

# LG

# MULTI F

Cooling Only R410A(50/60Hz)  
0CIM0-03B (Replaces 0CIM0-03A)

# TOTAL HVAC SOLUTION PROVIDER

## ENGINEERING PRODUCT DATA BOOK



P/No. : MFL67502706

# MULTI F

## R410A(50/60Hz)

**Part 1 General information**

**Part 2 Product data**

**Part 3 Design and installation**

**Part 4 Special Part**

# MULTI F

## Introduction

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### Preface

New era brings the more sophisticated and advanced buildings which in turn demands for specialized and optimized direct expansion air conditioning systems. Also energy efficiency, environment friendly, low noise and low maintenance are the features which are essential for these systems.

As a part of vertical integration LG makes all the key components in house, which gives us an edge to LG to make better and latest technology products with best quality in optimized time.

MULTI F™ systems with MPS technology inside are equipped with inverter technology and R410A refrigerant which is perfect solution to various installation locations.

This Engineering product data book incorporates information about the product itself, and installation, designing for MULTI F™ system.

The comprehensive study of this book will improve your knowledge about the system and its application in detail.

**LG Electronics Inc.**  
**Air Conditioning & Energy Solution Company**

# MULTI F

## R410A(50/60Hz)



### **Part 1 General information**



- 1. Model line up**
- 2. Nomenclature**
- 3. Appearance**
- 4. Combination**

# 1. Model line up

## 1.1 Outdoor units

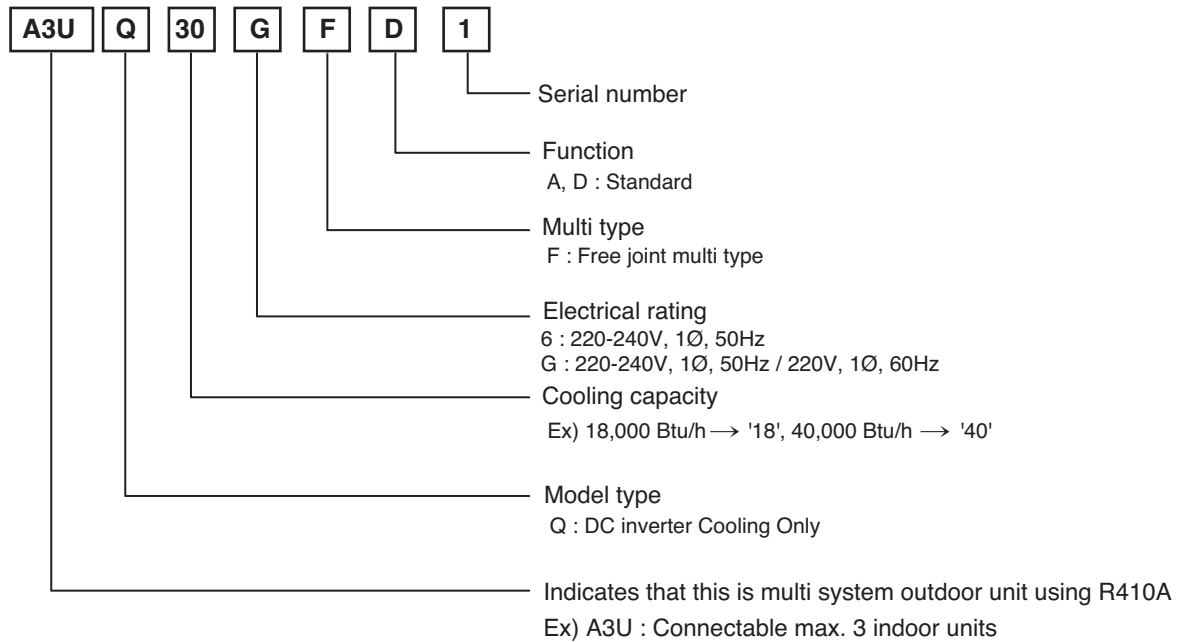
**MULTI F**

Cooling Only		A2UQ18GFD0	A3UQ24GFD0
No. of connectable indoor units		Max.2	Max.3
Total capacity of connectable indoor unit	kW	8.8	9.9
	kBtu/h	30	34
Power Supply		230V, 1Ø, 50Hz / 220V, 1Ø, 60Hz	
Chassis			

Cooling Only		A3UQ30GFD1	A4UQ36GFD0	A5UQ48GFA1
No. of connectable indoor units		Max.3	Max.4	Max.5
Total capacity of connectable indoor unit	kW	12.3	14.7	21.1
	kBtu/h	42	50	72
Power Supply		230V, 1Ø, 50Hz / 220V, 1Ø, 60Hz		
Chassis				

## 2. Nomenclature

### 2.1 Outdoor units



### 3. Appearance

LG multi system provides various indoor units such as wall mounted, ART COOL mirror, ceiling cassette, ceiling concealed duct.

MULTI F



Outdoor unit

#### 3.1 Outdoor units

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 <p><b>A2UQ18GFD0</b> <b>A3UQ24GFD0</b></p>	 <p><b>A3UQ30GFD1</b></p>	 <p><b>A4UQ36GFD0</b> <b>A5UQ48GFA1</b></p>
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## 4. Combination

### 4.1 Selection procedure

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#### Outdoor units selection

In general, outdoor unit may be selected as follows, though the location of the unit, and usage of the room, etc. should be considered.

The combination of indoor and outdoor unit was to be decided that the sum of indoor unit capacity index should be smaller than the max. combination capacity of outdoor unit.

It is recommended to choose a large capacity outdoor unit if the installation space is large enough.

Model name		A2UQ18GFD0	A3UQ24GFD0	A3UQ30GFD1	A4UQ36GFD0	A5UQ48GFA1
Rated capacity (kW)		5	7	8.8	10.5	14.1
Connectable indoor units	Number of indoor units	Max. 2 units	Max. 3 units	Max. 3 units	Max. 4 units	Max. 5 units
	Total capacity index(kBtu/h)	18 ~ 30	18 ~ 33	18 ~ 42	18 ~ 48	18 ~ 72

#### Indoor units selection

Look up the table on combination of indoor and outdoor unit', and determine the appropriate indoor unit capacity which satisfies the given thermal load.

For proper system operation, refer to the following:

- 1) At least 2 indoor units should be connected to outdoor unit.
- 2) Total capacity of indoor units connected should be minimum 40% of outdoor unit rated capacity.
- 3) Calculation method for the connectable total capacity of indoor unit sum up the capacity of indoor unit, but high static duct type indoor unit capacity weights 1.3 times.



## 4. Combination

### 4.2 Combination of indoor and outdoor unit

The total capacity index of indoor units is the sum of capacity index of each units and should be within the capacity index of the outdoor unit.

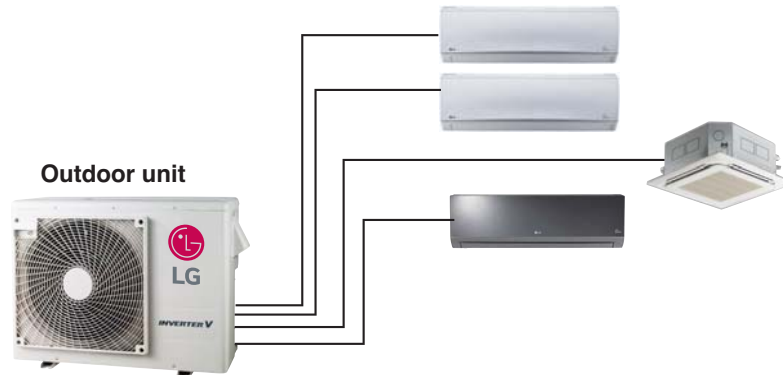
Indoor units				A2UQ18GFD0	A3UQ24GFD0	A3UQ30GFD1	A4UQ36GFD0	A5UQ48GFA1	
Model type	Capacity			No. of connectable indoor units					
	Index (kBtu/h)	Btu/h	kW	2	3	3	4	5	
Wall mounted	9	9,000	2.6	0	0	0	0	0	
	12	12,000	3.5	0	0	0	0	0	
	18	18,000	5.3	0	0	0	0	0	
	24	24,000	7.0	-	0	0	0	0	
ART COOL Mirror	9	9,000	2.6	0	0	0	0	0	
	12	12,000	3.5	0	0	0	0	0	
	18	18,000	5.3	0	0	0	0	0	
	24	24,000	7.0	-	0	0	0	0	
Ceiling Cassette 1-way	9	9,000	2.6	0	0	0	0	0	
	12	12,000	3.5	0	0	0	0	0	
	18	18,000	5.3	0	0	0	0	0	
	24	24,000	7.0	-	0	0	0	0	
Ceiling Cassette 4-way	12	12,000	3.5	0	0	0	0	0	
	18	18,000	5.3	0	0	0	0	0	
	24	24,000	7.0	-	0	0	0	0	
Ceiling Concealed Duct	High static pressure	18	18,000	5.3	-	0	0	0	0
		24	24,000	7.0	-	-	0	0	0
	Low Static Pressure (Slim)	12	12,000	3.5	0	0	0	0	0
		18	18,000	5.3	0	0	0	0	0
		24	24,000	7.0	-	0	0	0	0

## 4. Combination

### 4.3 The representative combination example

#### ■ System of 1 outdoor unit, 4 indoor units

##### • The representative combination example (A4UQ36GFD0)



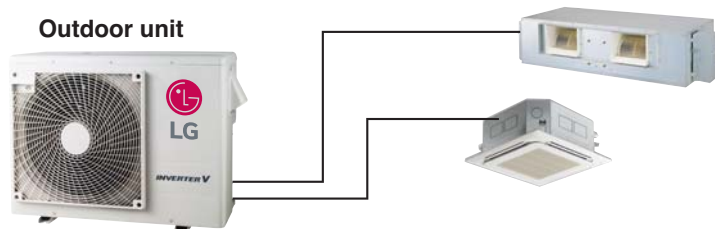
**NOTE**

The rated capacity should be determined in accordance with the combination table of each outdoor unit. The indoor units can be connected max. 4 units according to outdoor unit. For the next step, make sure that the total rated capacity selected is in a max combination capacity of outdoor unit.

<b>Example)</b>	AMNC18GTQA2	AMNC09GDBR0	AMNC12GDBA2	AMNC09GDBA2	
Total rated capacity index:	18	+	9	+	12
(kBtu/h)					+
					9 = 48 ≤ 50
					↑
					Refer the combination table.

#### ■ System of 1 outdoor unit, 2 indoor units

##### • The representative combination example (A4UQ36GFD0)



**NOTE**

The rated capacity should be determined in accordance with the combination table of each outdoor unit. The indoor units can be connected max. 4 units according to outdoor unit. For the next step, make sure that the total rated capacity selected is in a max combination capacity of outdoor unit.

<b>Example)</b>	AMNC18GTQA2	AMNC24GBHA2	
Total rated capacity Index:	18	+	24*1.3 = 49.2 ≤ 50
			↑
			Refer the combination table.

# MULTI F

## R410A(50/60Hz)

### Part 2 Product data

#### ■ Outdoor units

##### 1. Multi piping type MULTI F™

# MULTI F

## R410A(50/60Hz)

- 1. Multi piping type MULTI F™**
  - 1.1 List of functions**
  - 1.2 Specifications**
  - 1.3 Combination table**
  - 1.4 Dimensions**
  - 1.5 Piping diagrams**
  - 1.6 Wiring diagrams**
  - 1.7 Capacity tables**
  - 1.8 Operation range**
  - 1.9 Electric characteristics**
  - 1.10 Sound levels**

## 1. Multi piping type MULTI F

### 1.1 List of functions

Category	Functions	A2UQ18GFD0	A3UQ24GFD0	A3UQ30GFD1 A4UQ36GFD0 A5UQ48GFA1
Reliability	Defrost / Deicing	X	X	X
	High pressure switch	X	X	X
	Low pressure switch	O	X	X
	Phase protection	X	X	X
	Restart delay (3-minutes)	O	O	O
	Release Control	O	O	O
	Self diagnosis	O	O	O
	Soft start	O	O	O
	Test function	X	X	X
Convenience	Night Silent Operation	O	O	O
	Wiring Error Check	O	O	O
	Peak Control	O	O	O
	Forced Operation	O	O	O
CAC network function	Network solution(LGAP)	X	X	O

Device	A2UQ18GFD0 A3UQ24GFD0	A3UQ30GFD1 A4UQ36GFD0 A5UQ48GFA1	
Central Controller	AC Ez	X	PQCSZ250S0
	AC Ez Touch	X	PACEZA000
	AC Smart 5	X	PACS5A000
	ACP 5	X	PACP5A000
	AC Manager IV	X	PACM4B000
	AC Manager 5	X	PACM5A000
	PI 485	X	PMNFP14A1
BNU (Building Network Unit)	LONWORKS Gateway	X	PLNWKB000
	BACnet Gateway	X	PQNFB17C0
PDI (Power distribution indicator)	PDI Standard	X	PPWRDB000
	PDI Premium	X	PQNUD1S40
ODU Dry Contact	X	X	
Low Ambient Kit	O (Logical operation)	O (Logical operation)	

**Note :**

O : Applied      X : Not applied

Accessory model name : Installed at field, ordered and purchased separately by the corresponding model name, supplied with separate package.

