DAIKIN

Air Conditioning

Technical Data

Replacement VRV

EEDEN15-202

RQCEQ-P3

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RQCEQ-P3

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1 Features

Quick & quality replacement for R-22 and R-407C systems

- Cost effective and fast replacement as only the outdoor and indoor unit needs to be replaced, meaning almost no work has to be carried out inside the building
- Efficiency gains of more than 40% can be realized, thanks to technological developments in heat pump technology and the more efficient R-410A refrigerant
- Less intrusive and time consuming installation compared to installing a new system, as the refrigerant piping can be maintained
- Unique automatic refrigerant charge eliminates the need to calculate refrigerant volume and allows safe replacement of competitor replacement
- Automatic cleaning of refrigerant piping ensures a clean piping network, even when a compressor breakdown has occurred
- Possibility to add indoor units and increase capacity without changing the refrigerant piping
- Possibility to spread the various stages of repclacement thanks to the modular design of the VRV system
- Keep your system in top condition via our ACNSS service: 24/7 monitoring for maximum efficiency, extended lifetime, immediate service support thanks to failure prediction and a clear understanding of operability and usage

Inverter

2 Specifications

2-1 Technical Specifications					RQCEQ 280P3	RQCEQ 360P3	RQCEQ 460P3	RQCEQ 500P3	RQCEQ 540P3	RQCEQ 636P3	RQCEQ 712P3	RQCEQ 744P3	RQCEQ 816P3	RQCEQ 848P3
System	Outdoor unit module 1				RQEQ140P3									
	Outdoor unit module 2				RQEQ180P3									
	Outdoor unit module 3				RQEQ212P3									
	Outdoor unit module 4				RQEQ212P3									
Capacity range				HP	10	13	16	18	20	22	24	26	28	30
Cooling capacity	Nom.			kW	28.0 (1)	36.0 (1)	45.0 (1)	50.0 (1)	54.0 (1)	63.6 (1)	71.2 (1)	74.4 (1)	81.6 (1)	84.8 (1)
Heating capacity	Nom.			kW	32.0 (2)	40.0 (2)	52.0 (2)	56.0 (2)	60.0 (2)	67.2 (2)	78.4 (2)	80.8 (2)	87.2 (2)	89.6 (2)
Power input - 50Hz	Cooling	Nom.		kW	7.04	10.3	12.2	13.9	15.5	21.9	21.2	23.3	27.1	29.2
	Heating	Nom.		kW	8.00	10.7	13.4	14.7	16.1	17.7	20.7	21.2	23.1	23.6
EER					3.98	3.48	3.77	3.61	3.48	2.90	3.36	3.19	3.01	2.90
COP					4.00	3.72	3.89	3.80	3.72	3.79	3.80	3.81	3.77	3.79
Maximum number of connectable indoor units					21	28	34	39	43	47	52	56	60	64
Indoor index connection	Min.				140	180	230	250	270	318	356	372	408	424
	Nom.				280	360	500		540	636	712	744	816	848
	Max.				364	468	598	650	702	827	926	967.0	1,061	1,102
Sound pressure level	Cooling	Nom.		dBA	57	61		62	63	64	63	64	65	66
Refrigerant	Circuits	Quantity			1									
Piping connections	Liquid	Type			Braze connection									
		OD		mm	9.52	12.7		15.9			19.1			
	Gas	Type			Braze connection									
		OD		mm	22.2	25.4	28.6				34.9			
	Discharge gas	Type			Braze connection									
		OD		mm	19.1		22.2			25.4			28.6	
	Piping length	OU - IU	Max.	m	120									
	Total piping length	System	Actual	m	300									
	Level difference	OU - IU	Outdoor unit in highest position	m	50									

Standard Accessories : Installation manual;

Standard Accessories : Operation manual;

Standard Accessories : Clamps;

2-2 Electrical Specifications			RQCEQ 280P3	RQCEQ 360P3	RQCEQ 460P3	RQCEQ 500P3	RQCEQ 540P3	RQCEQ 636P3	RQCEQ 712P3	RQCEQ 744P3	RQCEQ 816P3	RQCEQ 848P3
Current - 50Hz	Minimum circuit amps (MCA)	A	23.8	34.5	41.0	46.4	51.7	55.5	64.9	66.1	72.7	74.0
	Maximum fuse amps (MFA)	A	30	40	50	60		70	80		90	
	Total overcurrent amps (TOCA)	A	31.2		46.8				62.4			

Notes

(1) Cooling: indoor temp. 27°CDB, 19°CWB; outdoor temp. 35°CDB; equivalent piping length: 7.5m; level difference: 0m

(2) Heating: indoor temp. 20°CDB; outdoor temp. 7°CDB, 6°CWB; equivalent refrigerant piping: 7.5m; level difference: 0m

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).

Contains fluorinated greenhouse gases

Sound values are measured in an anechoic chamber. Operating sound level generally becomes higher than this value depending on the operating conditions, reflected sound, and peripheral noise.

RLA is based on following conditions: indoor temp. 27°CDB, 19°CWB; outdoor temp. 35°CDB

2 Specifications

2-3 Technical Specifications					RQEQ140P3	RQEQ180P3	RQEQ212P3
Dimensions	Unit	Height		mm	1,680		
		Width		mm	635		
		Depth		mm	765		
Weight	Unit			kg	175		179
Casing	Colour				Ivory white (Munsell code: 5Y7.5/1)		
Heat exchanger	Type				Cross fin coil		
Compressor	Quantity				1		
	Type				Hermetically sealed scroll compressor		
	Piston displacement			m³/h	13.34	15.75	16.89
	Speed			rpm	6,300	7,440	7,980
	Output			W	2,800	3,300	3,600
	Starting method				Soft start		
Fan	Type				Propeller fan		
	Air flow rate	Cooling	Nom.	m³/min	95	110	
	External static pressure	Max.		Pa	-		
Fan motor	Quantity				1		
	Drive				Direct drive		
	Output			W	350		
Sound pressure level	Cooling	Nom.		dBA	54	58	60
Operation range	Cooling	Min.~Max.		°CDB	-5~43		
	Heating	Min.~Max.		°CWB	-20~15.5		
Refrigerant	Type				R-410A		
	Charge			kg	10.3	10.6	11.2
				TCO2Eq	21.5	22.1	23.4
	Control				Electronic expansion valve		
	GWP				2,087.5		
Safety devices	Item	01			High pressure switch		
		02			Fan driver overload protector		
		03			Overcurrent relay		
		04			Inverter overload protector		

2-4 Electrical Specifications					RQEQ140P3	RQEQ180P3	RQEQ212P3
Power supply	Name				Y1		
	Phase				3~		
	Frequency			Hz	50		
	Voltage			V	380-415		
Voltage range	Min.			%	-10		
	Max.			%	10		
Current	Nominal running current (RLA) - 50Hz	Compressor 1	Cooling	A	4.8	7.2	10.7
Current - 50Hz	Minimum circuit amps (MCA)			A	11.9	17.25	18.5
	Maximum fuse amps (MFA)			A	15	20	22.5
	Full load amps (FLA)	Fan motor		A	0.7	0.8	

3 Electrical data

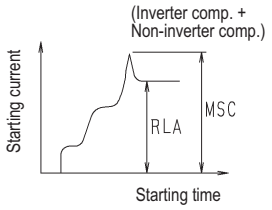
3 - 1 Electrical Data

RQCEQ-P3

Model Name					Units				Power Supply Comp.					OFM	
Combination Unit	Independent Unit				Hz	Volts	Min.	Max	MCA	TOCA	MFA	MSC	RLA	kW	FLA
RQCEQ280P3	RQEQ140P3	RQEQ140P3			50	380	342	456	23.8	31.2	30	-	4.6x2	0.35x2	0.7x2
						400						-	4.8x2		
						415						-	5.1x2		
RQCEQ360P3	RQEQ180P3	RQEQ180P3			50	380	342	456	34.5	31.2	40	-	6.9x2	0.35x2	0.8x2
						400						-	7.2x2		
						415						-	7.6x2		
RQCEQ460P3	RQEQ140P3	RQEQ140P3	RQEQ180P3		50	380	342	456	41.0	46.8	50	-	(4.6x2)+6.9	0.35x3	0.7x2+0.8
						400						-	(4.8x2)+7.2		
						415						-	(5.1x2)+7.6		
RQCEQ500P3	RQEQ140P3	RQEQ180P3	RQEQ180P3		50	380	342	456	46.4	46.8	60	-	4.6+(6.9x2)	0.35x3	0.7+0.8x2
						400						-	4.8+(7.2x2)		
						415						-	5.1+(7.6x2)		
RQCEQ540P3	RQEQ180P3	RQEQ180P3	RQEQ180P3		50	380	342	456	51.7	46.8	60	-	6.9x3	0.35x3	0.8x3
						400						-	7.2x3		
						415						-	7.6x3		
RQCEQ636P3	RQEQ212P3	RQEQ212P3	RQEQ212P3		50	380	342	456	55.5	46.8	70	-	10.3x3	0.35x3	0.8x3
						400						-	10.7x3		
						415						-	11.3x3		
RQCEQ712P3	RQEQ140P3	RQEQ180P3	RQEQ180P3	RQEQ212P3	50	380	342	456	64.9	62.4	80	-	4.6+(6.9x2)+10.3	0.35x4	0.7+0.8x3
						400						-	4.8+(7.2x2)+10.7		
						415						-	5.1+(7.6x2)+11.3		
RQCEQ744P3	RQEQ140P3	RQEQ180P3	RQEQ212P3	RQEQ212P3	50	380	342	456	66.1	62.4	80	-	4.6+6.9+(10.3x2)	0.35x4	0.7+0.8x3
						400						-	4.8+7.2+(10.7x2)		
						415						-	5.1+7.6+(11.3x2)		
RQCEQ816P3	RQEQ180P3	RQEQ212P3	RQEQ212P3	RQEQ212P3	50	380	342	456	72.7	62.4	90	-	6.9+(10.3x3)	0.35x4	0.8x4
						400						-	7.2+(10.7x3)		
						415						-	7.6+(11.3x3)		
RQCEQ848P3	RQEQ212P3	RQEQ212P3	RQEQ212P3	RQEQ212P3	50	380	342	456	74.0	62.4	90	-	10.3x4	0.35x4	0.8x4
						400						-	10.7x4		
						415						-	11.3x4		

SYMBOLS

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)
OFM : Outdoor Fan Motor
FLA : Full Load Amps. (A)
kW : Rated Motor Output (kW)



The relationship between the starting time and the starting current

NOTES

1. RLA is based on the following conditions,
   Indoor temperature, 27°C DB/19.0°C WB
   Outdoor temperature, 35°C DB
2. TOCA means the total value of each OC set.
3. MSC means the Max. current during the starting of compressor.
4. Voltage range
   Units are suitable for use on electrical systems where voltage supplied to unit terminal is not below or above listed range limits.
5. Maximum allowable voltage variation between phases is 2%
6. Select wire size based on the value of MCA or TOCA.
7. MFA is used to select the circuit breaker and the ground fault circuit interrupter (earth leakage circuit breaker).

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4 Options

4 - 1 Options

RQCEQ-P3

Series		VRV III - Q			
Model / Option name		RQCEQ280P3 RQCEQ360P3	RQCEQ460P3 RQCEQ500P3	RQCEQ540P3 RQCEQ636P3	RQCEQ712P3 RQCEQ744P3 RQCEQ816P3 RQCEQ848P3
Cool/heater selector					
Fixing box		KJB11A			
Distributive piping	Refnet header	KHRQ23M29H KHRQ23M64H		KHRQ23M29H KHRQ23M64H KHRQ23M75H	
	Refnet joint	KHRQ23M20T KHRQ23M29T9 KHRQ23M64T		KHRQ23M20T KHRQ23M29T9 KHRQ23M64T KHRQ23M75T	
Pipe size reducer					
Outdoor unit multi Connection piping kit		BHFP26P36C	BHFP26P63C		BHFP26P84C

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5 Capacity tables

5 - 1 Capacity Table Legend

In order to fulfill more your requirements on quick access of data in the format you require, we have developed a tool to consult capacity tables.

Below you can find the link to the capacity table database and an overview of all the tools we have to help you select the correct product:

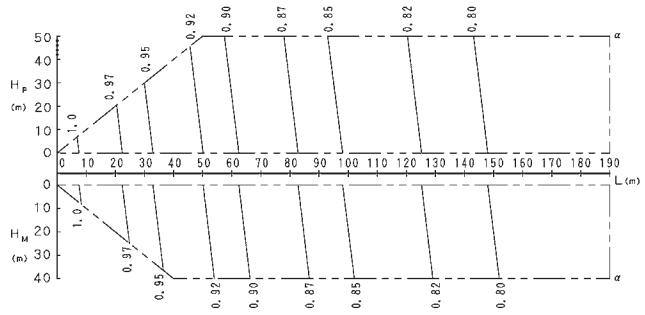
- Capacity table database: lets you find back and export quickly the capacity information you are looking for based upon unit model, refrigerant temperature and connection ratio.
  → http://extranet.daikineurope.com/captab
- E-data app: gives a complete overview of the Daikin products available in your country, with all engineering data and commercial info in your own language. Download the app now!
  → https://itunes.apple.com/us/app/daikin-e-data/id565955746?mt=8
- Selection software: allows you to do load calculations, equipment selections and energy simulations for our VRV, Daikin Altherma, refrigeration and applied systems products.
  → http://extranet.daikineurope.com/en/software/downloads/default.jsp

5 Capacity tables

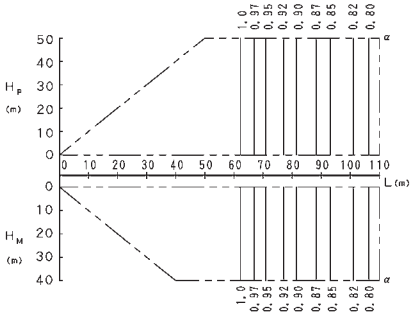
5 - 2 Capacity Correction Factor

RQCEQ280P3

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



[Diameter of the main pipes (standard size)]

Model	Liquid
RQCEQ280P3	ø 9.5

[Explanation of symbols]

Hp: Level difference (m) between indoor and outdoor units where indoor unit in inferior position

Hm: Level difference (m) between indoor and outdoor units where indoor unit in superior position

L: Equivalent pipe length (m)

α: Capacity correction factor

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NOTES

1. These figures illustrate the rate of change in capacity of 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. 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 outdoor units as mentioned bellow, whichever smaller.
   Calculating A/C capacity of outdoor units.
   - Condition: Indoor unit combination ratio does not exceed 100%.

