

A GUIDE FOR REPLACEMENT

Refrigerant **R32** **R410A** for Air Conditioners

[Revised version]

Sales Promotion Manual

· Added
PUHZ-P-KA series,
PUHZ-ZRP200,250YKA3,
and PUHZ-P200,250YKA3
in Revised version.

To protect the ozone layer

Our replacement technologies contribute to
environmental conservation

2017

for a greener tomorrow



Doing Our Part to Create a Better Future for All...

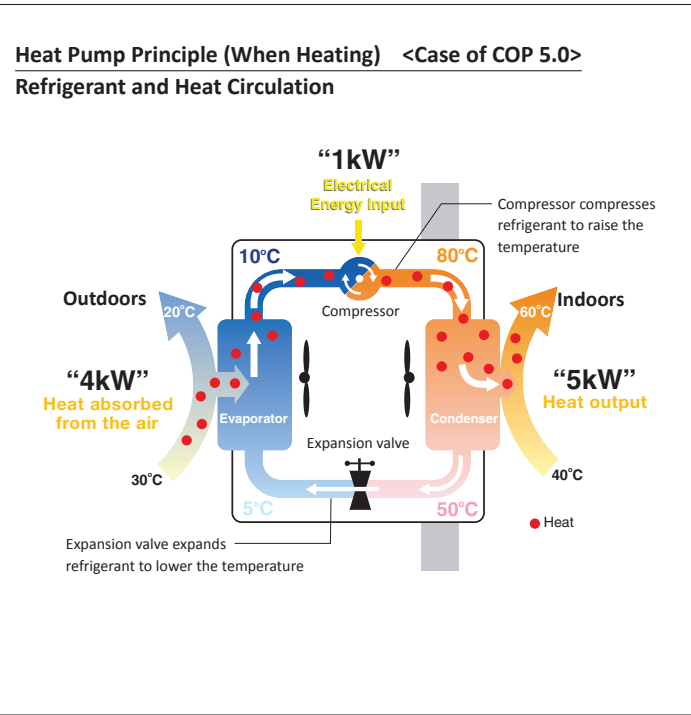
Core Environmental Policy

The Mitsubishi Electric Group promotes sustainable development and is committed to protecting and restoring the global environment through technology, through all its business activities, and through the actions of its employees.



Mitsubishi Electric reflects the essence of this policy and vision in all aspects of its air conditioner business as well.

Preventing Global Warming
Heat pump technology inspires Mitsubishi Electric to design air conditioners that harmonize comfort and ecology.



Mitsubishi Electric develops technologies to balance comfort and ecology, achieving greater efficiency in heat pump operation.

	Comfort	Ecology
1. Inverter	Faster start-up and more stable indoor temperature than non-inverter units.	Fewer On/Off operations than with non-inverter, saving energy.
2. 3D i-see Sensor	Since the positions of people can be detected, airflow can be set to personal taste, such as in airflow path or protected from the wind. The ability to adjust to individual preferences realizes more comfortable air conditioning.	Since the number of people in a room can be detected, energy-saving operation is adjusted or the power is turned off automatically. Efficient air conditioning with less waste is realized.
3. Flash Injection	Achieves high heating capacity even at low temperatures, plus faster start-up compared to conventional inverters.	Expands the region covered by heat pump heating system.

Creating a Recycling-Based Society

1. All models are designed for RoHS and WEEE compliance. *
2. Mitsubishi Electric develops downsizing technology to reduce materials use.

* WEEE and RoHS directives: The Waste Electrical and Electronic Equipment (WEEE) Directive is a recycling directive for this type of equipment, while the Restrictions of Hazardous Substances (RoHS) Directive is an EU directive restricting the use of six specified substances in electronic and electrical devices. In the EU, it is no longer possible (from July 2006) to sell products containing any of the six substances.

Ensuring Harmony with Nature / Fostering Environmental Awareness

In striving to heighten the eco-awareness of its employees, Mitsubishi Electric provides education in RoHS, WEEE and other environmental regulations, along with environmental education targeting second and third-year workers.



Special care should be taken for replacement.

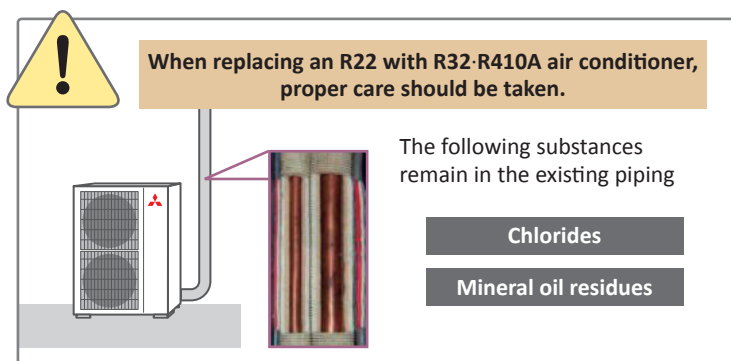
Refrigerant oil

Previous refrigerant (R22)	New refrigerant (R32/R410A/R407C)
Mineral oil	Mineral oil cannot be used

To protect the ozone layer, the conventional refrigerants (R22) have been replaced with the new refrigerants (R32-R410A).

However mineral oil is not suitable for the R32-R410A refrigerant oil because R32-R410A refrigerants do not contain chlorine. Without chlorine, refrigerants do not dissolve in mineral oil, which causes poor oil return to the compressor and insufficient lubrication. As a result, introduction of alternative high fluidity and miscible oil which is compatible with the R32-R410A refrigerants is essential.

When replacing an R22 air conditioner with an R32-R410A air conditioner, chlorine and mineral oil residues, which are not used in the R32-R410A air conditioner, must be handled properly. **Reusing the existing piping without pipe cleaning or replacement of pipes causes the deterioration of refrigerant oil and/or clogging of the refrigerant circuit, which lead to malfunction of the air conditioner.** Reuse of the piping requires proper handling of residues.

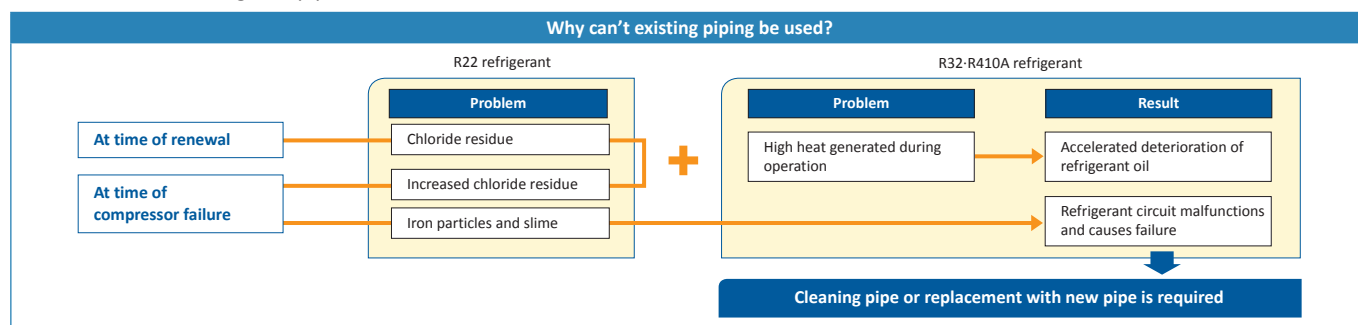


Mitsubishi Electric's 'Cleaning-free Pipe Reuse Technology' requires no cleaning.

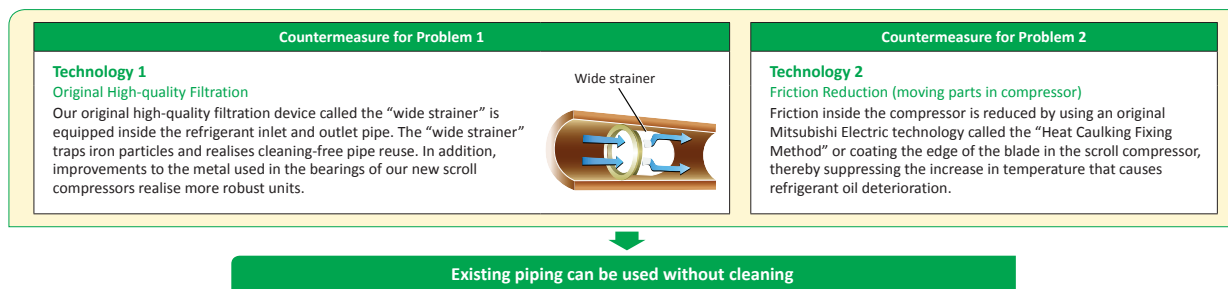


No Need to Clean at the Time of System Renewal

Chloride residue builds up in existing pipes and becomes a source of trouble. In addition, the iron particles and slime produced as a result of compressor failure lead to problems. To counter this, various original Mitsubishi Electric technologies have been combined to enable the introduction of "cleaning-free pipe reuse."



Mitsubishi Electric's Original Replacement Technologies



Cautions when using existing piping

- When removing an old air conditioning unit, please make sure to perform the pump-down process and recover the refrigerant and refrigerant oil.
- Check to ensure that the piping diameter and thickness match Mitsubishi Electric specifications.
- Check to ensure that the flare is compatible with R32-R410A. (The copper pipe flare-end shape and dimensions used for R410A can also be used for R32 air conditioners.)

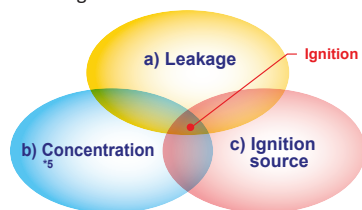


New Refrigerant **R32** for single Split Air Conditioners

1. Safety Handling for R32

(1) R32 Refrigerant Properties

Under the conditions shown below, there is a possibility that R32 could ignite.



	R32	R410A	R22
Chemical formula	CH ₂ F ₂	CH ₂ F ₂ /CHF ₂ CF ₃	CHClF ₂
Composition (blend ratio wt. %)	Single composition	R32/R125 (50/50 wt %)	Single composition
Ozone depletion potential (ODP)	0	0	0.055
Global warming potential (GWP) ^{*1}	675	2088	1810
LFL(vol.%) ^{*2}	13.3	—	—
UFL(vol.%) ^{*3}	29.3	—	—
Flammability ^{*4}	Lower flammability (2L)	No flame propagation (1)	No flame propagation (1)

^{*1} IPCC 4th assessment report.

^{*2} LFL : Lower flammable limit

^{*3} UFL : Upper flammable limit

^{*4} ISO 817:2014

^{*5} R32 consistency is higher than LFL^{*1} and lower than UFL^{*2}.

(2) Installation and Servicing Notice

Although R32 is classified as low flammability, the possibility of igniting can be eliminated by ensuring the following three points.

a) Do not leak refrigerant.

- <Installation> · Vacuum drying should be done. Air purging is prohibited.
- Follow “4. Installation Points of Refrigerant Piping Work”.
- <Repair/Relocation/Removal> · Pump down or recovering refrigerant should be done.

b) Prevent concentration.

- Ventilate during installation and servicing, such as open the door or window and use a fan.
- Follow “2. Installation Restrictions”.

c) Keep ignition source away from the unit.

- Do not braze pipe and unit which contain refrigerant. Before brazing, refrigerant should be recovered.
- Do not install unit while the electricity is turned on. Turn off electricity at the fuse box and check the wiring using a tester.

Note Both R32 / R410A emit a toxic gas when coming into contact with an open flame.

2. Installation Restrictions

In order to prevent the refrigerant from igniting, use the following instructions during installation.