# MULTI F

## 1. Multi piping type MULTI F

### 1.2 Specifications

Outdoor unit				A2UQ18GFD0	A3UQ24GFD0
Testing Combination				AMNC09GDBA2 x 2EA	AMNC09GDBA2 x 3EA
Capacity	Cooling	Min.~Rated~Max.	kW	1.45 ~ 5.0 ~ 6.1	1.45 ~ 7.0 ~ 7.7
		Min.~Rated~Max.	Btu/h	4,950 ~ 18,000~ 20,700	4,950 ~ 24,000~ 26,400
Power Input	Cooling	Min.~Rated~Max.	kW	0.47 ~ 1.63~ 2.00	0.47 ~ 2.13~ 2.80
Power Supply			V , Ø , Hz	230, 1, 50	230, 1, 50
Running Current			Cooling	2.1 ~ 7.2 ~ 9.0	2.1 ~ 9.5 ~ 12.0
Starting Current			Cooling	-	-
Wiring Connections	Power Supply Cable (included Earth)		No. x mm <sup>2</sup>	3C x 2.5	3C x 2.5
	Power and Communication Cable(included Earth)	Outdoor ~ BD unit	No. x mm <sup>2</sup>	-	-
Combination	Sum of Indoor Units Capacity		kBtu/h	30	34
	Number of Indoor Units		EA	2	3
	Number of BD Units		EA	-	-
Casing Color			-	Warm Gray	Warm Gray
Dimensions	W x H x D		mm	770 x 545 x 288	770 x 545 x 288
	W x H x D		inch	34-1/4 x 25-25/32 x 12-19/32	34-1/4 x 25-25/32 x 12-19/32
Net Weight			kg (lbs)	36(79.4)	39(86)
Compressor	Type		-	Twin Rotary	Twin Rotary
	Model		Model x No.	GKT141MAC x 1	GKT176MAE x 1
	Motor type		-	BLDC	BLDC
	Motor Output		W x No.	1,500 (at 60Hz) x 1	1,500 (at 60Hz) x 1
Refrigerant	Type		-	R410A	R410A
	Precharged Amount		g (oz)	1,200 (42.3)	1,400(49.4)
	Chargeless-Pipe Length		m (ft)	30(98.4)	50(164.0)
	Additional Charging Volume		g/m (oz/ft)	-	-
Refrigerant Oil	Control		-	Electronic Expansion Valve	Electronic Expansion Valve
	Type		-	FVC68D	FVC68D
	Charged volume		cc x No.	570x 1	670x 1
Heat Exchanger (Row x Column x Fins per inch) x No.			-	(2 x 24 x 20) x 1	(2 x 24 x 20) x 1
Fan	Type		-	Propeller	Propeller
	Air Flow Rate		m <sup>3</sup> /min x No.	26 x 1	26 x 1
Fan Motor	Type		-	BLDC	BLDC
	Output		W x No.	43 x 1	43 x 1
Sound Pressure Level	Cooling	Rated	dB(A)	48	49
Sound Power Level	Cooling	Rated	dB(A)	-	-
Piping Connections	Liquid	Outer Dia.	mm(inch) x No.	Ø 6.35 (1/4) x 2	Ø 6.35 (1/4) x 3
	Gas	Outer Dia.	mm(inch) x No.	Ø 9.52 (3/8) x 2	Ø 9.52 (3/8) x 3
Piping Length	Total Piping	Max.	m (ft)	30 (98.4)	50(164.0)
	Main Piping	Max.	m (ft)	-	-
	Total Branch Piping	Max.	m (ft)	-	-
	Each Branch Piping	Max.	m (ft)	20 (65.6)	25 (82.0)
Maximum Height Difference	Outdoor Unit ~ Indoor Unit	Max.	m (ft)	15 (49.2)	15 (49.2)
	Indoor Unit ~ Indoor Unit	Max.	m (ft)	7.5 (24.6)	7.5 (24.6)
Operation Range (Outdoor Temperature)	Cooling	Min. ~ Max.	°C DB (°F DB)	-5(23.0) ~ 48 (118.4)	-5(23.0) ~ 48 (118.4)

**Note :**

- All data are based on the following conditions:
  - Cooling Temperature : Indoor 27°C(80.6°F) DB / 19°C(66.2°F) WB  
Outdoor 35°C(95°F) DB / 24°C(75.2°F) WB
  - Heating Temperature : Indoor 20°C(68°F) DB / 15°C(59°F) WB  
Outdoor 7°C(44.6°F) DB / 6°C(42.8°F) WB
  - Piping Length : Interconnected Pipe Length = 7.5m
  - Difference Limit of Elevation (Outdoor ~ Indoor Unit) is Zero.
- Wiring cable size must comply with the applicable local and national code.
- Due to our policy of innovation some specifications may be changed without notification.
- Sound Level Values are measured at Anechoic chamber. Therefore, these values can be increased owing to ambient conditions during operation.

## 2 \_ Cooling Only R410A(50/60Hz)

# MULTI F

## 1. Multi piping type MULTI F

Outdoor unit				A3UQ30GFD1	A4UQ36GFD0
Testing Combination				AMNQ09GSJAO x 2EA / AMNQ12GSJAO x 1EA	AMNC09GDBA2 x 4EA
Capacity	Cooling	Min.~Rated~Max.	kW	1.7 ~ 8.8 ~ 10.0	2.8 ~ 10.5 ~ 11.7
		Min.~Rated~Max.	Btu/h	5,800 ~ 30,000 ~ 34,000	7,100 ~ 36,000 ~ 40,000
Power Input	Cooling	Min.~Rated~Max.	kW	0.4 ~ 2.7 ~3.1	0.68 ~ 3.1 ~ 3.75
Power Supply			V, Ø, Hz	230, 1, 50 220, 1, 60	230, 1, 50 220, 1, 60
Running Current	Cooling	Min.~Rated~Max.	A	1.7 ~ 12.2 ~ 13.4	3.2 ~ 14.0 ~ 17.0
Starting Current	Cooling	Max.	A	-	-
Wiring Connections	Power Supply Cable (included Earth)		No. x mm <sup>2</sup>	3C x 2.5	3C x 2.5
	Power and Communication Cable(included Earth)	Outdoor ~ BD unit	No. x mm <sup>2</sup>	-	-
Combination	Sum of Indoor Units Capacity		kBtu/h	42	50
	Number of Indoor Units		EA	3	4
	Number of BD Units		EA	-	-
Casing Color			-	Warm Gray	Warm Gray
Dimensions	W x H x D		mm	870 x 650 x 330	950 x 834 x 330
	W x H x D		inch	34-1/4 x 25-19/32 x 13	37-13/32 x 32-27/32 x 13
Net Weight			kg (lbs)	46(101.4)	60(132.3)
Compressor	Type		-	Twin Rotary	Twin Rotary
	Model		Model x No.	GKT208MAB x 1	GJT240MA x 1
	Motor type		-	BLDC	BLDC
	Motor Output		W x No.	1,500 (at 60Hz) x 1	2,137 (at 60Hz) x 1
Refrigerant	Type		-	R410A	R410A
	Precharged Amount		g (oz)	1,900 (67.0)	2,200 (77.6)
	Chargeless-Pipe Length		m (ft)	30 (98.4)	70 (229.7)
	Additional Charging Volume		g/m (oz/ft)	20 (0.7)	-
Control			-	Electronic Expansion Valve	Electronic Expansion Valve
Refrigerant Oil	Type		-	FVC68D	FVC68D
	Charged volume		cc x No.	670x 1	900 x 1
Heat Exchanger			(Row x Column x Fins per inch) x No.	(2 x 28 x 14) x 1	(2 x 40 x 21) x 1
Fan	Type		-	Propeller	Propeller
	Air Flow Rate		m <sup>3</sup> /min x No.	50 x 1	60 x 1
Fan Motor	Type		-	BLDC	BLDC
	Output		W x No.	85.4 x 1	124.2 x 1
Sound Pressure Level	Cooling	Rated	dB(A)	50	51
Sound Power Level	Cooling	Rated	dB(A)	-	-
Piping Connections	Liquid	Outer Dia.	mm(inch) x No.	Ø 6.35 (1/4) x 3	Ø 6.35 (1/4) x 4
	Gas	Outer Dia.	mm(inch) x No.	Ø 9.52 (3/8) x 3	Ø 9.52 (3/8) x 4
Piping Length	Total Piping		Max. m (ft)	50 (164.0)	70 (229.7)
	Main Piping		Max. m (ft)	-	-
	Total Branch Piping		Max. m (ft)	-	-
	Each Branch Piping		Max. m (ft)	25 (82.0)	25 (82.0)
Maximum Height Difference	Outdoor Unit ~ Indoor Unit	Max.	m (ft)	15 (49.2)	15 (49.2)
	Indoor Unit ~ Indoor Unit	Max.	m (ft)	7.5 (24.6)	7.5 (24.6)
Operation Range (Outdoor Temperature)	Cooling	Min. ~ Max.	°C DB (°F DB)	-5(23.0) ~ 48 (118.4)	-5(23.0) ~ 48 (118.4)

### Note :

1. All data are based on the following conditions:

- Cooling Temperature : Indoor 27°C(80.6°F) DB / 19°C(66.2°F) WB  
Outdoor 35°C(95°F) DB / 24°C(75.2°F) WB
- Heating Temperature : Indoor 20°C(68°F) DB / 15°C(59°F) WB  
Outdoor 7°C(44.6°F) DB / 6°C(42.8°F) WB
- Piping Length : Interconnected Pipe Length = 7.5m
- Difference Limit of Elevation (Outdoor ~ Indoor Unit) is Zero.

2. Wiring cable size must comply with the applicable local and national code.
3. Due to our policy of innovation some specifications may be changed without notification.
4. Sound Level Values are measured at Anechoic chamber.  
Therefore, these values can be increased owing to ambient conditions during operation.

