



Air Conditioners

Technical Data

VRV[®]-WIII

VRV[®] Water-cooled Outdoor Units



EEDEN10-201



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R-410A VRV®-systems

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1 Possible indoor units using R-410A

→ Roundflow ceiling mounted cassette
FXFQ-P9



4-way blow ceiling mounted cassette
(600 mm x 600 mm) →
FXZQ-M9



→ 2-way blow ceiling mounted cassette
FXCQ-M8



Ceiling mounted corner cassette →
FXKQ-MA



→ Concealed ceiling unit (small)
FXDQ-M9



Slim Concealed Ceiling Unit →
FXDQ-P7



→ Concealed ceiling unit
FXSQ-P



Concealed ceiling unit →
FXMQ-P7



→ Concealed ceiling unit
FXMQ-MA



1
1

1 Possible indoor units using R-410A



→ Wall mounted unit
FXAQ-P

Ceiling suspended unit →
FXHQ-MA



1
1



→ 4-way blow ceiling suspended unit
FXUQ-MA

Floor standing unit →
FXLQ-P



→ Concealed floor standing unit
FXNQ-P

1 Possible indoor units using R-410A

Description	Indoor unit	Size													
		20	25	32	40	50	63	71	80	100	125	140	200	250	
Roundflow ceiling mounted cassette	FXFQ-P9	x	x	x	x	x	x			x	x	x			
4-way blow ceiling mounted cassette (600 mm x 600 mm)	FXZQ-M9	x	x	x	x	x									
2-way blow ceiling mounted cassette	FXCQ-M8	x	x	x	x	x	x		x		x				
Ceiling mounted corner cassette	FXKQ-MA		x	x	x		x								
Concealed ceiling unit (small)	FXDQ-M9	x	x												
Slim Concealed Ceiling Unit	FXDQ-P7	x	x	x	x	x	x								
Concealed ceiling unit	FXSQ-P	x	x	x	x	x	x		x	x	x	x			
Concealed ceiling unit	FXMQ-P7				x	x	x		x	x	x				
Concealed ceiling unit	FXMQ-MA												x	x	
Wall mounted unit	FXAQ-P	x	x	x	x	x	x								
Ceiling suspended unit	FXHQ-MA			x			x			x					
4-way blow ceiling suspended unit	FXUQ-MA							x		x	x				
Floor standing unit	FXLQ-P	x	x	x	x	x	x								
Concealed floor standing unit	FXNQ-P	x	x	x	x	x	x								

NOTE

1 FXMQ200, 250MA cannot be combined to VRV®III-S.

2 Possible outdoor units using R-410A

2 - 1 VRV®III Heat Recovery

2 - 1 - 1 Small footprint combination

VRV®III heat recovery	Fixed combinations	N° of outdoors	N° of compressors	N° of connectable indoor units	Minimum capacity index	Maximum capacity index	Capacity steps
REYQ8P9	REYQ8P9	1	2	13	100	260	30
REYQ10P8	REYQ10P8	1	2	16	125	325	37
REYQ12P9	REYQ12P9	1	2	19	150	390	37
REYQ14P8	REYQ14P8	1	2	22	175	455	26
REYQ16P8	REYQ16P8	1	2	26	200	520	26
REYQ18P9	REMQ8P9 + REMQ10P8	2	3	29	225	585	31
REYQ20P9	REMQ8P9 + REMQ12P8	2	3	32	250	650	31
REYQ22P8	REMQ10P8 + REMQ12P8	2	4	35	275	715	38
REYQ24P8	REMQ12P8 + REMQ12P8	2	4	39	300	780	38
REYQ26P8	REMQ10P8 + REMQ16P8	2	5	42	325	845	41
REYQ28P8	REMQ12P8 + REMQ16P8	2	5	45	350	910	41
REYQ30P8	REMQ14P8 + REMQ16P8	2	6	48	375	975	46
REYQ32P8	REMQ16P8 + REMQ16P8	2	6	52	400	1,040	46
REYQ34P9	REMQ8P9 + REMQ10P8 + REMQ16P8	3	6	55	425	1,105	36
REYQ36P9	REMQ8P9 + REMQ12P8 + REMQ16P8	3	6	58	450	1,170	36
REYQ38P8	REMQ10P8 + REMQ12P8 + REMQ16P8	3	7	61	475	1,235	41
REYQ40P8	REMQ12P8 + REMQ12P8 + REMQ16P8	3	8	64	500	1,300	41
REYQ42P8	REMQ10P8 + REMQ16P8 + REMQ16P8	3	8	64	525	1,365	46
REYQ44P8	REMQ12P8 + REMQ16P8 + REMQ16P8	3	8	64	550	1,430	46
REYQ46P8	REMQ14P8 + REMQ16P8 + REMQ16P8	3	8	64	575	1,495	51
REYQ48P8	REMQ16P8 + REMQ16P8 + REMQ16P8	3	9	64	600	1,560	51

2 - 1 - 2 High COP combination

VRV®III heat recovery	Fixed combinations	N° of outdoors	N° of compressors	N° of connectable indoor units	Minimum capacity index	Maximum capacity index	Capacity steps
REYHQ16P	REMQ8P9 + REMQ8P9	2	2	26	200	520	*
REYHQ20P	REMQ8P9 + REMHQ12P8	2	3	29	225	585	*
REYHQ22P	REMQ10P8 + REMHQ12P8	2	4	32	250	650	*
REYHQ24P	REMQ12P8 + REMHQ12P8	2	4	35	275	715	*

2 Possible outdoor units using R-410A

2 - 2 VRV® III Heat Pump

2 - 2 - 1 Small footprint combination

VRV® III heat pump	N° of outdoor units	N° of compressors	N° of connectable indoor units	Minimum capacity index	Maximum capacity index	Capacity steps
RXYQ5P	1	1	8	62.5	162.5	18
RXYQ8P8	1	1	13	100	260	24
RXYQ10P	1	2	16	125	325	37
RXYQ12P	1	2	19	150	390	37
RXYQ14PA	1	3	23	175	455	51
RXYQ16PA	1	3	26	200	520	51
RXYQ18PA	1	3	29	225	585	55
RXYQ20P8	2	3	32	250	650	35
RXYQ22P	2	4	35	275	715	36
RXYQ24P	2	4	39	300	780	40
RXYQ26P8A	2	4	42	325	845	40
RXYQ28PA	2	5	45	350	910	45
RXYQ30PA	2	5	49	375	975	45
RXYQ32PA	2	6	52	400	1,040	46
RXYQ34PA	2	6	55	425	1,105	50
RXYQ36PA	2	6	58	450	1,170	50
RXYQ38P8A	3	6	61	475	1,235	41
RXYQ40PA	3	7	64	500	1,300	46
RXYQ42PA	3	7	64	525	1,365	46
RXYQ44P8A	3	7	64	550	1,430	46
RXYQ46PA	3	8	64	575	1,495	66
RXYQ48PA	3	8	64	600	1,560	66
RXYQ50PA	3	9	64	625	1,625	56
RXYQ52PA	3	9	64	650	1,690	56
RXYQ54PA	3	9	64	675	1,755	56

2 - 2 - 2 High COP combination

VRV® III heat pump	Fixed combinations	N° of outdoors	N° of compressors	N° of connectable indoor units	Minimum capacity index	Maximum capacity index	Capacity steps
RXYHQ12P8	RXYHQ12P8	1	*	19	150	390	*
RXYHQ16P8	RXYQ8P8 + RXYQ8P8	2	*	26	200	520	*
RXYHQ18P8	RXYQ8P8 + RXYQ10P	2	*	29	225	585	*
RXYHQ20P8	RXYQ8P8 + RXYHQ12P8	2	*	32	250	650	*
RXYHQ22P8	RXYQ10P + RXYHQ12P8	2	*	35	275	715	*
RXYHQ24P8	RXYQ8P8 + RXYQ8P8 + RXYQ8P8	3	*	39	300	780	*
RXYHQ26P8	RXYQ8P8 + RXYQ8P8 + RXYQ10P	3	*	42	325	845	*
RXYHQ28P8	RXYQ8P8 + RXYQ10P + RXYQ10P	3	*	45	350	910	*
RXYHQ30P8	RXYQ8P8 + RXYQ10P + RXYHQ12P8	3	*	49	375	975	*
RXYHQ32P8	RXYQ8P8 + RXYHQ12P8 + RXYHQ12P8	3	*	52	400	1.040	*
RXYHQ34P8	RXYQ10P + RXYHQ12P8 + RXYHQ12P8	3	*	55	425	1105	*
RXYHQ36P8	RXYHQ12P8 + RXYHQ12P8 + RXYHQ12P8	3	*	58	450	1.170	*

2 - 2 - 3 VRV® III-C Heat pump optimized for heating

VRV® III heat pump	Fixed combinations	N° of outdoors	N° of compressors	N° of connectable indoor units	Minimum capacity index	Maximum capacity index	Capacity steps
RTSYQ10P	RTSQ10P + BTSQ20P	1 + function unit	2+1	16	125	325	*
RTSYQ14P	RTSQ14P + BTSQ20P	1 + function unit	3+1	22	175	455	*
RTSYQ16P	RTSQ16P + BTSQ20P	1 + function unit	3+1	26	200	520	*
RTSYQ20P	RTSQ8P + RTSQ12P + BTSQ20P	2 + function unit	3+1	32	250	650	*

2 Possible outdoor units using R-410A

2 - 2 - 4 VRV[®]III-S

VRVIII-S	N° of outdoors	N° of compressors	N° of connectable indoor units	Minimum capacity index	Maximum capacity index	Capacity steps
RXYSQ4PAV/RXYSQ4PAY	1	1	6	50	130	31
RXYSQ5PAV/RXYSQ5PAY	1	1	8	62.5	162.5	31
RXYSQ6PAV/RXYSQ6PAY	1	1	9	70	182	31

2 - 2 - 5 VRV[®] heat pump with connection to stylish indoor units

VRV [®] III heat pump	N° of outdoors	N° of compressors	N° of connectable indoor units	Minimum capacity index	Maximum capacity index	Capacity steps
RXYQ8PR	1	1	13	100	260	24
RXYQ10PR	1	2	16	125	325	37
RXYQ12PR	1	2	19	150	390	37
RXYQ14PR	1	3	23	175	455	51
RXYQ16PR	1	3	26	200	520	51
RXYQ18PR	1	3	29	225	585	55

* For more information on this product, please refer to your local dealer.

2 - 3 Replacement VRV[®]

Replacement VRV [®] - Heat recovery	Fixed combinations	N° of outdoors	N° of compressors	N° of connectable indoor units	Minimum capacity index	Maximum capacity index	Capacity steps
RQCEQ280P	RREQ140P + RREQ140P	2	2	16	14	36.4	*
RQCEQ360P	RREQ180P + RREQ180P	2	2	20	18	46.2	*
RQCEQ460P	RREQ140P + RREQ140P + RREQ180P	3	3	26	23	59.8	*
RQCEQ500P	RREQ140P + RREQ180P + RREQ180P	3	3	29	25	65	*
RQCEQ540P	RREQ180P + RREQ180P + RREQ180P	3	3	33	27	70.2	*
RQCEQ636P	RREQ212P + RREQ212P + RREQ212P	3	3	36	31.8	82.7	*
RQCEQ712P	RREQ140P + RREQ180P + RREQ180P + RREQ212P	4	4	40	35.6	92.6	*
RQCEQ744P	RREQ140P + RREQ180P + RREQ212P + RREQ212P	4	4	43	37.2	96.7	*
RQCEQ816P	RREQ180P + RREQ212P + RREQ212P + RREQ212P	4	4	47	40.8	106	*
RQCEQ848P	RREQ212P + RREQ212P + RREQ212P + RREQ212P	4	4	50	42.4	110	*

Replacement VRV [®] - Heat pump	Fixed combinations	N° of outdoors	N° of compressors	N° of connectable indoor units	Minimum capacity index	Maximum capacity index	Capacity steps
RQYQ140P	RQYQ140P	1	1	8	7	18.2	*
RQYQ180P	RQYQ180P	1	1	10	9	23.4	*
RQCYQ280P	RQYQ140P + RQYQ140P	2	2	16	14	36.4	*
RQCYQ360P	RQYQ180P + RQYQ180P	2	2	20	18	46.2	*
RQCYQ460P	RQYQ140P + RQYQ140P + RQYQ180P	3	3	26	23	59.8	*
RQCYQ500P	RQYQ140P + RQYQ180P + RQYQ180P	3	3	29	25	65	*
RQCYQ540P	RQYQ180P + RQYQ180P + RQYQ180P	3	3	33	27	70.2	*
RQYP615A	RQYP280A + RQYP335A	2	4	36	30.8	80	*
RQYP680A	RQYP280A + RQYP400A	2	5	40	34	88.4	*
RQYP730A	RQYP280A + RQYP450A	2	5	43	36.5	94.9	*
RQYP785A	RQYP335A + RQYP450A	2	5	46	39.3	102	*
RQYP850A	RQYP400A + RQYP450A	2	6	48	42.5	111	*

2 Possible outdoor units using R-410A

2 - 4 VRV®-WIII

2 - 4 - 1 Standard series

VRV®-WIII heat pump	VRV®-WIII heat recovery	Fixed combinations	N° of outdoors	N° of compressors	N° of connectable indoor units	Minimum capacity index	Maximum capacity index	Capacity steps
		RWEYQ8P	1	1	13	100	260	*
		RWEYQ10P	1	1	16	125	325	*
		RWEYQ16P	2	2	26	200	520	*
		RWEYQ18P	2	2	29	225	585	*
		RWEYQ20P	2	2	32	250	650	*
		RWEYQ24P	3	3	36	300	780	*
		RWEYQ26P	3	3	36	325	845	*
		RWEYQ28P	3	3	36	350	910	*
		RWEYQ30P	3	3	36	375	975	*

2 - 4 - 2 Geothermal series

VRV®-WIII heat pump	VRV®-WIII heat recovery	Fixed combinations	N° of outdoors	N° of compressors	N° of connectable indoor units	Minimum capacity index	Maximum capacity index	Capacity steps
		RWEYQ8PR	1	1	13	100	260	*
		RWEYQ10PR	1	1	16	125	325	*

2 - 5 Indoor unit capacity index

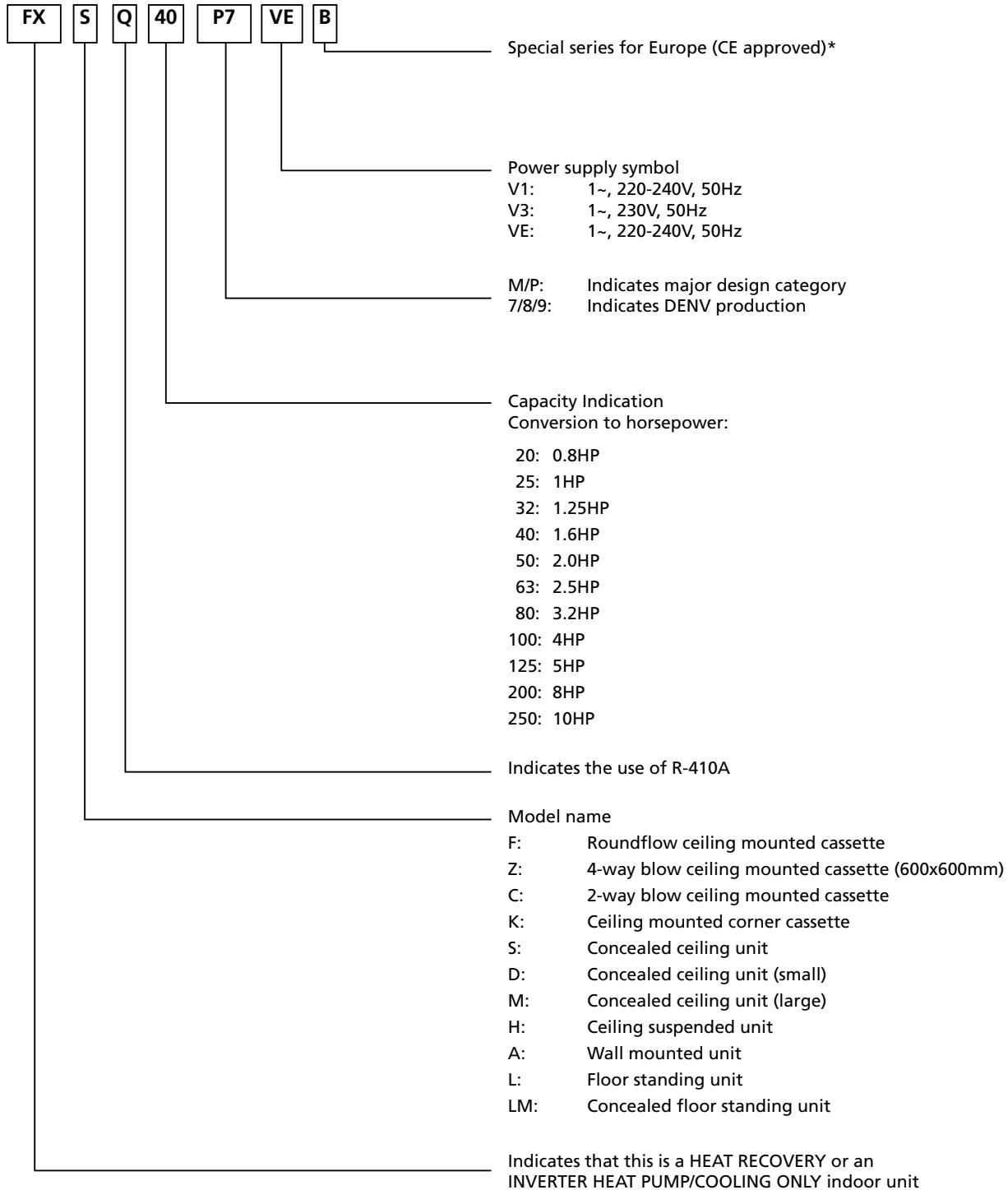
Model	20	25	32	40	50	63	71	80	100	125	200	250
Capacity index	20	25	31.25	40	50	62.5	71	80	100	125	200	250

NOTE

- 1 e.g. Selected indoor units: FXCQ25 + FXFQ100 + FXMQ200 + FXSQ40
 Connection ratio: 25 + 100 + 200 + 40 = 365
 → Possible outdoor unit: REYQ12P8

3 Nomenclature

3 - 1 Indoor units



* B is not mandatory for indoor units

3 Nomenclature

3 - 2 Outdoor units

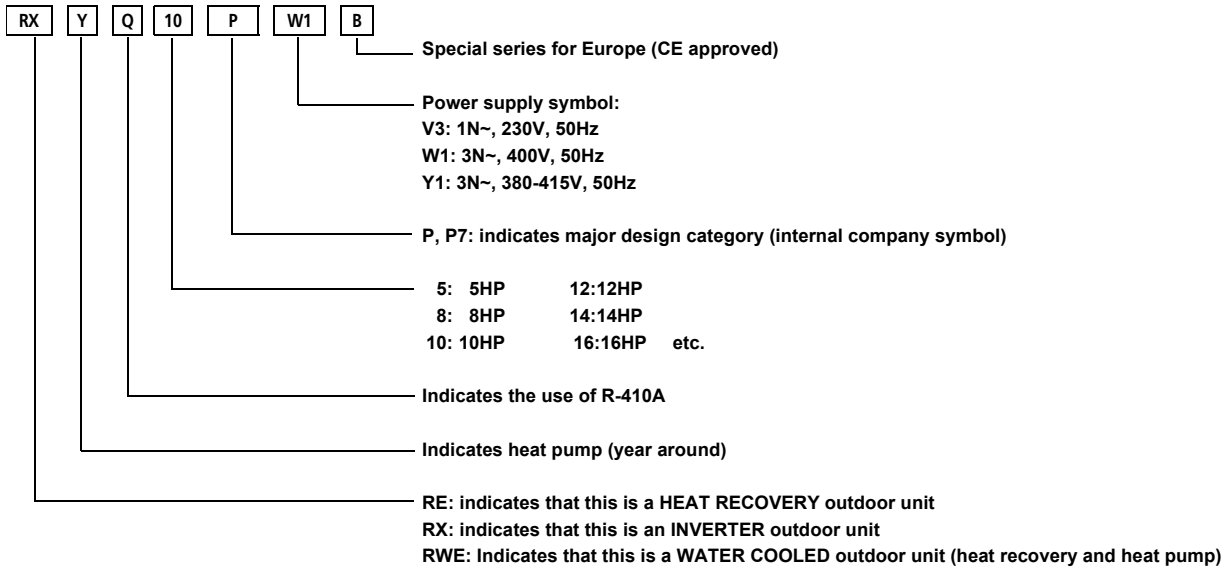


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"Please note that this material is for reference only. In practice, construction methods may vary with projects and local legislation. Therefore, please consult your design office for design and construction of the system"

1 Introduction

The Daikin water cooled VRV® (VRV®-WIII) combines all the well known benefits of VRV® with those of water systems:

The VRV® component of the system - condensing and indoor units, refrigerant piping and controls - delivers high efficiency combined with exceptional control flexibility. Heat is exhausted or absorbed via the condensing units to and from the 2-pipe water circuit as required, during cooling and heating cycles respectively.

On the water side of the system the heat source (water) is supplied to VRV® condensing units throughout the building via the water circuit, which incorporates ancillary items such as - pumps, valves, strainer, expansion tank, heat transfer equipment, air vents and water treatment equipment etc.

The operating range of VRV®-WIII depends on the temperature of the water circuit, which should be maintained between 15°C and 45°C.

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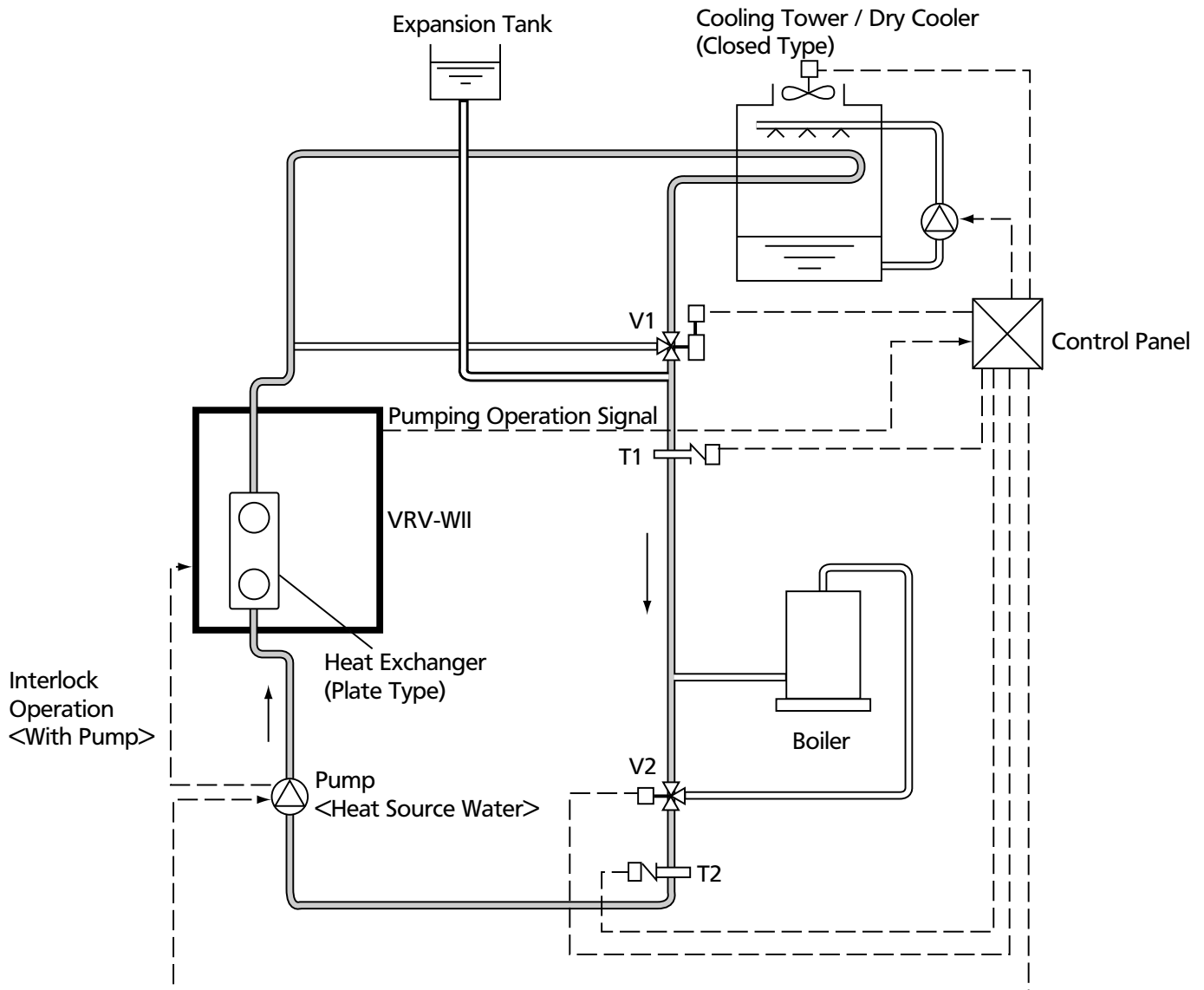
Application potential for VRV®-WIII:

- tall or wide multi storey buildings not subject to limitations on length of water piping
- applications in which the amount of refrigerant in the building is limited
- refurbishment projects in which it is possible to link VRV®-WIII into existing water piping and use the existing heat source
- sites where suitable alternative heat transfer sources such as district water, underground water, sea water, solar energy etc. exist
- sites where low external noise is critical. NB! Models of heat rejection equipment (cooling towers) are available for low noise applications.
- cold climate applications with no defrost cycle due to use of water circuit.

2 Basic configurations of VRV®-WIII

2 - 1 Basic configuration for cooling operation

In temperate climatic regions, excess heat within the water circuit can usually be exhausted via a dry cooler or cooling tower. However, alternative heat sinks can also be used, including natural water sources such as rivers, lakes and bore holes - existing process or chilled water circuits can also be utilized if fitted with heat transfer facilities.

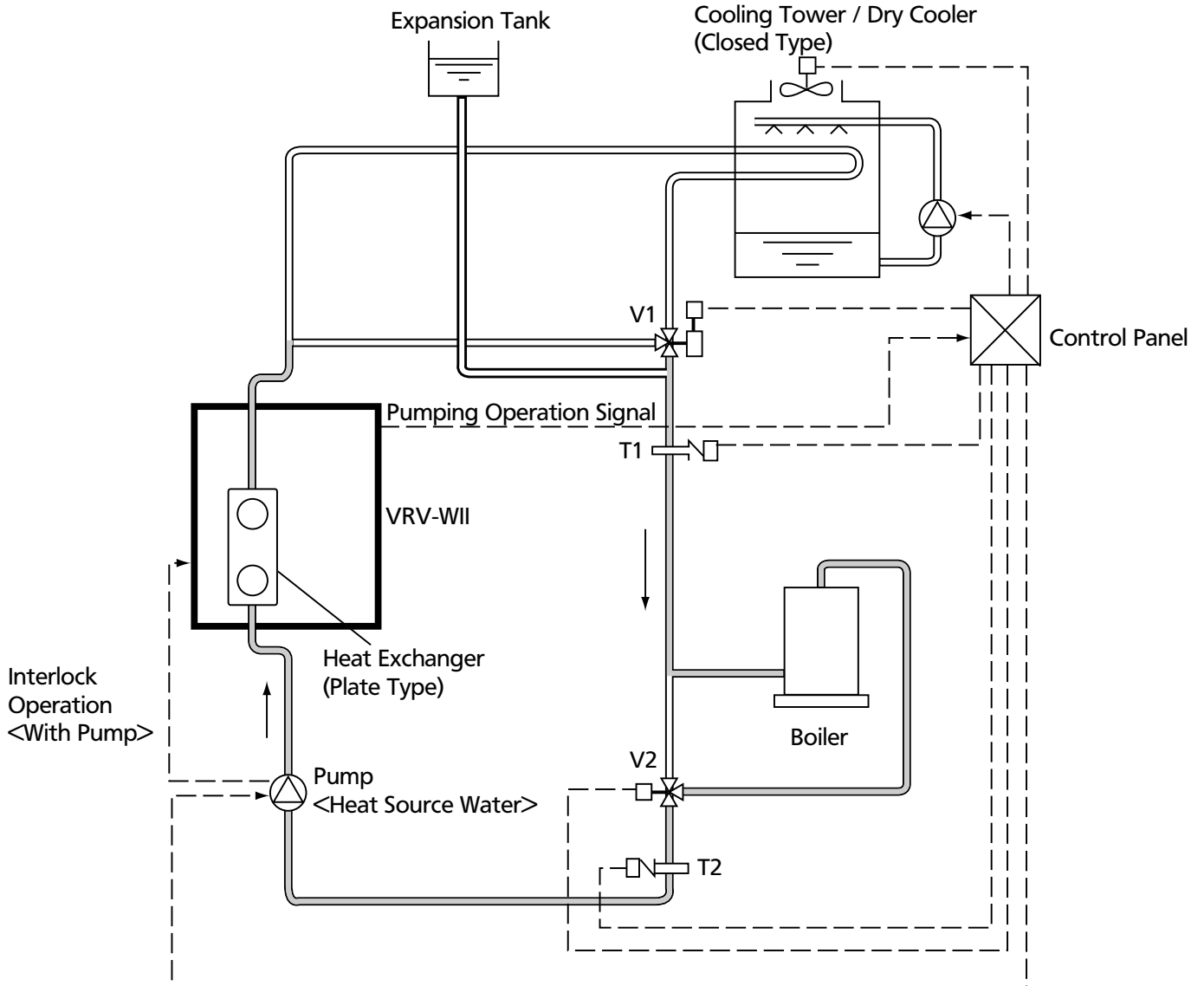


The diagram shows that during summer operating cycles, a drop in cooling water temperature below pre set temperature level T1 causes 3-way valve bypass V1 to open. This bypass closes once more when T1 is exceeded, reducing the temperature by allowing an increased flow of water to the cooling tower. On/off control of pump and fan in closed cooling tower circuits is also provided by 3-way valve, V1.

2 Basic configurations of VRV®-WIII

2 - 2 Basic configuration for heating operation

Low pressure hot water from a boiler is generally utilized to maintain the required temperature levels within the water circuit - but steam, district/process/industrial heating systems or even solar energy can also act as the heat source.



During winter operation, water circuit temperature T2 is maintained by circulating water through the boiler (or similar) via valve V2, which shuts off immediately the pre set temperature is achieved.

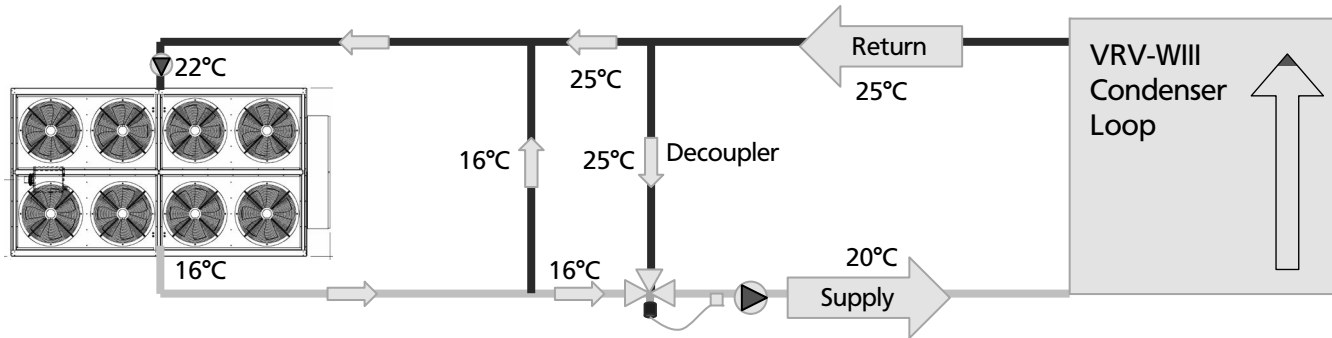
2 Basic configurations of VRV®-WIII

2 - 3 Alternative solution

Cooling tower and boiler replaced by heat pump chiller

The use of a boiler and cooling tower to maintain condenser circuit temperature can be replaced by a heat pump chiller in most Southern European regions, resulting in good control options via a single package, which can be supplied by Daikin.

The water circuit temperature on VRV®-WIII is outside the standard operating range of a standard heat pump chiller, hence the **pipng configuration is important**. All engineering data books for Daikin chillers publish the operating range and specify the max and min ΔT across the evaporator (Usually 3~8°C).



To ensure maximum operating efficiency of the heat pump chiller, the following data represents the optimum selection point when using the above configuration: -

Cooling Mode: Leaving chilled water temperature

= **Highest possible leaving water temperature (16°C)**

Heating Mode: Leaving hot water temperature =

= **Lowest possible leaving water temperature (25°C)**

3 Water piping elements

Water at the pre set temperature is supplied to all VRV®-VIII condensing units via a 2-pipe closed circuit..

Water temperatures within the circuit must be maintained at 15 to 45°C and pumps should be of sufficient duty to match the requirements of all VRV®-VIII condensing units. Air purging should be carried out in closed circuit systems and a strainer installed to prevent impurities from entering the water flow. Expansion tanks are also important since they allow for temperature changes within the circuit. System start up should be provided by a controller, which also regulates circuit water temperature and protects the system.

Steel, stainless steel, copper and plastic but not galvanised, piping can be used.

2
3

1 When designing a water piping system, the following should be considered:

- water must be supplied to the required locations according to the needs of each VRV®-VIII
- head and friction losses should be kept at a minimum
- water velocity should be properly controlled to avoid water streaming noise, pipe vibration or pipe expansion/contraction due to temperature differences.
- attention should be paid to water management: impact of the water quality, corrosion prevention...
- enough arrangements should be provided for easy service and maintenance.

3 - 1 Heat rejection equipment

In cooling mode, the purpose of the water cooled VRV® plant is to reject unwanted heat outdoors.

In an **air cooled VRV®III**, cooler ambient air is usually drawn across the condenser coil by means of propeller fans. High pressure refrigerant heat is transferred to the cooler ambient air and exhausted outdoors.

By comparison, in a **water cooled VRV®-VIII**, cooling water is pumped through the plate type condenser. High pressure refrigerant heat is transferred to the cooler condenser water and exhausted outdoors.

3 - 1 - 1 Cooling towers types

The cooling tower is still the most common equipment used for water heat rejection. With the current drive towards energy efficiency, ground water, lakes, rivers and sea have been used as an alternative heat rejection medium. Environmental concerns and restrictions however, may limit this potential source.

The cooling tower relies on the process of evaporation, enabling the condenser water circuit to be cooled to a temperature below the ambient wet bulb.

1 Cooling tower performance is dependent on the ambient wet bulb, whilst dry bulb temperature has little effect on performance.

Over sizing cooling towers will lead to lower condenser water temperatures at part load operation, increasing plant efficiency.

Cooling towers are either of the "**open**" or "**closed**" type.

In an **open tower**, the condenser water / fluid circuit comes into direct contact with the outside air.

In a **closed tower**, the condenser water is circulated in the heat exchanger tubes, while an evaporating water film falls on the fins of the tube exchanger.

3 Water piping elements

3 - 1 Heat rejection equipment

3 - 1 - 1 Cooling towers types

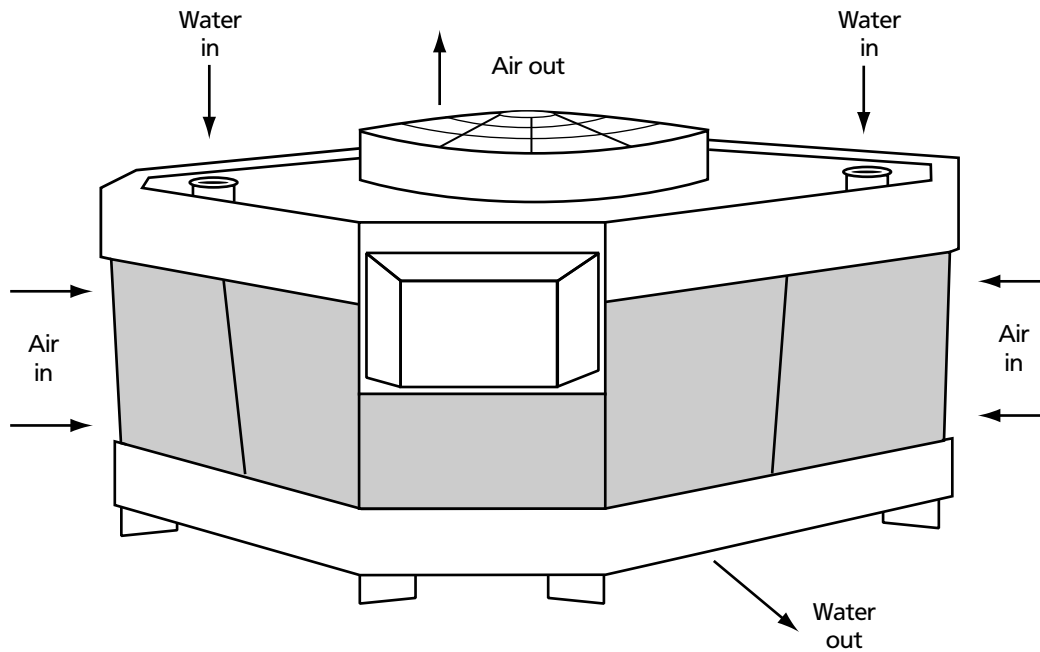
3 - 1 - 1 - 1 Open cooling towers

Open cooling towers are classified in terms of the airflow configuration. "**Forced draught**" and "**induced draught**" towers are the most common types found in the HVAC industry. The forced draught tower is driven by a fan, which blows air through the tower. Induced draught towers **pull** the air through the tower.

Depending on whether the air is drawn against the flow of the water or across the flow of water in the tower, the systems can be further classified as "**counter flow**" or "**cross flow**" configurations.

① Induced draught tower

This type of unit utilizes axial flow fans and is generally thought to be the most efficient and therefore the most popular, in use today.



Large propeller fans on the air discharge or the top of the tower **draw air counter flow or cross flow** to the condenser water. Due to the higher discharge velocities they are less susceptible to short air circuits or recirculation. Noise levels are higher due to the low frequency noise associated with propeller and axial fans.

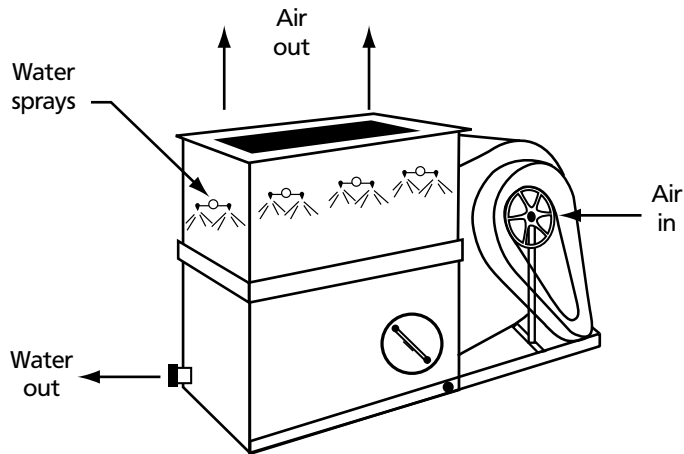
3 Water piping elements

3 - 1 Heat rejection equipment

3 - 1 - 1 Cooling towers types

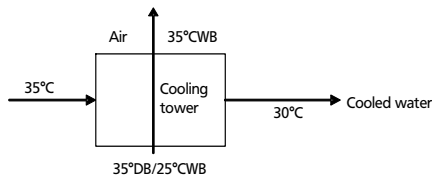
3 - 1 - 1 - 1 Open cooling towers

① Forced Draught Tower



Forward curved centrifugal fans on the air inlet will **force/push** the air in either a counter flow or cross flow pattern. **Centrifugal fans use more power but generate enough static pressure to overcome any problems associated with internally located cooling towers or those fitted with sound dampers.** These towers are quieter than others and are particularly useful for low noise applications. The cross flow tower offers the benefit of a lower profile unit where aesthetics or plant room height may be restricted. On the other hand, the power input is approximately double that of an induced draught tower.

Typical air/water temperatures for an open cooling tower operating in a temperate climatic region:



3 Water piping elements

3 - 1 Heat rejection equipment

3 - 1 - 1 Cooling towers types

3 - 1 - 1 - 2 Closed cooling towers

The water being cooled is contained within a heat exchanger or coil.

Numerous advantages are associated with this arrangement, particularly if the water is pressurized or mixed with chilled water from an external source or if the primary pump is sited away from the cooling tower.

Closed cooling towers tend to be larger than open models and consequently, more expensive.

On the other hand, since fouling is negligible, closed type systems have lower maintenance costs

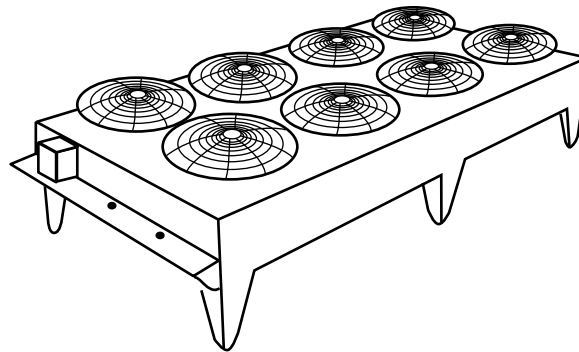
There are 2 types:

① **Evaporative cooling tower:**

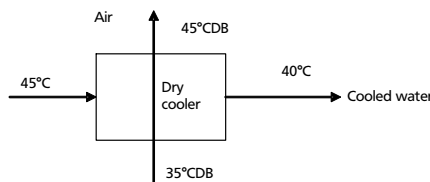
A secondary open water spray system is used to distribute a film of water to the fins to provide the benefit of evaporative cooling.

② **Dry cooler:**

The concept is similar to that of an air cooled condenser with condenser water circulating through the tubes and is therefore classed as a closed type system. Due to the higher condenser water temperatures of dry coolers, performance is similar or lower than an equivalent air cooled package.



Typical air/water temperatures for a dry cooler tower operating in a temperate climatic region:



RECOMMENDATION

- 1 It is recommended that closed cooling towers should be used as much as possible in order to prevent the cooling water from becoming contaminated.
- 2 When open cooling towers are used it is essential to install a water treatment system.

3 Water piping elements

3 - 1 Heat rejection equipment

3 - 1 - 2 Cooling tower selection

Cooling tower selection is based on the amount of heat to be rejected (the actual cooling capacity + compressor power) and the optimum method of rejecting this heat depending on the most important design criteria, ie. initial cost, efficiency, footprint and noise.

Example of selection of a dry cooler:

Q_r = total rejected heat = Total (cooling capacity + PI) of VRV®-WIII units (kW)

m = VRV®-WIII total condenser flow rate (kg/s)

ΔT = range = LWC-EWC (°C)

LWC = Condenser leaving water temperature

EWC = Condenser entering water temperature

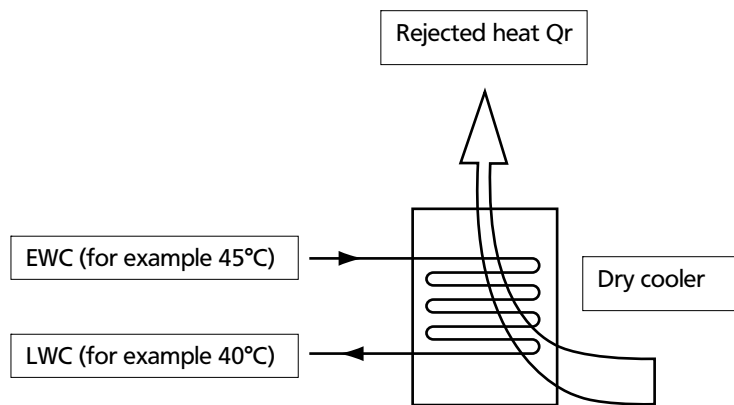
2
3

$$\Delta T = Q_r / (4.2 \times m)$$

where 4.2 = specific heat capacity, kJ/kg*s

LWC is pre-selected within the limits of the VRV®-WIII operation range (15°-45°C), EWC is calculated.

With these values, the dry cooler can be selected by using different manufacturers' selection catalogues or software.



3 Water piping elements

3 - 2 Heat transfer equipment

An external heat source, usually in the form of a LPHW boiler and associated heat exchanger is necessary in applications in which the operating temperature of the water circuit cannot be maintained due to insufficient heat recovery within the system. The operating temperature of the boiler should be in the region of 90/70°C.

Example of boiler selection:

Boiler selection is carried out similarly to cooler selection, except the kW of power input (PI) is subtracted from instead of added to the VRV®-WIII heating capacity.

Q_i = total injected heat = total (heating capacity - PI) of VRV®-WIII units (kW)

m = VRV®-WIII total condenser flow rate (kg/s)

ΔT = EWC-LWC (°C)

LWH = heat exchanger leaving water temperature

EWH = heat exchanger entering water temperature

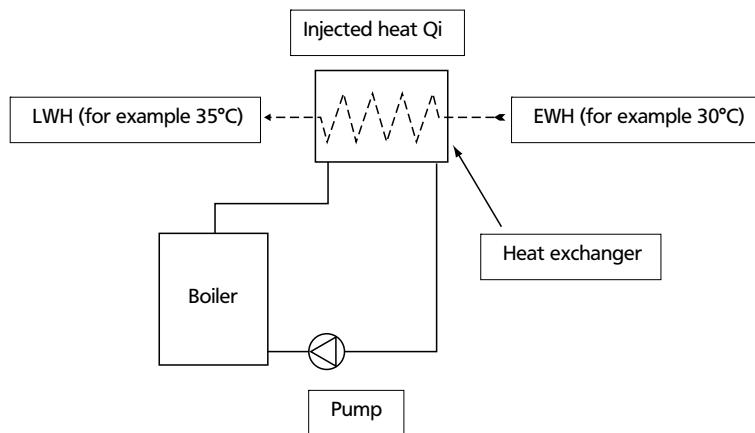
$$\Delta T = Q_i / (4.2 \times m)$$

where 4.2 = specific heat capacity, kJ/kg*s

LWH is pre-selected within the limits of the VRV®-WIII operation range (15°-45°C), EWH is calculated.

Based on total injected heat (Qi), the boiler can be selected.

With these values, the heat exchanger can also be selected by using different manufacturers' selection catalogues or software.



3 Water piping elements

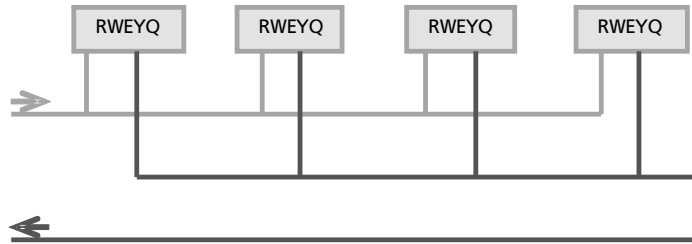
3 - 3 Water pipes

The 2-pipe layout is commonly used and consists out of one pipe to and one from the terminal (fan coil unit or VRV®-WIII). Both chilled or hot water can be supplied to the terminal.

3 - 3 - 1 Reverse return method for dimensioning the water pipes:

According to this method, the length of the water piping return and supply is almost equal for all VRV®-WIII condensing units in the system. The friction loss is almost the same, resulting in a balanced water flow to each condensing unit. Adversely, the piping length is longer. Since the water circuits are equal for each unit, the major advantage of the reverse return method is that it seldom requires balancing. Due to the more balanced flow, the test run and maintenance work becomes easier.

It is often the most economical design for new build projects.



3 - 3 - 2 Friction losses

In order to force a fluid through a pipe, pressure is required to overcome the viscous friction forces. Friction loss occurs when water flow through a pipe.

NOTE

- The Darcy equation is the basis of all fluid flow equations and relates the pipe pressure drop required to overcome the fluid viscous friction forces:

$$\partial P = (\rho * f * l * v^2) / (2 * d)$$

Where: ∂P = friction losses (Pa)

ρ = fluid density (kg/m³)

f = friction factor, depending on the roughness of the internal surface of the pipe (dimensionless)

l = pipe length (m)

v = fluid velocity (m/s)

d = internal pipe diameter (m)

Most air conditioning systems use steel pipe or copper tubing .

Based on the Darcy equation, the pipe friction / flow tables are made (e.g. **fig.1**).

3 - 3 - 3 Water velocity

The recommended water velocity through the piping is depending on two conditions:

- pipe diameter
- effect of erosion.

The table below lists the recommended velocity ranges for the different piping diameters. The higher the water velocity, the higher the noise level of the moving water and the entrained air and the erosion will be.

Recommended water velocity	
Diameter (mm)	Velocity range (m/s)
> 125	2.1 ~ 2.7
50-100	1.2 ~ 2.1
about 25	0.6 ~ 1.2

Since erosion is a function of time, water velocity and quality of water, the design water velocity is subject to the judgment of the design engineer.

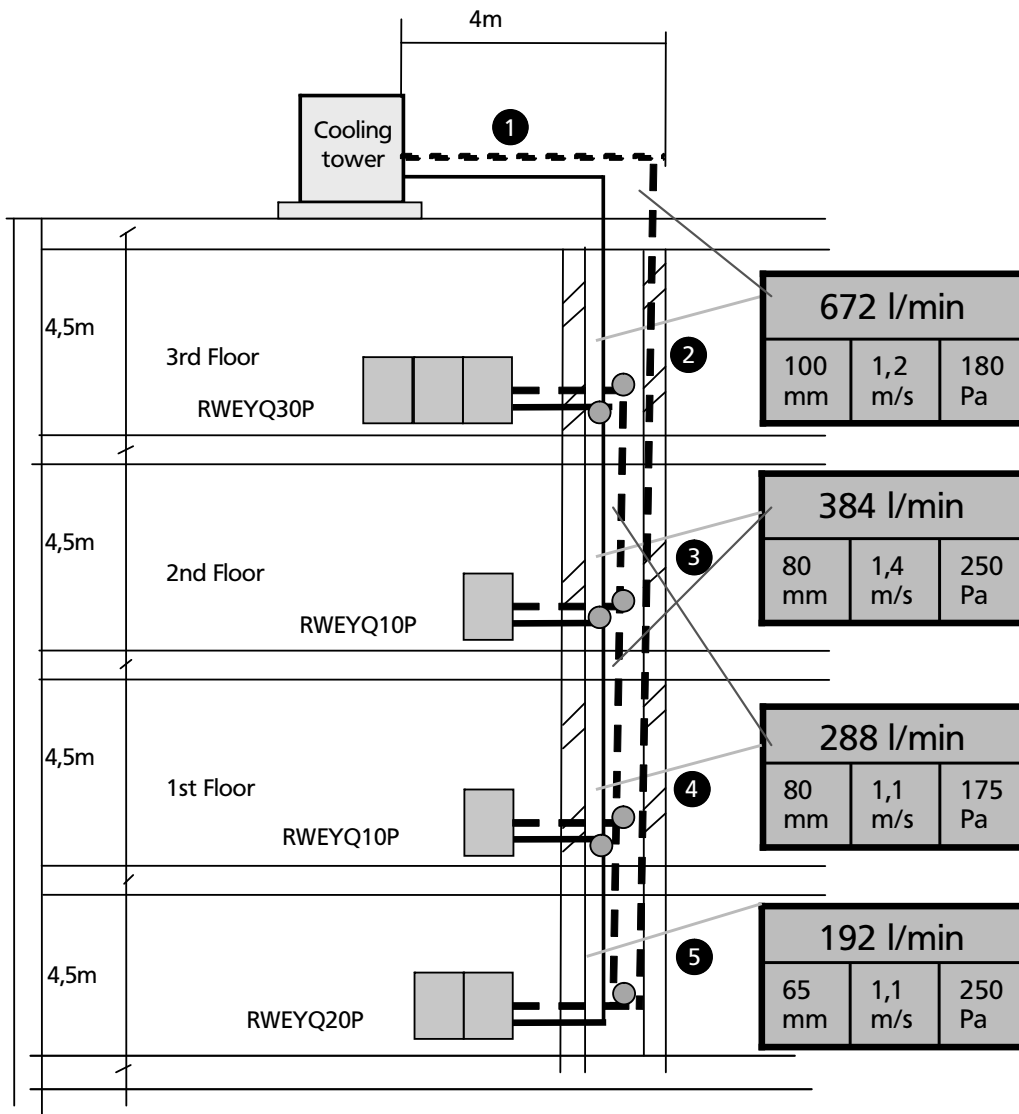
3 Water piping elements

3 - 3 Water pipes

3 - 3 - 4 Example of dimensioning the water pipes:

Preliminary information on the VRV®-WIII systems, according with capacity tables:

- **system 3rd floor: 30 HP**
 - 130% connection ratio
 - water flow: $96 \times 3 = 288 \text{ l/min}$
 - water temp inlet/outlet: $30^\circ\text{C}/34,3^\circ\text{C}$
- **system 2nd floor: 10 HP**
 - 120% connection ratio
 - 96 l/min
 - $30^\circ\text{C}/34^\circ\text{C}$
- **system 1st floor: 10 HP**
 - 120% connection ratio
 - 96 l/min
 - $30^\circ\text{C}/34^\circ\text{C}$
- **basement: 20 HP**
 - 120% connection ratio
 - $96 \times 2 = 192 \text{ l/min}$
 - $30^\circ\text{C}/34^\circ\text{C}$



3 Water piping elements

3 - 3 Water pipes

3 - 3 - 4 Example of dimensioning the water pipes:

RECOMMENDATION

- 1 in VRV®-VIII capacity tables 4 water flows are mentioned for each model/connection ratio: 50, 60, 96, 120 l/min
- 2 water flows of either 60 or 96 l/min are advisable in order to maintain a balance between pipe diameter and pressure losses. As water flow increases, pipe diameter reduces whereas pressure losses increase with increased water flow.

Black Steel Pipe

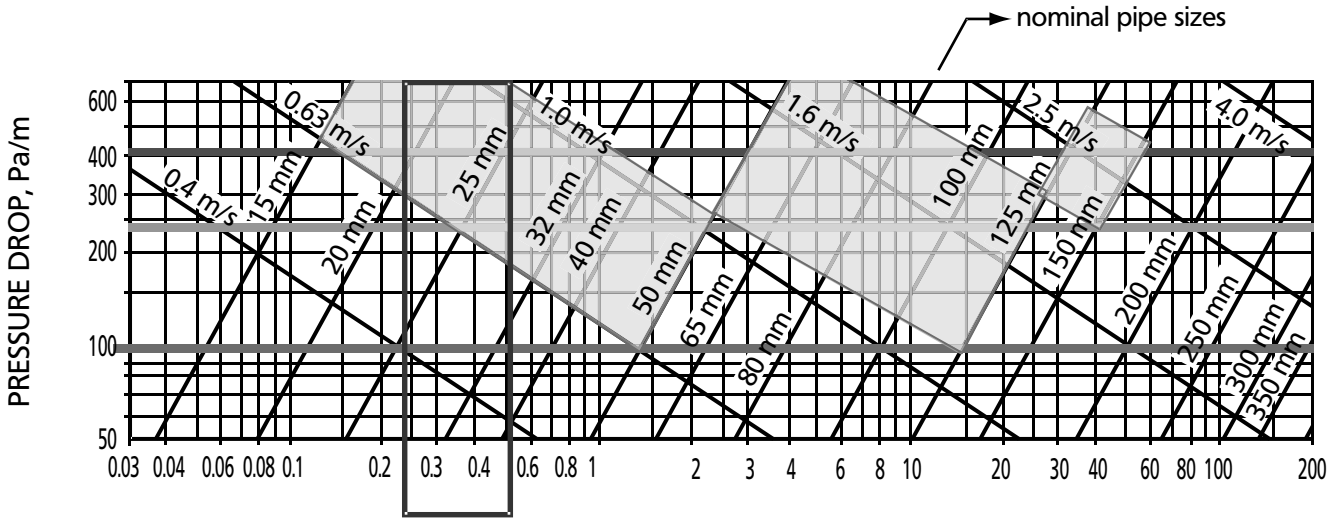


Fig. 1 VOLUMETRIC FLOW RATE, L/s

Friction Loss for Water in Commercial Steel Pipe

Procedure for pipe selection:

- reverse return piping was chosen
- the water flow should be determined for each section of the water circuit
- by means of the using the friction loss diagram (fig.1), the diameter should be determined based on following input:
 - water flow
 - recommended domain of water velocities
 - recommended domain of linear pressure losses (100-400 Pa/m)
- the total linear friction losses should be determined by multiplying the pressure drop (Pa/m) obtained from the diagram, with the pipe length.
- local pressure losses should be calculated for special fittings like elbows, T-connections, reducers, etc. The values can be obtained from pipe manufacturers' catalogues. The following table can be also used: the equivalent length should be multiplied with the pressure drop (Pa/m) determined before.

Equivalent length of local friction loss (m)

Nominal pipe size	mm	15	20	25	32	40	50	65	80
	in	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3
Elbow		0.5	0.6	0.9	1.1	1.3	1.6	2.1	2.6
T-connection straight through		0.3	0.4	0.6	0.8	0.9	1.1	1.4	1.7
T-connection through branch		1.0	1.3	1.8	2.3	2.8	3.5	4.2	5.7
Gate valve		0.1	0.15	0.2	0.3	0.35	0.4	0.5	0.6
Reducer (3/4)		0.1	0.15	0.2	0.3	0.35	0.4	0.5	0.6
Globe valve		4.5	6.5	9.0	11	16	21	26	30

- total friction loss in pipes should be calculated by adding the linear and local friction losses.

The total friction loss in pipes will serve further when selecting the circulating pump.

3 Water piping elements

3 - 4 Expansion tank

The purpose of the expansion tank is to maintain system pressure by allowing the water to expand when the water temperature increases in order to prevent pipes from bursting. It also provides the means for adding water to the system

An expansion tank is required in a closed system. In an open system, the reservoir acts as the expansion tank.

The expansion tank can be of the open or closed type.

The **open expansion tank** (reservoir) is located at the suction side of the pump, above the highest point in the system. At this location, the tank provides atmospheric pressure equal to or higher than the pump suction, preventing air from leaking into the system.

The **closed expansion tank** is used in small systems and work at atmospheric pressure. The tank is located at the suction side of the pump.

The capacity of a closed expansion tank is greater than that of an open expansion tank operating under the same conditions.

When sizing the expansion tank, the engineering supplied by the tank manufacturer should be consulted.

3 - 5 Pumps

Centrifugal pumps are the most commonly used types in chilled water (CW) and low pressure hot water circuits (LPHW).

An electric motor usually powers the impeller (the rotating specially shaped "heart" of the pump) rotation.

System design requires a duty and a standby pump to be selected for the sum of all water flow rates of the VRV®-WIII system.

Pump performance can be given in terms of discharge capacity, head, shaft, power and efficiency

- **The discharge capacity** is the required water flow rate (m³/min or l/min). The correlation between the pump suction size and the water flow is listed in table.

Correlation between pump suction size and water flow rate	
Suction size (mm)	Discharge capacity (m ³ /min)
40	0.10~ 0.20
50	0.16~ 0.32
65	0.25~ 0.50
80	0.40~ 0.80
100	0.63~ 1.25
125	1.00~ 2.00
150	1.60~ 2.15
200	2.50~ 5.00
250	4.00~ 8.00
300	3.30~12.50

- **The head is the pressure produced by the pump** in metres of water column. The higher the discharge capacity of the pump, the lower the head (Fig. 2).
- **The required pump power** is roughly proportional to the delivered capacity.
- **The pump efficiency (%)** is defined as the ratio between the delivered work and the shaft power: **efficiency % = (power output / power input) x 100%**
- **The pump efficiency may be obtained from manufacturer data.**

The pump performance chart is the summary of the head, efficiency and discharge capacity.

The pump is operated at the intersection between the head and the system resistance curve. This intersection is called the pump operating point.

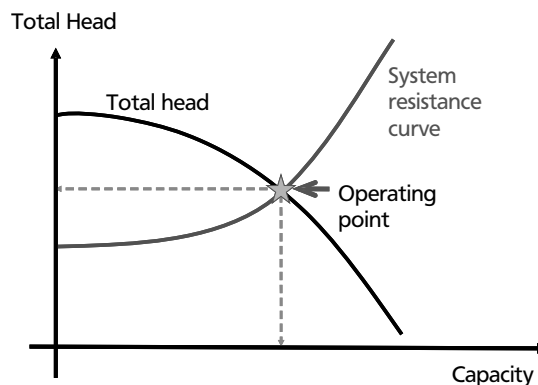


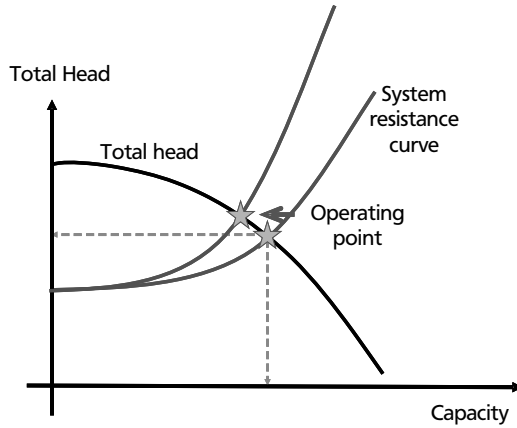
Fig. 2

3 Water piping elements

3 - 5 Pumps

NOTE

- When the gate valve is throttled, the resistance increases and the water flow rate decreases. In doing this, the operating point can be changed. The same phenomena, a decrease in water flow rate and an increase in the head loss, can be caused when rust and / or scale is deposited on the internal surface of the water piping system.



The pump selection can be carried out through calculation or by use of the pump selection chart:

- The input values are:
 - design flow rate (discharge capacity)
 - total friction loss (system resistance)
 - the pump efficiency
- The type of pump and required power of the pump are resulting.

In both cases the maximum friction loss (usually the longest pipe branch in the piping system) should be calculated:

$$H = H_a + H_f + H_t + H_k$$

Where: **H** = total friction loss

H_a = actual head (mH₂O) = difference between the discharge and suction level

H_f = linear friction loss in straight pipes (mH₂O) = from friction loss diagram

H_t = local friction loss (mH₂O) caused by fittings = equivalent piping length * basic friction loss

H_k = internal friction loss (mH₂O) of evaporator/condenser (of the cooling tower and VRV®-WIII) may be obtained from the manufacturer's data.

3 - 6 Temperature and pressure measurement points

Temperature and pressure measurement points should be located at each VRV®-WIII condensing unit

3 Water piping elements

3 - 7 Water quality

Be sure the water quality is in accordance with the specifications below:

Water quality standards for chilled water, hot water and make-up water

ITEM (5)	Cooling water system (3)		Hot water system (2)		Tendency (1)	
	Circulation system		Circulation water (20°C ~ 60°C)	Make-up water	Corrosion	Scale
	Circulation water	Make-up water				
Standard items						
pH (25°C)	6.8 to 8.2	6.0 to 8.0	7.0 to 8.0	7.0 to 8.0	○	○
Electrical conductivity (mS/m) (25°C)	Less than 80	Less than 30	Less than 30	Less than 30	○	○
Chloride ions (mg Cl ⁻ /l)	Less than 200	Less than 50	Less than 50	Less than 50	○	
Sulfate ions (mg SO ₄ ²⁻ /l)	Less than 200	Less than 50	Less than 50	Less than 50	○	
Acid consumption (pH 4.8) (mg CaCO ₃ /l)	Less than 100	Less than 50	Less than 50	Less than 50		○
Total hardness (mg CaCO ₃ /l)	Less than 200	Less than 70	Less than 70	Less than 70		○
Calcium hardness (mg CaCO ₃ /l)	Less than 150	Less than 50	Less than 50	Less than 50		○
Ionic-state silica (mg SiO ₂ /l)	Less than 50	Less than 30	Less than 30	Less than 30		○
Reference items						
Iron (mg Fe/l)	Less than 1.0	Less than 0.3	Less than 1.0	Less than 0.3	○	○
Copper (mg Cu/l)	Less than 0.3	Less than 0.1	Less than 1.0	Less than 0.1	○	
Sulfite ion (mg S ²⁻ /l)	Shall not be	Shall not be	Shall not be	Shall not be	○	
Ammonium ion (mg NH ₄ ⁺ /l)	Less than 1.0	Less than 0.1	Less than 0.3	Less than 0.1	○	
Residual chlorine (mg CL/l)	Less than 0.3	Less than 0.3	Less than 0.25	Less than 0.3	○	
Free carbon dioxide (mg CO ₂ /l)	Less than 4.0	Less than 4.0	Less than 0.4	Less than 4.0	○	
Stability index	6.0 to 7.0	-	-	-	○	○

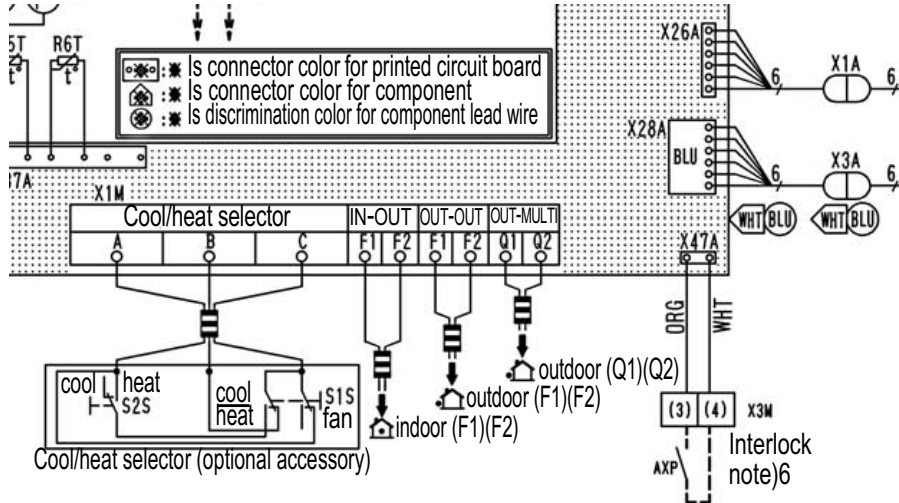
4 System safety requirements

4 - 1 Pump interlock

Problems can arise if the VRV®-WIII condensing units are allowed to operate without sufficient water within the circuit.

When interlocking a water pump with a VRV®-WIII system, terminals 1 and 2 of the X2M terminal strip should be used.

The PCB of the VRV®-WIII condensing unit:



NOTE

1 In most cases in large buildings (20,000 m²) the pumps run continuously. Therefore the interlock function is not used.

4 - 2 Flow switch

A flow switch per VRV®-WIII module is recommended to ensure that each module receives its required flow rate. If one flow switch is open, the module stops. In case of a multi arrangement (20 and 30 HP units), all units in the same system will remain in 'off' condition, which will continue as long as any VRV®-WIII module detects an 'open' status for a flow switch.

A flow switch can be interlocked between the terminal 3 and 4 of the terminal strip X3M

4 System safety requirements

4 - 3 Anti freezing protection

Anti freezing protection should be provided for the cooling tower and the external water piping during winter

Typical measures:

- if the temperature drops, **the pump** should be started to re-circulate the water
- electric heater tape should be used
- a forced boiler start up program activated
- water should be drained from the cooling tower

4 - 3 - 1 Glycol application

The use of a certain % ethylene glycol instead of normal water will affect the COP and water flow rate of the system, together with pressure drop on total system.

