

Refrigerant
R410A
INVERTER

AIRSTAGE™

V SERIES

Variable Refrigerant Flow System

Multi Air Conditioning System for Buildings



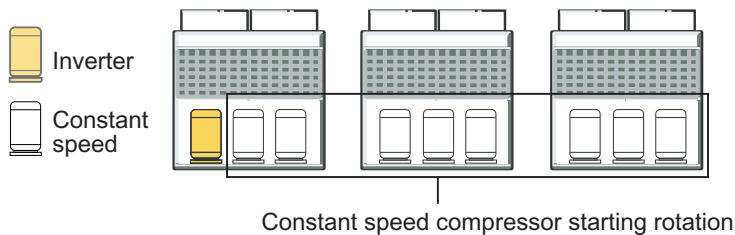
1-1. FEATURES OF SYSTEM

1-1-1. HIGH RELIABILITY

■ COMPRESSOR ROTATION CONTROL

● Improvement of long life by reducing compressor wear

In addition to control which reduces the number of times the compressor is started and stopped, the load at starting is shared and equalized by rotation control. This rotation improves the durability and reliability of each compressor.

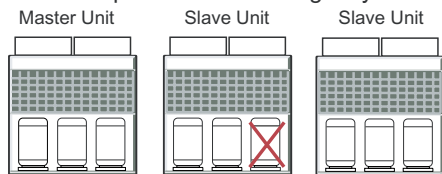


■ EMERGENCY OPERATION

● Outdoor unit

Continuous operation is possible even in the unlikely event of compressor failure

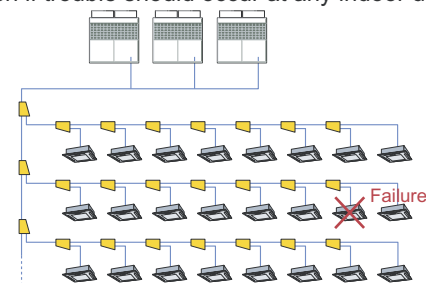
There is no immediate system shutdown if trouble occurs in any compressor. The other compressors continue to operate on an emergency basis.



● Indoor unit

Continuous operation is possible even if trouble occurs at any indoor unit(s)

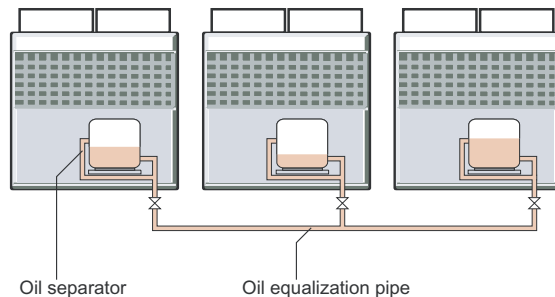
Each indoor unit is controlled individually on the system network. This allows all indoor units continue to run unaffected even if trouble should occur at any indoor unit(s) in one system.



■ OPTIMUM OIL CONTROL

Stable operation of compressor by optimum oil control

- 1 High trapping efficiency, large capacity cyclone type oil separator
- 2 Oil balance control which maintains uniform oil levels
- 3 Optimum EEV control for oil and refrigerant circulation

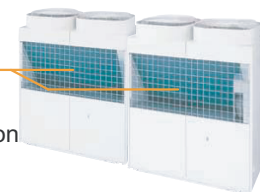


■ BLUE FIN HEAT EXCHANGER MOUNTED

Corrosion-resistance of the heat exchanger even in coastal areas has been improved by blue fin treatment of the outdoor unit heat exchanger.

