



# technical data

Air-cooled selection procedure

air conditioning systems

**VRV<sup>®</sup> III-S**  
**VRV<sup>®</sup> III**

# 1 Selection procedure VRV 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

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

In general, outdoor 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 %
RXYSQ4PV / RXYSQ4PY1	130	120	110	100	90	80	70	60	50
RXYSQ5PV / RXYSQ5PY1	162.5	150	137.5	125	112.5	100	87.5	75	62.5
RXYSQ6PV / RXYSQ6PY1	182	168	154	140	126	112	98	84	70

Outdoor unit	Indoor unit combination ratio								
	130 %	120 %	110 %	100 %	90 %	80 %	70%	60 %	50 %
RX(Y)Q5P	162.5	150	137.5	125	112.5	100	87.5	75	62.5
RX(Y)Q8P/REYQ8P	260	240	220	200	180	160	140	120	100
RX(Y)Q10P/REYQ10P	325	300	275	250	225	200	175	150	125
RX(Y)Q12P/REYQ12P	390	360	330	300	270	240	210	180	150
RX(Y)Q14PA/REYQ14P	455	420	385	350	315	280	245	210	175
RX(Y)Q16PA/REYQ16P	520	480	440	400	360	320	280	240	200
RX(Y)Q18PA/REYQ18P	585	540	495	450	405	360	315	270	225
RXYQ20P(A)/REYQ20P	650	600	550	500	450	400	350	300	250
RXYQ22P(A)/REYQ22P	715	660	605	550	495	440	385	330	275
RXYQ24P(A)/REYQ24P	780	720	660	600	540	480	420	360	300
RXYQ26P(A)/REYQ26P	845	780	715	650	585	520	455	390	325
RXYQ28P(A)/REYQ28P	910	840	770	700	630	560	490	420	350
RXYQ30P(A)/REYQ30P	975	900	825	750	675	600	525	450	375
RXYQ32P(A)/REYQ32P	1,040	960	880	800	720	640	560	480	400
RXYQ34P(A)/REYQ34P	1,105	1,020	935	850	765	680	595	510	425
RXYQ36P(A)/REYQ36P	1,170	1,080	990	900	810	720	630	540	450
RXYQ38P(A)/REYQ38P	1,235	1,140	1,045	950	855	760	665	570	475
RXYQ40P(A)/REYQ40P	1,300	1,200	1,100	1,000	900	800	700	600	500
RXYQ42P(A)/REYQ42P	1,365	1,260	1,155	1,050	945	840	735	630	525
RXYQ44P(A)/REYQ44P	1,430	1,320	1,210	1,100	990	880	770	660	550
RXYQ46P(A)/REYQ46P	1,495	1,380	1,265	1,150	1,035	920	805	690	575
RXYQ48P(A)/REYQ48P	1,560	1,440	1,320	1,200	1,080	960	840	720	600
RXYQ50P(A)	1,625	1,500	1,375	1,250	1,125	1,000	875	750	625
RXYQ52P(A)	1,690	1,560	1,430	1,300	1,170	1,040	910	780	650
RXYQ54P(A)	1,755	1,620	1,485	1,350	1,215	1,080	945	810	675

Indoor unit capacity index

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

# 1 Selection procedure VRV 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

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: RXYQ10P

Indoor unit: FXCQ25M8 x 3, FXCQ40M8 x 5

- Indoor unit combination total capacity index

$$25 \times 3 + 40 \times 5 = 275 \text{ (110 \%)}$$

# 1 Selection procedure VRV system based on cooling load

## 1 - 4 Selection example based on cooling load

### 4 Actual performance data (50Hz)

- Outdoor unit cooling capacity: 30.5kW (RXYQ10P, 110 %)
- Individual capacity  
 Capacity of FXCQ25M =  $30.5 \times \frac{25}{275} = 2.77\text{kW}$   
 Capacity of FXCQ40M =  $30.5 \times \frac{40}{275} = 4.44\text{kW}$

### 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  
 $(25 \times 2) + 31.25 + (40 \times 5) = 281.25$  (112.5 %)
- Outdoor unit cooling capacity:  
 27,610 kcal/h (direct interpolation between 110 % and 120 % in the table)
- Individual capacity  
 Capacity of FXCQ25M =  $30.0 \times \frac{25}{281.25} = 2.7\text{kW}$   
 Capacity of FXCQ32M =  $30.0 \times \frac{32}{281.25} = 3.4\text{kW}$   
 Capacity of FXCQ40M =  $30.0 \times \frac{40}{281.25} = 4.3\text{kW}$

### 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

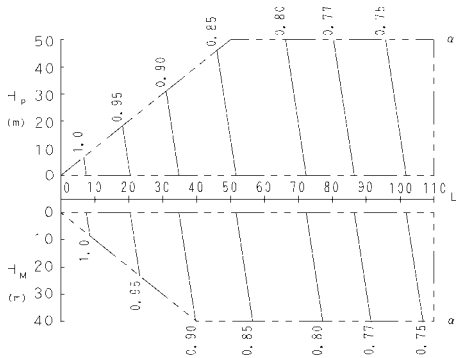
Then, the capacities have to be corrected for actual piping length according to the location of indoor and outdoor units and the distance between them.

## 2 Capacity correction ratio

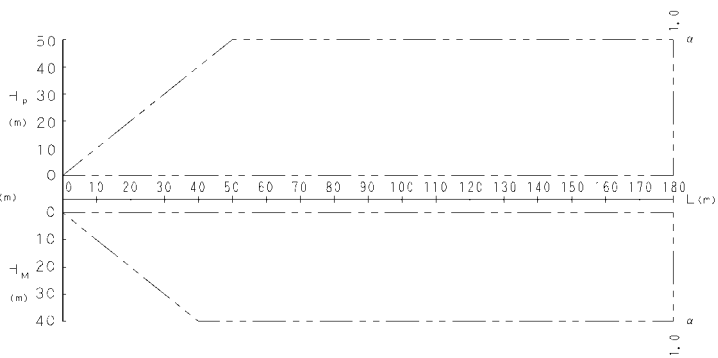
### 2 - 1 VRV8-S

#### RXYSQ4,5PV/RXYSQ4,5PY1

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



3D045710C

#### NOTES

- 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.
- With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
- Method of calculating cooling / heating capacity (max. capacity for combination with standard indoor unit).

$$\text{Cooling / heating capacity} = \text{cooling / heating capacity obtained from performance characteristics table} \times \text{each capacity rate of change}$$

In the case length of piping differs depending on the indoor unit, maximum capacity of each unit during simultaneous operation is:

$$\text{Cooling / heating capacity} = \text{cooling / heating capacity of each unit} \times \text{capacity rate of change for each piping length}$$

<As for RXYSQ4,5P7V3B>

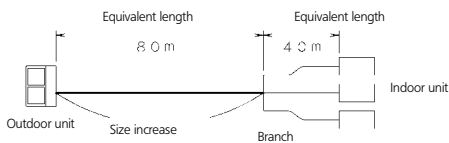
- When overall equivalent pipe length is 90m or more, the diameter of the main gas pipes (outdoor unit-branch sections) must be increased.  
[Diameter of above case]

Model	Gas	Liquid
RXYSQ4, 5P7V3B	J 19.1	Not increased
RXYSQ4, 5P7Y1B		

- When the main sections of the interunit gas pipe diameters are increased the overall equivalent length should be calculated as follows.

$$\text{Overall equivalent length} = \text{Equivalent length to main pipe} \times 0.5 + \text{Equivalent length after branching}$$

Example: RXYSQ4, 5P7V3B  
: RXYSQ4, 5P7Y1B



In the above case (Cooling)

$$\text{Overall equivalent length} = 80\text{m} \times 0.5 + 40\text{m} = 80\text{m}$$

The correction factor in capacity when Hp=0m is thus approximately 0.78.

#### Explanation of symbols

- H<sub>p</sub> : Level difference (m) between indoor and outdoor units where indoor in inferior position.
- H<sub>M</sub> : Level difference (m) between indoor and outdoor units where indoor in superior position.
- L : Equivalent pipe length (m)
- : Capacity correction factor

[Diameter of pipes]

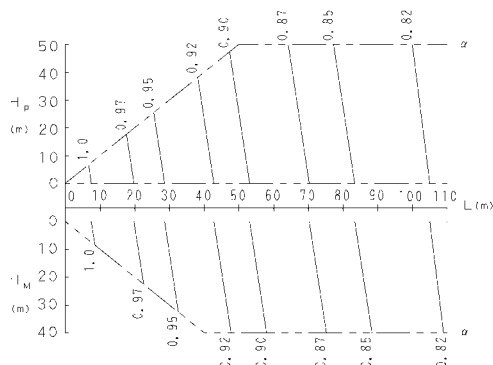
Model	Gas	Liquid
RXYSQ4, 5P7V3B	J 15.9	J 9.5
RXYSQ4, 5P7Y1B		

## 2 Capacity correction ratio

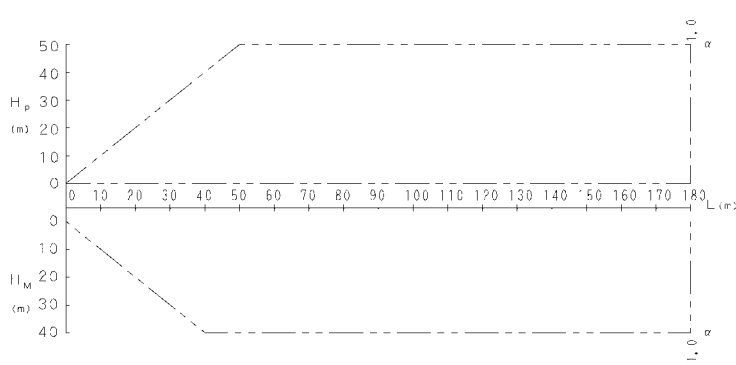
### 2 - 1 VRV8-S

#### RXYSQ6PV/RXYSQ6PY1

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



3D045961C

#### NOTES

- 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.
- With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
- 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 capacity rate of change

In the case length of piping 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

<As for RXYSQ6P7V3B>

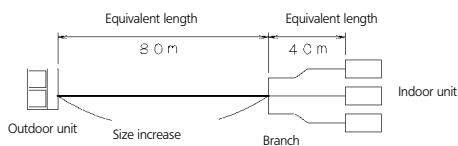
- When overall equivalent pipe length is 90m or more, the diameter of the main gas pipes (outdoor unit-branch sections) must be increased.  
[Diameter of above case]

Model	Gas	Liquid
RXYSQ6P7V3B	J 22.2	Not increased
RXYSQ6P7Y1B		

- When the main sections of the interunit gas pipe diameters are increased the overall equivalent length should be calculated as follows.

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

Example: RXYSQ6P7V3B  
: RXYSQ6P7Y1B



In the above case (Cooling)

Overall equivalent length = 80m x 0.5 + 40m = 80m

The correction factor in capacity when Hp=0m is thus approximately 0.86.

#### Explanation of symbols

- H<sub>p</sub> : Level difference (m) between indoor and outdoor units where indoor in inferior position.
- H<sub>m</sub> : Level difference (m) between indoor and outdoor units where indoor in superior position.
- L : Equivalent pipe length (m)
- C<sub>p</sub> : Capacity correction factor

[Diameter of pipes]

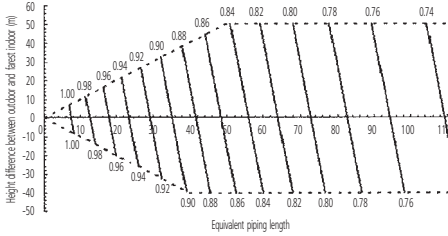
Model	Gas	Liquid
RXYSQ6P7V3B	J 19.1	J 9.5
RXYSQ6P7Y1B		

## 2 Capacity correction ratio

### 2 - 2 VRV cooling only

#### RXQ5P

- Correction ratio for cooling capacity



3TW27302-6

#### NOTES

- These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation from the capacity correction ratio, shown in the above figures.
- With this outdoor unit, constant evaporating pressure control when cooling.
- Method of calculating the capacity of the outdoor units:  
The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
  - Condition: Indoor connection ratio does not exceed 100%  
Maximum capacity of outdoor units =  $\frac{\text{capacity of outdoor units from capacity table at 100\% connection ratio}}{\text{correction ratio of piping to forest indoor}}$
  - Condition: Indoor connection ratio exceeds 100%  
Maximum capacity of outdoor units =  $\frac{\text{capacity of outdoor from capacity table at installed connection ratio}}{\text{correction ratio of piping to forest indoor}}$
- When the overall equivalent pipe length is 90m or more, main gas and liquid pipe diameters must be increased. For new diameters see below.

Model	gas pipe	liquid pipe
RXQ5P	ø 19.1	ø 9.5

- When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).

Diameter of main pipes (standard size)

Model	gas pipe	liquid pipe
RXQ5P	ø 15.9	ø 9.5

- Equivalent length used in the above figures is based upon the following equivalent length.

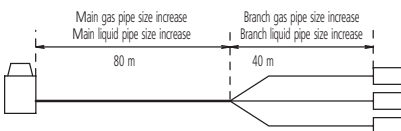
$$\text{Equivalent piping length} = \text{Equivalent length of main pipe} \times \text{Correction factor} + \text{Equivalent length of branch pipes} \times \text{Correction factor}$$

Choose a correction factor from the following table.

When cooling capacity is calculated: gas pipe size.

Cooling (gas pipe)	Correction factor	
	Standard size	Size increase
	1.0	0.5

- Example



In the above case

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

The rate of change in:

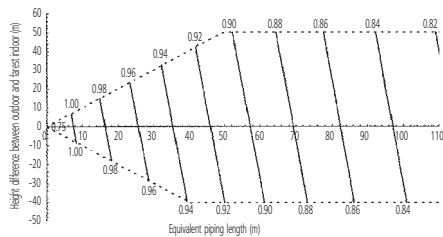
cooling capacity when height difference = 0 is thus approximately 0.78

## 2 Capacity correction ratio

### 2 - 2 VRV8 cooling only

#### RXQ8P

- Correction ratio for cooling capacity



3TW27302-6

#### NOTES

- These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions.  
Moreover, under partial load conditions, there is only a minor deviation from the capacity correction ratio, shown in the above figures.
- With this outdoor unit, constant evaporating pressure control when cooling.
- Method of calculating the capacity of the outdoor units:  
The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
  - Condition: Indoor connection ratio does not exceed 100%  
Maximum capacity of outdoor units = capacity of outdoor units from capacity table at 100% connection ratio x correction ratio of piping to farthest indoor
  - Condition: Indoor connection ratio exceeds 100%  
Maximum capacity of outdoor units = capacity of outdoor from capacity table at installed connection ratio x correction ratio of piping to farthest indoor
- When the overall equivalent pipe length is 90m or more, main gas and liquid pipe diameters must be increased.  
For new diameters see below.

Model	gas pipe	liquid pipe
RXQ8P	ø 22.2	ø 12.7

- When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).

Diameter of main pipes (standard size)

Model	gas pipe	liquid pipe
RXQ8P	ø 19.1	ø 9.5

- Equivalent length used in the above figures is based upon the following equivalent length.

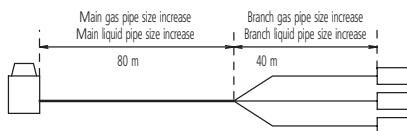
$$\text{Equivalent piping length} = \text{Equivalent length of main pipe} \times \text{Correction factor} + \text{Equivalent length of branch pipes} \times \text{Correction factor}$$

Choose a correction factor from the following table.

When cooling capacity is calculated: gas pipe size.

Cooling (gas pipe)	Correction factor	
	Standard size	Size increase
	1.0	0.5

- Example



In the above case

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

The rate of change in:

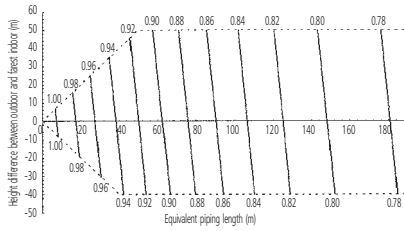
cooling capacity when height difference = 0 is thus approximately 0.86

## 2 Capacity correction ratio

### 2 - 2 VRVIII cooling only

#### RXQ10P

- Correction ratio for cooling capacity



3TW27302-6

#### NOTES

- These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation from the capacity correction ratio, shown in the above figures.
- With this outdoor unit, constant evaporating pressure control when cooling.
- Method of calculating the capacity of the outdoor units:  
The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
  - Condition: Indoor connection ratio does not exceed 100%  

$$\text{Maximum capacity of outdoor units} = \frac{\text{capacity of outdoor units from capacity table at 100\% connection ratio}}{\text{correction ratio of piping to forest indoor}}$$
  - Condition: Indoor connection ratio exceeds 100%  

$$\text{Maximum capacity of outdoor units} = \frac{\text{capacity of outdoor from capacity table at installed connection ratio}}{\text{correction ratio of piping to forest indoor}}$$
- When the overall equivalent pipe length is 90m or more, main gas and liquid pipe diameters must be increased. For new diameters see below.

Model	gas pipe	liquid pipe
RXQ10P	ø 25.4*	ø 12.7

\* If not available on site, do not increase. If not increased, no correction factor should be applied to the equivalent length (see note 6).

- When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).

Diameter of main pipes (standard size)

Model	gas pipe	liquid pipe
RXQ10P	ø 22.2	ø 9.5

- Equivalent length used in the above figures is based upon the following equivalent length.