Glycol should be limited in use, however when necessary a primary and secondary water loop is recommended (Fig 3)

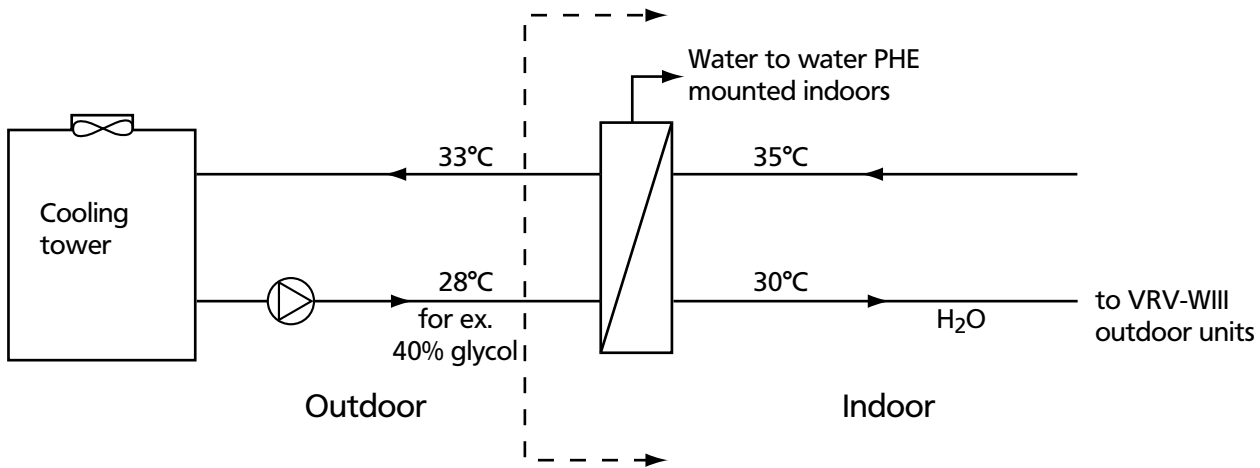


Fig. 3

Example

① **Influence on COP:**

- When normal water is used -
Cooling operation: capacity 26.7kW, power input: 6.07kW
Heating operation: capacity 31.5kW, power input: 6.05kW
- When ethylene glycol 40% is used
Cooling operation: capacity 26.1kW, power input: 6.35kW
Heating operation: capacity 31.5 kW, power input: 6.30kW

③ **Water flow range:**

- When using normal water: from 50 l/min to 120 l/min
- When using water with 40/% glycol: from 80 l/min to 150 l/min
Larger piping diameters are required.

④ **Water temperature range: between 15°C and 45°C, the same as for normal water.**

⑤ **Corrosiveness:**

Since the heat exchanger is made of SUS304, anti-freezing fluid non corrosive to SUS304 must be used.

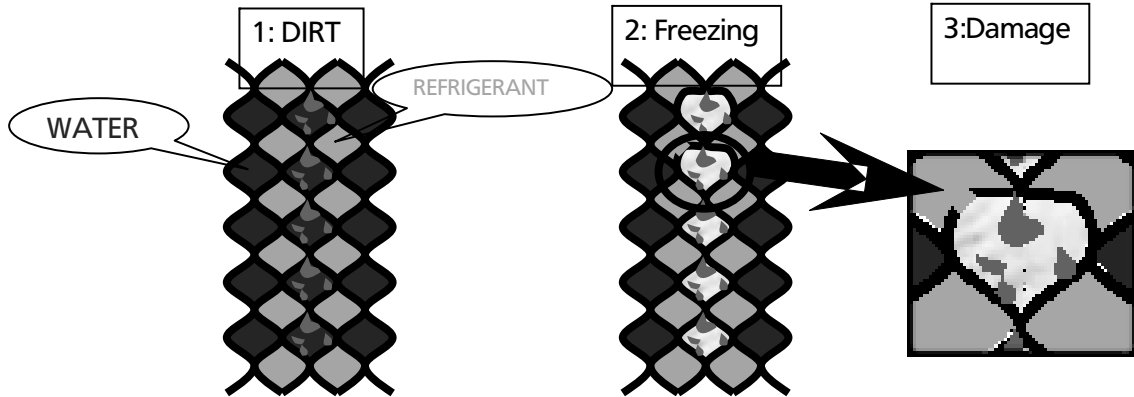
4 System safety requirements

4 - 4 Water piping strainer

A strainer kit 50 mesh should be provided for each outdoor unit in order to filter the water and protect the VRV®-VIII heat exchanger against dirt.

Why the strainer a must

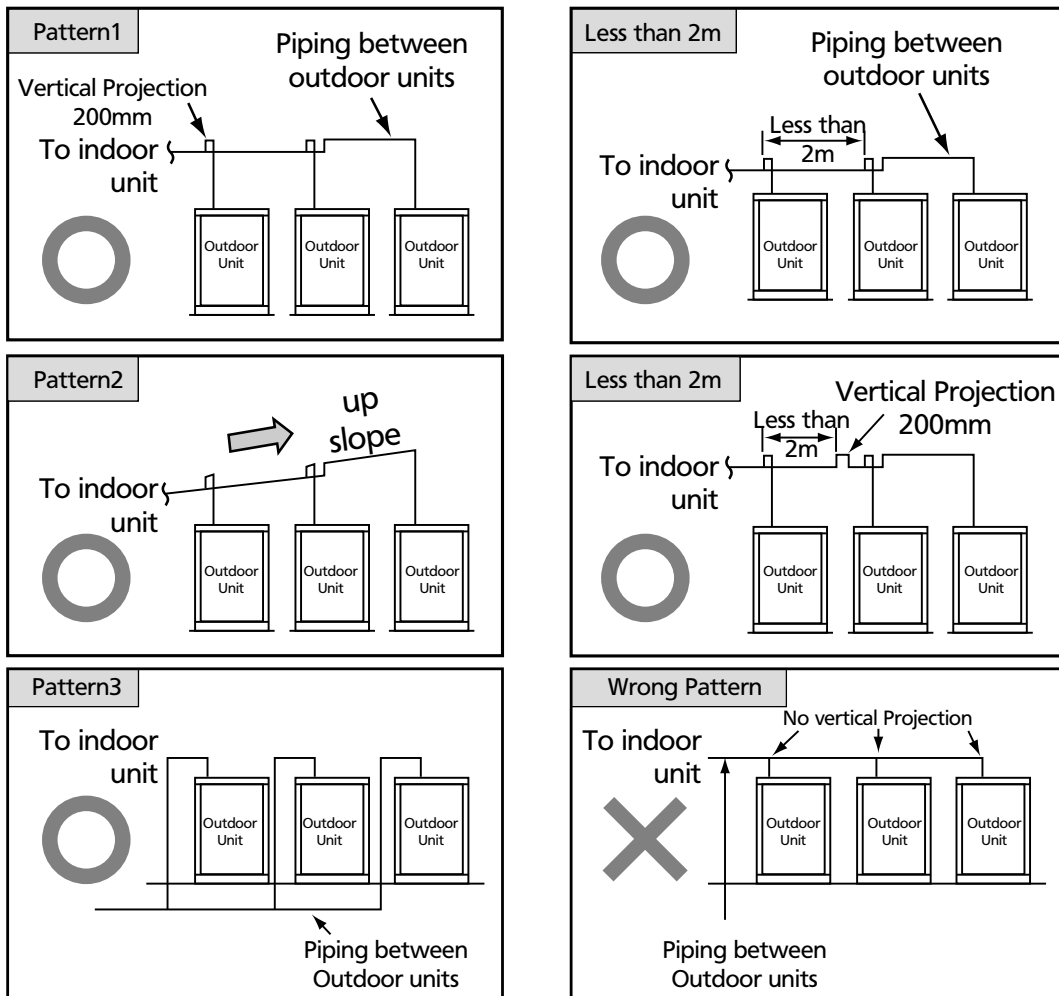
- 1 A plate heat exchanger consists of several water passages in parallel.
- 2 If no water filter is used, some of these passages can get blocked by dirt.
- 3 Evaporating temperature drops but the mix of water temperatures of the non blocked passages remains above freezing point.
- 4 The water in the blocked passages starts to freeze and the PHE breaks.
- 5 The result is a leak between the water circuit and the refrigerant circuit.



4 - 5 Recommendations for multi outdoor unit installations

Recommendations for multi outdoor unit installations, in order to prevent oil and refrigerant flow back to a stopped outdoor unit:

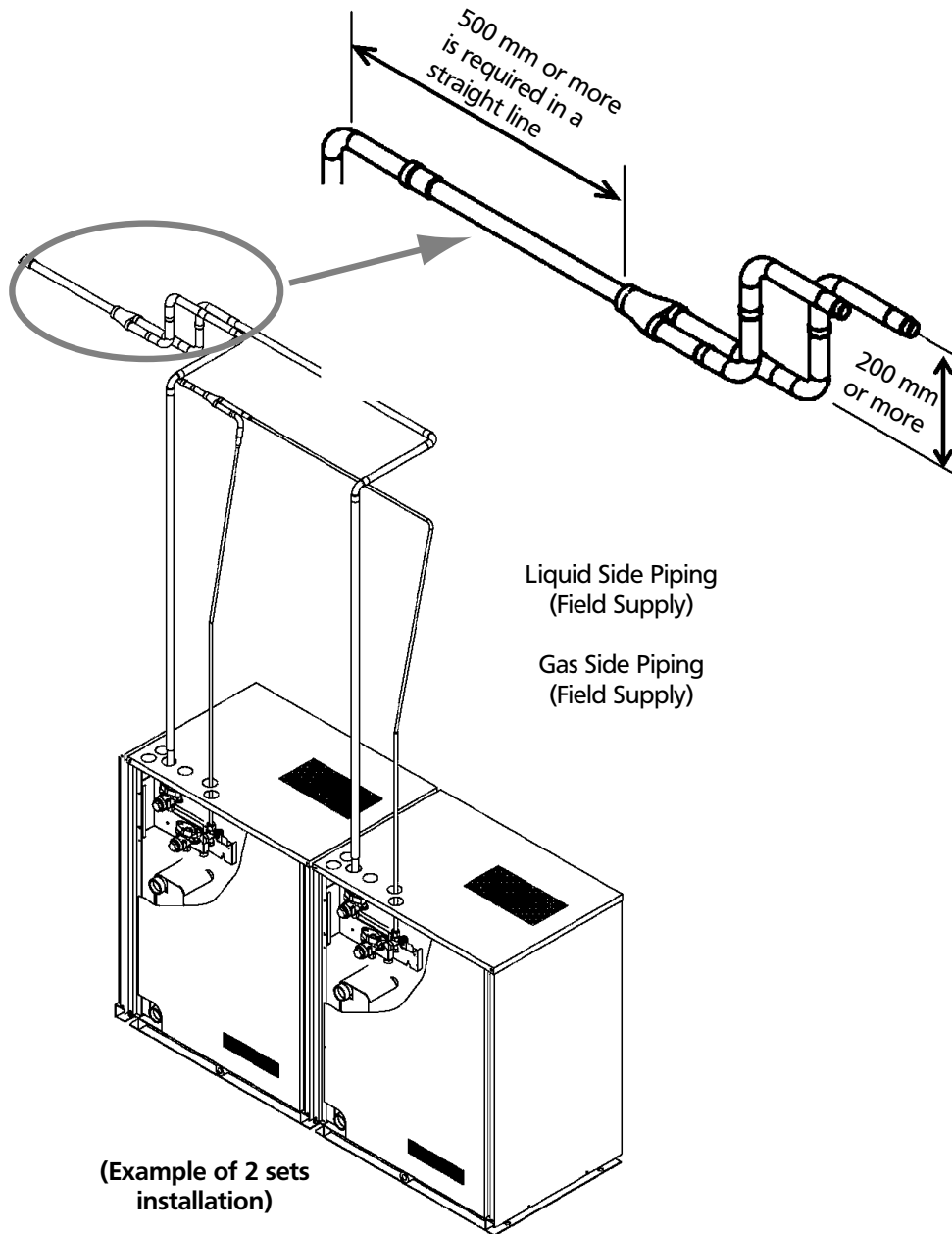
- An oil trap of 200 mm or more should be located on the gas pipe
- At every 2m of piping between outdoor units, an oil trap of 200mm should be fitted on the gas pipe.
- Piping between outdoor units should be horizontal or upwards inclined.



4 System safety requirements

4 - 5 Recommendations for multi outdoor unit installations

- A straight refrigerant pipe of 500mm should be positioned in front of the Y branch kit which couples outdoor unit piping.



4 - 6 The total heat rejection of a single unit is 710W.

The majority of heat produced will be from the inverter board and compressor, which is why the machine room must be ventilated, especially if the ambient temperature is over 40°C. A space of 300 mm must be allowed above the unit for heat rejection.

5 System control

5 - 1 Complete control of a VRV®-WIII

- The control for the refrigerant side is identical to that of an air cooled VRV®III -- by the use of the DIII communication line

Complete control of a VRV®-WIII system (including pumps and cooling tower) can be achieved by using Intelligent Controller and Intelligent Manager:

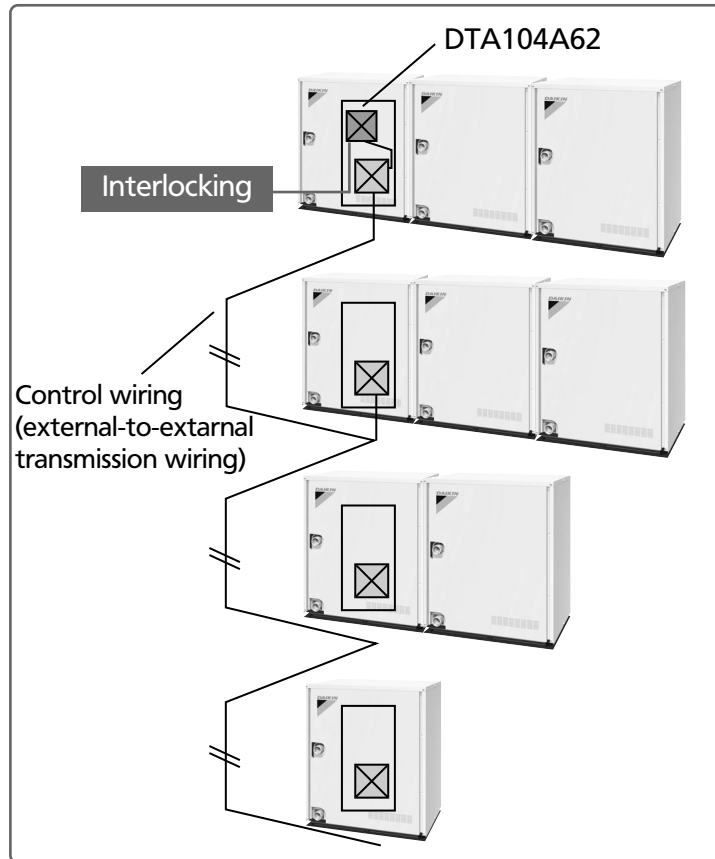
For ex.:

The on/off control of water pumps, cooling water fan and pumps can be controlled via the DEC101A51 (digital input) or DEC102A51 (digital input/output) electronic boards.

More details can be found in the chapters of the control systems data books.

5 - 2 Interlocking VRV®-WIII outdoor units

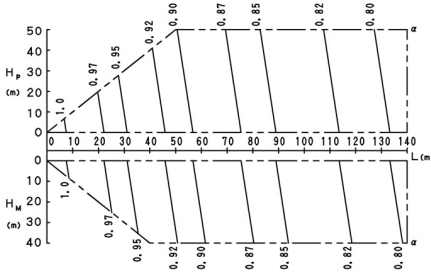
Centralized interlocking input to multiple condensing units is possible by using an external control adaptor (DTA104A62)



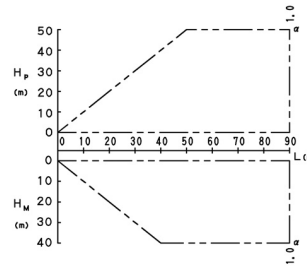
6 Capacity correction factor

RWEYQ8P

• Correction ratio for cooling capacity



• Correction ratio for heating capacity



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NOTES

1 These figures illustrate the rate of change in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation from the rate of change in capacity shown in the above figures.

2 With this outdoor unit, evaporating pressure constant control when cooling and condensing pressure constant control when heating is carried out.

3 Method of calculating A/C (cooling/heating) capacity:

The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of the outside units as mentioned below, whichever smaller.

Calculating A/C capacity of outside units

• Condition: Indoor unit combination ratio does not exceed 100%

Maximum A/C capacity of outside units = A/C capacity of outside units obtained from capacity characteristic table at the 100% combination x capacity change rate due to piping length to the farthest indoor unit.

• Condition: Indoor unit combination ratio exceeds 100%

Maximum A/C capacity of outside units = A/C capacity of outside units obtained from capacity characteristic table at the combination x capacity change rate due to piping length to the farthest indoor unit.

4 When overall equivalent pipe length is 80m or more, the diameter of the main liquid pipes (outside unit-branch sections) must be increased.

Diameter of above case

Model	liquid pipe
RWEYQ8PY1	ø12.7

5 Read cooling/heating capacity rate of change in the above figures based on the following equivalent length.

Overall equivalent piping length = Equivalent length of main pipe x Correction factor + Equivalent length after branching

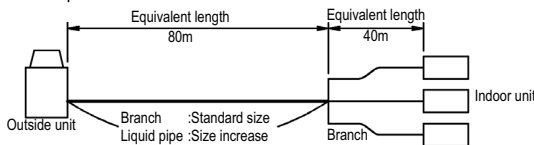
Choose a correction factor from the following table.

When cooling capacity is calculated: gas pipe size

When heating capacity is calculated: liquid pipe size.

Rate of change (object piping)	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	
Heating (liquid pipe)	1.0	0.5

Example RWEYQ8PY1



In the above case

(Cooling) Overall equivalent length = 80m x 1.0 + 40m x 1.0 = 120m

(Heating) Overall equivalent length = 80m x 0.5 + 40m x 1.0 = 80m

The correction factor in:

cooling capacity when height difference = 0 is thus approximately 0.78

heating capacity when height difference = 0 is thus approximately 1.0

6 Explanation of symbols

H_p : Level difference (m) between indoor and outside units where indoor unit in inferior position

H_M : Level difference (m) between indoor and outside units where indoor unit in superior position

L: Equivalent pipe length (m)

α : Capacity correction factor

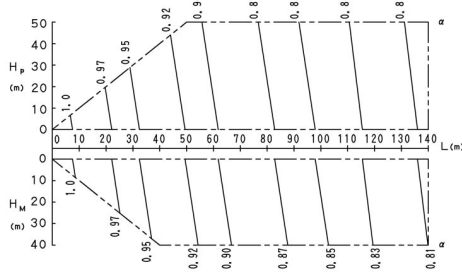
Diameter of pipe

Model	liquid
RWEYQ8PY1	ø9.5

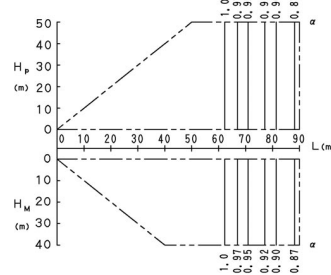
6 Capacity correction factor

RWEYQ10,20P

• Correction ratio for cooling capacity



• Correction ratio for heating capacity



3D048283C

NOTES

1 These figures illustrate the rate of change in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation from the rate of change in capacity shown in the above figures.

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Maximum A/C capacity of outside units = A/C capacity of outside units obtained from capacity characteristic table at the combination
x capacity change rate due to piping length to the farthest indoor unit.

4 When overall equivalent pipe length is 80m or more, the diameter of the main liquid pipes (outside unit-branch sections) must be increased.
 Diameter of above case

Model	liquid pipe
RWEYQ10PY1	ø12.7
RWEYQ20PY1	ø19.1

5 Read cooling/heating capacity rate of change in the above figures based on the following equivalent length.

Overall equivalent piping length = Equivalent length of main pipe x Correction factor + Equivalent length after branching

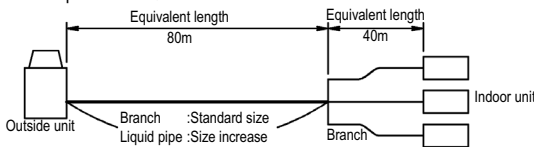
Choose a correction factor from the following table.

When cooling capacity is calculated: gas pipe size

When heating capacity is calculated: liquid pipe size.

Rate of change (object piping)	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	-
Heating (liquid pipe)	1.0	0.5

Example RWEYQ8PY1



In the above case

(Cooling) Overall equivalent length = 80m x 1.0 + 40m x 1.0 = 120m

(Heating) Overall equivalent length = 80m x 0.5 + 40m x 1.0 = 80m

The correction factor in:

cooling capacity when height difference = 0 is thus approximately 0.78

heating capacity when height difference = 0 is thus approximately 1.0

6 Explanation of symbols

H_p: Level difference (m) between indoor and outside units where indoor unit in inferior position

H_M: Level difference (m) between indoor and outside units where indoor unit in superior position

L: Equivalent pipe length (m)

α: Capacity correction factor

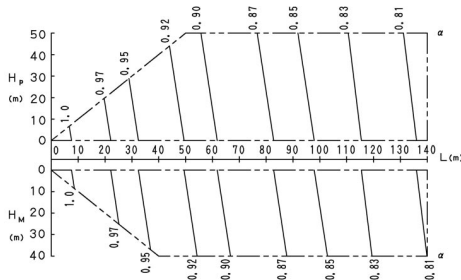
Diameter of pipe

Model	liquid
RWEYQ10PY1	ø9.5
RWEYQ20PY1	ø15.9

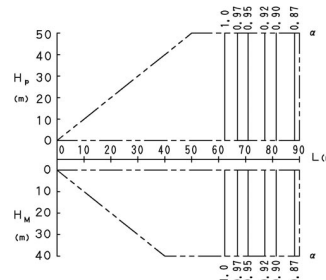
6 Capacity correction factor

RWEYQ16,18,24,26,28,30P

• Correction ratio for cooling capacity



• Correction ratio for heating capacity



3D048284C

NOTES

- These figures illustrate the rate of change in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation from the rate of change in capacity shown in the above figures.
- With this outdoor unit, evaporating pressure constant control when cooling and condensing pressure constant control when heating is carried out.
- Method of calculating A/C (cooling/heating) capacity:
The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of the outside units as mentioned below, whichever smaller.

Calculating A/C capacity of outside units

- Condition: Indoor unit combination ratio does not exceed 100%
Maximum A/C capacity of outside units = A/C capacity of outside units obtained from capacity characteristic table at the 100% combination x capacity change rate due to piping length to the farthest indoor unit.
- Condition: Indoor unit combination ratio exceeds 100%
Maximum A/C capacity of outside units = A/C capacity of outside units obtained from capacity characteristic table at the combination x capacity change rate due to piping length to the farthest indoor unit.

- When overall equivalent pipe length is 80m or more, the diameter of the main liquid pipes (outside unit-branch sections) must be increased.
Diameter of above case

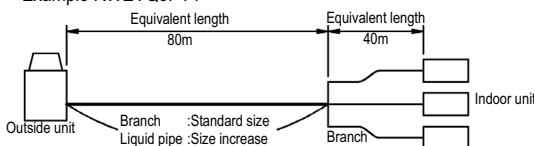
Model	liquid pipe
RWEYQ16PY1	ø15.9
RWEYQ18,24PY1	ø19.1
RWEYQ26,28,30PY1	ø22.2

- Read cooling/heating capacity rate of change in the above figures based on the following equivalent length.
Overall equivalent piping length = Equivalent length of main pipe x Correction factor + Equivalent length after branching
Choose a correction factor from the following table.

When cooling capacity is calculated: gas pipe size
When heating capacity is calculated: liquid pipe size.

Rate of change (object piping)	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	-
Heating (liquid pipe)	1.0	0.5

Example RWEYQ8PY1



In the above case

(Cooling) Overall equivalent length = 80m x 1.0 + 40m x 1.0 = 120m

(Heating) Overall equivalent length = 80m x 0.5 + 40m x 1.0 = 80m

The correction factor in:

cooling capacity when height difference = 0 is thus approximately 0.78

heating capacity when height difference = 0 is thus approximately 1.0

- Explanation of symbols

H_p : Level difference (m) between indoor and outside units where indoor unit in inferior position

H_m : Level difference (m) between indoor and outside units where indoor unit in superior position

L: Equivalent pipe length (m)

α : Capacity correction factor

Diameter of pipe

Model	liquid
RWEYQ16PY1	ø12.7
RWEYQ18,24PY1	ø15.9
RWEYQ26,28,30PY1	ø19.1

7 Refnet pipe systems

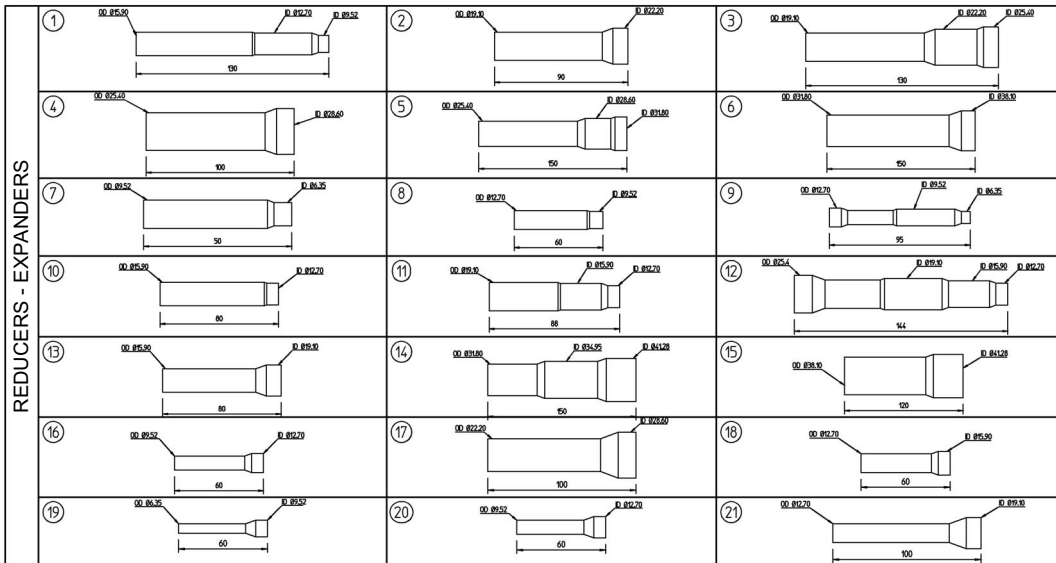
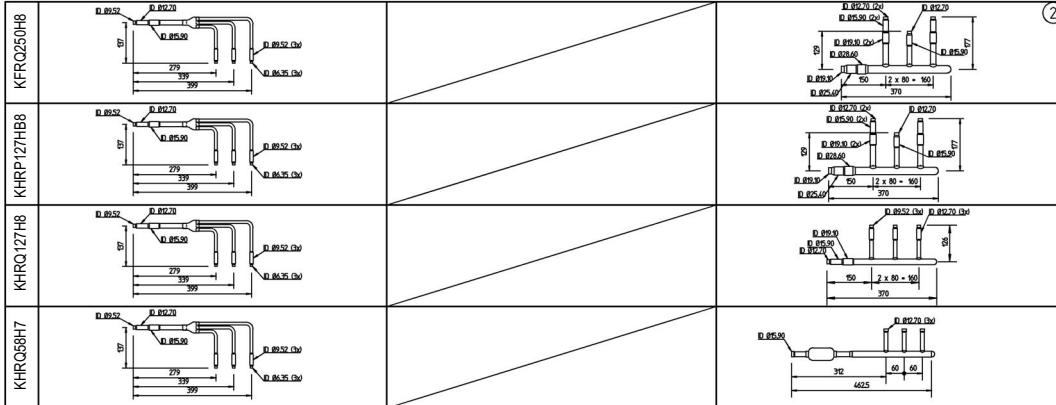
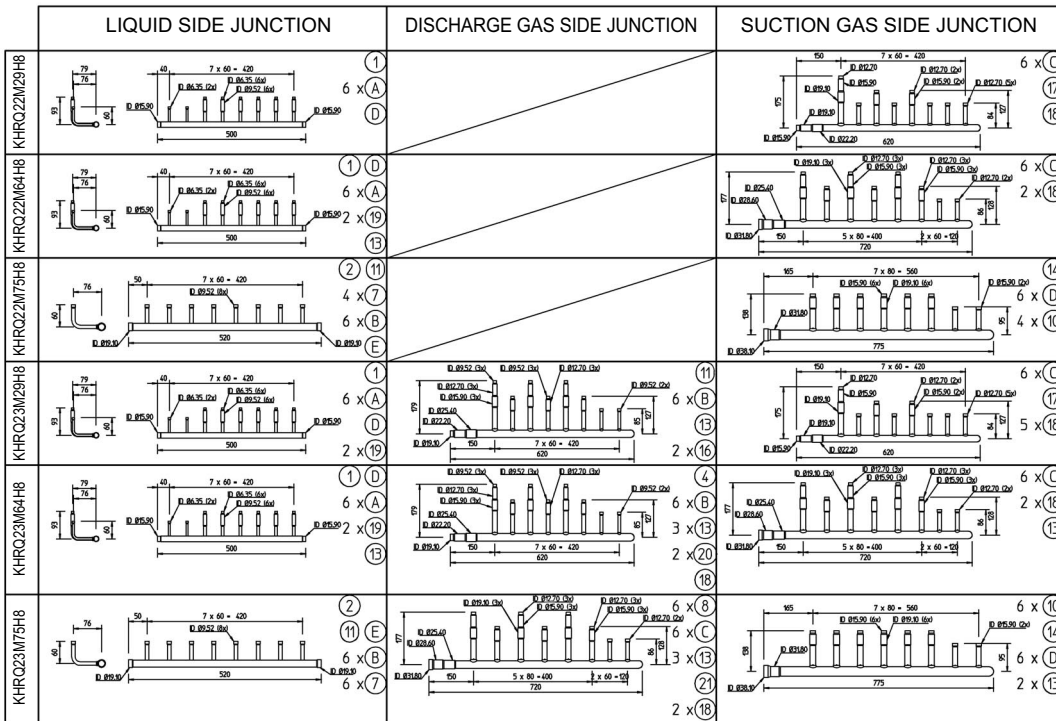
2
7

	LIQUID SIDE JUNCTION	DISCHARGE GAS SIDE JUNCTION	SUCTION GAS SIDE JUNCTION
KHRP22M64T8			
KHRP22M75T8			
KHRQ22M20T8			
KHRQ22M29T9			
KHRQ22M64T8			
KHRQ22M75T8			
KHRP23M33T8			
KHRP23M64T8			
KFRP23M75T8			
KHRQ23M20T8			
KHRQ23M29T9			
KHRQ23M64T8			
KHRQ23M75T8			
KHRG57T			

CLOSED PIPES		
(A)	(B)	(C)
(D)	(E)	

1TW25799-4D

7 Refnet pipe systems



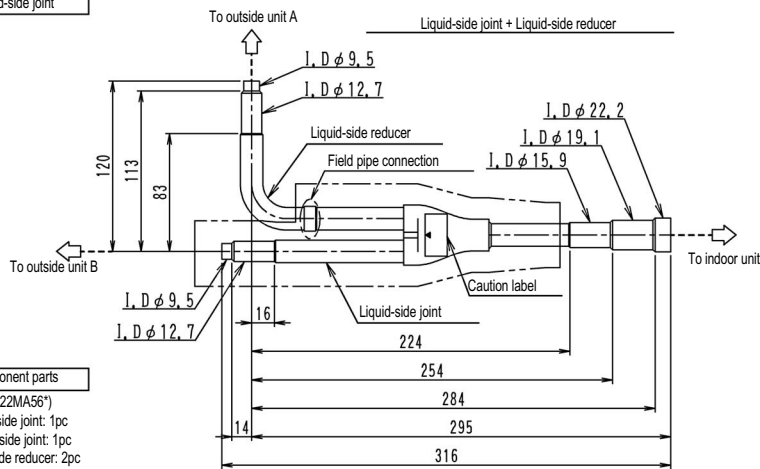
1TW25799-4D

2
7

7 Refnet pipe systems

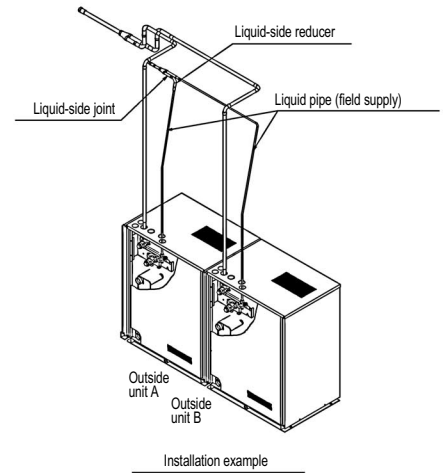
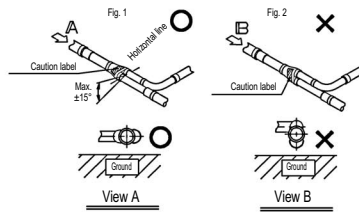
BHFP22-26MA56

Liquid-side joint



Component parts

- (BHFP22MA56*)
 Gase side joint: 1pc
 Liquid side joint: 1pc
 Gas-side reducer: 2pc
 Gas-side accessory pipe: 2pc
 Liquid-side reducer: 1pc
 Thermal insulation: 2pc
 Insulating tube for gas pipe: 2pc
 Insulating tube for liquid pipe: 1pc
 Installation manual
 * Refer to outside drawing of for the component parts in case of BHFP26MA56.



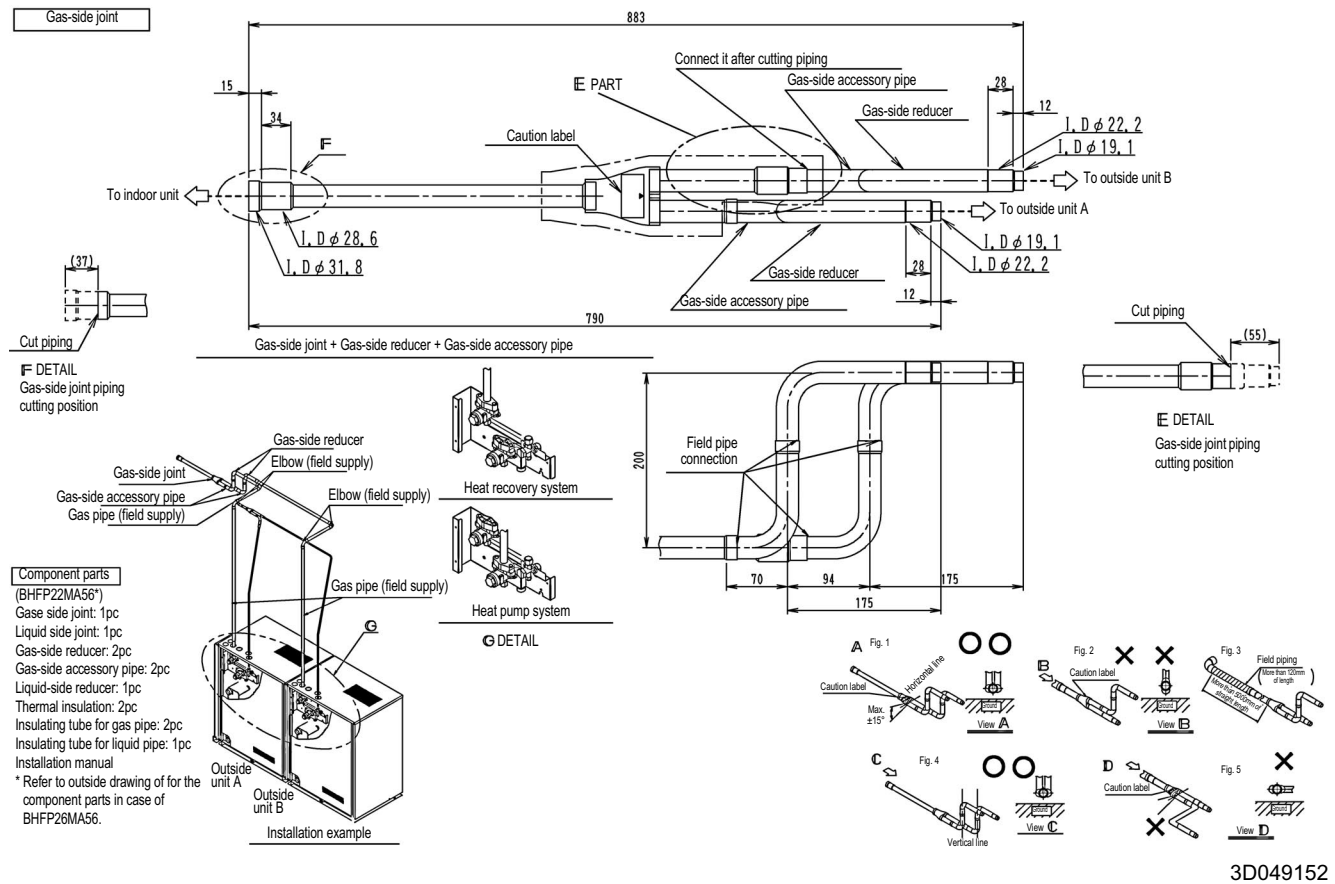
3D049158

NOTES

- 1 --- in figure shows the (field supply) connecting piping.
- 2 See "Installation Manual" or "Engineering Data" for details on the necessary connecting piping.
- 3 Observe the following limitation when you set up this kit.
 - Install the joint horizontally so that the caution label attached to joint comes to the top. Do not tilt the joint more than $\pm 15^\circ$. (see Fig. 1). In addition, do not install the joint vertically. (See fig. 2)

7 Refnet pipe systems

BHFP22-26MA56



3D049152

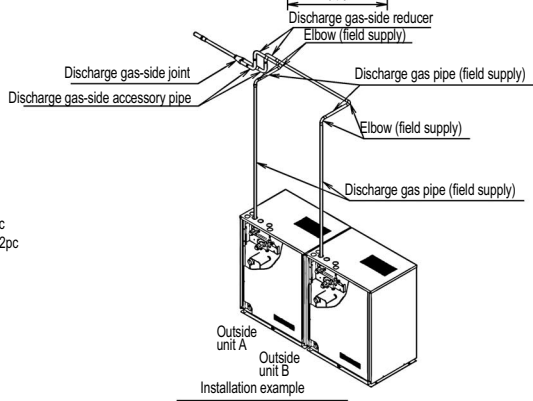
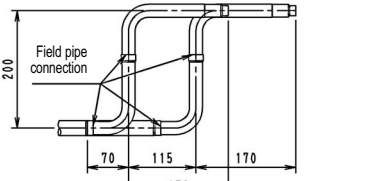
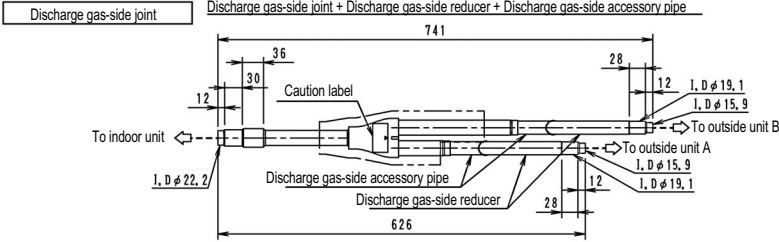
NOTES

- 1 --- in figure shows the (field supply) connecting piping.
- 2 See "Installation Manual" or "Engineering Data" for details on the necessary connecting piping.
- 3 Observe the following limitation when you set up this kit.
 - Install the joint horizontally so that the caution label attached to joint comes to the top. Do not tilt the joint more than ±15°. (see Fig. 1). In addition, do not install the joint vertically. (See fig. 2)
 - Make sure the piping up to the joint is straight for more than 500mm. Do not bend the field piping within this range. If a straight field piping more than 120mm is connected, more than 500mm of straight section can be ensured. (See Fig. 3)
 - Improper installation may lead to malfunction of the outside unit.
 - Set up the part of L bend of the gas piping to be vertical and upward after it diverges. (See Fig. 1,4)
 - In addition, do not install it as shown in Fig. 5.

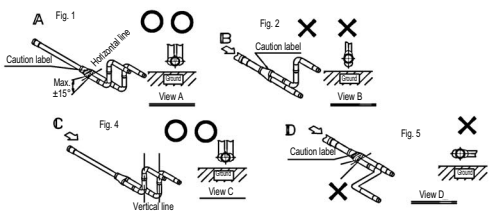
2
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7 Refnet pipe systems

BHFP22-26MA56



- Component parts**
(BHFP22MA56)
- Suction gas-side joint: 1pc
 - Discharge gas-side joint: 1pc
 - Liquid side joint: 1pc
 - Suction gas-side accessory pipe: 2pc
 - Discharge gas-side accessory pipe: 2pc
 - Suction gas-side reducer: 2pc
 - Discharge gas-side reducer: 2pc
 - Liquid-side reducer: 1pc
 - Thermal insulation: 2pc
 - Insulating tube for gas pipe: 4pc
 - Insulating tube for liquid pipe: 1pc
 - Installation manual



3D049206

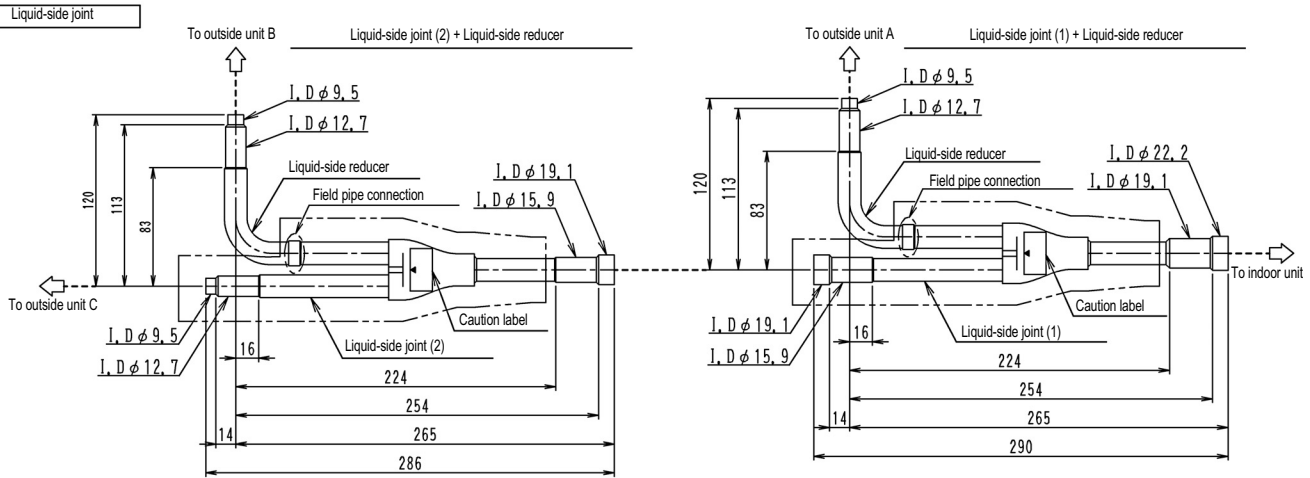
NOTES

- 1 --- in figure shows the (field supply) connecting piping.
- 2 See "Installation Manual" or "Engineering Data" for details on the necessary connecting piping.
- 3 Observe the following limitation when you set up this kit.
 - Install the joint horizontally so that the caution label attached to joint comes to the top. Do not tilt the joint more than $\pm 15^\circ$. (see Fig. 1). In addition, do not install the joint vertically. (See fig. 2)
 - Improper installation may lead to malfunction of the outside unit.
 - Set up the part of L bend of the gas piping to be vertical and upward after it diverges. (See Fig. 1,3)
 - In addition, do not install it as shown in Fig. 4.

2
7

7 Refnet pipe systems

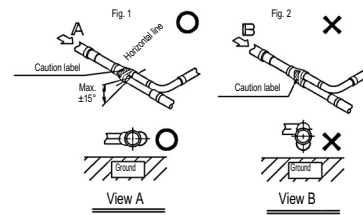
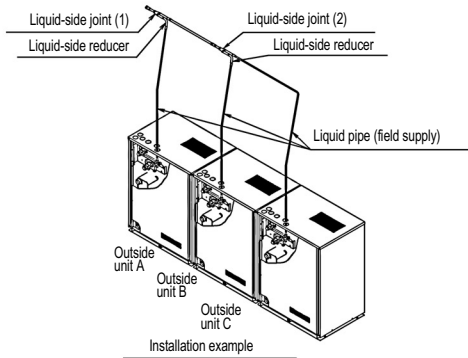
BHFP22-26MA84



Component parts

- (BHFP22MA84*)
- Gas side joint: 2pc
- Liquid side joint (1): 1pc
- Liquid side joint (2): 1pc
- Gas-side accessory pipe: 3pc
- Gas-side reducer (1): 3pc
- Gas-side reducer (2): 1pc
- Liquid-side reducer: 2pc
- Thermal insulation: 4pc
- Insulating tube for gas pipe: 3pc
- Insulating tube for liquid pipe: 2pc
- Installation manual

* Refer to outside drawing of for the component parts in case of BHFP26MA56.



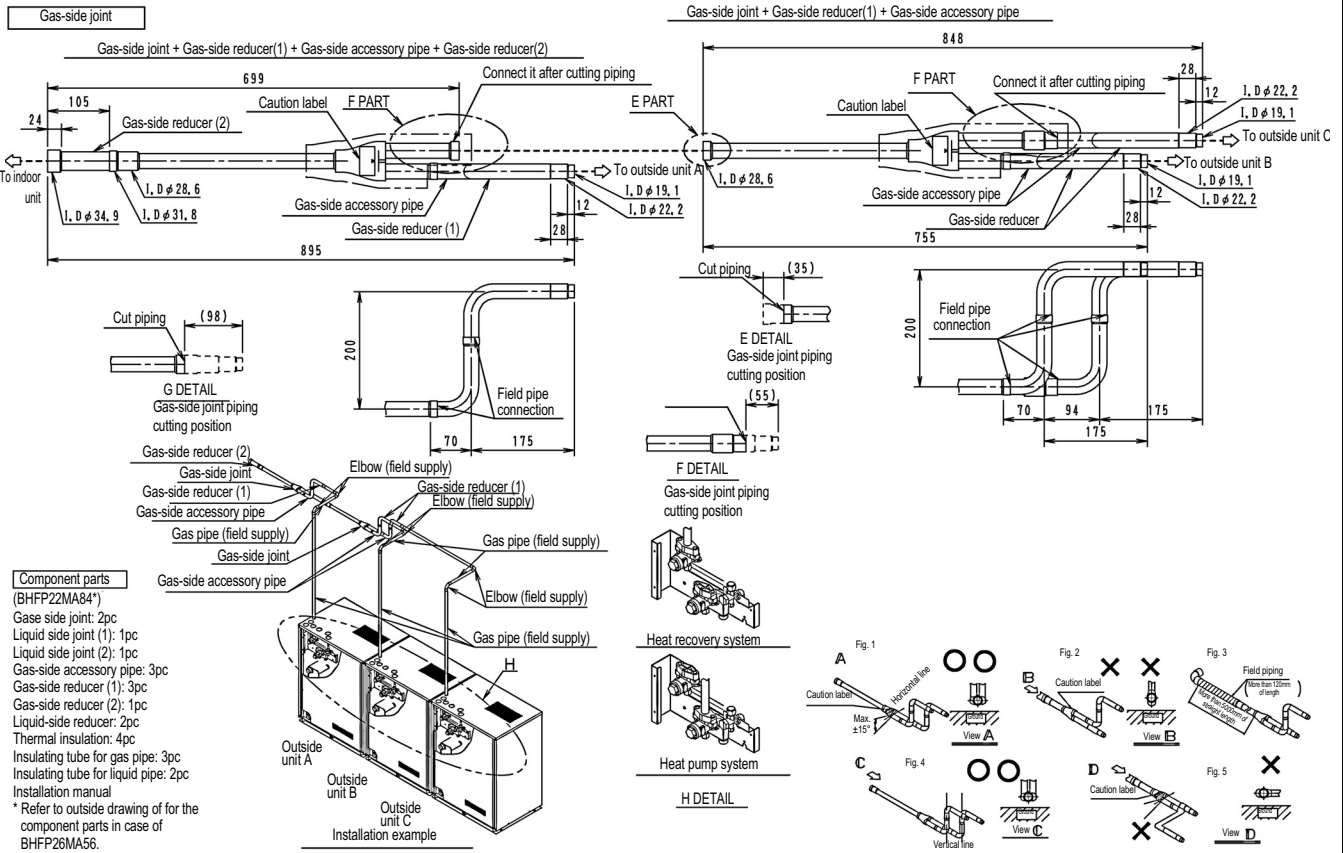
3D049157

NOTES

- 1 ---- in figure shows the (field supply) connecting piping.
- 2 See "Installation Manual" or "Engineering Data" for details on the necessary connecting piping.
- 3 Observe the following limitation when you set up this kit.
 - Install the joint horizontally so that the caution label attached to joint comes to the top. Do not tilt the joint more than ±15°. (see Fig. 1). In addition, do not install the joint vertically. (See fig. 2)

7 Refnet pipe systems

BHFP22-26MA84



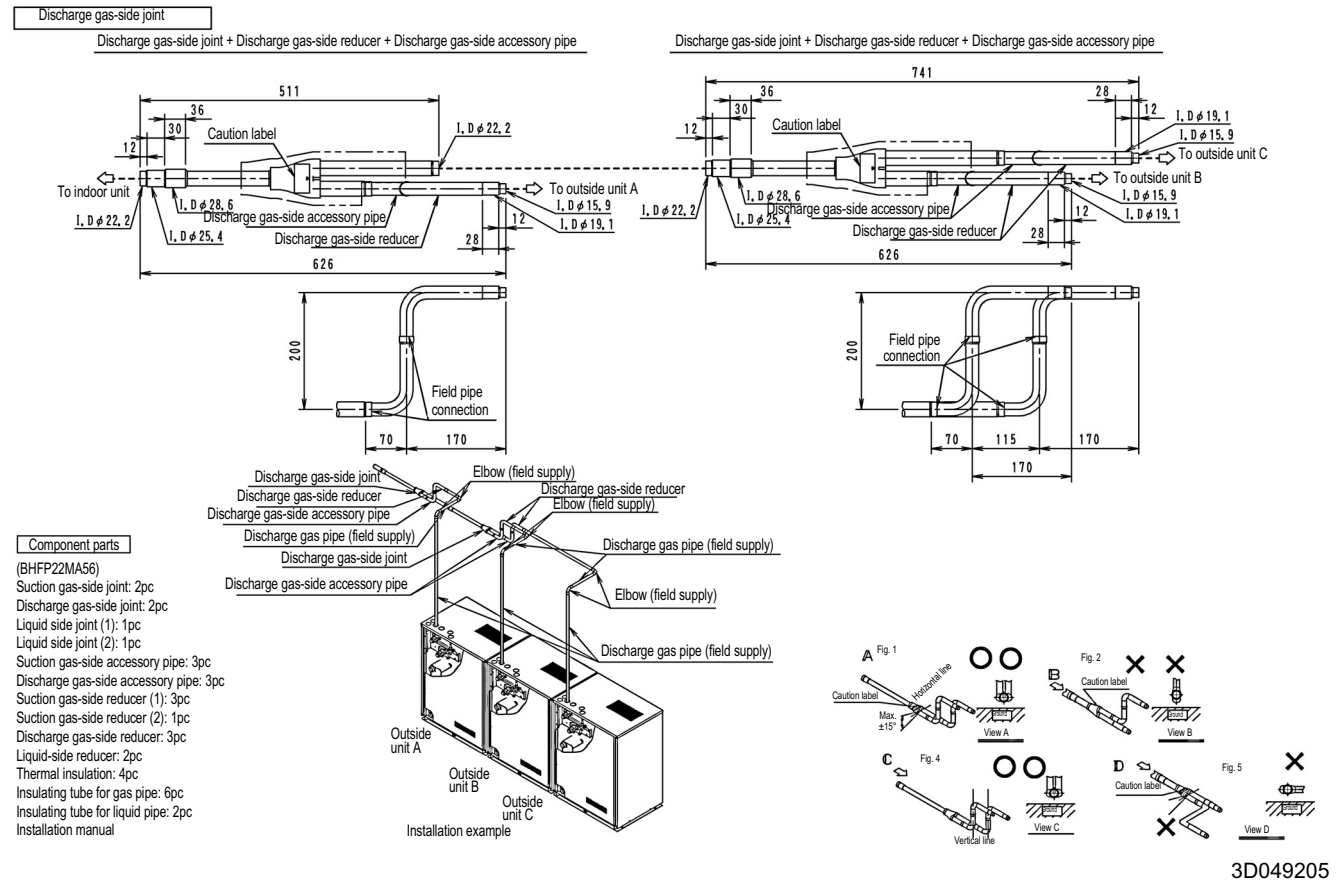
3D049156

NOTES

- in figure shows the (field supply) connecting piping.
- See "Installation Manual" or "Engineering Data" for details on the necessary connecting piping.
- Observe the following limitation when you set up this kit.
 - Install the joint horizontally so that the caution label attached to joint comes to the top. Do not tilt the joint more than $\pm 15^\circ$. (see Fig. 1). In addition, do not install the joint vertically. (See fig. 2)
 - Make sure the piping up to the joint is straight for more than 500mm. Do not bend the field piping within this range. If a straight field piping more than 120mm is connected, more than 500mm of straight section can be ensured. (See Fig. 3)
 - Improper installation may lead to malfunction of the outside unit.
 - Set up the part of L bend of the gas piping to be vertical and upward after it diverges. (See Fig. 1,4)
 - In addition, do not install it as shown in Fig. 5.

7 Refnet pipe systems

BHFP22-26MA84



NOTES

- 1 --- in figure shows the (field supply) connecting piping.
- 2 See "Installation Manual" or "Engineering Data" for details on the necessary connecting piping.
- 3 Observe the following limitation when you set up this kit.
 - Install the joint horizontally so that the caution label attached to joint comes to the top.
Do not tilt the joint more than $\pm 15^\circ$. (See Fig. 1). In addition, do not install the joint vertically. (See Fig. 2)
 - Improper installation may lead to malfunction of the outside unit.
 - Set up the part of L bend of the gas piping to be vertical and upward after it diverges. (See Fig. 1,3)
 - In addition, do not install it as shown in Fig. 4.

8 Refrigerant pipe selection

8 - 1 Standard series

RWEYQ-P

Example of connection
(Connection of 8 indoor units Heat pump system)
Outside unit
HP/LP gas piping (2-piping)
Suction gas piping (1-piping)
Liquid piping (1-piping)
Indoor unit
Gas piping (2-piping)
Liquid piping (1-piping)

- Piping between outside unit and BS unit
- Piping between BS unit and indoor unit
- Piping between indoor unit and indoor unit

In case of multi outside unit system, re-read the outside unit as the first outside branch seen from the indoor unit side.

Branch with REFINET joint

Example 1: Single outside unit system
Example 2: Branch with REFINET joint and REFINET header
Example 3: Branch with REFINET header
Example 4: Multi outside unit system
Example 5: Branch with REFINET joint
Example 6: Branch with REFINET header

Example 1: (a) + (b) + (c) + (d) + (e) + (f) + (g) + (h) + (i) + (j) + (k) + (l) + (m) + (n) + (o) + (p) + (q) + (r) + (s) + (t) + (u) + (v) + (w) + (x) + (y) + (z) + (AA) + (AB) + (AC) + (AD) + (AE) + (AF) + (AG) + (AH) + (AI) + (AJ) + (AK) + (AL) + (AM) + (AN) + (AO) + (AP) + (AQ) + (AR) + (AS) + (AT) + (AU) + (AV) + (AW) + (AX) + (AY) + (AZ) + (BA) + (BB) + (BC) + (BD) + (BE) + (BF) + (BG) + (BH) + (BI) + (BJ) + (BK) + (BL) + (BM) + (BN) + (BO) + (BP) + (BQ) + (BR) + (BS) + (BT) + (BU) + (BV) + (BW) + (BX) + (BY) + (BZ) + (CA) + (CB) + (CC) + (CD) + (CE) + (CF) + (CG) + (CH) + (CI) + (CJ) + (CK) + (CL) + (CM) + (CN) + (CO) + (CP) + (CQ) + (CR) + (CS) + (CT) + (CU) + (CV) + (CW) + (CX) + (CY) + (CZ) + (DA) + (DB) + (DC) + (DD) + (DE) + (DF) + (DG) + (DH) + (DI) + (DJ) + (DK) + (DL) + (DM) + (DN) + (DO) + (DP) + (DQ) + (DR) + (DS) + (DT) + (DU) + (DV) + (DW) + (DX) + (DY) + (DZ) + (EA) + (EB) + (EC) + (ED) + (EE) + (EF) + (EG) + (EH) + (EI) + (EJ) + (EK) + (EL) + (EM) + (EN) + (EO) + (EP) + (EQ) + (ER) + (ES) + (ET) + (EU) + (EV) + (EW) + (EX) + (EY) + (EZ) + (FA) + (FB) + (FC) + (FD) + (FE) + (FF) + (FG) + (FH) + (FI) + (FJ) + (FK) + (FL) + (FM) + (FN) + (FO) + (FP) + (FQ) + (FR) + (FS) + (FT) + (FU) + (FV) + (FW) + (FX) + (FY) + (FZ) + (GA) + (GB) + (GC) + (GD) + (GE) + (GF) + (GG) + (GH) + (GI) + (GJ) + (GK) + (GL) + (GM) + (GN) + (GO) + (GP) + (GQ) + (GR) + (GS) + (GT) + (GU) + (GV) + (GW) + (GX) + (GY) + (GZ) + (HA) + (HB) + (HC) + (HD) + (HE) + (HF) + (HG) + (HH) + (HI) + (HJ) + (HK) + (HL) + (HM) + (HN) + (HO) + (HP) + (HQ) + (HR) + (HS) + (HT) + (HU) + (HV) + (HW) + (HX) + (HY) + (HZ) + (IA) + (IB) + (IC) + (ID) + (IE) + (IF) + (IG) + (IH) + (II) + (IJ) + (IK) + (IL) + (IM) + (IN) + (IO) + (IP) + (IQ) + (IR) + (IS) + (IT) + (IU) + (IV) + (IW) + (IX) + (IY) + (IZ) + (JA) + (JB) + (JC) + (JD) + (JE) + (JF) + (JG) + (JH) + (JI) + (JJ) + (JK) + (JL) + (JM) + (JN) + (JO) + (JP) + (JQ) + (JR) + (JS) + (JT) + (JU) + (JV) + (JW) + (JX) + (JY) + (JZ) + (KA) + (KB) + (KC) + (KD) + (KE) + (KF) + (KG) + (KH) + (KI) + (KJ) + (KL) + (KM) + (KN) + (KO) + (KP) + (KQ) + (KR) + (KS) + (KT) + (KU) + (KV) + (KW) + (KX) + (KY) + (KZ) + (LA) + (LB) + (LC) + (LD) + (LE) + (LF) + (LG) + (LH) + (LI) + (LJ) + (LK) + (LL) + (LM) + (LN) + (LO) + (LP) + (LQ) + (LR) + (LS) + (LT) + (LU) + (LV) + (LW) + (LX) + (LY) + (LZ) + (MA) + (MB) + (MC) + (MD) + (ME) + (MF) + (MG) + (MH) + (MI) + (MJ) + (MK) + (ML) + (MM) + (MN) + (MO) + (MP) + (MQ) + (MR) + (MS) + (MT) + (MU) + (MV) + (MW) + (MX) + (MY) + (MZ) + (NA) + (NB) + (NC) + (ND) + (NE) + (NF) + (NG) + (NH) + (NI) + (NJ) + (NK) + (NL) + (NM) + (NO) + (NP) + (NQ) + (NR) + (NS) + (NT) + (NU) + (NV) + (NW) + (NX) + (NY) + (NZ) + (OA) + (OB) + (OC) + (OD) + (OE) + (OF) + (OG) + (OH) + (OI) + (OJ) + (OK) + (OL) + (OM) + (ON) + (OO) + (OP) + (OQ) + (OR) + (OS) + (OT) + (OU) + (OV) + (OW) + (OX) + (OY) + (OZ) + (PA) + (PB) + (PC) + (PD) + (PE) + (PF) + (PG) + (PH) + (PI) + (PJ) + (PK) + (PL) + (PM) + (PN) + (PO) + (PP) + (PQ) + (PR) + (PS) + (PT) + (PU) + (PV) + (PW) + (PX) + (PY) + (PZ) + (QA) + (QB) + (QC) + (QD) + (QE) + (QF) + (QG) + (QH) + (QI) + (QJ) + (QK) + (QL) + (QM) + (QN) + (QO) + (QP) + (QQ) + (QR) + (QS) + (QT) + (QU) + (QV) + (QW) + (QX) + (QY) + (QZ) + (RA) + (RB) + (RC) + (RD) + (RE) + (RF) + (RG) + (RH) + (RI) + (RJ) + (RK) + (RL) + (RM) + (RN) + (RO) + (RP) + (RQ) + (RR) + (RS) + (RT) + (RU) + (RV) + (RW) + (RX) + (RY) + (RZ) + (SA) + (SB) + (SC) + (SD) + (SE) + (SF) + (SG) + (SH) + (SI) + (SJ) + (SK) + (SL) + (SM) + (SN) + (SO) + (SP) + (SQ) + (SR) + (SS) + (ST) + (SU) + (SV) + (SW) + (SX) + (SY) + (SZ) + (TA) + (TB) + (TC) + (TD) + (TE) + (TF) + (TG) + (TH) + (TI) + (TJ) + (TK) + (TL) + (TM) + (TN) + (TO) + (TP) + (TQ) + (TR) + (TS) + (TT) + (TU) + (TV) + (TW) + (TX) + (TY) + (TZ) + (UA) + (UB) + (UC) + (UD) + (UE) + (UF) + (UG) + (UH) + (UI) + (UJ) + (UK) + (UL) + (UM) + (UN) + (UO) + (UP) + (UQ) + (UR) + (US) + (UT) + (UU) + (UV) + (UW) + (UX) + (UY) + (UZ) + (VA) + (VB) + (VC) + (VD) + (VE) + (VF) + (VG) + (VH) + (VI) + (VJ) + (VK) + (VL) + (VM) + (VN) + (VO) + (VP) + (VQ) + (VR) + (VS) + (VT) + (VU) + (VV) + (VW) + (VX) + (VY) + (VZ) + (WA) + (WB) + (WC) + (WD) + (WE) + (WF) + (WG) + (WH) + (WI) + (WJ) + (WK) + (WL) + (WM) + (WN) + (WO) + (WP) + (WQ) + (WR) + (WS) + (WT) + (WU) + (WV) + (WW) + (WX) + (WY) + (WZ) + (XA) + (XB) + (XC) + (XD) + (XE) + (XF) + (XG) + (XH) + (XI) + (XJ) + (XK) + (XL) + (XM) + (XN) + (XO) + (XP) + (XQ) + (XR) + (XS) + (XT) + (XU) + (XV) + (XW) + (XX) + (XY) + (XZ) + (YA) + (YB) + (YC) + (YD) + (YE) + (YF) + (YG) + (YH) + (YI) + (YJ) + (YK) + (YL) + (YM) + (YN) + (YO) + (YP) + (YQ) + (YR) + (YS) + (YT) + (YU) + (YV) + (YW) + (YX) + (YY) + (YZ) + (ZA) + (ZB) + (ZC) + (ZD) + (ZE) + (ZF) + (ZG) + (ZH) + (ZI) + (ZJ) + (ZK) + (ZL) + (ZM) + (ZN) + (ZO) + (ZP) + (ZQ) + (ZR) + (ZS) + (ZT) + (ZU) + (ZV) + (ZW) + (ZX) + (ZY) + (ZZ)

How to calculate the additional refrigerant to be charged
Additional refrigerant to be charged R (kg)
(R should be rounded off in units of 0.1 kg.)

Refrigerant branch kit selection
Refrigerant branch kits can only be used with R410A.

Indoor capacity index	Heat recovery system	Refrigerant branch kit name
< 200	RHEV08, 10 type	KHR022M29H
200 ≤ x < 290	RHEV16, 20 type	KHR022M64H
290 ≤ x < 640	RHEV24, 30 type	KHR022M75H
640 ≤		KHR022M75H

How to select REFINET joint:
When using REFINET joint, choose from the following table in accordance with the capacity of the outside unit.
(Example 1, 2, 4, 5: REFINET joints)

Indoor capacity index	Heat recovery system	Heat pump system
< 200	KHR022M29H	KHR022M29H
200 ≤ x < 290	KHR022M64H	KHR022M64H
290 ≤ x < 640	KHR022M75H	KHR022M75H
640 ≤		

How to select an outside branch kit (Needed when the outside unit type is RWEYQ20 or more.)
Select from the table below according to the number of outside units.

Number of units of outside unit	Heat recovery system	Heat pump system
2 unit	BHPF22MA56	BHPF22MA56
3 unit	BHPF22MA84	BHPF22MA84

How to calculate the additional refrigerant to be charged
Additional refrigerant to be charged R (kg)
(R should be rounded off in units of 0.1 kg.)

8 Refrigerant pipe selection

8 - 1 Standard series

RWEYQ-P

System	Liquid pipe
RWEYQ8~10PY1	φ9.5 → φ12.7
RWEYQ16PY1	φ12.7 → φ15.9
RWEYQ18~24PY1	φ15.9 → φ19.1
RWEYQ26~30PY1	φ19.1 → φ22.2

Note 1. When the equivalent pipe length between outside and indoor units is 80m or more, the size of main pipes on the liquid side (refer to figure 21) must be increased according to the right table.
(Never increase suction gas pipe and HP/LP gas pipe.)

(Refer to figure 21)

1. Outside unit
2. Main pipes
3. Increase only liquid pipe size
4. First refrigerant branch kit
5. Indoor unit

Note 2. Allowable length after the first refrigerant branch kit to indoor units is 40m or less, however it can be extended up to 90m if all the following conditions are satisfied. (In case of "Branch with REFNET joint")

Required Conditions	Example Drawings
1. It is necessary to increase the liquid and suction gas pipe size between the first branch kit and the final branch kit. (Reducers must be procured on site) However, the pipes that are same pipe size with main pipe must not be increased.	<div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> <p>[8] $b + c + d + e + f + g + p \leq 90$ m</p> <p>increase the liquid and suction gas pipe size of b, c, d, e, f, g</p> </div> </div>
2. For calculation of Total extension length, the actual length of above pipes must be doubled. (except main pipe and the pipes that are not increased)	<p>$a + b \times 2 + c \times 2 + d \times 2 + e \times 2 + f \times 2 + g \times 2$ $+ h + i + j + k + l + m + n + p \leq 300$ m</p>
3. Indoor unit to the nearest branch kit ≤ 40 m	<p>$h, i, j, \dots, p \leq 40$ m</p>
4. The difference between [Outside unit to the farthest indoor unit] and [Outside unit to the nearest indoor unit] ≤ 40 m	<p>The farthest indoor unit [8] The nearest indoor unit [1] $(a + b + c + d + e + f + g + p) \cdot (a + h) \leq 40$ m</p>

*If available on the site, use this size. Otherwise it can not be increased.

This table is about a heat recovery system (3-piping: suction gas, HP/LP gas and liquid pipes).
 In a case of heat pump system (2-piping: gas and liquid pipes), select the pipe size from suction gas pipe for gas pipes and from liquid gas pipe for liquid pipes. And BS unit is not required.

