HITACHI

Technical Bulletin

SET FREE ∑

Heat Pump Type

HNCQ Series

	Edit							
	Review							
	Standardization		Mark	Management No.	Date	Edit	Review	Approve
	Approve			Change Record				
NO. HB2017003A			Johnson Controls-Hitachi Air Conditioning Technology (Wuxi) Co., Ltd.					

New Products Information

Distributed to √ Areas:					
All Areas		Oceania		Europe	
China		India		NA	
ASEAN and others	√	ME	√	LA	√
Taiwan		Africa	√	Brazil	
NOTE (except Malaysia, ME(T3))					

HITACHI

TECHNICAL BULLETIN	Set Free ∑-HNCQ series VRF Air Conditioning System	**DATE:** Sep.'17 **PAGE:** 1/48

Summary:

This Technical Bulletin describes and details the heat pump of outdoor units for Σ-HNCQ Series (8 to 96HP).

Description:

1. Applicable Models

Type	Model Name	
[Heat Pump]	RAS-8.0HNBCMQ	RAS-54HNBCMQ
	RAS-10HNBCMQ	RAS-56HNBCMQ
	RAS-12HNBCMQ	RAS-58HNBCMQ
	RAS-14HNBCMQ	RAS-60HNBCMQ
	RAS-16HNBCMQ	RAS-62HNBCMQ
	RAS-18HNBCMQ	RAS-64HNBCMQ
	RAS-20HNBCMQ	RAS-66HNBCMQ
	RAS-22HNBCMQ	RAS-68HNBCMQ
	RAS-24HNBCMQ	RAS-70HNBCMQ
	RAS-26HNBCMQ	RAS-72HNBCMQ
	RAS-28HNBCMQ	RAS-74HNBCMQ
	RAS-30HNBCMQ	RAS-76HNBCMQ
	RAS-32HNBCMQ	RAS-78HNBCMQ
	RAS-34HNBCMQ	RAS-80HNBCMQ
	RAS-36HNBCMQ	RAS-82HNBCMQ
	RAS-38HNBCMQ	RAS-84HNBCMQ
	RAS-40HNBCMQ	RAS-86HNBCMQ
	RAS-42HNBCMQ	RAS-88HNBCMQ
	RAS-44HNBCMQ	RAS-90HNBCMQ
	RAS-46HNBCMQ	RAS-92HNBCMQ
	RAS-48HNBCMQ	RAS-94HNBCMQ
	RAS-50HNBCMQ	RAS-96HNBCMQ
	RAS-52HNBCMQ	

Manufacture Factory:

Qingdao Johnson Controls Air-conditioning Co., Ltd.

Date of Shipment:

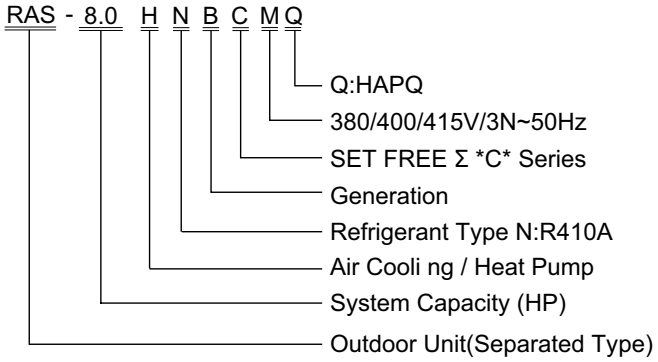
When placing an order, please confirm the lead time with HAPQ firstly.

2. Power

380V±10% 3N~ 50Hz

3. Line-Up

This outdoor unit series “HNBCMQ” can build the capacity from 8 to 96HP by combining maximum 4 outdoor units from 8 to 24HP.



Base Unit

HP	8	10	12	14	16
Model	RAS-8.0HNBCMQ	RAS-10HNBCMQ	RAS-12HNBCMQ	RAS-14HNBCMQ	RAS-16HNBCMQ

HP	18	20	22	24
Model	RAS-18HNBCMQ	RAS-20HNBCMQ	RAS-22HNBCMQ	RAS-24HNBCMQ

Combination of Base Units *

HP	26	28	30	32	34
Model	RAS-26HNBCMQ	RAS-28HNBCMQ	RAS-30HNBCMQ	RAS-32HNBCMQ	RAS-34HNBCMQ
Combination	RAS-10HNBCMQ	RAS-12HNBCMQ	RAS-14HNBCMQ	RAS-16HNBCMQ	RAS-16HNBCMQ
	RAS-16HNBCMQ	RAS-16HNBCMQ	RAS-16HNBCMQ	RAS-16HNBCMQ	RAS-18HNBCMQ

HP	36	38	40	42	44
Model	RAS-36HNBCMQ	RAS-38HNBCMQ	RAS-40HNBCMQ	RAS-42HNBCMQ	RAS-44HNBCMQ
Combination	RAS-16HNBCMQ	RAS-16HNBCMQ	RAS-16HNBCMQ	RAS-18HNBCMQ	RAS-20HNBCMQ
	RAS-20HNBCMQ	RAS-22HNBCMQ	RAS-24HNBCMQ	RAS-24HNBCMQ	RAS-24HNBCMQ

HP	46	48	50	52	54
Model	RAS-46HNBCMQ	RAS-48HNBCMQ	RAS-50HNBCMQ	RAS-52HNBCMQ	RAS-54HNBCMQ
Combination	RAS-22HNBCMQ	RAS-24HNBCMQ	RAS-16HNBCMQ	RAS-16HNBCMQ	RAS-16HNBCMQ
	RAS-24HNBCMQ	RAS-24HNBCMQ	RAS-16HNBCMQ	RAS-16HNBCMQ	RAS-16HNBCMQ
	-	-	RAS-18HNBCMQ	RAS-20HNBCMQ	RAS-22HNBCMQ

HP	56	58	60	62	64
Model	RAS-56HNBCMQ	RAS-58HNBCMQ	RAS-60HNBCMQ	RAS-62HNBCMQ	RAS-64HNBCMQ
Combination	RAS-16HNBCMQ	RAS-16HNBCMQ	RAS-16HNBCMQ	RAS-16HNBCMQ	RAS-16HNBCMQ
	RAS-16HNBCMQ	RAS-18HNBCMQ	RAS-20HNBCMQ	RAS-22HNBCMQ	RAS-24HNBCMQ
	RAS-24HNBCMQ	RAS-24HNBCMQ	RAS-24HNBCMQ	RAS-24HNBCMQ	RAS-24HNBCMQ

HP	66	68	70	72	74
Model	RAS-66HNBCMQ	RAS-68HNBCMQ	RAS-70HNBCMQ	RAS-72HNBCMQ	RAS-74HNBCMQ
Combination	RAS-18HNBCMQ	RAS-20HNBCMQ	RAS-22HNBCMQ	RAS-24HNBCMQ	RAS-16HNBCMQ
	RAS-24HNBCMQ	RAS-24HNBCMQ	RAS-24HNBCMQ	RAS-24HNBCMQ	RAS-16HNBCMQ
	RAS-24HNBCMQ	RAS-24HNBCMQ	RAS-24HNBCMQ	RAS-24HNBCMQ	RAS-18HNBCMQ
	-	-	-	-	RAS-24HNBCMQ

HP	76	78	80	82	84
Model	RAS-76HNBCMQ	RAS-78HNBCMQ	RAS-80HNBCMQ	RAS-82HNBCMQ	RAS-84HNBCMQ
Combination	RAS-16HNBCMQ	RAS-16HNBCMQ	RAS-20HNBCMQ	RAS-20HNBCMQ	RAS-20HNBCMQ
	RAS-16HNBCMQ	RAS-16HNBCMQ	RAS-20HNBCMQ	RAS-20HNBCMQ	RAS-20HNBCMQ
	RAS-20HNBCMQ	RAS-22HNBCMQ	RAS-20HNBCMQ	RAS-20HNBCMQ	RAS-20HNBCMQ
	RAS-24HNBCMQ	RAS-24HNBCMQ	RAS-20HNBCMQ	RAS-22HNBCMQ	RAS-24HNBCMQ

HP	86	88	90	92	94
Model	RAS-86HNBCMQ	RAS-88HNBCMQ	RAS-90HNBCMQ	RAS-92HNBCMQ	RAS-94HNBCMQ
Combination	RAS-20HNBCMQ	RAS-20HNBCMQ	RAS-20HNBCMQ	RAS-20HNBCMQ	RAS-22HNBCMQ
	RAS-20HNBCMQ	RAS-20HNBCMQ	RAS-22HNBCMQ	RAS-24HNBCMQ	RAS-24HNBCMQ
	RAS-22HNBCMQ	RAS-24HNBCMQ	RAS-24HNBCMQ	RAS-24HNBCMQ	RAS-24HNBCMQ
	RAS-24HNBCMQ	RAS-24HNBCMQ	RAS-24HNBCMQ	RAS-24HNBCMQ	RAS-24HNBCMQ

HP	96
Model	RAS-96HNBCMQ
Combination	RAS-24HNBCMQ
	RAS-24HNBCMQ
	RAS-24HNBCMQ
	RAS-24HNBCMQ

***:** The outdoor units from 26 to 96HP consists of the combination of 2 to 4 base units.
The combinations are not available except for the above tables.

Base Unit Outer Dimension:

RAS-8.0 - 12HNBCMQ (8 - 12HP)	RAS-14 - 18HNBCMQ (14 - 18HP)	RAS-20 - 24HNBCMQ (20 - 24HP)
W958 x D782 x H1725 mm	W1218 x D782 x H1725 mm	W1608 x D782 x H1725 mm

Combination of Base Units

RAS-26 - 28HNBCMQ (26 - 28HP)	RAS-30 - 34HNBCMQ (30 - 34HP)	RAS-36 - 42HNBCMQ (36 - 42HP)

RAS-44 - 48HNBCMQ (44 - 48HP)	RAS-50HNBCMQ (50HP)	RAS-52 - 58HNBCMQ (52 - 58HP)

New Products Information

Distributed to √ Areas:					
All Areas		Oceania		Europe	
China		India		NA	
ASEAN and others	√	ME	√	LA	√
Taiwan		Africa	√	Brazil	
NOTE (except Malaysia, ME(T3))					

HITACHI

TECHNICAL BULLETIN	Set Free ∑-HNCQ series VRF Air Conditioning System	**DATE:** Sep.'17 **PAGE:** 5/48

RAS-60 - 66 HNBCMQ (60 - 66HP)

RAS-68 - 72 HNBCMQ (68 - 72HP)

RAS-74 HNBCMQ (74HP)

RAS-76 - 78 HNBCMQ (76 - 78HP)

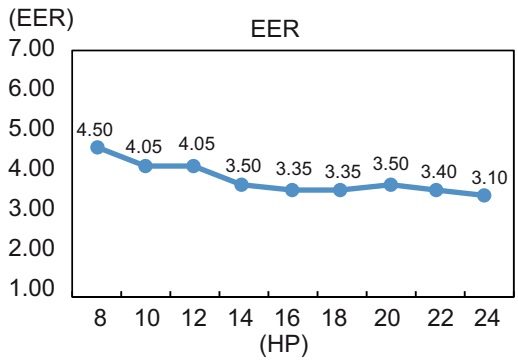
RAS-80 - 96 HNBCMQ (80 - 96HP)

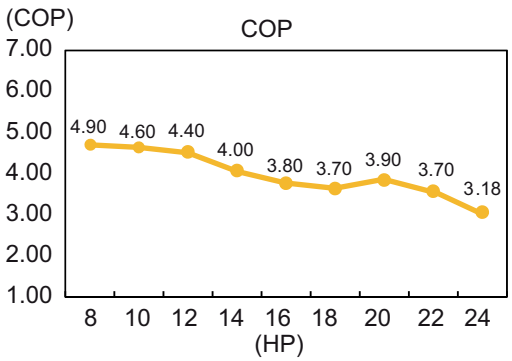
4. Features

1. High EER / COP Design

   The new Σ-HNCQ series has achieved high EER/COP and considerable energy saving by improving the performance of compressor and optimizing refrigerant cycle system.

   The graphs below show the EER/COP of single units.





Notes: The above values indicate the EER/COP per outdoor unit when it is combined with test indoor units.

2. Energy Saving Technology

Bell-mouth

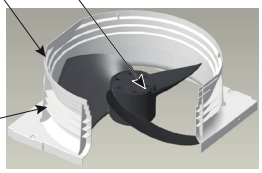
<Long Bell-mouth Structure>

Create smooth air flow and reduce fan input by adopting multi-stage enhanced structure.

Long Blade Propeller Fan

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

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

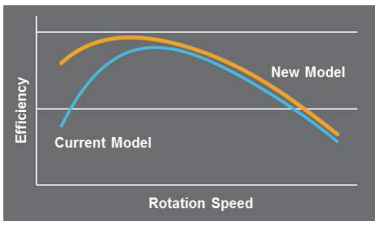


Compressor

<Improve Compressor Efficiency at Low Load Operation>

Optimize oil rate by improving oil distribution to the compressor and expand operation range at low load operation

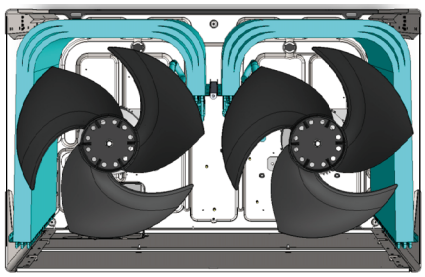
Efficiency of Compressor (image)



Heat Exchanger

<Σ Shape Heat Exchanger>

(≥14HP)
Adopt two fan structure for improve efficiency at low load operation. Adopt Σ shape heat exchanger to maximize the effect of the two fan structure for better energy saving.

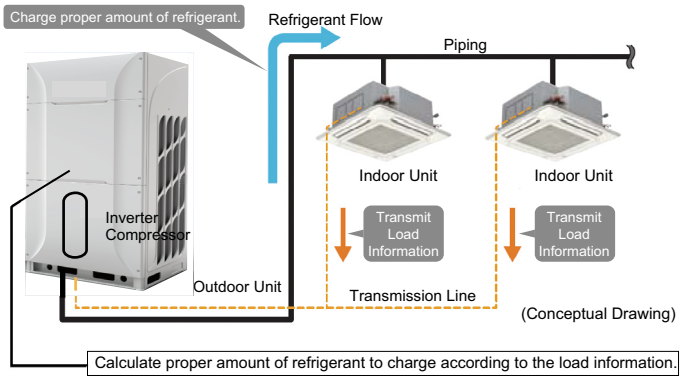


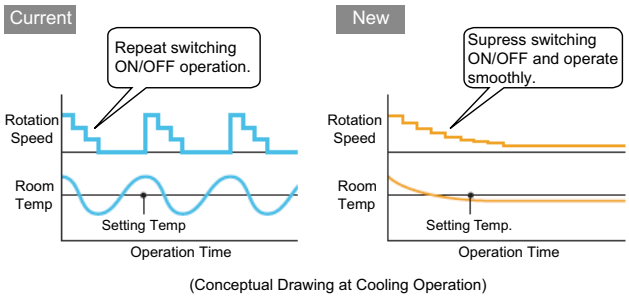
3. Operation Control

- Smooth Drive Control System:

  Calculate the amount of refrigerant to charge based on the load information from the indoor units. Control inverter compressor rotation speed and charge proper amount of refrigerant to indoor unit at each loading condition. Suppress compressor switching ON/OFF at low load operation for better energy efficiency with smooth operation.

