6	126	9.5	132	9.4	138	9.3	144	9.2	150	9.1	156	8.9	162	8.8
	82	152	13.3	158	13.1	164	13.0	170	12.8	176	12.1	182	12.4	189	12.2	195	12.0	82	120	10.3	126	10.2	132	10.1	138	10.0	144	9.9	150	9.7	156	9.5	162	9.4
	86	152	14.2	158	14.0	164	13.8	170	13.7	176	12.9	182	13.3	187	13.1	193	12.8	86	120	11.0	126	10.9	132	10.8	138	10.6	144	10.5	150	10.3	156	10.2	162	10.0
	90	152	15.2	156	15.0	162	14.8	167	14.6	173	13.8	178	14.2	184	14.0	189	13.7	90	120	11.8	126	11.7	132	11.5	138	11.4	144	11.2	150	11.1	156	10.9	162	10.7
	95	146	16.6	152	16.4	157	16.2	163	16.0	169	15.1	174	15.5	180	15.3	185	15.0	95	120	12.9	126	12.8	132	12.6	138	12.5	144	12.3	149	12.1	155	11.9	160	12.7
100	147	16.1	148	16.1	153	16.1	159	16.1	164	16.1	170	16.1	176	16.1	181	16.1	100	117	14.1	123	13.9	129	13.7	134	13.6	139	13.4	145	13.2	150	12.9	156	12.7	
106	137	16.1	143	16.1	148	16.1	154	16.1	160	16.1	166	16.1	171	16.1	176	16.1	106	112	15.6	118	15.5	123	15.3	129	15.1	134	14.9	140	14.7	146	14.4	151	14.2	
110	131	16.1	140	16.1	145	16.1	151	16.1	156	15.8	162	15.2	167	14.8	169	13.9	110	109	16.1	114	16.1	120	16.1	126	16.1	131	15.8	137	15.2	142	14.6	148	13.9	
114	131	14.8	134	14.2	136	13.6	139	13.3	142	12.3	144	11.8	147	11.5	150	11.3	114	106	14.8	111	14.2	117	13.6	122	13.0	128	12.3	133	11.8	139	11.3	145	10.8	
118	99.0	10.6	99.9	10.2	99.9	9.7	99.9	9.3	99.9	8.8	99.9	8.5	99.9	8.1	99.9	7.8	118	99.0	10.6	99.9	10.2	99.9	9.7	99.9	9.3	99.9	8.8	99.9	8.5	99.9	8.1	99.9	7.8	
122	65.6	6.4	65.6	6.1	65.6	5.9	65.6	5.6	65.6	5.3	65.6	5.1	65.6	4.9	65.6	4.7	122	65.6	6.4	65.6	6.1	65.6	5.9	65.6	5.6	65.6	5.3	65.6	5.1	65.6	4.9	65.6	4.7	
140	-10	146	7.4	152	7.3	158	7.2	164	7.1	170	6.7	176	6.9	183	6.8	189	6.7	-10	105	5.6	112	5.6	118	5.5	124	5.4	130	5.1	136	5.3	142	5.2	148	5.1
	-4	146	7.4	152	7.3	158	7.2	164	7.1	170	6.7	176	6.9	183	6.8	189	6.7	-4	105	5.6	112	5.6	118	5.5	124	5.4	130	5.1	136	5.3	142	5.2	148	5.1
	14	146	7.4	152	7.3	158	7.2	164	7.1	170	6.7	176	6.9	183	6.8	189	6.7	14	105	5.6	112	5.6	118	5.5	124	5.4	130	5.1	136	5.3	142	5.2	148	5.1
	23	146	7.4	152	7.3	158	7.2	164	7.2	170	6.7	176	7.0	183	6.8	189	6.7	23	105	5.6	112	5.6	118	5.5	124	5.4	130	5.1	136	5.3	142	5.2	148	5.1
	32	146	7.7	152	7.6	158	7.5	164	7.4	170	6.9	176	7.2	183	6.9	189	6.8	32	105	5.8	112	5.7	118	5.6	124	5.5	130	5.2	136	5.4	142	5.3	148	5.2
	42	146	8.0	152	7.9	158	7.8	164	7.7	170	7.2	176	7.5	183	7.3	189	7.2	42	105	6.1	112	6.0	118	5.9	124	5.8	130	5.5	136	5.7	142	5.6	148	5.5
	50	146	8.5	152	8.4	158	8.3	164	8.2	170	7.7	176	7.9	183	7.8	189	7.7	50	105	6.4	112	6.4	118	6.3	124	6.2	130	5.9	136	6.0	142	5.9	148	5.8
	58	146	9.2	152	9.1	158	9.0	164	8.9	170	8.3	176	8.6	183	8.5	189	8.3	58	105	7.0	112	6.9	118	6.8	124	6.7	130	6.3	136	6.5	142	6.4	148	6.3
	62	146	9.6	152	9.5	158	9.4	164	9.3	170	8.7	176	9.0	183	8.9	189	8.7	62	105	7.3	112	7.2	118	7.1	124	7.1	130	6.6	136	6.9	142	6.7	148	6.6
	66	146	10.1	152	10.0	158	9.9	164	9.8	170	9.2	176	9.5	183	9.3	189	9.2	66	105	7.7	112	7.6	118	7.5	124	7.4	130	7.0	136	7.2	142	7.1	148	7.0
	70	146	10.7	152	10.6	158	10.4	164	10.3	170	9.7	176	10.0	183	9.8	189	9.7	70	105	8.1	112	8.0	118	7.9	124	7.8	130	7.4	136	7.6	142	7.5	148	7.4
	74	146	11.3	152	11.2	158	11.1	164	11.0	170	10.3	176	10.6	183	10.4	189	10.3	74	105	8.6	112	8.5	118	8.4	124	8.3	130	7.8	136	8.0	142	7.9	148	7.8
	78	146	12.0	152	11.9	158	11.8	164	11.6	170	10.9	176	11.3	183	11.1	189	10.9	78	105	9.2	112	9.0	118	8.9	124	8.8	130	8.3	136	8.6	142	8.4	148	8.3
	82	146	12.8	152	12.7	158	12.5	164	12.4	170	11.6	176	12.0	183	11.8	189	11.6	82	105	9.8	112	9.6	118	9.5	124	9.4	130	8.9	136	9.1	142	9.0	148	8.8
	86	146	13.7	152	13.5	158	13.4	164	13.2	170	12.4	176	12.8	183	12.6	188	12.4	86	105	10.4	112	10.3	118	10.2	124	10.0	130	9.5	136	9.8	142	9.6	148	9.4
	90	146	14.7	151	14.5	157	14.3	163	14.1	168	13.3	174	13.7	179	13.5	185	13.3	90	105	11.1	112	11.0	118	10.9	124	10.7	130	10.1	136	10.4	142	10.3	148	10.1
95	142	16.0	147	15.8	153	15.6	158	15.5	164	14.6	170	15.0	175	14.8	181	14.5	95	105	12.2	112	12.0													

(H,Y)VAHR168B(3,4,5)2S

Cooling Capacity

Connection ratio	Outdoor air temp.	Indoor air temp. °FWB																Connection ratio	Outdoor air temp.	Indoor air temp. °FWB															
		59		61		63		65		67		69		71		73				59		61		63		65		67		69		71		73	
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP		
%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW		
150	-10	178	8.0	185	7.9	192	7.8	199	7.7	206	7.6	213	7.5	220	7.4	227	7.2	100	-10	140	6.5	147	6.5	154	6.4	161	6.3	168	6.2	175	6.1	182	6.0	189	5.9
	-4	178	8.0	185	7.9	192	7.8	199	7.7	206	7.6	213	7.5	220	7.4	227	7.2		-4	140	6.5	147	6.5	154	6.4	161	6.3	168	6.2	175	6.1	182	6.0	189	5.9
	14	178	8.0	185	7.9	192	7.8	199	7.7	206	7.6	213	7.5	220	7.4	227	7.2		14	140	6.5	147	6.5	154	6.4	161	6.3	168	6.2	175	6.1	182	6.0	189	5.9
	23	178	8.0	185	7.9	192	7.8	199	7.8	206	7.7	213	7.5	220	7.4	227	7.3		23	140	6.6	147	6.5	154	6.4	161	6.3	168	6.3	175	6.1	182	6.0	189	5.9
	32	178	8.2	185	8.1	192	8.0	199	7.9	206	7.8	213	7.7	220	7.6	227	7.4		32	140	6.7	147	6.6	154	6.6	161	6.5	168	6.4	175	6.3	182	6.2	189	6.1
	42	178	8.6	185	8.5	192	8.4	199	8.3	206	8.2	213	8.1	220	8.0	227	7.8		42	140	7.1	147	7.0	154	6.9	161	6.8	168	6.7	175	6.6	182	6.5	189	6.4
	50	178	9.2	185	9.1	192	9.0	199	8.9	206	8.7	213	8.6	220	8.5	227	8.3		50	140	9.1	147	9.0	154	8.9	161	8.8	168	8.7	175	8.6	182	8.5	189	8.4
	58	178	9.9	185	9.8	192	9.7	199	9.6	206	9.5	213	9.3	220	9.2	227	9.0		58	140	8.1	147	8.0	154	7.9	161	7.8	168	7.7	175	7.6	182	7.5	189	7.3
	62	178	10.4	185	10.3	192	10.2	199	10.0	206	9.9	213	9.8	220	9.6	227	9.4		62	140	8.5	147	8.4	154	8.3	161	8.2	168	8.1	175	8.0	182	7.8	189	7.7
	66	178	11.0	185	10.8	192	10.7	199	10.6	206	10.4	213	10.3	220	10.1	227	9.9		66	140	8.9	147	8.8	154	8.7	161	8.6	168	8.5	175	8.4	182	8.2	189	8.1
	70	178	11.6	185	11.4	192	11.3	199	11.2	206	11.0	213	10.8	220	10.7	227	10.5		70	140	9.5	147	9.3	154	9.2	161	9.1	168	9.0	175	8.9	182	8.7	189	8.6
	74	178	12.3	185	12.1	192	12.0	199	11.8	206	11.7	213	11.5	220	11.3	227	11.1		74	140	10.0	147	9.9	154	9.8	161	9.7	168	9.5	175	9.4	182	9.2	189	9.1
	78	178	13.0	185	12.9	192	12.7	199	12.6	206	12.4	213	12.2	220	12.0	227	11.8		78	140	10.6	147	10.5	154	10.4	161	10.3	168	10.1	175	10.0	182	9.8	189	9.6
	82	178	13.9	185	13.7	192	13.6	199	13.4	206	13.2	213	13.0	220	12.8	227	12.6		82	140	11.3	147	11.2	154	11.1	161	10.9	168	10.8	175	10.6	182	10.4	189	10.3
86	178	14.8	185	14.7	192	14.5	199	14.3	206	14.1	213	13.9	218	13.7	225	13.4	86	140	12.1	147	12.0	154	11.8	161	11.7	168	11.5	175	11.3	182	11.2	189	11.0		
90	176	15.9	182	15.7	188	15.5	195	15.3	201	15.1	208	14.9	214	14.6	221	14.4	90	140	13.0	147	12.8	154	12.7	161	12.5	168	12.3	175	12.1	182	11.9	189	11.7		
95	177	17.4	177	17.2	184	16.9	190	16.7	197	16.5	203	16.3	210	16.0	216	15.7	95	140	14.2	147	14.0	154	13.8	161	13.7	168	13.5	174	13.3	180	13.1	187	12.8		
100	166	18.9	172	18.7	179	18.4	185	18.2	192	18.0	199	17.7	205	17.4	211	17.1	100	137	15.4	143	15.2	150	15.1	156	14.9	163	14.7	169	14.5	175	14.2	182	14.0		
106	168	19.4	167	19.4	173	19.4	180	19.4	186	19.4	193	19.4	199	19.4	199	19.9	106	131	17.2	137	17.0	144	16.8	150	16.6	157	16.4	163	16.1	170	15.8	176	15.5		
110	159	19.4	163	19.4	169	19.4	176	19.4	182	19.4	188	19.4	194	18.9	180	18.1	110	127	18.4	134	18.2	140	18.0	147	17.8	153	17.6	159	17.3	166	17.0	172	16.7		
114	153	19.4	159	19.4	159	18.8	159	17.9	157	17.1	157	16.4	152	15.7	146	15.0	114	123	19.4	130	19.4	133	18.8	143	17.9	149	17.1	156	16.4	162	15.7	168	15.0		
118	130	16.2	130	15.6	130	14.9	130	14.2	130	13.5	129	13.0	119	12.4	112	11.9	118	130	16.2	130	15.6	130	14.9	130	14.2	130	13.5	125	13.0	119	12.4	112	11.9		
122	101	12.0	101	11.5	101	11.0	101	10.5	101	10.0	93.5	9.6	85.8	9.2	78.0	8.8	122	101	12.0	101	11.5	101	11.0	101	10.5	101	10.0	93.5	9.6	85.8	9.2	78.0	8.8		
140	-10	171	7.7	178	7.6	185	7.5	192	7.5	199	7.4	206	7.2	213	7.1	220	7.0	90	-10	123	5.9	130	5.8	137	5.7	144	5.7	151	5.6	158	5.5	165	5.4	172	5.3
	-4	171	7.7	178	7.6	185	7.5	192	7.5	199	7.4	206	7.2	213	7.1	220	7.0		-4	123	5.9	130	5.8	137	5.7	144	5.7	151	5.6	158	5.5	165	5.4	172	5.3
	14	171	7.7	178	7.6	185	7.5	192	7.5	199	7.4	206	7.2	213	7.1	220	7.0		14	123	5.9	130	5.8	137	5.7	144	5.7	151	5.6	158	5.5	165	5.4	172	5.3
	23	171	7.8	178	7.7	185	7.6	192	7.5	199	7.4	206	7.3	213	7.2	220	7.0		23	123	5.9	130	5.8	137	5.8	144	5.7	151	5.6	158	5.5	165	5.4	172	5.3
	32	171	7.9	178	7.8	185	7.8	192	7.7	199	7.6	206	7.4	213	7.3	220	7.2		32	123	6.0	130	6.0	137	5.9	144	5.8	151	5.8	158	5.7	165	5.6	172	5.5
	42	171	8.3	178	8.2	185	8.1	192	8.0	199	7.9	206	7.8	213	7.7	220	7.5		42	123	6.3	130	6.3	137	6.2	144	6.1	151	6.0	158	5.9	165	5.8	172	5.7
	50	171	8.9	178	8.8	185	8.7	192	8.6	199	8.4	206	8.3	213	8.2	220	8.0		50	123	6.7	130	6.7	137	6.6	144	6.5	151	6.4	158	6.3	165	6.2	172	6.1
	58	171	9.6	178	9.5	185	9.4	192	9.3	199	9.1	206	9.0	213	8.8	220	8.7		58	123	7.3	130	7.2	137	7.1	144	7.0	151	7.0	158	6.8	165	6.7	172	6.6
	62	171	10.1	178	9.9	185	9.8	192	9.7	199	9.6	206	9.4	213	9.3	220	9.1		62	123	7.7	130	7.6	137	7.5	144	7.4	151	7.3	158	7.2	165	7.0	172	6.9
	66	171	10.6	178	10.5	185	10.3	192	10.2	199	10.1	206	9.9	213	9.7	220	9.6		66	123	8.1	130	8.0	137	7.9	144	7.8	151	7.7	158	7.5	165	7.4	172	7.3
	70	171	11.0	178	10.9	185	10.8	192	10.7	199	10.6	206	10.4	213	10.3	220	10.1		70	123	8.5	130	8.4	137	8.3	144	8.2	151	8.1	158	8.0	165	7.8	172	7.7
	74	171	11.9	178	11.7	185	11.6	192	11.4	199	11.3	206	11.1	213	10.9	220	10.7		74	123	9.0	130	8.9	137	8.8	144	8.7	151	8.6	158	8.4	165	8.3	172	8.2
	78	171	12.6	178	12.4	185	12.3	192	12.1	199	12.0	206	11.8	213	11.6	220	11.4		78	123	9.6	130	9.5	137	9.4	144	9.2	151	9.1	158	9.0	165	8.8	172	8.7
	82	171	13.4	178	13.3	185	13.1	192	12.9	199	12.8	206	12.6	213	12.4	220	12.1		82	123	10.2	130	10.1	137	10.0	144	9.8	151	9.7	158	9.6	165	9.4	172	9.2
86	171	14.3	178	14.2	185	14.0	192	13.8	199	13.7	206	13.4	213	13.2	219	13.0	86	123	10																

SELECTION DATA

(H,Y)VAHR192B(3,4,5)2S

Cooling Capacity

Connection ratio	Outdoor air temp.	Indoor air temp. °FWB																Connection ratio	Outdoor air temp.	Indoor air temp. °FWB																															
		59		61		63		65		67		69		71		73				59		61		63		65		67		69		71		73																	
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP																		
%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FDB	MBH	kW	MBH	kW	MBH	kW										
150	-10	203	9.8	211	9.7	219	9.5	227	9.4	235	9.3	243	9.2	251	9.0	259	8.8	-10	160	8.0	168	7.9	176	7.8	184	7.7	192	7.6	200	7.5	208	7.4	216	7.2	-10	141	7.2	149	7.1	157	7.0	165	6.9	173	6.8	181	6.7	189	6.6	197	6.5
	-4	203	9.8	211	9.7	219	9.5	227	9.4	235	9.3	243	9.2	251	9.0	259	8.8	-4	160	8.0	168	7.9	176	7.8	184	7.7	192	7.6	200	7.5	208	7.4	216	7.2	-4	141	7.2	149	7.1	157	7.0	165	6.9	173	6.8	181	6.7	189	6.6	197	6.5
	14	203	9.8	211	9.7	219	9.5	227	9.4	235	9.3	243	9.2	251	9.0	259	8.8	14	160	8.0	168	7.9	176	7.8	184	7.7	192	7.6	200	7.5	208	7.4	216	7.2	14	141	7.2	149	7.1	157	7.0	165	6.9	173	6.8	181	6.7	189	6.6	197	6.5
	23	203	9.8	211	9.7	219	9.6	227	9.5	235	9.4	243	9.2	251	9.0	259	8.9	23	160	8.0	168	7.9	176	7.8	184	7.7	192	7.6	200	7.5	208	7.4	216	7.3	23	141	7.2	149	7.1	157	7.0	165	6.9	173	6.8	181	6.7	189	6.6	197	6.5
	32	203	10.0	211	9.9	219	9.8	227	9.7	235	9.6	243	9.4	251	9.2	259	9.1	32	160	8.2	168	8.1	176	8.0	184	7.9	192	7.8	200	7.7	208	7.6	216	7.4	32	141	7.8	149	7.7	157	7.6	165	6.9	173	6.8	181	6.7	189	6.6	197	6.5
	42	203	10.6	211	10.4	219	10.3	227	10.2	235	10.1	243	9.9	251	9.7	259	9.5	42	160	8.8	168	8.7	176	8.6	184	8.5	192	8.4	200	8.3	208	8.2	216	8.0	42	141	8.2	149	8.1	157	8.0	165	6.9	173	6.8	181	6.7	189	6.6	197	6.5
	50	203	11.2	211	11.1	219	11.0	227	10.8	235	10.7	243	10.5	251	10.3	259	10.1	50	160	9.2	168	9.1	176	9.0	184	8.9	192	8.8	200	8.7	208	8.6	216	8.4	50	141	8.8	149	8.7	157	8.6	165	6.9	173	6.8	181	6.7	189	6.6	197	6.5
	58	203	12.2	211	12.0	219	11.9	227	11.7	235	11.6	243	11.4	251	11.2	259	11.0	58	160	9.9	168	9.8	176	9.7	184	9.6	192	9.4	200	9.3	208	9.1	216	9.0	58	141	9.4	149	9.3	157	9.2	165	6.9	173	6.8	181	6.7	189	6.6	197	6.5
	62	203	12.7	211	12.6	219	12.4	227	12.3	235	12.1	243	11.9	251	11.7	259	11.5	62	160	10.4	168	10.3	176	10.1	184	10.0	192	9.9	200	9.7	208	9.6	216	9.4	62	141	9.9	149	9.8	157	9.7	165	6.9	173	6.8	181	6.7	189	6.6	197	6.5
	66	203	13.4	211	13.2	219	13.1	227	12.9	235	12.8	243	12.5	251	12.3	259	12.1	66	160	10.9	168	10.8	176	10.7	184	10.5	192	10.4	200	10.2	208	10.1	216	9.9	66	141	10.4	149	10.3	157	10.1	166	10.0	173	9.9	181	9.8	189	9.6	197	9.5
	70	203	14.1	211	14.0	219	13.8	227	13.6	235	13.5	243	13.3	251	13.0	259	12.8	70	160	11.6	168	11.4	176	11.3	184	11.1	192	11.0	200	10.8	208	10.6	216	10.5	70	141	11.0	149	10.9	157	10.7	166	10.4	173	10.3	181	10.2	189	10.0	197	9.9
	74	203	15.0	211	14.8	219	14.6	227	14.5	235	14.3	243	14.0	251	13.8	259	13.6	74	160	12.2	168	12.1	176	12.0	184	11.8	192	11.7	200	11.5	208	11.3	216	11.1	74	141	11.6	149	11.5	157	11.3	166	10.6	173	10.5	181	10.4	189	10.2	197	10.1
	78	203	15.9	211	15.7	219	15.6	227	15.4	235	15.2	243	14.9	251	14.7	259	14.4	78	160	13.0	168	12.9	176	12.7	184	12.5	192	12.4	200	12.2	208	12.0	216	11.8	78	141	12.2	149	12.1	157	11.9	166	10.8	173	10.7	181	10.6	189	10.4	197	10.3
	82	203	17.0	211	16.8	219	16.6	227	16.4	235	16.2	243	15.9	251	15.6	259	15.4	82	160	13.9	168	13.7	176	13.5	184	13.4	192	13.2	200	13.0	208	12.8	216	12.5	82	141	13.0	149	12.9	157	12.7	166	10.9	173	10.8	181	10.7	189	10.5	197	10.4
	86	203	18.1	211	17.9	219	17.7	227	17.5	235	17.3	243	17.0	251	16.7	255	16.4	86	160	14.8	168	14.6	176	14.5	184	14.3	192	14.1	200	13.9	208	13.6	216	13.4	86	141	14.0	149	13.9	157	13.7	166	11.1	173	11.0	181	10.9	189	10.7	197	10.6
	90	203	19.4	208	19.2	215	18.9	223	18.7	230	18.5	238	18.2	245	17.9	246	17.6	90	160	15.8	168	15.7	176	15.5	184	15.3	192	15.1	200	14.8	208	14.6	216	14.3	90	141	15.0	149	14.8	157	14.6	165	11.4	173	11.1	181	10.9	189	10.7	197	10.6
95	195	21.2	203	21.0	210	20.7	217	20.5	225	20.2	233	19.9	236	19.5	236	19.2	95	160	17.3	168	17.1	176	16.9	184	16.7	192	16.5	199	16.2	206	16.0	213	15.7	95	141	16.5	149	16.3	157	16.1	165	11.6	173	11.4	181	11.2	189	11.0	197	10.8	
100	190	22.7	197	22.7	204	22.5	212	22.3	219	22.0	227	21.6	225	21.3	225	20.9	100	156	18.9	164	18.6	171	18.4	178	18.2	186	18.0	193	17.7	201	17.4	205	17.1	100	141	18.0	149	17.8	157	17.6	165	11.7	173	11.5	181	11.3	189	11.1	197	10.9	
106	182	22.7	191	22.7	198	22.7	205	22.7	213	22.7	221	21.7	213	22.7	221	22.6	106	150	21.0	157	20.7	164	20.5	172	20.2	179	20.0	187	19.7	194	19.3	201	19.0	106	141	20.5	149	20.3	157	20.1	165	11.8	173	11.6	181	11.4	189	11.2	197	11.0	
110	170	22.7	184	22.7	192	22.7	200	22.7	208	22.7	216	21.7	208	22.7	216	22.6	110	141	22.5	149	22.5	157	22.5	165	22.5	173	22.5	181	22.5	189	22.5	197	22.5	110	141	22.5	149	22.5	157	22.5	165	22.5	173	22.5	181	22.5	189	22.5	197	22.5	
114	170	21.9	170	21.0	170	20.0	170	19.1	170	18.2	167	17.5	162	16.7	156	16.0	114	141	21.9	148	21.0	150	20.0	163	19.1	170	18.2	167	17.5	162	16.7	156	16.0	114	141	21.9	148	21.0	150	20.0	163	19.1	170	18.2	167	17.5	162	16.7	156	16.0	
118	130	17.3	139	16.6	139	15.9	139	15.2	139	14.4	134	13.8	127	13.3	120	12.7	118	130	17.3	139	16.6	139	15.9	139	15.2	139	14.4	134	13.8	127	13.3	120	12.7	118	130	17.3	139	16.6	139	15.9	139	15.2	139	14.4	134	13.8	127	13.3	120	12.7	
122	108	12.8	108	12.3	108	11.7	108	11.2	108	10.6	99.7	10.2	91.5	9.8	83.2	9.4	122	108	12.8	108	12.3	108	11.7	108	11.2	108	10.6	99.7	10.2	91.5	9.8	83.2	9.4	122	108	12.8	108	12.3	108	11.7	108	11.2	108	10.6	99.7	10.2	91.5	9.8	83.2	9.4	
140	-10	195	9.4	203	9.3	211	9.2	219	9.1	227	9.0	235	8.8	243	8.7	251	8.5	-10	141	7.2	149	7.1	157	7.0	165	6.9	173	6.8	181	6.7	189	6.6	197	6.5	-10	121	6.4	129	6.3	137	6.2	146	6.2	154	6.1	162	6.0	170	5.9	178	5.8
	-4	195	9.4	203	9.3	211	9.2	219	9.1	227	9.0	235	8.8	243	8.7	251	8.5	-4	141	7.2	149	7.1	157	7.0	165	6.9	173	6.8	181	6.7	189	6.6	197	6.5	-4	121	6.4	129	6.3	137	6.2	146	6.2								

(H,Y)VAHR216B(3,4,5)2S

Cooling Capacity

Connection ratio	Outdoor air temp	Indoor air temp. °FWB																Connection ratio	Outdoor air temp	Indoor air temp. °FWB															
		59		61		63		65		67		69		71		73				59		61		63		65		67		69		71		73	
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP		
%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW		
150	-10	228	10.9	237	10.8	246	10.6	256	10.5	265	10.4	274	10.2	283	10.0	292	9.9	-10	180	8.9	189	8.8	198	8.7	207	8.6	216	8.5	225	8.3	234	8.2	243	8.1	
	-4	228	10.9	237	10.8	246	10.6	256	10.5	265	10.4	274	10.2	283	10.0	292	9.9	-4	180	8.9	189	8.8	198	8.7	207	8.6	216	8.5	225	8.3	234	8.2	243	8.1	
	14	228	10.9	237	10.8	246	10.6	256	10.5	265	10.4	274	10.2	283	10.0	292	9.9	14	180	8.9	189	8.8	198	8.7	207	8.6	216	8.5	225	8.3	234	8.2	243	8.1	
	23	228	11.0	237	10.8	246	10.7	256	10.6	265	10.4	274	10.3	283	10.1	292	9.9	23	180	8.9	189	8.8	198	8.7	207	8.6	216	8.5	225	8.3	234	8.2	243	8.1	
	32	228	11.2	237	11.1	246	10.9	256	10.8	265	10.7	274	10.5	283	10.3	292	10.1	32	180	9.1	189	9.0	198	8.9	207	8.8	216	8.7	225	8.6	234	8.4	243	8.3	
	42	228	11.8	237	11.6	246	11.5	256	11.4	265	11.2	274	11.0	283	10.8	292	10.6	42	180	9.6	189	9.5	198	9.4	207	9.3	216	9.2	225	9.0	234	8.8	243	8.7	
	50	228	12.5	237	12.4	246	12.2	256	12.1	265	11.9	274	11.7	283	11.5	292	11.3	50	180	10.2	189	10.1	198	10.0	207	9.9	216	9.8	225	9.6	234	9.4	243	9.2	
	58	228	13.6	237	13.4	246	13.2	256	13.1	265	12.9	274	12.7	283	12.5	292	12.3	58	180	11.1	189	10.9	198	10.8	207	10.7	216	10.5	225	10.4	234	10.2	243	10.0	
	62	228	14.2	237	14.0	246	13.9	256	13.7	265	13.5	274	13.3	283	13.1	292	12.8	62	180	11.6	189	11.5	198	11.3	207	11.2	216	11.0	225	10.9	234	10.7	243	10.5	
	66	228	14.9	237	14.8	246	14.6	256	14.4	265	14.2	274	14.0	283	13.8	292	13.5	66	180	12.2	189	12.1	198	11.9	207	11.8	216	11.6	225	11.4	234	11.2	243	11.0	
	70	228	15.8	237	15.6	246	15.4	256	15.2	265	15.0	274	14.8	283	14.5	292	14.3	70	180	12.9	189	12.7	198	12.6	207	12.4	216	12.3	225	12.1	234	11.9	243	11.7	
	74	228	16.7	237	16.5	246	16.3	256	16.1	265	15.9	274	15.7	283	15.4	292	15.1	74	180	13.7	189	13.5	198	13.3	207	13.2	216	13.0	225	12.8	234	12.6	243	12.4	
	78	228	17.8	237	17.6	246	17.3	256	17.1	265	16.9	274	16.6	283	16.3	292	16.0	78	180	14.5	189	14.3	198	14.2	207	14.0	216	13.8	225	13.6	234	13.4	243	13.1	
	82	228	18.9	237	18.7	246	18.5	256	18.3	265	18.0	274	17.7	283	17.4	292	17.1	82	180	15.5	189	15.3	198	15.1	207	14.9	216	14.7	225	14.5	234	14.2	243	14.0	
	86	228	20.2	237	20.0	246	19.7	256	19.5	264	19.3	274	18.9	281	18.6	289	18.3	86	180	16.5	189	16.3	198	16.1	207	15.9	216	15.7	225	15.5	234	15.2	243	14.9	
	90	226	21.6	234	21.4	242	21.1	251	20.9	259	20.6	267	20.3	276	19.9	284	19.6	90	180	17.7	189	17.5	198	17.2	207	17.0	216	16.8	225	16.5	234	16.3	243	16.0	
	95	220	23.7	228	23.4	236	23.1	245	22.8	253	22.5	261	22.2	270	21.8	278	21.4	95	180	19.3	189	19.1	198	18.9	207	18.6	216	18.4	223	18.1	232	17.8	241	17.5	
	100	213	25.8	222	25.5	230	25.1	238	24.8	247	24.5	255	24.1	263	23.7	272	23.3	100	176	21.4	214	20.8	198	20.5	201	20.3	209	20.0	217	19.7	226	19.4	234	19.0	
	106	206	25.9	214	25.9	223	25.9	231	25.9	239	25.9	248	25.9	256	25.9	264	25.5	106	168	23.4	177	23.1	188	22.8	193	22.6	202	22.3	210	21.9	218	21.5	227	21.2	
	110	208	26.9	208	26.9	216	26.9	224	26.9	232	26.9	240	26.9	248	26.9	256	26.5	110	168	24.1	177	24.1	190	23.5	197	23.8	205	23.5	213	23.2	221	22.9	230	22.6	
	114	198	22.2	205	21.3	207	20.4	207	19.4	207	18.5	207	17.8	207	17.0	207	16.3	114	158	22.2	167	21.3	175	20.4	183	19.4	192	18.5	200	17.8	207	17.0	210	16.3	
	118	167	15.9	162	15.2	162	14.6	162	13.9	162	13.2	162	12.7	162	12.2	162	11.6	118	154	15.9	162	15.2	162	14.6	162	13.9	162	13.2	162	12.7	162	12.2	162	11.6	
	122	116	9.6	116	9.2	116	8.8	116	8.4	116	8.0	116	7.7	116	7.3	116	7.0	122	116	9.6	116	9.2	116	8.8	116	8.4	116	8.0	116	7.7	116	7.3	116	7.0	
140	-10	210	10.2	210	10.2	210	10.2	210	10.2	210	10.2	210	10.2	210	10.2	210	10.2	-10	158	8.0	167	7.9	176	7.8	185	7.7	194	7.6	204	7.5	213	7.4	222	7.3	
	-4	210	10.2	210	10.2	210	10.2	210	10.2	210	10.2	210	10.2	210	10.2	210	10.2	-4	158	8.0	167	7.9	176	7.8	185	7.7	194	7.6	204	7.5	213	7.4	222	7.3	
	14	210	10.2	210	10.2	210	10.2	210	10.2	210	10.2	210	10.2	210	10.2	210	10.2	14	158	8.0	167	7.9	176	7.8	185	7.7	194	7.6	204	7.5	213	7.4	222	7.3	
	23	210	10.2	210	10.2	210	10.2	210	10.2	210	10.2	210	10.2	210	10.2	210	10.2	23	158	8.1	167	8.0	176	7.9	185	7.8	194	7.7	204	7.6	213	7.5	222	7.4	
	32	210	10.4	210	10.3	210	10.2	210	10.1	246	9.9	255	9.8	264	9.6	274	9.4	32	157	8.3	166	8.1	175	7.9	184	7.8	193	7.7	202	7.6	211	7.5	220	7.4	
	42	210	11.0	210	10.8	210	10.7	210	10.6	246	10.4	255	10.3	264	10.1	274	9.9	42	157	8.7	166	8.5	175	7.9	184	7.8	193	7.7	202	7.6	211	7.5	220	7.4	
	50	210	11.6	210	11.5	210	11.4	210	11.3	212	11.2	246	11.1	255	10.9	264	10.7	50	157	9.2	166	9.1	175	8.5	184	8.4	193	8.3	202	8.2	211	8.1	220	8.0	
	58	210	12.6	210	12.5	210	12.3	212	12.2	246	12.0	255	11.8	264	11.6	274	11.4	58	157	10.3	166	10.2	175	9.6	184	9.5	193	9.4	202	9.3	211	9.2	220	9.0	
	62	210	13.2	210	13.1	210	12.9	212	12.8	246	12.6	255	12.4	264	12.2	274	12.0	62	157	10.9	166	10.8	175	10.2	184	10.1	193	10.0	202	9.9	211	9.7	220	9.5	
	66	210	13.9	210	13.7	210	13.6	213	13.4	246	13.2	255	13.0	264	12.8	274	12.6	66	157	11.6	166	11.5	175	10.9	184	10.8	193	10.6	202	10.4	211	10.2	220	10.0	
	70	210	14.7	210	14.5	210	14.3	214	14.2	246	14.0	255	13.8	264	13.6	274	13.4	70	157	12.4	166	12.3	175	11.7	184	11.6	193	11.5	202	11.4	211	11.2	220	11.0	
	74	210	15.6	210	15.4	210	15.2	213	15.0	246	14.8	255	14.6	264	14.3	274	14.1	74	157	13.0	166	12.9	175	12.3	184	12.1	193	12.0	202	11.8	211	11.6	220	11.4	
	78	210	16.5	210	16.3	210	16.1	213	16.0	246	15.8	255	15.5	264	15.2	274	15.0	78	157	13.7	166	13.6	175	13.0	184	12.8	193	12.6	202	12.4	211	12.1	220	11.9	
	82	210	17.6	210	17.4	210	17.2	213	17.0	246	16.8	255	16.5	264	16.2	274	16.0	82	157	14.4	166	14.3	175	13.7	184	13.5	193	13.3	202	13.1	211	12.9	220	12.7	
	86	210	18.8	210	18.6	210	18.4	213	18.2	246	17.9	255	17.6	264	17.3	274	17.0	86	157	15.2	166	15.1	175	14.5	184	14.3	193	14.1	202	14.0	211	13.8	220	13.6	
	90	201	20.1	210	19.9	210	19.7	213	19.4	245	19.2	253	18.9	262	18.5	270	18.2	90	137	14.1	146	14.0	155	13.8	164	13.6	173	13.3	182	13.2	191	13.0	200	12.8	
	95	206	22.0	214	21.8	222	21.5	231	21.2	238	21.0	247	20.6	256	20.3	264	19.9	95	137	15.5	146	15.3	155	15.1	164	14.9	173	14.7	182	14.5	191	14.2	200	14.0	
	100	199	24.0	208	23.6	219	23.3	228	23.0	237	22.7	246	22.42																						