3P153897-8L

8 Refrigerant pipe selection

8 - 2 Geothermal series

RWEYQ-PR

Example of connection

(Connection of 3 indoor units Heat pump system (2-zone))

• Piping between outside unit and BS unit
 — (Thick line), 3-piping
 { HPLP gas piping
 { Suction gas piping
 { Liquid piping

• Piping between BS unit and indoor unit,
 — (Thin line), 2-piping
 { Gas piping
 { Liquid piping

Single outside unit system

Branch with REFINET joint

Example 1

Example 2

Example 3

Refrigerant branch kit selection

Refrigerant branch kits can only be used with R410A.

Outside unit capacity type	Heat recovery system	Refrigerant branch kit name
RWEYQ8, 10 type	RHRQ22M29T9	RHRQ22M29T9
Indoor capacity index	Refrigerant branch kit name	
< 200	KHRQ22M20T	
200 ≤ X < 290	KHRQ22M29T9	
290 ≤ X < 640	KHRQ22M64T	

• For REFINET joints other than the first branch, select the proper branch kit model based on the total capacity index.

How to select REFINET joint

• When using REFINET joints at the first branch counted from the outside unit side, Choose from the following table in accordance with the capacity of the outside unit. (Example 1, 2, 4, 5; REFINET joints 4)

Indoor capacity index	Refrigerant branch kit name
< 200	KHRQ22M29H
200 ≤ X < 290	KHRQ22M29H
290 ≤ X < 640	KHRQ22M64H

• Be careful that 290 type cannot be connected to the downstream of REFINET header.

How to calculate the additional refrigerant to be charged

Additional refrigerant to be charged R (kg)
 (R should be rounded off in units of 0.1kg.)

R = (Total length (m) of liquid piping size at φ22.2) × 0.37 (kg/m) + (Total length (m) of liquid piping size at φ19.1) × 0.26 (kg/m) + (Total length (m) of liquid piping size at φ15.9) × 0.18 (kg/m) + (Total length (m) of liquid piping size at φ9.5) × 0.12 (kg/m)

+ (Total length (m) of liquid piping size at φ22.2) × 0.025 (kg/m) + (Total length (m) of liquid piping size at φ19.1) × 0.022 (kg/m) + (Total length (m) of liquid piping size at φ15.9) × 0.018 (kg/m) + (Total length (m) of liquid piping size at φ9.5) × 0.012 (kg/m)

+ volume by outside unit

System name RWEYQ8-10 Heat recovery system 3 kg Heat pump system 4 kg

How to calculate the additional refrigerant to be charged

Additional refrigerant to be charged R (kg)
 (R should be rounded off in units of 0.1kg.)

R = (Total length (m) of liquid piping size at φ22.2) × 0.37 (kg/m) + (Total length (m) of liquid piping size at φ19.1) × 0.26 (kg/m) + (Total length (m) of liquid piping size at φ15.9) × 0.18 (kg/m) + (Total length (m) of liquid piping size at φ9.5) × 0.12 (kg/m)

+ (Total length (m) of liquid piping size at φ22.2) × 0.025 (kg/m) + (Total length (m) of liquid piping size at φ19.1) × 0.022 (kg/m) + (Total length (m) of liquid piping size at φ15.9) × 0.018 (kg/m) + (Total length (m) of liquid piping size at φ9.5) × 0.012 (kg/m)

+ volume by outside unit

System name RWEYQ8-10 Heat recovery system 4 kg Heat pump system 3 kg

8 Refrigerant pipe selection

8 - 2 Geothermal series

RWEYQ-PR

System	Liquid pipe
RWEYQ8, 10PR	φ9.5 → φ12.7

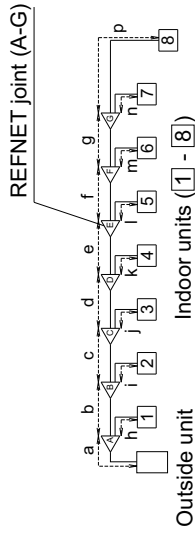
Note 1. When the equivalent pipe length between outside and indoor units is 80m or more, the size of main pipes on the liquid side (refer to figure 21) must be increased according to the right table.
(Never increase suction gas pipe and HP/LP gas pipe.)

(Refer to figure 21)

1. Outside unit
2. Main pipes
3. Increase only liquid pipe size
4. First refrigerant branch kit
5. Indoor unit

Note 2. Allowable length after the first refrigerant branch kit to indoor units is 40m or less, however it can be extended up to 90m if all the following conditions are satisfied. (In case of "Branch with REFNET joint")

Required Conditions	Example Drawings
1. It is necessary to increase the liquid and suction gas pipe size between the first branch kit and the final branch kit. (Reducers must be procured on site) However, the pipes that are same pipe size with main pipe must not be increased.	$\boxed{8}$ $b + c + d + e + f + g + p \leq 90$ m increase the liquid and suction gas pipe size of b, c, d, e, f, g
2. For calculation of Total extension length, the actual length of above pipes must be doubled. (except main pipe and the pipes that are not increased)	$a + b \times 2 + c \times 2 + d \times 2 + e \times 2 + f \times 2 + g \times 2 + h + i + j + k + l + m + n + p \leq 300$ m
3. Indoor unit to the nearest branch kit ≤ 40 m	$h, i, j, \dots, p \leq 40$ m
4. The difference between [Outside unit to the farthest indoor unit] and [Outside unit to the nearest indoor unit] ≤ 40 m	The farthest indoor unit $\boxed{8}$ The nearest indoor unit $\boxed{1}$ $(a + b + c + d + e + f + g + p) - (a + h) \leq 40$ m



*If available on the site, use this size. Otherwise it can not be increased.

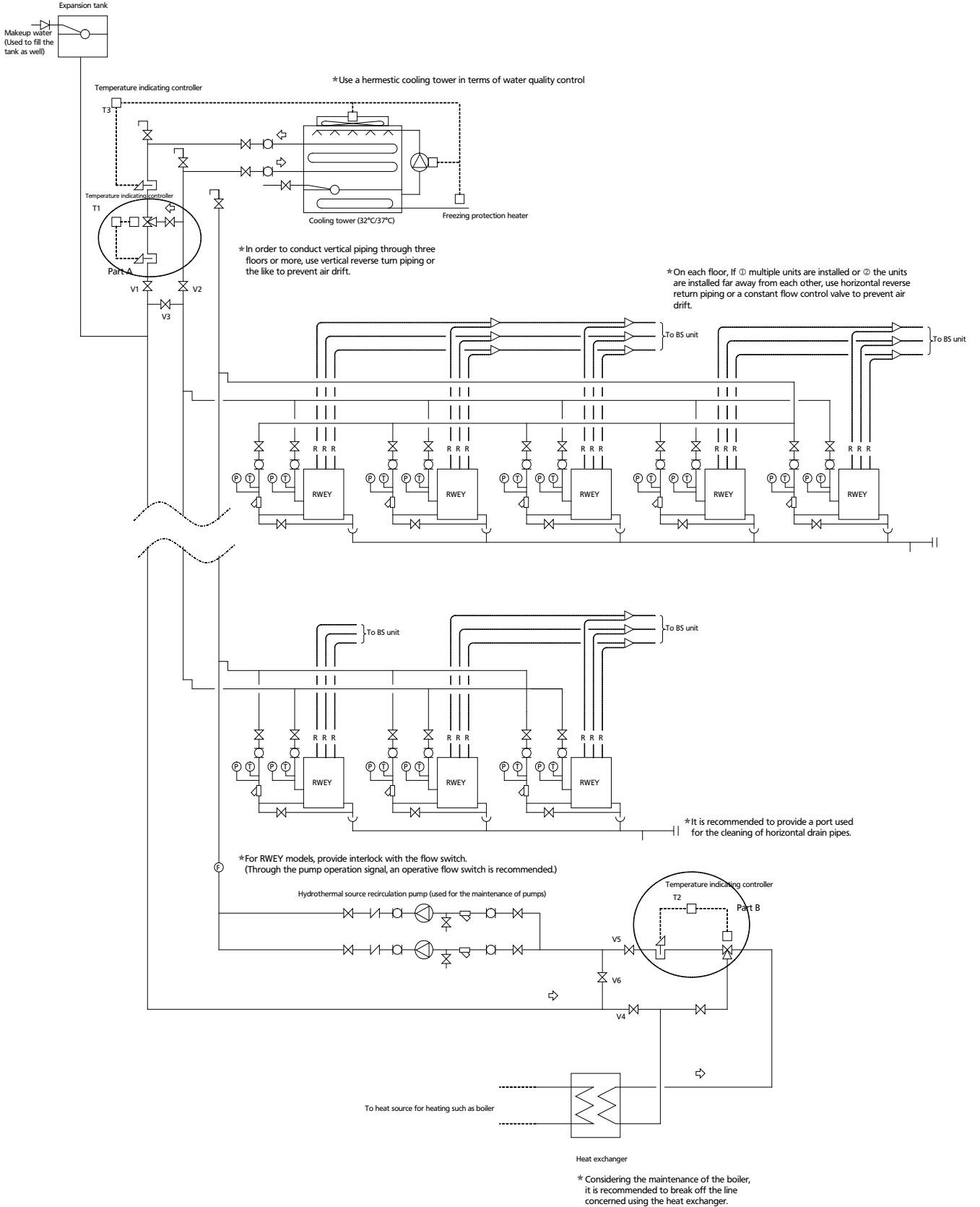
This table is about a heat recovery system (3-piping: suction gas, HP/LP gas and liquid pipes).
 In a case of heat pump system (2-piping: gas and liquid pipes), select the pipe size from suction gas pipe for gas pipes and from liquid gas pipe for liquid pipes. And BS unit is not required.

3P153897-8LR

9 Typical VRV®-WIII installations

9 - 1 Example Installation

Typical Installation



2
9

9 Typical VRV®-WIII installations

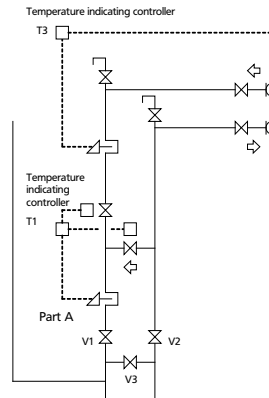
9 - 1 Example Installation

Note:
Please be noted that this Schematic Diagram is absolutely for reference only.
Practically, construction methods may vary with projects. Therefore, consult with the architect office for the design and construction of the system.

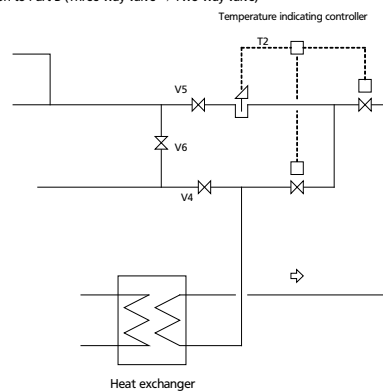
The following section shows precautions for the design of systems, which should be thoroughly observed.

1. Temperature
The operating range of hydrothermal cooling/heating free VRV® (RWEY) is 10°C to 45°C.
Keep the water temperature in the system within the said range through the ON/OFF operation of 2-way control valve, three-way control valve, cooling tower, or boiler.
2. Water quality
The hydrothermal cooling/heating free VRV® (RWEY) requires quality stability of water to be used.
Be sure to install the hermetic cooling water or, in order to install the open type cooling water, install the heat exchanger to break off the line concerned.
3. Freezing
Freezing protection should be provided for the cooling tower water during wintertime.
Take some sort of measures shown below so that water on the primary and secondary side of the cooling tower will not freeze up during wintertime.
Typical measure: If the water temperature drops,
Start the pump to recirculate water.
Provide freezing protection using freezing protection heater.
Provide water temperature drop protection through the forced startup of the boiler.
Drain water from the cooling tower.
Particularly, if the unit should stop for an extended period of time, it may freeze up. Consequently, attention should be paid for this point.
4. Air drift
Provide constant amount of feed water through the installation of reverse return piping system and constant flow control valve.

Typical modification to Part A (Three-way valve → Two-way valve)



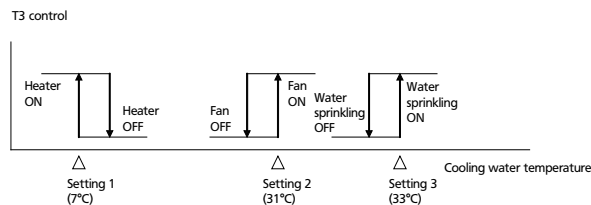
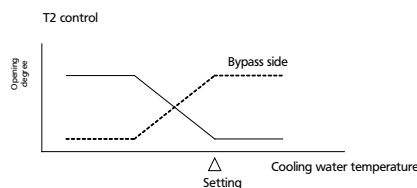
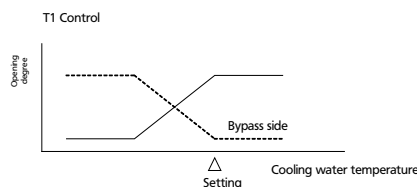
Typical modification to Part B (Three-way valve → Two-way valve)



	Pump
	Temperature controller
	Three-way valve (mixed type)
	Y strainer
	Flexible joint
	Pressure gauge
	Thermometer
	Flow switch

Typical set values (reference values)

Operation mode	Cooling (mainly for cooling)	Heating (mainly for heating)	In-between seasons (cooling/heating combination)	
T1 set value	15°C		25°C	
T2 set value		40°C	20°C	
T3 set value	33°C, 31°C		33°C, 31°C	
Open/Closed of valve	V1	○	×	○
	V2	○	×	○
	V3	×	○	×
	V4	×	○	○
	V5	×	○	○
	V6	○	×	×



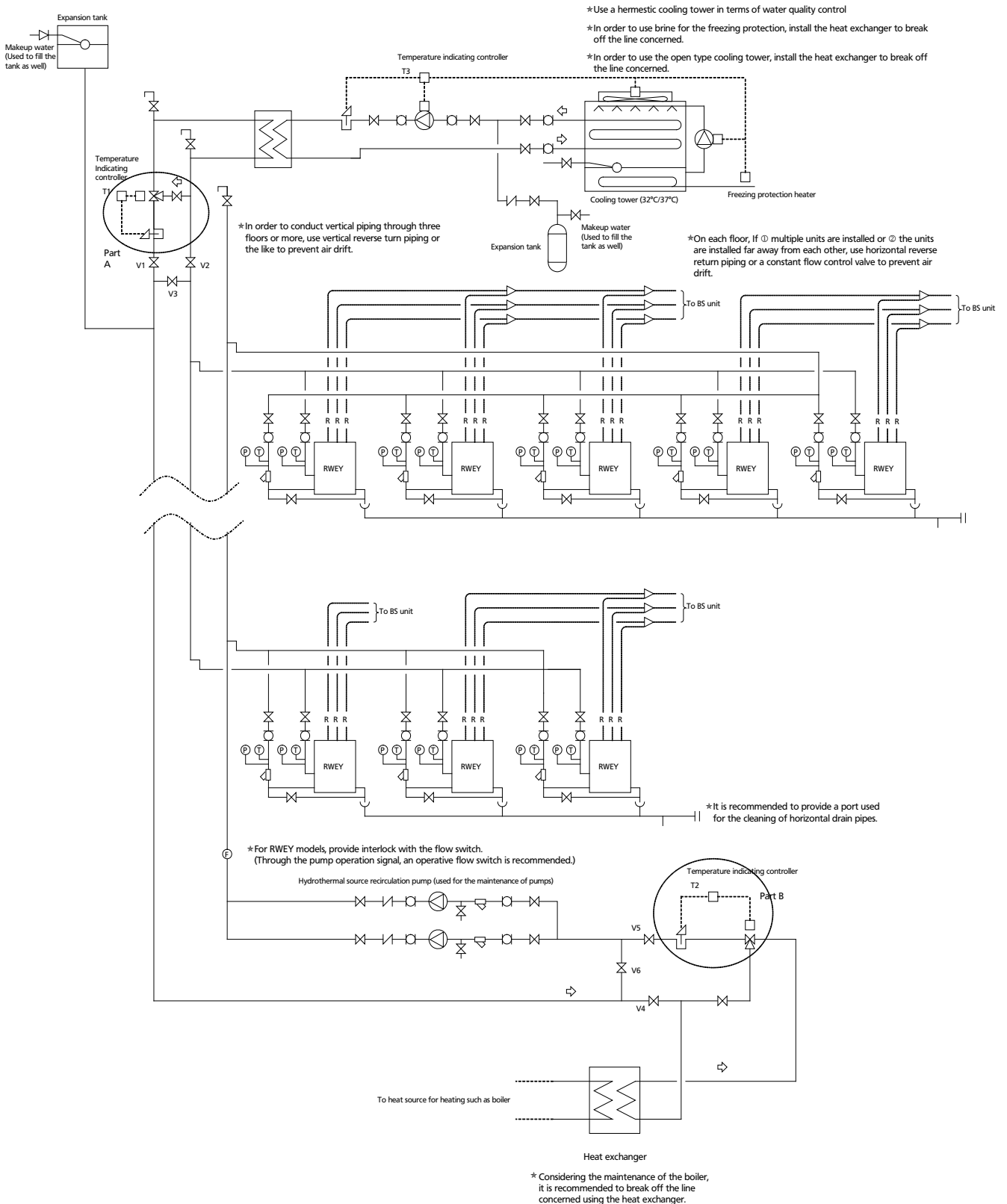
* If freezing is expected to occur, install the freezing protection heater or drain water from the water sprinkling side.
(If water is drained from the water sprinkling side, pay attention so that loads will never be applied to cooling mainly.)

9 Typical VRV[®]-WIII installations

9 - 2 Example Installation

(Use of open type cooling tower for low ambient climates)

Typical Installation (Installed in cold district, with open type cooling tower used)



2
9

9 Typical VRV®-WIII installations

9 - 2 Example Installation

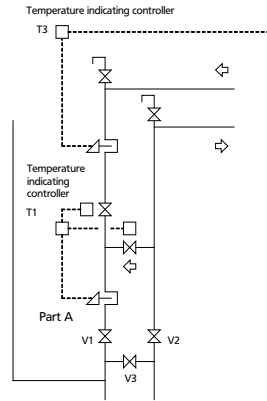
(Use of open type cooling tower for low ambient climates)

Note:
 Pleased be noted that this Schematic Diagram is absolutely for reference only.
 Practically, construction methods may vary with projects. Therefore, consult with the architect office for the design and construction of the system.

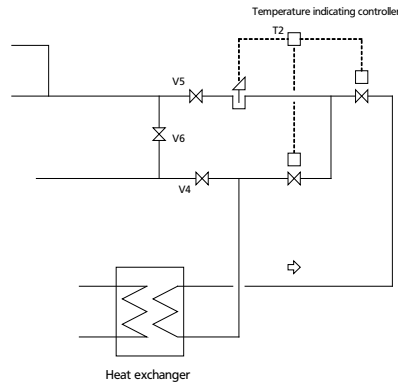
The following section shows precautions for the design of systems, which should be thoroughly observed.

1. Temperature
 The operating range of hydrothermal cooling/heating free VRV® (RWEY) is 10°C to 45°C.
 Keep the water temperature in the system within the said range through the ON/OFF operation of 2-way control valve, three-way control valve, cooling tower, or boiler.
2. Water quality
 The hydrothermal cooling/heating free VRV® (RWEY) requires quality stability of water to be used.
 Be sure to install the hermetic cooling water or, in order to install the open type cooling water, install the heat exchanger to break off the line concerned.
3. Freezing
 Freezing protection should be provided for the cooling tower water during wintertime.
 Take some sort of measures shown below so that water on the primary and secondary side of the cooling tower will not freeze up during wintertime.
 Typical measure: If the water temperature drops,
 Start the pump to recirculate water.
 Provide freezing protection using freezing protection heater.
 Provide water temperature drop protection through the forced startup of the boiler.
 Drain water from the cooling tower.
 Particularly, if the unit should stop for an extended period of time, it may freeze up. Consequently, attention should be paid for this point.
4. Air drift
 Provide constant amount of feed water through the installation of reverse return piping system and constant flow control valve.

Typical modification to Part A (Three-way valve → Two-way valve)



Typical modification to Part B (Three-way valve → Two-way valve)

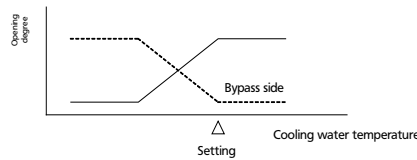


	Pump
	Temperature controller
	Three-way valve (mixed type)
	Y strainer
	Flexible joint
	Pressure gauge
	Thermometer
	Flow switch

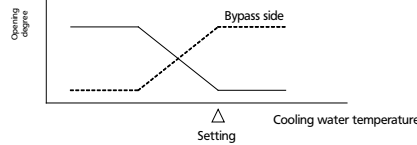
Typical set values (reference values)

Operation mode	Cooling (mainly for cooling)	Heating (mainly for heating)	In-between seasons (cooling/heating combination)	
T1 set value	15°C		25°C	
T2 set value		40°C	20°C	
T3 set value	33°C, 31°C		33°C, 31°C	
Open/Closed of valve Open: ○ Closed: ×	V1	○	×	○
	V2	○	×	○
	V3	×	○	×
	V4	×	○	○
	V5	×	○	○
	V6	○	×	×

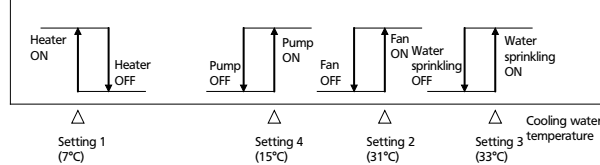
T1 Control



T2 Control



T3 Control

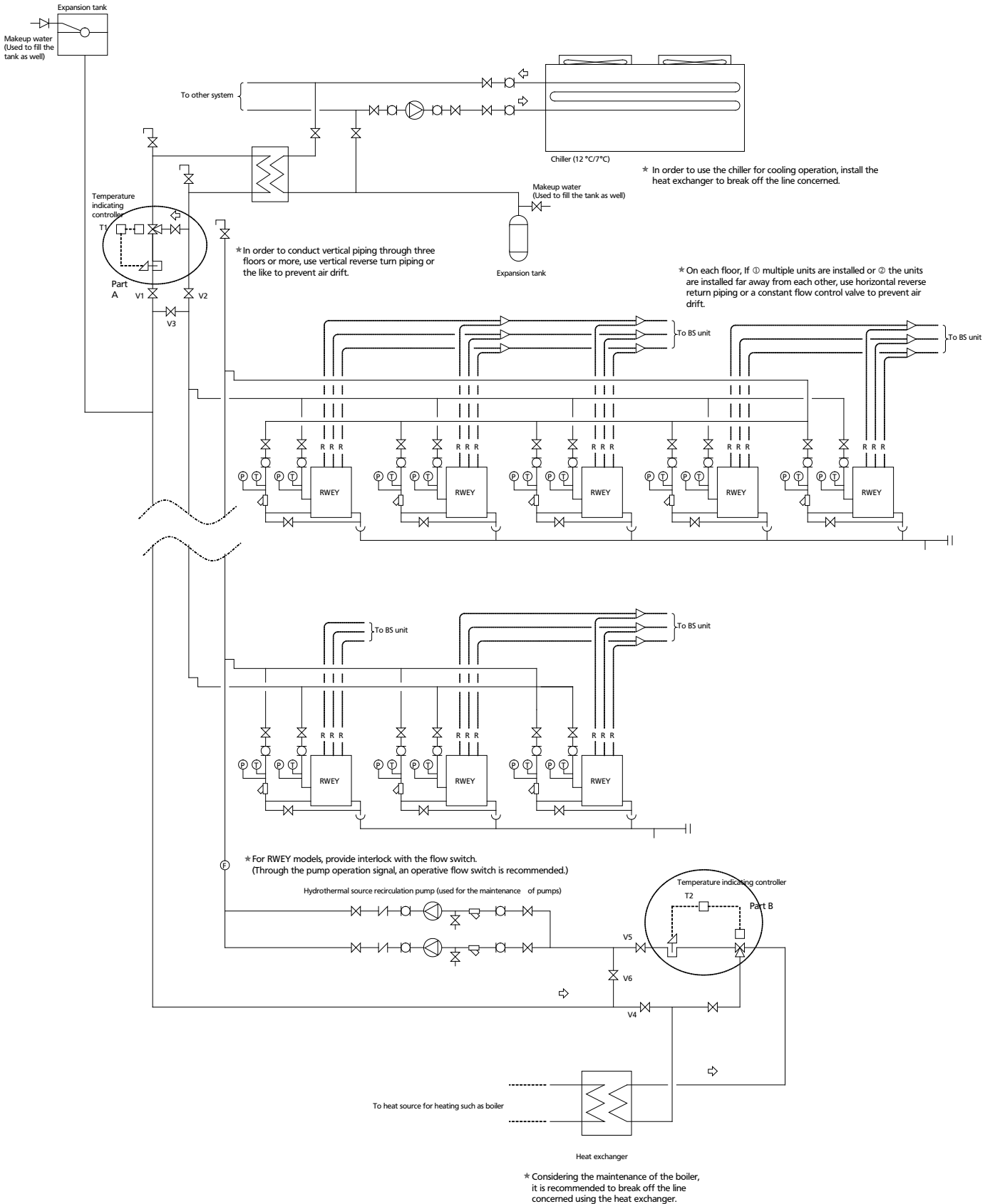


*If freezing is expected to occur, install the freezing protection heater or drain water from the water sprinkling side.
 (If water is drained from the water sprinkling side, pay attention so that loads will never be applied to cooling mainly.)

9 Typical VRV®-WIII installations

9 - 3 Example Installation

(with part of central heating equipment used for this installation)



9 Typical VRV®-WIII installations

9 - 3 Example Installation

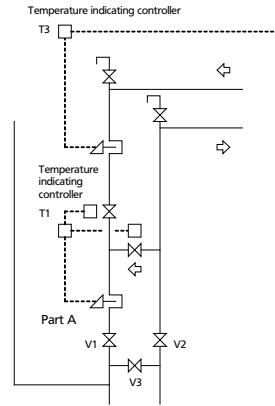
(with part of central heating equipment used for this installation)

Note:
Please be noted that this Schematic Diagram is absolutely for reference only.
Practically, construction methods may vary with projects. Therefore, consult with the architect office for the design and construction of the system.

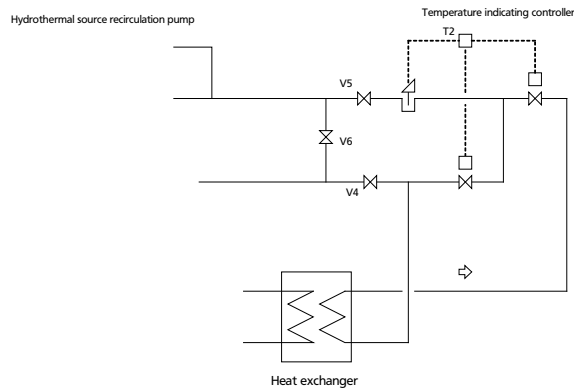
The following section shows precautions for the design of systems, which should be thoroughly observed.

1. Temperature
The operating range of hydrothermal cooling/heating free VRV® (RWEY) is 10°C to 45°C.
Keep the water temperature in the system within the said range through the ON/OFF operation of 2-way control valve, three-way control valve, cooling tower, or boiler.
2. Water quality
The hydrothermal cooling/heating free VRV® (RWEY) requires quality stability of water to be used.
Be sure to install the hermetic cooling water or, in order to install the open type cooling water, install the heat exchanger to break off the line concerned.
3. Freezing
Freezing protection should be provided for the cooling tower water during wintertime.
Take some sort of measures shown below so that water on the primary and secondary side of the cooling water will not freeze up during wintertime.
Typical measure: If the water temperature drops,
Start the pump to recirculate water.
Provide freezing protection using freezing protection heater.
Provide water temperature drop protection through the forced startup of the boiler.
Drain water from the cooling tower.
Particularly, if the unit should stop for an extended period of time, it may freeze up. Consequently, attention should be paid for this point.
4. Air drift
Provide constant amount of feed water through the installation of reverse return piping system and constant flow control valve.

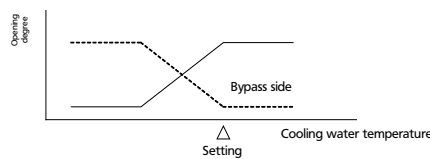
Typical modification to Part A (Three-way valve → Two-way valve)



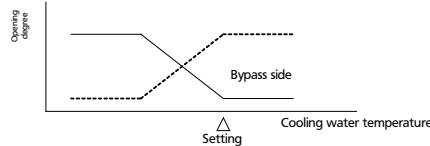
Typical modification to Part B (Three-way valve → Two-way valve)



T1 Control



T2 Control



	Pump
	Temperature controller
	Three-way valve (mixed type)
	Y strainer
	Flexible joint
	Pressure gauge
	Thermometer
	Flow switch

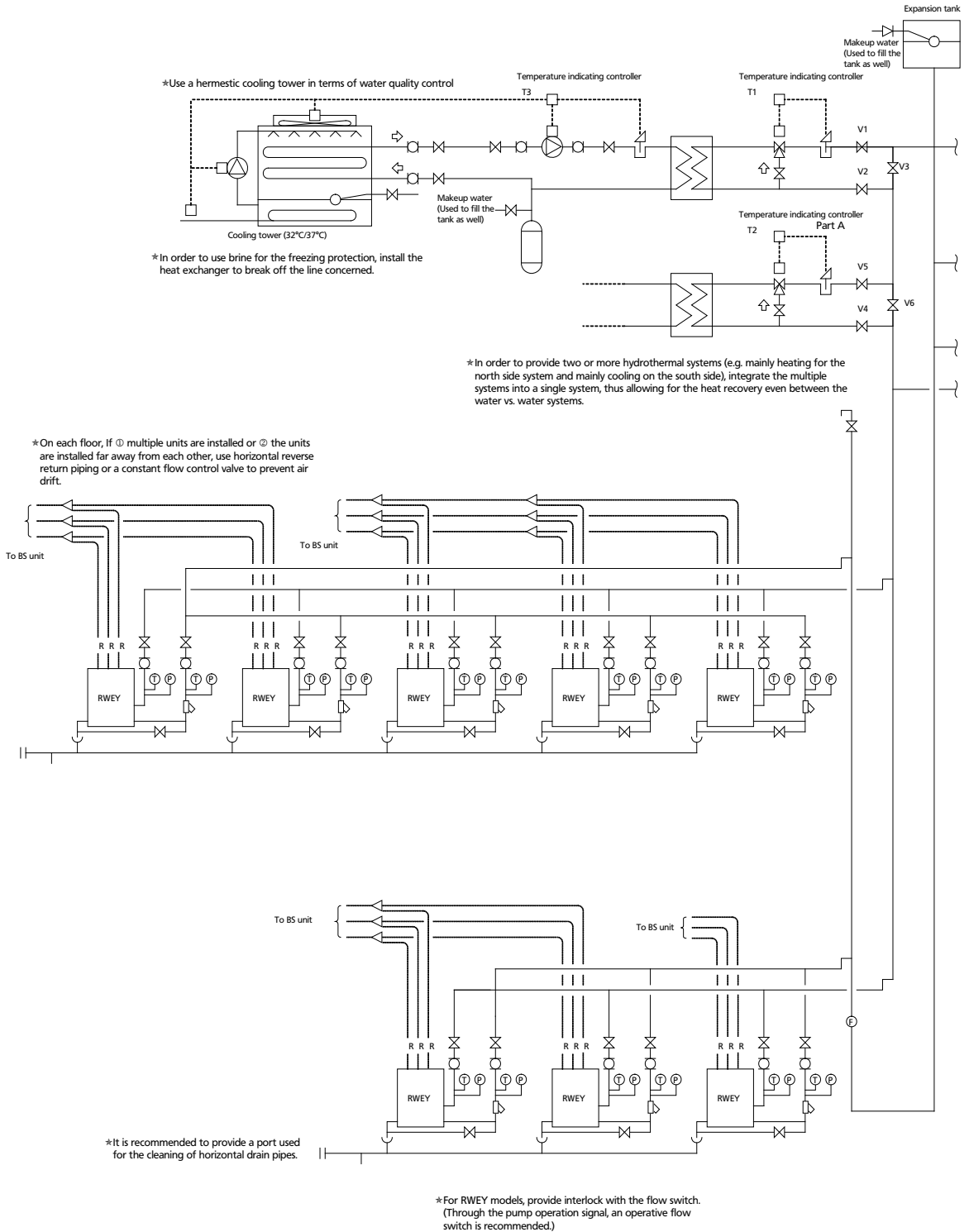
Typical set values (reference values)

Operation mode	Cooling (mainly for cooling)	Heating (mainly for cooling)	In-between seasons (cooling/heating combination)	
T1 set value	15°C		25°C	
T2 set value		40°C	20°C	
Open/Closed of valve	V1	○	×	○
	V2	○	×	○
	V3	×	○	×
Open: ○ Closed: ×	V4	×	○	○
	V5	×	○	○
	V6	○	×	×

9 Typical VRV®-WIII installations

9 - 4 Example Installation

(With heat recovery from multiple systems through water circuit)



Operation mode	Cooling (mainly for cooling)	Heating (mainly for heating)	In-between seasons (cooling/heating combination)	
T1 set value	15°C		25°C	
T2 set value		40°C	20°C	
T3 set value	33°C, 31°C		33°C, 31°C	
Open/Closed of valve	V1	○	×	○
	V2	○	×	○
	V3	×	○	×
	V4	×	○	○
	V5	×	○	○
	V6	○	×	×

	Pump
	Temperature controller
	Three-way valve (mixed type)
	Y strainer
	Flexible joint
	Pressure gauge
	Thermometer
	Flow switch

9 Typical VRV®-WIII installations

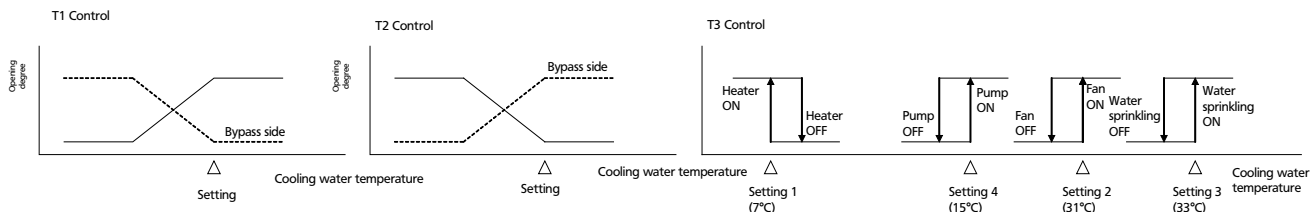
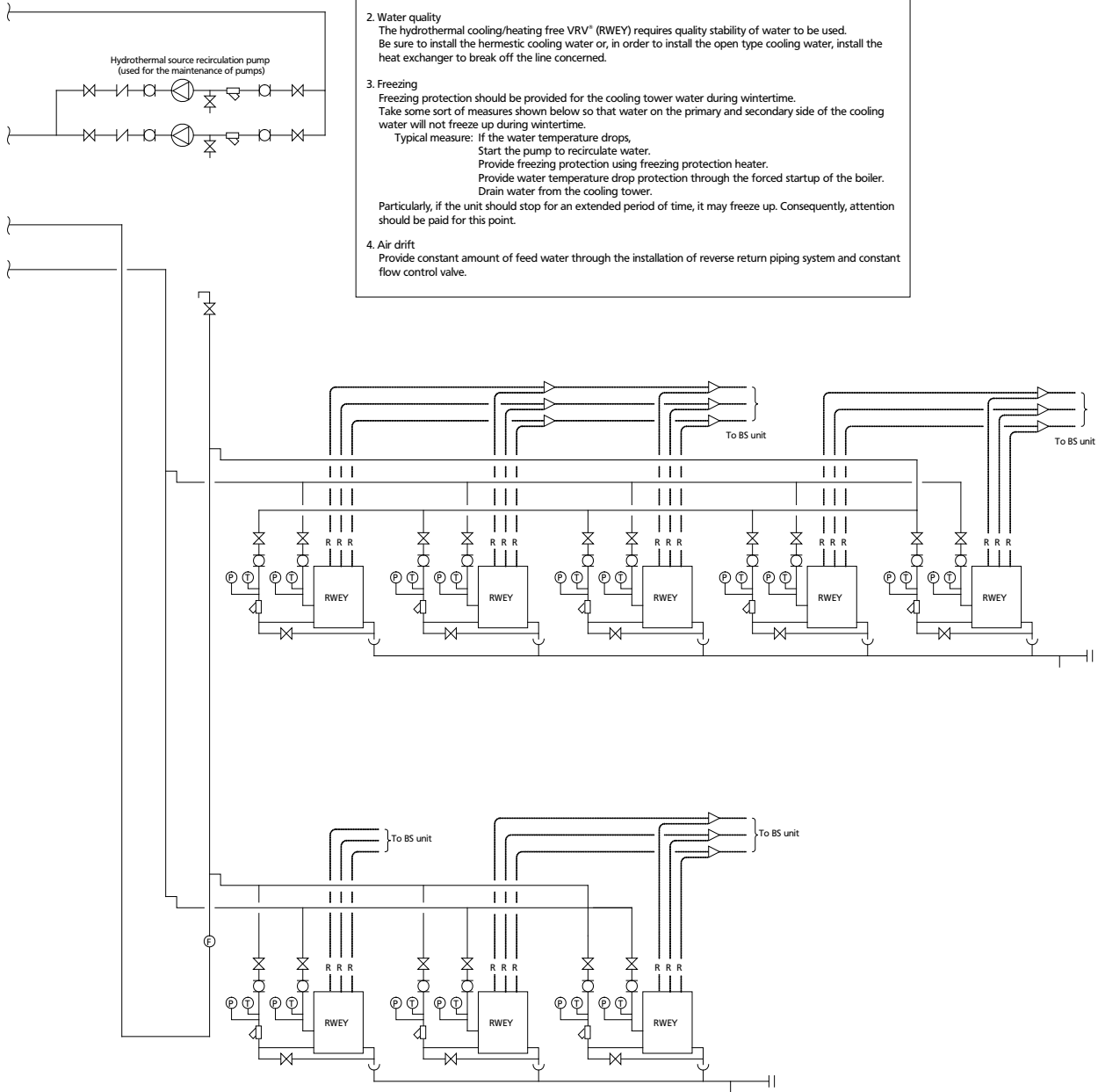
9 - 4 Example Installation

(With heat recovery from multiple systems through water circuit)

Note:
 Please be noted that this Schematic Diagram is absolutely for reference only. Practically, construction methods may vary with projects. Therefore, consult with the architect office for the design and construction of the system.

The following section shows precautions for the design of systems, which should be thoroughly observed.

- Temperature**
 The operating range of hydrothermal cooling/heating free VRV® (RWEY) is 10°C to 45°C. Keep the water temperature in the system within the said range through the ON/OFF operation of 2-way control valve, three-way control valve, cooling tower, or boiler.
- Water quality**
 The hydrothermal cooling/heating free VRV® (RWEY) requires quality stability of water to be used. Be sure to install the hermetic cooling water or, in order to install the open type cooling water, install the heat exchanger to break off the line concerned.
- Freezing**
 Freezing protection should be provided for the cooling tower water during wintertime. Take some sort of measures shown below so that water on the primary and secondary side of the cooling water will not freeze up during wintertime.
 Typical measure: If the water temperature drops,
 Start the pump to recirculate water.
 Provide freezing protection using freezing protection heater.
 Provide water temperature drop protection through the forced startup of the boiler.
 Drain water from the cooling tower.
 Particularly, if the unit should stop for an extended period of time, it may freeze up. Consequently, attention should be paid for this point.
- Air drift**
 Provide constant amount of feed water through the installation of reverse return piping system and constant flow control valve.



*If freezing is expected to occur, install the freezing protection heater or drain water from the water sprinkling side. (If water is drained from the water sprinkling side, pay attention so that loads will never be applied to cooling mainly.)

III Outdoor units

Standard series	3	RWEYQ-PY161	3
Geothermal series	4	RWEYQ-PY1R137	4
Individual BS box.....	5	BSVQ100-250P8177	5
Multi BS Box.....	6	BSV4Q100PV187	6
Multi BS Box.....	7	BSVQ6P100PV195	7

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1 Specifications

1-1 Independent Unit			RWEYQ8PY1	RWEYQ10PY1	RWEYQ16PY1	RWEYQ18PY1	RWEYQ20PY1
Outdoor Unit			RWEYQ8PY1	RWEYQ10PY1	RWEYQ8PY1	RWEYQ10PY1	RWEYQ10PY1
					RWEYQ8PY1	RWEYQ8PY1	RWEYQ10PY1

1-2 Technical Specifications				RWEYQ8PY1	RWEYQ10PY1	RWEYQ16PY1	RWEYQ18PY1	RWEYQ20PY1
Capacity	Cooling	kW		22.4	26.7	44.8	49.1	53.4
	Heating	kW		25.0	31.5	50.0	56.5	63.0
EER	Cooling			4.92	4.43	4.92	4.63	4.43
COP	Heating			5.90	5.21	5.90	5.49	5.21
Power input (nominal)	Cooling	kW		4.55	6.03	9.10	10.6	12.1
	Heating	kW		4.24	6.05	8.48	10.3	12.1
Casing	Colour	Ivory white (5Y7,5/1)						
Dimensions	Unit	Height	mm	1,000				
		Width	mm	780	780	780 + 780	780 + 780	780 + 780
		Depth	mm	550	550	550	550	550
Weight	Unit	kg	149	150	149 + 149	150 + 149	150 + 150	
Heat Exchanger	Dimensions	Type	Stainless steel plate					
Compressor	Piston displacement	m	14.61	14.61	14.61 + 14.61	14.61 + 14.61	14.61 + 14.61	
	Motor	Type	Hermetically sealed scroll compressor					
		Speed	rpm	6,900	6,900	6,900 + 6,900	6,900 + 6,900	6,900 + 6,900
		Motor Output	kW	4.0	4.2	4.0 + 4.0	4.2 + 4.0	4.2 + 4.2
	Starting Method	Soft start						
Sound level	Cooling	Sound Pressure (Nominal)	dBA	50	51	53	54	54
Inlet water temperature	Cooling	Min~Max	°CDB	10-45				
	Heating	Min~Max	°CWB	10-45				
Refrigerant	Name	R-410A						
	Charge	kg	3.5	4.2	3.5 + 3.5	4.2 + 3.5	4.2 + 4.2	
	Control	Expansion valve (electronic type)						
Refrigerant Oil	Name	Synthetic (ether) oil						
Piping connections	Liquid (OD)	Type	Flare connection					
		Diameter (OD)	mm	9.52	9.52	12.7	15.9	15.9
	Gas (in case of heat recovery)	Type	Braze connection					
		Diameter (OD)	mm	19.1	22.2	28.6	28.6	28.6
	Discharge Gas (in case of heat recovery)	Type	Braze connection					
		Diameter (OD)	mm	15.9	19.1	22.2	22.2	22.2
	Discharge Gas (in case of heat pump)	Type	Braze connection					
		Diameter (OD)	mm	19.1	22.2	28.6	28.6	28.6
	Water inlet	PT1 1/4B internal thread						
	Water outlet	PT1 1/4B internal thread						
Drain outlet	PS 1/2B internal thread							
Max total length	m	300						
Level difference OU-IU	m	50 (outdoor unit in highest position)						
Max n° of indoor units to be connected		13	16	26	29	32		
Capacity Control		23 to 100	23 to 100	11 to 100	11 to 100	11 to 100		
Safety devices	HPS							
	Inverter overload protector							
	Fusible plugs							
Standard Accessories	Installation manual							
	Operation manual							
	Connection pipes							
	Clamps							

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1 Specifications

1-2 Technical Specifications	RWEYQ8PY1	RWEYQ10PY1	RWEYQ16PY1	RWEYQ18PY1	RWEYQ20PY1
Notes	Nominal cooling capacities are based on : indoor temperature : 27°CDB, 19°CWB, inlet water temperature : 30°C, equivalent refrigerant piping : 7.5m, level difference : 0m.				
	Nominal heating capacities are based on : indoor temperature : 20°CDB, inlet water temperature : 20°C, equivalent refrigerant piping : 7.5m, level difference : 0m				
	This unit should not be installed outdoors, but indoors eg. in a machine room, etc.				
	Hold ambient temperature at 0-46°C and humidity at 80%RH or less. Heat rejection from the casing: 0.64kW/8HP	Hold ambient temperature at 0-40°C and humidity at 80%RH or less. Heat rejection from the casing: 0.71kW/10HP	Hold ambient temperature at 0-40°C and humidity at 80%RH or less. Heat rejection from the casing: 0.64kW/8HP	Hold ambient temperature at 0-40°C and humidity at 80%RH or less. Heat rejection from the casing: 0.64kW/8HP	Hold ambient temperature at 0-40°C and humidity at 80%RH or less. Heat rejection from the casing: 0.71kW/10HP
			Hold ambient temperature at 0-40°C and humidity at 80%RH or less. Heat rejection from the casing: 0.71kW/10HP		

1-1 Independent Unit	RWEYQ24PY1	RWEYQ26PY1	RWEYQ28PY1	RWEYQ30PY1
Outdoor Unit	RWEYQ8PY1	RWEYQ10PY1	RWEYQ10PY1	RWEYQ10PY1
	RWEYQ8PY1	RWEYQ8PY1	RWEYQ10PY1	RWEYQ10PY1
	RWEYQ8PY1	RWEYQ8PY1	RWEYQ8PY1	RWEYQ10PY1

1-2 Technical Specifications				RWEYQ24PY1	RWEYQ26PY1	RWEYQ28PY1	RWEYQ30PY1	
Capacity	Cooling	kW		67.2	71.5	75.8	80.1	
	Heating	kW		75.0	81.5	88.0	94.5	
EER	Cooling			4.91	4.74	4.57	4.43	
COP	Heating			5.91	5.62	5.40	5.21	
Power input (nominal)	Cooling	kW		13.7	15.1	16.6	18.1	
	Heating	kW		12.7	14.5	16.3	18.2	
Casing	Colour			Ivory white (5Y7,5/1)				
Dimensions	Unit	Height	mm	1,000				
		Width	mm	780 + 780 + 780				
		Depth	mm	550	550	550	550	
Weight	Unit	kg		149 + 149 + 149	150 + 149 + 149	150 + 150 + 149	150 + 150 + 150	
Heat Exchanger	Dimensions	Type		Stainless steel plate				
Compressor	Piston displacement		m	14.61 + 14.61 + 14.61				
	Motor	Type		Hermetically sealed scroll compressor				
		Speed	rpm		6,900 + 6,900 + 6,900			
		Motor Output	kW		4.0 + 4.0 + 4.0	4.2 + 4.0 + 4.0	4.2 + 4.2 + 4.0	4.2 + 4.2 + 4.2
	Starting Method		Soft start					
Sound level	Cooling	Sound Pressure (Nominal)	dBA	55				
Inlet water temperature	Cooling	Min~Max	°CDB	10-45				
	Heating	Min~Max	°CWB	10-45				
Refrigerant	Name			R-410A				
	Charge	kg		3.5 + 3.5 + 3.5	4.2 + 3.5 + 3.5	4.2 + 4.2 + 3.5	4.2 + 4.2 + 4.2	
	Control			Expansion valve (electronic type)				
Refrigerant Oil	Name			Synthetic (ether) oil				
Piping connections	Liquid (OD)	Type		Flare connection				
		Diameter (OD)	mm	15.9	19.1	19.1	19.1	
	Gas (in case of heat recovery)	Type		Braze connection				
		Diameter (OD)	mm		34.9			
	Discharge Gas (in case of heat recovery)	Type		Braze connection				
		Diameter (OD)	mm		28.6			
	Discharge Gas (in case of heat pump)	Type		Braze connection				
		Diameter (OD)	mm		34.9			
	Water inlet				PT1 1/4B internal thread			
	Water outlet				PT1 1/4B internal thread			
Drain outlet				PS 1/2B internal thread				
Max total length			m	300				
Level difference OU-IU			m	50 (outdoor unit in highest position)				
Max n° of indoor units to be connected				36				

1 Specifications

1-2 Technical Specifications		RWEYQ24PY1	RWEYQ26PY1	RWEYQ28PY1	RWEYQ30PY1	
Capacity Control		8 to 100				
Safety devices		HPS				
		Inverter overload protector				
		Fusible plugs				
Standard Accessories	Standard Accessories	Installation manual				
		Operation manual				
		Connection pipes				
		Cramps				
Notes		Nominal cooling capacities are based on : indoor temperature : 27°CDB, 19°CWB, inlet water temperature : 30°C, equivalent refrigerant piping : 7.5m, level difference : 0m.				
		Nominal heating capacities are based on : indoor temperature : 20°CDB, inlet water temperature : 20°C, equivalent refrigerant piping : 7.5m, level difference : 0m				
		This unit should not be installed outdoors, but indoors eg. in a machine room, etc.				
		Hold ambient temperature at 0-40°C and humidity at 80%RH or less. Heat rejection from the casing: 0.64kW/8HP	Hold ambient temperature at 0-40°C and humidity at 80%RH or less. Heat rejection from the casing: 0.64kW/8HP	Hold ambient temperature at 0-40°C and humidity at 80%RH or less. Heat rejection from the casing: 0.64kW/8HP	Hold ambient temperature at 0-40°C and humidity at 80%RH or less. Heat rejection from the casing: 0.71kW/10HP	
			Hold ambient temperature at 0-40°C and humidity at 80%RH or less. Heat rejection from the casing: 0.71kW/10HP	Hold ambient temperature at 0-40°C and humidity at 80%RH or less. Heat rejection from the casing: 0.71kW/10HP		

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1 Specifications

1-3 Electrical Specifications (50Hz)			RWEYQ8PY1	RWEYQ10PY1	RWEYQ16PY1	RWEYQ18PY1	RWEYQ20PY1
Power Supply	Name		Y1				
	Phase		3~				
	Frequency	Hz	50				
	Voltage	V	380-415				
Current	Maximum Running Current	A	7.2	9.5	7.2 + 7.2	7.2 + 9.5	9.5 + 9.5
	Minimum circuit amps (MCA)	A	12.6	12.6	25.3	25.3	25.3
	Maximum fuse amps (MFA)	A	25	25	35	35	35
	Total overcurrent amps (TOCA)	A	13.5	13.5	27.0	27.0	27.0
Voltage range	Minimum	V	342	342	342	342	342
	Maximum	V	456	456	456	456	456
Notes			RLA is based on the following conditions: Indoor: 27° CDB, 19° CWB, Inlet water: 30°C				
			TOCA means the total value of each OC set				
			MSC means the maximum current during start up of the compressor				
			Voltage range : units are suitable for use on electrical systems where voltage supplied to unit terminal is not below or above listed range limits				
			Maximum allowable voltage range variation between phases is 2%				
			Select wire size based on the larger value of MCA or TOCA				
			MFA is used to select the circuit breaker and the ground fault circuit interrupter (earth leakage circuit breaker)				

1-3 Electrical Specifications (50Hz)			RWEYQ24PY1	RWEYQ26PY1	RWEYQ28PY1	RWEYQ30PY1
Power Supply	Name		Y1			
	Phase		3~			
	Frequency	Hz	50			
	Voltage	V	380-415			
Current	Maximum Running Current	A	7.2 + 7.2 + 7.2	7.2 + 7.2 + 9.5	7.2 + 9.5 + 9.5	9.5 + 9.5 + 9.5
	Minimum circuit amps (MCA)	A	37.9	37.9	37.9	37.9
	Maximum fuse amps (MFA)	A	45	45	45	45
	Total overcurrent amps (TOCA)	A	40.5	40.5	40.5	40.5
Voltage range	Minimum	V	342	342	342	342
	Maximum	V	456	456	456	456
Notes			RLA is based on the following conditions: Indoor: 27° CDB, 19° CWB, Inlet water: 30°C			
			TOCA means the total value of each OC set			
			MSC means the maximum current during start up of the compressor			
			Voltage range : units are suitable for use on electrical systems where voltage supplied to unit terminal is not below or above listed range limits			
			Maximum allowable voltage range variation between phases is 2%			
			Select wire size based on the larger value of MCA or TOCA			
			MFA is used to select the circuit breaker and the ground fault circuit interrupter (earth leakage circuit breaker)			

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2 Electrical data

RWEYQ-P

Models	Units				Power supply			Input (W)	
	Hz	Volts	min.	max.	MCA	TOCA	MFA	MSC	RLA
RWEYQ8PY1	50	380	342	456	12.6	13.5	25	-	7.5
		400						-	7.2
		415						-	6.9
RWEYQ10PY1	50	380	342	456	12.6	13.5	25	-	9.9
		400						-	9.5
		415						-	9.1
RWEYQ16PY1	50	380	342	456	25.3	27.0	35	-	7.5+7.5
		400						-	7.2+7.2
		415						-	6.9+6.9
RWEYQ18PY1	50	380	342	456	25.3	27.0	35	-	7.5+9.9
		400						-	7.2+9.5
		415						-	6.9+9.1
RWEYQ20PY1	50	380	342	456	25.3	27.0	35	-	9.9+9.9
		400						-	9.5+9.5
		415						-	9.1+9.1
RWEYQ24PY1	50	380	342	456	37.9	40.5	45	-	7.5+7.5+7.5
		400						-	7.2+7.2+7.2
		415						-	6.9+6.9+6.9
RWEYQ26PY1	50	380	342	456	37.9	40.5	45	-	7.5+7.5+9.9
		400						-	7.2+7.2+9.5
		415						-	6.9+6.9+9.1
RWEYQ28PY1	50	380	342	456	37.9	40.5	45	-	7.5+9.9+9.9
		400						-	7.2+9.5+9.5
		415						-	6.9+9.1+9.1
RWEYQ30PY1	50	380	342	456	37.9	40.5	45	-	9.9+9.9+9.9
		400						-	9.5+9.5+9.5
		415						-	9.1+9.1+9.1

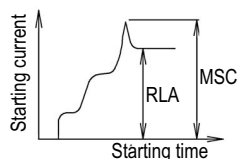
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SYMBOLS

- 1 MCA: Min. Circuit Amps. (A)
TOCA: Total Over-current Amps (A)
MFA: Max. Fuse Amps (A)
MSC: Max. Starting current
RLA: Rated Load Amps. (A)

NOTES

- 2 RLA is based on the following conditions.
Indoor temp.: 27°C DB, 19°C WB
Inlet water temp. / 30°C
- 3 TOCA means the total value of each OC set.
- 4 MSC means the max. current during the starting of compressor.
- 5 Voltage range
Units are suitable for use on electrical systems where voltage supplied to unit terminal is not below or above listed range limits.
- 6 Maximum allowable voltage variation between phases is 2%.
- 7 Select wire size based on the larger value of MCA or TOCA.
- 8 MFA is used to select the circuit breaker and the ground fault circuit interrupter (earth leakage circuit breaker).



3 Options

3 - 1 Option list

RWEYQ-P	Models		
	RWEYQ8,10PY1	RWEYQ16,18,20PY1	RWEYQ24,26,28,30PY1
Optional accessories		KRC19-26A6	
Cool / Heat selector		KJB111A	
Fixing box			
Refnet header - heat recovery	KHRQ23M29H	KHRQ23M29H, KHRQ23M64H, KHRQ23M75H	
Refnet header - heat pump	KHRQ22M29H	KHRQ22M29H, KHRQ22M64H, KHRQ22M75H	
Refnet joint - heat recovery	KHRQ23M20T, KHRQ23M29T9	KHRQ23M20T, KHRQ23M29T9, KHRQ23M64T, KHRQ23M75T	
Refnet joint - heat pump	KHRQ22M20T, KHRQ22M29T9	KHRQ22M20T, KHRQ22M29T9, KHRQ22M64T, KHRQ22M75T	
Outside unit multi connection piping kit	-	BHFP22MA56, BHFP26MA56	BHFP22MA84, BHFP26MA84
External control adapter for outdoor unit		DTA104A62	
Strainer kit		BWU26A15, BWU26A20	

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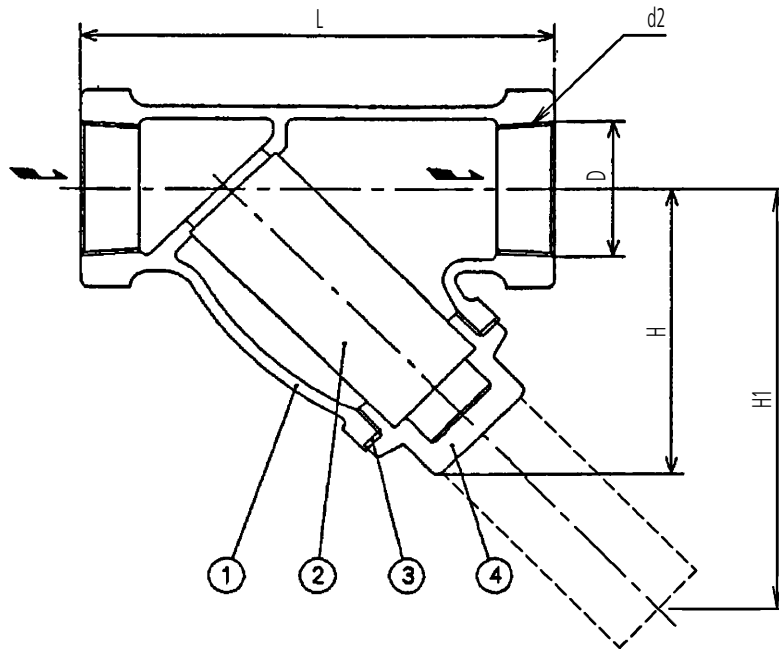
NOTES

- 1 Refer to the latest drawing.
- 2 In the case of heat recovery system, COOL/HEAT selector cannot be connected.

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3 - 2 Water piping strainer (BWU26A15/BWU26A20)

3 - 2 - 1 Dimension



	Dimension					Material			
	Diameter	H	L	d2	H1	①	②	③	④
BWU26A15	1 1/4	82	135	RC1 1/4	130	CAC	SUS304	Non Abestos Casket	C377BEE
BWU26A20	1 1/4	90	135	RC1 1/4	130	FCD-S	SUS304	Non Abestos Seet Gasket	C3771BE

3 - 2 - 2 Specification

Use fluid: Pluse water of 100°C or less

Use temperature: 0°C ~ 70°C

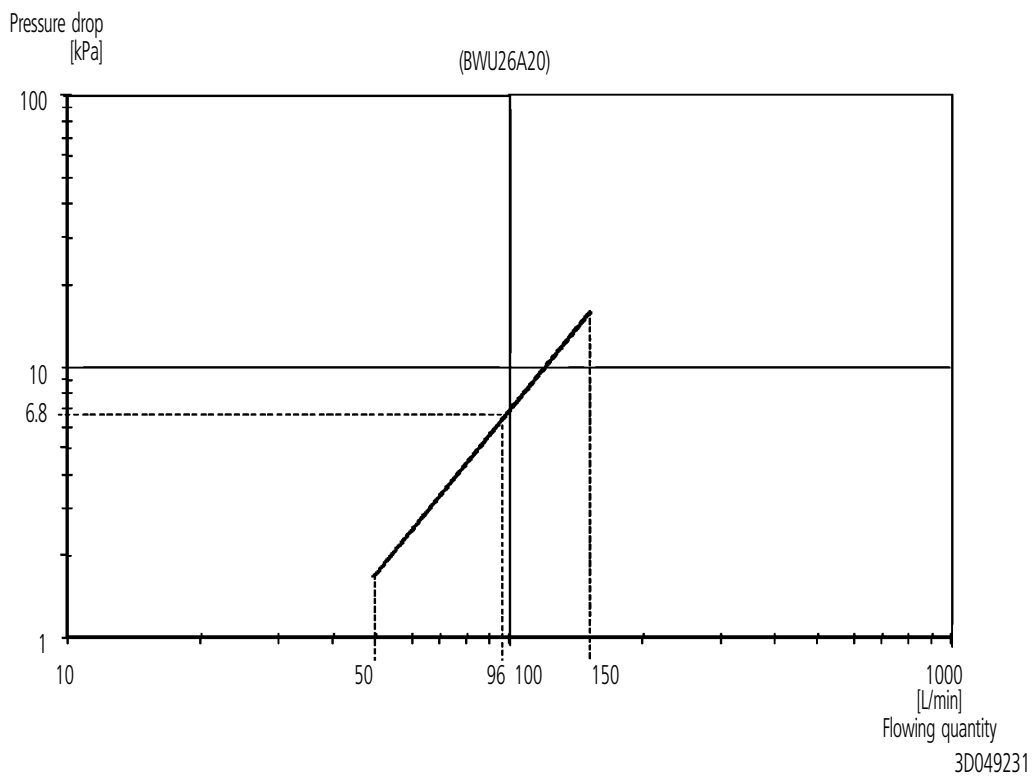
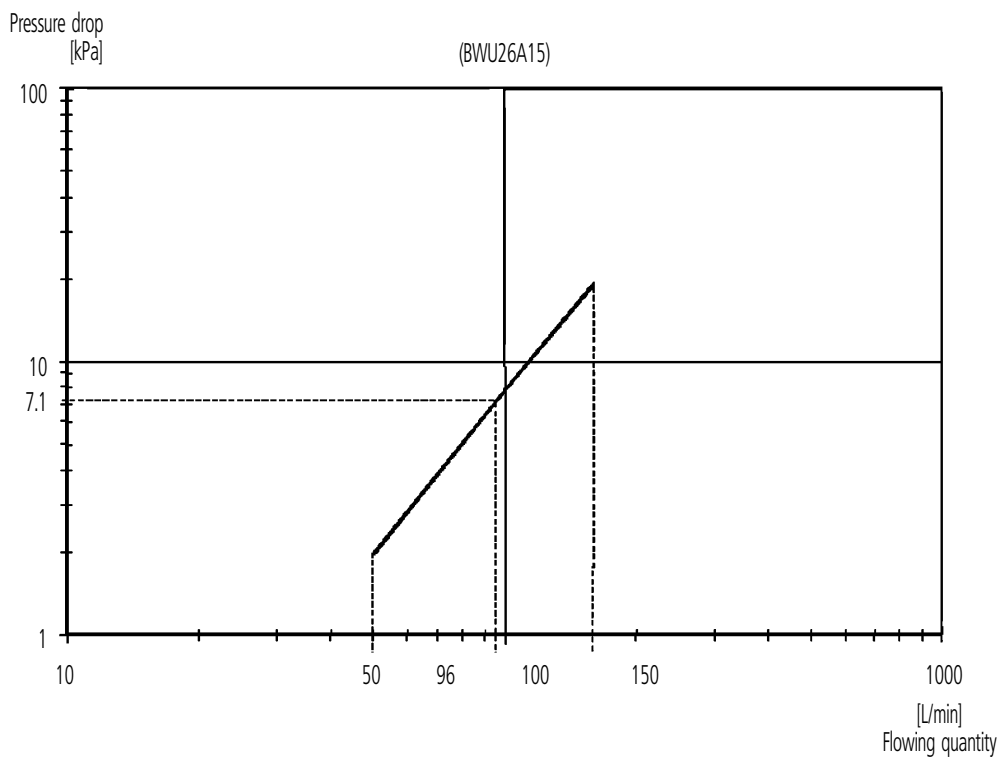
Design pressure: BWU26A15 (1.4 Mpa), BWU26A20 (1.96 Mpa)

Mesh size: 50 mesh

3 Options

3 - 2 Water piping strainer (BWU26A15/BWU26A20)

3 - 2 - 3 Flowing quantity characteristic



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4 Capacity tables

4 - 1 Water flow head loss

RWEYQ-P

Water Flow Head loss

Water volume	L/min	50	60	80	96	120	140
Head loss	kPa	9.3	12.9	30.9	26.5	47.2	72.2
	mH ₂ O	1.0	1.3	3.2	2.7	4.8	7.4

* This value shows the amount of head loss per one unit.

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4 Capacity tables

4 - 2 Cooling capacity tables

RWEYQ8PY1 TC: Total Capacity: kW ; PI: Power Input: kW (compressor + outdoor fan motor) ; OWT: Outlet Water Temperature: °C
Indoor air temperature: °CWB

Combinatio n (%)	Inlet Water Temp. (°C)	Water Volume (note2) L/min	Indoor air temperature: °CWB																							
			14.0			16.0			18.0			19.0			20.0			22.0			24.0					
			TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C			
130	10	60	19.7	2.62	16.4	23.4	3.49	17.7	25.6	3.69	18.4	26.0	3.71	18.5	26.3	3.73	18.6	26.9	3.75	18.8	27.4	3.76	18.9			
		96	19.7	2.57	15.3	23.4	3.43	16.4	25.7	3.66	17.0	26.1	3.67	17.1	26.5	3.69	17.2	27.1	3.71	17.4	27.5	3.73	17.5			
		120	19.7	2.45	13.3	23.4	3.25	14.0	26.1	3.56	14.4	26.4	3.57	14.5	26.8	3.59	14.5	27.4	3.61	14.6	27.9	3.63	14.7			
	120	10	60	19.7	2.40	12.6	23.4	3.19	13.2	26.2	3.52	13.5	26.6	3.54	13.6	26.9	3.55	13.6	27.5	3.57	13.7	28.0	3.59	13.8		
			110	10	60	16.6	2.02	15.3	19.8	2.66	16.4	23.0	3.40	17.6	24.6	3.64	18.1	25.4	3.68	18.3	26.1	3.71	18.5	26.6	3.74	18.7

CA08A496A

NOTES - ANMERKUNGEN - Σημειώσεις - NOTAS - REMARQUES - NOTE - OPMERKINGEN - примечания - NOTLAR

- 1 ■ is shown as reference. ■ se muestra como referencia. ■ is als referentie getoond.
 ■ dient als Verweis. ■ est montré comme référence. ■ referans olarak gösterilmektedir.
 H ■ είναι ενδεικτική. ■ valori riportati unicamente come riferimento.