◆ Concept of Smooth Drive Control

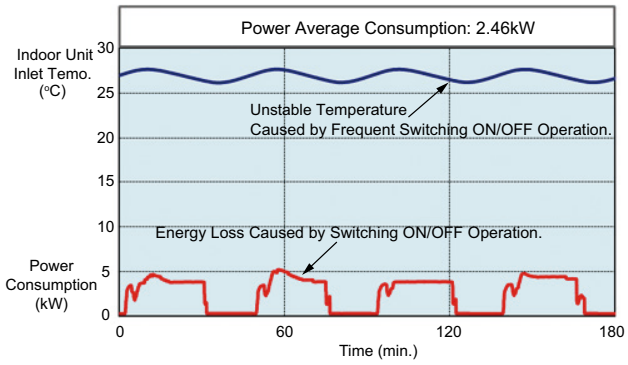




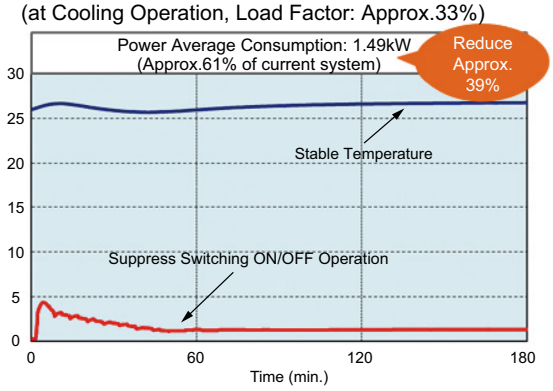
- Verification Result of Energy Saving Effect from Smooth Drive Control

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

▪ Current Control System
(at Cooling Operation, Load Factor:Approx.33%)

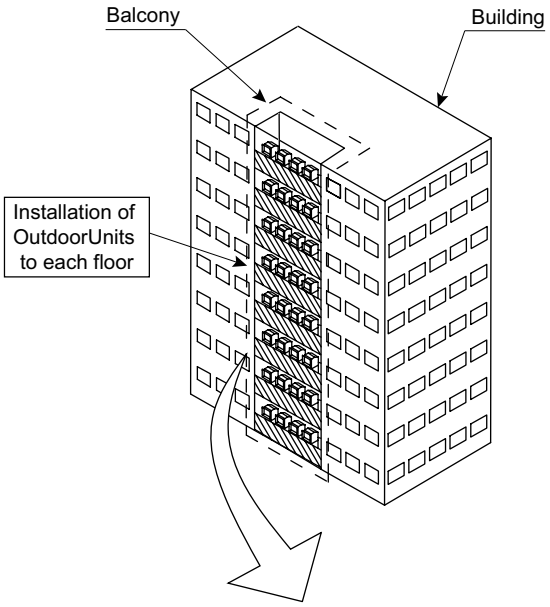


▪ New Control System (Smooth Drive Control)
(at Cooling Operation, Load Factor: Approx.33%)



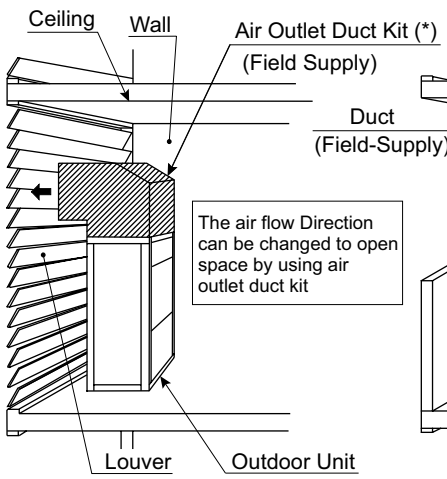
4. Installation Flexibility for Expand External Static Pressure

   For installation spaces such as a balcony or a floor where an external static pressure such as a louver or a duct is required to secure, the 3 steps external static pressure (80Pa, 60Pa and 30Pa) by the dip switch setting (DSW8) is newly adopted (current model is 60Pa only).

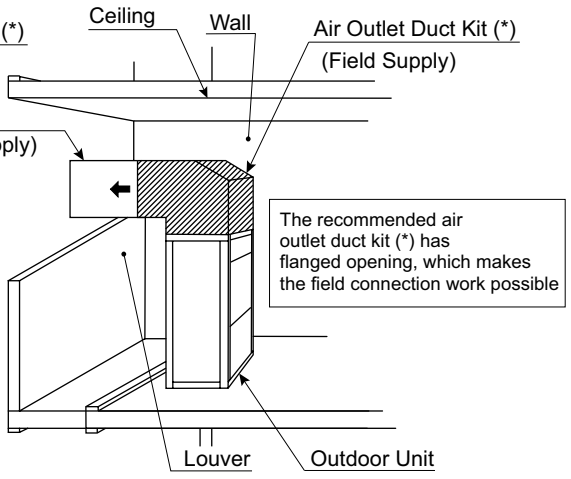


Setting for External Static Pressure	DSW8		
	#1	#2	#3
0Pa	OFF	OFF	OFF
Max.30Pa	ON	OFF	OFF
Max.60Pa	OFF	ON	OFF
Max.80Pa	ON	ON	OFF

Case that Open Space is Louver



Case that Open Space is Wall



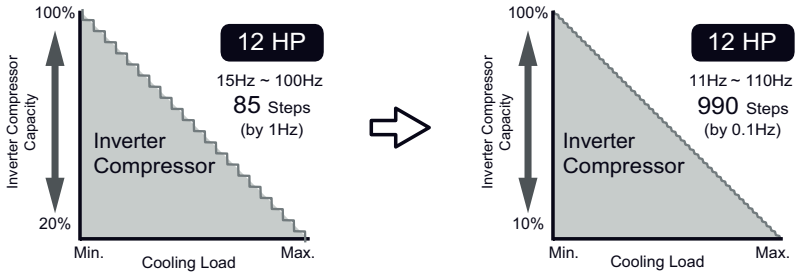
Notes:

1. Pay attention to the following case at the design and the installation. If the outlet air intakes by short-circuit, the operation range is limited due to increasing high pressure in the cooling operation or decreasing low pressure in the heating operation so that may cause failure of unit.
2. (*): Air outlet duct kit is field supply.
3. Refer to section "9. Operating Temperature Range" on page 38 for details.

5. Other Advance Technologies

- Capacity Control by 0.1Hz

  The highly improved performance as well as greater energy saving is achieved by adopting newly developed high efficiency DC inverter compressor, with outstandingly precise control technology of 0.1Hz increments inverter frequency. Another feature is the dramatically extended working range, enabled by expanding the compressor's operating frequency band, both upwards and downwards.



- Wide Working Range for Cooling Operation

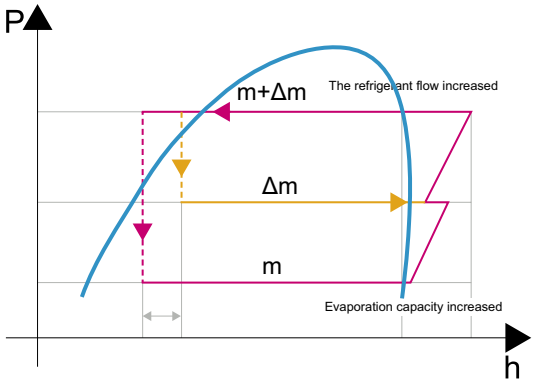
Type	New Model	Current Model
Σ-HNCQ series	52°C(*)	43°C

Notes:

(*)Refer to section "9. Operating Temperature Range" on page 38 and the technical catalogue for the details.

6. EVI (Enhanced Vapor Injection) Technology

- To increase about 20% capacity at low ambient heating compared to without EVI function;
- To improve EER/COP at rated conditions;



For example, in heating mode, when the OD ambient temperature is very low, the performance of OD unit decreases, and the refrigerant volume decreases in the compressor suction port. But with EVI technology, the intermediate pressure refrigerant would be injected to compressor, and will increase the discharge volume so the mass flow of the refrigerant cycle will also get increased, keeping sufficient heating capacity in low ambient condition.

5. General Specifications

Model		RAS-8.0HNBCMQ	RAS-10HNBCMQ	RAS-12HNBCMQ
Power Supply		380/400/415V±10% 3N~ 50Hz		
Nominal Cooling Capacity	kW	22.4	28.0	33.5
Nominal Heating Capacity	kW	25.0	31.5	37.5
Cabinet Color (Munsell Code)		Natural White (ID8000-100036)		
Sound Pressure Level	dB(A)	60	61	62
Outer Dimensions Height x Width x Depth	mm	1,725 x 958 x 782	1,725 x 958 x 782	1,725 x 958 x 782
Net Weight	kg	225	226	248
Refrigerant		R410A		
Flow Control		Micro-Computer Control Expansion Valve		
Compressor		Hermetic (Scroll)		
Compressor Model		AA50PHDG	AA50PHDG	DC80PHDG
Compressor Quantity		1	1	1
Compressor Motor Output	kW	4.1	6.2	7.4
Refrigeration Oil Type		FV68H		
Charge	L/Unit	6.0	6.0	6.0
Heat Exchanger		Multi-Pass Cross-Finned Tube		
Condenser Fan		Propeller Fan		
Fan Quantity		1	1	1
Air Flow Rate	m^3/min	165	170	190
Fan Motor Output	kW	0.26	0.28	0.42
Liquid Line	mm (in.)	Ø9.52 (3/8)	Ø9.52 (3/8)	Ø12.7 (1/2)
Gas Line	mm (in.)	Ø19.05 (3/4)	Ø22.2 (7/8)	Ø25.4 (1)
Refrigerant Charge (before Shipment)	kg	5.0	5.0	7.2

Notes:

1. The cooling and heating performances are the values when combined with our test indoor units.

   Cooling Operation Conditions:
   Indoor Air Inlet Temperature: 27°C DB 19°C WB
   Outdoor Air Inlet Temperature: 35°C DB
   Piping Length: 7.5 Meters

   Heating Operation Conditions:
   Indoor Air Inlet Temperature: 20°C DB
   Outdoor Air Inlet Temperature: 7°C DB 6°C WB
   Piping Lift: 0 Meter

2. The sound pressure is based on the following conditions.

   1 Meter from the unit service cover surface, and 1.36 Meters from floor level.
   The above data is based on the cooling mode. In case of heating mode, the sound pressure level increases by approximately 1~2 dB. The above data was measured in an semianechoic chamber so that reflected sound should be taken into consideration in the field.

New Products Information

Distributed to √ Areas:					
All Areas		Oceania		Europe	
China		India		NA	
ASEAN and others	√	ME	√	LA	√
Taiwan		Africa	√	Brazil	
NOTE (except Malaysia, ME(T3))					

HITACHI

TECHNICAL BULLETIN	Set Free ∑-HNCQ series VRF Air Conditioning System	DATE: Sep.'17 PAGE: 12/48

Model		RAS-14HNBCMQ	RAS-16HNBCMQ	RAS-18HNBCMQ
Power Supply		380/400/415V±10% 3N~ 50Hz		
Nominal Cooling Capacity	kW	40.0	45.0	50.0
Nominal Heating Capacity	kW	45.0	50.0	56.0
Cabinet Color (Munsell Code)		Natural White (ID8000-100036)		
Sound Pressure Level	dB(A)	63	64	64
Outer Dimensions Height x Width x Depth	mm	1,725 x 1,218 x 782	1,725 x 1,218 x 782	1,725 x 1,218 x 782
Net Weight	kg	308	310	356
Refrigerant		R410A		
Flow Control		Micro-Computer Control Expansion Valve		
Compressor		Hermetic (Scroll)		
Compressor Model		DC50PHDG	DC80PHDG	AA50PHDG+AA50PHDG
Compressor Quantity		1	1	2
Compressor Motor Output	kW	9.3	10.8	6.4×2
Refrigeration Oil Type		FV68H		
Charge	L/Unit	6.9	6.9	7.9
Heat Exchanger		Multi-Pass Cross-Finned Tube		
Condenser Fan		Propeller Fan		
Fan Quantity		2	2	2
Air Flow Rate	m³/min	239	256	256
Fan Motor Output	kW	0.33 x 2	0.39 x 2	0.39 x 2
Liquid Line	mm (in.)	Ø12.7 (1/2)	Ø12.7 (1/2)	Ø15.88 (5/8)
Gas Line	mm (in.)	Ø25.4 (1)	Ø28.58 (1-1/8)	Ø28.58 (1-1/8)
Refrigerant Charge (before Shipment)	kg	8.9	9.9	10.7

Notes:

1. The cooling and heating performances are the values when combined with our test indoor units.

   Cooling Operation Conditions:
   Indoor Air Inlet Temperature: 27°C DB 19°C WB
   Outdoor Air Inlet Temperature: 35°C DB
   Piping Length: 7.5 Meters

   Heating Operation Conditions:
   Indoor Air Inlet Temperature: 20°C DB
   Outdoor Air Inlet Temperature: 7°C DB 6°C WB
   Piping Lift: 0 Meter

2. The sound pressure is based on the following conditions.
   1 Meter from the unit service cover surface, and 1.36 Meters from floor level.
   The above data is based on the cooling mode. In case of heating mode, the sound pressure level increases by approximately 1~2 dB. The above data was measured in an semianechoic chamber so that reflected sound should be taken into consideration in the field.

New Products Information

Distributed to √ Areas:					
All Areas		Oceania		Europe	
China		India		NA	
ASEAN and others	√	ME	√	LA	√
Taiwan		Africa	√	Brazil	
NOTE (except Malaysia, ME(T3))					

HITACHI

TECHNICAL BULLETIN	Set Free ∑-HNCQ series VRF Air Conditioning System	DATE: Sep.'17 PAGE: 13/48

Model		RAS-20HNBCMQ	RAS-22HNBCMQ	RAS-24HNBCMQ
Power Supply		380/400/415V±10% 3N~ 50Hz		
Nominal Cooling Capacity	kW	56.0	61.5	68.0
Nominal Heating Capacity	kW	63.0	69.0	75.0
Cabinet Color (Munsell Code)		Natural White (ID8000-100036)		
Sound Pressure Level	dB(A)	65	66	66
Outer Dimensions Height x Width x Depth	mm	1,725 x 1,608 x 782	1,725 x 1,608 x 782	1,725 x 1,608 x 782
Net Weight	kg	390	415	416
Refrigerant		R410A		
Flow Control		Micro-Computer Control Expansion Valve		
Compressor		Hermetic (Scroll)		
Compressor Model		AA50PHDG+AA50PHDG	DC80PHDG+DC80PHDG	DC80PHDG+DC80PHDG
Compressor Quantity		2	2	2
Compressor Motor Output	kW	6.5 x 2	7.5 x 2	8.6 x 2
Refrigeration Oil Type		FV68H		
Charge	L/Unit	8.4	8.4	8.4
Heat Exchanger		Multi-Pass Cross-Finned Tube		
Condenser Fan		Propeller Fan		
Fan Quantity		2	2	2
Air Flow Rate	m^3/min	329	329	348
Fan Motor Output	kW	0.48 x 2	0.48 x 2	0.56 x 2
Liquid Line	mm (in.)	Ø15.88 (5/8)	Ø15.88 (5/8)	Ø15.88 (5/8)
Gas Line	mm (in.)	Ø28.58 (1-1/8)	Ø28.58 (1-1/8)	Ø28.58 (1-1/8)
Refrigerant Charge (before Shipment)	kg	11.3	11.3	12.6

Notes:

1. The cooling and heating performances are the values when combined with our test indoor units.

   Cooling Operation Conditions:
   Indoor Air Inlet Temperature: 27°C DB 19°C WB
   Outdoor Air Inlet Temperature: 35°C DB
   Piping Length: 7.5 Meters

   Heating Operation Conditions:
   Indoor Air Inlet Temperature: 20°C DB
   Outdoor Air Inlet Temperature: 7°C DB 6°C WB
   Piping Lift: 0 Meter

2. The sound pressure is based on the following conditions.
   1 Meter from the unit service cover surface, and 1.36 Meters from floor level.
   The above data is based on the cooling mode. In case of heating mode, the sound pressure level increases by approximately 1~2 dB. The above data was measured in an semianechoic chamber so that reflected sound should be taken into consideration in the field.

