DAIKIN

technical data

VRV II Systems

Selection procedure

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1 Selection procedure VRVII system based on cooling load

1-1 Indoor unit selection

Enter indoor unit capacity tables at given indoor and outdoor temperature.

Select the unit that the capacity is the nearest to and higher than the given load.

NOTE

1 Individual indoor unit capacity is subject to change by the combination. Actual capacity has to be calculated according to the combination by using outdoor units capacity table.

1-2 Outdoor unit selection

Allowable combinations are indicated in indoor unit combination total capacity index table.

In general, oudoor units can be selected as follows though the location of the unit, zoning and usage of the rooms should be considered.

The indoor and outdoor unit combination is determined that the sum of indoor unit capacity index is nearest to and smaller than the capacity index at 100 % combination ratio of each outdoor unit. Up to 16 indoor units can be connected to one outdoor unit. It is recommended to choose a larger outdoor unit if the installation space is large enough.

If the combination ratio is higher than 100 %, the indoor unit selection will have to be reviewed by using actual capacity of each indoor unit.

Indoor unit combination total capacity index table

Outdoor unit	Indoor unit combination ratio								
	130 %	120 %	110 %	100 %	90 %	80 %	70%	60 %	50 %
RX(Y)Q5M	162.5	150	137.5	125	112.5	100	87.5	75	62.5
RX(Y)Q8M/REYQ8M	260	240	220	200	180	160	140	120	100
RX(Y)Q10M/REYQ10M	325	300	275	250	225	200	175	150	125
RXYQ12M/REYQ12M	390	360	330	300	270	240	210	180	150
RXYQ14M/REYQ14M	455	420	385	350	315	280	245	210	175
RXYQ16M/REYQ16M	520	480	440	400	360	320	280	240	200
RXYQ18M/REYQ18M	585	540	495	450	405	360	315	270	225
RXYQ20M/REYQ20M	650	600	550	500	450	400	350	300	250
RXYQ22M/REYQ22M	715	660	605	550	495	440	385	330	275
RXYQ24M/REYQ24M	780	720	660	600	540	480	420	360	300
RXYQ26M/REYQ26M	845	780	715	650	585	520	455	390	325
RXYQ28M/REYQ28M	910	840	770	700	630	560	490	420	350
RXYQ30M/REYQ30M	975	900	825	750	675	600	525	450	375
RXYQ32M/REYQ32M	1,040	960	880	800	720	640	560	480	400
RXYQ34M/REYQ34M	1,105	1,020	935	850	765	680	595	510	425
RXYQ36M/REYQ36M	1,170	1,080	990	900	810	720	630	540	450
RXYQ38M/REYQ38M	1,235	1,140	1,045	950	855	760	665	570	475
RXYQ40M/REYQ40M	1,300	1,200	1,100	1,000	900	800	700	600	500
RXYQ42M/REYQ42M	1,365	1,260	1,155	1,050	945	840	735	630	525
RXYQ44M/REYQ44M	1,430	1,320	1,210	1,100	990	880	770	660	550
RXYQ46M/REYQ46M	1,495	1,380	1,265	1,150	1,035	920	805	690	575
RXYQ48M/REYQ48M	1,560	1,440	1,320	1,200	1,080	960	840	720	600

Indoor unit capacity index

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

1 Selection procedure VRVII system based on cooling load

1-3 Actual performance data

Use outdoor unit capacity tables

Determine the correct table according to the outdoor unit model and combination ratio.

Enter the table at given indoor and outdoor temperature and find the outdoor capacity and power input. The individual indoor unit capacity (power input) can be calculated as follows:

$$ICA = \frac{OCA \times INX}{TNX}$$

ICA: Individual indoor unit capacity (power input)
OCA: Outdoor unit capacity (power input)
INX: Individual indoor unit capacity index
TNX: Total capacity index

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Then, correct the indoor unit capacity according to the piping length.
If the corrected capacity is smaller than the load, the size of indoor unit has to be increased. Repeat the same selection procedure.

1-4 Selection example based on cooling load

1 Given

- Design condition
  Cooling: indoor 20°CWB, outdoor 33°CDB
- Cooling load

Room	A	B	C	D	E	F	G	H
Load (kW)	2.9	2.7	2.5	4.3	4.0	4.0	3.9	4.2

- Power supply: 3-phase 380V/50Hz

2 Indoor unit selection

Enter indoor unit capacity table at:
20 CWB indoor temperature
33 CDB outdoor air temperature.

Selection results are as follows:

Room	A	B	C	D	E	F	G	H
Load (kW)	2.9	2.7	2.5	4.3	4.0	4.0	3.9	4.2
Unit size	25	25	25	40	40	40	40	40
Capacity	3.0	3.0	3.0	4.8	4.8	4.8	4.8	4.8

3 Outdoor unit selection

- Assume that the indoor and outdoor unit combination is as follows.
  Outdoor unit: RXYQ10M
  Indoor unit: FXCQ25M7 x 3, FXCQ40M7 x 5
- Indoor unit combination total capacity index
  25 x 3 + 40 x 5 = 275 (110 %)

1 Selection procedure VRVII system based on cooling load

1-4 Selection example based on cooling load

4 Actual performance data (50Hz)

- Outdoor unit cooling capacity: 30.5kW (RXYQ10M, 110 %)
- Individual capacity
  Capacity of FXYCP25K $= 30.5 \times \frac{25}{275} = 2.77$kW

  Capacity of FXYCP40K7 $= 30.5 \times \frac{40}{275} = 4.44$kW

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Actual combination capacity

Room	A	B	C	D	E	F	G	H
Load (kW)	2.9	2.7	2.5	4.3	4.0	4.0	3.9	4.2
Unit size	25	25	25	40	40	40	40	40
Capacity	2.77	2.77	2.77	4.44	4.44	4.44	4.44	4.44

The unit size for room A has to be increased from 25 to 32 because the capacity is less than the load. For new combination, actual capacity is calculated as follows.

- Indoor unit combination total capacity index
  (25 x 2) +31.25 + (40 x5) = 281.25 (112.5 %)
- Outdoor unit cooling capacity:
  27,610 kcal/h (direct interpolation between 110 % and 120 % in the table)
- Individual capacity
  Capacity of FXCQ25M $= 30.0 \times \frac{25}{281.25} = 2.7$kW

  Capacity of FXCQ32M $= 30.0 \times \frac{32}{281.25} = 3.4$kW

  Capacity of FXCQ40M $= 30.0 \times \frac{40}{281.25} = 4.3$kW

Actual capacity of new combination

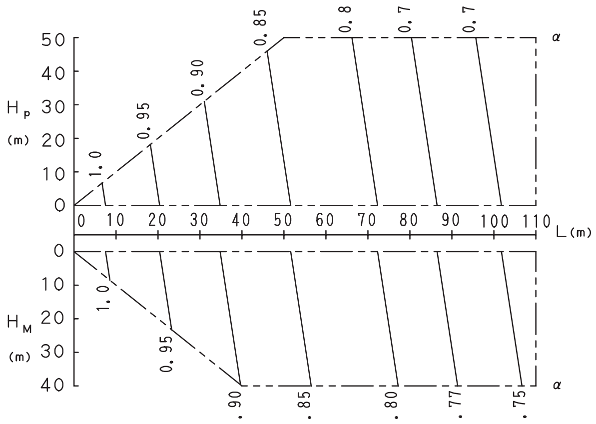
Room	A	B	C	D	E	F	G	H
Load (kW)	2.9	2.7	2.5	4.3	4.0	4.0	3.9	4.2
Unit size	32	25	25	40	40	40	40	40
Capacity	3.4	2.7	2.7	4.3	4.3	4.3	4.3	4.3

Then, the capacities have to be corrected for actual piping length according to the location of indoor and outdoor units and the distance between them.

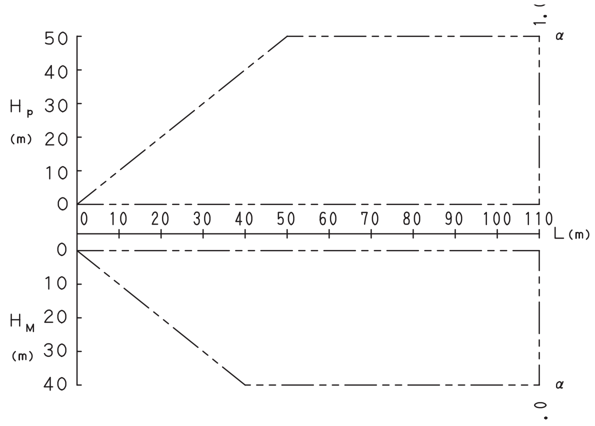
2 Capacity correction ratio

2-1 RX(Y)Q5M

- Rate of change in cooling capacity



- Rate of change in heating capacity



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

3 Method of calculating cooling / heating capacity (max. capacity for combination with standard indoor unit)
cooling / heating capacity = cooling / heating capacity obtained from performance characteristics table x each capacity rate of change
When piping length differs depending on the indoor unit, maximum capacity of each unit during simultaneous operation is:
cooling / heating capacity = cooling / heating capacity of each unit x capacity rate of change for each piping length

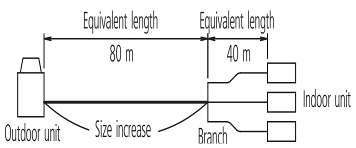
4 When overall equivalent pipe length is 90m or more, the diameter of the main gas pipes (outdoor unit-branch sections) must be increased.
Diameter of above case

Model	gas	liquid
RX(Y)Q5M	ø 19.1	not increased

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

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

Example



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

EXPLANATION OF SYMBOLS

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

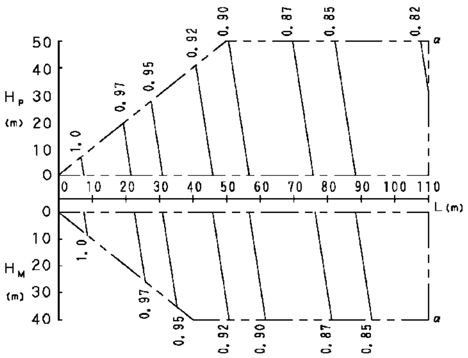
Diameter of gas pipes

Model	gas	liquid
RX(Y)Q5M	ø 15.9	ø 9.5

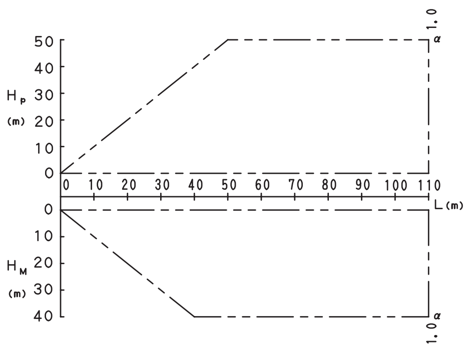
2 Capacity correction ratio

2-2 RX(Y)Q8M, RXYQ22M

- Rate of change in cooling capacity



- Rate of change in heating capacity



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

3 Method of calculating cooling / heating capacity (max. capacity for combination with standard indoor unit)
cooling / heating capacity = cooling / heating capacity obtained from performance characteristics table x each capacity rate of change
When piping length differs depending on the indoor unit, maximum capacity of each unit during simultaneous operation is:
cooling / heating capacity = cooling / heating capacity of each unit x capacity rate of change for each piping length

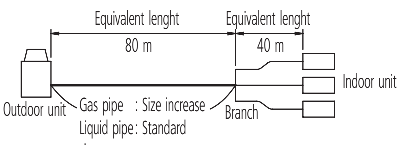
4 When overall equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit-branch sections) must be increased.
Diameter of above case

Model	gas	liquid
RX(Y)Q8M	ø 22.2	ø 12.7
RXYQ22M	ø 31.8	ø 19.1

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

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

Example



In the above case
(Cooling) Overall equivalent length = 80m x 0.5 + 40m = 80m
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m
The correction factor in capacity in cooling capacity when Hp=0m is thus approximately 0.86
heating capacity when Hp=0m is thus approximately 1.0