- 2 Water volume (l/m): value is applicable for 1 module. When combining 2 or 3 modules, multiply this value by 2 resp. 3
 Wassermenge (l/m): Der Wert gilt für 1 Modul. Wenn 2 oder 3 Module kombiniert werden, diesen Wert mit 2 bzw. 3 multiplizieren
 Ουχος νερού (l/m): η τιμή ισχύει για 1 μονάδα. Όταν συνδυάζετε 2 ή 3 μονάδες, πολλαπλασιάστε αυτή την τιμή με 2 ή 3.
 Volumen de agua (l/m): el valor se aplica a 1 módulo. Cuando se combinan 2 ó 3 módulos, multiplique este valor por 2 resp. 3
 Volume d'eau (l/m) : la valeur ne s'applique qu'à 1 module. Lors de la combinaison de 2 ou 3 modules, multiplier cette valeur respectivement par 2 ou 3 en fonction du nombre de modules.
 Volume d'acqua (l/m): il valore è applicabile per 1 modulo. Quando si combinano 2 o 3 moduli, moltiplicare questo valore per 2 o 3
 Watervolume (l/m) : waarde is van toepassing voor 1 module. Bij een combinatie met 2 of 3 modules moet deze waarde
 met respectievelijk 2 en 3 vermenigvuldigd worden.
 Объем воды (л/м): значение относится к 1 блоку. При комбинировании 2 или 3 блоков умножьте это значение, соответственно, на 2 или 3
 Su hacmi (l/m) : değeri 1 modül için geçerlidir. 2 veya 3 modül birleştirilken bu değeri 2 veya 3 ile çarpın

4 Capacity tables

4 - 2 Cooling capacity tables

RWEYQ10PY1		TC: Total Capacity: kW ; PI: Power Input: kW (compressor + outdoor fan motor) ; OWT: Outlet Water Temperatur: °C																										
		Indoor air temperature: °CWB																										
		14.0			16.0			18.0			19.0			20.0			22.0			24.0								
Combinatio n (%)	Inlet Water Temp. (°C)	Water Volume (note2) L/min	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT					
			kW	kWh	°C	kW	kWh	°C	kW	kWh	°C	kW	kWh	°C	kW	kWh	°C	kW	kWh	°C	kW	kWh	°C					
130	10	50	23.4	3.48	17.7	27.9	4.63	19.3	30.5	4.90	20.2	31.0	4.92	20.3	31.4	4.94	20.4	31.7	4.97	20.5	32.0	4.97	20.6	32.6	4.99	20.8		
		60	23.4	3.41	16.4	27.9	4.54	17.8	30.7	4.85	18.5	31.1	4.87	18.6	31.5	4.89	18.7	32.2	4.92	18.9	32.8	4.94	19.0	33.2	4.94	19.1		
		96	23.4	3.24	14.0	27.9	4.31	14.8	31.1	4.72	15.3	31.5	4.74	15.4	31.9	4.76	15.5	32.7	4.79	15.6	33.3	4.81	15.7	34.0	4.81	15.7		
	15	50	23.4	3.18	13.2	27.9	4.22	13.8	31.2	4.67	14.3	31.7	4.69	14.3	32.1	4.71	14.4	32.8	4.74	14.5	33.4	4.76	14.6	34.2	4.76	14.6		
		60	23.4	3.74	22.7	27.9	4.79	24.4	30.0	5.04	25.0	30.4	5.06	25.2	30.8	5.08	25.3	31.5	5.11	25.5	32.0	5.13	25.6	32.6	5.15	25.6		
		96	23.4	3.53	21.4	27.9	4.70	22.8	30.1	4.99	23.4	30.6	5.01	23.5	31.0	5.03	23.6	31.6	5.06	23.8	32.2	5.08	23.9	32.8	5.09	23.9		
	20	50	23.4	3.29	18.2	27.9	4.37	18.9	30.6	4.80	19.2	31.1	4.82	19.3	31.5	4.84	19.3	32.2	4.88	19.4	32.8	4.90	19.5	33.6	4.92	19.5		
		60	23.4	3.74	27.8	27.9	4.98	29.4	5.18	29.9	29.7	5.21	30.0	30.1	5.23	30.1	30.7	5.26	30.3	31.2	5.28	30.5	31.8	5.29	30.7	32.4	5.30	30.8
		96	23.4	3.67	26.5	27.9	4.89	27.8	4.94	28.3	28.8	5.13	28.3	29.8	5.16	28.4	30.2	5.18	28.5	30.9	5.21	28.6	31.3	5.23	28.7	31.9	5.25	28.9
	25	50	23.4	3.49	24.0	27.9	4.64	24.9	4.98	25.2	30.2	5.02	30.2	30.6	5.04	28.5	31.3	5.07	25.4	31.8	5.09	25.5	32.5	5.11	25.6			
		60	23.4	3.42	23.2	27.9	4.55	23.9	4.94	24.2	30.4	4.96	24.2	30.8	4.98	24.3	31.4	5.01	24.4	31.9	5.03	24.4	32.6	5.05	24.4			
		96	23.4	4.41	33.0	27.5	5.70	34.5	28.4	34.8	28.8	5.79	34.9	29.2	5.81	35.0	29.7	5.84	35.2	30.1	5.86	35.3	30.7	5.88	35.3			
30	50	23.4	4.33	31.6	27.6	5.65	33.0	28.6	33.0	28.9	5.73	33.3	29.3	5.75	33.4	29.9	5.78	33.5	30.3	5.80	33.6	30.7	5.82	33.6				
	60	23.4	4.11	29.1	27.9	5.48	30.0	28.9	30.0	29.3	5.58	30.2	29.7	5.60	30.3	30.3	5.63	30.4	30.7	5.65	30.4	30.7	5.65	30.4				
	96	23.4	4.03	28.3	27.9	5.37	29.0	29.0	29.0	29.5	5.52	29.2	29.8	5.54	29.2	30.4	5.57	29.3	30.9	5.59	29.4	30.9	5.59	29.4				

3
4

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NOTES - ANMERKUNGEN - Σημειώσεις - NOTAS - REMARQUES - NOTE - OPMERKINGEN - ПРИМЕЧАНИЯ - NOTLAR

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4 Capacity tables

4 - 2 Cooling capacity tables

RWEYQ10PY1 TC: Total Capacity: kW ; PI: Power Input: kW (compressor + outdoor fan motor) ; OWT: Outlet Water Temperatur: °C

Combination (%)	Inlet Water Temp. (°C)	Water Volume (note2) L/min	Indoor air temperature: °CWB																																																																																								
			14.0			16.0			18.0			19.0			20.0			22.0			24.0																																																																						
			TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT																																																																	
100	10	50	18.0	2.32	15.8	21.5	3.04	17.0	25.0	3.85	18.3	26.7	4.30	18.9	28.4	4.77	19.5	30.4	4.84	20.1	31.1	4.92	20.3	18.0	2.28	14.9	21.5	2.98	15.8	25.0	3.78	16.9	26.7	4.21	17.4	28.4	4.68	17.9	30.6	4.71	18.5	31.2	4.88	18.6	18.0	2.17	13.0	21.5	2.83	13.6	25.0	3.59	14.3	26.7	4.00	14.6	28.4	4.44	14.9	30.9	4.71	15.3	31.6	4.74	15.4	18.0	2.13	12.4	21.5	2.78	12.9	25.0	3.52	13.4	26.7	3.92	13.7	28.4	4.35	13.9	31.1	4.66	14.3	31.8	4.67	14.4					
		90	15	50	18.0	2.40	20.9	21.5	3.14	22.1	25.0	3.99	23.3	26.7	4.45	23.9	28.4	4.94	24.6	29.9	5.03	25.0	30.5	5.07	25.2	18.0	2.36	19.9	21.5	3.08	20.9	25.0	3.91	21.9	26.7	4.36	22.4	28.4	4.84	23.0	30.0	4.98	23.4	30.7	5.02	23.5	18.0	2.24	18.0	21.5	2.93	18.6	25.0	3.71	19.3	26.7	4.14	19.6	28.4	4.59	19.9	30.4	4.85	20.3	31.1	4.88	20.4	18.0	2.20	17.4	21.5	2.87	17.9	25.0	3.64	18.4	26.7	4.06	18.7	28.4	4.50	18.9	30.5	4.80	19.2	31.2	4.83	19.3			
				80	20	50	18.0	2.49	25.9	21.5	3.27	27.1	25.0	4.15	28.3	26.7	4.63	29.0	28.4	5.13	29.6	29.2	5.18	29.8	29.8	5.21	30.0	18.0	2.45	24.9	21.5	3.20	25.9	25.0	4.07	26.9	26.7	4.54	27.5	28.4	5.03	28.0	29.3	5.13	28.2	30.0	5.16	28.4	18.0	2.33	23.0	21.5	3.04	23.7	25.0	3.86	24.3	26.7	4.31	24.6	28.4	4.78	25.0	29.7	4.99	25.2	30.3	5.02	25.3	18.0	2.29	22.4	21.5	2.99	22.9	25.0	3.78	23.4	26.7	4.22	23.7	28.4	4.68	24.0	29.8	4.93	24.2	30.5	4.97	24.2	
						70	25	50	18.0	2.93	31.0	21.5	3.85	32.3	25.0	4.89	33.6	26.7	5.46	34.2	27.6	5.71	34.6	28.3	5.76	34.8	28.9	5.80	35.0	18.0	2.88	30.0	21.5	3.77	31.0	25.0	4.80	32.1	26.7	5.36	32.7	27.7	5.65	33.0	28.4	5.70	33.2	29.1	5.74	33.3	18.0	2.73	28.1	21.5	3.58	28.7	25.0	4.55	29.4	26.7	5.08	29.7	28.1	5.50	30.0	28.8	5.55	30.1	29.4	5.58	30.2	18.0	2.68	27.5	21.5	3.51	28.0	25.0	4.46	28.5	26.7	4.98	28.8	28.2	5.44	29.0	28.9	5.49	29.1	29.6	5.52

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4 Capacity tables

4 - 2 Cooling capacity tables

RWEYQ16PY1 TC: Total Capacity: kW ; PI: Power Input: kW (compressor + outdoor fan motor) ; OWT: Outlet Water Temperatur: °C

Combinatio n (%)	Inlet Water Temp. (°C)	Water Volume (note2) L/min	Indoor air temperature: °CWB																				
			14.0			16.0			18.0			19.0			20.0			22.0			24.0		
			TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C
10	50	39.3	5.25	16.4	46.9	6.99	17.7	51.2	7.39	18.4	52.0	7.42	18.5	52.7	7.45	18.6	53.8	7.50	18.8	54.8	7.52	18.9	

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NOTES - ANMERKUNGEN - Σημειώσεις - NOTAS - REMARQUES - NOTE - OPMERKINGEN - ПРИМЕЧАНИЯ - NOTLAR

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2 Water volume (l/m): value is applicable for 1 module. When combining 2 or 3 modules, multiply this value by 2 resp. 3
 Wassermenge (l/m): Der Wert gilt für 1 Modul. Wenn 2 oder 3 Module kombiniert werden, diesen Wert mit 2 bzw. 3 multiplizieren
 Ουχός νερού (l/m): η τιμή ισχύει για 1 μονάδα. Όταν συνδυάζετε 2 ή 3 μονάδες, πολλαπλασιάστε αυτή την τιμή με 2 ή 3.
 Volumen de agua (l/m): el valor se aplica a 1 módulo. Cuando se combinan 2 o 3 módulos, multiplique este valor por 2 resp. 3
 Volume d'eau (l/m): la valeur ne s'applique qu'à 1 module. Lors de la combinaison de 2 ou 3 modules, multiplier cette valeur respectivement par 2 ou 3 en fonction du nombre de modules.

Volume d'acqua (l/m): il valore è applicabile per 1 modulo. Quando si combinano 2 o 3 moduli, moltiplicare questo valore per 2 o 3
 Watervolume (l/m): waarde is van toepassing voor 1 module. Bij een combinatie met 2 of 3 modules moet deze waarde met respectievelijk 2 en 3 vermenigvuldigd worden.

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 Su hacmi (l/m): değeri 1 modul için geçerlidir. 2 veya 3 modul birleştirilirken bu değeri 2 veya 3 ile çarpın

4 Capacity tables

4 - 2 Cooling capacity tables

RWEYQ20PY1

TC: Total Capacity: kW ; PI: Power Input: kW (compressor + outdoor fan motor) ; OWT: Outlet Water Temperature: °C

Combinatio n (%)	Inlet Water Temp. (°C)	Water Volume (note2) L/min	Indoor air temperature: °CWB																								
			14.0			16.0			18.0			19.0			20.0			22.0			24.0						
			TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C				
3	10	50	46.9	6.96	17.7	55.9	9.26	19.3	61.1	9.79	20.2	62.0	9.84	20.3	62.8	9.88	20.4	64.2	9.94	20.6	65.3	9.97	20.8				
		4	10	50	46.9	7.20	22.7	55.9	9.59	24.4	60.0	10.08	25.0	60.8	10.13	25.2	61.6	10.17	25.3	63.0	10.23	25.5	64.0	10.26	25.6		
				5	10	50	46.9	7.48	27.8	55.9	9.97	29.4	58.6	10.4	29.9	59.4	10.42	30.0	60.2	10.5	30.1	61.4	10.5	30.3	62.4	10.6	30.5

CA08A496A

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2 Water volume (l/m): value is applicable for 1 module. When combining 2 or 3 modules, multiply this value by 2 resp. 3
 Wassermenge (l/m): Der Wert gilt für 1 Modul. Wenn 2 oder 3 Module kombiniert werden, diesen Wert mit 2 bzw. 3 multiplizieren
 Όγκος νερού (l/m): η τιμή ισχύει για 1 модуль. Όταν συνδυάζονται 2 ή 3 модуля, πολλαπλασιάστε αυτή την τιμή με 2 ή 3.
 Volumen de agua (l/m): el valor se aplica a 1 módulo. Cuando se combinan 2 ó 3 módulos, multiplique este valor por 2 resp. 3.
 Volume d'eau (l/m) : la valeur ne s'applique qu'à 1 module. Lors de la combinaison de 2 ou 3 modules, multiplier cette valeur respectivement par 2 ou 3 en fonction du nombre de modules.
 Volume d'acqua (l/m): il valore è applicabile per 1 modulo. Quando si combinano 2 o 3 moduli, moltiplicare questo valore per 2 o 3
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4 Capacity tables

4 - 2 Cooling capacity tables

RWEYQ20PY1

TC: Total Capacity: kW ; PI: Power Input: kW (compressor + outdoor fan motor) ; OWT: Outlet Water Temperatur: °C

Combination (%)	Inlet Water Temp. (°C)	Water Volume (note2) L/min	Indoor air temperature: °CWB																							
			14.0			16.0			18.0			19.0			21.0			22.0			24.0					
			TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT			
70	10	50	25.2	2.82	14.0	30.1	3.58	14.8	35.0	4.44	15.6	37.4	4.90	16.1	39.8	5.39	16.5	44.7	6.45	17.3	49.5	7.60	18.2			
		45	50	24.2	6.25	49.4	25.2	6.33	49.5	25.9	6.38	49.6	26.1	6.39	49.7	26.3	6.40	49.7	26.6	6.40	49.7	26.6	6.40	49.7		
			60	10	50	21.62	2.31	13.4	25.8	2.90	14.1	30.0	3.55	14.8	32.0	3.91	15.2	34.1	4.28	15.5	38.3	5.08	16.2	42.5	5.96	16.9
	45				50	21.6	4.47	43.7	25.8	5.83	44.5	30.0	7.37	45.4	32.0	8.22	45.8	34.1	9.11	46.2	36.5	9.99	46.7	37.3	10.1	46.8
		50			10	50	18.02	1.87	12.9	21.5	2.30	13.4	25.0	2.78	14.0	26.7	3.04	14.3	28.4	3.31	14.6	31.9	3.89	15.1	35.4	4.52
				45		50	18.0	4.32	46.6	25.8	5.60	46.9	30.0	7.07	47.2	32.0	7.87	47.4	34.1	8.71	47.6	38.2	10.5	47.9	39.1	10.6

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4 Capacity tables

4 - 2 Cooling capacity tables

RWEYQ24PY1				TC: Total Capacity: kW ; PI: Power Input: kW (compressor + outdoor fan motor) ; OWT: Outlet Water Temperatur: °C																							
Combination (%)	Inlet Water Temp. (°C)	Water Volume (note2) L/min	Indoor air temperature: °C/DWB																								
			14.0			16.0			18.0			19.0			20.0			22.0			24.0						
			TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT				
130	10	50	59.0	7.87	16.4	70.3	10.48	17.7	76.8	11.08	18.4	78.0	11.13	18.5	79.0	11.18	18.6	80.8	11.25	18.8	82.2	11.29	18.9				
		60	59.0	7.72	15.3	70.3	10.28	16.4	77.2	10.97	17.0	78.3	11.02	17.1	79.4	11.07	17.2	81.2	11.14	17.4	82.6	11.18	17.5				
		96	59.0	7.34	13.3	70.3	9.75	14.0	78.2	10.67	14.4	79.3	10.72	14.5	80.4	10.77	14.5	82.2	10.84	14.6	83.7	10.88	14.7				
	15	50	59.0	7.19	12.6	70.3	9.56	13.2	78.5	10.56	13.5	79.7	10.61	13.6	80.7	10.65	13.6	82.6	10.72	13.7	84.1	10.77	13.8				
		60	59.0	8.15	21.4	70.3	10.85	22.8	75.5	11.4	23.3	76.6	11.5	23.4	77.6	11.5	23.5	79.3	11.6	23.7	80.6	11.6	23.8				
		96	59.0	8.00	20.3	70.3	10.64	21.4	75.8	11.3	21.9	76.9	11.3	22.0	77.9	11.4	22.1	79.6	11.5	22.3	81.0	11.5	22.4				
	20	50	59.0	7.59	18.3	70.3	10.10	19.0	76.8	11.0	19.4	77.9	11.0	19.4	78.9	11.1	19.5	80.7	11.2	19.6	82.1	11.2	19.6				
		60	59.0	7.45	17.6	70.3	9.90	18.2	77.1	10.87	18.5	78.2	10.92	18.6	79.3	11.0	18.6	81.1	11.0	18.7	82.5	11.1	18.7				
		96	59.0	8.47	26.4	70.3	11.3	27.8	73.7	11.7	28.2	74.8	11.79	28.3	75.7	11.8	28.4	77.3	11.9	28.5	78.5	11.9	28.6				
	120	10	50	59.0	7.87	16.4	70.3	10.48	17.7	76.8	11.08	18.4	78.0	11.13	18.5	79.0	11.18	18.6	80.8	11.25	18.8	82.2	11.29	18.9			
			110	10	50	49.9	6.07	15.3	59.5	7.99	16.4	69.1	10.19	17.6	73.9	10.93	18.1	76.2	11.05	18.3	78.2	11.14	18.5	79.8	11.21	18.7	

CA08A496A

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4 Capacity tables

4 - 2 Cooling capacity tables

RWEYQ26PY1

TC: Total Capacity; kW ; PI: Power Input; kW (compressor + outdoor fan motor) ; OWT: Outlet Water Temperatur; °C

Combinatio n (%)	Inlet Water Temp. (°C)	Water Volume (note2) L/min	Indoor air temperature: °CWB																															
			14.0			16.0			18.0			19.0			20.0			22.0			24.0													
			TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C											
130	10	50	62.7	8.73	16.8	74.8	11.82	18.3	81.8	12.3	19.1	83.0	12.3	17.6	84.1	12.4	19.2	85.9	12.5	19.4	87.4	12.5	19.5											
		120	10	50	62.7	8.73	16.8	74.8	11.82	18.3	81.8	12.3	19.1	83.0	12.3	17.6	84.1	12.4	19.2	85.9	12.5	19.4	87.4	12.5	19.5									
				110	10	50	62.7	8.73	16.8	74.8	11.82	18.3	81.8	12.3	19.1	83.0	12.3	17.6	84.1	12.4	19.2	85.9	12.5	19.4	87.4	12.5	19.5							
	100					10	50	62.7	8.73	16.8	74.8	11.82	18.3	81.8	12.3	19.1	83.0	12.3	17.6	84.1	12.4	19.2	85.9	12.5	19.4	87.4	12.5	19.5						
			90				10	50	62.7	8.73	16.8	74.8	11.82	18.3	81.8	12.3	19.1	83.0	12.3	17.6	84.1	12.4	19.2	85.9	12.5	19.4	87.4	12.5	19.5					
					80			10	50	62.7	8.73	16.8	74.8	11.82	18.3	81.8	12.3	19.1	83.0	12.3	17.6	84.1	12.4	19.2	85.9	12.5	19.4	87.4	12.5	19.5				
						70			10	50	62.7	8.73	16.8	74.8	11.82	18.3	81.8	12.3	19.1	83.0	12.3	17.6	84.1	12.4	19.2	85.9	12.5	19.4	87.4	12.5	19.5			
							60			10	50	62.7	8.73	16.8	74.8	11.82	18.3	81.8	12.3	19.1	83.0	12.3	17.6	84.1	12.4	19.2	85.9	12.5	19.4	87.4	12.5	19.5		
								50			10	50	62.7	8.73	16.8	74.8	11.82	18.3	81.8	12.3	19.1	83.0	12.3	17.6	84.1	12.4	19.2	85.9	12.5	19.4	87.4	12.5	19.5	
									40			10	50	62.7	8.73	16.8	74.8	11.82	18.3	81.8	12.3	19.1	83.0	12.3	17.6	84.1	12.4	19.2	85.9	12.5	19.4	87.4	12.5	19.5
										30			10	50	62.7	8.73	16.8	74.8	11.82	18.3	81.8	12.3	19.1	83.0	12.3	17.6	84.1	12.4	19.2	85.9	12.5	19.4	87.4	12.5
											20			10	50	62.7	8.73	16.8	74.8	11.82	18.3	81.8	12.3	19.1	83.0	12.3	17.6	84.1	12.4	19.2	85.9	12.5	19.4	87.4
10												10			50	62.7	8.73	16.8	74.8	11.82	18.3	81.8	12.3	19.1	83.0	12.3	17.6	84.1	12.4	19.2	85.9	12.5	19.4	87.4

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NOTES - ANMERKUNGEN - Σημειώσεις - NOTAS - REMARQUES - NOTE - OPMERKINGEN - примечания - NOTLAR

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4 Capacity tables

4 - 2 Cooling capacity tables

RWEYQ28PY1

TC: Total Capacity: kW ; PI: Power Input: kW (compressor + outdoor fan motor) ; OWT: Outlet Water Temperatur: °C

Combinatio n (%)	Inlet Water Temp. (°C)	Water Volume (note2) L/min	Indoor air temperature: °CWB																							
			14.0			16.0			18.0			19.0			20.0			22.0			24.0					
			TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C			
130	10	50	66.5	9.58	17.3	79.3	12.75	18.8	86.7	13.5	19.6	87.9	13.5	19.7	89.1	13.6	19.8	91.1	13.7	20.0	92.7	13.7	20.2			
		60	66.5	9.40	16.0	79.3	12.51	17.3	87.1	13.4	18.0	88.4	13.4	18.1	89.5	13.5	18.2	91.6	13.6	18.4	93.1	13.6	18.5			
		120	66.5	8.93	13.8	79.3	11.87	14.5	88.2	13.0	15.0	89.5	13.0	15.1	90.7	13.1	15.2	92.7	13.2	15.3	94.4	13.2	15.4			
	15	50	66.5	9.92	22.3	79.3	13.2	23.8	85.1	13.9	24.5	86.4	13.9	24.6	87.5	14.0	24.7	89.4	14.1	24.9	90.9	14.1	25.0			
		60	66.5	9.73	21.1	79.3	13.0	22.3	85.5	13.7	22.9	86.8	13.8	23.0	87.9	13.9	23.1	89.8	13.9	23.3	91.3	14.0	23.4			
		120	66.5	9.24	18.8	79.3	12.3	19.6	86.6	13.4	20.0	87.9	13.4	20.0	89.0	13.5	20.1	91.0	13.6	20.2	92.6	13.6	20.3			
	20	50	66.5	10.3	27.3	79.3	13.7	28.9	83.1	14.3	29.3	84.3	14.34	29.4	85.4	14.4	29.5	87.2	14.5	29.7	88.5	14.5	29.8			
		60	66.5	10.1	26.1	79.3	13.5	27.4	83.5	14.1	27.8	84.7	14.2	27.9	85.8	14.3	28.0	87.6	14.3	28.1	89.0	14.4	28.2			
		120	66.5	9.62	23.0	79.3	12.5	23.7	85.0	13.6	23.9	86.2	13.7	24.0	87.3	13.7	24.0	89.2	13.8	24.1	90.7	13.9	24.2			
	25	50	66.5	12.2	32.5	78.1	15.7	34.0	80.7	15.9	34.2	81.8	15.9	34.3	82.8	16.0	34.4	84.4	16.1	34.6	85.6	16.1	34.7			
		60	66.5	11.9	31.2	78.4	15.6	32.5	81.1	15.7	32.7	82.2	15.8	32.8	83.2	15.8	32.9	84.9	15.9	33.0	86.0	16.0	33.1			
		120	66.5	11.3	28.9	79.3	15.1	29.7	82.1	15.3	29.8	83.2	15.4	29.9	84.3	15.4	30.0	86.0	15.5	30.1	87.2	15.6	30.1			
30	50	66.5	14.4	37.7	75.3	17.8	38.8	77.7	17.5	39.1	78.8	17.6	39.2	79.7	17.6	39.3	81.1	17.7	39.4	82.0	17.7	39.5				
	60	66.5	14.1	36.4	75.6	17.1	37.4	78.1	17.3	37.6	79.1	17.4	37.7	80.1	17.4	37.8	81.5	17.5	37.9	82.5	17.5	38.0				
	120	66.5	13.4	34.0	76.6	16.7	34.6	79.1	16.8	34.8	80.2	16.9	34.8	81.1	17.0	34.9	82.6	17.1	35.0	83.7	17.1	35.0				
35	50	66.5	17.2	43.0	72.0	18.9	43.7	74.3	19.1	43.8	75.2	19.2	44.0	76.0	19.2	44.1	77.2	19.3	44.2	77.8	19.3	44.3				
	60	66.5	16.9	41.6	72.4	18.7	42.3	74.6	18.9	42.4	75.6	19.0	42.5	76.4	19.0	42.6	77.6	19.1	42.7	78.3	19.1	42.8				
	120	66.5	16.0	39.1	73.3	18.2	39.6	75.6	18.4	39.7	76.5	18.5	39.7	77.4	18.5	39.8	78.7	18.6	39.8	79.4	18.6	39.9				
40	50	54.0	13.9	46.5	55.7	14.1	46.7	56.6	14.1	46.8	56.8	14.1	46.8	56.8	14.0	46.8	56.3	13.9	46.7	55.0	13.6	46.6				
	60	56.9	15.1	45.7	58.8	15.2	45.9	60.0	15.3	46.0	60.4	15.3	46.0	60.5	15.3	46.0	60.4	15.1	46.0	59.6	15.0	45.9				
	120	65.2	16.6	43.3	67.7	16.8	43.4	69.7	16.9	43.4	70.4	17.0	43.5	71.0	17.0	43.5	71.9	17.0	43.5	72.1	17.0	43.5				
45	50	37.8	8.80	49.3	37.4	8.68	49.4	35.9	8.43	49.2	34.7	8.26	49.1	33.3	8.06	48.9	29.6	7.56	48.5	24.8	6.95	48.0				
	60	41.5	9.72	49.1	41.7	9.66	49.1	40.8	9.48	49.0	40.0	9.35	48.9	39.0	9.20	48.8	36.2	8.80	48.6	32.4	8.30	48.2				
	120	56.7	14.7	47.8	58.6	14.8	47.9	59.8	14.9	48.0	60.2	14.9	48.0	60.3	14.8	48.0	60.2	14.7	48.0	59.3	14.6	47.9				

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2 Water volume (l/min): value is applicable for 1 module. When combining 2 or 3 modules, multiply this value by 2 resp. 3.
 Wassermenge (l/min): Der Wert gilt für 1 Modul. Wenn 2 oder 3 Module kombiniert werden, diesen Wert mit 2 bzw. 3 multiplizieren.
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 Su hacmi (l/min): değeri 1 modül için geçerlidir. 2 veya 3 modül birleştirilken bu değeri 2 veya 3 ile çarpın.

4 Capacity tables

4 - 2 Cooling capacity tables

RWEYQ30PY1		TC: Total Capacity; kW ; PI: Power Input: kW (compressor + outdoor fan motor) ; OWT: Outlet Water Temperatur: °C																								
Combination (%)	Inlet Water Temp. (°C)	Water Volume (note2) L/min	Indoor air temperature: °CWB																							
			14.0			16.0			18.0			19.0			20.0			22.0			24.0					
			TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C	TC kW	PI kW	OWT °C			
130	10	50	70.3	10.4	17.7	83.8	13.9	19.3	91.6	14.7	20.2	92.9	14.8	20.3	94.2	14.8	20.4	96.3	14.9	20.6	97.9	15.0	20.8			
		60	70.3	10.2	16.4	83.8	13.6	17.8	92.0	14.5	18.5	93.4	14.6	18.6	94.6	14.7	18.7	96.7	14.8	18.9	98.4	14.8	19.0			
		96	70.3	9.72	14.0	83.8	12.92	14.8	93.2	14.1	15.3	94.5	14.2	15.4	95.8	14.3	15.5	98.0	14.4	15.6	99.7	14.4	15.7			

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4 Capacity tables

4 - 2 Cooling capacity tables

RWEYQ30PY1				TC: Total Capacity: kW ; PI: Power Input: kW (compressor + outdoor fan motor) ; OWT: Outlet Water Temperatur: °C																													
Combination (%)	Inlet Water Temp. (°C)	Water Volume (note2) L/min	Indoor air temperature: °CWB																														
			14.0			16.0			18.0			19.0			20.0			22.0			24.0												
			TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT										
100	10	50	54.1	6.96	15.8	64.5	9.11	17.0	74.9	11.55	18.3	80.1	12.89	18.9	85.3	14.3	19.5	91.2	14.7	20.1	93.3	14.8	20.3										
		90	10	50	48.7	5.97	15.2	58.0	7.75	16.3	67.4	9.77	17.4	72.1	10.87	17.9	76.8	12.03	18.5	86.2	14.4	19.6	91.2	14.7	20.1								
				80	10	50	43.2	5.06	14.6	51.6	6.50	15.6	59.9	8.13	16.5	64.1	9.02	17.0	68.2	9.96	17.5	76.6	11.98	18.5	84.9	14.2	19.5						
	70					10	50	38.3	4.53	14.1	49.1	6.06	14.9	59.9	7.59	15.4	64.1	8.85	16.8	68.2	9.77	17.0	76.6	11.75	17.0	84.9	13.9	17.9					
			60				10	50	34.2	4.04	13.7	46.8	5.54	14.6	58.0	7.06	15.1	64.1	8.57	16.5	68.2	9.59	16.8	76.6	11.58	17.0	84.9	13.9	17.9				
					50			10	50	30.4	3.60	13.3	44.5	5.06	14.3	56.7	6.57	14.8	64.1	8.30	16.2	68.2	9.42	16.6	76.6	11.41	17.0	84.9	13.9	17.9			
						40			10	50	26.9	3.17	12.9	42.2	4.59	14.0	54.6	6.10	14.5	64.1	8.03	15.9	68.2	9.27	16.4	76.6	11.24	17.0	84.9	13.9	17.9		
							30			10	50	23.5	2.74	12.5	40.1	4.12	13.7	52.7	5.63	14.2	64.1	7.76	15.7	68.2	9.12	16.2	76.6	11.07	17.0	84.9	13.9	17.9	
								20			10	50	20.1	2.31	12.1	38.0	3.65	13.4	50.8	5.16	13.9	64.1	7.49	15.5	68.2	9.01	16.0	76.6	10.90	17.0	84.9	13.9	17.9
									10			10	50	16.7	1.88	11.7	35.9	3.18	13.1	48.7	4.69	13.6	64.1	7.32	15.3	68.2	8.90	15.8	76.6	10.73	17.0	84.9	13.9

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4 Capacity tables

4 - 3 Heating capacity tables

RWEYQ10PY1		TC: Total Capacity: kW ; PI: Power Input: kW (compressor + outdoor fan motor) ; OWT: Outlet Water Temperatur: °C																								
Combination (%)	Inlet Water Temp. (°C)	Water Volume (note2) L/min	Indoor air temperature: °CWB																							
			16.0			18.0			20.0			21.0			22.0			24.0								
			TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT						
100	10	50	16.7	2.94	6.04	16.9	2.87	5.96	17.1	2.82	5.91	17.1	2.81	5.89	17.2	2.81	5.88	17.2	2.84	5.88						
		120	26.7	5.15	7.43	26.5	5.29	7.46	26.4	5.46	7.50	26.3	5.55	7.53	26.2	5.65	7.55	25.9	5.86	7.60						
		90	10	50	17.1	2.83	5.92	17.2	2.81	5.89	17.2	2.82	5.88	17.2	2.84	5.88	17.2	2.86	5.89	17.2	2.93	5.92				
	120			26.4	5.42	7.49	26.2	5.58	7.53	26.0	5.77	7.58	25.9	5.86	7.60	25.8	5.97	7.63	24.7	5.81	7.73					
	80			10	50	17.2	2.82	5.88	17.2	2.85	5.88	17.2	2.91	5.91	17.2	2.94	5.92	17.1	2.98	5.95	17.0	3.08	6.00			
			120		26.0	5.76	7.58	25.8	5.94	7.62	25.2	5.90	7.69	24.4	5.60	7.76	23.6	5.32	7.82	22.0	4.78	7.95				

CA08A496A

4 Capacity tables

4 - 3 Heating capacity tables

RWEYQ10PY1			TC: Total Capacity: kW ; PI: Power Input: kW (compressor + outdoor fan motor) ; OWT: Outlet Water Temperatur: °C																										
Combination (%)	Inlet Water Temp. (°C)	Water Volume (note2) L/min	Indoor air temperature: °CWB																										
			16.0			18.0			20.0			21.0			22.0			24.0											
			TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT									
70	10	50	17.2	2.92	5.91	17.1	2.99	5.95	17.0	3.07	6.00	17.0	3.12	6.03	16.9	3.17	6.06	16.8	3.29	6.13									
		15	50	24.9	5.74	9.51	23.5	5.25	9.78	22.1	4.77	10.05	21.3	4.55	10.2	20.6	4.33	10.3	19.2	3.90	10.6								
			20	50	24.9	4.40	14.1	23.5	4.04	14.4	22.1	3.69	14.7	21.3	3.53	14.9	20.6	3.37	15.1	19.2	3.06	15.4							
	25			50	24.9	3.80	19.0	23.5	3.50	19.3	22.1	3.21	19.6	21.3	3.07	19.8	20.6	2.94	19.9	19.2	2.68	20.3							
		30		50	24.9	3.34	23.8	23.5	3.08	24.2	22.1	2.84	24.5	21.3	2.72	24.7	20.6	2.61	24.8	19.2	2.38	25.2							
			35	50	24.9	2.97	28.7	23.5	2.75	29.1	22.1	2.54	29.4	21.3	2.44	29.6	20.6	2.34	29.8	19.2	2.15	30.1							
	40			50	24.9	2.89	33.7	23.5	2.68	34.0	22.1	2.48	34.4	21.3	2.38	34.6	20.6	2.28	34.7	19.2	2.10	35.1							
		45		50	24.9	2.82	38.7	23.5	2.61	39.0	22.1	2.41	39.4	21.3	2.32	39.5	20.6	2.22	39.7	19.2	2.04	40.1							
			60	50	17.0	3.12	6.03	16.9	3.22	6.08	16.8	3.32	6.15	16.7	3.38	6.19	16.6	3.44	6.22	16.4	3.57	6.31							
	15			50	21.3	4.54	10.2	20.1	4.17	10.4	18.9	3.81	10.7	18.3	3.64	10.8	17.7	3.47	10.9	16.5	3.15	11.2							
		20		50	21.3	3.53	14.9	20.1	3.25	15.2	18.9	2.99	15.4	18.3	2.86	15.6	17.7	2.74	15.7	16.5	2.50	16.0							
			25	50	21.3	3.07	19.8	20.1	2.84	20.0	18.9	2.62	20.3	18.3	2.52	20.5	17.7	2.41	20.6	16.5	2.21	20.9							
	30			50	21.3	2.72	24.7	20.1	2.52	25.0	18.9	2.34	25.3	18.3	2.25	25.4	17.7	2.16	25.5	16.5	1.99	25.8							
		35		50	21.3	2.44	29.6	20.1	2.27	29.9	18.9	2.11	30.2	18.3	2.03	30.3	17.7	1.95	30.5	16.5	1.81	30.8							
			40	50	21.3	2.36	34.6	20.1	2.21	34.9	18.9	2.06	35.2	18.3	1.98	35.3	17.7	1.91	35.5	16.5	1.76	35.8							
	45			50	21.3	2.35	39.6	20.1	2.19	39.9	18.9	2.03	40.2	18.3	1.96	40.3	17.7	1.89	40.5	16.5	1.73	40.8							
		50		50	17.8	3.43	6.22	16.5	3.58	6.29	15.8	3.34	6.44	15.2	3.18	6.54	14.7	3.02	6.64	13.7	2.71	6.84							
			15	50	17.8	3.37	11.6	16.8	3.11	11.7	15.8	2.86	11.9	15.2	2.74	12.0	14.7	2.63	12.1	13.7	2.40	12.3							
	20			50	17.8	2.76	15.7	16.8	2.56	15.9	15.8	2.37	16.2	15.2	2.28	16.3	14.7	2.19	16.4	13.7	2.01	16.6							
		25		50	17.8	2.43	20.6	16.8	2.26	20.8	15.8	2.10	21.1	15.2	2.02	21.2	14.7	1.95	21.3	13.7	1.80	21.6							
			30	50	17.8	2.17	25.5	16.8	2.03	25.8	15.8	1.89	26.0	15.2	1.82	26.2	14.7	1.76	26.3	13.7	1.63	26.5							
	35			50	17.8	1.97	30.5	16.8	1.84	30.7	15.8	1.72	31.0	15.2	1.67	31.1	14.7	1.61	31.2	13.7	1.50	31.5							
		40		50	17.8	1.92	35.5	16.8	1.80	35.7	15.8	1.68	36.0	15.2	1.62	36.1	14.7	1.57	36.2	13.7	1.46	36.5							
			45	50	17.8	1.87	40.4	16.8	1.75	40.7	15.8	1.64	41.0	15.2	1.58	41.1	14.7	1.53	41.2	13.7	1.43	41.5							

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4 Capacity tables

4 - 3 Heating capacity tables

RWEYQ16PY1			TC: Total Capacity: kW ; PI: Power Input: kW (compressor + outdoor fan motor) ; OWT: Outlet Water Temperatur: °C																											
Combination (%)	Inlet Water Temp. (°C)	Water Volume (note2) L/min	Indoor air temperature: °CWB																											
			16.0			18.0			20.0			21.0			22.0			24.0												
			TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT										
70	10	50	27.3	4.09	6.68	27.2	4.19	6.71	27.0	4.31	6.74	27.0	4.38	6.76	26.9	4.45	6.79	26.6	4.61	6.84										
		60	30.9	5.18	6.93	30.7	5.33	6.97	30.5	5.51	7.01	30.4	5.60	7.04	30.3	5.70	7.07	30.0	5.92	7.13										
		96	38.9	8.11	7.70	37.3	7.67	7.79	35.0	6.97	7.91	33.9	6.64	7.97	32.8	6.31	8.03	30.5	5.68	8.15										
	15	50	39.5	8.10	8.10	37.3	7.40	8.22	35.0	6.74	8.31	33.9	6.42	8.36	32.8	6.11	8.41	30.5	5.51	8.51										
		60	39.5	8.05	10.49	37.3	7.35	10.71	35.0	6.69	10.94	33.9	6.37	11.1	32.8	6.06	11.2	30.5	5.47	11.4										
		96	39.5	7.72	11.2	37.3	7.06	11.4	35.0	6.43	11.6	33.9	6.13	11.7	32.8	5.83	11.8	30.5	5.27	12.0										
	20	50	39.5	6.98	12.6	37.3	6.39	12.7	35.0	5.83	12.8	33.9	5.56	12.9	32.8	5.30	13.0	30.5	4.80	13.1										
		60	39.5	6.74	13.0	37.3	6.18	13.1	35.0	5.64	13.2	33.9	5.38	13.3	32.8	5.13	13.4	30.5	4.65	13.5										
		96	39.5	6.16	15.2	37.3	5.66	15.5	35.0	5.18	15.7	33.9	4.95	15.9	32.8	4.72	16.0	30.5	4.28	16.2										
	25	50	39.5	6.10	16.0	37.3	5.60	16.2	35.0	5.12	16.4	33.9	4.90	16.5	32.8	4.67	16.6	30.5	4.24	16.9										
		60	39.5	5.94	17.5	37.3	5.45	17.6	35.0	4.99	17.8	33.9	4.77	17.8	32.8	4.56	17.9	30.5	4.14	18.0										
		96	39.5	5.89	18.0	37.3	5.41	18.1	35.0	4.95	18.2	33.9	4.73	18.3	32.8	4.52	18.3	30.5	4.11	18.4										
	30	50	39.5	5.33	20.1	37.3	4.90	20.4	35.0	4.50	20.6	33.9	4.31	20.8	32.8	4.12	20.9	30.5	3.75	21.2										
		60	39.5	5.27	20.9	37.3	4.86	21.1	35.0	4.46	21.4	33.9	4.27	21.5	32.8	4.08	21.6	30.5	3.72	21.8										
		96	39.5	5.14	22.4	37.3	4.73	22.6	35.0	4.35	22.7	33.9	4.16	22.8	32.8	3.98	22.9	30.5	3.63	23.0										
	35	50	39.5	5.09	22.9	37.3	4.70	23.1	35.0	4.32	23.2	33.9	4.13	23.2	32.8	3.95	23.3	30.5	3.61	23.4										
		60	39.5	4.68	25.0	37.3	4.32	25.3	35.0	3.98	25.6	33.9	3.81	25.7	32.8	3.65	25.8	30.5	3.34	26.1										
		96	39.5	4.63	25.8	37.3	4.28	26.1	35.0	3.94	26.3	33.9	3.78	26.4	32.8	3.62	26.5	30.5	3.31	26.8										
	40	50	39.5	4.52	27.4	37.3	4.17	27.5	35.0	3.85	27.7	33.9	3.69	27.7	32.8	3.54	27.8	30.5	3.24	28.0										
		60	39.5	4.48	27.9	37.3	4.14	28.0	35.0	3.82	28.1	33.9	3.66	28.2	32.8	3.51	28.3	30.5	3.22	28.4										
		96	39.5	4.16	29.9	37.3	3.85	30.2	35.0	3.56	30.5	33.9	3.42	30.6	32.8	3.28	30.8	30.5	3.01	31.1										
	45	50	39.5	4.12	30.8	37.3	3.82	31.0	35.0	3.53	31.2	33.9	3.39	31.4	32.8	3.25	31.5	30.5	2.99	31.7										
		60	39.5	4.02	32.4	37.3	3.73	32.5	35.0	3.45	32.6	33.9	3.31	32.7	32.8	3.18	32.8	30.5	2.93	32.9										
		96	39.5	3.99	32.9	37.3	3.70	33.0	35.0	3.42	33.1	33.9	3.29	33.2	32.8	3.16	33.2	30.5	2.91	33.4										
	50	50	39.5	4.06	34.9	37.3	3.76	35.2	35.0	3.47	35.5	33.9	3.33	35.6	32.8	3.20	35.8	30.5	2.94	36.1										
		60	39.5	4.02	35.8	37.3	3.72	36.0	35.0	3.44	36.2	33.9	3.30	36.3	32.8	3.17	36.5	30.5	2.91	36.7										
		96	39.5	3.92	37.3	37.3	3.64	37.5	35.0	3.36	37.6	33.9	3.23	37.7	32.8	3.10	37.8	30.5	2.85	37.9										
	60	50	39.5	3.89	37.9	37.3	3.61	38.0	35.0	3.34	38.1	33.9	3.21	38.2	32.8	3.08	38.2	30.5	2.83	38.3										
60		39.5	3.96	39.9	37.3	3.66	40.2	35.0	3.38	40.5	33.9	3.25	40.6	32.8	3.12	40.8	30.5	2.86	41.0											
96		39.5	3.92	40.8	37.3	3.63	41.0	35.0	3.35	41.2	33.9	3.22	41.3	32.8	3.09	41.5	30.5	2.84	41.7											
70	50	39.5	3.82	42.3	37.3	3.55	42.5	35.0	3.28	42.6	33.9	3.15	42.7	32.8	3.02	42.8	30.5	2.78	42.9											
	60	39.5	3.80	42.9	37.3	3.52	43.0	35.0	3.26	43.1	33.9	3.13	43.2	32.8	3.00	43.2	30.5	2.76	43.3											
	96	39.5	3.63	46.8	37.3	3.38	46.8	35.0	3.28	47.0	33.9	3.15	47.1	32.8	3.02	47.1	30.5	2.70	47.2											
80	50	39.5	3.63	48.3	37.3	3.35	48.5	35.0	3.26	48.6	33.9	3.13	48.7	32.8	3.00	48.7	30.5	2.68	48.8											
	60	39.5	3.61	49.1	37.3	3.32	49.3	35.0	3.24	49.4	33.9	3.11	49.4	32.8	2.98	49.4	30.5	2.66	49.5											
	96	39.5	3.46	53.9	37.3	3.18	53.9	35.0	3.12	54.1	33.9	3.05	54.2	32.8	2.92	54.2	30.5	2.60	54.3											
90	50	39.5	3.39	58.8	37.3	3.04	58.8	35.0	3.06	59.0	33.9	2.99	59.0	32.8	2.85	59.0	30.5	2.54	59.1											
	60	39.5	3.37	59.6	37.3	3.01	59.8	35.0	3.04	60.0	33.9	2.97	60.0	32.8	2.83	60.0	30.5	2.52	60.1											
	96	39.5	3.23	64.4	37.3	2.87	64.4	35.0	2.89	64.6	33.9	2.82	64.6	32.8	2.69	64.6	30.5	2.46	64.7											
100	50	39.5	3.19	69.3	37.3	2.74	69.3	35.0	2.76	69.5	33.9	2.69	69.5	32.8	2.55	69.5	30.5	2.40	69.6											
	60	39.5	3.17	70.1	37.3	2.71	70.3	35.0	2.74	70.5	33.9	2.67	70.5	32.8	2.53	70.5	30.5	2.38	70.6											
	96	39.5	3.03	74.9	37.3	2.57	74.9	35.0	2.59	75.1	33.9	2.52	75.1	32.8	2.39	75.1	30.5	2.32	75.2											

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4 Capacity tables

4 - 3 Heating capacity tables

RWEYQ18PY1			TC: Total Capacity: kW ; PI: Power Input: kW (compressor + outdoor fan motor) ; OWT: Outlet Water Temperatur: °C																				
Combination (%)	Inlet Water Temp. (°C)	Water Volume (note2) L/min	Indoor air temperature: °CWB																				
			16.0			18.0			20.0			21.0			22.0			24.0					
			TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT			
100	10	50	30.0	5.00	6.41	30.4	4.87	6.34	30.7	4.80	6.29	30.7	4.79	6.28	30.8	4.79	6.27	30.9	4.83	6.27			
		90	10	50	30.6	4.81	6.30	30.8	4.79	6.28	30.9	4.80	6.27	30.9	4.83	6.27	30.9	4.87	6.27	30.8	5.0	6.30	
				80	10	50	30.9	4.80	6.27	30.9	4.86	6.27	30.8	4.9	6.29	30.8	5.0	6.31	30.7	5.07	6.32	30.5	5.24

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4 Capacity tables

4 - 3 Heating capacity tables

RWEYQ24PY1			TC: Total Capacity: kW ; PI: Power Input: kW (compressor + outdoor fan motor) ; OWT: Outlet Water Temperatur: °C																																			
Combination (%)	Inlet Water Temp. (°C)	Water Volume (note2) L/min	Indoor air temperature: °CWB																																			
			16.0						18.0						20.0						21.0						22.0						24.0					
			TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT						
100	10	50	39.9	6.2	6.78	40.3	6.0	6.72	40.7	5.9	6.68	40.8	5.9	6.67	40.9	5.9	6.66	41.0	6.0	6.65	41.0	6.0	6.65	41.0	6.0	6.65	41.0	6.0	6.65	41.0	6.0	6.65						
		90	10	50	40.6	6.0	6.69	40.8	5.9	6.66	41.0	5.9	6.65	41.0	6.0	6.65	41.0	6.0	6.66	40.9	6.2	6.68	40.9	6.2	6.68	40.9	6.2	6.68	40.9	6.2	6.68	40.9	6.2	6.68				
				80	10	50	41.0	5.94	6.65	41.0	6.0	6.66	40.9	6.1	6.67	40.9	6.2	6.69	40.8	6.3	6.70	40.5	6.5	6.74	40.5	6.5	6.74	40.5	6.5	6.74	40.5	6.5	6.74	40.5	6.5	6.74		

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4 Capacity tables

4 - 3 Heating capacity tables

RWEYQ28PY1			TC: Total Capacity: kW ; PI: Power Input: kW (compressor + outdoor fan motor) ; OWT: Outlet Water Temperatur: °C																									
Combination (%)	Inlet Water Temp. (°C)	Water Volume (note2) L/min	Indoor air temperature: °CWB																									
			16.0				18.0				20.0				21.0				22.0				24.0					
			TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT		
100	10	50	46.8	7.94	6.29	47.3	7.74	6.22	47.7	7.62	6.17	47.9	7.60	6.15	48.0	7.60	6.14	48.1	7.67	6.14								
		60	54.7	9.09	6.37	55.0	9.08	6.35	55.0	9.16	6.35	55.0	9.23	6.35	55.0	9.32	6.36	54.8	9.56	6.40								
		96	71.2	13.1	7.11	70.9	13.4	7.14	70.5	13.8	7.18	70.3	14.1	7.20	70.0	14.3	7.23	69.4	14.8	7.28								
	90	10	50	47.7	7.64	6.18	47.9	7.60	6.15	48.1	7.63	6.14	48.1	7.67	6.14	48.1	7.73	6.14	48.0	7.91	6.17							
			60	55.0	9.13	6.35	55.0	9.25	6.35	54.9	9.44	6.38	54.8	9.56	6.40	54.7	9.70	6.42	54.4	10.0	6.47							
			96	70.6	13.7	7.17	70.2	14.1	7.21	69.7	14.6	7.26	69.4	14.8	7.28	69.1	15.1	7.31	68.4	15.7	7.38							
		80	10	50	48.1	7.62	6.14	48.1	7.71	6.14	48.0	7.85	6.16	47.9	7.95	6.18	47.8	8.05	6.20	47.6	8.32	6.25						
				60	54.9	9.43	6.38	54.7	9.65	6.41	54.5	9.92	6.45	54.3	10.1	6.48	54.1	10.3	6.51	53.7	10.6	6.57						
				96	69.7	14.6	7.26	69.2	15.0	7.30	68.6	15.5	7.36	68.1	15.7	7.39	65.9	14.9	7.46	61.4	13.4	7.61						
			45	50	79.4	15.5	7.72	72.2	16.0	7.76	70.4	15.9	7.83	68.1	15.1	7.89	65.9	14.4	7.95	61.4	12.9	8.07						
				60	79.4	14.5	13.8	74.9	13.3	14.1	70.4	12.1	14.4	68.1	11.5	14.6	65.9	11.0	14.8	61.4	9.92	15.1						
				96	79.4	14.4	14.8	74.9	13.1	15.1	70.4	12.0	15.3	68.1	11.4	15.5	65.9	10.9	15.6	61.4	9.82	15.9						
			20	50	79.4	14.0	16.7	74.9	12.8	16.9	70.4	11.7	17.1	68.1	11.1	17.2	65.9	10.6	17.2	61.4	9.57	17.4						
				60	79.4	13.8	17.4	74.9	12.7	17.5	70.4	11.6	17.3	68.1	11.0	17.7	65.9	10.5	17.8	61.4	9.49	17.9						
				96	79.4	12.5	18.6	74.9	11.4	18.9	70.4	10.4	19.3	68.1	9.98	19.4	65.9	9.51	19.6	61.4	8.63	20.0						
			25	50	79.4	12.3	19.7	74.9	11.3	19.9	70.4	10.3	20.2	68.1	9.88	20.4	65.9	9.42	20.5	61.4	8.54	20.8						
				60	79.4	12.0	21.6	74.9	11.0	21.8	70.4	10.1	22.0	68.1	9.62	22.1	65.9	9.18	22.2	61.4	8.34	22.4						
				96	79.4	11.9	22.3	74.9	10.9	22.5	70.4	9.99	22.6	68.1	9.55	22.7	65.9	9.11	22.7	61.4	8.27	22.9						
			30	50	79.4	10.9	23.4	74.9	10.0	23.8	70.4	9.17	24.1	68.1	8.77	24.3	65.9	8.38	24.5	61.4	7.62	24.9						
				60	79.4	10.8	24.5	74.9	9.90	24.8	70.4	9.08	25.1	68.1	8.68	25.3	65.9	8.30	25.4	61.4	7.55	25.7						
				96	79.4	10.5	26.6	74.9	9.65	26.8	70.4	8.85	26.9	68.1	8.47	27.0	65.9	8.09	27.1	61.4	7.38	27.3						
			35	50	79.4	9.61	28.3	74.9	8.86	28.7	70.4	8.15	29.1	68.1	7.81	29.2	65.9	7.47	29.4	61.4	6.83	29.8						
				60	79.4	9.52	29.4	74.9	8.78	29.7	70.4	8.07	30.0	68.1	7.74	30.2	65.9	7.40	30.3	61.4	6.77	30.7						
				96	79.4	9.28	31.5	74.9	8.56	31.7	70.4	7.88	31.9	68.1	7.55	32.0	65.9	7.23	32.1	61.4	6.61	32.3						
			40	50	79.4	9.20	32.2	74.9	8.50	32.4	70.4	7.82	32.5	68.1	7.50	32.6	65.9	7.18	32.7	61.4	6.57	32.8						
				60	79.4	9.37	33.3	74.9	8.64	33.7	70.4	7.95	34.0	68.1	7.61	34.2	65.9	7.29	34.4	61.4	6.66	34.8						
				96	79.4	9.04	36.5	74.9	8.35	36.7	70.4	7.68	36.9	68.1	7.36	37.0	65.9	7.05	37.1	61.4	6.45	37.3						
			45	50	79.4	8.97	37.2	74.9	8.28	37.3	70.4	7.63	37.5	68.1	7.31	37.6	65.9	7.00	37.7	61.4	6.40	37.8						
				60	79.4	9.14	38.3	74.9	8.43	38.6	70.4	7.73	39.0	68.1	7.42	39.2	65.9	7.10	39.4	61.4	6.49	39.8						
				96	79.4	9.05	39.4	74.9	8.35	39.7	70.4	7.68	40.0	68.1	7.35	40.2	65.9	7.04	40.3	61.4	6.43	40.6						
			120	50	79.4	8.82	41.5	74.9	8.14	41.7	70.4	7.49	41.9	68.1	7.18	42.0	65.9	6.87	42.1	61.4	6.29	42.3						
				60	79.4	8.75	42.2	74.9	8.08	42.3	70.4	7.43	42.5	68.1	7.13	42.6	65.9	6.82	42.6	61.4	6.24	42.8						

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4 Capacity tables

4 - 3 Heating capacity tables

TC: Total Capacity: kW ; PI: Power Input: kW (compressor + outdoor fan motor) ; OWT: Outlet Water Temperatur: °C

Combination (%)	Inlet Water Temp. (°C)	Water Volume (note2) L/min	Indoor air temperature: °CWB																				
			16.0			18.0			20.0			21.0			22.0			24.0					
			TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT			
130	10	50	44.4	11.7	6.88	46.2	10.7	6.61	47.8	9.93	6.38	48.5	9.60	6.28	49.2	9.30	6.19	50.2	8.84	6.05			
		120	10	50	46.8	10.4	6.52	48.2	9.74	6.32	49.4	9.20	6.16	49.9	8.98	6.09	50.3	8.80	6.04	51.0	8.55	5.95	
				110	10	50	48.8	9.47	6.24	49.8	9.03	6.11	50.5	8.71	6.00	50.8	8.60	5.96	51.1	8.51	5.93	51.5	8.44

CA08A496A

NOTES - ANMERKUNGEN - Σημειώσεις - NOTAS - REMARQUES - NOTE - OPMERKINGEN - примечания - NOTLAR

1	■ is shown as reference.	■ se muestra como referencia.	■ is als referentie getoond.
	■ dient als Verweis.	■ est montré comme référence.	■ показан как.
	H ■ είναι ενδεικτική.	■ valori riportati unicamente come riferimento.	■ referans olarak gösterilmektedir.

2 Water volume (l/m): value is applicable for 1 module. When combining 2 or 3 modules, multiply this value by 2 resp. 3
Wassermenge (l/m): Der Wert gilt für 1 Modul. Wenn 2 oder 3 Module kombiniert werden, diesen Wert mit 2 bzw. 3 multiplizieren
Όγκος νερού (l/m): η τιμή ισχύει για 1 μονάδα. Όταν συνδυάζετε 2 ή 3 μονάδες, πολλαπλασιάζετε αυτή την τιμή με το 2 ή το 3.
Volumen de agua (l/m): el valor se aplica a 1 módulo. Cuando se combinan 2 ó 3 módulos, multiplique este valor por 2 resp. 3
Volume d'eau (l/m) : la valeur ne s'applique qu'à 1 module. Lors de la combinaison de 2 ou 3 modules, multiplier cette valeur respectivement par 2 ou 3 en fonction du nombre de modules.
Volume d'acqua (l/m): il valore è applicabile per 1 modulo. Quando si combinano 2 o 3 moduli, moltiplicare questo valore per 2 o 3
Watervolume (l/m): waarde is van toepassing voor 1 module. Bij een combinatie met 2 of 3 modules moet deze waarde met respectievelijk 2 en 3 vermenigvuldigd worden.
Объём воды (л/м): значение относится к 1 блоку. При комбинировании 2 или 3 блоков умножьте это значение, соответственно, на 2 или 3
Su hacmi (l/m): değeri 1 modül için geçerlidir. 2 veya 3 modül birleştirilirken bu değeri 2 veya 3 ile çarpın

4 Capacity tables

4 - 3 Heating capacity tables

RWEYQ30PY1		TC: Total Capacity: kW ; PI: Power Input: kW (compressor + outdoor fan motor) ; OWT: Outlet Water Temperatur: °C																					
		Combination (%)	Inlet Water Temp. (°C)	Water Volume (note2) L/min	Indoor air temperature: °CWB																		
					16.0			18.0			20.0			21.0			22.0			24.0			
					TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	
70	10	50	51.5	8.76	5.91	51.4	8.97	5.95	51.1	9.22	6.00	51.0	9.36	6.03	50.8	9.52	6.06	50.4	9.88	6.13			
		60	10	50	57.4	12.0	6.38	57.0	12.4	6.45	56.3	12.8	6.52	54.9	12.3	6.61	53.1	11.6	6.70	49.4	10.4	6.90	
				50	10	50	49.9	10.3	6.22	49.5	10.6	6.29	47.3	10.0	6.44	45.7	9.53	6.54	44.2	9.05	6.64	41.2	8.14

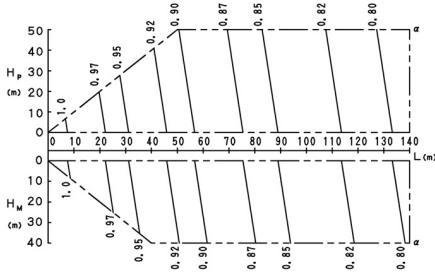
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4 Capacity tables

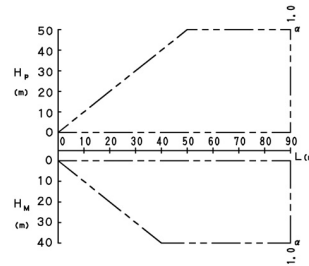
4 - 4 Capacity correction factor

RWEYQ8P

• Correction ratio for cooling capacity



• Correction ratio for heating capacity



3D062332

NOTES

- These figures illustrate the rate of change in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation from the rate of change in capacity shown in the above figures.
- With this outdoor unit, evaporating pressure constant control when cooling and condensing pressure constant control when heating is carried out.
- Method of calculating A/C (cooling/heating) capacity:
The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of the outside units as mentioned below, whichever smaller.
Calculating A/C capacity of outside units
 - Condition: Indoor unit combination ratio does not exceed 100%
Maximum A/C capacity of outside units = A/C capacity of outside units obtained from capacity characteristic table at the 100% combination x capacity change rate due to piping length to the farthest indoor unit.
 - Condition: Indoor unit combination ratio exceeds 100%
Maximum A/C capacity of outside units = A/C capacity of outside units obtained from capacity characteristic table at the combination x capacity change rate due to piping length to the farthest indoor unit.
- When overall equivalent pipe length is 80m or more, the diameter of the main liquid pipes (outside unit-branch sections) must be increased.

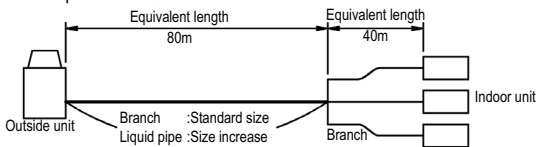
Diameter of above case

Model	liquid pipe
RWEYQ8PY1	ø12.7

- Read cooling/heating capacity rate of change in the above figures based on the following equivalent length.
Overall equivalent piping length = Equivalent length of main pipe x Correction factor + Equivalent length after branching
Choose a correction factor from the following table.
When cooling capacity is calculated: gas pipe size
When heating capacity is calculated: liquid pipe size.

Rate of change (object piping)	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	
Heating (liquid pipe)	1.0	0.5

Example RWEYQ8PY1



In the above case
 (Cooling) Overall equivalent length = 80m x 1.0 + 40m x 1.0 = 120m
 (Heating) Overall equivalent length = 80m x 0.5 + 40m x 1.0 = 80m
 The correction factor in:
 cooling capacity when height difference = 0 is thus approximately 0.78
 heating capacity when height difference = 0 is thus approximately 1.0

- Explanation of symbols
 \$H_p\$: Level difference (m) between indoor and outside units where indoor unit in inferior position
 \$H_M\$: Level difference (m) between indoor and outside units where indoor unit in superior position
 \$L\$: Equivalent pipe length (m)
 \$\alpha\$: Capacity correction factor

Diameter of pipe

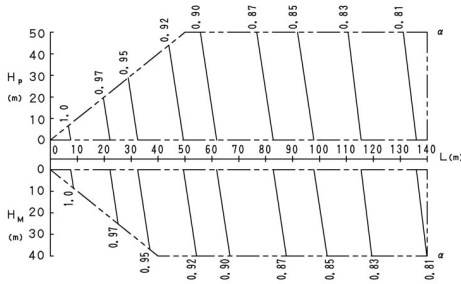
Model	liquid
RWEYQ8PY1	ø9.5

4 Capacity tables

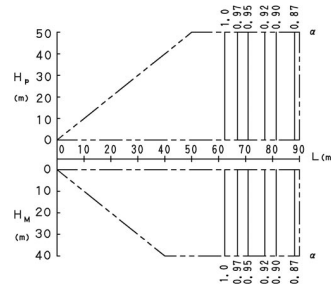
4 - 4 Capacity correction factor

RWEYQ10,20P

• Correction ratio for cooling capacity



• Correction ratio for heating capacity



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NOTES

- These figures illustrate the rate of change in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation from the rate of change in capacity shown in the above figures.
- With this outdoor unit, evaporating pressure constant control when cooling and condensing pressure constant control when heating is carried out.
- Method of calculating A/C (cooling/heating) capacity:
The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of the outside units as mentioned below, whichever smaller.

Calculating A/C capacity of outside units

- Condition: Indoor unit combination ratio does not exceed 100%
Maximum A/C capacity of outside units = A/C capacity of outside units obtained from capacity characteristic table at the 100% combination x capacity change rate due to piping length to the farthest indoor unit.
- Condition: Indoor unit combination ratio exceeds 100%
Maximum A/C capacity of outside units = A/C capacity of outside units obtained from capacity characteristic table at the combination x capacity change rate due to piping length to the farthest indoor unit.

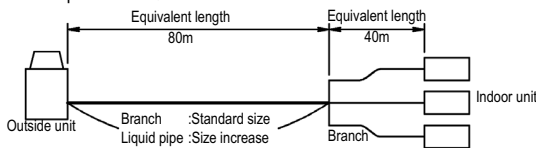
- When overall equivalent pipe length is 80m or more, the diameter of the main liquid pipes (outside unit-branch sections) must be increased.
Diameter of above case

Model	liquid pipe
RWEYQ10PY1	ø12.7
RWEYQ20PY1	ø19.1

- Read cooling/heating capacity rate of change in the above figures based on the following equivalent length.
Overall equivalent piping length = Equivalent length of main pipe x Correction factor + Equivalent length after branching
Choose a correction factor from the following table.
When cooling capacity is calculated: gas pipe size
When heating capacity is calculated: liquid pipe size.

Rate of change (object piping)	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	-
Heating (liquid pipe)	1.0	0.5

Example RWEYQ8PY1



In the above case

(Cooling) Overall equivalent length = 80m x 1.0 + 40m x 1.0 = 120m

(Heating) Overall equivalent length = 80m x 0.5 + 40m x 1.0 = 80m

The correction factor in:

cooling capacity when height difference = 0 is thus approximately 0.78

heating capacity when height difference = 0 is thus approximately 1.0

- Explanation of symbols

H_p : Level difference (m) between indoor and outside units where indoor unit in inferior position

H_M : Level difference (m) between indoor and outside units where indoor unit in superior position

L: Equivalent pipe length (m)

α : Capacity correction factor

Diameter of pipe

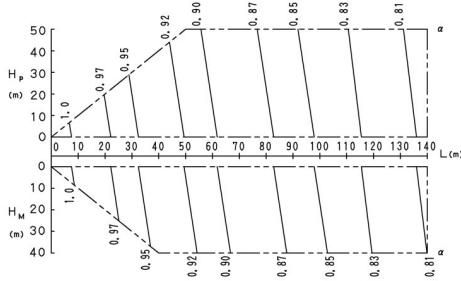
Model	liquid
RWEYQ10PY1	ø9.5
RWEYQ20PY1	ø15.9

4 Capacity tables

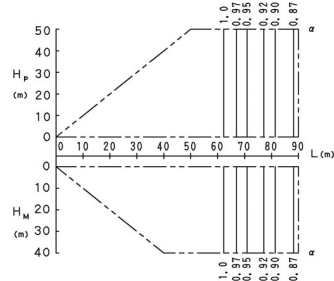
4 - 4 Capacity correction factor

RWEYQ16,18,24,26,28,30P

• Correction ratio for cooling capacity



• Correction ratio for heating capacity



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NOTES

- These figures illustrate the rate of change in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation from the rate of change in capacity shown in the above figures.
- With this outdoor unit, evaporating pressure constant control when cooling and condensing pressure constant control when heating is carried out.

3 Method of calculating A/C (cooling/heating) capacity:

The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of the outside units as mentioned below, whichever smaller.

Calculating A/C capacity of outside units

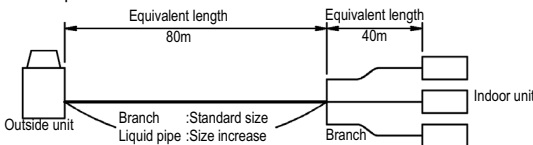
- Condition: Indoor unit combination ratio does not exceed 100%
 $\text{Maximum A/C capacity of outside units} = \text{A/C capacity of outside units obtained from capacity characteristic table at the 100\% combination} \times \text{capacity change rate due to piping length to the farthest indoor unit.}$
 - Condition: Indoor unit combination ratio exceeds 100%
 $\text{Maximum A/C capacity of outside units} = \text{A/C capacity of outside units obtained from capacity characteristic table at the combination} \times \text{capacity change rate due to piping length to the farthest indoor unit.}$
- When overall equivalent pipe length is 80m or more, the diameter of the main liquid pipes (outside unit-branch sections) must be increased. Diameter of above case

Model	liquid pipe
RWEYQ16PY1	ø15.9
RWEYQ18,24PY1	ø19.1
RWEYQ26,28,30PY1	ø22.2

- Read cooling/heating capacity rate of change in the above figures based on the following equivalent length.
 $\text{Overall equivalent piping length} = \text{Equivalent length of main pipe} \times \text{Correction factor} + \text{Equivalent length after branching}$
 Choose a correction factor from the following table.
 When cooling capacity is calculated: gas pipe size
 When heating capacity is calculated: liquid pipe size.