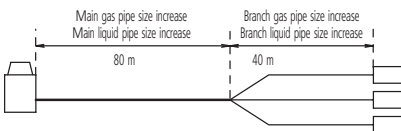
$$\text{Equivalent piping length} = \text{Equivalent length of main pipe} \times \text{Correction factor} + \text{Equivalent length of branch pipes} \times \text{Correction factor}$$

Choose a correction factor from the following table.

When cooling capacity is calculated: gas pipe size.

Cooling (gas pipe)	Correction factor	
	Standard size	Size increase
	1.0	0.5

- Example



In the above case

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

The rate of change in:

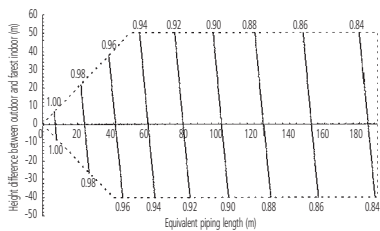
cooling capacity when height difference = 0 is thus approximately 0.87

## 2 Capacity correction ratio

### 2 - 2 VRV8 cooling only

#### RXQ12,14P

- Correction ratio for cooling capacity



3TW27302-6

#### NOTES

- These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions.  
Moreover, under partial load conditions, there is only a minor deviation from the capacity correction ratio, shown in the above figures.
- With this outdoor unit, constant evaporating pressure control when cooling.
- Method of calculating the capacity of the outdoor units:  
The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
  - Condition: Indoor connection ratio does not exceed 100%  
Maximum capacity of outdoor units = capacity of outdoor units from capacity table at 100% connection ratio x correction ratio of piping to farthest indoor
  - Condition: Indoor connection ratio exceeds 100%  
Maximum capacity of outdoor units = capacity of outdoor from capacity table at installed connection ratio x correction ratio of piping to farthest indoor
- When the overall equivalent pipe length is 90m or more, main gas and liquid pipe diameters must be increased.  
For new diameters see below.

Model	gas pipe	liquid pipe
RXQ12-14P	ø 28.6	ø 15.9

- When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).

Diameter of main pipes (standard size)

Model	gas pipe	liquid pipe
RXQ12-14P	ø 28.6	ø 12.7

- Equivalent length used in the above figures is based upon the following equivalent length.

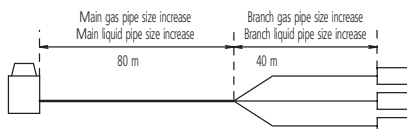
$$\text{Equivalent piping length} = \text{Equivalent length of main pipe} \times \text{Correction factor} + \text{Equivalent length of branch pipes} \times \text{Correction factor}$$

Choose a correction factor from the following table.

When cooling capacity is calculated: gas pipe size.

Cooling (gas pipe)	Correction factor	
	Standard size	Size increase
	1.0	0.5

- Example



In the above case

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

The rate of change in:

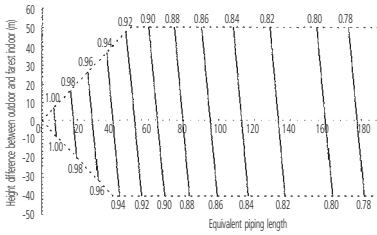
cooling capacity when height difference = 0 is thus approximately 0.89

## 2 Capacity correction ratio

### 2 - 2 VRV8 cooling only

#### RXQ16P

- Correction ratio for cooling capacity



3TW27302-6

#### NOTES

- These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation from the capacity correction ratio, shown in the above figures.
- With this outdoor unit, constant evaporating pressure control when cooling.
- Method of calculating the capacity of the outdoor units:  
The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
  - Condition: Indoor connection ratio does not exceed 100%  

$$\text{Maximum capacity of outdoor units} = \frac{\text{capacity of outdoor units from capacity table at 100\% connection ratio}}{\text{correction ratio of piping to forest indoor}}$$
  - Condition: Indoor connection ratio exceeds 100%  

$$\text{Maximum capacity of outdoor units} = \frac{\text{capacity of outdoor from capacity table at installed connection ratio}}{\text{correction ratio of piping to forest indoor}}$$
- When the overall equivalent pipe length is 90m or more, main gas and liquid pipe diameters must be increased. For new diameters see below.

Model	gas pipe	liquid pipe
RXQSP	ø 31.8*	ø 15.9

- When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).

Diameter of main pipes (standard size)

Model	gas pipe	liquid pipe
RXQSP	ø 28.6	ø 12.7

- Equivalent length used in the above figures is based upon the following equivalent length.

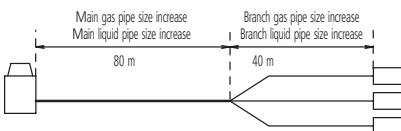
$$\text{Equivalent piping length} = \text{Equivalent length of main pipe} \times \text{Correction factor} + \text{Equivalent length of branch pipes} \times \text{Correction factor}$$

Choose a correction factor from the following table.

When cooling capacity is calculated: gas pipe size.

Cooling (gas pipe)	Correction factor	
	Standard size	Size increase
	1.0	0.5

- Example



In the above case

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

The rate of change in:

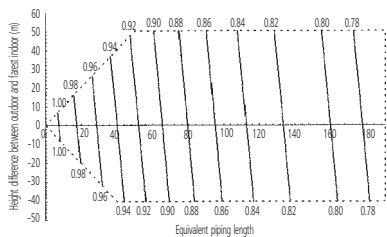
cooling capacity when height difference = 0 is thus approximately 0.88

## 2 Capacity correction ratio

### 2 - 2 VRV VIII cooling only

#### RXQ18P

- Correction ratio for cooling capacity



3TW27302-6

#### NOTES

- These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions.  
Moreover, under partial load conditions, there is only a minor deviation from the capacity correction ratio, shown in the above figures.
- With this outdoor unit, constant evaporating pressure control when cooling.
- Method of calculating the capacity of the outdoor units:  
The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
  - Condition: Indoor connection ratio does not exceed 100%  
Maximum capacity of outdoor units = capacity of outdoor units from capacity table at 100% connection ratio x correction ratio of piping to farthest indoor
  - Condition: Indoor connection ratio exceeds 100%  
Maximum capacity of outdoor units = capacity of outdoor from capacity table at installed connection ratio x correction ratio of piping to farthest indoor
- When the overall equivalent pipe length is 90m or more, main gas and liquid pipe diameters must be increased.  
For new diameters see below.

Model	gas pipe	liquid pipe
RXQ18P	ø 31.8*	ø 19.1

\* If not available on site, do not increase. If not increased, no correction factor should be applied to the equivalent length (see note 6).

- When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).

Diameter of main pipes (standard size)

Model	gas pipe	liquid pipe
RXQ18P	ø 28.6	ø 15.9

- Equivalent length used in the above figures is based upon the following equivalent length.

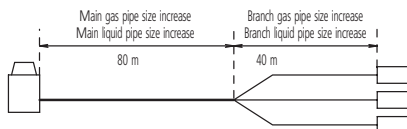
$$\text{Equivalent piping length} = \text{Equivalent length of main pipe} \times \text{Correction factor} + \text{Equivalent length of branch pipes} \times \text{Correction factor}$$

Choose a correction factor from the following table.

When cooling capacity is calculated: gas pipe size

Cooling (gas pipe)	Correction factor	
	Standard size	Size increase
	1.0	0.5

- Example



In the above case

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

The rate of change in:

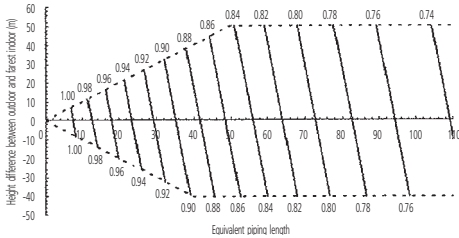
cooling capacity when height difference = 0 is thus approximately 0.83

## 2 Capacity correction ratio

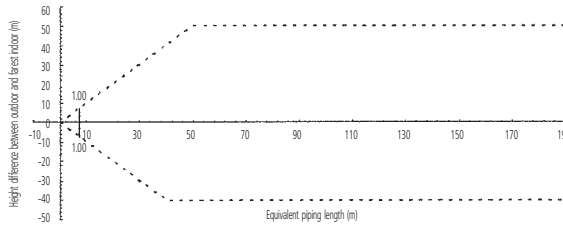
### 2 - 3 VRV8 heat pump

#### RXYQ5P

• Correction ratio for cooling capacity



• Correction ratio for heating capacity



3TW27232-6

#### NOTES

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

- Condition: Indoor connection ratio does not exceed 100%  

$$\text{Maximum capacity of outdoor units} = \text{capacity of outdoor units from capacity table at 100\% connection ratio} \times \text{correction ratio of piping to forest indoor}$$
- Condition: Indoor connection ratio exceeds 100%  

$$\text{Maximum capacity of outdoor units} = \text{capacity of outdoor from capacity table at installed connection ratio} \times \text{correction ratio of piping to forest indoor}$$

- When the overall equivalent pipe length is 90m or more, main gas and liquid pipe diameters must be increased. For new diameters see below.

Model	gas pipe	liquid pipe
RXYQ5P	ø 19.1	ø 9.5

- When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).

Diameter of main pipes (standard size)

Model	gas pipe	liquid pipe
RXYQ5P	ø 15.9	ø 9.5

- Equivalent length used in the above figures is based upon the following equivalent length.

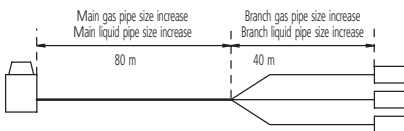
$$\text{Equivalent piping length} = \text{Equivalent length of main pipe} \times \text{Correction factor} + \text{Equivalent length of branch pipes} \times \text{Correction factor}$$

Choose a correction factor from the following table.

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

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

(Heating)  $\text{Overall equivalent length} = 80\text{m} \times 0.5 + 40\text{m} \times 1.0 = 120\text{m}$

The rate of change in:

cooling capacity when height difference = 0 is thus approximately 0.78

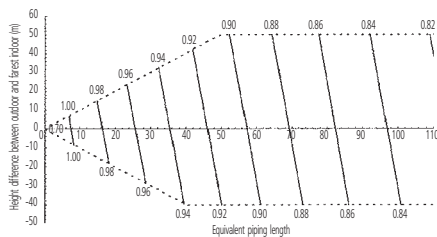
heating capacity when height difference = 0 is thus approximately 1.0

## 2 Capacity correction ratio

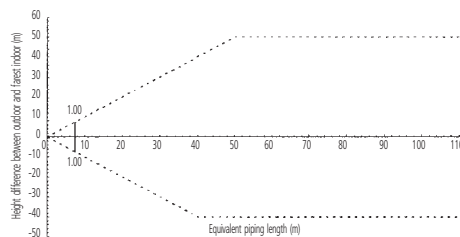
### 2 - 3 VRV VIII heat pump

#### RXYQ8P

• Correction ratio for cooling capacity



• Correction ratio for heating capacity



3TW27232-6

#### NOTES

- These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions.  
Moreover, under partial load conditions, there is only a minor deviation from the capacity correction ratio, shown in the above figures.
- With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
- Method of calculating the capacity of the outdoor units:  
The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
  - Condition: Indoor connection ratio does not exceed 100%  

$$\text{Maximum capacity of outdoor units} = \text{capacity of outdoor units from capacity table at 100\% connection ratio} \times \text{correction ratio of piping to farrest indoor}$$
  - Condition: Indoor connection ratio exceeds 100%  

$$\text{Maximum capacity of outdoor units} = \text{capacity of outdoor from capacity table at installed connection ratio} \times \text{correction ratio of piping to farrest indoor}$$
- When the overall equivalent pipe length is 90m or more, main gas and liquid pipe diameters must be increased.  
For new diameters see below.

Model	gas pipe	liquid pipe
RXYQ8P	ø 22.2	ø 12.7

- When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).

Diameter of main pipes (standard size)

Model	gas pipe	liquid pipe
RXYQ8P	ø 19.1	ø 9.5

- Equivalent length used in the above figures is based upon the following equivalent length.

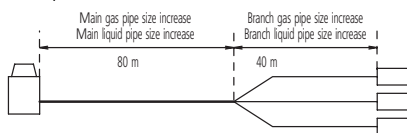
$$\text{Equivalent piping length} = \text{Equivalent length of main pipe} \times \text{Correction factor} + \text{Equivalent length of branch pipes} \times \text{Correction factor}$$

Choose a correction factor from the following table.

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

	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

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

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

The rate of change in:

cooling capacity when height difference = 0 is thus approximately 0.86

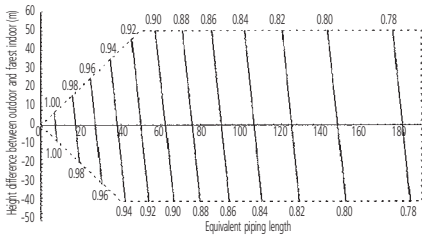
heating capacity when height difference = 0 is thus approximately 1.0

## 2 Capacity correction ratio

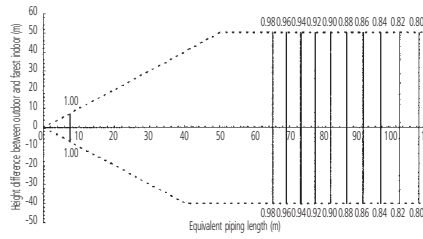
### 2 - 3 VRV8 heat pump

#### RXYQ10P

• Correction ratio for cooling capacity



• Correction ratio for heating capacity



3TW27232-6

#### NOTES

- These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation from the capacity correction ratio, shown in the above figures.
- With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
- Method of calculating the capacity of the outdoor units:  
The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
  - Condition: Indoor connection ratio does not exceed 100%  
 $\text{Maximum capacity of outdoor units} = \text{capacity of outdoor units from capacity table at 100\% connection ratio} \times \text{correction ratio of piping to forest indoor}$
  - Condition: Indoor connection ratio exceeds 100%  
 $\text{Maximum capacity of outdoor units} = \text{capacity of outdoor from capacity table at installed connection ratio} \times \text{correction ratio of piping to forest indoor}$
- When the overall equivalent pipe length is 90m or more, main gas and liquid pipe diameters must be increased. For new diameters see below.

Model	gas pipe	liquid pipe
RXYQ10P	ø 25.4*	ø 12.7

\* If not available on site, do not increase. If not increased, no correction factor should be applied to the equivalent length (see note 6).

- When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).

Diameter of main pipes (standard size)

Model	gas pipe	liquid pipe
RXYQ10P	ø 22.2	ø 9.5

- Equivalent length used in the above figures is based upon the following equivalent length.

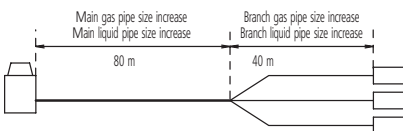
$$\text{Equivalent piping length} = \text{Equivalent length of main pipe} \times \text{Correction factor} + \text{Equivalent length of branch pipes} \times \text{Correction factor}$$

Choose a correction factor from the following table.

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

	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

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

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

The rate of change in:

cooling capacity when height difference = 0 is thus approximately 0.87

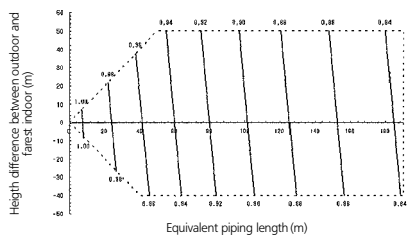
heating capacity when height difference = 0 is thus approximately 0.90

## 2 Capacity correction ratio

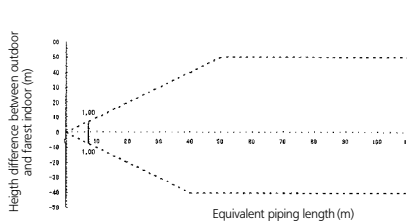
### 2 - 3 VRV8 heat pump

#### RXYQ12,14,24,36P

Correction ratio for cooling capacity



Correction ratio for heating capacity



**Notes**

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

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

**3. Method of calculating the capacity of the outdoor units**

The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.

**Condition: Indoor connection ratio does not exceed 100%**

$$\text{Maximum capacity of outdoor units} = \frac{\text{Capacity of outdoor units from capacity table at 100\% connection ratio}}{\text{Correction ratio of piping to faarest indoor}}$$

**Condition: Indoor connection ratio exceeds 100%**

$$\text{Maximum capacity of outdoor units} = \frac{\text{Capacity of outdoor units from capacity table at installed connection ratio}}{\text{Correction ratio of piping to faarest indoor}}$$

4. When the overall equivalent pipe length is 90m or more, main gas and liquid pipe diameters must be increased. For new diameters, see below.

model	Gas pipe	Liquid pipe
RXYQ12+14P	28.6	15.9
RXYQ24P	34.9	19.1
RXYQ36P	41.3	22.2

5. When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).

model	Gas pipe	Liquid pipe
RXYQ12+14P	28.6	12.7
RXYQ24P	34.9	15.9
RXYQ36P	41.3	19.1

6. Equivalent length used in the above figures is based upon the following equivalent length

$$\text{Equivalent piping length} = \text{Equivalent length of main pipe} \times \text{Correction factor} + \text{Equivalent length of branch pipes} \times \text{Correction factor}$$

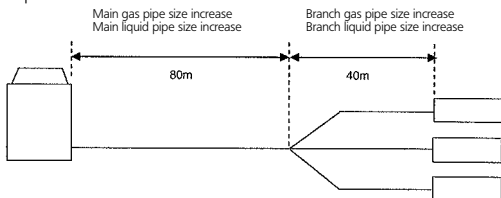
Choose the correction factor from the following table.