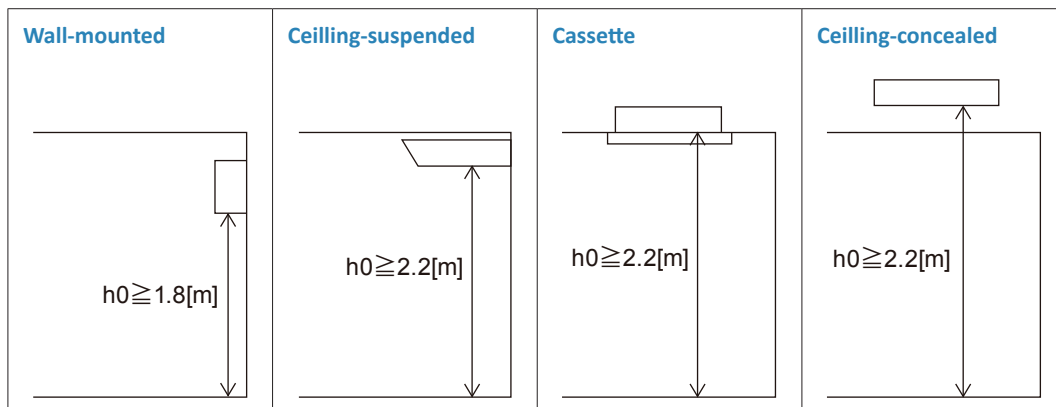
(1) Indoor Units

Install in a room with a floor area of Amin* or more, corresponding to refrigerant quantity M.
(M = factory-charged refrigerant + locally added refrigerant)

Install the indoor unit so that the height from the floor to the bottom of the indoor unit is h0.*

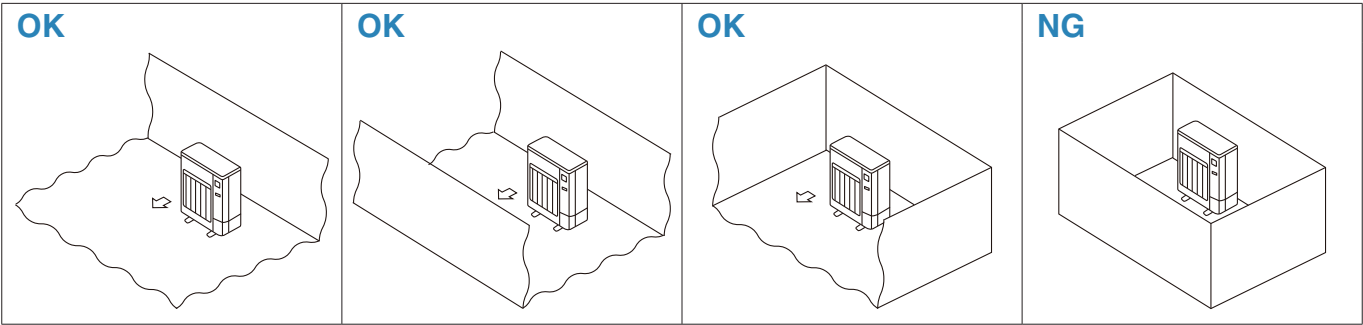
* Refer to table and drawings below.

M[kg]	Amin[m ²]
1.0	4
1.5	6
2.0	8
2.5	10
3.0	12
3.5	14
4.0	16
4.5	20
5.0	24
5.5	29
6.0	35
6.5	41
7.0	47
7.5	54



(2) Outdoor Units

Install outdoor units in a place where at least one of the four sides is open or in a sufficiently large space without depressions.



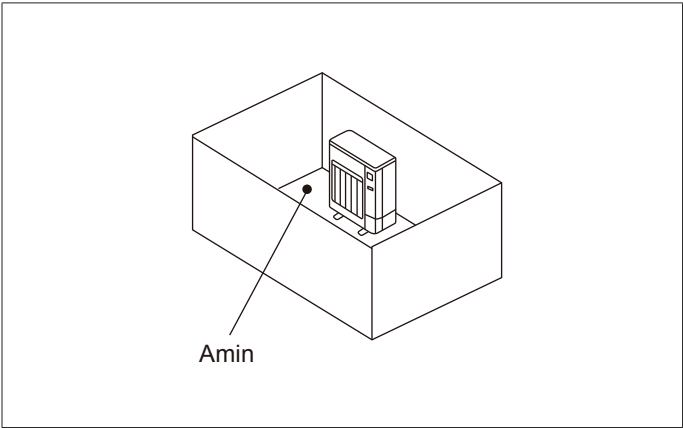
If you unavoidably install a unit in a space where all four sides are blocked or there are depressions, confirm that one of these situations (A, B or C) is satisfied.

A Secure sufficient installation space (minimum installation area A_{min}).

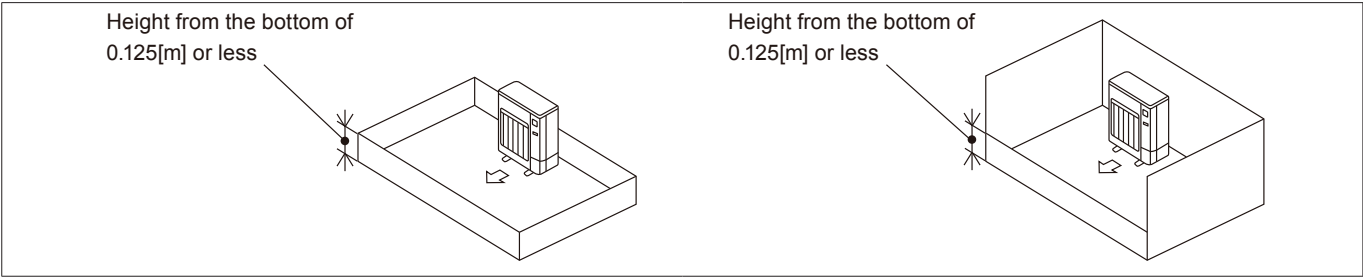
Install in a space with an installation area of A_{min}^* or more, corresponding to refrigerant quantity M.
(M = factory charged refrigerant + locally added refrigerant)

* Refer to table and drawing below.

M[kg]	$A_{min}[m^2]$
1.0	12
1.5	17
2.0	23
2.5	28
3.0	34
3.5	39
4.0	45
4.5	50
5.0	56
5.5	62
6.0	67
6.5	73
7.0	78
7.5	84

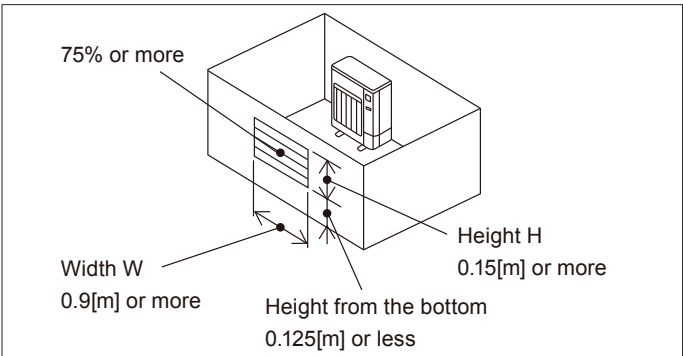


B Install in a space with a depression height of $\leq 0.125[m]$.



C Create an appropriate open ventilation area.

Make sure that the width of the open area is 0.9[m] or more and the height of the open area is 0.15[m] or more.
However, the height from the bottom of the installation space to the bottom edge of the open area should be 0.125[m] or less.
More than 75% of the ventilation area should be open to allow air circulation.



Note These countermeasures (A, B or C) are for keeping safety not for specification guarantee.

3. Tools

Tools	Gauge manifold	Charge hose	Electronic weight scales	Charge valve	Electric leak tester (Gas leak detector)	Vacuum pump	Vacuum pump adapter	Refrigerant recovery equipment	Refrigerant recovery cylinder
R32	Shareable	Shareable	Shareable	Shareable	Shareable	Shareable	Shareable	Shareable	Exclusive
R410A				Shareable	Shareable				Exclusive
R22	Exclusive	Exclusive		Exclusive	Some Exclusive				Exclusive

Note Be sure to confirm with manufacturers that the electric leak tester, vacuum pump and refrigerant recovery equipment are compliant with R32.

4. Installation Points of Refrigerant Piping Work

<div>Before work</div> <div>Work</div>	Confirmation of refrigerant type	Confirm the spec label.
	Pre-work preparations	Use piping with specifications stipulated in the installation manual.
	Confirmation of installation restrictions	Be sure to follow "2.Installation Restrictions".
	Refrigerant piping connection work	Be sure to tighten the flare joints with the torque stipulated in the installation manual.
	Air-tightness test*	Use nitrogen gas, increase the pressure up to the design pressure and perform a 24-hour air-tightness test.
	Vacuuming	Be sure to perform vacuuming procedure stipulated in the installation manual. Air purge is prohibited.
	Additional refrigerant charging	Use a gauge manifold, charge hose and charge valve compliant with R32.
	Gas leak inspection	Use the leak tester compliant with R32.

*Only for PAC.

5. R32 Refrigerant Properties

(1) Properties of refrigerants

<Comparison table>

	R32	R410A	R22
Chemical formula	CH ₂ F ₂	CH ₂ F ₂ /CHF ₂ CF ₃	CHClF ₂
Composition (blend ratio wt. %)	Single composition	R32/R125 (50/50 wt %)	Single composition
Bolling point (°C)	-51.7	-51.5	-40.8
Pressure (MPa) ^{*1}	3.14	3.07	1.94
Capacity (ratio) ^{*2}	160	141	100
COP (ratio) ^{*3}	95	91	100
Ozone depletion potential (ODP)	0	0	0.055
Global warming potential (GWP) ^{*4}	675	2088	1810
Flammability ^{*5}	Lower flammability (2L)	No flame propagation (1)	No flame propagation (1)
Toxicity ^{*5}	Lower chronic toxicity (A)	Lower chronic toxicity (A)	Lower chronic toxicity (A)

*1 Temperature condition Characteristic value at 50°C.

*2 Temperature condition 0/50°C (relative values where R22=100).

*3 Te/Tc/SC/SH=5/50/3/0°C

*4 Values based on IPCC 4th assessment report.

*5 Data from ISO 817:2014

(2) Pressure

<Saturated vapor pressure comparison>

Unit: MPa

Temperature (°C)	Refrigerant	R32	R410A	R22
-20		0.30	0.30	0.14
0		0.71	0.70	0.40
20		1.37	1.35	0.81
40		2.38	2.32	1.43
60		3.84	3.73	2.33
65		4.29	4.17	2.60



Mitsubishi Electric's 'Cleaning-free Pipe Reuse Technology' provides a variety of advantages in replacement.

Reuse of the existing piping, this has many merits in replacing the air conditioning systems.

Short working period

- Cut in extensive works behind walls or above ceilings to install new piping.
- Cut in difficult tasks including welding works above the ceiling.



Cost-saving

- Cut in material costs to install the new piping.
- Great reduction in waste materials minimizes their disposal costs.
- Short period of work saves the installation costs.



Ecology

- Waste materials, such as ceiling materials and pipes, minimized.
- Being environmentally aware by 'reusing' meets the demand of the times.



The reuse technologies are available for wiring, not just for piping!!

Wiring recycling problem solved! Compatible with other wiring connection methods*

The wiring method has been improved, making it possible to use methods different from those utilized for control and power supply. Units are compatible with the dual harness control line/power line method and the separate power supply method. Using a power-supply terminal kit, wire can be efficiently reused at the time of system renewal regardless of the method the existing system uses.

* Optional. Usage may be limited due to wiring type diameter.