Rate of change (object piping)	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	-
Heating (liquid pipe)	1.0	0.5

Example RWEYQ8PY1



In the above case
 (Cooling) $\text{Overall equivalent length} = 80\text{m} \times 1.0 + 40\text{m} \times 1.0 = 120\text{m}$
 (Heating) $\text{Overall equivalent length} = 80\text{m} \times 0.5 + 40\text{m} \times 1.0 = 80\text{m}$
 The correction factor in:
 cooling capacity when height difference = 0 is thus approximately 0.78
 heating capacity when height difference = 0 is thus approximately 1.0

6 Explanation of symbols

- H_p : Level difference (m) between indoor and outside units where indoor unit in inferior position
- H_M : Level difference (m) between indoor and outside units where indoor unit in superior position
- L: Equivalent pipe length (m)
- α : Capacity correction factor

Diameter of pipe

Model	liquid
RWEYQ16PY1	ø12.7
RWEYQ18,24PY1	ø15.9
RWEYQ26,28,30PY1	ø19.1

5 Dimensional drawing & centre of gravity

5 - 1 Dimensional drawing

RWEYQ8-10P

4 - Ø17 Hole (Foundation bolt hole)

400 (Pitch of foundation bolt hole)

744 (Pitch of foundation bolt hole)

60 (After attaching accessories pipe)

780

550

1000

480

76

19

95

390

6 (Plug)

19

Manufacturer's label

Front view

Right side view

Rear view

Nr	Name	Description
1	Liquid pipe	see note 2
2	Suction gas pipe connection	see note 2
3	HP/LP gas pipe	see note 2
4	Water inlet	PT 1 ¹ / ₄ B internal thread
5	Water outlet	PT1 ¹ / ₄ B internal thread
6	Drain outlet	PS ¹ / ₂ B internal thread
7	Earth terminal	M5
8	Power cord through hole	Ø29
9	Wiring through hole	Ø29

NOTE

1 Earth terminal is in the switch box.

2 Piping size is as follows.

Model name	RWEYQ8PY1		RWEYQ10PY1	
	Heat pump	Heat recovery	Heat pump	Heat recovery
Liquid pipe	Ø9.5	Ø9.5	Ø9.5	Ø9.5
Suction gas pipe	Ø19.1	Ø19.1	Ø22.2	Ø22.2
HP/LP gas pipe	Ø19.1	Ø15.9	Ø22.2	Ø19.1

*connection method Liquid Pipe: flare connection
 Suction gas pipe } : brazing connection
 HP/LP gas pipe }

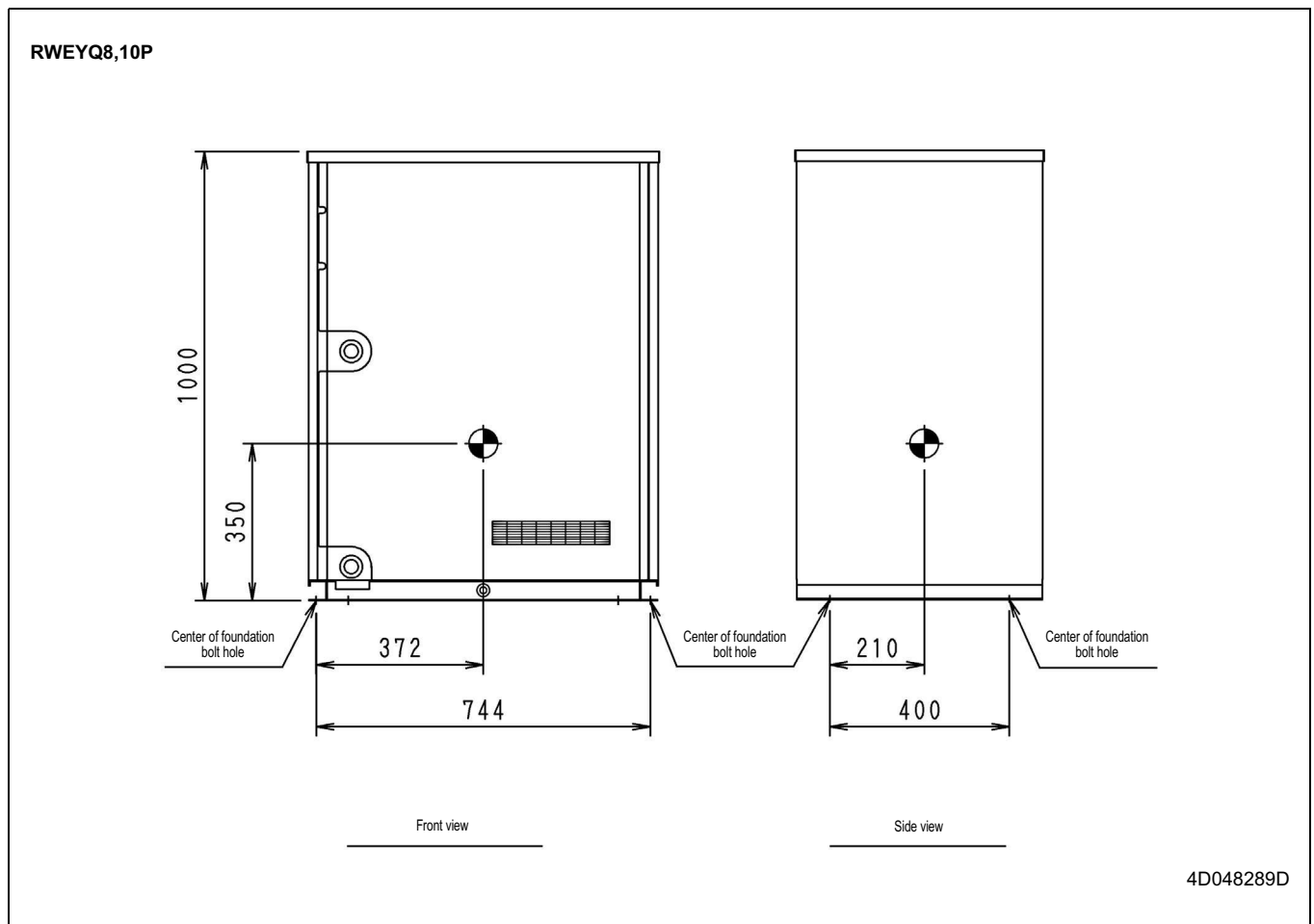
*In the case of heat pump system, suction gas pipe is not used

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5 Dimensional drawing & centre of gravity

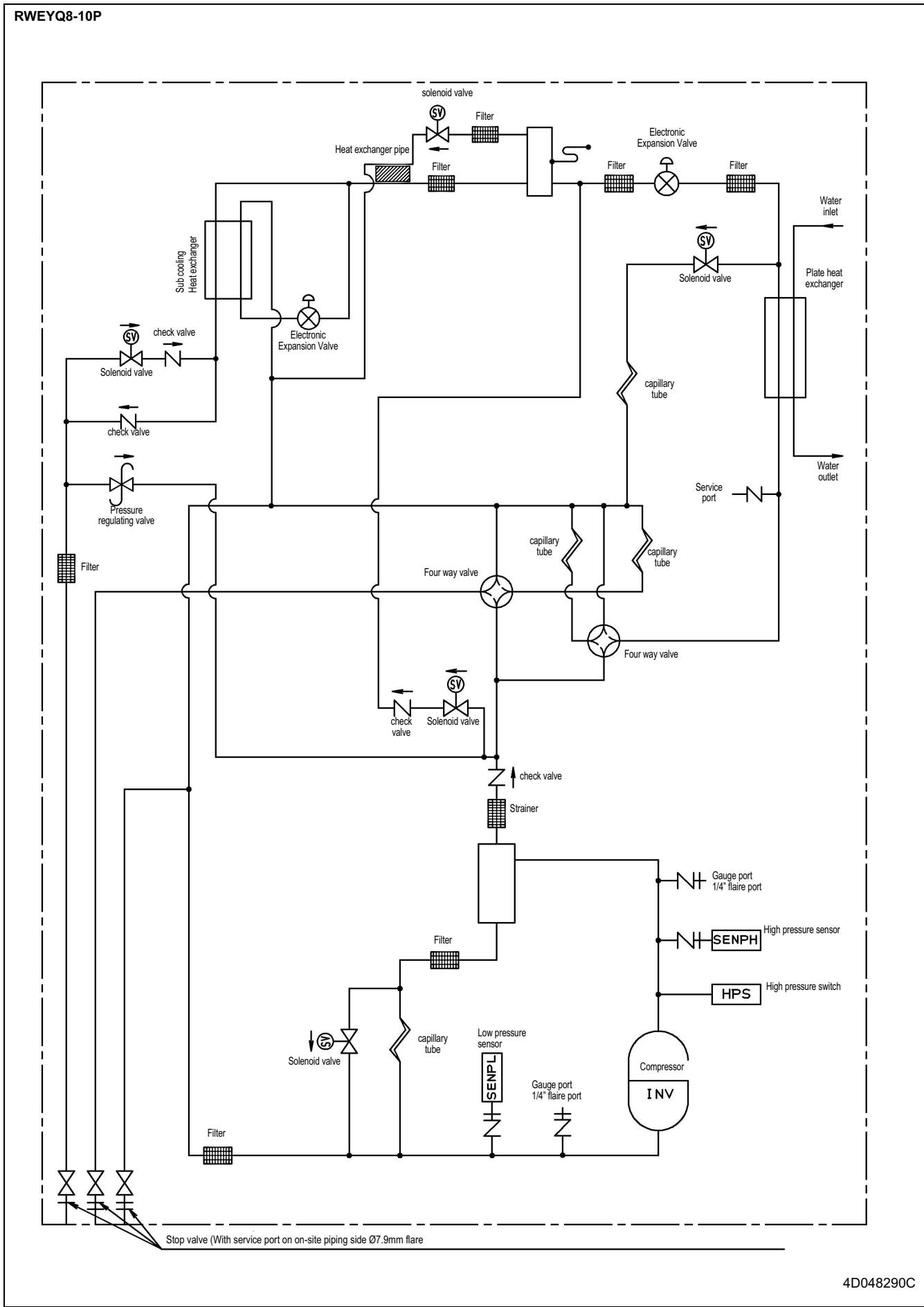
5 - 2 Centre of gravity



3

5

6 Piping diagram

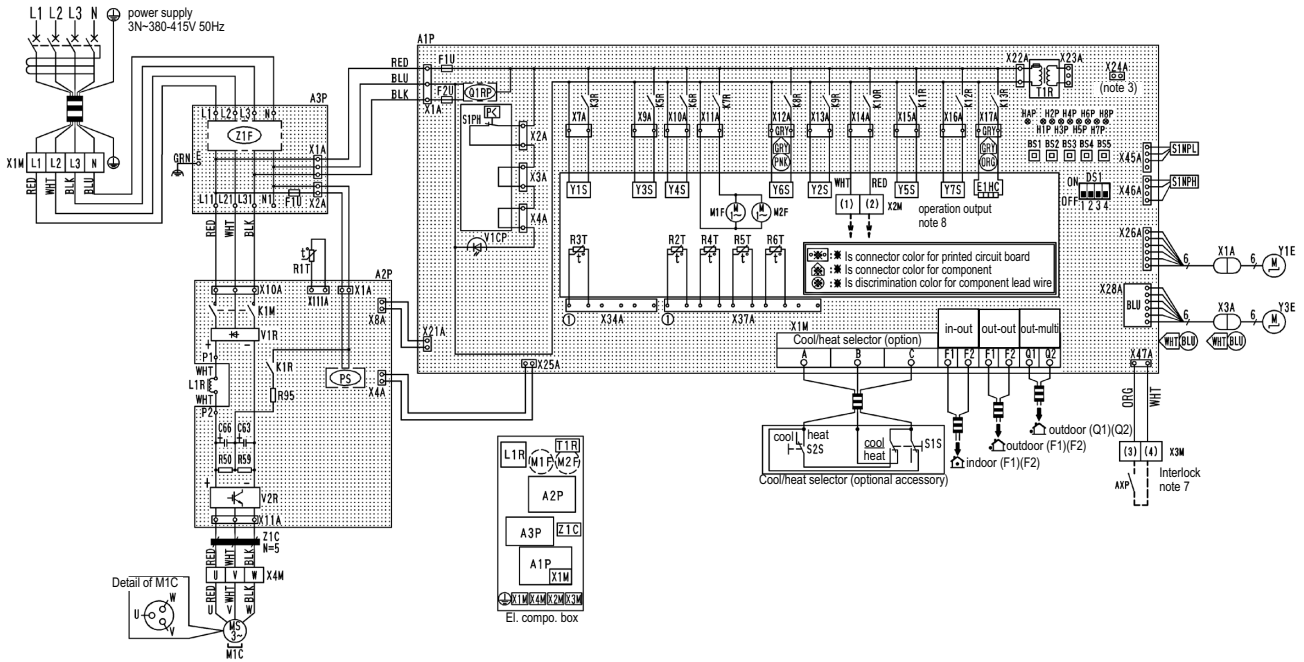


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7 Wiring diagram

7 - 1 Wiring diagram

RWEYQ8-10P



A1P	Printed circuit board (Main)	K12R	Magnetic relay (Y7S)(A1P)	X1M	Terminal strip (Control)(A1P)
A2P	Printed circuit board (INV)	K13R	Magnetic relay (E1HC)(A1P)	X2M	Terminal strip (operation output)
A3P	Printed circuit board (Noise filter)	L1R	Reactor	X3M	Terminal strip (interlock)
BS1~5	Push button switch (Mode, set, return, test, reset)	M1C	Motor (compressor)	X4M	Terminal strip (M1C)
C63,C66	Capacitor	M1F,M2F	Motor (fan, inverter cooling)	Y1E	Electronic expansion valve (main)
DS1	Dip switch	PS	Switching power supply	Y3E	Electronic expansion valve (Sub cool)
E1HC	Crankcase heater	R1RP	Phase reversal detect circuit (A1P)	Y1S	Solenoid valve (hot gas bypass)
F1U	Fuse (250V, 5A, ⊕)(A3P)	R50,R59	Resistor	Y2S	Solenoid valve (oil recovery)
F1U, F2U	Fuse (250V,10A, ⊕)(A1P)	R95	Resistor (current limiting)	Y3S	Solenoid valve (receiver pressurization)
H1P~8P	Pilotlamp (service monitor-green) (A1P) [H2P] prepare, test ----- flickering malfunction detection ----- light up	R1T	Thermistor (Fin)(A2P)	Y4S	Solenoid valve (receiver gas purge)
HAP	Pilotlamp (service monitor green) (A1P)	R2T	Thermistor (Suction)	Y5S	Solenoid valve (4 way valve) (main)
K1M	Magnetic contactor (M1C)(A2P)	R3T	Thermistor (M1C discharge)	Y6S	Solenoid valve (liquid pipe)
K1R	Magnetic relay (A2P)	R4T	Thermistor (hex gas pipe)	Y7S	Solenoid valve (4 way valve) (heat exchanger)
K3R	Magnetic relay (Y1S)(A1P)	R5T	Thermistor (sub cooling hex)	Z1C	Noise filter (ferrite core)
K5R	Magnetic relay (Y3S)(A1P)	R6T	Thermistor (Receiver liq. pipe)	Z1F	Noise filter (with surge absorber)
K6R	Magnetic relay (Y4S)(A1P)	S1NPH	Pressure sensor (High)		
K7R	Magnetic relay (M1F,M2F)(A1P)	S1NPL	Pressure sensor (Low)		COOL/HEAT SELECTOR
K8R	Magnetic relay (Y6S)(A1P)	S1PH	Pressure switch (High)	S1S	Selector switch (fan/cool - heat)
K9R	Magnetic relay (Y2S)(A1P)	T1R	Transformer (220-240V/20V)	S2S	Selector switch (cool/heat)
K10R	Magnetic relay (operation output) (A1P)	V1CP	Safety devices input		
K11R	Magnetic relay (Y5S)(A1P)	V1R	Diode bridge (A2P)		
		V2R	Power module (A2P)		
		X1A,X3A	Connector (Y1E,Y3E)		
		X1M	Terminal strip (power supply)		
					RED: red GRY: grey
					BLK: black PNK: pink
					WHT: white ORG: orange
					BLU: blue

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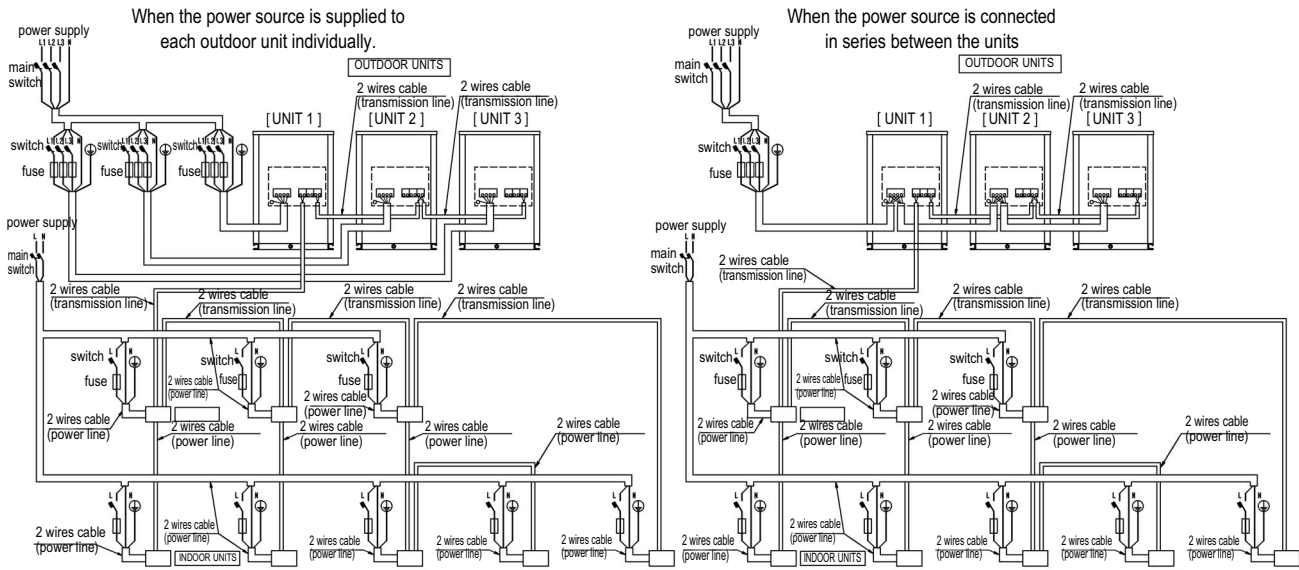
NOTES

- This wiring diagram is applied only to the outdoor unit
- : Terminal strip ⊙: connector ○-: terminal ⊞: Field wiring ⊕: protective earth (screw)
- When using the optional adapter, refer to the installation manual.
- Refer to the installation manual, for connection wiring to indoor-outdoor transmission F1-F2, outdoor-outdoor transmission F1-F2, outdoor-multi transmission Q1-Q2
- Refer to 'service precaution' label (on el.compo.box cover), how to use BS1~BS5 and DS1 switch.
- When operating, don't shortcircuit the protection device (S1PH).
- Be sure to connect an interlock circuit between the terminal (3)-(4) of terminal strip (X3M)
- Install a heat source water pump operation circuit between the terminal (1)-(2) of terminal strip (X2M), when interlocking a heat source water pump and system operation.
- Cool/heat selector cannot be connected when operating heat recovery system.

7 Wiring diagram

7 - 2 External connection diagram

RWEYQ-P-[HEAT RECOVERY]

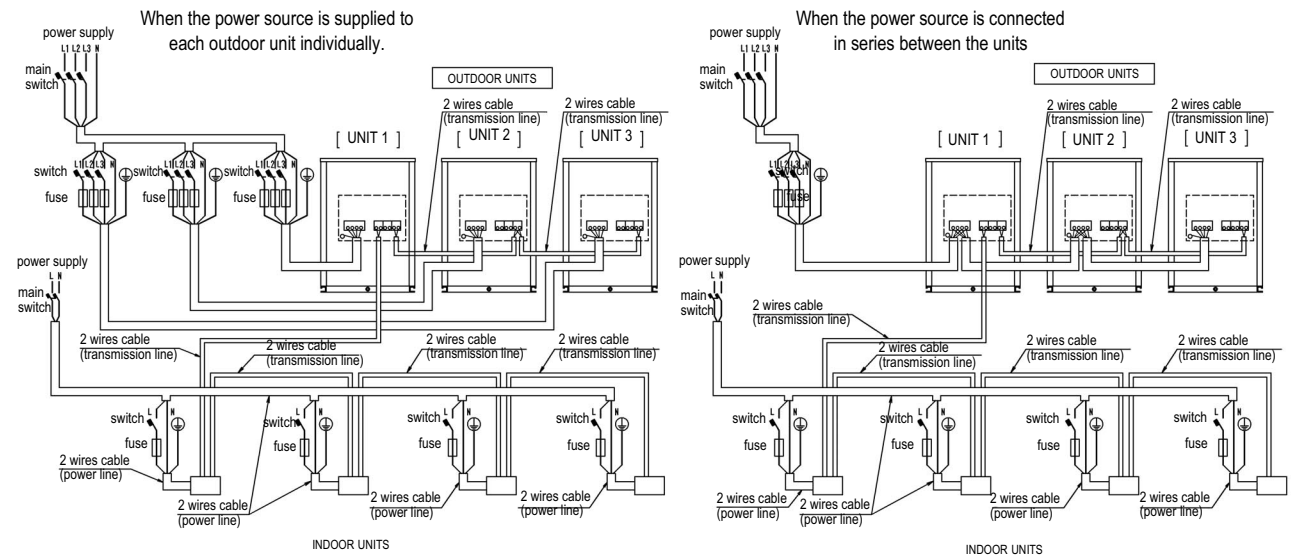


NOTES

- 1 All wiring, components and materials to be procured on the site must comply with the applicable local and national codes
- 2 Use copper conductors only.
- 3 As for details, see wiring diagram.
- 4 Install circuit breaker for safety.
- 5 All field wiring and components must be provided by licensed electrician.
- 6 Unit shall be grounded in compliance with the applicable local and national codes
- 7 Wiring shown are general points-of-connection guides only and are not intended for or to include all details for a specific installation.
- 8 Be sure to install the switch and the fuse to the power line of each equipment.
- 9 Install the main switch that can interrupt all the power sources in an integrated manner because this system consists of the equipment utilizing the multiple power sources.
- 10 If there exists the possibility of reversed phase, lose phase, momentary blackout or the power goes on and off while the product is operating, attach a reversed phase protection circuit locally. Running the product in reversed phase may break the compressor and other parts.

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RWEYQ-P-[HEAT PUMP]



NOTES

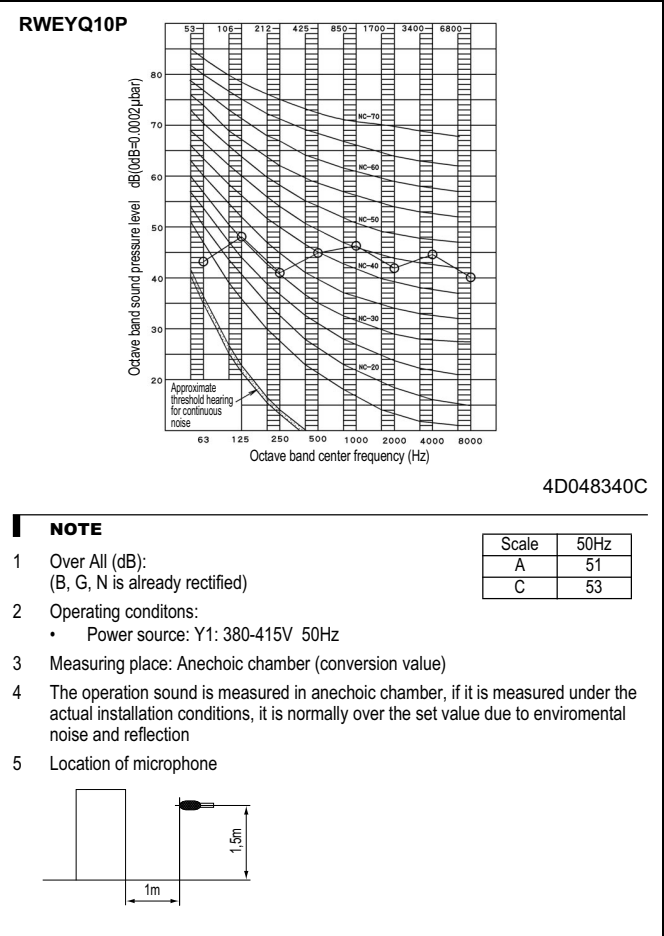
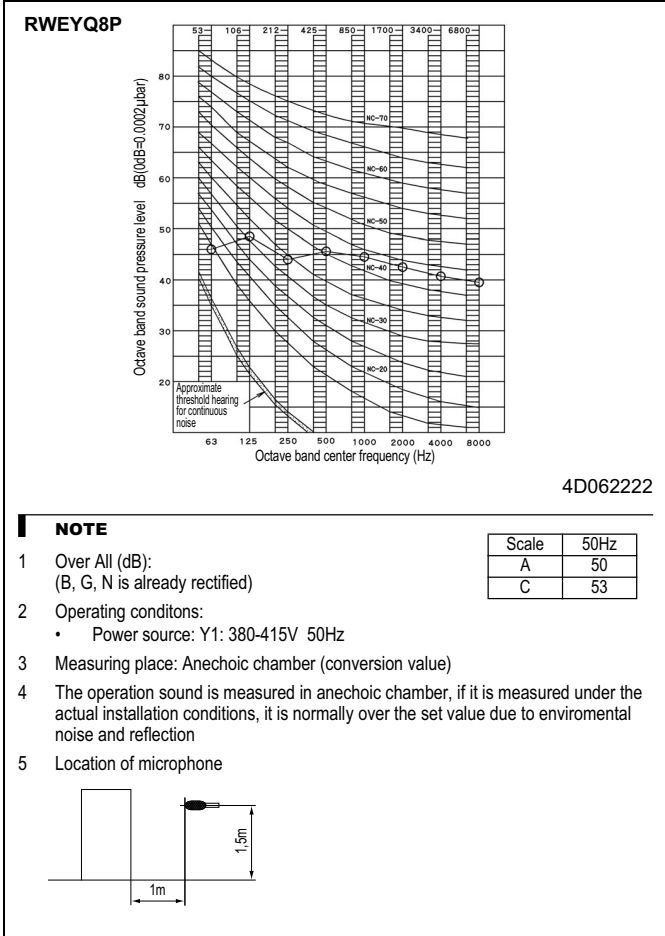
- 1 All wiring, components and materials to be procured on the site must comply with the applicable local and national codes
- 2 Use copper conductors only.
- 3 As for details, see wiring diagram.
- 4 Install circuit breaker for safety.
- 5 All field wiring and components must be provided by licensed electrician.
- 6 Unit shall be grounded in compliance with the applicable local and national codes
- 7 Wiring shown are general points-of-connection guides only and are not intended for or to include all details for a specific installation.
- 8 Be sure to install the switch and the fuse to the power line of each equipment.
- 9 Install the main switch that can interrupt all the power sources in an integrated manner because this system consists of the equipment utilizing the multiple power sources.
- 10 If there exists the possibility of reversed phase, lose phase, momentary blackout or the power goes on and off while the product is operating, attach a reversed phase protection circuit locally. Running the product in reversed phase may break the compressor and other parts.

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8 Sound data

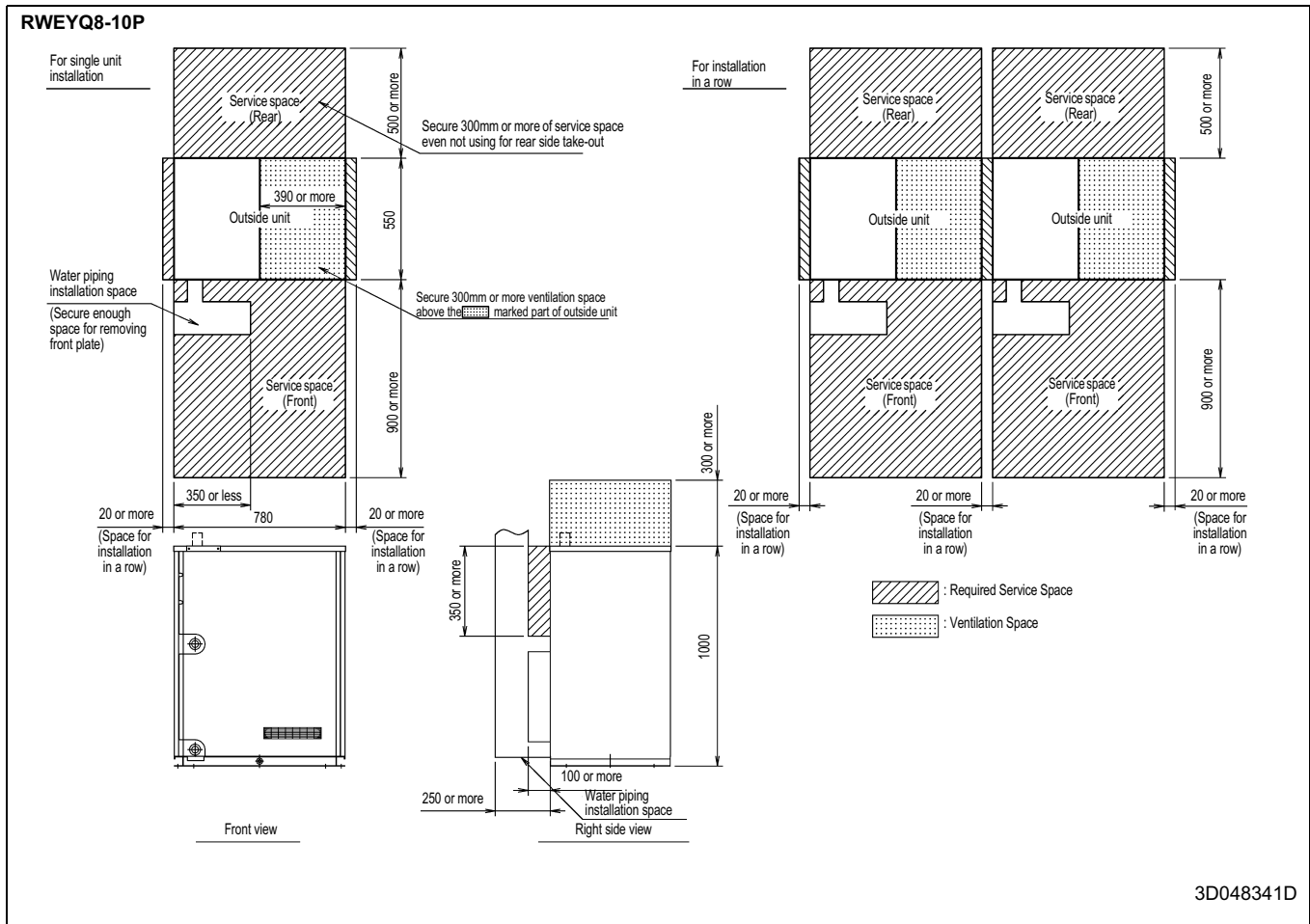
8 - 1 Sound pressure spectrum

3
8



9 Installation

9 - 1 Service space



9 Installation

9 - 2 Refrigerant pipe selection

RWEYQ-P

Example of connection
(Connection of 6 indoor units Heat pump system)
Outside unit side: H/P gas piping, Suction gas piping, Liquid piping, BS unit, Gas piping, Indoor unit side: H/P gas piping, Suction gas piping, Liquid piping.

• Piping between outside unit and BS unit
— (Thick line), 3-piping
— (Thin line), 2-piping

• Piping between BS unit and indoor unit,
— (Thick line), 2-piping
— (Thin line), 2-piping

In case of multi outside unit system, re-charge the outside unit as the first outside branch seen from the indoor unit side.

Example 1	Example 2	Example 3	Example 4	Example 5	Example 6
<p>Pipe length between outside (*) and indoor units ≤ 120m (Example 1,4) unit (a) + b + c + d + e + s ≤ 120m Total piping length between outside (*) and indoor units ≤ 140m (Note 1) (assume equivalent pipe length of REFINET joint to be 1m, BSVPT100, 160 is m and BSVPT250 is 6m.) Total piping length from outside unit (*) to all indoor units ≤ 300m</p> <p>Actual pipe length Equivalent length Total extension length</p> <p>Actual pipe length Difference in height between outside and indoor units (H1) ≤ 50m (Equivalent length: max. 13m) Difference in height between indoor units (H2) ≤ 15m Difference in height between outside unit (main) and outside unit (sub) (H3) ≤ 2m Difference in height between outside and inside units</p> <p>Allowable length after the branch (Example 1,4) unit (a) + b + c + d + e + s ≤ 40m (Example 2,5) unit (a) + b + 1 ≤ 40m, (a) + n + p ≤ 40m (Example 3,6) unit (a) + o ≤ 40m</p>					

Refrigerant branch kit selection
Refrigerant branch kits can only be used with R410A.

Outside unit capacity type	Heat recovery system	Refrigerant branch kit name
RWEYQ38, 101 type	Heat pump system	KHRQ23M29H
RWEYQ16, 20 type	Heat recovery system	KHRQ23M42H
RWEYQ24, 30 type	Heat recovery system	KHRQ23M47H
RWEYQ24, 30 type	Heat recovery system	KHRQ23M75H

• For REFINET joints other than the first branch, select the proper branch kit model based on the total capacity index.

Indoor capacity index	Refrigerant branch kit name
< 200	KHRQ23M29H
200 ≤ X < 280	KHRQ23M42H
280 ≤ X < 640	KHRQ23M47H
640 ≤	KHRQ23M75H

How to select REFINET joint:
• When using REFINET joints at the first branch counted from the outside unit side.
• Choose from the following table in accordance with the capacity of the outside unit.
(Example 1,2,4,5: REFINET joints)

Indoor capacity index	Heat recovery system	Heat pump system
< 200	BHPF22MA56	BHPF22MA59
200 ≤ X < 280	BHPF22MA64	BHPF22MA67
280 ≤ X < 640	BHPF22MA84	BHPF22MA87
640 ≤	BHPF22MA84	BHPF22MA84

How to select an outside branch kit (Needed when the outside unit type is RWEYQ20 or more):
• Select from the table below according to the number of outside units.

Number of units of outside unit	Heat recovery system	Heat pump system
2 unit	BHPF22MA56	BHPF22MA59
3 unit	BHPF22MA84	BHPF22MA84

(Example 2,5) In case of REFINET joint, indoor units of (a) + (b) + (c) + (d) + (e) + (f) + (g)
(Example 2,5) In case of REFINET Header, indoor units of (a) + (b) + (c) + (d) + (e) + (f) + (g)

Caution
The thickness of the pipes in the table shows the requirements of Japanese High Pressure Gas Control law. (As of Jan. 2003).
The thickness and material shall be selected in accordance with local code.

For a multi outside unit system, make the settings in accordance with the following figure.
Piping between outside unit (*) and refrigerant branch kit (part A)
Piping between outside branches (part B)
Piping between outside branch and outside unit (part C)

How to calculate the additional refrigerant to be charged
Additional refrigerant to be charged R (kg)
(R should be rounded off in units of 0.1kg.)

Re = (Total length (m) of liquid piping size φ12.7) × 0.18 + (Total length (m) of liquid piping size φ15.9) × 0.16 + (Total length (m) of liquid piping size φ19.1) × 0.26 + (Total length (m) of liquid piping size φ22.9) × 0.37 + (Total length (m) of liquid piping size φ28.6) × 0.64 + (Total length (m) of liquid piping size φ34.9) × 0.89 + (Total length (m) of liquid piping size φ41.3) × 1.21

Example for refrigerant branch using REFINET joint and REFINET header for RWEYQ30 (Heat recovery system)
If the outside unit is RWEYQ30 and the piping lengths are as at right
Re = 30 × 0.26 + 11 × 0.18 + 10 × 0.22 + 10 × 0.022 + 9 = 25.071

System name	Heat pump system	Heat recovery system
RWEYQ16, 20	3 kg	4 kg
RWEYQ16, 20, 30	4.5 kg	6.5 kg
RWEYQ24, 28, 29, 30	6 kg	9 kg

9 Installation

9 - 2 Refrigerant pipe selection

RWEYQ-P

System	Liquid pipe
RWEYQ8-10PY1	φ9.5 → φ12.7
RWEYQ16PY1	φ12.7 → φ15.9
RWEYQ18-24PY1	φ15.9 → φ19.1
RWEYQ26-30PY1	φ19.1 → φ22.2

Note 1. When the equivalent pipe length between outside and indoor units is 80m or more, the size of main pipes on the liquid side (refer to figure 21) must be increased according to the right table.
(Never increase suction gas pipe and HP/LP gas pipe.)

(Refer to figure 21)

1. Outside unit
2. Main pipes
3. Increase only liquid pipe size
4. First refrigerant branch kit
5. Indoor unit

Note 2. Allowable length after the first refrigerant branch kit to indoor units is 40m or less, however it can be extended up to 90m if all the following conditions are satisfied. (In case of "Branch with REFNET joint")

Required Conditions	Example Drawings
<p>1. It is necessary to increase the liquid and suction gas pipe size between the first branch kit and the final branch kit. (Reducers must be procured on site) However, the pipes that are same pipe size with main pipe must not be increased.</p> <p>2. For calculation of Total extension length, the actual length of above pipes must be doubled. (except main pipe and the pipes that are not increased)</p> <p>3. Indoor unit to the nearest branch kit ≤ 40 m</p> <p>4. The difference between [Outside unit to the farthest indoor unit] and [Outside unit to the nearest indoor unit] ≤ 40 m</p>	<p>8] b + c + d + e + f + g + p ≤ 90 m increase the liquid and suction gas pipe size of b, c, d, e, f, g</p> <p>a + b × 2 + c × 2 + d × 2 + e × 2 + f × 2 + g × 2 + h + i + j + k + l + m + n + p ≤ 300 m</p> <p>h, i, j, p ≤ 40 m</p> <p>The farthest indoor unit 8] The nearest indoor unit 1] (a + b + c + d + e + f + g + p) - (a + h) ≤ 40 m</p>

*If available on the site, use this size. Otherwise it can not be increased.

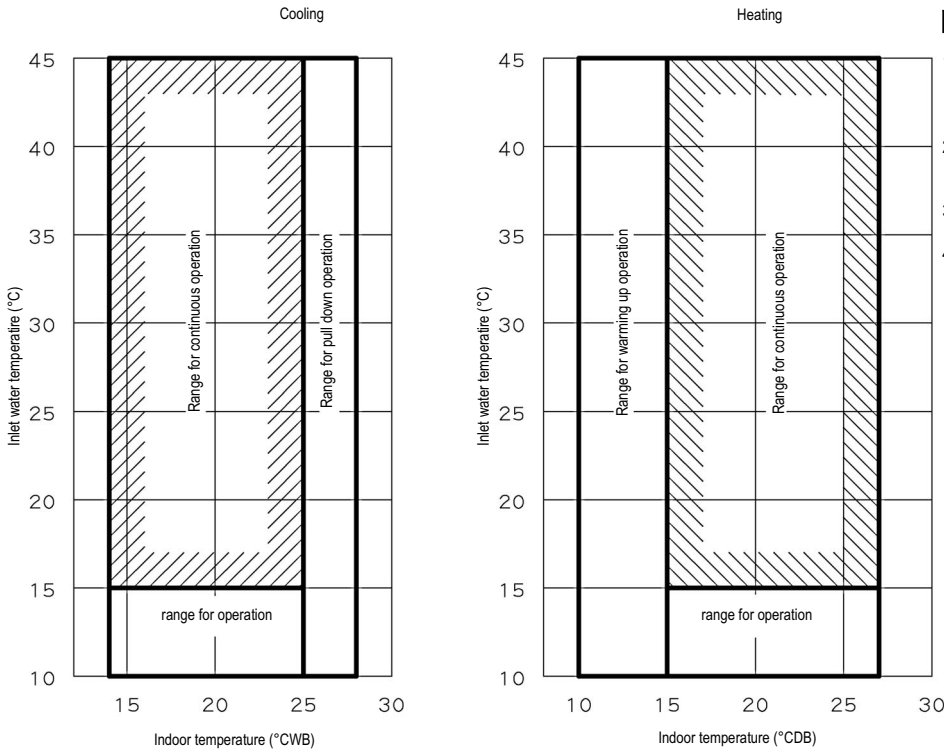
This table is about a heat recovery system (3-piping: suction gas, HP/LP gas and liquid pipes).
In a case of heat pump system (2-piping: gas and liquid pipes), select the pipe size from suction gas pipe for gas pipes and from liquid gas pipe for liquid pipes. And BS unit is not required.

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10 Operation range

3
10

RWEYQ-P



NOTES

- 1 This figure shows the range which can be operated, when it is the water volume shown below.
- 2 Design in the following condition range, water temperature 20~35°C water volume 60L/min or more
- 3 When cooling load is small, thermostat-off may be carried out for freeze-up protection.
- 4 Hold ambient temperature at 0~40°C and humidity at 80%RH or less.

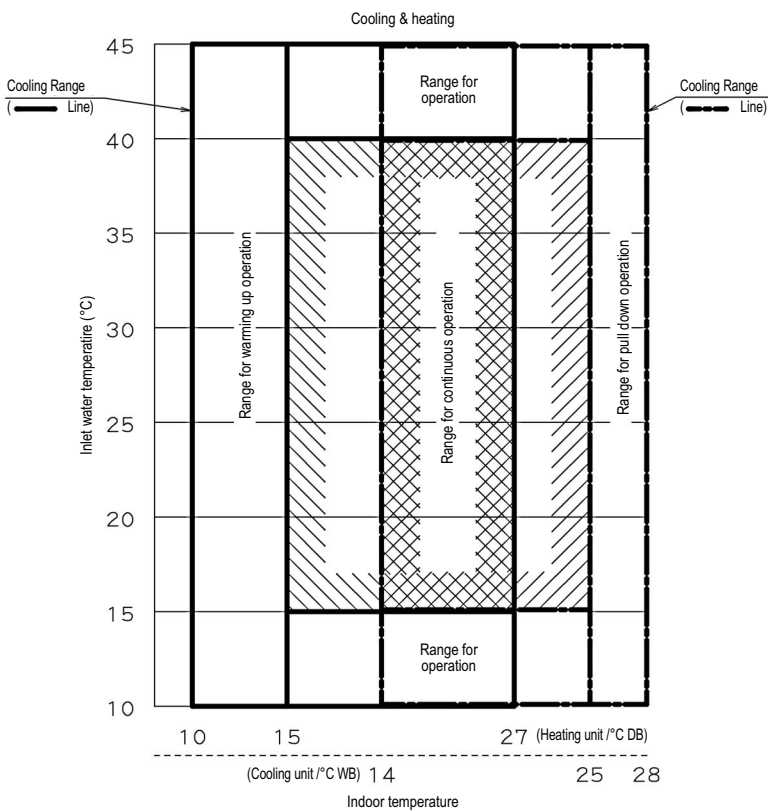
Range for continuous operation

: cooling

: heating

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RWEYQ-P



NOTES

- 1 This figure shows the range which can be operated, when it is the water volume shown below.
- 2 Design in the following condition range, water temperature 20~35°C water volume 60L/min or more
- 3 When cooling load is small, thermostat-off may be carried out for freeze-up protection.
- 4 Hold ambient temperature at 0~40°C and humidity at 80%RH or less.

Range for continuous operation

: cooling

: heating

3D049377B

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1 Specifications

1-1 Independent Unit	RWEYQ8PY1R	RWEYQ10PY1R
Outdoor Unit	RWEYQ8PY1R	RWEYQ10PY1R

1-2 Technical Specifications				RWEYQ8PY1R	RWEYQ10PY1R	
Capacity	Cooling	kW		22.4	26.1	
	Heating	kW		25.0	31.5	
EER	Cooling			4.92	4.43	
COP	Heating			5.90	5.21	
Casing	Colour	Ivory white (5Y7,5/1)				
Dimensions	Unit	Height	mm	1,000		
		Width	mm	780	780	
		Depth	mm	550	550	
Weight	Unit		kg	149	150	
Heat Exchanger	Dimensions	Type	Stainless steel plate			
Compressor	Piston displacement		m ³ /h	14.61	14.61	
	Motor	Type				Hermetically sealed scroll compressor
		Speed	rpm	6,900		
		Motor Output	kW	4.0	4.2	
Starting Method		Soft start				
Sound level	Cooling	Sound Pressure (Nominal)	dBA	50	51	
Inlet water temperature	Cooling		°C	6~45		
	Heating		°C	-10~45		
Refrigerant	Name				R-410A	
	Charge		kg	3.5	4.2	
	Control				Expansion valve (electronic type)	
Refrigerant Oil	Name				Synthetic (ether) oil	
Piping connections	Liquid (OD)	Type		Flare connection		
		Diameter (OD)	mm	9.52	9.52	
	Gas (in case of heat recovery)	Type		Braze connection		
		Diameter (OD)	mm	19.1	22.2	
	Discharge Gas (in case of heat recovery)	Type		Braze connection		
		Diameter (OD)	mm	15.9	19.1	
	Discharge Gas (in case of heat pump)	Type		Braze connection		
		Diameter (OD)	mm	19.1	22.2	
	Water inlet		PT1 1/4B internal thread			
	Water outlet		PT1 1/4B internal thread			
Drain outlet		PS1 1/2B internal thread				
Max total length		300				
Level difference OU-IU		Contact your local dealer for more information				
Max n° of indoor units to be connected				13	16	
Capacity Control				23 to 100		
Safety devices				HPS		
				Inverter overload protector		
				Fusible plugs		
Standard Accessories	Standard Accessories			Installation manual		
				Operation manual		
				Connection pipes		
				Clamps		
Notes				Nominal cooling capacities are based on : indoor temperature : 27°CDB, 19°CWB, inlet water temperature : 30°C, equivalent refrigerant piping : 7.5m, level difference : 0m.		
				Nominal heating capacities are based on : indoor temperature : 20°CDB, inlet water temperature : 20°C, equivalent refrigerant piping : 7.5m, level difference : 0m		
				This unit should not be installed outdoors, but indoors eg. in a machine room, etc.		
				Hold ambient temperature at 0-46°C and humidity at 80%RH or less. Heat rejection from the casing: 0.64kW/8HP	Hold ambient temperature at 0-40°C and humidity at 80%RH or less. Heat rejection from the casing: 0.71kW/10HP	

4
1

1 Specifications

1-3 Electrical Specifications (50Hz)			RWEYQ8PY1R	RWEYQ10PY1R
Power Supply	Phase		3~	
	Frequency	Hz	50	
	Voltage	V	380-415	
Current	Maximum Running Current	A	7.2	9.5
	Minimum circuit amps (MCA)	A	12.6	12.6
	Maximum fuse amps (MFA)	A	25	25
	Total overcurrent amps (TOCA)	A	13.5	13.5
Voltage range	Minimum	V	342	342
	Maximum	V	456	456
Notes			RLA is based on the following conditions: Indoor: 27°CDB, 19°CWB, Inlet water: 30°C	
			TOCA means the total value of each OC set	
			MSC means the maximum current during start up of the compressor	
			Voltage range : units are suitable for use on electrical systems where voltage supplied to unit terminal is not below or above listed range limits	
			Maximum allowable voltage range variation between phases is 2%	
			Select wire size based on the larger value of MCA or TOCA	
			MFA is used to select the circuit breaker and the ground fault circuit interrupter (earth leakage circuit breaker)	

2 Electrical data

RWEYQ-PR

Models	Units				Power supply			Input (W)	
	Hz	Volts	min.	max.	MCA	TOCA	MFA	MSC	RLA
RWEYQ8PR	50	380	342	456	12.6	13.5	25	-	7.5
		400						-	7.2
		415						-	6.9
RWEYQ10PR	50	380	342	456	12.6	13.5	25	-	9.9
		400						-	9.5
		415						-	9.1

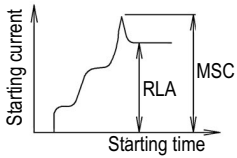
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SYMBOLS

- 1 MCA: Min. Circuit Amps. (A)
- TOCA: Total Over-current Amps (A)
- MFA: Max. Fuse Amps (A)
- MSC: Max. Starting current
- RLA: Rated Load Amps. (A)

NOTES

- 2 RLA is based on the following conditions.
Indoor temp.: 27°C DB, 19°C WB
Inlet water temp. / 30°C
- 3 TOCA means the total value of each OC set.
- 4 MSC means the max. current during the starting of compressor.
- 5 Voltage range
Units are suitable for use on electrical systems where voltage supplied to unit terminal is not below or above listed range limits.
- 6 Maximum allowable voltage variation between phases is 2%.
- 7 Select wire size based on the larger value of MCA or TOCA.
- 8 MFA is used to select the circuit breaker and the ground fault circuit interrupter (earth leakage circuit breaker).



3 Options

3 - 1 Option list

RWEYQ-PR		Models	
		RWEYQ8PR	RWEYQ10PR
Optional accessories			
Cool / Heat selector		KRC19-26A	
Fixing box		KJB111A	
Distributive piping	Refnet header - heat recovery	KHRQ23M29H	
	Refnet header - heat pump	KHRQ22M29H	
	Refnet joint - heat recovery	KHRQ23M20T, KHRQ23M29T9	
	Refnet joint - heat pump	KHRQ22M20T, KHRQ22M29T9	
	Outside unit multi connection piping kit	-	
External control adapter for outdoor unit		DTA104A62	
Strainer kit		BWU26A15, BWU26A20	

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NOTES

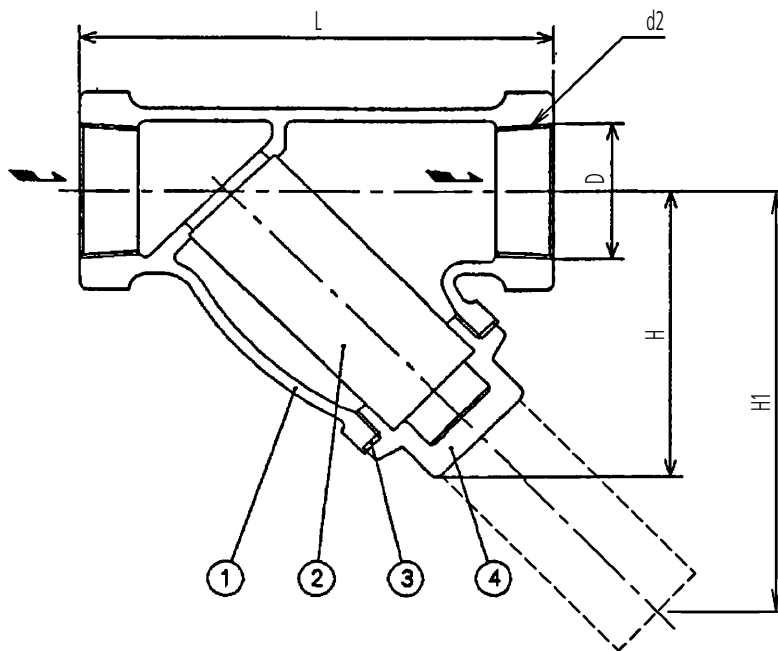
- 1 Refer to the latest drawing.
- 2 In the case of heat recovery system, COOL/HEAT selector cannot be connected.

3 Options

3 - 1 Option list

3 - 1 - 1 Water piping strainer (BWU26A15/BWU26A20)

3 - 1 - 1 - 1 Dimension



	Dimension					Material			
	Diameter	H	L	d2	H1	①	②	③	④
BWU26A15	1 1/4	82	135	RC1 1/4	130	CAC	SUS304	Non Abestos Casket	C377BEE
BWU26A20	1 1/4	90	135	RC1 1/4	130	FCD-S	SUS304	Non Abestos Seet Gasket	C3771BE

3 - 1 - 1 - 2 Specification

Use fluid: Pluse water of 100°C or less

Use temperature: 0°C ~ 70°C

Design pressure: BWU26A15 (1.4 Mpa), BWU26A20 (1.96 Mpa)

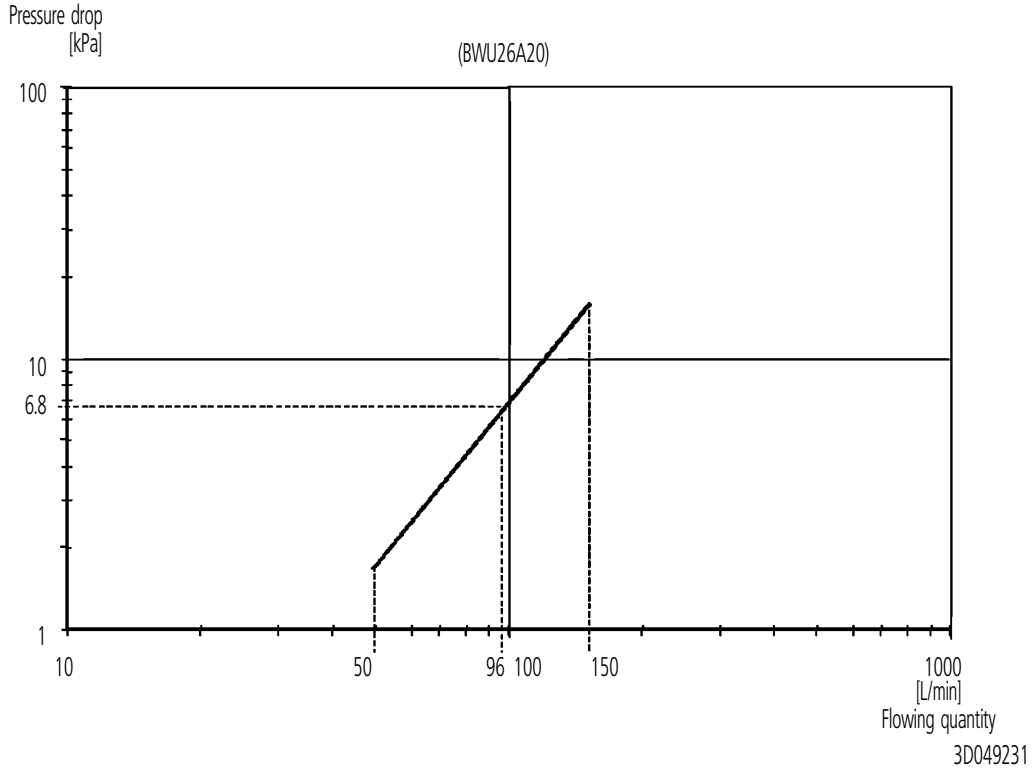
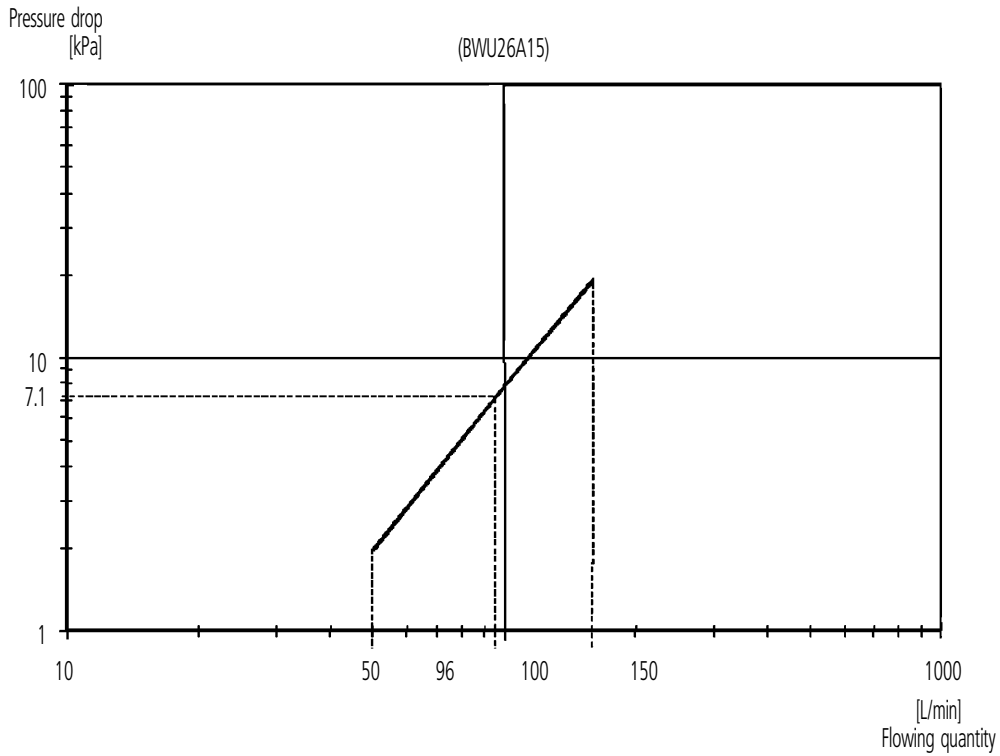
Mesh size: 50 mesh

3 Options

3 - 1 Option list

3 - 1 - 1 Water piping strainer (BWU26A15/BWU26A20)

3 - 1 - 1 - 3 Flowing quantity characteristic



4 Capacity tables

4 - 1 Water flow head loss

RWEYQ-PR

Water Flow Head loss

Water volume	L/min	50	60	80	96	120	150
Head loss	kPa	11.3	19.0	25.3	26.5	39.6	52.5
	mH ₂ O	1.2	1.9	2.5	2.7	4.1	5.3
Head loss (30% glycol)	kPa	17.0	22.5	38.0	39.8	59.4	78.8
Head loss (40% glycol)	kPa	20.3	34.8	45.5	47.7	71.3	94.5

* This value shows the amount of head loss per one unit.

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4

4 Capacity tables

4 - 2 Cooling capacity tables with brine (30%)

RWEYQ8PR

TC: Total Capacity: kW ; PI: Power Input: kW (compressor + outdoor fan motor) ; OWT: Outlet Water Temperatur: °C

Combination (%)	Inlet Water Temp. (°C)	Water Volume l/min	Indoor air temperature: °CWB																				
			14.0			16.0			18.0			19.0			20.0			22.0			24.0		
			TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT
100	10	80	15.1	1.80	13.0	18.0	2.31	13.6	20.9	2.89	14.3	22.4	3.20	14.6	23.9	3.53	14.9	26.0	3.72	15.3	26.6	3.74	15.4

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NOTES - ANMERKUNGEN - Σημειώσεις - NOTAS - REMARQUES - NOTE - OPMERKINGEN - примечания - NOTLAR

1 Capacity tables with 30% glycol
 Leistungstabellen mit 30 % Glykol
 Πίνακες αποδοσεων με 30% γλυκόλη
 Tablas de capacidad con un 30% de glicol
 Tableaux de puissance (glycol 30 %)

Tabelle delle capacità (30% glicole)
 Capaciteitstabellen met 30% glycol
 Рґнбкет брдьущен ме 30% глхкъл
 %30 glikollu kapasite tabloları



4 Capacity tables

4 - 3 Cooling capacity tables with brine (40%)

RWEYQ10PR

TC: Total Capacity: kW ; PI: Power Input: kW (compressor + outdoor fan motor) ; OWT: Outlet Water Temperatur: °C

Indoor air temperature: °CWB

Combination (%)	Inlet Water Temp. (°C)	Water Volume (l/min)	Indoor air temperature: °CWB																																										
			14.0				16.0				18.0				19.0				20.0				22.0				24.0																		
			TC	PI	OWT	°C	TC	PI	OWT	°C	TC	PI	OWT	°C	TC	PI	OWT	°C	TC	PI	OWT	°C	TC	PI	OWT	°C	TC	PI	OWT	°C	TC	PI	OWT	°C											
100	10	80	17.6	2.42	13.6	21.0	3.17	14.3	24.4	4.01	15.1	26.1	4.48	15.5	27.8	4.97	15.9	29.8	5.11	16.3	30.5	5.15	16.4	16.4	17.6	2.42	13.6	21.0	3.17	14.3	24.4	4.01	15.1	26.1	4.48	15.5	27.8	4.97	15.9	29.8	5.11	16.3	30.5	5.15	16.4

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NOTES - ANMERKUNGEN - Σημειώσεις - NOTAS - REMARQUES - NOTE - OPMERKINGEN - примечания - NOTLAR

- 1 Capacity tables with 40% glycol
- Leistungstabellen mit 40 % Glykol
- Πίνακες αποδόσεων με 40% γλυκόλη
- Tablas de capacidad con un 40% de glicol
- Tableaux de puissance (glycol 40 %)
- Tabelle delle capacità (40% glicole)
- Сapacityтабeллeн мeт 40% глuкoл
- Рянькeт брдъуeщeн мe 40% глuкълз
- %40 glikollu kapasite tabloları

4 Capacity tables

4 - 3 Cooling capacity tables with brine (40%)

RWEYQ10PR				TC: Total Capacity: kW ; PI: Power Input: kW (compressor + outdoor fan motor) ; OWT: Outlet Water Temperatur: °C																										
Combination (%)	Inlet Water Temp. (°C)	Water Volume (l/min)	Indoor air temperature: °CWB																											
			14.0			16.0			18.0			19.0			20.0			22.0			24.0									
			TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT							
70	10	80	12.3	1.47	12.5	14.7	1.86	13.0	17.1	2.31	13.5	18.3	2.56	13.7	19.5	2.81	14.0	21.8	3.36	14.5	24.2	3.96	15.0	24.2	3.96	15.0				
		45	80	12.3	3.39	47.8	13.5	3.79	48.1	13.9	3.83	48.2	14.1	3.84	48.2	14.2	3.85	48.2	14.5	3.87	48.3	14.6	3.87	48.3	14.6	3.87	48.3			
			60	10	80	10.57	1.21	12.1	12.6	1.51	12.5	14.6	1.85	13.0	15.7	2.04	13.2	16.7	2.23	13.4	18.7	2.65	13.8	20.8	3.10	14.3	20.8	3.10	14.3	
					45	80	10.6	2.05	37.3	12.6	2.61	37.7	14.6	3.23	38.2	15.7	3.57	38.4	16.7	3.93	38.7	18.7	4.70	39.2	20.8	5.54	39.7	20.8	5.54	39.7
	50					10	80	8.81	0.97	11.8	10.5	1.20	12.1	12.2	1.45	12.4	13.1	1.58	12.6	13.9	1.72	12.8	15.6	2.03	13.2	17.3	2.35	13.5	17.3	2.35
		45					80	8.81	1.69	46.9	10.5	2.46	46.9	12.2	3.12	47.3	13.1	3.48	47.5	13.9	3.86	47.7	14.7	4.11	47.8	15.0	4.14	47.9	15.0	4.14

4 Capacity tables

4 - 5 Heating capacity tables with brine (40%)

RWEYQ8PR		TC: Total Capacity: kW ; PI: Power Input: kW (compressor + outdoor fan motor) ; OWT: Outlet Water Temperatur: °C																								
		Indoor air temperature: °CDB																								
		16.0			18.0			20.0			21.0			22.0			24.0									
Combination (%)	Inlet Water Temp. (°C)	Water Volume l/min	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT	TC	PI	OWT						
			kW	kW	°C	kW	kW	°C	kW	kW	°C	kW	kW	°C	kW	kW	°C	kW	kW	°C	kW	kW	°C			
60	-10	80	12.6	4.08	-11.5	12.6	4.17	-11.5	12.5	4.28	-11.5	12.5	4.34	-11.5	12.4	4.40	-11.4	12.3	4.54	-11.4	12.3	4.58	-11.2			
		-5	80	14.3	4.32	-6.78	14.2	4.43	-6.75	14.1	4.56	-6.71	14.0	4.63	-6.69	14.0	4.70	-6.66	13.1	4.25	-6.58	13.1	4.12	-6.34		
			0	80	16.0	4.60	-2.04	15.9	4.72	-2.00	15.0	4.33	-1.91	14.5	4.13	-1.86	14.0	3.94	-1.81	13.1	3.57	-1.70	13.1	3.57	-1.70	
				5	80	16.9	4.31	2.74	16.0	3.97	2.85	15.0	3.64	2.97	14.5	3.49	3.02	14.0	3.33	3.08	13.1	3.03	3.20	13.1	2.94	3.49
	10				80	16.9	3.65	7.62	16.0	3.37	7.74	15.0	3.11	7.87	14.5	2.98	7.93	14.0	2.85	8.00	13.1	2.60	8.12	13.1	2.53	8.43
		15			80	16.9	3.13	12.5	16.0	2.90	12.7	15.0	2.68	12.8	14.5	2.57	12.9	14.0	2.46	12.9	13.1	2.26	13.1	2.26	13.1	2.20
			20		80	16.9	2.71	17.5	16.0	2.51	17.6	15.0	2.33	17.7	14.5	2.24	17.8	14.0	2.15	17.9	13.1	1.98	18.0	13.1	1.93	18.3
				25	80	16.9	2.36	22.4	16.0	2.20	22.5	15.0	2.05	22.7	14.5	1.97	22.8	14.0	1.90	22.8	13.1	1.76	23.0	13.1	1.71	23.3
	30				80	16.9	2.08	27.3	16.0	1.95	27.5	15.0	1.82	27.6	14.5	1.75	27.7	14.0	1.69	27.8	13.1	1.57	27.9	13.1	1.53	28.3
		35			80	16.9	1.85	32.3	16.0	1.74	32.5	15.0	1.63	32.6	14.5	1.57	32.7	14.0	1.52	32.8	13.1	1.42	32.9	13.1	1.38	33.3
			40		80	16.9	1.66	37.3	16.0	1.56	37.4	15.0	1.47	37.6	14.5	1.42	37.7	14.0	1.37	37.7	13.1	1.28	37.9	13.1	1.26	38.2
				45	80	16.9	1.50	42.2	16.0	1.41	42.4	15.0	1.33	42.6	14.5	1.29	42.6	14.0	1.25	42.7	13.1	1.17	42.9	13.1	1.12	43.6
	50				-10	80	12.4	4.39	-11.4	12.4	4.51	-11.4	12.3	4.63	-11.4	12.1	4.57	-11.3	11.7	4.35	-11.3	10.9	3.94	-11.2	10.9	3.81
		-5				80	14.0	4.69	-6.67	13.3	4.36	-6.60	12.5	3.99	-6.52	12.1	3.81	-6.48	11.7	3.64	-6.44	10.9	3.31	-6.36	10.9	3.21
			0			80	14.1	3.97	-1.82	13.3	3.66	-1.73	12.5	3.36	-1.64	12.1	3.22	-1.59	11.7	3.08	-1.54	10.9	2.81	-1.45	10.9	2.72
				5		80	14.1	3.35	3.07	13.3	3.10	3.17	12.5	2.86	3.27	12.1	2.74	3.32	11.7	2.63	3.38	10.9	2.41	3.48	10.9	2.34
					10	80	14.1	2.87	7.99	13.3	2.66	8.09	12.5	2.46	8.20	12.1	2.37	8.26	11.7	2.27	8.31	10.9	2.09	8.42	10.9	2.04
		15				80	14.1	2.48	12.9	13.3	2.31	13.0	12.5	2.15	13.1	12.1	2.07	13.2	11.7	1.99	13.3	10.9	1.84	13.4	10.9	1.79
			20			80	14.1	2.17	17.9	13.3	2.02	18.0	12.5	1.89	18.1	12.1	1.82	18.2	11.7	1.75	18.2	10.9	1.63	18.3	10.9	1.59
				25		80	14.1	1.91	22.8	13.3	1.79	22.9	12.5	1.68	23.1	12.1	1.62	23.1	11.7	1.56	23.2	10.9	1.46	23.3	10.9	1.42
					30	80	14.1	1.70	27.8	13.3	1.60	27.9	12.5	1.50	28.0	12.1	1.45	28.1	11.7	1.41	28.2	10.9	1.31	28.3	10.9	1.29
		35				80	14.1	1.53	32.7	13.3	1.44	32.9	12.5	1.36	33.0	12.1	1.31	33.1	11.7	1.27	33.1	10.9	1.19	33.3	10.9	1.17
			40			80	14.1	1.38	37.7	13.3	1.30	37.9	12.5	1.23	38.0	12.1	1.20	38.0	11.7	1.16	38.1	10.9	1.09	38.2	10.9	1.07
				45		80	14.1	1.25	42.7	13.3	1.19	42.8	12.5	1.13	43.0	12.1	1.10	43.0	11.7	1.07	43.1	10.9	1.01	43.2	10.9	0.99

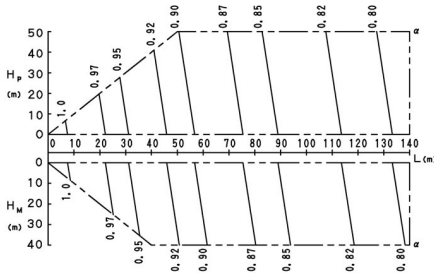
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4 Capacity tables

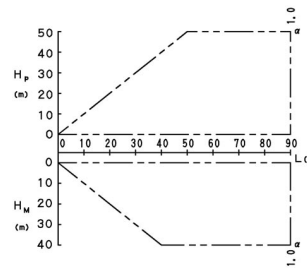
4 - 6 Capacity correction factor

RWEYQ8PR

• Correction ratio for cooling capacity



• Correction ratio for heating capacity



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NOTES

- These figures illustrate the rate of change in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation from the rate of change in capacity shown in the above figures.
- With this outdoor unit, evaporating pressure constant control when cooling and condensing pressure constant control when heating is carried out.
- Method of calculating A/C (cooling/heating) capacity:
The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of the outside units as mentioned below, whichever smaller.