When cooling capacity is calculated: gas pipe size

When heating capacity is calculated: liquid pipe size

	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 x 1.0 = 120m

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

The rate of change in:

Cooling capacity when height difference = 0 is thus approximately 0.89

Heating capacity when height difference = 0 is thus approximately 1.0

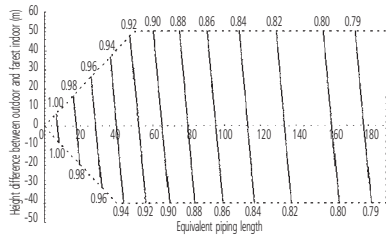
3TW27232-6A

## 2 Capacity correction ratio

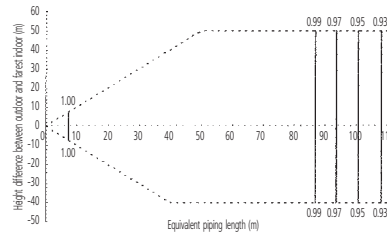
### 2 - 3 VRVIII heat pump

#### RXYQ16P

• Correction ratio for cooling capacity



• Correction ratio for heating capacity



3TW27232-6

#### NOTES

- These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation from the capacity correction ratio, shown in the above figures.
- With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
- Method of calculating the capacity of the outdoor units:  
The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
  - Condition: Indoor connection ratio does not exceed 100%  
 $\text{Maximum capacity of outdoor units} = \text{capacity of outdoor units from capacity table at 100\% connection ratio} \times \text{correction ratio of piping to forest indoor}$
  - Condition: Indoor connection ratio exceeds 100%  
 $\text{Maximum capacity of outdoor units} = \text{capacity of outdoor from capacity table at installed connection ratio} \times \text{correction ratio of piping to forest indoor}$
- When the overall equivalent pipe length is 90m or more, main gas and liquid pipe diameters must be increased. For new diameters see below.

Model	gas pipe	liquid pipe
RXYQ16P	ø 31.8*	ø 15.9

\* If not available on site, do not increase. If not increased, no correction factor should be applied to the equivalent length (see note 6).

- When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).

Diameter of main pipes (standard size)

Model	gas pipe	liquid pipe
RXYQ16P	ø 28.6	ø 12.7

- Equivalent length used in the above figures is based upon the following equivalent length.

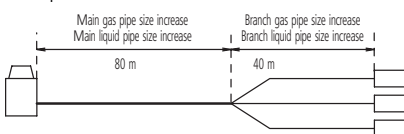
$$\text{Equivalent piping length} = \text{Equivalent length of main pipe} \times \text{Correction factor} + \text{Equivalent length of branch pipes} \times \text{Correction factor}$$

Choose a correction factor from the following table.

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

	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

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

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

The rate of change in:

cooling capacity when height difference = 0 is thus approximately 0.88

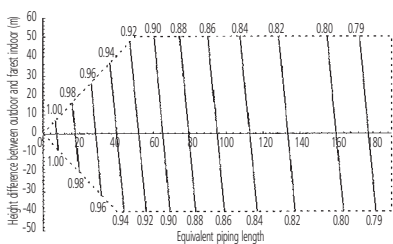
heating capacity when height difference = 0 is thus approximately 0.99

## 2 Capacity correction ratio

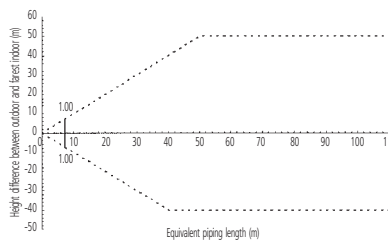
### 2 - 3 VRV8 heat pump

#### RXYQ18,26,28,30,38,40,42,44P

- Correction ratio for cooling capacity



- Correction ratio for heating capacity



3TW27232-6

2

#### NOTES

- These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation from the capacity correction ratio, shown in the above figures.
- With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
- Method of calculating the capacity of the outdoor units:  
The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
  - Condition: Indoor connection ratio does not exceed 100%  
Maximum capacity of outdoor units = capacity of outdoor units from capacity table at 100% connection ratio x correction ratio of piping to faarest indoor
  - Condition: Indoor connection ratio exceeds 100%  
Maximum capacity of outdoor units = capacity of outdoor from capacity table at installed connection ratio x correction ratio of piping to faarest indoor
- When the overall equivalent pipe length is 90m or more, main gas and liquid pipe diameters must be increased. For new diameters see below.

Model	gas pipe	liquid pipe
RXYQ18P	ø 31.8*	ø 19.1
RXYQ26-30P	ø 38.1*	ø 22.2
RXYQ38-44P	ø 41.3	ø 22.2

\* If not available on site, do not increase. If not increased, no correction factor should be applied to the equivalent length (see note 6).

- When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).  
Diameter of main pipes (standard size)

Model	gas pipe	liquid pipe
RXYQ18P	ø 28.6	ø 15.9
RXYQ26-30P	ø 34.9	ø 19.1
RXYQ38-44P	ø 41.3	ø 19.1

- Equivalent length used in the above figures is based upon the following equivalent length.

$$\text{Equivalent piping length} = \text{Equivalent length of main pipe} \times \text{Correction factor} + \text{Equivalent length of branch pipes} \times \text{Correction factor}$$

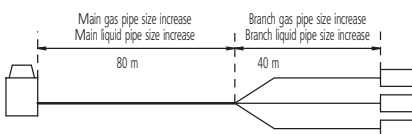
Choose a correction factor from the following table.

When cooling capacity is calculated: gas pipe size

When heating capacity is calculated: liquid pipe size.

	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 x 1.0 = 120m

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

The rate of change in:

cooling capacity when height difference = 0 is thus approximately 0.83

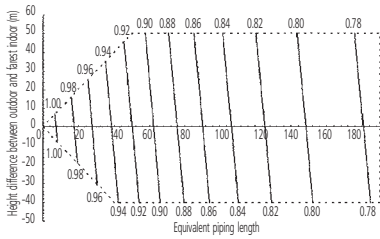
heating capacity when height difference = 0 is thus approximately 1.0

## 2 Capacity correction ratio

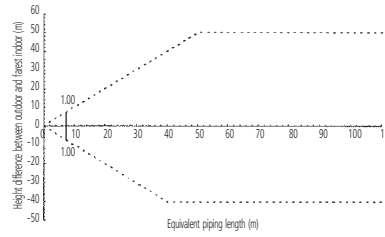
### 2 - 3 VRV8 heat pump

#### RXYQ20,32,34P

• Correction ratio for cooling capacity



• Correction ratio for heating capacity



3TW27232-6

#### NOTES

1 These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions.

Moreover, under partial load conditions, there is only a minor deviation from the capacity correction ratio, shown in the above figures.

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

3 Method of calculating the capacity of the outdoor units:

The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.

- Condition: Indoor connection ratio does not exceed 100%

$$\text{Maximum capacity of outdoor units} = \frac{\text{capacity of outdoor units from capacity table at 100\% connection ratio}}{\text{correction ratio of piping to faest indoor}}$$

- Condition: Indoor connection ratio exceeds 100%

$$\text{Maximum capacity of outdoor units} = \frac{\text{capacity of outdoor from capacity table at installed connection ratio}}{\text{correction ratio of piping to faest indoor}}$$

4 When the overall equivalent pipe length is 90m or more, main gas and liquid pipe diameters must be increased. For new diameters see below.

Model	gas pipe	liquid pipe
RXYQ20P	ø 31.8*	ø 19.1
RXYQ32-34P	ø 38.1*	ø 22.2

\* If not available on site, do not increase. If not increased, no correction factor should be applied to the equivalent length (see note 6).

5 When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).

Diameter of main pipes (standard size)

Model	gas pipe	liquid pipe
RXYQ20P	ø 28.6	ø 15.9
RXYQ32-34P	ø 34.9	ø 19.1

6 Equivalent length used in the above figures is based upon the following equivalent length.

$$\text{Equivalent piping length} = \text{Equivalent length of main pipe} \times \text{Correction factor} + \text{Equivalent length of branch pipes} \times \text{Correction factor}$$

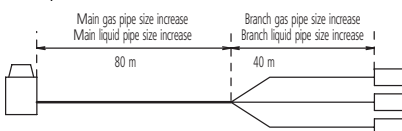
Choose a correction factor from the following table.

When cooling capacity is calculated: gas pipe size

When heating capacity is calculated: liquid pipe size.

	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	0.5
Heating (liquid pipe)	1.0	0.5

7 Example



In the above case

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

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

The rate of change in:

cooling capacity when height difference = 0 is thus approximately 0.88

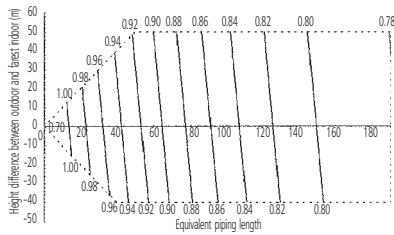
heating capacity when height difference = 0 is thus approximately 1.0

## 2 Capacity correction ratio

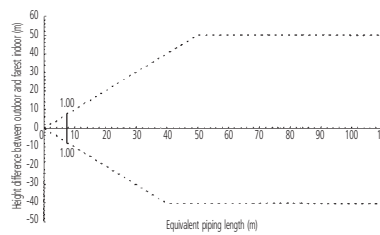
### 2 - 3 VRVIII heat pump

#### RXYQ22P

• Correction ratio for cooling capacity



• Correction ratio for heating capacity



3TW27232-6

#### NOTES

- These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation from the capacity correction ratio, shown in the above figures.
- With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
- Method of calculating the capacity of the outdoor units:  
The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
  - Condition: Indoor connection ratio does not exceed 100%  
 $\text{Maximum capacity of outdoor units} = \text{capacity of outdoor units from capacity table at 100\% connection ratio} \times \text{correction ratio of piping to farrest indoor}$
  - Condition: Indoor connection ratio exceeds 100%  
 $\text{Maximum capacity of outdoor units} = \text{capacity of outdoor from capacity table at installed connection ratio} \times \text{correction ratio of piping to farrest indoor}$
- When the overall equivalent pipe length is 90m or more, main gas and liquid pipe diameters must be increased. For new diameters see below.

Model	gas pipe	liquid pipe
RXYQ22P	ø 31.8*	ø 19.1

\* If not available on site, do not increase. If not increased, no correction factor should be applied to the equivalent length (see note 6).

- When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).

Diameter of main pipes (standard size)

Model	gas pipe	liquid pipe
RXYQ22P	ø 28.6	ø 15.9

- Equivalent length used in the above figures is based upon the following equivalent length.

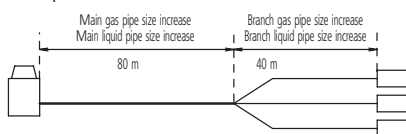
$$\text{Equivalent piping length} = \text{Equivalent length of main pipe} \times \text{Correction factor} + \text{Equivalent length of branch pipes} \times \text{Correction factor}$$

Choose a correction factor from the following table.

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

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

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

The rate of change in:

cooling capacity when height difference = 0 is thus approximately 0.88

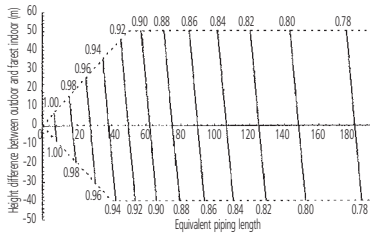
heating capacity when height difference = 0 is thus approximately 1.0

## 2 Capacity correction ratio

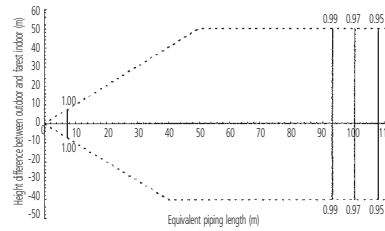
### 2 - 3 VRVIII heat pump

#### RXYQ46P

• Correction ratio for cooling capacity



• Correction ratio for heating capacity



3TW27232-6

#### NOTES

- These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions.  
Moreover, under partial load conditions, there is only a minor deviation from the capacity correction ratio, shown in the above figures.
- With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
- Method of calculating the capacity of the outdoor units:  
The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
  - Condition: Indoor connection ratio does not exceed 100%  

$$\text{Maximum capacity of outdoor units} = \frac{\text{capacity of outdoor units from capacity table at 100\% connection ratio}}{\text{correction ratio of piping to forest indoor}}$$
  - Condition: Indoor connection ratio exceeds 100%  

$$\text{Maximum capacity of outdoor units} = \frac{\text{capacity of outdoor from capacity table at installed connection ratio}}{\text{correction ratio of piping to forest indoor}}$$
- When the overall equivalent pipe length is 90m or more, main gas and liquid pipe diameters must be increased.  
For new diameters see below.

Model	gas pipe	liquid pipe
RXYQ46P	ø 41.3	ø 22.2

- When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).

Diameter of main pipes (standard size)

Model	gas pipe	liquid pipe
RXYQ46P	ø 41.3	ø 19.1

- Equivalent length used in the above figures is based upon the following equivalent length.

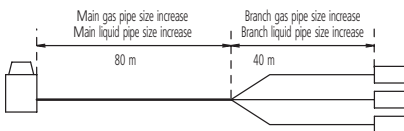
$$\text{Equivalent piping length} = \text{Equivalent length of main pipe} \times \text{Correction factor} + \text{Equivalent length of branch pipes} \times \text{Correction factor}$$

Choose a correction factor from the following table.

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

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

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

The rate of change in:

cooling capacity when height difference = 0 is thus approximately 0.83

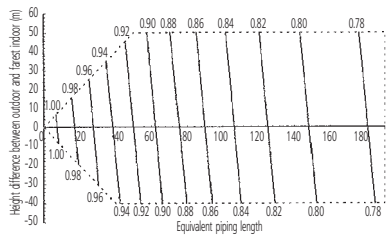
heating capacity when height difference = 0 is thus approximately 1.0

## 2 Capacity correction ratio

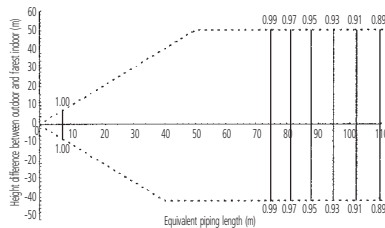
### 2 - 3 VRV VIII heat pump

#### RXYQ48P

• Correction ratio for cooling capacity



• Correction ratio for heating capacity



3TW27232-6

#### NOTES

- These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions.  
Moreover, under partial load conditions, there is only a minor deviation from the capacity correction ratio, shown in the above figures.
- With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
- Method of calculating the capacity of the outdoor units:  
The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
  - Condition: Indoor connection ratio does not exceed 100%  
Maximum capacity of outdoor units = capacity of outdoor units from capacity table at 100% connection ratio x correction ratio of piping to faarest indoor
  - Condition: Indoor connection ratio exceeds 100%  
Maximum capacity of outdoor units = capacity of outdoor from capacity table at installed connection ratio x correction ratio of piping to faarest indoor
- When the overall equivalent pipe length is 90m or more, main gas and liquid pipe diameters must be increased.  
For new diameters see below.

Model	gas pipe	liquid pipe
RXYQ48P	ø 41.3	ø 22.2

- When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).

Diameter of main pipes (standard size)

Model	gas pipe	liquid pipe
RXYQ48P	ø 41.3	ø 19.1

- Equivalent length used in the above figures is based upon the following equivalent length.

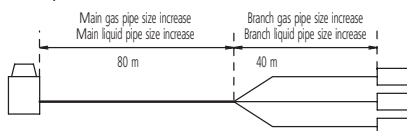
$$\text{Equivalent piping length} = \text{Equivalent length of main pipe} \times \text{Correction factor} + \text{Equivalent length of branch pipes} \times \text{Correction factor}$$

Choose a correction factor from the following table.

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

	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 x 1.0 = 120m

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

The rate of change in:

cooling capacity when height difference = 0 is thus approximately 0.83

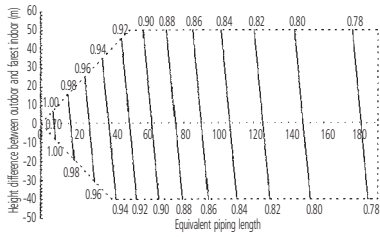
heating capacity when height difference = 0 is thus approximately 0.97

## 2 Capacity correction ratio

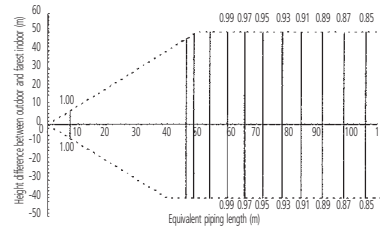
### 2 - 3 VRVIII heat pump

#### RXYQ50P

• Correction ratio for cooling capacity



• Correction ratio for heating capacity



3TW27232-6

#### NOTES

- These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions. Moreover, under partial load conditions, there is only a minor deviation from the capacity correction ratio, shown in the above figures.
- With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
- Method of calculating the capacity of the outdoor units:  
The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
  - Condition: Indoor connection ratio does not exceed 100%  

$$\text{Maximum capacity of outdoor units} = \frac{\text{capacity of outdoor units from capacity table at 100\% connection ratio}}{\text{correction ratio of piping to forest indoor}}$$
  - Condition: Indoor connection ratio exceeds 100%  

$$\text{Maximum capacity of outdoor units} = \frac{\text{capacity of outdoor from capacity table at installed connection ratio}}{\text{correction ratio of piping to forest indoor}}$$
- When the overall equivalent pipe length is 90m or more, main gas and liquid pipe diameters must be increased. For new diameters see below.