SELECTION DATA

(H,Y)VAHR240B(3,4,5)2S

Cooling Capacity

Connection ratio	Outdoor air temp.	Indoor air temp. °F/WB																Connection ratio	Outdoor air temp.	Indoor air temp. °F/WB															
		59		61		63		65		67		69		71		73				59		61		63		65		67		69		71		73	
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP		
%	°F/DB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°F/DB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW		
150																																			
-10	-10	254	12.6	264	12.6	274	12.5	284	12.4	294	12.2	304	12.0	314	11.8	324	11.6	-10	-10	200	10.5	210	10.4	220	10.3	230	10.1	240	10.0	250	9.8	260	9.7	270	9.5
-4	-4	254	12.6	264	12.6	274	12.5	284	12.4	294	12.2	304	12.0	314	11.8	324	11.6	-4	-4	200	10.5	210	10.4	220	10.3	230	10.1	240	10.0	250	9.8	260	9.7	270	9.5
14	14	254	12.6	264	12.6	274	12.5	284	12.4	294	12.2	304	12.0	314	11.8	324	11.6	14	14	200	10.5	210	10.4	220	10.3	230	10.1	240	10.0	250	9.8	260	9.7	270	9.5
23	23	254	12.7	264	12.7	274	12.6	284	12.4	294	12.3	304	12.1	314	11.9	324	11.7	23	23	200	10.6	210	10.4	220	10.3	230	10.2	240	10.0	250	9.9	260	9.7	270	9.5
32	32	254	12.9	264	12.9	274	12.9	284	12.7	294	12.5	304	12.3	314	12.1	324	11.9	32	32	200	10.8	210	10.7	220	10.5	230	10.4	240	10.3	250	10.1	260	9.9	270	9.8
42	42	254	13.6	264	13.6	274	13.5	284	13.3	294	13.2	304	13.0	314	12.7	324	12.5	42	42	200	11.3	210	11.2	220	11.1	230	10.9	240	10.8	250	10.6	260	10.4	270	10.3
50	50	254	14.4	264	14.4	274	14.4	284	14.2	294	14.0	304	13.8	314	13.5	324	13.3	50	50	200	12.0	210	11.9	220	11.8	230	11.6	240	11.5	250	11.3	260	11.1	270	10.9
58	58	254	15.6	264	15.6	274	15.6	284	15.4	294	15.2	304	14.9	314	14.7	324	14.4	58	58	200	13.0	210	12.9	220	12.7	230	12.6	240	12.4	250	12.2	260	12.0	270	11.8
62	62	254	16.4	264	16.4	274	16.3	284	16.1	294	15.9	304	15.6	314	15.4	324	15.1	62	62	200	13.7	210	13.5	220	13.3	230	13.2	240	13.0	250	12.8	260	12.6	270	12.4
66	66	254	17.2	264	17.2	274	17.1	284	16.9	294	16.7	304	16.4	314	16.2	324	15.9	66	66	200	14.4	210	14.2	220	14.0	230	13.9	240	13.7	250	13.5	260	13.2	270	13.0
70	70	254	18.2	264	18.2	274	18.1	284	17.9	294	17.7	304	17.4	314	17.1	324	16.8	70	70	200	15.2	210	15.0	220	14.8	230	14.7	240	14.5	250	14.2	260	14.0	270	13.7
74	74	254	19.3	264	19.3	274	19.2	284	19.0	294	18.7	304	18.4	314	18.1	324	17.8	74	74	200	16.1	210	15.9	220	15.7	230	15.6	240	15.3	250	15.1	260	14.8	270	14.6
78	78	254	20.5	264	20.5	274	20.4	284	20.1	294	19.9	304	19.6	314	19.3	324	19.0	78	78	200	17.1	210	16.9	220	16.7	230	16.5	240	16.3	250	16.0	260	15.8	270	15.5
82	82	254	21.9	264	21.9	274	21.7	284	21.5	294	21.2	304	20.9	314	20.5	324	20.1	82	82	200	18.2	210	18.0	220	17.8	230	17.6	240	17.4	250	17.1	260	16.8	270	16.5
86	86	254	23.3	264	23.3	274	23.2	284	22.9	293	22.6	303	22.3	312	21.9	321	21.5	86	86	200	19.5	210	19.2	220	19.0	230	18.8	240	18.5	250	18.2	260	17.9	270	17.6
90	90	251	25.0	260	25.0	269	24.8	279	24.5	288	24.2	297	23.8	306	23.4	316	23.0	90	90	200	20.8	210	20.6	220	20.3	230	20.1	240	19.8	250	19.5	260	19.2	270	18.9
95	95	244	27.3	253	27.3	262	27.2	272	26.8	281	26.5	290	26.1	299	25.6	308	25.2	95	95	200	22.8	210	22.5	220	22.2	230	22.0	240	21.7	248	21.3	258	21.0	267	20.6
100	100	237	27.3	246	27.3	256	27.3	265	27.3	274	27.3	283	27.3	293	27.3	302	27.3	100	100	195	24.8	204	24.5	214	24.2	223	23.9	232	23.6	241	23.2	251	22.8	260	22.4
106	106	229	27.3	238	27.3	247	27.3	257	27.3	266	27.3	275	27.3	284	27.3	293	27.3	106	106	187	27.3	196	27.3	205	26.9	215	26.6	224	26.3	233	25.8	242	25.4	251	25.0
110	110	221	27.3	230	27.3	239	27.3	248	27.3	257	27.3	266	27.3	275	27.3	284	27.3	110	110	174	27.3	183	27.3	192	26.9	201	26.6	210	26.3	219	25.9	228	25.5	237	25.1
114	114	218	27.2	227	26.0	236	24.9	246	23.8	256	22.6	264	21.7	246	20.8	246	19.9	114	114	176	27.2	185	26.0	195	24.9	204	23.8	213	22.6	222	21.7	232	20.8	241	19.9
118	118	181	19.4	183	18.6	183	17.8	183	17.0	183	16.2	183	15.5	183	14.9	183	14.2	118	118	171	19.4	180	18.6	181	17.8	183	17.0	183	16.2	183	15.5	183	14.9	183	14.2
122	122	120	11.7	120	11.2	120	10.7	120	10.2	120	9.8	120	9.4	120	9.0	120	8.6	122	122	120	11.7	120	11.2	120	10.7	120	10.2	120	9.8	120	9.4	120	9.0	120	8.6
140																																			
-10	-10	244	12.4	254	12.2	264	12.1	274	11.9	284	11.8	294	11.6	304	11.4	314	11.2	-10	-10	176	9.5	186	9.3	196	9.2	206	9.1	216	9.0	226	8.9	236	8.7	246	8.6
-4	-4	244	12.4	254	12.2	264	12.1	274	11.9	284	11.8	294	11.6	304	11.4	314	11.2	-4	-4	176	9.5	186	9.3	196	9.2	206	9.1	216	9.0	226	8.9	236	8.7	246	8.6
14	14	244	12.4	254	12.2	264	12.1	274	11.9	284	11.8	294	11.6	304	11.4	314	11.2	14	14	176	9.5	186	9.3	196	9.2	206	9.1	216	9.0	226	8.9	236	8.7	246	8.6
24	24	244	12.7	254	12.6	264	12.5	274	12.3	284	12.1	294	11.9	304	11.7	314	11.5	24	24	176	9.7	186	9.5	196	9.4	206	9.3	216	9.2	226	9.1	236	8.9	246	8.8
32	32	244	13.4	254	13.2	264	13.1	274	12.9	284	12.7	294	12.5	304	12.3	314	12.1	32	32	176	10.2	186	10.1	196	10.0	206	9.8	216	9.7	226	9.6	236	9.4	246	9.2
50	50	244	14.2	254	14.0	264	13.9	274	13.7	284	13.5	294	13.3	304	13.1	314	12.9	50	50	176	10.8	186	10.7	196	10.6	206	10.5	216	10.3	226	10.2	236	10.0	246	9.8
58	58	244	15.4	254	15.2	264	15.0	274	14.8	284	14.7	294	14.4	304	14.2	314	13.9	58	58	176	11.7	186	11.6	196	11.5	206	11.3	216	11.2	226	11.0	236	10.8	246	10.6
62	62	244	16.1	254	15.9	264	15.7	274	15.6	284	15.4	294	15.1	304	14.8	314	14.6	62	62	176	12.3	186	12.2	196	12.0	206	11.9	216	11.7	226	11.5	236	11.3	246	11.1
66	66	244	17.0	254	16.8	264	16.6	274	16.4	284	16.2	294	15.9	304	15.6	314	15.4	66	66	176	12.9	186	12.8	196	12.6	206	12.5	216	12.3	226	12.1	236	11.9	246	11.7
70	70	244	18.1	254	17.9	264	17.7	274	17.5	284	17.1	294	16.8	304	16.5	314	16.2	70	70	176	13.5	186	13.4	196	13.3	206	13.2	216	13.0	226	12.8	236	12.6	246	12.4
74	74	244	19.0	254	18.8	264	18.6	274	18.3	284	18.1	294	17.8	304	17.5	314	17.2	74	74	176	14.3	186	14.3	196	14.1	206	14.0	216	13.8	226	13.6	236	13.4	246	13.1
78	78	244	20.2	254	19.9	264	19.7	274	19.5	284	19.2	294	18.9	304	18.6	314	18.3	78	78	176	15.4	186	15.2	196	15.0	206									

(H,Y)VAHR264B(3,4,5)2S

Cooling Capacity

Connection ratio	Outdoor air temp	Indoor air temp. °FWB																Connection ratio	Outdoor air temp	Indoor air temp. °FWB															
		59		61		63		65		67		69		71		73				59		61		63		65		67		69		71		73	
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP		
%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW		
150	-10	279	12.6	290	12.6	301	12.6	312	12.6	323	12.6	334	12.6	346	12.6	357	12.6	-10	220	11.7	231	11.5	242	11.4	253	11.2	264	11.1	275	10.9	286	10.7	297	10.6	
	-4	279	12.6	290	12.6	301	12.6	312	12.6	323	12.6	334	12.6	346	12.6	357	12.6	-4	220	11.7	231	11.5	242	11.4	253	11.2	264	11.1	275	10.9	286	10.7	297	10.6	
	14	279	12.6	290	12.6	301	12.6	312	12.6	323	12.6	334	12.6	346	12.6	357	12.6	14	220	11.7	231	11.5	242	11.4	253	11.2	264	11.1	275	10.9	286	10.7	297	10.6	
	23	279	12.7	290	12.7	301	12.7	312	12.7	323	12.7	334	12.7	346	12.7	357	12.7	23	220	11.7	231	11.5	242	11.4	253	11.2	264	11.2	275	11.0	286	10.8	297	10.6	
	32	279	12.9	290	12.9	301	12.9	312	12.9	323	12.9	334	12.9	346	12.9	357	12.9	32	220	12.0	231	11.8	242	11.7	253	11.6	264	11.4	275	11.2	286	11.0	297	10.8	
	42	279	13.6	290	13.6	301	13.6	312	13.6	323	13.6	334	13.6	346	13.6	357	13.6	42	220	12.6	231	12.4	242	12.3	253	12.1	264	12.0	275	11.8	286	11.6	297	11.4	
	50	279	14.4	290	14.4	301	14.4	312	14.4	323	14.4	334	14.4	346	14.4	357	14.4	50	220	13.4	231	13.2	242	13.1	253	12.9	264	12.7	275	12.5	286	12.3	297	12.1	
	58	279	15.6	290	15.6	301	15.6	312	15.6	323	15.6	334	15.6	346	15.6	357	15.6	58	220	14.5	231	14.3	242	14.2	253	14.0	264	13.8	275	13.6	286	13.3	297	13.1	
	62	279	16.4	290	16.4	301	16.4	312	16.4	323	16.4	334	16.4	346	16.4	357	16.4	62	220	15.2	231	15.0	242	14.8	253	14.6	264	14.5	275	14.2	286	14.0	297	13.7	
	66	279	17.2	290	17.2	301	17.2	312	17.2	323	17.2	334	17.2	346	17.2	357	17.2	66	220	16.0	231	15.8	242	15.6	253	15.4	264	15.2	275	15.0	286	14.7	297	14.5	
	70	279	18.2	290	18.2	301	18.2	312	18.2	323	18.2	334	18.2	346	18.2	357	18.2	70	220	16.9	231	16.7	242	16.5	253	16.3	264	16.1	275	15.8	286	15.5	297	15.3	
	74	279	19.3	290	19.3	301	19.3	312	19.3	323	19.3	334	19.3	346	19.3	357	19.3	74	220	17.9	231	17.7	242	17.5	253	17.2	264	17.0	275	16.7	286	16.5	297	16.2	
	78	279	20.5	290	20.5	301	20.5	312	20.5	323	20.5	334	20.5	346	20.5	357	20.5	78	220	19.0	231	18.8	242	18.6	253	18.3	264	18.1	275	17.8	286	17.5	297	17.2	
82	279	21.9	290	21.9	301	21.9	312	21.9	323	21.9	334	21.9	346	21.9	357	21.9	82	220	20.3	231	20.0	242	19.8	253	19.5	264	19.3	275	19.0	286	18.6	297	18.3		
86	279	23.3	290	23.3	301	23.3	312	23.3	323	23.3	334	23.3	346	23.3	357	23.3	86	220	21.6	231	21.4	242	21.1	253	20.9	264	20.6	275	20.3	286	19.9	297	19.6		
90	276	25.0	286	25.0	296	25.0	306	25.0	317	25.0	327	25.0	337	25.0	347	25.0	90	220	23.1	231	22.9	242	22.6	253	22.3	264	22.0	275	21.7	286	21.3	297	20.9		
95	268	27.3	278	27.3	289	27.3	299	27.3	309	27.3	319	27.3	329	27.3	340	27.3	95	220	25.3	231	25.0	242	24.7	253	24.4	264	24.1	275	23.7	283	23.3	293	22.9		
100	261	27.3	271	27.3	281	27.3	291	27.3	301	27.3	311	27.3	322	27.3	332	27.3	100	215	27.3	225	27.2	235	26.9	245	26.6	255	26.2	266	25.8	276	25.4	286	24.9		
106	262	27.3	262	27.3	272	27.3	282	27.3	292	27.3	302	27.3	312	27.3	322	27.3	106	206	27.3	216	27.3	226	27.3	236	27.3	246	27.3	257	27.3	267	27.3	277	27.3		
110	240	27.3	256	27.3	266	27.3	276	27.3	287	27.3	297	27.3	307	27.3	317	27.3	110	200	27.3	210	27.3	220	27.3	230	27.3	240	27.3	251	27.3	261	27.3	271	27.3		
114	240	27.3	250	27.2	257	27.2	267	27.2	277	27.2	287	27.2	297	27.2	307	27.2	114	194	27.3	204	27.2	214	26.9	224	26.8	234	26.7	244	26.7	254	26.7	264	26.7		
118	191	20.3	191	20.3	191	20.3	191	20.3	191	20.3	191	20.3	191	20.3	191	20.3	118	188	20.3	191	19.5	191	18.6	191	18.6	191	18.6	191	18.6	191	18.6	191	18.6		
122	126	12.3	126	11.7	126	11.2	126	10.7	126	10.2	126	9.8	126	9.4	126	9.0	122	126	12.3	126	11.7	126	11.2	126	10.7	126	10.2	126	9.8	126	9.4	126	9.0		
140	-10	268	12.6	279	12.6	290	12.6	301	12.6	312	12.6	323	12.6	334	12.6	345	12.6	-10	193	10.5	204	10.4	215	10.2	227	10.1	238	10.0	249	9.8	260	9.7	271	9.5	
	-4	268	12.6	279	12.6	290	12.6	301	12.6	312	12.6	323	12.6	334	12.6	345	12.6	-4	193	10.5	204	10.4	215	10.2	227	10.1	238	10.0	249	9.8	260	9.7	271	9.5	
	14	268	12.6	279	12.6	290	12.6	301	12.6	312	12.6	323	12.6	334	12.6	345	12.6	14	193	10.5	204	10.4	215	10.2	227	10.1	238	10.0	249	9.8	260	9.7	271	9.5	
	23	268	12.7	279	12.7	290	12.7	301	12.7	312	12.7	323	12.7	334	12.7	345	12.7	23	193	10.5	204	10.4	215	10.2	227	10.1	238	10.0	249	9.8	260	9.7	271	9.5	
	32	268	12.9	279	12.9	290	12.9	301	12.9	312	12.9	323	12.9	334	12.9	345	12.9	32	193	10.8	204	10.7	215	10.5	227	10.4	238	10.3	249	10.1	260	9.9	271	9.8	
	42	268	13.6	279	13.6	290	13.6	301	13.6	312	13.6	323	13.6	334	13.6	345	13.6	42	193	11.3	204	11.2	215	11.1	227	10.9	238	10.8	249	10.6	260	10.4	271	10.2	
	50	268	14.4	279	14.4	290	14.4	301	14.4	312	14.4	323	14.4	334	14.4	345	14.4	50	193	12.0	204	11.9	215	11.8	227	11.6	238	11.5	249	11.3	260	11.1	271	10.9	
	58	268	15.6	279	15.6	290	15.6	301	15.6	312	15.6	323	15.6	334	15.6	345	15.6	58	193	13.0	204	12.9	215	12.7	227	12.6	238	12.4	249	12.2	260	12.0	271	11.8	
	62	268	16.4	279	16.4	290	16.4	301	16.4	312	16.4	323	16.4	334	16.4	345	16.4	62	193	13.7	204	13.5	215	13.3	227	13.2	238	13.0	249	12.8	260	12.6	271	12.4	
	66	268	17.2	279	17.2	290	17.2	301	17.2	312	17.2	323	17.2	334	17.2	345	17.2	66	193	14.4	204	14.2	215	14.0	227	13.9	238	13.7	249	13.5	260	13.2	271	13.0	
	70	268	18.2	279	18.2	290	18.2	301	18.2	312	18.2	323	18.2	334	18.2	345	18.2	70	193	15.2	204	15.0	215	14.8	227	14.6	238	14.5	249	14.3	260	14.0	271	13.8	
	74	268	19.3	279	19.3	290	19.3	301	19.3	312	19.3	323	19.3	334	19.3	345	19.3	74	193	16.1	204	15.9	215	15.7	227	15.5	238	15.3	249	15.1	260	14.8	271	14.6	
	78	268	20.5	279	20.5	290	20.5	301	20.5	312	20.5	323	20.5	334	20.5	345	20.5	78	193	17.0	204	16.8	215	16.6	227	16.4	238	16.2	249	16.0	260	15.7	271	15.5	
82	268	21.9	279	21.9	290	21.9	301	21.9	312	21.9	323	21.9	334	21.9																					

SELECTION DATA

(H,Y)VAHR288B(3,4,5)2S

Cooling Capacity

Connection ratio	Outdoor air temp	Indoor air temp. °FWB																Connection ratio	Outdoor air temp	Indoor air temp. °FWB																
		59		61		63		65		67		69		71		73				59		61		63		65		67		69		71		73		
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			
%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW			
150		-10	304	15.9	316	15.9	329	15.9	341	15.9	353	15.8	365	15.5	377	15.2	389	15.0	100	-10	240	13.5	252	13.4	264	13.2	276	13.1	288	12.9	300	12.7	312	12.5	324	12.3
		-4	304	15.9	316	15.9	329	15.9	341	15.9	353	15.8	365	15.5	377	15.2	389	15.0		-4	240	13.5	252	13.4	264	13.2	276	13.1	288	12.9	300	12.7	312	12.5	324	12.3
		14	304	15.9	316	15.9	329	15.9	341	15.9	353	15.8	365	15.5	377	15.2	389	15.0		14	240	13.5	252	13.4	264	13.2	276	13.1	288	12.9	300	12.7	312	12.5	324	12.3
		23	304	16.0	316	16.0	329	16.0	341	16.0	353	15.8	365	15.6	377	15.3	389	15.0		23	240	13.6	252	13.5	264	13.3	276	13.1	288	13.0	300	12.8	312	12.6	324	12.3
		32	304	16.4	316	16.4	329	16.4	341	16.4	353	15.6	365	15.9	377	15.6	389	15.4		32	240	13.9	252	13.8	264	13.6	276	13.4	288	13.3	300	13.0	312	12.8	324	12.6
		42	304	17.2	316	17.2	329	17.2	341	17.2	353	17.0	365	16.7	377	16.4	389	16.2		42	240	14.6	252	14.5	264	14.3	276	14.1	288	13.9	300	13.7	312	13.5	324	13.2
		50	304	18.3	316	18.3	329	18.3	341	18.3	353	18.1	365	17.8	377	17.5	389	17.2		50	240	15.5	252	15.4	264	15.2	276	15.0	288	14.8	300	14.6	312	14.3	324	14.1
		58	304	19.8	316	19.8	329	19.8	341	19.8	353	19.6	365	19.3	377	18.9	389	18.6		58	240	16.8	252	16.6	264	16.4	276	16.2	288	16.0	300	15.8	312	15.5	324	15.2
		62	304	20.7	316	20.7	329	20.7	341	20.7	353	20.5	365	20.2	377	19.8	389	19.5		62	240	17.6	252	17.4	264	17.2	276	17.0	288	16.8	300	16.5	312	16.2	324	16.0
		66	304	21.8	316	21.8	329	21.8	341	21.8	353	21.6	365	21.2	377	20.9	389	20.5		66	240	18.6	252	18.3	264	18.1	276	17.9	288	17.7	300	17.4	312	17.1	324	16.8
		70	304	23.0	316	23.0	329	23.0	341	23.0	353	22.8	365	22.4	377	22.0	389	21.7		70	240	19.8	252	19.4	264	19.1	276	18.9	288	18.7	300	18.4	312	18.0	324	17.7
		74	304	24.4	316	24.4	329	24.4	341	24.4	353	24.2	365	23.8	377	23.4	389	22.9		74	240	20.8	252	20.5	264	20.3	276	20.1	288	19.8	300	19.5	312	19.1	324	18.8
140		78	304	26.0	316	26.0	329	26.0	341	26.0	353	25.7	365	25.2	377	24.8	389	24.4	78	240	22.1	252	21.8	264	21.6	276	21.3	288	21.0	300	20.7	312	20.3	324	20.0	
		82	304	27.7	316	27.7	329	27.7	341	27.7	353	27.4	365	26.9	377	26.4	389	26.0	82	240	23.5	252	23.2	264	23.0	276	22.7	288	22.4	300	22.0	312	21.7	324	21.3	
		86	304	29.5	316	29.5	329	29.5	341	29.5	352	29.2	365	28.7	374	28.2	385	27.8	86	240	25.1	252	24.8	264	24.5	276	24.2	288	23.9	300	23.5	312	23.1	324	22.7	
		90	304	31.6	316	31.6	329	31.6	341	31.6	345	31.3	356	30.7	368	30.2	379	29.7	90	240	26.9	252	26.6	264	26.2	276	25.9	288	25.6	300	25.2	312	24.7	324	24.3	
		95	293	34.6	304	34.6	315	34.6	326	34.6	337	34.2	348	33.6	359	33.0	370	32.5	95	240	29.4	252	29.1	264	28.7	276	28.4	288	28.0	298	27.5	309	27.1	320	26.6	
		100	285	34.6	296	34.6	307	34.6	318	34.6	329	34.6	340	34.6	351	34.6	362	34.6	100	234	32.0	245	31.6	256	31.2	267	30.9	279	30.5	290	30.0	301	29.5	311	29.0	
		106	275	34.6	286	34.6	297	34.6	308	34.6	319	34.6	330	34.6	341	34.6	352	34.6	106	224	34.6	235	34.6	247	34.6	258	34.3	269	33.9	280	33.4	291	32.8	302	32.2	
		110	268	34.6	279	34.6	290	34.6	301	33.3	313	31.7	324	30.4	335	29.1	347	27.8	110	218	34.6	229	34.6	240	34.6	251	33.3	262	31.7	273	30.4	284	29.1	296	27.8	
		114	262	29.6	268	28.4	268	27.2	268	25.9	268	24.7	268	23.7	268	22.7	268	21.7	114	211	29.6	222	28.4	233	27.2	245	25.9	256	24.7	267	23.7	268	22.7	268	21.7	
		118	250	21.2	200	20.3	200	19.4	200	18.5	200	17.7	200	16.9	200	16.2	200	15.5	118	200	21.2	200	20.3	200	19.4	200	18.5	200	17.7	200	16.9	200	16.2	200	15.5	
		122	131	12.8	131	12.2	131	11.7	131	11.2	131	10.6	131	10.2	131	9.8	131	9.3	122	131	12.8	131	12.2	131	11.7	131	11.2	131	10.6	131	10.2	131	9.8	131	9.3	
		130		-10	292	15.9	305	15.8	317	15.6	329	15.4	341	15.2	353	15.0	365	14.7	377	14.5	90	-10	211	12.2	223	12.0	235	11.9	247	11.8	259	11.6	271	11.4	283	11.2
-4	292			15.9	305	15.8	317	15.6	329	15.4	341	15.2	353	15.0	365	14.7	377	14.5	-4	211		12.2	223	12.0	235	11.9	247	11.8	259	11.6	271	11.4	283	11.2	296	11.0
14	292			15.9	305	15.8	317	15.6	329	15.4	341	15.2	353	15.0	365	14.7	377	14.5	14	211		12.2	223	12.0	235	11.9	247	11.8	259	11.6	271	11.4	283	11.2	296	11.0
23	292			16.0	305	15.9	317	15.7	329	15.5	341	15.3	353	15.1	365	14.8	377	14.5	23	211		12.3	223	12.1	235	12.0	247	11.8	259	11.7	271	11.5	283	11.3	296	11.1
32	292			16.4	305	16.2	317	16.0	329	15.8	341	15.6	353	15.4	365	15.1	377	14.8	32	211		12.5	223	12.4	235	12.2	247	12.1	259	11.9	271	11.7	283	11.5	296	11.3
42	292			17.2	305	17.0	317	16.8	329	16.6	341	16.4	353	16.1	365	15.8	377	15.6	42	211		12.8	223	12.6	235	12.4	247	12.2	259	12.0	271	11.8	283	11.6	296	11.4
50	292			18.3	305	18.1	317	17.9	329	17.7	341	17.5	353	17.2	365	16.9	377	16.6	50	211		14.0	223	13.8	235	13.7	247	13.5	259	13.3	271	13.1	283	12.9	296	12.7
58	292			19.8	305	19.6	317	19.4	329	19.2	341	18.9	353	18.6	365	18.3	377	18.0	58	211		15.2	223	15.0	235	14.8	247	14.6	259	14.4	271	14.2	283	14.0	296	13.7
62	292			20.7	305	20.6	317	20.3	329	20.1	341	19.8	353	19.5	365	19.2	377	18.8	62	211		15.9	223	15.7	235	15.5	247	15.3	259	15.1	271	14.9	283	14.6	296	14.4
66	292			21.8	305	21.6	317	21.4	329	21.1	341	20.9	353	20.5	365	20.2	377	19.8	66	211		16.7	223	16.5	235	16.3	247	16.1	259	15.9	271	15.6	283	15.4	296	15.1
70	292			23.0	305	22.8	317	22.6	329	22.3	341	22.0	353	21.7	365	21.3	377	20.9	70	211		17.6	223	17.4	235	17.2	247	17.0	259	16.8	271	16.5	283	16.2	296	16.0
74	292			24.4	305	24.2	317	23.9	329	23.6	341	23.3	353	22.9	365	22.5	377	22.2	74	211		18.7	223	18.5	235	18.3	247	18.0	259	17.8	271	17.5	283	17.2	296	16.9
120		78	292	26.0	305	25.7	317	25.4	329	25.1	341	24.8	353	24.5	365	24.1	78	211	19.8	223	19.6	235	19.4	247	19.1	259	18.8	271	18.5	283	18.2	296	17.9			
		82	292	27.7	305	27.4	317	27.1	329	26.8	341	26.4	353	26.0	365	25.6	377	25.1	82	211	21.2	223	20.9	235	20.7	247	20.4	259	20.2	271	19.8	283	19.5	296	19.	