# MULTI F

## 1. Multi piping type MULTI F

Outdoor unit				A5UQ48GFA1
Testing Combination				AMNQ09GSJ*0 x 4EA / AMNQ12GSJ*0 x 1EA
Capacity	Cooling	Min.~Rated~Max.	kW	2.05 ~ 14.10 ~ 15.50
		Min.~Rated~Max.	Btu/h	7,000 ~ 48,000~52,800
Power Input	Cooling	Min.~Rated~Max.	kW	0.60 ~ 4.40 ~ 5.64
Power Supply			V, Ø, Hz	230, 1, 50 220, 1, 60
Running Current	Cooling	Min.~Rated~Max.	A	2.7 ~ 19.2 ~ 25.5
Starting Current	Cooling	Max.	A	-
Wiring Connections	Power Supply Cable (included Earth)		No. x mm <sup>2</sup>	3C x 2.5
	Power and Communication Cable(included Earth)	Outdoor ~ BD unit	No. x mm <sup>2</sup>	-
Combination	Sum of Indoor Units Capacity		kBtu/h	72
	Number of Indoor Units		EA	5
	Number of BD Units		EA	-
Casing Color				Warm Gray
Dimensions	W x H x D		mm	950 x 834 x 330
	W x H x D		inch	37-2/5 x 32-4/5 x 12-19/32
Net Weight			kg (lbs)	65(143.3)
Compressor	Type		-	Scroll
	Model		Model x No.	RJA036MAA x 1
	Motor type		-	BLDC
	Motor Output		W x No.	3,198 x 1
Refrigerant	Type		-	R410A
	Precharged Amount		g (oz)	2,200 (77.6)
	Chargeless-Pipe Length		m (ft)	37.5(123.0)
	Additional Charging Volume		g/m (oz/ft)	20 (0.7)
	Control		-	Electronic Expansion Valve
Refrigerant Oil	Type		-	FVC68D
	Charged volume		cc x No.	1,000 x 1
Heat Exchanger	(Row x Column x Fins per inch) x No.		-	(3 x 40 x 21) x 1
Fan	Type		-	Propeller
	Air Flow Rate		m <sup>3</sup> /min x No.	70 x 1
Fan Motor	Type		-	BLDC
	Output		W x No.	124.2 x 1
Sound Pressure Level	Cooling	Rated	dB(A)	54
Sound Power Level	Cooling	Rated	dB(A)	-
Piping Connections	Liquid	Outer Dia.	mm(inch) x No.	Ø 6.35 (1/4) x 5
	Gas	Outer Dia.	mm(inch) x No.	Ø 9.52 (3/8) x 5
Piping Length	Total Piping	Max.	m (ft)	85 (278.9)
	Main Piping	Max.	m (ft)	-
	Total Branch Piping	Max.	m (ft)	-
	Each Branch Piping	Max.	m (ft)	25 (82.0)
Maximum Height Difference	Outdoor Unit ~ Indoor Unit	Max.	m (ft)	15 (49.2)
	Indoor Unit ~ Indoor Unit	Max.	m (ft)	7.5 (24.6)
Operation Range (Outdoor Temperature)	Cooling	Min. ~ Max.	°C DB (°F DB)	-5(23.0) ~ 48(118.4)

### Note :

1. All data are based on the following conditions:

- Cooling Temperature : Indoor 27°C(80.6°F) DB / 19°C(66.2°F) WB  
Outdoor 35°C(95°F) DB / 24°C(75.2°F) WB
- Heating Temperature : Indoor 20°C(68°F) DB / 15°C(59°F) WB  
Outdoor 7°C(44.6°F) DB / 6°C(42.8°F) WB
- Piping Length : Interconnected Pipe Length = 7.5m
- Difference Limit of Elevation (Outdoor ~ Indoor Unit) is Zero.

2. Wiring cable size must comply with the applicable local and national code.
3. Due to our policy of innovation some specifications may be changed without notification.
4. Sound Level Values are measured at Anechoic chamber.  
Therefore, these values can be increased owing to ambient conditions during operation.



# MULTI F

## 1. Multi piping type MULTI F

### 1.3 Combination table

Models : A2UQ18GFD0

#### Cooling

Operation	Combination (kBtu/h)			Each Capacity (Btu/h)		Total Capacity (Btu/h)			Total Input (W)			Total Current (A)		
	Unit-A	Unit-B	Total	Unit-A	Unit-B	Min	Rated	Max	Min	Rated	Max	Min	Rated	Max
1 UNIT	9	-	9	9,000	-	4,950	9,000	10,800	470	780	1,020	2.1	3.5	4.6
	12	-	12	12,000	-	6,600	12,000	14,400	530	900	1,310	2.4	4.1	5.9
	18	-	18	18,000	-	9,900	18,000	20,700	918	1,630	2,000	4.2	7.2	9.0
2 UNIT	9	9	18	9,000	9,000	9,900	18,000	20,700	918	1,630	2,000	4.2	7.2	9.0
	9	12	21	7,714	10,286	9,900	18,000	20,700	918	1,630	2,000	4.2	7.2	9.0
	9	18	27	6,000	12,000	9,900	18,000	20,700	918	1,630	2,000	4.2	7.2	9.0
	12	12	24	9,000	9,000	9,900	18,000	20,700	918	1,630	2,000	4.2	7.2	9.0
	12	18	30	7,200	10,800	9,900	18,000	20,700	918	1,630	2,000	4.2	7.2	9.0

**Note :**

1. Cooling Capacity is based on : indoor temp. 27°CDB, 19°CWB  
: outdoor temp. 35°CDB
2. The total ability of connected a indoor unit is up to 30kBtu/h
3. At least two indoor units should be connected.

# MULTI F

## 1. Multi piping type MULTI F

Models : A3UQ24GFD0

### Cooling

Operation	Combination (kBtu/h)				Each Capacity (Btu/h)			Total Capacity (Btu/h)			Total Input (W)			Total Current (A)		
	Unit-A	Unit-B	Unit-C	Total	Unit-A	Unit-B	Unit-C	Min	Rated	Max	Min	Rated	Max	Min	Rated	Max
1 UNIT	9	-	-	9	9,000	-	-	4,950	9,000	10,800	470	780	1,020	2.1	3.5	4.6
	12	-	-	12	12,000	-	-	6,600	12,000	14,400	542	900	1,310	2.4	4.1	5.9
	18	-	-	18	18,000	-	-	9,900	18,000	21,600	981	1,630	2,000	4.5	7.2	9.0
	24	-	-	24	24,000	-	-	13,200	24,000	26,400	1,282	2,130	2,800	5.8	9.5	12.0
2 UNIT	9	9	-	18	9,000	9,000	-	9,900	18,000	21,600	981	1,630	2,000	4.5	7.2	9.0
	9	12	-	21	9,000	12,000	-	11,550	21,000	25,200	1,132	1,880	2,100	5.1	7.2	9.0
	9	18	-	27	8,000	16,000	-	13,200	24,000	26,400	1,282	2,130	2,800	5.8	9.5	12.0
	9	24	-	33	6,545	17,455	-	13,200	24,000	26,400	1,282	2,130	2,800	5.8	9.5	12.0
	12	12	-	24	12,000	12,000	-	13,200	24,000	26,400	1,282	2,130	2,800	5.8	9.5	12.0
	12	18	-	30	9,600	14,400	-	13,200	24,000	26,400	1,282	2,130	2,800	5.8	9.5	12.0
3 UNIT	9	9	9	27	8,000	8,000	8,000	13,200	24,000	26,400	1,282	2,130	2,800	5.8	9.5	12.0
	9	9	12	30	7,200	7,200	9,600	13,200	24,000	26,400	1,282	2,130	2,800	5.8	9.5	12.0
	9	12	12	33	6,545	8,727	8,727	13,200	24,000	26,400	1,282	2,130	2,800	5.8	9.5	12.0

#### Note :

- Cooling Capacity is based on : indoor temp.27°CDB, 19°CWB  
: outdoor temp. 35°CDB
- The total ability of connected a indoor unit is up to 34kBtu/h
- At least two indoor units should be connected.

# MULTI F

## 1. Multi piping type MULTI F

Models : A3UQ30GFD1

### Cooling

Operation	Combination (kBtu/h)				Each Capacity (Btu/h)			Total Capacity (Btu/h)			Total Input (W)			Total Current (A)		
	Unit-A	Unit-B	Unit-C	Total	Unit-A	Unit-B	Unit-C	Min	Rated	Max	Min	Rated	Max	Min	Rated	Max
1 UNIT	9	-	-	9	9,000	-	-	7,100	9,000	10,800	680	880	1,050	3.2	3.9	4.6
	12	-	-	12	12,000	-	-	10,340	12,000	13,700	830	930	1,320	3.8	4.1	5.8
	18	-	-	18	18,000	-	-	15,180	18,000	21,700	1,200	1,410	2,230	5.6	6.1	9.8
	24	-	-	24	24,000	-	-	18,860	24,000	26,900	1,480	1,850	2,510	6.7	8.1	11.0
2 UNIT	9	9	-	18	9,000	9,000	-	15,180	18,000	21,700	1,200	1,410	2,230	5.6	6.1	9.8
	9	12	-	21	9,000	12,000	-	17,020	21,000	24,300	1,340	1,630	2,370	6.0	7.2	10.5
	9	18	-	27	9,000	18,000	-	20,700	27,000	29,300	1,615	2,275	2,705	7.2	10.1	12.0
	9	24	-	33	8,182	21,818	-	22,540	30,000	34,000	1,917	2,700	3,100	8.5	12.2	13.4
	12	12	-	24	12,000	12,000	-	18,860	24,000	26,900	1,480	1,850	2,510	6.7	8.1	11.0
	12	18	-	30	12,000	18,000	-	22,540	30,000	34,000	1,917	2,700	3,100	8.5	12.2	13.4
	12	24	-	36	10,000	20,000	-	22,540	30,000	34,000	1,917	2,700	3,100	8.5	12.2	13.4
	18	18	-	36	15,000	15,000	-	22,540	30,000	34,000	1,917	2,700	3,100	8.5	12.2	13.4
3 UNIT	18	24	-	42	12,857	17,143	-	22,540	30,000	34,000	1,917	2,700	3,100	8.5	12.2	13.4
	9	9	9	27	9,000	9,000	9,000	20,700	27,000	29,300	1,615	2,275	2,705	7.2	10.1	12.0
	9	9	12	30	9,000	9,000	12,000	22,540	30,000	34,000	1,917	2,700	3,100	8.5	12.2	13.4
	9	9	18	36	7,500	7,500	15,000	22,540	30,000	34,000	1,917	2,700	3,100	8.5	12.2	13.4
	9	9	24	42	6,429	6,429	17,143	22,540	30,000	34,000	1,917	2,700	3,100	8.5	12.2	13.4
	9	12	12	33	8,182	10,909	10,909	22,540	30,000	34,000	1,917	2,700	3,100	8.5	12.2	13.4
	9	12	18	39	6,923	9,231	13,846	22,540	30,000	34,000	1,917	2,700	3,100	8.5	12.2	13.4
	12	12	12	36	10,000	10,000	10,000	22,540	30,000	34,000	1,917	2,700	3,100	8.5	12.2	13.4
	12	12	18	42	8,571	8,571	12,857	22,540	30,000	34,000	1,917	2,700	3,100	8.5	12.2	13.4

#### Note :

- Cooling Capacity is based on : indoor temp.27°CDB, 19°CWB  
: outdoor temp. 35°CDB
- The total ability of connected a indoor unit is up to 42kBtu/h
- At least two indoor units should be connected.