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

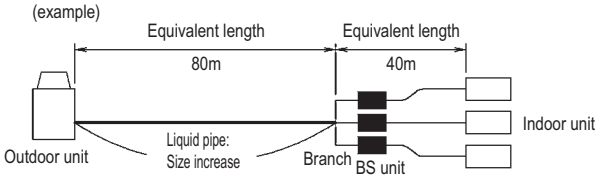
3. When overall equivalent pipe length is 90m or more, the diameter of the main liquid pipes (outdoor unit-branch sections) must be increased.
   [Diameter of above case]

Model	Liquid
RQCEQ280P3	ø 12.7

4. When the main sections of the interunit liquid pipe diameters are increased the overall equivalent length should be calculated as follows, (heating only)

   Overall equivalent length =(Equivalent length to main pipe) x 0.2 + (Equivalent length after branching)

   (example)

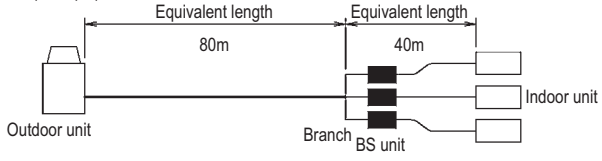


   In the above case (Heating) Overall equivalent length = 80m x 0.2 + 40m = 56m. The correction factor in capacity when Hp=0m is thus approximately 1.0.

5. In the combination which does not include cooling only indoor unit,
   Calculate the equivalent length pipe by the following when you calculate cooling capacity

   Overall equivalent length =(Equivalent length to main pipe) x 0.5 + (Equivalent length after branching)

   (example)



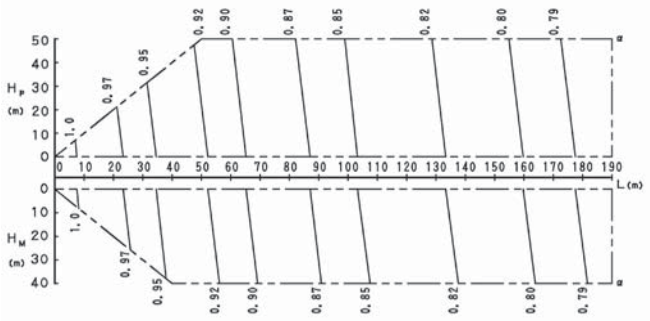
   In the above case (Cooling) Overall equivalent length = 80m x 0.5 + 40m = 80m. The correction factor in capacity when Hp=0m is thus approximately 0.88.

5 Capacity tables

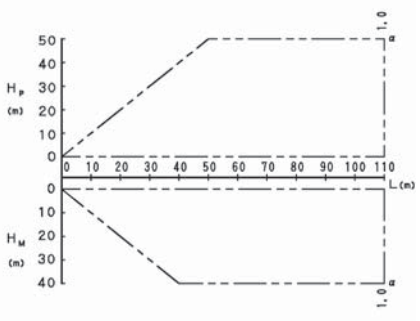
5 - 2 Capacity Correction Factor

RQCEQ360,500P3

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



[Diameter of the main pipes (standard size)]

Model	Liquid
RQCEQ360P3	ø 12.7
RQCEQ500P3	ø 15.9

[Explanation of symbols]

Hp: Level difference (m) between indoor and outdoor units where indoor unit in inferior position

Hm: Level difference (m) between indoor and outdoor units where indoor unit in superior position

L: Equivalent pipe length (m)

α: Capacity correction factor

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NOTES

1. These figures illustrate the rate of change in capacity of 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. 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 outdoor units as mentioned bellow, whichever smaller.
   Calculating A/C capacity of outdoor units.
   - Condition: Indoor unit combination ratio does not exceed 100%.

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

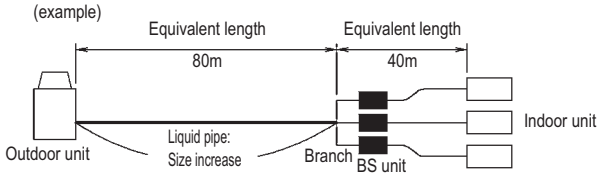
3. When overall equivalent pipe length is 90m or more, the diameter of the main liquid pipes (outdoor unit-branch sections) must be increased.
   [Diameter of above case]

Model	Liquid
RQCEQ360P3	ø 15.9
RQCEQ500P3	ø 19.1

4. When the main sections of the interunit liquid pipe diameters are increased the overall equivalent length should be calculated as follows, (heating only)

   Overall equivalent length =(Equivalent length to main pipe) x Correction factor + (Equivalent length after branching)

   (example)



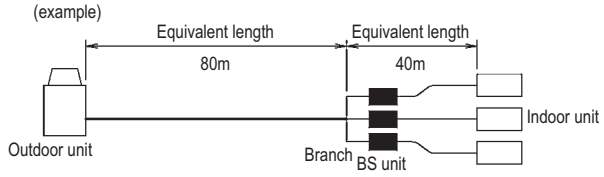
Model	Correction factor
RQCEQ360P3	ø 0.3
RQCEQ500P3	ø 0.4

   In the above case (Heating) Overall equivalent length = 80m x 0.4 + 40m = 72m. The correction factor in capacity when Hp=0m is thus approximately 1.0.

5. In the combination which does not include cooling only indoor unit,
   Calculate the equivalent length pipe by the following when you calculate cooling capacity

   Overall equivalent length =(Equivalent length to main pipe) x 0.5 + (Equivalent length after branching)

   (example)



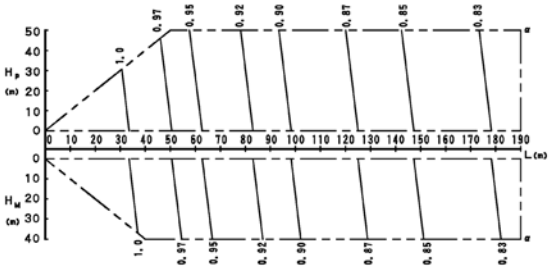
   In the above case (Cooling) Overall equivalent length = 80m x 0.5 + 40m = 80m. The correction factor in capacity when Hp=0m is thus approximately 0.88.

5 Capacity tables

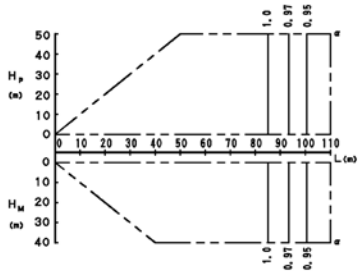
5 - 2 Capacity Correction Factor

RQCEQ460P3

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



[Diameter of pipe (standard size)]

Model	Liquid
RQCEQ460P3	ø 12.7

[Explanation of symbols]

Hp: Level difference (m) between indoor and outdoor units where indoor unit in inferior position

Hm: Level difference (m) between indoor and outdoor units where indoor unit in superior position

L: Equivalent pipe length (m)

α: Capacity correction factor

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NOTES

1. These figures illustrate the rate of change in capacity of 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. 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 outdoor units as mentioned bellow, whichever smaller.
   Calculating A/C capacity of outdoor units.
   - Condition: Indoor unit combination ratio does not exceed 100%.

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

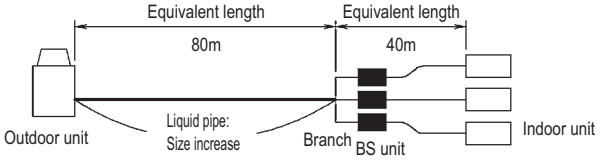
3. When overall equivalent pipe length is 90m or more, the diameter of the main liquid pipes (outdoor unit-branch sections) must be increased.
   [Diameter of above case]

Model	Liquid
RQCEQ460P3	ø 15.9

4. When the main sections of the interunit liquid pipe diameters are increased the overall equivalent length should be calculated as follows, (heating only)

   Overall equivalent length =(Equivalent length to main pipe) x 0.3 + (Equivalent length after branching)

   (example)

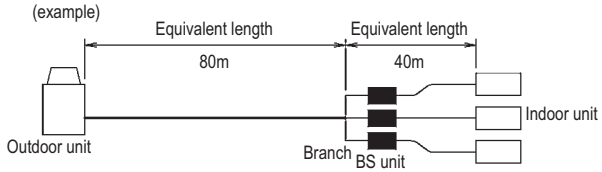


   In the above case (Heating) Overall equivalent length = 80m x 0.3 + 30m = 64m. The correction factor in capacity when Hp=0m is thus approximately 1.0.

5. In the combination which does not include cooling only indoor unit,
   Calculate the equivalent length pipe by the following when you calculate cooling capacity

   Overall equivalent length =(Equivalent length to main pipe) x 0.5 + (Equivalent length after branching)

   (example)



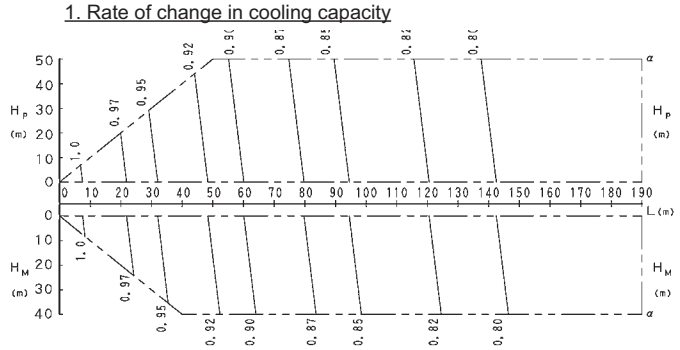
   In the above case (Cooling) Overall equivalent length = 80m x 0.5 + 40m = 80m. The correction factor in capacity when Hp=0m is thus approximately 0.93.

5 Capacity tables

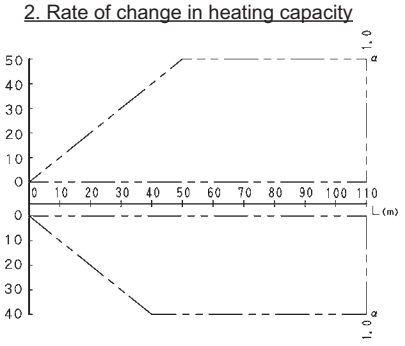
5 - 2 Capacity Correction Factor

RQCEQ540,744P3

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



[Diameter of the main pipes (standard size)]

Model	Liquid
RQCEQ540P3	ø 15.9
RQCEQ744P3	ø 19.1

[Explanation of symbols]

Hp: Level difference (m) between indoor and outdoor units where indoor unit in inferior position

Hm: Level difference (m) between indoor and outdoor units where indoor unit in superior position

L: Equivalent pipe length (m)

α: Capacity correction factor

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NOTES

1. These figures illustrate the rate of change in capacity of 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. 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 outdoor units as mentioned bellow, whichever smaller.
   Calculating A/C capacity of outdoor units.
   - Condition: Indoor unit combination ratio does not exceed 100%.

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

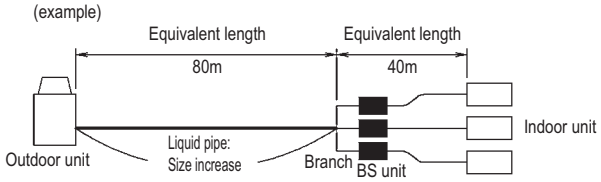
3. When overall equivalent pipe length is 90m or more, the diameter of the main liquid pipes (outdoor unit-branch sections) must be increased.
   [Diameter of above case]

Model	Liquid
RQCEQ540P3	ø 19.1
RQCEQ744P3	ø 22.2

4. When the main sections of the interunit liquid pipe diameters are increased the overall equivalent length should be calculated as follows, (heating only)

   Overall equivalent length =(Equivalent length to main pipe) x 0.4 + (Equivalent length after branching)

   (example)

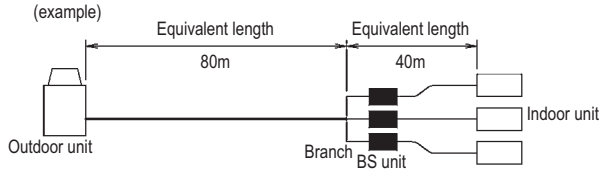


   In the above case (Heating) Overall equivalent length = 80m x 0.4 + 40m = 72m. The correction factor in capacity when Hp=0m is thus approximately 1.0.