(H,Y)VAHR312B(3,4,5)2S

Cooling Capacity

Connection ratio	Outdoor air temp.	Indoor air temp. °FWB																Connection ratio	Outdoor air temp.	Indoor air temp. °FWB																					
		59		61		63		65		67		69		71		73				59		61		63		65		67		69		71		73							
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP						
%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FDB	MBH	kW	MBH	kW		
150	-10	330	15.9	343	15.9	356	15.9	369	15.9	382	15.9	395	15.9	408	15.9	421	15.8	-10	260	14.3	273	14.1	286	13.9	299	13.8	312	13.6	325	13.4	338	13.1	351	12.9	-10	260	14.3	273	14.1	286	13.9
	-4	330	15.9	343	15.9	356	15.9	369	15.9	382	15.9	395	15.9	408	15.9	421	15.8	-4	260	14.3	273	14.1	286	13.9	299	13.8	312	13.6	325	13.4	338	13.1	351	12.9	-4	260	14.3	273	14.1	286	13.9
	14	330	15.9	343	15.9	356	15.9	369	15.9	382	15.9	395	15.9	408	15.9	421	15.8	14	260	14.3	273	14.1	286	13.9	299	13.8	312	13.6	325	13.4	338	13.1	351	12.9	14	260	14.3	273	14.1	286	13.9
	23	330	16.0	343	16.0	356	16.0	369	16.0	382	16.0	395	16.0	408	16.0	421	15.8	23	260	14.3	273	14.2	286	14.0	299	13.8	312	13.7	325	13.4	338	13.2	351	13.0	23	260	14.3	273	14.2	286	14.0
	32	330	16.4	343	16.4	356	16.4	369	16.4	382	16.4	395	16.4	408	16.4	421	16.2	32	260	14.7	273	14.5	286	14.3	299	14.1	312	14.0	325	13.7	338	13.5	351	13.3	32	260	14.7	273	14.5	286	14.3
	42	330	17.2	343	17.2	356	17.2	369	17.2	382	17.2	395	17.2	408	17.2	421	17.0	42	260	15.4	273	15.2	286	15.0	299	14.9	312	14.7	325	14.4	338	14.2	351	13.9	42	260	15.4	273	15.2	286	15.0
	50	330	18.3	343	18.3	356	18.3	369	18.3	382	18.3	395	18.3	408	18.3	421	18.1	50	260	16.4	273	16.2	286	16.0	299	15.8	312	15.6	325	15.3	338	15.1	351	14.8	50	260	16.4	273	16.2	286	16.0
	58	330	19.8	343	19.8	356	19.8	369	19.8	382	19.8	395	19.8	408	19.8	421	19.6	58	260	17.7	273	17.5	286	17.3	299	17.1	312	16.9	325	16.6	338	16.3	351	16.0	58	260	17.7	273	17.5	286	17.3
	62	330	20.7	343	20.7	356	20.7	369	20.7	382	20.7	395	20.7	408	20.7	421	20.5	62	260	18.6	273	18.4	286	18.1	299	17.9	312	17.7	325	17.4	338	17.1	351	16.8	62	260	18.6	273	18.4	286	18.1
	66	330	21.8	343	21.8	356	21.8	369	21.8	382	21.8	395	21.8	408	21.8	421	21.6	66	260	19.6	273	19.3	286	19.1	299	18.9	312	18.6	325	18.3	338	18.0	351	17.7	66	260	19.6	273	19.3	286	19.1
	70	330	23.0	343	23.0	356	23.0	369	23.0	382	23.0	395	23.0	408	23.0	421	22.8	70	260	20.7	273	20.4	286	20.2	299	19.9	312	19.7	325	19.3	338	19.0	351	18.7	70	260	20.7	273	20.4	286	20.2
	74	330	24.4	343	24.4	356	24.4	369	24.4	382	24.4	395	24.4	408	24.4	421	22.8	74	260	21.9	273	21.6	286	21.4	299	21.1	312	20.8	325	20.5	338	20.1	351	19.8	74	260	21.9	273	21.6	286	21.4
78	330	26.0	343	26.0	356	26.0	369	26.0	382	26.0	395	26.0	408	26.0	421	23.0	78	260	23.3	273	23.0	286	22.7	299	22.4	312	22.2	325	21.8	338	21.4	351	21.0	78	260	23.3	273	23.0	286	22.7	
82	330	27.7	343	27.7	356	27.7	369	27.7	382	27.7	395	27.7	408	27.7	421	23.2	82	260	24.8	273	24.5	286	24.2	299	23.9	312	23.6	325	23.2	338	22.8	351	22.4	82	260	24.8	273	24.5	286	24.2	
86	330	29.5	343	29.5	356	29.5	369	29.5	381	29.5	395	29.5	405	29.5	417	29.2	86	260	26.5	273	26.2	286	25.8	299	25.5	312	25.2	325	24.8	338	24.4	351	24.0	86	260	26.5	273	26.2	286	25.8	
90	326	31.6	338	31.6	350	31.6	362	31.6	374	31.6	386	31.6	398	31.6	410	31.3	90	260	28.3	273	28.0	286	27.6	299	27.3	312	27.0	325	26.5	338	26.1	351	25.6	90	260	28.3	273	28.0	286	27.6	
95	317	34.6	329	34.6	341	34.6	353	34.6	365	34.6	377	34.6	389	34.6	401	34.2	95	260	31.0	273	30.6	286	30.2	299	29.9	312	29.5	323	29.0	335	28.5	347	28.0	95	260	31.0	273	30.6	286	30.2	
100	300	34.6	320	34.6	332	34.6	344	34.6	356	34.6	368	34.6	380	34.6	392	34.4	100	254	33.7	266	33.3	279	32.9	290	32.5	302	32.1	314	31.6	326	31.0	338	30.5	100	254	33.7	266	33.3	279	32.9	
106	298	34.6	310	34.6	322	34.6	334	34.6	346	34.6	358	34.6	370	34.6	382	34.6	106	243	34.6	255	34.6	267	34.6	279	34.6	291	34.6	303	34.6	315	34.5	327	33.9	106	243	34.6	255	34.6	267	34.6	
110	290	34.6	302	34.6	314	34.6	326	34.6	338	34.6	350	34.6	362	34.6	374	34.6	110	236	34.6	248	34.6	260	34.6	272	34.6	284	34.6	296	34.6	308	34.6	320	34.6	110	236	34.6	248	34.6	260	34.6	
114	274	30.3	274	29.0	274	27.7	274	26.5	274	25.2	274	24.2	274	23.1	274	22.1	114	229	30.3	241	29.0	253	27.7	265	26.5	274	25.2	274	24.2	274	23.1	274	22.1	114	229	30.3	241	29.0	253	27.7	
118	204	21.7	204	20.7	204	19.8	204	18.9	204	18.0	204	17.3	204	16.6	204	15.8	118	194	21.7	204	20.7	204	19.8	204	18.9	204	18.0	204	17.3	204	16.6	204	15.8	118	194	21.7	204	20.7	204	19.8	
122	134	13.1	134	12.5	134	12.0	134	11.4	134	10.9	134	10.4	134	10.0	134	9.5	122	134	13.1	134	12.5	134	12.0	134	11.4	134	10.9	134	10.4	134	10.0	134	9.5	122	134	13.1	134	12.5	134	12.0	
140	-10	317	15.9	330	15.9	343	15.9	356	15.9	369	15.9	382	15.8	395	15.5	409	15.2	-10	228	12.8	242	12.7	255	12.5	268	12.4	281	12.2	294	12.0	307	11.8	320	11.6	-10	228	12.8	242	12.7	255	12.5
	-4	317	15.9	330	15.9	343	15.9	356	15.9	369	15.9	382	15.8	395	15.5	409	15.2	-4	228	12.8	242	12.7	255	12.5	268	12.4	281	12.2	294	12.0	307	11.8	320	11.6	-4	228	12.8	242	12.7	255	12.5
	14	317	15.9	330	15.9	343	15.9	356	15.9	369	15.9	382	15.8	395	15.5	409	15.2	14	228	12.8	242	12.7	255	12.5	268	12.4	281	12.2	294	12.0	307	11.8	320	11.6	14	228	12.8	242	12.7	255	12.5
	23	317	16.0	330	16.0	343	16.0	356	16.0	369	16.0	382	15.8	395	15.5	409	15.3	23	228	12.9	242	12.8	255	12.6	268	12.4	281	12.3	294	12.1	307	11.9	320	11.7	23	228	12.9	242	12.8	255	12.6
	32	317	16.4	330	16.4	343	16.4	356	16.4	369	16.4	382	15.8	395	15.5	409	15.3	32	228	13.2	242	13.0	255	12.9	268	12.7	281	12.5	294	12.3	307	12.1	320	11.9	32	228	13.2	242	13.0	255	12.9
	42	317	17.2	330	17.2	343	17.2	356	17.2	369	17.2	382	17.0	395	16.7	409	16.4	42	228	13.9	242	13.7	255	13.5	268	13.4	281	13.2	294	13.0	307	12.8	320	12.5	42	228	13.9	242	13.7	255	13.5
	50	317	18.3	330	18.3	343	18.3	356	18.3	369	18.3	382	18.1	395	17.8	409	17.5	50	228	14.7	242	14.5	255	14.4	268	14.2	281	14.0	294	13.8	307	13.6	320	13.3	50	228	14.7	242	14.5	255	14.4
	58	317	19.8	330	19.8	343	19.8	356	19.8	369	19.8	382	19.6	395	19.3	409	18.9	58	228	16.0	242	15.8	255	15.6	268	15.4	281	15.2	294	15.0	307	14.7	320	14.4	58	228	16.0	242	15.8	255	15.6
	62	317	20.7	330	20.7	343	20.7	356	20.7	369	20.7	382	20.5	395	20.2	409	19.8	62	228	16.7	242	16.5	255	16.3	268	16.1	281	15.9	294	15.7											

SELECTION DATA

(H,Y)VAHR336B(3,4,5)2S

Cooling Capacity

[illegible]

TC: Total Capacity

IP: Input Power

NOTES:

1. The table shows the normal value of a cooling operation.
2. The value in the table shows when the system is operating under the following conditions.
The total piping length: 24.6ft. (7.5m), The height difference: 0ft (0m)
3. In a heat recovery system, the value in the table indicates when all the indoor units are operating in cooling mode.

(H,Y)VAHR360B(3,4,5)2S

Cooling Capacity

Connection ratio	Outdoor air temp.	Indoor air temp. °FWB																Connection ratio	Outdoor air temp.	Indoor air temp. °FWB																																
		59		61		63		65		67		69		71		73				59		61		63		65		67		69		71		73																		
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP																			
%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FDB	MBH	kW	MBH	kW													
150	-10	380	17.9	386	17.9	411	17.9	426	17.9	441	17.9	456	17.9	471	17.9	486	17.9	100	-10	300	17.5	315	17.3	330	17.1	345	16.8	360	16.6	375	16.4	390	16.1	405	15.8	50	300	20.0	315	19.8	330	19.6	345	19.3	360	19.1	375	18.8	390	18.4	405	18.1
	-4	380	17.9	386	17.9	411	17.9	426	17.9	441	17.9	456	17.9	471	17.9	486	17.9	-4	300	17.5	315	17.3	330	17.1	345	16.8	360	16.6	375	16.4	390	16.1	405	15.8	300	21.7	315	21.4	330	21.2	345	20.9	360	20.7	375	20.3	390	20.0	405	19.6		
	14	380	17.9	386	17.9	411	17.9	426	17.9	441	17.9	456	17.9	471	17.9	486	17.9	14	300	17.5	315	17.3	330	17.1	345	16.8	360	16.6	375	16.4	390	16.1	405	15.8	300	22.7	315	22.5	330	22.2	345	21.9	360	21.7	375	21.3	390	20.9	405	20.6		
	23	380	18.0	386	18.0	411	18.0	426	18.0	441	18.0	456	18.0	471	18.0	486	18.0	23	300	17.6	315	17.3	330	17.1	345	16.9	360	16.7	375	16.5	390	16.2	405	15.9	300	23.9	315	23.6	330	23.4	345	23.1	360	22.8	375	22.4	390	22.0	405	21.7		
	32	380	18.4	386	18.4	411	18.4	426	18.4	441	18.4	456	18.4	471	18.4	486	18.4	32	300	17.9	315	17.3	330	17.1	345	17.3	360	17.1	375	16.9	390	16.6	405	16.3	300	24.9	315	24.6	330	24.4	345	24.1	360	23.8	375	23.4	390	23.0	405	22.6		
	42	380	19.3	386	19.3	411	19.3	426	19.3	441	19.3	456	19.3	471	19.3	486	19.3	42	300	18.9	315	18.6	330	18.4	345	18.2	360	18.0	375	17.7	390	17.4	405	17.1	300	25.9	315	25.6	330	25.4	345	25.1	360	24.8	375	24.4	390	24.0	405	23.6		
	50	380	20.5	386	20.5	411	20.5	426	20.5	441	20.5	456	20.5	471	20.5	486	20.5	50	300	20.0	315	20.3	330	20.1	345	19.8	360	19.6	375	19.4	390	19.1	405	18.8	300	26.9	315	26.6	330	26.4	345	26.1	360	25.8	375	25.4	390	25.0	405	24.6		
	58	380	22.2	386	22.2	411	22.2	426	22.2	441	22.2	456	22.2	471	22.2	486	22.2	58	300	21.7	315	21.4	330	21.2	345	20.9	360	20.7	375	20.3	390	20.0	405	19.6	300	27.9	315	27.6	330	27.4	345	27.1	360	26.8	375	26.4	390	26.0	405	25.6		
	62	380	23.3	386	23.3	411	23.3	426	23.3	441	23.3	456	23.3	471	23.3	486	23.3	62	300	22.7	315	22.5	330	22.2	345	21.9	360	21.7	375	21.3	390	20.9	405	20.6	300	28.9	315	28.6	330	28.4	345	28.1	360	27.8	375	27.4	390	27.0	405	26.6		
	66	380	24.5	386	24.5	411	24.5	426	24.5	441	24.5	456	24.5	471	24.5	486	24.5	66	300	23.9	315	23.6	330	23.4	345	23.1	360	22.8	375	22.4	390	22.0	405	21.7	300	30.9	315	30.6	330	30.4	345	30.1	360	29.8	375	29.4	390	29.0	405	28.6		
	70	380	25.9	386	25.9	411	25.9	426	25.9	441	25.9	456	25.9	471	25.9	486	25.9	70	300	25.3	315	25.0	330	24.7	345	24.4	360	24.1	375	23.7	390	23.3	405	22.9	300	31.9	315	31.6	330	31.4	345	31.1	360	30.8	375	30.4	390	30.0	405	29.6		
	74	380	27.4	386	27.4	411	27.4	426	27.4	441	27.4	456	27.4	471	27.4	486	27.4	74	300	26.9	315	26.6	330	26.4	345	26.1	360	25.8	375	25.4	390	25.0	405	24.6	300	32.9	315	32.6	330	32.4	345	32.1	360	31.8	375	31.4	390	31.0	405	30.6		
	78	380	28.9	386	28.9	411	28.9	426	28.9	441	28.9	456	28.9	471	28.9	486	28.9	78	300	28.5	315	28.1	330	27.8	345	27.5	360	27.1	375	26.7	390	26.3	405	25.9	300	33.9	315	33.6	330	33.4	345	33.1	360	32.8	375	32.4	390	32.0	405	31.6		
	82	380	31.1	386	31.1	411	31.1	426	31.1	441	31.1	456	31.1	471	31.1	486	31.1	82	300	30.3	315	30.0	330	29.6	345	29.3	360	28.9	375	28.4	390	27.9	405	27.4	300	34.9	315	34.6	330	34.4	345	34.1	360	33.8	375	33.4	390	33.0	405	32.6		
	86	380	33.2	386	33.2	411	33.2	426	33.2	441	33.2	456	33.2	471	33.2	486	33.2	86	300	32.4	315	32.0	330	31.6	345	31.2	360	30.9	375	30.3	390	29.8	405	29.3	300	35.9	315	35.6	330	35.4	345	35.1	360	34.8	375	34.4	390	34.0	405	33.6		
	90	370	35.5	380	35.5	404	35.5	418	35.5	432	35.5	446	35.5	459	35.5	473	35.5	90	300	34.7	315	34.2	330	33.8	345	33.4	360	33.0	375	32.5	390	31.9	405	31.4	300	36.9	315	36.6	330	36.4	345	36.1	360	35.8	375	35.4	390	35.0	405	34.6		
95	360	38.8	380	38.8	388	38.8	408	38.8	428	38.8	448	38.8	468	38.8	488	38.8	95	300	37.9	315	37.5	330	37.0	345	36.6	360	36.1	372	35.5	386	34.9	400	34.3	300	38.9	388	38.7	408	38.7	428	38.7	448	38.7	468	38.7	488	38.7	508	38.7			
100	350	38.8	370	38.8	383	38.8	397	38.8	411	38.8	425	38.8	439	38.8	453	38.8	100	293	38.8	307	38.8	321	38.8	335	38.8	349	38.8	363	38.8	377	38.8	391	38.8	300	39.9	398	39.8	418	39.8	438	39.8	458	39.8	478	39.8	498	39.8					
106	340	38.8	357	38.8	371	38.8	385	38.8	399	38.8	413	38.8	427	38.8	441	38.8	106	286	38.8	299	38.8	313	38.8	327	38.8	341	38.8	355	38.8	369	38.8	383	38.8	300	40.9	408	40.8	428	40.8	448	40.8	468	40.8	488	40.8	508	40.8					
110	330	38.8	347	38.8	361	38.8	375	38.8	389	38.8	403	38.8	417	38.8	431	38.8	110	278	38.8	291	38.8	305	38.8	319	38.8	333	38.8	347	38.8	361	38.8	375	38.8	300	41.9	418	41.8	438	41.8	458	41.8	478	41.8	498	41.8	518	41.8					
114	310	38.8	313	38.8	313	38.8	313	38.8	313	38.8	313	38.8	313	38.8	313	38.8	114	264	38.8	268	38.8	268	38.8	268	38.8	268	38.8	268	38.8	268	38.8	268	38.8	300	42.9	428	42.8	448	42.8	468	42.8	488	42.8	508	42.8	528	42.8					
118	240	33.6	245	32.2	245	30.8	245	29.4	245	28.0	245	26.8	245	25.7	232	24.5	118	245	33.6	245	32.2	245	30.8	245	29.4	245	28.0	245	26.8	245	25.7	232	24.5	300	43.9	438	43.8	458	43.8	478	43.8	498	43.8	518	43.8	538	43.8					
122	177	24.8	177	23.7	177	22.7	177	21.7	177	20.6	177	19.8	177	19.0	161	18.1	122	177	24.8	177	23.7	177	22.7	177	21.7	177	20.6	177	19.8	177	19.0	161	18.1	300	44.9	448	44.8	468	44.8	488	44.8	508	44.8	528	44.8	548	44.8					
140	-10	350	17.9	365	17.9	380	17.9	395	17.9	411	17.9	426	17.9	441	17.9	456	17.9	90	-10	284	15.7	279	15.5	294	15.3	309	15.2	324	15.0	339	14.7	354	14.5	369	14.2	50	284	15.7	279	15.5	294	15.3	309	15.2	324	15.0	339	14.7	354	14.5	369	14.2
	-4	350	17.9	365	17.9	380	17.9	395	17.9	411	17.9	426	17.9	441	17.9	456	17.9	-4	284	15.7	279	15.5	294	15.3	309	15.2	324	15.0	339	14.7	354	14.5	369	14.2	300	21.7	315	21.4	330	21.2	345	20.9	360	20.7	375	20.3						

SELECTION DATA

(H,Y)VAHR384B(3,4,5)2S

Cooling Capacity

Connection ratio	Outdoor air temp	Indoor air temp. °FWB																Connection ratio	Outdoor air temp	Indoor air temp. °FWB															
		59		61		63		65		67		69		71		73				59		61		63		65		67		69		71		73	
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP		
%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW		
150	-10	406	22.7	422	22.4	438	22.1	454	21.9	470	21.6	486	21.2	503	20.9	519	20.5	-10	320	18.6	336	18.4	352	18.1	368	17.9	384	17.7	400	17.4	416	17.1	432	16.8	
	-4	406	22.7	422	22.4	438	22.1	454	21.9	470	21.6	486	21.2	503	20.9	519	20.5	-4	320	18.6	336	18.4	352	18.1	368	17.9	384	17.7	400	17.4	416	17.1	432	16.8	
	14	406	22.7	422	22.4	438	22.1	454	21.9	470	21.6	486	21.2	503	20.9	519	20.5	14	320	18.6	336	18.4	352	18.1	368	17.9	384	17.7	400	17.4	416	17.1	432	16.8	
	23	406	22.8	422	22.5	438	22.3	454	22.0	470	21.7	486	21.4	503	21.0	519	20.6	23	320	18.7	336	18.5	352	18.2	368	18.0	384	17.8	400	17.5	416	17.2	432	16.9	
	32	406	23.3	422	23.0	438	22.7	454	22.5	470	22.2	486	21.8	503	21.5	519	21.1	32	320	19.1	336	18.9	352	18.6	368	18.4	384	18.2	400	17.9	416	17.6	432	17.3	
	42	406	24.5	422	24.2	438	23.9	454	23.6	470	23.3	486	22.9	503	22.5	519	22.2	42	320	20.1	336	19.8	352	19.6	368	19.4	384	19.1	400	18.8	416	18.5	432	18.1	
	50	406	26.0	422	25.7	438	25.4	454	25.1	470	24.8	486	24.4	503	24.0	519	23.5	50	320	21.3	336	21.1	352	20.8	368	20.6	384	20.3	400	20.0	416	19.6	432	19.3	
	58	406	28.2	422	27.9	438	27.5	454	27.2	470	26.9	486	26.4	503	26.0	519	25.5	58	320	23.1	336	22.8	352	22.5	368	22.3	384	22.0	400	21.6	416	21.3	432	20.9	
	62	406	29.5	422	29.2	438	28.8	454	28.5	470	28.1	486	27.7	503	27.2	519	26.7	62	320	24.2	336	23.9	352	23.6	368	23.3	384	23.0	400	22.7	416	22.3	432	21.9	
	66	406	31.1	422	30.7	438	30.3	454	30.0	470	29.6	486	29.1	503	28.6	519	28.1	66	320	25.5	336	25.2	352	24.9	368	24.5	384	24.2	400	23.8	416	23.4	432	23.0	
	70	406	32.8	422	32.4	438	32.0	454	31.7	470	31.3	486	30.7	503	30.2	519	29.7	70	320	26.9	336	26.6	352	26.2	368	25.9	384	25.6	400	25.2	416	24.8	432	24.3	
	74	406	34.8	422	34.4	438	34.0	454	33.5	470	33.1	486	32.6	503	32.0	519	31.5	74	320	28.5	336	28.2	352	27.8	368	27.5	384	27.1	400	26.7	416	26.2	432	25.8	
	78	406	37.0	422	36.6	438	36.2	454	35.7	470	35.2	486	34.6	503	34.0	519	33.5	78	320	30.3	336	29.9	352	29.6	368	29.2	384	28.8	400	28.4	416	27.9	432	27.4	
82	406	39.4	422	38.9	438	38.5	454	38.0	470	37.5	486	36.9	503	36.3	519	35.6	82	320	32.3	336	31.9	352	31.5	368	31.1	384	30.7	400	30.2	416	29.7	432	29.2		
86	406	42.1	422	41.6	438	41.1	454	40.6	469	40.1	484	39.4	499	38.7	514	38.1	86	320	34.5	336	34.1	352	33.6	368	33.2	384	32.8	400	32.3	416	31.7	432	31.2		
90	401	45.0	416	44.5	431	43.9	446	43.4	460	42.9	474	42.2	489	41.4	505	40.7	90	320	36.9	336	36.4	352	36.0	368	35.6	384	35.1	400	34.5	416	33.9	432	33.4		
95	390	49.2	405	48.6	420	48.1	435	47.5	449	46.9	464	46.1	479	45.3	494	44.5	95	320	40.3	336	39.8	352	39.4	368	38.9	384	38.4	397	37.8	412	37.1	427	36.5		
100	370	51.8	394	51.8	409	51.8	424	51.8	439	51.2	453	50.3	468	49.5	483	48.6	100	312	43.9	327	43.4	342	42.8	357	42.3	371	41.8	386	41.1	401	40.4	416	39.7		
106	368	51.8	381	51.8	396	51.8	411	51.8	425	51.8	440	51.8	455	50.4	470	48.2	106	299	48.8	314	48.3	329	47.7	344	47.1	358	46.5	373	45.7	388	45.0	403	44.2		
110	357	51.8	372	51.7	387	51.7	402	51.7	417	51.7	432	51.7	447	51.3	461	39.4	110	290	51.8	305	51.7	320	51.4	335	47.2	350	44.9	364	43.1	379	41.3	394	39.4		
114	249	42.0	364	40.2	378	38.5	390	36.7	380	35.0	380	33.5	380	32.1	380	30.7	114	282	42.0	296	40.2	311	38.5	326	36.7	341	35.0	356	33.5	370	32.1	385	30.7		
118	283	30.1	283	28.3	283	27.5	283	26.3	283	25.0	283	24.0	283	23.0	283	22.0	118	273	30.1	283	28.3	283	27.5	283	26.3	283	25.0	283	24.0	283	23.0	283	22.0		
122	186	18.1	186	17.4	186	16.6	186	15.8	186	15.1	186	14.5	186	13.9	186	13.2	122	186	18.1	186	17.4	186	16.6	186	15.8	186	15.1	186	14.5	186	13.9	186	13.2		
140	-10	390	21.9	406	21.7	422	21.4	438	21.1	454	20.9	471	20.5	487	20.2	503	19.8	-10	281	16.7	297	16.5	313	16.3	330	16.1	346	15.9	362	15.7	378	15.4	394	15.1	
	-4	390	21.9	406	21.7	422	21.4	438	21.1	454	20.9	471	20.5	487	20.2	503	19.8	-4	281	16.7	297	16.5	313	16.3	330	16.1	346	15.9	362	15.7	378	15.4	394	15.1	
	14	390	21.9	406	21.7	422	21.4	438	21.1	454	20.9	471	20.5	487	20.2	503	19.8	14	281	16.7	297	16.5	313	16.3	330	16.1	346	15.9	362	15.7	378	15.4	394	15.1	
	23	390	22.1	406	21.8	422	21.5	438	21.2	454	20.9	471	20.5	487	20.2	503	19.9	23	281	16.8	297	16.6	313	16.4	330	16.2	346	16.0	362	15.7	378	15.5	394	15.2	
	32	390	22.5	406	22.2	422	21.9	438	21.6	454	21.3	471	20.9	487	20.6	503	20.4	32	281	17.2	297	17.0	313	16.8	330	16.6	346	16.4	362	16.1	378	15.8	394	15.5	
	42	390	23.7	406	23.4	422	23.1	438	22.8	454	22.5	471	22.2	487	21.8	503	21.4	42	281	18.1	297	17.8	313	17.6	330	17.4	346	17.2	362	16.9	378	16.6	394	16.3	
	50	390	25.1	406	24.8	422	24.5	438	24.2	454	23.9	471	23.5	487	23.1	503	22.8	50	281	19.2	297	19.0	313	18.7	330	18.5	346	18.3	362	18.0	378	17.7	394	17.4	
	58	390	27.2	406	26.9	422	26.6	438	26.3	454	25.9	471	25.5	487	25.1	503	24.6	58	281	20.8	297	20.5	313	20.3	330	20.0	346	19.8	362	19.5	378	19.1	394	18.8	
	62	390	28.5	406	28.2	422	27.9	438	27.5	454	27.2	471	26.7	487	26.3	503	25.8	62	281	21.8	297	21.5	313	21.3	330	21.0	346	20.7	362	20.4	378	20.0	394	19.7	
	66	390	30.0	406	29.7	422	29.3	438	29.0	454	28.6	471	28.1	487	27.6	503	27.2	66	281	22.9	297	22.6	313	22.4	330	22.1	346	21.8	362	21.5	378	21.1	394	20.7	
	70	390	31.9	406	31.6	422	31.3	438	31.0	454	30.6	471	28.7	487	28.2	503	27.8	70	281	24.2	297	23.9	313	23.6	330	23.3	346	23.0	362	22.7	378	22.3	394	21.9	
	74	390	33.6	406	33.3	422	33.0	438	32.7	454	32.4	471	31.5	487	31.0	503	30.4	74	281	25.6	297	25.3	313	25.0	330	24.7	346	24.4	362	24.0	378	23.6	394	23.2	
	78	390	35.7	406	35.3	422	34.9	438	34.4	454	34.0	471	33.5	487	32.9	503	32.3	78	281	27.1	297	26.8	313	26.5	330	26.2	346	25.9	362	25.5	378	25.1	394	24.7	
82	390	38.1	406	37.6	422	37.2	438	36.7	454	36.2	471	35.6	4																						

(H,Y)VAHR408B(3,4,5)2S

Cooling Capacity

Connection ratio	Outdoor air temp	Indoor air temp. °FWB																Connection ratio	Outdoor air temp	Indoor air temp. °FWB															
		59		61		63		65		67		69		71		73				59		61		63		65		67		69		71		73	
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP		
%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW		
150	-10	431	23.9	448	23.8	465	23.5	483	23.2	500	23.0	517	22.6	534	22.2	551	21.8	-10	340	19.7	357	19.5	374	19.3	391	19.0	408	18.8	425	18.5	442	18.2	459	17.9	
	-4	431	23.9	448	23.8	465	23.5	483	23.2	500	23.0	517	22.6	534	22.2	551	21.8	-4	340	19.7	357	19.5	374	19.3	391	19.0	408	18.8	425	18.5	442	18.2	459	17.9	
	14	431	23.9	448	23.8	465	23.5	483	23.2	500	23.0	517	22.6	534	22.2	551	21.8	14	340	19.7	357	19.5	374	19.3	391	19.0	408	18.8	425	18.5	442	18.2	459	17.9	
	23	431	24.0	448	23.9	465	23.6	483	23.3	500	23.1	517	22.7	534	22.3	551	21.9	23	340	19.8	357	19.6	374	19.4	391	19.1	408	18.9	425	18.6	442	18.3	459	18.0	
	32	431	24.5	448	24.5	465	24.2	483	23.9	500	23.6	517	23.2	534	22.8	551	22.4	32	340	20.3	357	20.0	374	19.8	391	19.6	408	19.3	425	19.0	442	18.7	459	18.3	
	42	431	25.8	448	25.7	465	25.4	483	25.1	500	24.8	517	24.4	534	24.0	551	23.5	42	340	21.3	357	21.1	374	20.8	391	20.5	408	20.3	425	20.0	442	19.6	459	19.3	
	50	431	27.4	448	27.3	465	27.0	483	26.7	500	26.3	517	25.9	534	25.5	551	25.0	50	340	22.6	357	22.4	374	22.1	391	21.8	408	21.6	425	21.2	442	20.9	459	20.5	
	58	431	29.7	448	29.6	465	29.2	483	28.9	500	28.5	517	28.1	534	27.6	551	27.1	58	340	24.5	357	24.2	374	24.0	391	23.7	408	23.4	425	23.0	442	22.6	459	22.2	
	62	431	31.1	448	31.0	465	30.6	483	30.3	500	29.9	517	29.4	534	28.9	551	28.4	62	340	25.7	357	25.4	374	25.1	391	24.8	408	24.5	425	24.1	442	23.7	459	23.3	
	66	431	32.7	448	32.6	465	32.2	483	31.8	500	31.5	517	30.9	534	30.4	551	29.9	66	340	27.0	357	26.7	374	26.4	391	26.1	408	25.8	425	25.3	442	24.9	459	24.5	
	70	431	34.6	448	34.5	465	34.0	483	33.6	500	33.2	517	32.7	534	32.1	551	31.6	70	340	28.6	357	28.2	374	27.9	391	27.5	408	27.2	425	26.8	442	26.3	459	25.8	
	74	431	36.6	448	36.5	465	36.1	483	35.6	500	35.2	517	34.6	534	34.0	551	33.4	74	340	30.3	357	29.9	374	29.5	391	29.2	408	28.8	425	28.3	442	27.9	459	27.4	
	78	431	38.9	448	38.8	465	38.3	483	37.9	500	37.4	517	36.8	534	36.2	551	35.5	78	340	32.2	357	31.8	374	31.4	391	31.0	408	30.6	425	30.1	442	29.6	459	29.1	
82	431	41.5	448	41.4	465	40.9	483	40.4	500	39.9	517	39.2	534	38.5	551	37.9	82	340	34.3	357	33.9	374	33.5	391	33.1	408	32.7	425	32.2	442	31.6	459	31.0		
86	431	44.3	448	44.2	465	43.6	483	43.1	498	42.6	514	41.9	530	41.2	546	40.4	86	340	36.6	357	36.2	374	35.7	391	35.3	408	34.9	425	34.3	442	33.7	459	33.1		
90	426	47.4	442	47.3	458	46.7	473	46.1	489	45.6	504	44.8	521	44.0	536	43.3	90	340	39.2	357	38.7	374	38.2	391	37.8	408	37.3	425	36.7	442	36.1	459	35.4		
95	415	51.8	430	51.7	446	51.1	462	50.4	478	49.8	493	49.0	509	48.2	525	47.3	95	340	42.8	357	42.3	374	41.8	391	41.3	408	40.8	425	40.1	438	39.4	455	38.8		
100	401	51.8	419	51.8	434	51.8	450	51.8	466	51.8	482	51.8	497	51.8	513	51.7	100	332	46.6	347	46.1	363	45.5	379	45.0	395	44.4	411	43.7	426	42.9	442	42.2		
106	389	51.8	405	51.8	421	51.8	436	51.8	452	51.8	468	51.8	484	51.8	499	49.6	106	318	51.8	334	51.3	349	50.7	365	50.0	381	49.4	396	48.6	412	47.8	428	47.0		
110	389	51.8	405	51.8	421	51.8	436	51.8	452	51.8	468	51.8	484	51.8	499	49.6	110	309	51.8	324	51.4	330	50.9	356	48.5	371	46.2	387	44.3	403	42.5	419	40.6		
114	371	43.2	386	41.4	391	39.6	391	37.8	391	36.0	391	34.5	391	33.1	391	31.6	114	299	43.2	315	41.4	321	39.6	346	37.8	362	36.0	378	34.5	391	33.1	391	31.6		
118	291	30.9	291	29.6	291	28.3	291	27.0	291	25.8	291	24.7	291	23.7	291	22.6	118	299	30.9	291	29.6	291	28.3	291	27.0	291	25.8	291	24.7	291	23.7	291	22.6		
122	191	18.6	191	17.9	191	17.1	191	16.3	191	15.5	191	14.9	191	14.3	191	13.6	122	191	18.6	191	17.9	191	17.1	191	16.3	191	15.5	191	14.9	191	14.3	191	13.6		
140	-10	414	23.3	431	23.0	449	22.7	466	22.5	483	22.2	500	21.8	517	21.4	534	21.1	-10	299	17.8	316	17.6	333	17.3	350	17.1	367	16.9	384	16.6	402	16.4	419	16.1	
	-4	414	23.3	431	23.0	449	22.7	466	22.5	483	22.2	500	21.8	517	21.4	534	21.1	-4	299	17.8	316	17.6	333	17.3	350	17.1	367	16.9	384	16.6	402	16.4	419	16.1	
	14	414	23.3	431	23.0	449	22.7	466	22.5	483	22.2	500	21.8	517	21.4	534	21.1	14	299	17.8	316	17.6	333	17.3	350	17.1	367	16.9	384	16.6	402	16.4	419	16.1	
	23	414	23.4	431	23.1	449	22.8	466	22.6	483	22.3	500	21.9	517	21.5	534	21.2	23	299	17.9	316	17.7	333	17.4	350	17.2	367	17.0	384	16.7	402	16.4	419	16.2	
	32	414	23.9	431	23.6	449	23.4	466	23.1	483	22.8	500	22.4	517	22.0	534	21.6	32	299	18.3	316	18.0	333	17.8	350	17.6	367	17.4	384	17.1	402	16.8	419	16.5	
	42	414	25.1	431	24.8	449	24.6	466	24.2	483	23.9	500	23.5	517	23.1	534	22.7	42	299	19.2	316	19.0	333	18.7	350	18.5	367	18.3	384	18.0	402	17.7	419	17.4	
	50	414	26.7	431	26.4	449	26.1	466	25.8	483	25.4	500	25.0	517	24.6	534	24.2	50	299	20.4	316	20.1	333	19.9	350	19.7	367	19.4	384	19.1	402	18.8	419	18.4	
	58	414	28.9	431	28.6	449	28.3	466	27.9	483	27.6	500	27.1	517	26.6	534	26.2	58	299	22.1	316	21.8	333	21.6	350	21.3	367	21.0	384	20.7	402	20.3	419	20.0	
	62	414	30.3	431	30.0	449	29.6	466	29.2	483	28.9	500	28.4	517	27.9	534	27.4	62	299	23.1	316	22.9	333	22.6	350	22.3	367	22.0	384	21.7	402	21.3	419	20.9	
	66	414	31.9	431	31.5	449	31.1	466	30.8	483	30.4	500	29.9	517	29.4	534	28.9	66	299	24.3	316	24.1	333	23.8	350	23.5	367	23.2	384	22.9	402	22.4	419	22.0	
	70	414	33.7	431	33.3	449	32.9	466	32.5	483	32.1	500	31.6	517	31.0	534	30.6	70	299	25.7	316	25.4	333	25.1	350	24.8	367	24.5	384	24.1	402	23.7	419	23.3	
	74	414	35.7	431	35.3	449	34.9	466	34.4	483	34.0	500	33.4	517	32.9	534	32.4	74	299	27.2	316	26.9	333	26.6	350	26.3	367	26.0	384	25.5	402	25.1	419	24.6	
	78	414	38.0	431	37.5	449	37.0	466	36.6	483	36.1	500	35.5	517	34.9	534	34.3	78	299	29.2	316	28.9	333	28.6	350	28.3	367	28.0	384	27.5	402	27.1	419	26.6	
82	414	40.4	431	40.0	449	39.5	466	39.0	483	38.5	500	37.9																							