EXPLANATION OF SYMBOLS

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

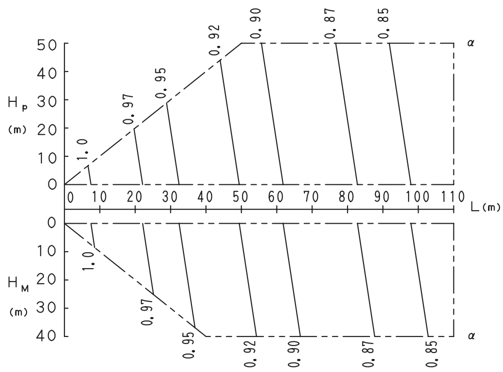
Diameter of gas pipes

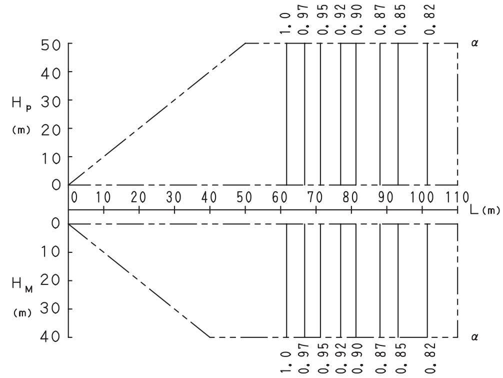
Model	gas	liquid
RX(Y)Q8M	ø 19.1	ø 9.5
RXYQ22M	ø 28.6	ø 15.9

2 Capacity correction ratio

2-3 RX(Y)Q10M

- Rate of change in cooling capacity
- Rate of change in heating capacity





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

3 Method of calculating cooling / heating capacity (max. capacity for combination with standard indoor unit)
cooling / heating capacity = cooling / heating capacity obtained from performance characteristics table x each capacity rate of change
When piping length differs depending on the indoor unit, maximum capacity of each unit during simultaneous operation is:
cooling / heating capacity = cooling / heating capacity of each unit x capacity rate of change for each piping length

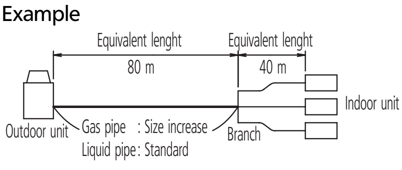
4 When overall equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit-branch sections) must be increased.
Diameter of above case

Model	gas	liquid
RX(Y)Q10M	ø 25.4	ø 12.7

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

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

Example



In the above case
(Cooling) Overall equivalent length = 80m x 0.5 + 40m = 80m
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m
The correction factor in capacity in cooling capacity when Hp=0m is thus approximately 0.87
heating capacity when Hp=0m is thus approximately 0.90

EXPLANATION OF SYMBOLS

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

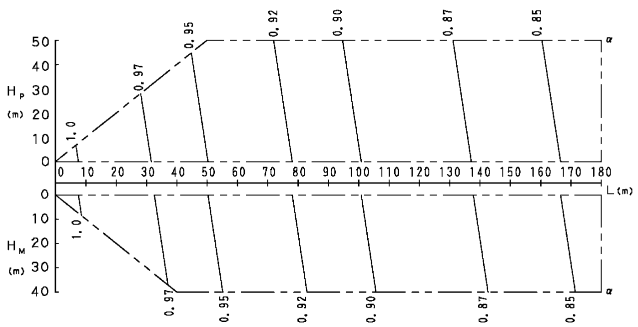
Diameter of gas pipes

Model	gas	liquid
RX(Y)Q10M	ø 22.2	ø 9.5

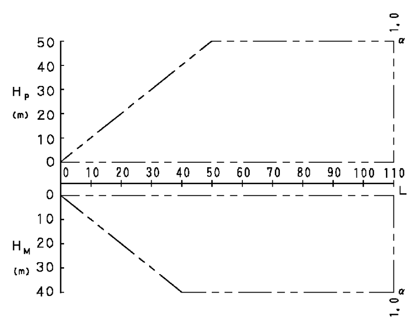
2 Capacity correction ratio

2-4 RXYQ12,14,24,36M

- Rate of change in cooling capacity



- Rate of change in heating capacity



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

3 Method of calculating cooling / heating capacity (max. capacity for combination with standard indoor unit)
cooling / heating capacity = cooling / heating capacity obtained from performance characteristics table x each capacity rate of change
When piping length differs depending on the indoor unit, maximum capacity of each unit during simultaneous operation is:
cooling / heating capacity = cooling / heating capacity of each unit x capacity rate of change for each piping length

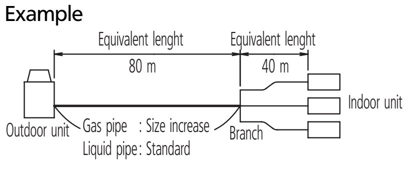
4 When overall equivalent pipe length is 90m or more, the diameter of the main liquid pipes (outdoor unit-branch sections) must be increased.
Diameter of above case

Model	gas	liquid
RXYQ12,14M	Not Increased	ø 15.9
RXYQ24M		ø 19.1
RXYQ36M		ø 22.2

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

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

Example



In the above case
(Cooling) Overall equivalent length = 80m x 1.0 + 40m = 120m
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m
The correction factor in capacity in cooling capacity when Hp=0m is thus approximately 0.88
heating capacity when Hp=0m is thus approximately 1.0

EXPLANATION OF SYMBOLS

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

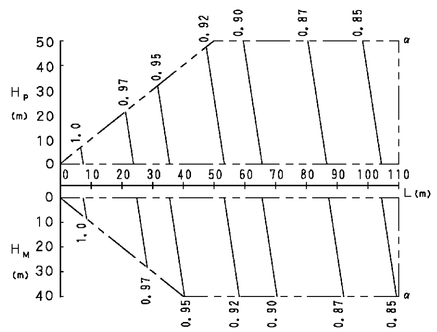
Diameter of gas pipes

Model	gas	liquid
RXYQ12,14M	ø 28.6	ø 12.7
RXYQ24M	ø 34.9	ø 15.9
RXYQ36M	ø 41.3	ø 19.1

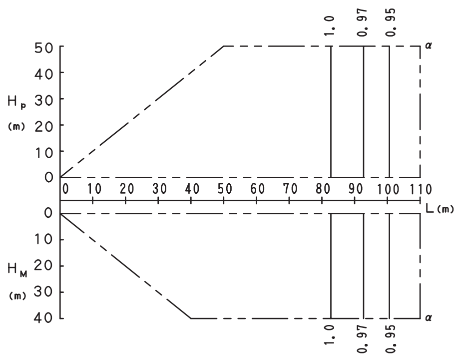
2 Capacity correction ratio

2-5 RXYQ16M

- Rate of change in cooling capacity



- Rate of change in heating capacity



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NOTES

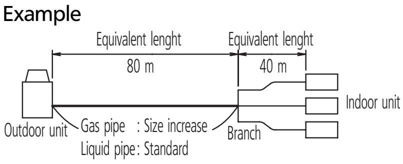
1. These figures illustrate the rate of change in capacity of a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions.
   Moreover, under partial load conditions there is only a minor deviation from the rate of change in capacity shown in the above figures.
2. With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
3. Method of calculating cooling / heating capacity (max. capacity for combination with standard indoor unit)
   cooling / heating capacity = cooling / heating capacity obtained from performance characteristics table x each capacity rate of change
   When piping length differs depending on the indoor unit, maximum capacity of each unit during simultaneous operation is:
   cooling / heating capacity = cooling / heating capacity of each unit x capacity rate of change for each piping length
4. When overall equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit-branch sections) must be increased.
   Diameter of above case

Model	gas	liquid
RXYQ16M	ø 31.8	ø 15.9

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

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

Example



In the above case
(Cooling) Overall equivalent length = 80m x 0.5 + 40m = 80m
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m
The correction factor in capacity in cooling capacity when Hp=0m is thus approximately 0.88
heating capacity when Hp=0m is thus approximately 1.0

EXPLANATION OF SYMBOLS

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

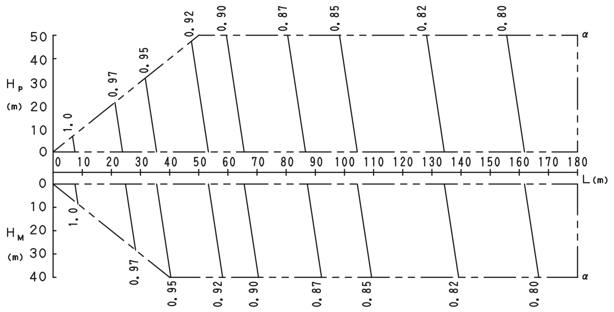
Diameter of pipes

Model	gas	liquid
RXYQ16M	ø 28.6	ø 12.7

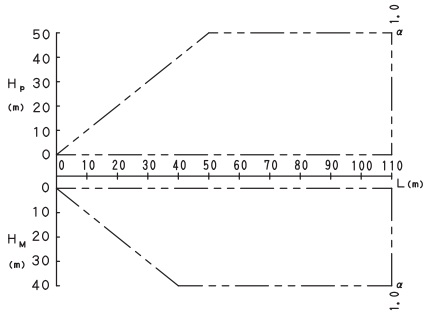
2 Capacity correction ratio

2-6 RXYQ18,26,28,30,38,40,42,44M

- Rate of change in cooling capacity



- Rate of change in heating capacity



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

3 Method of calculating cooling / heating capacity (max. capacity for combination with standard indoor unit)
cooling / heating capacity = cooling / heating capacity obtained from performance characteristics table x each capacity rate of change
When piping length differs depending on the indoor unit, maximum capacity of each unit during simultaneous operation is:
cooling / heating capacity = cooling / heating capacity of each unit x capacity rate of change for each piping length

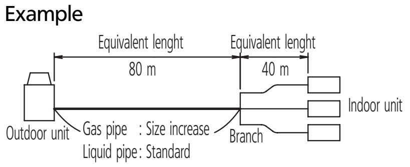
4 When overall equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit-branch sections) must be increased except for the gas pipe of RX(Y)Q38,40,42,44M.
Diameter of above case

Model	gas	liquid
RXYQ18M	ø 31.8	ø 19.1
RXYQ26,28,30M	ø 38.1	ø 22.2
RXYQ38,40,42,44M	Not Increased	ø 22.2

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

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

Example



In the above case
(Cooling) Overall equivalent length = 80m x 1.0 + 40m = 120m
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m
The correction factor in capacity in cooling capacity when Hp=0m is thus approximately 0.83
heating capacity when Hp=0m is thus approximately 1.0

EXPLANATION OF SYMBOLS

H_P : Level difference (m) between indoor and outdoor units with indoor unit in inferior position
H_M : Level difference (m) between indoor and outdoor units with indoor unit in superior position
L : Equivalent pipe length (m)
α : Capacity correction factor

Diameter of gas pipes

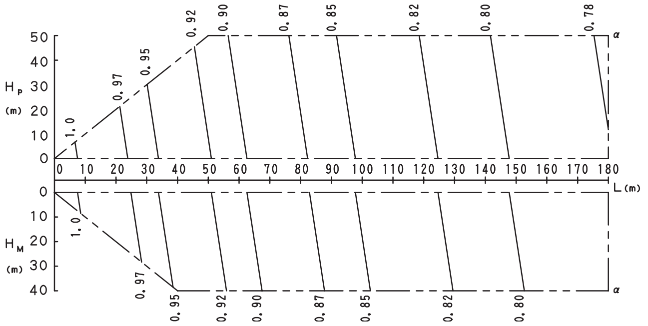
Model	gas	liquid
RXQ18M	ø 28.6	ø 15.9
RXYQ26,28,30M	ø 34.9	ø 19.1
RXYQ40,42,44M	ø 41.3	ø 19.1

2

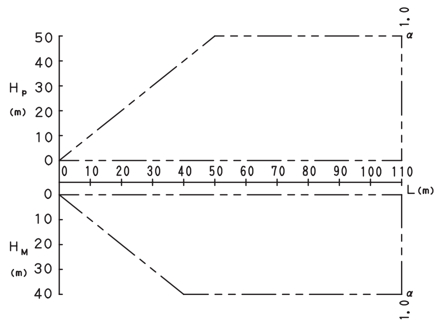
2 Capacity correction ratio

2-7 RXYQ20,32,34,46M

- Rate of change in cooling capacity



- Rate of change in heating capacity



3D040058A

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

3 Method of calculating cooling / heating capacity (max. capacity for combination with standard indoor unit)
cooling / heating capacity = cooling / heating capacity obtained from performance characteristics table x each capacity rate of change
When piping length differs depending on the indoor unit, maximum capacity of each unit during simultaneous operation is:
cooling / heating capacity = cooling / heating capacity of each unit x capacity rate of change for each piping length