Blue fin heat exchanger

- Cobalt Blue protection
- Standard chromate protection
- Aluminium base material
- Hydrophilic coating



■ WEB MONITORING TOOL

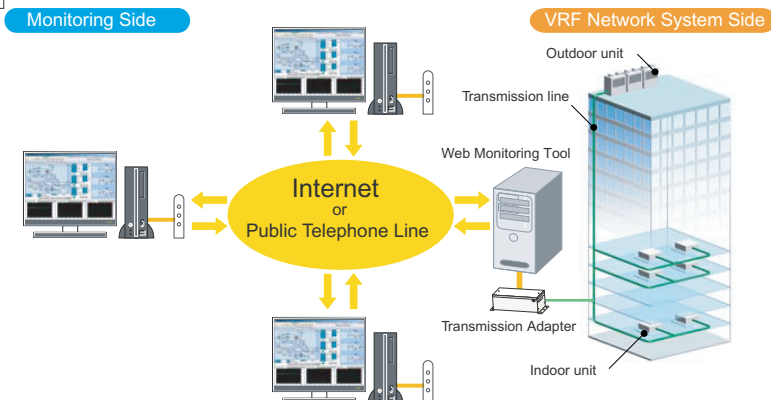
Software

Trouble free operation at all times by web monitoring system

The operation status of the VRF system within the building can be monitored in real time over the Internet.



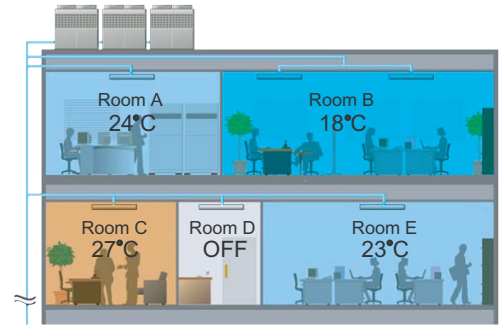
*Please contact your distributor for details.



1-1-2. IMPROVED COMFORT

INDIVIDUAL AIR CONDITIONING SYSTEM

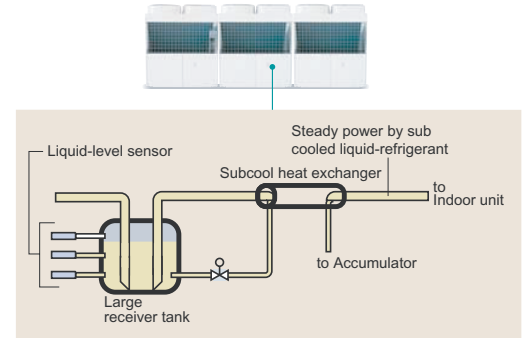
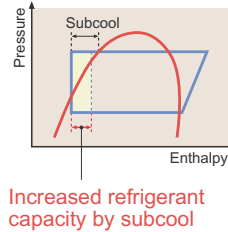
Pleasant air conditioning meeting individual room requirements.



LIQUID LEVEL BALANCE CONTROL

Stable capacity and reduction of refrigerant noise by optimum state of refrigerant

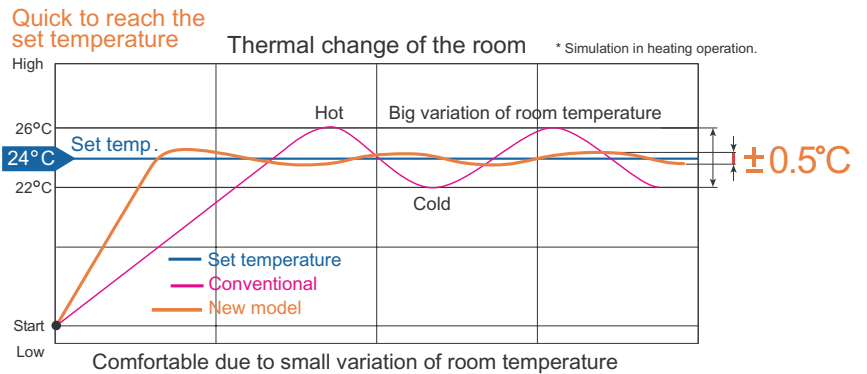
Balancing of the refrigerant in the system is optimized by liquid level balance control and subcool circuit between the receiver tanks of each outdoor unit. Stable refrigerant supply allows long pipe runs and achieves stable operational system performance whilst reducing unpleasant refrigerant noise.