SELECTION DATA

(H,Y)VAHR432B(3,4,5)2S

Cooling Capacity

Connection ratio	Outdoor air temp.	Indoor air temp. °FWB																Connection ratio	Outdoor air temp.	Indoor air temp. °FWB																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
		59		61		63		65		67		69		71		73				59		61		63		65		67		69		71		73																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FDB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH</

(H,Y)VAHR072B(3,4,5)2S

Heating Capacity

Connection ratio	Outdoor air temp	Indoor air temp. °FDB																Connection ratio	Outdoor air temp	Indoor air temp. °FDB															
		59		63		66		68		70		74		77		80				59		63		66		68		70		74		77		80	
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP		
%	°FWB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FWB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW		
150	-13	542.2	5.3	542.2	5.4	542.2	5.5	542.2	5.6	542.2	5.7	542.2	5.9	542.2	6.1	542.2	6.3	100	-13	542.2	6.5	542.2	6.6	542.2	6.8	542.2	6.9	542.2	7.1	542.2	7.3	542.2	7.5		
	-9	582.2	5.3	582.2	5.5	582.2	5.6	582.2	5.7	582.2	5.7	582.2	6.0	582.2	6.2	582.2	6.4		-9	582.2	6.5	582.2	6.7	582.2	6.8	582.2	6.9	582.2	7.0	582.2	7.3	582.2	7.6		
	-5	622.2	5.4	622.2	5.5	622.2	5.7	622.2	5.7	622.2	5.8	622.2	6.1	622.2	6.2	622.2	6.5		-5	622.2	6.6	622.2	6.8	622.2	6.9	622.2	7.0	622.2	7.1	622.2	7.4	622.2	7.6		
	-1	662.2	5.4	662.2	5.6	662.2	5.7	662.2	5.8	662.2	5.9	662.2	6.1	662.2	6.3	662.2	6.5		-1	662.2	6.7	662.2	6.9	662.2	7.0	662.2	7.1	662.2	7.2	662.2	7.5	662.2	7.5		
	3	702.2	5.5	702.2	5.7	702.2	5.8	702.2	5.9	702.2	5.9	702.2	6.2	702.2	6.4	702.2	6.6		3	702.2	6.7	702.2	6.9	702.2	7.0	702.2	7.1	702.2	7.3	702.2	7.6	702.2	7.3		
	7	742.2	5.6	742.2	5.7	742.2	5.8	742.2	5.9	742.2	6.0	742.2	6.2	742.2	6.4	742.2	6.7		7	742.2	6.8	742.2	7.0	742.2	7.2	742.2	7.2	742.2	7.3	742.2	7.6	742.2	7.2		
	11	782.2	5.6	782.2	5.8	782.2	5.9	782.2	6.0	782.2	6.1	782.2	6.3	782.2	6.5	782.2	6.7		11	782.2	6.9	782.2	7.1	782.2	7.2	782.2	7.3	782.2	7.4	782.2	7.5	782.2	6.8		
	15	822.2	5.7	822.2	5.8	822.2	6.0	822.2	6.0	822.2	6.1	822.2	6.4	822.2	6.6	822.2	6.8		15	822.2	7.0	822.2	7.2	822.2	7.3	822.2	7.4	822.2	7.5	822.2	7.6	822.2	6.9		
	19	861.2	5.7	861.2	5.9	861.2	6.0	861.2	6.1	861.2	6.2	861.2	6.5	861.2	6.7	861.2	6.8		19	861.2	7.0	861.2	7.2	861.2	7.4	861.2	7.5	861.2	7.6	861.2	7.0	861.2	6.7		
	23	901.2	5.8	901.2	6.0	901.2	6.1	901.2	6.2	901.2	6.2	901.2	6.5	901.2	6.7	901.2	6.8		23	901.2	7.1	901.2	7.3	901.2	7.5	901.2	7.6	901.2	7.7	901.2	7.1	901.2	6.8		
	27	941.2	5.9	941.2	6.0	941.2	6.2	941.2	6.3	941.2	6.3	941.2	6.6	941.2	6.8	941.2	6.7		27	941.2	7.2	941.2	7.4	941.2	7.5	941.2	7.6	941.2	7.2	941.2	6.9	941.2	6.7		
	31	981.2	5.9	981.2	6.1	981.2	6.2	981.2	6.3	981.2	6.4	981.2	6.7	981.2	6.8	981.2	6.7		31	981.2	7.3	981.2	7.5	981.2	7.6	981.2	7.7	981.2	7.3	981.2	7.0	981.2	6.8		
	35	1022.2	6.0	1022.2	6.2	1022.2	6.3	1022.2	6.4	1022.2	6.4	1022.2	6.7	1022.2	6.8	1022.2	6.6		35	1022.2	7.3	1022.2	7.5	1022.2	7.6	1022.2	7.7	1022.2	7.4	1022.2	7.1	1022.2	6.9		
	39	1066.2	6.0	1066.2	6.2	1066.2	6.3	1066.2	6.4	1066.2	6.5	1066.2	6.8	1066.2	6.9	1066.2	6.5		39	1066.2	7.4	1066.2	7.6	1066.2	7.7	1066.2	7.8	1066.2	7.5	1066.2	7.2	1066.2	6.6		
	43	1110.2	6.1	1110.2	6.3	1110.2	6.4	1110.2	6.5	1110.2	6.6	1110.2	6.9	1110.2	7.0	1110.2	6.5		43	1110.2	7.5	1110.2	7.7	1110.2	7.8	1110.2	7.9	1110.2	7.6	1110.2	7.3	1110.2	6.7		
	47	1154.2	6.2	1154.2	6.3	1154.2	6.5	1154.2	6.5	1154.2	6.6	1154.2	6.9	1154.2	7.0	1154.2	6.4		47	1154.2	7.6	1154.2	7.8	1154.2	7.9	1154.2	8.0	1154.2	7.7	1154.2	7.4	1154.2	6.8		
	51	1198.2	6.2	1198.2	6.4	1198.2	6.5	1198.2	6.6	1198.2	6.7	1198.2	7.0	1198.2	7.1	1198.2	6.5		51	1198.2	7.7	1198.2	7.9	1198.2	8.0	1198.2	8.1	1198.2	7.8	1198.2	7.5	1198.2	6.9		
	55	1242.2	6.3	1242.2	6.5	1242.2	6.6	1242.2	6.7	1242.2	6.8	1242.2	7.1	1242.2	7.2	1242.2	6.6		55	1242.2	7.8	1242.2	8.0	1242.2	8.1	1242.2	8.2	1242.2	7.9	1242.2	7.6	1242.2	7.0		
	59	1286.2	6.3	1286.2	6.5	1286.2	6.6	1286.2	6.7	1286.2	6.8	1286.2	7.1	1286.2	7.2	1286.2	6.3		59	1286.2	7.9	1286.2	8.1	1286.2	8.2	1286.2	8.3	1286.2	8.0	1286.2	7.7	1286.2	7.1		
140	-13	542.2	5.3	542.2	5.4	542.2	5.5	542.2	5.6	542.2	5.7	542.2	5.9	542.2	6.1	542.2	6.3	90	-13	542.2	6.5	542.2	6.6	542.2	6.8	542.2	6.9	542.2	7.1	542.2	7.3	542.2	7.5		
	-9	582.2	5.3	582.2	5.5	582.2	5.6	582.2	5.7	582.2	5.7	582.2	6.0	582.2	6.2	582.2	6.4		-9	582.2	6.5	582.2	6.7	582.2	6.8	582.2	6.9	582.2	7.0	582.2	7.3	582.2	7.6		
	-5	622.2	5.4	622.2	5.5	622.2	5.7	622.2	5.7	622.2	5.8	622.2	6.1	622.2	6.2	622.2	6.5		-5	622.2	6.6	622.2	6.8	622.2	6.9	622.2	7.0	622.2	7.1	622.2	7.4	622.2	7.6		
	-1	662.2	5.4	662.2	5.6	662.2	5.7	662.2	5.8	662.2	5.9	662.2	6.1	662.2	6.3	662.2	6.5		-1	662.2	6.7	662.2	6.9	662.2	7.0	662.2	7.1	662.2	7.2	662.2	7.5	662.2	7.5		
	3	702.2	5.5	702.2	5.7	702.2	5.8	702.2	5.9	702.2	6.0	702.2	6.2	702.2	6.4	702.2	6.6		3	702.2	6.7	702.2	6.9	702.2	7.0	702.2	7.1	702.2	7.2	702.2	7.6	702.2	7.3		
	7	742.2	5.6	742.2	5.7	742.2	5.8	742.2	5.9	742.2	6.0	742.2	6.2	742.2	6.4	742.2	6.6		7	742.2	6.8	742.2	7.0	742.2	7.1	742.2	7.2	742.2	7.3	742.2	7.7	742.2	7.4		
	11	782.2	5.6	782.2	5.8	782.2	5.9	782.2	6.0	782.2	6.1	782.2	6.3	782.2	6.5	782.2	6.7		11	782.2	6.9	782.2	7.1	782.2	7.2	782.2	7.3	782.2	7.4	782.2	7.5	782.2	6.8		
	15	822.2	5.7	822.2	5.8	822.2	6.0	822.2	6.0	822.2	6.1	822.2	6.4	822.2	6.6	822.2	6.8		15	822.2	7.0	822.2	7.2	822.2	7.3	822.2	7.4	822.2	7.5	822.2	7.6	822.2	6.9		
	19	861.2	5.7	861.2	5.9	861.2	6.0	861.2	6.1	861.2	6.2	861.2	6.5	861.2	6.7	861.2	6.8		19	861.2	7.0	861.2	7.2	861.2	7.4	861.2	7.5	861.2	7.6	861.2	7.0	861.2	6.7		
	23	901.2	5.8	901.2	6.0	901.2	6.1	901.2	6.2	901.2	6.2	901.2	6.5	901.2	6.7	901.2	6.8		23	901.2	7.1	901.2	7.3	901.2	7.5	901.2	7.6	901.2	7.7	901.2	7.1	901.2	6.8		
	27	941.2	5.9	941.2	6.0	941.2	6.2	941.2	6.3	941.2	6.3	941.2	6.6	941.2	6.8	941.2	6.7		27	941.2	7.2	941.2	7.4	941.2	7.5	941.2	7.6	941.2	7.2	941.2	6.9	941.2	6.7		
	31	981.2	5.9	981.2	6.1	981.2	6.2	981.2	6.3	981.2	6.4	981.2	6.7	981.2	6.8	981.2	6.7		31	981.2	7.3	981.2	7.5	981.2	7.6	981.2	7.7	981.2	7.3	981.2	7.0	981.2	6.8		
	35	1022.2	6.0	1022.2	6.2	1022.2	6.3	1022.2	6.4	1022.2	6.4	1022.2	6.7	1022.2	6.8	1022.2	6.6		35	1022.2	7.3	1022.2	7.5	1022.2	7.6	1022.2	7.7	1022.2	7.4	1022.2	7.1	1022.2	6.9		
	39	1066.2	6.0	1066.2	6.2	1066.2	6.3	1066.2	6.4	1066.2	6.5	1066.2	6.8	1066.2	6.9	1066.2	6.5		39	1066.2	7.4	1066.2	7.6	1066.2	7.7	1066.2	7.8	1066.2	7.5	1066.2	7.2	1066.2	6.6		
	43	1110.2	6.1	1110.2	6.3	1110.2	6.4	1110.2	6.5	1110.2	6.6	1110.2	6.9	1110.2	7.0	1110.2	6.5		43	1110.2	7.5	1110.2	7.7	1110.2	7.8	1110.2	7.9	1110.2	7.6	1110.2	7.3	1110.2	6.7		
	47	1154.2	6.2	1154.2	6.3	1154.2	6.5	1154.2	6.5	1154.2	6.6	1154.2	6.9	1154.2	7.0	1154.2	6.4		47	1154.2	7.6	1154.2	7.8	1154.2	7.9	1154.2	8.0	1154.2	7.7	1154.2	7.4	1154.2	6.8		
	51	1198.2	6.2	1198.2	6.4	1198.2	6.5	1198.2	6.6	1198.2	6.7	1198.2	7.0	1198.2	7.1	1198.2	6.5	51	1198.2	7.7	1198.2	7.9	1198.2	8.0	1198.2	8.1	1198.2	7.8	1198.2	7.5	1198.2	6.9			
55	1242.2	6.3	1242.2	6.5	1242.2	6.6	1242.2	6.7	1242.2	6.8	1242.2	7.1	1242.2	7.2	1242.2	6.6	55	1242.2	7.8	1242.2	8.0	1242.2	8.1	1242.2	8.2	1242.2	7.9	1242.2	7.6	1242.2	7.0				
59	1286.2	6.																																	

SELECTION DATA

(H,Y)VAHR096B(3,4,5)2S

Heating Capacity

Connection ratio	Outdoor air temp	Indoor air temp. °FDB																Connection ratio	Outdoor air temp	Indoor air temp. °FDB															
		59		63		66		68		70		74		77		80				59		63		66		68		70		74		77		80	
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP		
%	°FWB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FWB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW		
150	-13	63.5	8.8	63.5	9.0	63.5	9.2	63.5	9.3	63.5	9.5	63.5	9.9	63.5	10.2	63.5	10.4	-13	63.5	10.4	63.5	10.4	63.5	10.4	63.5	10.4	63.5	10.4	63.5	10.4	63.5	10.4	63.5	10.4	
	-9	68.6	8.9	68.6	9.1	68.6	9.3	68.6	9.4	68.6	9.6	68.6	10.0	68.6	10.3	68.6	10.4	-9	68.6	10.4	68.6	10.4	68.6	10.4	68.6	10.4	68.6	10.4	68.6	10.4	68.6	10.4	68.6	10.4	
	-5	74.2	9.0	74.2	9.2	74.2	9.4	74.2	9.5	74.2	9.7	74.2	10.1	74.2	10.4	74.2	10.4	-5	74.2	10.4	74.2	10.4	74.2	10.4	74.2	10.4	74.2	10.4	74.2	10.4	74.2	10.4	74.2	10.4	
	-1	80.1	9.1	80.1	9.3	80.1	9.5	80.1	9.6	80.1	9.8	80.1	10.2	80.1	10.4	80.1	10.4	-1	80.1	10.4	80.1	10.4	80.1	10.4	80.1	10.4	80.1	10.4	80.1	10.4	80.1	10.4	80.1	10.4	
	3	86.4	9.2	86.4	9.4	86.4	9.6	86.4	9.8	86.4	9.9	86.4	10.3	86.4	10.4	86.4	10.4	3	86.4	10.4	86.4	10.4	86.4	10.4	86.4	10.4	86.4	10.4	86.4	10.4	86.4	10.4	86.4	10.4	
	7	93.1	9.3	93.1	9.5	93.1	9.7	93.1	9.9	93.1	10.0	93.1	10.4	93.1	10.4	93.1	10.4	7	93.1	10.4	93.1	10.4	93.1	10.4	93.1	10.4	93.1	10.4	93.1	10.4	93.1	10.4	93.1	10.4	
	11	100.4	9.4	100.4	9.6	100.4	9.8	100.4	10.0	100.4	10.1	100.4	10.4	100.4	10.4	100.4	10.4	11	100.4	10.4	100.4	10.4	100.4	10.4	100.4	10.4	100.4	10.4	100.4	10.4	100.4	10.4	100.4	10.4	
	15	106.9	9.5	106.9	9.7	106.9	9.9	106.9	10.1	106.9	10.2	106.9	10.4	106.9	10.4	106.9	10.4	15	106.9	10.4	106.9	10.4	106.9	10.4	106.9	10.4	106.9	10.4	106.9	10.4	106.9	10.4	106.9	10.4	
	19	116.9	9.6	116.9	9.8	116.9	10.0	116.9	10.2	116.9	10.3	116.9	10.4	116.9	10.4	116.9	10.4	19	116.9	10.4	116.9	10.4	116.9	10.4	116.9	10.4	116.9	10.4	116.9	10.4	116.9	10.4	116.9	10.4	
	23	124.9	9.7	124.9	9.9	124.9	10.1	124.9	10.3	124.9	10.4	124.9	10.4	124.9	10.4	124.9	10.4	23	124.9	10.4	124.9	10.4	122.9	10.2	115.9	9.9	108.9	9.5	94.9	9.2	84.9	8.7	73.9	8.5	
	27	133.9	9.8	133.9	10.0	133.9	10.3	133.9	10.4	133.9	10.4	133.9	10.4	133.9	10.4	133.9	10.4	27	133.9	10.4	132.9	10.3	122.9	10.2	115.9	9.8	108.9	9.5	94.9	9.2	84.9	8.7	73.9	8.5	
	31	142.9	9.9	142.9	10.2	142.9	10.4	142.9	10.4	142.9	10.4	142.9	10.4	142.9	10.4	142.9	10.4	31	142.9	10.4	132.9	10.3	122.9	10.2	115.9	9.5	108.9	9.1	94.9	8.6	84.9	8.2	73.9	7.9	
	35	151.9	10.0	151.9	10.3	151.9	10.4	151.9	10.4	151.9	10.4	151.9	10.4	151.9	10.4	151.9	10.4	35	146.9	10.4	132.9	10.3	122.9	10.2	115.9	9.1	108.9	8.8	94.9	8.3	84.9	8.0	73.9	7.8	
	39	161.9	10.1	161.9	10.4	161.9	10.4	161.9	10.4	161.9	10.4	161.9	10.4	161.9	10.4	161.9	10.4	39	146.9	10.1	132.9	10.3	122.9	10.2	115.9	8.8	108.9	8.5	94.9	8.1	84.9	7.9	73.9	7.7	
	43	171.9	10.2	171.9	10.4	171.9	10.4	171.9	10.4	171.9	10.4	171.9	10.4	171.9	10.4	171.9	10.4	43	146.9	9.7	132.9	10.1	122.9	10.1	115.9	8.5	108.9	8.3	94.9	8.0	84.9	7.7	73.9	7.6	
	47	182.9	10.3	182.9	10.4	182.9	10.4	182.9	10.4	182.9	10.4	182.9	10.4	182.9	10.4	182.9	10.4	47	146.9	9.3	132.9	10.1	122.9	10.1	115.9	8.3	108.9	8.1	94.9	7.8	84.9	7.6	73.9	7.5	
	51	193.9	10.4	193.9	10.4	193.9	10.4	193.9	10.4	193.9	10.4	193.9	10.4	193.9	10.4	193.9	10.4	51	146.9	8.9	132.9	10.1	122.9	10.1	115.9	8.1	108.9	7.9	94.9	7.7	84.9	7.6	73.9	7.5	
	55	204.9	10.4	198.9	10.4	183.9	9.9	172.9	9.5	162.9	9.2	141.9	8.5	126.9	8.1	111.9	7.8	55	146.9	8.6	132.9	10.1	122.9	10.1	115.9	7.9	108.9	7.8	94.9	7.6	84.9	7.5	73.9	7.4	
	59	216.9	10.4	198.9	10.1	183.9	9.5	172.9	9.2	162.9	8.8	141.9	8.3	126.9	8.0	111.9	7.7	59	146.9	8.4	132.9	10.1	122.9	10.1	115.9	7.8	108.9	7.7	94.9	7.5	84.9	7.5	73.9	7.4	
140	-13	63.5	8.8	63.5	9.0	63.5	9.2	63.5	9.3	63.5	9.5	63.5	9.9	63.5	10.2	63.5	10.4	-13	63.5	10.4	63.5	10.4	63.5	10.4	63.5	10.4	63.5	10.4	63.5	10.4	63.5	10.4	63.5	10.4	
	-9	68.6	8.9	68.6	9.1	68.6	9.3	68.6	9.4	68.6	9.6	68.6	10.0	68.6	10.3	68.6	10.4	-9	68.6	10.4	68.6	10.4	68.6	10.4	68.6	10.4	68.6	10.4	68.6	10.4	68.6	10.4	68.6	10.4	
	-5	74.2	9.0	74.2	9.2	74.2	9.4	74.2	9.5	74.2	9.7	74.2	10.1	74.2	10.4	74.2	10.4	-5	74.2	10.4	74.2	10.4	74.2	10.4	74.2	10.4	74.2	10.4	74.2	10.4	74.2	10.4	74.2	10.4	
	-1	80.1	9.1	80.1	9.3	80.1	9.5	80.1	9.6	80.1	9.8	80.1	10.2	80.1	10.4	80.1	10.4	-1	80.1	10.4	80.1	10.4	80.1	10.4	80.1	10.4	80.1	10.4	80.1	10.4	80.1	10.4	80.1	10.4	
	3	86.4	9.2	86.4	9.4	86.4	9.6	86.4	9.8	86.4	9.9	86.4	10.3	86.4	10.4	86.4	10.4	3	86.4	10.4	86.4	10.4	86.4	10.4	86.4	10.4	86.4	10.4	86.4	10.4	86.4	10.4	86.4	10.4	
	7	93.1	9.3	93.1	9.5	93.1	9.7	93.1	9.9	93.1	10.0	93.1	10.4	93.1	10.4	93.1	10.4	7	93.1	10.4	93.1	10.4	93.1	10.4	93.1	10.4	93.1	10.4	93.1	10.4	93.1	10.4	93.1	10.4	
	11	100.4	9.7	100.4	10.0	100.4	10.2	100.4	10.3	100.4	10.4	100.4	10.4	100.4	10.4	100.4	10.4	11	100.4	10.4	100.4	10.4	100.4	10.4	100.4	10.4	100.4	10.4	100.4	10.4	100.4	10.4	100.4	10.4	
	15	106.9	9.5	106.9	9.7	106.9	9.9	106.9	10.1	106.9	10.2	106.9	10.4	106.9	10.4	106.9	10.4	15	106.9	10.4	106.9	10.4	106.9	10.4	106.9	10.4	106.9	10.4	106.9	10.4	106.9	10.4	106.9	10.4	
	19	116.9	9.6	116.9	9.8	116.9	10.0	116.9	10.2	116.9	10.3	116.9	10.4	116.9	10.4	116.9	10.4	19	116.9	10.4	116.9	10.4	116.9	10.4	116.9	10.4	116.9	10.4	116.9	10.4	116.9	10.4	116.9	10.4	
	23	124.9	9.7	124.9	9.9	124.9	10.1	124.9	10.3	124.9	10.4	124.9	10.4	124.9	10.4	124.9	10.4	23	124.9	10.4	119.9	10.4	110.9	9.9	103.9	9.5	97.9	9.1	84.9	8.4	75.9	7.9	66.9	7.5	
	27	133.9	9.8	133.9	10.0	133.9	10.3	133.9	10.4	133.9	10.4	133.9	10.4	133.9	10.4	133.9	10.4	27	131.9	10.4	119.9	10.0	110.9	9.4	103.9	9.1	97.9	8.7	84.9	8.1	75.9	7.7	66.9	7.4	
	31	142.9	9.9	142.9	10.2	142.9	10.4	142.9	10.4	142.9	10.4	142.9	10.4	142.9	10.4	142.9	10.4	31	131.9	10.3	119.9	9.5	110.9	9.0	103.9	8.6	97.9	8.3	84.9	7.8	75.9	7.5	66.9	7.2	
	35	151.9	10.0	151.9	10.3	151.9	10.4	151.9	10.4	151.9	10.4	151.9	10.4	151.9	10.4	151.9	10.4	35	131.9	9.7	119.9	9.0	110.9	8.6	103.9	8.3	97.9	8.0	84.9	7.6	75.9	7.3	66.9	7.0	
	39	161.9	10.1	161.9	10.4	161.9	10.4	161.9	10.4	161.9	10.4	161.9	10.4	161.9	10.4	161.9	10.4	39	131.9	9.2	119.9	8.6	110.9	8.2	103.9	8.0	97.9	7.8	84.9	7.4	75.9	7.2	66.9	7.0	
	43	171.9	10.2	171.9	10.4	171.9	10.4	171.9	10.4	171.9	10.4	171.9	10.4	171.9	10.4	171.9	10.4	43	131.9	8.8	119.9	8.3	110.9	7.9	103.9	7.7	97.9	7.5	84.9	7.2	75.9	7.1	66.9	6.9	
	47	182.9	10.3	182.9	10.4	182.9	10.4	182.9	10.4	182.9	10.4	182.9	10.4	182.9	10.4	182.9	10.4	47	131.9	8.4	119.9	8.0	110.9	7.7	103.9	7.5	97.9	7.4	84.9	7.1	75.9	7.0	66.9	6.9	
	51	193.9	10.4	193.9																															

(H,Y)VAHR120B(3,4,5)2S

Heating Capacity

Connection ratio	Outdoor air temp.	Indoor air temp. °FDB																Connection ratio	Outdoor air temp.	Indoor air temp. °FDB																			
		59		63		66		68		70		74		77		80				59		63		66		68		70		74		77		80					
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP				
%	°F/WB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°F/WB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW				
150	-13	69.9	9.7	69.9	9.9	69.9	10.1	69.9	10.3	69.9	10.4	69.9	10.8	69.9	11.2	69.9	11.6	-13	69.9	11.8	69.9	12.2	69.9	12.4	69.9	12.6	69.9	12.7	69.9	13.3	69.9	13.7	69.9	13.7					
	-9	75.5	10.1	75.5	10.4	75.5	10.6	75.5	10.7	75.5	10.9	75.5	11.2	75.5	11.5	75.5	11.7	-9	75.5	12.0	75.5	12.3	75.5	12.5	75.5	12.7	75.5	12.9	75.5	13.4	75.5	13.7	75.5	13.7					
	-5	81.6	10.2	81.6	10.5	81.6	10.7	81.6	10.8	81.6	10.9	81.6	11.1	81.6	11.3	81.6	11.4	-5	81.6	11.8	81.6	12.1	81.6	12.3	81.6	12.5	81.6	12.7	81.6	13.2	81.6	13.7	81.6	13.7					
	-1	88.1	10.3	88.1	10.6	88.1	10.8	88.1	10.9	88.1	11.0	88.1	11.2	88.1	11.4	88.1	11.6	-1	88.1	11.8	88.1	12.2	88.1	12.4	88.1	12.6	88.1	12.8	88.1	13.3	88.1	13.7	88.1	13.7					
	3	95.0	10.4	95.0	10.7	95.0	10.9	95.0	11.0	95.0	11.1	95.0	11.3	95.0	11.5	95.0	11.7	3	95.0	12.0	95.0	12.3	95.0	12.5	95.0	12.7	95.0	12.9	95.0	13.4	95.0	13.7	95.0	13.7					
	7	102.1	10.5	102.1	10.8	102.1	11.0	102.1	11.1	102.1	11.2	102.1	11.4	102.1	11.6	102.1	11.8	7	102.1	12.1	102.1	12.4	102.1	12.6	102.1	12.8	102.1	13.0	102.1	13.5	102.1	13.7	102.1	13.7					
	11	110.3	10.6	110.3	10.9	110.3	11.1	110.3	11.2	110.3	11.3	110.3	11.5	110.3	11.7	110.3	11.9	11	110.3	12.2	110.3	12.5	110.3	12.7	110.3	12.9	110.3	13.1	110.3	13.6	110.3	13.7	105.1	13.7					
	15	119.4	10.7	119.4	11.0	119.4	11.2	119.4	11.3	119.4	11.4	119.4	11.6	119.4	11.8	119.4	12.0	15	119.4	12.3	119.4	12.6	119.4	12.8	119.4	13.0	119.4	13.2	119.4	13.7	118.1	13.7	105.1	13.7					
	19	127.1	10.8	127.1	11.1	127.1	11.3	127.1	11.4	127.1	11.5	127.1	11.7	127.1	11.9	127.1	12.1	19	127.1	12.4	127.1	12.7	127.1	12.9	127.1	13.1	127.1	13.3	127.1	13.8	127.1	13.7	105.1	13.7					
	23	136.1	10.9	136.1	11.2	136.1	11.4	136.1	11.5	136.1	11.6	136.1	11.8	136.1	12.0	136.1	12.2	23	136.1	12.5	136.1	12.8	136.1	13.0	136.1	13.2	136.1	13.4	136.1	13.9	136.1	13.7	105.1	13.7					
	27	146.1	11.0	146.1	11.3	146.1	11.5	146.1	11.6	146.1	11.7	146.1	11.9	146.1	12.1	146.1	12.3	27	146.1	12.6	146.1	12.9	146.1	13.1	146.1	13.3	146.1	13.5	146.1	14.0	146.1	13.7	105.1	13.7					
	31	156.1	11.1	156.1	11.4	156.1	11.6	156.1	11.7	156.1	11.8	156.1	12.0	156.1	12.2	156.1	12.4	31	156.1	12.7	156.1	13.0	156.1	13.2	156.1	13.4	156.1	13.6	156.1	14.1	156.1	13.7	105.1	13.7					
	35	166.1	11.2	166.1	11.5	166.1	11.7	166.1	11.8	166.1	11.9	166.1	12.1	166.1	12.3	166.1	12.5	35	166.1	12.8	166.1	13.1	166.1	13.3	166.1	13.5	166.1	13.7	166.1	14.2	166.1	13.7	105.1	13.7					
	39	177.1	11.3	177.1	11.6	177.1	11.8	177.1	11.9	177.1	12.0	177.1	12.2	177.1	12.4	177.1	12.6	39	177.1	12.9	177.1	13.2	177.1	13.4	177.1	13.6	177.1	13.8	177.1	14.3	177.1	13.7	105.1	13.7					
	43	188.1	11.4	188.1	11.7	188.1	11.9	188.1	12.0	188.1	12.1	188.1	12.3	188.1	12.5	188.1	12.7	43	188.1	13.0	188.1	13.3	188.1	13.5	188.1	13.7	188.1	13.9	188.1	14.4	188.1	13.7	105.1	13.7					
	47	200.1	11.5	200.1	11.8	200.1	12.0	200.1	12.1	200.1	12.2	200.1	12.4	200.1	12.6	200.1	12.8	47	200.1	13.1	200.1	13.4	200.1	13.6	200.1	13.8	200.1	14.0	200.1	14.5	200.1	13.7	105.1	13.7					
	51	212.1	11.6	212.1	11.9	212.1	12.1	212.1	12.2	212.1	12.3	212.1	12.5	212.1	12.7	212.1	12.9	51	212.1	13.2	212.1	13.5	212.1	13.7	212.1	13.9	212.1	14.1	212.1	14.6	212.1	13.7	105.1	13.7					
	55	225.1	11.7	225.1	12.0	225.1	12.2	225.1	12.3	225.1	12.4	225.1	12.6	225.1	12.8	225.1	13.0	55	225.1	13.3	225.1	13.6	225.1	13.8	225.1	14.0	225.1	14.2	225.1	14.7	225.1	13.7	105.1	13.7					
	59	238.1	11.8	238.1	12.1	238.1	12.3	238.1	12.4	238.1	12.5	238.1	12.7	238.1	12.9	238.1	13.1	59	238.1	13.4	238.1	13.7	238.1	13.9	238.1	14.1	238.1	14.3	238.1	14.8	238.1	13.7	105.1	13.7					
	140	-13	69.9	10.0	69.9	10.3	69.9	10.5	69.9	10.6	69.9	10.8	69.9	11.2	69.9	11.6	69.9	12.0	-13	69.9	12.5	69.9	12.8	69.9	13.1	69.9	13.3	69.9	13.4	69.9	13.9	69.9	13.7	69.9	13.7				
		-9	75.5	10.1	75.5	10.4	75.5	10.6	75.5	10.7	75.5	10.9	75.5	11.2	75.5	11.5	75.5	11.7	-9	75.5	12.6	75.5	13.0	75.5	13.2	75.5	13.4	75.5	13.5	75.5	14.0	75.5	13.7	75.5	13.7				
		-5	81.6	10.2	81.6	10.5	81.6	10.7	81.6	10.8	81.6	10.9	81.6	11.1	81.6	11.3	81.6	11.4	-5	81.6	12.8	81.6	13.2	81.6	13.4	81.6	13.6	81.6	13.7	81.6	14.2	81.6	13.7	81.6	13.7				
		-1	88.1	10.3	88.1	10.6	88.1	10.8	88.1	10.9	88.1	11.0	88.1	11.2	88.1	11.4	88.1	11.6	-1	88.1	13.0	88.1	13.4	88.1	13.6	88.1	13.8	88.1	13.9	88.1	14.4	88.1	13.7	88.1	13.7				
		3	95.0	10.4	95.0	10.7	95.0	10.9	95.0	11.0	95.0	11.1	95.0	11.3	95.0	11.5	95.0	11.7	3	95.0	13.1	95.0	13.5	95.0	13.7	95.0	13.9	95.0	14.0	95.0	14.5	95.0	13.7	95.0	13.7				
7		102.1	10.5	102.1	10.8	102.1	11.0	102.1	11.1	102.1	11.2	102.1	11.4	102.1	11.6	102.1	11.8	7	102.1	13.2	102.1	13.6	102.1	13.8	102.1	14.0	102.1	14.1	102.1	14.6	102.1	13.7	102.1	13.7					
11		110.3	10.6	110.3	10.9	110.3	11.1	110.3	11.2	110.3	11.3	110.3	11.5	110.3	11.7	110.3	11.9	11	110.3	13.3	110.3	13.7	110.3	13.9	110.3	14.1	110.3	14.2	110.3	14.7	110.3	13.7	106.1	13.7					
15		119.4	10.7	119.4	11.0	119.4	11.2	119.4	11.3	119.4	11.4	119.4	11.6	119.4	11.8	119.4	12.0	15	119.4	13.4	119.4	13.8	119.4	14.0	119.4	14.2	119.4	14.3	119.4	14.8	119.4	13.7	106.1	13.7					
19		127.1	10.8	127.1	11.1	127.1	11.3	127.1	11.4	127.1	11.5	127.1	11.7	127.1	11.9	127.1	12.1	19	127.1	13.5	127.1	13.9	127.1	14.1	127.1	14.3	127.1	14.4	127.1	14.9	127.1	13.7	106.1	13.7					
23		136.1	10.9	136.1	11.2	136.1	11.4	136.1	11.5	136.1	11.6	136.1	11.8	136.1	12.0	136.1	12.2	23	136.1	13.6	136.1	14.0	136.1	14.2	136.1	14.4	136.1	14.5	136.1	15.0	136.1	13.7	106.1	13.7					
27		146.1	11.0	146.1	11.3	146.1	11.5	146.1	11.6	146.1	11.7	146.1	11.9	146.1	12.1	146.1	12.3	27	146.1	13.7	146.1	14.1	146.1	14.3	146.1	14.5	146.1	14.6	146.1	15.1	146.1	13.7	106.1	13.7					
31		156.1	11.1	156.1	11.4	156.1	11.6	156.1	11.7	156.1	11.8	156.1	12.0	156.1	12.2	156.1	12.4	31	156.1	13.8	156.1	14.2	156.1	14.4	156.1	14.6	156.1	14.7	156.1	15.2	156.1	13.7	106.1	13.7					
35		166.1	11.2	166.1	11.5	166.1	11.7	166.1	11.8	166.1	11.9	166.1	12.1	166.1	12.3	166.1	12.5	35	166.1	13.9	166.1	14.3	166.1	14.5	166.1	14.7	166.1	14.8	166.1	15.3	166.1	13.7	106.1	13.7					
39		177.1	11.3	177.1	11.6	177.1	11.8	177.1	11.9	177.1	12.0	177.1	12.2	177.1	12.4	177.1	12.6	39	177.1	14.0	177.1	14.4	177.1	14.6	177.1	14.8	177.1	14.9	177.1	15.4	177.1	13.7	106.1	13.7					
43		188.1	11.4	188.1	11.7	188.1	11.9	188.1	12.0	188.1	12.1	188.1	12																										