Calculating A/C capacity of outside units

- Condition: Indoor unit combination ratio does not exceed 100%
Maximum A/C capacity of outside units = A/C capacity of outside units obtained from capacity characteristic table at the 100% combination x capacity change rate due to piping length to the farthest indoor unit.
- Condition: Indoor unit combination ratio exceeds 100%
Maximum A/C capacity of outside units = A/C capacity of outside units obtained from capacity characteristic table at the combination x capacity change rate due to piping length to the farthest indoor unit.

- When overall equivalent pipe length is 80m or more, the diameter of the main liquid pipes (outside unit-branch sections) must be increased.
Diameter of above case

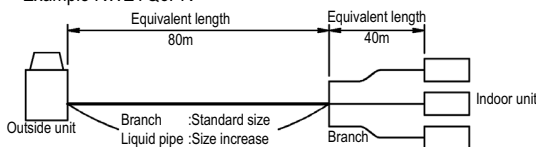
Model	liquid pipe
RWEYQ8PR	ø12.7

- Read cooling/heating capacity rate of change in the above figures based on the following equivalent length.
Overall equivalent piping length = Equivalent length of main pipe x Correction factor + Equivalent length after branching
Choose a correction factor from the following table.

When cooling capacity is calculated: gas pipe size
When heating capacity is calculated: liquid pipe size.

Rate of change (object piping)	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	
Heating (liquid pipe)	1.0	0.5

Example RWEYQ8PR



In the above case

(Cooling) Overall equivalent length = 80m x 1.0 + 40m x 1.0 = 120m

(Heating) Overall equivalent length = 80m x 0.5 + 40m x 1.0 = 80m

The correction factor in:

cooling capacity when height difference = 0 is thus approximately 0.78

heating capacity when height difference = 0 is thus approximately 1.0

- Explanation of symbols

H_p: Level difference (m) between indoor and outside units where indoor unit in inferior position

H_M: Level difference (m) between indoor and outside units where indoor unit in superior position

L: Equivalent pipe length (m)

α: Capacity correction factor

Diameter of pipe

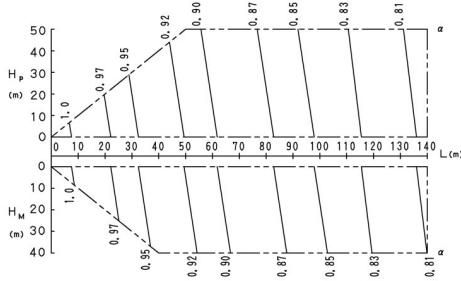
Model	liquid
RWEYQ8PR	ø9.5

4 Capacity tables

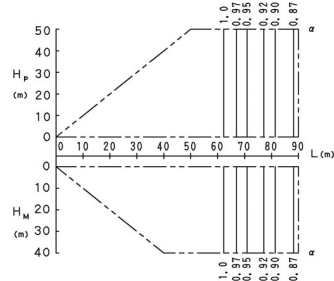
4 - 6 Capacity correction factor

RWEYQ10PR

• Correction ratio for cooling capacity



• Correction ratio for heating capacity



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NOTES

1 These figures illustrate the rate of change in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation from the rate of change in capacity shown in the above figures.

2 With this outdoor unit, evaporating pressure constant control when cooling and condensing pressure constant control when heating is carried out.

3 Method of calculating A/C (cooling/heating) capacity:

The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of the outside units as mentioned below, whichever smaller.

Calculating A/C capacity of outside units

• Condition: Indoor unit combination ratio does not exceed 100%

$$\text{Maximum A/C capacity of outside units} = \text{A/C capacity of outside units obtained from capacity characteristic table at the 100\% combination} \times \text{capacity change rate due to piping length to the farthest indoor unit.}$$

• Condition: Indoor unit combination ratio exceeds 100%

$$\text{Maximum A/C capacity of outside units} = \text{A/C capacity of outside units obtained from capacity characteristic table at the combination} \times \text{capacity change rate due to piping length to the farthest indoor unit.}$$

4 When overall equivalent pipe length is 80m or more, the diameter of the main liquid pipes (outside unit-branch sections) must be increased.
Diameter of above case

Model	liquid pipe
RWEYQ10PR	ø12.7

5 Read cooling/heating capacity rate of change in the above figures based on the following equivalent length.

$$\text{Overall equivalent piping length} = \text{Equivalent length of main pipe} \times \text{Correction factor} + \text{Equivalent length after branching}$$

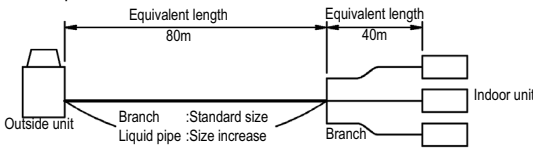
Choose a correction factor from the following table.

When cooling capacity is calculated: gas pipe size

When heating capacity is calculated: liquid pipe size.

Rate of change (object piping)	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	-
Heating (liquid pipe)	1.0	0.5

Example RWEYQ10PR



In the above case

$$\text{(Cooling) Overall equivalent length} = 80\text{m} \times 1.0 + 40\text{m} \times 1.0 = 120\text{m}$$

$$\text{(Heating) Overall equivalent length} = 80\text{m} \times 0.5 + 40\text{m} \times 1.0 = 80\text{m}$$

The correction factor in:

cooling capacity when height difference = 0 is thus approximately 0.78

heating capacity when height difference = 0 is thus approximately 1.0

6 Explanation of symbols

H_p: Level difference (m) between indoor and outside units where indoor unit in inferior position

H_M: Level difference (m) between indoor and outside units where indoor unit in superior position

L: Equivalent pipe length (m)

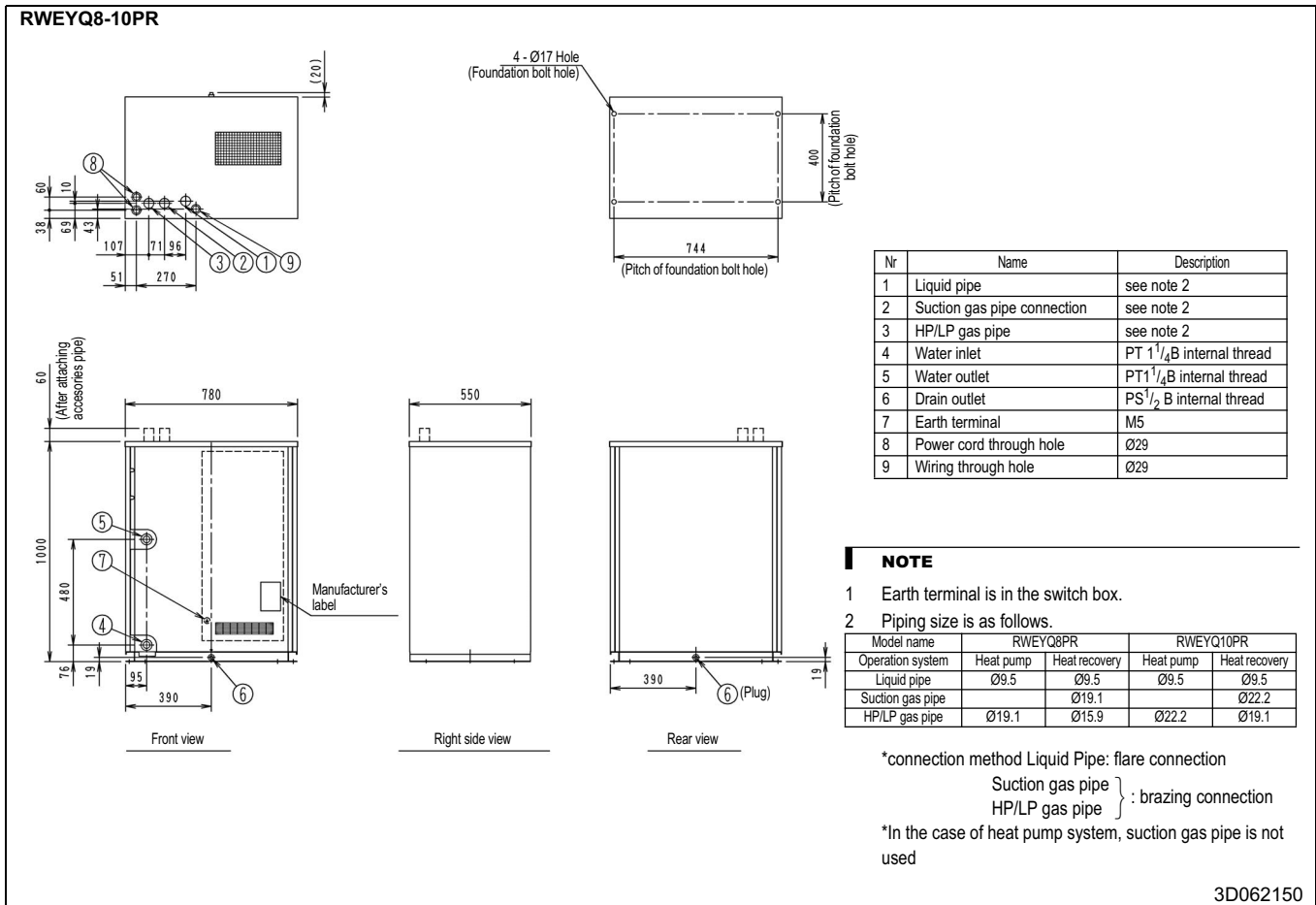
α: Capacity correction factor

Diameter of pipe

Model	liquid
RWEYQ10PR	ø9.5

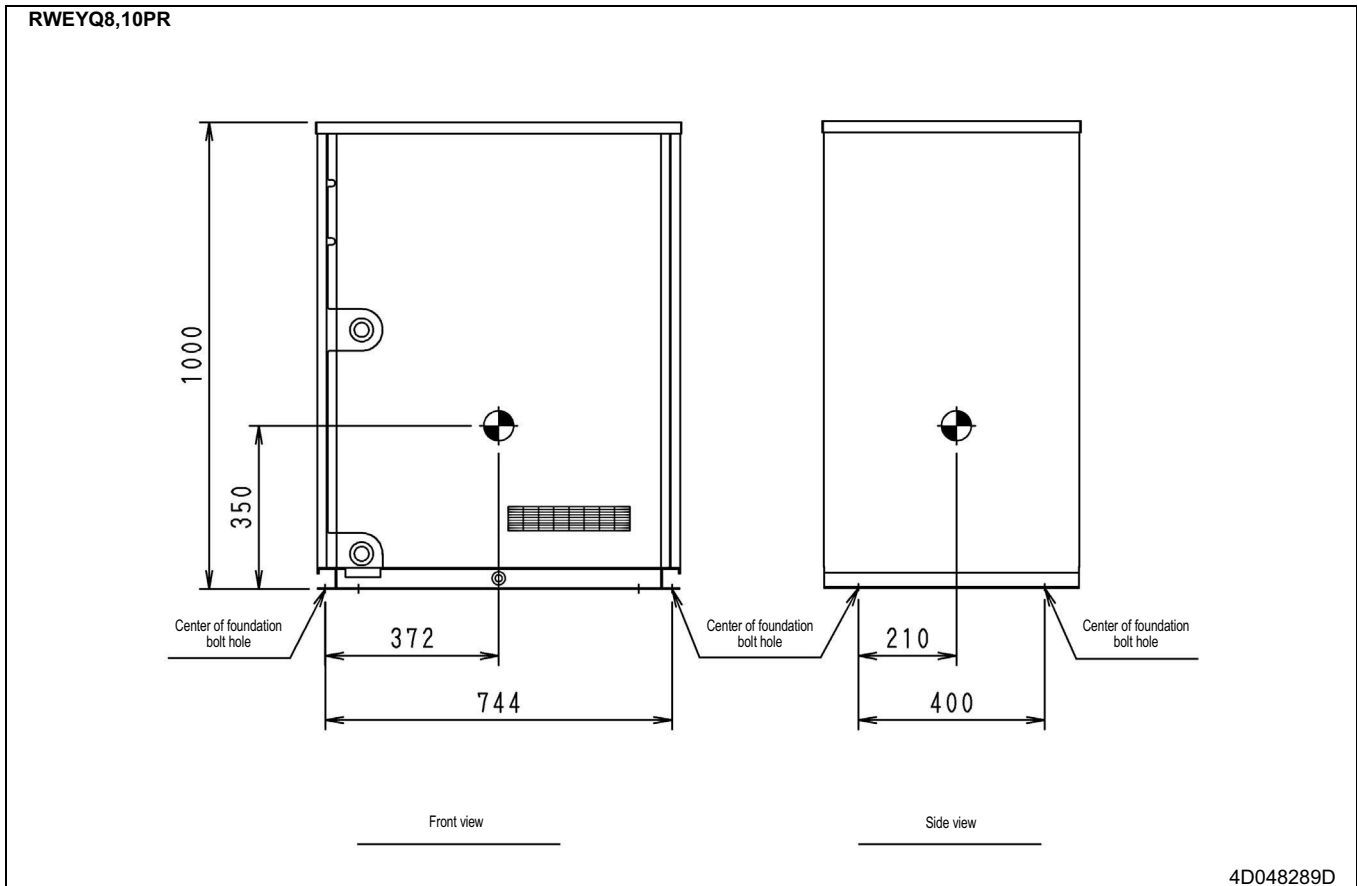
5 Dimensional drawing & centre of gravity

5 - 1 Dimensional drawing



4
5

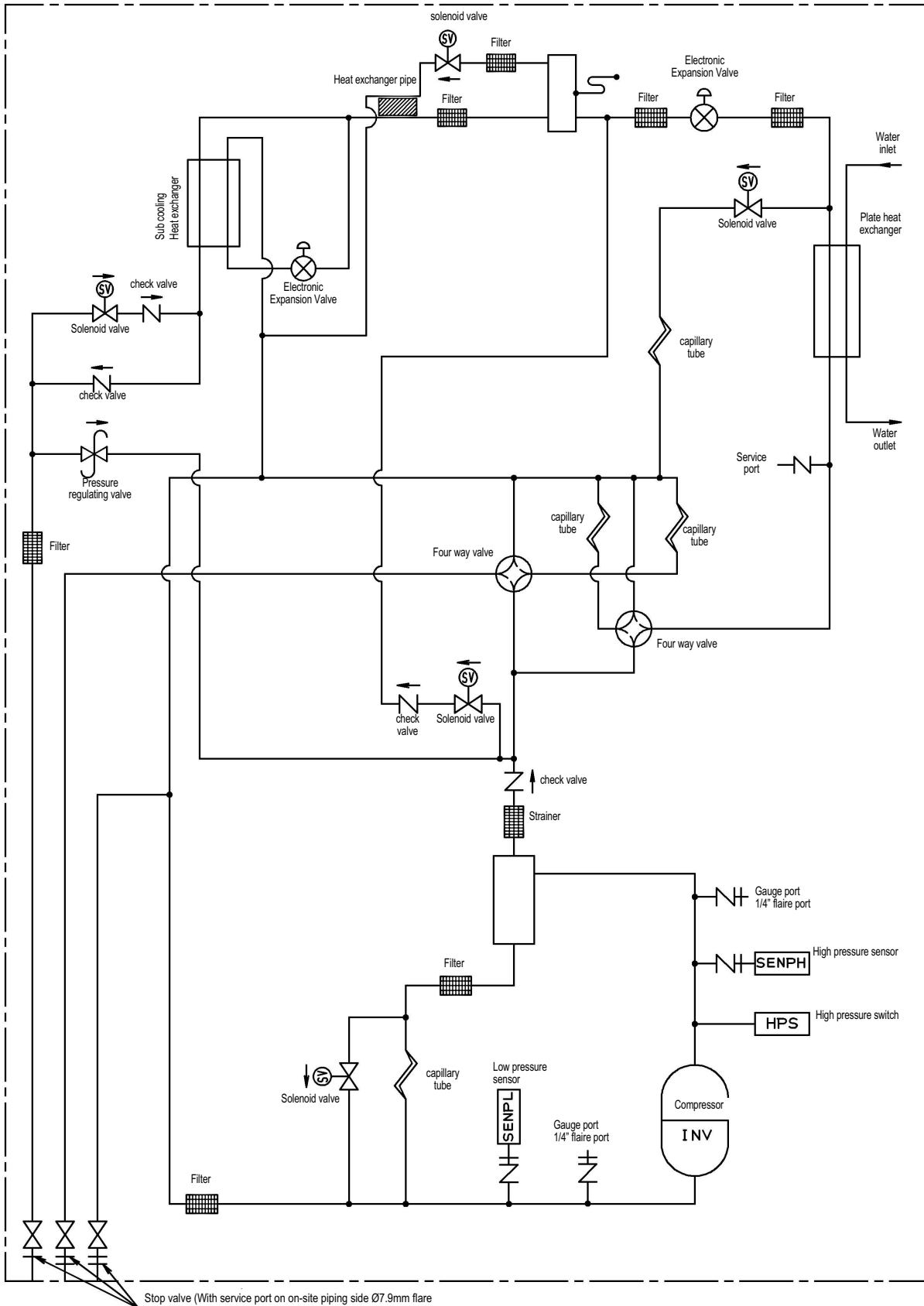
5 - 2 Centre of gravity



6 Piping diagram

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6

RWEYQ8-10PR

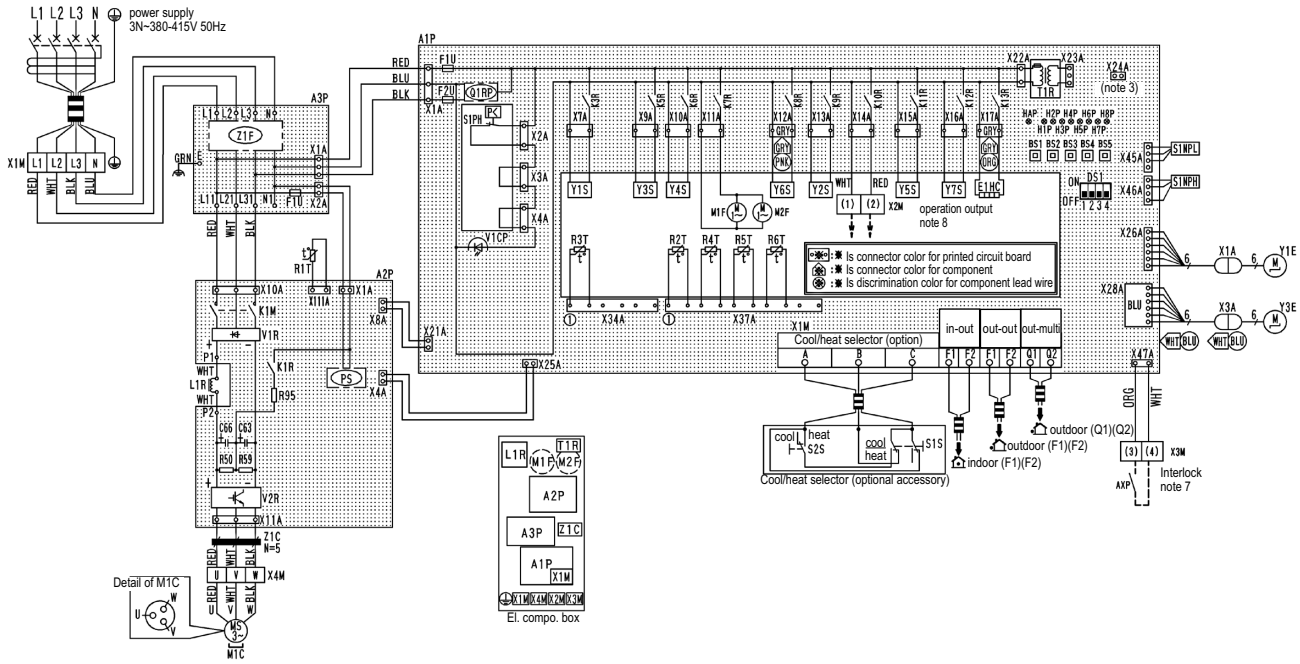


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7 Wiring diagram

7 - 1 Wiring diagram

RWEYQ8-10PR



4
7

A1P	Printed circuit board (Main)	K12R	Magnetic relay (Y7S)(A1P)	X1M	Terminal strip (Control)(A1P)
A2P	Printed circuit board (INV)	K13R	Magnetic relay (E1HC)(A1P)	X2M	Terminal strip (operation output)
A3P	Printed circuit board (Noise filter)	L1R	Reactor	X3M	Terminal strip (interlock)
BS1-5	Push button switch (Mode, set, return, test, reset)	M1C	Motor (compressor)	X4M	Terminal strip (M1C)
C63,C66	Capacitor	M1F,M2F	Motor (fan, inverter cooling)	Y1E	Electronic expansion valve (main)
DS1	Dip switch	PS	Switching power supply	Y3E	Electronic expansion valve (Sub cool)
E1HC	Crankcase heater	Q1RP	Phase reversal detect circuit (A1P)	Y1S	Solenoid valve (hot gas bypass)
F1U, F2U	Fuse (250V, 5A, ⊕)(A3P) Fuse (250V, 10A, ⊕)(A1P)	R50,R59	Resistor	Y2S	Solenoid valve (oil recovery)
H1P~8P	Pilotlamp (service monitor-green) (A1P) [H2P] prepare, test ----- flickering malfunction detection ----- light up	R1T	Thermistor (Fin)(A2P)	Y3S	Solenoid valve (receiver pressurization)
HAP	Pilotlamp (service monitor green) (A1P)	R2T	Thermistor (Suction)	Y4S	Solenoid valve (receiver gas purge)
K1M	Magnetic contactor (M1C)(A2P)	R3T	Thermistor (M1C discharge)	Y5S	Solenoid valve (4 way valve) (main)
K1R	Magnetic relay (A2P)	R4T	Thermistor (hex gas pipe)	Y6S	Solenoid valve (liquid pipe)
K3R	Magnetic relay (Y1S)(A1P)	R5T	Thermistor (sub cooling hex)	Y7S	Solenoid valve (4 way valve) (heat exchanger)
K5R	Magnetic relay (Y3S)(A1P)	R6T	Thermistor (Receiver liq. pipe)	Z1C	Noise filter (ferrite core)
K6R	Magnetic relay (Y4S)(A1P)	S1NPH	Pressure sensor (High)	Z1F	Noise filter (with surge absorber)
K7R	Magnetic relay (M1F,M2F)(A1P)	S1NPL	Pressure sensor (Low)	COOL/HEAT SELECTOR	
K8R	Magnetic relay (Y6S)(A1P)	S1PH	Pressure switch (High)	S1S	Selector switch (fan/cool - heat)
K9R	Magnetic relay (Y2S)(A1P)	T1R	Transformer (220-240V/20V)	S2S	Selector switch (cool/heat)
K10R	Magnetic relay (operation output) (A1P)	V1CP	Safety devices input	RED: red GRY: grey	
K11R	Magnetic relay (Y5S)(A1P)	V1R	Diode bridge (A2P)	BLK: black PNK: pink	
		V2R	Power module (A2P)	WHT: white ORG: orange	
		X1A,X3A	Connector (Y1E,Y3E)	BLU: blue	
		X1M	Terminal strip (power supply)		

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NOTES

- This wiring diagram is applied only to the outdoor unit
- □ □ □: Terminal strip ○ □ □ □: connector —○—: terminal —|—: Field wiring ⊕: protective earth (screw)
- When using the optional adapter, refer to the installation manual.
- Refer to the installation manual, for connection wiring to indoor-outdoor transmission F1-F2, outdoor-outdoor transmission F1-F2, outdoor-multi transmission Q1-Q2
- Refer to 'service precaution' label (on el.compo.box cover), how to use BS1-BS5 and DS1 switch.
- When operating, don't shortcircuit the protection device (S1PH).
- Be sure to connect an interlock circuit between the terminal (3)-(4) of terminal strip (X3M)
- Install a heat source water pump operation circuit between the terminal (1)-(2) of terminal strip (X2M), when interlocking a heat source water pump and system operation.
- Cool/heat selector cannot be connected when operating heat recovery system.

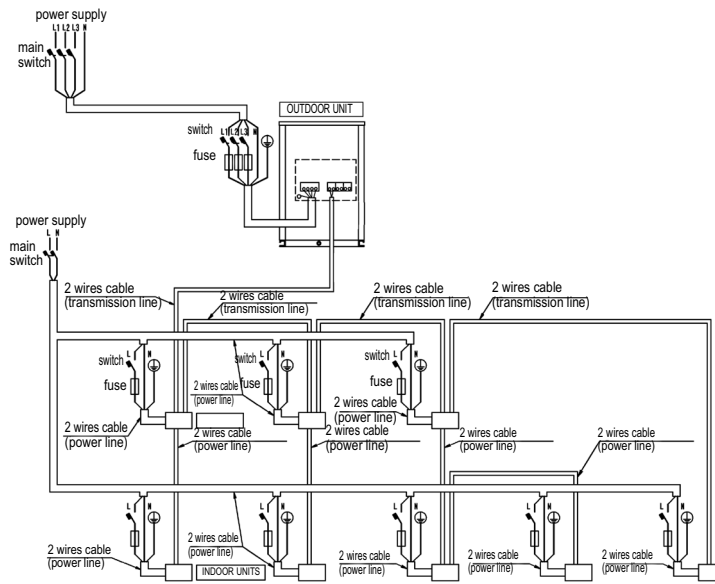
7 Wiring diagram

7 - 2 External connection diagram

4

7

RWEYQ-PR-[HEAT RECOVERY]

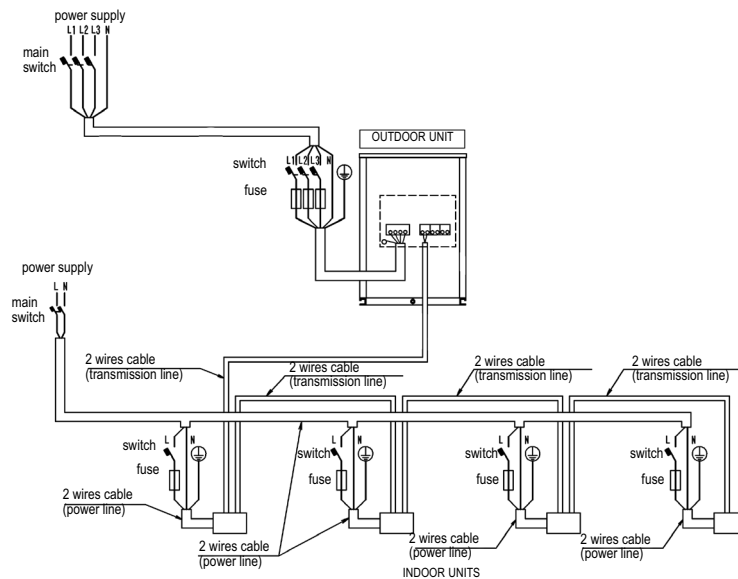


NOTES

- 1 All wiring, components and materials to be procured on the site must comply with the applicable local and national codes
- 2 Use copper conductors only.
- 3 As for details, see wiring diagram.
- 4 Install circuit breaker for safety.
- 5 All field wiring and components must be provided by licensed electrician.
- 6 Unit shall be grounded in compliance with the applicable local and national codes
- 7 Wiring shown are general points-of-connection guides only and are not intended for or to include all details for a specific installation.
- 8 Be sure to install the switch and the fuse to the power line of each equipment.
- 9 Install the main switch that can interrupt all the power sources in an integrated manner because this system consists of the equipment utilizing the multiple power sources.
- 10 If there exists the possibility of reversed phase, lose phase, momentary blackout or the power goes on and off while the product is operating, attach a reversed phase protection circuit locally. Running the product in reversed phase may break the compressor and other parts.

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RWEYQ-PR-[HEAT PUMP]



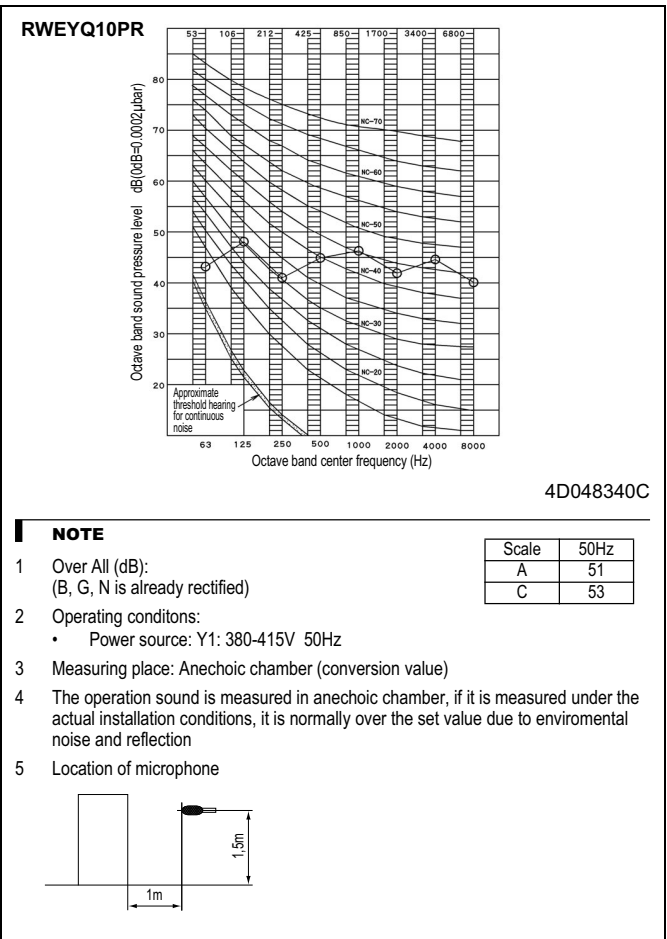
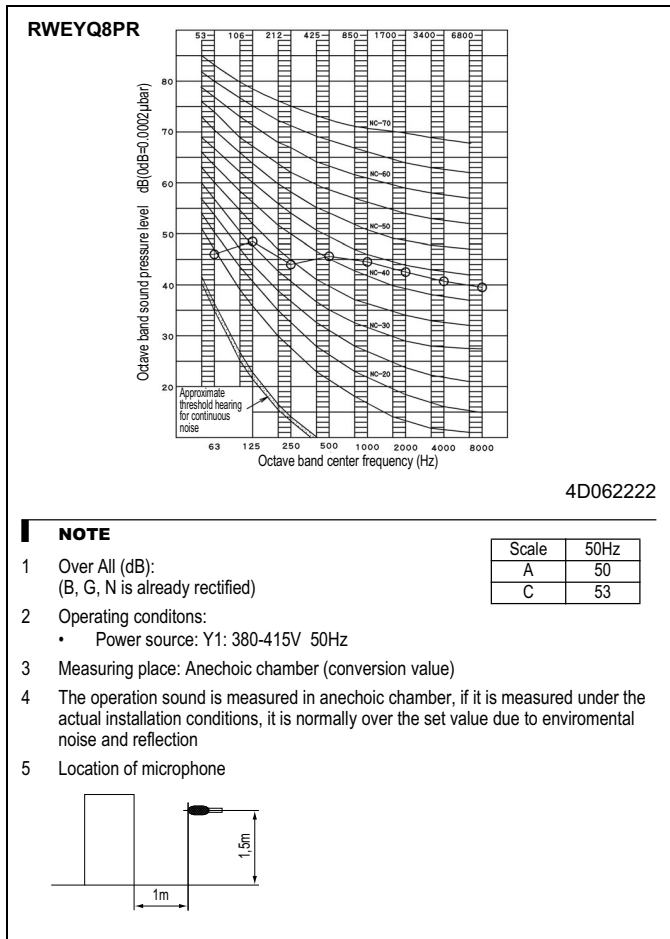
NOTES

- 1 All wiring, components and materials to be procured on the site must comply with the applicable local and national codes
- 2 Use copper conductors only.
- 3 As for details, see wiring diagram.
- 4 Install circuit breaker for safety.
- 5 All field wiring and components must be provided by licensed electrician.
- 6 Unit shall be grounded in compliance with the applicable local and national codes
- 7 Wiring shown are general points-of-connection guides only and are not intended for or to include all details for a specific installation.
- 8 Be sure to install the switch and the fuse to the power line of each equipment.
- 9 Install the main switch that can interrupt all the power sources in an integrated manner because this system consists of the equipment utilizing the multiple power sources.
- 10 If there exists the possibility of reversed phase, lose phase, momentary blackout or the power goes on and off while the product is operating, attach a reversed phase protection circuit locally. Running the product in reversed phase may break the compressor and other parts.

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8 Sound data

8 - 1 Sound pressure spectrum

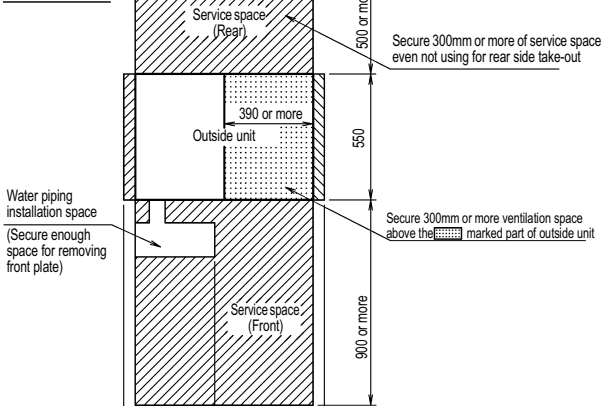


9 Installation

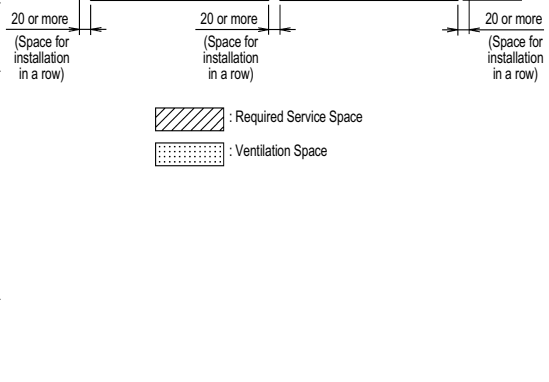
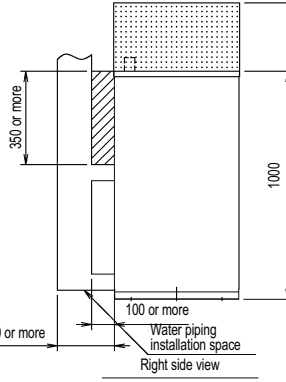
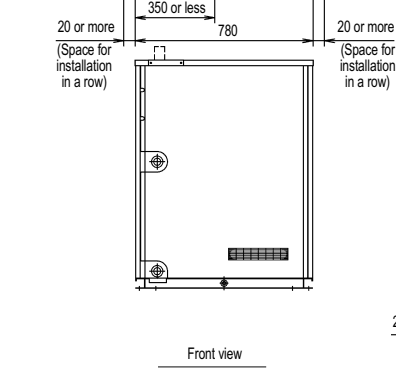
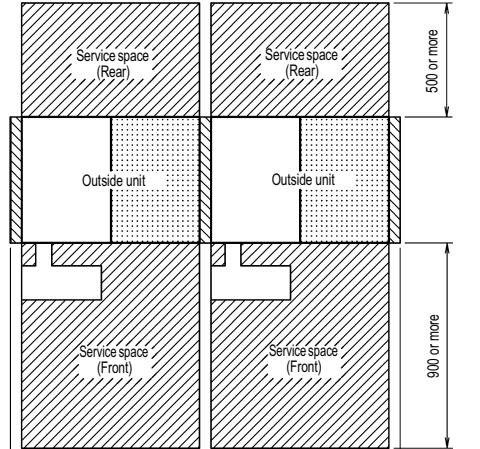
9 - 1 Service space

RWEYQ8-10PR

For single unit installation



For installation in a row



: Required Service Space
 : Ventilation Space

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9

9 Installation

9 - 2 Refrigerant pipe selection

RWEYQ-PR

Example of connection		Branch with REFINET joint		Branch with REFINET joint and REFINET header		Branch with REFINET header																																											
<p>Example of connection (Connection of 8 indoor units Heat pump system (2-HP))</p> <p>• Piping between outside unit and BS unit — (Thick line), 3-piping — (Thin line), 2-piping { Gas piping { Liquid piping</p> <p>• Piping between BS unit and indoor unit — (Thick line), 3-piping — (Thin line), 2-piping { Gas piping { Liquid piping</p>		<p>Example 1</p> <p>Single outside unit system</p>		<p>Example 2</p> <p>Contrast</p>		<p>Example 3</p> <p>Heat recovery system</p>																																											
Maximum allowable length	Actual pipe length	Pipe length between outside (a) and indoor units ≤ 120m (Example 1) unit [a] + b + c + d + e + f + g + h + i + j + k + l + m + n + o + p + q + r + s + t + u + v + w + x + y + z ≤ 120m	Pipe length between outside (a) and indoor units ≤ 120m (Example 2) unit [a] + b + c + d + e + f + g + h + i + j + k + l + m + n + o + p + q + r + s + t + u + v + w + x + y + z ≤ 120m	Pipe length between outside (a) and indoor units ≤ 120m (Example 3) unit [a] + b + c + d + e + f + g + h + i + j + k + l + m + n + o + p + q + r + s + t + u + v + w + x + y + z ≤ 120m	Equivalent length between outside and indoor units ≤ 140m (Note 1) (assume equivalent pipe length of REFINET joint to be 0.5m, that of REFINET header to be 1m, BSVQ100, 160 is 4 m and BSVQ250 is 6m).	Total piping length from outside unit to all indoor units ≤ 300m																																											
Allowable height	Difference in height	Difference in height between outside and indoor units (H1) ≤ 50m (Max. 40m if the outside unit is below)	Difference in height between outside and indoor units (H1) ≤ 50m (Max. 40m if the outside unit is below)	Difference in height between outside and indoor units (H1) ≤ 50m (Max. 40m if the outside unit is below)	Difference in height between outside and indoor units (H2) ≤ 15m	Difference in height between outside and indoor units (H3) ≥ 2m																																											
Additional piping limitations based on inlet water temperature in cooling refer to table: piping limitations based on inlet water temperature in cooling mode (Brine concentration 40%)	Additional piping limitations based on inlet water temperature in cooling refer to table: piping limitations based on inlet water temperature in cooling mode (Brine concentration 40%)	Pipe length from first refrigerant branch kit (either REFINET joint or REFINET header) to indoor unit ≤ 40m (Note 2) (Example 1) unit [a] + b + c + d + e + f + g + h + i + j + k + l + m + n + o + p + q + r + s + t + u + v + w + x + y + z ≤ 40m	Pipe length from first refrigerant branch kit (either REFINET joint or REFINET header) to indoor unit ≤ 40m (Note 2) (Example 2) unit [a] + b + c + d + e + f + g + h + i + j + k + l + m + n + o + p + q + r + s + t + u + v + w + x + y + z ≤ 40m	Pipe length from first refrigerant branch kit (either REFINET joint or REFINET header) to indoor unit ≤ 40m (Note 2) (Example 3) unit [a] + b + c + d + e + f + g + h + i + j + k + l + m + n + o + p + q + r + s + t + u + v + w + x + y + z ≤ 40m	How to select REFINET header																																												
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9 Installation

9 - 2 Refrigerant pipe selection

RWEYQ-PR

System	Liquid pipe
RWEYQ8, 10PR	φ9.5 → φ12.7

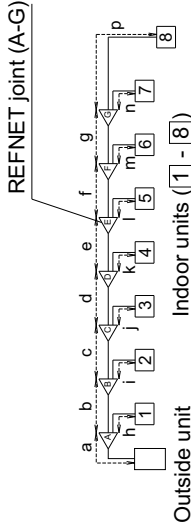
Note 1. When the equivalent pipe length between outside and indoor units is 80m or more, the size of main pipes on the liquid side (refer to figure 21) must be increased according to the right table.
(Never increase suction gas pipe and HP/LP gas pipe.)
(Refer to figure 21)

1. Outside unit
2. Main pipes
3. Increase only liquid pipe size
4. First refrigerant branch kit
5. Indoor unit

Note 2. Allowable length after the first refrigerant branch kit to indoor units is 40m or less, however it can be extended up to 90m if all the following conditions are satisfied. (In case of "Branch with REFNET joint")

Required Conditions	Example Drawings
1. It is necessary to increase the liquid and suction gas pipe size between the first branch kit and the final branch kit. (Reducers must be procured on site) However, the pipes that are same pipe size with main pipe must not be increased.	$\text{[8]} \quad b + c + d + e + f + g + p \leq 90 \text{ m}$ increase the liquid and suction gas pipe size of b, c, d, e, f, g
2. For calculation of Total extension length, the actual length of above pipes must be doubled. (except main pipe and the pipes that are not increased)	$a + b \times 2 + c \times 2 + d \times 2 + e \times 2 + f \times 2 + g \times 2$ $+ h + i + j + k + l + m + n + p \leq 300 \text{ m}$
3. Indoor unit to the nearest branch kit $\leq 40 \text{ m}$	$h, i, j, \dots, p \leq 40 \text{ m}$
4. The difference between [Outside unit to the farthest indoor unit] and [Outside unit to the nearest indoor unit] $\leq 40 \text{ m}$	The farthest indoor unit [8] The nearest indoor unit [1] $(a + b + c + d + e + f + g + p) - (a + h) \leq 40 \text{ m}$

Increase the liquid and suction gas pipe size as follows
 φ9.5 → φ12.7 φ15.9 → φ19.1 φ22.2 → φ25.4* φ34.9 → φ38.1*
 φ12.7 → φ15.9 φ19.1 → φ22.2 φ28.6 → φ31.8*

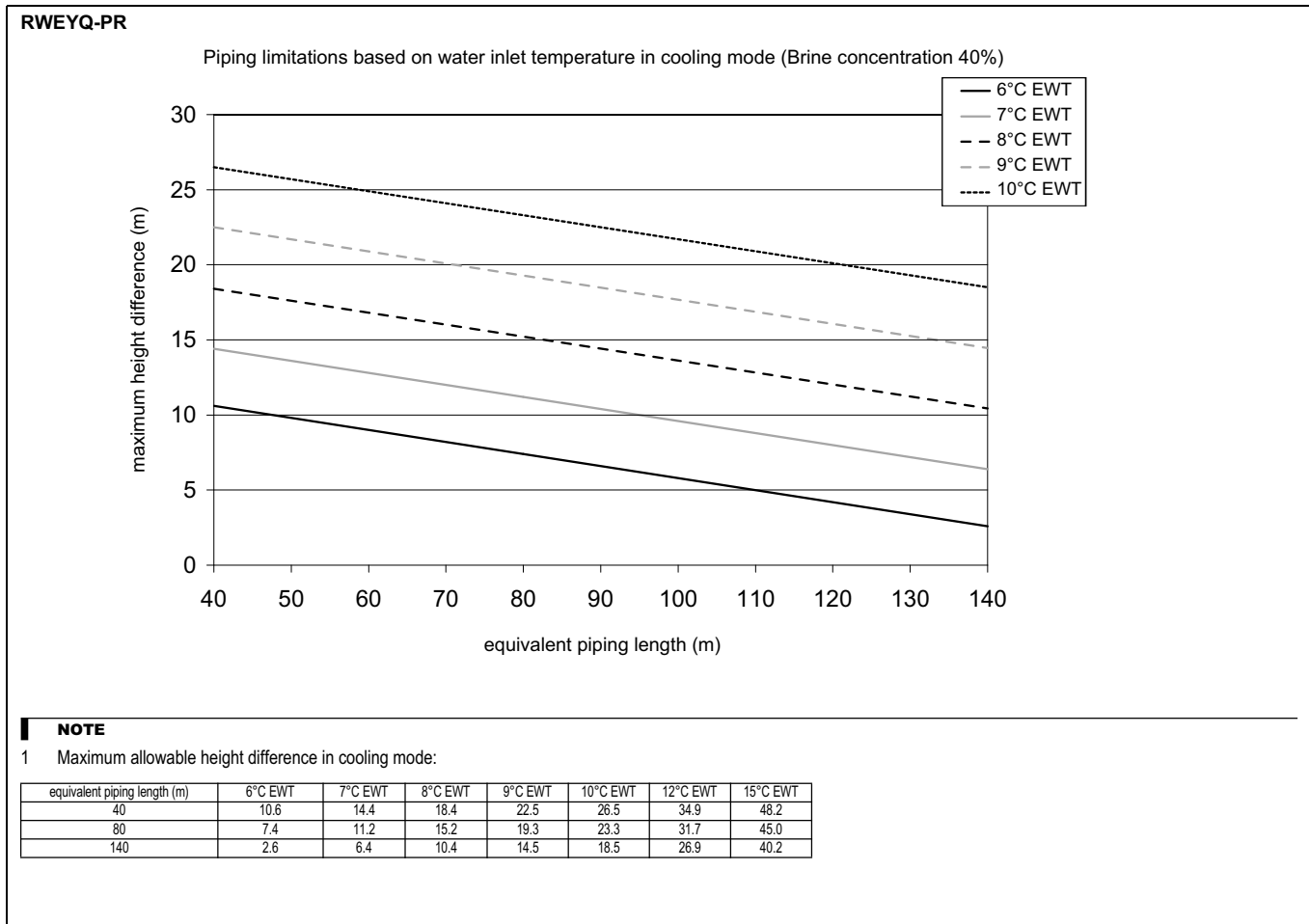


*If available on the site, use this size. Otherwise it can not be increased.

This table is about a heat recovery system (3-piping: suction gas, HP/LP gas and liquid pipes).
 In a case of heat pump system (2-piping: gas and liquid pipes), select the pipe size from suction gas pipe for gas pipes and from liquid gas pipe for liquid pipes. And BS unit is not required.

9 Installation

9 - 2 Refrigerant pipe selection

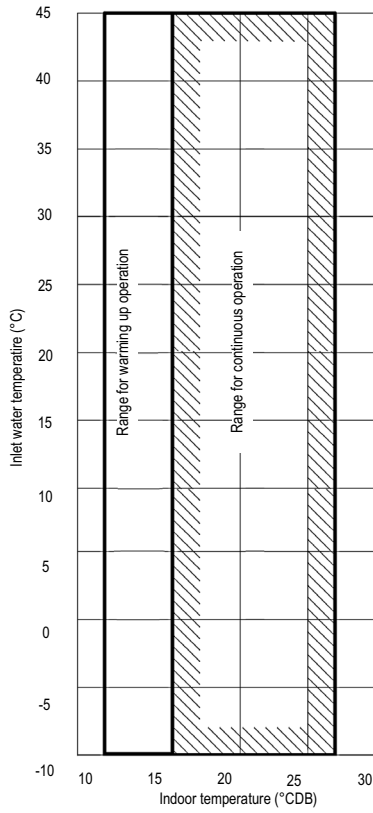
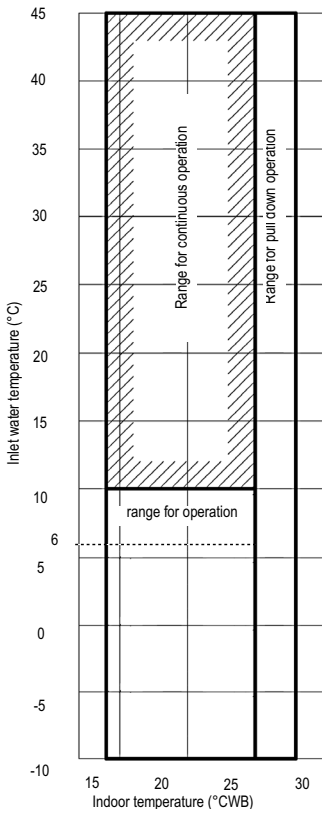


10 Operation range

RWEYQ-PR

Cooling

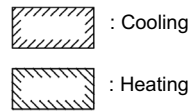
Heating



NOTES

- 1 This figure shows the range which can be operated, when it is the water volume shown below.
80~150L/min
- 2 When using Inlet Water Temperatures (IWT) lower than 20°C in heating mode, it is advised to reduce the Connection Ratio in function of the low water temperature, to guarantee indoor comfort in heating.
- 3 When cooling load is small, thermostat-off may be carried out for freeze-up protection.
- 4 Hold ambient temperature at 0~40°C and humidity at 80%RH or less.
- 5 If cooling load > heating load: please use cooling table
If heating load > cooling load: please use heating table

Range for continuous operation



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4
10

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BSVQ100-250P8

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	Wiring diagram	184
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1 Specifications

1-1 Technical Specifications				BSVQ100P8V1B	BSVQ160P8V1B	BSVQ250P8V1B
Power input (nominal)	Cooling	kW		0.005	0.005	0.005
	Heating	kW		0.005	0.005	0.005
Max. number of connectable units				5	8	8
Total capacity index of connectable indoor unit				20 < x ≤ 100	100 < x ≤ 160	160 < x ≤ 250
Casing	Material			Galvanised steel		
Dimensions	Unit	Height	mm	207	207	207
		Width	mm	388	388	388
		Depth	mm	326	326	326
Weight	Unit	kg	14.0	14.0	15.0	
Outdoor Unit	Liquid (OD)	Type	Braze connection			
		Diameter	mm	9.5	9.5	9.5
	Gas	Type	Braze connection			
		Diameter	mm	15.9	15.9	22.2
	Discharge Gas	Type	Braze connection			
		Diameter	mm	12.7	12.7	19.1
Indoor Units	Liquid (OD)	Type	Braze connection			
		Diameter	mm	9.5	9.5	9.5
	Gas	Type	Braze connection			
		Diameter	mm	15.9	15.9	22.2
Sound absorbing thermal insulation material				Foamed polyurethane, Frame resisting needle felt		
Standard Accessories	Item	Installation manual				
		Attached piping				
		Insulation pipe cover				
		Clamps				
Notes				In case of connection with a 20~50 type indoor unit, match to the size of the field pipe using the attached pipe. Connection between the attached pipe and the field pipe must be brazed.	In case of connecting with indoor unit capacity index 150 or more and 160 or less, match to the size of the field pipe using the attached pipe. Connection between the attached pipe and the field pipe must be brazed.	In case of connecting with a 200 type indoor unit or capacity index more than 160 and less than 200, match to the size of the field pipe using the attached pipe. Connection between the attached pipe and the field pipe must be brazed.

1-2 Electrical Specifications				BSVQ100P8V1B	BSVQ160P8V1B	BSVQ250P8V1B
Power Supply	Phase			1~		
	Frequency	Hz		50	50	50
	Voltage	V		220-240		
Voltage range	Minimum	V		-10%		
	Maximum	V		+10%		
Total circuit	Minimum circuit amps (MCA)	A		0.1	0.1	0.1
	Maximum Fuse Amps	A		15	15	15
Notes				Voltage range : units are suitable for use on electrical systems where voltage supplied to unit terminal is not below or above listed range limits		
				Maximum allowable voltage range variation between phases is 2%		
				MCA / MFA : MCA = 1.25 x FLA		
				MFA is smaller than or equal to 4 x FLA		
				Next lower standard fuse rating minimum 15A		
				Select wire size based on MCA		
				Instead of a fuse, use a circuit breaker		

2 Safety device settings

BSVQ-P8	
Model	Safety devices
	PC board fuse
BSVQ100PV1	250V 3.15A
BSVQ160PV1	250V 3.15A
BSVQ250PV1	250V 3.15A
BSVQ36PVJU	250V 3.15A
BSVQ60PVJU	250V 3.15A
BSVQ96PVJU	250V 3.15A

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3 Options

BSVQ-P8				
OPTION LIST				
No	Item	BSVQ100P	BSVQ160P	BSVQ250P
1	PCB for multi tenant	DTA114A61		
2	Sound reduction for BSVQ box	EKBSVQLNP (see note 2)		

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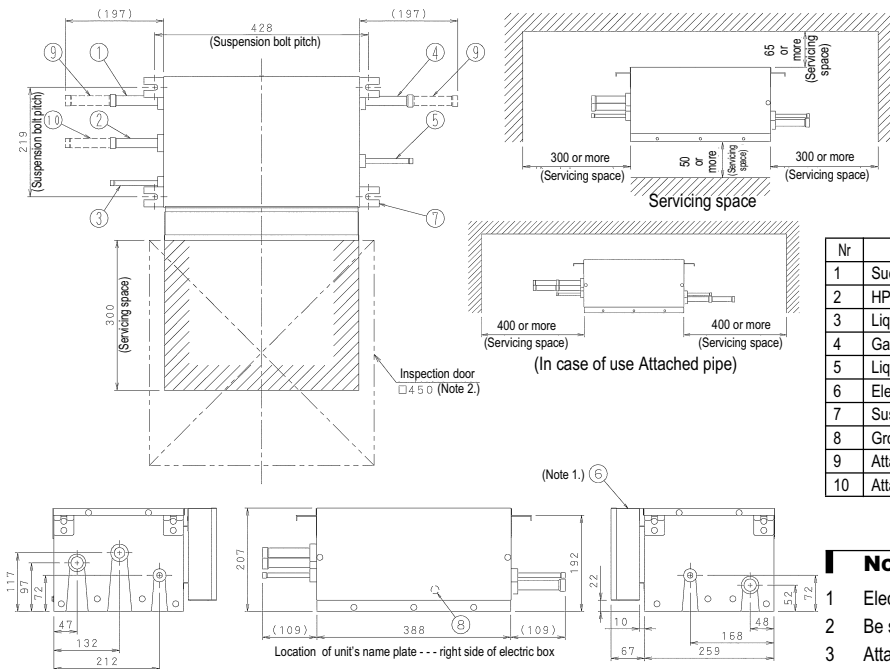
NOTE

- All options are kits.
- Only available for standard BSVQ boxes (not possible for central BSV4Q).
Allows to reduce operating sound of BSVQ-box (requires 1 sound kit per BSVQ-box).

4 Dimensional drawing & centre of gravity

4 - 1 Dimensional drawing

BSVQ250PV1



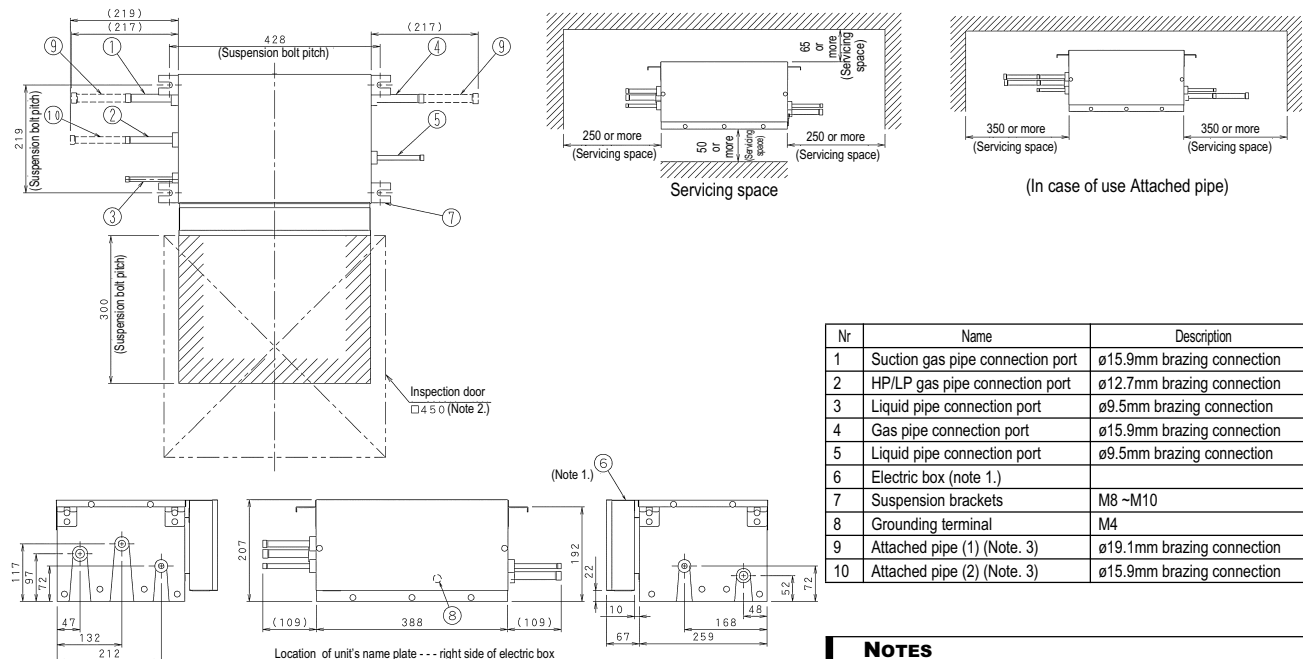
Nr	Name	Description
1	Suction gas pipe connection port	ø22.2mm brazing connection
2	HP/LP gas pipe connection port	ø19.1mm brazing connection
3	Liquid pipe connection port	ø9.5mm brazing connection
4	Gas pipe connection port	ø22.2mm brazing connection
5	Liquid pipe connection port	ø9.5mm brazing connection
6	Electric box (note 1.)	
7	Suspension brackets	M8 ~M10
8	Grounding terminal	M4
9	Attached pipe (1) (Note. 3)	ø19.1mm brazing connection
10	Attached pipe (2) (Note. 3)	ø15.9mm brazing connection

NOTES

- 1 Electric box can also be fixed on the other side of the unit.
- 2 Be sure to install a inspection door at electric box side.
- 3 Attached pipe (1) and attached pipe (2) is used in case of connecting with indoor capacity index more than 160 and less than 200 In case of connecting one indoor unit of 200 type, only gas pipe connection port need Attached pipe (1).
- 4 Small sound will be made when changing over the motor operated valve, which may be disturbing. Do not install it at the place such as bedroom under roof.

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BSVQ160PV1



Nr	Name	Description
1	Suction gas pipe connection port	ø15.9mm brazing connection
2	HP/LP gas pipe connection port	ø12.7mm brazing connection
3	Liquid pipe connection port	ø9.5mm brazing connection
4	Gas pipe connection port	ø15.9mm brazing connection
5	Liquid pipe connection port	ø9.5mm brazing connection
6	Electric box (note 1.)	
7	Suspension brackets	M8 ~M10
8	Grounding terminal	M4
9	Attached pipe (1) (Note. 3)	ø19.1mm brazing connection
10	Attached pipe (2) (Note. 3)	ø15.9mm brazing connection

NOTES

- 1 Electric box can also be fixed on the other side of the unit.
- 2 Be sure to install an inspection door at electric box side.
- 3 Attached pipe is only used in case of connecting with indoor unit capacity index 150 or more and 160 or less.
- 4 Small sound of refrigerant will be made, which may be disturbing. Do not install it at the place such as bedroom under roof.

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4 Dimensional drawing & centre of gravity

4 - 1 Dimensional drawing

BSVQ100PV1

Servicing space

(In case of use attached pipe)

Nr	Name	Description
1	Suction gas pipe connection port	ø15.9mm brazing connection
2	HP/LP gas pipe connection port	ø12.7mm brazing connection
3	Liquid pipe connection port	ø9.5mm brazing connection
4	Gas pipe connection port	ø15.9mm brazing connection
5	Liquid pipe connection port	ø9.5mm brazing connection
6	Electric box (note 1.)	
7	Suspension brackets	M8 ~M10
8	Grounding terminal	M4
9	Attached pipe (1) (Note. 3)	ø12.7mm brazing connection
10	Attached pipe (2) (Note. 3)	ø6.4mm brazing connection

NOTES

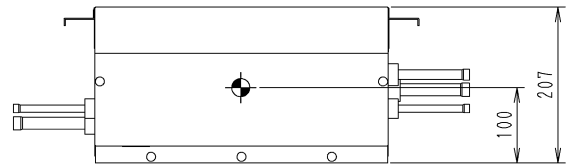
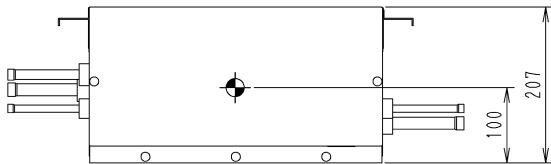
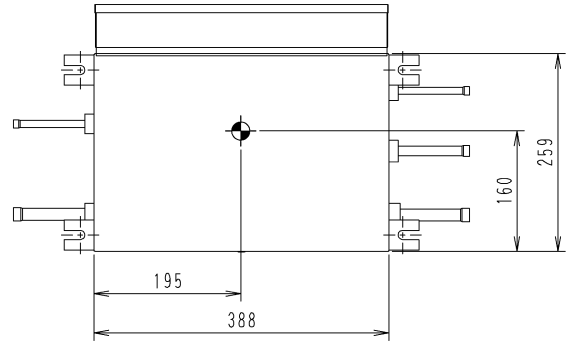
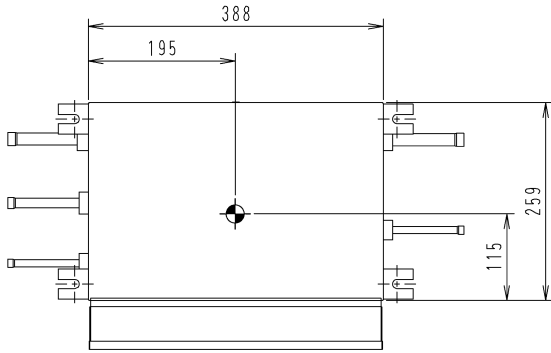
- 1 Electric box can also be fixed on the other side of the unit.
- 2 Be sure to install an inspection door at electric box side.
- 3 Attached pipe is only used in case of connecting with a 20-50 class indoor unit.
- 4 Small sound of refrigerant will be made, which may be disturbing.
Do not install it at the place such as bedroom under roof.