ROOM TEMPERATURE CONTROL

Comfort at any time by high precision refrigerant flow control

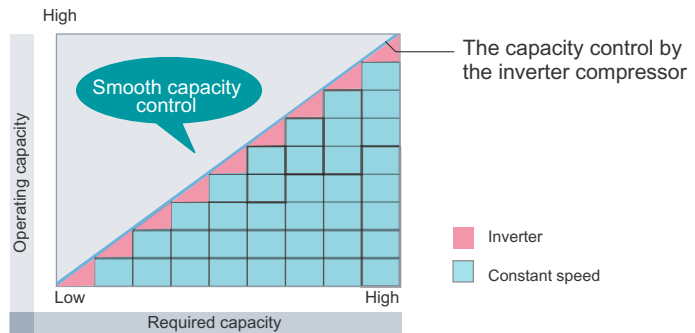
High precision $\pm 0.5^\circ\text{C}$ ensures comfortable temperature control of the room. This is achieved by smooth refrigerant flow, controlled by inverter and by the indoor unit electronic expansion valve.



INVERTER CONTROL

Comfort and energy saving achieved by implementation of inverter control

Comfort and energy saving is achieved by the adoption of linear step control in conjunction with inverter and constant speed compressor combination, which allows more precise control of the necessary refrigerant circulation amount required according to the system load. This also allows for a comfortable environment by use of smooth capacity control.



SUPER QUIET

Outdoor unit

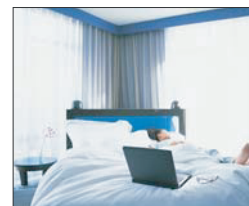
Quiet operating sound outdoor unit achieved

Operating noise has been reduced further through the application of a new dual casing bell mouth and large fan. The noise level can be reduced by 4-5dB (A) compared to normal operation by selecting silent operation.



Indoor unit

Quiet indoor units suited for bedrooms and other rooms which require quietness are available.



1-1-3. HIGH EFFICIENCY OPERATION

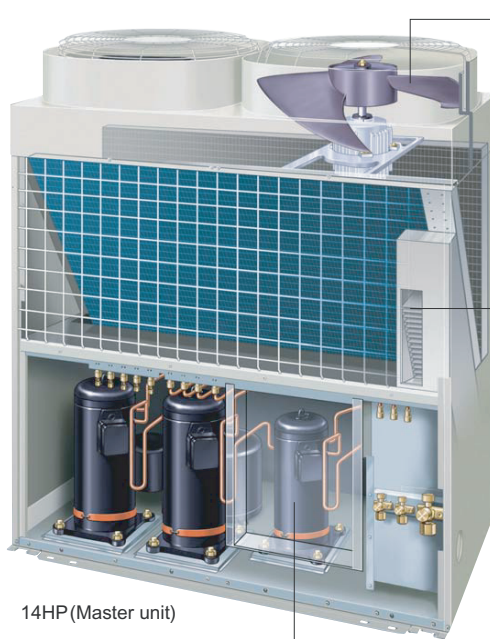
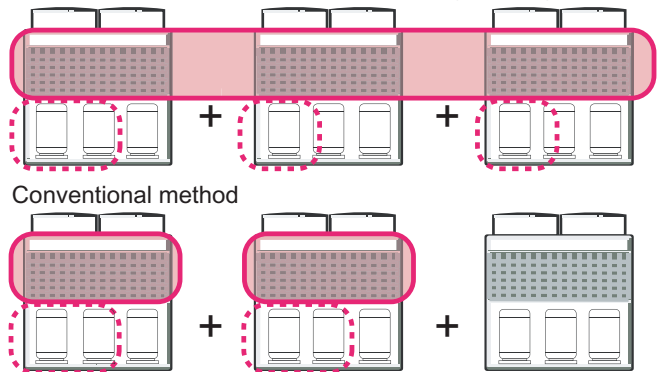
■ EFFECTIVE USE OF THE HEAT EXCHANGER OF OTHER OUTDOOR UNITS

This system takes advantage of the features of the multi type outdoor unit

The heat exchanger is operated at maximum efficiency by effectively using the heat exchanger of each outdoor unit reciprocally.