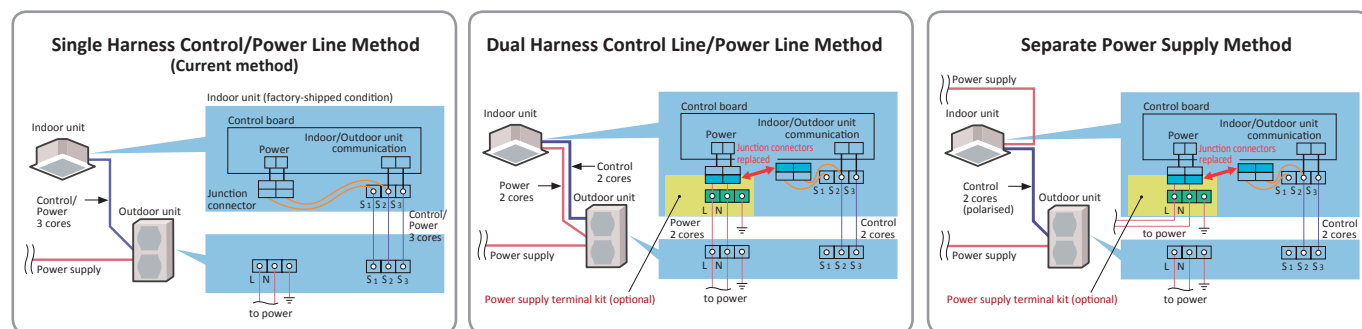


Table of optional power supply terminal kit available models

M-series																
Indoor unit	MSZ-LN25/35/50/60VG(W)(V)(B)(R)[R32/R410A]								MSZ-FH25/35/50VE2							
Outdoor unit	MUZ-LN	MXZ-2D	MXZ-2E-VAHZ	MXZ-3E	MXZ-4E	MXZ-4E-VAHZ	MXZ-5E	MXZ-6D	MUZ-FH	MXZ-2D	MXZ-2E-VAHZ	MXZ-3E	MXZ-4E	MXZ-4E-VAHZ	MXZ-5E	MXZ-6D
Optional power supply terminal kit																
Indoor unit	MSZ-EF18/22/25/35/42/50VE3(W)(B)(S)								MSZ-GF60/71VE2							
Outdoor unit	MUZ-EF	MXZ-2D	MXZ-2E-VAHZ	MXZ-3E	MXZ-4E	MXZ-4E-VAHZ	MXZ-5E	MXZ-6D	MUZ-GF	MXZ-3E	MXZ-4E	MXZ-4E-VAHZ	MXZ-5E	MXZ-6D		
Optional power supply terminal kit																
Indoor unit	MSZ-SF15/20VA MSZ-SF25/35/42/50VE3								MSZ-WN25/35VA	MSZ-DM25/35VA				MSZ-HJ25/35/50VA		
Outdoor unit	MUZ-SF	MXZ-2D	MXZ-2E-VAHZ	MXZ-3E	MXZ-4E	MXZ-4E-VAHZ	MXZ-5E	MXZ-6D	MUZ-WN	MUZ-DM	MXZ-2DM	MXZ-3DM		MUZ-HJ	MXZ-2DM	MXZ-3DM
Optional power supply terminal kit																
Indoor unit	MFZ-KJ25/35/50VE2								MLZ-KA25/35/50VA							
Outdoor unit	MUFZ-KJ	MXZ-2D	MXZ-2E-VAHZ	MXZ-3E	MXZ-4E	MXZ-4E-VAHZ	MXZ-5E	MXZ-6D	MXZ-2D	MXZ-2E-VAHZ	MXZ-3E	MXZ-4E	MXZ-4E-VAHZ	MXZ-5E	MXZ-6D	
Optional power supply terminal kit																
S-series																
Indoor unit	SLZ-KF25/35/50VA2								SEZ-KD25/35/50/60/71VAQ/VAL							
Outdoor unit	SUZ-KA	MXZ-2D	MXZ-2E-VAHZ	MXZ-3E	MXZ-4E	MXZ-4E-VAHZ	MXZ-5E	MXZ-6D	SUZ-KA	MXZ-2D	MXZ-2E-VAHZ	MXZ-3E	MXZ-4E	MXZ-4E-VAHZ	MXZ-5E	MXZ-6D
Optional power supply terminal kit																
P-series																
Indoor unit	PLA-ZP35/50/60/71/100/125/140EA								PLA-RP35/50/60/71/100/125/140EA							
Outdoor unit	PUHZ-SHW	PUHZ-ZRP	PUHZ-P	PUHZ-SHW	PUHZ-ZRP	SUZ-KA	PUHZ-P-HA	PUHZ-P-KA	MXZ-3E	MXZ-4E	MXZ-4E-VAHZ	MXZ-5E	MXZ-6D			
Optional power supply terminal kit	●	●	●	●	●		●	●								
Indoor unit	PCA-RP50/60/71/100/125/140KAQ								PCA-RP71HAQ				PKA-RP35/50HAL			
Outdoor unit	PUHZ-ZRP	SUZ-KA	PUHZ-P	MXZ-3E	MXZ-4E	MXZ-4E-VAHZ	MXZ-5E	MXZ-6D	PUHZ-ZRP	PUHZ-ZRP						
Optional power supply terminal kit	●		●						●	●						
Indoor unit	PKA-RP60/71/100KAL								PSA-RP71/100/125/140KA							
Outdoor unit	PUHZ-SHW	PUHZ-ZRP	PUHZ-P	PUHZ-ZRP	PUHZ-P-HA	PUHZ-P-KA										
Optional power supply terminal kit	●	●	●	●	●	●										
Indoor unit	PEAD-RP35/50/60/71/100/125/140JA(L)Q								PEA-RP200/250/400/500GAQ							
Outdoor unit	PUHZ-SHW	PUHZ-ZRP	SUZ-KA	PUHZ-P	MXZ-3E	MXZ-4E	MXZ-4E-VAHZ	MXZ-5E	MXZ-6D	PUHZ-ZRP	PUHZ-P-KA					
Optional power supply terminal kit	●	●		●						●	●					
Indoor unit	PLA-ZM35/50/60/71/100/125/140EA[R32/R410A]								PKA-M35/50HA(L)[R32/R410A]				PKA-M60/71/100KA(L)[R32/R410A]			
Outdoor unit	PUHZ-SHW	PUHZ-ZRP	PUZ-ZM	PUHZ-ZRP	PUZ-ZM	PUHZ-SHW	PUHZ-ZRP	PUZ-ZM	PUHZ-P-HA	PUHZ-P-KA						
Optional power supply terminal kit	●	●	●	●	●	●	●	●	●	●						
Indoor unit	PCA-M35/50/60/71/100/125/140KA[R32/R410A]								PEAD-M35/50/60/71/100/125/140/71/100JA(L)[R32/R410A]							
Outdoor unit	PUHZ-ZRP	PUZ-ZM	PUHZ-P-HA	PUHZ-P-KA	PUHZ-SHW	PUHZ-ZRP	PUZ-ZM	PUHZ-P-HA	PUHZ-P-KA							
Optional power supply terminal kit	●	●	●	●	●	●	●	●	●							

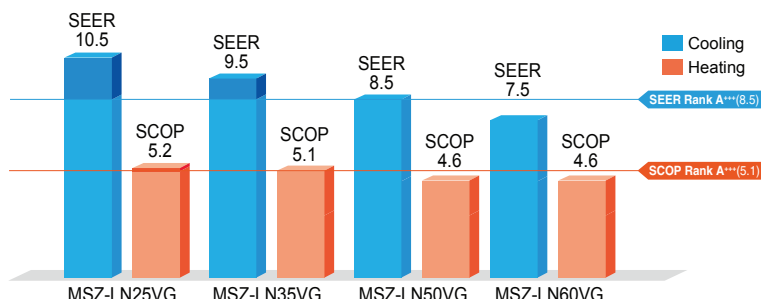
Our newest models are excellent in energy-saving and comfort

Our newest models feature major improvements in energy efficiency, capacity range, functions and other parameters.

POINT 1

High Energy Efficiency

Power consumption has been reduced for the cooling and heating modes thanks to the incorporation of our newest inverter technologies. Models from capacities 25 to 50 have achieved the "Rank A+++" for SEER, and models for capacities 25 and 35 have achieved the "Rank A+++" for SCOP as well.



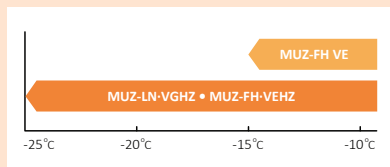
POINT 2

Hyper Heating

The Hyper Heating feature is incorporated, realizing powerful heating even in the harsh cold. Even users in cold regions can comfortably rely on the MSZ-LN Series and MSZ-FH Series for all their heating needs.

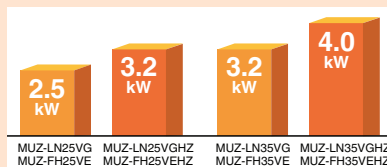
Operation Guaranteed at Outside Temperature of -25°C

MUZ-LN-VGHZ and MUZ-FH VEHZ can be operated at outside temperatures as low as -25°C, so there are no concerns about use even in very cold climates.



Rated Capacity Demonstrated at Outside Temperatures of -15°C

With rated capacity ensured at outside temperature as low as -15°C, the LN Series and FH Series can be relied upon to properly warm living spaces even in severe cold snaps.



Freeze-prevention Heater Equipped as Standard (VGHZ-VEHZ)

The Freeze-prevention heater prevents lowered capacity due to the drain freezing and also inhibits operation shutdowns.



Without Freeze-prevention heater



With Freeze-prevention heater

Selecting a Heater-equipped Model

In regions with the following conditions, there is a possibility that water resulting from condensation on the outdoor unit when operating in the heating mode will freeze and not drain from the base.

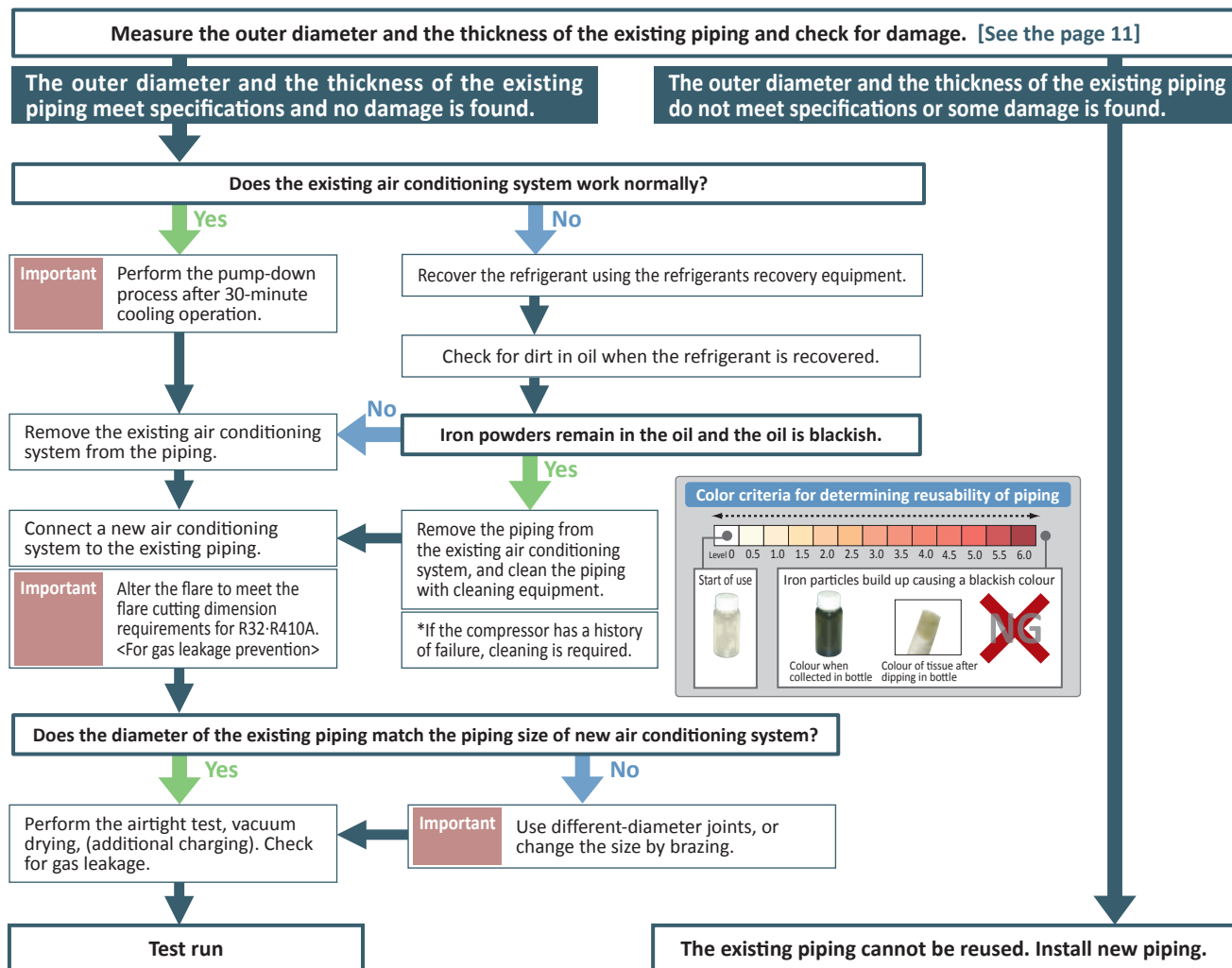
- 1) Cold outdoor temperatures (temperature does not rise above 0°C all day)
- 2) Areas where dew forms easily (in the mountains, valleys (surrounded by mountains), near a forest, near unfrozen lakes, ponds, rivers or hot springs), or areas with snowfall

To prevent water from freezing in the base, it is recommended that a unit with a built-in heater be purchased. Please ask your dealer representative about the best model for you.