5. In the combination which does not include cooling only indoor unit,
   Calculate the equivalent length pipe by the following when you calculate cooling capacity

   Overall equivalent length =(Equivalent length to main pipe) x 0.5 + (Equivalent length after branching)

   (example)



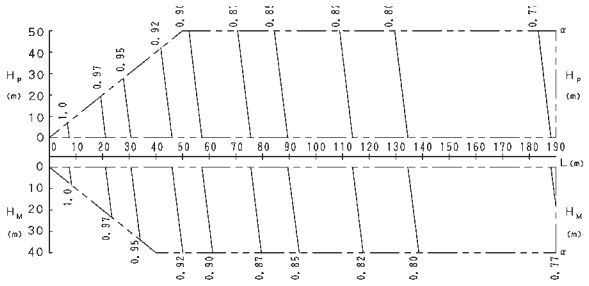
   In the above case (Cooling) Overall equivalent length = 80m x 0.5 + 40m = 80m. The correction factor in capacity when Hp=0m is thus approximately 0.87.

5 Capacity tables

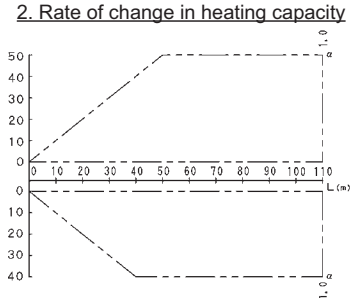
5 - 2 Capacity Correction Factor

RQCEQ636-848P3

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



[Diameter of the main pipes (standard size)]

Model	Liquid
RQCEQ636P3	ø 15.9
RQCEQ712P3	ø 15.9
RQCEQ848P3	ø 19.1

[Explanation of symbols]

Hp: Level difference (m) between indoor and outdoor units where indoor unit in inferior position

Hm: Level difference (m) between indoor and outdoor units where indoor unit in superior position

L: Equivalent pipe length (m)

α: Capacity correction factor

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NOTES

1. These figures illustrate the rate of change in capacity of 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. 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 outdoor units as mentioned bellow, whichever smaller.
   Calculating A/C capacity of outdoor units.
   - Condition: Indoor unit combination ratio does not exceed 100%.

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

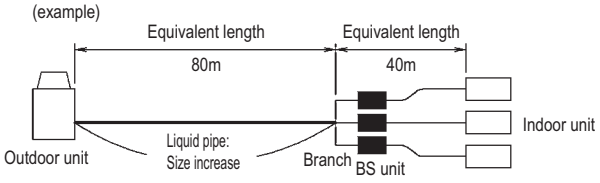
3. When overall equivalent pipe length is 90m or more, the diameter of the main liquid pipes (outdoor unit-branch sections) must be increased.
   [Diameter of above case]

Model	Liquid
RQCEQ636P3	ø 19.1
RQCEQ712P3	ø 19.1
RQCEQ848P3	ø 22.2

4. When the main sections of the interunit liquid pipe diameters are increased the overall equivalent length should be calculated as follows, (heating only)

   Overall equivalent length =(Equivalent length to main pipe) x 0.4 + (Equivalent length after branching)

   (example)

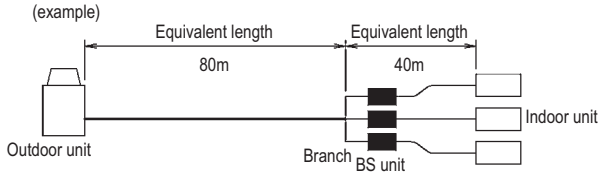


   In the above case (Heating) Overall equivalent length = 80m x 0.4 + 40m = 72m. The correction factor in capacity when Hp=0m is thus approximately 1.0.

5. In the combination which does not include cooling only indoor unit,
   Calculate the equivalent length pipe by the following when you calculate cooling capacity

   Overall equivalent length =(Equivalent length to main pipe) x 0.5 + (Equivalent length after branching)

   (example)



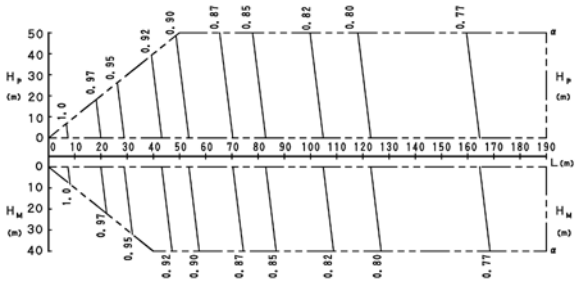
   In the above case (Cooling) Overall equivalent length = 80m x 0.5 + 40m = 80m. The correction factor in capacity when Hp=0m is thus approximately 0.86.

5 Capacity tables

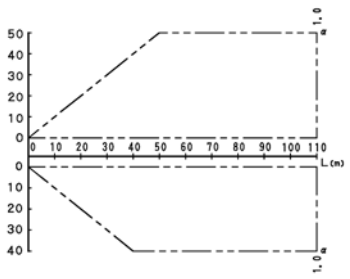
5 - 2 Capacity Correction Factor

RQCEQ816P3

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



[Diameter of the main pipes (standard size)]

Model	Liquid
RQCEQ816P3	ø 19.1

[Explanation of symbols]

Hp: Level difference (m) between indoor and outdoor units where indoor unit in inferior position

Hm: Level difference (m) between indoor and outdoor units where indoor unit in superior position

L: Equivalent pipe length (m)

α: Capacity correction factor

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NOTES

1. These figures illustrate the rate of change in capacity of 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. 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 outdoor units as mentioned bellow, whichever smaller.
   Calculating A/C capacity of outdoor units.
   - Condition: Indoor unit combination ratio does not exceed 100%.

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

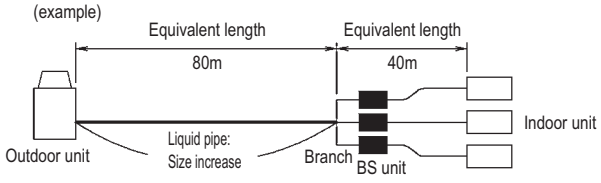
3. When overall equivalent pipe length is 90m or more, the diameter of the main liquid pipes (outdoor unit-branch sections) must be increased.
   [Diameter of above case]

Model	Liquid
RQCEQ816P3	ø 22.2

4. When the main sections of the interunit liquid pipe diameters are increased the overall equivalent length should be calculated as follows, (heating only)

   Overall equivalent length =(Equivalent length to main pipe) x 0.4 + (Equivalent length after branching)

   (example)

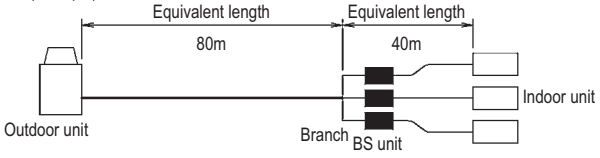


   In the above case (Heating) Overall equivalent length = 80m x 0.4 + 40m = 72m. The correction factor in capacity when Hp=0m is thus approximately 1.0.

5. In the combination which does not include cooling only indoor unit,
   Calculate the equivalent length pipe by the following when you calculate cooling capacity

   Overall equivalent length =(Equivalent length to main pipe) x 0.5 + (Equivalent length after branching)

   (example)

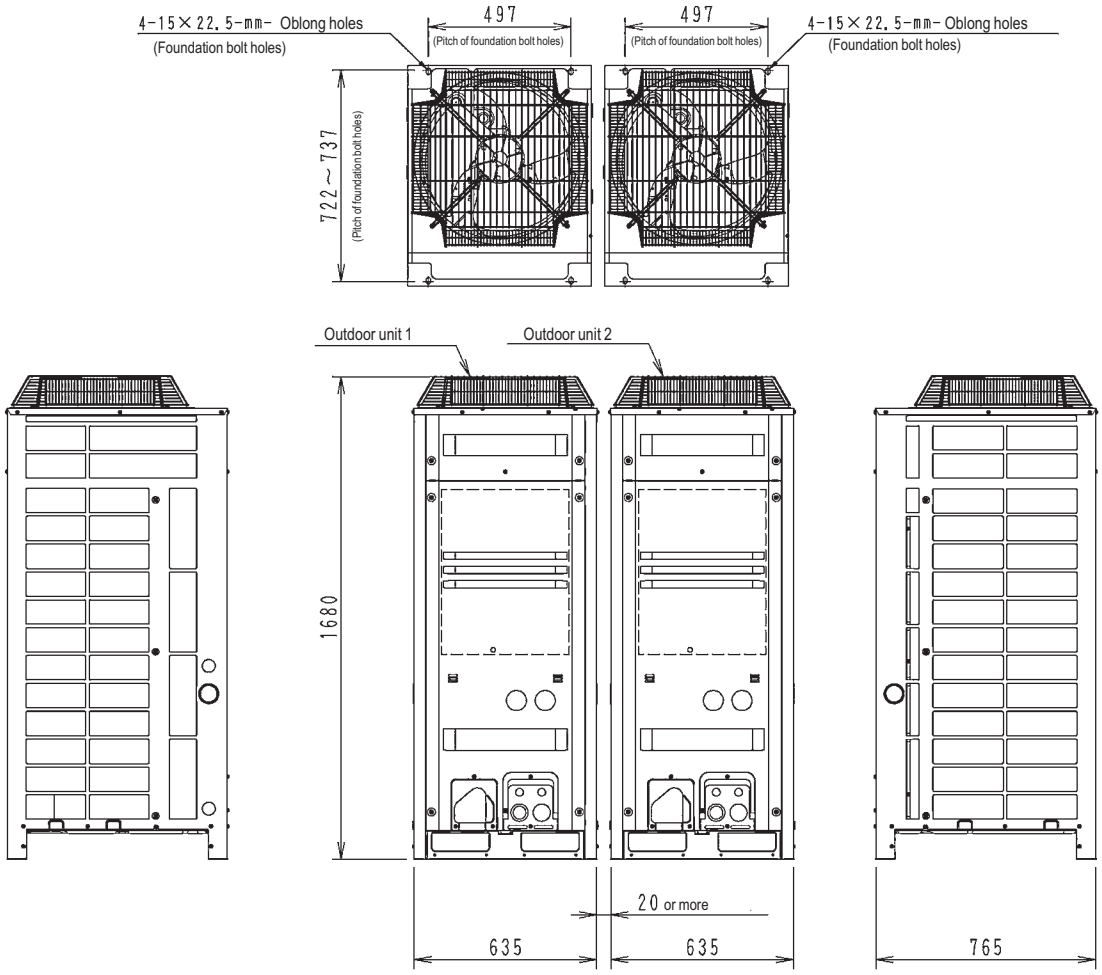


   In the above case (Cooling) Overall equivalent length = 80m x 0.5 + 40m = 80m. The correction factor in capacity when Hp=0m is thus approximately 0.86.

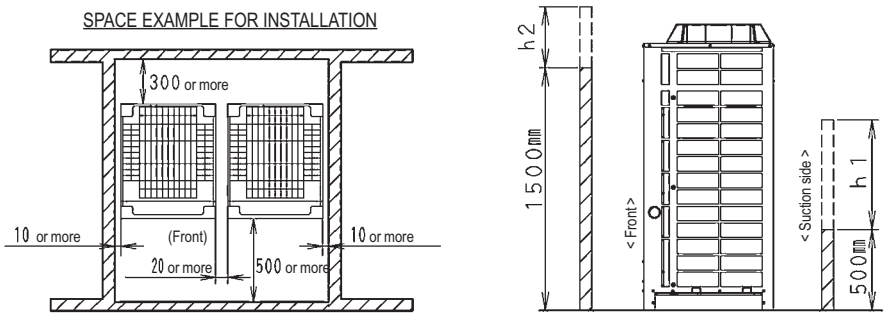
6 Dimensional drawings

6 - 1 Dimensional Drawings

RQCEQ280-360P3



SPACE EXAMPLE FOR INSTALLATION



Model name	Outdoor unit 1	Drawing N°.	Outdoor Unit 2	Drawing N°.
RQCEQ280P3	RQEQ140P3	3D066441A	RQEQ140P3	3D066441A
RQCEQ360P3	RQEQ180P3	3D066441A	RQEQ180P3	3D066441A

Unit:mm

NOTES

1. Heights of walls
   Front: 1500mm
   Suction side: 500mm
   Side: Height unrestricted
   The installation space shown in this figure is based on the condition of cooling operation at the outdoor air temperature of 35°C.
   The installation space of suction side shown above must be expanded in the following case.
   - Design outdoor temperature becomes over 35°C.
   - Operating over Max. operating load
   (In case of causing a heavy heating load at indoor unit side)
2. If the above wall heights are exceeded then h2/2 and h1/2 should be added to the front and suction side service spaces respectively as shown in the following figure.
3. When installing the units the most appropriate pattern should be selected from those shown above in order to obtain the best fit in the space available always bearing in mind the need to leave enough room for a parson to pass between nuits and wall for the air to circulate freely. (If more units are to be installed than are catered for in the above patterns your layout should take account of the possibility of short circuits.)
4. The units should be installed to leave sufficient space at the front for the on site refrigerant piping work to be carried out comfortably.