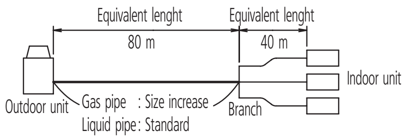
4 When overall equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit-branch sections) must be increased except for the gas pipe of RX(Y)Q46M.
Diameter of above case

Model	gas	liquid
RXYQ20M	ø 31.8	ø 19.1
RXYQ32,34M	ø 38.1	ø 22.2
RXYQ46M	Not Increased	ø 22.2

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

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

Example



In the above case
(Cooling) Overall equivalent length = 80m x 1.0 + 40m = 120m
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m
The correction factor in capacity in cooling capacity when Hp=0m is thus approximately 0.82
heating capacity when Hp=0m is thus approximately 1.0

EXPLANATION OF SYMBOLS

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

Diameter of gas pipes

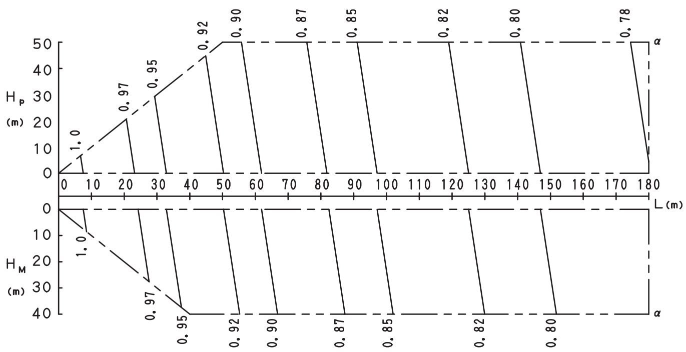
Model	gas	liquid
RXYQ18M	ø 28.6	ø 15.9
RXYQ26,28,30M	ø 34.9	ø 19.1
RXYQ40,42,44M	ø 41.3	ø 19.1

2

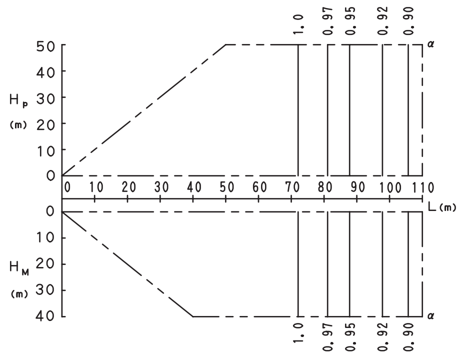
2 Capacity correction ratio

2-8 RXYQ48M

- Rate of change in cooling capacity



- Rate of change in heating capacity



3D040061A

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

3 Method of calculating cooling / heating capacity (max. capacity for combination with standard indoor unit)
cooling / heating capacity = cooling / heating capacity obtained from performance characteristics table x each capacity rate of change
When piping length differs depending on the indoor unit, maximum capacity of each unit during simultaneous operation is:
cooling / heating capacity = cooling / heating capacity of each unit x capacity rate of change for each piping length

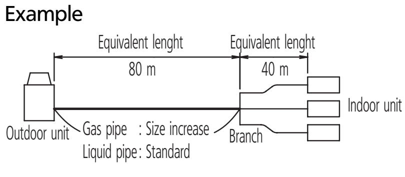
4 When overall equivalent pipe length is 90m or more, the diameter of the main liquid pipes (outdoor unit-branch sections) must be increased.
Diameter of above case

Model	liquid	gas
RXYQ48M	ø 22.2	not increased

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

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

Example



In the above case
(Cooling) Overall equivalent length = 80m x 1.0 + 40m = 120m
(Heating) Overall equivalent length = 80m x 0.5 + 40m = 80m
The correction factor in capacity in cooling capacity when Hp=0m is thus approximately 0.82
heating capacity when Hp=0m is thus approximately 0.97

EXPLANATION OF SYMBOLS

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

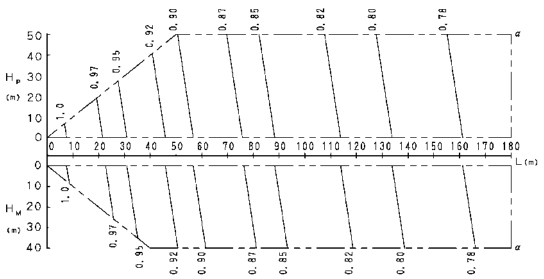
Diameter of pipes

Model	gas	liquid
RXYQ48M	ø 41.3	ø 19.1

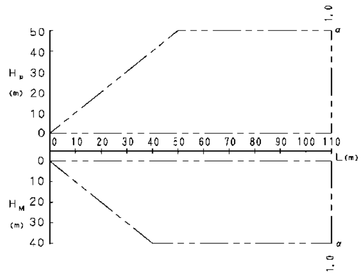
2 Capacity correction ratio

2-9 REYQ8,22M

- Rate of change in cooling capacity



- Rate of change in heating capacity



3D042141

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.

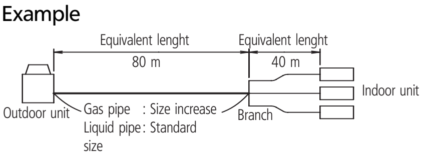
2 With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.

3 Method of calculating cooling / heating capacity (max. capacity for combination with standard indoor unit)
cooling / heating capacity = cooling / heating capacity obtained from performance characteristics table x each capacity rate of change
When piping length differs depending on the indoor unit, maximum capacity of each unit during simultaneous operation is:
cooling / heating capacity = cooling / heating capacity of each unit x capacity rate of change for each piping length

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

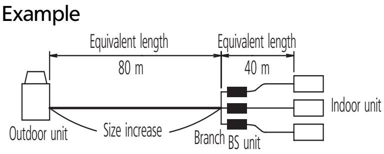
Model	Liquid
REYQ8M	ø 12.7
REYQ22M	ø 19.1

5 When the main sections of the interunit gas pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)
Overall equivalent length = Equivalent length to main pipe x 0.5 + Equivalent length after branching
Example



In the above case (Heating)
Overall equivalent length = 80m x 0.5 + 40m = 80m
The correction factor in capacity when H_p = 0m is thus approximately 1.0

6 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 H_p = 0m is thus approximately 0.86

EXPLANATION OF SYMBOLS

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

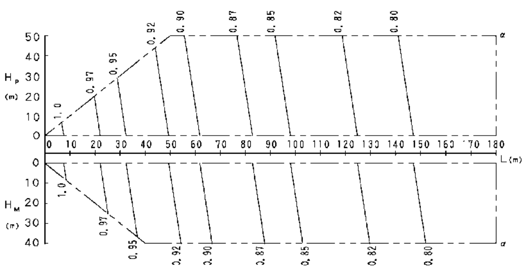
Diameter of pipes

Model	liquid
REYQ8M	ø 9.5
REYQ22M	ø 15.9

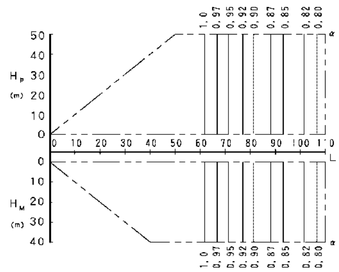
2 Capacity correction ratio

2-10 REYQ10M

- Rate of change in cooling capacity



- Rate of change in heating capacity



3D042142

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.

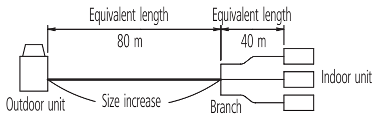
2 With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.

3 Method of calculating cooling / heating capacity (max. capacity for combination with standard indoor unit)
cooling / heating capacity = cooling / heating capacity obtained from performance characteristics table x each capacity rate of change
When piping length differs depending on the indoor unit, maximum capacity of each unit during simultaneous operation is:
cooling / heating capacity = cooling / heating capacity of each unit x capacity rate of change for each piping length

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

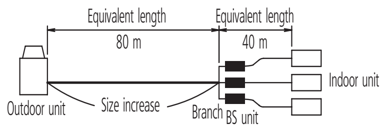
Model	liquid
REYQ10M	ø 12.7

5 When the main sections of the interunit gas pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)
Overall equivalent length = Equivalent length to main pipe x 0.5 + Equivalent length after branching
Example



In the above case (Heating)
Overall equivalent length = 80m x 0.5 + 40m = 80m
The correction factor in capacity when H_p = 0m is thus approximately 0.91

6 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 H_p = 0m is thus approximately 0.88

EXPLANATION OF SYMBOLS

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

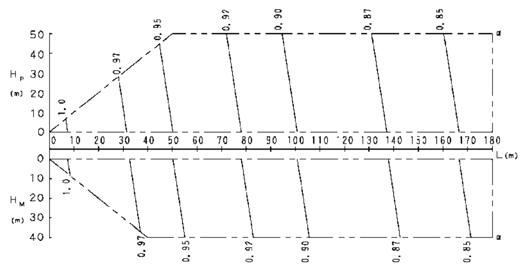
Diameter of gas pipes

Model	liquid
REYQ10M	ø 9.5

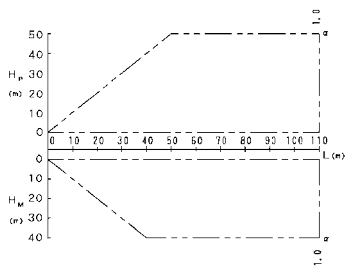
2 Capacity correction ratio

2-11 REYQ12,14,24,36M

- Rate of change in cooling capacity



- Rate of change in heating capacity



3D042143

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.

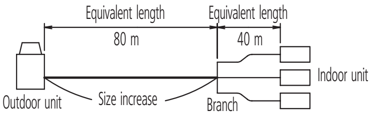
2 With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.

3 Method of calculating cooling / heating capacity (max. capacity for combination with standard indoor unit)
cooling / heating capacity = cooling / heating capacity obtained from performance characteristics table x each capacity rate of change
When piping length differs depending on the indoor unit, maximum capacity of each unit during simultaneous operation is:
cooling / heating capacity = cooling / heating capacity of each unit x capacity rate of change for each piping length

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

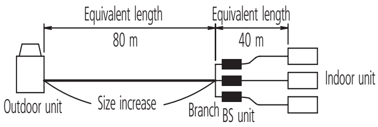
Model	liquid
REYQ12,14M	ø 15.9
REYQ24M	ø 19.1
REYQ36M	ø 22.2

5 When the main sections of the interunit gas pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)
Overall equivalent length = Equivalent length to main pipe x 0.5 + Equivalent length after branching
Example



In the above case (Heating)
Overall equivalent length = 80m x 0.5 + 40m = 80m
The correction factor in capacity when H_p = 0m is thus approximately 1.0

6 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 H_p = 0m is thus approximately 0.92

EXPLANATION OF SYMBOLS

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

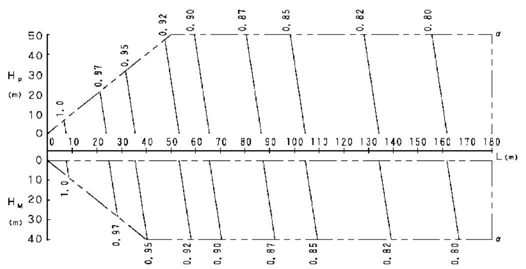
Diameter of gas pipes

Model	liquid
REYQ12,14M	ø 12.7
REYQ24M	ø 15.9
REYQ36M	ø 19.1

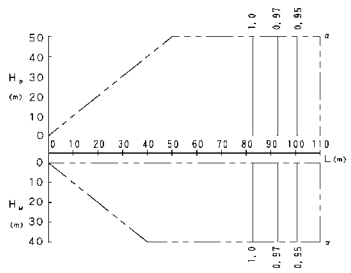
2 Capacity correction ratio

2-12 REYQ16M

- Rate of change in cooling capacity



- Rate of change in heating capacity



3D042144

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.

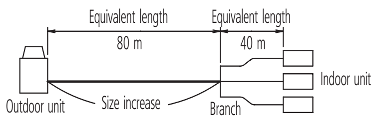
2 With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.