Existing Piping Availability Check Flowchart

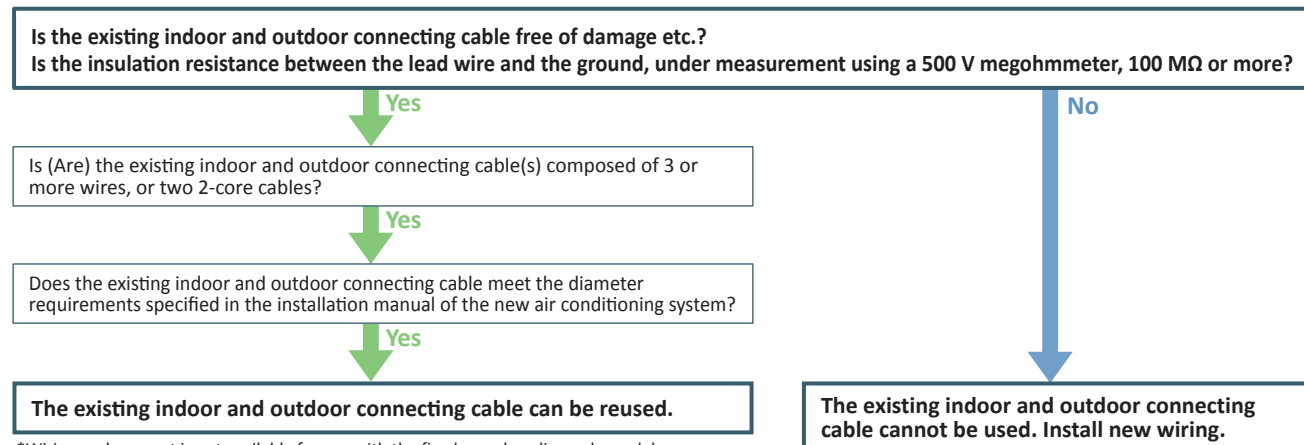
Table of optional power supply terminal kit available models

M-series																
Indoor unit	MSZ-LN25/35VG(W)(V)(B)(R)[R32/R410A]								MSZ-FH25/35/50VE2							
Outdoor unit	MUZ-LN	MXZ-2D	MXZ-2E-VAHZ	MXZ-3E	MXZ-4E	MXZ-4E-VAHZ	MXZ-5E	MXZ-6D	MUZ-FH	MXZ-2D	MXZ-2E-VAHZ	MXZ-3E	MXZ-4E	MXZ-4E-VAHZ	MXZ-5E	MXZ-6D
Optional power supply terminal kit	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Indoor unit	MSZ-EF18/22/25/35/42/50VE3(W)(B)(S)								MSZ-GF60/71VE2							
Outdoor unit	MUZ-EF	MXZ-2D	MXZ-2E-VAHZ	MXZ-3E	MXZ-4E	MXZ-4E-VAHZ	MXZ-5E	MXZ-6D	MUZ-GF	MXZ-3E	MXZ-4E	MXZ-4E-VAHZ	MXZ-5E	MXZ-6D		
Optional power supply terminal kit	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Indoor unit	MSZ-SF15/20VA				MSZ-SF25/35/42/50VE3				MSZ-WN25/35VA				MSZ-DM25/35VA			
Outdoor unit	MUZ-SF	MXZ-2D	MXZ-2E-VAHZ	MXZ-3E	MXZ-4E	MXZ-4E-VAHZ	MXZ-5E	MXZ-6D	MUZ-WN	MXZ-2D	MXZ-2E-VAHZ	MXZ-3E	MXZ-4E	MXZ-4E-VAHZ	MXZ-5E	MXZ-6D
Optional power supply terminal kit	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Indoor unit	MFZ-KJ25/35/50VE2								MLZ-KA25/35/50VA							
Outdoor unit	MUFZ-KJ	MXZ-2D	MXZ-2E-VAHZ	MXZ-3E	MXZ-4E	MXZ-4E-VAHZ	MXZ-5E	MXZ-6D	MXZ-2D	MXZ-2E-VAHZ	MXZ-3E	MXZ-4E	MXZ-4E-VAHZ	MXZ-5E	MXZ-6D	
Optional power supply terminal kit	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
S-series																
Indoor unit	SLZ-KF25/35/50/60VA2				SEZ-KD25/35/50/60/71VAQ/VAL											
Outdoor unit	SUZ-KA				SUZ-KA											
Optional power supply terminal kit																



Existing Wiring Availability Check Flowchart

*Wiring replacement is only available when the new air conditioning system is the inverter type.



*Wiring replacement is not available for use with the fixed speed cooling only models.

Applicable extension pipe for each model

«Different-diameter Pipe Availability Criteria»

Piping specification requirements for M, S, MXZ, P series.

Basic requirements

If the diameter of the existing piping matches the right chart, it can be reused.

If the thickness is below the figures shown in the right table, refer to following formula and calculate the "Max usable pressure".

Thickness of refrigerant piping

Outer diameter(mm)	Thickness	Outer diameter(mm)	Thickness
ø6.35	0.8t	ø19.05	1.0t
ø9.52	0.8t	ø22.2	1.0t
ø12.7	0.8t	ø25.4	1.0t
ø15.88	1.0t	ø28.58	1.0t

"Max usable pressure" standard

$$P_a = \frac{2\Sigma a \times T_a}{D_0 - (0.8 \times T_a)} \times \frac{1}{S_f}$$

Pa : Max usable pressure (MPa)
D₀ : Diameter of exist piping (mm)
Ta : Thickness of exist piping (mm)
Σa : Max working stress (N/mm²)
Sf : Safety factor

Taking your countries typical data into the formula, you can get the "Max usable pressure".

If the result is bigger than "Max usable pressure" of each model as shown in the right table, the exist piping can be used regardless of the thickness.

*Please well consider safety factor which is provided for your country law. In Japan, the safety factor is 3.

Model name	Diameter	Max usable pressure	Model name	Diameter	Max usable pressure	Model name	Diameter	Max usable pressure
All RAC models		4.15MPa	PUHZ-P100VHA5	ø9.52/ø15.88	4.15MPa	PUZ-ZM100YKA	ø9.52/ø15.88	4.15MPa
PUHZ-ZRP35VKA2	ø6.35/ø12.7	4.15MPa	PUHZ-P125VHA4	ø9.52/ø15.88	4.15MPa	PUZ-ZM125VKA	ø9.52/ø15.88	4.15MPa
PUHZ-ZRP50VKA2	ø6.35/ø12.7	4.15MPa	PUHZ-P140VHA4	ø9.52/ø15.88	4.15MPa	PUZ-ZM125YKA	ø9.52/ø15.88	4.15MPa
PUHZ-ZRP60VHA2	ø9.52/ø15.88	4.15MPa	PUHZ-P100YHA3	ø9.52/ø15.88	4.15MPa	PUZ-ZM140VKA	ø9.52/ø15.88	4.15MPa
PUHZ-ZRP71VHA2	ø9.52/ø15.88	4.15MPa	PUHZ-P125VHA2	ø9.52/ø15.88	4.15MPa	PUZ-ZM140YKA	ø9.52/ø15.88	4.15MPa
PUHZ-ZRP100V/YKA3	ø9.52/ø15.88	4.15MPa	PUHZ-P140YHA2	ø9.52/ø15.88	4.15MPa			
PUHZ-ZRP125V/YKA3	ø9.52/ø15.88	4.15MPa	PUHZ-P100VKA	ø9.52/ø15.88	4.15MPa			
PUHZ-ZRP140V/YKA3	ø9.52/ø15.88	4.15MPa	PUHZ-P125VKA	ø9.52/ø15.88	4.15MPa			
PUHZ-ZRP200YKA2	ø9.52/ø25.4	4.15MPa	PUHZ-P140VKA	ø9.52/ø15.88	4.15MPa			
PUHZ-ZRP250YKA2	ø12.7/ø25.4	4.15MPa	PUHZ-P100YKA	ø9.52/ø15.88	4.15MPa			
PUHZ-P200YKA2	ø9.52/ø25.4	4.15MPa	PUHZ-P125YKA	ø9.52/ø15.88	4.15MPa			
PUHZ-P250YKA2	ø12.7/ø25.4	4.15MPa	PUHZ-P140YKA	ø9.52/ø15.88	4.15MPa			
PUHZ-ZRP200YKA3	ø9.52/ø25.4	4.15MPa	PUHZ-SHW112VHA	ø9.52/ø15.88	4.15MPa			
PUHZ-ZRP250YKA3	ø12.7/ø25.4	4.15MPa	PUHZ-SHW112YHA	ø9.52/ø15.88	4.15MPa			
PUHZ-P200YKA3	ø9.52/ø25.4	4.15MPa	PUHZ-SHW140YHA	ø9.52/ø15.88	4.15MPa			
PUHZ-P250YKA3	ø12.7/ø25.4	4.15MPa	PUHZ-SHW230YKA2	ø12.7/ø25.4	4.15MPa			
SUZ-KA25VA6	ø6.35/ø9.52	4.15MPa	PUZ-ZM35VKA	ø6.35/ø12.7	4.15MPa			
SUZ-KA35VA6	ø6.35/ø9.52	4.15MPa	PUZ-ZM50VKA	ø6.35/ø12.7	4.15MPa			
SUZ-KA50VA6	ø6.35/ø12.7	4.15MPa	PUZ-ZM60VHA	ø9.52/ø15.88	4.15MPa			
SUZ-KA60VA6	ø6.35/ø15.88	4.15MPa	PUZ-ZM71VHA	ø9.52/ø15.88	4.15MPa			
SUZ-KA71VA6	ø9.52/ø15.88	4.15MPa	PUZ-ZM100YKA	ø9.52/ø15.88	4.15MPa			

M, MXZ series

1:1 (Single-split system)

Different-diameter piping for 1:1 RAC is available only in following case: Gas pipe(mm) ø9.52(standard) ⇒ ø12.7(existing pipe)

2:1 (Multi-split system: Installing 2 indoor units)

Existing piping					2D33VA 2D42VA2	2DM40VA	2D53VA(H)2 2E53VAHZ	3DM50VA	3E54VA 3E68VA 4E72VA	4E83VA 4E83VAHZ 5E102VA 6D122VA
Pipe size	Liquid (mm) : outer diameter	ø6.35	ø6.35	ø6.35						
	Gas (mm) : outer diameter	ø9.52	ø12.7	ø15.88	ø15.88					
Combination I		2				○				○
Combination II		1	1			—	—		○	○
Combination III		1		1		—	—	—	—	□
Combination IV		1			1	—	—	—	—	□
Combination V			2			—	—	○	○	○
Combination VI			1	1		—	—	—	—	□
Combination VII			1		1	—	—	—	—	□
Combination VIII				2		—	—	—	—	□
Combination IX				1	1	—	—	—	—	□
Combination X					2	—	—	—	—	□

○, □: See [NOTE].
compatible with indoor units of 50 or higher capacity class.