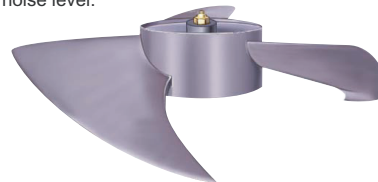
Example

The larger heat exchanger than the capacity of compressor is used in each outdoor unit. (V series)



Large propeller fan

A newly designed fan is adopted for achieving higher performance and reducing the noise level.

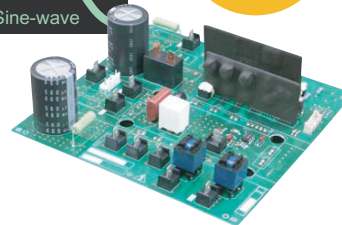


Sine-wave DC Inverter Control

By adopting Sine-Wave DC Inverter Control for smoothing the motor running, energy saving and high efficiency operation are realized



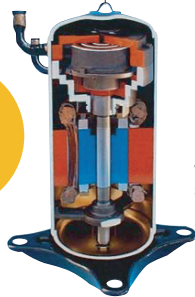
Adopted Sine-wave DC inverter control



14HP (Master unit)

DC inverter + Scroll compressor

Equipped with DC inverter scroll compressor



By combining the DC inverter controlled scroll compressor with the constant speed scroll compressor, an operating system of energy saving and high efficiency is realized.

■ HIGH EFFICIENCY

All key features of the outdoor unit result in a higher level of COP



* The data refers to a 10HP outdoor unit.
 * "COP" is the coefficient of performance [= capacity (kW) ÷ input power (kW)].
 ※ COP values are base on our own testing method.

■ HIGH EFFICIENCY REFRIGERANT R410A

Improvement of operation efficiency realized by adoption of a new refrigerant



Refrigerant characteristics (Comparison of R22 / R407C / R410A)

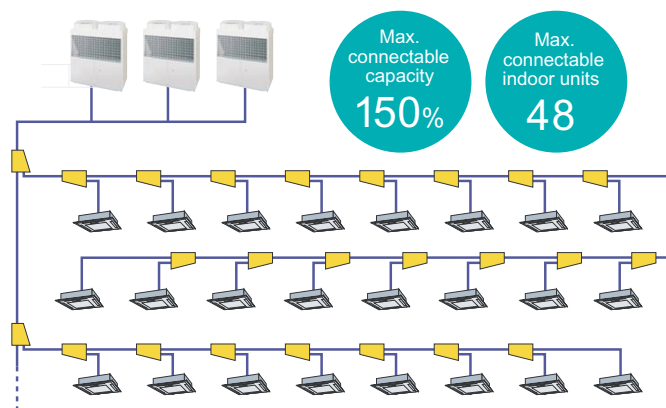
Refrigerant	R22	R407C	R410A
Composition element	Single component	Blended (Zeotrope)	Blended (Near azeotrope)
Working Pressure (As compared to R22)	—	Similar	Higher (1.6 times)
Capacity (As compared to R22)	—	Similar	Higher (1.5 times)
Pressure Loss (As compared to R22)	—	Similar	Lower (0.6 times)
Total Efficiency (As compared to R22)	—	Similar	Higher (1.05 times)

1-1-4. DESIGN FREEDOM

CONNECTABLE LARGE CAPACITY

The indoor unit connection ratio of this system can be from 50 to 150%(*1) of the outdoor unit capacity, thus achieving a high level of diversification with up to 48 indoor units (30 to 42HP) connectable on one refrigerant system.