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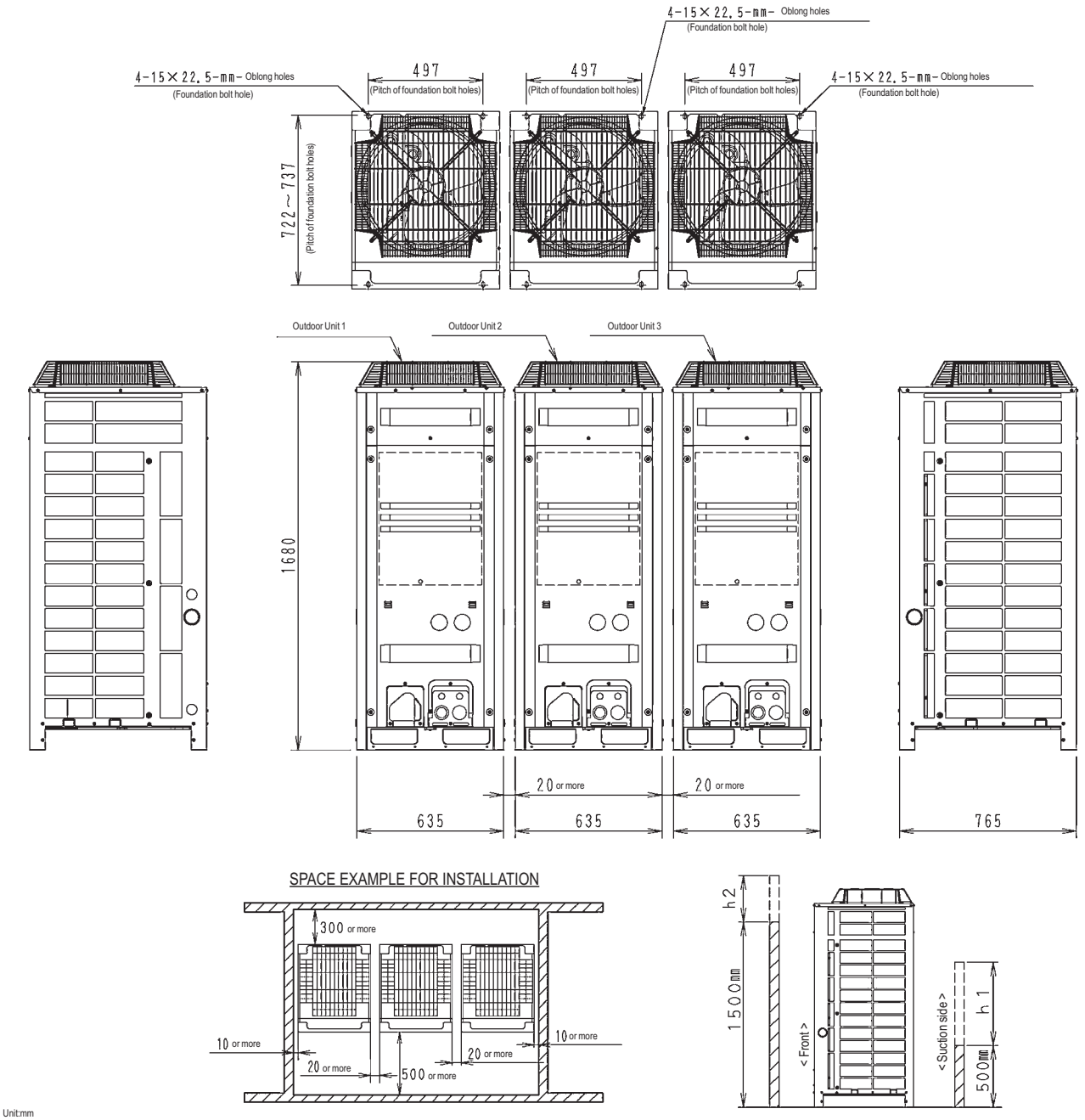
6 Dimensional drawings

6 - 1 Dimensional Drawings

RQCEQ460-636P3



Unit:mm

Model name	Outdoor unit 1	Drawing N°.	Outdoor Unit 2	Drawing N°.	Outdoor unit 1	Drawing N°.
RQCEQ460P3	RQEQ180P3	3D066441A	RQEQ140P3	3D066441A	RQEQ140P3	3D066441A
RQCEQ500P3	RQEQ180P3	3D066441A	RQEQ180P3	3D066441A	RQEQ140P3	3D066441A
RQCEQ540P3	RQEQ180P3	3D066441A	RQEQ180P3	3D066441A	RQEQ180P3	3D066441A
RQCEQ636P3	RQEQ212P3	3D066441A	RQEQ212P3	3D066441A	RQEQ212P3	3D066441A

NOTES

1. Heights of walls
   Front: 1500mm
   Suction side: 500mm
   Side: Height unrestricted
   The installation space shown in this figure is based on the condition of cooling operation at the outdoor air temperature of 35°C.
   The installation space of suction side shown above must be expanded in the following case.
   - Design outdoor temperature becomes over 35°C.
   - Operating over Max. operating load
   (In case of causing a heavy heating load at indoor unit side)
2. If the above wall heights are exceeded then h2/2 and h1/2 should be added to the front and suction side service spaces respectively as shown in the following figure.
3. When installing the units the most appropriate pattern should be selected from those shown above in order to obtain the best fit in the space available always bearing in mind the need to leave enough room for a parson to pass between nuits and wall for the air to circulate freely. (If more units are to be installed than are catered for in the above patterns your layout should take account of the possibility of short circuits.)
4. The units should be installed to leave sufficient space at the front for the on site refrigerant piping work to be carried out comfortably.

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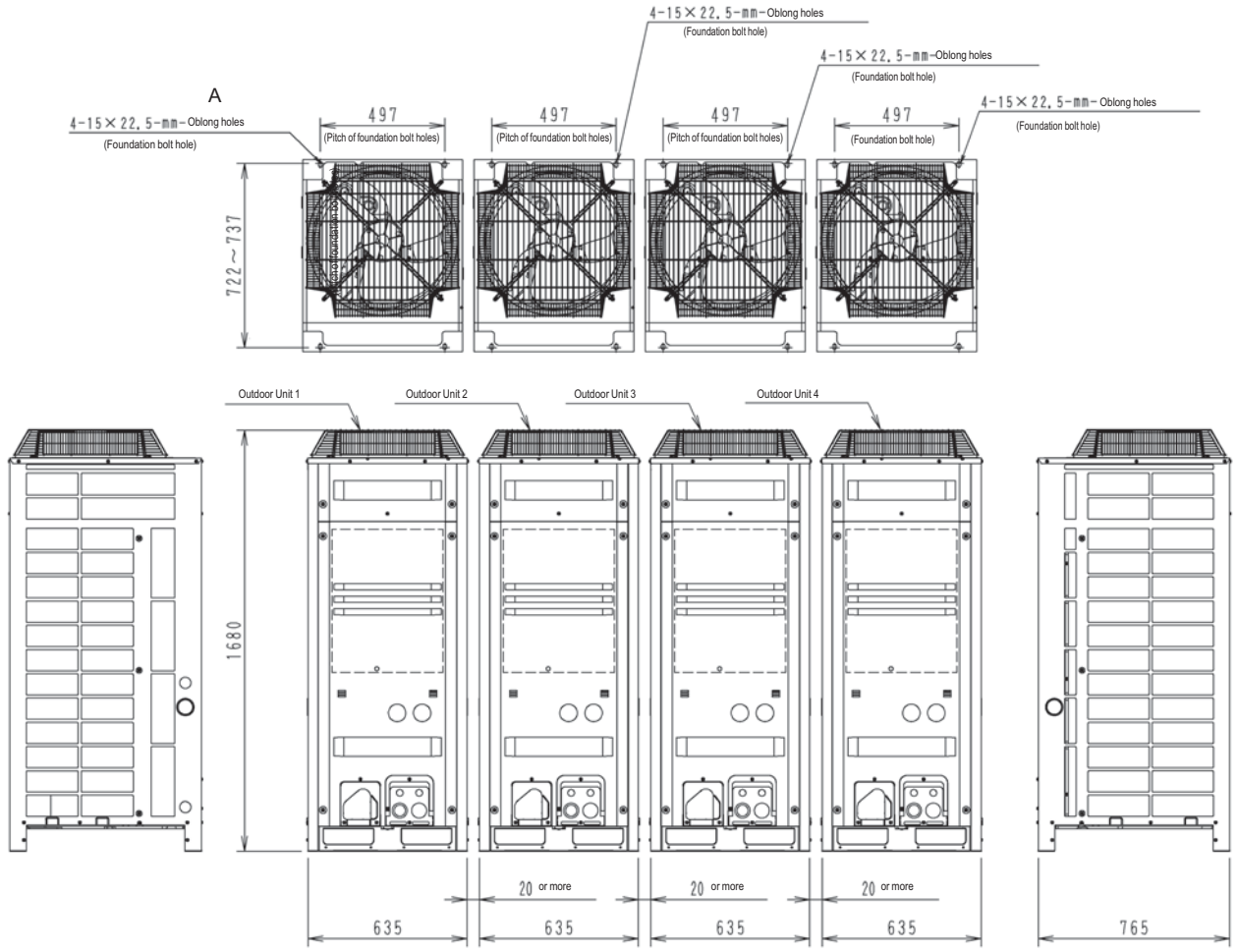
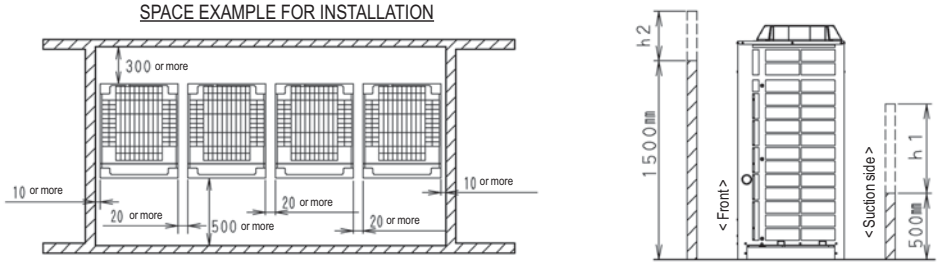
6 Dimensional drawings

6 - 1 Dimensional Drawings

RQCEQ712-848P3



SPACE EXAMPLE FOR INSTALLATION



Unit: mm

Model name	Outdoor unit 1	Drawing N°.	Outdoor Unit 2	Drawing N°.	Outdoor unit 3	Drawing N°.	Outdoor unit 4	Drawing N°.
RQCEQ712P3	RQEQ212P3	3D066441A	RQEQ180P3	3D0664413	RQEQ180PA	3D066441A	RQEQ140P3	3D066441A
RQCEQ744P3	RQEQ212P3	3D066441A	RQEQ212P3	3D0664413	RQEQ180PA	3D066441A	RQEQ140P3	3D066441A
RQCEQ816P3	RQEQ212P3	3D066441A	RQEQ212P3	3D0664413	RQEQ212PA	3D066441A	RQEQ180P3	3D066441A
RQCEQ848P3	RQEQ212P3	3D066441A	RQEQ212P3	3D0664413	RQEQ212PA	3D066441A	RQEQ212P3	3D066441A

NOTES

1. Heights of walls
   Front: 1500mm
   Suction side: 500mm
   Side: Height unrestricted
   The installation space shown in this figure is based on the condition of cooling operation at the outdoor air temperature of 35°C.
   The installation space of suction side shown above must be expanded in the following case.
   - Design outdoor temperature becomes over 35°C.
   - Operating over Max. operating load
   (In case of causing a heavy heating load at indoor unit side)
2. If the above wall heights are exceeded then h2/2 and h1/2 should be added to the front and suction side service spaces respectively as shown in the following figure.
3. When installing the units the most appropriate pattern should be selected from those shown above in order to obtain the best fit in the space available always bearing in mind the need to leave enough room for a parson to pass between nuits and wall for the air to circulate freely. (If more units are to be installed than are catered for in the above patterns your layout should take account of the possibility of short circuits.)
4. The units should be installed to leave sufficient space at the front for the on site refrigerant piping work to be carried out comfortably.

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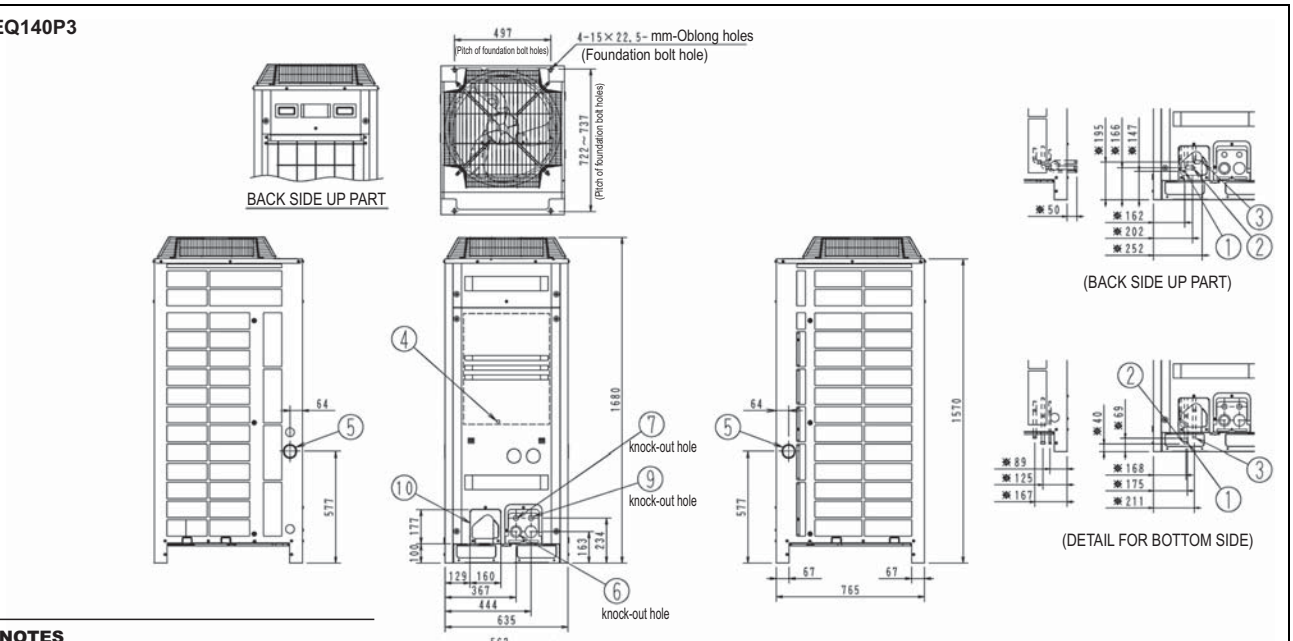
6 Dimensional drawings

6 - 1 Dimensional Drawings

RQEQ140P3



NOTES

1 ※ Shows the dimensions after fixing the accessory pipes.