[NOTE]

- : Not compatible
- : Compatible
- : The gas pipe with an outer diameter of 15.88 mm is only compatible with indoor units of 50 or higher capacity class.

3:1 (Multi-split system: Installing 3 indoor units)

Existing piping						3E54VA 3E68VA 4E72VA	4E83VA 4E83VAHZ 5E102VA 6D122VA
Pipe size	Liquid (mm) : outer diameter	ø6.35	ø6.35	ø6.35	ø9.52		
	Gas (mm) : outer diameter	ø9.52	ø12.7	ø15.88	ø15.88		
Combination I		3				○	○
Combination II		2	1			○	○
Combination III		2		1		—	□
Combination IV		2			1	—	□
Combination V		1	2			○	○
Combination VI		1	1	1		—	□
Combination VII		1	1		1	—	□
Combination VIII			3			○	○
Combination IX			2	1		—	□
Combination X			2		1	—	□

○, □ : See [NOTE].

4:1 (Multi-split system: Installing 4 indoor units)

Existing piping						4E72VA	4E83VA 4E83VAHZ 5E102VA 6D122VA
Pipe size	Liquid (mm) : outer diameter	ø6.35	ø6.35	ø6.35	ø9.52		
	Gas (mm) : outer diameter	ø9.52	ø12.7	ø15.88	ø15.88		
Combination I		4				○	○
Combination II		3	1			○	○
Combination III		3		1		—	□
Combination IV		3			1	—	□
Combination V		2	2			○	○
Combination VI		2	1	1		—	□
Combination VII		2	1		1	—	□
Combination VIII		1	3			○	○
Combination IX		1	2	1		—	□
Combination X		1	2		1	—	□
Combination XI			4			○	○
Combination XII			3	1		—	□
Combination XIII			3		1	—	□

○, □ : See [NOTE].

5:1 (Multi-split system: Installing 5 indoor units)

Existing piping						5E102VA 6D122VA
Pipe size	Liquid (mm) : outer diameter	ø6.35	ø6.35	ø6.35	ø9.52	
	Gas (mm) : outer diameter	ø9.52	ø12.7	ø15.88	ø15.88	
Combination I		5				○
Combination II		4	1			○
Combination III		4		1		□
Combination IV		4			1	□
Combination V		3	2			○
Combination VI		2	3			○
Combination VII		3	1	1		□
Combination VIII		3	1		1	□
Combination IX		3		2		□

○, □ : See [NOTE].

[NOTE]

- : Not compatible
- : Compatible
- : The gas pipe with an outer diameter of 15.88 mm is only compatible with indoor units of 50 or higher capacity class.

6:1 (Multi-split system: Installing 6 indoor units)

Existing piping						6D122VA
Pipe size	Liquid (mm) : outer diameter	ø6.35	ø6.35	ø6.35	ø9.52	
	Gas (mm) : outer diameter	ø9.52	ø12.7	ø15.88	ø15.88	
Combination I		6				○
Combination II		5	1			○
Combination III		5		1		□
Combination IV		5			1	□
Combination V		4	2			○
Combination VI		4		2		□
Combination VII		4			2	□
Combination VIII		4	1	1		○
Combination IX		4	1		1	□
Combination X		4		1	1	□
Combination XI		3	3			○
Combination XII		3		3		□
Combination XIII		3			3	□
Combination XIV		3	2	1		○
Combination XV		3	2		1	□
Combination XVI		3	1	1	1	□
Combination XVII		2	4			○
Combination XVIII		2		4		□
Combination XIX		2			4	□
Combination XX		2	3	1		○
Combination XXI		2	3		1	□
Combination XXII		2	2	2		○
Combination XXIII		2	2		2	□
Combination XXIV		2	2	1	1	□

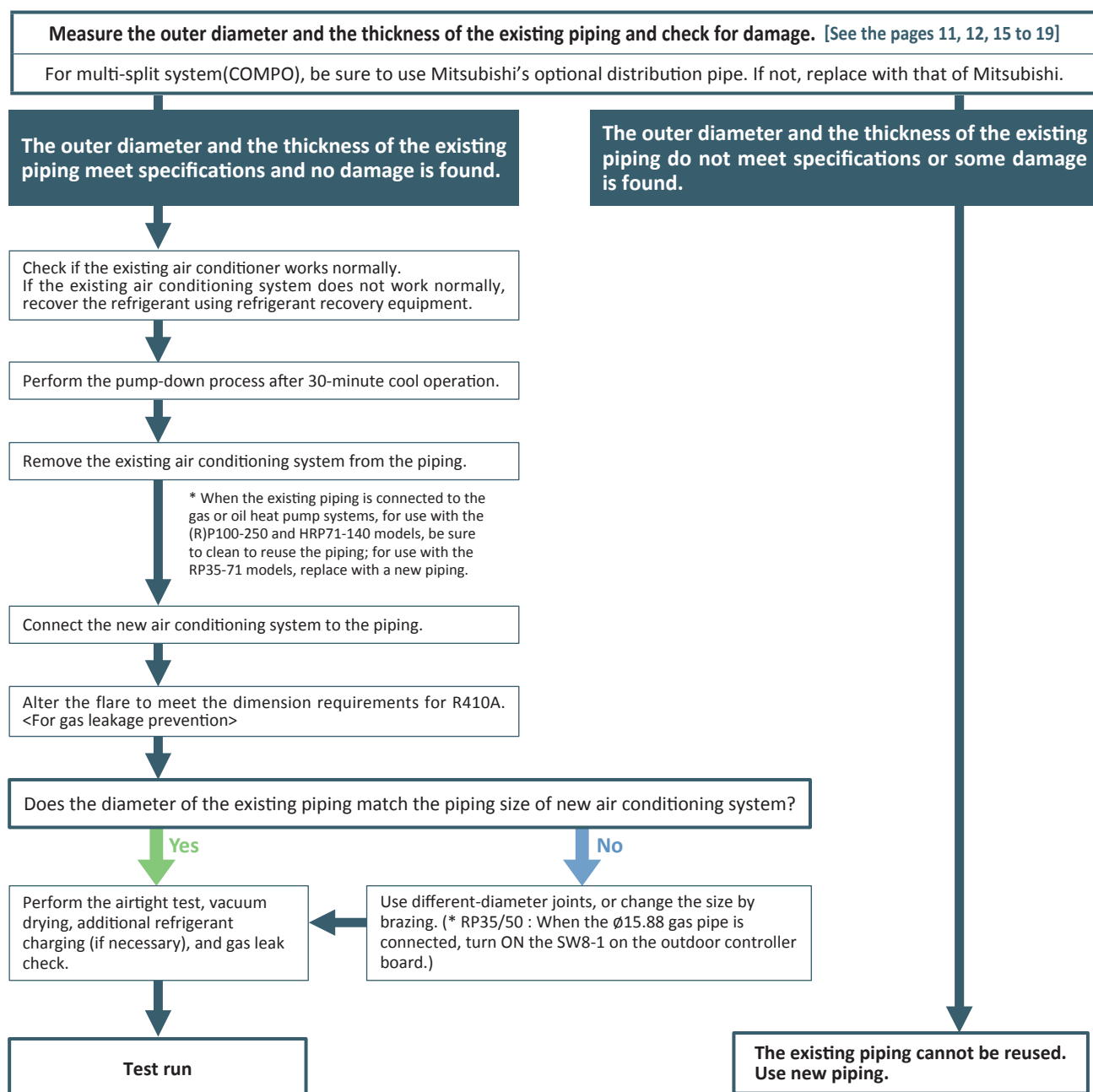
○, □ : See [NOTE].

Existing Piping Availability Check Flowchart

Table of cleaning-free pipe reuse technology models

P series													
Indoor unit	PLA-ZP35/50/60/71/100/125/140EA			PLA-RP35/50/60/71/100/125/140EA				PCA-RP35/50/60/71/100/125/140KAQ			PCA-RP71HAQ		
Outdoor unit	PUHZ-SHW		PUHZ-ZRP		PUHZ-SHW	PUHZ-ZRP	SUZ-KA	PUHZ-P-HA	PUHZ-P-KA	PUHZ-ZRP	SUZ-KA	PUHZ-P	PUHZ-ZRP
Optional power supply terminal kit	●		●		●		●	●	●	●	●	●	●
Indoor unit	PKA-RP35/50HAL		PKA-RP60/71/100KAL			PSA-RP71/100/125/140KA			PEAD-RP35/50/60/71/100/125/140JA(L)Q				
Outdoor unit	PUHZ-ZRP		PUHZ-SHW	PUHZ-ZRP	PUHZ-P	PUHZ-ZRP	PUHZ-P-HA	PUHZ-P-KA	PUHZ-SHW		PUHZ-ZRP	SUZ-KA	PUHZ-P
Optional power supply terminal kit	●		●	●	●	●	●	●	●	●	●	●	●
Indoor unit	PEA-RP200/250/400/500GAQ												
Outdoor unit	PUHZ-ZRP		PUHZ-P										
Optional power supply terminal kit	●		●										
Indoor unit	PLA-ZM35/50/60/71/100/125/140EA[R32/R410A]				PKA-M35/50HA(L)[R32/R410A]		PKA-M60/71/100KA(L)[R32/R410A]						
Outdoor unit	PUHZ-SHW		PUHZ-ZRP		PUZ-ZM		PUHZ-ZRP	PUZ-ZM	PUHZ-SHW	PUHZ-ZRP	PUZ-ZM	PUHZ-P-HA	PUHZ-P-KA
Optional power supply terminal kit	●		●		●		●	●	●	●	●	●	●
Indoor unit	PCA-M35/50/60/71/100/125/140KA[R32/R410A]				PEAD-M35/50/60/71/100/125/140/71/100JA(L)[R32/R410A]								
Outdoor unit	PUHZ-ZRP		PUZ-ZM	PUHZ-P-HA	PUHZ-P-KA	PUHZ-SHW	PUHZ-ZRP	PUZ-ZM	PUHZ-P-HA		PUHZ-P-KA		
Optional power supply terminal kit	●		●	●	●	●	●	●	●	●	●	●	●

- Refer to the flowchart below to determine if the existing piping can be reused.
- If the diameter of the existing piping doesn't match the specified size, refer to Technological Data Material on the pages 15 to 19 to determine if the piping can be reused.