SELECTION DATA

(H,Y)VAHR144B(3,4,5)2S

Heating Capacity

Connection ratio	Outdoor air temp	Indoor air temp. °FDB																Connection ratio	Outdoor air temp	Indoor air temp. °FDB																	
		59		63		66		68		70		74		77		80				59		63		66		68		70		74		77		80			
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP				
%	°FWB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FWB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW				
150	-13	76.2	10.5	76.2	10.8	76.2	11.1	76.2	11.2	76.2	11.3	76.2	11.8	76.2	12.2	76.2	12.6	-13	76.2	12.9	76.2	13.3	76.2	13.5	76.2	13.7	76.2	13.9	76.2	14.5	76.2	14.9	76.2	15.5			
	-9	82.4	10.7	82.4	11.0	82.4	11.2	82.4	11.3	82.4	11.5	82.4	12.0	82.4	12.3	82.4	12.8	-9	82.4	13.1	82.4	13.4	82.4	13.7	82.4	14.1	82.4	14.7	82.4	15.1	82.4	15.7					
	-5	89.0	10.8	89.0	11.1	89.0	11.3	89.0	11.5	89.0	11.6	89.0	12.1	89.0	12.5	89.0	12.9	-5	89.0	13.2	89.0	13.6	89.0	13.8	89.0	14.2	89.0	14.8	89.0	15.3	89.0	15.8					
	-1	96.1	10.9	96.1	11.2	96.1	11.4	96.1	11.6	96.1	11.7	96.1	12.2	96.1	12.6	96.1	13.1	-1	96.1	13.3	96.1	13.7	96.1	14.0	96.1	14.4	96.1	15.0	96.1	15.5	96.1	16.0					
	3	104.1	11.0	104.1	11.3	104.1	11.6	104.1	11.7	104.1	11.9	104.1	12.4	104.1	12.8	104.1	13.2	3	104.1	13.5	104.1	13.9	104.1	14.1	104.1	14.3	104.1	14.9	104.1	15.1	104.1	15.8					
	7	112.1	11.1	112.1	11.4	112.1	11.7	112.1	11.8	112.1	12.0	112.1	12.5	112.1	12.9	112.1	13.4	7	112.1	13.8	112.1	14.0	112.1	14.3	112.1	14.5	112.1	14.7	112.1	15.3	112.1	15.9					
	11	120.1	11.3	120.1	11.6	120.1	11.8	120.1	12.0	120.1	12.1	120.1	12.6	120.1	13.0	120.1	13.5	11	120.1	13.8	120.1	14.2	120.1	14.5	120.1	14.6	120.1	14.8	120.1	15.5	120.1	16.0					
	15	128.1	11.4	128.1	11.7	128.1	11.9	128.1	12.1	128.1	12.2	128.1	12.8	128.1	13.2	128.1	13.6	15	128.1	13.9	128.1	14.3	128.1	14.6	128.1	14.8	128.1	15.0	128.1	15.6	128.1	16.1					
	19	136.1	11.5	136.1	11.8	136.1	12.1	136.1	12.3	136.1	12.4	136.1	13.0	136.1	13.3	136.1	13.8	19	136.1	14.1	136.1	14.5	136.1	14.8	136.1	15.0	136.1	15.2	136.1	15.8	136.1	16.1					
	23	144.1	11.6	144.1	11.9	144.1	12.2	144.1	12.3	144.1	12.5	144.1	13.1	144.1	13.4	144.1	13.9	23	144.1	14.2	144.1	14.6	144.1	14.9	144.1	15.1	144.1	15.3	144.1	15.8	144.1	16.1					
	27	152.1	11.7	152.1	12.1	152.1	12.3	152.1	12.5	152.1	12.6	152.1	13.2	152.1	13.6	152.1	14.1	27	152.1	14.4	152.1	14.8	152.1	15.1	152.1	15.3	152.1	15.5	152.1	16.1	152.1	16.4					
	31	160.1	11.8	160.1	12.2	160.1	12.4	160.1	12.6	160.1	12.7	160.1	13.3	160.1	13.7	160.1	14.2	31	160.1	14.5	160.1	14.9	160.1	15.2	160.1	15.4	160.1	15.6	160.1	16.2	160.1	16.5					
	35	168.1	12.0	168.1	12.3	168.1	12.6	168.1	12.7	168.1	12.9	168.1	13.4	168.1	13.8	168.1	14.3	35	168.1	14.7	168.1	15.1	168.1	15.4	168.1	15.6	168.1	15.8	168.1	16.4	168.1	16.7					
	39	176.1	12.1	176.1	12.4	176.1	12.7	176.1	12.8	176.1	13.0	176.1	13.6	176.1	14.0	176.1	14.5	39	176.1	14.8	176.1	15.2	176.1	15.5	176.1	15.7	176.1	15.9	176.1	16.5	176.1	16.8					
	43	184.1	12.2	184.1	12.5	184.1	12.8	184.1	13.0	184.1	13.1	184.1	13.7	184.1	14.1	184.1	14.6	43	184.1	15.0	184.1	15.3	184.1	15.6	184.1	15.8	184.1	16.0	184.1	16.6	184.1	16.9					
	47	192.1	12.3	192.1	12.6	192.1	12.9	192.1	13.1	192.1	13.2	192.1	13.8	192.1	14.2	192.1	14.7	47	192.1	15.1	192.1	15.4	192.1	15.7	192.1	15.9	192.1	16.1	192.1	16.7	192.1	17.0					
	51	200.1	12.4	200.1	12.7	200.1	13.0	200.1	13.2	200.1	13.3	200.1	13.9	200.1	14.3	200.1	14.8	51	200.1	15.2	200.1	15.5	200.1	15.8	200.1	16.0	200.1	16.2	200.1	16.8	200.1	17.1					
	55	208.1	12.5	208.1	12.8	208.1	13.1	208.1	13.3	208.1	13.4	208.1	14.0	208.1	14.4	208.1	14.9	55	208.1	15.3	208.1	15.6	208.1	15.9	208.1	16.1	208.1	16.3	208.1	16.9	208.1	17.2					
	59	216.1	12.7	216.1	13.0	216.1	13.3	216.1	13.5	216.1	13.6	216.1	14.2	216.1	14.6	216.1	15.1	59	216.1	15.4	216.1	15.7	216.1	16.0	216.1	16.2	216.1	16.4	216.1	17.0	216.1	17.3					
140	-13	76.2	10.5	76.2	11.2	76.2	11.6	76.2	11.7	76.2	11.8	76.2	12.2	76.2	12.6	76.2	13.1	-13	76.2	13.6	76.2	14.0	76.2	14.3	76.2	14.5	76.2	14.7	76.2	15.3	76.2	15.7					
	-9	82.4	10.7	82.4	11.1	82.4	11.4	82.4	11.5	82.4	11.6	82.4	12.1	82.4	12.4	82.4	12.9	-9	82.4	13.4	82.4	13.8	82.4	14.1	82.4	14.4	82.4	14.6	82.4	15.2	82.4	15.6					
	-5	89.0	10.8	89.0	11.5	89.0	11.9	89.0	12.0	89.0	12.1	89.0	12.6	89.0	12.9	89.0	13.4	-5	89.0	13.9	89.0	14.3	89.0	14.6	89.0	14.8	89.0	15.0	89.0	15.6	89.0	16.0					
	-1	96.1	11.1	96.1	11.4	96.1	11.7	96.1	11.8	96.1	11.9	96.1	12.4	96.1	12.7	96.1	13.2	-1	96.1	14.1	96.1	14.5	96.1	14.8	96.1	15.0	96.1	15.2	96.1	15.8	96.1	16.2					
	3	104.1	11.4	104.1	11.7	104.1	12.0	104.1	12.1	104.1	12.3	104.1	12.8	104.1	13.2	104.1	13.7	3	104.1	14.2	104.1	14.6	104.1	14.9	104.1	15.1	104.1	15.3	104.1	16.0	104.1	16.4					
	7	112.1	11.5	112.1	11.8	112.1	12.1	112.1	12.2	112.1	12.4	112.1	12.9	112.1	13.3	112.1	13.8	7	112.1	14.4	112.1	14.8	112.1	15.1	112.1	15.3	112.1	15.5	112.1	16.1	112.1	16.6					
	11	120.1	11.7	120.1	12.0	120.1	12.2	120.1	12.4	120.1	12.5	120.1	13.0	120.1	13.3	120.1	13.8	11	120.1	14.5	120.1	14.9	120.1	15.2	120.1	15.4	120.1	15.6	120.1	16.3	120.1	16.8					
	15	128.1	11.9	128.1	12.1	128.1	12.3	128.1	12.5	128.1	12.7	128.1	13.2	128.1	13.5	128.1	14.0	15	128.1	14.7	128.1	15.1	128.1	15.4	128.1	15.6	128.1	15.8	128.1	16.5	128.1	17.0					
	19	136.1	12.1	136.1	12.3	136.1	12.5	136.1	12.7	136.1	12.9	136.1	13.4	136.1	13.7	136.1	14.2	19	136.1	14.9	136.1	15.3	136.1	15.6	136.1	15.8	136.1	16.0	136.1	16.7	136.1	17.2					
	23	144.1	12.3	144.1	12.5	144.1	12.7	144.1	12.9	144.1	13.1	144.1	13.6	144.1	13.9	144.1	14.4	23	144.1	15.1	144.1	15.5	144.1	15.8	144.1	16.0	144.1	16.2	144.1	16.9	144.1	17.4					
	27	152.1	12.5	152.1	12.7	152.1	12.9	152.1	13.1	152.1	13.3	152.1	13.8	152.1	14.1	152.1	14.6	27	152.1	15.3	152.1	15.7	152.1	16.0	152.1	16.2	152.1	16.4	152.1	17.1	152.1	17.6					
	31	160.1	12.7	160.1	12.9	160.1	13.1	160.1	13.3	160.1	13.5	160.1	14.0	160.1	14.3	160.1	14.8	31	160.1	15.5	160.1	15.9	160.1	16.2	160.1	16.4	160.1	16.6	160.1	17.3	160.1	17.8					
	35	168.1	12.9	168.1	13.1	168.1	13.3	168.1	13.5	168.1	13.7	168.1	14.2	168.1	14.5	168.1	15.0	35	168.1	15.7	168.1	16.1	168.1	16.4	168.1	16.6	168.1	16.8	168.1	17.5	168.1	18.0					
	39	176.1	13.1	176.1	13.3	176.1	13.5	176.1	13.7	176.1	13.9	176.1	14.4	176.1	14.7	176.1	15.2	39	176.1	15.9	176.1	16.3	176.1	16.6	176.1	16.8	176.1	17.0	176.1	17.7	176.1	18.2					
	43	184.1	13.3	184.1	13.5	184.1	13.7	184.1	13.9	184.1	14.1	184.1	14.6	184.1	14.9	184.1	15.4	43	184.1	16.1	184.1	16.5	184.1	16.8	184.1	17.0	184.1	17.2	184.1	17.9	184.1	18.4					
	47	192.1	13.5	192.1	13.7	192.1	13.9	192.1	14.1	192.1	14.3	192.1	14.8	192.1	15.1	192.1	15.6	47	192.1	16.3	192.1	16.7	192.1	17.0	192.1	17.2	192.1	17.4	192.1	18.18							

(H,Y)VAHR168B(3,4,5)2S

Heating Capacity

Connection ratio	Outdoor air temp	Indoor air temp. °FDB																Connection ratio	Outdoor air temp	Indoor air temp. °FDB															
		59				63				66				68						70				74				77				80			
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP		
%	°F/WB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°F/WB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW		
150	-13	79.1	11.1	79.1	11.5	79.1	11.7	79.1	11.7	79.1	11.8	79.1	12.0	79.1	12.5	79.1	12.9	79.1	13.4	79.1	13.6	79.1	14.0	79.1	14.3	79.1	14.5	79.1	14.7	79.1	15.3	79.1	15.8	79.1	16.4
	-9	85.9	12.0	85.9	12.3	85.9	12.6	85.9	12.7	85.9	12.9	85.9	13.5	85.9	13.9	85.9	14.4	85.9	14.9	85.9	15.6	85.9	15.8	85.9	16.5	85.9	16.7	85.9	17.0	85.9	17.6	85.9	18.2	85.9	18.9
	-5	92.5	12.9	92.5	13.2	92.5	13.5	92.5	13.7	92.5	13.8	92.5	14.4	92.5	14.9	92.5	15.4	92.5	15.9	92.5	16.2	92.5	16.5	92.5	16.7	92.5	16.9	92.5	17.7	92.5	18.2	92.5	18.9		
	-1	99.3	13.7	99.3	14.1	99.3	14.4	99.3	14.6	99.3	14.7	99.3	15.4	99.3	15.9	99.3	16.4	99.3	16.8	99.3	17.3	99.3	17.6	99.3	17.8	99.3	18.1	99.3	18.8	99.3	19.4	99.3	19.4		
	3	107	14.6	107	15.0	107	15.3	107	15.5	107	15.7	107	16.3	107	16.9	107	17.5	107	18.1	107	18.7	107	19.3	107	19.7	107	20.1	107	20.4	107	20.9	107	21.4		
	7	115	15.4	115	15.8	115	16.2	115	16.5	115	16.7	115	17.3	115	17.9	115	18.5	115	19.1	115	19.7	115	20.3	115	20.9	115	21.5	115	22.1	115	22.7	115	23.3		
	11	124	16.3	124	16.7	124	17.1	124	17.3	124	17.5	124	18.3	124	18.8	124	19.4	124	19.9	124	20.5	124	21.1	124	21.7	124	22.3	124	22.9	124	23.5	124	24.1		
	15	134	17.1	134	17.6	134	18.0	134	18.2	134	18.4	134	19.2	134	19.4	134	19.4	15	134	19.4	134	19.4	134	19.4	134	19.4	134	19.4	134	19.4	134	19.4	134	19.4	
	19	146	18.0	146	18.5	146	18.8	146	19.1	146	19.3	146	19.4	146	19.4	146	19.4	19	146	19.4	146	19.4	146	19.4	146	19.4	146	19.4	146	19.4	146	19.4	146	19.4	
	23	161	18.8	161	19.4	161	19.4	161	19.4	161	19.4	161	19.4	161	19.4	161	19.4	23	161	19.4	161	19.4	161	19.4	161	19.4	161	19.4	161	19.4	161	19.4	161	19.4	
	27	177	19.4	177	19.4	177	19.4	177	19.4	177	19.4	177	19.4	177	19.4	177	19.4	27	177	19.4	177	19.4	177	19.4	177	19.4	177	19.4	177	19.4	177	19.4	177	19.4	
	31	197	19.4	197	19.4	197	19.4	197	19.4	197	19.4	197	19.4	197	19.4	197	19.4	31	197	19.4	197	19.4	197	19.4	197	19.4	197	19.4	197	19.4	197	19.4	197	19.4	
	35	219	19.4	219	19.4	219	19.4	219	19.4	219	19.4	219	19.4	219	19.4	219	19.4	35	219	19.4	219	19.4	213	18.3	201	17.3	189	16.3	165	15.7	147	15.0	129	14.4	
	39	245	19.4	245	19.4	245	19.4	245	19.4	245	19.4	245	19.4	245	19.4	245	19.4	39	245	19.4	231	18.3	201	17.3	189	16.3	165	15.7	147	15.0	129	14.4	111	13.8	
	43	274	19.4	274	19.4	274	19.4	274	19.4	274	19.4	274	19.4	274	19.4	274	19.4	43	255	19.4	231	17.8	213	16.5	201	15.6	189	14.8	165	14.2	147	13.6	129	13.0	
	47	307	19.4	307	19.4	307	19.4	302	19.4	284	19.4	247	17.1	220	15.4	193	13.8	47	255	17.6	231	16.1	213	15.0	201	14.2	189	13.5	165	12.8	147	12.2	129	11.6	
	51	345	19.4	345	19.4	320	19.4	302	18.5	284	17.5	247	15.5	220	14.1	193	12.7	51	255	15.9	231	14.6	213	13.7	201	13.1	189	12.5	165	11.8	147	11.2	129	10.6	
	55	383	19.4	347	18.9	320	17.5	302	16.7	284	15.8	247	14.1	220	12.9	193	11.8	55	255	14.5	231	13.4	213	12.6	201	12.1	189	11.7	165	11.0	147	10.4	129	9.8	
	59	383	18.6	347	17.0	320	15.9	302	15.1	284	14.4	247	13.0	220	12.0	193	11.1	59	255	13.3	231	12.4	213	11.8	201	11.4	189	11.0	165	10.4	147	10.0	129	9.4	
140	-13	79.1	11.5	79.1	11.9	79.1	12.1	79.1	12.3	79.1	12.4	79.1	12.9	79.1	13.3	79.1	13.8	79.1	14.3	79.1	14.8	79.1	15.1	79.1	15.4	79.1	15.7	79.1	16.1	79.1	16.7	79.1	17.3	79.1	17.9
	-9	85.9	12.4	85.9	12.8	85.9	13.0	85.9	13.2	85.9	13.4	85.9	13.9	85.9	14.4	85.9	14.9	85.9	15.6	85.9	15.9	85.9	16.2	85.9	16.5	85.9	16.8	85.9	17.4	85.9	18.0	85.9	18.6		
	-5	92.5	13.3	92.5	13.7	92.5	13.9	92.5	14.1	92.5	14.3	92.5	14.9	92.5	15.4	92.5	16.0	92.5	16.6	92.5	17.1	92.5	17.4	92.5	17.7	92.5	18.3	92.5	18.9	92.5	19.5	92.5	20.1		
	-1	99.3	14.2	99.3	14.6	99.3	14.9	99.3	15.1	99.3	15.3	99.3	15.9	99.3	16.4	99.3	17.0	99.3	17.6	99.3	18.1	99.3	18.4	99.3	18.7	99.3	19.3	99.3	19.9	99.3	20.5	99.3	21.1		
	3	107	15.1	107	15.5	107	15.8	107	16.0	107	16.2	107	16.9	107	17.4	107	18.0	107	18.6	107	19.1	107	19.4	107	19.7	107	20.3	107	20.9	107	21.5	107	22.1		
	7	115	16.0	115	16.4	115	16.7	115	16.9	115	17.2	115	17.9	115	18.5	115	19.1	115	19.7	115	20.3	115	20.9	115	21.5	115	22.1	115	22.7	115	23.3	115	23.9		
	11	124	16.8	124	17.3	124	17.7	124	17.9	124	18.1	124	18.9	124	19.4	124	19.9	124	20.5	124	21.1	124	21.7	124	22.3	124	22.9	124	23.5	124	24.1	124	24.7		
	15	134	17.7	134	18.2	134	18.6	134	18.8	134	19.1	134	19.4	134	19.4	15	134	19.4	134	19.4	134	19.4	134	19.4	134	19.4	134	19.4	134	19.4	134	19.4	134	19.4	
	19	146	18.6	146	19.1	146	19.4	146	19.4	146	19.4	146	19.4	146	19.4	19	146	19.4	146	19.4	146	19.4	146	19.4	146	19.4	146	19.4	146	19.4	146	19.4	146	19.4	
	23	161	19.4	161	19.4	161	19.4	161	19.4	161	19.4	161	19.4	161	19.4	23	161	19.4	161	19.4	161	19.4	161	19.4	161	19.4	161	19.4	161	19.4	161	19.4	161	19.4	
	27	177	19.4	177	19.4	177	19.4	177	19.4	177	19.4	177	19.4	177	19.4	27	177	19.4	177	19.4	177	19.4	177	19.4	177	19.4	177	19.4	177	19.4	177	19.4	177	19.4	
	31	197	19.4	197	19.4	197	19.4	197	19.4	197	19.4	197	19.4	197	19.4	31	197	19.4	197	19.4	197	19.4	197	19.4	197	19.4	197	19.4	197	19.4	197	19.4	197	19.4	
	35	219	19.4	219	19.4	219	19.4	219	19.4	219	19.4	219	19.4	219	19.4	35	219	19.4	208	19.4	193	18.2	181	17.1	170	16.0	149	13.8	132	12.2	116	10.8	100	9.2	
	39	245	19.4	245	19.4	245	19.4	245	19.4	245	19.4	245	19.4	245	19.4	39	230	19.4	208	17.7	193	16.3	181	15.4	170	14.4	149	12.6	132	11.6	116	10.1	100	8.6	
	43	274	19.4	274	19.4	274	19.4	274	19.4	274	19.4	274	19.4	274	19.4	43	230	17.6	208	15.9	193	14.7	181	13.9	169	13.1	149	11.5	132	10.5	116	9.7	100	8.9	
	47	307	19.4	307	19.4	307	19.4	298	19.4	281	19.2	265	18.2	231	16.1	206	14.5	181	13.0	47	230	15.7	208	14.3	193	13.3	181	12.6	170	12.0	149	11.3	132	10.6	
	51	345	19.4	324	19.4	298	18.3	281	17.3	265	16.4	231	14.6	206	13.1	181	12.1	51	230	14.2	208	13.0	193	12.1	181	11.6	170	11.1	149	10.1	132	9.6	116	9.2	
	55	357	19.4	324	17.7	298	16.5	281	15.7	265	14.9	231	13.4	206	12.3	181	11.4	55	230	12.9	208</														

SELECTION DATA

(H,Y)VAHR192B(3,4,5)2S

Heating Capacity

Connection ratio	Outdoor air temp	Indoor air temp. °FDB																Connection ratio	Outdoor air temp	Indoor air temp. °FDB															
		59		63		66		68		70		74		77		80				59		63		66		68		70		74		77		80	
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP		
%	°FWB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FWB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW		
150	-13	81.6	11.9	81.6	12.2	81.6	12.5	81.6	12.6	81.6	12.8	81.6	13.3	81.6	13.8	81.6	14.3	-13	81.6	14.6	81.6	15.0	81.6	15.3	81.6	15.5	81.6	15.7	81.6	16.3	81.6	16.8	81.6	17.3	
	-9	88.8	12.8	88.8	13.2	88.8	13.4	88.8	13.6	88.8	13.8	88.8	14.4	88.8	14.8	88.8	15.3	-9	88.8	15.7	88.8	16.1	88.8	16.4	88.8	16.6	88.8	16.9	88.8	17.6	88.8	18.1	88.8	18.8	
	-5	95.5	13.7	95.5	14.1	95.5	14.4	95.5	14.6	95.5	14.8	95.5	15.4	95.5	15.9	95.5	16.4	-5	95.5	16.8	95.5	17.3	95.5	17.6	95.5	17.8	95.5	18.1	95.5	18.8	95.5	19.4	95.5	20.1	
	-1	102	14.6	102	15.0	102	15.3	102	15.5	102	15.7	102	16.4	102	16.9	102	17.5	-1	102	17.9	102	18.4	102	18.8	102	19.0	102	19.3	102	20.1	102	20.7	102	21.5	
	3	110	15.5	110	16.0	110	16.3	110	16.5	110	16.7	110	17.4	110	18.0	110	18.6	3	110	19.0	110	19.5	110	19.9	110	20.2	110	20.5	110	21.4	110	22.0	110	22.7	
	7	116	16.4	116	16.9	116	17.2	116	17.5	116	17.7	116	18.5	116	19.1	116	19.7	7	116	20.6	116	21.1	116	21.5	116	21.8	116	22.1	116	22.8	116	23.4	116	24.1	
	11	121	17.4	121	17.8	121	18.2	121	18.4	121	18.7	121	19.5	121	20.1	121	20.8	11	121	21.3	121	21.8	121	22.3	121	22.6	121	22.9	121	23.7	121	24.3	121	25.0	
	15	126	18.3	126	18.8	126	19.1	126	19.4	126	19.7	126	20.5	126	21.1	126	21.9	15	126	22.4	126	22.9	126	23.4	126	23.7	126	24.0	126	24.8	126	25.4	126	26.1	
	19	131	19.2	131	19.7	131	20.1	131	20.4	131	20.6	131	21.5	131	22.2	131	22.7	19	131	23.3	131	23.8	131	24.3	131	24.6	131	24.9	131	25.7	131	26.3	131	27.0	
	23	136	20.1	136	20.6	136	21.1	136	21.3	136	21.6	136	22.6	136	23.2	136	23.7	23	136	24.2	136	24.7	136	25.2	136	25.5	136	25.8	136	26.6	136	27.2	136	27.9	
	27	141	21.0	141	21.6	141	22.0	141	22.3	141	22.6	141	23.6	141	24.2	141	24.7	27	141	25.1	141	25.6	141	26.1	141	26.4	141	26.7	141	27.5	141	28.1	141	28.8	
140	31	146	21.9	146	22.5	146	22.9	146	23.2	146	23.5	146	24.5	146	25.1	146	25.6	31	146	26.6	146	27.1	146	27.6	146	27.9	146	28.2	146	29.0	146	29.6	146	30.3	
	35	151	22.8	151	23.4	151	23.8	151	24.1	151	24.4	151	25.4	151	26.0	151	26.5	35	151	28.1	151	28.6	151	29.1	151	29.4	151	29.7	151	30.5	151	31.1	151	31.8	
	39	156	23.7	156	24.3	156	24.7	156	25.0	156	25.3	156	26.3	156	26.9	156	27.4	39	156	29.6	156	30.1	156	30.6	156	30.9	156	31.2	156	32.0	156	32.6	156	33.3	
	43	161	24.6	161	25.2	161	25.6	161	25.9	161	26.2	161	27.2	161	27.8	161	28.3	43	161	31.1	161	31.6	161	32.1	161	32.4	161	32.7	161	33.5	161	34.1	161	34.8	
	47	166	25.5	166	26.1	166	26.5	166	26.8	166	27.1	166	28.1	166	28.7	166	29.2	47	166	32.6	166	33.1	166	33.6	166	33.9	166	34.2	166	35.0	166	35.6	166	36.3	
	51	171	26.4	171	27.0	171	27.4	171	27.7	171	28.0	171	29.0	171	29.6	171	30.1	51	171	34.1	171	34.6	171	35.1	171	35.4	171	35.7	171	36.5	171	37.1	171	37.8	
	55	176	27.3	176	27.9	176	28.3	176	28.6	176	28.9	176	30.0	176	30.6	176	31.1	55	176	35.6	176	36.1	176	36.6	176	36.9	176	37.2	176	38.0	176	38.6	176	39.3	
	59	181	28.2	181	28.8	181	29.2	181	29.5	181	29.8	181	30.9	181	31.5	181	32.0	59	181	37.1	181	37.6	181	38.1	181	38.4	181	38.7	181	39.5	181	40.1	181	40.8	
	-13	81.6	12.8	81.6	13.1	81.6	13.4	81.6	13.6	81.6	13.8	81.6	14.3	81.6	14.8	81.6	15.3	-13	81.6	15.3	81.6	15.8	81.6	16.1	81.6	16.3	81.6	16.5	81.6	17.2	81.6	17.8	81.6	18.4	
	-9	88.8	13.2	88.8	13.6	88.8	13.9	88.8	14.1	88.8	14.3	88.8	14.9	88.8	15.4	88.8	15.9	-9	88.8	15.8	88.8	16.3	88.8	16.6	88.8	16.8	88.8	17.0	88.8	17.7	88.8	18.3	88.8	18.9	
	-5	95.5	14.2	95.5	14.6	95.5	14.9	95.5	15.1	95.5	15.3	95.5	15.9	95.5	16.4	95.5	17.0	-5	95.5	17.0	95.5	17.5	95.5	17.8	95.5	18.0	95.5	18.2	95.5	19.0	95.5	20.5	95.5	21.2	
-1	102	15.1	102	15.5	102	15.8	102	16.0	102	16.2	102	16.9	102	17.4	102	18.0	-1	102	18.0	102	18.5	102	18.8	102	19.0	102	19.2	102	20.0	102	21.5	102	22.2		
3	110	16.1	110	16.5	110	16.9	110	17.1	110	17.3	110	18.0	110	18.6	110	19.3	3	110	20.0	110	20.6	110	21.0	110	21.3	110	21.6	110	22.5	110	24.0	110	24.7		
7	116	17.0	116	17.5	116	17.8	116	18.1	116	18.3	116	19.1	116	19.7	116	20.4	7	116	21.8	116	22.3	116	22.6	116	22.8	116	23.0	116	23.7	116	24.3	116	25.0		
11	121	18.0	121	18.5	121	18.8	121	19.1	121	19.3	121	20.2	121	20.8	121	21.5	11	121	22.4	121	22.9	121	23.2	121	23.4	121	23.6	121	24.3	121	25.0	121	25.7		
15	126	18.9	126	19.4	126	19.8	126	20.1	126	20.3	126	21.3	126	21.9	126	22.7	15	126	23.7	126	24.2	126	24.5	126	24.7	126	24.9	126	25.6	126	26.3	126	27.0		
19	131	19.8	131	20.3	131	20.7	131	21.0	131	21.2	131	22.2	131	22.8	131	23.5	19	131	25.2	131	25.7	131	26.0	131	26.2	131	26.4	131	27.1	131	27.8	131	28.5		
23	136	20.8	136	21.3	136	21.7	136	22.0	136	22.2	136	23.2	136	23.8	136	24.5	23	136	26.7	136	27.2	136	27.5	136	27.7	136	27.9	136	28.6	136	29.3	136	30.0		
27	141	21.7	141	22.2	141	22.6	141	22.9	141	23.1	141	24.1	141	24.7	141	25.4	27	141	28.6	141	29.1	141	29.4	141	29.6	141	29.8	141	30.5	141	31.2	141	31.9		
31	146	22.6	146	23.1	146	23.5	146	23.8	146	24.0	146	25.0	146	25.6	146	26.3	31	146	29.8	146	30.3	146	30.6	146	30.8	146	31.0	146	31.7	146	32.4	146	33.1		
35	151	23.5	151	24.0	151	24.4	151	24.7	151	24.9	151	25.9	151	26.5	151	27.2	35	151	31.6	151	32.1	151	32.4	151	32.6	151	32.8	151	33.5	151	34.2	151	34.9		
39	156	24.4	156	24.9	156	25.3	156	25.6	156	25.8	156	26.8	156	27.4	156	28.1	39	156	33.5	156	34.0	156	34.3	156	34.5	156	34.7	156	35.4	156	36.1	156	36.8		
43	161	25.3	161	25.8	161	26.2	161	26.5	161	26.7	161	27.7	161	28.3	161	29.0	43	161	35.4	161	35.9	161	36.2	161	36.4	161	36.6	161	37.3	161	38.0	161	38.7		
47	166	26.2	166	26.7	166	27.1	166	27.4	166	27.6	166	28.6	166	29.2	166	30.0	47	166	37.3	166	37.8	166	38.1	166	38.3	166	38.5	166	39.2	166	40.0	166	40.6		
51	171	27.1	171	27.6	171	28.0	171	28.3	171	28.5	171	29.5	171	30.1	171	30.9	51	171	39.2	171	39.7	171	40.0	171	40.2	171	40.4	171	41.1	171	41.8	171	42.5		
55	176	28.0	176	28.5	176	28.9	176	29.2	176	29.4	176	30.4	176	31.0	176	31.8	55	176	41.1	176	41.6	176	41.9	176	42.1	176	42.3	176	43.0	176	43.7	176	44.4		
59	181	28.9	181	29.4	181	29.8	181	30.1	181	30.3	181																								