Distributed to √ Areas:					
All Areas		Oceania		Europe	
China		India		NA	
ASEAN and others	√	ME	√	LA	√
Taiwan		Africa	√	Brazil	
NOTE (except Malaysia, ME(T3))					

HITACHI

TECHNICAL BULLETIN	Set Free ∑-HNCQ series VRF Air Conditioning System	**DATE:** Sep.'17 **PAGE:** 14/48

Model		RAS-26HNBCMQ	RAS-28HNBCMQ	RAS-30HNBCMQ
Combination of Base Unit		RAS-10HNBCMQ RAS-16HNBCMQ	RAS-12HNBCMQ RAS-16HNBCMQ	RAS-14HNBCMQ RAS-16HNBCMQ
Power Supply		380/400/415V±10% 3N~ 50Hz		
Nominal Cooling Capacity	kW	73.0	78.5	85.0
Nominal Heating Capacity	kW	81.5	87.5	95.0
Cabinet Color (Munsell Code)		Natural White (ID8000-100036)		
Sound Pressure Level	dB(A)	66	66	67
Outer Dimensions Height x Width x Depth	mm	1,725 x 2,196 x 782	1,725 x 2,196 x 782	1,725 x 2,456 x 782
Net Weight	kg	226 + 310	248 + 310	308 + 310
Refrigerant		R410A		
Flow Control		Micro-Computer Control Expansion Valve		
Compressor		Hermetic (Scroll)		
Compressor Model		AA50PHDG + DC80PHDG	DC80PHDG + DC80PHDG	DC80PHDG + DC80PHDG
Compressor Quantity		2	2	2
Compressor Motor Output	kW	6.2 x 1 + 10.8 x 1	7.4 x 1 + 10.8 x 1	9.3 x 1 + 10.8 x 1
Refrigeration Oil Type		FV68H		
Charge	L/Unit	12.9	12.9	13.8
Heat Exchanger		Multi-Pass Cross-Finned Tube		
Condenser Fan		Propeller Fan		
Fan Quantity		3	3	4
Air Flow Rate	m³/min	170 + 256	190 + 256	239 + 256
Fan Motor Output	kW	0.28 + (0.39 x 2)	0.42 + (0.39 x 2)	(0.33 x 2)+ (0.39 x 2)
Liquid Line	mm (in.)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)
Gas Line	mm (in.)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)
Refrigerant Charge (before Shipment)	kg	14.9	17.1	18.8

Notes:

1. The cooling and heating performances are the values when combined with our test indoor units.

   Cooling Operation Conditions:
   Indoor Air Inlet Temperature: 27°C DB 19.0°C WB
   Outdoor Air Inlet Temperature: 35°C DB
   Piping Length: 7.5 Meters

   Heating Operation Conditions:
   Indoor Air Inlet Temperature: 20°C DB
   Outdoor Air Inlet Temperature: 7°C DB 6°C WB
   Piping Lift: 0 Meter

2. The sound pressure is based on the following conditions.
   1 Meter from the unit service cover surface, and 1.36 Meters from floor level.
   The above data is based on the cooling mode. In case of heating mode, the sound pressure level increases by approximately 1~2 dB. The above data was measured in an semianechoic chamber so that reflected sound should be taken into consideration in the field.
3. Except for the test combination in the table (26~96HP), there is no other combination of the base unit.
4. The width of outer dimension, it is the value when each distance between the base outdoor units is test to 20mm.

New Products Information

Distributed to √ Areas:					
All Areas		Oceania		Europe	
China		India		NA	
ASEAN and others	√	ME	√	LA	√
Taiwan		Africa	√	Brazil	
NOTE (except Malaysia, ME(T3))					

HITACHI

TECHNICAL BULLETIN	Set Free ∑-HNCQ series VRF Air Conditioning System	DATE: Sep.'17 PAGE: 15/48

Model		RAS-32HNBCMQ	RAS-34HNBCMQ	RAS-36HNBCMQ
Combination of Base Unit		RAS-16HNBCMQ RAS-16HNBCMQ	RAS-16HNBCMQ RAS-18HNBCMQ	RAS-16HNBCMQ RAS-20HNBCMQ
Power Supply		380/400/415V±10% 3N~ 50Hz		
Nominal Cooling Capacity	kW	90.0	95.0	101.0
Nominal Heating Capacity	kW	100.0	106.0	113.0
Cabinet Color (Munsell Code)		Natural White (ID8000-100036)		
Sound Pressure Level	dB(A)	67	67	68
Outer Dimensions Height x Width x Depth	mm	1,725 x 2,456 x 782	1,725 x 2,456 x 782	1,725 x 2,846 x 782
Net Weight	kg	310 + 310	310 + 356	310 + 390
Refrigerant		R410A		
Flow Control		Micro-Computer Control Expansion Valve		
Compressor		Hermetic (Scroll)		
Compressor Model		DC80PHDG + DC80PHDG	DC80PHDG + AA50PHDG + AA50PHDG	DC80PHDG + AA50PHDG + AA50PHDG
Compressor Quantity		2	3	3
Compressor Motor Output	kW	10.8 x 1 + 10.8 x 1	10.8 x 1 + 6.4 x 2	10.8 x 1 + 6.5 x 2
Refrigeration Oil Type		FV68H		
Charge	L/Unit	13.8	14.8	15.3
Heat Exchanger		Multi-Pass Cross-Finned Tube		
Condenser Fan		Propeller Fan		
Fan Quantity		4	4	4
Air Flow Rate	m^3/min	256 x 2	256 x 2	256 + 329
Fan Motor Output	kW	(0.39 x 2) x 2	(0.39 x 2) x 2	(0.39 x 2) + (0.48 x 2)
Liquid Line	mm (in.)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)
Gas Line	mm (in.)	Ø31.75 (1-1/4)	Ø31.75 (1-1/4)	Ø38.1 (1-1/2)
Refrigerant Charge (before Shipment)	kg	19.8	20.6	21.2

Notes:

1. The cooling and heating performances are the values when combined with our test indoor units.

   Cooling Operation Conditions:
   Indoor Air Inlet Temperature: 27°C DB 19.0°C WB
   Outdoor Air Inlet Temperature: 35°C DB
   Piping Length: 7.5 Meters

   Heating Operation Conditions:
   Indoor Air Inlet Temperature: 20°C DB
   Outdoor Air Inlet Temperature: 7°C DB 6°C WB
   Piping Lift: 0 Meter

2. The sound pressure is based on the following conditions.
   1 Meter from the unit service cover surface, and 1.36 Meters from floor level.
   The above data is based on the cooling mode. In case of heating mode, the sound pressure level increases by approximately 1~2 dB. The above data was measured in an semianechoic chamber so that reflected sound should be taken into consideration in the field.
3. Except for the test combination in the table (26~96HP), there is no other combination of the base unit.
4. The width of outer dimension, it is the value when each distance between the base outdoor units is test to 20mm.

New Products Information

Distributed to √ Areas:					
All Areas		Oceania		Europe	
China		India		NA	
ASEAN and others	√	ME	√	LA	√
Taiwan		Africa	√	Brazil	
NOTE (except Malaysia, ME(T3))					

HITACHI

TECHNICAL BULLETIN	Set Free ∑-HNCQ series VRF Air Conditioning System	DATE: Sep.'17 PAGE: 16/48

Model		RAS-38HNBCMQ	RAS-40HNBCMQ	RAS-42HNBCMQ
Combination of Base Unit		RAS-16HNBCMQ RAS-22HNBCMQ	RAS-16HNBCMQ RAS-24HNBCMQ	RAS-18HNBCMQ RAS-24HNBCMQ
Power Supply		380/400/415V±10% 3N~ 50Hz		
Nominal Cooling Capacity	kW	106.5	113.0	118.0
Nominal Heating Capacity	kW	119.0	125.0	131.0
Cabinet Color (Munsell Code)		Natural White (ID8000-100036)		
Sound Pressure Level	dB(A)	68	68	68
Outer Dimensions Height x Width x Depth	mm	1,725 x 2,846 x 782	1,725 x 2,846 x 782	1,725 x 2,846 x 782
Net Weight	kg	310 + 415	310 + 416	356 + 416
Refrigerant		R410A		
Flow Control		Micro-Computer Control Expansion Valve		
Compressor		Hermetic (Scroll)		
Compressor Model		DC80PHDG + DC80PHDG + DC80PHDG	DC80PHDG + DC80PHDG + DC80PHDG	AA50PHDG + AA50PHDG + DC80PHDG + DC80PHDG
Compressor Quantity		3	3	4
Compressor Motor Output	kW	10.8 x 1 + 7.5 x 2	10.8 x 1 + 8.6 x 2	6.4 x 2 + 8.6 x 2
Refrigeration Oil Type		FV68H		
Charge	L/Unit	15.3	15.3	16.3
Heat Exchanger		Multi-Pass Cross-Finned Tube		
Condenser Fan		Propeller Fan		
Fan Quantity		4	4	4
Air Flow Rate	m^3/min	256 + 329	256 + 348	256 + 348
Fan Motor Output	kW	(0.39 x 2) + (0.48 x 2)	(0.39 x 2) + (0.56 x 2)	(0.39 x 2) + (0.56 x 2)
Liquid Line	mm (in.)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)
Gas Line	mm (in.)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)
Refrigerant Charge (before Shipment)	kg	21.2	22.5	23.3

Notes:

1. The cooling and heating performances are the values when combined with our test indoor units.

   Cooling Operation Conditions:
   Indoor Air Inlet Temperature: 27°C DB 19.0°C WB
   Outdoor Air Inlet Temperature: 35°C DB
   Piping Length: 7.5 Meters

   Heating Operation Conditions:
   Indoor Air Inlet Temperature: 20°C DB
   Outdoor Air Inlet Temperature: 7°C DB 6°C WB
   Piping Lift: 0 Meter

2. The sound pressure is based on the following conditions.
   1 Meter from the unit service cover surface, and 1.36 Meters from floor level.
   The above data is based on the cooling mode. In case of heating mode, the sound pressure level increases by approximately 1~2 dB. The above data was measured in an semianechoic chamber so that reflected sound should be taken into consideration in the field.
3. Except for the test combination in the table (26~96HP), there is no other combination of the base unit.
4. The width of outer dimension, it is the value when each distance between the base outdoor units is test to 20mm.

New Products Information

Distributed to √ Areas:					
All Areas		Oceania		Europe	
China		India		NA	
ASEAN and others	√	ME	√	LA	√
Taiwan		Africa	√	Brazil	
NOTE (except Malaysia, ME(T3))					

HITACHI

TECHNICAL BULLETIN	Set Free ∑-HNCQ series VRF Air Conditioning System	DATE: Sep.'17 PAGE: 17/48

Model		RAS-44HNBCMQ	RAS-46HNBCMQ	RAS-48HNBCMQ
Combination of Base Unit		RAS-20HNBCMQ RAS-24HNBCMQ	RAS-22HNBCMQ RAS-24HNBCMQ	RAS-24HNBCMQ RAS-24HNBCMQ
Power Supply		380/400/415V±10% 3N~ 50Hz		
Nominal Cooling Capacity	kW	124.0	129.5	136.0
Nominal Heating Capacity	kW	138.0	144.0	150.0
Cabinet Color (Munsell Code)		Natural White (ID8000-100036)		
Sound Pressure Level	dB(A)	69	69	69
Outer Dimensions Height x Width x Depth	mm	1,725 x 3,236 x 782	1,725 x 3,236 x 782	1,725 x 3,236 x 782
Net Weight	kg	390 + 416	415 + 416	416 + 416
Refrigerant		R410A		
Flow Control		Micro-Computer Control Expansion Valve		
Compressor		Hermetic (Scroll)		
Compressor Model		AA50PHDG + AA50PHDG + DC80PHDG + DC80PHDG	DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG	DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG
Compressor Quantity		4	4	4
Compressor Motor Output	kW	(6.5 x 2) + (8.6 x 2)	(7.5 x 2) + (8.6 x 2)	(8.6 x 2) x 2
Refrigeration Oil Type		FV68H		
Charge	L/Unit	16.8	16.8	16.8
Heat Exchanger		Multi-Pass Cross-Finned Tube		
Condenser Fan		Propeller Fan		
Fan Quantity		4	4	4
Air Flow Rate	m³/min	329 + 348	329 + 348	348 x 2
Fan Motor Output	kW	(0.48 x 2) + (0.56 x 2)	(0.48 x 2) + (0.56 x 2)	(0.56 x 2) x 2
Liquid Line	mm (in.)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)
Gas Line	mm (in.)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)
Refrigerant Charge (before Shipment)	kg	23.9	23.9	25.2

Notes:

1. The cooling and heating performances are the values when combined with our test indoor units.

   Cooling Operation Conditions:
   Indoor Air Inlet Temperature: 27°C DB 19.0°C WB
   Outdoor Air Inlet Temperature: 35°C DB
   Piping Length: 7.5 Meters

   Heating Operation Conditions:
   Indoor Air Inlet Temperature: 20°C DB
   Outdoor Air Inlet Temperature: 7°C DB 6°C WB
   Piping Lift: 0 Meter

2. The sound pressure is based on the following conditions.
   1 Meter from the unit service cover surface, and 1.36 Meters from floor level.
   The above data is based on the cooling mode. In case of heating mode, the sound pressure level increases by approximately 1~2 dB. The above data was measured in an semianechoic chamber so that reflected sound should be taken into consideration in the field.
3. Except for the test combination in the table (26~96HP), there is no other combination of the base unit.
4. The width of outer dimension, it is the value when each distance between the base outdoor units is test to 20mm.