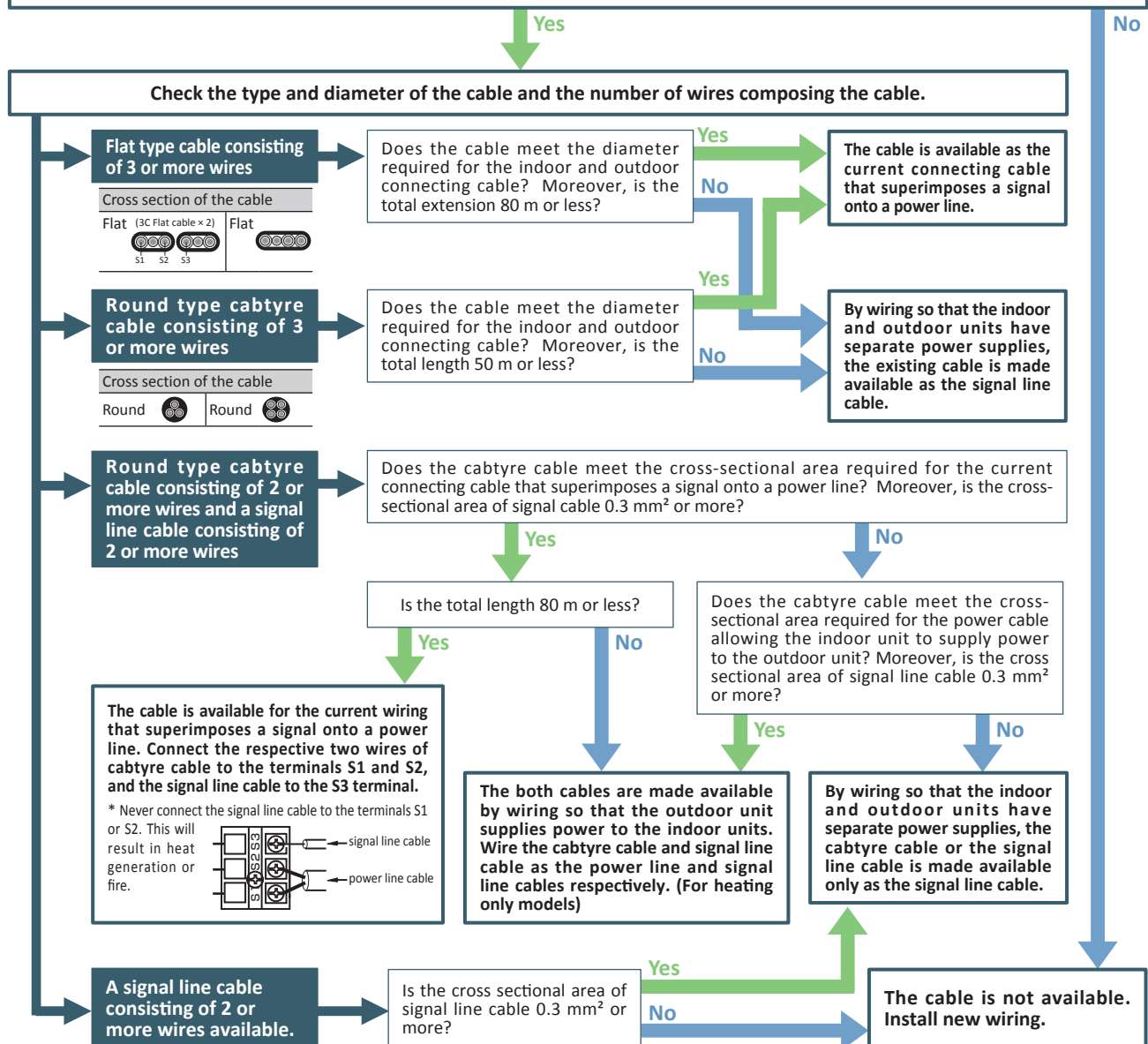


Existing Wiring Availability Check Flowchart (Only for P series)

«Indoor and outdoor connecting cable»

Is the wiring between the indoor and outdoor units free of damage etc.?

Is the insulation resistance between the lead wire and the ground, under measurement using a 500 V megohmmeter, 100 MΩ or more?



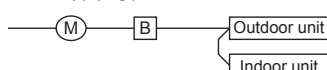
[NOTE] The length of wiring varies depending on individual outdoor unit models. For details, refer to the appropriate installation manuals.

«Power supply wiring»

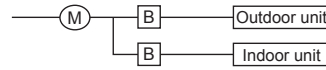
- When the outdoor unit receives power supply from one of the indoor units as shown in pattern D, the existing power wiring cannot be used. Install new wiring.
- When the existing power supply wiring matches any of the following reusable power wiring patterns, check for damage etc. and make sure that the insulation resistance between the lead wire and the ground is 100 MΩ or more under measurement using a 500 V megohmmeter. When the insulation deteriorates and the wiring does not satisfy the above conditions, install new wiring.

Reusable power wiring pattern (example)

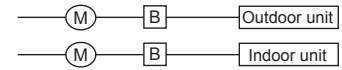
Pattern A: One branch circuit for one power source, supplying power from the outdoor unit



Pattern B: Two branch circuits for one power source



Pattern C: Dual power supply system



Non-reusable power wiring pattern (example)

Pattern D: One branch circuit for one power source, supplying power from the indoor unit



(M) indicates a main circuit protection device.

(B) indicates a branch circuit protection device.

Applicable extension pipe for each model

PUZ-ZM-HA / PUZ-ZM-KA / PUHZ-ZRP-HA / PUHZ-ZRP-KA / PUHZ-SHW-HA

«PIPE LENGTH»

(1) 1:1 SYSTEM

<Table 1> Maximum pipe length (ZM35-140, ZRP35-140, SHW112-140)

Liquid pipe(mm)	O.D.	ø6.35			ø9.52			ø12.7		
	Thickness	t0.8			t0.8			t0.8		
Gas pipe (mm)	O.D.	ø9.52	ø12.7	ø15.88	ø12.7	ø15.88	ø19.05	ø15.88	ø19.05	ø19.05
	Thickness	t0.8	t0.8	t1.0	t0.8	t1.0	t1.0	t1.0	t1.0	t1.0
ZM35-50 ZRP35-50		□ 30m [30m]	Standard size 50m [30m]	○ *2 30m [30m]	△ 30m [20m]	△ *2 30m [20m]				
ZM60-71 ZRP60-71		□ 10m [10m]	○ 10m [10m]	○ 30m [30m]	Standard size 50m*3 [30m]			△ 30m [20m]		
ZM100-140 ZRP100-140 SHW112-140					Standard size 50m*4 [30m]	○ 50m [30m]		△ 50m [20m]	△ 50m [20m]	

*1. ZM50-ZRP50 : maximum pipe length is 10m.

*2. Turn the SW8-1 on the outdoor controller circuit board from OFF to ON.

*3. ZM60-71 : The maximum length is 55m in the case of new pipes.

*4. ZM100-140 : The maximum length is 100m in the case of new pipes.

ZRP100-140, SHW112-140 : The maximum length is 75m in the case of new pipes.

<Table 2> Maximum pipe length (ZRP200 · ZRP250 · SHW230)

Liquid pipe(mm)	O.D.	ø9.52				ø12.7				ø15.88			
	Thickness	t0.8				t0.8				t1.0			
Gas pipe (mm)	O.D.	ø19.05	ø22.2	ø25.4	ø28.58	ø19.05	ø22.2	ø25.4	ø28.58	ø22.2	ø25.4	ø28.58	ø31.75
	Thickness	t1.0	t1.0	t1.0	t1.0	t1.0	t1.0	t1.0	t1.0	t1.0	t1.0	t1.0	t1.1
ZRP200		□ 20m [20m]	□ 50m [30m]	Standard size 100m [30m]	○ 100m [30m]	□ 100m [30m]	□ 100m [30m]	○ 100m [30m]	○ 100m [30m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]
ZRP250 SHW230		□ 20m [20m]	□ 50m [30m]	○ 100m [30m]	○ 100m [30m]	□ 100m [30m]	Standard size 100m [30m]	○ 100m [30m]	○ 100m [30m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]

*Be sure to use rigid (tempered) pipes when the gas pipe O.D. exceeds ø22.2(RP200) / ø19.05(RP250).

(2) TWIN SYSTEM

<Table 3> Maximum pipe length (ZM71-140, ZRP71-140, SHW112-140)

Main pipe (mm)[A]	Liquid pipe	ZM71 (35×2) · ZRP71 (35×2)		SHW112 (50×2) · ZM100 (50×2) · ZRP100 (50×2)				SHW140 (60×2) · ZM125 (60×2) · ZM140 (71×2) · ZRP125 (60×2) · ZRP140 (71×2)		
		ø6.35	ø9.52	ø9.52	ø9.52	ø12.7	ø9.52	ø9.52	ø12.7	ø12.7
Branch pipe (mm) [B, C]	Gas pipe	ø12.7	ø15.88	ø15.88	ø19.05	ø19.05	ø15.88	ø19.05	ø19.05	ø19.05
	Liquid pipe	ø6.35	Standard size 50m*1 [30m]	Standard size 50m*2 [30m]	○ 50m [30m]	△ 50m [20m]				
	Gas pipe	ø12.7								
	Liquid pipe	ø9.52								
	Gas pipe	ø15.88								
	Liquid pipe	ø12.7								

*1. ZM71 : The maximum length is 55m in the case of new pipes.

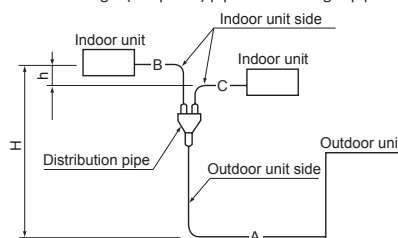
*2. ZM100-140 : The maximum length is 100m in the case of new pipes.

ZRP100-140, SHW112-140 : The maximum length is 75m in the case of new pipes.

<Table 4> Maximum pipe length (Main pipe [A] + Branch pipe [B, C and D]) (ZRP200 · ZRP250)

Main pipe (mm)[A]	Liquid pipe	ZRP200 twin (100×2)										ZRP250 twin (125×2)									
		ø9.52					ø12.7					ø9.52					ø12.7				
Branch pipe (mm) [B, C]	Gas pipe	ø19.05	ø22.2	ø25.4	ø28.58	ø19.05	ø22.2	ø25.4	ø28.58	ø22.2	ø25.4	ø19.05	ø22.2	ø25.4	ø28.58	ø19.05	ø22.2	ø25.4	ø28.58	ø22.2	ø25.4
	Liquid pipe	ø9.52	□ 20m [20m]	□ 50m [30m]	Standard size 100m [30m]	○ 100m [30m]	□ 100m [30m]	□ 100m [30m]	○ 100m [30m]	△ 50m [20m]	△ 50m [20m]	□ 20m [20m]	□ 50m [30m]	□ 100m [30m]	○ 100m [30m]	□ 20m [20m]	□ 50m [30m]	□ 100m [30m]	○ 100m [30m]	△ 50m [20m]	△ 50m [20m]
	Gas pipe	ø15.88																			
	Liquid pipe	ø9.52																			
	Gas pipe	ø19.05																			
	Liquid pipe	ø12.7																			

*Be sure to use rigid (tempered) pipes when the gas pipe O.D. exceeds ø22.2(ZRP200) / ø19.05(ZRP250).



<TWIN SYSTEM>

Total length A + B + C

ZRP71 : 50 m

ZRP100-140 : 75 m

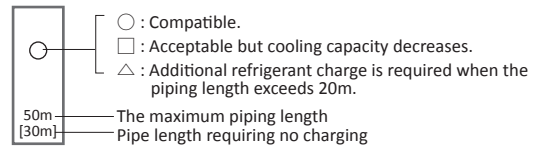
SHW112,140 : 75 m

ZRP200/250 : 100 m

ZM71 : 55 m

ZM100-140 : 100 m

<Marks in the table>



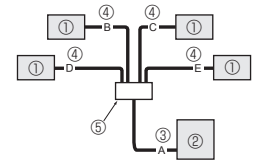
<Pipe diameter and thickness>

OD(mm)	ø6.35	ø9.52	ø12.7	ø15.88	ø19.05	ø22.2	ø25.4	ø28.58	ø31.75
Thickness(mm)	0.8	0.8	0.8	1.0	1.0	1.0	1.0	1.0	1.1

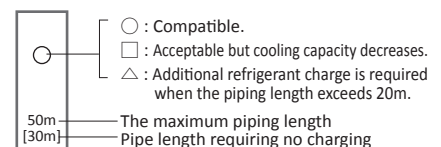
*Be sure to use rigid (tempered) pipes when the gas pipe O.D. exceeds ø19.05(ZRP250) / ø22.2(ZRP200).

(Do not use soft (annealed) pipes.)