*1 Indoor unit connectable capacity is 75 to 150% for single outdoor unit system (8-14HP) in case of including indoor unit model code 18 and under in the system.

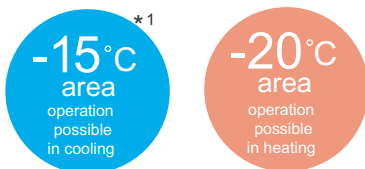


Note : When all indoor units are operating at maximum capacity, individual indoor units operate at a slightly lower capacity.(When connecting more than 100%)

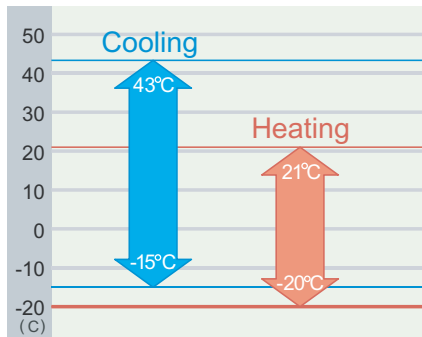
LOW OUTDOOR AIR TEMPERATURE OPERATION

Expansion of operating ranges

World's top class low outdoor air temperature operating range is achieved. This extends the potential locations for use to the cold regions of the world.

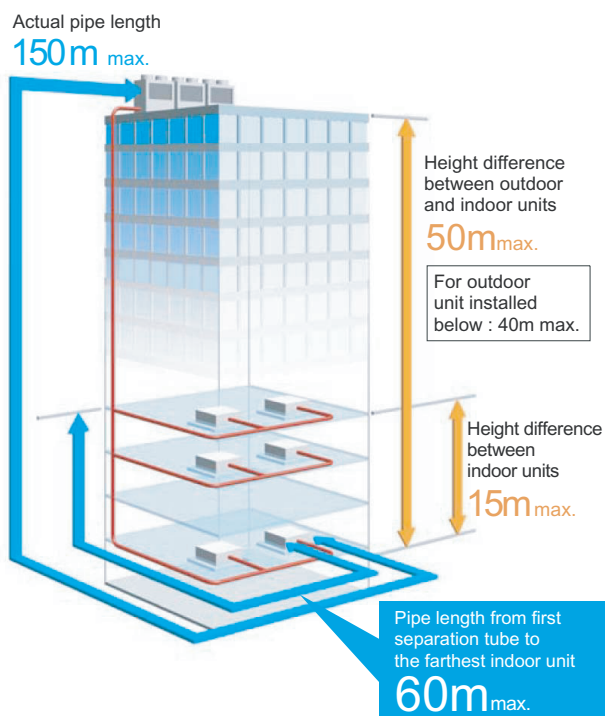


*1 Note : When outdoor units connect multiple operating range is from -5°C to 43°C in cooling.