# MULTI F

## 1. Multi piping type MULTI F

Models : A4UQ36GFD0

### Cooling

Operation	Combination (kBtu/h)					Each Capacity (Btu/h)				Total Capacity (Btu/h)			Total Input (W)			Total Current (A)		
	Unit-A	Unit-B	Unit-C	Unit-D	Total	Unit-A	Unit-B	Unit-C	Unit-D	Min	Rated	Max	Min	Rated	Max	Min	Rated	Max
1 UNIT	9	-	-	-	9	9,000	-	-	-	7,100	9,000	10,800	680	880	1,050	3.2	3.9	4.6
	12	-	-	-	12	12,000	-	-	-	10,340	12,000	13,700	830	930	1,320	3.8	4.1	5.8
	18	-	-	-	18	18,000	-	-	-	15,180	18,000	21,700	1,200	1,410	2,230	5.6	6.1	9.8
	24	-	-	-	24	24,000	-	-	-	18,860	24,000	26,900	1,480	1,850	2,510	6.7	8.1	11.0
2 UNIT	9	9	-	-	18	9,000	9,000	-	-	15,180	18,000	21,700	1,200	1,410	2,230	5.6	6.1	9.8
	9	12	-	-	21	9,000	12,000	-	-	17,020	21,000	24,300	1,340	1,630	2,370	6.0	7.2	10.5
	9	18	-	-	27	9,000	18,000	-	-	20,700	27,000	29,300	1,615	2,275	2,705	7.2	10.1	12.0
	9	24	-	-	33	9,000	24,000	-	-	24,380	33,000	35,900	2,059	2,900	3,325	9.4	12.7	14.9
	12	12	-	-	24	12,000	12,000	-	-	18,860	24,000	26,900	1,480	1,850	2,510	6.7	8.1	11.0
	12	18	-	-	30	12,000	18,000	-	-	22,540	30,000	31,800	1,917	2,700	2,900	8.5	11.5	12.9
	12	24	-	-	36	12,000	24,000	-	-	26,220	36,000	40,000	2,201	3,100	3,750	10.3	14.0	17.0
	18	18	-	-	36	18,000	18,000	-	-	26,220	36,000	40,000	2,201	3,100	3,750	10.3	14.0	17.0
	18	24	-	-	42	15,429	20,571	-	-	26,220	36,000	40,000	2,201	3,100	3,750	10.3	14.0	17.0
	24	24	-	-	48	18,000	18,000	-	-	26,220	36,000	40,000	2,201	3,100	3,750	10.3	14.0	17.0
3 UNIT	9	9	9	-	27	9,000	9,000	9,000	-	20,700	27,000	29,300	1,615	2,275	2,705	7.2	10.1	12.0
	9	9	12	-	30	9,000	9,000	12,000	-	22,540	30,000	31,800	1,917	2,700	2,900	8.5	11.5	12.9
	9	9	18	-	36	9,000	9,000	18,000	-	26,220	36,000	40,000	2,201	3,100	3,750	10.3	14.0	17.0
	9	9	24	-	42	7,714	7,714	20,571	-	26,220	36,000	40,000	2,201	3,100	3,750	10.3	14.0	17.0
	9	12	12	-	33	9,000	12,000	12,000	-	24,380	33,000	35,900	2,059	2,900	3,325	9.4	12.7	14.9
	9	12	18	-	39	8,308	11,077	16,615	-	26,220	36,000	40,000	2,201	3,100	3,750	10.3	14.0	17.0
	9	12	24	-	45	7,200	9,600	19,200	-	26,220	36,000	40,000	2,201	3,100	3,750	10.3	14.0	17.0
	9	18	18	-	45	7,200	14,400	14,400	-	26,220	36,000	40,000	2,201	3,100	3,750	10.3	14.0	17.0
	12	12	12	-	36	12,000	12,000	12,000	-	26,220	36,000	40,000	2,201	3,100	3,750	10.3	14.0	17.0
	12	12	18	-	42	10,286	10,286	15,429	-	26,220	36,000	40,000	2,201	3,100	3,750	10.3	14.0	17.0
4 UNIT	9	9	9	9	36	9,000	9,000	9,000	9,000	26,220	36,000	40,000	2,201	3,100	3,750	10.3	14.0	17.0
	9	9	9	12	39	8,308	8,308	8,308	11,077	26,220	36,000	40,000	2,201	3,100	3,750	10.3	14.0	17.0
	9	9	9	18	45	7,200	7,200	7,200	14,400	26,220	36,000	40,000	2,201	3,100	3,750	10.3	14.0	17.0
	9	9	12	12	42	7,714	7,714	10,286	10,286	26,220	36,000	40,000	2,201	3,100	3,750	10.3	14.0	17.0
	9	9	12	18	48	6,750	6,750	9,000	13,500	26,220	36,000	40,000	2,201	3,100	3,750	10.3	14.0	17.0
	9	12	12	12	45	7,200	9,600	9,600	9,600	26,220	36,000	40,000	2,201	3,100	3,750	10.3	14.0	17.0
	12	12	12	12	48	9,000	9,000	9,000	9,000	26,220	36,000	40,000	2,201	3,100	3,750	10.3	14.0	17.0

**Note :**

- Cooling Capacity is based on : indoor temp.27°CDB, 19°CWB  
: outdoor temp. 35°CDB
- The total ability of connected a indoor unit is up to 50kBtu/h
- At least two indoor units should be connected.

# MULTI F

## 1. Multi piping type MULTI F

Models : A5UQ48GFA1

### Cooling

Operation	Combination (kBtu/h)						Each Capacity (Btu/h)					Total Capacity (Btu/h)			Total Input (W)			Total Current (A)		
	Unit-A	Unit-B	Unit-C	Unit-D	Unit-E	Total	Unit-A	Unit-B	Unit-C	Unit-D	Unit-E	Min	Rated	Max	Min	Rated	Max	Min	Rated	Max
1 UNIT	9	-	-	-	-	9	9,000	-	-	-	-	7,000	9,000	10,800	600	750	970	2.7	3.4	4.4
	12	-	-	-	-	12	12,000	-	-	-	-	7,500	12,000	14,400	630	1,010	1,850	2.9	4.6	8.4
	18	-	-	-	-	18	18,000	-	-	-	-	10,800	18,000	21,600	1,040	1,690	2,750	4.7	7.7	12.5
	24	-	-	-	-	24	24,000	-	-	-	-	12,400	24,000	28,800	1,140	2,550	3,410	5.2	11.5	15.4
2 UNIT	9	9	-	-	-	18	9,000	9,000	-	-	-	13,206	18,000	25,941	1,190	1,590	3,020	5.4	7.2	13.7
	9	12	-	-	-	21	9,000	12,000	-	-	-	14,485	21,000	28,147	1,350	2,000	3,280	6.1	9.0	14.9
	12	12	-	-	-	24	12,000	12,000	-	-	-	15,765	24,000	30,353	1,500	2,400	3,540	6.8	10.9	16.0
	9	18	-	-	-	27	9,000	18,000	-	-	-	17,044	27,000	32,559	1,650	2,810	3,810	7.5	12.7	17.2
	12	18	-	-	-	30	12,000	18,000	-	-	-	18,324	30,000	34,765	1,800	3,210	4,070	8.2	14.5	18.4
	9	24	-	-	-	33	9,000	24,000	-	-	-	19,603	33,000	36,971	1,950	3,620	4,330	8.8	16.4	19.6
	12	24	-	-	-	36	12,000	24,000	-	-	-	20,882	36,000	39,176	2,110	4,020	4,590	9.5	18.2	20.8
	18	18	-	-	-	36	18,000	18,000	-	-	-	20,882	36,000	39,176	2,110	4,020	4,590	9.5	18.2	20.8
	18	24	-	-	-	42	18,000	24,000	-	-	-	23,441	42,000	43,588	2,410	4,830	5,120	10.9	21.9	23.2
24	24	-	-	-	48	24,000	24,000	-	-	-	26,000	48,000	48,000	2,720	5,640	5,640	12.3	25.5	25.5	
3 UNIT	9	9	9	-	-	27	8,588	8,588	8,588	-	-	19,224	25,765	35,088	1,740	2,290	4,010	7.9	10.4	18.2
	9	9	12	-	-	30	8,444	8,444	11,259	-	-	20,335	28,147	36,632	1,860	2,590	4,180	8.4	11.8	18.9
	9	12	12	-	-	33	8,326	11,102	11,102	-	-	21,447	30,529	38,176	1,990	2,900	4,350	9.0	13.1	19.7
	9	9	18	-	-	36	8,228	8,228	16,456	-	-	22,559	32,912	39,721	2,110	3,210	4,520	9.6	14.5	20.5
	12	12	12	-	-	36	10,971	10,971	10,971	-	-	22,559	32,912	39,721	2,110	3,210	4,520	9.6	14.5	20.5
	9	12	18	-	-	39	8,145	10,860	16,290	-	-	23,671	35,294	41,265	2,240	3,510	4,690	10.1	15.9	21.2
	9	9	24	-	-	42	8,074	8,074	21,529	-	-	24,782	37,676	42,809	2,370	3,820	4,860	10.7	17.3	22.0
	12	12	18	-	-	42	10,765	10,765	16,147	-	-	24,782	37,676	42,809	2,370	3,820	4,860	10.7	17.3	22.0
	9	12	24	-	-	45	8,012	10,682	21,365	-	-	25,894	40,059	44,353	2,490	4,130	5,030	11.3	18.7	22.8
	9	18	18	-	-	45	8,012	16,024	16,024	-	-	25,894	40,059	44,353	2,490	4,130	5,030	11.3	18.7	22.8
	12	12	24	-	-	48	12,000	12,000	24,000	-	-	29,600	48,000	49,500	2,910	5,150	5,590	13.2	23.3	25.3
	12	18	18	-	-	48	12,000	18,000	18,000	-	-	29,600	48,000	49,500	2,910	5,150	5,590	13.2	23.3	25.3
	9	18	24	-	-	51	8,471	16,941	22,588	-	-	29,600	48,000	49,500	2,910	5,150	5,590	13.2	23.3	25.3
	12	18	24	-	-	54	10,667	16,000	21,333	-	-	29,600	48,000	49,500	2,910	5,150	5,590	13.2	23.3	25.3
	18	18	18	-	-	54	16,000	16,000	16,000	-	-	29,600	48,000	49,500	2,910	5,150	5,590	13.2	23.3	25.3
	9	24	24	-	-	57	7,579	20,211	20,211	-	-	29,600	48,000	49,500	2,910	5,150	5,590	13.2	23.3	25.3
12	24	24	-	-	60	9,600	19,200	19,200	-	-	29,600	48,000	49,500	2,910	5,150	5,590	13.2	23.3	25.3	
18	18	24	-	-	60	14,400	14,400	19,200	-	-	29,600	48,000	49,500	2,910	5,150	5,590	13.2	23.3	25.3	
18	24	24	-	-	66	13,091	17,455	17,455	-	-	29,600	48,000	49,500	2,910	5,150	5,590	13.2	23.3	25.3	
24	24	24	-	-	72	16,000	16,000	16,000	-	-	29,600	48,000	49,500	2,910	5,150	5,590	13.2	23.3	25.3	

**Note :**

- Cooling Capacity is based on : indoor temp.27°CDB, 19°CWB  
: outdoor temp. 35°CDB
- The total ability of connected a indoor unit is up to 50kBtu/h
- At least two indoor units should be connected.

# MULTI F

## 1. Multi piping type MULTI F

Models : A5UQ48GFA1

### Cooling

Operation	Combination (kBtu/h)						Each Capacity (Btu/h)					Total Capacity (Btu/h)			Total Input (W)			Total Current (A)		
	Unit-A	Unit-B	Unit-C	Unit-D	Unit-E	Total	Unit-A	Unit-B	Unit-C	Unit-D	Unit-E	Min	Rated	Max	Min	Rated	Max	Min	Rated	Max
4 UNIT	9	9	9	9	-	36	9,000	9,000	9,000	9,000	-	25,900	36,000	45,300	2,380	3,320	5,010	10.8	15.0	22.7
	9	9	9	12	-	39	9,000	9,000	9,000	12,000	-	27,175	39,000	46,725	2,520	3,710	5,150	11.4	16.8	23.3
	9	9	12	12	-	42	9,000	9,000	12,000	12,000	-	28,450	42,000	48,150	2,670	4,110	5,280	12.1	18.6	23.9
	9	12	12	12	-	45	9,000	12,000	12,000	12,000	-	29,725	45,000	49,575	2,810	4,500	5,410	12.7	20.4	24.5
	9	9	9	18	-	45	9,000	9,000	9,000	18,000	-	29,725	45,000	49,575	2,810	4,500	5,410	12.7	20.4	24.5
	9	9	12	18	-	48	9,000	9,000	12,000	18,000	-	31,000	48,000	51,000	2,950	4,900	5,550	13.4	22.2	25.1
	12	12	12	12	-	48	12,000	12,000	12,000	12,000	-	31,000	48,000	51,000	2,950	4,900	5,550	13.4	22.2	25.1
	9	9	9	24	-	51	8,471	8,471	8,471	22,588	-	31,000	48,000	51,000	2,950	4,900	5,550	13.4	22.2	25.1
	9	12	12	18	-	51	8,471	11,294	11,294	16,941	-	31,000	48,000	51,000	2,950	4,900	5,550	13.4	22.2	25.1
	9	9	12	24	-	54	8,000	8,000	10,667	21,333	-	31,000	48,000	51,000	2,950	4,900	5,550	13.4	22.2	25.1
	9	9	18	18	-	54	8,000	8,000	16,000	16,000	-	31,000	48,000	51,000	2,950	4,900	5,550	13.4	22.2	25.1
	12	12	12	18	-	54	10,667	10,667	10,667	16,000	-	31,000	48,000	51,000	2,950	4,900	5,550	13.4	22.2	25.1
	9	12	12	24	-	57	7,579	10,105	10,105	20,211	-	31,000	48,000	51,000	2,950	4,900	5,550	13.4	22.2	25.1
	9	12	18	18	-	57	7,579	10,105	15,158	15,158	-	31,000	48,000	51,000	2,950	4,900	5,550	13.4	22.2	25.1
	9	9	18	24	-	60	7,200	7,200	14,400	19,200	-	31,000	48,000	51,000	2,950	4,900	5,550	13.4	22.2	25.1
	12	12	12	24	-	60	9,600	9,600	9,600	19,200	-	31,000	48,000	51,000	2,950	4,900	5,550	13.4	22.2	25.1
	12	12	18	18	-	60	9,600	9,600	14,400	14,400	-	31,000	48,000	51,000	2,950	4,900	5,550	13.4	22.2	25.1
	9	12	18	24	-	63	6,857	9,143	13,714	18,286	-	31,000	48,000	51,000	2,950	4,900	5,550	13.4	22.2	25.1
	9	18	18	18	-	63	6,857	13,714	13,714	13,714	-	31,000	48,000	51,000	2,950	4,900	5,550	13.4	22.2	25.1
	9	9	24	24	-	66	6,545	6,545	17,455	17,455	-	31,000	48,000	51,000	2,950	4,900	5,550	13.4	22.2	25.1
12	12	18	24	-	66	8,727	8,727	13,091	17,455	-	31,000	48,000	51,000	2,950	4,900	5,550	13.4	22.2	25.1	
12	18	18	18	-	66	8,727	13,091	13,091	13,091	-	31,000	48,000	51,000	2,950	4,900	5,550	13.4	22.2	25.1	
9	12	24	24	-	69	6,261	8,348	16,696	16,696	-	31,000	48,000	51,000	2,950	4,900	5,550	13.4	22.2	25.1	
9	18	18	24	-	69	6,261	12,522	12,522	16,696	-	31,000	48,000	51,000	2,950	4,900	5,550	13.4	22.2	25.1	
12	12	24	24	-	72	8,000	8,000	16,000	16,000	-	31,000	48,000	51,000	2,950	4,900	5,550	13.4	22.2	25.1	
12	18	18	24	-	72	8,000	12,000	12,000	16,000	-	31,000	48,000	51,000	2,950	4,900	5,550	13.4	22.2	25.1	
18	18	18	18	-	72	12,000	12,000	12,000	12,000	-	31,000	48,000	51,000	2,950	4,900	5,550	13.4	22.2	25.1	