New Products Information

Distributed to √ Areas:					
All Areas		Oceania		Europe	
China		India		NA	
ASEAN and others	√	ME	√	LA	√
Taiwan		Africa	√	Brazil	
NOTE (except Malaysia, ME(T3))					

HITACHI

TECHNICAL BULLETIN	Set Free ∑-HNCQ series VRF Air Conditioning System	DATE: Sep.'17 PAGE: 18/48

Model		RAS-50HNBCMQ	RAS-52HNBCMQ	RAS-54HNBCMQ
Combination of Base Unit		RAS-16HNBCMQ RAS-16HNBCMQ RAS-18HNBCMQ	RAS-16HNBCMQ RAS-16HNBCMQ RAS-20HNBCMQ	RAS-16HNBCMQ RAS-16HNBCMQ RAS-22HNBCMQ
Power Supply		380/400/415V±10% 3N~ 50Hz		
Nominal Cooling Capacity	kW	140.0	146.0	151.5
Nominal Heating Capacity	kW	156.0	163.0	169.0
Cabinet Color (Munsell Code)		Natural White (ID8000-100036)		
Sound Pressure Level	dB(A)	69	69	70
Outer Dimensions Height x Width x Depth	mm	1,725 x 3,694 x 782	1,725 x 4,084 x 782	1,725 x 4,084 x 782
Net Weight	kg	310 + 310 + 356	310 + 310 + 390	310 + 310 + 415
Refrigerant		R410A		
Flow Control		Micro-Computer Control Expansion Valve		
Compressor		Hermetic (Scroll)		
Compressor Model		DC80PHDG + DC80PHDG + AA50PHDG + AA50PHDG	DC80PHDG + DC80PHDG + AA50PHDG + AA50PHDG	DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG
Compressor Quantity		4	4	4
Compressor Motor Output	kW	10.8 x 1 + 10.8 x 1 + (6.4 x 2)	10.8 x 1 + 10.8 x 1 + (6.5 x 2)	10.8 x 1 + 10.8 x 1 + (7.5 x 2)
Refrigeration Oil Type		FV68H		
Charge	L/Unit	21.7	22.2	22.2
Heat Exchanger		Multi-Pass Cross-Finned Tube		
Condenser Fan		Propeller Fan		
Fan Quantity		6	6	6
Air Flow Rate	m^3/min	256 x 3	256 x 2 + 329 x 1	256 x 2 + 329 x 1
Fan Motor Output	kW	(0.39 x 2) x 3	(0.39 x 2) x 2 + 0.48 x 2	(0.39 x 2) x 2 + 0.48 x 2
Liquid Line	mm (in.)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)
Gas Line	mm (in.)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)	Ø38.1 (1-1/2)
Refrigerant Charge (before Shipment)	kg	30.5	31.1	31.1

Notes:

1. The cooling and heating performances are the values when combined with our test indoor units.

   Cooling Operation Conditions:
   Indoor Air Inlet Temperature: 27°C DB 19.0°C WB
   Outdoor Air Inlet Temperature: 35°C DB
   Piping Length: 7.5 Meters

   Heating Operation Conditions:
   Indoor Air Inlet Temperature: 20°C DB
   Outdoor Air Inlet Temperature: 7°C DB 6°C WB
   Piping Lift: 0 Meter
2. The sound pressure is based on the following conditions.
   1 Meter from the unit service cover surface, and 1.36 Meters from floor level.
   The above data is based on the cooling mode. In case of heating mode, the sound pressure level increases by approximately 1~2 dB. The above data was measured in an semianechoic chamber so that reflected sound should be taken into consideration in the field.
3. Except for the test combination in the table (26~96HP), there is no other combination of the base unit.
4. The width of outer dimension, it is the value when each distance between the base outdoor units is test to 20mm.

Model		RAS-56HNBCMQ	RAS-58HNBCMQ	RAS-60HNBCMQ
Combination of Base Unit		RAS-16HNBCMQ RAS-16HNBCMQ RAS-24HNBCMQ	RAS-16HNBCMQ RAS-18HNBCMQ RAS-24HNBCMQ	RAS-16HNBCMQ RAS-20HNBCMQ RAS-24HNBCMQ
Power Supply		380/400/415V±10% 3N~ 50Hz		
Nominal Cooling Capacity	kW	158.0	163.0	169.0
Nominal Heating Capacity	kW	175.0	181.0	188.0
Cabinet Color (Munsell Code)		Natural White (ID8000-100036)		
Sound Pressure Level	dB(A)	70	70	70
Outer Dimensions Height x Width x Depth	mm	1,725 x 4,084 x 782	1,725 x 4,084 x 782	1,725 x 4,474 x 782
Net Weight	kg	310 + 310 + 416	310 + 356 + 416	310 + 390 + 416
Refrigerant		R410A		
Flow Control		Micro-Computer Control Expansion Valve		
Compressor		Hermetic (Scroll)		
Compressor Model		DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG	DC80PHDG + AA50PHDG + AA50PHDG + DC80PHDG + DC80PHDG	DC80PHDG + AA50PHDG + AA50PHDG + DC80PHDG + DC80PHDG
Compressor Quantity		4	5	5
Compressor Motor Output	kW	10.8 x 1 + 10.8 x 1 + (8.6 x 2)	10.8 x 1 + (6.4 x 2) + (8.6 x 2)	10.8 x 1 + (6.5 x 2) + (8.6 x 2)
Refrigeration Oil Type		FV68H		
Charge	L/Unit	22.2	23.2	23.7
Heat Exchanger		Multi-Pass Cross-Finned Tube		
Condenser Fan		Propeller Fan		
Fan Quantity		6	6	6
Air Flow Rate	m³/min	256 x 2 + 348	256 x 2 + 348	256 + 329 + 348
Fan Motor Output	kW	(0.39 x 2) x 2 + (0.56 x 2)	(0.39 x 2) x 2 + (0.56 x 2)	(0.39 x 2) + (0.48 x 2) + (0.56 x 2)
Liquid Line	mm (in.)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)
Gas Line	mm (in.)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)
Refrigerant Charge (before Shipment)	kg	32.4	33.2	33.8

Notes:

1. The cooling and heating performances are the values when combined with our test indoor units.

   Cooling Operation Conditions:
   Indoor Air Inlet Temperature: 27°C DB 19.0°C WB
   Outdoor Air Inlet Temperature: 35°C DB
   Piping Length: 7.5 Meters

   Heating Operation Conditions:
   Indoor Air Inlet Temperature: 20°C DB
   Outdoor Air Inlet Temperature: 7°C DB 6°C WB
   Piping Lift: 0 Meter

2. The sound pressure is based on the following conditions.
   1 Meter from the unit service cover surface, and 1.36 Meters from floor level.
   The above data is based on the cooling mode. In case of heating mode, the sound pressure level increases by approximately 1~2 dB. The above data was measured in an semianechoic chamber so that reflected sound should be taken into consideration in the field.
3. Except for the test combination in the table (26~96HP), there is no other combination of the base unit.
4. The width of outer dimension, it is the value when each distance between the base outdoor units is test to 20mm.

Model		RAS-62HNBCMQ	RAS-64HNBCMQ	RAS-66HNBCMQ
Combination of Base Unit		RAS-16HNBCMQ RAS-22HNBCMQ RAS-24HNBCMQ	RAS-16HNBCMQ RAS-24HNBCMQ RAS-24HNBCMQ	RAS-18HNBCMQ RAS-24HNBCMQ RAS-24HNBCMQ
Power Supply		380/400/415V±10% 3N~ 50Hz		
Nominal Cooling Capacity	kW	174.5	181.0	186.0
Nominal Heating Capacity	kW	194.0	200.0	206.0
Cabinet Color (Munsell Code)		Natural White (ID8000-100036)		
Sound Pressure Level	dB(A)	70	70	70
Outer Dimensions Height x Width x Depth	mm	1,725 x 4,474 x 782	1,725 x 4,474 x 782	1,725 x 4,474 x 782
Net Weight	kg	310 + 415 + 416	310 + 416 + 416	356 + 416 + 416
Refrigerant		R410A		
Flow Control		Micro-Computer Control Expansion Valve		
Compressor		Hermetic (Scroll)		
Compressor Model		DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG	DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG	AA50PHDG + AA50PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG
Compressor Quantity		5	5	6
Compressor Motor Output	kW	10.8 x 1 + (7.5 x 2) + (8.6 x 2)	10.8 x 1 + (8.6 x 2) x 2	6.4 x 2 + (8.6 x 2) x 2
Refrigeration Oil Type		FV68H		
Charge	L/Unit	23.7	23.7	24.7
Heat Exchanger		Multi-Pass Cross-Finned Tube		
Condenser Fan		Propeller Fan		
Fan Quantity		6	6	6
Air Flow Rate	m³/min	256 + 329 + 348	256 + 348 + 348	256 + 348 + 348
Fan Motor Output	kW	(0.39 x 2) + (0.48 x 2) + (0.56 x 2)	(0.39 x 2) + (0.56 x 2) x 2	(0.39 x 2) + (0.56 x 2) x 2
Liquid Line	mm (in.)	Ø19.05 (3/4)	Ø19.05 (3/4)	Ø19.05 (3/4)
Gas Line	mm (in.)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)
Refrigerant Charge (before Shipment)	kg	33.8	35.1	35.9

Notes:

1. The cooling and heating performances are the values when combined with our test indoor units.

   Cooling Operation Conditions:
   Indoor Air Inlet Temperature: 27°C DB 19°C WB Outdoor Air Inlet Temperature: 35°C DB
   Piping Length: 7.5 Meters

   Heating Operation Conditions:
   Indoor Air Inlet Temperature: 20°C DB
   Outdoor Air Inlet Temperature: 7°C DB 6 °C WB
   Piping Lift: 0 Meter

2. The sound pressure is based on the following conditions.
   1 Meter from the unit service cover surface, and 1.36 Meters from floor level.
   The above data is based on the cooling mode. In case of heating mode, the sound pressure level increases by approximately 1~2 dB. The above data was measured in an semianechoic chamber so that reflected sound should be taken into consideration in the field.
3. Except for the test combination in the table (26~96HP), there is no other combination of the base unit.
4. The width of outer dimension, it is the value when each distance between the base outdoor units is test to 20mm.

New Products Information

Distributed to √ Areas:					
All Areas		Oceania		Europe	
China		India		NA	
ASEAN and others	√	ME	√	LA	√
Taiwan		Africa	√	Brazil	
NOTE (except Malaysia, ME(T3))					

HITACHI

TECHNICAL BULLETIN	Set Free ∑-HNCQ series VRF Air Conditioning System	DATE: Sep.'17 PAGE: 21/48

Model		RAS-68HNBCMQ	RAS-70HNBCMQ	RAS-72HNBCMQ
Combination of Base Unit		RAS-20HNBCMQ RAS-24HNBCMQ RAS-24HNBCMQ	RAS-22HNBCMQ RAS-24HNBCMQ RAS-24HNBCMQ	RAS-24HNBCMQ RAS-24HNBCMQ RAS-24HNBCMQ
Power Supply		380/400/415V±10% 3N~ 50Hz		
Nominal Cooling Capacity	kW	192.0	197.5	204.0
Nominal Heating Capacity	kW	213.0	219.0	225.0
Cabinet Color (Munsell Code)		Natural White (ID8000-100036)		
Sound Pressure Level	dB(A)	70	71	71
Outer Dimensions Height x Width x Depth	mm	1,725 x 4,864 x 782	1,725 x 4,864 x 782	1,725 x 4,864 x 782
Net Weight	kg	390 + 416 + 416	415 + 416 + 416	416 + 416 + 416
Refrigerant		R410A		
Flow Control		Micro-Computer Control Expansion Valve		
Compressor		Hermetic (Scroll)		
Compressor Model		AA50PHDG + AA50PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG	DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG	DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG
Compressor Quantity		6	6	6
Compressor Motor Output	kW	(6.5 x 2)+ (8.6 x 2) x 2	(7.5 x 2)+ (8.6 x 2) x 2	(8.6 x 2) x 3
Refrigeration Oil Type		FV68H		
Charge	L/Unit	25.2	25.2	25.2
Heat Exchanger		Multi-Pass Cross-Finned Tube		
Condenser Fan		Propeller Fan		
Fan Quantity		6	6	6
Air Flow Rate	m^3/min	329 + 348 x 2	329 + 348 x 2	348 x 3
Fan Motor Output	kW	(0.48 x 2) + (0.56 x 2) x 2	(0.48 x 2) + (0.56 x 2) x 2	(0.56 x 2) x 3
Liquid Line	mm (in.)	Ø22.2 (7/8)	Ø22.2 (7/8)	Ø22.2 (7/8)
Gas Line	mm (in.)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)	Ø44.45 (1-3/4)
Refrigerant Charge (before Shipment)	kg	36.5	36.5	37.8

Notes:

1. The cooling and heating performances are the values when combined with our test indoor units.

   Cooling Operation Conditions:
   Indoor Air Inlet Temperature: 27°C DB 19°C WB Outdoor Air Inlet Temperature: 35°C DB
   Piping Length: 7.5 Meters

   Heating Operation Conditions:
   Indoor Air Inlet Temperature: 20°C DB
   Outdoor Air Inlet Temperature: 7°C DB 6 °C WB
   Piping Lift: 0 Meter

2. The sound pressure is based on the following conditions.
   1 Meter from the unit service cover surface, and 1.36 Meters from floor level.
   The above data is based on the cooling mode. In case of heating mode, the sound pressure level increases by approximately 1~2 dB. The above data was measured in an semianechoic chamber so that reflected sound should be taken into consideration in the field.
3. Except for the test combination in the table (26~96HP), there is no other combination of the base unit.
4. The width of outer dimension, it is the value when each distance between the base outdoor units is test to 20mm.

New Products Information

Distributed to √ Areas:					
All Areas		Oceania		Europe	
China		India		NA	
ASEAN and others	√	ME	√	LA	√
Taiwan		Africa	√	Brazil	
NOTE (except Malaysia, ME(T3))					

HITACHI

TECHNICAL BULLETIN	Set Free ∑-HNCQ series VRF Air Conditioning System	DATE: Sep.'17 PAGE: 22/48

Model		RAS-74HNBCMQ	RAS-76HNBCMQ	RAS-78HNBCMQ
Combination of Base Unit		RAS-16HNBCMQ RAS-16HNBCMQ RAS-18HNBCMQ RAS-24HNBCMQ	RAS-16HNBCMQ RAS-16HNBCMQ RAS-20HNBCMQ RAS-24HNBCMQ	RAS-16HNBCMQ RAS-16HNBCMQ RAS-22HNBCMQ RAS-24HNBCMQ
Power Supply		380/400/415V±10% 3N~ 50Hz		
Nominal Cooling Capacity	kW	208.0	214.0	219.5
Nominal Heating Capacity	kW	231.0	238.0	244.0
Cabinet Color (Munsell Code)		Natural White (ID8000-100036)		
Sound Pressure Level	dB(A)	71	71	71
Outer Dimensions Height x Width x Depth	mm	1,725 x 5,322 x 782	1,725 x 5,712 x 782	1,725 x 5,712 x 782
Net Weight	kg	310 + 310 + 356 + 416	310 + 310 + 390 + 416	310 + 310 + 415 + 416
Refrigerant		R410A		
Flow Control		Micro-Computer Control Expansion Valve		
Compressor		Hermetic (Scroll)		
Compressor Model		DC80PHDG + DC80PHDG + AA50PHDG + AA50PHDG + DC80PHDG + DC80PHDG	DC80PHDG + DC80PHDG + AA50PHDG + AA50PHDG + DC80PHDG + DC80PHDG	DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG
Compressor Quantity		6	6	6
Compressor Motor Output	kW	10.8 x 1 + 10.8 x 1 + (6.4 x 2) + (8.6 x 2)	10.8 x 1 + 10.8 x 1 + (6.5 x 2) + (8.6 x 2)	10.8 x 1 + 10.8 x 1 + (7.5 x 2) + (8.6 x 2)
Refrigeration Oil Type		FV68H		
Charge	L/Unit	30.1	30.6	30.6
Heat Exchanger		Multi-Pass Cross-Finned Tube		
Condenser Fan		Propeller Fan		
Fan Quantity		8	8	8
Air Flow Rate	m^3/min	256 x 3 + 348	256 x 2 + 329 + 348	256 x 2 + 329 + 348
Fan Motor Output	kW	(0.39 x 2) x 3 + (0.56 x 2)	(0.39 x 2) x 2 + (0.48 x 2) + (0.56 x 2)	(0.39 x 2) x 2 + (0.48 x 2) + (0.56 x 2)
Liquid Line	mm (in.)	Ø22.2 (7/8)	Ø22.2 (7/8)	Ø22.2 (7/8)
Gas Line	mm (in.)	Ø50.8 (2)	Ø50.8 (2)	Ø50.8 (2)
Refrigerant Charge (before Shipment)	kg	43.1	43.7	43.7

Notes:

1. The cooling and heating performances are the values when combined with our test indoor units.

   Cooling Operation Conditions:
   Indoor Air Inlet Temperature: 27°C DB 19°C WB Outdoor Air Inlet Temperature: 35°C DB
   Piping Length: 7.5 Meters

   Heating Operation Conditions:
   Indoor Air Inlet Temperature: 20°C DB
   Outdoor Air Inlet Temperature: 7°C DB 6 °C WB
   Piping Lift: 0 Meter

2. The sound pressure is based on the following conditions.
   1 Meter from the unit service cover surface, and 1.36 Meters from floor level.
   The above data is based on the cooling mode. In case of heating mode, the sound pressure level increases by approximately 1~2 dB. The above data was measured in an semianechoic chamber so that reflected sound should be taken into consideration in the field.
3. Except for the test combination in the table (26~96HP), there is no other combination of the base unit.
4. The width of outer dimension, it is the value when each distance between the base outdoor units is test to 20mm.