Model	gas pipe	liquid pipe
RXYQ50P	ø 41.3	ø 22.2

- When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).

Diameter of main pipes (standard size)

Model	gas pipe	liquid pipe
RXYQ50P	ø 41.3	ø 19.1

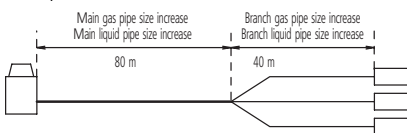
- Equivalent length used in the above figures is based upon the following equivalent length.  

$$\text{Equivalent piping length} = \text{Equivalent length of main pipe} \times \text{Correction factor} + \text{Equivalent length of branch pipes} \times \text{Correction factor}$$

Choose a correction factor from the following table.  
 When cooling capacity is calculated: gas pipe size  
 When heating capacity is calculated: liquid pipe size.

	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	0.5
Heating (liquid pipe)	1.0	0.5

- Example



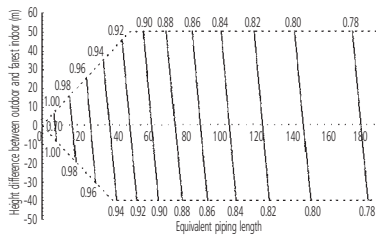
In the above case  
 (Cooling) Overall equivalent length = 80m x 1.0 + 40m x 1.0 = 120m  
 (Heating) Overall equivalent length = 80m x 0.5 + 40m x 1.0 = 80m  
 The rate of change in:  
 cooling capacity when height difference = 0 is thus approximately 0.83  
 heating capacity when height difference = 0 is thus approximately 0.92

## 2 Capacity correction ratio

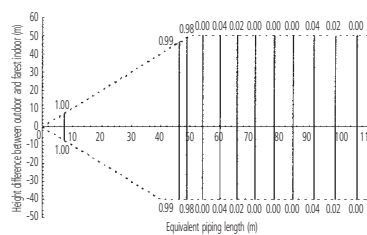
### 2 - 3 VRVIII heat pump

#### RXYQ52P

• Correction ratio for cooling capacity



• Correction ratio for heating capacity



3TW27232-6

#### NOTES

1 These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions.

Moreover, under partial load conditions, there is only a minor deviation from the capacity correction ratio, shown in the above figures.

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

3 Method of calculating the capacity of the outdoor units:

The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.

- Condition: Indoor connection ratio does not exceed 100%

$$\text{Maximum capacity of outdoor units} = \text{capacity of outdoor units from capacity table at 100\% connection ratio} \times \text{correction ratio of piping to farthest indoor}$$

- Condition: Indoor connection ratio exceeds 100%

$$\text{Maximum capacity of outdoor units} = \text{capacity of outdoor from capacity table at installed connection ratio} \times \text{correction ratio of piping to farthest indoor}$$

4 When the overall equivalent pipe length is 90m or more, main gas and liquid pipe diameters must be increased.

For new diameters see below.

Model	gas pipe	liquid pipe
RXYQ52P	ø 41.3	ø 22.2

5 When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).

Diameter of main pipes (standard size)

Model	gas pipe	liquid pipe
RXYQ52P	ø 41.3	ø 19.1

6 Equivalent length used in the above figures is based upon the following equivalent length.

$$\text{Equivalent piping length} = \text{Equivalent length of main pipe} \times \text{Correction factor} + \text{Equivalent length of branch pipes} \times \text{Correction factor}$$

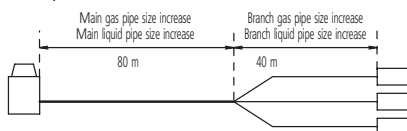
Choose a correction factor from the following table.

When cooling capacity is calculated: gas pipe size

When heating capacity is calculated: liquid pipe size.

	Correction factor	
	Standard size	Size increase
Cooling (gas pipe)	1.0	0.5
Heating (liquid pipe)	1.0	0.5

7 Example



In the above case

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

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

The rate of change in:

cooling capacity when height difference = 0 is thus approximately 0.83

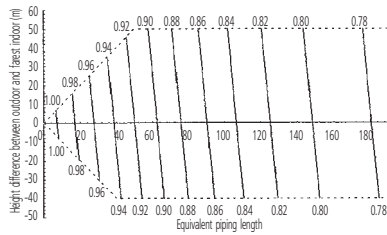
heating capacity when height difference = 0 is thus approximately 0.88

## 2 Capacity correction ratio

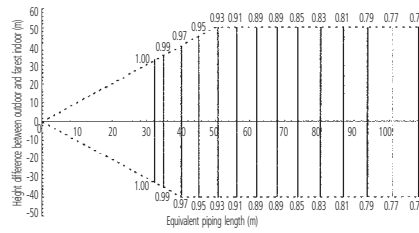
### 2 - 3 VRV8 heat pump

#### RXYQ54P

• Correction ratio for cooling capacity



• Correction ratio for heating capacity



3TW27232-6

#### NOTES

- These figures illustrate the correction ratio for piping length in capacity for a standard indoor unit system at maximum load (with the thermostat set to maximum) under standard conditions.  
Moreover, under partial load conditions, there is only a minor deviation from the capacity correction ratio, shown in the above figures.
- With this outdoor unit, constant evaporating pressure control when cooling and constant condensing pressure control when heating is carried out.
- Method of calculating the capacity of the outdoor units:  
The maximum capacity of the system will be either the total capacity of the indoor units or the maximum capacity of the outdoor units as mentioned below, whichever is smaller.
  - Condition: Indoor connection ratio does not exceed 100%  
Maximum capacity of outdoor units = capacity of outdoor units from capacity table at 100% connection ratio x correction ratio of piping to forest indoor
  - Condition: Indoor connection ratio exceeds 100%  
Maximum capacity of outdoor units = capacity of outdoor from capacity table at installed connection ratio x correction ratio of piping to forest indoor
- When the overall equivalent pipe length is 90m or more, main gas and liquid pipe diameters must be increased.  
For new diameters see below.

Model	gas pipe	liquid pipe
RXYQ54P	ø 41.3	ø 22.2

- When the pipe length after the first refrigerant branch kit is more than 40m, pipe size between first and final branch kit must be increased (refer also to installation manual).

Diameter of main pipes (standard size)

Model	gas pipe	liquid pipe
RXYQ54P	ø 41.3	ø 19.1

- Equivalent length used in the above figures is based upon the following equivalent length.

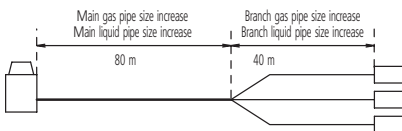
$$\text{Equivalent piping length} = \text{Equivalent length of main pipe} \times \text{Correction factor} + \text{Equivalent length of branch pipes} \times \text{Correction factor}$$

Choose a correction factor from the following table.

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

	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 x 1.0 = 120m

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

The rate of change is:

cooling capacity when height difference = 0 is thus approximately 0.83

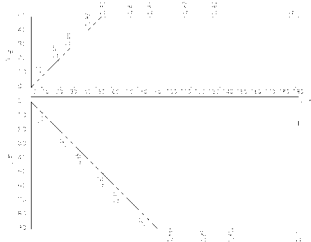
heating capacity when height difference = 0 is thus approximately 0.83

## 2 Capacity correction ratio

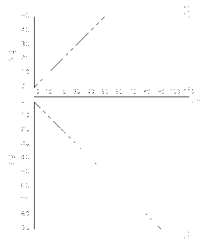
### 2 - 4 VRV VIII heat recovery

#### REYQ8,22P

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



3D057931A

#### NOTES

- 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.
- With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
- Method of calculating A/C (cooling/heating) capacity:  
The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of outdoor units as mentioned below, whichever smaller.

##### Calculating A/C capacity of outdoor units

- Condition: Indoor unit combination ratio does not exceed 100%.

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

- Condition: Indoor unit combination ratio exceeds 100%.

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

- When overall equivalent pipe length is 90m or more, the diameter of the main gas pipes (outdoor unit-branch sections) must be increased. When level difference is 50m or more, the diameter of the main liquid pipe (outdoor unit-branch sections) must be increased. [Diameter of above case]

Model	Liquid
REYQ8PY1	J 12.7
REYQ22PY1	J 19.1

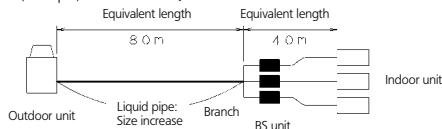
- When the main sections of the interunit gas pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)

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

[Choose a correction factor from the following table]

Model	Correction factor
REYQ8PY1	0.2
REYQ22PY1	0.4

(Example) In case of REYQ22PY1



In the above case (Heating)

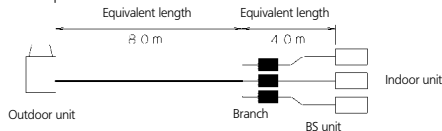
$$\text{Overall equivalent length} = 80\text{m} \times 0.4 + 40\text{m} = 72\text{m}$$

The correction factor in capacity when  $H_p=0\text{m}$  is thus approximately 1.0.

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

$$\text{Overall equivalent length} = \text{Equivalent length to main pipe} \times 0.5 + \text{Equivalent length after branching}$$

Example:



In the above case (Cooling)

$$\text{Overall equivalent length} = 80\text{m} \times 0.5 + 40\text{m} = 80\text{m}$$

The correction factor in capacity when  $H_p=0\text{m}$  is thus approximately 0.88.

#### Explanation of symbols

- $H_i$  : Level difference (m) between indoor and outdoor units where indoor in inferior position.
- $H_s$  : Level difference (m) between indoor and outdoor units where indoor in superior position.
- $L$  : Equivalent pipe length (m)
- $C$  : Capacity correction factor

[Diameter of pipe (standard size)]

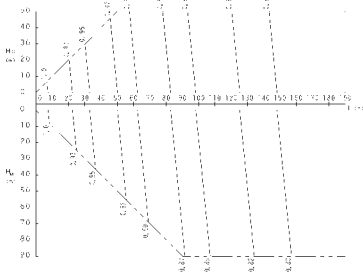
Model	Liquid
REYQ8PY1	J 9.5
REYQ22PY1	J 15.9

## 2 Capacity correction ratio

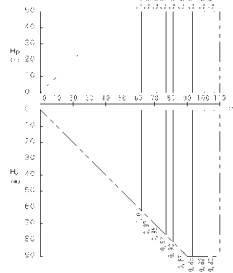
### 2 - 4 VRVIII heat recovery

#### REYQ10P

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



3D058181

#### NOTES

- 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.
- With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
- Method of calculating A/C (cooling/heating) capacity:  
The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of outdoor units as mentioned below, whichever smaller.

#### Calculating A/C capacity of outdoor units

- Condition: Indoor unit combination ratio does not exceed 100%.

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

- Condition: Indoor unit combination ratio exceeds 100%.

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

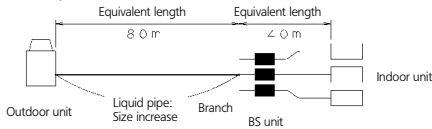
- When overall equivalent pipe length is 90m or more, the diameter of the main gas pipes (outdoor unit-branch sections) must be increased. When level difference is 50m or more, the diameter of the main liquid pipe (outdoor unit-branch sections) must be increased.  
[Diameter of above case]

Model	Liquid
REYQ10PY1	J 12.7

- When the main sections of the interunit gas pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)

$$\text{Overall equivalent length} = \text{Equivalent length to main pipe} \times 0.2 + \text{Equivalent length after branching}$$

Example:



In the above case (Heating)

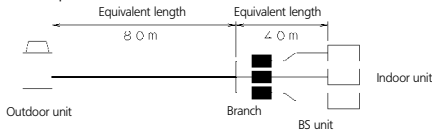
$$\text{Overall equivalent length} = 80\text{m} \times 0.2 + 40\text{m} = 56\text{m}$$

The correction factor in capacity when  $H_p=0\text{m}$  is thus approximately 1.0.

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

$$\text{Overall equivalent length} = \text{Equivalent length to main pipe} \times 0.5 + \text{Equivalent length after branching}$$

Example:



In the above case (Cooling)

$$\text{Overall equivalent length} = 80\text{m} \times 0.5 + 40\text{m} = 80\text{m}$$

The correction factor in capacity when  $H_p=0\text{m}$  is thus approximately 0.88.

#### Explanation of symbols

- $H_p$  : Level difference (m) between indoor and outdoor units where indoor is in inferior position.
- $H_M$  : Level difference (m) between indoor and outdoor units where indoor is in superior position.
- $L$  : Equivalent pipe length (m)
- $C$  : Capacity correction factor

[Diameter of pipe (standard size)]

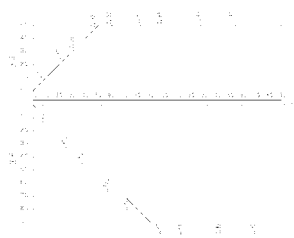
Model	Liquid
REYQ10PY1	J 9.5

## 2 Capacity correction ratio

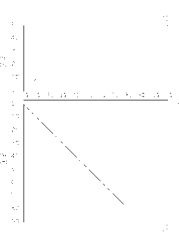
### 2 - 4 VRVIII heat recovery

#### REYQ12,18,20,28,30,38,40,42,44P

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



3D057935A

#### NOTES

- 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.
- With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
- Method of calculating A/C (cooling/heating) capacity:  
The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of outdoor units as mentioned below, whichever smaller.

##### Calculating A/C capacity of outdoor units

- Condition: Indoor unit combination ratio does not exceed 100%.

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

- Condition: Indoor unit combination ratio exceeds 100%.

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

- When overall equivalent pipe length is 90m or more, the diameter of the main gas pipes (outdoor unit-branch sections) must be increased. When level difference is 50m or more, the diameter of the main liquid pipe (outdoor unit-branch sections) must be increased. [Diameter of above case]

Model	Liquid	Model	Liquid	Model	Liquid
REYQ12PY1	J 159	REYQ30PY1	J 222	REYQ44PY1	J 222
REYQ18PY1	J 191	REYQ38PY1			
REYQ26PY1	J 222	REYQ40PY1			
REYQ28PY1		REYQ42PY1			

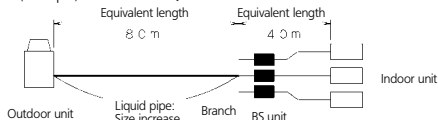
- When the main sections of the interunit gas pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)

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

[Choose a correction factor from the following table]

Model	Correction factor	Model	Correction factor
REYQ12PY1	0.3	REYQ38PY1	0.4
REYQ18PY1		REYQ40PY1	
REYQ26PY1	0.4	REYQ42PY1	
REYQ28PY1		REYQ44PY1	
REYQ30PY1			

(Example) In case of REYQ18PY1



In the above case (Heating)

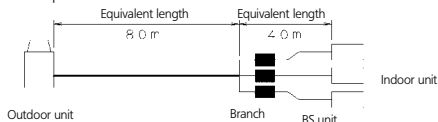
$$\text{Overall equivalent length} = 80\text{m} \times 0.4 + 40\text{m} = 72\text{m}$$

The correction factor in capacity when  $H_p=0\text{m}$  is thus approximately 1.0.

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

$$\text{Overall equivalent length} = \text{Equivalent length to main pipe} \times 0.5 + \text{Equivalent length after branching}$$

Example:



In the above case (Cooling)

$$\text{Overall equivalent length} = 80\text{m} \times 0.5 + 40\text{m} = 80\text{m}$$

The correction factor in capacity when  $H_p=0\text{m}$  is thus approximately 0.88.

#### Explanation of symbols

- $H_P$  : Level difference (m) between indoor and outdoor units where indoor in inferior position.
- $H_M$  : Level difference (m) between indoor and outdoor units where indoor in superior position.
- $L$  : Equivalent pipe length (m)
- : Capacity correction factor

[Diameter of pipe (standard size)]

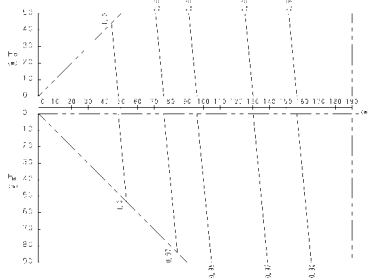
Model	Liquid	Model	Liquid
REYQ12PY1	J 127	REYQ38PY1	J 191
REYQ18PY1	J 159	REYQ40PY1	
REYQ26PY1	J 191	REYQ42PY1	
REYQ28PY1		REYQ44PY1	
REYQ30PY1			

## 2 Capacity correction ratio

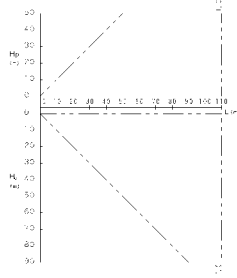
### 2 - 4 VRVIII heat recovery

#### REYQ14P

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



3D058182

#### NOTES

- 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.
- With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
- Method of calculating A/C (cooling/heating) capacity:  
The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of outdoor units as mentioned below, whichever smaller.

#### Calculating A/C capacity of outdoor units

- Condition: Indoor unit combination ratio does not exceed 100%.

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

- Condition: Indoor unit combination ratio exceeds 100%.