3 Method of calculating cooling / heating capacity (max. capacity for combination with standard indoor unit)
cooling / heating capacity = cooling / heating capacity obtained from performance characteristics table x each capacity rate of change
When piping length differs depending on the indoor unit, maximum capacity of each unit during simultaneous operation is:
cooling / heating capacity = cooling / heating capacity of each unit x capacity rate of change for each piping length

4 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

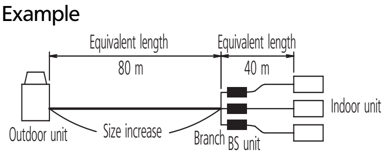
Model	liquid
REYQ16M	ø 15.9

5 When the main sections of the interunit gas pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)
Overall equivalent length = Equivalent length to main pipe x 0.5 + Equivalent length after branching
Example



In the above case (Heating)
Overall equivalent length = 80m x 0.5 + 40m = 80m
The correction factor in capacity when H_p = 0m is thus approximately 1.0

6 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 H_p = 0m is thus approximately 0.88

EXPLANATION OF SYMBOLS

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

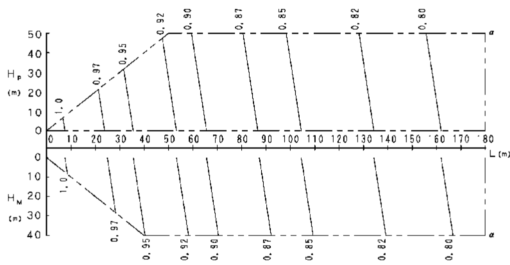
Diameter of gas pipes

Model	liquid
REYQ16M	ø 12.7

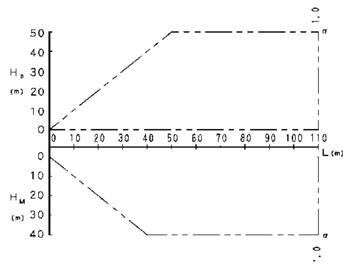
2 Capacity correction ratio

2-13 REYQ18,26,28,30,38,40,42,44M

- Rate of change in cooling capacity



- Rate of change in heating capacity



3D042145

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.

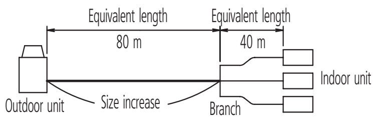
2 With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.

3 Method of calculating cooling / heating capacity (max. capacity for combination with standard indoor unit)
cooling / heating capacity = cooling / heating capacity obtained from performance characteristics table x each capacity rate of change
When piping length differs depending on the indoor unit, maximum capacity of each unit during simultaneous operation is:
cooling / heating capacity = cooling / heating capacity of each unit x capacity rate of change for each piping length

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

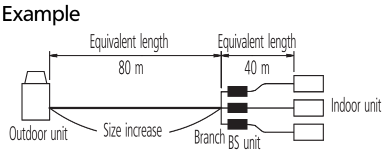
Model	liquid
REYQ18M	ø 19.1
REYQ26,28,30,38,40,42,44M	ø 22.2

5 When the main sections of the interunit gas pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)
Overall equivalent length = Equivalent length to main pipe x 0.5 + Equivalent length after branching
Example



In the above case (Heating)
Overall equivalent length = 80m x 0.5 + 40m = 80m
The correction factor in capacity when H_p = 0m is thus approximately 1.0

6 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 H_p = 0m is thus approximately 0.88

EXPLANATION OF SYMBOLS

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

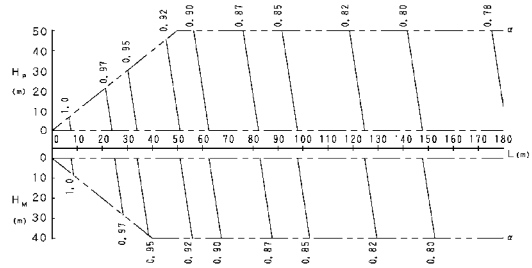
Diameter of pipes

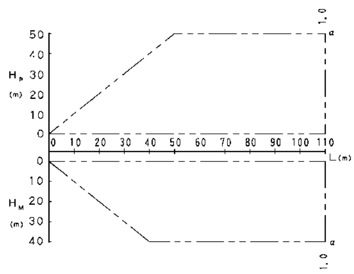
Model	liquid
REYQ18M	ø 15.9
REYQ26,28,30,38,40,42,44M	ø 19.1

2 Capacity correction ratio

2-14 REYQ20,32,34,46M

- Rate of change in cooling capacity
- Rate of change in heating capacity





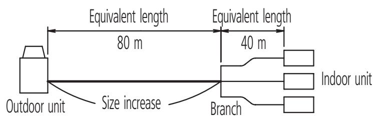
3D042146

NOTES

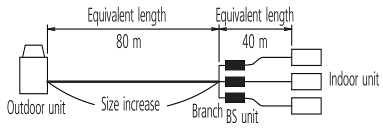
1. These figures illustrate the rate of change in capacity of a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions.
   Moreover, under partial load conditions there is only a minor deviation from the rate of change in capacity shown in the above figures.
2. With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
3. Method of calculating cooling / heating capacity (max. capacity for combination with standard indoor unit)
   <u>cooling / heating capacity</u> = <u>cooling / heating capacity obtained from performance characteristics table</u> x <u>each capacity rate of change</u>
   When piping length differs depending on the indoor unit, maximum capacity of each unit during simultaneous operation is:
   <u>cooling / heating capacity</u> = <u>cooling / heating capacity of each unit</u> x <u>capacity rate of change for each piping length</u>
4. When overall equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit-branch sections) must be increased .
   Diameter of above case

Model	liquid
REYQ20M	ø 19.1
REYQ32,34,46M	ø 22.2

5. When the main sections of the interunit gas pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)
   <u>Overall equivalent length</u> = <u>Equivalent length to main pipe</u> x <u>0.5</u> + <u>Equivalent length after branching</u>
   Example



   In the above case (Heating)
   <u>Overall equivalent length</u> = <u>80m</u> x <u>0.5</u> + <u>40m</u> = 80m
   The correction factor in capacity when H_p = 0m is thus approximately 1.0
6. In the combination which does not include cooling only indoor unit, calculate the equivalent length pipe by the following when you calculate cooling capacity.
   <u>Overall equivalent length</u> = <u>Equivalent length to main pipe</u> x <u>0.5</u> + <u>Equivalent length after branching</u>
   Example



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

EXPLANATION OF SYMBOLS

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

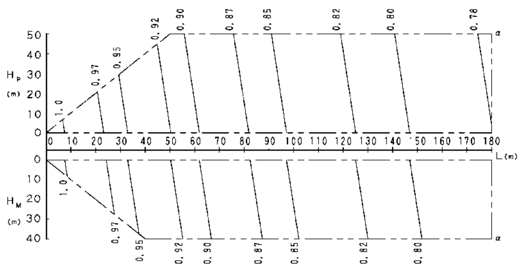
Diameter of gas pipes

Model	liquid
REYQ20M	ø 15.9
REYQ32,34,46M	ø 19.1

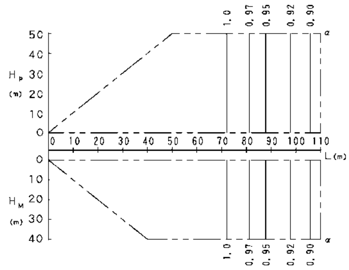
2 Capacity correction ratio

2-15 REYQ48M

- Rate of change in cooling capacity



- Rate of change in heating capacity



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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.

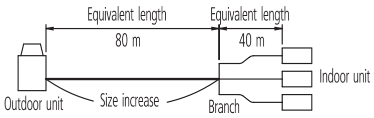
2 With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.

3 Method of calculating cooling / heating capacity (max. capacity for combination with standard indoor unit)
cooling / heating capacity = cooling / heating capacity obtained from performance characteristics table x each capacity rate of change
When piping length differs depending on the indoor unit, maximum capacity of each unit during simultaneous operation is:
cooling / heating capacity = cooling / heating capacity of each unit x capacity rate of change for each piping length

4 When overall equivalent pipe length is 90m or more, the diameter of the main gas and liquid pipes (outdoor unit-branch sections) must be increased except for the gas pipe of RX(Y)Q46M.
Diameter of above case

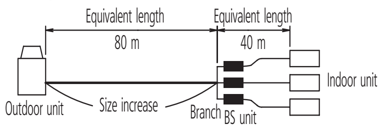
Model	liquid
REYQ48M	ø 22.2

5 When the main sections of the interunit gas pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)
Overall equivalent length = Equivalent length to main pipe x 0.5 + Equivalent length after branching
Example



In the above case (Heating)
Overall equivalent length = 80m x 0.5 + 40m = 80m
The correction factor in capacity when H_p = 0m is thus approximately 0.97

6 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 H_p = 0m is thus approximately 0.87

EXPLANATION OF SYMBOLS

H_p : Level difference (m) between indoor and outdoor units with indoor unit in inferior position
H_M : Level difference (m) between indoor and outdoor units with indoor unit in superior position
L : Equivalent pipe length (m)
α : Capacity correction factor
Diameter of gas pipes

Model	liquid
REYQ48M	ø 19.1

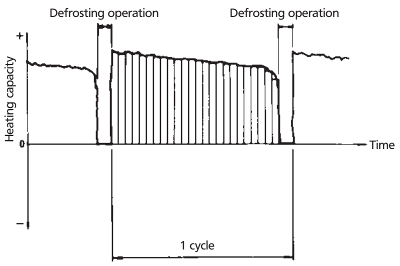
3 Integrated heating capacity coefficient

1 The tables do not take account of the reduction in capacity when frost has accumulated or while the defrosting operation is in progress. The capacity values which take these factors into account, in other words the integrated heating capacity values, can be calculated as follows:

Formula: Integrated heating capacity = A
Value given in table of capacity characteristics = B
Integrating correction factor for frost accumulation (kW) = C
A = B x C

2 Correction factor for finding integrated heating capacity

Inlet port temperature of heat exchanger (°C/RH 85%)	-7	-5	-3	0	3	5	7
Integrating correction factor for frost accumulation	0.96	0.93	0.87	0.81	0.83	0.89	1.0



NOTE

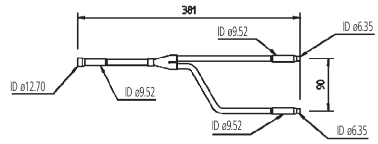
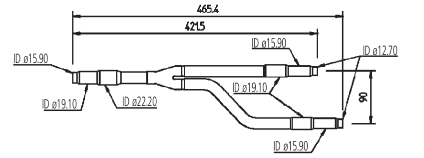
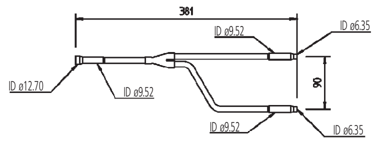
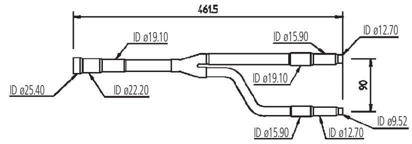
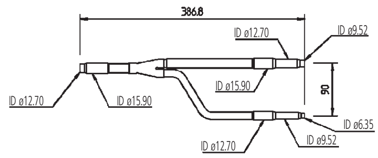
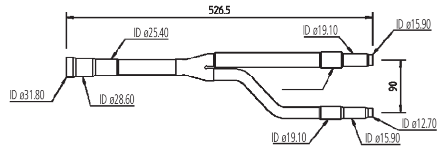
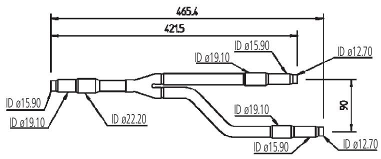
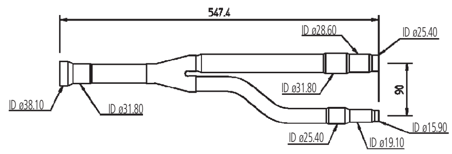
- The figure shows that the integrated heating capacity expresses the integrated heating capacity for a single cycle (from defrost operation to defrost operation) in terms of time.

3 Please note that when there is an accumulation of snow against the outside surface of the outdoor unit heat exchanger, there will always be a temporary reduction in capacity although this will, of course, vary in degree in accordance with a number of other factors such as the outdoor temperature (CDB), relative humidity (RH) and the amount of frosting which occurs.