**Note :**

- Cooling Capacity is based on : indoor temp.27°CDB, 19°CWB  
: outdoor temp. 35°CDB
- The total ability of connected a indoor unit is up to 50kBtu/h
- At least two indoor units should be connected.

# MULTI F

## 1. Multi piping type MULTI F

Models : A5UQ48GFA1

### Cooling

Operation	Combination (kBtu/h)						Each Capacity (Btu/h)					Total Capacity (Btu/h)			Total Input (W)			Total Current (A)		
	Unit-A	Unit-B	Unit-C	Unit-D	Unit-E	Total	Unit-A	Unit-B	Unit-C	Unit-D	Unit-E	Min	Rated	Max	Min	Rated	Max	Min	Rated	Max
5 UNIT	9	9	9	9	9	45	9,000	9,000	9,000	9,000	9,000	31,808	45,000	51,808	2,970	4,010	5,400	13.0	17.6	23.7
	9	9	9	9	12	48	9,000	9,000	9,000	9,000	12,000	34,000	48,000	52,800	3,180	4,400	5,460	13.8	19.2	23.7
	9	9	9	12	12	51	8,471	8,471	8,471	11,294	11,294	34,000	48,000	52,800	3,180	4,400	5,460	13.8	19.2	23.7
	9	9	9	9	18	54	8,000	8,000	8,000	8,000	16,000	34,000	48,000	52,800	3,180	4,400	5,460	13.8	19.2	23.7
	9	9	12	12	12	54	8,000	8,000	10,667	10,667	10,667	34,000	48,000	52,800	3,180	4,400	5,460	13.8	19.2	23.7
	9	9	9	12	18	57	7,579	7,579	7,579	10,105	15,158	34,000	48,000	52,800	3,180	4,400	5,460	13.8	19.2	23.7
	9	12	12	12	12	57	7,579	10,105	10,105	10,105	10,105	34,000	48,000	52,800	3,180	4,400	5,460	13.8	19.2	23.7
	9	9	9	9	24	60	7,200	7,200	7,200	7,200	19,200	34,000	48,000	52,800	3,180	4,400	5,460	13.8	19.2	23.7
	9	9	12	12	18	60	7,200	7,200	9,600	9,600	14,400	34,000	48,000	52,800	3,180	4,400	5,460	13.8	19.2	23.7
	12	12	12	12	12	60	9,600	9,600	9,600	9,600	9,600	34,000	48,000	52,800	3,180	4,400	5,460	13.8	19.2	23.7
	9	9	9	12	24	63	6,857	6,857	6,857	9,143	18,286	34,000	48,000	52,800	3,180	4,400	5,460	13.8	19.2	23.7
	9	9	9	18	18	63	6,857	6,857	6,857	13,714	13,714	34,000	48,000	52,800	3,180	4,400	5,460	13.8	19.2	23.7
	9	12	12	12	18	63	6,857	9,143	9,143	9,143	13,714	34,000	48,000	52,800	3,180	4,400	5,460	13.8	19.2	23.7
	9	9	12	12	24	66	6,545	6,545	8,727	8,727	17,455	34,000	48,000	52,800	3,180	4,400	5,460	13.8	19.2	23.7
	9	9	12	18	18	66	6,545	6,545	8,727	13,091	13,091	34,000	48,000	52,800	3,180	4,400	5,460	13.8	19.2	23.7
	12	12	12	12	18	66	8,727	8,727	8,727	8,727	13,091	34,000	48,000	52,800	3,180	4,400	5,460	13.8	19.2	23.7
	9	9	9	18	24	69	6,261	6,261	6,261	12,522	16,696	34,000	48,000	52,800	3,180	4,400	5,460	13.8	19.2	23.7
	9	12	12	12	24	69	6,261	8,348	8,348	8,348	16,696	34,000	48,000	52,800	3,180	4,400	5,460	13.8	19.2	23.7
	9	12	12	18	18	69	6,261	8,348	8,348	12,522	12,522	34,000	48,000	52,800	3,180	4,400	5,460	13.8	19.2	23.7
	9	9	12	18	24	72	6,000	6,000	8,000	12,000	16,000	34,000	48,000	52,800	3,180	4,400	5,460	13.8	19.2	23.7
9	9	18	18	18	72	6,000	6,000	12,000	12,000	12,000	34,000	48,000	52,800	3,180	4,400	5,460	13.8	19.2	23.7	
12	12	12	12	24	72	8,000	8,000	8,000	8,000	16,000	34,000	48,000	52,800	3,180	4,400	5,460	13.8	19.2	23.7	
12	12	12	18	18	72	8,000	8,000	8,000	12,000	12,000	34,000	48,000	52,800	3,180	4,400	5,460	13.8	19.2	23.7	

**Note :**

- Cooling Capacity is based on : indoor temp.27°CDB, 19°CWB  
: outdoor temp. 35°CDB
- The total ability of connected a indoor unit is up to 50kBtu/h
- At least two indoor units should be connected.

# MULTI F

## 1. Multi piping type MULTI F

### 1.4 Dimensions

[Unit: mm]  
Chassis code : U18A  
DWG P/No. : TBW35988101\_Rev.01

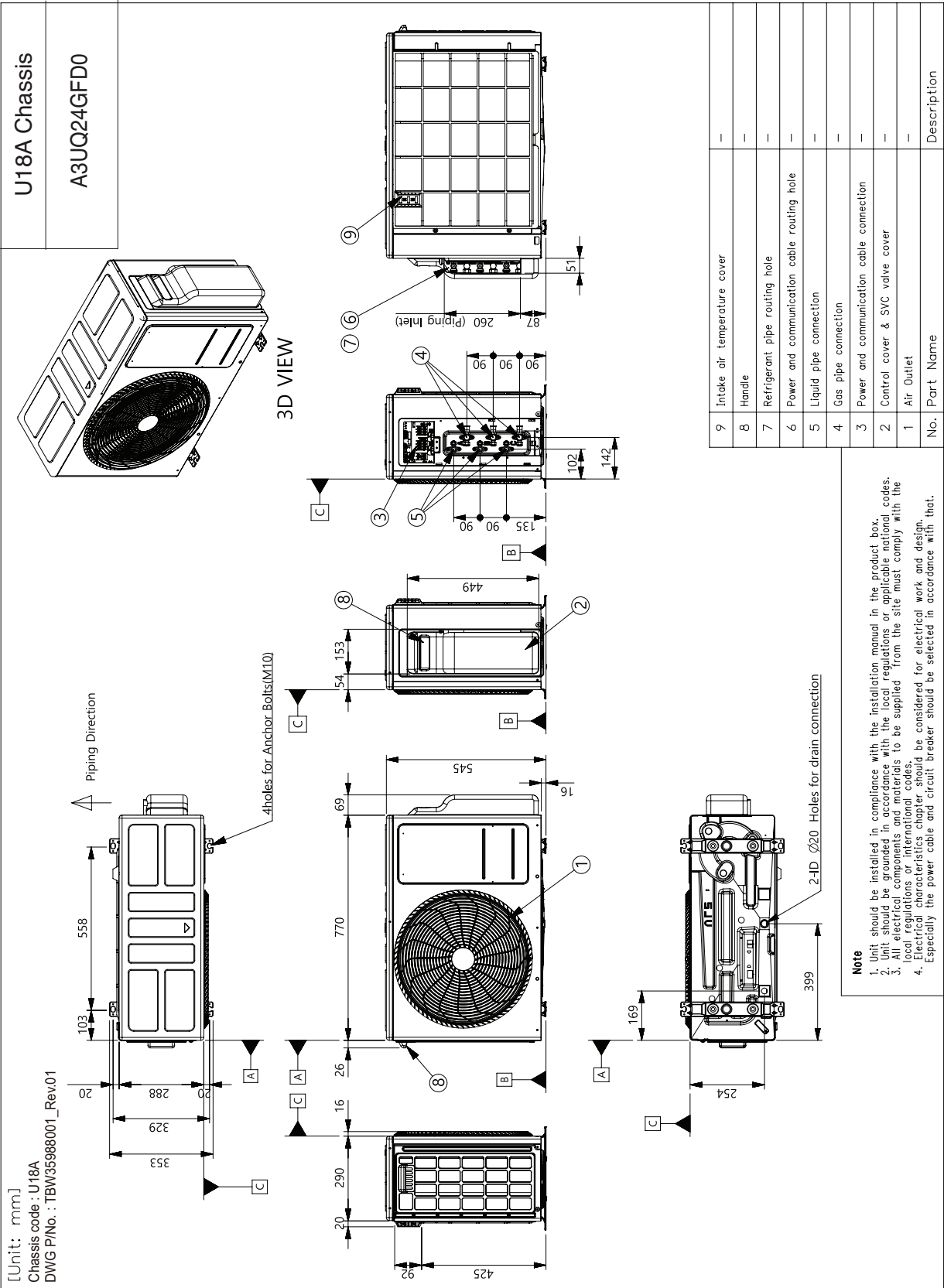
**Note**

- Unit should be installed in compliance with the installation manual in the product box.
- Unit should be grounded in accordance with the local standards.
- All electrical connections and components to be supplied from the site must comply with the local regulations or international codes.
- Electrical characteristics chapter should be considered for electrical work and design. Especially the power cable and circuit breaker should be selected in accordance with that.