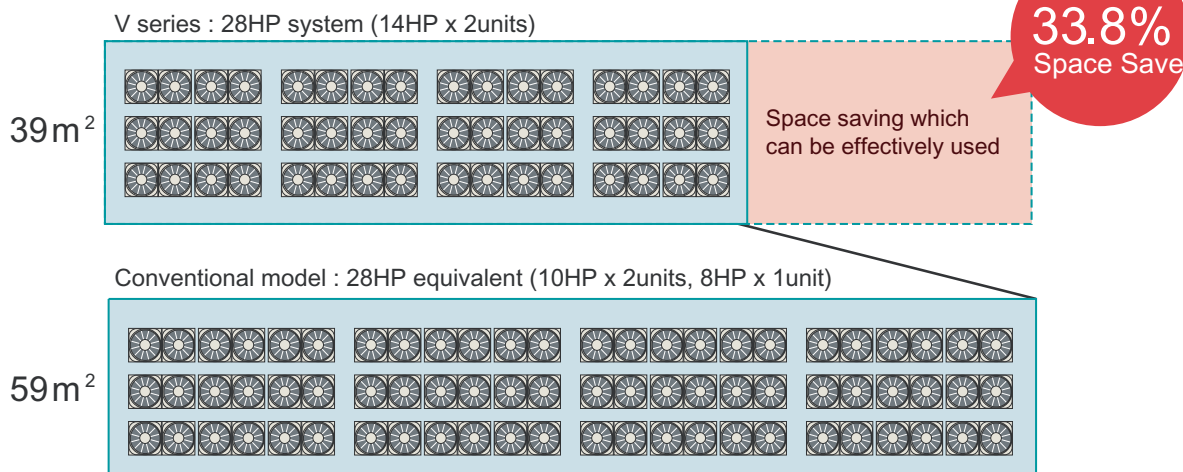
LONG PIPING SYSTEM DESIGN

With the V Series, installation up to a maximum piping length of 150m and a maximum height difference of 50m is possible. In addition, the piping can be extended up to a maximum of 60m from the first separation tube.



COMPACT OUTDOOR UNIT IMPROVES USE OF SPACE

Installation space can be reduced freeing up valuable building space



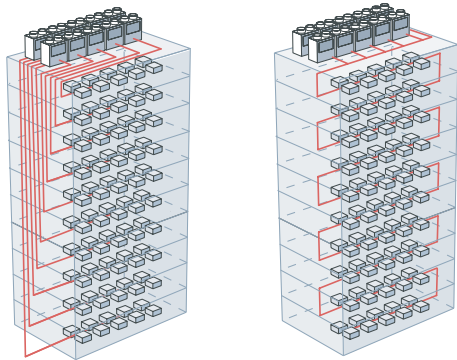
* 12 floors building (28HP capacity is required by each floor)

1-1-5. EASY INSTALLATION

■ SIMPLE COMMUNICATION WIRING

Connection method simplifies installation and prevents errors

By using our wiring connection method, the wiring length is reduced compared to other wiring systems.

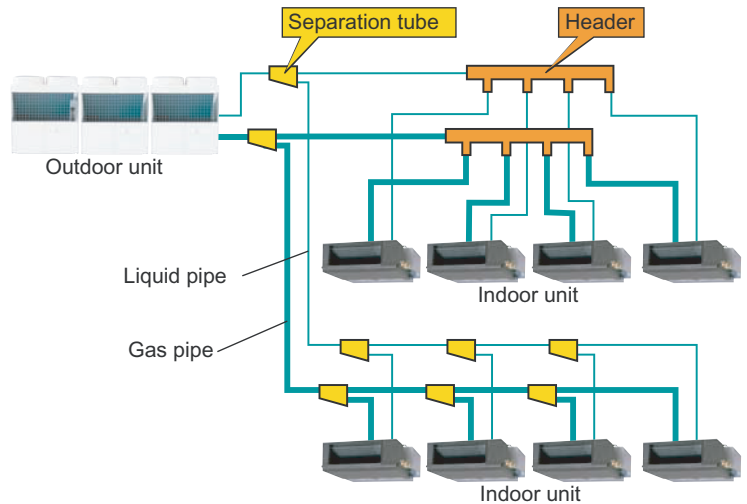


Other wiring method

Simple wiring method

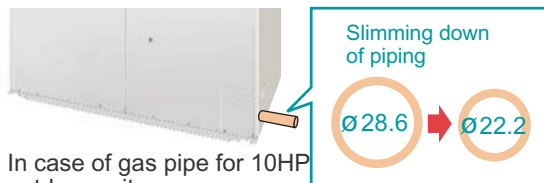
■ SIMPLE PIPING SYSTEM

Separation tubes and headers provide connection flexibility and simplicity reducing installation costs.