4 Refnet pipe system

4-1 Refnet joints

4-1-1 VRVII heat pump

	Liquid side junction	Suction gas side junction
KHRQ22M20TA7	⑦ 	2 x ⑧ ⑩ 
KHRQ22M29T7	⑯ 	③ 2 x ④ 
KHRQ22M64T7	2 x ⑬ 	③ ④ ② ⑤ 
KHRQ22M75T7	⑨ 	⑤ ② ⑥ ⑩ 2 x ⑭ 

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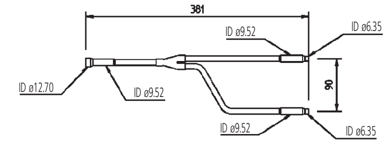
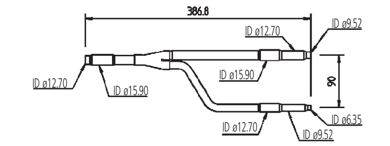
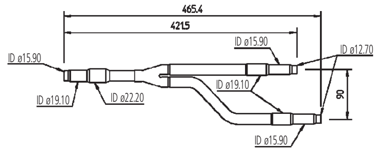
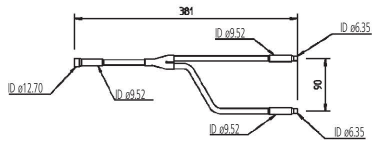
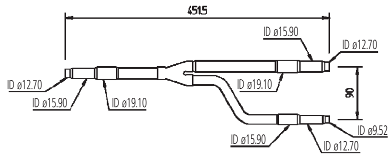
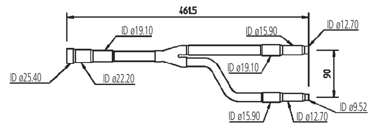
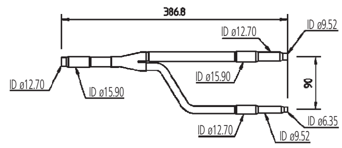
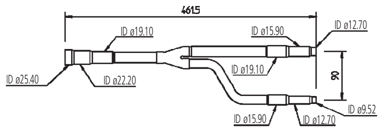
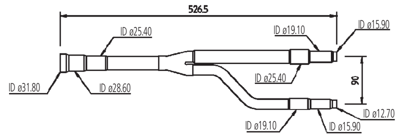
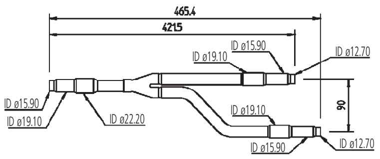
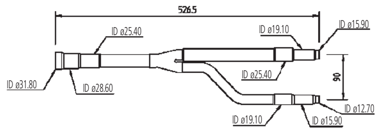
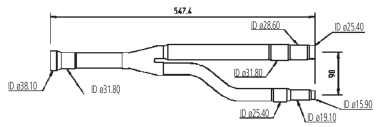
4 Refnet pipe system

4-1 Refnet joints

4-1-2 VRVII heat recovery

	Liquid side junction	Discharge gas side junction	Suction gas side junction
KHRQ23M20T7			 ⑩ ⑧
KHRQ23M29T7	 ⑯		 ③ 2 x ④
KHRQ23M64T7	 2 x ⑬	 ③ 2 x ④ ⑬	 ⑤ ②
KHRQ23M75T7	 ⑨	 ⑧② ⑭③ ④ ⑤	 ⑤② ⑥ ⑩ 2 x ⑭

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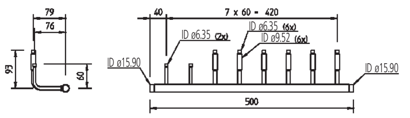
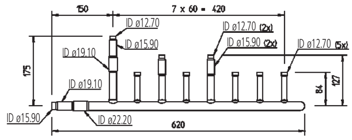
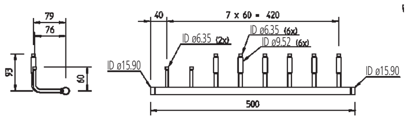
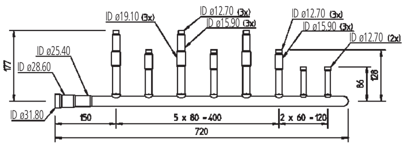
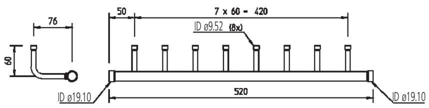
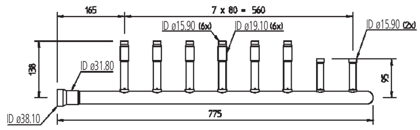
4 Refnet pipe system

4-2 Refnet headers

4-2-1 VRVII heat pump

	Liquid side header		Suction gas side header	
KHRQ22M29H7		① 6 x Ⓐ Ⓓ		6 x Ⓒ ⑰ ⑱
KHRQ22M64H7		①Ⓓ 6 x Ⓐ 2 x ⑲ ⑬		6 x Ⓒ 2 x ⑱
KHRQ22M75H7		① 6 x Ⓐ Ⓓ		⑭ 6 x Ⓓ 4 x ⑩

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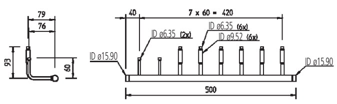
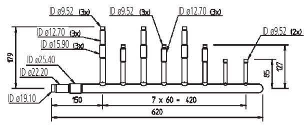
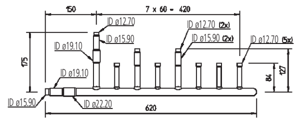
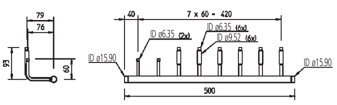
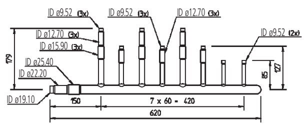
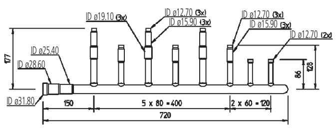
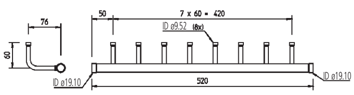
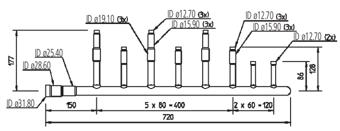
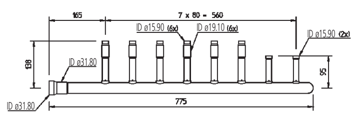
4-2-2 VRVII heat recovery

	Liquid side header		Discharge gas side header		Suction gas side header	
KHRQ23M29H7		① 6 x Ⓐ Ⓓ		⑪ 6 x Ⓑ ⑬		6 x Ⓒ ⑰ ⑱
KHRQ23M64H7		①Ⓓ 6 x Ⓐ 2 x ⑲ ⑬		④ 6 x Ⓑ 3 x ⑬ 2 x ⑳		6 x Ⓒ 2 x ⑱
KHRQ23M75H7		②⑨ ⑪Ⓔ 6 x Ⓑ 4 x ⑦		5 x ⑧ 6 x Ⓒ 6 x ⑬ ㉑		5 x ⑩ ⑫ ⑭ 6 x Ⓓ

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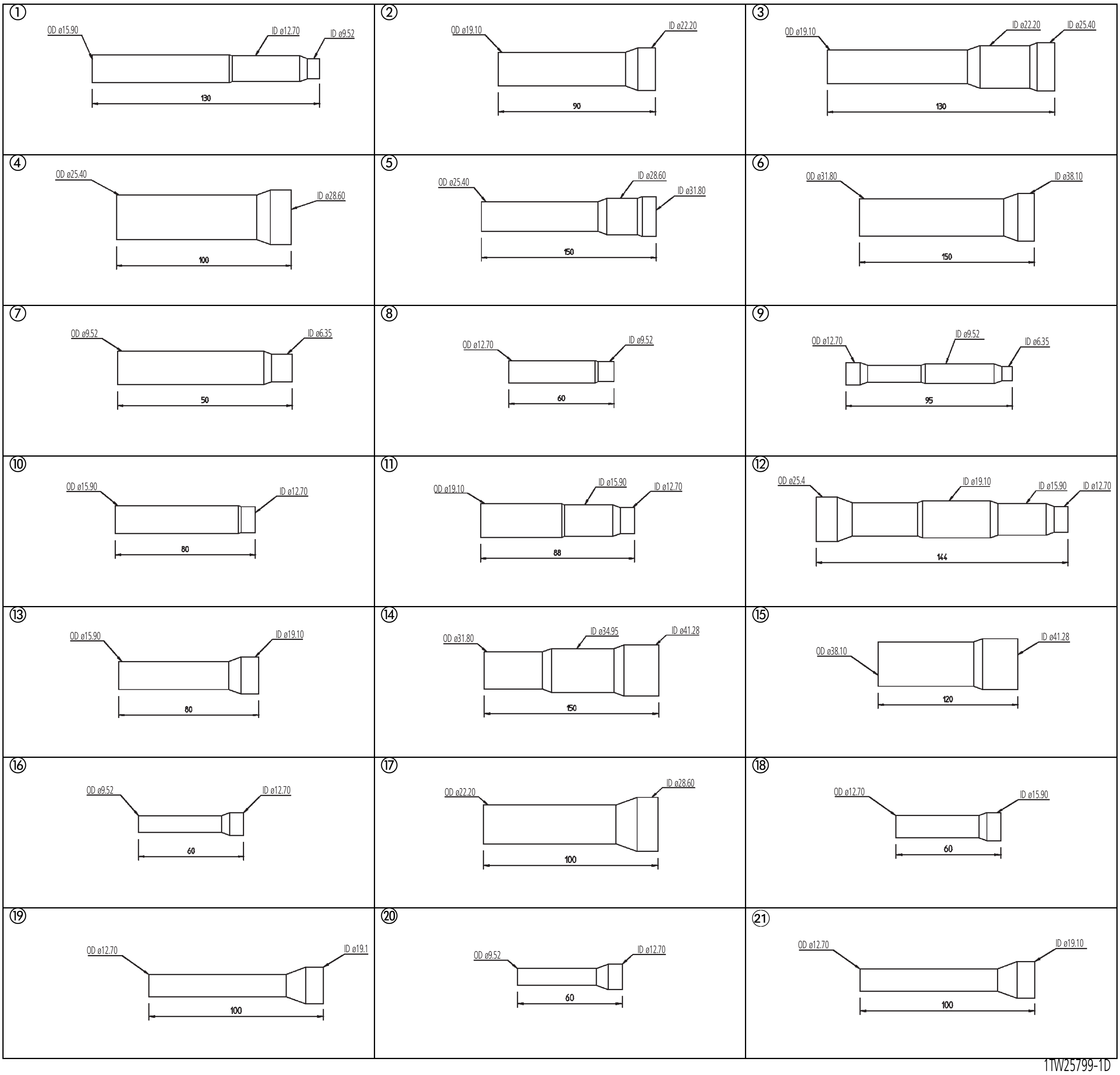
4 Refnet pipe system

4-3 Reducers, Expanders



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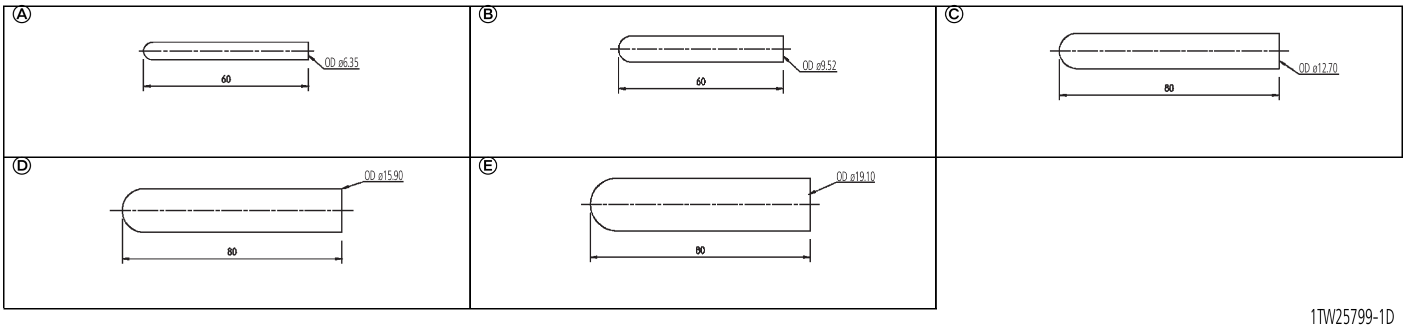
4-4 Closed pipes