- ①Indoor unit
- ②Outdoor unit
- ③Main piping
- ④Branch piping
- ⑤Multi distribution pipe (option)



<Marks in the table>

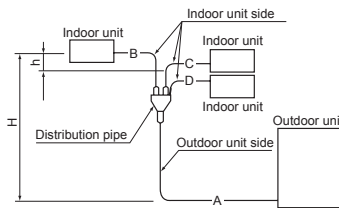


(3) TRIPLE SYSTEM

<Table 5> Maximum pipe length (ZM140 · ZRP140)

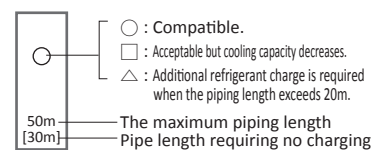
		ZM140 (50×3) · ZRP140 (50×3)		
Main pipe (mm)[A]	Liquid pipe	ø9.52	ø9.52	ø12.7
	Gas pipe	ø15.88	ø19.05	ø19.05
Branch pipe (mm) [B, C, D]	Liquid pipe ø6.35	Standard size 50m* [30m]	○ 50m [30m]	△ 50m [20m]
	Gas pipe ø12.7	○ 50m [30m]	○ 50m [30m]	△ 50m [20m]
	Liquid pipe ø9.52	○ 50m [30m]	○ 50m [30m]	△ 50m [20m]
	Gas pipe ø15.88	○ 50m [30m]	○ 50m [30m]	△ 50m [20m]
	Liquid pipe ø12.7	○ 50m [30m]	○ 50m [30m]	△ 50m [20m]
	Gas pipe ø19.05	○ 50m [30m]	○ 50m [30m]	△ 50m [20m]

* ZM140 : The maximum length is 100m in the case of new pipes.
ZRP140 : The maximum length is 75m in the case of new pipes.



<TWIN SYSTEM> Total length A + B + C
ZRP71 : 50 m
ZRP100-140 : 75 m
SHW112,140 : 75 m
ZRP200/250 : 100 m
ZM71 : 55 m
ZM100-140 : 100 m

<Marks in the table>











































































































































































<Table 6> Maximum pipe length (Main pipe [A] + Branch pipe [B, C and D]) (ZRP200, 250)

		ZRP200 triple (60×3)												ZRP250 triple (71×3)											
Main pipe (mm)[A]	Liquid pipe	ø9.52				ø12.7				ø15.88				ø9.52				ø12.7				ø15.88			
	Gas pipe	ø19.05	ø22.2	ø25.4	ø28.58	ø19.05	ø22.2	ø25.4	ø28.58	ø22.2	ø25.4	ø28.58	ø31.75	ø19.05	ø22.2	ø25.4	ø28.58	ø19.05	ø22.2	ø25.4	ø28.58	ø22.2	ø25.4	ø28.58	ø31.75
Branch pipe (mm) [B, C, D]	Liquid pipe ø9.52	□ 20m [20m]	□ 50m [30m]	Standard size 100m [30m]	○ 100m [30m]	□ 20m [20m]	□ 50m [30m]	○ 100m [30m]	○ 100m [30m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]	□ 20m [20m]	□ 50m [30m]	○ 100m [30m]	○ 100m [30m]	□ 20m [20m]	□ 50m [30m]	○ 100m [30m]	○ 100m [30m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]
	Gas pipe ø15.88	□ 20m [20m]	□ 50m [30m]	○ 100m [30m]	○ 100m [30m]	□ 20m [20m]	□ 50m [30m]	○ 100m [30m]	○ 100m [30m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]	□ 20m [20m]	□ 50m [30m]	○ 100m [30m]	○ 100m [30m]	□ 20m [20m]	□ 50m [30m]	○ 100m [30m]	○ 100m [30m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]
	Liquid pipe ø9.52	□ 20m [20m]	□ 50m [30m]	○ 100m [30m]	○ 100m [30m]	□ 20m [20m]	□ 50m [30m]	○ 100m [30m]	○ 100m [30m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]	□ 20m [20m]	□ 50m [30m]	○ 100m [30m]	○ 100m [30m]	□ 20m [20m]	□ 50m [30m]	○ 100m [30m]	○ 100m [30m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]
	Gas pipe ø19.05	□ 20m [20m]	□ 50m [30m]	○ 100m [30m]	○ 100m [30m]	□ 20m [20m]	□ 50m [30m]	○ 100m [30m]	○ 100m [30m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]	□ 20m [20m]	□ 50m [30m]	○ 100m [30m]	○ 100m [30m]	□ 20m [20m]	□ 50m [30m]	○ 100m [30m]	○ 100m [30m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]
	Liquid pipe ø12.7	□ 20m [20m]	□ 50m [30m]	○ 100m [30m]	○ 100m [30m]	□ 20m [20m]	□ 50m [30m]	○ 100m [30m]	○ 100m [30m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]	□ 20m [20m]	□ 50m [30m]	○ 100m [30m]	○ 100m [30m]	□ 20m [20m]	□ 50m [30m]	○ 100m [30m]	○ 100m [30m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]
	Gas pipe ø19.05	□ 20m [20m]	□ 50m [30m]	○ 100m [30m]	○ 100m [30m]	□ 20m [20m]	□ 50m [30m]	○ 100m [30m]	○ 100m [30m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]	□ 20m [20m]	□ 50m [30m]	○ 100m [30m]	○ 100m [30m]	□ 20m [20m]	□ 50m [30m]	○ 100m [30m]	○ 100m [30m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]

*Be sure to use rigid (tempered) pipes when the gas pipe O.D. exceeds ø22.2(ZRP200) / ø19.05(ZRP250).

(4) QUADRUPLE SYSTEM

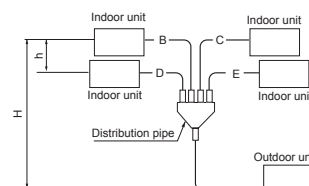
<Table 7> Maximum pipe length (Main pipe [A] + Branch pipe [B, C, D and E])

			ZRP200 quadruple (50×4)												ZRP250 quadruple (60×4)											
Main pipe (mm)[A]	Liquid pipe	ø9.52				ø12.7				ø15.88				ø9.52				ø12.7				ø15.88				
	Gas pipe	ø19.05	ø22.2	ø25.4	ø28.58	ø19.05	ø22.2	ø25.4	ø28.58	ø22.2	ø25.4	ø28.58	ø31.75	ø19.05	ø22.2	ø25.4	ø28.58	ø19.05	ø22.2	ø25.4	ø28.58	ø22.2	ø25.4	ø28.58	ø31.75	
Branch pipe (mm) [B, C, D, E]	Liquid pipe	ø6.35			Standard size																					
	Gas pipe	ø12.7																								
	Liquid pipe	ø9.52																								
	Gas pipe	ø15.88																								
	Liquid pipe	ø9.52																								
	Gas pipe	ø19.05																								
	Liquid pipe	ø12.7																								
	Gas pipe	ø19.05																								

*Be sure to use rigid (tempered) pipes when the gas pipe O.D. exceeds ø22.2(RP200) / ø19.05(RP250).

<Table 8> Decreased cooling capacity ratio in the case of smaller O.D. pipes

Pipe length	Cooling capacity ratio (ZRP35-140 · SHW112-140)		Cooling capacity ratio (ZRP200/250)	
	1-size smaller gas pipe		gas pipe ø22.2	gas pipe ø19.05
5m and less	100%		100%	100%
6-10m	100-90%		100-95%	100-88%
11-20m	90-85%		95-88%	88-77%
21-30m	85-80%		88-83%	—
31-40m	—		83-79%	—
41-50m	—		79-75%	—



<QUADRUPLE SYSTEM>
Total length A + B + C + D + E
ZRP200, 250 : 100 m

ADJUSTING THE AMOUNT OF REFRIGERANT

(1) ZM35-140 [R32]

- Check the additional refrigerant charging amount by referring to the table 10 when the liquid pipe O.D. is larger than the standard size.

<Table 9> Required additional charging amount when the liquid pipe O.D. is 1 size larger than the standard size.
(1:1 SYSTEM) (ZM35-140)

Outdoor unit	Liquid pipe O.D.	Refrigerant amount to be added
PUZ-ZM35,50	ø9.52	40 g per 1 m
PUZ-ZM60-140	ø12.7	80 g per 1 m

<Table 10> Required additional charging amount when the liquid pipe O.D. is 1 size larger than the standard size.
(TWIN/TRIPLE SYSTEM)

Outdoor unit	When the extension pipe length (main piping + branch piping) exceeds 20 m
ZM71-140	Additional refrigerant amount $\Delta W(g) = (80 \times L1) + (40 \times L2) + (15 \times L3) - 1600$

If the calculation result is negative ($\Delta W \leq 0$), additional charging is not necessary.

L1: ø12.7 liquid pipe length (m)

L2: ø9.52 liquid pipe length (m)

L3: ø6.35 liquid pipe length (m)

(2) ZRP35-140 · SHW112-140 [R410A]

- Check the additional refrigerant charging amount by referring to the tables 12 and 13 when the liquid pipe O.D. is larger than the standard size.

<Table 11> Required additional charging amount when the liquid pipe O.D. is 1 size larger than the standard size.
(1:1 SYSTEM) (ZRP35-140 · SHW112-140)

Outdoor unit	Liquid pipe O.D.	Refrigerant amount to be added
PUHZ-ZRP35,50	ø9.52	60 g per 1 m
PUHZ-ZRP60,71	ø12.7	100 g per 1 m
PUHZ-ZRP100-140 / PUHZ-SHW112-140	ø12.7	100 g per 1 m

<Table 12> Required additional charging amount when the liquid pipe O.D. is 1 size larger than the standard size.
(TWIN/TRIPLE SYSTEM)

Outdoor unit	When the extension pipe length (main piping + branch piping) exceeds 20 m
PUHZ-ZRP71-140 PUHZ-SHW112-140	Additional refrigerant amount $\Delta W(g) = (100 \times L1) + (60 \times L2) + (30 \times L3) - 2000$

If the calculation result is negative ($\Delta W \leq 0$), additional charging is not necessary.

L1: ø12.7 liquid pipe length (m)

L2: ø9.52 liquid pipe length (m)

L3: ø6.35 liquid pipe length (m)

<Table 13> Additional refrigerant amount when the liquid pipe O.D. is larger.
(Single / Simultaneous Twin / Simultaneous Triple / Simultaneous Quadruple)

Capacity	When the extension pipe length (main piping + branch piping) exceeds 20 m
ZRP200 ZRP250	Additional refrigerant amount $\Delta W(g) = (180 \times L1) + (120 \times L2) + (90 \times L3) + (30 \times L4) - 3000$

L1 : ø15.88 liquid pipe (m)

L2 : ø12.7 liquid pipe (m)

L3 : ø9.52 liquid pipe (m)

L4 : ø6.35 liquid pipe (m)

If the calculation result is negative, additional charging is not necessary. ($\Delta W \leq 0$)

Applicable extension pipe for each model

PUHZ-P-VHA / PUHZ-P-YHA / PUHZ-P-VKA / PUHZ-P-YKA

«PIPE LENGTH»

(1) 1:1 SYSTEM

<Table 1> Maximum pipe length (P100-140)

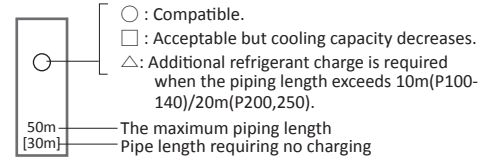
Liquid pipe(mm)	O.D.	ø9.52			ø12.7	
	Thickness	t0.8			t0.8	
Gas pipe (mm)	O.D.	ø12.7	ø15.88	ø19.05	ø15.88	ø19.05
	Thickness	t0.8	t1.0	t1.0	t1.0	t1.0
P100			Standard size 50m [20m]	○ 50m [20m]	△ 25m [10m]	△ 25m [10m]
P125, P140			Standard size 50m [30m]	○ 50m [30m]	△ 30m [10m]	△ 30m [10m]

<Table 2> Maximum pipe length (P200 · P250)

Liquid pipe(mm)	O.D.	ø9.52			ø12.7		ø15.88			
	Thickness	t0.8			t0.8		t1.0			
Gas pipe (mm)	O.D.	ø22.2	ø25.4	ø28.58	ø22.2	ø25.4	ø28.58	ø22.2	ø25.4	ø31.75
	Thickness	t1.0	t1.0	t1.0	t1.0	t1.0	t1.0	t1.0	t1.0	t1.1
P200		□ 50m [30m]	Standard size 70m [30m]	○ 70m [30m]	□△ 50m [20m]	○ 50m [20m]	○ 50m [20m]	□△ 40m [20m]	△ 40m [20m]	△ 40m [20m]
P250		□ 50m [30m]	○ 70m [30m]	○ 70m [30m]	Standard size 70m [30m]	○ 70m [30m]	○ 70m [30m]	□△ 45m [20m]	△ 45m [20m]	△ 45m [20m]

*Be sure to use hard (tempered) one for pipe over ø22.2(Do not use soft (annealed) one).