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

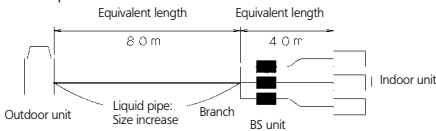
- When overall equivalent pipe length is 90m or more, the diameter of the main gas pipes (outdoor unit-branch sections) must be increased. When level difference is 50m or more, the diameter of the main liquid pipe (outdoor unit-branch sections) must be increased.  
[Diameter of above case]

Model	Liquid
REYQ14PY1	J 15.9

- When the main sections of the interunit gas pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)

$$\text{Overall equivalent length} = \text{Equivalent length to main pipe} \times 0.3 + \text{Equivalent length after branching}$$

Example:



In the above case (Heating)

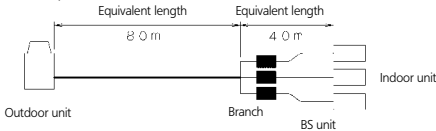
$$\text{Overall equivalent length} = 80\text{m} \times 0.3 + 40\text{m} = 64\text{m}$$

The correction factor in capacity when  $H_p=0\text{m}$  is thus approximately 1.0.

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

$$\text{Overall equivalent length} = \text{Equivalent length to main pipe} \times 0.5 + \text{Equivalent length after branching}$$

Example:



In the above case (Cooling)

$$\text{Overall equivalent length} = 80\text{m} \times 0.5 + 40\text{m} = 80\text{m}$$

The correction factor in capacity when  $H_p=0\text{m}$  is thus approximately 0.96.

#### Explanation of symbols

- $H_p$  : Level difference (m) between indoor and outdoor units where indoor is in inferior position.
- $H_m$  : Level difference (m) between indoor and outdoor units where indoor is in superior position.
- $L$  : Equivalent pipe length (m)
- : Capacity correction factor

[Diameter of pipe (standard size)]

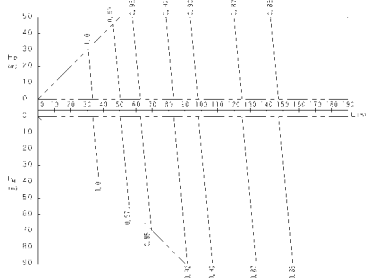
Model	Liquid
REYQ14PY1	J 12.7

## 2 Capacity correction ratio

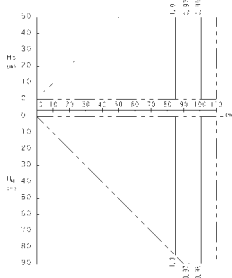
### 2 - 4 VRVIII heat recovery

#### REYQ16P

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



3D058183

#### NOTES

- 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.
- With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
- Method of calculating A/C (cooling/heating) capacity:  
The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of outdoor units as mentioned below, whichever smaller.

#### Calculating A/C capacity of outdoor units

- Condition: Indoor unit combination ratio does not exceed 100%.  

$$\text{Maximum A/C capacity of outdoor units} = \frac{\text{A/C capacity of outdoor units obtained from capacity characteristic table at the 100\% combination}}{\text{Capacity change rate due to piping length to the farthest indoor unit}}$$
  - Condition: Indoor unit combination ratio exceeds 100%.  

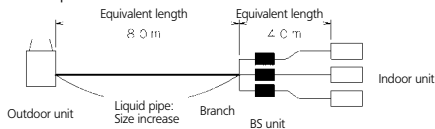
$$\text{Maximum A/C capacity of outdoor units} = \frac{\text{A/C capacity of outdoor units obtained from capacity characteristic table at the combination}}{\text{Capacity change rate due to piping length to the farthest indoor unit}}$$
- When overall equivalent pipe length is 90m or more, the diameter of the main gas pipes (outdoor unit-branch sections) must be increased. When level difference is 50m or more, the diameter of the main liquid pipe (outdoor unit-branch sections) must be increased. [Diameter of above case]

Model	Liquid
REYQ16PY1	J 15.9

- When the main sections of the interunit gas pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)  

$$\text{Overall equivalent length} = \text{Equivalent length to main pipe} \times 0.3 + \text{Equivalent length after branching}$$

#### Example:



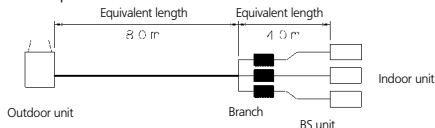
In the above case (Heating)  

$$\text{Overall equivalent length} = 80\text{m} \times 0.3 + 40\text{m} = 64\text{m}$$
  
 The correction factor in capacity when  $H_p=0\text{m}$  is thus approximately 1.0.

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

$$\text{Overall equivalent length} = \text{Equivalent length to main pipe} \times 0.5 + \text{Equivalent length after branching}$$

#### Example:



In the above case (Cooling)  

$$\text{Overall equivalent length} = 80\text{m} \times 0.5 + 40\text{m} = 80\text{m}$$
  
 The correction factor in capacity when  $H_p=0\text{m}$  is thus approximately 0.93.

#### Explanation of symbols

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

[Diameter of pipe (standard size)]

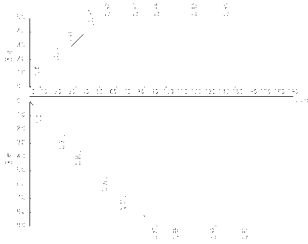
Model	Liquid
REYQ16PY1	J 12.7

## 2 Capacity correction ratio

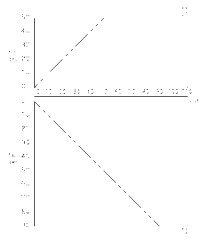
### 2 - 4 VRVIII heat recovery

#### REYQ20,32,34P

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



3D057933

#### NOTES

- 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.
- With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
- Method of calculating A/C (cooling/heating) capacity:  
The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of outdoor units as mentioned below, whichever smaller.

#### Calculating A/C capacity of outdoor units

- Condition: Indoor unit combination ratio does not exceed 100%.

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

- Condition: Indoor unit combination ratio exceeds 100%.

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

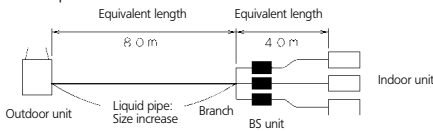
- When overall equivalent pipe length is 90m or more, the diameter of the main gas pipes (outdoor unit-branch sections) must be increased. When level difference is 50m or more, the diameter of the main liquid pipe (outdoor unit-branch sections) must be increased.  
[Diameter of above case]

Model	Liquid
REYQ20PY1	J 19.1
REYQ32PY1	J 22.2
REYQ34PY1	

- When the main sections of the interunit gas pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)

$$\text{Overall equivalent length} = \text{Equivalent length to main pipe} \times 0.4 + \text{Equivalent length after branching}$$

#### Example:



In the above case (Heating)

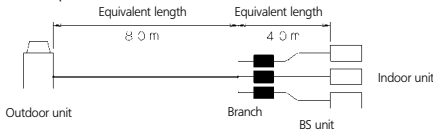
$$\text{Overall equivalent length} = 80\text{m} \times 0.4 + 40\text{m} = 72\text{m}$$

The correction factor in capacity when  $H_p=0\text{m}$  is thus approximately 1.0.

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

$$\text{Overall equivalent length} = \text{Equivalent length to main pipe} \times 0.5 + \text{Equivalent length after branching}$$

#### Example:



In the above case (Cooling)

$$\text{Overall equivalent length} = 80\text{m} \times 0.5 + 40\text{m} = 80\text{m}$$

The correction factor in capacity when  $H_p=0\text{m}$  is thus approximately 0.88.

#### Explanation of symbols

- $H_p$  : Level difference (m) between indoor and outdoor units where indoor in inferior position.
- $H_M$  : Level difference (m) between indoor and outdoor units where indoor in superior position.
- $L$  : Equivalent pipe length (m)
- $C$  : Capacity correction factor

[Diameter of pipe (standard size)]

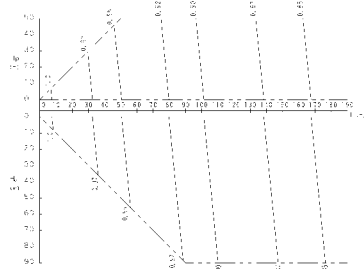
Model	Liquid
REYQ20PY1	J 15.9
REYQ32PY1	J 19.1
REYQ34PY1	

## 2 Capacity correction ratio

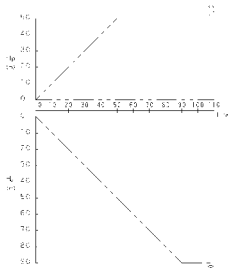
### 2 - 4 VRV VIII heat recovery

#### REYQ24P

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



3D057932

#### NOTES

- 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.
- With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
- Method of calculating A/C (cooling/heating) capacity:  
The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of outdoor units as mentioned below, whichever smaller.

##### Calculating A/C capacity of outdoor units

- Condition: Indoor unit combination ratio does not exceed 100%.

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

- Condition: Indoor unit combination ratio exceeds 100%.

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

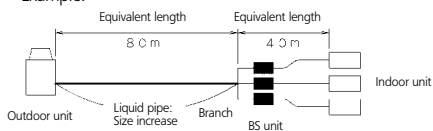
- When overall equivalent pipe length is 90m or more, the diameter of the main gas pipes (outdoor unit-branch sections) must be increased. When level difference is 50m or more, the diameter of the main liquid pipe (outdoor unit-branch sections) must be increased. [Diameter of above case]

Model	Liquid
REYQ24PY1	J 19.1

- When the main sections of the interunit gas pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)

$$\text{Overall equivalent length} = \text{Equivalent length to main pipe} \times 0.4 + \text{Equivalent length after branching}$$

Example:



In the above case (Heating)

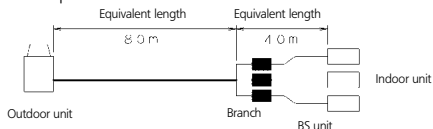
$$\text{Overall equivalent length} = 80\text{m} \times 0.4 + 40\text{m} = 72\text{m}$$

The correction factor in capacity when  $H_p=0\text{m}$  is thus approximately 1.0.

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

$$\text{Overall equivalent length} = \text{Equivalent length to main pipe} \times 0.5 + \text{Equivalent length after branching}$$

Example:



In the above case (Cooling)

$$\text{Overall equivalent length} = 80\text{m} \times 0.5 + 40\text{m} = 80\text{m}$$

The correction factor in capacity when  $H_p=0\text{m}$  is thus approximately 0.91.

#### Explanation of symbols

- $H_p$  : Level difference (m) between indoor and outdoor units where indoor in inferior position.
- $H_M$  : Level difference (m) between indoor and outdoor units where indoor in superior position.
- L : Equivalent pipe length (m)
- Cp : Capacity correction factor

[Diameter of pipe (standard size)]

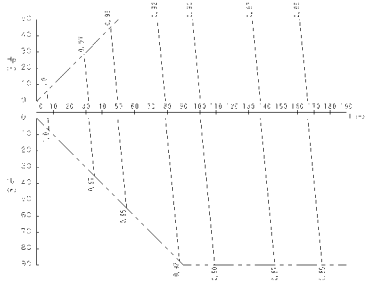
Model	Liquid
REYQ24PY1	J 15.9

## 2 Capacity correction ratio

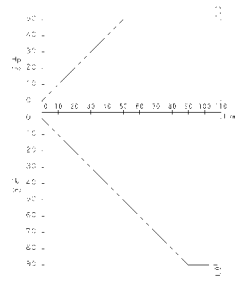
### 2 - 4 VRVIII heat recovery

#### REYQ36P

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



3D057934

#### NOTES

- 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.
- With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
- Method of calculating A/C (cooling/heating) capacity:  
The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of outdoor units as mentioned below, whichever smaller.

#### Calculating A/C capacity of outdoor units

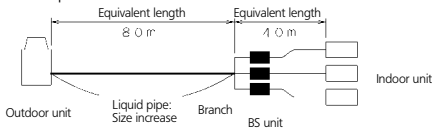
- Condition: Indoor unit combination ratio does not exceed 100%.  
Maximum A/C capacity of outdoor units =  $\frac{\text{A/C capacity of outdoor units obtained from capacity characteristic table at the 100\% combination}}{\text{X Capacity change rate due to piping length to the farthest indoor unit}}$
  - Condition: Indoor unit combination ratio exceeds 100%.  
Maximum A/C capacity of outdoor units =  $\frac{\text{A/C capacity of outdoor units obtained from capacity characteristic table at the combination}}{\text{X Capacity change rate due to piping length to the farthest indoor unit}}$
- When overall equivalent pipe length is 90m or more, the diameter of the main gas pipes (outdoor unit-branch sections) must be increased. When level difference is 50m or more, the diameter of the main liquid pipe (outdoor unit-branch sections) must be increased. [Diameter of above case]

Model	Liquid
REYQ36PY1	J 222

- When the main sections of the interunit gas pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)

$$\text{Overall equivalent length} = \text{Equivalent length to main pipe} \times 0.4 + \text{Equivalent length after branching}$$

#### Example:



In the above case (Heating)

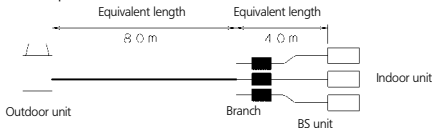
$$\text{Overall equivalent length} = 80\text{m} \times 0.4 + 40\text{m} = 72\text{m}$$

The correction factor in capacity when  $H_p=0\text{m}$  is thus approximately 1.0.

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

$$\text{Overall equivalent length} = \text{Equivalent length to main pipe} \times 0.5 + \text{Equivalent length after branching}$$

#### Example:



In the above case (Cooling)

$$\text{Overall equivalent length} = 80\text{m} \times 0.5 + 40\text{m} = 80\text{m}$$

The correction factor in capacity when  $H_p=0\text{m}$  is thus approximately 0.92.

#### Explanation of symbols

- $H_D$  : Level difference (m) between indoor and outdoor units where indoor in inferior position.
- $H_M$  : Level difference (m) between indoor and outdoor units where indoor in superior position.
- $L$  : Equivalent pipe length (m)
- $C$  : Capacity correction factor

[Diameter of pipe (standard size)]

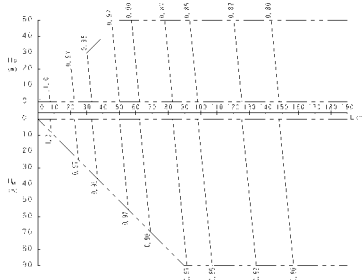
Model	Liquid
REYQ36PY1	J 191

## 2 Capacity correction ratio

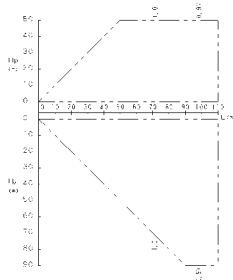
### 2 - 4 VRV VIII heat recovery

#### REYQ46P

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



3D057936

#### NOTES

- 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.
- With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
- Method of calculating A/C (cooling/heating) capacity:  
The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of outdoor units as mentioned below, whichever smaller.

#### Calculating A/C capacity of outdoor units

- Condition: Indoor unit combination ratio does not exceed 100%.

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

- Condition: Indoor unit combination ratio exceeds 100%.

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

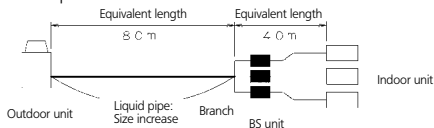
- When overall equivalent pipe length is 90m or more, the diameter of the main gas pipes (outdoor unit-branch sections) must be increased. When level difference is 50m or more, the diameter of the main liquid pipe (outdoor unit-branch sections) must be increased. [Diameter of above case]

Model	Liquid
REYQ46PY1	J 222

- When the main sections of the interunit gas pipe diameters are increased the overall equivalent length should be calculated as follows. (Heating only)

$$\text{Overall equivalent length} = \text{Equivalent length to main pipe} \times 0.4 + \text{Equivalent length after branching}$$

Example:



In the above case (Heating)

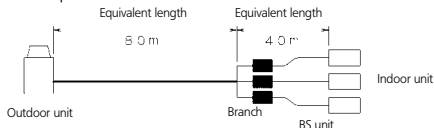
$$\text{Overall equivalent length} = 80\text{m} \times 0.4 + 40\text{m} = 72\text{m}$$

The correction factor in capacity when  $H_p=0\text{m}$  is thus approximately 1.0.

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

$$\text{Overall equivalent length} = \text{Equivalent length to main pipe} \times 0.5 + \text{Equivalent length after branching}$$

Example:



In the above case (Cooling)

$$\text{Overall equivalent length} = 80\text{m} \times 0.5 + 40\text{m} = 80\text{m}$$

The correction factor in capacity when  $H_p=0\text{m}$  is thus approximately 0.88.