(H,Y)VAHR216B(3,4,5)2S

Heating Capacity

Connection ratio	Outdoor air temp	Indoor air temp. °FDB																Connection ratio	Outdoor air temp	Indoor air temp. °FDB																			
		59		63		66		68		70		74		77		80				59		63		66		68		70		74		77		80					
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP				
%	°FWB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FWB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW				
150	-13	114	15.8	114	16.2	114	16.6	114	16.8	114	17.0	114	17.8	114	18.3	114	19.0	-13	114	19.4	114	19.9	114	20.3	114	20.6	114	20.8	114	21.7	114	22.4	114	23.2					
	-9	124	16.0	124	16.4	124	16.8	124	17.0	124	17.2	124	18.0	124	18.5	124	19.2	-9	124	19.6	124	20.1	124	20.5	124	20.8	124	21.1	124	22.0	124	22.7	124	23.5					
	-5	134	16.2	134	16.6	134	17.0	134	17.2	134	17.4	134	18.2	134	18.7	134	19.4	-5	134	19.8	134	20.4	134	20.8	134	21.0	134	21.3	134	22.2	134	22.9	134	23.7					
	-1	144	16.3	144	16.8	144	17.1	144	17.4	144	17.6	144	18.4	144	18.9	144	19.6	-1	144	20.0	144	20.6	144	21.0	144	21.3	144	21.5	144	22.5	144	23.2	144	24.0					
	3	156	16.5	156	17.0	156	17.3	156	17.6	156	17.8	156	18.6	156	19.1	156	19.8	3	156	20.2	156	20.8	156	21.2	156	21.5	156	21.8	156	22.7	156	23.4	156	24.3					
	7	168	16.7	168	17.2	168	17.5	168	17.7	168	18.0	168	18.8	168	19.3	168	20.0	7	168	20.5	168	21.1	168	21.5	168	21.8	168	22.1	168	23.0	168	23.7	168	24.5					
	11	180	16.9	180	17.4	180	17.7	180	17.9	180	18.2	180	19.0	180	19.5	180	20.2	11	180	20.7	180	21.3	180	21.7	180	22.0	180	22.3	180	23.2	180	23.9	180	24.8					
	15	194	17.1	194	17.5	194	17.9	194	18.1	194	18.4	194	19.2	194	19.8	194	20.5	15	194	20.9	194	21.5	194	21.9	194	22.2	194	22.5	194	23.5	194	24.2	194	25.1					
	19	208	17.2	208	17.7	208	18.1	208	18.3	208	18.6	208	19.4	208	20.0	208	20.7	19	208	21.1	208	21.7	208	22.1	208	22.4	208	22.7	208	23.7	208	24.4	208	25.3					
	23	223	17.4	223	17.9	223	18.3	223	18.5	223	18.7	223	19.6	223	20.2	223	20.9	23	223	21.3	223	21.9	223	22.3	223	22.6	223	23.0	223	24.0	223	24.7	223	25.6					
27	239	17.6	239	18.1	239	18.5	239	18.7	239	18.9	239	19.8	239	20.4	239	21.1	27	239	21.6	239	22.2	239	22.6	239	22.9	239	23.2	239	24.2	239	24.9	239	25.8						
31	255	17.8	255	18.3	255	18.6	255	18.9	255	19.1	255	20.0	255	20.6	255	21.3	31	255	21.8	255	22.4	255	22.8	255	23.1	255	23.4	255	24.4	255	25.1	255	26.0						
35	272	18.0	272	18.5	272	18.8	272	19.1	272	19.3	272	20.2	272	20.8	272	21.5	35	272	22.0	272	22.6	272	23.0	272	23.3	272	23.6	272	24.6	272	25.3	272	26.2						
39	290	18.1	290	18.6	290	19.0	290	19.3	290	19.5	290	20.4	290	21.0	290	21.7	39	290	22.2	290	22.8	290	23.2	290	23.5	290	23.8	290	24.8	290	25.5	290	26.4						
43	308	18.3	308	18.8	308	19.1	308	19.3	308	19.6	308	20.6	308	21.2	308	21.9	43	308	22.4	308	23.0	308	23.4	308	23.7	308	24.0	308	25.0	308	25.7	308	26.6						
47	327	18.5	327	19.0	327	19.3	327	19.5	327	19.8	327	20.8	327	21.4	327	22.1	47	327	22.6	327	23.2	327	23.6	327	23.9	327	24.2	327	25.2	327	25.9	327	26.8						
51	347	18.7	347	19.2	347	19.6	347	19.8	347	20.1	347	21.1	347	21.8	347	22.5	51	347	23.0	347	23.6	347	24.0	347	24.3	347	24.6	347	25.6	347	26.3	347	27.2						
55	367	18.9	367	19.4	367	19.8	367	20.0	367	20.3	367	21.3	367	22.0	367	22.7	55	367	23.2	367	23.8	367	24.2	367	24.5	367	24.8	367	25.8	367	26.5	367	27.4						
59	389	19.0	389	19.6	389	20.0	389	20.2	389	20.5	389	21.5	389	22.2	389	22.9	59	389	23.4	389	24.0	389	24.4	389	24.7	389	25.0	389	26.0	389	26.7	389	27.6						
140	-13	114	16.4	114	16.8	114	17.2	114	17.4	114	17.6	114	18.4	114	18.9	114	19.6	-13	114	20.4	114	21.0	114	21.4	114	21.7	114	22.0	114	22.9	114	23.6	114	24.5					
	-9	124	16.6	124	17.0	124	17.4	124	17.6	124	17.8	124	18.6	124	19.2	124	19.9	-9	124	20.6	124	21.2	124	21.6	124	21.9	124	22.2	124	23.2	124	23.9	124	24.8					
	-5	134	16.7	134	17.2	134	17.5	134	17.8	134	18.0	134	18.8	134	19.4	134	20.1	-5	134	20.9	134	21.5	134	21.9	134	22.2	134	22.5	134	23.4	134	24.2	134	25.0					
	-1	144	16.9	144	17.4	144	17.7	144	18.0	144	18.2	144	19.0	144	19.6	144	20.3	-1	144	21.1	144	21.7	144	22.1	144	22.4	144	23.4	144	24.1	144	25.0	144	25.8					
	3	156	17.1	156	17.6	156	17.9	156	18.2	156	18.4	156	19.2	156	19.8	156	20.5	3	156	21.3	156	21.9	156	22.3	156	22.6	156	23.6	156	24.3	156	25.2	156	26.0					
	7	168	17.3	168	17.8	168	18.1	168	18.4	168	18.6	168	19.4	168	20.0	168	20.7	7	168	21.6	168	22.2	168	22.6	168	22.9	168	23.9	168	24.6	168	25.5	168	26.4					
	11	180	17.5	180	18.0	180	18.3	180	18.6	180	18.8	180	19.6	180	20.2	180	21.0	11	180	21.8	180	22.4	180	22.8	180	23.1	180	24.1	180	24.8	180	25.7	180	26.6					
	15	194	17.7	194	18.2	194	18.5	194	18.8	194	19.0	194	19.8	194	20.4	194	21.2	15	194	22.0	194	22.6	194	23.0	194	23.3	194	24.3	194	25.0	194	25.9	194	26.8					
	19	208	17.8	208	18.3	208	18.7	208	19.0	208	19.2	208	20.0	208	20.6	208	21.4	19	208	22.3	208	22.9	208	23.3	208	23.6	208	24.6	208	25.3	208	26.2	208	27.0					
	23	223	18.0	223	18.5	223	18.9	223	19.2	223	19.4	223	20.2	223	20.8	223	21.6	23	223	22.5	223	23.1	223	23.5	223	23.8	223	24.8	223	25.5	223	26.4	223	27.2					
27	239	18.2	239	18.7	239	19.1	239	19.4	239	19.6	239	20.4	239	21.0	239	21.8	27	239	22.7	239	23.3	239	23.7	239	24.0	239	25.0	239	25.7	239	26.6	239	27.4						
31	255	18.4	255	18.9	255	19.3	255	19.5	255	19.8	255	20.6	255	21.2	255	22.0	31	255	22.9	255	23.5	255	23.9	255	24.2	255	25.2	255	26.0	255	26.8	255	27.6						
35	272	18.6	272	19.1	272	19.5	272	19.7	272	20.0	272	20.8	272	21.5	272	22.3	35	272	23.2	272	23.8	272	24.2	272	24.5	272	25.5	272	26.2	272	27.1	272	27.9						
39	290	18.8	290	19.3	290	19.7	290	19.9	290	20.2	290	21.0	290	21.7	290	22.5	39	290	23.4	290	24.0	290	24.4	290	24.7	290	25.7	290	26.4	290	27.3	290	28.1						
43	308	19.0	308	19.5	308	19.9	308	20.1	308	20.4	308	21.2	308	21.9	308	22.7	43	308	23.6	308	24.2	308	24.6	308	24.9	308	25.9	308	26.6	308	27.5	308	28.3						
47	327	19.1	327	19.7	327	20.1	327	20.3	327	20.6	327	21.4	327	22.1	327	22.9	47	327	23.8	327	24.4	327	24.8	327	25.1	327	26.1	327	26.8	327	27.7	327	28.5						
51	347	19.3	347	19.9	347	20.3	347	20.5	347	20.8	347	21.6	347	22.3	347	23.1	51	347	24.0	347	24.6	347	25.0	347	25.3	347	26.3	347	27.0	347	27.9	347	28.7						
55	367	19.5	367	20.1	367	20.5	367	20.7	367	21.0	367	21.8	367	22.5	367	23.3	55	367	24.2	367	24.8	367	25.2	367	25.5	367	26.5	367	27.2	367	28.1	367	28.9						
59	389	19.7	389	20.2	389	20.6	389	20.8	389	21.1	389	21.9	389	22.6	389	23.4	59																						

SELECTION DATA

(H,Y)VAHR240B(3,4,5)2S

Heating Capacity

Connection ratio	Outdoor air temp	Indoor air temp. °FDB																Connection ratio	Outdoor air temp	Indoor air temp. °FDB																			
		59		63		66		68		70		74		77		80				59		63		66		68		70		74		77		80					
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP				
%	°FWB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FWB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW				
150	-13	140	21.1	140	21.7	140	22.1	140	22.4	140	22.7	140	23.7	140	24.4	140	25.3	-9	151	26.1	151	26.8	151	27.3	151	27.3	151	27.3	151	27.3	151	27.3	151	27.3	151	27.3			
	-9	151	21.3	151	21.9	151	22.4	151	22.6	151	22.9	151	23.9	151	24.7	151	25.6	-5	163	26.4	163	27.1	163	27.3	163	27.3	163	27.3	163	27.3	163	27.3	163	27.3	163	27.3			
	-5	163	21.6	163	22.2	163	22.6	163	22.9	163	23.2	163	24.2	163	25.0	163	25.9	-1	176	26.7	176	27.3	176	27.3	176	27.3	176	27.3	176	27.3	176	27.3	176	27.3	176	27.3			
	-1	176	21.8	176	22.4	176	22.9	176	23.2	176	23.5	176	24.5	176	25.2	176	26.1	3	190	27.0	190	27.3	190	27.3	190	27.3	190	27.3	190	27.3	190	27.3	190	27.3	190	27.3			
	3	190	22.0	190	22.6	190	23.1	190	23.4	190	23.7	190	24.7	190	25.5	190	26.4	7	205	27.3	205	27.3	205	27.3	205	27.3	205	27.3	205	27.3	205	27.3	205	27.3	205	27.3			
	7	205	22.3	205	22.9	205	23.4	205	23.7	205	24.0	205	25.0	205	25.8	205	26.7	11	220	27.3	220	27.3	220	27.3	220	27.3	220	27.3	220	27.3	220	27.3	220	27.3	220	27.3			
	11	220	22.5	220	23.1	220	23.6	220	23.9	220	24.2	220	25.3	220	26.1	220	27.0	15	237	27.3	237	27.3	237	27.3	237	27.3	237	27.3	237	27.3	237	27.3	237	27.3	237	27.3			
	15	237	22.8	237	23.4	237	23.9	237	24.2	237	24.5	237	25.5	237	26.3	237	27.3	19	254	27.3	254	27.3	254	27.3	254	27.3	254	27.3	254	27.3	254	27.3	254	27.3	254	27.3			
	19	254	23.0	254	23.6	254	24.1	254	24.4	254	24.7	254	25.8	254	26.6	254	27.3	23	272	27.3	272	27.3	272	27.3	272	27.3	272	27.3	272	27.3	272	27.3	272	27.3	272	27.3			
	23	272	23.2	272	23.9	272	24.4	272	24.7	272	25.0	272	26.1	272	26.9	272	27.3	27	292	27.3	292	27.3	292	27.3	292	27.3	292	27.3	292	27.3	292	27.3	292	27.3	292	27.3			
	27	292	23.5	292	24.1	292	24.6	292	24.9	292	25.3	292	26.3	292	27.2	292	27.3	31	311	27.3	311	27.3	311	27.3	311	27.3	311	27.3	311	27.3	311	27.3	311	27.3	311	27.3			
	31	311	23.7	311	24.4	311	24.9	311	25.2	311	25.5	311	26.6	311	27.3	311	27.3	35	332	27.3	332	27.3	332	27.3	332	27.3	332	27.3	332	27.3	332	27.3	332	27.3	332	27.3			
	35	332	23.9	332	24.6	332	25.1	332	25.4	332	25.8	332	26.9	332	27.3	332	27.3	39	354	27.3	354	27.3	354	27.3	354	27.3	354	27.3	354	27.3	354	27.3	354	27.3	354	27.3			
	39	354	24.2	354	24.9	354	25.4	354	25.7	354	26.0	354	27.1	354	27.3	354	27.3	43	376	27.3	376	27.3	376	27.3	376	27.3	376	27.3	376	27.3	376	27.3	376	27.3	376	27.3			
	43	376	24.4	376	25.1	376	25.6	376	25.9	376	26.3	376	27.0	376	27.3	376	27.3	47	400	27.3	400	27.3	400	27.3	400	27.3	400	27.3	400	27.3	400	27.3	400	27.3	400	27.3			
	47	400	24.7	400	25.3	400	25.9	400	26.2	400	26.5	400	27.3	400	27.3	400	27.3	51	424	27.3	424	27.3	424	27.3	424	27.3	424	27.3	424	27.3	424	27.3	424	27.3	424	27.3			
	51	424	24.9	424	25.6	424	26.1	424	26.4	424	26.8	424	27.3	424	27.3	424	27.3	55	448	27.3	448	27.3	448	27.3	448	27.3	448	27.3	448	27.3	448	27.3	448	27.3	448	27.3			
	55	448	25.1	448	25.8	448	26.4	448	26.7	448	27.0	448	27.3	448	27.3	448	27.3	59	472	27.3	472	27.3	472	27.3	472	27.3	472	27.3	472	27.3	472	27.3	472	27.3	472	27.3			
	59	472	25.4	472	26.1	472	26.6	472	26.9	472	27.3	472	27.3	472	27.3	472	27.3																						
140	-13	140	21.8	140	22.4	140	22.9	140	23.2	140	23.5	140	24.5	140	25.3	140	26.2	-9	151	27.3	151	27.3	151	27.3	151	27.3	151	27.3	151	27.3	151	27.3	151	27.3	151	27.3			
	-9	151	22.1	151	22.7	151	23.1	151	23.4	151	23.7	151	24.8	151	25.5	151	26.5	-5	163	27.3	163	27.3	163	27.3	163	27.3	163	27.3	163	27.3	163	27.3	163	27.3	163	27.3			
	-5	163	22.3	163	22.9	163	23.3	163	23.6	163	23.9	163	25.0	163	25.8	163	26.8	-1	176	27.3	176	27.3	176	27.3	176	27.3	176	27.3	176	27.3	176	27.3	176	27.3	176	27.3			
	-1	176	22.6	176	23.2	176	23.6	176	23.9	176	24.2	176	25.2	176	26.0	176	27.0	3	190	27.3	190	27.3	190	27.3	190	27.3	190	27.3	190	27.3	190	27.3	190	27.3	190	27.3			
	3	190	22.8	190	23.4	190	23.9	190	24.2	190	24.5	190	25.6	190	26.4	190	27.3	7	205	27.3	205	27.3	205	27.3	205	27.3	205	27.3	205	27.3	205	27.3	205	27.3	205	27.3			
	7	205	23.1	205	23.7	205	24.2	205	24.5	205	24.8	205	25.9	205	26.7	205	27.3	11	220	27.3	220	27.3	220	27.3	220	27.3	220	27.3	220	27.3	220	27.3	220	27.3	220	27.3			
	11	220	23.3	220	23.9	220	24.4	220	24.7	220	25.0	220	26.1	220	26.9	220	27.3	15	237	27.3	237	27.3	237	27.3	237	27.3	237	27.3	237	27.3	237	27.3	237	27.3	237	27.3			
	15	237	23.5	237	24.2	237	24.7	237	25.0	237	25.3	237	26.4	237	27.3	237	27.3	19	254	27.3	254	27.3	254	27.3	254	27.3	254	27.3	254	27.3	254	27.3	254	27.3	254	27.3			
	19	254	23.8	254	24.5	254	24.9	254	25.3	254	25.6	254	26.7	254	27.3	254	27.3	23	272	27.3	272	27.3	272	27.3	272	27.3	272	27.3	272	27.3	272	27.3	272	27.3	272	27.3			
	23	272	24.0	272	24.7	272	25.2	272	25.5	272	25.8	272	27.0	272	27.3	272	27.3	27	292	27.3	292	27.3	292	27.3	292	27.3	292	27.3	292	27.3	292	27.3	292	27.3	292	27.3			
	27	292	24.3	292	25.0	292	25.5	292	25.8	292	26.1	292	27.3	292	27.3	292	27.3	31	311	27.3	311	27.3	311	27.3	311	27.3	311	27.3	311	27.3	311	27.3	311	27.3	311	27.3			
	31	311	24.5	311	25.3	311	25.8	311	26.1	311	26.4	311	27.3	311	27.3	311	27.3	35	332	27.3	332	27.3	332	27.3	332	27.3	332	27.3	332	27.3	332	27.3	332	27.3	332	27.3			
	35	332	24.8	332	25.5	332	26.0	332	26.3	332	26.6	332	27.3	332	27.3	332	27.3	39	354	27.3	354	27.3	354	27.3	354	27.3	354	27.3	354	27.3	354	27.3	354	27.3	354	27.3			
	39	354	25.0	354	25.7	354	26.2	354	26.5	354	26.8	354	27.3	354	27.3	354	27.3	43	376	27.3	376	27.3	376	27.3	376	27.3	376	27.3	376	27.3	376	27.3	376	27.3	376	27.3			
	43	376	25.3	376	26.0	376	26.5	376	26.8	376	27.1	376	27.3	376	27.3	376	27.3	47	400	27.3	400	27.3	400	27.3	400	27.3	400	27.3	400	27.3	400	27.3	400	27.3	400	27.3			
	47	400	25.5	400	26.2	400	26.7	400	27.0	400	27.3	400	27.3	400	27.3	400	27.3	51	424	27.3	424	27.3	424	27.3	424	27.3	424	27.3	424	27.3	424	27.3	424	27.3	424	27.3			
	51	424	25.8	424	26.5	424	27.0	424	27.3	424	27.6	424	27.3	424	27.3	424	27.3	55	448	27.3	448	27.3	448	27.3	448	27.3	448	27.3	448										

(H,Y)VAHR264B(3,4,5)2S

Heating Capacity

[illegible]

TC: Total Capacity
IP: Input Power

NOTES:

1. The table shows the normal value of a heating operation.
2. The heating capacity in the table indicates the peak value which does not include the capacity decrease by frost.
3. The value in the table shows when the system is operating under the following conditions.
The total piping length: 24.6ft. (7.5m), The height difference: 0ft (0m)
4. In a heat recovery system, the value in the table indicates when all the indoor units are operating in heating mode.

SELECTION DATA

(H,Y)VAHR288B(3,4,5)2S

Heating Capacity

Connection ratio	Outdoor air temp	Indoor air temp. °FDB																Connection ratio	Outdoor air temp	Indoor air temp. °FDB															
		59				63				66				68						70				74				77				80			
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP		
%	°FWB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FWB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW		
150	-13	152	21.1	152	21.7	152	22.1	152	22.4	152	22.7	152	23.7	152	24.4	152	25.3	152	25.8	-13	152	25.8	152	26.5	152	27.1	152	27.4	152	27.8	152	28.0	152	28.9	
	-9	165	21.3	165	21.9	165	22.4	165	22.6	165	22.9	165	23.9	165	24.7	165	25.6	165	26.1	-9	165	26.1	165	26.8	165	27.4	165	27.7	165	28.1	165	29.3	165	30.2	
	-5	178	21.6	178	22.2	178	22.6	178	22.9	178	23.2	178	24.2	178	25.0	178	25.9	178	26.4	-5	178	26.4	178	27.1	178	27.7	178	28.0	178	28.4	178	29.6	178	30.6	
	-1	192	21.8	192	22.4	192	22.9	192	23.2	192	23.5	192	24.5	192	25.2	192	26.1	192	26.6	-1	192	26.7	192	27.4	192	28.0	192	28.4	192	28.7	192	30.0	192	30.9	
	3	207	22.0	207	22.6	207	23.1	207	23.4	207	23.7	207	24.7	207	25.5	207	26.4	207	26.9	3	207	27.0	207	27.7	207	28.3	207	28.7	207	29.0	207	30.3	207	31.2	
	7	224	22.3	224	22.9	224	23.4	224	23.7	224	24.0	224	25.0	224	25.8	224	26.7	224	27.2	7	224	27.3	224	28.0	224	28.6	224	29.0	224	29.4	224	30.6	224	31.5	
	11	241	22.5	241	23.1	241	23.6	241	23.9	241	24.2	241	25.3	241	26.1	241	27.0	241	27.5	11	241	27.6	241	28.3	241	28.9	241	29.3	241	29.7	241	31.0	241	31.9	
	15	258	22.8	258	23.4	258	23.9	258	24.2	258	24.5	258	25.5	258	26.3	258	27.3	258	27.8	15	258	27.9	258	28.6	258	29.2	258	29.6	258	30.0	258	31.3	258	32.3	
	19	277	23.0	277	23.6	277	24.1	277	24.4	277	24.7	277	25.8	277	26.6	277	27.6	277	28.1	19	277	28.2	277	28.9	277	29.5	277	29.9	277	30.3	277	31.6	277	32.5	
	23	297	23.2	297	23.9	297	24.4	297	24.7	297	25.0	297	26.1	297	26.9	297	27.9	297	28.4	23	297	28.4	297	29.2	297	29.8	297	30.2	297	30.6	297	31.9	297	32.8	
	27	318	23.5	318	24.1	318	24.6	318	24.9	318	25.3	318	26.3	318	27.2	318	28.2	318	28.7	27	318	28.7	318	29.5	318	30.1	318	30.5	318	30.9	318	32.2	318	33.1	
140	-13	152	21.1	152	21.7	152	22.1	152	22.4	152	22.7	152	23.7	152	24.4	152	25.3	152	25.8	-13	152	25.8	152	26.5	152	27.1	152	27.4	152	27.8	152	28.0	152	28.9	
	-9	165	21.3	165	21.9	165	22.4	165	22.6	165	22.9	165	23.9	165	24.7	165	25.6	165	26.1	-9	165	26.1	165	26.8	165	27.4	165	27.7	165	28.1	165	29.3	165	30.2	
	-5	178	21.6	178	22.2	178	22.6	178	22.9	178	23.2	178	24.2	178	25.0	178	25.9	178	26.4	-5	178	26.4	178	27.1	178	27.7	178	28.0	178	28.4	178	29.6	178	30.6	
	-1	192	21.8	192	22.4	192	22.9	192	23.2	192	23.5	192	24.5	192	25.2	192	26.1	192	26.6	-1	192	26.7	192	27.4	192	28.0	192	28.4	192	28.7	192	30.0	192	30.9	
	3	207	22.0	207	22.6	207	23.1	207	23.4	207	23.7	207	24.7	207	25.5	207	26.4	207	26.9	3	207	27.0	207	27.7	207	28.3	207	28.7	207	29.0	207	30.3	207	31.2	
	7	224	22.3	224	22.9	224	23.4	224	23.7	224	24.0	224	25.0	224	25.8	224	26.7	224	27.2	7	224	27.3	224	28.0	224	28.6	224	29.0	224	29.4	224	30.6	224	31.5	
	11	241	22.5	241	23.1	241	23.6	241	23.9	241	24.2	241	25.3	241	26.1	241	27.0	241	27.5	11	241	27.6	241	28.3	241	28.9	241	29.3	241	29.7	241	31.0	241	31.9	
	15	258	22.8	258	23.4	258	23.9	258	24.2	258	24.5	258	25.5	258	26.3	258	27.3	258	27.8	15	258	27.9	258	28.6	258	29.2	258	29.6	258	30.0	258	31.3	258	32.3	
	19	277	23.0	277	23.6	277	24.1	277	24.4	277	24.7	277	25.8	277	26.6	277	27.6	277	28.1	19	277	28.2	277	28.9	277	29.5	277	29.9	277	30.3	277	31.6	277	32.5	
	23	297	23.2	297	23.9	297	24.4	297	24.7	297	25.0	297	26.1	297	26.9	297	27.9	297	28.4	23	297	28.4	297	29.2	297	29.8	297	30.2	297	30.6	297	31.9	297	32.8	
	27	318	23.5	318	24.1	318	24.6	318	24.9	318	25.3	318	26.3	318	27.2	318	28.2	318	28.7	27	318	28.7	318	29.5	318	30.1	318	30.5	318	30.9	318	32.2	318	33.1	
130	-13	152	21.1	152	21.7	152	22.1	152	22.4	152	22.7	152	23.7	152	24.4	152	25.3	152	25.8	-13	152	25.8	152	26.5	152	27.1	152	27.4	152	27.8	152	28.0	152	28.9	
	-9	165	21.3	165	21.9	165	22.4	165	22.6	165	22.9	165	23.9	165	24.7	165	25.6	165	26.1	-9	165	26.1	165	26.8	165	27.4	165	27.7	165	28.1	165	29.3	165	30.2	
	-5	178	21.6	178	22.2	178	22.6	178	22.9	178	23.2	178	24.2	178	25.0	178	25.9	178	26.4	-5	178	26.4	178	27.1	178	27.7	178	28.0	178	28.4	178	29.6	178	30.6	
	-1	192	21.8	192	22.4	192	22.9	192	23.2	192	23.5	192	24.5	192	25.2	192	26.1	192	26.6	-1	192	26.7	192	27.4	192	28.0	192	28.4	192	28.7	192	30.0	192	30.9	
	3	207	22.0	207	22.6	207	23.1	207	23.4	207	23.7	207	24.7	207	25.5	207	26.4	207	26.9	3	207	27.0	207	27.7	207	28.3	207	28.7	207	29.0	207	30.3	207	31.2	
	7	224	22.3	224	22.9	224	23.4	224	23.7	224	24.0	224	25.0	224	25.8	224	26.7	224	27.2	7	224	27.3	224	28.0	224	28.6	224	29.0	224	29.4	224	30.6	224	31.5	
	11	241	22.5	241	23.1	241	23.6	241	23.9	241	24.2	241	25.3	241	26.1	241	27.0	241	27.5	11	241	27.6	241	28.3	241	28.9	241	29.3	241	29.7	241	31.0	241	31.9	
	15	258	22.8	258	23.4	258	23.9	258	24.2	258	24.5	258	25.5	258	26.3	258	27.3	258	27.8	15	258	27.9	258	28.6	258	29.2	258	29.6	258	30.0	258	31.3	258	32.3	
	19	277	23.0	277	23.6	277	24.1	277	24.4	277	24.7	277	25.8	277	26.6	277	27.6	277	28.1	19	277	28.2	277	28.9	277	29.5	277	29.9	277	30.3	277	31.6	277	32.5	
	23	297	23.2	297	23.9	297	24.4	297	24.7	297	25.0	297	26.1	297	26.9	297	27.9	297	28.4	23	297	28.4	297	29.2	297	29.8	297	30.2	297	30.6	297	31.9	297	32.8	
	27	318	23.5	318	24.1	318	24.6	318	24.9	318	25.3	318	26.3	318	27.2	318	28.2	318	28.7	27	318	28.7	318	29.5	318	30.1	318	30.5	318	30.9	318	32.2	318	33.1	
120	-13	152	21.1	152	21.7	152	22.1	152	22.4	152	22.7	152	23.7	152	24.4	152	25.3	152	25.8	-13	152	25.8	152	26.5	152	27.1	152	27.4	152	27.8	152	28.0	152	28.9	
	-9	165	21.3	165	21.9	165	22.4	165	22.6	165	22.9	165	23.9	165	24.7	165	25.6	165	26.1	-9	165	26.1	165	26.8	165	27.4	165	27.7	165	28.1	165	29.3	165	30.2	
	-5	178	21.6	178	22.2	178	22.6	178	22.9	178	23.2	178	24.2	178	25.0	178	25.9	178	26.4	-5	178	26.4	178	27.1	178	27.7	178	28.0	178	28.4	178	29.6	178	30.6	
	-1	192	21.8	192	22.4	192	22.9	192	23.2	192	23.5	192	24.5	192	25.2	192	26.1	192	26.6	-1	192	26.7	192	27.4	192	28.0	192	28.4	192	28.7					