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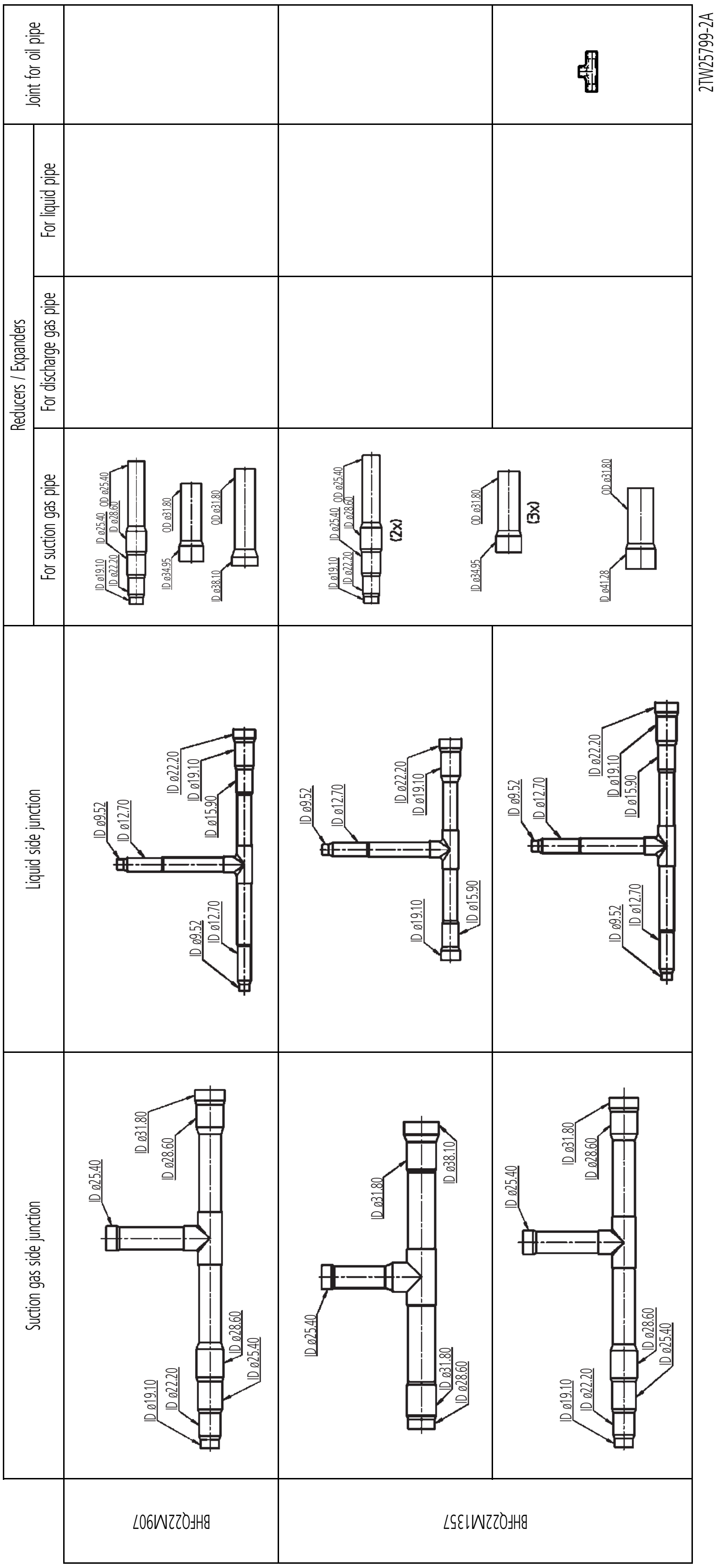
4

4 Refnet pipe system

4-5 Outdoor unit multi piping connection kit

4-5-1 VRVII heat pump



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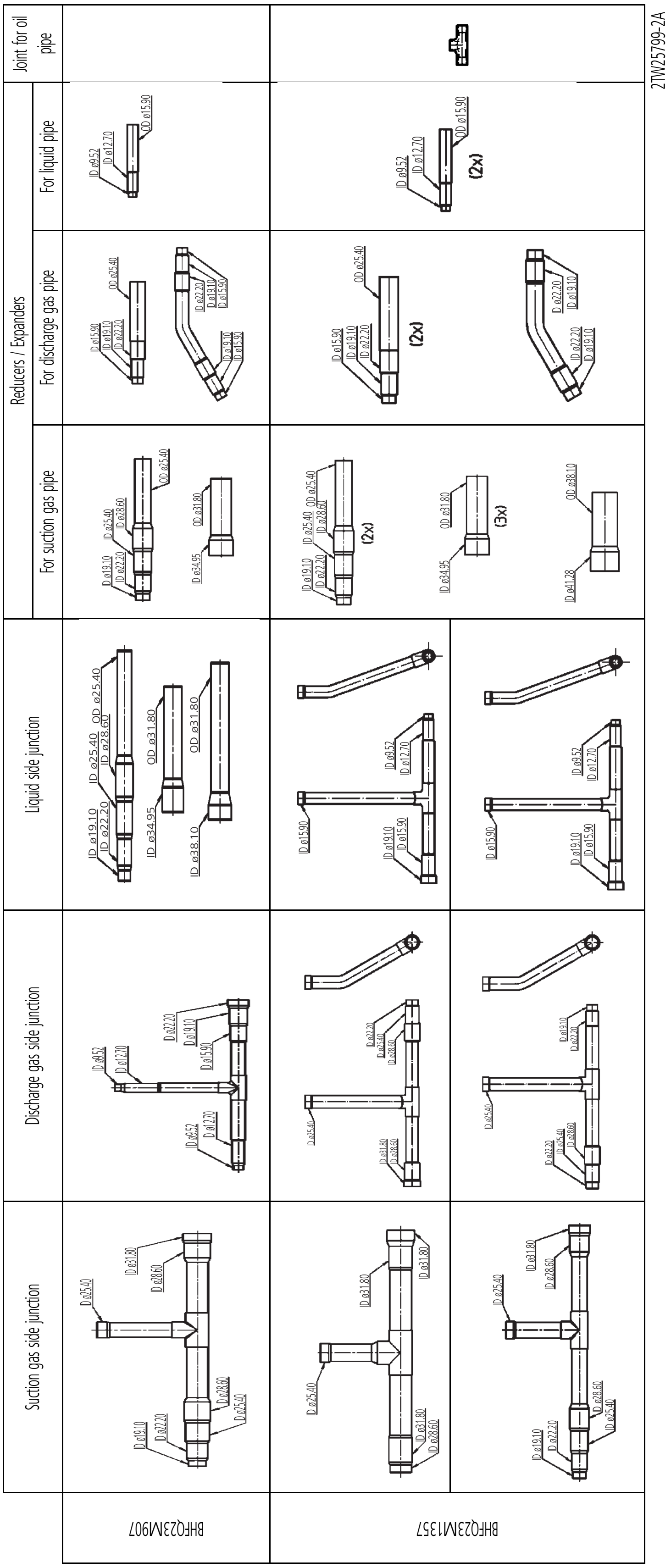
4 Refnet pipe system

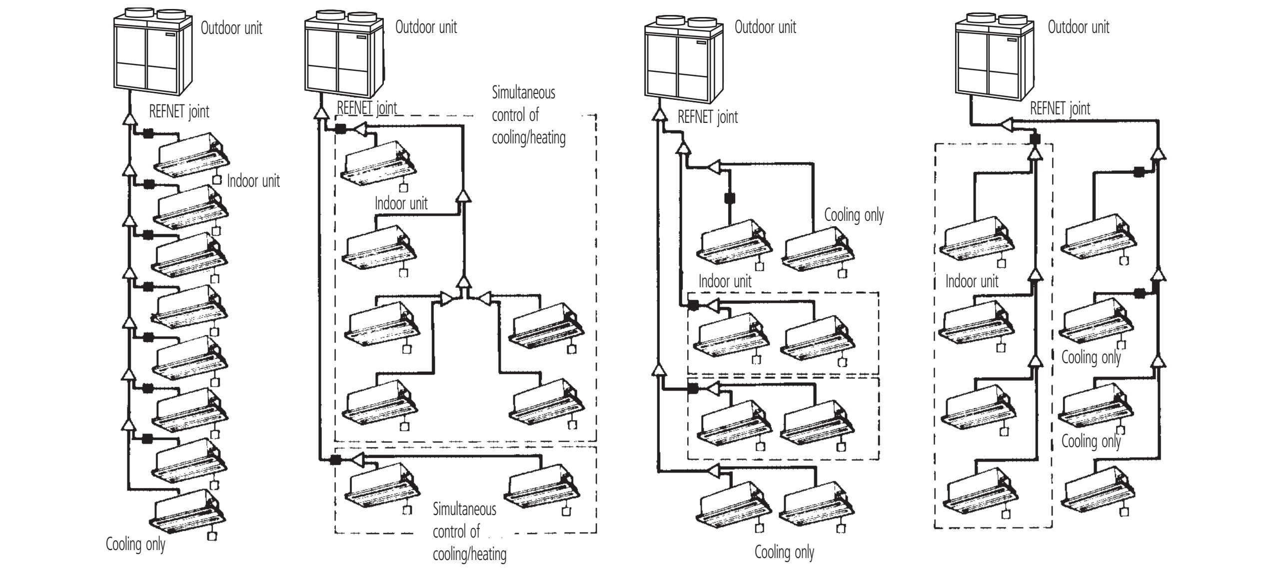
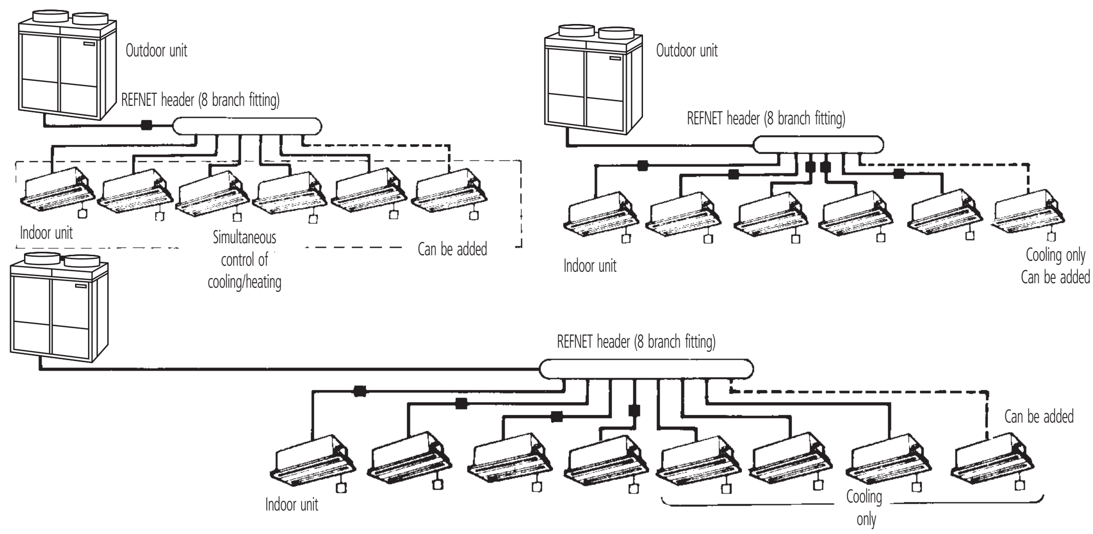
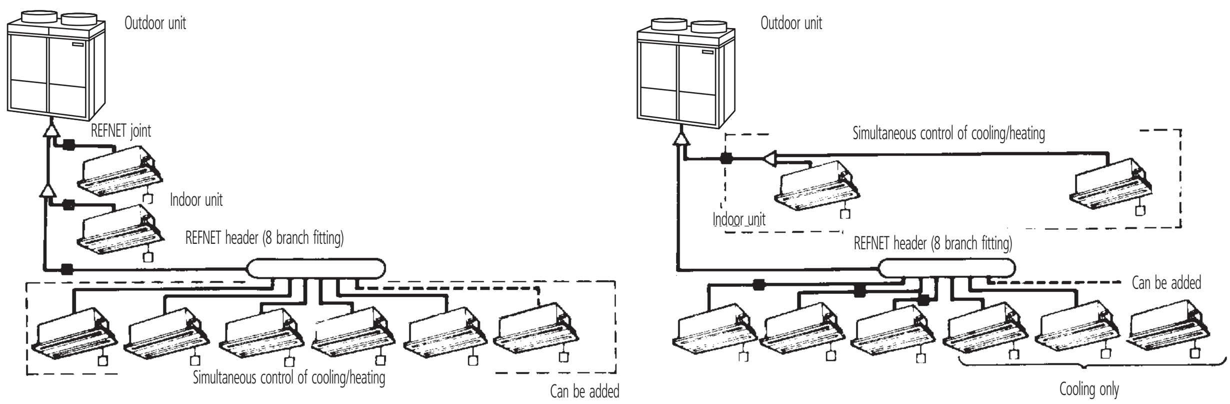
4-5 Outdoor unit multi piping connection kit