#### Explanation of symbols

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

[Diameter of pipe (standard size)]

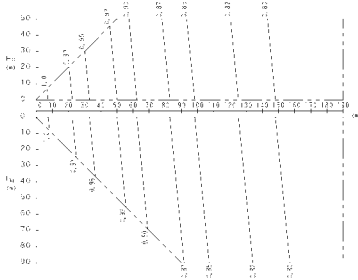
Model	Liquid
REYQ46PY1	J 19.1

## 2 Capacity correction ratio

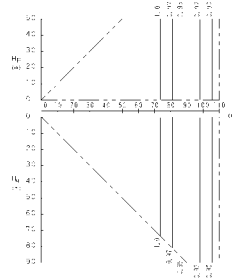
### 2 - 4 VRVIII heat recovery

#### REYQ48P

1. Rate of change in cooling capacity



2. Rate of change in heating capacity



3D057937

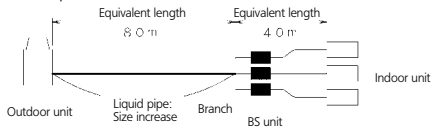
#### NOTES

- 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.
- With this outdoor unit, evaporating pressure constant control when cooling, and condensing pressure constant control when heating is carried out.
- Method of calculating A/C (cooling/heating) capacity:  
The maximum A/C capacity of the system will be either the total A/C capacity of the indoor units obtained from capacity characteristic table or the maximum A/C capacity of outdoor units as mentioned below, whichever smaller.  
Calculating A/C capacity of outdoor units
  - Condition: Indoor unit combination ratio does not exceed 100%.  
Maximum A/C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristic table at the 100% combination X Capacity change rate due to piping length to the farthest indoor unit
  - Condition: Indoor unit combination ratio exceeds 100%.  
Maximum A/C capacity of outdoor units = A/C capacity of outdoor units obtained from capacity characteristic table at the combination X Capacity change rate due to piping length to the farthest indoor unit
- When overall equivalent pipe length is 90m or more, the diameter of the main gas pipes (outdoor unit-branch sections) must be increased. When level difference is 50m or more, the diameter of the main liquid pipe (outdoor unit-branch sections) must be increased. [Diameter of above case]

Model	Liquid
REYQ48PY1	J 222

- 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 0.4 + Equivalent length after branching

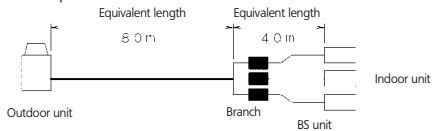
Example:



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

- In the combination which does not include cooling only indoor unit, Calculate the equivalent length pipe by the following when you calculate cooling capacity.  
Overall equivalent length = Equivalent length to main pipe x 0.5 + Equivalent length after branching

Example:



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

#### Explanation of symbols

- H<sub>P</sub> : Level difference (m) between indoor and outdoor units where indoor in inferior position.
- H<sub>M</sub> : Level difference (m) between indoor and outdoor units where indoor in superior position.
- L : Equivalent pipe length (m)
- : Capacity correction factor

[Diameter of pipe (standard size)]

Model	Liquid
REYQ48PY1	J 191

### 3 Integrated heating capacity coefficient

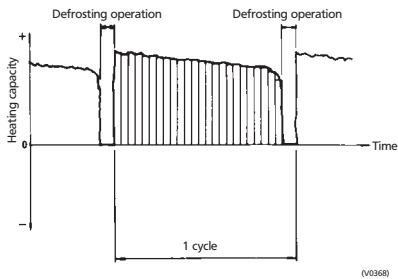
- The tables do not take account of the reduction in capacity when frost has accumulated or while the defrosting operation is in progress. The capacity values which take these factors into account, in other words the integrated heating capacity values, can be calculated as follows:

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

- 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	REYQ8,10,12PY1	0.97	0.95	0.90	0.86	0.87	0.92	1.00
	REYQ14,16PY1	0.96	0.94	0.89	0.85	0.86	0.91	1.00
	REYQ18~32PY1	0.99	0.97	0.92	0.88	0.89	0.94	1.00
	REYQ34~48PY1	0.98	0.96	0.91	0.87	0.88	0.93	1.00

3

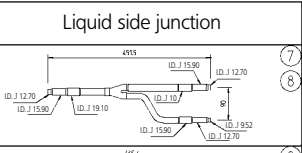
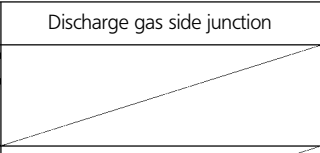
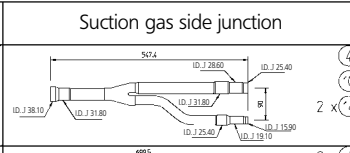
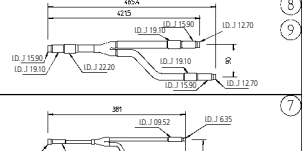
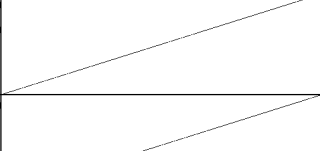
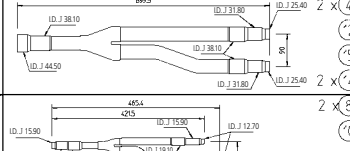
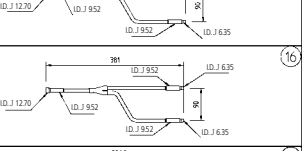
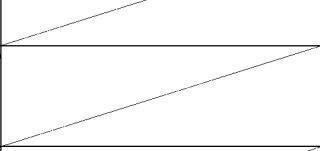
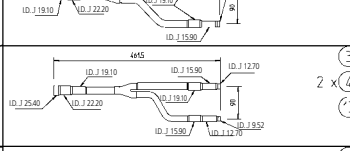
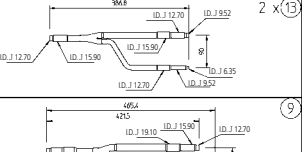
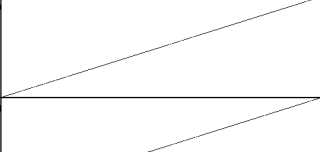
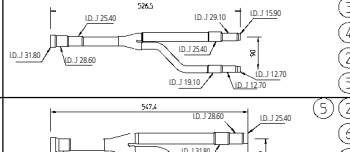
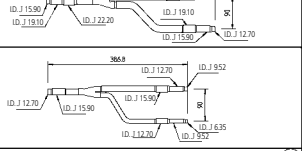
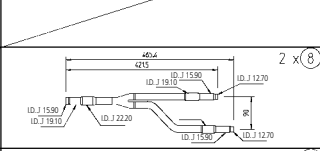
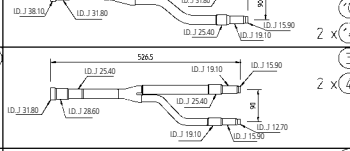
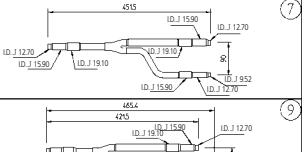
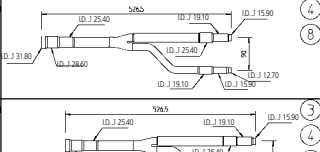
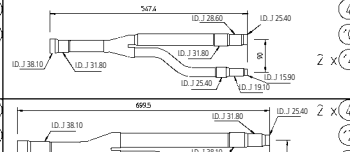
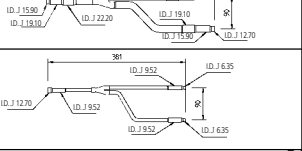
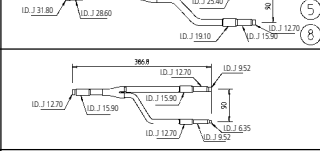
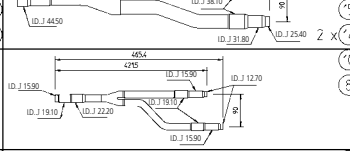
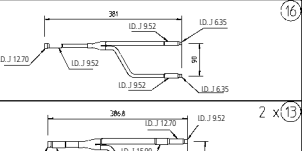
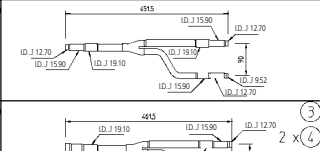
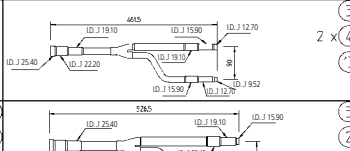
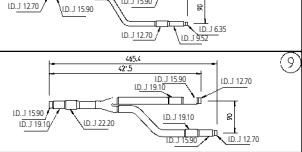
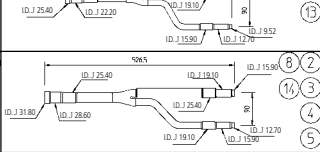
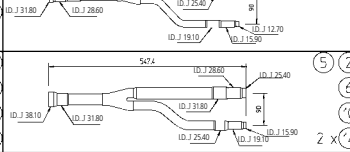
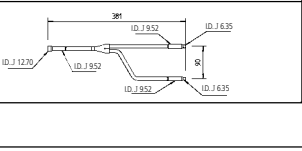
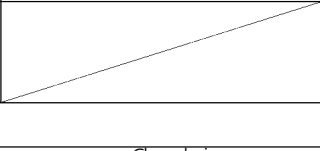
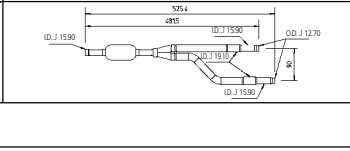
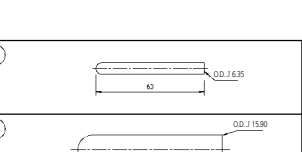
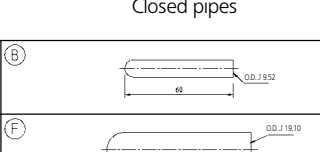
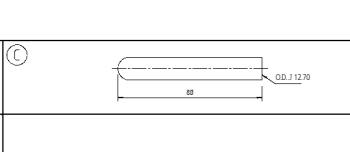
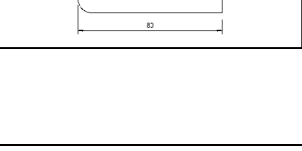
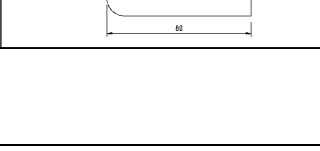


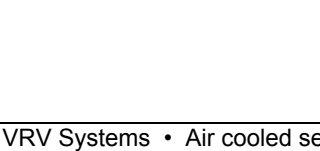
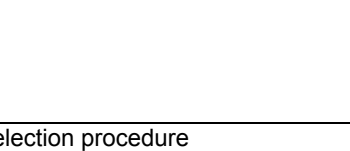



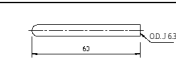
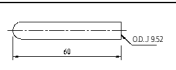
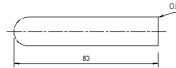
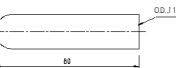
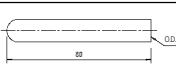


**NOTE**

- It will be seen on the figure on the left that the integrated heating capacity expresses the integrated heating capacity for a single cycle (from defrost operation to defrost operation) in terms of time.

- 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 systems

	Liquid side junction	Discharge gas side junction	Suction gas side junction
KHRQ22M4T8			
KHRQ22M7S18			
KHRQ22M20T48			
KHRQ22M29T9			
KHRQ22M4T8			
KHRQ22M7S18			
KHRQ23M8T8			
KHRQ23M4T8			
KHRQ23M7S18			
KHRQ23M20T8			
KHRQ23M29T9			
KHRQ23M4T8			
KHRQ23M7S18			
KHRQ58T7			
Closed pipes			
A		B	
D		F	
C			

1TW25799-4C

# 4 Refnet pipe systems

4

	Liquid side header	Discharge gas side header	Suction gas side header
KHRQ2M29H8			
KHRQ2M64H8			
KHRQ2M75H8			
KHRQ2M39H8			
KHRQ2M64H8			
KHRQ2M75H8			
KHRQ250H8			
KHRP127H8			
KHRQ127H8			
KHRQ58H7			
Reducers - Expanders			

1TW25799-4C

# 4 Refnet pipe systems

		Insulation tube	
		for gas pipe	for liquid pipe
Reducers	for gas pipe		
	for liquid pipe		
Liquid-side junction			
Gas-side junction			
		BHFQ22P1007	BHFQ22P1517

2TW27239-1

# 4 Refnet pipe systems

4

	FOR SUCTION GAS PIPE	REDUCERS / EXPANDERS FOR DISCHARGE GAS PIPE	FOR LIQUID PIPE	JOINT FOR OIL PIPE
LIQUID SIDE JUNCTION				
DISCHARGE GAS SIDE JUNCTION				
SUCTION GAS SIDE JUNCTION				
	BP-Q22H977A	BP-Q22H977A	BP-Q22H977A	BP-Q22H977A
	BP-Q22H977A	BP-Q22H977A	BP-Q22H977A	BP-Q22H977A
	BP-Q22H977A	BP-Q22H977A	BP-Q22H977A	BP-Q22H977A
	BP-Q22H977A	BP-Q22H977A	BP-Q22H977A	BP-Q22H977A
	BP-Q22H977A	BP-Q22H977A	BP-Q22H977A	BP-Q22H977A
	BP-Q22H977A	BP-Q22H977A	BP-Q22H977A	BP-Q22H977A

2TW25799-6

# 4 Refnet pipe systems

	Reducers				Insulation tube		
	For gas pipe	For discharge gas pipe	For liquid pipe	Joint for pressure equalization pipe	For gas pipe	For pressure equalization pipe	
BHFQ23P907							
BHFQ23P1357							

2TW29119-1

# 4 Refnet pipe systems

4

	Liquid side junction	Discharge gas side junction	Suction gas side junction	
KHRQM22M20T8	7	/	2 x 8, 10	
KHRQM22M29T8	15		2 x 4, 13	
KHRQM22M64T8	2 x 13		2, 3, 4, 5	
KHRQM22M75T8	9		2, 5, 6, 10, 14	
KHRQM23M20T8	15		8R	8, 10
KHRQM23M29T8	15		8R	2 x 4, 13
KHRQM23M64T8	2 x 13		2 x 4, 13	2, 5
KHRQM23M75T8	9		2, 4, 3, 5, 8, 14	2, 5, 6, 10, 14
KHRQM58T7	90		8R	

Closed pipes		
(A)	(B)	(C)
(D)	(E)	

1TW29479-1

# 4 Refnet pipe systems

	Liquid side header	Discharge gas side header	Suction gas side header
KHRQM22M29H8			
KHRQM22M64H8			
KHRQM22M75H8			
KHRQM23M29H8			
KHRQM23M64H8			
KHRQM23M75H8			
KHRQM250H8			
KHRQM127H8			
KHRQM58H7			
Reducers - Expanders	(1)	(2)	(3)
	(4)	(5)	(6)
	(7)	(8)	(9)
	(10)	(11)	(12)
	(13)	(14)	(15)
	(16)	(17)	(18)
	(19)	(20)	(21)

1TW29479-1

# 4 Refnet pipe systems

4

	Insulation tube		Reducers											
	Gas	Liquid	For gas pipe						For liquid pipe					
Gas-side junction														
Liquid side junction														
			For gas pipe						For liquid pipe					

2TW29659-1

# 4 Refnet pipe systems

		Reducers - Expanders			Parts for oil pipe	
		For suction gas pipe	For discharge gas pipe	For liquid pipe		
Suction gas side junction	Discharge gas side junction	Liquid side junction	For discharge gas pipe		Joint	Reducer
			For suction gas pipe	For liquid pipe		
BHFQM23M1907A	BHFQM23M1357A	2TW29679-1				

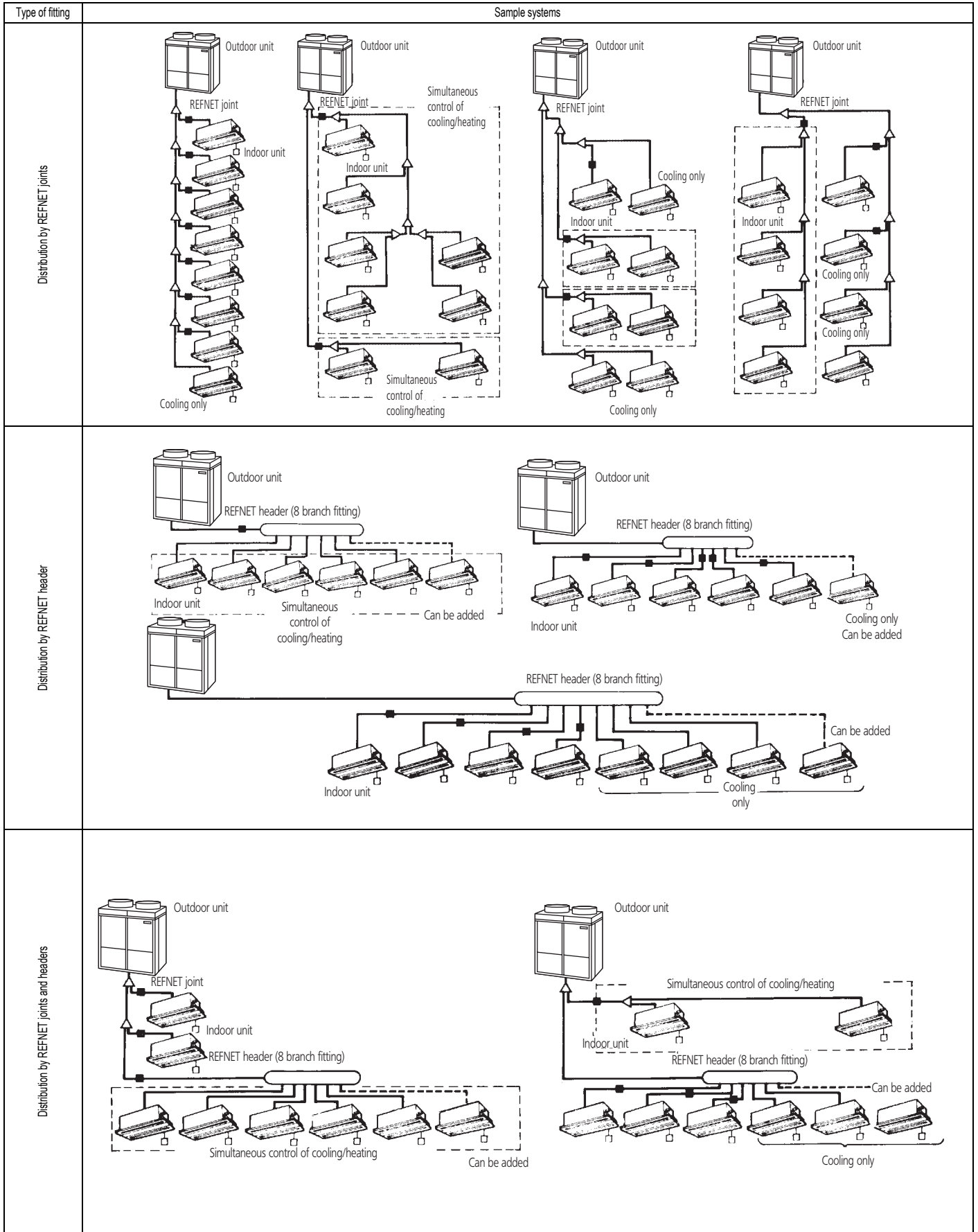
# 4 Refnet pipe systems

4

REDUCERS	INSULATION TUBE FOR PRESSURE EQUIVALENT PIPE FOR LIQUID PIPE			04
	INSULATION TUBE FOR PRESSURE EQUIVALENT PIPE FOR GAS PIPE			04
	JOINT FOR PRESSURE EQUIVALENT PIPE			04
				04
	MM-INCH REDUCERS			04
				04
				04
				04
				04
	FOR DISCHARGE GAS PIPE			04
			04	
			04	
FOR GAS PIPE			04	
			04	
LIQUID SIDE JUNCTION			04	
			04	
			04	
DISCHARGE GAS SIDE JUNCTION			04	
			04	
			04	
GAS SIDE JUNCTION			04	
			04	
			04	
		20K3040	20K3040	