■ PIPE SIZE REDUCTION

Use of R410A refrigerant allows for a pipe size reduction compared to the conventional system. This offers improvement in construction work and a reduction in piping costs.

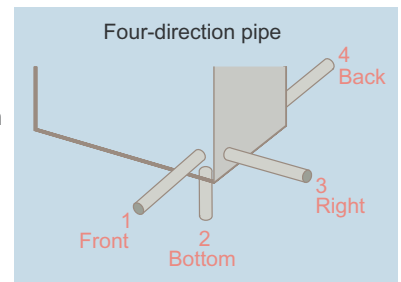


In case of gas pipe for 10HP outdoor unit

■ CHOICE OF 4-DIRECTION PIPING CONNECTION

Piping connection

4-direction piping allows a variety of installation configurations. Easy installation and pipe direction setting.

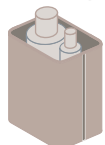


■ PIPING SYSTEM ALLOWS REDUCTION OF THE NUMBER OF PIPES

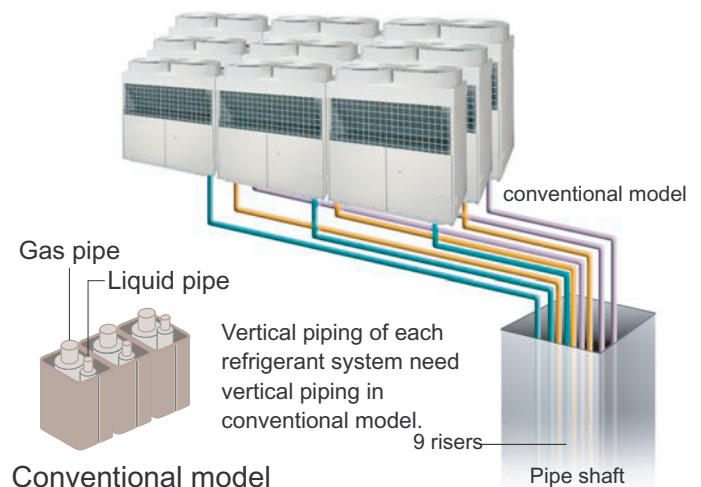
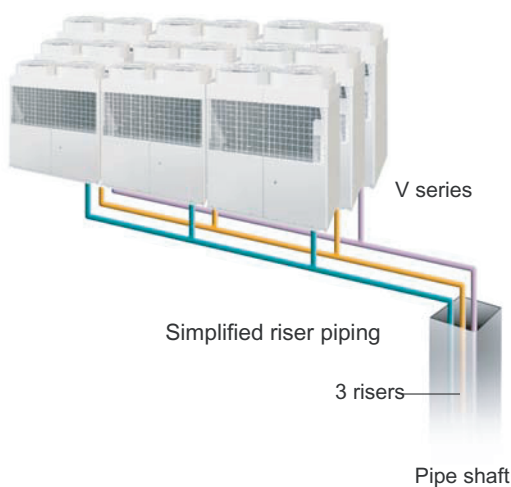
Example: 90HP = 10HP x 3units x 3