New Products Information

Distributed to √ Areas:					
All Areas		Oceania		Europe	
China		India		NA	
ASEAN and others	√	ME	√	LA	√
Taiwan		Africa	√	Brazil	
NOTE (except Malaysia, ME(T3))					

HITACHI

TECHNICAL BULLETIN	Set Free ∑-HNCQ series VRF Air Conditioning System	DATE: Sep.'17 PAGE: 23/48

Model		RAS-80HNBCMQ	RAS-82HNBCMQ	RAS-84HNBCMQ
Combination of Base Unit		RAS-20HNBCMQ RAS-20HNBCMQ RAS-20HNBCMQ RAS-20HNBCMQ	RAS-20HNBCMQ RAS-20HNBCMQ RAS-20HNBCMQ RAS-22HNBCMQ	RAS-20HNBCMQ RAS-20HNBCMQ RAS-20HNBCMQ RAS-24HNBCMQ
Power Supply		380/400/415V±10% 3N~ 50Hz		
Nominal Cooling Capacity	kW	224.0	229.5	236.0
Nominal Heating Capacity	kW	252.0	258.0	264.0
Cabinet Color (Munsell Code)		Natural White (ID8000-100036)		
Sound Pressure Level	dB(A)	71	71	71
Outer Dimensions Height x Width x Depth	mm	1,725 x 6,492 x 782	1,725 x 6,492 x 782	1,725 x 6,492 x 782
Net Weight	kg	390 + 390 + 390 + 390	390 + 390 + 390 + 415	390 + 390 + 390 + 416
Refrigerant		R410A		
Flow Control		Micro-Computer Control Expansion Valve		
Compressor		Hermetic (Scroll)		
Compressor Model		AA50PHDG + AA50PHDG + AA50PHDG + AA50PHDG + AA50PHDG + AA50PHDG + AA50PHDG + AA50PHDG	AA50PHDG + AA50PHDG + AA50PHDG + AA50PHDG + AA50PHDG + AA50PHDG + DC80PHDG + DC80PHDG	AA50PHDG + AA50PHDG + AA50PHDG + AA50PHDG + AA50PHDG + AA50PHDG + DC80PHDG + DC80PHDG
Compressor Quantity		8	8	8
Compressor Motor Output	kW	(6.5 x 2) x 4	(6.5 x 2) x 3 + 7.5 x 2	(6.5 x 2) x 3 + 8.6 x 2
Refrigeration Oil Type		FV68H		
Charge	L/Unit	33.6	33.6	33.6
Heat Exchanger		Multi-Pass Cross-Finned Tube		
Condenser Fan		Propeller Fan		
Fan Quantity		8	8	8
Air Flow Rate	m^3/min	329 x 4	329x 4	329 x 3 + 348 x 1
Fan Motor Output	kW	(0.48 x 2) x 4	(0.48 x 2) x 4	(0.48 x 2) x 3 + (0.56 x 2)
Liquid Line	mm (in.)	Ø22.2 (7/8)	Ø22.2 (7/8)	Ø22.2 (7/8)
Gas Line	mm (in.)	Ø50.8 (2)	Ø50.8 (2)	Ø50.8 (2)
Refrigerant Charge (before Shipment)	kg	45.2	45.2	46.5

Notes:

1. The cooling and heating performances are the values when combined with our test indoor units.

   Cooling Operation Conditions:
   Indoor Air Inlet Temperature: 27°C DB 19°C WB Outdoor Air Inlet Temperature: 35°C DB
   Piping Length: 7.5 Meters

   Heating Operation Conditions:
   Indoor Air Inlet Temperature: 20°C DB
   Outdoor Air Inlet Temperature: 7°C DB 6 °C WB
   Piping Lift: 0 Meter

2. The sound pressure is based on the following conditions.
   1 Meter from the unit service cover surface, and 1.36 Meters from floor level.
   The above data is based on the cooling mode. In case of heating mode, the sound pressure level increases by approximately 1~2 dB. The above data was measured in an semianechoic chamber so that reflected sound should be taken into consideration in the field.
3. Except for the test combination in the table (26~96HP), there is no other combination of the base unit.
4. The width of outer dimension, it is the value when each distance between the base outdoor units is test to 20mm.

Model		RAS-86HNBCMQ	RAS-88HNBCMQ	RAS-90HNBCMQ
Combination of Base Unit		RAS-20HNBCMQ RAS-20HNBCMQ RAS-22HNBCMQ RAS-24HNBCMQ	RAS-20HNBCMQ RAS-20HNBCMQ RAS-24HNBCMQ RAS-24HNBCMQ	RAS-20HNBCMQ RAS-22HNBCMQ RAS-24HNBCMQ RAS-24HNBCMQ
Power Supply		380/400/415V±10% 3N~50Hz		
Nominal Cooling Capacity	kW	241.5	248.0	253.5
Nominal Heating Capacity	kW	270.0	276.0	282.0
Cabinet Color (Munsell Code)		Natural White (ID8000-100036)		
Sound Pressure Level	dB(A)	72	72	72
Outer Dimensions Height x Width x Depth	mm	1,725 x 6,492 x 782	1,725 x 6,492 x 782	1,725 x 6,492 x 782
Net Weight	kg	390 + 390 + 415 + 416	390 + 390 + 416 + 416	390 + 415 + 416 + 416
Refrigerant		R410A		
Flow Control		Micro-Computer Control Expansion Valve		
Compressor		Hermetic (Scroll)		
Compressor Model		AA50PHDG + AA50PHDG + AA50PHDG + AA50PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG	AA50PHDG + AA50PHDG + AA50PHDG + AA50PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG	AA50PHDG + AA50PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG
Compressor Quantity		8	8	8
Compressor Motor Output	kW	(6.5 x 2) x 2 + 7.5 x 2 + 8.6 x 2	(6.5 x 2) x 2 + (8.6 x 2) x 2	6.5 x 2 + 7.5 x 2 + (8.6 x 2) x 2
Refrigeration Oil Type		FV68H		
Charge	L/Unit	33.6	33.6	33.6
Heat Exchanger		Multi-Pass Cross-Finned Tube		
Condenser Fan		Propeller Fan		
Fan Quantity		8	8	8
Air Flow Rate	m³/min	329 x 3 + 348	329 x 2 + 348 x 2	329 x 2 + 348 x 2
Fan Motor Output	kW	(0.48 x 2) x 3 + 0.56 x 2	(0.48 x 2) x 2 + (0.56 x 2) x 2	(0.48 x 2) x 2 + (0.56 x 2) x 2
Liquid Line	mm (in.)	Ø22.2 (7/8)	Ø22.2 (7/8)	Ø25.4 (1)
Gas Line	mm (in.)	Ø50.8 (2)	Ø50.8 (2)	Ø50.8 (2)
Refrigerant Charge (before Shipment)	kg	46.5	47.8	47.8

Notes:

1. The cooling and heating performances are the values when combined with our test indoor units.

   Cooling Operation Conditions:
   Indoor Air Inlet Temperature: 27°C DB 19.0°C WB
   Outdoor Air Inlet Temperature: 35°C DB
   Piping Length: 7.5 Meters

   Heating Operation Conditions:
   Indoor Air Inlet Temperature: 20°C DB
   Outdoor Air Inlet Temperature: 7°C DB 6°C WB
   Piping Lift: 0 Meter

2. The sound pressure is based on the following conditions.
   1 Meter from the unit service cover surface, and 1.36 Meters from floor level.
   The above data is based on the cooling mode. In case of heating mode, the sound pressure level increases by approximately 1~2 dB. The above data was measured in an semianechoic chamber so that reflected sound should be taken into consideration in the field.
3. Except for the test combination in the table (26~96HP), there is no other combination of the base unit.
4. The width of outer dimension, it is the value when each distance between the base outdoor units is test to 20mm.

New Products Information

Distributed to √ Areas:					
All Areas		Oceania		Europe	
China		India		NA	
ASEAN and others	√	ME	√	LA	√
Taiwan		Africa	√	Brazil	
NOTE (except Malaysia, ME(T3))					

HITACHI

TECHNICAL BULLETIN	Set Free ∑-HNCQ series VRF Air Conditioning System	DATE: Sep.'17 PAGE: 25/48

Model		RAS-92HNBCMQ	RAS-94HNBCMQ	RAS-96HNBCMQ
Combination of Base Unit		RAS-20HNBCMQ RAS-24HNBCMQ RAS-24HNBCMQ RAS-24HNBCMQ	RAS-22HNBCMQ RAS-24HNBCMQ RAS-24HNBCMQ RAS-24HNBCMQ	RAS-24HNBCMQ RAS-24HNBCMQ RAS-24HNBCMQ RAS-24HNBCMQ
Power Supply		380/400/415V±10% 3N~ 50Hz		
Nominal Cooling Capacity	kW	260.0	265.5	272.0
Nominal Heating Capacity	kW	288.0	294.0	300.0
Cabinet Color (Munsell Code)		Natural White (ID8000-100036)		
Sound Pressure Level	dB(A)	72	72	72
Outer Dimensions Height x Width x Depth	mm	1,725 x 6,492 x 782	1,725 x 6,492 x 782	1,725 x 6,492 x 782
Net Weight	kg	390 + 416 + 416 + 416	415 + 416 + 416 + 416	416 + 416 + 416 + 416
Refrigerant		R410A		
Flow Control		Micro-Computer Control Expansion Valve		
Compressor		Hermetic (Scroll)		
Compressor Model		AA50PHDG + AA50PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG	DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG	DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG + DC80PHDG
Compressor Quantity		8	8	8
Compressor Motor Output	kW	6.5 x 2 + (8.6 x 2) x 3	7.5 x 2 + (8.6 x 2) x 3	(8.6 x 2) x 4
Refrigeration Oil Type		FV68H		
Charge	L/Unit	33.6	33.6	33.6
Heat Exchanger		Multi-Pass Cross-Finned Tube		
Condenser Fan		Propeller Fan		
Fan Quantity		8	8	8
Air Flow Rate	m³/min	329 + 348 x 3	329 + 348 x 3	348 x 4
Fan Motor Output	kW	(0.48 x 2) + (0.56 x 2) x 3	(0.48 x 2) + (0.56 x 2) x 3	(0.56 x 2) x 4
Liquid Line	mm (in.)	Ø25.4 (1)	Ø25.4 (1)	Ø25.4 (1)
Gas Line	mm (in.)	Ø50.8 (2)	Ø50.8 (2)	Ø50.8 (2)
Refrigerant Charge (before Shipment)	kg	49.1	49.1	50.4

Notes:

1. The cooling and heating performances are the values when combined with our test indoor units.

   Cooling Operation Conditions:
   Indoor Air Inlet Temperature: 27°C DB 19°C WB Outdoor Air Inlet Temperature: 35°C DB
   Piping Length: 7.5 Meters

   Heating Operation Conditions:
   Indoor Air Inlet Temperature: 20°C DB
   Outdoor Air Inlet Temperature: 7°C DB 6 °C WB
   Piping Lift: 0 Meter

2. The sound pressure is based on the following conditions.
   1 Meter from the unit service cover surface, and 1.36Meters from floor level.
   The above data is based on the cooling mode. In case of heating mode, the sound pressure level increases by approximately 1~2 dB. The above data was measured in an semianechoic chamber so that reflected sound should be taken into consideration in the field.
3. Except for the test combination in the table (26~96HP), there is no other combination of the base unit.
4. The width of outer dimension, it is the value when each distance between the base outdoor units is test to 20mm.

6. Performance Specification

	HP	8	10	12	14	16	18	20	22	24	26	28	30	32
Cooling	Capacity (KW)	22.4	28.0	33.5	40.0	45.0	50.0	56.0	61.5	68.0	73.0	78.5	85.0	90.0
	Power Input (KW)	4.98	6.91	8.27	11.43	13.43	14.93	16.00	18.09	21.94	20.34	21.70	24.86	26.86
	EER	4.50	4.05	4.05	3.50	3.35	3.35	3.50	3.40	3.10	3.59	3.62	3.42	3.35
Heating	Capacity (KW)	25.0	31.5	37.5	45.0	50.0	56.0	63.0	69.0	75.0	81.5	87.5	95.0	100.0
	Power Input (KW)	5.10	6.85	8.52	11.25	13.16	15.14	16.15	18.65	23.58	20.01	21.68	24.41	26.31
	COP	4.90	4.60	4.40	4.00	3.80	3.70	3.90	3.70	3.18	4.07	4.04	3.89	3.80

	HP	34	36	38	40	42	44	46	48	50	52	54	56	58
Cooling	Capacity (KW)	95.0	101.0	106.5	113.0	118.0	124.0	129.5	136.0	140.0	146.0	151.5	158.0	163.0
	Power Input (KW)	28.36	29.43	31.52	35.37	36.87	37.94	40.03	43.88	41.79	42.86	44.95	48.80	50.30
	EER	3.35	3.43	3.38	3.19	3.20	3.27	3.24	3.10	3.35	3.41	3.37	3.24	3.24
Heating	Capacity (KW)	106.0	113.0	119.0	125.0	131.0	138.0	144.0	150.0	156.0	163.0	169.0	175.0	181.0
	Power Input (KW)	28.30	29.31	31.81	36.74	38.72	39.73	42.23	47.16	41.46	42.47	44.97	49.90	51.88
	COP	3.75	3.86	3.74	3.40	3.38	3.47	3.41	3.18	3.76	3.84	3.76	3.51	3.49

	HP	60	62	64	66	68	70	72	74	76	78	80	82	84
Cooling	Capacity (KW)	169.0	174.5	181.0	186.0	192.0	197.5	204.0	208.0	214.0	219.5	224.0	229.5	236.0
	Power Input (KW)	51.37	53.46	57.31	58.81	59.88	61.97	65.82	63.73	64.80	66.89	64.00	66.09	69.94
	EER	3.29	3.26	3.16	3.16	3.21	3.19	3.10	3.26	3.30	3.28	3.50	3.47	3.37
Heating	Capacity (KW)	188.0	194.0	200.0	206.0	213.0	219.0	225.0	231.0	238.0	244.0	252.0	258.0	264.0
	Power Input (KW)	52.89	55.39	60.32	62.30	63.31	65.81	70.74	65.04	66.05	68.55	64.60	67.10	72.03
	COP	3.55	3.50	3.32	3.31	3.36	3.33	3.18	3.55	3.60	3.56	3.90	3.85	3.67

HP		86	88	90	92	94	96
Cooling	Capacity (KW)	241.5	248.0	253.5	260	265.5	272.0
	Power Input (KW)	72.03	75.88	77.97	81.82	83.91	87.76
	EER	3.35	3.27	3.25	3.18	3.16	3.10
Heating	Capacity (KW)	270.0	276.0	282.0	288.0	294.0	300.0
	Power Input (KW)	74.53	79.46	81.96	86.89	89.39	94.32
	COP	3.62	3.47	3.44	3.31	3.29	3.18

Notes:

1. The cooling and heating performances are the values when combined with our test indoor units.

   Cooling Operation Conditions:
   Indoor Air Inlet Temperature: 27°C DB 19°C WB
   Outdoor Air Inlet Temperature: 35°C DB
   Piping Length: 7.5 Meters