(H,Y)VAHR312B(3,4,5)2S

Heating Capacity

Connection ratio	Outdoor air temp.	Indoor air temp. °F DB																Connection ratio	Outdoor air temp.	Indoor air temp. °F DB																			
		59		63		66		68		70		74		77		80				59		63		66		68		70		74		77		80					
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP				
%	°FWB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FWB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW				
150																																							
-13	156	21.5	156	22.1	156	22.6	156	22.9	156	23.2	156	24.2	156	24.9	156	25.8	156	-13	156	26.4	156	27.1	156	27.6	156	28.0	156	28.4	156	28.6	156	28.7	156	28.8	156				
-9	168	21.8	168	22.4	168	22.8	168	23.1	168	23.4	168	24.4	168	25.2	168	26.1	168	-9	168	26.7	168	27.4	168	27.9	168	28.3	168	28.7	168	28.9	168	29.0	168	29.1	168				
-5	182	22.0	182	22.6	182	23.1	182	23.4	182	23.7	182	24.7	182	25.5	182	26.4	182	-5	182	27.0	182	27.7	182	28.3	182	28.8	182	29.0	182	29.1	182	29.2	182	29.3	182				
-1	196	22.3	196	22.9	196	23.3	196	23.6	196	23.9	196	25.0	196	25.8	196	26.7	196	-1	196	27.3	196	28.0	196	28.6	196	29.0	196	29.3	196	29.5	196	29.6	196	29.7	196				
3	212	22.5	212	23.1	212	23.6	212	23.9	212	24.2	212	25.3	212	26.1	212	27.0	212	3	212	27.5	212	28.3	212	28.9	212	29.3	212	29.6	212	29.8	212	29.9	212	30.0	212				
7	228	22.7	228	23.3	228	23.8	228	24.2	228	24.5	228	25.5	228	26.3	228	27.3	228	7	228	27.8	228	28.6	228	29.2	228	29.6	228	30.0	228	30.3	228	30.4	228	30.5	228				
11	246	23.0	246	23.6	246	24.1	246	24.4	246	24.7	246	25.8	246	26.6	246	27.6	246	11	246	28.1	246	28.8	246	29.4	246	29.8	246	30.2	246	30.5	246	30.6	246	30.7	246				
15	264	23.2	264	23.8	264	24.3	264	24.6	264	24.9	264	26.0	264	26.8	264	27.7	264	15	264	28.4	264	29.1	264	29.7	264	30.1	264	30.4	264	30.6	264	30.7	264	30.8	264				
19	280	23.5	280	24.1	280	24.6	280	24.9	280	25.2	280	26.3	280	27.1	280	28.0	280	19	280	28.7	280	29.4	280	30.0	280	30.4	280	30.7	280	30.9	280	31.0	280	31.1	280				
23	300	23.7	300	24.3	300	24.8	300	25.1	300	25.4	300	26.5	300	27.3	300	28.2	300	23	300	29.0	300	29.7	300	30.3	300	30.7	300	31.0	300	31.2	300	31.3	300	31.4	300				
27	320	24.0	320	24.6	320	25.1	320	25.4	320	25.7	320	26.8	320	27.6	320	28.5	320	27	320	29.3	320	30.0	320	30.6	320	31.0	320	31.3	320	31.5	320	31.6	320	31.7	320				
31	340	24.2	340	24.8	340	25.3	340	25.6	340	25.9	340	27.0	340	27.8	340	28.7	340	31	340	29.5	340	30.2	340	30.8	340	31.2	340	31.5	340	31.7	340	31.8	340	31.9	340				
35	360	24.4	360	25.0	360	25.5	360	25.8	360	26.1	360	27.2	360	28.0	360	28.9	360	35	360	29.8	360	30.5	360	31.1	360	31.5	360	31.8	360	32.0	360	32.1	360	32.2	360				
39	394	24.7	394	25.3	394	25.8	394	26.1	394	26.4	394	27.5	394	28.3	394	29.2	394	39	394	30.2	394	30.9	394	31.5	394	31.9	394	32.2	394	32.4	394	32.5	394	32.6	394				
43	419	24.9	419	25.5	419	26.0	419	26.3	419	26.6	419	27.7	419	28.5	419	29.4	419	43	419	30.5	419	31.2	419	31.8	419	32.2	419	32.5	419	32.7	419	32.8	419	32.9	419				
47	445	25.2	445	25.8	445	26.3	445	26.6	445	26.9	445	28.0	445	28.8	445	29.7	445	47	445	30.8	445	31.5	445	32.1	445	32.5	445	32.8	445	33.0	445	33.1	445	33.2	445				
51	470	25.4	470	26.0	470	26.5	470	26.8	470	27.1	470	28.2	470	29.0	470	29.9	470	51	470	31.0	470	31.7	470	32.3	470	32.7	470	33.0	470	33.2	470	33.3	470	33.4	470				
55	500	25.7	500	26.3	500	26.8	500	27.1	500	27.4	500	28.5	500	29.3	500	30.2	500	55	500	31.2	500	31.9	500	32.5	500	32.9	500	33.2	500	33.4	500	33.5	500	33.6	500				
59	529	25.9	529	26.5	529	27.0	529	27.3	529	27.6	529	28.7	529	29.5	529	30.4	529	59	529	31.4	529	32.1	529	32.7	529	33.1	529	33.4	529	33.6	529	33.7	529	33.8	529				
140																																							
-13	156	22.3	156	22.9	156	23.4	156	23.7	156	24.0	156	25.0	156	25.8	156	26.7	156	-13	156	27.8	156	28.5	156	29.1	156	29.5	156	29.9	156	30.1	156	30.2	156	30.3	156				
-9	168	22.5	168	23.1	168	23.6	168	23.9	168	24.2	168	25.2	168	26.0	168	26.9	168	-9	168	28.1	168	28.8	168	29.4	168	29.8	168	30.2	168	30.4	168	30.5	168	30.6	168				
-5	182	22.8	182	23.4	182	23.9	182	24.2	182	24.5	182	25.6	182	26.4	182	27.3	182	-5	182	28.4	182	29.2	182	29.8	182	30.2	182	30.6	182	30.8	182	30.9	182	31.0	182				
-1	196	23.0	196	23.6	196	24.1	196	24.4	196	24.7	196	25.8	196	26.6	196	27.5	196	-1	196	28.6	196	29.4	196	30.0	196	30.4	196	30.8	196	31.0	196	31.1	196	31.2	196				
3	212	23.2	212	23.8	212	24.3	212	24.6	212	24.9	212	26.0	212	26.8	212	27.7	212	3	212	29.0	212	29.8	212	30.4	212	30.8	212	31.2	212	31.4	212	31.5	212	31.6	212				
7	228	23.5	228	24.1	228	24.6	228	24.9	228	25.2	228	26.3	228	27.1	228	28.0	228	7	228	29.2	228	30.0	228	30.6	228	31.0	228	31.4	228	31.6	228	31.7	228	31.8	228				
11	246	23.8	246	24.4	246	24.9	246	25.3	246	25.6	246	26.7	246	27.5	246	28.4	246	11	246	29.5	246	30.3	246	30.9	246	31.3	246	31.7	246	31.9	246	32.0	246	32.1	246				
15	264	24.0	264	24.6	264	25.1	264	25.4	264	25.7	264	26.8	264	27.6	264	28.5	264	15	264	30.0	264	30.8	264	31.4	264	31.8	264	32.2	264	32.4	264	32.5	264	32.6	264				
19	280	24.3	280	24.9	280	25.4	280	25.7	280	26.0	280	27.1	280	27.9	280	28.8	280	19	280	30.3	280	31.1	280	31.7	280	32.1	280	32.5	280	32.7	280	32.8	280	32.9	280				
23	300	24.5	300	25.1	300	25.6	300	25.9	300	26.2	300	27.3	300	28.1	300	29.0	300	23	300	30.6	300	31.4	300	32.0	300	32.4	300	32.8	300	33.0	300	33.1	300	33.2	300				
27	320	24.8	320	25.4	320	25.9	320	26.2	320	26.5	320	27.6	320	28.4	320	29.3	320	27	320	30.9	320	31.7	320	32.3	320	32.7	320	33.1	320	33.3	320	33.4	320	33.5	320				
31	340	25.0	340	25.6	340	26.1	340	26.4	340	26.7	340	27.8	340	28.6	340	29.5	340	31	340	31.2	340	32.0	340	32.6	340	33.0	340	33.4	340	33.6	340	33.7	340	33.8	340				
35	360	25.3	360	25.9	360	26.4	360	26.7	360	27.0	360	28.1	360	28.9	360	29.8	360	35	360	31.5	360	32.3	360	32.9	360	33.3	360	33.7	360	33.9	360	34.0	360	34.1	360				
39	394	25.6	394	26.2	394	26.7	394	27.0	394	27.3	394	28.4	394	29.2	394	30.1	394	39	394	31.8	394	32.6	394	33.2	394	33.6	394	34.0	394	34.2	394	34.3	394	34.4	394				
43	419	25.8	419	26.4	419	26.9	419	27.2	419	27.5	419	28.6	419	29.4	419	30.3	419	43	419	32.0	419	32.8	419	33.4	419	33.8	419	34.2	419	34.4	419	34.5	419	34.6	419				
47	445	26.1	445	26.7	445	27.2	445	27.5	445	27.8	445	28.9	445	29.7	445	30.6	445	47	445	32.3	445	33.1	445	33.7	445	34.1	445	34.5	445	34.7	445	34.8	445	34.9	445				
51	470	26.3	470	26.9	470	27.4	470	27.7	470	28.0	470	29.1	470																										

SELECTION DATA

(H,Y)VAHR336B(3,4,5)2S

Heating Capacity

Connection ratio	Outdoor air temp	Indoor air temp. °FDB																Connection ratio	Outdoor air temp	Indoor air temp. °FDB																			
		59		63		66		68		70		74		77		80				59		63		66		68		70		74		77		80					
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP				
%	°F/WB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°F/WB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW				
150																																							
-13	159	22.0	159	22.6	159	23.0	159	23.3	159	23.6	159	24.7	159	25.4	159	26.3	159	26.3	-9	172	27.2	172	27.8	172	28.5	172	28.9	172	29.3	172	30.5	172	31.5	172	32.6				
-5	185	22.5	185	23.1	185	23.5	185	23.9	185	24.3	185	25.2	185	26.0	185	26.9	185	26.9	-1	200	22.7	200	23.3	200	23.8	200	24.1	200	24.4	200	25.5	200	26.3	200	27.2				
3	216	23.0	216	23.6	216	24.1	216	24.4	216	24.7	216	25.8	216	26.6	216	27.5	216	27.5	7	233	23.2	233	23.8	233	24.3	233	24.6	233	25.0	233	26.0	233	26.8	233	27.8				
11	251	23.5	251	24.1	251	24.6	251	24.9	251	25.2	251	26.3	251	27.1	251	28.1	251	28.1	11	251	28.7	251	29.5	251	30.1	251	30.4	251	30.8	251	31.7	251	32.5	251	33.5				
15	269	23.7	269	24.4	269	24.8	269	25.2	269	25.5	269	26.6	269	27.4	269	28.4	269	28.4	15	269	29.0	269	29.8	269	30.4	269	30.7	269	31.1	269	32.2	269	33.2	269	34.4				
19	289	23.9	289	24.6	289	25.1	289	25.4	289	25.8	289	26.9	289	27.7	289	28.7	289	28.7	19	289	29.3	289	30.1	289	30.8	289	31.2	289	31.6	289	32.9	289	33.9	289	34.6				
23	310	24.2	310	24.9	310	25.4	310	25.7	310	26.0	310	27.2	310	28.0	310	29.0	310	29.0	23	310	29.6	310	30.5	310	31.1	310	31.5	310	31.9	310	33.3	310	34.3	310	34.9				
27	331	24.4	331	25.1	331	25.6	331	26.0	331	26.3	331	27.4	331	28.3	331	29.3	331	29.3	27	331	29.9	331	30.8	331	31.4	331	31.8	331	32.2	331	33.6	331	34.6	331	35.2				
31	354	24.7	354	25.4	354	25.9	354	26.2	354	26.6	354	27.7	354	28.6	354	29.6	354	29.6	31	354	30.2	354	31.1	354	31.7	354	32.1	354	32.5	354	33.9	354	34.9	354	35.5				
35	378	24.9	378	25.6	378	26.2	378	26.5	378	26.8	378	28.0	378	28.9	378	29.9	378	29.9	35	378	30.5	378	31.4	378	32.0	378	32.4	378	32.8	378	34.2	378	35.2	378	35.8				
39	400	25.2	400	25.9	400	26.4	400	26.8	400	27.1	400	28.3	400	29.2	400	30.2	400	30.2	39	400	30.9	400	31.7	400	32.3	400	32.7	400	33.1	400	34.5	400	35.5	400	36.1				
43	428	25.4	428	26.1	428	26.6	428	27.0	428	27.4	428	28.6	428	29.4	428	30.4	428	30.4	43	428	31.2	428	32.0	428	32.6	428	33.0	428	33.4	428	34.8	428	35.8	428	36.4				
47	454	25.7	454	26.4	454	26.9	454	27.3	454	27.6	454	28.8	454	29.6	454	30.6	454	30.6	47	454	31.5	454	32.3	454	32.9	454	33.3	454	33.7	454	35.1	454	36.1	454	36.7				
51	482	25.9	482	26.6	482	27.2	482	27.6	482	27.9	482	29.1	482	29.9	482	30.9	482	30.9	51	482	31.8	482	32.6	482	33.2	482	33.6	482	34.0	482	35.4	482	36.4	482	37.0				
55	510	26.2	510	26.9	510	27.5	510	27.8	510	28.2	510	29.4	510	30.2	510	31.2	510	31.2	55	510	32.1	510	32.9	510	33.5	510	33.9	510	34.3	510	35.7	510	36.7	510	37.3				
59	540	26.4	540	27.2	540	27.7	540	28.1	540	28.4	540	29.6	540	30.4	540	31.4	540	31.4	59	540	32.4	540	33.2	540	33.8	540	34.2	540	34.6	540	36.0	540	37.0	540	37.6				
140																																							
-13	159	22.7	159	23.4	159	23.8	159	24.1	159	24.5	159	25.5	159	26.3	159	27.3	159	27.3	-9	172	28.3	172	28.9	172	29.7	172	30.4	172	31.2	172	32.0	172	33.2	172	34.4				
-5	185	23.2	185	23.8	185	24.2	185	24.7	185	25.0	185	26.1	185	26.9	185	27.9	185	27.9	-1	200	23.5	200	24.2	200	24.6	200	25.0	200	25.3	200	26.4	200	27.2	200	28.2				
3	216	23.8	216	24.4	216	24.9	216	25.2	216	25.6	216	26.7	216	27.5	216	28.5	216	28.5	7	233	24.0	233	24.7	233	25.2	233	25.5	233	25.9	233	26.9	233	27.7	233	28.7				
11	251	24.3	251	24.9	251	25.5	251	25.8	251	26.1	251	27.2	251	28.0	251	29.0	251	29.0	11	251	30.3	251	31.1	251	31.7	251	32.1	251	32.5	251	33.9	251	34.9	251	35.2				
15	269	24.5	269	25.2	269	25.7	269	26.1	269	26.4	269	27.5	269	28.3	269	29.3	269	29.3	15	269	30.5	269	31.4	269	32.0	269	32.4	269	32.8	269	34.2	269	35.2	269	35.5				
19	289	24.8	289	25.5	289	26.0	289	26.3	289	26.7	289	27.8	289	28.6	289	29.6	289	29.6	19	289	30.8	289	31.6	289	32.2	289	32.6	289	33.0	289	34.4	289	35.4	289	35.7				
23	310	25.0	310	25.7	310	26.2	310	26.5	310	26.9	310	28.1	310	28.9	310	30.0	310	30.0	23	310	31.2	310	32.1	310	32.7	310	33.1	310	33.5	310	34.9	310	35.9	310	36.2				
27	331	25.3	331	26.0	331	26.5	331	26.9	331	27.2	331	28.4	331	29.2	331	30.3	331	30.3	27	331	31.6	331	32.4	331	33.0	331	33.4	331	33.8	331	35.2	331	36.2	331	36.5				
31	354	25.6	354	26.3	354	26.8	354	27.2	354	27.5	354	28.7	354	29.5	354	30.6	354	30.6	31	354	31.9	354	32.8	354	33.4	354	33.8	354	34.2	354	35.6	354	36.6	354	36.9				
35	378	25.8	378	26.5	378	27.1	378	27.4	378	27.8	378	29.0	378	29.8	378	30.9	378	30.9	35	378	32.2	378	33.1	378	33.7	378	34.1	378	34.5	378	35.9	378	36.9	378	37.2				
39	400	26.1	400	26.8	400	27.3	400	27.7	400	28.0	400	29.3	400	30.1	400	31.2	400	31.2	39	400	32.5	400	33.4	400	34.0	400	34.4	400	34.8	400	36.2	400	37.2	400	37.5				
43	428	26.3	428	27.1	428	27.6	428	28.0	428	28.3	428	29.6	428	30.4	428	31.4	428	31.4	43	428	32.8	428	33.7	428	34.3	428	34.7	428	35.1	428	36.5	428	37.5	428	37.8				
47	454	26.6	454	27.3	454	27.8	454	28.2	454	28.5	454	29.8	454	30.6	454	31.6	454	31.6	47	454	33.2	454	34.1	454	34.7	454	35.1	454	35.5	454	36.9	454	37.9	454	38.2				
51	482	26.8	482	27.6	482	28.1	482	28.5	482	28.8	482	29.9	482	30.7	482	31.7	482	31.7	51	482	33.9	482	34.8	482	35.4	482	35.8	482	36.2	482	37.6	482	38.6	482	38.9				
55	510	27.1	510	27.8	510	28.4	510	28.8	510	29.2	510	30.4	510	31.2	510	32.2	510	32.2	55	510	34.1	510	35.0	510	35.6	510	36.0	510	36.4	510	37.8	510	38.8	510	39.1				
59	540	27.4	540	28.1	540	28.7	540	29.1	540	29.4	540	30.6	540	31.4	540	32.4	540	32.4	59	540	34.4	540	35.3	540	35.9	540	36.3	540	36.7	540	38.1	540	39.1	540	39.4				
130																																							
-13	159	23.0	159	23.7	159	24.1	159	24.5	159	24.8	159	25.9	159	26.7	159	27.7	159	27.7	-9	172	29.3	172	29.9	172	30.7	172	31.4	172	32.2	172	33.0	172	34.2	172	35.4				
-5	185	24.1	185	24.8	185	25.3	185	25.6	185	26.0	185	27.1	185	27.9	185	28.9	185	28.9	-1	200	24.4	200	25.1	200	25.6	200	26.0	200	26.3	200	27.4	200	28.2	200	29.3				
3	216	24.7	216	25.3	216	25.8	216	26.1	216	26.5	216	27.6	216	28.4	216	29.4	216	29.4	7	233	25.3	233	26.0	233	26.5	233	26.9	233	27.3	233	28.3	233	29.1	233	30.1				
11	251	25.2	251	25.9	251	26.4	251																																

(H,Y)VAHR360B(3,4,5)2S

Heating Capacity

[illegible]

TC: Total Capacity
IP: Input Power

NOTES:

1. The table shows the normal value of a heating operation.
2. The heating capacity in the table indicates the peak value which does not include the capacity decrease by frost.
3. The value in the table shows when the system is operating under the following conditions.
The total piping length: 24.6ft. (7.5m), The height difference: 0ft (0m)
4. In a heat recovery system, the value in the table indicates when all the indoor units are operating in heating mode.

SELECTION DATA

(H,Y)VAHR384B(3,4,5)2S

Heating Capacity

Connection ratio	Outdoor air temp	Indoor air temp. °FDB																Connection ratio	Outdoor air temp	Indoor air temp. °FDB																			
		59		63		66		68		70		74		77		80				59		63		66		68		70		74		77		80					
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP				
%	°FWB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°FWB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW				
150	-13	216	29.9	216	30.7	216	31.3	216	31.7	216	32.1	216	33.5	216	34.6	216	35.8	-13	216	36.6	216	37.6	216	38.3	216	38.9	216	39.4	216	41.0	216	41.0	216	41.0	216	41.0			
	-9	233	30.2	233	31.0	233	31.7	233	32.1	233	32.5	233	33.9	233	35.0	233	36.2	-9	233	37.0	233	38.0	233	38.8	233	39.3	233	39.8	233	41.0	233	41.0	233	41.0	233	41.0			
	-5	252	30.5	252	31.4	252	32.0	252	32.4	252	32.9	252	34.3	252	35.4	252	36.6	-5	252	37.4	252	38.4	252	39.2	252	39.7	252	40.3	252	41.0	252	41.0	252	41.0	252	41.0			
	-1	272	30.9	272	31.7	272	32.4	272	32.8	272	33.2	272	34.7	272	35.7	272	37.0	-1	272	37.8	272	38.9	272	39.7	272	40.2	272	40.7	272	41.0	272	41.0	272	41.0	272	41.0			
	3	294	31.2	294	32.1	294	32.7	294	33.2	294	33.6	294	35.0	294	36.1	294	37.4	3	294	38.2	294	39.3	294	40.1	294	40.6	294	41.0	294	41.0	294	41.0	294	41.0	294	41.0			
	7	317	31.6	317	32.4	317	33.1	317	33.5	317	34.0	317	35.4	317	36.5	317	37.9	7	317	38.6	317	39.7	317	40.5	317	41.0	317	41.0	317	41.0	317	41.0	317	41.0	317	41.0			
	11	341	31.9	341	32.8	341	33.4	341	33.9	341	34.3	341	35.8	341	36.9	341	38.2	11	341	39.1	341	40.1	341	41.0	341	41.0	341	41.0	341	41.0	341	41.0	341	41.0	341	41.0			
	15	366	32.2	366	33.1	366	33.8	366	34.2	366	34.7	366	36.2	366	37.3	366	38.7	15	366	39.5	366	40.6	366	41.0	366	41.0	366	41.0	366	41.0	366	41.0	366	41.0	366	41.0			
	19	390	32.6	393	33.5	393	34.1	393	34.6	393	35.0	393	36.6	393	37.7	393	39.1	19	393	39.9	393	41.0	393	41.0	393	41.0	393	41.0	393	41.0	393	41.0	393	41.0	393	41.0			
	23	421	32.9	421	33.8	421	34.5	421	35.0	421	35.4	421	36.9	421	38.1	421	39.5	23	421	40.3	421	41.0	421	41.0	421	41.0	421	41.0	421	41.0	421	41.0	421	41.0	421	41.0			
	27	451	33.2	451	34.2	451	34.9	451	35.3	451	35.8	451	37.3	451	38.5	451	39.9	27	451	40.7	451	41.0	451	41.0	451	41.0	451	41.0	451	41.0	451	41.0	451	41.0	451	41.0			
	31	481	33.6	481	34.5	481	35.2	481	35.7	481	36.1	481	37.6	481	38.9	481	40.2	31	481	41.0	481	41.0	481	41.0	481	41.0	481	41.0	481	41.0	481	41.0	481	41.0	481	41.0			
	35	513	33.9	513	34.9	513	35.6	513	36.0	513	36.5	513	38.0	513	39.3	513	40.6	35	513	41.0	513	41.0	513	41.0	513	41.0	513	41.0	513	41.0	513	41.0	513	41.0	513	41.0			
	39	547	34.3	547	35.2	547	35.9	547	36.4	547	36.9	547	38.4	547	39.6	547	40.9	39	547	41.0	547	41.0	547	41.0	547	41.0	547	41.0	547	41.0	547	41.0	547	41.0	547	41.0			
	43	582	34.6	582	35.6	582	36.2	582	36.8	582	37.2	582	38.8	582	39.9	582	41.2	43	582	41.0	582	41.0	582	41.0	582	41.0	582	41.0	582	41.0	582	41.0	582	41.0	582	41.0			
47	618	34.9	618	35.7	618	36.4	618	36.9	618	37.4	618	38.9	618	40.2	47	618	41.0	618	41.0	618	41.0	618	41.0	618	41.0	618	41.0	618	41.0	618	41.0	618	41.0	618	41.0				
51	655	35.3	655	36.2	655	37.0	655	37.5	655	38.0	655	39.6	655	40.7	51	655	41.0	655	41.0	655	41.0	655	41.0	655	41.0	655	41.0	655	41.0	655	41.0	655	41.0	655	41.0				
55	694	35.6	694	36.6	694	37.3	694	37.8	694	38.3	694	39.9	694	41.0	55	694	41.0	694	41.0	694	41.0	694	41.0	694	41.0	694	41.0	694	41.0	694	41.0	694	41.0	694	41.0				
59	734	35.9	734	36.9	734	37.7	689	37.7	689	37.7	648	37.0	566	35.0	504	33.0	42	55	583	37.0	528	36.1	487	34.2	480	31.7	432	30.7	377	29.2	336	28.5	295	28.2					
140	-13	216	29.9	216	31.8	216	32.4	216	32.8	216	33.3	216	34.7	216	35.8	216	37.1	-13	216	38.6	216	39.6	216	40.4	216	41.0	216	41.0	216	41.0	216	41.0	216	41.0	216	41.0			
	-9	233	30.1	233	32.1	233	32.8	233	33.2	233	33.6	233	35.1	233	36.2	233	37.5	-9	233	39.0	233	40.1	233	40.9	233	41.0	233	41.0	233	41.0	233	41.0	233	41.0	233	41.0			
	-5	252	30.1	252	32.5	252	33.3	252	33.6	252	34.0	252	35.5	252	36.6	252	37.9	-5	252	39.4	252	40.5	252	41.0	252	41.0	252	41.0	252	41.0	252	41.0	252	41.0	252	41.0			
	-1	272	30.4	272	32.5	272	33.3	272	33.6	272	34.0	272	35.5	272	36.6	272	37.9	-1	272	40.1	272	41.0	272	41.0	272	41.0	272	41.0	272	41.0	272	41.0	272	41.0	272	41.0			
	3	294	32.3	294	33.2	294	33.9	294	34.3	294	34.8	294	36.3	294	37.4	294	38.8	3	294	40.3	294	41.0	294	41.0	294	41.0	294	41.0	294	41.0	294	41.0	294	41.0	294	41.0			
	7	317	32.7	317	33.6	317	34.2	317	34.7	317	35.1	317	36.7	317	37.8	317	39.2	7	317	40.7	317	41.0	317	41.0	317	41.0	317	41.0	317	41.0	317	41.0	317	41.0	317	41.0			
	11	341	33.0	341	33.9	341	34.6	341	35.1	341	35.5	341	37.1	341	38.2	341	39.6	11	341	41.0	341	41.0	341	41.0	341	41.0	341	41.0	341	41.0	341	41.0	341	41.0	341	41.0			
	15	366	33.4	366	34.3	366	35.0	366	35.4	366	35.9	366	37.5	366	38.6	366	40.0	15	366	41.0	366	41.0	366	41.0	366	41.0	366	41.0	366	41.0	366	41.0	366	41.0	366	41.0			
	19	390	33.7	393	34.6	393	35.3	393	35.8	393	36.3	393	37.8	393	39.0	393	40.4	19	393	41.0	393	41.0	393	41.0	393	41.0	393	41.0	393	41.0	393	41.0	393	41.0	393	41.0			
	23	421	34.1	421	35.0	421	35.7	421	36.2	421	36.7	421	38.2	421	39.4	421	40.8	23	421	41.0	421	41.0	421	41.0	421	41.0	421	41.0	421	41.0	421	41.0	421	41.0	421	41.0			
	27	451	34.4	451	35.4	451	36.1	451	36.6	451	37.0	451	38.6	451	39.8	451	41.2	27	451	41.0	451	41.0	451	41.0	451	41.0	451	41.0	451	41.0	451	41.0	451	41.0	451	41.0			
	31	481	34.8	481	35.7	481	36.4	481	36.9	481	37.4	481	39.0	481	40.2	481	41.6	31	481	41.0	481	41.0	481	41.0	481	41.0	481	41.0	481	41.0	481	41.0	481	41.0	481	41.0			
	35	513	35.1	513	36.1	513	36.8	513	37.3	513	37.8	513	39.4	513	40.6	513	41.9	35	513	41.0	513	41.0	513	41.0	513	41.0	513	41.0	513	41.0	513	41.0	513	41.0	513	41.0			
	39	547	35.5	547	36.4	547	37.2	547	37.7	547	38.2	547	39.8	547	41.0	39	547	41.0	547	41.0	547	41.0	547	41.0	547	41.0	547	41.0	547	41.0	547	41.0	547	41.0	547	41.0			
	43	582	35.8	582	36.8	582	37.5	582	38.0	582	38.5	582	39.9	582	41.0	43	582	41.0	582	41.0	582	41.0	582	41.0	582	41.0	582	41.0	582	41.0	582	41.0	582	41.0	582	41.0			
47	618	36.2	618	37.2	618	37.9	618	38.4	618	38.9	618	40.4	618	41.0	47	618	41.0	618	41.0	618																			

(H,Y)VAHR408B(3,4,5)2S

Heating Capacity

Connection ratio	Outdoor air temp	Indoor air temp. °FDB																Connection ratio	Outdoor air temp	Indoor air temp. °FDB															
		59				63				66				68						70				74				80							
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP		
%	°F/WB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°F/WB	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW		
150	-13	222	30.7	222	31.6	222	32.2	222	32.7	222	33.1	222	34.5	222	35.6	222	36.9	-13	222	37.7	222	38.7	222	39.5	222	40.2	222	40.5	222	41.0	222	41.0	222	41.0	
	-9	240	31.1	240	32.0	240	32.6	240	33.0	240	33.5	240	34.9	240	36.0	240	37.3	-9	240	38.1	240	39.1	240	39.9	240	40.5	240	41.0	240	41.0	240	41.0	240	41.0	
	-5	260	31.4	260	32.3	260	33.0	260	33.4	260	33.8	260	35.3	260	36.4	260	37.7	-5	260	38.5	260	39.6	260	40.4	260	40.9	260	41.0	260	41.0	260	41.0	260	41.0	
	-1	280	31.8	280	32.7	280	33.3	280	33.8	280	34.2	280	35.7	280	36.8	280	38.1	-1	280	38.9	280	40.0	280	40.8	280	41.0	280	41.0	280	41.0	280	41.0	280	41.0	
	3	302	32.1	302	33.0	302	33.7	302	34.1	302	34.5	302	36.0	302	37.2	302	38.5	3	302	39.4	302	40.4	302	41.0	302	41.0	302	41.0	302	41.0	302	41.0	302	41.0	
	7	326	32.5	326	33.4	326	34.1	326	34.5	326	35.0	326	36.5	326	37.6	326	38.9	7	326	39.8	326	40.9	326	41.0	326	41.0	326	41.0	326	41.0	326	41.0	326	41.0	
	11	351	32.8	351	33.7	351	34.4	351	34.9	351	35.3	351	36.9	351	38.0	351	39.4	11	351	40.2	351	41.0	351	41.0	351	41.0	351	41.0	351	41.0	351	41.0	351	41.0	
	15	377	33.2	377	34.1	377	34.8	377	35.2	377	35.7	377	37.2	377	38.4	377	39.8	15	377	40.6	377	41.0	377	41.0	377	41.0	377	41.0	377	41.0	377	41.0	377	41.0	
	19	405	33.5	405	34.5	405	35.1	405	35.6	405	36.1	405	37.6	405	38.8	405	40.2	19	405	41.0	405	41.0	405	41.0	405	41.0	405	41.0	405	41.0	405	41.0	405	41.0	
	23	433	33.9	433	34.8	433	35.5	433	36.0	433	36.5	433	38.0	433	39.2	433	40.6	23	433	41.0	433	41.0	433	41.0	433	41.0	433	41.0	433	41.0	433	41.0	433	41.0	
	27	464	34.2	464	35.2	464	35.9	464	36.4	464	36.8	464	38.4	464	39.6	464	41.0	27	464	41.0	464	41.0	464	41.0	464	41.0	464	41.0	464	41.0	464	41.0	464	41.0	
	31	494	34.6	494	35.6	494	36.2	494	36.7	494	37.2	494	38.8	494	40.0	494	41.0	31	494	41.0	494	41.0	494	41.0	494	41.0	494	41.0	494	41.0	494	41.0	494	41.0	
	35	529	34.9	529	35.9	529	36.6	529	37.1	529	37.6	529	39.2	529	40.4	529	41.0	35	529	41.0	529	41.0	529	41.0	529	41.0	529	41.0	529	41.0	529	41.0	529	41.0	
	39	563	35.3	563	36.2	563	37.0	563	37.5	563	38.0	563	39.6	563	40.8	563	41.0	39	563	41.0	563	41.0	563	41.0	563	41.0	563	41.0	563	41.0	563	41.0	563	41.0	
	43	599	35.6	599	36.6	599	37.3	599	37.8	599	38.3	599	40.0	599	41.0	599	41.0	43	599	41.0	599	41.0	599	41.0	599	41.0	599	41.0	599	41.0	599	41.0	599	41.0	
	47	636	36.0	636	37.0	636	37.7	636	38.2	636	38.7	636	40.3	636	41.0	636	41.0	47	636	41.0	636	41.0	636	41.0	636	41.0	636	41.0	636	41.0	636	41.0	636	41.0	
	51	675	36.3	675	37.3	675	38.0	675	38.5	675	39.0	675	40.6	675	41.0	675	41.0	51	675	41.0	675	41.0	675	41.0	675	41.0	675	41.0	675	41.0	675	41.0	675	41.0	
	55	714	36.7	714	37.7	714	38.4	714	38.9	714	39.4	714	41.0	714	41.0	714	41.0	55	714	41.0	714	41.0	714	41.0	714	41.0	714	41.0	714	41.0	714	41.0	714	41.0	
	59	756	37.0	756	38.0	756	38.8	756	39.3	756	39.8	756	41.4	756	41.0	756	41.0	59	756	41.0	756	41.0	756	41.0	756	41.0	756	41.0	756	41.0	756	41.0	756	41.0	
140	-13	222	31.1	222	32.1	222	33.4	222	34.8	222	36.2	222	38.7	222	41.2	222	43.8	-13	222	39.7	222	40.8	222	41.0	222	41.0	222	41.0	222	41.0	222	41.0	222	41.0	
	-9	240	32.2	240	33.1	240	33.7	240	34.2	240	34.6	240	36.1	240	37.2	240	38.6	-9	240	41.0	240	41.0	240	41.0	240	41.0	240	41.0	240	41.0	240	41.0	240	41.0	
	-5	260	32.5	260	33.4	260	34.1	260	34.6	260	35.0	260	36.5	260	37.1	260	38.9	-5	260	40.6	260	41.0	260	41.0	260	41.0	260	41.0	260	41.0	260	41.0	260	41.0	
	-1	280	32.9	280	33.8	280	34.5	280	35.0	280	35.4	280	36.9	280	37.5	280	39.3	-1	280	41.0	280	41.0	280	41.0	280	41.0	280	41.0	280	41.0	280	41.0	280	41.0	
	3	302	33.3	302	34.2	302	34.9	302	35.4	302	35.8	302	37.3	302	38.5	302	39.9	3	302	41.0	302	41.0	302	41.0	302	41.0	302	41.0	302	41.0	302	41.0	302	41.0	
	7	326	33.6	326	34.6	326	35.3	326	35.7	326	36.2	326	37.7	326	38.9	326	40.3	7	326	41.0	326	41.0	326	41.0	326	41.0	326	41.0	326	41.0	326	41.0	326	41.0	
	11	351	34.0	351	34.9	351	35.6	351	36.1	351	36.6	351	38.1	351	39.3	351	40.8	11	351	41.0	351	41.0	351	41.0	351	41.0	351	41.0	351	41.0	351	41.0	351	41.0	
	15	377	34.3	377	35.3	377	36.0	377	36.5	377	37.0	377	38.6	377	39.7	377	41.0	15	377	41.0	377	41.0	377	41.0	377	41.0	377	41.0	377	41.0	377	41.0	377	41.0	
	19	405	34.7	405	35.7	405	36.4	405	36.9	405	37.3	405	38.9	405	40.2	405	41.0	19	405	41.0	405	41.0	405	41.0	405	41.0	405	41.0	405	41.0	405	41.0	405	41.0	
	23	433	35.1	433	36.0	433	36.8	433	37.2	433	37.7	433	39.3	433	40.6	433	41.0	23	433	41.0	433	41.0	433	41.0	433	41.0	433	41.0	433	41.0	433	41.0	433	41.0	
	27	464	35.4	464	36.4	464	37.1	464	37.6	464	38.1	464	39.8	464	41.0	464	41.0	27	464	41.0	464	41.0	464	41.0	464	41.0	464	41.0	464	41.0	464	41.0	464	41.0	
	31	495	35.8	495	36.8	495	37.5	495	38.0	495	38.5	495	40.2	495	41.0	495	41.0	31	495	41.0	495	41.0	495	41.0	495	41.0	495	41.0	495	41.0	495	41.0	495	41.0	
	35	529	36.1	529	37.1	529	37.9	529	38.4	529	38.9	529	40.6	529	41.0	529	41.0	35	529	41.0	529	41.0	529	41.0	529	41.0	529	41.0	529	41.0	529	41.0	529	41.0	
	39	563	36.5	563	37.5	563	38.3	563	38.8	563	39.3	563	41.0	563	41.0	563	41.0	39	563	41.0	563	41.0	563	41.0	563	41.0	563	41.0	563	41.0	563	41.0	563	41.0	
	43	599	36.9	599	37.9	599	38.6	599	39.1	599	39.6	599	41.3	599	41.0	599	41.0	43	599	41.0	599	41.0	599	41.0	599	41.0	599	41.0	599	41.0	599	41.0	599	41.0	
	47	636	37.2	636	38.3	636	39.0	636	39.5	636	40.1	636	41.8	636	41.0	636	41.0	47	636	41.0	636	41.0	636	41.0	636	41.0	636	41.0	636	41.0	636	41.0	636	41.0	
51	675	37.6	675	38.6	675	39.4	675	39.9	675	40.4	675	42.1	675	41.0	675	41.0	51	675	41.0	675	41.0	675	41.0	675	41.0	675	41.0	675	41.0	675	41.0	675	41.0		
55	714	37.9	714	39.0	714	39.8	714	40.3	714	40.8	714	42.5	714	41.0	714	41.0	55	714	41.0	714	41.0	714	41.0	714	41.0	714	41.0	714	41.0	714	41.0	714	41.0		
59	756	38.3	756	39.4	756	40.2	756	40.7	756	41.2	756	42.9	756	41.0	756	41.0	59	756	41.0	756	41.0	756	41.0	756	41.0	756	41.0	756	41.0	756	41.0	756	41.0		
130	-13	222	33.0	222	33.9	222	35.2	222	36.5	222	37.9	222	40.4	222	42.9	222	45.4	-13	222	41.0	222	41.0	222	41.0	222	41.0	222	41.0							