Less piping

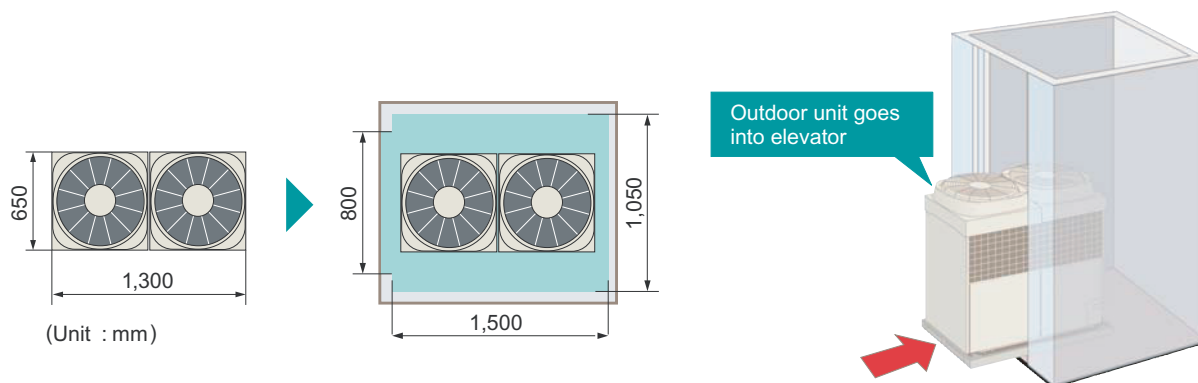
Reduction of pipe-duct space



V series



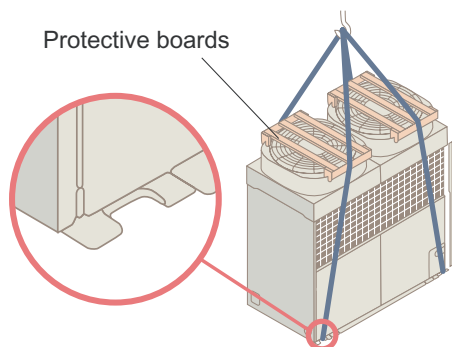
■ COMPACT OUTDOOR UNIT CAN BE CARRIED IN A SMALL ELEVATOR



■ LIFTING BELT HOOKS CONVENIENT IN CRANE WORK

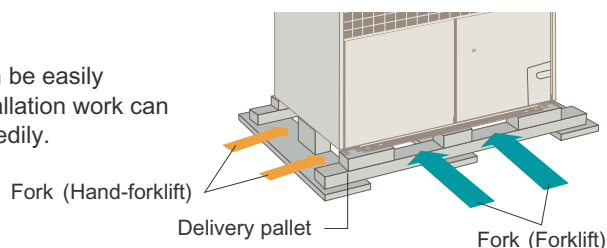
Craning into place

The outdoor unit can be lifted by crane and set down on the building roof.



■ EASY REMOVING PALLET

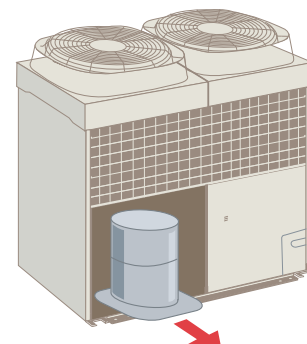
Delivery pallet can be easily removed and installation work can be performed speedily.



■ EASY REPLACEMENT

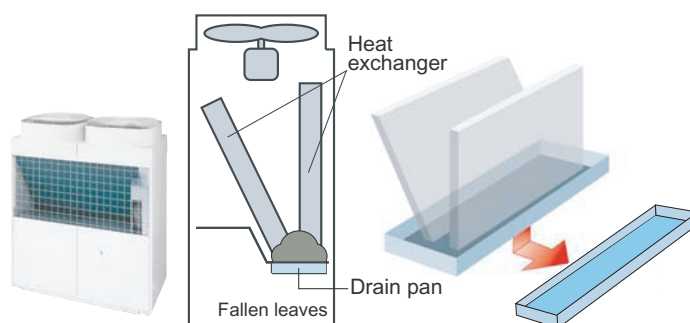
Compressor can be moved by pull-out tray which simplifies inspection and replacement work

A pull-out plate ensures easy compressor replacement if necessary.



■ DRAIN PAN CLEANING IS EASY

Detachable drain pan simplifies removal of fallen leaves collected in the drain pan at the bottom of the heat exchanger.



■ SERVICE TOOL Software

● MODEL : UTR-YSTC

Extensive monitoring and analysis functions for installation and maintenance.