<Marks in the table>

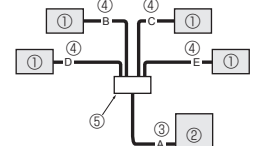


<Pipe diameter and thickness>

OD(mm)	ø6.35	ø9.52	ø12.7	ø15.88	ø19.05	ø22.2	ø25.4	ø28.58	ø31.75
Thickness(mm)	0.8	0.8	0.8	1.0	1.0	1.0	1.0	1.0	1.1

*Be sure to use rigid (tempered) pipes when the gas pipe O.D. exceeds ø22.2. (Do not use soft (annealed) pipes.)

- ① Indoor unit
- ② Outdoor unit
- ③ Main piping
- ④ Branch piping
- ⑤ Multi distribution pipe (option)



(2) TWIN SYSTEM

<Table 3> Maximum pipe length (P100-140)

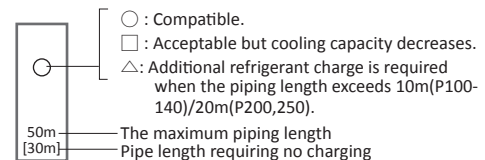
Main pipe (mm)[A]	Liquid pipe	P100 (50×2)			P125 (60×2) / P140 (71×2)		
		ø9.52	ø9.52	ø12.7	ø9.52	ø9.52	ø12.7
Branch pipe (mm) [B, C]	Gas pipe	ø15.88	ø19.05	ø19.05	ø15.88	ø19.05	ø19.05
	Liquid pipe	ø6.35	Standard size 50m [20m]	○ 50m [20m]	△ 25m [10m]		
	Gas pipe	ø12.7	Standard size 50m [20m]	○ 50m [20m]	△ 25m [10m]		
	Liquid pipe	ø9.52	○ 50m [20m]	○ 50m [20m]	△ 25m [10m]	Standard size 50m [30m]	△ 30m [10m]

<Table 4> Maximum pipe length (P200, 250)

Main pipe (mm)[A]	Liquid pipe	O.D.	P200 (100×2)								P250 (125×4)									
			ø9.52	ø12.7	ø15.88	ø22.2	ø25.4	ø28.58	ø31.75	ø15.88	ø9.52	ø12.7	ø15.88	ø22.2	ø25.4	ø28.58	ø31.75	ø15.88	ø22.2	ø25.4
Branch pipe (mm) [B, C]	Gas pipe	O.D.	ø22.2	ø25.4	ø28.58	ø22.2	ø25.4	ø28.58	ø31.75	ø22.2	ø25.4	ø28.58	ø31.75	ø22.2	ø25.4	ø28.58	ø31.75	ø22.2	ø25.4	ø28.58
	Liquid pipe	ø9.52	□ 50m [30m]	Standard size 70m [30m]	○ 70m [30m]	□△ 50m [20m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]	△ 50m [20m]	□ 50m [30m]	○ 70m [30m]	○ 70m [30m]	□ 50m [30m]	Standard size 70m [30m]	○ 70m [30m]	△ 45m [20m]	△ 45m [20m]	△ 45m [20m]	△ 45m [20m]

*Be sure to use rigid (tempered) pipes when the gas pipe O.D. exceeds ø22.2.

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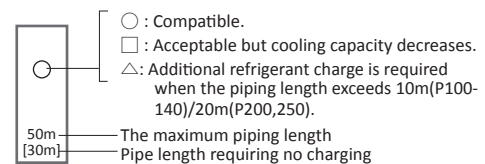


(3) TRIPLE SYSTEM

































<Table 5> Maximum pipe length (P140)

Main pipe (mm)[A]	Liquid pipe	P140 (50×3)		
		ø9.52	ø9.52	ø12.7
Branch pipe (mm) [B, C, D]	Gas pipe	ø15.88	ø19.05	ø19.05
	Liquid pipe	ø6.35	Standard size 50m [30m]	○ 50m [30m]
	Gas pipe	ø12.7	Standard size 50m [30m]	○ 50m [30m]
	Liquid pipe	ø9.52	○ 50m [30m]	○ 50m [30m]

<Marks in the table>



<Table 6> Maximum pipe length(P200, 250)

			P200 (60×3)											P250 (71×3)									
Main pipe (mm)[A]	Liquid pipe	O.D.	ø9.52			ø12.7			ø15.88					ø9.52			ø12.7			ø15.88			
	Gas pipe	O.D.	ø22.2	ø25.4	ø28.58	ø22.2	ø25.4	ø28.58	ø22.2	ø25.4	ø28.58	ø31.75	ø22.2	ø25.4	ø28.58	ø22.2	ø25.4	ø28.58	ø22.2	ø25.4	ø28.58	ø31.75	
Branch pipe (mm) [B, C, D]	Liquid pipe	ø9.52		Standard size													Standard size						
	Gas pipe	ø15.88																					

*Be sure to use rigid (tempered) pipes when the gas pipe O.D. exceeds ø22.2.

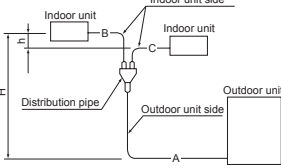
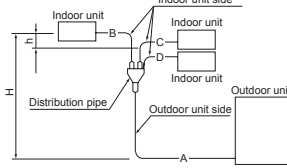
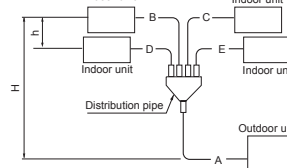
(4) QUADRUPLE SYSTEM

<Table 7> Maximum pipe length(P200, 250)

			P200 (50×4)											P250 (60×4)									
Main pipe (mm)[A]	Liquid pipe	O.D.	ø9.52			ø12.7			ø15.88					ø9.52			ø12.7			ø15.88			
	Gas pipe	O.D.	ø22.2	ø25.4	ø28.58	ø22.2	ø25.4	ø28.58	ø22.2	ø25.4	ø28.58	ø31.75	ø22.2	ø25.4	ø28.58	ø22.2	ø25.4	ø28.58	ø22.2	ø25.4	ø28.58	ø31.75	
Branch pipe (mm) [B, C, D, E]	Liquid pipe	ø6.35	□	Standard size	○	□△	△	△	□△	△	△	△	△	△	△	△	△	△	△	△	△	△	
	Gas pipe	ø12.7	50m [30m]	70m [30m]	70m [30m]	50m [20m]	50m [20m]	50m [20m]	40m [20m]	40m [20m]	40m [20m]	40m [20m]	△	△	△	△	△	△	△	△	△	△	
	Liquid pipe	ø9.52	□	○	○	□△	△	△	△	□△	△	△	△	□	○	○	□	Standard size	○	□△	△	△	△
	Gas pipe	ø15.88	50m [30m]	70m [30m]	70m [30m]	50m [20m]	50m [20m]	50m [20m]	40m [20m]	40m [20m]	40m [20m]	40m [20m]	40m [20m]	50m [30m]	70m [30m]	70m [30m]	50m [30m]	70m [30m]	45m [20m]	45m [20m]	45m [20m]	45m [20m]	

*Be sure to use rigid (tempered) pipes when the gas pipe O.D. exceeds ø22.2.

<Table 8> Decreased cooling capacity ratio in the case of smaller O.D. pipes

Pipe length	Cooling capacity ratio (P200/250)	
	gas pipe ø22.2	
5m and less	100%	 <p><TWIN SYSTEM> Total length A + B + C P100-140: 50 m P200, 250: 70 m</p>
6-10m	100-95%	
11-20m	95-88%	
21-30m	88-83%	
31-40m	83-79%	
41-50m	79-75%	
		 <p><TRIPLE SYSTEM> Total length A + B + C + D P140: 50 m P200, 250: 70 m</p>
		 <p><QUADRUPLE SYSTEM> Total length A + B + C + D + E P200, 250: 70 m</p>

ADJUSTING THE AMOUNT OF REFRIGERANT

- Check the additional refrigerant charging amount by referring to the tables 12 and 13 when the liquid pipe O.D. is larger than the standard size.

<Table 9> Required additional charging amount when the liquid pipe O.D. is 1 size larger than the standard size.
(1:1 SYSTEM) (P100-140)

Outdoor unit	Liquid pipe O.D.	Refrigerant amount to be added
PUHZ-P100-140	ø12.7	100 g per 1 m

<Table 10> Required additional charging amount when the liquid pipe O.D. is 1 size larger than the standard size.
(TWIN/TRIPLE SYSTEM)

Outdoor unit	When the extension pipe length (main piping + branch piping) exceeds 10 m
PUHZ-P100-140	Additional refrigerant amount $\Delta W(g) = (100 \times L1) + (60 \times L2) + (30 \times L3) - 2000$

If the calculation result is negative ($\Delta W \leq 0$), additional charging is not necessary.

L1: ø12.7 liquid pipe length (m)

L2: ø9.52 liquid pipe length (m)

L3: ø6.35 liquid pipe length (m)

<Table 11> Additional refrigerant amount when the liquid pipe O.D. is larger.
(Single /Simultaneous Twin / Simultaneous Triple / Simultaneous Quadruple)

Capacity	When the extension pipe length (main piping + branch piping) exceeds 20m
P200, P250	Additional refrigerant amount $\Delta W(g) = (180 \times L1) + (120 \times L2) + (90 \times L3) + (30 \times L4) - 3000$

L1 : ø15.88 liquid pipe (m)

L2 : ø12.7 liquid pipe (m)

L3 : ø9.52 liquid pipe (m)

L4 : ø6.35 liquid pipe (m)

If the calculation result is negative, additional charging is not necessary. ($\Delta W \leq 0$)

NOTICE

- Do not install indoor units in areas (e.g., mobile phone base stations) where the emission of VOCs such as phthalate compounds and formaldehyde is known to be high as this may result in a chemical reaction.
- Our air-conditioning equipments and heat pumps contain a fluorinated greenhouse gas, R32 (GWP: 675) or R410A (GWP: 2088).

* These GWP values are based on Regulation (EU) No 517/2014 from IPCC 4th edition. In case of Regulation (EU) No.626/2011 from IPCC 3rd edition, these are as follows. R32 (GWP: 550), R410A (GWP: 1975).

- When installing or relocating or servicing the air conditioners, use only the specified refrigerant (R32 or R410A) to charge the refrigerant lines.

Do not mix it with any other refrigerant and do not allow air to remain in the lines.

If air is mixed with the refrigerant, then it can be the cause of abnormal high pressure in the refrigerant lines, and may result in an explosion and other hazards.

The use of any refrigerant other than that specified for the system will cause mechanical failure, system malfunction or unit breakdown. In the worst case, this could lead to a serious impediment to securing product safety.



for a greener tomorrow

Eco Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.

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