2 For piping connection method (front and bottom sides) see the installation manual.

3 Suction gas pipe
ø 15.9 Brazing connection *** RQEQ140P3
ø 19.1 Brazing connection *** RQEQ180,212P3
HP/LP gas pipe
ø 12.7 Brazing connection *** RQEQ140P3
ø 15.9 Brazing connection *** RQEQ180,212P3

Nr	Name	Description
1	Liquid pipe connection port	Ø 9.5 Brazing connection
2	Suction gas pipe connection port	See note 3
3	High and low pressure gas pipe connection port	See note 3
4	Grounding terminal	Inside of switch box (M8)
5	Power cord routing hole (side)	Ø 62
6	Power cord routing hole (front)	Ø 45
7	Power cord routing hole (front)	Ø 27
8	Power cord routing hole (bottom)	Ø 50
9	Wire routing hole (front)	Ø 27
10	Pipe routing hole (front)	See note 2
11	Pipe routing hole (bottom)	See note 2

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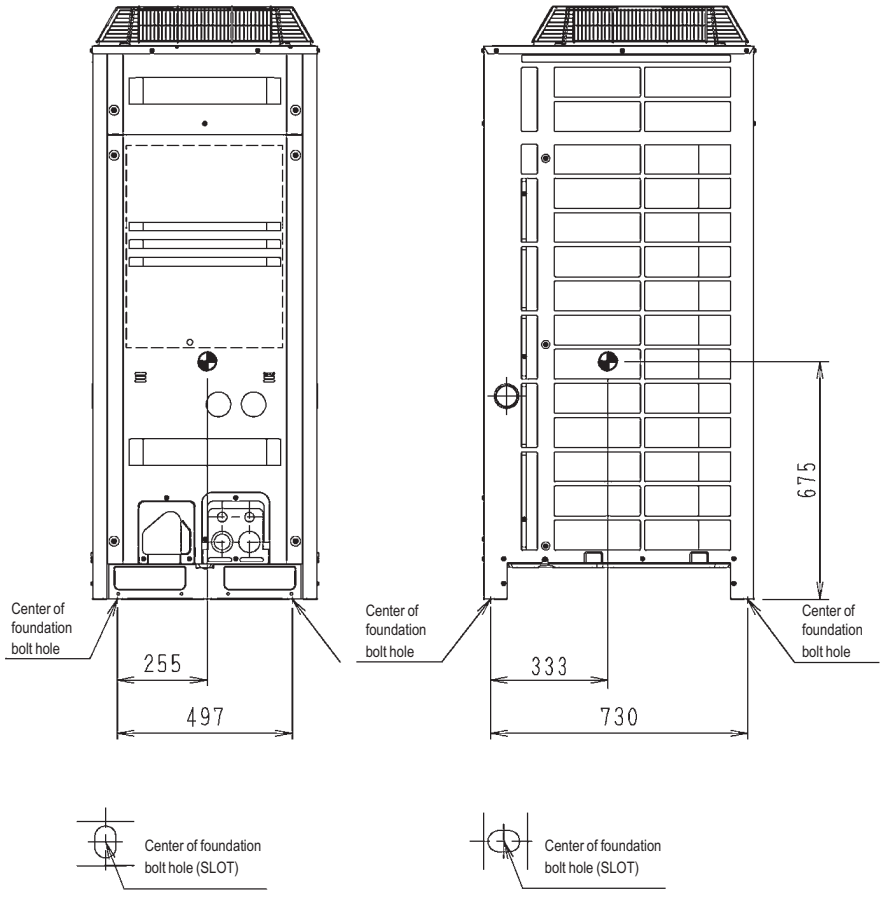
7 Centre of gravity

7 - 1 Centre of Gravity

RQEQ140-212P3



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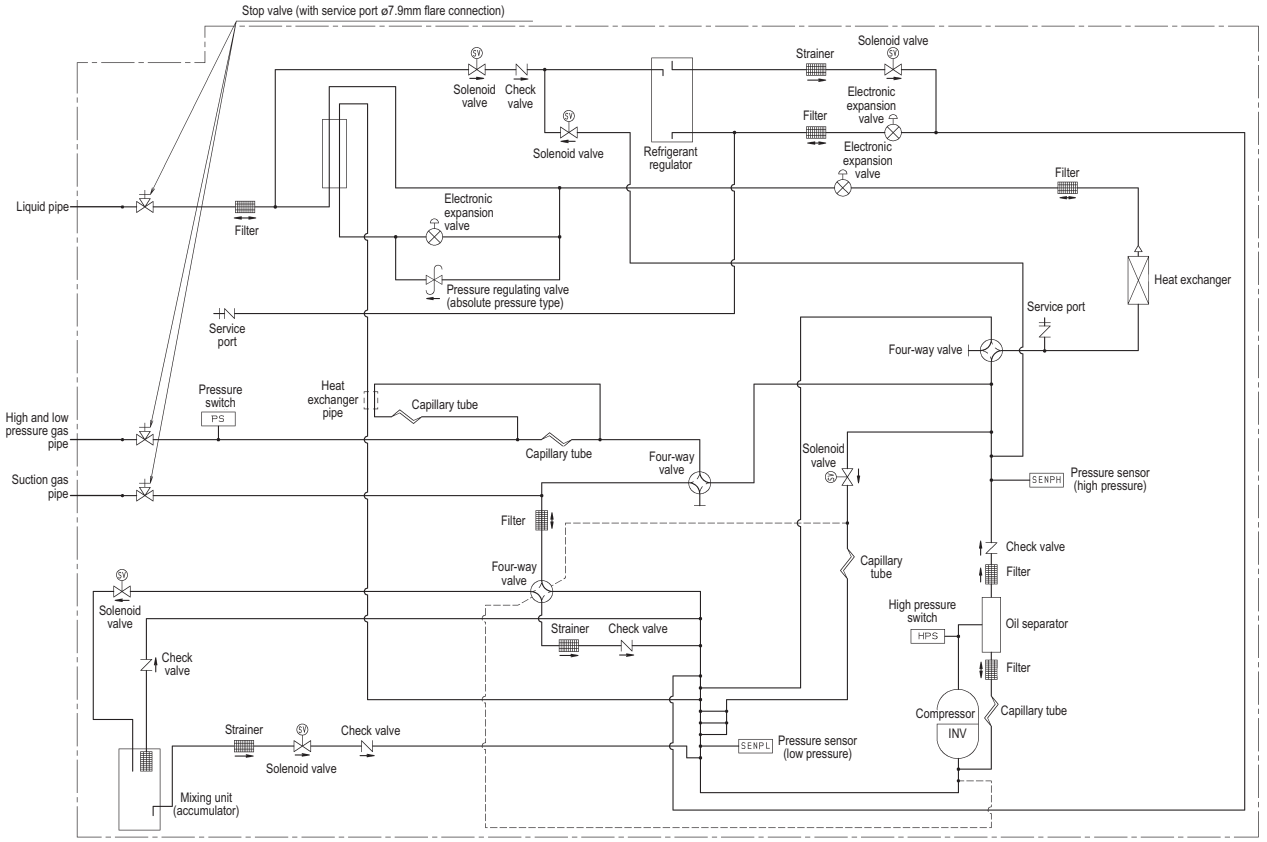
8 Piping diagrams

8 - 1 Piping Diagrams

RQEQ-P3



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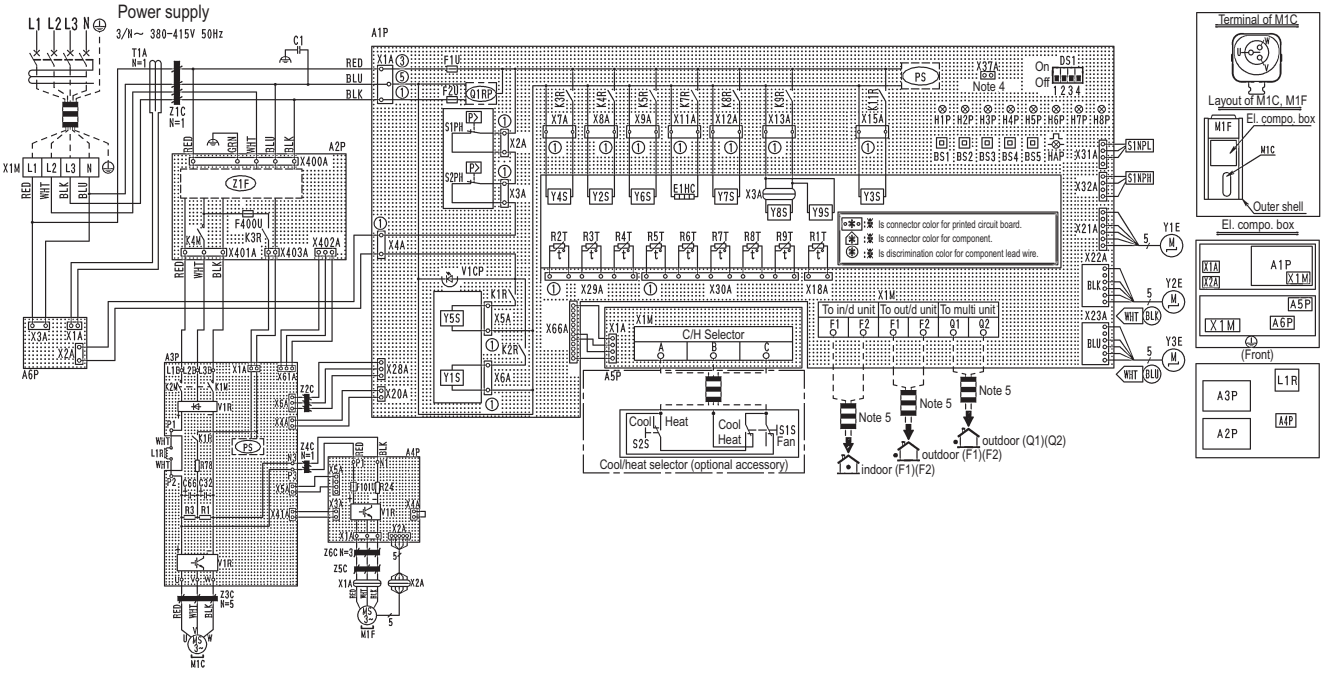
9 Wiring diagrams

9 - 1 Wiring Diagrams - Three Phase

RQEQ-P3



A1P	Printed circuit board (main)	R3T	Thermistor (heat exc. liquid)
A2P	Printed circuit board (noise filter)	R4T	Thermistor (heat exc. gas pipe)
A3P	Printed circuit board (inv)	R5T	Thermistor (suction)
A4P	Printed circuit board (fan)	R6T	Thermistor (heatexc. deicer)
A5P	Printed circuit board (ABC I/P)	R7T	Thermistor (subcooling gas)
A6P	Printed circuit board (SUB)	R8T	Thermistor (subcooling liquid)
BS1~5	Push button switch (mode, set, return, test, reset)	R9T	Thermistor (liquid)
C1	Capacitor	S1NPH	Pressure sensor (high)
C32,C66	Capacitor	S1NPL	Pressure sensor (low)
DS1	Dip switch	S1PH	Pressure switch (high)
E1HC	Crankcase heater	S2PH	Pressure switch (high)
F1U,F2U	Fuse (T, 3.15A, 250V) (A1P)	T1A	Current sensor (A6P)
F101U	Fuse (A4P)	V1CP	Safety devices input
F400U	Fuse (T, 6.3A, 250V) (A2P)	V1R	Diode bridge (A3P)
H1P~8P	Pilotlamp (service monitor-orange)	V1R	Power module (A3P)
	[H2P] Prepare, test ——— Flickering	V1R	Power module (A4P)
	Malfunction detection ——— Light up	X1A, X2A	Connector (M1F)
HAP	Pilotlamp (service monitor-green)	X3A	Relaying connector (Y8S)
K1M, K2M	Magnetic contactor (M1C) (A3P)	X1M	Terminal strip (power supply)
K4M	Magnetic contactor (M1C) (A2P)	X1M	Terminal strip (control) (A1P)
K1R	Magnetic relay (A3P)	X1M	Terminal strip (ABC I/P) (A5P)
K1R	Magnetic relay (Y5S)	Y1E	Electronic expansion valve (main)
K2R	Magnetic relay (Y1S)	Y2E	Electronic expansion valve (charge)
K3R	Magnetic relay (A2P)	Y3E	Electronic expansion valve (subcool)
K3R	Magnetic relay (Y4S)	Y1S	Solenoid valve (refrigerant regulator hot gas)
K4R	Magnetic relay (Y2S)	Y2S	Solenoid valve (refrigerant regulator liquid pipe)
K5R	Magnetic relay (Y6S)	Y3S	Solenoid valve (refrigerant regulator gas purge pipe)
K7R	Magnetic relay (E1HC)	Y4S	Solenoid valve (hot gas)
K8R	Magnetic relay (Y7S)	Y5S	Solenoid valve (oil)
K9R	Magnetic relay (Y8S, Y9S)	Y6S	Solenoid valve (4 way valve - heat exc.)
K11R	Magnetic relay (Y3S)	Y7S	Solenoid valve (4 way valve - piping)
L1R	Reactor	Y8S	Solenoid valve (4 way valve - mix)
M1C	Motor (compressor)	Y9S	Solenoid valve (mix in)
M1F	Motor (fan)	Z1C~6C	Noise filter (ferrite core)
PS	Switching power supply (A1P, A3P)	Z1F	Noise filter (with surge absorber)
Q1RP	Phase reversal detect circuit (A1P)		
R1,R3	Resistor (A3P)		
R24	Resistor (current sensor) (A4P)		
R78	Resistor (current limiting)	Cool/heat selector	
R1T	Thermistor (air) (A1P)	S1S	Selector switch (fan/cool • heat)
R2T	Thermistor (M1C discharge)	S2S	Selector switch (cool / heat)