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4 Dimensional drawing & centre of gravity

4 - 2 Centre of gravity

BSVQ100,160PV1

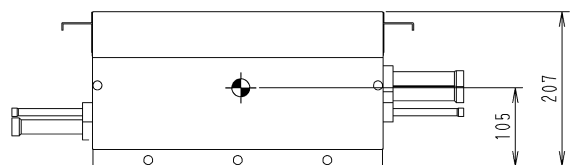
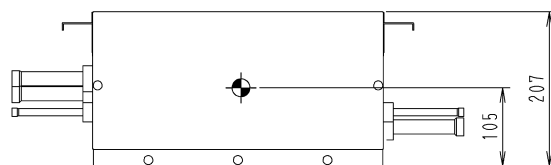
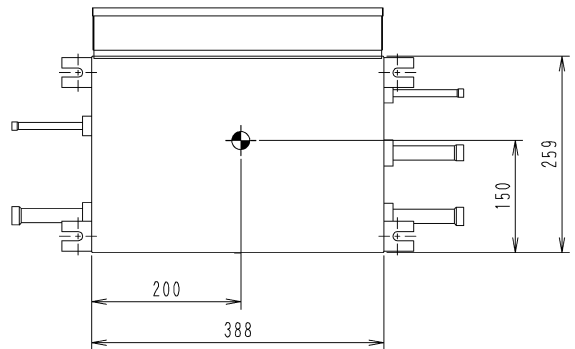
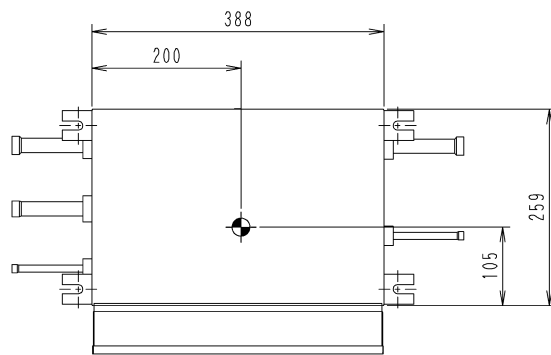


In case of the electrical box on the standard side of the unit

In case of the electrical box on the other side of the unit

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BSVQ250PV1

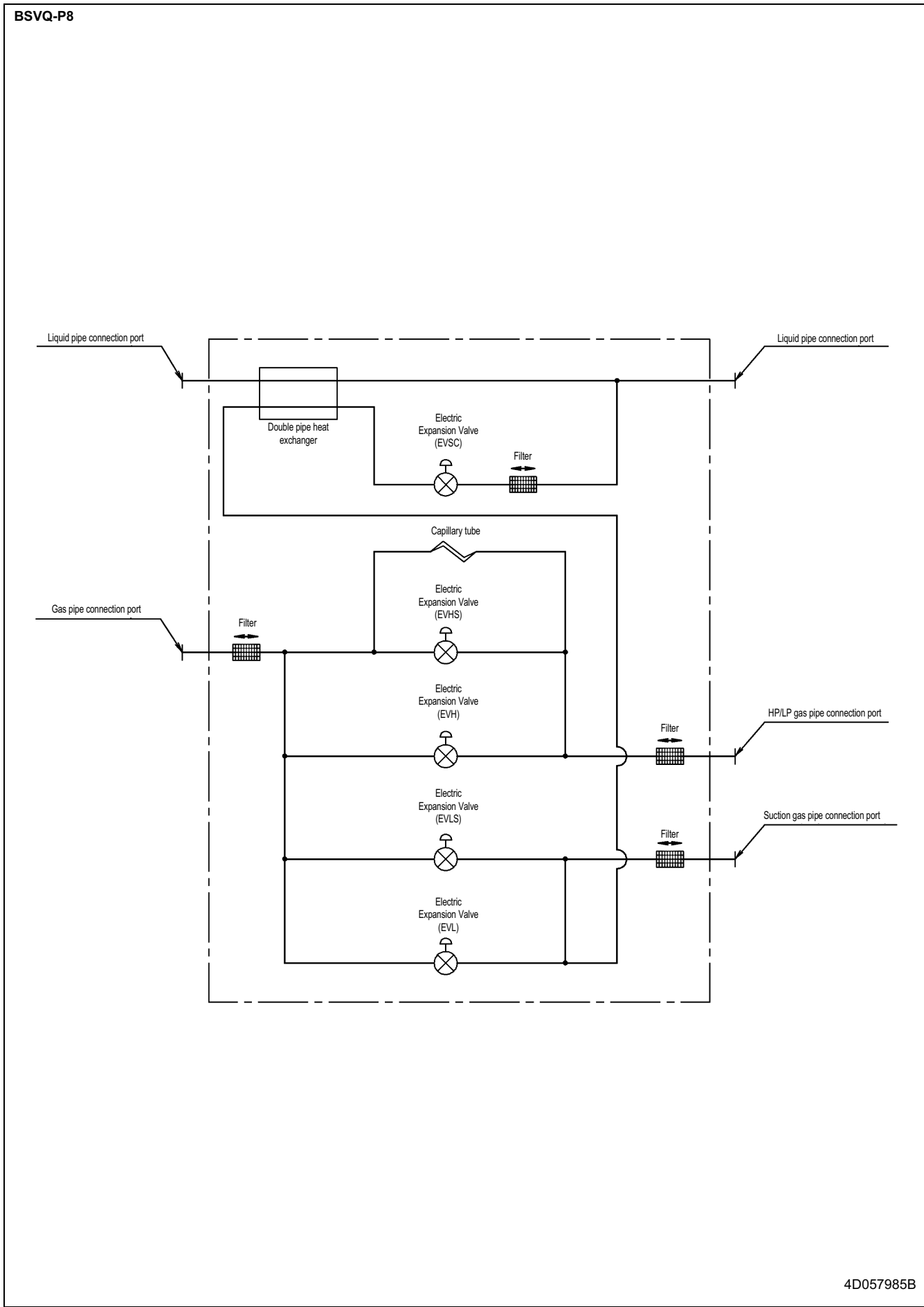


In case of the electrical box on the standard side of the unit

In case of the electrical box on the other side of the unit

3D058132

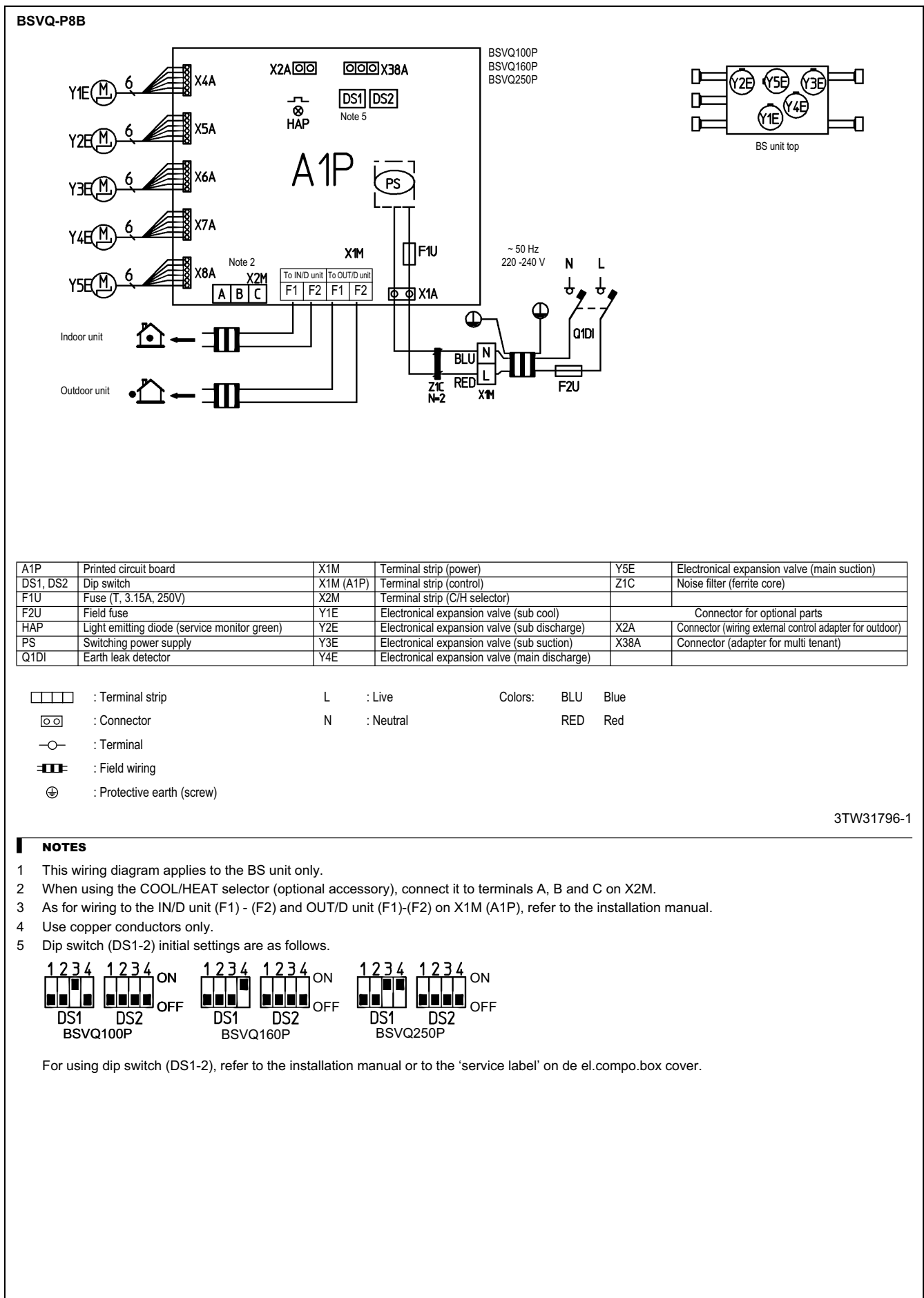
5 Piping diagram



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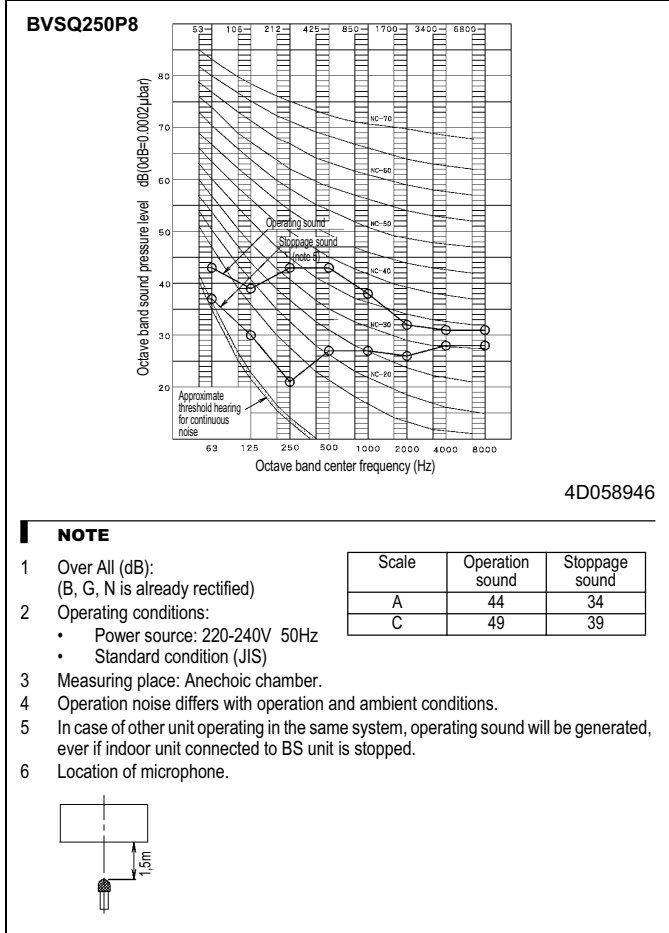
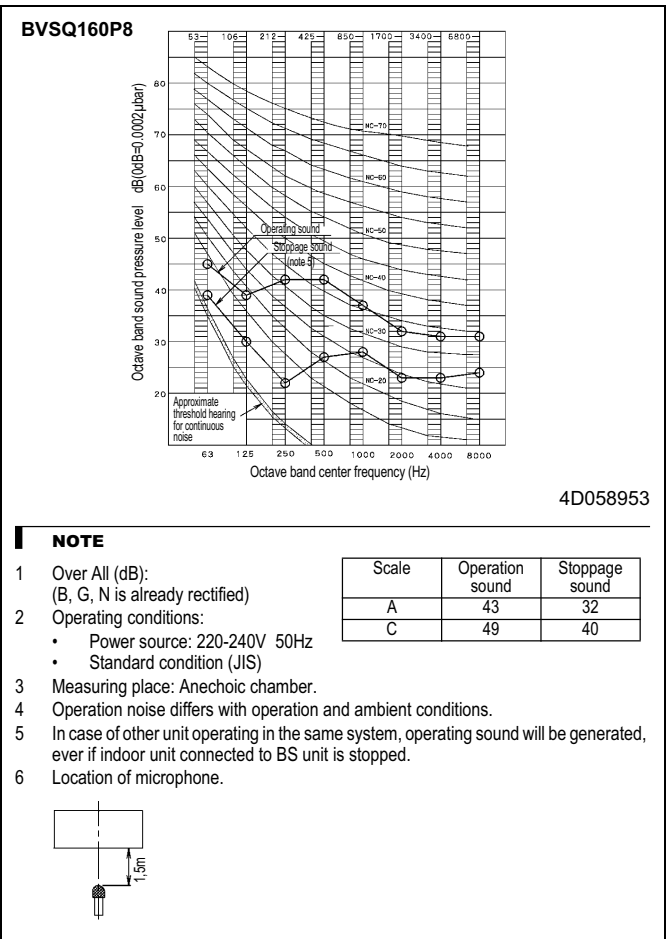
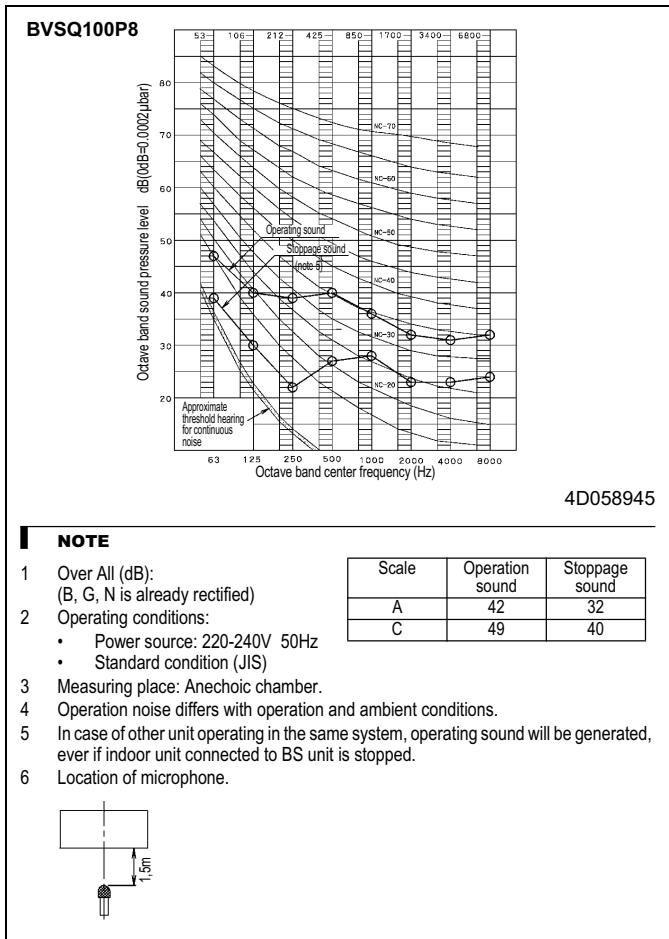
6 Wiring diagram

6 - 1 Wiring diagram



7 Sound data

7 - 1 Sound pressure spectrum



5
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1 Specifications

1-1 Technical Specifications				BSV4Q100PV1	
Maximum capacity index of connectable indoor units				400	
Maximum capacity index of connectable indoor units per branch				100	
Number of branches				4	
Maximum number of connectable indoor units				20	
Maximum number of connectable indoor units per branch				5	
Power input (nominal)	Cooling		kW	0.020	
	Heating		kW	0.020	
Casing	Material			Galvanised steel	
Dimensions	Unit	Height	mm	209	
		Width	mm	1,053	
		Depth	mm	635	
Weight	Unit			kg	
Outdoor Unit	Liquid (OD)	Type		Braze connection	
		Diameter	mm	12.7	
	Gas	Type		Braze connection	
		Diameter	mm	28.6	
	Discharge Gas	Type		Braze connection	
		Diameter	mm	19.1	
Indoor Units	Liquid (OD)	Type		Braze connection	
		Diameter	mm	9.5	
	Gas	Type		Braze connection	
		Diameter	mm	15.9	
Sound absorbing thermal insulation material				Foamed polyurethane, Flame resisting needle felt	
Standard Accessories	Item			Installation manual	
				Attached piping	
				Insulation pipe cover	
				Clamps	
Notes				In case of connection with a 20~50 type indoor unit, match to the size of the field pipe using the attached pipe. Connection between the attached pipe and the field pipe must be brazed.	
				In case the joint diameter does not fit on the triple piping side, a reducer is needed (field supply)	
				Insulators are necessary (field supply) for the triple piping side	

1-2 Electrical Specifications				BSV4Q100PV1	
Power Supply	Name		V1		
	Phase		1~		
	Frequency	Hz	50		
	Voltage	V	220-240		
Voltage range	Minimum	V	-10%		
	Maximum	V	+10%		
Total circuit	Minimum circuit amps (MCA)	A	0.5		
	Maximum Fuse Amps	A	15		
Notes				Voltage range : units are suitable for use on electrical systems where voltage supplied to unit terminal is not below or above listed range limits	
				Maximum allowable voltage range variation between phases is 2%	
				MCA / MFA : MCA = 1.25 x FLA	
				MFA is smaller than or equal to 4 x FLA	
				Next lower standard fuse rating minimum 15A	
				Select wire size based on MCA	
				Instead of a fuse, use a circuit breaker	

2 Safety device settings

BSV4Q100PV
BSV6Q100PV

Model	Safety devices
	PC board fuse
BSV4Q100PV	250V 3.15A
BSV6Q100PV	250V 3.15A

4D064144

3 Dimensional drawing & centre of gravity

3 - 1 Dimensional drawing

BSV4Q100PV

Location of unit's name plate . . . Right side of electric box

Nr	Name	Description
1	Suction gas pipe connection port (note 5,6)	ø28.6mm brazing connection
2	HP/LP gas pipe connection port (note 5,6)	ø19.1mm brazing connection
3	Liquid pipe connection port (note 5,6)	ø12.7mm brazing connection
4	Gas pipe connection port	ø15.9mm brazing connection
5	Liquid pipe connection port	ø9.5mm brazing connection
6	Electric box (note 1.)	
7	Suspension brackets	M8 -M10
8	Grounding terminal	M4
9	Attached pipe (1) (Note. 3)	ø12.7mm brazing connection
10	Attached pipe (2) (Note. 3)	ø6.4mm brazing connection

NOTES

- Be sure to install an inspection door at electric box side. Another door is necessary to unload the product.
- Install it at the place where small sound of refrigerant does not disturb. Must not install it at the space such as roof-space of room where persons exists.
- Attached pipe is only used in case of connecting with 20-50 class indoor unit.
- Occupy the space with is possible to install field pipes.
- Reducer may be required (field supply) if joint diameter does not suit on the triple piping side.
- Insulators are necessary (field supply) for the triple piping side.
- This space is a space to keep a top panel when servicing.

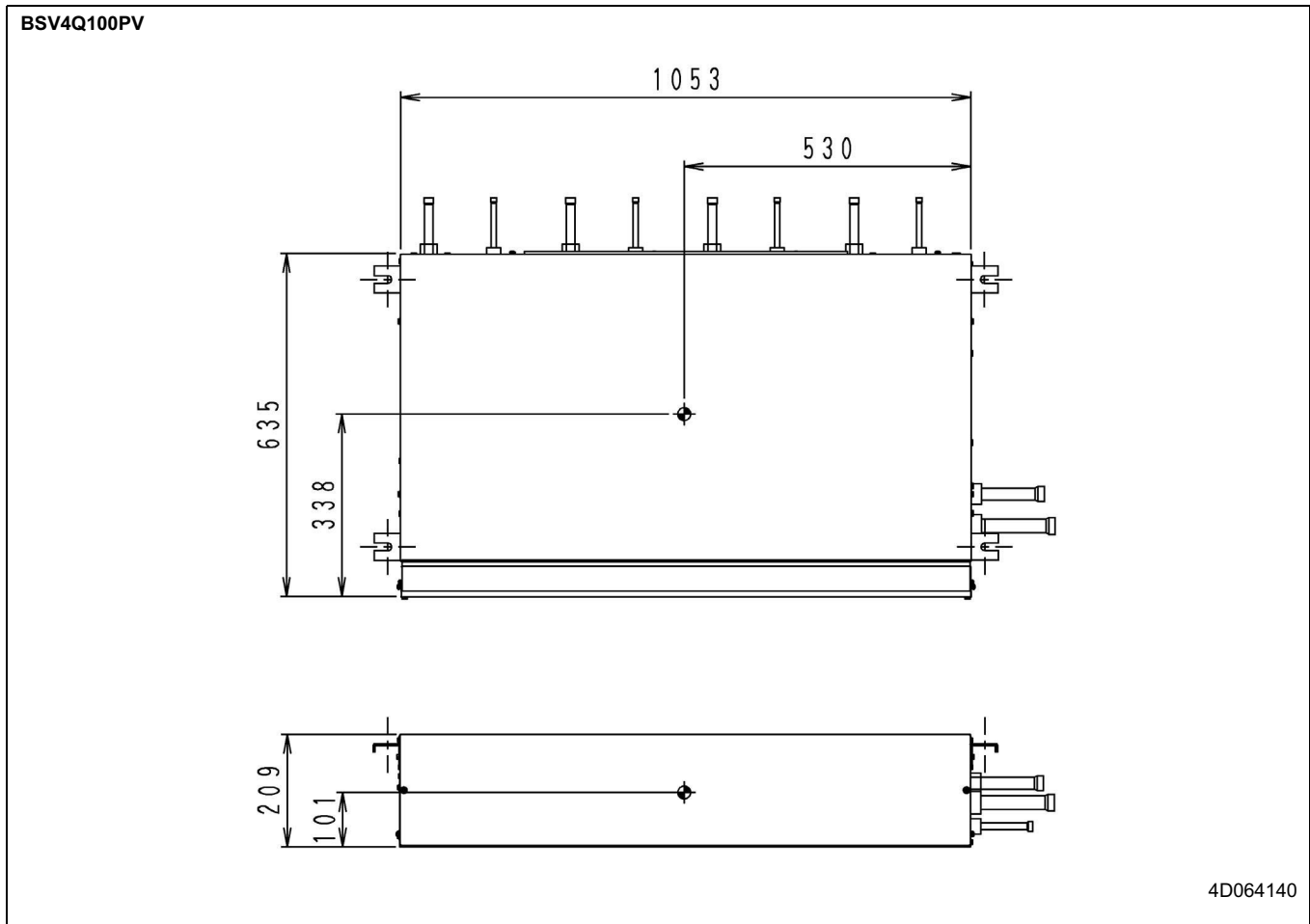
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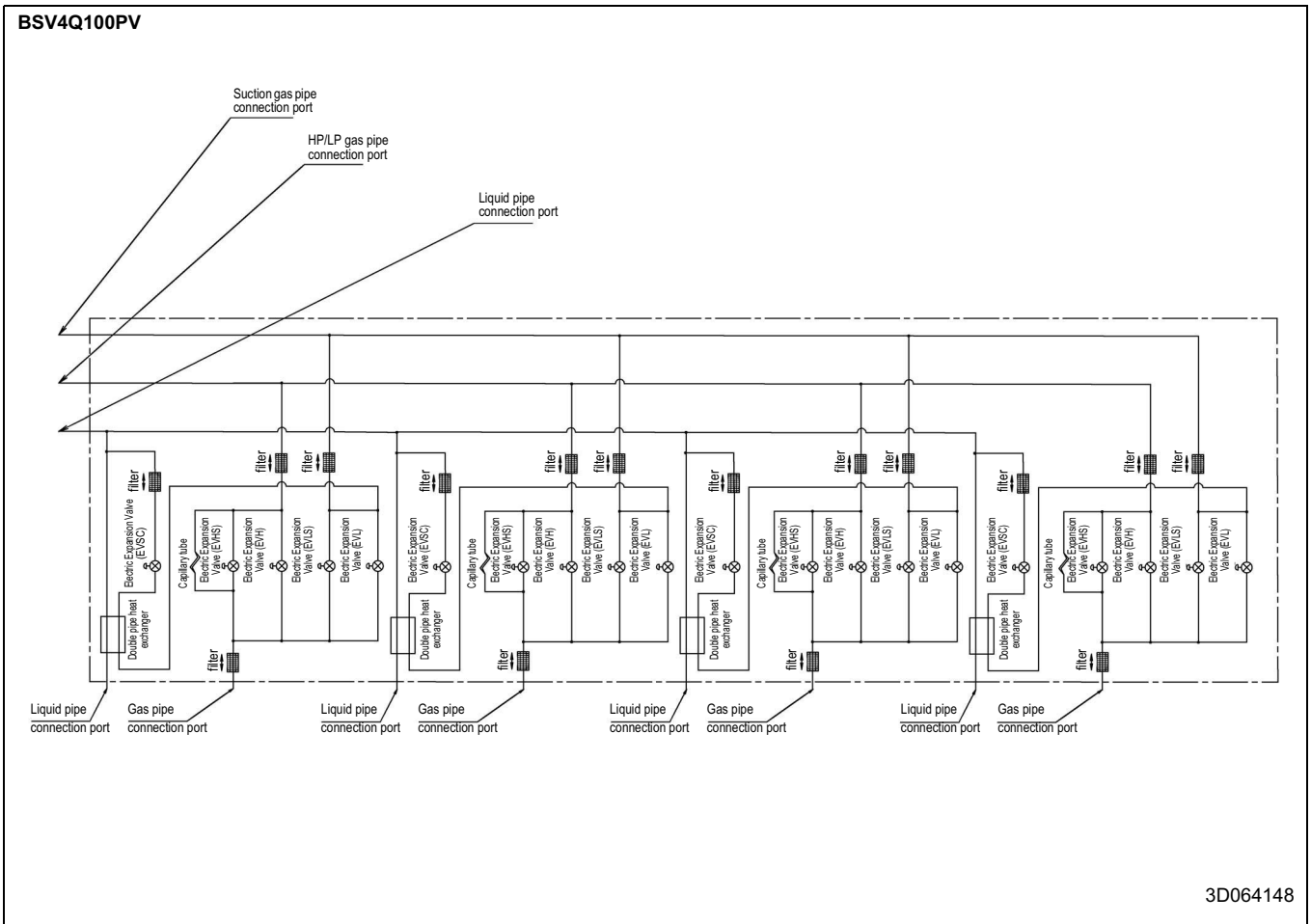
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3 Dimensional drawing & centre of gravity

3 - 2 Centre of gravity



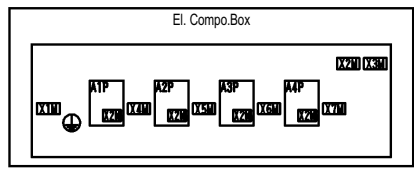
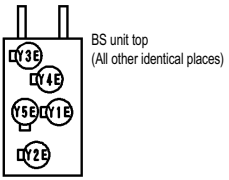
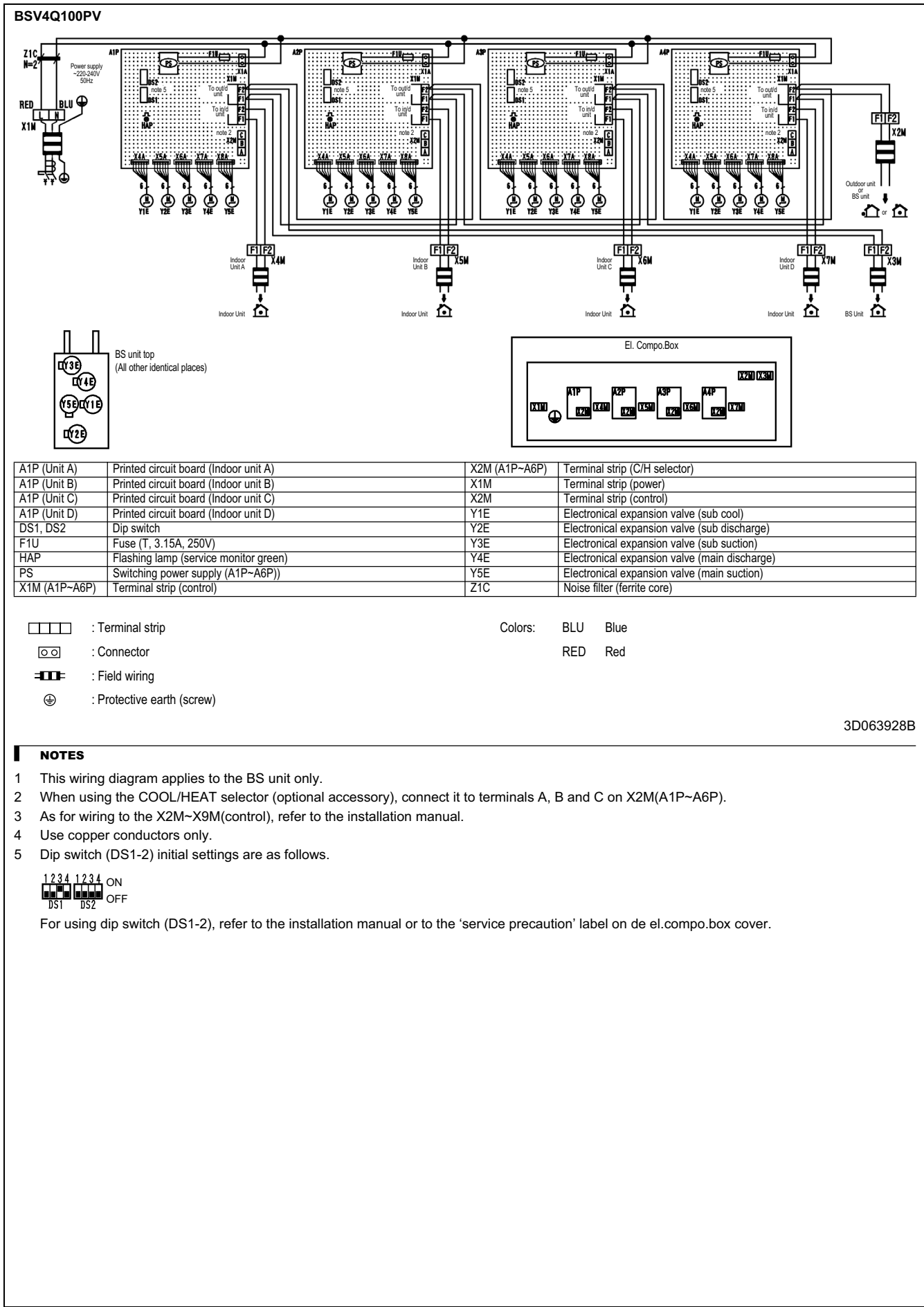
4 Piping diagram



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4

5 Wiring diagram

5 - 1 Wiring diagram



A1P (Unit A)	Printed circuit board (Indoor unit A)	X2M (A1P~A6P)	Terminal strip (C/H selector)
A1P (Unit B)	Printed circuit board (Indoor unit B)	X1M	Terminal strip (power)
A1P (Unit C)	Printed circuit board (Indoor unit C)	X2M	Terminal strip (control)
A1P (Unit D)	Printed circuit board (Indoor unit D)	Y1E	Electronical expansion valve (sub cool)
DS1, DS2	Dip switch	Y2E	Electronical expansion valve (sub discharge)
F1U	Fuse (T, 3.15A, 250V)	Y3E	Electronical expansion valve (sub suction)
HAP	Flashing lamp (service monitor green)	Y4E	Electronical expansion valve (main discharge)
PS	Switching power supply (A1P~A6P)	Y5E	Electronical expansion valve (main suction)
X1M (A1P~A6P)	Terminal strip (control)	Z1C	Noise filter (ferrite core)

- : Terminal strip
 - : Connector
 - : Field wiring
 - : Protective earth (screw)
- Colors: BLU Blue
RED Red

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NOTES

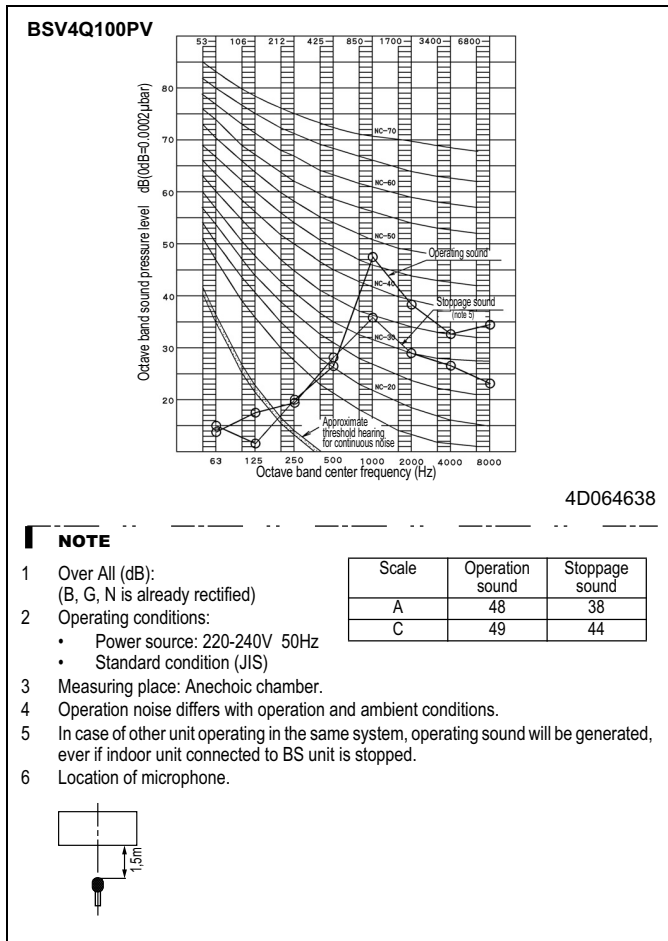
- This wiring diagram applies to the BS unit only.
- When using the COOL/HEAT selector (optional accessory), connect it to terminals A, B and C on X2M(A1P~A6P).
- As for wiring to the X2M~X9M(control), refer to the installation manual.
- Use copper conductors only.
- Dip switch (DS1-2) initial settings are as follows.



For using dip switch (DS1-2), refer to the installation manual or to the 'service precaution' label on de el.compo.box cover.

6 Sound data

6 - 1 Sound pressure spectrum



6

6

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BSVQ6P100PV

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6	Sound data	202
	Sound pressure spectrum	202

1 Specifications

1-1 Technical Specifications				BSV6Q100PV1	
Maximum capacity index of connectable indoor units				600	
Maximum capacity index of connectable indoor units per branch				100	
Number of branches				6	
Maximum number of connectable indoor units				30	
Maximum number of connectable indoor units per branch				5	
Power input (nominal)	Cooling	kW		0.030	
	Heating	kW		0.030	
Casing	Material			Galvanised steel	
Dimensions	Unit	Height	mm	209	
		Width	mm	1,577	
		Depth	mm	635	
Weight	Unit		kg	89	
Outdoor Unit	Liquid (OD)	Type		Braze connection	
		Diameter	mm	15.9	
	Gas	Type		Braze connection	
		Diameter	mm	28.6	
	Discharge Gas	Type		Braze connection	
		Diameter	mm	28.6	
Indoor Units	Liquid (OD)	Type		Braze connection	
		Diameter	mm	9.5	
	Gas	Type		Braze connection	
		Diameter	mm	15.9	
Sound absorbing thermal insulation material				Foamed polyurethane, Flame resisting needle felt	
Standard Accessories	Item			Installation manual	
				Connection pipes	
				Insulation pipe cover	
				Clamps	
Notes				In case of connection with a 20~50 type indoor unit, match to the size of the field pipe using the attached pipe. Connection between the attached pipe and the field pipe must be brazed.	
				In case the joint diameter does not fit on the triple piping side, a reducer is needed (field supply)	
				Insulators are necessary (field supply) for the triple piping side	

7
1

1-2 Electrical Specifications				BSV6Q100PV1	
Power Supply	Name		V1		
	Phase		1~		
	Frequency	Hz	50		
	Voltage	V	220-240		
Voltage range	Minimum	V	-10%		
	Maximum	V	+10%		
Total circuit	Minimum circuit amps (MCA)	A	0.8		
	Maximum Fuse Amps	A	15		
Notes				Voltage range : units are suitable for use on electrical systems where voltage supplied to unit terminal is not below or above listed range limits	
				Maximum allowable voltage range variation between phases is 2%	
				MCA / MFA : MCA = 1.25 x FLA	
				MFA is smaller than or equal to 4 x FLA	
				Next lower standard fuse rating minimum 15A	
				Select wire size based on MCA	
				Instead of a fuse, use a circuit breaker	

2 Safety device settings

BSV4Q100PV
BSV6Q100PV

Model	Safety devices
	PC board fuse
BSV4Q100PV	250V 3.15A
BSV6Q100PV	250V 3.15A

4D064144

3 Dimensional drawing & centre of gravity

3 - 1 Dimensional drawing

BSV6Q100PV

Location of unit's name plate . . . Right side of electric box

Nr	Name	Description
1	Suction gas pipe connection port (note 5,6)	ø28.6mm brazing connection
2	HP/LP gas pipe connection port (note 5,6)	ø28.6mm brazing connection
3	Liquid pipe connection port (note 5,6)	ø15.9mm brazing connection
4	Gas pipe connection port	ø15.9mm brazing connection
5	Liquid pipe connection port	ø9.5mm brazing connection
6	Electric box (note 1.)	
7	Suspension brackets	M8 ~M10
8	Grounding terminal	M4
9	Attached pipe (1) (Note. 3)	ø12.7mm brazing connection
10	Attached pipe (2) (Note. 3)	ø6.4mm brazing connection

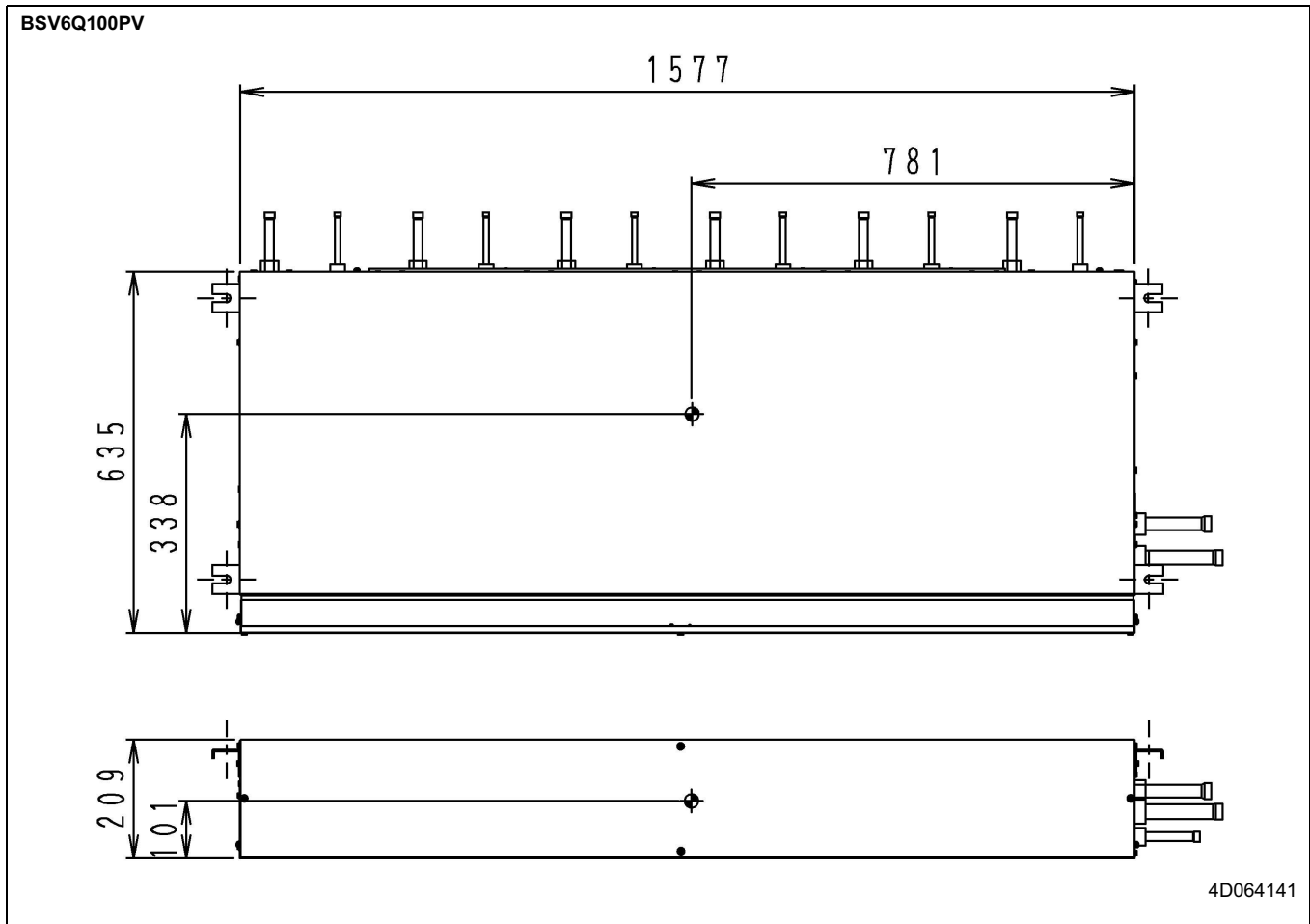
NOTES

- Be sure to install an inspection door at electric box side. Another door is necessary to unload the product.
- Install it at the place where small sound of refrigerant does not disturb. Must not install it at the space such as roof-space of room where persons exists.
- Attached pipe is only used in case of connecting with 20-50 class indoor unit.
- Occupy the space which is possible to install field pipes.
- Reducer may be required (field supply) if joint diameter does not suit on the triple piping side.
- Insulators are necessary (field supply) for the triple piping side.
- This space is a space to keep a top panel when servicing.

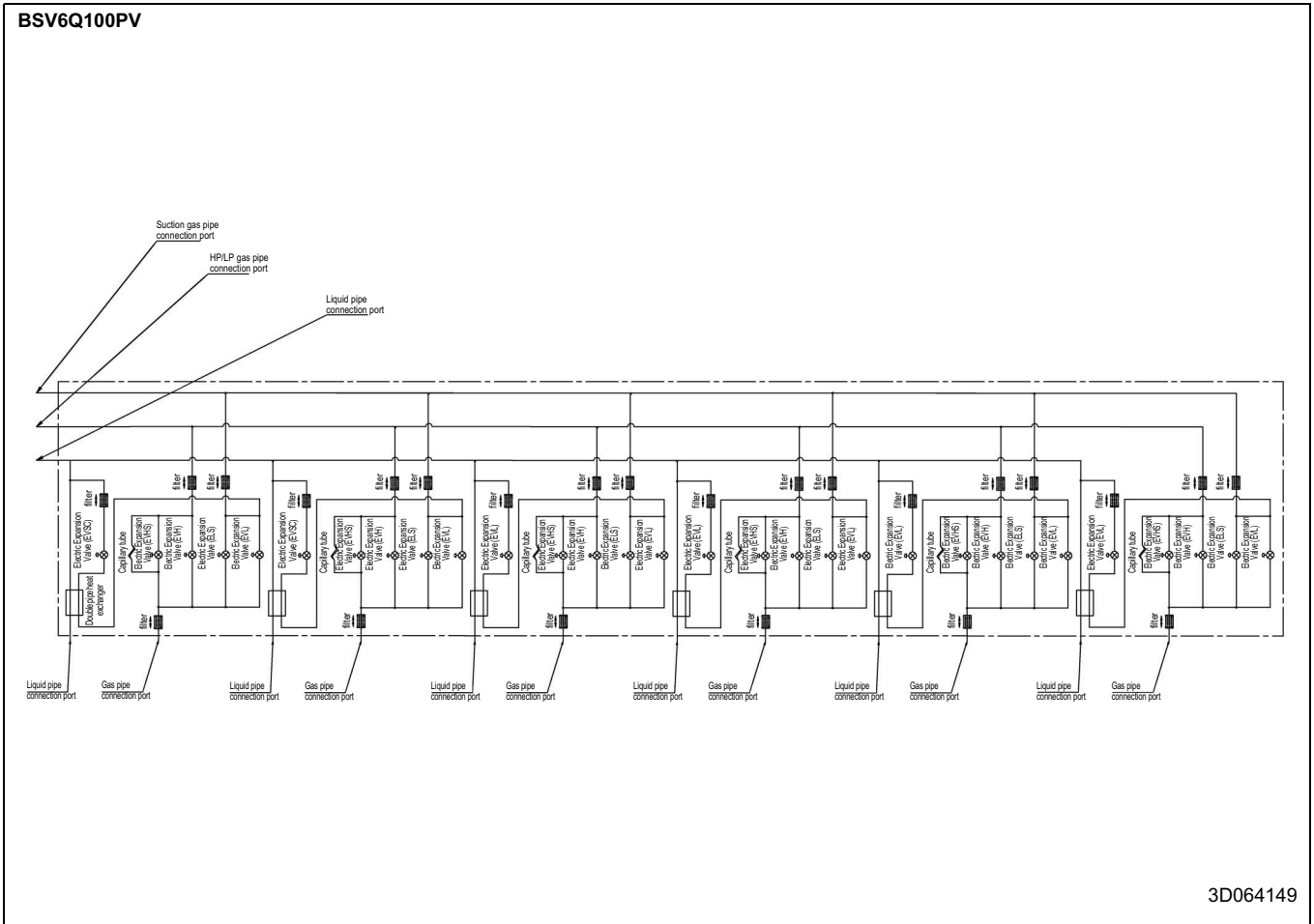
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3 Dimensional drawing & centre of gravity

3 - 2 Centre of gravity



4 Piping diagram

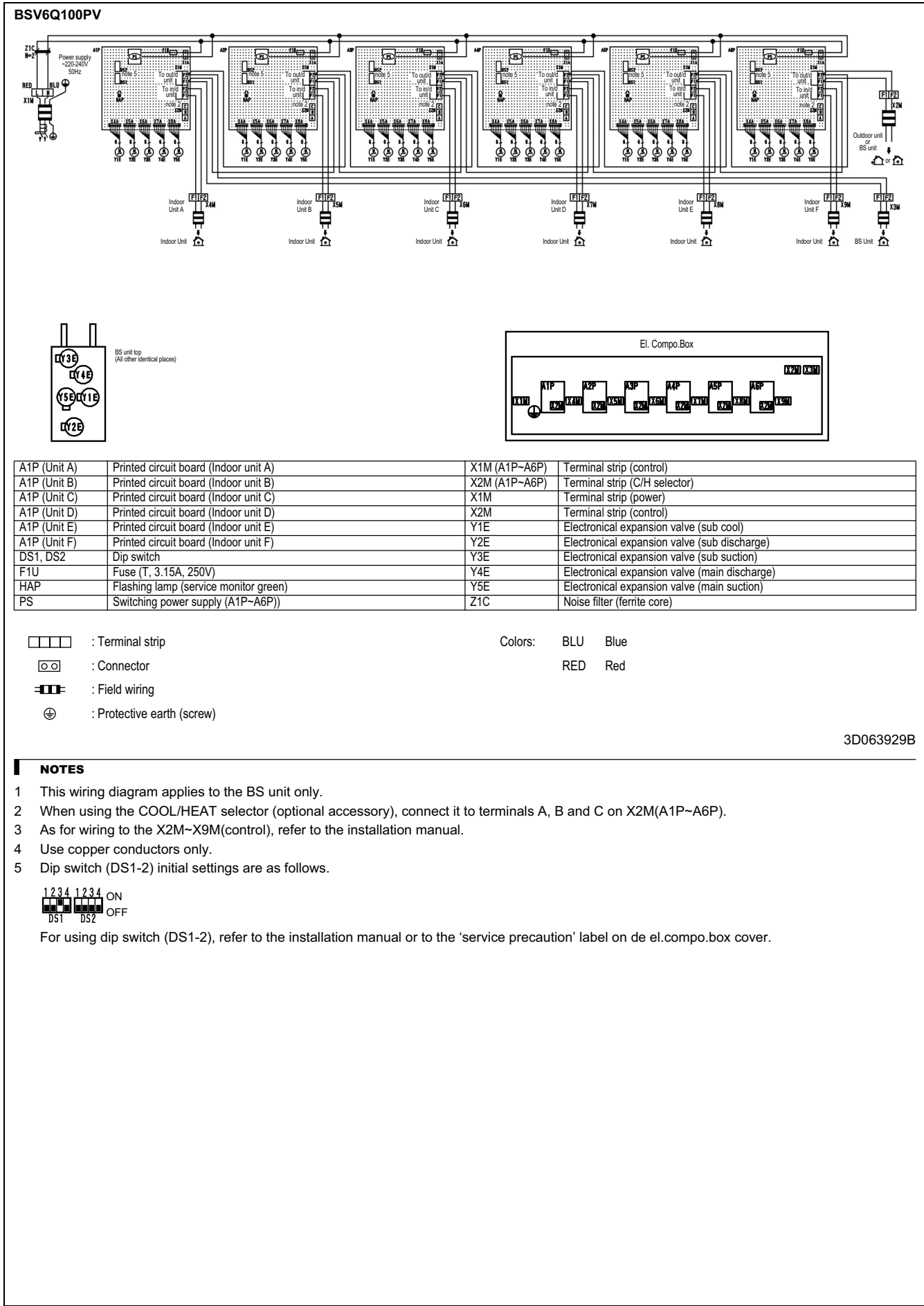


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5 Wiring diagram

5 - 1 Wiring diagram



A1P (Unit A)	Printed circuit board (Indoor unit A)	X1M (A1P~A6P)	Terminal strip (control)
A1P (Unit B)	Printed circuit board (Indoor unit B)	X2M (A1P~A6P)	Terminal strip (C/H selector)
A1P (Unit C)	Printed circuit board (Indoor unit C)	X1M	Terminal strip (power)
A1P (Unit D)	Printed circuit board (Indoor unit D)	X2M	Terminal strip (control)
A1P (Unit E)	Printed circuit board (Indoor unit E)	Y1E	Electronical expansion valve (sub cool)
A1P (Unit F)	Printed circuit board (Indoor unit F)	Y2E	Electronical expansion valve (sub discharge)
DS1, DS2	Dip switch	Y3E	Electronical expansion valve (sub suction)
F1U	Fuse (T, 3.15A, 250V)	Y4E	Electronical expansion valve (main discharge)
HAP	Flashing lamp (service monitor green)	Y5E	Electronical expansion valve (main suction)
PS	Switching power supply (A1P~A6P)	Z1C	Noise filter (ferrite core)

- : Terminal strip
- : Connector
- : Field wiring
- : Protective earth (screw)

- Colors: BLU Blue
RED Red

3D063929B

NOTES

- 1 This wiring diagram applies to the BS unit only.
- 2 When using the COOL/HEAT selector (optional accessory), connect it to terminals A, B and C on X2M(A1P~A6P).
- 3 As for wiring to the X2M~X9M(control), refer to the installation manual.
- 4 Use copper conductors only.
- 5 Dip switch (DS1-2) initial settings are as follows.



For using dip switch (DS1-2), refer to the installation manual or to the 'service precaution' label on de el.compo.box cover.

6 Sound data

6 - 1 Sound pressure spectrum

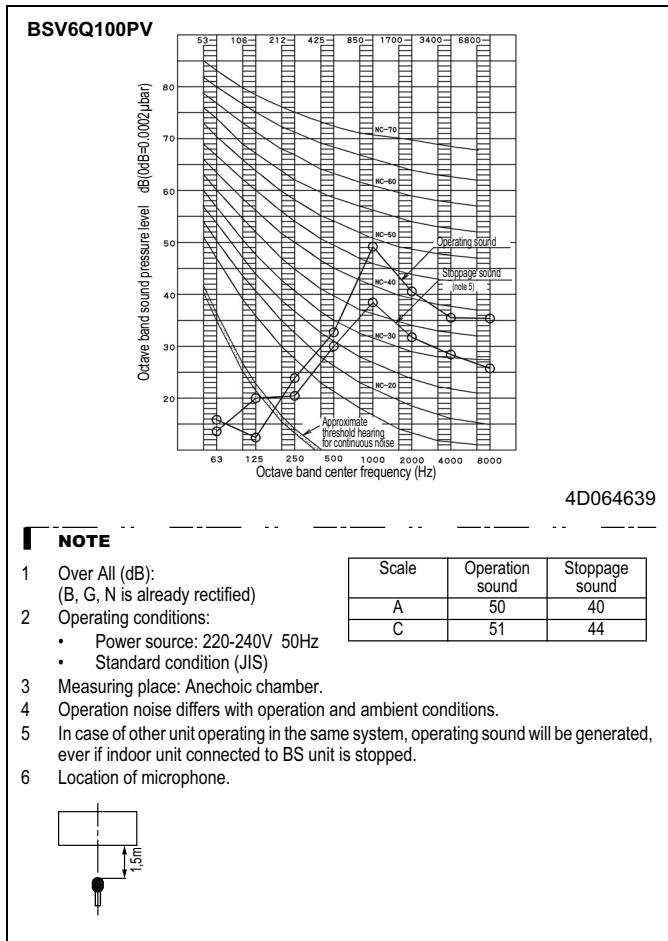


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1 Installation of outdoor units

1 - 1 Safety considerations

Please read these "SAFETY CONSIDERATIONS" carefully before installing air conditioning unit and be sure to install it correctly. After completing the installation, make sure that the unit operates properly completing the installation, make sure that the unit operates properly during the start-up operation. Please instruct the customer on how to operate the unit and keep it maintained.

Also, inform customers that they should store this installation manual along with the operation manual for future reference.

This air conditioner comes under the term "appliances not accessible to the general public".

<Safety Precaution>

VRV System is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Meaning of warning and caution symbols.

WARNING

Failure to observe a warning may result in death.

CAUTION

Failure to observe a caution may result in injury or damage to the unit.

WARNING

- 1 Ask your dealer or qualified personnel to carry out installation work. Do not try to install the machine yourself.
Improper installation may result in water leakage, electric shocks or fire.
- 2 Perform installation work in accordance with this installation manual.
Improper installation may result in water leakage, electric shocks or fire.
- 3 When installing the unit in a small room, take measures against to keep refrigerant concentration from exceeding allowable safety limits in the event of refrigerant leakage.
Contact the place of purchase for more information. Excessive refrigerant in a closed ambient can lead to oxygen deficiency.
- 4 Be sure to use only the specified accessories and parts for installation work.
Failure to use the specified parts may result in water leakage, electric shocks, fire or the unit falling.
- 5 Install the air conditioner on a foundation strong enough to with-stand the weight of the unit.
A foundation of insufficient strength may result in the unit falling and causing injuries.
- 6 Carry out the specified installation work after taking into account strong winds, typhoons or earthquakes.
Improper installation work may result in the unit falling and causing accidents.
- 7 Make sure that a separate power supply circuit is provided for this unit and that all electrical work is carried out by qualified personnel according to local laws and regulations and this installation manual.
An insufficient power supply capacity or improper electrical construction may lead to electric shocks or fire.
- 8 Make sure that all wiring is secured, the specified wires and used, and no external forces act on the terminal connections or wires.
Improper connections or installation may result in fire.
- 9 When wiring the power supply and connecting the remote controller wiring and transmission wiring, position the wires so that the control box lid can be securely fastened.
Improper positioning of the control box lid may result in electric shocks, fire or the terminals overheating.
- 10 If the refrigerant gas leaks during installation, ventilate the area immediately.
Toxic gas may be produced if the refrigerant gas comes into contact with fire.
- 11 After completing the installation work, check that the refrigerant gas does not leak.
Toxic gas may be produced if the refrigerant gas leaks into the room and comes into contact with a source of fire, such as a fan heater, stove or cooker.
- 12 Before touching electrical parts, turn off the unit.
- 13 Do not directly touch the refrigerant leaked from refrigerant piping connections.
Frostbite may be caused.
- 14 Do not allow children to mount on the outside unit, or avoid placing any object on it. Falling or tumble may result in injury.

1 Installation of outdoor units

1 - 1 Safety considerations

CAUTION

- 1 Ground the air conditioner.
Do not connect the ground wire to gas or water pipes, lightning rod or a telephone ground wire.
Incomplete grounding may result in electric shocks.
- 2 Be sure to install an earth leakage breaker.
Failure to install an earth leakage breaker may result in electric shocks.
- 3 While following the instructions in this installation manual, install drain piping in order to ensure proper drainage and insulate piping in order to prevent condensation.
Improper drain piping may result in water leakage and property damage.
- 4 Install the indoor and outside units, power supply wiring and connecting wiring at least 1 meter away from televisions or radios in order to prevent image interference or noise.
(Depending on the radio waves, a distance of 1 meter may not be sufficient enough to eliminate the noise.)
- 5 Remote controller (wireless kit) transmitting distance can result shorter than expected in rooms with electronic fluorescent lamps. (inverter or rapid start types)
Install the indoor unit as far away from fluorescent lamps as possible.
- 6 Install in a machine room that has no water drops.
This unit is for indoor use.
- 7 Do not install the air conditioner in the following locations:
 - a where a mineral oil mist or an oil spray or vapor is produced, for example in a kitchen
Plastic parts may deteriorate and fall off or result in water leakage.
 - b where corrosive gas, such as sulfurous acid gas, is produced
Corroding copper pipes or soldered parts may result in refrigerant leakage.
 - c near machinery emitting electromagnetic waves
Electromagnetic waves may disturb the operation of the control system and result in a malfunction of the unit.
 - d where flammable gas may leak, where there are carbon fiber or ignitable dust suspensions in the air, or where volatile flammables such as thinner or gasoline are handled.
Operating the unit in such conditions may result in fire.

Disposal requirements

Dismantling of the unit, treatment of the refrigerant, oil and eventual other parts, should be done in accordance with the relevant local and national regulations.

CAUTION

The refrigerant R410A requires strict cautions for keeping the system clean, dry and tight.

1 Clean and dry

Foreign materials (including mineral oils such as SUNISO oil or moisture) should be prevented from getting mixed into the system.

2 Tight

R410A does not contain any chlorine, does not destroy the ozone layer, and does not reduce the earth's protection against harmful ultraviolet radiation.

R410A can contribute slightly to the greenhouse effect if it is released. Therefore we should take special attention to check the tightness of the installation.

Read the chapter "REFRIGERANT PIPING" carefully and follow these procedures correctly.

Since design pressure is 4.0MPa or 40bar (for R407C units: 3.3MPa or 33bar), the wall thickness of pipes should be more carefully selected.

Since R410A is a mixed refrigerant, the required additional refrigerant must be charged in its liquid state. (If the refrigerant is charged in a state of gas, its composition changes and the system will not work properly.)

The indoor unit is for R410A. See the catalog for indoor unit models which can be connected.

(Normal operation is not possible when connected to other units.)

1 Installation of outdoor units

1 - 2 Introduction

This installation manual concerns VRV® inverters of the Daikin RWEYQ-P series. These units are designed for indoor installation and used for cooling and heatpump applications.

The RWEYQ-P units can be combined with Daikin VRV® series indoor units for air conditioning purposes.

The present installation manual describes the procedures for unpacking, installing and connecting the RWEYQ-P units. Installation of the indoor units is not described in this manual. Always refer to the installation manual supplied with these units for their installation.

1 - 2 - 1 Combination

The indoor units can be installed in the following range.

- **Always use appropriate indoor units compatible with R410A.**
To lean which models of indoor units are compatible with R410A, refer to the product catalogs.
- Total capacity/quantity of indoor units

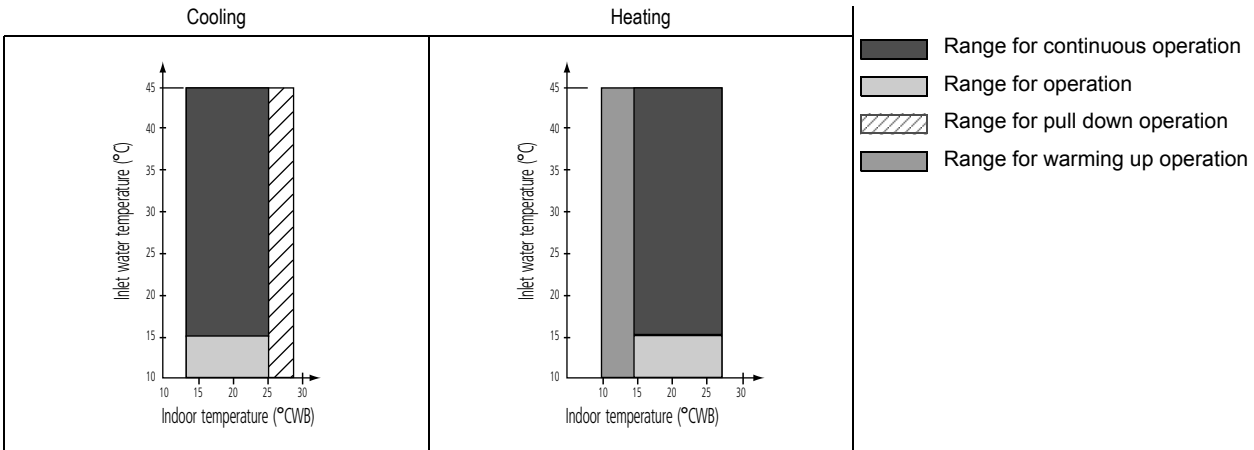
Outdoor unit	Min.-Max. capacity index	No. of connectable indoor units
RWEYQ8PY1	100~260	13
RWEYQ10PY1	125~325	16
RWEYQ16PY1	200~520	26
RWEYQ18PY1	225~585	29
RWEYQ20PY1	250~650	32
RWEYQ24PY1	300~780	36
RWEYQ26PY1	325~845	36
RWEYQ28PY1	350~910	36
RWEYQ30PY1	375~975	36

1 - 2 - 2 Standard operation limit

The figures below assume following operating conditions for indoor and outside units:

Equivalent pipe length 7.5m

Level difference 0m



- Operation range of water volume is 50-150L/min
- **Design in the following condition range**
water temp. : 20-35°C
water volume : 60L/min more
- When cooling condition load is small, thermostat-off may be carried out for freeze-up protection
- Hold ambient temperature at 0-40°C
Heat rejection from the casing: 0.71kw/10HP

1 Installation of outdoor units

1 - 2 Introduction

1 - 2 - 3 Technical specifications (1)

GENERAL			RWEYQ8PY1	RWEYQ10PY1	RWEYQ16PY1	RWEYQ20PY1	RWEYQ24PY1	RWEYQ26PY1	RWEYQ28PY1	RWEYQ30PY1
Nominal capacity	Cooling (2)	kW	22.4	26.7	44.8	53.4	67.2	71.5	75.8	80.1
	Heating (3)		25.0	31.5	50.0	63.0	75.0	81.5	88.0	94.5
Dimensions	Unit	Height	mm							
		Width	780	780	780 + 780	780 + 780	780+780+780	780+780+780	780+780+780	780+780+780
		Depth	mm							
Weight		kg	149	150	149 + 149	150 + 150	149+149+149	150+149+149	150+150+149	150+150+150
Piping connections										
Liquid	Diameter (OD)	mm	9.52	9.52	12.7	15.9	15.9	19.1	19.1	19.1
Gas	Diameter (OD)	mm	19.1	22.2	28.6	28.6	34.9	34.9	34.9	34.9
Discharge gas (4)	Diameter (OD)	mm	15.9	19.1	22.2	22.2	28.6	28.6	28.6	28.6
Water piping connections										
Water inlet			PT1 1/4B internal thread							
Water outlet			PT1 1/4B internal thread							
Drain outlet			PS1 1/2B internal thread							

NOTES

- 1 Refer to the engineering data book for the complete list of specifications.
- 2 The normal cooling capacities are based on:
 - indoor temperature: 27°CDB / 19°CWB,
 - inlet water temperature: 30°C,
 - equivalent pipe length: 7.5m,
 - level difference: 0m
- 3 The normal heating capacities are based on: –indoor temperature: 20°CDB,
 - inlet water temperature: 20°C,
 - equivalent pipe length: 7.5m,
 - level difference: 0m
- 4 Only use incase of –H/R system

COMPRESSOR		RWEYQ8PY1	RWEYQ10PY1	RWEYQ16PY1	RWEYQ20PY1	RWEYQ24PY1	RWEYQ26PY1	RWEYQ28PY1	RWEYQ30PY1	
Oil Type		Synthetic (ether) oil								
Refrigerant type		R-410A								
Refrigerant charge	kg	3.5	4.2	3.5 + 3.5	4.2 + 4.2	3.5 + 3.5 + 3.5	4.2 + 3.5 + 3.5	4.2 + 4.2 + 3.5	4.2 + 4.2 + 4.2	

1 - 2 - 4 Electrical specifications

MODEL			RWEYQ8PY1	RWEYQ10PY1	RWEYQ16PY1	RWEYQ20PY1	RWEYQ24PY1	RWEYQ26PY1	RWEYQ28PY1	RWEYQ30PY1
Power supply										
Phase			3~							
Frequency		Hz	50							
Voltage		V	380-415							
Voltage range	Minimum	V	342							
	Maximum	V	456							

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1 Installation of outdoor units

1 - 3 Selection of location

This unit is not a type of specifications for outdoor installation.

Always install it in a room.

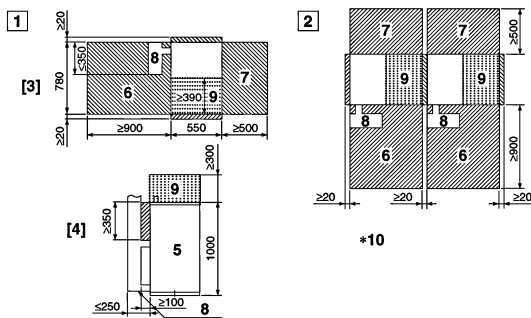
(machine room, etc.)

Paying attention to the conditions mentioned below, select the place for installation with a prior approval of customer.

- 1 The foundation is strong enough to support the weight of the unit and the floor is flat to prevent vibration and noise generation.
- 2 Consider the space required for refrigerant piping work when installing. Refer to [Necessary Space].
- 3 There is no danger of fire due to leakage of inflammable gas.
- 4 The piping length between the outside unit and the indoor unit may not exceed the allowable piping length. "10-9 Refrigerant piping".
- 5 Locations where the noise of the unit operating will not disturb nearby houses, etc.
- 6 Locations with airflow and ventilation holes capable of dissipating heat from the machine and where the ambient temperature around the outside unit is between 0 and 40°C and the humidity does not exceed 80%.

[Necessary Space]

When installing, secure the space mentioned below without fail.



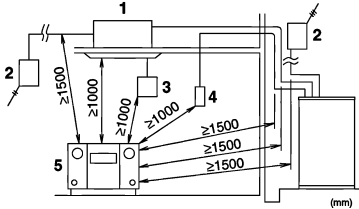
- ① In case of a single installation [mm]
- ② In case of series installations [mm]
- ③ Top view
- ④ Side view
- ⑤ Outside unit
- ⑥ Service Space (front side)
- ⑦ Service Space (back side)
- ⑧ Space for installing water piping
*Secure a enough space for removing the front panel.
- ⑨ Ventilation Space
*above the area () of the outside unit.
- ⑩ Secure spaces in the front, back and top sides as same as the case of single installation.

1 Installation of outdoor units

1 - 3 Selection of location

CAUTION

- 1 An inverter air conditioner may cause electronic noise generated from AM broadcasting. Examine where to install the main air conditioner and electric wires, keeping proper distances away from stereo equipment, personal computers, etc.



- ① Indoor unit
- ② Branch switch, overcurrent breaker
- ③ Remote controller
- ④ Cool/heat selector
- ⑤ Personal computer or radio

If the electric wave of AM broadcasting is particularly weak, keep distances of 3m or more and use conduit tubes for power and transmission lines.

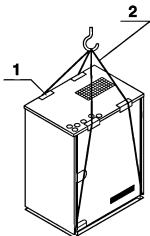
- 2 Water quality
Water containing high level of foreign materials may cause the corrosion of heat exchanger and piping or scale accumulation. Use water satisfying "10-7-4 Water quality".
- 3 Cooling tower
Use a closed type cooling tower without fail. (Open type tower cannot be used.)
- 4 Strainer
Install a strainer (an optional accessory) without fail at the inlet of water piping. (If sands, wastes, rust particles, etc. are mixed in the water circulation system, damage to the plate type heat exchanger may be caused by the corrosion of metal materials and clogging of the heat exchanger.)
- 5 The refrigerant R410A itself is nontoxic, nonflammable and is safe. If the refrigerant should leak however, its concentration may exceed the allowable limit depending on room size. Due to this it could be necessary to take measures against leakage. Refer to the chapter "Caution for refrigerant leaks".

1 - 4 Inspecting and handling the unit

At delivery, the package should be checked and any damage should be reported immediately to the carrier claims agent.

When handling the unit, take into account the following:

- 1 Fragile, handle the unit with care. Keep the unit upright in order to avoid compressor damage.
- 2 Choose the path along which the unit is to be brought in ahead of time.
- 3 In order to prevent any damage to the unit during installation, use slings (cloth) or patch plates and lift the unit referring to the figure below.
- 4 Lift the unit preferably with a crane and 2 belts of at least 4m long.
- 5 Use patch plates or clothes where the belt may hit the casing in order to prevent the casing from being damaged.
- 6 Be sure use the standard supplied accessories and dedicated parts as installation parts.



- ① Patch plates or clothes
- ② Belt sling

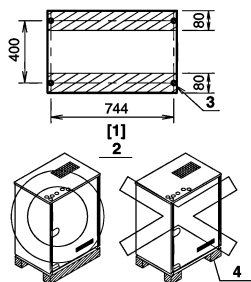
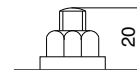
NOTE

Use belt sling of 20mm width or less which adequately bears the weight of the product.

1 Installation of outdoor units

1 - 5 Unpacking and placing the unit

- Make sure the area around the machine drains properly by setting up drainage grooves around the foundation.
- Make sure the unit is installed level on a sufficiently strong base to prevent vibration and noise.
- Secure the unit to its base using foundation bolts. (Use four commercially available M12-type foundation bolts, nuts, and washers.)
- The foundation bolts should be inserted 20 mm.
- Fix 4 foundation bolts.
- Support the unit with the foundation which is larger than the hatched area shown in the figure below.



- ① Front side
- ② Position of foundation bolts
- ③ Hole for a foundation bolt
($\varnothing 17$ holes at 4 corners)
- ④ Avoid such a foundation where the unit is supported by 4 corner points.

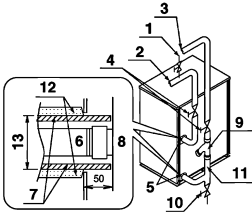
CAUTION

When installing the unit closely contacting the wall for any unavoidable reason, arrange so that no vibration from the unit may be transmitted to the wall surface by insulating the vibration using cushions, etc.

1 Installation of outdoor units

1 - 6 Water piping work

- The water pressure resistance of water piping of this outside unit is 1.96 MPa.
- The connection port for water piping is located in the front. The connection ports for drain piping are located in the front and back. When using the back port, change the cast iron plug from the back to the front and securely close it.
- Because of indoor use, carry out piping work in such a way no water may drop on the outer plate.
- Drain piping should be short and have a slant downwards.
The diameter of drain pipe should be the same as the diameter of unit connection (1/2B) or larger.
- The diameter of water pipe should be the same as the diameter of unit connection (1-1/4) or larger.
- Install an air purge valve in the midway of the water piping to prevent cavitation.
- After completing the drain piping work, make sure that the water runs smoothly without any clogging by dust.
- Do not connect the drain outlet to the water outlet.
- Install a strainer (an optional accessory) in the inlet of water piping within a distance of 1.5 m from the outside unit.
(If sand, waste or rust particles are mixed in the water circulation system, metal materials will become corrosive.)
- Install insulation on the inlet/outlet of water piping to prevent condensation and freezing.
- Install insulation up to the base of heat exchanger as shown in the figure below.
- Install a gate valve for chemical cleaning in an easy position to handle.
- Use water pipes complied with the local and national codes.
- Run the water pump to flush inside of water piping.
Then, clean the strainer.
- If there is a possibility of freezing, take measures to prevent freezing.
- Tighten securely the connection of water piping and socket with tightening torque of 300 N·m or less.
(If a larger torque is applied, the unit may be damaged.)