   Heating Operation Conditions:
   Indoor Air Inlet Temperature: 20°C DB
   Outdoor Air Inlet Temperature: 7°C DB 6 °C WB
   Piping Lift: 0 Meter

2. The above values indicate the EER/COP per outdoor unit when it is combined with test indoor units.

7. Component Data

Model		RAS-8.0HNBCMQ	RAS-10HNBCMQ	RAS-12HNBCMQ	RAS-14HNBCMQ	RAS-16HNBCMQ
Heat Exchanger Type		Multi-Pass Cross Finned Tube				
Tube Material		Copper Tube				
Outer Diameter	Ømm	7.0	7.0	7.0	7.0	7.0
Rows		2	2	3	3	3
Number of Tube/ Coil		120	120	180	180	180
Maximum Operating Pressure	MPa	4.15	4.15	4.15	4.15	4.15
Fin Material		Aluminum				
Pitch	mm	1.7	1.7	1.7	1.7	1.7
Total Face Area	m²	2.36	2.36	2.36	3.12	3.12
Number of Coil/ Unit		1	1	1	2	2
Outdoor Fan		Large Diameter Fan (Propeller Fan)				
Number/Unit		1	1	1	2	2
Outer Diameter	mm	644	644	644	544 + 544	544 + 544
Revolution	rpm	780	804	924	1116 + 1116	1194 + 1194
Nominal Air Flow	m³/min	165	170	190	239	256
Outdoor Fan Motor		Drip-Proof Type Enclosure				
Starting Method		DC Motor				
Nominal Output	kW	260	280	420	330 + 330	390 + 390
Quantity		1	1	1	2	2
Insulation Class		E	E	E	E	E

Model		RAS-18HNBCMQ	RAS-20HNBCMQ	RAS-22HNBCMQ	RAS-24HNBCMQ	RAS-26HNBCMQ
Heat Exchanger Type		Multi-Pass Cross Finned Tube				
Tube Material		Copper Tube				
Outer Diameter	Ømm	7.0	7.0	7.0	7.0	7.0
Rows		3	3	3	3	2 + 3
Number of Tube/ Coil		180	180	180	180	120 + 180
Maximum Operating Pressure	MPa	4.15	4.15	4.15	4.15	4.15
Fin Material		Aluminum				
Pitch	mm	1.7	1.7	1.7	1.7	1.7
Total Face Area	m²	3.12	3.58	3.58	3.58	2.36 + 3.12
Number of Coil/ Unit		2	2	2	2	3
Outdoor Fan		Large Diameter Fan (Propeller Fan)				
Number/Unit		2	2	2	2	3
Outer Diameter	mm	544 + 544	644 + 644	644 + 644	644 + 644	644 + 544 + 544
Revolution	rpm	1194 + 1194	888 + 888	888 + 888	936 + 936	804 + 1194 + 1194
Nominal Air Flow	m³/min	256	329	329	348	170 + 256
Outdoor Fan Motor		Drip-Proof Type Enclosure				
Starting Method		DC Motor				
Nominal Output	kW	390 + 390	480 + 480	480 + 480	560 + 560	280+ 390 + 390
Quantity		2	2	2	2	3
Insulation Class		E	E	E	E	E + E

Model		RAS-28HNBCMQ	RAS-30HNBCMQ	RAS-32HNBCMQ	RAS-34HNBCMQ	RAS-36HNBCMQ
Heat Exchanger Type		Multi-Pass Cross Finned Tube				
Tube Material		Copper Tube				
Outer Diameter	Ømm	7.0	7.0	7.0	7.0	7.0
Rows		3 + 3	3 + 3	3 + 3	3 + 3	3 + 3
Number of Tube/ Coil		180 + 180	180 + 180	180 + 180	180 + 180	180 + 180
Maximum Operating Pressure	MPa	4.15	4.15	4.15	4.15	4.15
Fin Material		Aluminium				
Pitch	mm	1.7	1.7	1.7	1.7	1.7
Total Face Area	m²	2.36 + 3.12	3.12 + 3.12	3.12 + 3.12	3.12 + 3.12	3.12 + 3.58
Number of Coil/ Unit		3	4	4	4	4
Outdoor Fan		Large Diameter Fan (Propeller Fan)				
Number/Unit		3	4	4	4	4
Outer Diameter	mm	644 + 544 + 544	544 + 544 + 544 + 544	544 + 544 + 544 + 544	544 + 544 + 544 + 544	544 + 544 + 644 + 644
Revolution	rpm	924 + 1194 + 1194	1116 + 1116 + 1194 + 1194	1194 + 1194 + 1194 + 1194	1194 + 1194 + 1194 + 1194	1194 + 1194 + 888 + 888
Nominal Air Flow	m³/min	190 + 256	239+ 256	256 + 256	256 + 256	256 + 329
Outdoor Fan Motor		Drip-Proof Type Enclosure				
Starting Method		DC Motor				
Nominal Output	kW	420 + 390 + 390	330 + 330 + 390 + 390	390 + 390 + 390 + 390	390 + 390 + 390 + 390	390 + 390 + 480 + 480
Quantity		3	4	4	4	4
Insulation Class		E + E	E + E	E + E	E + E	E + E

Model		RAS-38HNBCMQ	RAS-40HNBCMQ	RAS-42HNBCMQ	RAS-44HNBCMQ	RAS-46HNBCMQ
Heat Exchanger Type		Multi-Pass Cross Finned Tube				
Tube Material		Copper Tube				
Outer Diameter	Ømm	7.0	7.0	7.0	7.0	7.0
Rows		3 + 3	3 + 3	3 + 3	3 + 3	3 + 3
Number of Tube/ Coil		180 + 180	180 + 180	180 + 180	180 + 180	180 + 180
Maximum Operating Pressure	MPa	4.15	4.15	4.15	4.15	4.15
Fin Material		Aluminium				
Pitch	mm	1.7	1.7	1.7	1.7	1.7
Total Face Area	m²	3.12 + 3.58	3.12+ 3.58	3.12 + 3.58	3.58 + 3.58	3.58 + 3.58
Number of Coil/ Unit		4	4	4	4	4
Outdoor Fan		Large Diameter Fan (Propeller Fan)				
Number/Unit		4	4	4	4	4
Outer Diameter	mm	544 + 544 + 644 + 644	544 + 544 + 644 + 644	544 + 544 + 644 + 644	644 + 644 + 644 + 644	644 + 644 + 644 + 644
Revolution	rpm	1194 + 1194 + 888 + 888	1194 + 1194 + 936 + 936	1194 + 1194 + 936 + 936	888 + 888 + 936 + 936	888 + 888 + 936 + 936
Nominal Air Flow	m³/min	256 + 329	256+348	256+348	329 + 348	329 + 348
Outdoor Fan Motor		Drip-Proof Type Enclosure				
Starting Method		DC Motor				
Nominal Output	kW	390+390 + 480 + 480	390+390 + 560+560	390+390 + 560+560	480 + 480 + 560+560	480 + 480 + 560 + 560
Quantity		4	4	4	4	4
Insulation Class		E + E	E + E	E + E	E + E	E + E

Model		RAS-48HNBCMQ	RAS-50HNBCMQ	RAS-52HNBCMQ	RAS-54HNBCMQ	RAS-56HNBCMQ
Heat Exchanger Type		Multi-Pass Cross Finned Tube				
Tube Material		Copper Tube				
Outer Diameter	Ømm	7.0	7.0	7.0	7.0	7.0
Rows		3 + 3	3 + 3 + 3	3 + 3 + 3	3 + 3 + 3	3 + 3+3
Number of Tube/ Coil		180 + 180	180 + 180 + 180	180 + 180 + 180	180 + 180 + 180	180 + 180+ 180
Maximum Operating Pressure	MPa	4.15	4.15	4.15	4.15	4.15
Fin Material		Aluminum				
Pitch	mm	1.7	1.7	1.7	1.7	1.7
Total Face Area	m²	3.58 + 3.58	3.12 + 3.12 + 3.12	3.12 + 3.12 + 3.58	3.12 + 3.12 + 3.58	3.12 + 3.12 + 3.58
Number of Coil/ Unit		4	6	6	6	6
Outdoor Fan		Large Diameter Fan (Propeller Fan)				
Number/Unit		4	6	6	6	6
Outer Diameter	mm	644 + 644 + 644 + 644	544 + 544 + 544 + 544 + 544 + 544	544 + 544 + 544 + 544 + 644 + 644	544 + 544 + 544 + 544 + 644 + 644	544 + 544 + 544 + 544 + 644 + 644
Revolution	rpm	936 + 936 + 936 + 936	1194 + 1194 + 1194 + 1194 + 1194 + 1194	1194 + 1194 + 1194 + 1194 + 888 + 888	1194 + 1194 + 1194 + 1194 + 888 + 888	1194 + 1194 + 1194 + 1194 + 936 + 936
Nominal Air Flow	m³/min	348 + 348	256 + 256 + 256	256 + 256 + 329	256 + 256 + 329	256 + 256 + 348
Outdoor Fan Motor		Drip-Proof Type Enclosure				
Starting Method		DC Motor				
Nominal Output	kW	560 + 560 + 560 + 560	390 + 390 + 390 + 390 + 390 + 390	390 + 390 + 390 + 390 + 480 + 480	390 + 390 + 390 + 390 + 480 + 480	390 + 390 + 390 + 390 + 560 + 560
Quantity		4	6	6	6	6
Insulation Class		E + E	E + E + E	E + E + E	E + E + E	E + E + E

Model		RAS-58HNBCMQ	RAS-60HNBCMQ	RAS-62HNBCMQ	RAS-64HNBCMQ	RAS-66HNBCMQ
Heat Exchanger Type		Multi-Pass Cross Finned Tube				
Tube Material		Copper Tube				
Outer Diameter	Ømm	7.0	7.0	7.0	7.0	7.0
Rows		3 + 3 + 3	3 + 3 + 3	3 + 3 + 3	3 + 3 + 3	3 + 3 + 3
Number of Tube/ Coil		180 + 180 + 180	180 + 180 + 180	180 + 180 + 180	180 + 180 + 180	180 + 180 + 180
Maximum Operating Pressure	MPa	4.15	4.15	4.15	4.15	4.15
Fin Material		Aluminum				
Pitch	mm	1.7	1.7	1.7	1.7	1.7
Total Face Area	m²	3.12 + 3.12 + 3.58	3.12 + 3.58 + 3.58	3.12 + 3.58 + 3.58	3.12 + 3.58 + 3.58	3.12 + 3.58 + 3.58
Number of Coil/ Unit		6	6	6	6	6
Outdoor Fan		Large Diameter Fan (Propeller Fan)				
Number/Unit		6	6	6	6	6
Outer Diameter	mm	544 + 544 + 544 + 544 + 644 + 644	544 + 544 + 644 + 644 + 644 + 644	544 + 544 + 644 + 644 + 644 + 644	544 + 544 + 644 + 644 + 644 + 644	544 + 544 + 644 + 644 + 644 + 644
Revolution	rpm	1194 + 1194 + 1194 + 1194 + 936 + 936	1194 + 1194 + 888 + 888 + 936 + 936	1194 + 1194 + 888 + 888 + 936 + 936	1194 + 1194 + 936 + 936 + 936 + 936	1194 + 1194 + 936 + 936 + 936 + 936
Nominal Air Flow	m³/min	256 + 256 + 348	256 + 329 + 348	256 + 329 + 348	256 + 348 + 348	256 + 348 + 348
Outdoor Fan Motor		Drip-Proof Type Enclosure				
Starting Method		DC Motor				
Nominal Output	W	390 + 390 + 390 + 390 + 560 + 560	390 + 390 + 480 + 480 + 560 + 560	390 + 390 + 480 + 480 + 560 + 560	390 + 390 + 560 + 560 + 560 + 560	390 + 390 + 560 + 560 + 560 + 560
Quantity		6	6	6	6	6
Insulation Class		E + E + E	E + E + E	E + E + E	E + E + E	E + E + E

Model		RAS-68HNBCMQ	RAS-70HNBCMQ	RAS-72HNBCMQ	RAS-74HNBCMQ	RAS-76HNBCMQ
Heat Exchanger Type		Multi-Pass Cross Finned Tube				
Tube Material		Copper Tube				
Outer Diameter	Ømm	7.0	7.0	7.0	7.0	7.0
Rows		3 + 3 + 3	3 + 3 + 3	3 + 3 + 3	3 + 3 + 3 + 3	3 + 3 + 3 + 3
Number of Tube/ Coil		180 + 180 + 180	180 + 180 + 180	180 + 180 + 180	180 + 180 + 180 + 180	180 + 180 + 180 + 180
Maximum Operating Pressure	MPa	4.15	4.15	4.15	4.15	4.15
Fin Material		Aluminum				
Pitch	mm	1.7	1.7	1.7	1.7	1.7
Total Face Area	m²	3.58 + 3.58 + 3.58	3.58 + 3.58 + 3.58	3.58 + 3.58 + 3.58	3.12 + 3.12 + 3.12 + 3.58	3.12 + 3.12 + 3.58 + 3.58
Number of Coil/ Unit		6	6	6	8	8
Outdoor Fan		Large Diameter Fan (Propeller Fan)				
Number/Unit		6	6	6	8	8
Outer Diameter	mm	644 + 644 + 644 + 644 + 644 + 644	644 + 644 + 644 + 644 + 644 + 644	644 + 644 + 644 + 644 + 644 + 644	544 + 544 + 544 + 544 + 544 + 544 + 644 + 644	544 + 544 + 544 + 544 + 644 + 644 + 644 + 644
Revolution	rpm	888 + 888 + 936 + 936 + 936 + 936	888 + 888 + 936 + 936 + 936 + 936	936 + 936 + 936 + 936 + 936 + 936	1194 + 1194 + 1194 + 1194 + 1194 + 1194 + 936 + 936	1194 + 1194 + 1194 + 1194 + 888 + 888 + 936 + 936
Nominal Air Flow	m³/min	329 + 348 + 348	329 + 348 + 348	348 + 348 + 348	256 + 256 + 256 + 348	256 + 256 + 329 + 348
Outdoor Fan Motor		Drip-Proof Type Enclosure				
Starting Method		DC Motor				
Nominal Output	kW	480 + 480 + 560 + 560 + 560 + 560	480 + 480 + 560 + 560 + 560 + 560	560 + 560 + 560 + 560 + 560 + 560	390 + 390 + 390 + 390 + 390 + 390 + 560 + 560	390 + 390 + 390 + 390 + 480 + 480 + 560 + 560
Quantity		6	6	6	8	8
Insulation Class		E + E + E	E + E + E	E + E + E	E + E + E + E	E + E + E + E