NOTES

1. This wiring diagram is applied only to the outdoor unit.
2. ▬▬ :field wiring.
3. ☐☐☐☐: terminal strip, ⊙⊙: connector, –○–: terminal, ⏚: protective earth (screw), –◫–: Connector
4. When using the optional adapter, refer to the installation manual of the optional adapter.
5. For connection wiring to indoor-outdoor transmission F1•F2, outdoor-outdoor transmission F1•F2, refer to the installation manual.
6. How to use BS1~5 and DS1 switch, refer to "service precaution" label on el. compo. box cover.
7. When operating, don't shortcircuit the protection device (S1PH, S2PH).
8. Colors BLK: BLACK, RED: RED, BLU: BLUE, WHT: WHITE, PNK: PINK, YLW: YELLOW, BRN: BROWN, GRY: GRAY, GRN: GREEN, ORG: ORANGE.

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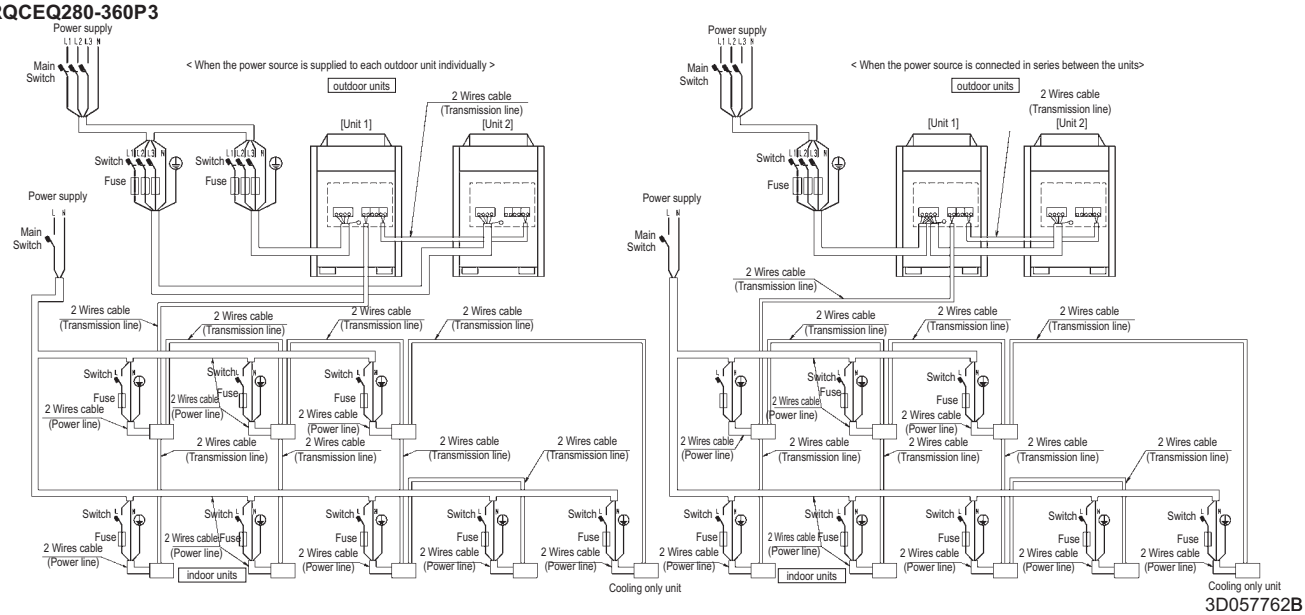
10 External connection diagrams

10 - 1 External Connection Diagrams

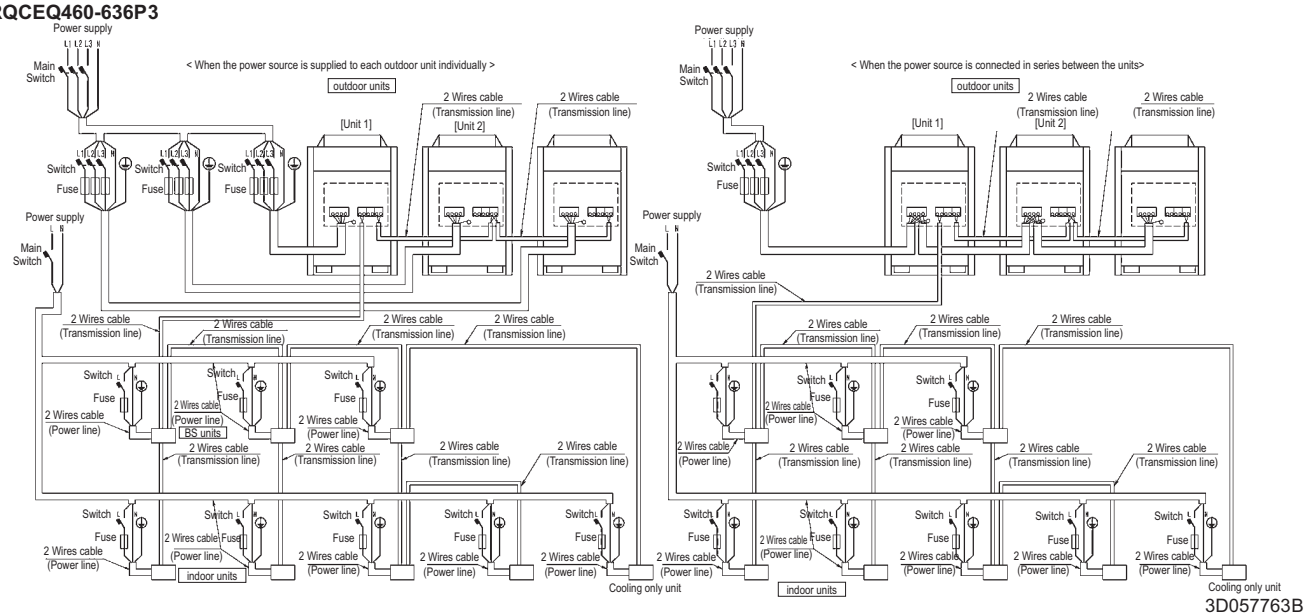
RQCEQ280-360P3



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 equipement.
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. the capacity of UNIT1 must be larger than UNIT2 when the power source is connected in series between the units.
11. 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.
12. Must install earth leakage circuit breaker.

RQCEQ460-636P3



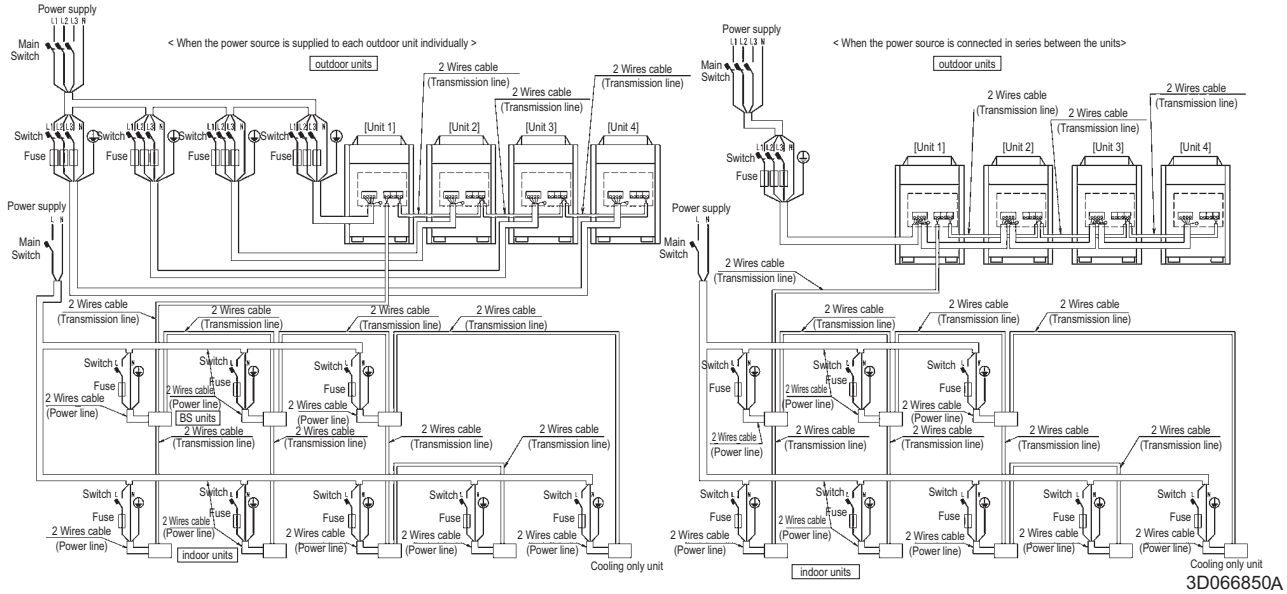
NOTES

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 equipement.
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. the capacity of UNIT1 must be larger than UNIT2 when the power source is connected in series between the units.
11. 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.
12. Must install earth leakage circuit breaker.

10 External connection diagrams

10 - 1 External Connection Diagrams

RQCEQ-712-848P3



3D066850A

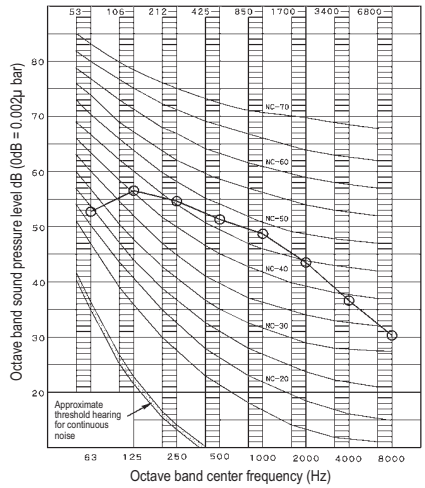
NOTES

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 equipement.
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. the capacity of UNIT1 must be larger than UNIT2 when the power source is connected in series between the units.
11. 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.
12. Must install earth leakage circuit breaker.

11 Sound data

11 - 1 Sound Pressure Spectrum

RQEQ140P3

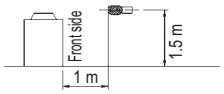


4D066849A

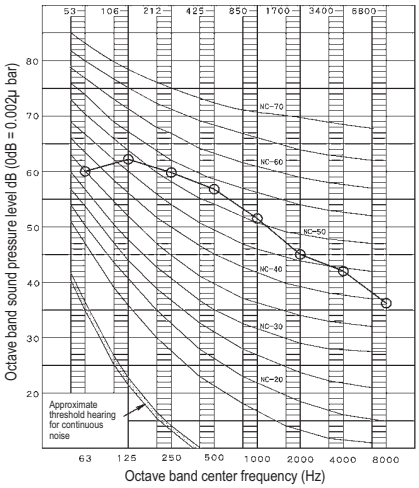
NOTES

Scale	50 Hz
A	54
C	60

1 Over All (dB):
(B,G,N is already rectified)
2 Operating conditions:
Power source: 380-415V 50Hz
JIS standard
3 Measuring place: Anechoic chamber (conversion value)
4 The operating sound is measured in anechoic chamber,
if it is measured under the actual installation conditions,
it is normally over the set value due to enviromental noise and sound reflection.
5 Location of microphone.