- ① Air purge
- ② Outlet of water
- ③ Inlet of water
- ④ Gate valve
- ⑤ Water piping socket
- ⑥ Water piping
- ⑦ Insulation
- ⑧ Heat exchanger
- ⑨ Strainer (an optional accessory)
- ⑩ Drain valve
- ⑪ Connection port to draining piping
- ⑫ Insulation cover
- ⑬ 80 mm or less

1 Installation of outdoor units

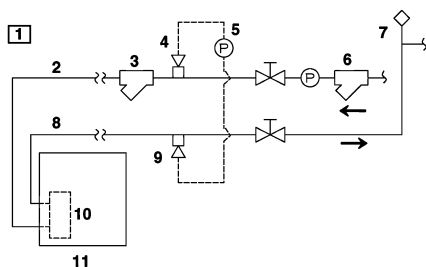
1 - 7 Handling of the plate type heat exchanger

CAUTION

The brazing plate type heat exchanger (the plate type heat exchanger) is used for this outside unit. Because its structure is different from a conventional type heat exchanger, it must be handled in a different manner.

1 - 7 - 1 When designing the equipment

- 1 Install a strainer (an optional accessory) at the water inlet side adjacent to the outside unit in order to prevent any foreign materials such as dust, sand, etc. from entering.
- 2 Depending on the water quality, scale may stick to the plate type heat exchanger. In order to remove this scale, it is necessary to clean it at a regular interval using chemicals. To this end, install a gate valve in the water piping. Set up a piping connection port on the piping between this gate valve and the outside unit for cleaning by chemicals.
- 3 For the purpose of cleaning and water drain off from the outside unit (water draining during a long period of nonuse in winter, draining upon starting of season-off), install an "air discharge plug" and a "water draining plug" at the inlet/outlet ports of water piping. In addition, install an "automatic air discharging valve" at the top of riser piping or at the top of a portion where air tends to stay.
- 4 Independent of the piping inlet of the outside unit, install a cleanable strainer at a portion close to the pump piping inlet.
- 5 Carry out complete cooling/thermal insulation of water piping and outdoor dehumidification. If complete cooling or thermal insulation has not been carried out, any damage may be caused during severe winter due to freezing, in addition to thermal loss.
- 6 When you stop operation during night or winter, it is necessary to take measures to prevent water related circuits from natural freezing in the area the ambient temperature drops below 0°C (by water drain off, keeping the circulation pump running, warming up by a heater, etc.) Freezing of water related circuits may result in any damage to the plate type heat exchanger. Therefore, please take appropriate measures depending on the circumstances of use.



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- ① Example of piping
- ② Water inlet piping
- ③ Strainer (sold separately as an accessory)
- ④ Air discharge plug (for joint use with cleaning port)
- ⑤ Cleaning device
- ⑥ Strainer for pump
- ⑦ Automatic air discharge valve
- ⑧ Water outlet piping
- ⑨ Joint use with water draining plug
- ⑩ Plate type heat exchanger
- ⑪ Outside unit

1 - 7 - 2 Before starting a test run

- 1 Before starting a test run, please make sure that the piping work has been carried out in a proper manner. Especially, make sure that the strainer, air discharge valve, automatic water supply valve, expansion tank and cistern are positioned at their places correctly.
- 2 After water has been completely filled in, first run the pump only, and then make sure that no air has been caught in the water circulation system and the water flow rate is correct. If any air has been caught or the flow rate is not enough, the plate type heat exchanger may freeze. Measure any water pressure loss before and after the outside unit and make sure that the flow rate is as designed. In case of any abnormal, stop the test run immediately and carry out trouble shooting to resolve the trouble.
- 3 Following the installation manual, carry out a test run of the outside unit.
- 4 After the test run has been completed, inspect the strainer at the inlet piping of the outside unit. Clean it if it is dirty.

1 Installation of outdoor units

1 - 7 Handling of the plate type heat exchanger

1 - 7 - 3 Daily service and maintenance

1 Management of water quality

The plate type heat exchanger has a structure that does not permit dismantling and cleaning, or replacing any parts. Please pay attention carefully to the quality of water to be used for the plate type heat exchanger in order to prevent corrosion and sticking of scale.

The water to be used for the plate type heat exchanger should have at least the quality as specified in the table below.

When using any corrosion prevention agent, scale depressant agent, etc. such agent should have no corrosive features against stainless steel and copper.

2 Management of chilled water flow rate

If the chilled water flow rate is not enough, it will result in the freezing damage to the plate type heat exchanger.

Check for any clogging of the strainer, any air being caught, any reduction in the flow rate due to failure of circulation pump by measuring the temperature and pressure differences at the inlet and outlet ports of the plate type heat exchanger. If the aged difference in the temperature or pressure has increased beyond the proper range, the flow rate should have decreased. Stop the operation and remove the cause before restarting the operation.

3 Steps to be taken when a freezing protection device was activated

When the freezing protection device should be activated during operation, remove the cause without fail before restarting the operation. If the freezing protection device has been once activated, a partial freezing has occurred. If you restart the operation without removing the cause, the plate type heat exchanger will be closed and the ice cannot be melted, and in addition, the freezing process will be repeated resulting in any damage to the plate type heat exchanger, leading to any such accidents that the refrigerant starts leaking or water starts entering the refrigerant circuit.

1 - 7 - 4 Water quality

Water quality standards for chilled water, hot water and make-up water (4) (6)

ITEM (5)	Cooling water system (3)		Hot water system (2)		Tendency (1)	
	Circulation system		Circulation water (20°C ~ 60°C)	Make-up water	Corrosion	Scale
	Circulation water	Make-up water				
Standard items						
pH (25°C)	6.8 to 8.2	6.0 to 8.0	7.0 to 8.0	7.0 to 8.0	○	○
Electrical conductivity (mS/m) (25°C)	Less than 80	Less than 30	Less than 30	Less than 30	○	○
Chloride ions (mg Cl ⁻ /l)	Less than 200	Less than 50	Less than 50	Less than 50	○	
Sulfate ions (mg SO ₄ ²⁻ /l)	Less than 200	Less than 50	Less than 50	Less than 50	○	
Acid consumption (pH 4.8) (mg CaCO ₃ /l)	Less than 100	Less than 50	Less than 50	Less than 50		○
Total hardness (mg CaCO ₃ /l)	Less than 200	Less than 70	Less than 70	Less than 70		○
Calcium hardness (mg CaCO ₃ /l)	Less than 150	Less than 50	Less than 50	Less than 50		○
Ionic-state silica (mg SiO ₂ /l)	Less than 50	Less than 30	Less than 30	Less than 30		○
Reference items						
Iron (mg Fe/l)	Less than 1.0	Less than 0.3	Less than 1.0	Less than 0.3	○	○
Copper (mg Cu/l)	Less than 0.3	Less than 0.1	Less than 1.0	Less than 0.1	○	
Sulfite ion (mg S ²⁻ /l)	Shall not be	Shall not be	Shall not be	Shall not be	○	
Ammonium ion (mg NH ₄ ⁺ /l)	Less than 1.0	Less than 0.1	Less than 0.3	Less than 0.1	○	
Residual chlorine (mg CL/l)	Less than 0.3	Less than 0.3	Less than 0.25	Less than 0.3	○	
Free carbon dioxide (mg CO ₂ /l)	Less than 4.0	Less than 4.0	Less than 0.4	Less than 4.0	○	
Stability index	6.0 to 7.0	-	-	-	○	○

NOTES

- The circle marks in the columns for corrosion or scale to develop.
- Corrosion has a tendency to occur when water temperature is high (40°C or higher), and if metals with no protective coating whatever are directly exposed to water, it would be a good idea to take effective measures against corrosion such as adding a corrosion inhibitor or deaeration treatment.
- In a condenser water circuit that uses a closed cooling tower, the closed circuit circulating water and make-up water must satisfy its water quality standards for the hot water system, and passing water and make-up water must satisfy those for the circulation type cooling water system.
- Supply or make-up water should be tap water (clean water), industrial water and underground water except for purified water, neutral water and softened water or the like.
- The fifteen items in the table above represent typical causes of corrosion and scale.
- Passing water may cause corrosion.
Do not use passing water.

1 Installation of outdoor units

1 - 7 Handling of the plate type heat exchanger

1 - 7 - 5 Maintenance of plate type heat exchanger

The performance of a plate type heat exchanger may decline due to scale accumulation. It may be damaged by freezing due to the drop of flow rate. For this reason, it is necessary to carry out programmed maintenances at a regular interval in order to prevent the scale from being generated.

- 1 Before entering the season for use, carry out the following inspections:
 - Conduct a water quality test and make sure that it is within the standard.
 - Clean the strainer.
 - Make sure that the flow rate is correct.
 - Make sure that the operational conditions (pressure, flow rate, outlet temperature, etc.) are normal.
- 2 Because the plate type heat exchanger has a structure which does not permit disassembling and cleaning, follow the following procedures for cleaning:
 - Make sure that a connection port for piping has been reserved for cleaning by chemicals. For chemicals to clean the scale, solution with 5% diluted formic acid, citric acid, oxalic acid, acetic acid, phosphoric acid, etc. is recommendable. Never use hydrochloric acid, sulfuric acid, nitric acid, etc., because they have strong corrosive features.
 - Make sure that a valve has been reserved for each before the inlet connection port and after the outlet connection port.
 - Connect the piping for circulation of cleaning chemicals to the inlet piping of plate type heat exchanger. Fill the cleaning solution of 50 - 60°C for a while in the plate type heat exchanger. Then, circulate the cleaning solution by a pump for 2-5 hours. The time for cleaning depends on the temperature of cleaning solution or the degree of scale accumulation. Therefore, please watch the change of the dirtiness (color) of cleaning solution to determine the level of removal of scale.
 - After circulating the cleaning solution, discharge the solution from the plate type heat exchanger, fill the heat exchanger with a solution of 1-2% sodium hydroxide (NaOH) or sodium bicarbonate (NaHCO₃). Circulate this solution for 15-20 minutes for neutralization purpose.
 - After the process of neutralization has been completed, rinse the inner part of the plate type heat exchanger with care using fresh and clean water.
 - When using any cleaning agent sold in the market, check in advance that such agent has no corrosive features against stainless steel and copper.
 - For details of cleaning method, ask the manufacturer of related cleaning agent.
- 3 After cleaning has been completed, make sure that the unit can be operated in a normal fashion.

1 Installation of outdoor units

1 - 8 Field wiring

CAUTION

All field wiring and components must be installed by a licensed electrician and must comply with relevant local and national regulations. The field wiring must be carried out in accordance with the wiring diagrams and the instructions given below.

Be sure to use a dedicated power circuit. Never use a power supply shared by another appliance.

Do not operate until refrigerant piping work is completed.
(If operated before complete the piping work, the compressor may be broken down.)

Never remove thermistor, sensor or etc. when connecting power wiring and transmission wiring.
(If operated with thermistor, sensor or etc. removed, the compressor may be broken down.)

Be sure to install an earth leak detector.
(This unit uses an inverter, so install the earth leak detector that be capable of handling high harmonics in order to prevent malfunctioning of the earth leak detector itself.)

This product have reversed phase protection detector that only works when the product started up.
Do not run the unit by short cutting the protection device (S1PH).

If there exists the possibility of reversed phase, lose phase, momentary black out or the power goes on and off while the product is operating, attach a reversed phase protection circuit locally. Running the product in reversed phase may break the compressor and other parts.

Attach the power wire securely.

Introducing power with a missing N-phase or with a mistaken N-phase will break the equipment.

1 - 8 - 1 Optional parts

COOL/HEAT Selector

S1S.....Selector switch (fan, cool/heat), S2S.....Selector switch (cool/heat)

NOTES

- 1 When using the adaptor for sequential start, refer to chapter “Examples”.
- 2 For connection wiring to the central remote controller, refer to the installation manual of the central remote controller.

1 - 8 - 2 Power circuit and cable requirements

A power circuit (see table below) must be provided for connection of the unit. This circuit must be protected with the required safety devices, i.e. a main switch, a slow blow fuse on each phase and an earth leak detector.

	Phase and frequency	Voltage	Minimum circuit amp.	Recommended fuses	Transmission line selection
RWEYQ8PY1	Ø 3,50Hz	380-415V	12.6A	25A	0.75-1.25mm ²
RWEYQ10PY1	Ø 3,50Hz	380-415V	12.6A	25A	0.75-1.25mm ²
RWEYQ16PY1	Ø 3,50Hz	380-415V	25.3A	35A	0.75-1.25mm ²
RWEYQ18PY1	Ø 3,50Hz	380-415V	25.3A	35A	0.75-1.25mm ²
RWEYQ20PY1	Ø 3,50Hz	380-415V	25.3A	35A	0.75-1.25mm ²
RWEYQ24PY1	Ø 3,50Hz	380-415V	37.9A	45A	0.75-1.25mm ²
RWEYQ26PY1	Ø 3,50Hz	380-415V	37.9A	45A	0.75-1.25mm ²
RWEYQ28PY1	Ø 3,50Hz	380-415V	37.9A	45A	0.75-1.25mm ²
RWEYQ30PY1	Ø 3,50Hz	380-415V	37.9A	45A	0.75-1.25mm ²

When using residual current operated circuit breakers, be sure to use a high-speed type 200mA rated residual operating current.

NOTES

- 1 Use copper conductors only.
- 2 Use insulated wire for the power cord.
- 3 Select the power supply cable in accordance with relevant local and national regulations.
- 4 Wire size must comply with the applicable local and national code.
- 5 Specifications for local wiring power cord and branch wiring are in compliance with IEC60245.
- 6 WIRE TYPE H05VV(*)
*Only in protected pipes, use H07RN-F when protected pipes are not used.

1 Installation of outdoor units

1 - 8 Field wiring

1 - 8 - 3 General

- Up to 3 units can be connected by crossover power source wiring between outside units. For details, refer to the equipment design data and technical data.
- Make sure to connect the power source wire to the power source terminal block and to clamp it as shown in figure 8, chapter "Field line connection".
- As this unit is equipped with an inverter, installing a phase advancing capacitor will not only deteriorate power factor improvement effect, but also may cause capacitor abnormal heating accident due to high-frequency waves. Therefore, never install a phase advancing capacitor.
- Keep power imbalance within 2% of the supply rating.
1 Large imbalance will shorten the life of the smoothing capacitor.
2 As a protective measure, the product will stop operating and an error indication will be made, when power imbalance exceeds 4% of the supply rating.
- Follow the "electrical wiring diagram" when carrying out any electrical wiring.
- Only proceed with wiring work after blocking off all power.
- Always ground wires. (In accordance with national regulations of the pertinent country.)
- Do not connect the ground wire to gas pipes, sewage pipes, lightning rods, or telephone ground wires.
Gas pipes: can explode or catch fire if there is a gas leak.
Sewage pipes: no grounding effect is possible if hard plastic piping is used.
Telephone ground wires and lightning rods: dangerous when struck by lightning due to abnormal rise in electrical potential in the grounding.
- This machine includes an inverter device. Connect earth and leave charge to eliminate the impact on other devices by reducing noise generated from the inverter device and to prevent leaked current from being charged in the outer hull of the product.
- Earth leak detector which are especially for protecting ground faults should be used in conjunction with main switch or fuse for use with wiring.
- Connect the wire securely using designated wire and fix it with attached clamp without applying external pressure on the terminal parts (terminal for power wiring, terminal for transmission wiring and earth terminal). See "field line connection".
- Never connect the power supply in reversed phase.
(This product have reversed phase protection detector.
If the detector operate, replace two of the three phases (L1, L2 and L3).

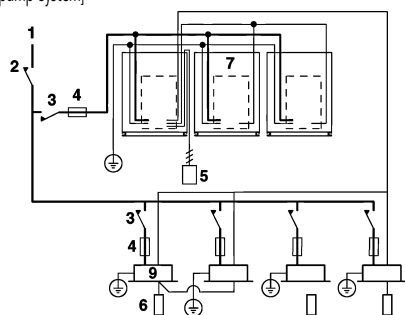
1 - 8 - 4 Examples

System example

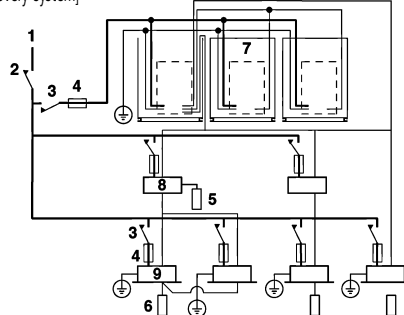
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[Heat pump system]



[Heat recovery system]



- ① Field power supply
- ② Main switch
- ③ Earth leak detector
- ④ Fuse
- ⑤ Cool/heat selector
- ⑥ Remote controller
- ⑦ Outside unit
- ⑧ BS unit
- ⑨ Indoor unit

—power supply wiring (sheathed cable)
—transmission wiring (sheathed cable)

1 Installation of outdoor units

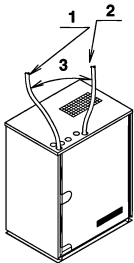
1 - 8 Field wiring

1 - 8 - 4 Examples

CAUTION

- 1 Use a power wire pipe for the power wiring.
- 2 Outside the unit, make sure the weak electric wiring (i.e. for the remote controller, transmission, etc.) and the strong electric wiring do not pass near each other, keeping them at least 50 mm apart. Proximity may cause electrical interference, malfunctions, and breakage.
- 3 Be sure to connect the power wiring to the power wiring terminal block and secure it as described in **Field line connection**.
- 4 Transmission wiring should be secured as described in **Field line connection: transmission wiring and COOL/HEAT selector**.
- 5 Secure the wiring with the accessory clamps so that it does not touch the piping.
- 6 Make sure the wiring and the EL. COMPO. BOX cover do not stick up above the structure, and close the cover firmly.

Picking power line and transmission line



- ① Power supply wiring
Pump operation output
(High voltage)
- ② Connection wiring
(Low voltage)
- ③ Set apart

Connect the wire to the terminal block on PC board with care since too much pressure may cause breakage of the PC board.

Field line connection: transmission wiring, interlock circuit, pump operation output and COOL/HEAT selector

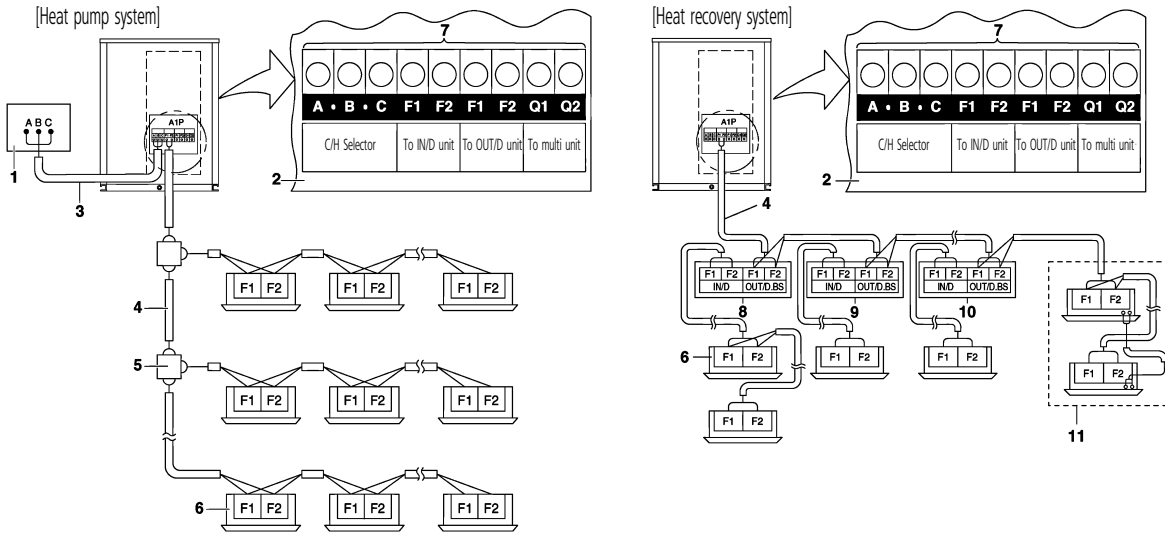
Connect the wire to the terminal block on the PC board with care since too much pressure may cause breakage of the PC board.

1 Installation of outdoor units

1 - 8 Field wiring

1 - 8 - 4 Examples

[In case of RWEYQ8,10PY1]

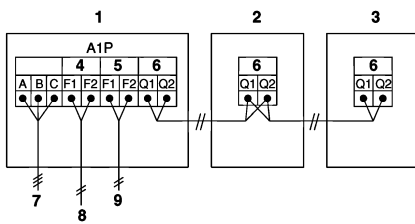


- ① COOL/HEAT selector
- ② Outside unit PC board (A1P)
- ③ Take care of the polarity
- ④ Use the conductor of sheathed wire (2 wire) (no polarity)
- ⑤ Terminal board (field supply)
- ⑥ Indoor unit
- ⑦ Never connect the power wire.
- ⑧ BS unit A
- ⑨ BS unit B
- ⑩ Last BS unit
- ⑪ Cool-only unit

8

1

[In case of RWEYQ18,20,24,26,28,30PY1]



- ① Unit A (Master unit)
- ② Unit B
- ③ Unit C
- ④ TO IN/D UNIT
- ⑤ TO OUT/D UNIT
- ⑥ TO MULTI UNIT
- ⑦ To COOL/HEAT selector (only Heat pump system)
- ⑧ To indoor unit
- ⑨ To other systems

1 Installation of outdoor units

1 - 8 Field wiring

1 - 8 - 4 Examples

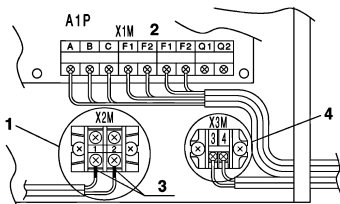
- The transmission wiring between the outside units in the same pipe line must be connected to the Q1/Q2 (Out Multi) terminals. Connecting the wires to the (Out-Out) terminals results in system malfunction.
- The wiring for the other lines must be connected to the F1/F2 (Out-Out) terminals of the PC board in the outside unit to which the transmission wiring for the indoor units is connected.
- The outside unit to which the transmission wiring for the indoor units is connected is master unit.
- The transmission wiring between the outside units must be 30 m in length at maximum.

[Setting the interlock circuit and pump operation output.]

<Pump operation output [high voltage]>

- Use insulated wires of the size as mentioned below having rated voltage of 250 V or higher:
 For single core: 1.25 mm² or larger (conduit pipe work)
 For multiple cores: 0.75 mm² or larger

*The wiring for pump operation output is to be procured locally



- ① Pump operation output terminal (X2M) when water pump is linked with system operation, water pump operation circuit shall be set between terminals (1) and (2).
 Contact specification --- 220 VAC, 3mA-0.5A

- ② PC board (A1P)
- ③ Mount an insulation sleeve.

④ Connection of interlock circuit

Do not forget to connect an interlock circuit (an auxiliary a-contact of electromagnetic switch for the water pump) to each outside unit. (Select without fail an auxiliary a-contact able to switch minimum load of DC15V, 1mA.)

<When connecting for each outside unit>

Connect to the terminal block (X3M) as shown in the bottom right of the sketch.

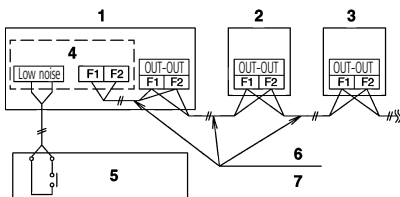
<When connecting in a lump-sum manner (centralized interlock)>

For this unit, it is possible to make a lump-sum interlock of multiple outside unit using an adapter (sold separately as an accessory) for external control of outside units.

For details of wiring connection, refer to "How to centralized interlock wiring".

<How to the centralized interlock wiring>

- When centralized interlock is done, see (3) "10-8-5 In case of a local setting"
- No wiring to terminal block X3M is necessary when centralized interlock is employed
- For RWEYQ18,20,24,26,28,30PY1, external/external connection wiring shall be done for master unit only.



- ① Outside unit A
- ② Outside unit B
- ③ Outside unit C
- ④ Adapter for external control
- ⑤ Interlock circuit of water pump
- ⑥ Out-Out connection wiring
- ⑦ Use the conductor of sheathed wire (2 wire) (no polarity)

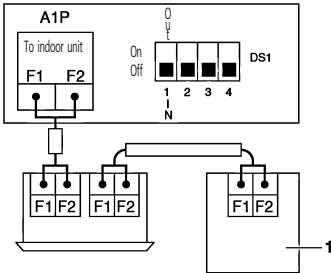
1 Installation of outdoor units

1 - 8 Field wiring

1 - 8 - 4 Examples

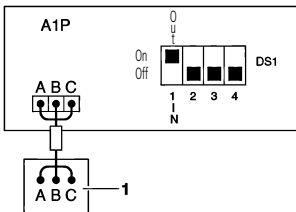
[Setting the cool/heat operation type]

- 1 Performing cool/heat setting with the remote controller connected to the indoor unit.
Keep the COOL/HEAT selector switch (DS1) on the outside unit PC board (A1P) at the factory setting position OFF.



① Remote controller

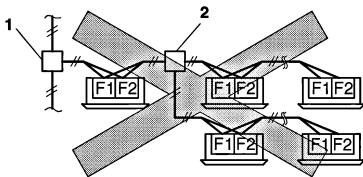
- 2 Performing cool/heat setting with the COOL/HEAT selector.
Connect the COOL/HEAT selector (optional) to the A/B/C terminals and set the COOL/HEAT selector switch (DS1) on the outside unit PC board (A1P) to ON.



① COOL/HEAT selector

- For the above wiring, always use sheathed vinyl cords with 0.75 to 1.25 mm² or cables (2 core wires). (3 core wire are allowable for the COOL/HEAT selector only.)
- All transmission wire is field supply.
- If the following limits should be exceeded, be careful that any abnormal transmission may be caused;

Maximum wiring length	1000 m or less
Total wiring length	2000 m or less
Maximum branching	16 branching or less
Wire length between outside unit	30 m or less
- Never connect power supply to any connection wiring and its terminal block, otherwise the entire system may be damaged.
- Up to 16 branches are possible for transmission wiring. However no branch is allowed after branch.



① Branch

② Branch after branch

- The wiring to the indoor units must be connected to the F1/F2 (To IN/D UNIT) terminals on the PC board in the outside unit.

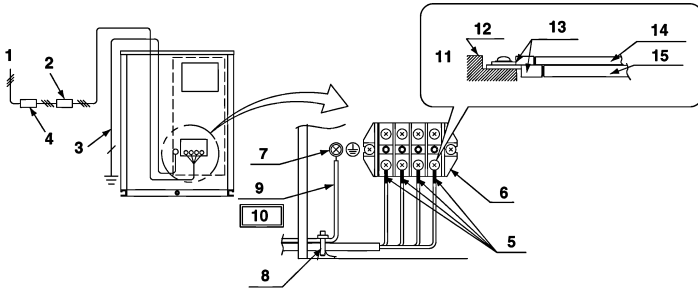
1 Installation of outdoor units

1 - 8 Field wiring

1 - 8 - 4 Examples

Field line connection: Power supply wiring and transmission wiring

Make sure to connect the power wire to the power terminal block and fix it using attached clamp as shown in figure 15 and 19.

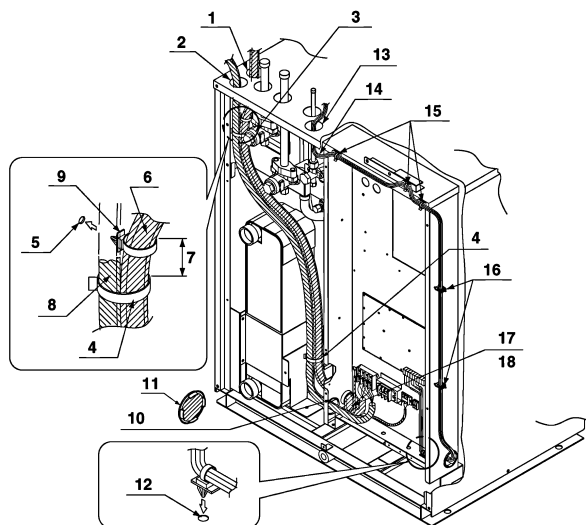


- ① Power supply
(3N~, 380-415V)
- ② Branch switch, overcurrent breaker
- ③ Grounding wire
- ④ Earth leakage breaker
- ⑤ Attach insulation sleeves.
- ⑥ Power supply terminal block
- ⑦ Grounding terminal
- ⑧ Retain the ground wires along with the power wires using the accessory clamp (A).
- ⑨ Grounding wire
- ⑩ When wiring, do not allow the ground wires to contact the compressor lead wires. If the wires contact each other, adverse effects may occur to other units.
- ⑪ When connecting two wires to one terminal, ensure that the crimp-style terminals face with each other back to back. Moreover, make sure that the wire of the smaller gauge is located above.
- ⑫ Terminal block
- ⑬ Crimp-style terminal
- ⑭ Wire gauge: Small
- ⑮ Wire gauge: Large

1 Installation of outdoor units

1 - 8 Field wiring

1 - 8 - 4 Examples



- ① Intake for power supply wiring, pump operation output (high voltage) and ground wiring.
- ② Intake for power supply jumper wiring and ground jumper wiring. (Only for jumping the power supply.)
- ③ Stop valve for discharge gas (high temperature part)
- ④ Retain the power supply wiring, pump operation output (high voltage) and ground wiring with the accessory clamp(A).
- ⑤ Insert the accessory clamp (B) in the hole of the fixing plate for stop valve.
- ⑥ Power supply wiring, pump operation output (high voltage) and ground wiring.
- ⑦ Approximately 50mm
- ⑧ Power supply jumper wiring and ground jumper wiring.
- ⑨ Retain the power supply wiring, pump operation output (high voltage) and ground wiring with the accessory clamp (B) to prevent them from touching with the stop valve for discharge gas.
- ⑩ Use the through hole cover for power jumper supply by cutting the hatched area.
- ⑪ Hatched area
- ⑫ Insert the accessory clamp (B) in the hole of the bottom of electrical box.
- ⑬ Intake for transmission wiring. (low voltage)
- ⑭ Make the transmission wiring have a trap with looseness to prevent condensate from reaching the top of electrical box.
- ⑮ Fix the transmission wiring to resin clamps with the accessory clamps (A)
- ⑯ Pass the transmission wiring (low voltage) through the wire clip.
- ⑰ Retain the power supply wiring, pump operation output (high voltage) and ground wiring to the bottom of electrical box with the accessory clamp (B)
- ⑱ Do not bundle the power supply jumper wiring.

1 Installation of outdoor units

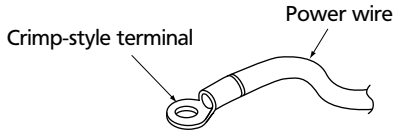
1 - 8 Field wiring

1 - 8 - 4 Examples

CAUTION

<Precautions when laying power wiring>

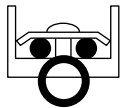
Use crimp-style terminals for connections to the power terminal block.



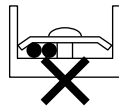
When none are available, follow the instructions below.

- Do not connect wiring of different size to the power terminal block. (Slack in the power wiring may cause abnormal heat.)
- When connecting wiring which is the same thickness, do as shown in the figure below.

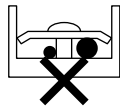
Connect same-size wiring to both sides.



It is forbidden to connect two to one side.



It is forbidden to connect wiring of different size.

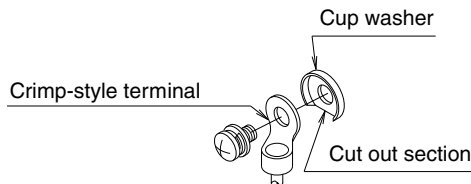


- For wiring, use the designated power wire and connect firmly, then secure to prevent outside pressure being exerted on the terminal board.
- Use an appropriate screwdriver for tightening the terminal screws. A screwdriver with a small head will strip the head and make proper tightening impossible.
- Over-tightening the terminal screws may break them.
- See the table below for tightening torque for the terminal screws.

	Tightening torque (N · m)
M5 (Power terminal block)	3.0 - 4.1
M5 (Ground)	
M3 (transmission wiring terminal block)	0.8 - 0.97

<Precautions when connecting the ground>

When pulling the ground wire out, wire it so that it comes through the cut out section of the cup washer. (An improper ground connection may prevent a good ground from being achieved.)



1 - 8 - 5 In case of a local setting

If necessary, do the local settings as mentioned in the table below.

For setting, refer to the plate "Cares to be taken in servicing" attached to the cover of electrical box.

Typical local settings

*For other settings than mentioned in the table below, refer to the equipment design materials and service manual.

(1) Setting of switching between cooling and heating	This setting is done when switching between cooling and heating is performed by a switching remote controller (sold separately as an accessory) installed on the outside unit.
(2) Setting to prohibit sequenced start	This setting is done when the outside units are not started in a sequenced order.
(3) Setting of centralized interlock Setting of external demand	These settings are done when the interlocks are connected in a lump-sum manner or when performing a demand operation by external instruction.
(4) Setting of abnormal display when interlock contact is OFF	This setting is done when making an abnormal display (HJ) on a remote controller when the interlock contact is OFF (when the heat source water pump is not operated)

CAUTION

A separate adapter (sold separately as an accessory) for external control of an outside unit becomes necessary when doing a demand operation from an external instruction, setting of cooling and heating through a centralized remote controller for cooling and heating (sold separately as an accessory) and setting of centralized interlock.

For details, refer to the pamphlet attached to the adapter.

1 Installation of outdoor units

1 - 9 Refrigerant piping

CAUTION

After completing installation, be sure to open the valve.

(See **10-9-9 Additional refrigerant charge for details**) (Operating the unit with the valve shut will break the compressor.)

Use R410A to add refrigerant. (The R410A refrigerant cylinder has a pink stripe painted around it.)

All field piping must be installed by a licensed refrigeration technician and must comply with relevant local and national regulations.

CAUTION TO BE TAKEN WHEN BRAZING REFRIGERANT PIPING

Do not use flux when brazing copper-to copper refrigerant piping.

(Particularly for the HFC refrigerant piping) Therefore, use the phosphor copper brazing filler metal (BCuP-2: JIS Z 3264/B-Cu93P-710/ 795: ISO 3677) which does not require flux.

(Flux has extremely harmful influence on refrigerant piping systems. For instance, if the chlorine based flux is used, it will cause pipe corrosion or, in particular, if the flux contains fluorine, it will damage the refrigerant oil.)

NOTE

Installation tools:

Gauge manifold, charge hose, etc.

Make sure to use installation tools that are exclusively used for R410A installations to withstand the pressure and to prevent foreign materials (e.g. mineral oils such as SUNISO and moisture) from mixing into the system.

(The screw specifications differ for R410A and R407C.)

Vacuum pump

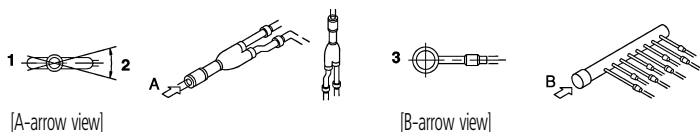
1 Use a 2-stage vacuum pump with a non-return valve.

2 Make sure the pump oil does not flow oppositely into the system while the pump is not working.

3 Use a vacuum pump which can evacuate to -100.7 kPa (5Torr, -755 mmHg).

1 - 9 - 1 Selection of piping material

- 1 Foreign materials inside pipes (including oils for fabrication) must be 30mg/10m or less.
- 2 Use the following material specification for refrigerant piping:
 - Construction material: Phosphoric acid deoxidized seamless copper for refrigerant.
 - Size: Determine the proper size referring to chapter "Example of connection".
 - The wall thickness of the refrigerant piping should comply with relevant local and national regulations. For R410A the design pressure is 4.0 MPa.
- 3 Make sure to use the particular branches of piping that have been selected referring to chapter "Example of connection".
- 4 Refer to chapter "Shutoff valve operation procedure" in 9-10 about the shutoff valve operation procedure.
- 5 Make sure to perform the piping installation within the range of the maximum allowable pipe length, allowable level difference and allowable length after branching as indicated in chapter "Example of connection"
- 6 For installation of the refrigerant branching kit, refer to the installation manual delivered with the kit. And follow the conditions listed below.
 - Mount the REFNET joint so that it branches either horizontally or vertically.
 - Mount the REFNET header so that it branches horizontally.



- ① Horizontal surface
- ② With in 30° against horizontal surface
- ③ Horizontal surface

- 7 The outside unit multi connection piping kit that is sold separately as an option (BHFP22MA56-84) is necessary for the multi installation of indoor units. See the installation manual attached to the kit with attention to the following restrictions when installing.

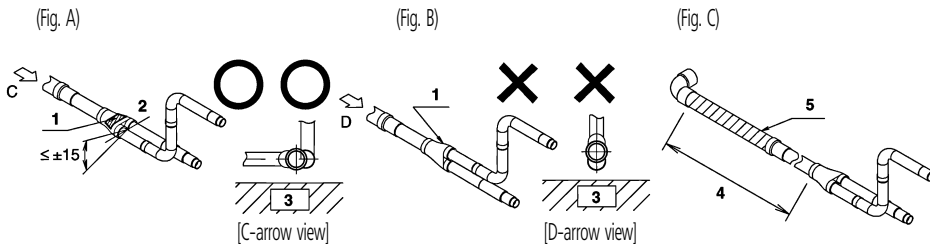
1 Installation of outdoor units

1 - 9 Refrigerant piping

1 - 9 - 1 Selection of piping material

Restriction for the installation of the outside unit multi connection piping kit

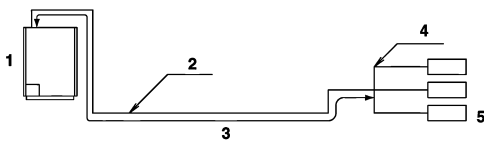
- Install the joint horizontally within a lean of $\pm 15^\circ$ with caution nameplate on top. Refer to figure 23 (Fig. A)
Do not connect it vertically. Refer to figure below (Fig. B)
- Reserve the straight part of 500mm or more to the branch pipe and do not bend the local pipe in that area. Straight part of 500mm or more can be reserved if a local pipe (straight pipe) of 120mm or more is connected to the joint. Refer to figure below (Fig. C)
- Incorrect installation may cause breakage of outside unit.



- ① Caution nameplate
- ② Horizontal line
- ③ Ground
- ④ Straight part of 500mm or more
- ⑤ Local pipe (120mm length or more)

Precautions when selecting branch piping.

- If the equivalent length of piping between the outside units and indoor units is 80m or longer, be sure to enlarge the main pipe in the liquid-side branch piping.
Depending on the length of the refrigerant piping, the cooling/ heating capacity may drop, but even in such cases it is ok to enlarge the main pipe.



- ① Outside unit
- ② Main pipe
- ③ Enlarge
- ④ The first refrigerant branching kit.
- ⑤ Indoor unit

[Liquid side]

RWEYQ10PY1 type:φ9.5. φ12.7 (Minimum thickness φ0.80mm)

RWEYQ20PY1 type:φ15.9. φ19.1 (Minimum thickness φ1.00mm)

RWEYQ30PY1 type:φ19.1. φ22.2 (Minimum thickness φ1.00mm)

(Unit: mm)

TEMPER GRADE	0 Type					1/2 H Type						
	Ø6.4	Ø9.5	Ø12.7	Ø15.9	Ø19.1	Ø22.2	Ø25.4	Ø28.6	Ø31.8	Ø34.9	Ø38.1	Ø41.3
Outer diameter	0.80	0.80	0.80	0.99	0.80	0.80	0.88	0.99	1.10	1.21	1.32	1.43
Minimum Well Thickness												

1 Installation of outdoor units

1 - 9 Refrigerant piping

1 - 9 - 2 Protection against contamination when installing pipes

- Take measures to prevent foreign materials like moisture and contamination from mixing into the system.

Place	Installation period	Protection method
Outdoor	More than a month	Pinch the pipe
	Less than a month	Pinch or tape the pipe
Indoor	Regardless of the period	

- Great caution is needed when passing copper tubes through walls.

1 - 9 - 3 Pipe connection

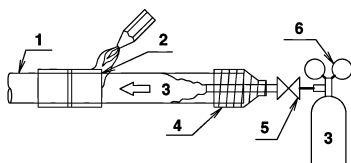
- Only use the flare nuts included with the unit.
Using different flare nuts may cause the refrigerant to leak.
- Be sure to perform a nitrogen blow when brazing.
(Brazing without performing nitrogen replacement or releasing nitrogen into the piping will create large quantities of oxidized film on the inside of the pipes, adversely affecting valves and compressors in the refrigerating system and preventing normal operation.)

CAUTION

Do not use anti-oxidants when brazing the pipe joints. Residue can clog pipes and break equipment.

NOTES

- 1 For nitrogen replacement method, see the "Installation Manual" (contact your dealer).
- 2 The pressure regulator for the nitrogen released when doing the brazing should be set to 0.02 MPa(0.2kg/cm²) or less.



- ① Refrigerant pipe
- ② Location to be brazed
- ③ Nitrogen
- ④ Taping
- ⑤ Manual valve
- ⑥ Regulator

Precautions when connecting pipes

- See the following table for flare part machining dimensions.
- When connecting the flare nuts, apply refrigerant oil to the inside and outside of the flares and screw them in by hand three or four times at first. (Use ester oil or ether oil.)
- See the following table for tightening torque. (Applying too much torque may cause the flares to crack.)
- After all the piping has been connected, check the gas leak with nitrogen.

Pipe size	Tightening torque (N·m)	A (mm)	Flare shape
ø9.5	32.7 - 39.9	12.8 - 13.2	
ø12.7	49.5 - 60.3	16.2 - 16.6	
ø15.9	61.8 - 75.4	19.3 - 19.7	

Not recommendable but in case of emergency

You must use a torque wrench but if you are obliged to install the unit without a torque wrench, you may follow the installation method mentioned below.

After the work is finished, make sure to check that there is no gas leak.

When you keep on tightening the flare nut with a spanner, there is a point where the tightening torque suddenly increases. From that position, further tighten the flare nut the angle shown below:

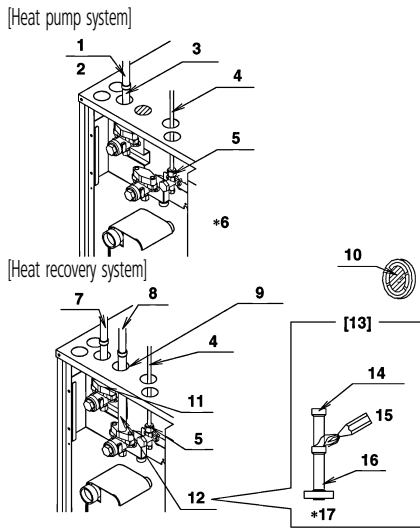
Pipe size	Further tightening angle	Recommended arm length of tool
ø9.5	60 to 90 degrees	Approx. 200 mm
ø12.7	30 to 60 degrees	Approx. 250 mm
ø15.9	30 to 60 degrees	Approx. 300 mm

1 Installation of outdoor units

1 - 9 Refrigerant piping

1 - 9 - 4 Connecting the refrigerant piping

Connect piping to outside unit by using accessory pipes



- ① Gas side piping
- ② (field supply)
- ③ Gas side accessory pipe (for suction gas (1))
- ④ Liquid side pipe (field supply)
- ⑤ Flare nut (Included in the unit)
- ⑥ Accessory pipes (for discharge gas and suction gas (2)) is not used.
- ⑦ Piping on discharge gas side (field supply)
- ⑧ Piping on suction gas side (field supply)
- ⑨ Cut off the hatched area and use it as a cover for the drilled.
- ⑩ Hatched area
- ⑪ Accessory pipe (for discharge gas)
- ⑫ Accessory pipe (for suction gas)
- ⑬ Guideline for pipe machining
- ⑭ Accessory pipe (for suction gas (2))
- ⑮ Brazing
- ⑯ Accessory pipe (for suction gas (1))
- ⑰ Before fitting to the product, apply brazing.

Precautions for installation of units

NOTES

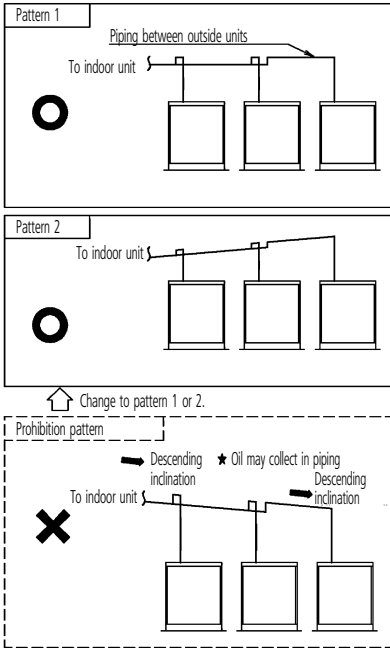
- 1 The outside unit multi connection piping kit that is sold separately as an option (BHFP22MA56·84 or BHFP26MA56·84) is necessary for the multi installation of outside units.
- 2 See the installation manual attached to the kit with attention to installation restrictions described in “connecting the refrigerant piping” when installing.

1 Installation of outdoor units

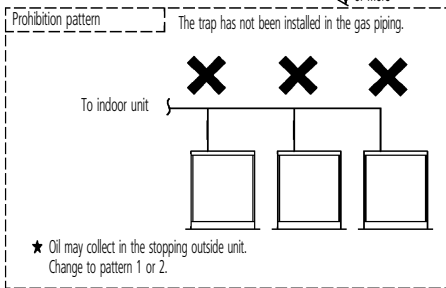
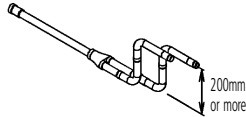
1 - 9 Refrigerant piping

1 - 9 - 4 Connecting the refrigerant piping

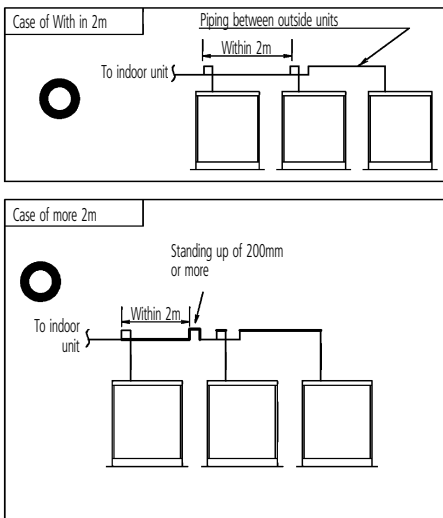
1 To avoid the risk of oil detention in the piping the piping between the outside units must be routed level or slightly upward.



2 The gas piping (both discharge and suction gas pipings in case of the heat recovery system) after branched, install without fail a trap of 200 mm or larger using the piping included in the piping kit for connecting the outside unit. Otherwise, the refrigerant may stay within the piping, causing any damage to the outside unit.



3 If the piping length between the outside unit connecting pipe kit or between the outside units exceeds 2 m, create a rise of 200 mm or more in the gas line within a length of 2 m from the kit.



1 Installation of outdoor units

1 - 9 Refrigerant piping

1 - 9 - 5 Air tight test and vacuum drying

The units were checked for leaks by the manufacturer.

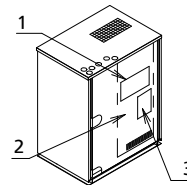
Confirm that the valves are firmly closed before Air tight test or vacuum drying.

To prevent entry of any impurities and insure sufficient pressure resistance, always use the special tools dedicated for R410A.

- **Air tight test:** Make sure to use nitrogen gas.
(For the service port location, refer to the "Caution" label attached on the front panel [right] of the outside unit.)

(Refer to figure)

- ① [Service precautions] Label
- ② EL. COMPO. BOX cover
- ③ [Caution] Label



Pressurize the liquid and gas pipes to 4.0MPa (40bar) (do not pressurize more than 4.0MPa (40bar)). If the pressure does not drop within 24 hours, the system passes the test. If the pressure drops, check where the nitrogen leaks from.

- **Vacuum drying:** Use a vacuum pump which can evacuate to -100.7kPa (5Torr, -755mmHg).

1Evacuate the system from the liquid and gas pipes by using a vacuum pump for more than 2 hours and bring the system to -100.7kPa or less. After keeping the system under that condition for more than 1 hour, check if the vacuum gauge rises or not. If it rises, the system may either contain moisture inside or have leaks.

2Following should be executed if there is a possibility of moisture remaining inside the pipe (if piping work is carried out during the raining season or over a long period of time rainwater may enter the pipe during work).

After evacuating the system for 2 hours, pressurize the system to 0.05MPa (vacuum break) with nitrogen gas and evacuate the system again using the vacuum pump for 1 hour to -100.7kPa or less (vacuum drying). If the system cannot be evacuated to -100.7kPa within 2 hours, repeat the operation of vacuum break and vacuum drying.

Then, after leaving the system in vacuum for 1 hour, confirm that the vacuum gauge does not rise.

1 - 9 - 6 Pipe insulation

After finishing the leak test and vacuum drying, the piping must be insulated. Take into account the following points:

- Make sure to insulate the connection piping both liquid-side and gas-side and refrigerant branch kits entirely. Not insulating them may cause leaking. (The gas piping can reach temperatures of 120°C . Be sure the insulation used can withstand such temperatures.)
- Reinforce the insulation on the refrigerant piping according to the installation environment. Condensation might form on the surface of the insulation.
- If there is a possibility that condensation on the shutoff valve might drip down into the indoor unit through gaps in the insulation and piping because the outside unit is located higher than the indoor unit, etc., this must be prevented by caulking the connections, etc.

8

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CAUTION

Be sure to insulate connection piping, as touching them can cause burns.

1 - 9 - 7 Checking of device and installation conditions

Be sure to check the followings.

- 1 Make sure there is no faulty power wiring or loosing of a nut.
See "10-8 Field wiring".
- 2 Make sure there is no faulty transmission wiring or loosing of a nut.
See "10-8 Field wiring".
- 3 Make sure there is no faulty refrigerant piping.
See "10-9 Refrigerant piping".
- 4 Make sure piping size is correct.
See "10-9-1 Selection of piping material".
- 5 Make sure insulation work is done.
See "10-9-7 Pipe insulation".
- 6 Make sure insulation resistance of main power circuit is not deteriorated.
Using a megatester for 500V, check that the insulation resistance of 2M or more is attained by applying a voltage of 500V DC between power terminals and earth. Never use the megatester for the transmission wiring (between outdoor and indoor unit, outdoor and COOL/HEAT selector and etc.).

1 Installation of outdoor units

1 - 9 Refrigerant piping

1 - 9 - 8 Additional refrigerant charge

CAUTION

Refrigerant cannot be charged until field wiring has been completed.
 Refrigerant may only be charged after performing the leak test and the vacuum drying.
 When charging a system, care shall be taken that its maximum permissible charge is never exceeded, in view of the danger of liquid hammer.
 Charging with an unsuitable substance may cause explosions and accidents, so always ensure that the appropriate refrigerant (R410A) is charged.
 Refrigerant containers shall be opened slowly.
 Always use protective gloves and protect your eyes when charging refrigerant.

- This outside unit is factory charged with refrigerant and depending on pipe sizes and pipe lengths some systems require additional charging of refrigerant.
- Determine the amount of refrigerant to be added by referring to the table, write it down on the included "Added Refrigerant" plate and attach it to the rear side of the front cover.

NOTE

Refer to the example of connection for the amount to be added.

Additional refrigerant charge procedure (1)-normally

- Charge the refrigerant to the liquid pipe in its liquid state. Since R410A is a mixed refrigerant, its composition changes if charged in a state of gas and normal system operation would no longer be assured.
 - Make sure to use installation tools you exclusively use on R410A installations to withstand the pressure and to prevent foreign materials from mixing into the system.
- 1 Before charging, check whether the tank has a siphon attached or not.

How to charge with a siphon attached tank.

Charge with the tank upright.
 (There is a siphon tube inside, so there is no need to turn the tank upside-down.)



How to charge with other tank.

Charge with the tank upside-down.



- 2 After the vacuum drying is finished, charge the additional refrigerant in its liquid state through the liquid shutoff valve service port. Taking into account following instructions:
- Check that gas and liquid shutoff valves are closed.
 - Stop the compressor and charge the specified weight of refrigerant.
 (If the outside unit is not in operation and the total amount cannot be charged, follow the Additional refrigerant charge procedure (2) shown below.)

1 Installation of outdoor units

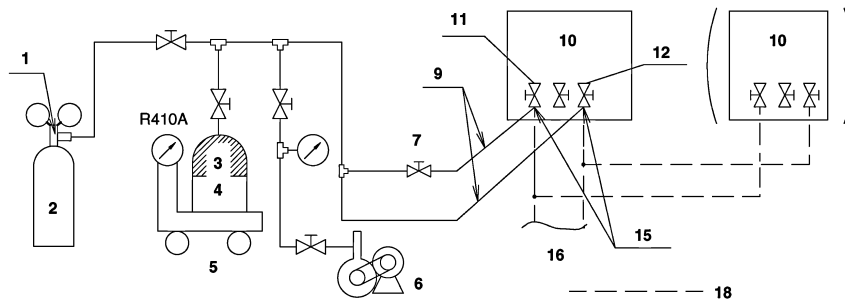
1 - 9 Refrigerant piping

1 - 9 - 8 Additional refrigerant charge

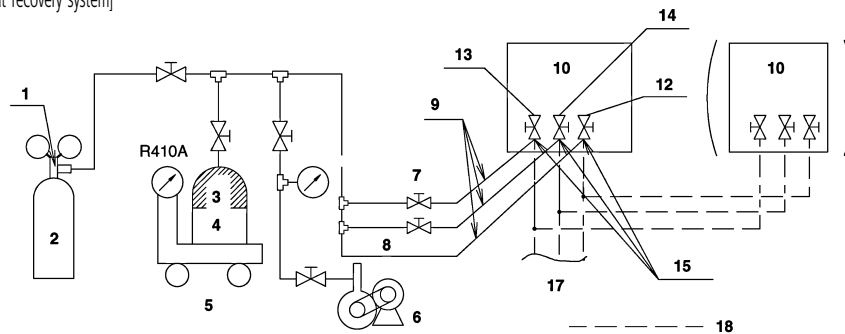
NOTE

Procedures for charging additional refrigerant.

[Heat pump system]



[Heat recovery system]



- ① Pressure reducing valve
- ② Nitrogen
- ③ Refrigerant tank
- ④ With a siphon
- ⑤ Measuring instrument
- ⑥ Vacuum pump
- ⑦ Valve A
- ⑧ Valve B
- ⑨ Charge hose
- ⑩ Outside unit
- ⑪ Gas side
- ⑫ Liquid side
- ⑬ Discharge gas side
- ⑭ Suction gas side
- ⑮ Shutoff valve service port
- ⑯ To indoor units / BS units
- ⑰ To indoor units / BS units
- ⑱ Dotted lines represent onsite piping

1 Installation of outdoor units

1 - 9 Refrigerant piping

1 - 9 - 8 Additional refrigerant charge

Additional refrigerant charge procedure (2)-by Additional refrigerant charge operation

About the system settings for additional refrigerant charge operation, refer to the [Service Precaution] label attached on the electric box cover in the outside unit.

- 1 Fully open all shutoff valves (valve A and valve B must be left fully closed).
- 2 After ten minutes, fully close liquid line shutoff valve and then, open the valve by turning 180°. Start the additional refrigerant charge operation.
See [Service precautions] Label for detail.
If it is difficult to charge the refrigerant additionally, decrease the water temperature or warm the refrigerant tank.
(Warm the refrigerant tank with a stupe or a warm hot water of 40 degrees or less.)
- 3 After the system is charged with a specified amount of refrigerant, press the RETURN button (BS3) on the PC board (A1P) in the outside unit to stop the additional refrigerant charge operation.
- 4 Immediately open both liquid-side and gas-side shutoff valve.
(If do not open the shutoff valve immediately, liquid seal may cause the pipe to burst.)

NOTE

Procedures for charging additional refrigerant.
(Refer to figure above)

1 Installation of outdoor units

1 - 9 Refrigerant piping

1 - 9 - 9 Shutoff valve operation procedure

CAUTION

Do not open the shutoff valve until 1-6 of "9-8 Checking of device and installation conditions" are completed. If the shutoff valve is left open without turning on power, it may cause refrigerant to buildup in the compressor, leading to insulation degradation.

Opening shutoff valve

- 1 Remove the cap and turn the valve counterclockwise with the hexagon wrench (JISB4648).
- 2 Turn it until the shaft stops.

Do not apply excessive force to the shutoff valve. Doing so may break the valve body, as the valve is not a backseat type. Always use the hexagon wrench.

- 3 Make sure to tighten the cap securely.

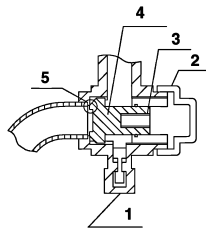
Closing shutoff valve

- 1 Remove the cap and turn the valve clockwise with the hexagon wrench (JISB4648).
- 2 Securely tighten the valve until the shaft contacts the main body seal.
- 3 Make sure to tighten the cap securely.

* For the tightening torque, refer to the table on the bellow.

Tightening torque

SHUTOFF VALVE SIZE	Tightening torque N-m (Turn clockwise to close)					
	Shaft (valve body)		Cap (valve lid)	Service port	Flare nut	Gas side accessory pipe (1)
Liquid side	5.4 - 6.6	Hexagonal wrench 4 mm	13.5 - 16.5	11.5 - 13.9	32.7 - 39.9	-
Gas side	27 - 33	Hexagonal wrench 10 mm	36 - 44	11.5 - 13.9	-	22 - 28



- ① Service port
- ② Cap
- ③ Hexagon hole
- ④ Shaft
- ⑤ The main body seal

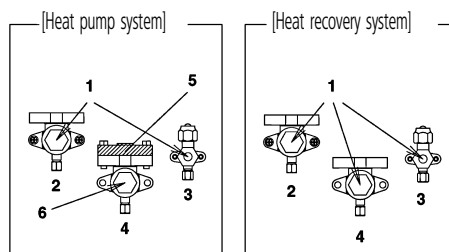
1 Installation of outdoor units

1 - 9 Refrigerant piping

1 - 9 - 9 Shutoff valve operation procedure

CAUTION

- 1 Do not damage the cap sealing.
- 2 Always use a charge hose for service port connection.
- 3 After tightening the cap, check that no refrigerant leaks are present.
- 4 After working, securely tighten the cover of service port without fail by specified torque.
- 5 When loosening a flare nut, always use two wrenches in combination. When connecting the piping, always use a spanner and torque wrench in combination to tighten the flare nut.
- 6 When connecting a flare nut, coat the flare (inner and outer faces) with ether oil or ester oil and hand-tighten the nut 3 to 4 turns as the initial tightening.
- 7 Do not forget to open the stop valve before starting operation.



- ① Remove the cap and turn the valve counter clockwise with the hexagon wrenches until it stops.
- ② Discharge gas side
- ③ Liquid side
- ④ Suction gas side
- ⑤ Never remove the partition flange for any reason.
- ⑥ Full close on the suction gas side

8 1 - 10 Checks after installation

1 After the installation, check the following.

- 1 The shutoff valve
Make sure that the shutoff valve (both liquid and gas) is opened.
See the "Shutoff valve operation procedure" in chapter 10-9 and 10-10.
- 2 Additional refrigerant charge
The amount of refrigerant to be added to the unit should be written on the included "Added Refrigerant" plate and attached to the rear side of the front cover.
- 3 Installation date
Be sure to keep record of the installation date on the sticker on the EL. COMPO. BOX cover according to EN60335-2-40.

1 Installation of outdoor units

1 - 11 Test run

CAUTION

After completing installation, be sure to open the shutoff valve.
(Operating the unit with the valve shut will break the compressor.)

1 - 11 - 1 Air discharge

- Running the heat source water pump, carry out air discharge process until the water comes out from the air discharge hole of local piping.
(For the operation to be done for the first time after installation, you need to perform a checking operation.)

1 - 11 - 2 Before turn on the power supply

- Close the EL. COMPO. BOX cover securely before turning on power.
- Make settings for outside unit PC board (A1P) after power-on and check the LED display from inspection door that is on the EL. COMPO. BOX cover.

1 - 11 - 3 Check operation

(For the operation to be done for the first time after installation, you need to perform a checking operation according to this guideline without fail. Otherwise, Abnormal Code "U3" appears and normal operation cannot be carried out.)

(1) Check the connection of interlock circuit	The outside unit cannot be operated if the interlock circuit has not been connected.
(2) As necessary, configure the system settings onsite by using the dip switch (DS1) and push button switches (BS1 to 5) on the outside unit PC board (A1P). After this, close the cover of electrical box.	Always perform configuration after turning ON the power. To learn the setting method, refer to the [Service Precautions] label attached at the cover of electrical box shown in the figure 27. Remember, the actual settings you have made must be recorded on the [Service Precautions] label.
(3) Turn ON the power to the outside units and indoor units.	Make sure to turn ON the power 6 hours before starting the operation. This is necessary to warm the crankcase by the electric heater.
(4) Start the heat source water pump and fill the heat source water in the outside unit.	The outside unit cannot be operated if the heat source water pump is not running.
(5) Make sure that the temperature of heat source water is kept within the operation range (10 - 45°C).	The outside unit cannot be operated at a temperature outside the operation range.
(6) Check the LED on the PC board (A1P) in the outside unit to see if the data transmission is performed normally.	

LED display (Default status before delivery)	Microcomputer operation monitor	Page	Ready/Error			Cooler/heater changeover			Low noise	Demand	Multi
			HAP	H1P	H2P	H3P	H4P	H5P			
One outside unit installed	●	●	●	○	●	●	●	●	●	●	
When multiple outside unit installed (*)	Master station	●	●	○	●	●	●	●	●	○	
	Sub station 1	●	●	●	●	●	●	●	●	●	
	Sub station 2	●	●	●	●	●	●	●	●	●	

LED display: ● OFF ○ ON ● Blinking

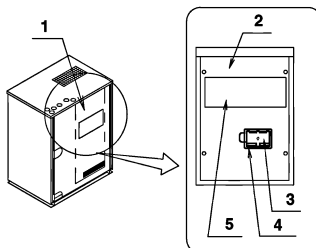
(*) The master unit is the outside unit to which the transmission wiring for the indoor units is connected. The other outside units are sub units.

(7) • Using the push button switches (BS1 - 5) on the P-panel (A1P) of outside unit, carry out a local setting, if necessary. • In case of an installation of multiple outside units, carry out the setting on the master unit. (Setting on the slave unit becomes invalid.)	Always carry out the setting only after the power supply has been applied . For the method of setting, refer to the label of "Points to be noted when providing services" attached to the cover of electrical box (shown in the figure 27) of the outside unit. (After setting, record the details of that setting to the label of "Points to be noted when providing services" without fail.)
(8) Check all shutoff valve is opened. If some shutoff valve is closed, open them. (Refer to "9-10 Shutoff valve operation procedure".)	<p>CAUTION</p> <p>Do not leave any shutoff valve closed. Otherwise the compressor will fail.</p> <p>For Heat recovery system of cooling and heating: Open all stop valves on the suction side, discharge gas side and liquid side.</p> <p>For cooling and heating switching operation system: Open the stop valves on discharge gas side and liquid side. (Keep the stop valve on suction side fully closed.)</p>
(9) Perform the check operation following	<p>If you push the test run button (BS4) on the P-panel (A1P) of the outside unit for 5 seconds, the test run starts.</p> <p>If you want to interrupt the test run, push the RETURN button (BS3) on Ppanel (A1P) of the outside unit. The system continues residual operation for about 1 minute (maximum 10 minutes) and then stops. (During test run, you cannot stop it by a command from a remote controller.) Carry out above setting from a service window.</p>

1 Installation of outdoor units

1 - 11 Test run

1 - 11 - 3 Check operation



- ① Electrical box
- ② Cover of electrical box
- ③ Cover for servicing
- ④ Service window
- ⑤ Points to be noted when providing services

<Cautions for check operation>

- If operated within about 12 minutes after power supply has been applied to the indoor unit and outside unit, H2P will turn ON but the compressor does not start running. Before start operation, make sure that the LED display is correct referring to the table (6) of “11-3 Check operation”.
- The system may require up to 10 minutes until it can start the compressor after an operation start. This is a normal operation to equalize the refrigerant distribution.
- The check operation does not provide any means of checking the indoor units individually. For that purpose, perform normal operation using the remote controller after the check operation.
- Check operation is not possible in other modes such as collection mode.
- If the setting of indoor remote controller is changed before the check operation, it may not be performed correctly and malfunction code “UF” may be displayed.

Remote controller displays malfunction code

Malfunction code	Installation error	Remedial action
E3 E4 F3 F6 UF U2	The shutoff valve of an outside unit is left closed.	Open the shutoff valve.
U1	The phases of the power to the outside units are reversed.	Exchange two of the three phases (L1, L2, L3) to make a positive phase connection.
U1 U2 U4	No power is supplied to an outdoor or indoor unit (including phase interruption).	Check if the power wiring for the outside units are connected correctly. (If the power wire is not connected to L2 phase, no malfunction display will appear and the compressor will not work.)
UF	Incorrect transmission between units	Check if the refrigerant piping line and the unit transmission wiring are consistent with each other.
E3 F6 UF U2	Refrigerant overcharge	Recalculate the required amount of refrigerant from the piping length and correct the refrigerant charge level by recovering any excessive refrigerant with a refrigerant recovery machine.
E4 F3	Insufficient refrigerant	<ul style="list-style-type: none"> • Check if the additional refrigerant charge has been finished correctly. • Recalculate the required amount of refrigerant from the piping length and add an adequate amount of refrigerant.
U7 UF	If an outdoor multi terminal is connected when there is one outside unit installed	Remove the line from the outdoor multi terminals (Q1 and Q2).
UF E4	The operation mode on the remote controller was changed before the check operation.	Set the operation mode on all indoor unit remote controllers to “cooling.”
HJ	The heat source water is not circulating.	Make sure that the water pump is running.

1 Installation of outdoor units

1 - 11 Test run

1 - 11 - 4 Check of normal operation

After the check operation is completed, operate the unit normally.

(Heating is not possible if the outdoor temperature is 24°C or higher. Refer to the Operation manual.)

Check the below items.

- Make sure the indoor and outside units are operating normally
(If a knocking sound can be heard in the liquid compression of the compressor, stop the unit immediately and then energize the heater for a sufficient length of time before restarting the operation.)
- Run each indoor unit one at a time and make sure the corresponding outside unit is also running.
- Check if cold (or hot) air is coming out of the indoor unit.
- Press the fan direction and fan strength buttons on the indoor unit to check if they operate properly.

CAUTION

<Cautions for normal operation check>

- Once stopping, the compressor will not restart in about 5 minutes even if the Run/Stop button of an indoor unit in the same system is pressed.
- When the system operation is stopped by the remote controller, the outside units may continue operating for further 5 minutes at maximum.
- If the system has not undergone any check operation by the test operation button since it was first installed, an malfunction code "U3" is displayed. In this case, perform check operation referring to "11-3 Check operation".
- After the test run, when handing the unit over to the customer, make sure the EL. COMPO. BOX cover, the inspection door, and the unit casing are all attached.

In all of us,
a green heart



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