No.	Part Name	Description
9	Intake air temperature cover	—
8	Handle	—
7	Refrigerant pipe routing hole	—
6	Power and communication cable routing hole	—
5	Liquid pipe connection	—
4	Gas pipe connection	—
3	Power and communication cable connection	—
2	Control cover & SVC valve cover	—
1	Air Outlet	—



# 1. Multi piping type MULTI F

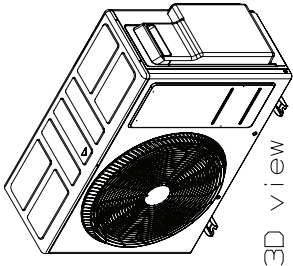


# MULTI F

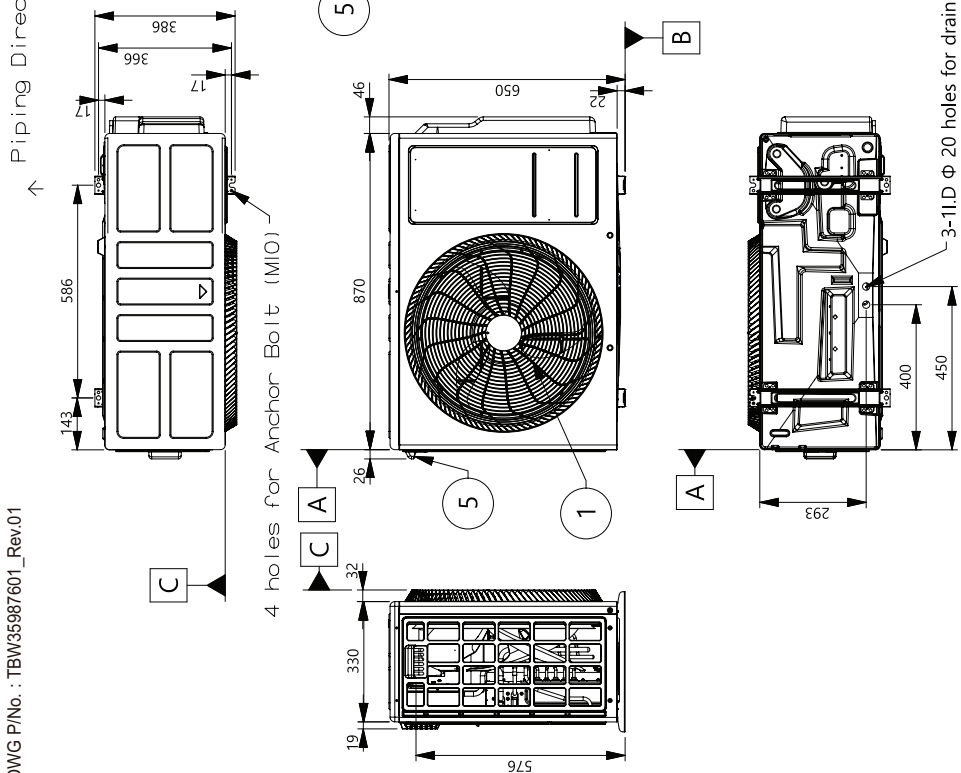
## 1. Multi piping type MULTI F

[Unit: mm]  
Chassis code : U24A  
DWG P/No. : TBW35887601\_Rev.01

U24A Chassis  
A3UQ30GFD1



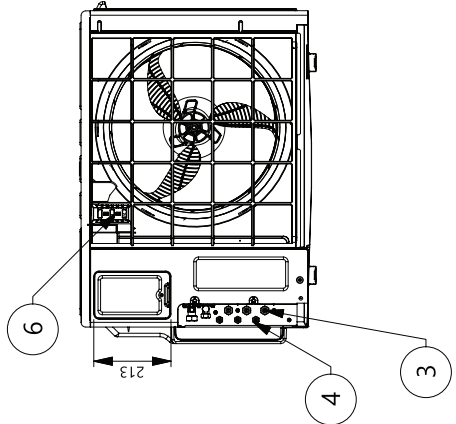
3D view

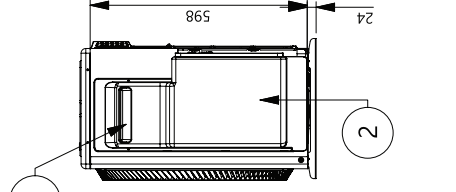


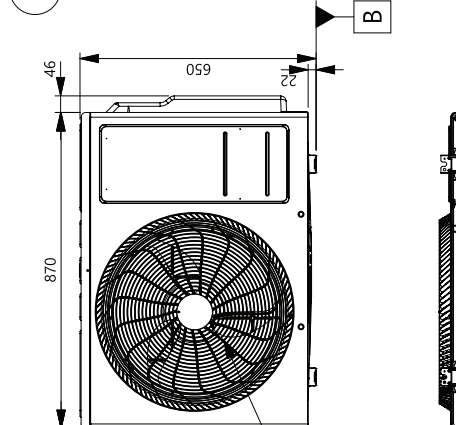
↑ Piping Direction

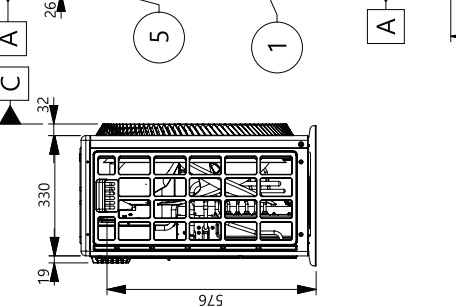
4 holes for Anchor Bolt (M10)

3-11.D  $\Phi$  20 holes for drain connection









**Note**

1. Unit should be installed in compliance with the installation manual in the product box.
2. Unit should be grounded in accordance with the local regulations or applicable national codes.
3. All electrical components and materials to be supplied from the site must comply with the local regulations or international codes.
4. Electrical characteristics chapter should be considered for electrical work and design. Especially the power cable and circuit breaker should be selected in accordance with that.

No.	Part Name	Description
7	Power and communication cable routing hole	—
6	Intake air temperature sensor cover	—
5	Handle	—
4	Liquid pipe connection	Flare joint
3	Gas pipe connection	Flare joint
2	control cover & SVC valve cover	—
1	Air outlet	—
	No. Part Name	Description

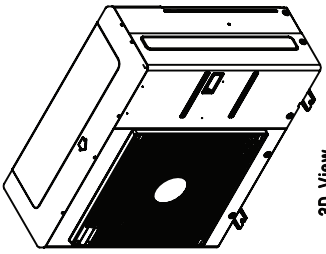


# MULTI F

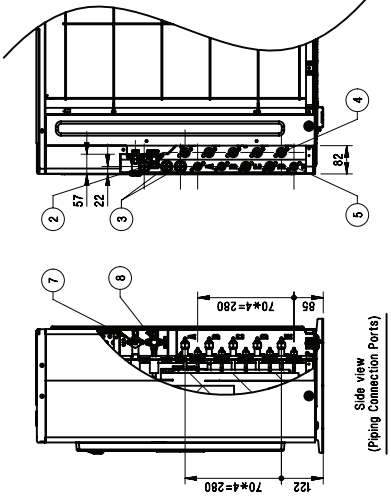
## 1. Multi piping type MULTI F

**[Unit: mm]**  
TBW34826501\_Rev.01  
Chassis code : U36A

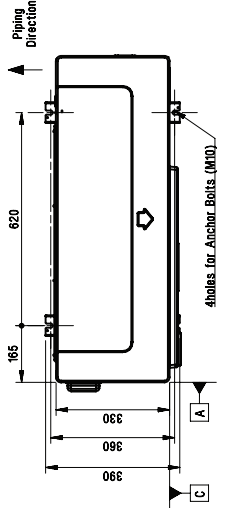
U36A Chassis  
A5UQ48GFA1



**3D View**

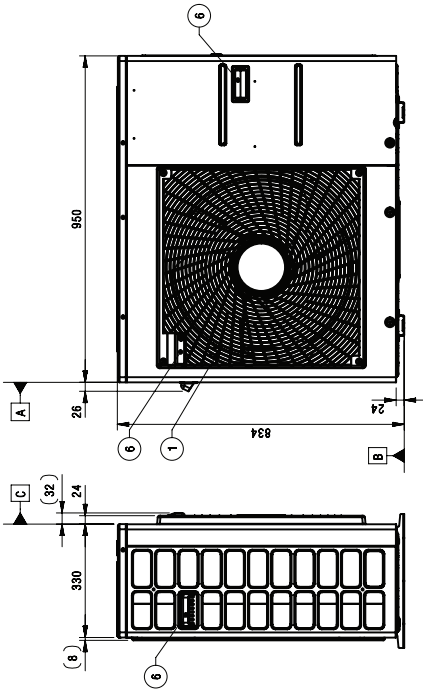


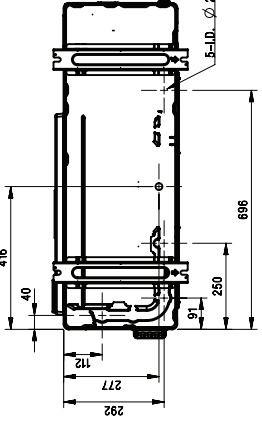
Side view  
(Piping Connection Ports)



Piping Direction

4holes for Anchor Bolts (M10)





5-ID,  $\phi$ 20holes for drain connection

**Note**

1. Unit should be installed in compliance with the installation manual in the product box.
2. Unit should be grounded in accordance with the local regulations or applicable national codes.
3. All electrical components and materials to be supplied from the site must comply with the local regulations or international codes.
4. Electric characteristics chapter should be considered for electrical work and design. Especially the power cable and circuit breaker should be selected in accordance with that.

**Symbols**

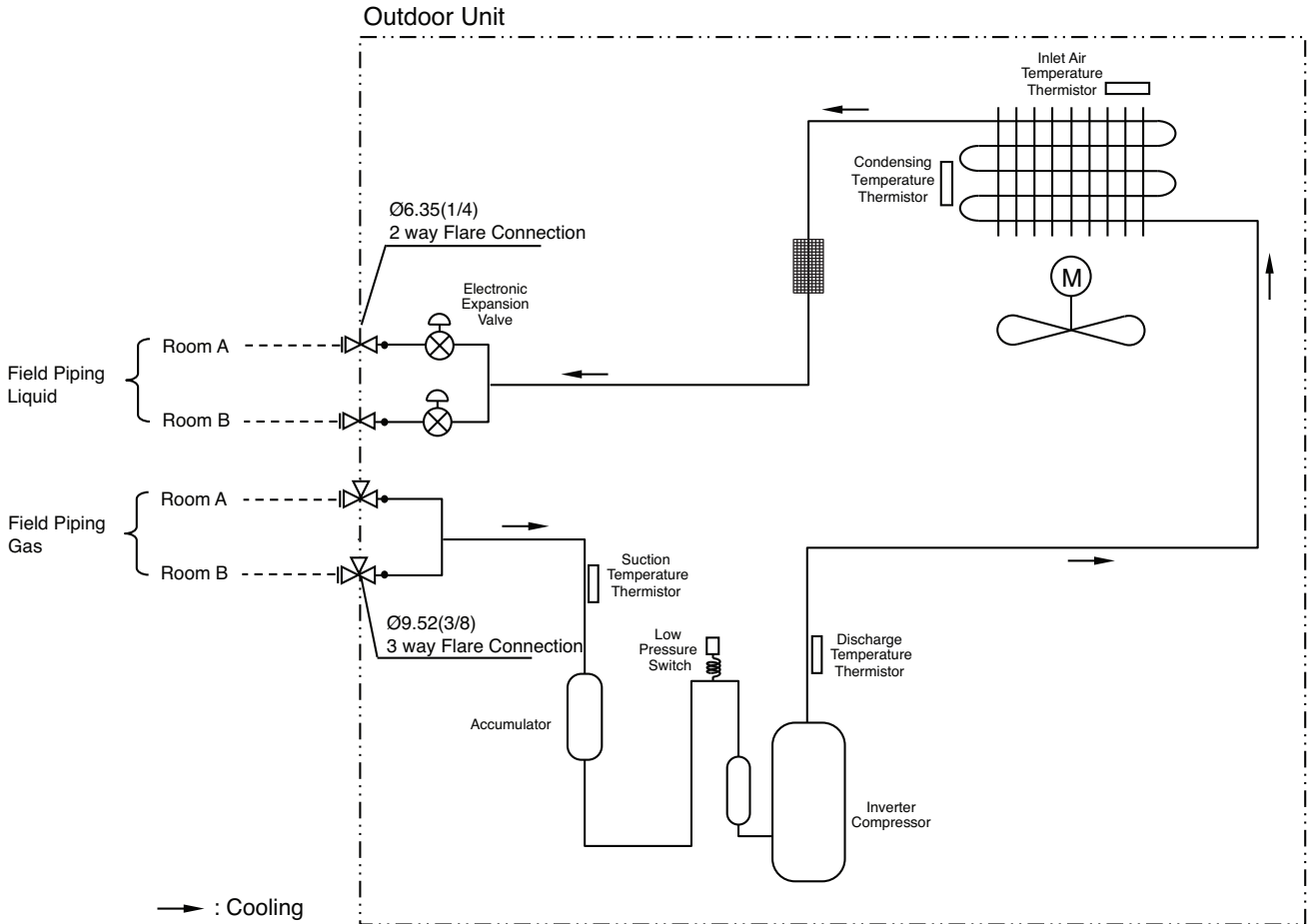
- Piping Direction
- Datum line

No.	Part Name	Description
8	SVC Valve (Liquid)	Flare joint
7	SVC Valve (Gas)	Flare joint
6	Handle	-
5	Liquid pipe Connection	Flare joint
4	Gas pipe Connection	Flare joint
3	Power and Communication Cable hole	ODU-IDU connection
2	Power Supply cable Hole	ODU power supply
1	Air Outlet	-