RQEQ180P3

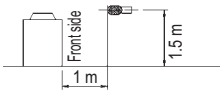


4D066836A

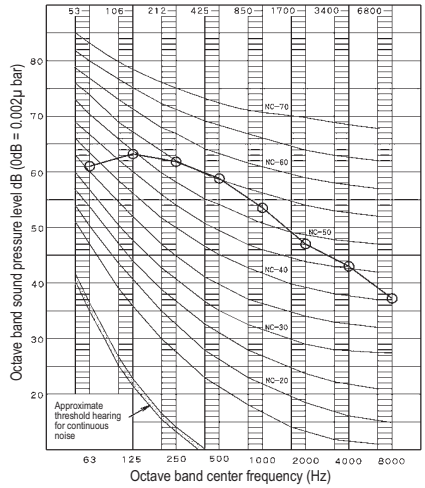
NOTES

Scale	50 Hz
A	58
C	66

1 Over All (dB):
(B,G,N is already rectified)
2 Operating conditions:
Power source: 380-415V 50Hz
JIS standard
3 Measuring place: Anechoic chamber (conversion value)
4 The operating sound is measured in anechoic chamber,
if it is measured under the actual installation conditions,
it is normally over the set value due to enviromental noise and sound reflection.
5 Location of microphone.



RQEQ212P3

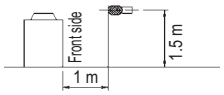


4D066834A

NOTES

Scale	50 Hz
A	60
C	68

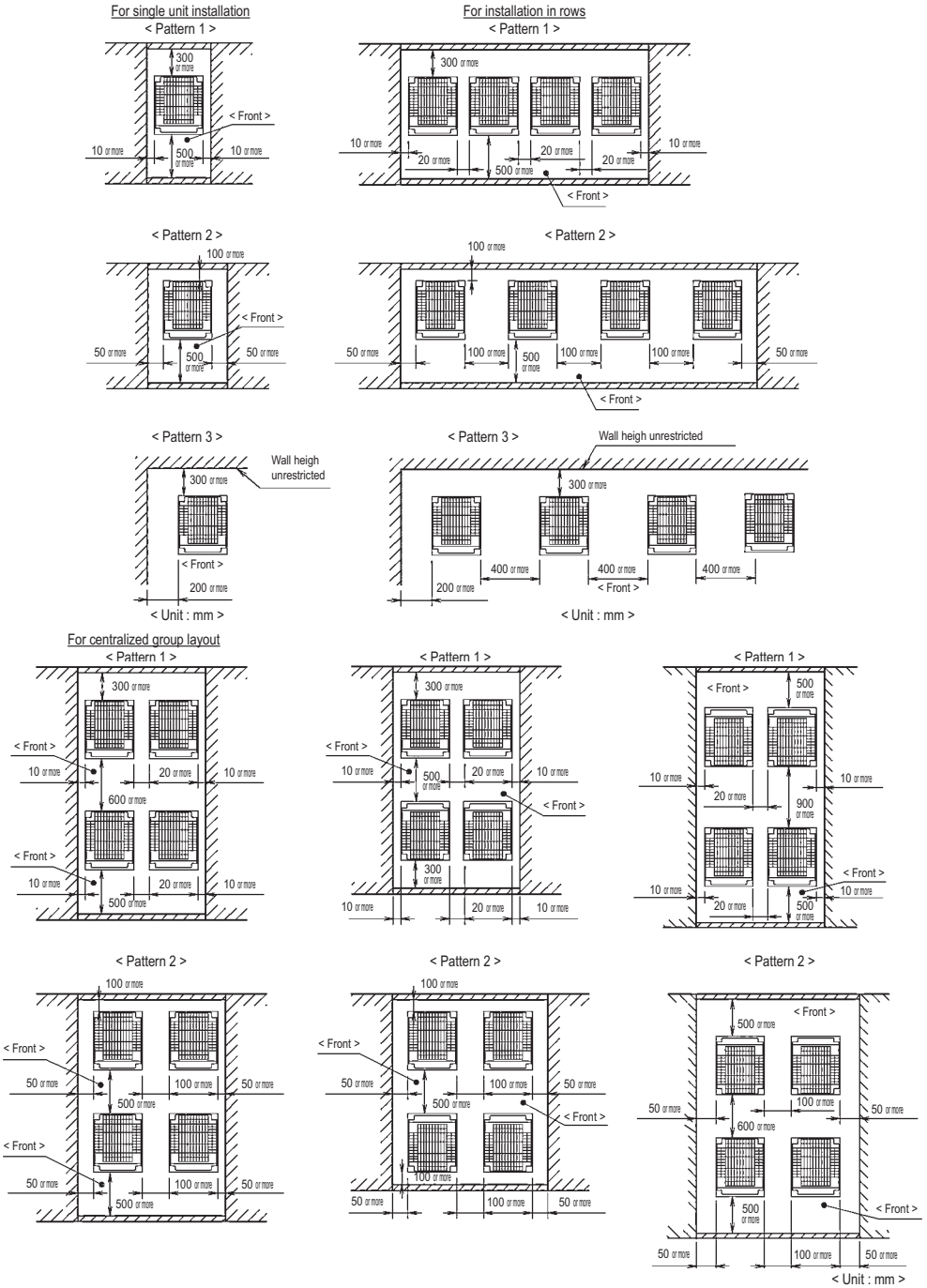
1 Over All (dB):
(B,G,N is already rectified)
2 Operating conditions:
Power source: 380-415V 50Hz
JIS standard
3 Measuring place: Anechoic chamber (conversion value)
4 The operating sound is measured in anechoic chamber,
if it is measured under the actual installation conditions,
it is normally over the set value due to enviromental noise and sound reflection.
5 Location of microphone.



12 Installation

12 - 1 Service Space

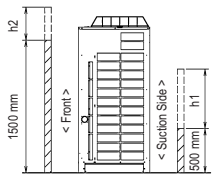
RQ(C)EQ-P3



3D066327A

NOTES

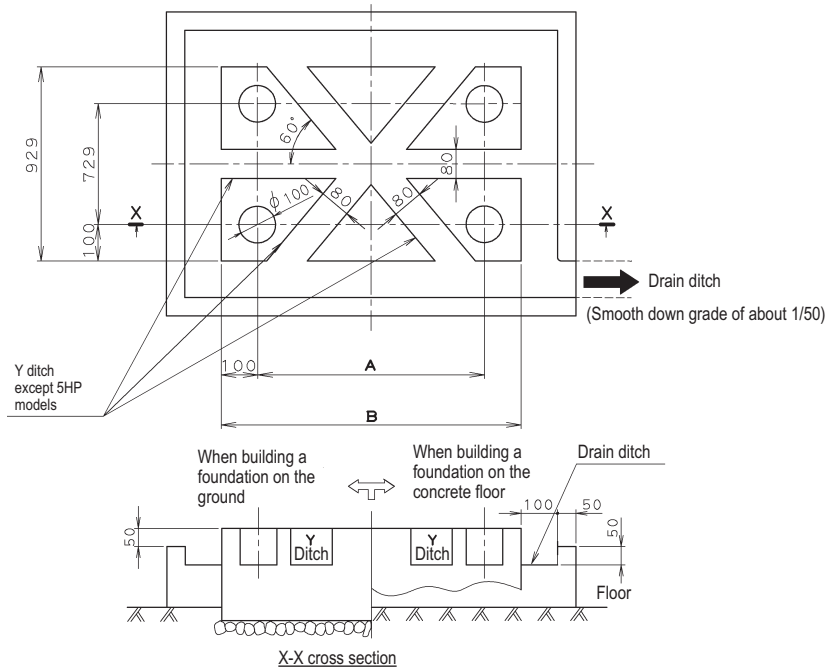
1. Heights of walls in case of patterns 1 and 2:
   Front: 1500 mm
   Suction side: 500mm
   Side: Height unrestricted.
   Installation space to be shown in this drawing is based on the cooling operation at 35 degrees outdoor air temperature.
   When the design outdoor air temperature exceeds 35 degrees or the load exceeds maximum ability because of much generation load of heat in all outdoor unit, take the suction side space more broadly than the space to be shown in this drawing.
2. If the above wall heights are exceeded then h2/2 and h1/2 should be added to the front and suction side service spaces respectively as shown in the figure on the right.
3. When installing the units most appropriate pattern should be selected from those shown above in order to obtain the best fit in the space available always bearing in mind the need to leave enough space for a person to pass between units and wall and for the air to circulate freely.
   (If more units are to be installed than are catered for in the above patterns your layout should take account to the possibility of short circuits.)
4. The units should be installed to leave sufficient space at the front for the on site refrigerant piping work to be carried out comfortably.



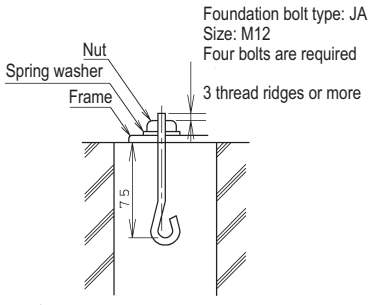
12 Installation

12 - 2 Fixation and Foundation of Units

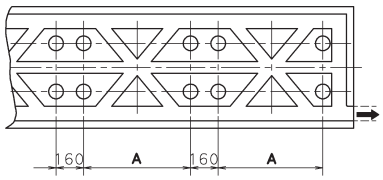
RQEQ-P3



X-X cross section



Foundation bolt executing method



When installing multiple units in connection

Model	A	B
RQEQ140P3	497	697
RQEQ180P3	497	697
RQEQ212P3	497	697

NOTES

1. The proportions of cement: sand: gravel for the concrete shall be 1:2:4, and the reinforcement bars that their diameter are 10mm, (approx. 300 mm intervals) shall be placed.
2. The surface shall be finished with mortar. The corner edges shall be chamfered.
3. When the foundation is built on a concrete floor, rubble is not necessary. However, the surface of the section on which the foundation is built shall have rough finish.
4. A drain ditch shall be made around the foundation to thoroughly drain water from the equipment installation area.
5. When installing the equipment on a roof, the floor strength shall be checked, and water-proofing measures shall be taken.
6. Y ditch is not necessary for 5HP Models.

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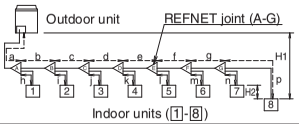
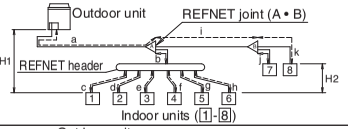
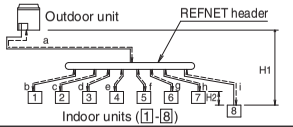
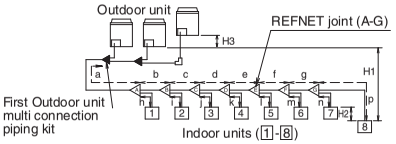
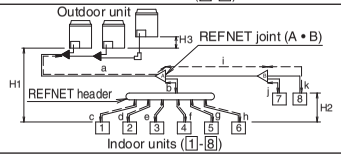
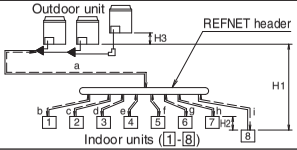
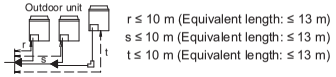
Example of connection

(Connection of 8 indoor units)

(*1) " ◄ " indicates the Outdoor unit multi connection piping kit

(*2) In case of multi outdoor system, re-read to the first Outdoor unit multi connection piping kit as seen from the indoor unit.

			Example refrigerant branch using REFNET joint	Example refrigerant branch using REFNET joint and REFNET header	Example refrigerant branch using REFNET header
		Single outdoor system			
		Multi outdoor system			
Maximum allowable length	Between outdoor (*2) and indoor units	Actual pipe length	Pipe length between outdoor (*2) and indoor units ≤ 120 m		
			Example unit 8 : a + b + c + d + e + f + g + p ≤ 120 m	Example unit 6 : a + b + h ≤ 165 m, unit 8 : a + i + k ≤ 120 m	Example unit 8 : a + i ≤ 120 m
		Equivalent length	Equivalent pipe length between outdoor (*2) and indoor units ≤ 150 m (assume equivalent pipe length of REFNET joint to be 0.5 m, that of REFNET header to be 1 m, calculation purposes) (See Note 1 - Next page)		
		Total extension length	Total pipe length from outdoor unit (*2) to all indoor units ≤ 300 m		
	Between outdoor unit and Outdoor unit multi connection piping kit (Only for multi system)	Actual pipe length Equivalent length	Pipe length between outdoor unit and outdoor unit multi connection piping kit ≤ 10 m, equivalent length between outdoor unit and outdoor unit multi connection piping kit ≤ 13 m		
Allowable height length	Between outdoor and indoor units	Difference in height	Difference in height between outdoor and indoor units (H1) ≤ 50 m (≤ 40 m if the outdoor unit is below)		
	Between indoor and indoor units	Difference in height	Difference in height between indoor units (H2) ≤ 15 m		
	Between outdoor and outdoor units	Difference in height	Difference in height between outdoor unit (H3) ≤ 5 m		
Allowable length after the branch		Actual pipe length	Pipe length from first refrigerant branch kit (either REFNET joint or REFNET header) to indoor unit ≤ 40 m		
			Example unit 8 : b + c + d + e + f + g + p ≤ 40 m	Example unit 6 : b + h ≤ 40 m, unit 8 :i + k ≤ 40 m	Example unit 8 : i ≤ 40 m



Refrigerant branch kit selection

Refrigerant branch kits can only be used with R410A.

⚠ • When multi outdoor system are installed, be sure to use the special separately sold Outdoor unit multi connection piping kit.
The table at right shows how to select the proper kit.