1TW29119-2

# 5 Example of Refnet piping layouts



# 6 Refrigerant pipe selection

## 6 - 1 VRVIII-S

Example of connection (Connection of 6 indoor units Heat pump system)		Branch with relief joint	Branch with relief joint and relief header	Branch with relief header																					
<p>1 Indoor unit</p> <p>2 Relief joint</p> <p>3 Relief header</p>	<p>Actual pipe length</p> <p>Between outdoor and indoor units</p>																								
	<p>Equivalent length</p> <p>Total extension</p> <p>Difference in height between outdoor and indoor units (H1-H2) (m) (if indoor unit is located in a lower position)</p> <p>Difference in height between indoor and outdoor units (H2-H1) (m)</p> <p>Actual pipe length</p>	<p>Pipe length between outdoor and indoor units = 150 m</p> <p>[Example] unit B: a-b-c-d-e-f-g-h-i-j-k-l-m-n</p> <p>Equivalent pipe length between outdoor and indoor units = 175 m (Assume equivalent pipe length of relief joint to be 2.5 m and of the relief header to be 1.0 m. (For calculation purposes))</p> <p>Total piping length from outdoor unit to all indoor units between 10 m and 300 m</p>	<p>Pipe length from first refrigerant branch kit (rather relief joint or relief header) to indoor unit = 42 m</p> <p>[Example] unit B: a-b-c-d-e-f-g-h-i-j-k-l-m-n</p> <p>Use the following relief header</p>	<p>Pipe length between outdoor and indoor units = 150 m</p> <p>[Example] unit B: a-b-c-d-e-f-g-h-i-j-k-l-m-n</p> <p>Equivalent pipe length between outdoor and indoor units = 175 m (Assume equivalent pipe length of relief joint to be 2.5 m and of the relief header to be 1.0 m. (For calculation purposes))</p> <p>Total piping length from outdoor unit to all indoor units between 10 m and 300 m</p>	<p>Pipe length from first refrigerant branch kit (rather relief joint or relief header) to indoor unit = 42 m</p> <p>[Example] unit B: a-b-c-d-e-f-g-h-i-j-k-l-m-n</p> <p>Use the following relief header</p>																				
<p>Allowable height</p> <p>Between outdoor and indoor units</p> <p>Between indoor and outdoor units</p>	<p>Difference in height between outdoor and indoor units (H1-H2) (m) (if indoor unit is located in a lower position)</p> <p>Difference in height between indoor and outdoor units (H2-H1) (m)</p>	<p>Use the following relief joint</p>	<p>Use the following relief header</p>	<p>Use the following relief header</p>																					
<p>Allowable length after the branch</p> <p>Refrigerant branch kit selection</p> <p>Refrigerant branch kits can only be used with R410A.</p>	<p>Outdoor unit capacity type</p> <p>Refrigerant branch kit name</p>	<p>Outdoor unit capacity type</p> <p>Refrigerant branch kit name</p>	<p>Outdoor unit capacity type</p> <p>Refrigerant branch kit name</p>	<p>Outdoor unit capacity type</p> <p>Refrigerant branch kit name</p>																					
<p>Pipe size selection</p> <p>Caution on selecting connection pipes</p> <p>If the overall equivalent piping length is 400 m, be sure to enlarge the pipe diameter of the pipe-size main piping. If the recommended pipe size is not available, stick to the original pipe diameter (which may result in a small capacity decrease).</p> <p>(See side)</p> <p>R410A: 0.15 ~ 0.18 1</p> <p>R410B: 0.19 1 ~ 0.22 2</p>	<p>Outdoor unit capacity type</p> <p>Piping size (outer diameter x minimum thickness)</p> <p>Gas pipe</p> <p>Liquid pipe</p>	<p>Outdoor unit capacity type</p> <p>Piping size (outer diameter x minimum thickness)</p> <p>Gas pipe</p> <p>Liquid pipe</p>	<p>Outdoor unit capacity type</p> <p>Piping size (outer diameter x minimum thickness)</p> <p>Gas pipe</p> <p>Liquid pipe</p>	<p>Outdoor unit capacity type</p> <p>Piping size (outer diameter x minimum thickness)</p> <p>Gas pipe</p> <p>Liquid pipe</p>																					
<p>How to calculate the additional refrigerant to be charged</p> <p>Additional refrigerant to be charged R (kg)</p> <p>R should be rounded off in units of 0.1 kg</p>	<p>1 Main pipe (enlarge)</p> <p>2 First refrigerant branch kit</p> <p>3 Indoor unit</p>	<p>1 Main pipe (enlarge)</p> <p>2 First refrigerant branch kit</p> <p>3 Indoor unit</p>	<p>1 Main pipe (enlarge)</p> <p>2 First refrigerant branch kit</p> <p>3 Indoor unit</p>	<p>1 Main pipe (enlarge)</p> <p>2 First refrigerant branch kit</p> <p>3 Indoor unit</p>																					
<p>Formula for calculating additional refrigerant:</p> $R = \left( \text{Total length (m) of liquid piping size at } \phi 25.4 \right) \times 0.024 + \left( \text{Total length (m) of liquid piping size at } \phi 6.4 \right) \times 0.022$ <p>Example for refrigerant branch using relief joint and relief header</p> <table border="1"> <tr> <td>a: 0.00 5x0.00 m</td> <td>d: 0.00 5x0.13 m</td> <td>e: 0.06 4x1.0 m</td> <td>f: 0.06 4x1.0 m</td> </tr> <tr> <td>b: 0.00 5x1.0 m</td> <td>c: 0.06 4x0.3 m</td> <td>h: 0.06 4x2.6 m</td> <td>k: 0.06 4x1.0 m</td> </tr> <tr> <td>c: 0.00 5x1.0 m</td> <td>f: 0.06 4x1.0 m</td> <td>i: 0.00 5x1.0 m</td> <td>l: 0.00 5x1.0 m</td> </tr> </table> <p><math>R = (79 \times 0.024) + (89 \times 0.022) = 5.46 \approx 5.5 \text{ kg}</math></p>	a: 0.00 5x0.00 m	d: 0.00 5x0.13 m	e: 0.06 4x1.0 m	f: 0.06 4x1.0 m	b: 0.00 5x1.0 m	c: 0.06 4x0.3 m	h: 0.06 4x2.6 m	k: 0.06 4x1.0 m	c: 0.00 5x1.0 m	f: 0.06 4x1.0 m	i: 0.00 5x1.0 m	l: 0.00 5x1.0 m	<p>Formula for calculating additional refrigerant:</p> $R = \left( \text{Total length (m) of liquid piping size at } \phi 25.4 \right) \times 0.024 + \left( \text{Total length (m) of liquid piping size at } \phi 6.4 \right) \times 0.022$ <p>Example for refrigerant branch using relief joint and relief header</p> <table border="1"> <tr> <td>a: 0.00 5x0.00 m</td> <td>d: 0.00 5x0.13 m</td> <td>e: 0.06 4x1.0 m</td> <td>f: 0.06 4x1.0 m</td> </tr> <tr> <td>b: 0.00 5x1.0 m</td> <td>c: 0.06 4x0.3 m</td> <td>h: 0.06 4x2.6 m</td> <td>k: 0.06 4x1.0 m</td> </tr> <tr> <td>c: 0.00 5x1.0 m</td> <td>f: 0.06 4x1.0 m</td> <td>i: 0.00 5x1.0 m</td> <td>l: 0.00 5x1.0 m</td> </tr> </table> <p><math>R = (79 \times 0.024) + (89 \times 0.022) = 5.46 \approx 5.5 \text{ kg}</math></p>	a: 0.00 5x0.00 m	d: 0.00 5x0.13 m	e: 0.06 4x1.0 m	f: 0.06 4x1.0 m	b: 0.00 5x1.0 m	c: 0.06 4x0.3 m	h: 0.06 4x2.6 m	k: 0.06 4x1.0 m	c: 0.00 5x1.0 m	f: 0.06 4x1.0 m	i: 0.00 5x1.0 m	l: 0.00 5x1.0 m
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# 6 Refrigerant pipe selection

## 6 - 2 VRV8

		Branch with relief joint	Branch with relief joint and relief header	Branch with relief header																
<p><b>Example of connection</b> (Connection of 8 indoor units Heat pump system)</p> <p><b>▲</b> Use the outdoor and multi connection piping kit that is sold separately as an option (R410A20SP-000-1517) for the multi installation of outdoor units. Selection method is as shown in the right table.</p> <p>Do not use the outdoor unit multi connection piping kit (R410A20SP-000-1516) that are sold separately as an option of the Multi type series and do not use 12-core.</p> <p> <input type="checkbox"/> indoor unit  <input type="checkbox"/> relief joint  <input type="checkbox"/> relief header  <input type="checkbox"/> outdoor multi connection piping kit                 </p> <p>Install the joint part (4 part in the figure) of the outdoor unit multi connection piping kit horizontally with attention to the installation instructions described in "connecting the refrigerant piping".</p> <p>(*) If the system capacity is R410A20 or more, we need to use the first outdoor branch as seen from the indoor unit.</p>	<p>One outdoor unit installed (R410A20-18)</p> <p>Outdoor units installed in a multiple outdoor unit system (R410A20-54)</p>																			
	<p><b>Maximum allowable length</b></p> <p>Between outdoor and indoor units</p> <p>Between outdoor branch and outdoor unit (Only for R410A20 or more)</p> <p>Between outdoor and indoor units</p> <p>Between indoor and indoor units</p> <p>Between outdoor and outdoor units</p>	<p>Actual pipe length</p> <p>Equivalent length</p> <p>Total extension length</p> <p>Actual pipe length</p> <p>Difference in height</p> <p>Difference in height</p> <p>Difference in height</p> <p>Actual pipe length</p>	<p>Pipe length between outdoor*1 and indoor units at 185 m</p> <p>[Example] unit B: a-b-c-d-e-f-g-h-i-j-k-l-m-n Equivalent pipe length between outdoor*1 and indoor units at 190 m (Assume equivalent pipe length of relief joint to be 1.0 m. (For calculation purposes))</p> <p>Total piping length from outdoor unit*1 to all indoor units at 1000 m</p> <p>Piping length from outdoor branch to outdoor unit at 10 m. Approximate length: max. 13 m</p> <p>Difference in height between outdoor and indoor units (H1-H2) in [m] or [ft] if outdoor unit is located in a lower position.</p> <p>Difference in height between adjacent indoor units (H2a-H2b)</p> <p>Difference in height between outdoor unit (H2a) and indoor unit (H2b) (H2a-H2b)</p> <p>Difference in height between outdoor unit (H2a) and indoor unit (H2b) (H2a-H2b)</p> <p>Pipe length from first refrigerant branch kit (either relief joint or relief header) to indoor unit at 8 m (See note 1 on next page)</p> <p>[Example] unit E: b-c-d-e-f-g-h-i-j-k-l-m-n [Example] unit G: i-j-k-l-m-n</p>	<p>Pipe length from first refrigerant branch kit (either relief joint or relief header) to indoor unit at 8 m (See note 1 on next page)</p> <p>[Example] unit E: b-c-d-e-f-g-h-i-j-k-l-m-n [Example] unit G: i-j-k-l-m-n</p>	<p>How to select the relief header</p> <ul style="list-style-type: none"> <li>Choose the relief header that is in accordance with the total capacity of all the indoor units connected to the relief header.</li> <li>Note: 200 type cannot be connected below the relief header.</li> </ul> <table border="1"> <thead> <tr> <th>Indoor capacity type (kW)</th> <th>Refrigerant branch kit name</th> </tr> </thead> <tbody> <tr> <td>&lt;200</td> <td>KR-R1022M02T</td> </tr> <tr> <td>200~&lt;250</td> <td>KR-R1022M02T73</td> </tr> <tr> <td>250~&lt;300</td> <td>KR-R1022M044T</td> </tr> <tr> <td>300~&lt;350</td> <td>KR-R1022M051T</td> </tr> </tbody> </table> <p>How to choose an outdoor multi connection piping kit (needed if the outdoor unit capacity type is R410A20 or more)</p> <ul style="list-style-type: none"> <li>Choose from the following table in accordance with the number of outdoor units.</li> </ul> <table border="1"> <thead> <tr> <th>Number of outdoor units</th> <th>Branch kit name</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>BR-F022P1007</td> </tr> <tr> <td>3</td> <td>BR-F022P1613</td> </tr> </tbody> </table> <p>[Example] in case of relief header: indoor units 1-2-3-4-5-6-7-8</p>	Indoor capacity type (kW)	Refrigerant branch kit name	<200	KR-R1022M02T	200~<250	KR-R1022M02T73	250~<300	KR-R1022M044T	300~<350	KR-R1022M051T	Number of outdoor units	Branch kit name	2	BR-F022P1007	3
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<p><b>Allowable length after the branch</b></p> <p>Refrigerant branch kit selection</p> <p>Refrigerant branch kits can only be used with R410A.</p>	<p>Actual pipe length</p> <p>Difference in height</p> <p>Difference in height</p> <p>Actual pipe length</p>	<p>Pipe length from first refrigerant branch kit (either relief joint or relief header) to indoor unit at 8 m (See note 1 on next page)</p> <p>[Example] unit E: b-c-d-e-f-g-h-i-j-k-l-m-n [Example] unit G: i-j-k-l-m-n</p>	<p>Pipe length from first refrigerant branch kit (either relief joint or relief header) to indoor unit at 8 m (See note 1 on next page)</p> <p>[Example] unit E: b-c-d-e-f-g-h-i-j-k-l-m-n [Example] unit G: i-j-k-l-m-n</p>	<p>How to select the relief header</p> <ul style="list-style-type: none"> <li>Choose the relief header that is in accordance with the total capacity of all the indoor units connected to the relief header.</li> <li>Note: 200 type cannot be connected below the relief header.</li> </ul> <table border="1"> <thead> <tr> <th>Indoor capacity type (kW)</th> <th>Refrigerant branch kit name</th> </tr> </thead> <tbody> <tr> <td>&lt;200</td> <td>KR-R1022M02T</td> </tr> <tr> <td>200~&lt;250</td> <td>KR-R1022M02T73</td> </tr> <tr> <td>250~&lt;300</td> <td>KR-R1022M044T</td> </tr> <tr> <td>300~&lt;350</td> <td>KR-R1022M051T</td> </tr> </tbody> </table> <p>How to choose an outdoor multi connection piping kit (needed if the outdoor unit capacity type is R410A20 or more)</p> <ul style="list-style-type: none"> <li>Choose from the following table in accordance with the number of outdoor units.</li> </ul> <table border="1"> <thead> <tr> <th>Number of outdoor units</th> <th>Branch kit name</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>BR-F022P1007</td> </tr> <tr> <td>3</td> <td>BR-F022P1613</td> </tr> </tbody> </table> <p>[Example] in case of relief joint C: indoor units 3-4-5-6-7-8</p>	Indoor capacity type (kW)	Refrigerant branch kit name	<200	KR-R1022M02T	200~<250	KR-R1022M02T73	250~<300	KR-R1022M044T	300~<350	KR-R1022M051T	Number of outdoor units	Branch kit name	2	BR-F022P1007	3	BR-F022P1613
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4PW35768A