SELECTION DATA

(H,Y)VAHR432B(3,4,5)2S

Heating Capacity

Connection ratio	Outdoor air temp	Indoor air temp. °FDB																Connection ratio	Outdoor air temp	Indoor air temp. °FDB															
		59		63		66		68		70		74		77		80				59		63		66		68		70		74		77		80	
		TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP			TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP	TC	IP		
%	°F	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	%	°F	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW	MBH	kW		
150	-13	229	30.7	229	31.6	229	32.2	229	32.7	229	33.1	229	34.5	229	35.6	229	36.9	-13	229	37.7	229	38.7	229	39.5	229	40.0	229	40.5	229	42.3	229	43.6	229	45.2	
	-9	247	31.1	247	32.0	247	32.6	247	33.0	247	33.5	247	34.9	247	36.0	247	37.3	-9	247	38.1	247	39.1	247	39.9	247	40.5	247	41.0	247	42.7	247	44.1	247	45.7	
	-5	267	31.4	267	32.3	267	33.0	267	33.4	267	33.8	267	35.3	267	36.4	267	37.7	-5	267	38.5	267	39.6	267	40.4	267	40.9	267	41.4	267	43.2	267	44.6	267	46.2	
	-1	288	31.8	288	32.7	288	33.3	288	33.8	288	34.2	288	35.7	288	36.8	288	38.1	-1	288	38.9	288	40.0	288	40.8	288	41.4	288	41.9	288	43.7	288	45.1	288	46.7	
	3	311	32.1	311	33.0	311	33.5	311	34.1	311	34.6	311	36.1	311	37.2	311	38.5	3	311	39.4	311	40.4	311	41.3	311	41.8	311	42.4	311	44.2	311	45.6	311	47.2	
	7	335	32.5	335	33.4	335	34.1	335	34.5	335	35.0	335	36.5	335	37.5	335	39.0	7	335	39.5	335	40.7	335	41.7	335	42.3	335	42.8	335	44.6	335	46.0	335	47.7	
	11	361	32.8	361	33.7	361	34.4	361	34.9	361	35.3	361	36.9	361	38.0	361	39.4	11	361	40.2	361	41.3	361	42.2	361	42.7	361	43.3	361	45.1	361	46.5	361	48.2	
	15	388	33.2	388	34.1	388	34.8	388	35.2	388	35.7	388	37.2	388	38.4	388	39.8	15	388	40.6	388	41.8	388	42.6	388	43.2	388	43.7	388	45.6	388	47.0	388	48.7	
	19	416	33.5	416	34.5	416	35.1	416	35.6	416	36.1	416	37.6	416	38.8	416	40.2	19	416	41.1	416	42.2	416	43.0	416	43.6	416	44.2	416	46.1	416	47.5	416	49.2	
	23	446	33.9	446	34.8	446	35.5	446	36.0	446	36.5	446	38.0	446	39.2	446	40.6	23	446	41.5	446	42.6	446	43.5	446	44.1	446	44.6	446	46.3	446	47.7	446	49.4	
	27	477	34.2	477	35.2	477	35.9	477	36.4	477	36.8	477	38.4	477	39.6	477	41.0	27	477	41.9	477	43.1	477	43.9	477	44.5	477	45.1	477	46.8	477	48.2	477	50.0	
	31	510	34.6	510	35.5	510	36.2	510	36.7	510	37.2	510	38.8	510	40.0	510	41.4	31	510	42.3	510	43.5	510	44.4	510	45.0	510	45.6	510	47.3	510	48.7	510	50.5	
	35	544	34.9	544	35.9	544	36.6	544	37.1	544	37.6	544	39.2	544	40.4	544	41.8	35	544	42.6	544	43.8	544	44.7	544	45.3	544	45.9	544	47.6	544	49.0	544	50.8	
	39	579	35.3	579	36.2	579	37.0	579	37.5	579	38.0	579	39.6	579	40.8	579	42.2	39	579	43.2	579	44.4	579	45.3	579	45.9	579	46.5	579	48.2	579	49.6	579	51.4	
	43	613	35.6	616	36.6	616	37.3	616	37.8	616	38.3	616	40.0	616	41.2	616	42.6	43	613	43.6	616	44.8	616	45.7	616	46.3	616	46.9	616	48.6	616	50.0	616	51.8	
	47	654	36.0	654	37.0	654	37.7	654	38.2	654	38.7	654	40.4	654	41.6	654	43.0	47	654	44.0	654	45.2	654	46.1	654	46.7	654	47.3	654	49.0	654	50.4	654	52.2	
	51	694	36.3	694	37.3	694	38.1	694	38.6	694	39.1	694	40.8	694	42.0	694	43.4	51	694	44.4	694	45.6	694	46.5	694	47.1	694	47.7	694	49.4	694	50.8	694	52.6	
	55	735	36.7	735	37.7	735	38.4	735	38.9	735	39.4	735	41.2	735	42.4	735	43.8	55	735	44.8	735	46.0	735	46.9	735	47.5	735	48.1	735	49.8	735	51.2	735	53.0	
	59	777	37.0	777	38.0	777	38.8	777	39.3	777	39.8	777	41.6	777	42.8	777	44.2	59	777	45.2	777	46.4	777	47.3	777	47.9	777	48.5	777	50.2	777	51.6	777	53.4	
140	-13	229	30.7	229	31.6	229	32.2	229	32.7	229	33.1	229	34.5	229	35.6	229	36.9	-13	229	37.7	229	38.7	229	39.5	229	40.0	229	40.5	229	42.3	229	43.6	229	45.2	
	-9	247	31.1	247	32.0	247	32.6	247	33.0	247	33.5	247	34.9	247	36.0	247	37.3	-9	247	38.1	247	39.1	247	39.9	247	40.5	247	41.0	247	42.7	247	44.1	247	45.7	
	-5	267	31.4	267	32.3	267	33.0	267	33.4	267	33.8	267	35.3	267	36.4	267	37.7	-5	267	38.5	267	39.6	267	40.4	267	40.9	267	41.4	267	43.2	267	44.6	267	46.2	
	-1	288	31.8	288	32.7	288	33.3	288	33.8	288	34.2	288	35.7	288	36.8	288	38.1	-1	288	38.9	288	40.0	288	40.8	288	41.4	288	41.9	288	43.7	288	45.1	288	46.7	
	3	311	32.1	311	33.0	311	33.5	311	34.1	311	34.6	311	36.1	311	37.2	311	38.5	3	311	39.4	311	40.4	311	41.3	311	41.8	311	42.4	311	44.2	311	45.6	311	47.2	
	7	335	32.5	335	33.4	335	34.1	335	34.5	335	35.0	335	36.5	335	37.5	335	39.0	7	335	39.5	335	40.7	335	41.7	335	42.3	335	42.8	335	44.6	335	46.0	335	47.7	
	11	361	32.8	361	33.7	361	34.4	361	34.9	361	35.3	361	36.9	361	38.0	361	39.4	11	361	40.2	361	41.3	361	42.2	361	42.7	361	43.3	361	45.1	361	46.5	361	48.2	
	15	388	33.2	388	34.1	388	34.8	388	35.2	388	35.7	388	37.2	388	38.4	388	39.8	15	388	40.6	388	41.8	388	42.6	388	43.2	388	43.7	388	45.6	388	47.0	388	48.7	
	19	416	33.5	416	34.5	416	35.1	416	35.6	416	36.1	416	37.6	416	38.8	416	40.2	19	416	41.1	416	42.2	416	43.0	416	43.6	416	44.2	416	46.1	416	47.5	416	49.2	
	23	446	33.9	446	34.8	446	35.5	446	36.0	446	36.5	446	38.0	446	39.2	446	40.6	23	446	41.5	446	42.6	446	43.5	446	44.1	446	44.6	446	46.3	446	47.7	446	49.4	
	27	477	34.2	477	35.2	477	35.9	477	36.4	477	36.8	477	38.4	477	39.6	477	41.0	27	477	41.9	477	43.1	477	43.9	477	44.5	477	45.1	477	46.8	477	48.2	477	50.0	
	31	510	34.6	510	35.5	510	36.2	510	36.7	510	37.2	510	38.8	510	40.0	510	41.4	31	510	42.3	510	43.5	510	44.4	510	45.0	510	45.6	510	47.3	510	48.7	510	50.5	
	35	544	34.9	544	35.9	544	36.6	544	37.1	544	37.6	544	39.2	544	40.4	544	41.8	35	544	42.6	544	43.8	544	44.7	544	45.3	544	45.9	544	47.6	544	49.0	544	50.8	
	39	579	35.3	579	36.2	579	37.0	579	37.5	579	38.0	579	39.6	579	40.8	579	42.2	39	579	43.2	579	44.4	579	45.3	579	45.9	579	46.5	579	48.2	579	49.6	579	51.4	
	43	616	35.6	616	36.6	616	37.3	616	37.8	616	38.3	616	40.0	616	41.2	616	42.6	43	616	43.6	616	44.8	616	45.7	616	46.3	616	46.9	616	48.6	616	50.0	616	51.8	
	47	654	36.0	654	37.0	654	37.7	654	38.2	654	38.7	654	40.4	654	41.6	654	43.0	47	654	44.0	654	45.2	654	46.1	654	46.7	654	47.3	654	49.0	654	50.4	654	52.2	
	51	694	36.3	694	37.3	694	38.1	694	38.6	694	39.1	694	40.8	694	42.0	694	43.4	51	694	44.4	694	45.6	694	46.5	694	47.1	694	47.7	694	49.4	694	50.8	694	52.6	
	55	735	36.7	735	37.7	735	38.4	735	38.9	735	39.4	735	41.2	735	42.4	735	43.8	55	735	44.8	735	46.0	735	46.9	735	47.5	735	48.1	735	49.8	735	51.2	735	53.0	
	59	777	37.0	777	38.0	777	38.8	777	39.3	777	39.8	777	41.6	777	42.8	777	44.2	59	777	45.2	777	46.4	777	47.3	777										

5.3 Correction Factor According to Piping Length

Cooling Capacity

Correction Factor for Cooling Capacity According to Piping Length

The cooling capacity must be corrected according to the following formula:

$$CCA = CC \times F$$

CCA: Actual Corrected Cooling Capacity

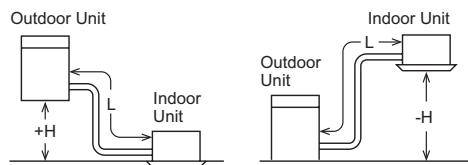
CC: Cooling Capacity in the Capacity Table

F: Correction Factor Based on the Equivalent Piping Length

The correction factors are shown in the figure.

Equivalent Piping Length for

- One 90° Elbow is 1.6ft (0.5m).
- One 180° Bend is 4.9ft (1.5m).
- One Multi-Kit is 1.6ft (0.5m).



H: Height Difference Between Indoor Unit and Outdoor Unit

EL: Equivalent Total Distance Between Indoor Unit and Outdoor Unit (Equivalent One-Way Piping Length)

H>0: Position of Outdoor Unit Higher Than Position of Indoor Unit

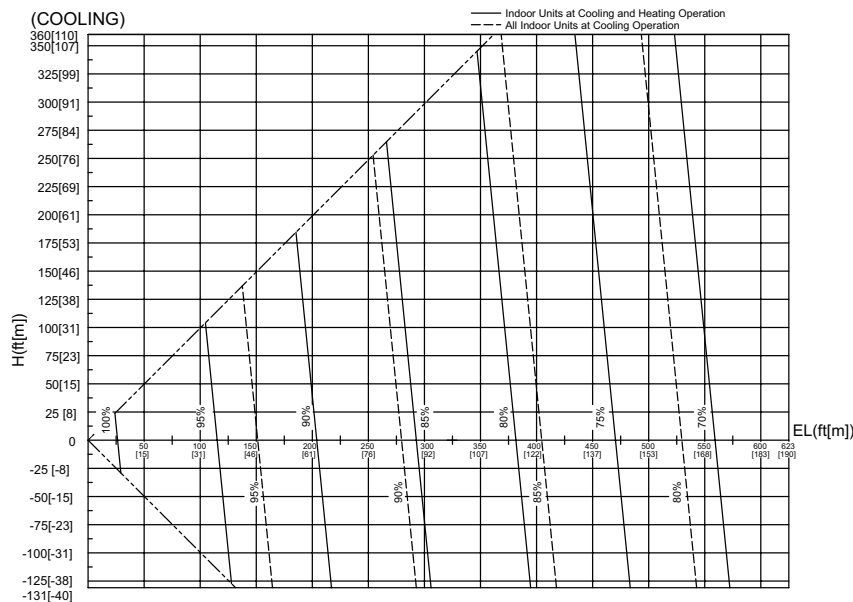
L: Actual One-Way Piping Length Between Indoor Unit and Outdoor Unit

* Liquid piping size for EL < 328ft [100m] and EL ≥ 328ft [100m] are different.

Refer to Section 2.14.3 "Piping Size and Multi-Kit Selection".

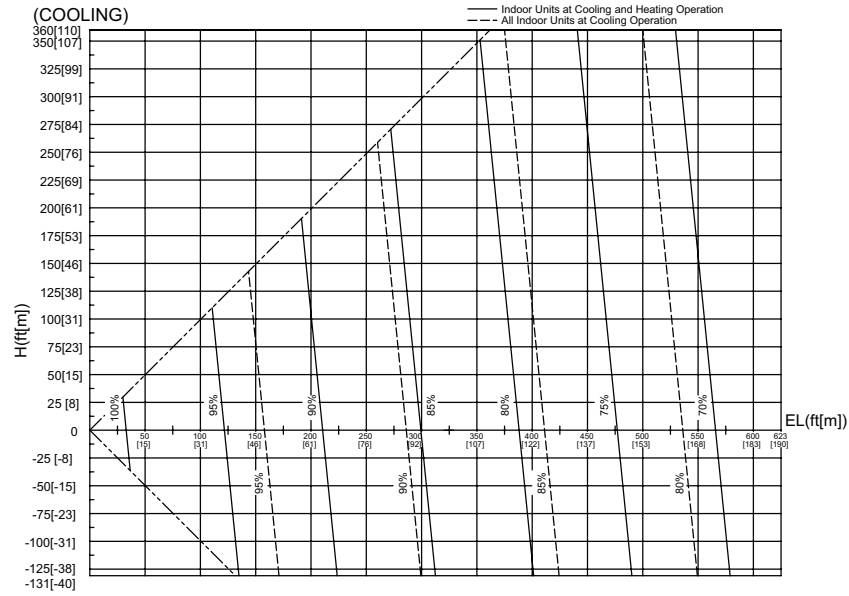
* When Height Difference is longer than 131ft (40m) and up to 360ft (110m) (in case the O.U. is lower), the same correction factor according to piping length "height difference = -131ft (-40m)" must be used.

MODELS: (H,Y)VAHR072B(3,4,5)2S and (H,Y)VAHR096B(3,4,5)2S

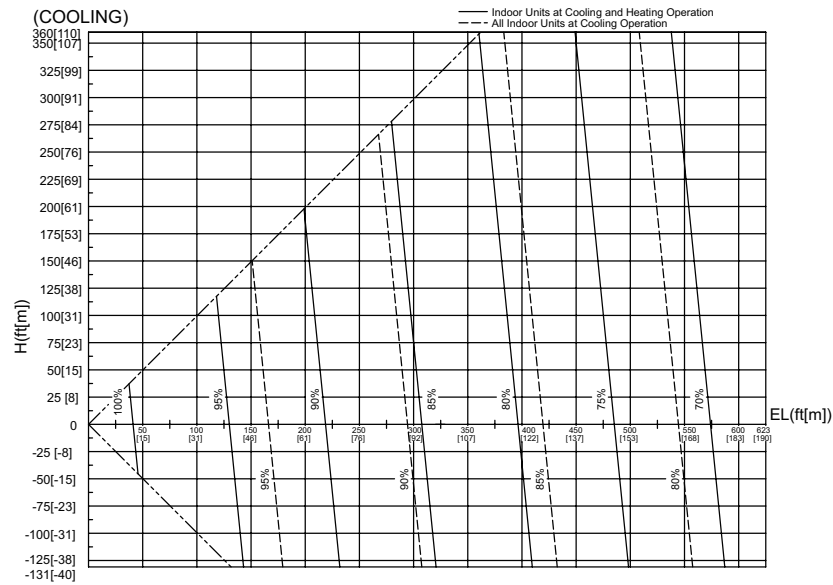


SELECTION DATA

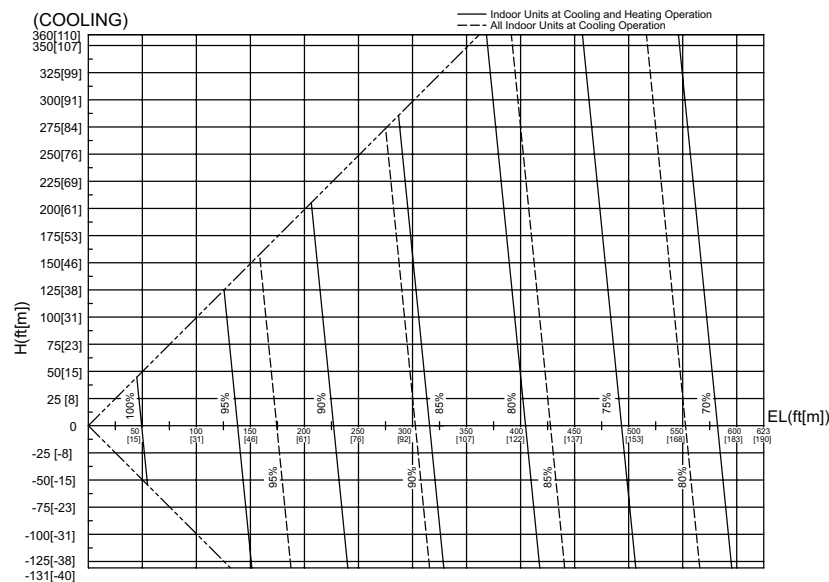
MODELS: (H,Y)VAHR120B(3,4,5)2S, (H,Y)VAHR144B(3,4,5)2S, (H,Y)VAHR168B(3,4,5)2S, (H,Y)VAHR192B(3,4,5)2S and (H,Y)VAHR16B(3,4,5)2S



MODELS: (H,Y)VAHR240B(3,4,5)2S, (H,Y)VAHR264B(3,4,5)2S, (H,Y)VAHR288B(3,4,5)2S, (H,Y)VAHR312B(3,4,5)2S, (H,Y)VAHR336B(3,4,5)2S and (H,Y)VAHR360B(3,4,5)2S



MODELS: (H,Y)VAHR384B(3,4,5)2S, (H,Y)VAHR408B(3,4,5)2S and (H,Y)VAHR432B(3,4,5)2S



Heating Capacity

Correction Factor for Heating Capacity According to Piping Length

The heating capacity must be corrected according to the following formula:

$$HCA = HC \times F$$

HCA: Actual Corrected Heating Capacity

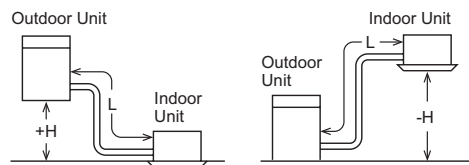
HC: Heating Capacity in the Performance Table

F: Correction Factor Based on the Equivalent Piping Length

The correction factors are shown in the figure.

Equivalent Piping Length for

- One 90° Elbow is 1.6ft (0.5m).
- One 180° Bend is 4.9ft (1.5m).
- One Multi-Kit is 1.6ft (0.5m).



H: Height Difference Between Indoor Unit and Outdoor Unit

EL: Equivalent Total Distance Between Indoor Unit and Outdoor Unit in Meters (Equivalent One-Way Piping Length)

H>0: Position of Outdoor Unit Higher Than Position of Indoor Unit

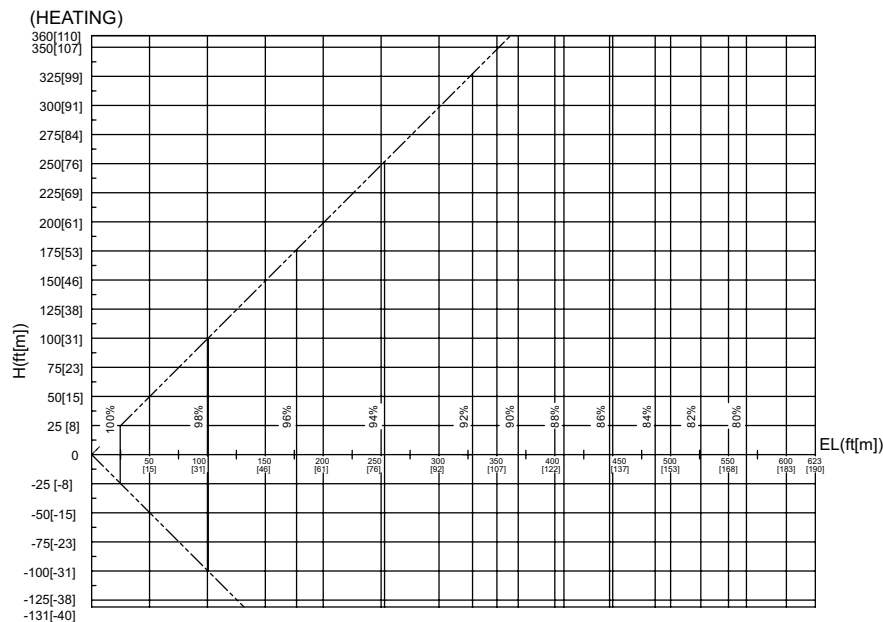
L: Actual One-Way Piping Length Between Indoor Unit and Outdoor Unit in Meters

* Liquid piping size for EL < 328ft [100m] and EL ≥ 328ft [100m] are different.

Refer to Section 2.14.3 "Piping Size and Multi-Kit Selection".

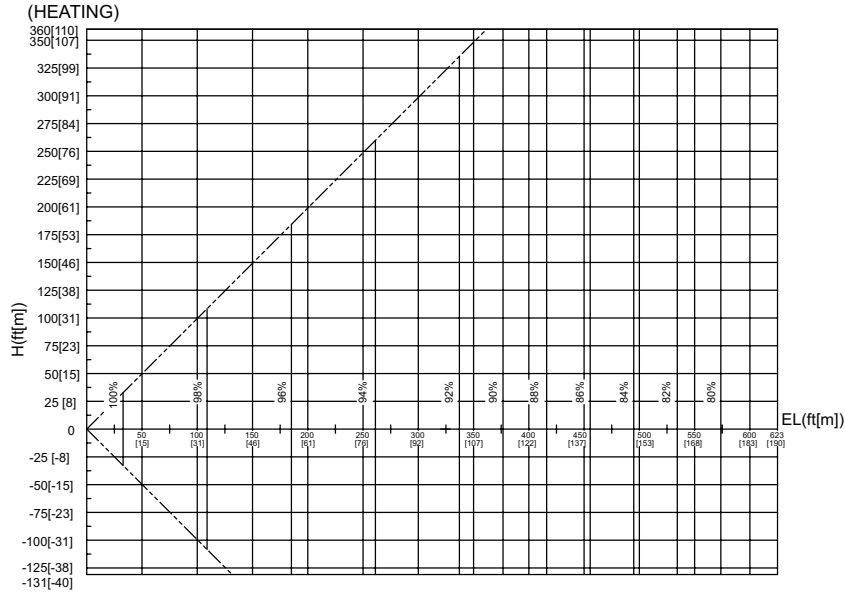
* When Height Difference is longer than 131ft (40m) and up to 360ft (110m) (in case the O.U. is lower), the same correction factor according to piping length "height difference = -131ft (-40m)" must be used.

MODELS: (H,Y)VAHR072B(3,4,5)2S and (H,Y)VAHR096B(3,4,5)2S

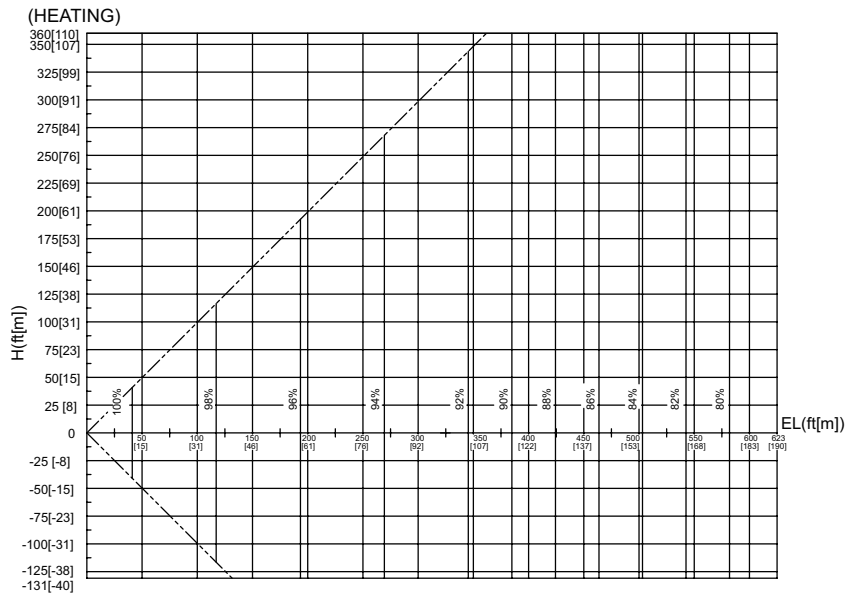


SELECTION DATA

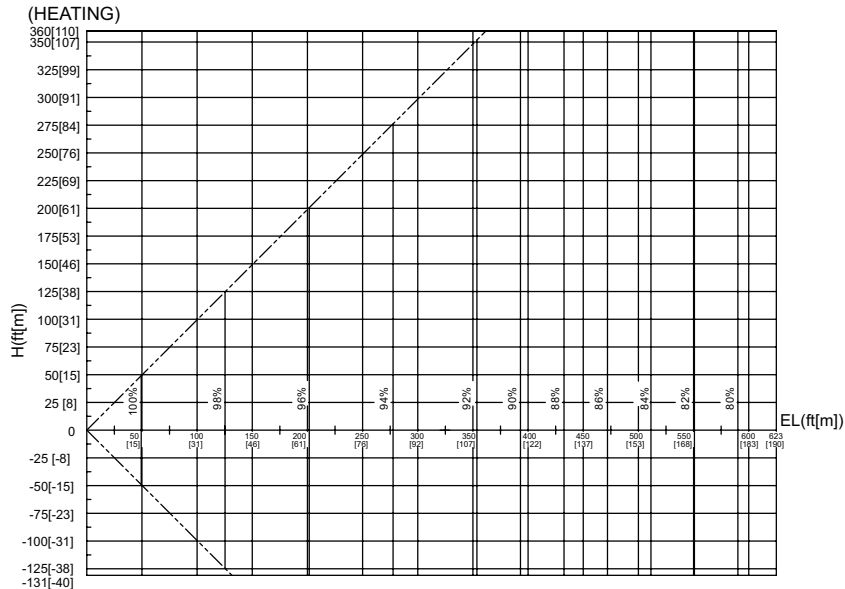
MODELS: (H,Y)VAHR120B(3,4,5)2S, (H,Y)VAHR144B(3,4,5)2S, (H,Y)VAHR168B(3,4,5)2S, (H,Y)VAHR192B(3,4,5)2S and (H,Y)VAHR216B(3,4,5)2S



MODELS: (H,Y)VAHR240B(3,4,5)2S, (H,Y)VAHR264B(3,4,5)2S, (H,Y)VAHR288B(3,4,5)2S, (H,Y)VAHR312B(3,4,5)2S, (H,Y)VAHR336B(3,4,5)2S and (H,Y)VAHR360B(3,4,5)2S



MODELS: (H,Y)VAHR384B(3,4,5)2S, (H,Y)VAHR408B(3,4,5)2S and (H,Y)VAHR432B(3,4,5)2S



5.4 Correction Factor According to Defrosting Operation

The heating capacity in the preceding paragraph does not include defrost operation periods. Therefore, capacity must be corrected as follows:

Corrected Heating Capacity = Correction Factor x Heating Capacity

Outdoor Air Temp. °F DB (°C DB) (Humidity=85% RH)	19 (-7.2)	23 (-5.0)	27 (-2.8)	31 (-0.6)	35 (1.7)	39 (3.9)	41 (5.0)	45 (7.2)	47 (8.3)
Correction Factor	0.95	0.93	0.88	0.85	0.86	0.88	0.90	1.0	1.0

NOTE:

The correction factors in the table are for regular conditions (not snowing, not operating in a transitional stage, etc.)

5.5 Correction Factor According to Altitude

The capacity is impacted by the altitude.

Corrected Capacity = Correction Factor x Capacity

Altitude	ft (m)	0 (0)	1000 (305)	2000 (610)	3000 (914)	4000 (1219)	5000 (1524)	6000 (1829)	7000 (2133)	8000 (2438)	9000 (2743)	10000 (3048)
Correction Factor		1.00	0.97	0.93	0.90	0.87	0.83	0.80	0.77	0.75	0.72	0.69