# 1. Multi piping type MULTI F

## 1.5 Piping diagrams

Models : A2UQ18GFD0

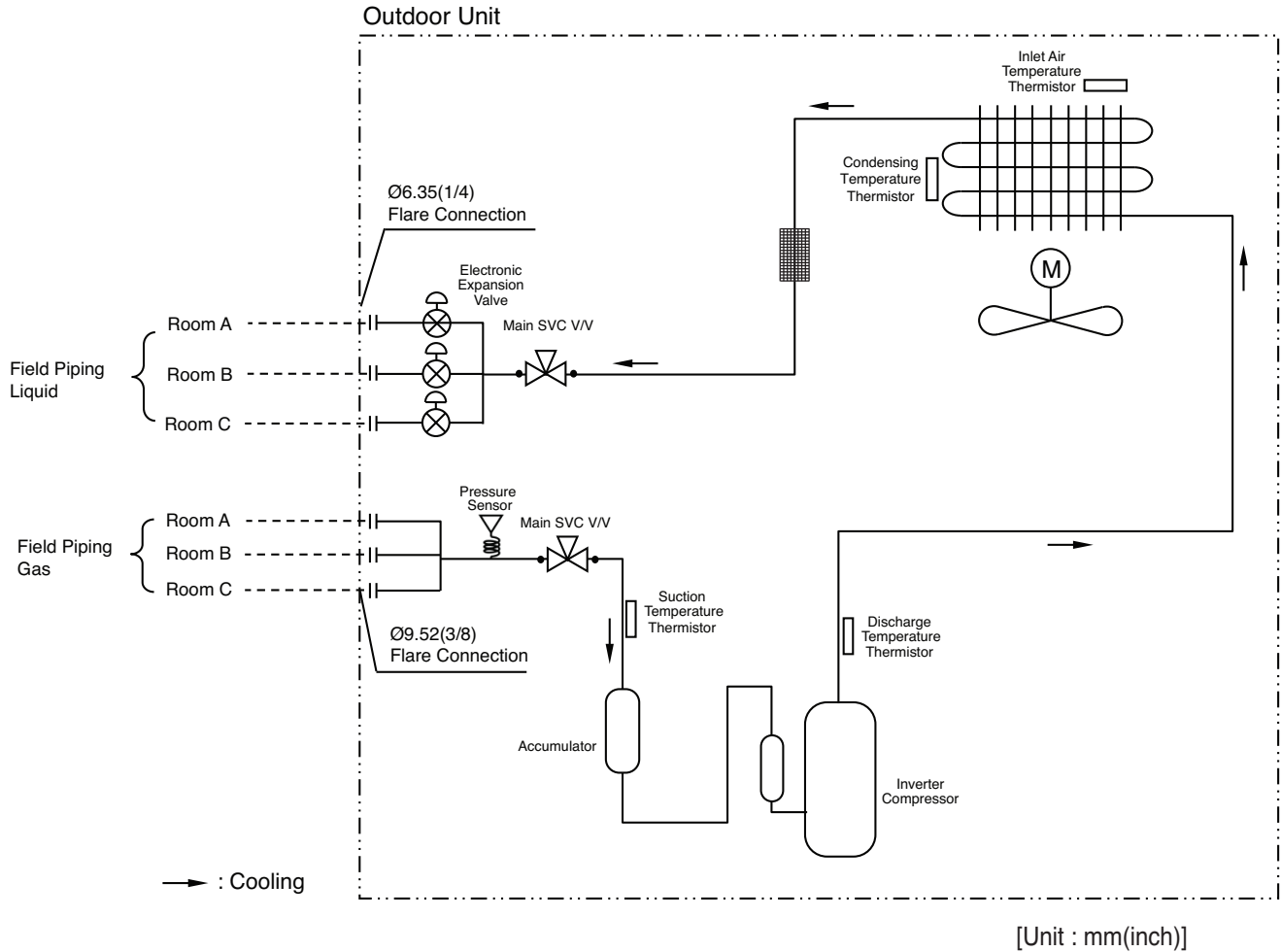


[Unit:mm(inch)]

Description	PCB Connector
Condensing Temperature Thermistor	CN_C/PIPE
Inlet air temperature Thermistor	CN_AIR
Discharge temperature Thermistor	CN_DISCHARGE
Suction temperature Thermistor	CN_SUCTION

# 1. Multi piping type MULTI F

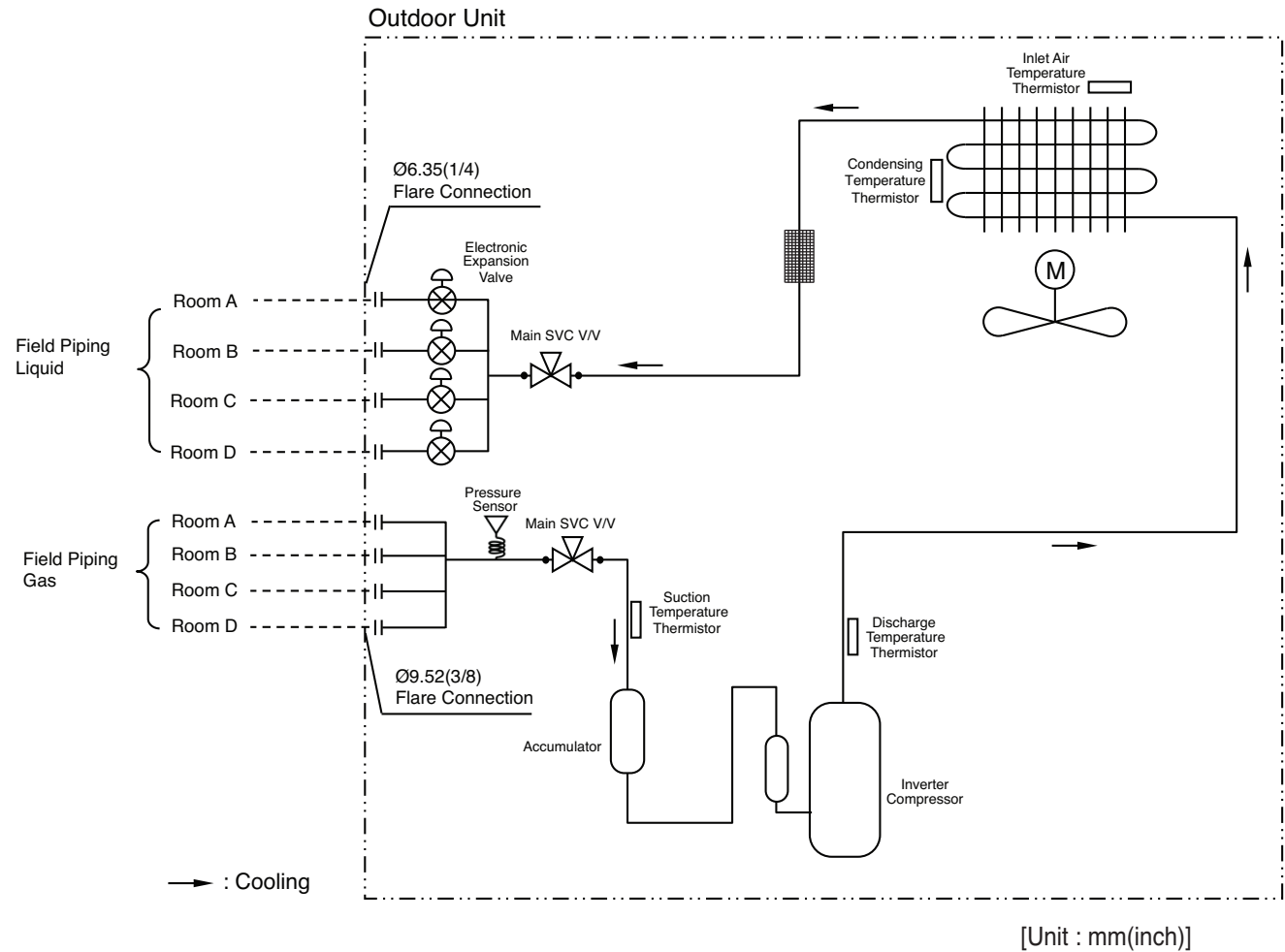
Models : A3UQ24GFD0 / A3UQ30GFD1



Description	PCB Connector	
	A3UQ24GFD0	A3UQ30GFD1
Condensing temperature Thermistor	CN_MID	
Inlet air temperature Thermistor	CN_AIR	
Discharge temperature Thermistor	CN_DISCHARGE	
Suction temperature Thermistor	CN_SUCTION	
Pressure Sensor	CN_L/PRESS	CN_H/PRESS

# 1. Multi piping type MULTI F

Models : A4UQ36GFD0

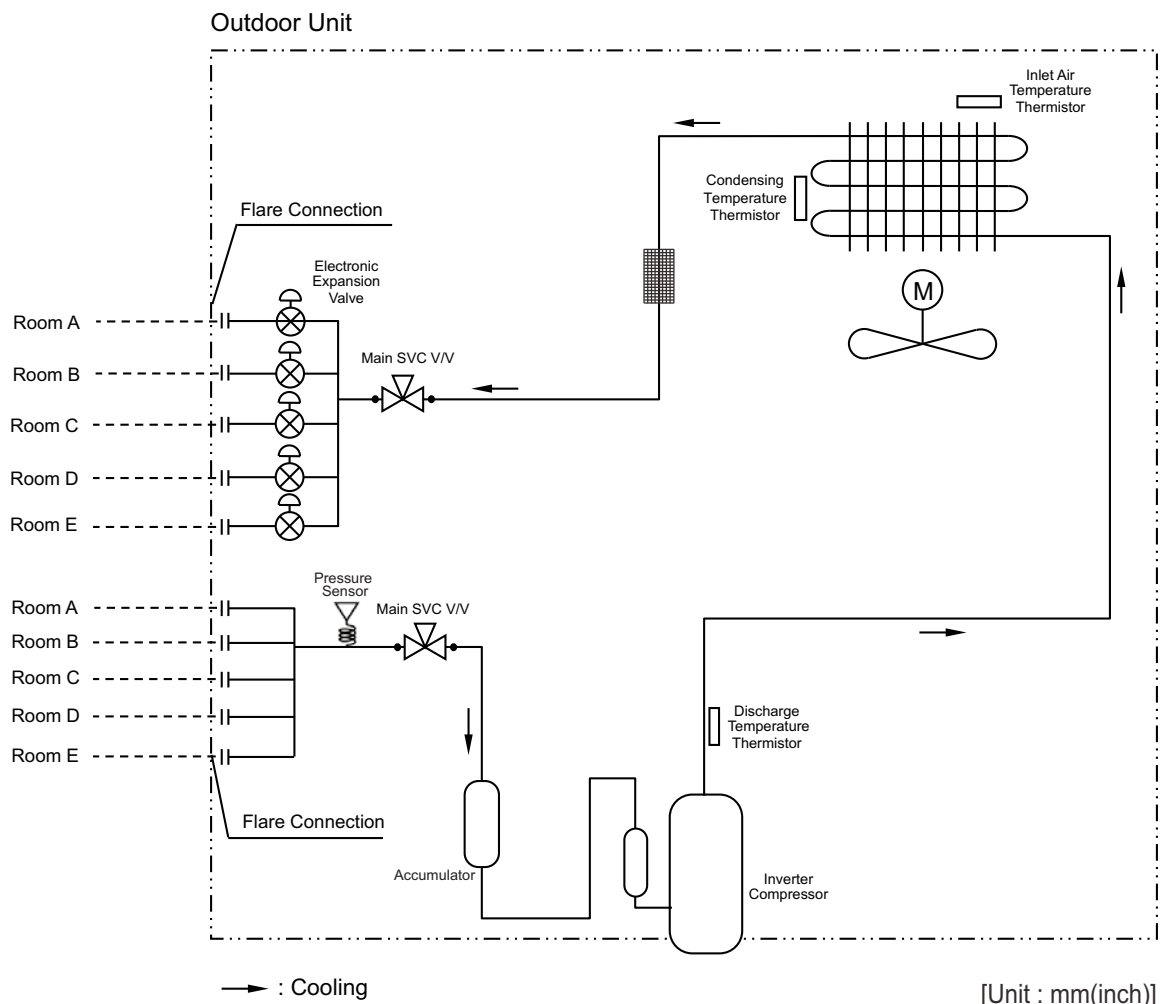


Part 2 Product data\_Outdoor units

Description	PCB Connector
Condensing temperature Thermistor	CN_MID
Inlet air temperature Thermistor	CN_AIR
Discharge temperature Thermistor	CN_DISCHARGE
Suction temperature Thermistor	CN_SUCTION
Pressure Sensor	CN_L/PRESS