# 6 Refrigerant pipe selection

## 6 - 3 VRVIII heat recovery

<p><b>Example of connection</b> (Connection of 8 indoor units)</p> <p>① Piping from outdoor unit to BS unit (Bold): 3 pipes { Suction gas pipe HP/LP, gas pipe, liquid pipe } ② Piping from BS unit to indoor unit or indoor unit used as cooling only Piping from Refrigerant branch kit to (Suction) gas pipe —— (Thin): 2 pipes { Liquid pipe }</p> <p>(*) " " indicates the Outdoor unit multi connection piping kit.</p> <p>(*) In case of multi outdoor system, re-read "outdoor unit" to "the first Outdoor unit multi connection piping kit" as seen from the indoor unit.</p>	<p><b>Single outdoor system (REYQ) (8-16)</b></p>	<p><b>Branch with REFNET joint</b></p> <p>BS Unit ①-⑥ : Indoor unit (Cool/Heat selection possible) ⑦, ⑧ : Indoor unit (Cooling only)</p>	<p><b>Branch with REFNET joint and header</b></p> <p>BS Unit ①-④, ⑦, ⑧ : Indoor unit (Cool/Heat selection possible) ⑤, ⑥ : Indoor unit (Cooling only)</p>	<p><b>Branch with REFNET header</b></p> <p>BS Unit ①-⑥ : Indoor unit (Cool/Heat selection possible) ⑦, ⑧ : Indoor unit (Cooling only)</p>	<p><b>Multi outdoor system (REYQ) (18-48)</b></p>	<p><b>Branch with REFNET joint</b></p> <p>BS Unit ①-⑥ : Indoor unit (Cool/Heat selection possible) ⑦, ⑧ : Indoor unit (Cooling only)</p>	<p><b>Branch with REFNET joint and header</b></p> <p>BS Unit ①-④, ⑦, ⑧ : Indoor unit (Cool/Heat selection possible) ⑤, ⑥ : Indoor unit (Cooling only)</p>	<p><b>Branch with REFNET header</b></p> <p>BS Unit ①-⑥ : Indoor unit (Cool/Heat selection possible) ⑦, ⑧ : Indoor unit (Cooling only)</p>	<p>Actual pipe length Equivalent length Total extension length</p>	<p>Between outdoor unit (*) and indoor unit Between first outdoor unit multi connection piping kit and outdoor unit (in case of multi system)</p>	<p>Actual and Equivalent pipe length Difference in height Difference in height Difference in height</p>	<p>Actual pipe length Equivalent length</p>
		<p>Pipe length between outdoor unit (*) and indoor unit <math>\leq 165\text{m}</math> Example ⑥ : <math>a + b + c + d + e + s \leq 165\text{m}</math> Equivalent pipe length between outdoor unit (*) and indoor unit <math>\leq 190\text{m}</math> (Note 1) (Assume equivalent pipe length of REFNET joint to be 0.5m, that of BS/Q100, 160 to be 4m, that of BS/Q100, 160 to be 4m, that of BS/Q250 to be 6m for calculation purposes) Total piping length from outdoor unit (*) to all indoor unit <math>\leq 1000\text{m}</math></p>	<p>Actual pipe length from first outdoor unit multi connection piping kit to outdoor unit <math>\leq 10\text{m}</math> Equivalent pipe length from first outdoor unit multi connection piping kit to outdoor unit <math>\leq 13\text{m}</math></p>	<p>Difference in height between outdoor unit and indoor unit (H1) <math>\leq 50\text{m}</math> (Max. 40m if the outdoor unit is below) Difference in height between adjacent indoor units (H2) <math>\leq 15\text{m}</math> Difference in height between adjacent outdoor units (H3) <math>\leq 5\text{m}</math> Actual pipe length from first refrigerant branch kit (either REFNET joint or REFNET header) to indoor unit <math>\leq 40\text{m}</math> (Note 2) Example ⑧ : <math>b + c + d + e + s \leq 40\text{m}</math></p>	<p>Actual pipe length from first outdoor unit multi connection piping kit to outdoor unit <math>\leq 10\text{m}</math> Equivalent pipe length from first outdoor unit multi connection piping kit to outdoor unit <math>\leq 13\text{m}</math></p>	<p>Difference in height between outdoor unit and indoor unit (H1) <math>\leq 50\text{m}</math> (Max. 40m if the outdoor unit is below) Difference in height between adjacent indoor units (H2) <math>\leq 15\text{m}</math> Difference in height between adjacent outdoor units (H3) <math>\leq 5\text{m}</math> Actual pipe length from first refrigerant branch kit (either REFNET joint or REFNET header) to indoor unit <math>\leq 40\text{m}</math> (Note 2) Example ⑧ : <math>b + c + d + e + s \leq 40\text{m}</math></p>	<p>Actual pipe length from first outdoor unit multi connection piping kit to outdoor unit <math>\leq 10\text{m}</math> Equivalent pipe length from first outdoor unit multi connection piping kit to outdoor unit <math>\leq 13\text{m}</math></p>	<p>Difference in height between outdoor unit and indoor unit (H1) <math>\leq 50\text{m}</math> (Max. 40m if the outdoor unit is below) Difference in height between adjacent indoor units (H2) <math>\leq 15\text{m}</math> Difference in height between adjacent outdoor units (H3) <math>\leq 5\text{m}</math> Actual pipe length from first refrigerant branch kit (either REFNET joint or REFNET header) to indoor unit <math>\leq 40\text{m}</math> (Note 2) Example ⑧ : <math>b + c + d + e + s \leq 40\text{m}</math></p>	<p>Actual pipe length from first outdoor unit multi connection piping kit to outdoor unit <math>\leq 10\text{m}</math> Equivalent pipe length from first outdoor unit multi connection piping kit to outdoor unit <math>\leq 13\text{m}</math></p>	<p>Between outdoor unit (*) and indoor unit Between first outdoor unit multi connection piping kit and outdoor unit (in case of multi system)</p>	<p>Actual and Equivalent pipe length Difference in height Difference in height Difference in height</p>	<p>Actual pipe length from first outdoor unit multi connection piping kit to outdoor unit <math>\leq 10\text{m}</math> Equivalent pipe length from first outdoor unit multi connection piping kit to outdoor unit <math>\leq 13\text{m}</math></p>

# 6 Refrigerant pipe selection

## 6 - 3 VRVIII heat recovery

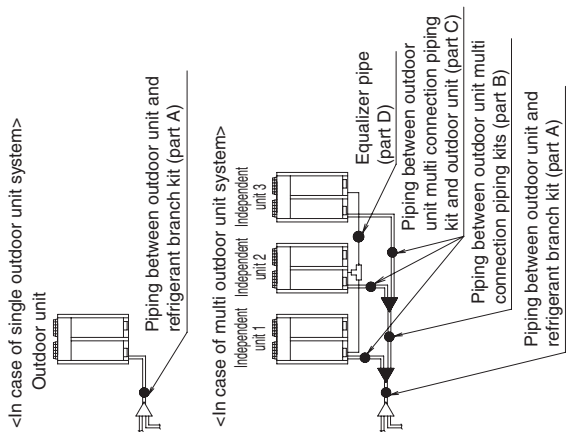
**Outdoor unit multi connection piping kit and Refrigerant branch kit selection**

- Refrigerant branch kits can only be used with R410A.
- When multi outdoor system are installed, be sure to use the special separately sold Outdoor unit multi connection piping kit. (BHF228P90 - 136)
- Never use BHF228M90 - 135, BHF228M90 - 135P for M type of this series or T joint (field supplied).

**Pipe size selection**

Example for indoor units connected downstream

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



**How to select the REFNET joint**

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

Outdoor unit capacity type	Refrigerant branch kit name
8,10HP type	KHRQ23M29T
12-22HP type	KHRQ23M64T
24HP type ~	KHRQ23M75T

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

Indoor unit total capacity index	Refrigerant branch kit name
x < 200	KHRQ23M20T
200 ≤ x < 290	KHRQ23M29T
290 ≤ x < 640	KHRQ23M64T
640 ≤ x	KHRQ23M75T

**Example REFNET joint C : Indoor units [5] + [6] + [7] + [8]**  
Example REFNET header : Indoor units [1] + [2] + [3] + [4] + [5] + [6]

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

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

Outdoor unit capacity type	Suction gas pipe	HP/LP gas pipe	Liquid pipe
8HP type	φ19.1	φ15.9	φ9.5
10HP type	φ22.2	φ19.1	φ12.7
14,16HP type	φ28.6	φ22.2	φ15.9
18HP type	φ34.9	φ28.6	φ19.1
20,22HP type	φ41.3	φ34.9	
26-34HP type			
36HP type			
38-48HP type			

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

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

Outdoor unit capacity type	Suction gas pipe	HP/LP gas pipe	Liquid pipe
8,10HP type	φ22.2	φ19.1	φ9.5 x 0.8
12HP type	φ28.6	φ22.2	φ12.7
14,16HP type			

Temper grade and wall thickness for pipes  
(Temper grade, O type and 1/2H type indicate the material type specified in JIS H 3300.)

Copper tube O. D.	φ6.4	φ9.5	φ12.7	φ15.9	φ19.1	φ22.2	φ25.4	φ28.6	φ31.8	φ34.9	φ38.1	φ41.3
Temper grade												
Wall thickness (Min. requirement)	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.88	0.99	1.10	1.21	1.43

**How to select the REFNET header**

- Choose from the following table in accordance with the total capacity index of all the indoor units connected below the REFNET header.
- 250 type indoor unit can not be connected below the REFNET header.

Indoor unit total capacity index	Refrigerant branch kit name
x < 200	KHRQ23M29H
200 ≤ x < 290	KHRQ23M64H
290 ≤ x < 640	KHRQ23M75H
640 ≤ x	KHRQ23M75H

**How to select the outdoor unit multi connection piping kit**  
(This is required when the system is multi outdoor unit system.)

- Choose from the following table in accordance with the number of outdoor units.

Number of outdoor unit	Connecting piping kit name
2 units	BHFQ23P907
3 units	BHFQ23P1357

**Example REFNET header :**  
Indoor units [1] + [2] + [3] + [4] + [5] + [6] + [7] + [8]

Piping between refrigerant branch kits  
Piping between refrigerant branch kit and BS unit  
Piping between BS unit and refrigerant branch kit

- Choose from the following table in accordance with the total capacity type of all the indoor units connected downstream.

\*1 Connection piping must not exceed the refrigerant Piping size between outdoor unit and refrigerant branch kit (part A)

\*2 When selecting 2 pipes line (gas pipe and liquid pipe), use Suction gas pipe column for gas pipe and Liquid pipe column for liquid pipe.

Indoor capacity index	Suction gas pipe	HP/LP gas pipe	Liquid pipe
x < 150	φ15.9	φ12.7	φ9.5
150 ≤ x < 200	φ19.1	φ15.9	φ9.5
200 ≤ x < 290	φ22.2	φ19.1	φ12.7
290 ≤ x < 420	φ28.6	φ28.6	φ15.9
420 ≤ x < 640	φ34.9	φ28.6	φ15.9
640 ≤ x < 920	φ41.3	φ28.6	φ19.1
920 ≤ x			

Piping between refrigerant branch kit, BS unit and indoor unit

- Match to the size of the connection piping on the indoor unit.

Indoor unit capacity type	gas pipe	Liquid pipe
20 - 25 · 32 · 40 · 50 type	φ12.7	φ6.4
63 · 80 · 100 · 125 type	φ15.9	
200 type	φ19.1	φ9.5
250 type	φ22.2	

Equalizer pipe (part D) (multi outdoor unit system only) (unit : mm)

Piping size (O. D.)	φ19.1
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# 6 Refrigerant pipe selection

## 6 - 3 VRV VIII heat recovery

### How to calculate the additional refrigerant to be charged

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

$$R = \left( \frac{\text{Total length(m) of liquid piping size at } \phi 22.2}{0.37} \times 0.26 \right) + \left( \frac{\text{Total length(m) of liquid piping size at } \phi 15.9}{0.18} \times 0.26 \right) + \left( \frac{\text{Total length(m) of liquid piping size at } \phi 9.5}{0.059} \times 0.022 \right)$$

HEAT RECOVER SYSTEM		REFRIGERANT AMOUNT FOR EXCEEDING CONNECTION CAPACITY OF INDOOR UNIT	
MODEL NAME	THE AMOUNT OF REFRIGERANT	INDOOR CONNECTION CAPACITY	MODEL NAME
REYQ8 - 16PY1	3.6kg	MORE THAN 100% 120% OR LESS	REYQ8 REYQ34
REYQ18 - 20PY1	1.0kg	MORE THAN 120% 130% OR LESS	32PY1 48PY1
REYQ22 - 24PY1	1.5kg		
REYQ26PY1	2.0kg		
REYQ28 - 30PY1	2.5kg		
REYQ32 - 40PY1	3.0kg		
REYQ42PY1	3.5kg		
REYQ44 - 48PY1	4.0kg		
REYQ48PY1	4.5kg		

Example for refrigerant branch using REFNET joint and REFNET header for the systems and each pipe length as shown below.

Outdoor system : REYQ34PY1  
Total capacity of indoor unit : 116%

a : $\phi 19.1 \times 30m$	e : $\phi 9.5 \times 10m$	i : $\phi 9.5 \times 10m$	m : $\phi 9.5 \times 20m$	r : $\phi 12.7 \times 3m$
b : $\phi 19.1 \times 20m$	f : $\phi 9.5 \times 10m$	j : $\phi 9.5 \times 10m$	n : $\phi 9.5 \times 10m$	s : $\phi 9.5 \times 3m$
c : $\phi 9.5 \times 10m$	g : $\phi 9.5 \times 10m$	k : $\phi 9.5 \times 20m$	o : $\phi 6.4 \times 10m$	t : $\phi 9.5 \times 3m$
d : $\phi 9.5 \times 10m$	h : $\phi 9.5 \times 10m$	l : $\phi 9.5 \times 20m$	p : $\phi 6.4 \times 10m$	u : $\phi 15.9 \times 1m$

$$R = \left( \frac{150 \times 0.26}{0.37} + \frac{1 \times 0.18}{0.18} + \frac{3 \times 0.12}{0.059} + \frac{156 \times 0.059}{0.022} \right) \times 1.02 + \frac{3 \times 0.12}{0.022} + \frac{3 \times 0.12}{0.022} + \frac{0.5}{0.022}$$

a, b      u      c-n, s, t      o, p      REYQ34PY1 116%

$$= 27.148 \rightarrow [27.1kg]$$

Round off in units of 0.1 kg.

Note 1.

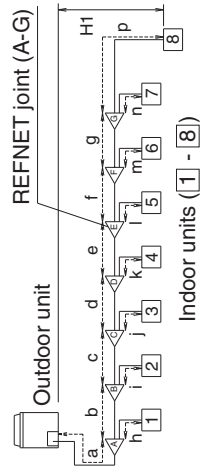
When the equivalent pipe length between outdoor and indoor units is 90m or increased according to the right table.  
(Never increase suction gas pipe and HP/LP gas pipe.)

- (Refer to figure 9)
1. Outdoor unit
  2. Main pipes
  3. Increase only liquid pipe size
  4. First refrigerant branch kit
  5. BS unit
  6. Indoor unit

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

Required Conditions	Example Drawings
1. It is necessary to increase the pipe size between the first branch kit and the final branch kit. (Reducers must be procured on site) However, the pipes that are same pipe size with main pipe must not be increased.	[8] $b + c + d + e + f + g + p \leq 90m$ Increase the pipe size of b, c, d, e, f, g
2. For calculation of Total extension length, the actual length of above pipes must be doubled, (except main pipe and the pipes that are not increased)	$a + b \times 2 + c \times 2 + d \times 2 + e \times 2 + f \times 2 + g \times 2 + h + i + j + k + l + m + n + p \leq 1000m$
3. Indoor unit to the nearest branch kit $\leq 40m$	$h, i, j, \dots, p \leq 40m$
4. The difference between [Outdoor unit to the farthest indoor unit] and [Outdoor unit to the nearest indoor unit] $\leq 40m$	The farthest indoor unit [8] The nearest indoor unit [1] $(a + b + c + d + e + f + g + p) - (a + h) \leq 40m$

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



## 6 Refrigerant pipe selection

### 6 - 4 Piping thickness

Piping diameter	Material	Minimum thickness [mm]
Ø 6.4	O	0.8
Ø 9.5	O	0.8
Ø 12.7	O	0.8
Ø 15.9	O	0.99
Ø 19.1	1/2H	0.8
Ø 22.2	1/2H	0.8
Ø 25.4	1/2H	0.88
Ø 28.6	1/2H	0.99
Ø 31.8	1/2H	1.10
Ø 34.9	1/2H	1.21
Ø 38.1	1/2H	1.32
Ø 41.3	1/2H	1.43

O : annealed

1/2H : half-hard

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

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

# 2

**VRV III-S**  
**VRV III**



Daikin's unique position as a manufacturer of air conditioning equipment, compressors and refrigerants has led to its close involvement in environmental issues. For several years Daikin has had the intention to become a leader in the provision of products that have limited impact on the environment. This challenge demands the eco design and development of a wide range of products and an energy management system, resulting in energy conservation and a reduction of waste.



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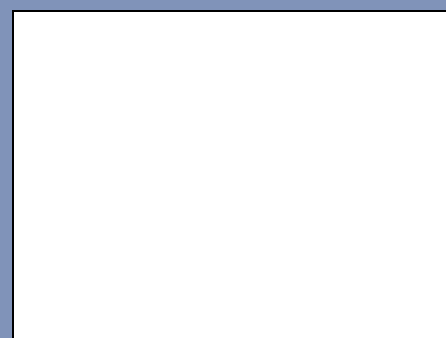


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