Model		RAS-78HNBCMQ	RAS-80HNBCMQ	RAS-82HNBCMQ	RAS-84HNBCMQ	RAS-86HNBCMQ
Heat Exchanger Type		Multi-Pass Cross Finned Tube				
Tube Material		Copper Tube				
Outer Diameter	Ømm	7.0	7.0	7.0	7.0	7.0
Rows		3 + 3 + 3 + 3	3 + 3 + 3 + 3	3 + 3 + 3 + 3	3 + 3 + 3 + 3	3 + 3 + 3 + 3
Number of Tube/ Coil		180 + 180 + 180 + 180	180 + 180 + 180 + 180	180 + 180 + 180 + 180	180 + 180 + 180 + 180	180 + 180 + 180 + 180
Maximum Operating Pressure	MPa	4.15	4.15	4.15	4.15	4.15
Fin Material		Aluminum				
Pitch	mm	1.7	1.7	1.7	1.7	1.7
Total Face Area	m²	3.12 + 3.12 + 3.58 + 3.58	3.58 + 3.58 + 3.58 + 3.58	3.58 + 3.58 + 3.58 + 3.58	3.58 + 3.58 + 3.58 + 3.58	3.58 + 3.58 + 3.58 + 3.58
Number of Coil/ Unit		8	8	8	8	8
Outdoor Fan		Large Diameter Fan (Propeller Fan)				
Number/Unit		8	8	8	8	8
Outer Diameter	mm	544 + 544 + 544 + 544 + 644 + 644 + 644 + 644	644 + 644 + 644 + 644 + 644 + 644 + 644 + 644	644 + 644 + 644 + 644 + 644 + 644 + 644 + 644	644 + 644 + 644 + 644 + 644 + 644 + 644 + 644	644 + 644 + 644 + 644 + 644 + 644 + 644 + 644
Revolution	rpm	1194 + 1194 + 1194 + 1194 + 888 + 888 + 936 + 936	888 + 888 + 888 + 888 + 888 + 888 + 888 + 888	888 + 888 + 888 + 888 + 888 + 888 + 888 + 888	888 + 888 + 888 + 888 + 888 + 888 + 936 + 936	888 + 888 + 888 + 888 + 888 + 888 + 936 + 936
Nominal Air Flow	m³/min	256 + 256 + 329 + 348	329 + 329 + 329 + 329	329 + 329 + 329 + 329	329 + 329 + 329 + 348	329 + 329 + 329 + 348
Outdoor Fan Motor		Drip-Proof Type Enclosure				
Starting Method		DC Motor				
Nominal Output	kW	390 + 390 + 390 + 390 + 480 + 480 + 560 + 560	480 + 480 + 480 + 480 + 480 + 480 + 480 + 480	480 + 480 + 480 + 480 + 480 + 480 + 480 + 480	480 + 480 + 480 + 480 + 480 + 480 + 560 + 560	480 + 480 + 480 + 480 + 480 + 480 + 560 + 560
Quantity		8	8	8	8	8
Insulation Class		E + E + E + E	E + E + E + E	E + E + E + E	E + E + E + E	E + E + E + E

Model		RAS-88HNBCMQ	RAS-90HNBCMQ	RAS-92HNBCMQ	RAS-94HNBCMQ	RAS-96HNBCMQ
Heat Exchanger Type		Multi-Pass Cross Finned Tube				
Tube Material		Copper Tube				
Outer Diameter	Ømm	7.0	7.0	7.0	7.0	7.0
Rows		3 + 3 + 3 + 3	3 + 3 + 3 + 3	3 + 3 + 3 + 3	3 + 3 + 3 + 3	3 + 3 + 3 + 3
Number of Tube/ Coil		180 + 180 + 180 + 180	180 + 180 + 180 + 180	180 + 180 + 180 + 180	180 + 180 + 180 + 180	180 + 180 + 180 + 180
Maximum Operating Pressure	MPa	4.15	4.15	4.15	4.15	4.15
Fin Material		Aluminum				
Pitch	mm	1.7	1.7	1.7	1.7	1.7
Total Face Area	m²	3.58 + 3.58 + 3.58 + 3.58	3.58 + 3.58 + 3.58 + 3.58	3.58 + 3.58 + 3.58 + 3.58	3.58 + 3.58 + 3.58 + 3.58	3.58 + 3.58 + 3.58 + 3.58
Number of Coil/ Unit		8	8	8	8	8
Outdoor Fan		Large Diameter Fan (Propeller Fan)				
Number/Unit		8	8	8	8	8
Outer Diameter	mm	644 + 644 + 644 + 644 + 644 + 644 + 644 + 644	644 + 644 + 644 + 644 + 644 + 644 + 644 + 644	644 + 644 + 644 + 644 + 644 + 644 + 644 + 644	644 + 644 + 644 + 644 + 644 + 644 + 644 + 644	644 + 644 + 644 + 644 + 644 + 644 + 644 + 644
Revolution	rpm	888 + 888 + 888 + 888 + 936 + 936 + 936 + 936	888 + 888 + 888 + 888 + 936 + 936 + 936 + 936	888 + 888 + 936 + 936 + 936 + 936 + 936 + 936	888 + 888 + 936 + 936 + 936 + 936 + 936 + 936	936 + 936 + 936 + 936 + 936 + 936 + 936 + 936
Nominal Air Flow	m³/min	329 + 329 + 348 + 348	329 + 329 + 348 + 348	329 + 348 + 348 + 348	329 + 348 + 348 + 348	348 + 348 + 348 + 348
Outdoor Fan Motor		Drip-Proof Type Enclosure				
Starting Method		DC Motor				
Nominal Output	kW	480 + 480 + 480 + 480 + 560 + 560 + 560 + 560	480 + 480 + 480 + 480 + 560 + 560 + 560 + 560	480 + 480 + 560 + 560 + 560 + 560 + 560 + 560	480 + 480 + 560 + 560 + 560 + 560 + 560 + 560	560 + 560 + 560 + 560 + 560 + 560 + 560 + 560
Quantity		8	8	8	8	8
Insulation Class		E + E + E + E	E + E + E + E	E + E + E + E	E + E + E + E	E + E + E + E

8. Electrical Data

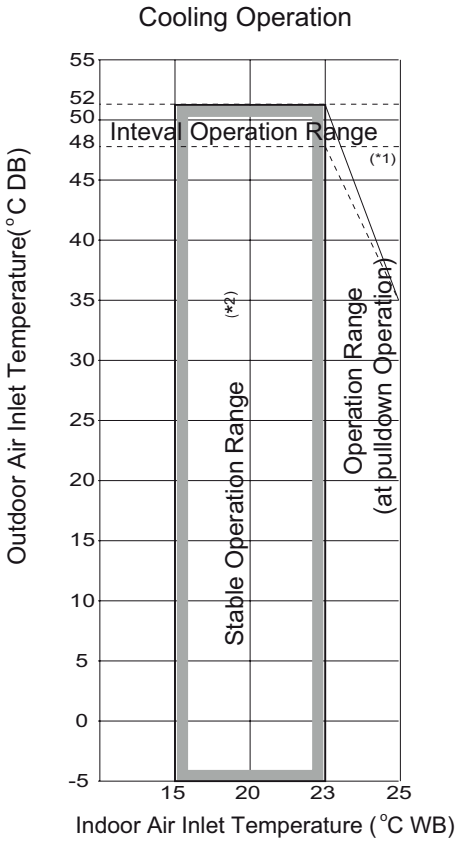
Model	Unit Main Power			Applicable Voltage		Cooling Operation		Heating Operation		Maximum Current(A)
	VOL	PH	HZ	Maxi-mum	Mini-mum	RNC	IPT	RNC	IPT	
RAS-8.0HNBCMQ	380/ 400/ 415V	3	50	456	342	8.5	4.98	8.7	5.10	17.0
RAS-10HNBCMQ						11.8	6.91	11.7	6.85	23.0
RAS-12HNBCMQ						14.0	8.27	14.5	8.52	27.0
RAS-14HNBCMQ						18.9	11.43	18.5	11.25	31.5
RAS-16HNBCMQ						22.1	13.43	21.6	13.16	35.5
RAS-18HNBCMQ						25.2	14.93	25.5	15.14	43.5
RAS-20HNBCMQ						26.9	16.00	27.4	16.15	45.0
RAS-22HNBCMQ						30.1	18.09	31.0	18.65	52.0
RAS-24HNBCMQ						36.5	21.94	39.3	23.58	61.5

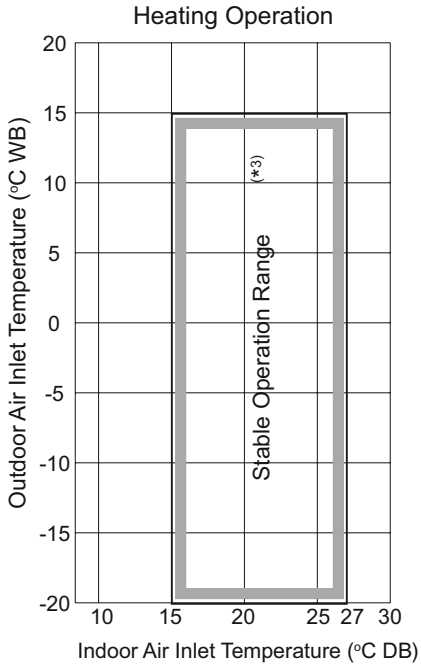
VOL: Rated Unit Power Supply Voltage (Plated)(V)	RNC: Running Current (A)
HZ: Frequency (Hz)	PH: Phase
STC: Starting Current (A)	

Notes:

1. The above compressor data is based on 100% capacity combination of the indoor units at rated operating frequency.
2. The above performance data is based on 7.5m equivalent piping length and 0m piping lift.
3. These data are based on the same conditions as the nominal heating and cooling capacities.
4. The compressor is started by an inverter, resulting in extremely low starting current.

9. Operating Temperature Range





	Cooling Operation	Heating Operation
Indoor Air Inlet Temperature	15 to 23 °C WB	15 to 27°C DB
Outdoor Air Inlet Temperature	-5 to 52°C DB (*1)	-20 to 15°C WB

Notes:

*1. (1) Cooling operation at maximum 52°C DB (48°C~52°C interval operation) should be available only if the outdoor air inlet temperature increase temporarily according to the installation condition.

(2) If install the units to the place where exceed ambient temperature 48°C continuously, the combination ratio must be lower 130%, operation indoor units capacity must lower than outdoor unit capacity .

(3) The appropriate amount (100%) of refrigerant must be charged. Excessive charging of refrigerant is forbidden and may cause alarm.

(4) It must be avoided to install the units where affected by direct sunlight reflection and short circuit. There may be the possibility to activate protection control and alarm system if install the units to inappropriate place. Also the life time of the products and parts must be considerably shortened.

(5) Periodic maintenance (1/certain month) must be applied to the heat exchanger fin to avoid adhesion of dirt and clogging of sand to the outdoor unit heat exchanger.

(6) Refer to the technical catalogue for the detail.

*2. There might be the possibility of thermo-OFF when cooling load is low and outdoor air inlet temperature is 10°C DB or lower to prevent frost formation on indoor unit heat exchanger.

*3. There might be the possibility of thermo-OFF when heating load is low and outdoor air inlet temperature is high (higher than 15°C DB) to prevent the outdoor unit. The outdoor unit operation stops when outdoor air inlet temperature exceeds 26°C DB.

4. Operational range is different when connect to All Fresh Air Unit, Econofresh, and other special indoor units. Refer to the technical catalogue of indoor unit for the details.

10. Indoor Unit Connection

The number of connectable indoor units with Σ-HNCQ series outdoor unit is as follows.
Comply with the condition as follows during installation.

Maximum Number of Connectable Indoor Units and Range of Combination Capacity

Outdoor Unit Capacity (HP)	8	10	12	14	16, 18	20	22	24	26	28	30	32	34	36	38 - 96
Range of Combination Capacity	50 to 130%														
Connectable Indoor Units Q'ty	13	16	19	23	26	33	36	40	43	47	50	53	56	59	64
Recommended Connectable Indoor Units Q'ty	8	10		16		18	20	26		32					38

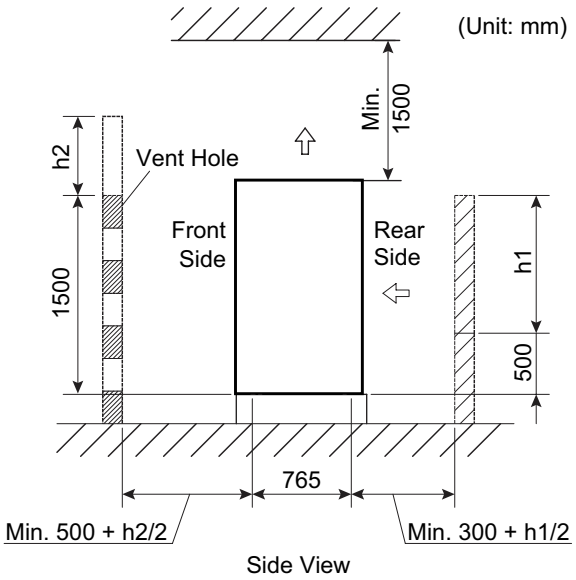
Notes:

1. The connectable indoor unit capacity ratio can be calculated as follows:
   Connectable Indoor Unit Capacity Ratio = Total Indoor Unit Capacity / Total Outdoor Unit Capacity
2. For the system under which all the indoor units are supposed to operate simultaneously, the total indoor unit capacity should be less than outdoor unit capacity. Otherwise, it may cause a decrease of operating performance and operating limit in overload operation.
3. For the system under which all the indoor units are not supposed to operate simultaneously, the total indoor unit capacity is available up to 130% against the outdoor unit capacity.
4. When operating the outdoor unit in cold areas with temperatures of -10°C, or under the high heating load conditions, the total indoor unit capacity should be less than 100% against the outdoor unit capacity and the total piping length should be less than 300m.
5. The air flow volume for indoor units of 0.8 and 1.0HP is set higher than that for indoor units of 1.5HP or more. Make sure to select appropriate indoor units when installing indoor units where cold draft may occur during heating operation. If installing indoor units in such places, refer to the recommended number of connectable indoor units.
6. For connecting Tempclean Indoor Unit and Outdoor Air Processing Air Conditioner, the number of the indoor units should be within recommended connectable indoor units number.
7. If combination capacity of indoor units exceed 100% of outdoor unit capacity, there might be the possibility of insufficient capacity of 130% .

The load capacity per hour or the possibility of all indoor units simultaneous operation is unknown at the design stage, the total capacity of combined indoor units should be not over 100% against the outdoor unit capacity.

11. Service Space around Outdoor Unit for Operation and Maintenance

Make the service space when outdoor unit is installed as follows.



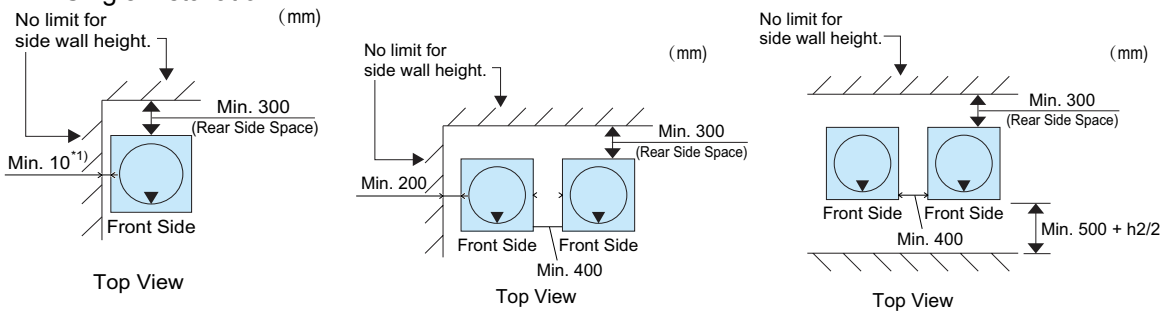
Side View

- In the case of no walls at the front side and the rear side, the service space is required as follows.
  * Front Side: Min. 500mm
  * Rear Side: Min. 300mm
  * Right and Left Sides: Min 10mm (In the case of the field-supplied snow protection food or the air outlet duct is adopted to the unit, the spaces of min. 50mm are required.)
- If the wall on the front side is over 1,500mm high, the space of (500 + h2/2) mm for the front side is required.
- If the wall on the rear side is over 500mm high, the space of (300 + h1/2) mm for the rear side is required.
- When the units are surrounded by walls on more than 2 sides, the spaces as the above figure is required.
- For walls on more than 2 sides, secure the service space as shown in the following figures.
- If the space between the unit and an obstacle above the unit is less than 1,500mm or the space above the unit is closed, set up the duct at the air outlet side in order to prevent short circuit.
- When there are obstacles above the unit, the four (front, rear, right and left) sides of the unit shall be open in principle.