How to select the REFNET joint
- When using REFNET joint at the first branch counted from the outdoor unit side. Choose from the following table in accordance with the outdoor unit capacity type. (Example: REFNET joint A)

Outdoor unit capacity type	Refrigerant branch kit name
Q140·180 type	KHRP26A22T
Q280 type	KHRP26A33T
Q360~540 type	KHRP26A72T

- Choose the REFNET joints other than that for the first branch from the following table in accordance with the total capacity index of all the indoor units connected below the REFNET joint.

Indoor unit total capacity index	Refrigerant branch kit name
< 200	KHRP26A22T
200 ≤ x< 290	KHRP26A33T
290 ≤ x< 640	KHRP26A72T
640 ≤	KHRP26A73T + KHRP26M73TP

How to select the REFNET header
- Choose from the following table in accordance with the total capacity index of all the indoor units connected below the REFNET header.
- Note: 250 type indoor unit cannot be connected below the REFNET header.

Indoor unit total capacity index	Refrigerant branch kit name
< 200	KHRP26M33H
200 ≤ x< 290	KHRP26M33H
290 ≤ x< 640	KHRP26M72H
640 ≤	KHRP26M73H + KHRP26M73HP

How to select the Outdoor unit multi connection piping kit (This is required when the system is multi outdoor unit system.)
- Choose from the following table in accordance with the number of outdoor units.

Number of outdoor units	Connection piping kit name
2 units	BHFP22P36C
3 units	BHFP22P54C

Example for indoor units connected downstream	Example REFNET joint C: indoor units 3+4+5+6+7+8	Example REFNET joint B: indoor units 7+8 Example REFNET header: indoor units 1+2+3+4+5+6	Example REFNET header: indoor units 1+2+3+4+5+6+7+8

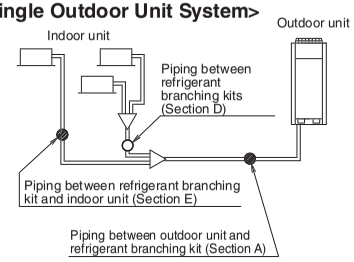
RQCEQ-P

Pipe size selection

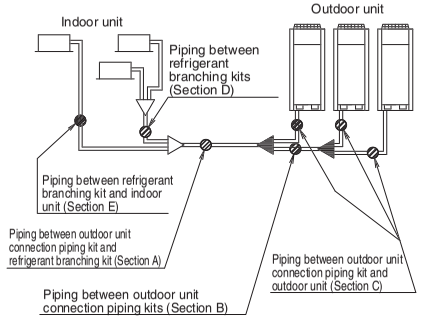
⚠ Caution

Refer to the diagram below and select the appropriate piping from the tables on the right.

<Single Outdoor Unit System>



<Multiple Outdoor Unit System>



Piping between outdoor unit (*2) and refrigerant branch kit (part A)

- Choose from the following table in accordance with the outdoor unit system capacity type. (Note1)

Outdoor capacity index	Piping size (O.D.)			
	Suction gas size		Liquid pipe	
	Standard size	Maximum size	Standard size	Maximum size
Q140	ϕ15.9	ϕ25.4	ϕ9.5	ϕ12.7
Q180	ϕ19.1			
Q280	ϕ22.2	ϕ28.6		ϕ15.9
Q360	ϕ25.4		ϕ12.7	
Q460	ϕ28.6	ϕ41.3	ϕ15.9	ϕ19.1
Q500				
Q540				

Piping between outdoor unit multi connection piping kits (part B)

- Choose from the following table in accordance with the total capacity of all the outdoor units connected upstream

(unit: mm)

Outdoor unit capacity type	Piping size (O.D.)	
	Suction gas pipe	Liquid pipe
280	ϕ22.2	ϕ9.5
360	ϕ25.4	ϕ12.7

Piping between outdoor unit multi connection piping kit and outdoor unit (part C)

- Choose from the following table in accordance with the capacity type of the outdoor unit connected

(unit: mm)

Outdoor capacity index	Piping size (O.D.)	
	Gas pipe	Liquid pipe
Q140	ϕ15.9	ϕ9.5
Q180	ϕ19.1	

Piping between refrigerant branch kits

- Choose from the following table in accordance with the total capacity index of all the indoor units connected below this. (part D)
- Do not let the connection piping exceed the main refrigerant piping size.

(unit: mm)

Indoor capacity index	Piping size (O.D.)			
	Suction gas pipe		Liquid pipe	
	Standard size	Maximum size	Standard size	Maximum size
< 11.2 kW	ϕ15.9	ϕ19.1	ϕ9.5	ϕ12.7
11.2 kW ≤ x< 22.4 kW		ϕ25.4		
22.4 kW ≤ x< 33.0 kW	ϕ22.2	ϕ28.6	ϕ12.7	ϕ15.9
33.0 kW ≤ x< 37.0 kW	ϕ25.4			
37.0 kW ≤ x< 47.0 kW	ϕ28.6			
47.0 kW ≤ x< 71.0 kW		ϕ34.9	ϕ15.9	ϕ19.1
71.0 kW ≤	ϕ34.9	ϕ41.3	ϕ19.1	ϕ22.2

Piping between refrigerant branch kit and indoor unit

- Match to the size of the connection piping on the indoor unit. (part E)

(unit: mm)

Indoor capacity index	Piping size (O.D.)			
	Suction gas pipe		Liquid pipe	
	Standard size	Maximum size	Standard size	Maximum size
Q20	ϕ12.7	ϕ15.9	ϕ6.4	ϕ9.5
Q25				
Q32				
Q40				
Q50				
Q63	ϕ15.9	ϕ19.1	ϕ9.5	ϕ12.7
Q80				
Q100		ϕ25.4		
Q125				
Q200	ϕ19.1	ϕ28.6		ϕ15.9
Q250	ϕ22.2			

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.)

$$R = \left\{ \begin{array}{l} (\text{Total length (m) of liquid piping size at } \phi 19.1) \times 0.26\ \text{kg/m} + (\text{Total length (m) of liquid piping size at } \phi 15.9) \times 0.18\ \text{kg/m} + (\text{Total length (m) of liquid piping size at } \phi 12.7) \times 0.12\ \text{kg/m} \\ + (\text{Total length (m) of liquid piping size at } \phi 9.5) \times 0.059\ \text{kg/m} + (\text{Total length (m) of liquid piping size at } \phi 6.4) \times 0.022\ \text{kg/m} \end{array} \right\} - \left\{ \begin{array}{|l|l|l|l|} \hline \text{RQYQ140} & 2.4\ \text{kg} & \text{RQCYQ460} & 11.2\ \text{kg} \\ \text{RQYQ180} & 2.4\ \text{kg} & \text{RQCYQ500} & 11.2\ \text{kg} \\ \text{RQCYQ280} & 6.8\ \text{kg} & \text{RQCYQ540} & 11.2\ \text{kg} \\ \text{RQCYQ360} & 6.8\ \text{kg} & & \\ \hline \end{array} \right. + \left\{ \begin{array}{|l|l|} \hline A \le 100\% & 0\ \text{kg} \\ A > 100\% & 0.5\ \text{kg} \\ \hline \end{array} \right.$$

(A: The ratio of total capacity index of connectable indoor units to outdoor capacity index (%))

Example for refrigerant branch using REFNET joint and REFNET header

In case the outdoor unit is RQCYQ540PY1 type and the piping lengths are as at right

a: ϕ15.9 × 30m	d: ϕ9.5 × 20m	g: ϕ9.5 × 20m	j : ϕ6.4 × 10m	s: ϕ9.5 × 1m
b: ϕ15.9 ×10m	e: ϕ9.5 × 20m	h: ϕ9.5 × 20m	k: ϕ6.4 × 10m	t : ϕ9.5 × 1m
c: ϕ9.5 × 20m	f : ϕ9.5 × 20m	i : ϕ9.5 × 10m	r: ϕ9.5 × 1m	u: ϕ12.7 × 3m

Total capacity of indoor unit: 116%

$$R = (\boxed{40 \times 0.18}\ (\text{a, b}) + \boxed{3 \times 0.12}\ (\text{u}) + \boxed{1.33 \times 0.059}\ (\text{c~i, r~t}) + \boxed{20 \times 0.022}\ (\text{j, k})) - \boxed{11.2}\ (\text{RQCYQ540PY1}) + \boxed{0.5}\ (116\%) = 5.147 \Rightarrow \boxed{5.1\ \text{kg}}$$

*Note 1

When the equivalent pipe length between outdoor unit multi connection piping kit and indoor units is 90m or more, the size of main pipes (both gas-side and liquid-side) must be increased to the following table.
Depending on the length of the piping, the capacity may drop, but even in such case it is able to increase the size of main pipes.

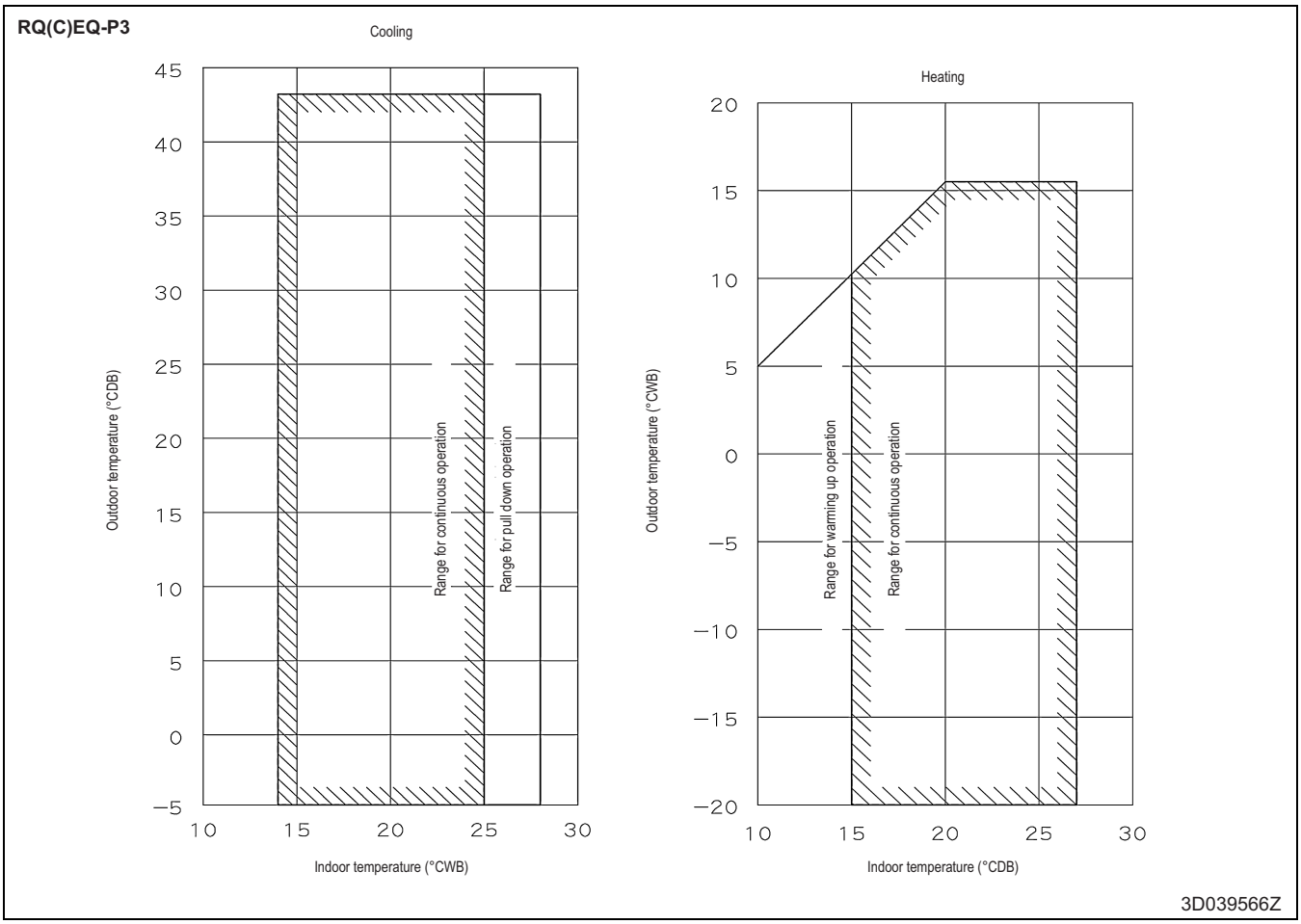
(Refer to figure 10.1)

1. Outdoor unit
2. Main pipes
3. Increase
4. The first refrigerant branch kit
5. Indoor unit

Model name of outdoor unit system	Piping size (O.D.)	
	Gas pipe	Liquid pipe
RQYQ140	ϕ15.9 → ϕ19.1	ϕ9.5 → Not increased
RQYQ180	ϕ19.1 → ϕ22.2	ϕ9.5 → Not increased
RQCYQ280	ϕ22.2 → ϕ25.4	ϕ9.5 → ϕ12.7
RQCYQ360	ϕ25.4 → ϕ28.6	ϕ12.7 → ϕ15.9
RQCYQ460	ϕ28.6 → ϕ34.9	
RQCYQ500, 540		ϕ15.9 → ϕ19.1

13 Operation range

13 - 1 Operation Range



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DAIKIN EUROPE N.V. Naamloze Vennootschap - Zandvoordestraat 300, B-8400 Oostende - Belgium - www.daikin.eu - BE 0412 120 336 - RPR Oostende

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