4-5-2 VRVII heat recovery



4 Refnet pipe system

4-6 Example of Refnet piping layouts

Type of fitting	Sample systems
Distribution by REFNET joints	
Distribution by REFNET header	
Distribution by REFNET joints and headers	

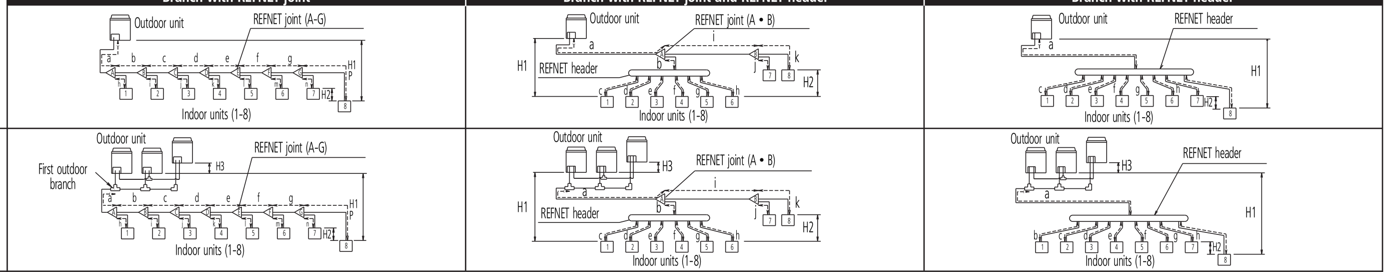
5 REFNET pipe selection

5-1 RX(Y)Q5-10M, RXYQ12-48M

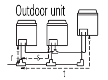
Example of connection
(Connection of 8 indoor units Heat pump system)

* If the system capacity is RXYQ18 or more, re-read to the first outdoor branch as seen from the indoor unit.

	Branch with REFNET joint	Branch with REFNET joint and REFNET header	Branch with REFNET header
One outdoor unit installed (RXYQ5～16) / When multiple outdoor units are installed (RXYQ18～)			



Maximum allowable length	Between outdoor and indoor units	Actual pipe length	Pipe length between outdoor and indoor units 150m Example unit 8: a + b + c + d + e + f + g + p 150m / Example unit 6: a + b + h 150m, unit 8: a + i + k 150m / Example unit 8: a + i 150m
		Equivalent length	Equivalent pipe length between outdoor and indoor units 175m (assume equivalent pipe length of refnet joint to be 0.5m, that of refnet header to be 1m, calculation purposes)
		Total extension length	Total piping length from outdoor unit* to all indoor units 300m
	Between outdoor branch and indoor unit (Only for RXYQ18 or more)	Actual pipe length	Piping length from outdoor branch to outdoor unit 10m Approximately length: max 13m
Allowable height length	Between outdoor and indoor units	Difference in height	Difference in height between outdoor and indoor units (H1) 50m (Max 40m if the outdoor unit is below)
	Between indoor and indoor units	Difference in height	Difference in height between adjacent indoor units (H2) 15m
	Between outdoor and outdoor units	Difference in height	Difference in height between outdoor unit (main) and outdoor unit (sub) (H3) 5m
Allowable length after the branch		Actual pipe length	Pipe length from first refrigerant branch kit (either refnet joint or refnet header) to indoor unit 40m Example unit 8: b + c + d + e + f + g + p 40m / Example unit 6: b + h 40m, unit 8: i + k 40m / Example unit 8: i 40m



r 10m (Equivalent length: max 13m)
s 10m (Equivalent length: max 13m)
t 10m (Equivalent length: max 13m)

Refrigerant branch kit selection

NOTE
Refrigerant branch kits can only be used with R-410A.

How to select the REFNET joint
• When using REFNET joints at the first branch counted from the outdoor unit side. Choose from the following table in accordance with the capacity of the outdoor unit.

First branch after the outdoor unit has to be selected from "Outdoor unit capacity type" table. Even if it is contradictory to the "indoor capacity index" table.

Outdoor unit capacity type	REFNET joints
RX(Y)Q5	KHRQ22M20T7
RX(Y)Q8, 10	KHRQ22M29T7
RXYQ12～22	KHRQ22M64T7
RXYQ24～	KHRQ22M75T7

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

Indoor capacity index	REFNET joints
< 200	KHRQ22M20T7
200 x < 290	KHRQ22M29T7
290 x < 640	KHRQ22M64T7
640 <	KHRQ22M75T7

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

Indoor capacity index	REFNET headers
< 200	KHRQ22M29H7 (Max 8 branches)
< 290	KHRQ22M29H7 (Max 8 branches)
290 x < 640	KHRQ22M64H7 (Max 8 branches)
640 <	KHRQ22M75H7 (Max 8 branches)

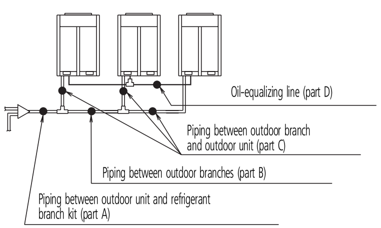
How to choose an outdoor branch kit (needed if the outdoor unit capacity type is RXYQ18 or more.)
• Choose from the following table in accordance with the number of outdoor units.

Number of outdoor units	Outdoor unit multi piping connection kit
2 units	BHFQ22M907
3 units	BHFQ22M1357

Example of downstream indoor units			
	example in case of refnet joint C; indoor units 3 + 4 + 5 + 6 + 7 + 8	example in case of refnet joint B indoor units 7 + 8, example in case of refnet header; indoor units 1 + 2 + 3 + 4 + 5 + 6	example in the case of refnet header; indoor units 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8

Pipe size selection

For an outdoor unit multi installation (RXYQ18～48MY1B), make the settings in accordance with the following figure.



Piping between outdoor unit and refrigerant branch kit (part A)
• Match to the size of the connection piping on the outdoor unit. Outdoor unit connection piping size (Unit: mm)

Outdoor unit capacity type	Piping size	
	Gas pipe	Liquid pipe
RX(Y)Q5	ø15.9	ø9.5
RX(Y)Q8	ø19.1	
RX(Y)Q10	ø22.2	
RXYQ12, 14, 16	ø28.6	ø12.7
RXYQ18～22		ø15.9
RXYQ24	ø34.9	
RXYQ26～34		ø19.1
RXYQ36～48	ø41.3	

⚠ **Maximum piping stretch > 90m equivalent:**
Increase diameter of the MAIN liquid pipe AND gas pipe, BUT:
• increase only gas for RX(Y)Q5M • increase only liquid for RXYQ12,14,24,36,38,40,42,44,46,48M
Main liquid pipe size (Unit:mm)

Outdoor unit capacity type	Piping size	
	Nomal size	Size up
RXYQ8, 10	ø 9.5	ø 12.7
RXYQ12, 14, 16	ø 12.7	ø 15.9
RXYQ18～24	ø 15.9	ø 19.1
RXYQ26～48	ø 19.1	ø 22.2

Piping between refrigerant branch kits
• Choose from the following table in accordance with the total capacity of all the indoor units connected below this.

⚠ • **Do not let the connection piping exceed the refrigerant piping size chosen by general system model name.**

(Unit: mm)

indoor capacity index	Piping size	
	Gas pipe	Liquid pipe
< 200	ø15.9	ø9.5
200 x < 290	ø22.2	
290 x < 420	ø28.6	ø12.7
420 x < 640		ø15.9
640 x < 920	ø34.9	ø19.1
920 <	ø41.3	

Piping between outdoor branches (part B)
• Choose from the following table in accordance with the total capacity of all the outdoor units connected above this. (Unit: mm)

outdoor capacity index	Piping size	
	Gas pipe	Liquid pipe
< 22HP	ø28.6	ø15.9
24HP	ø34.9	
26HP <		ø19.1

Between refrigerant branch kit and indoor unit
• Pipe size for direct connection to indoor unit must be the same as the connection size of indoor unit.

(Unit: mm)

indoor capacity index	Piping size	
	Gas pipe	Liquid pipe
20, 25, 32, 40, 50	ø12.7	ø6.4
63, 80, 100, 125	ø15.9	ø9.5
200	ø19.1	
250	ø22.2	

Piping between outdoor branch and outdoor unit (part C) (Unit:mm)

outdoor capacity index	Piping size	
	Gas pipe	Liquid pipe
RXYQ8	ø19.1	ø9.5
RXYQ10	ø22.2	
RXYQ12, 14, 16	ø28.6	ø12.7

Oil-equalizing line (Only for RXYQ18 or more) (part D)

Piping size	ø6.4

(Unit:mm)

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.

NOTE
If a negative result is gotten for R from the formula at right, no refrigerant needs to be added.

$$R = \begin{pmatrix}\text{Total length (m)}\\ \text{of liquid piping}\\ \text{size at ø22.2}\end{pmatrix} \times 0.35 + \begin{pmatrix}\text{Total length (m)}\\ \text{of liquid piping}\\ \text{size at ø19.1}\end{pmatrix} \times 0.25 + \begin{pmatrix}\text{Total length (m)}\\ \text{of liquid piping}\\ \text{size at ø15.9}\end{pmatrix} \times 0.17 + \begin{pmatrix}\text{Total length (m)}\\ \text{of liquid piping}\\ \text{size at ø12.7}\end{pmatrix} \times 0.11$$
$$+ \begin{pmatrix}\text{Total length (m)}\\ \text{of liquid piping}\\ \text{size at?ø9.5}\end{pmatrix} \times 0.054 + \begin{pmatrix}\text{Total length (m)}\\ \text{of liquid piping}\\ \text{size at ø6.4}\end{pmatrix} \times 0.022 -$$

Model name	Amount of refrigerant
RXYQ5～16MY1B	0 kg
RXYQ18～32MY1B	3 kg
RXYQ34～48MY1B	6 kg

Example for refrigerant branch using refnet joint and refnet header for RXYQ34MY1B

If the outdoor unit is RXYQ34MY1B and the piping lengths are as at right

a: ø19.1 x 30m	d: ø9.5 x 10m	g: ø6.4 x 10m	j : ø6.4 x 10m
b: ø15.9 x 10m	e: ?ø9.5 x 10m	h: ø6.4 x 20m	k: ø6.4 x 9m
c: ø9.5 x 10m	f : ?ø9.5 x 10m	i : ø12.7 x 10m	

$$R = \underset{a}{\boxed{30 \times 0.25}} + \underset{b}{\boxed{10 \times 0.17}} + \underset{i}{\boxed{10 \times 0.11}} + \underset{c+d+e+f}{\boxed{40 \times 0.054}} + \underset{g+h+j+k}{\boxed{49 \times 0.022}} - 6 = 7.538 \Rightarrow \boxed{7.5}$$

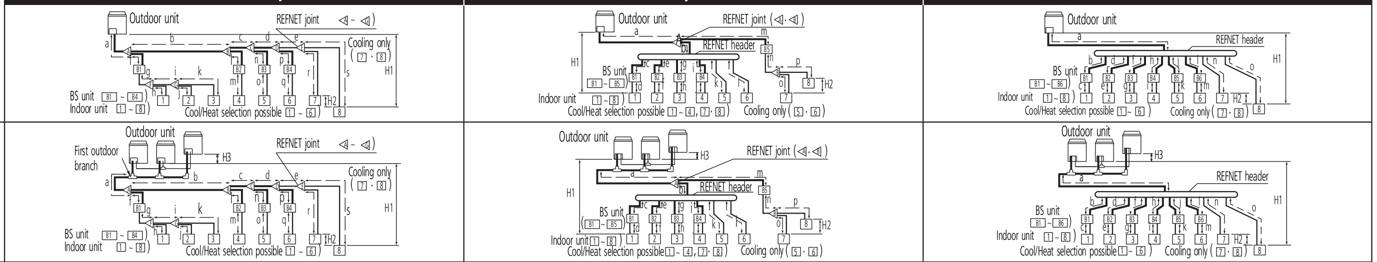
5 REFNET pipe selection

5-2 REYQ8~48M

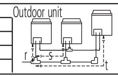
1 indoor unit
A REFNET joint
REFNET header