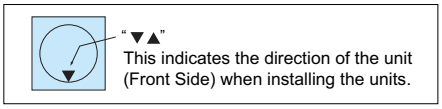
(1) When both sides have walls:

In case that the units are installed adjacent to tall buildings and there are no walls on 2 sides, the minimum rear side space must be 300mm.

- Single Installation

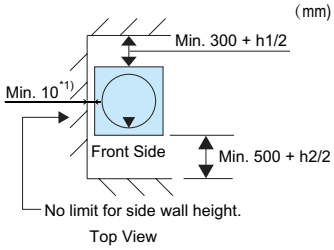


*1): In the case that the field-supplied snow protection hood or the air outlet duct is adopted, the space of minimum 50mm is required.



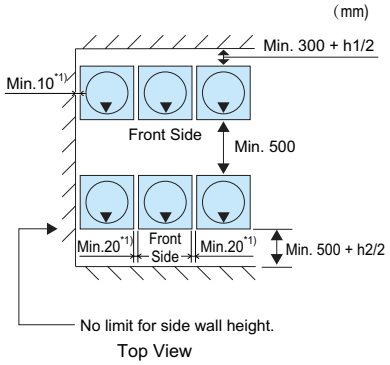
(2) When the walls are on 3 Sides

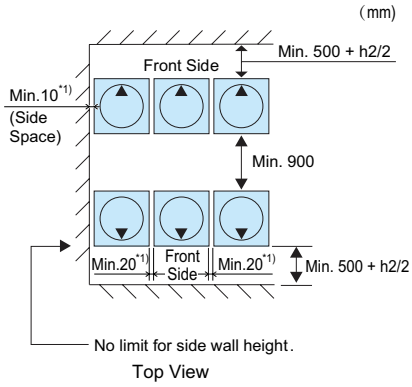
- Single Installation



- Multiple / Serial Installation

Installation in the Same Direction

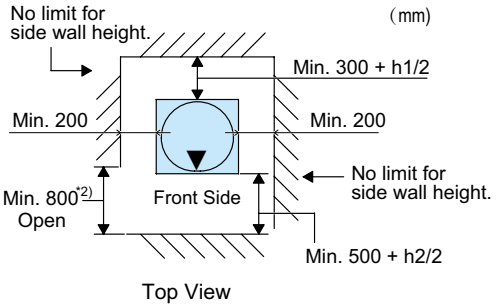




*1): In the case that the field-supplied snow protection hood or the air outlet duct is adopted, the space of minimum 50mm is required.

(3) When surrounded by walls at 4 Sides

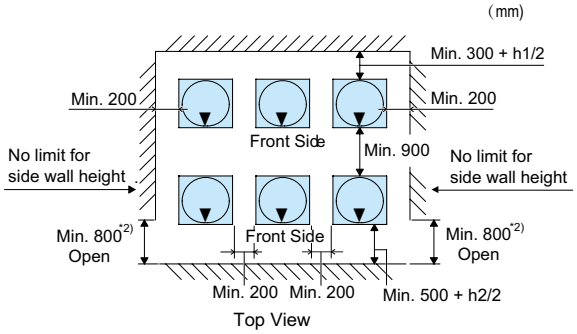
- Single Installation



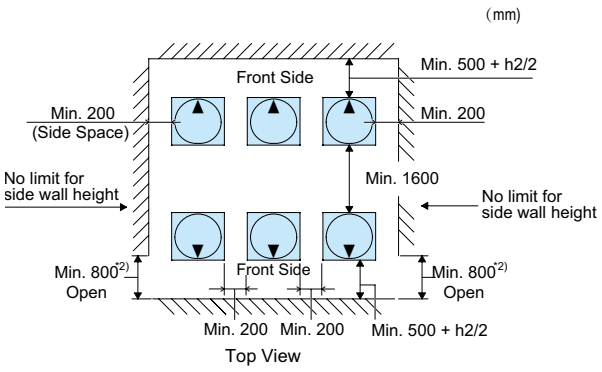
Top View

- Multiple / Serial Installation

  Installation in the Same Direction



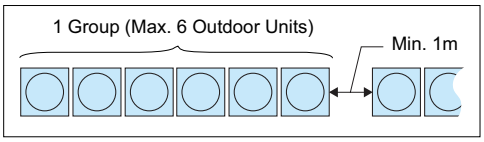
Top View



Top View

Notes:

1. Partly open a wall if the unit is surrounded by walls in four directions.
2. The figure dimensions indicate sufficient spaces around outdoor units for operation and maintenance at typical installing conditions as follows. [Operation Mode: Cooling Operation, Ambient Temp.: 35°C] In case that the outdoor unit ambient temperature is higher and also the short circuit is likely to occur compared to the installation condition, find an appropriate dimension by calculating air flow current.
3. For the multiple installation, 1 group shall be consist of 6 outdoor units (max.).
   Keep 1-meter intervals between each unit group.



12. Caution for Refrigerant Leakage

The room where the packaged air conditioner is installed, the refrigerant gas should be controlled not to exceed the limit concentration in case of the refrigerant leakage.

The refrigerant R410A of incombustible and non-toxic is adopted with this unit. If by any chance the refrigerant gas is leaked and filled in the room, the possibility of suffocation may occur.

Especially for the RAS-HNBCMQ series, the outdoor unit is multi-type air conditioner by connecting multiple indoor units with long distance piping. Accordingly, the refrigerant charging quantity is larger than general individual unit. Before the indoor unit installation, confirm that the room can keep the lower gas concentration than the limit value in order to take the emergency countermeasures even if the gas leakage is occurred.

◆ Calculation of Refrigerant Concentration

(1) Calculate the total quantity of refrigerant R (kg) charged in the system connecting all the indoor units of rooms to be air-conditioned.

(2) Calculate the room Volume V (m^3) of each room.

(3) Calculate the refrigerant concentration C (kg/m^3) of the room according to the following equation.

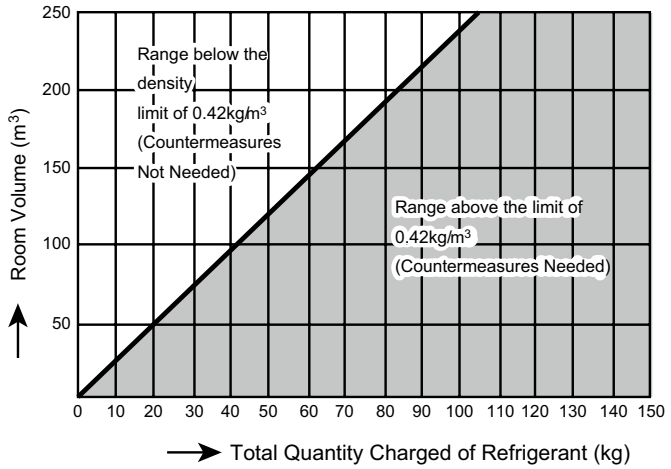
$$\frac{\text{R: Total Quantity of Charged Refrigerant (kg)}}{\text{V: Room Volume (m³)}} = \text{C: Refrigerant Concentration}$$

≤ 0.42 (kg/ m³) for R410A

⚠WARNING

The refrigerant R410A is non-toxic and inflammable in its original state.

However, in consideration of a state where the refrigerant leaks into the room, measures against refrigerant leaks must be taken in small rooms where the tolerable level could be exceeded. Take countermeasures by installing ventilation devices, etc.



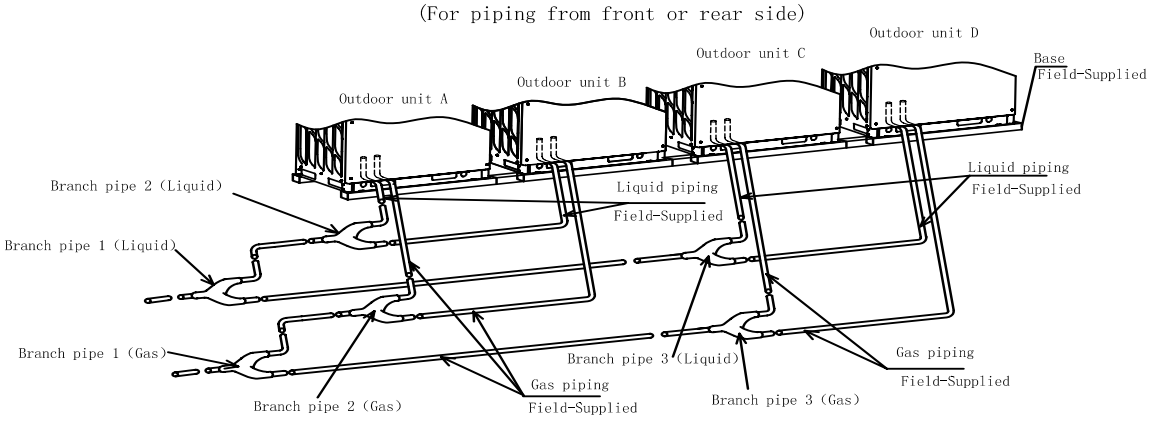
13. Optional Parts

1. Piping Connection Kit

Item	Outdoor Combination		Branch Pipe Type	Remarks
	Outdoor Unit Capacity	Number of Outdoor Units		
Piping Connection Kit	26HP - 34HP	2	M-30SNQ#E	
	36HP - 48HP	2	M-46SNQ#E	
	50HP - 54HP	3	M-46SNQ#E + M-30SNQ#E	
	56HP - 72HP	3	M-68SNQ#E + M-30SNQ#E	
	74HP - 96HP	4	M-68SNQ#E + M-30SNQ#E + M-30SNQ#E	

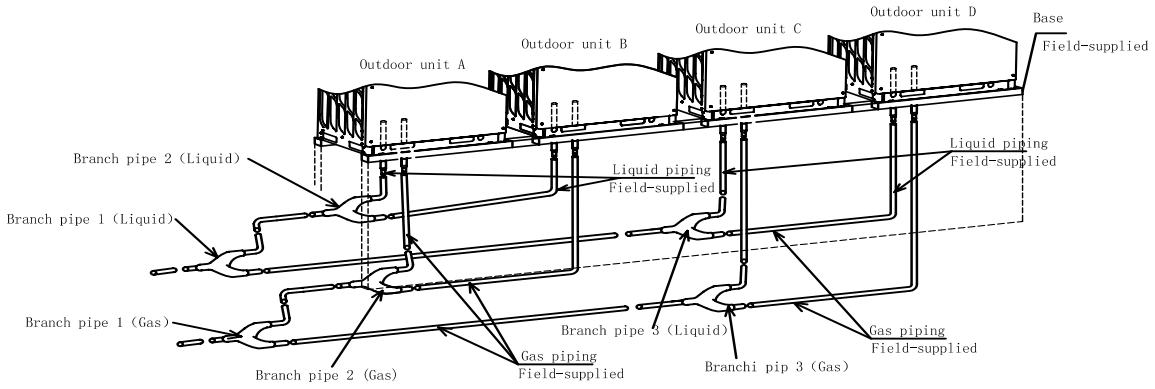
Construction Example : for 4 Units Combination

(For piping from front or rear side)



Note: Branch piping should be installed with the ground level (horizontal tilt angle≤15 degrees)

(For piping from lower side)



Note: Branch piping should be installed with the ground level (horizontal tilt angle≤15 degrees)

Notes:

1. Perform the piping connection between outdoor units according to this figure.
2. Refer to Installation and Maintenance Manual of the Outdoor unit for the dimension and distance between outdoor units and between connection kits.

2. Multi-Kit

Multi-Kit for Heat Pump System

1) The first Branch pipe selection

Max piping length≥ 100m		Max piping length< 100m	
Outdoor Unit Capacity	Multi-kit Type	Outdoor Unit Capacity	Multi-kit Type
8HP	E-162SN#E	8-10HP	E-102SN#E
10HP	E-162SN#E	12-16HP	E-162SN#E
12-14HP	E-242SN#E	18-24HP	E-242SN#E
16-24HP	E-302SN#E	26-54HP	E-302SN#E
26-54HP	E-462SN#E	56-72HP	E-462SN#E
56-96HP	E-682SN#E	74-96HP	E-682SN#E

Piping connection from the first branch pipe to the indoor unit:

Indoor Unit Machine capacity (kW)	Gas Pipe (mm)	Liquid Pipe (mm)	Multi-kit Type
Q ≤ 15.9	15.88	9.52	E-102SN#E
16 ≤ Q < 25	19.05	9.52	
25 ≤ Q < 33.5	22.2	9.52	
33.5 ≤ Q < 45	25.4	12.7	E-162SN#E
45 ≤ Q < 50	28.58	12.7	
50 ≤ Q < 72.9	28.58	15.88	E-242SN#E
72.9 ≤ Q < 100.8	31.75	19.05	E-302SN#E
100.8 ≤ Q < 156.8	38.1	19.05	
156.8 ≤ Q < 190.4	44.45	19.05	E-462SN#E
190.4 ≤ Q < 207.2	44.45	22.2	
207.2 ≤ Q < 252	50.8	22.2	E-682SN#E
252 ≤ Q < 274.4	50.8	25.4	
274.4 ≤ Q < 349.5	50.8	28.58	

2. Drain Pipe Joint

The drain boss is for the drain pipe connection in order to use outdoor unit bottom base as a drain pan.

- Model Name

Name	Model
Drain pipe joint	DC-01Q

- Drain pipe connection components:

Model	Part Name	Qty	Usage
DC-01Q	Drain pipe joint	1	Connect the drain connection
	Drain pipe cap	1	Blocking the water pipe mouth
	Rubber cap	4	Sealed drain connection anddrain cap

Drain Water Treatment

Drain water is discharged during heating and defrosting operation. (Rain water is also discharged.) Pay attention to the following.

(1) Choose a place where well drainage is available or provide a drain ditch.

(2) Do not install the unit over the walkways. Condensation water may fall on people. In case of installing the unit in such a place, provide the additional drain pan.

(3) Do not use drain boss in the cold area. The drain water in the drain pipe may be frozen and then the drain pipe may crack.

Appendix:

Connectivity list of indoor units:

Indoor Unit Type	Model	Source	Capacity
Compact Ducted (AC) (New)	RPIZ-*HNGUAQ	HAPQ	1.8-7.1kW
	RPIZ-*HNGTAQ		
Mid-ESP Ducted (AC) (New)	RPIM-*HNGUAQ	HAPQ	2.2-16kW
	RPIM-*HNGTAQ		
High-ESP Ducted (AC) (New)	RPIH-*HNGUAQ	HAPQ	2.2-28kW
	RPIH-*HNGTAQ		
	RPIH-*HNGUEQ		
Round-way Cassette (New)	RCIR-*HNGTAQ	HAPQ	2.8-16kW
2-way Cassette	RCD-*FSN3	HAPQ	2.2-16kW
Wall Mounted (Small)	RPK-*FSNQS	HAPQ	2.2-6.3kW
Floor Concealed	RPFI-*FSNQ	HAPQ	2.8-7.1kW
Fresh Air Ducted	RPI-*KFNQ	HAPQ	1080-6000m³/h
	RPI-*KFNQL(F)	HAPQ	
	RPI-*KFNQH(F)	HAPQ	

Notes:

1. Please refer to specific indoor unit technical catalogue for detailed information.

HITACHI