Outdoor unit — Discharge gas pipe, Suction gas pipe, Liquid pipe (3 pipes) — BS unit — Gas pipe, Liquid pipe (2 pipes) — Indoor unit

	Branch with REFNET joint	Branch with REFNET joint and REFNET header	Branch with REFNET header
One outdoor unit installed (REYQ8~16)			
When multiple outdoor units are installed (REYQ18~)			



			Branch with REFNET joint	Branch with REFNET joint and REFNET header	Branch with REFNET header
Maximum allowable length	Between outdoor and indoor units	Actual pipe length	Pipe length between outdoor and indoor units 150m Example unit 8: a + b + c + d + e + f + g + p 150m	Example unit 6: a + b + h 150m, unit 8: a + i + k 150m	Example unit 8: a + i 150m
		Equivalent length	Equivalent pipe length between outdoor and indoor units 175m (assume equivalent pipe length of REFNET joint to be 0.5m, that of REFNET header to be 1m, calculation purposes)		
		Total extension length	Total piping length from outdoor unit* to all indoor units 300m		
	Between outdoor branch and indoor unit (Only for REYQ18 or more)	Actual pipe length	Piping length from outdoor branch to outdoor unit 10m (Approximate length: max 13m)		
Allowable height length	Between outdoor and indoor units	Difference in height	Difference in height between outdoor and indoor units (H1) 50m (Max 40m if the outdoor unit is below)		
	Between indoor and indoor units	Difference in height	Difference in height between adjacent indoor units (H2) 15m		
	Between outdoor and outdoor units	Difference in height	Difference in height between outdoor unit (main) and outdoor unit (sub) (H3) 5m		
Allowable length after the branch		Actual pipe length	Pipe length from first refrigerant branch kit (either REFNET joint or REFNET header) to indoor unit 40m Example unit 8: b + c + d + e + f + g + p 40m	Example unit 6: b + h 40m, unit 8: i + k 40m	Example unit 8: i 40m



r 10m (Equivalent length: max 13m)
s 10m (Equivalent length: max 13m)
t 10m (Equivalent length: max 13m)

Refrigerant branch kit selection

NOTE
Refrigerant branch kits can only be used with R-410A.

How to select the REFNET joint

- When using REFNET joints at the first branch counted from the outdoor unit side. Choose from the following table in accordance with the capacity of the outdoor unit.

⚠ **First branch after the outdoor unit has to be selected from "Outdoor unit capacity type" table. Even if it is contradictory to the "indoor capacity index" table.**

Outdoor unit capacity type	REFNET joint
REYQ8, 10 type	KHRQ23M29T7
REYQ12~22 type	KHRQ23M64T7
REYQ24 type ~	KHRQ23M75T7

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

indoor capacity index	REFNET joint	
	In case of 3 pipes	In case of 2 pipes
< 200	KHRQ23M20T7	KHRQ22M20T7
200 x < 290	KHRQ23M29T7	KHRQ22M29T7
290 x < 640	KHRQ23M64T7	KHRQ22M64T7
640 <	KHRQ23M75T7	-

How to select the refnet header

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

indoor capacity index	REFNET header	
	In case of 3 pipes	In case of 2 pipes
< 200	KHRQ23M29H7	KHRQ22M29H7
200 x < 290		
290 x < 640	KHRQ23M64H7	KHRQ22M64H7
640 <	KHRQ23M75H7	-

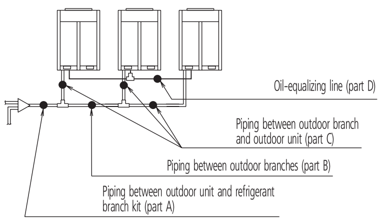
How to choose an outdoor branch kit (needed if the outdoor unit capacity type is REYQ18 or more)
- Choose from the following table in accordance with the number of outdoor units.

Number of outdoor units	
2 units	BHFQ23M907
3 units	BHFQ23M1357

Example of downstream indoor units	example in case of REFNET joint C; indoor units 3 + 4 + 5 + 6 + 7 + 8	example in case of REFNET joint B indoor units 7 + 8, example in case of REFNET header; indoor units 1 + 2 + 3 + 4 + 5 + 6	example in case of REFNET header; indoor units 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8

Pipe size selection

For an outdoor unit multi installation (REYQ18~48MY1B), make the settings in accordance with the following figure.



Piping between outdoor unit and refrigerant branch kit (part A)
- Match to the size of the connection piping on the outdoor unit.

(Unit:mm)

Outdoor unit capacity type	Piping size		
	Liquid pipe	Gas pipe	
		Suction	Discharge
REYQ8	ø 9.5	ø 19.1	ø 15.9
REYQ10		ø 22.2	ø 19.1
REYQ12	ø 12.7	ø 28.6	
REYQ14, 16			ø 22.2
REYQ18, 20	ø 15.9		
REYQ22			
REYQ24		ø 34.9	ø 28.6
REYQ26~34	ø 19.1		
REYQ36		ø 41.3	
REYQ38~48			ø 34.9

⚠ **Maximum piping stretch > 90m equivalent:**
Increase diameter of the MAIN liquid pipe AND gas pipe for the whole range

Main liquid pipe size (Unit:mm)

Outdoor unit capacity type	Piping size	
	Nomal size	Size up
REYQ8, 10	ø 9.5	ø 12.7
REYQ12, 14, 16	ø 12.7	ø 15.9
REYQ18~24	ø 15.9	ø 19.1
REYQ26~48	ø 19.1	ø 22.2

Piping between outdoor branches (part B)
- Choose from the following table in accordance with the total capacity of all the outdoor units connected above this.

(Unit:mm)

outdoor capacity index	Piping size		
	Liquid pipe	Gas pipe	
		Suction	Discharge
REYQ18	ø 15.9	ø 28.6	ø 22.2
REYQ20, 22			ø 28.6
REYQ24		ø 34.9	
REYQ26 <	ø 19.1		

Between two immediately adjacent refrigerant branch kits and BS unit
- Choose from the following table in accordance with the total capacity of all the indoor units connected below this.

⚠ • **Do not let the connection piping exceed the refrigerant piping size chosen by general system model name.**

(Unit:mm)

indoor capacity index	Piping size		
	Liquid pipe	Gas pipe	
		Suction	Discharge
※1 < 62.5	ø 6.4	ø 12.7	ø 9.5
※2 63 x < 200	ø 9.5	ø 15.9	ø 12.7
200 x < 290		ø 22.2	ø 19.1
290 x < 420	ø 12.7	ø 28.6	
420 x < 640	ø 15.9		ø 28.6
640 x < 920	ø 19.1	ø 34.9	
920		ø 41.3	

Piping between outdoor branch and outdoor unit (part C) (Unit:mm)

outdoor capacity type	Piping size		
	Liquid pipe	Gas pipe	
		Suction	Discharge
REYQ8	ø 9.5	ø 19.1	ø 15.9
REYQ10		ø 22.2	ø 19.1
REYQ12	ø 12.7	ø 28.6	
REYQ14, 16			ø 22.2

Oil-equalizing line (Only for REYQ18 or more) (part D) (Unit:mm)

Piping size (outer diameter minimum thickness)	ø 6.4

Between BS unit (refrigerant branch kit) and indoor unit
- Pipe size for direct connection to indoor unit must be the same as the connection size of indoor unit.

(Unit:mm)

indoor capacity index	Piping size	
	Gas pipe	Liquid pipe
※1 20, 25, 32, 40, 50	ø 12.7	ø 6.4
63, 80, 100, 125	ø 15.9	ø 9.5
200	ø 19.1	
250	ø 22.2	

※1 The BS unit (BSVQ100MV1) port and connection pipe are different sizes. Use the reducing joints included with the BS unit.
※2 When the indoor capacity is 160 x < 200. Use the reducing joints included with the BS unit.

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.

NOTE
If a negative result is gotten for R from the formula at right, no refrigerant needs to be added.

$$R=\left\{\begin{array}{l}\left[\begin{array}{l}\text{Total length (m)}\\ \text{of liquid piping}\\ \text{size at ø22.2}\end{array}\right]\times 0.35+\left[\begin{array}{l}\text{Total length (m)}\\ \text{of liquid piping}\\ \text{size at ø19.1}\end{array}\right]\times 0.25+\left[\begin{array}{l}\text{Total length (m)}\\ \text{of liquid piping}\\ \text{size at ø15.9}\end{array}\right]\times 0.17+\left[\begin{array}{l}\text{Total length (m)}\\ \text{of liquid piping}\\ \text{size at ø12.7}\end{array}\right]\times 0.11\\ +\left[\begin{array}{l}\text{Total length (m)}\\ \text{of liquid piping}\\ \text{size at ø9.5}\end{array}\right]\times 0.054+\left[\begin{array}{l}\text{Total length (m)}\\ \text{of liquid piping}\\ \text{size at ø6.4}\end{array}\right]\times 0.022\end{array}\right\}\times 1.15-$$

Model name	Amount of refrigerant
REYQ8~16MY1B	0 kg
REYQ18~32MY1B	3 kg
REYQ34~48MY1B	6 kg

Example for refrigerant branch using refnet joint and REFNET header for REYQ34MY1B

If the outdoor unit is REYQ34MY1B and the piping lengths are as at right

a: ø 19.1 x 30m	d: ø 9.5 x 10m	g: ø 6.4 x 10m	j: ø 6.4 x 10m
b: ø 15.9 x 10m	e: ø 9.5 x 10m	h: ø 6.4 x 20m	k: ø 6.4 x 9m
c: ø 9.5 x 10m	f: ø 9.5 x 10m	i: ø 12.7 x 10m	

$$R=\{\underbrace{30\times 0.25}_{a}+\underbrace{10\times 0.17}_{b}+\underbrace{10\times 0.11}_{i}+\underbrace{40\times 0.054}_{c+d+e+f}+\underbrace{49\times 0.022}_{g+h+j+k}\}\times 1.15-6=9.569 \Rightarrow \boxed{9.6}$$

⚠ **Please note that connectable indoor unit for BSVQ250M is from size 50 onwards. This means that indoor size 20 to 40 should NOT be connected to BSVQ250M. The explanation of possible trouble is that there is mainly a problem with the refrigerant side: if only this BSVQ is in heating, and all the other BSVQ are in cooling , there is a high risk of liquid back to the suction side (by insufficient evaporation of liquid used for extra subcool). If such operation of BSVQ250M runs for a while with an indoor thermostat-on of index 40 or less, it can result in compressor failure. The communication itself will work as the BSVQ does not know its size, so it**

5

5-3 Piping thickness

Piping diameter	Material	Minimum thickness [mm]
Ø 6.4	0	0.8
Ø 9.5	0	0.8
Ø 12.7	0	0.8
Ø 15.9	0	0.99
Ø 19.1	1/2H	0.8
Ø 22.2	1/2H	0.8
Ø 28.6	1/2H	0.99
Ø 34.9	1/2H	1.21
Ø 41.3	1/2H	1.43

:O : annealed

1/2H : half-hard

5

For half hard pipes the maximum allowed tensile stress is 61 N/mm^2. For this reason the 0.2% proof strength of the half hard pipe shall be minimum 61 N/mm^2.

The bending radius is more than or equal to 3 times the diameter of the pipe.

2

VRV® II

Systems

ISO14001 assures an effective environmental management system in order to help protect human•health•and the environment from the potential impact of our activities, products and services and to assist in maintaining and improving the quality of the•environment.

Daikin Europe N.V. is approved by LRQA for its Quality Management System in accordance with the ISO9001 standard. ISO9001 pertains to quality assurance regarding design, development, manufacturing as well as to services related to the product.

Daikin units comply with the European regulations that guarantee the safety of the product.

VRV products are not within the scope of the Eurovent certification programme.

Daikin equipment is designed for comfort applications. For use in other applications, please contact your local Daikin representative.

Specifications are subject to change without prior notice

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