# 1. Multi piping type MULTI F

Models : A5UQ48GFA1



Description	PCB Connector
Condensing temperature Thermistor	CN_MID
Inlet air temperature Thermistor	CN_AIR
Discharge temperature Thermistor	CN_DISCHARGE
Pressure Sensor	CN_H/PRESS

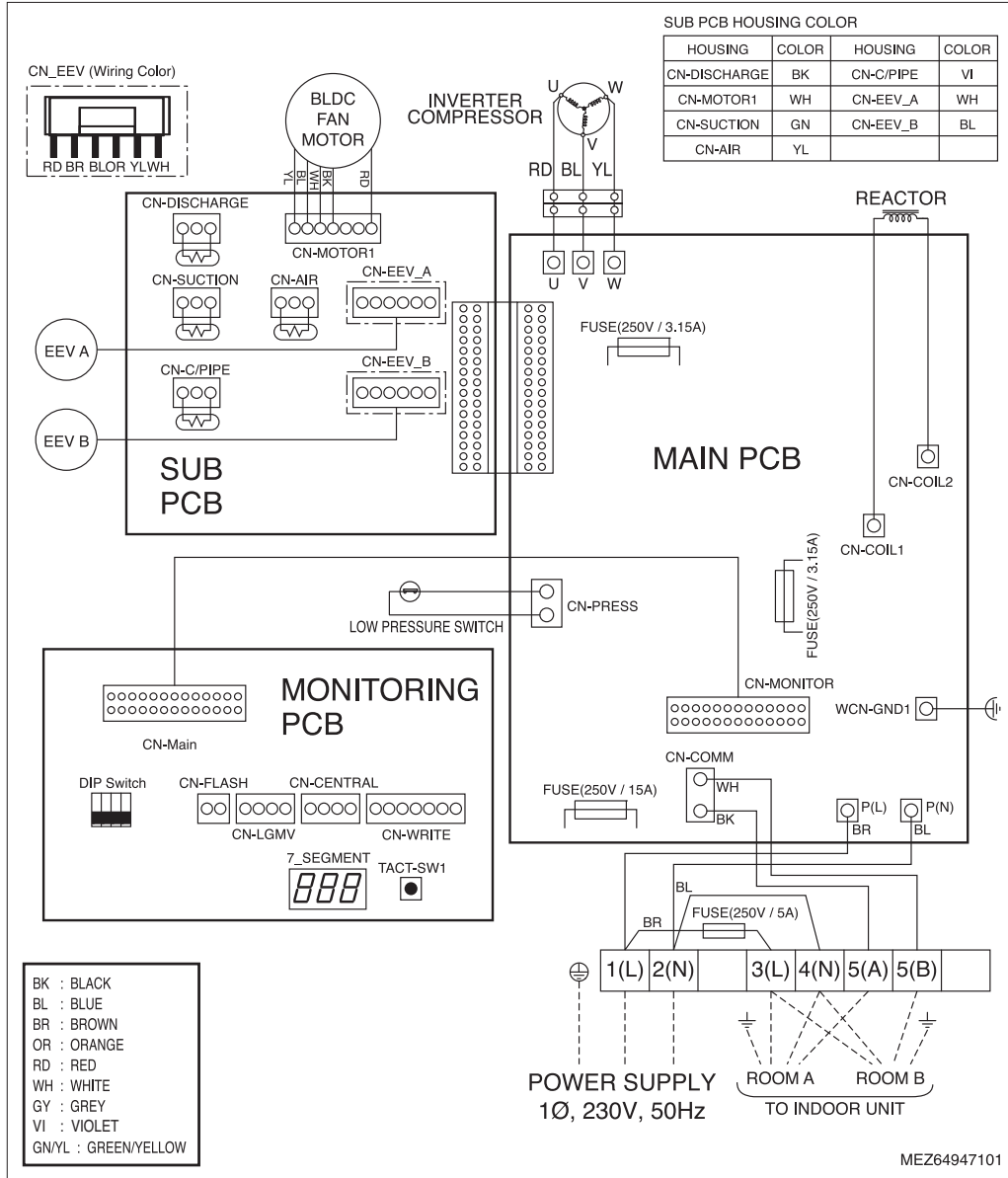


# MULTI F

## 1. Multi piping type MULTI F

### 1.6 Wiring diagrams

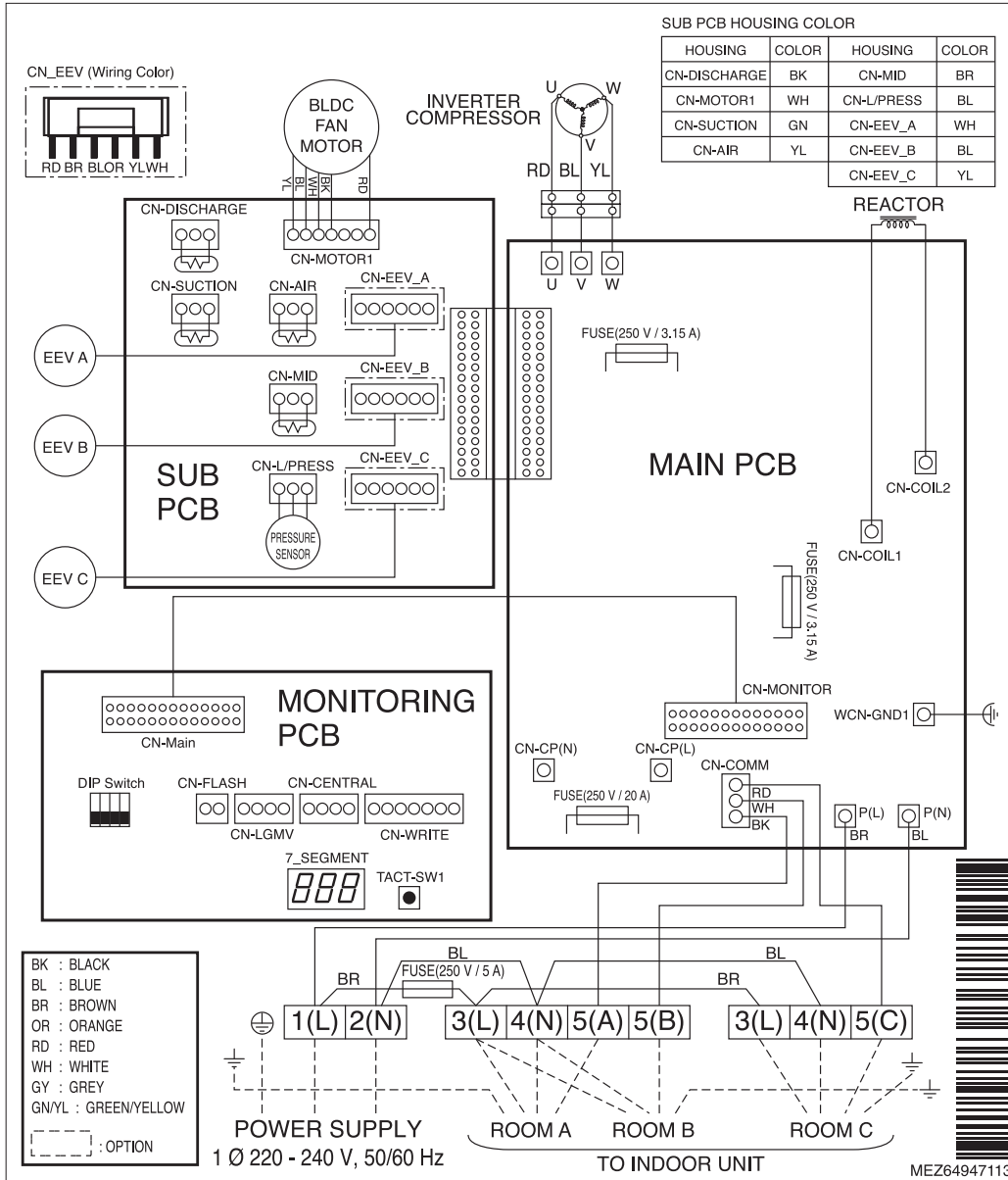
Models : A2UQ18GFD0



# MULTI F

## 1. Multi piping type MULTI F

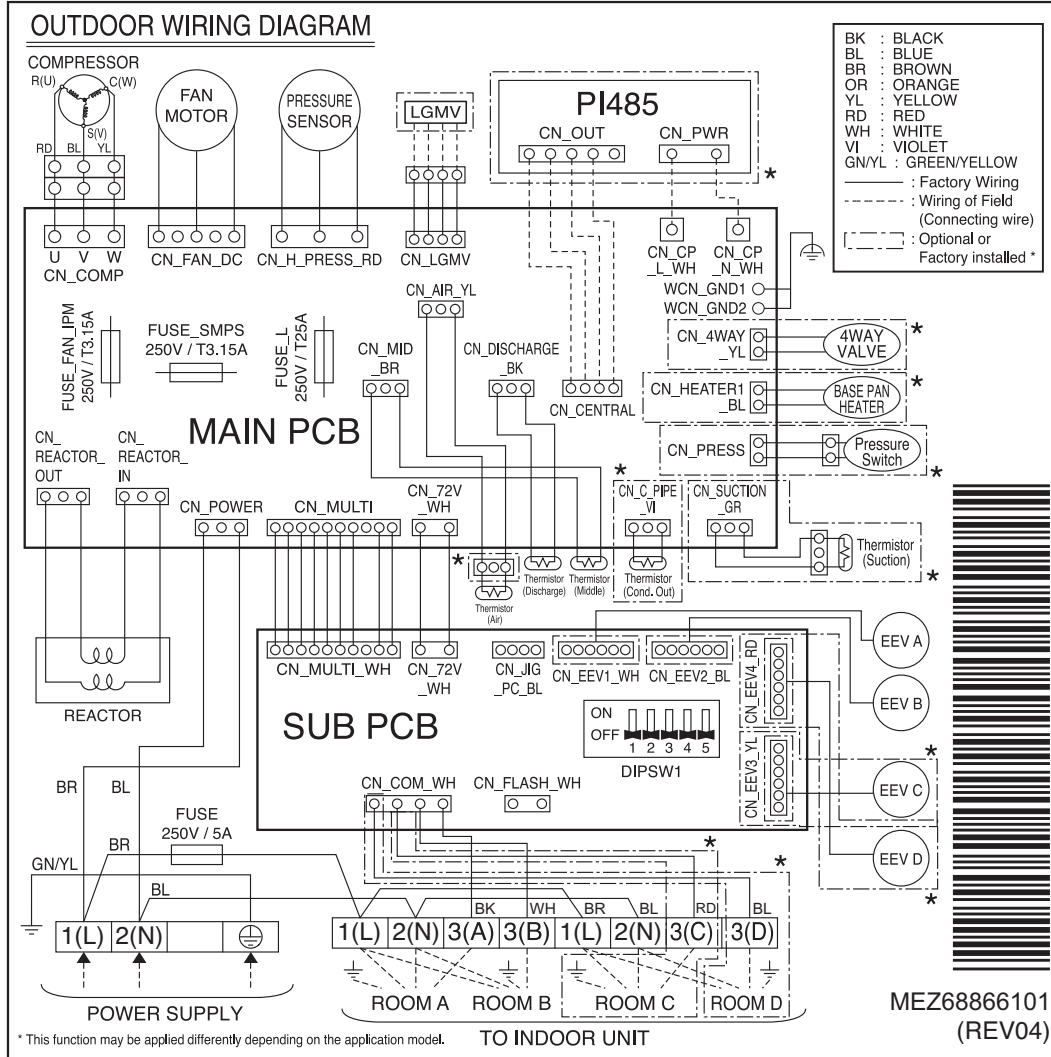
Models : A3UQ24GFD0



Part 2 Product data\_Outdoor units

# 1. Multi piping type MULTI F

Models : A3UQ30GFD1



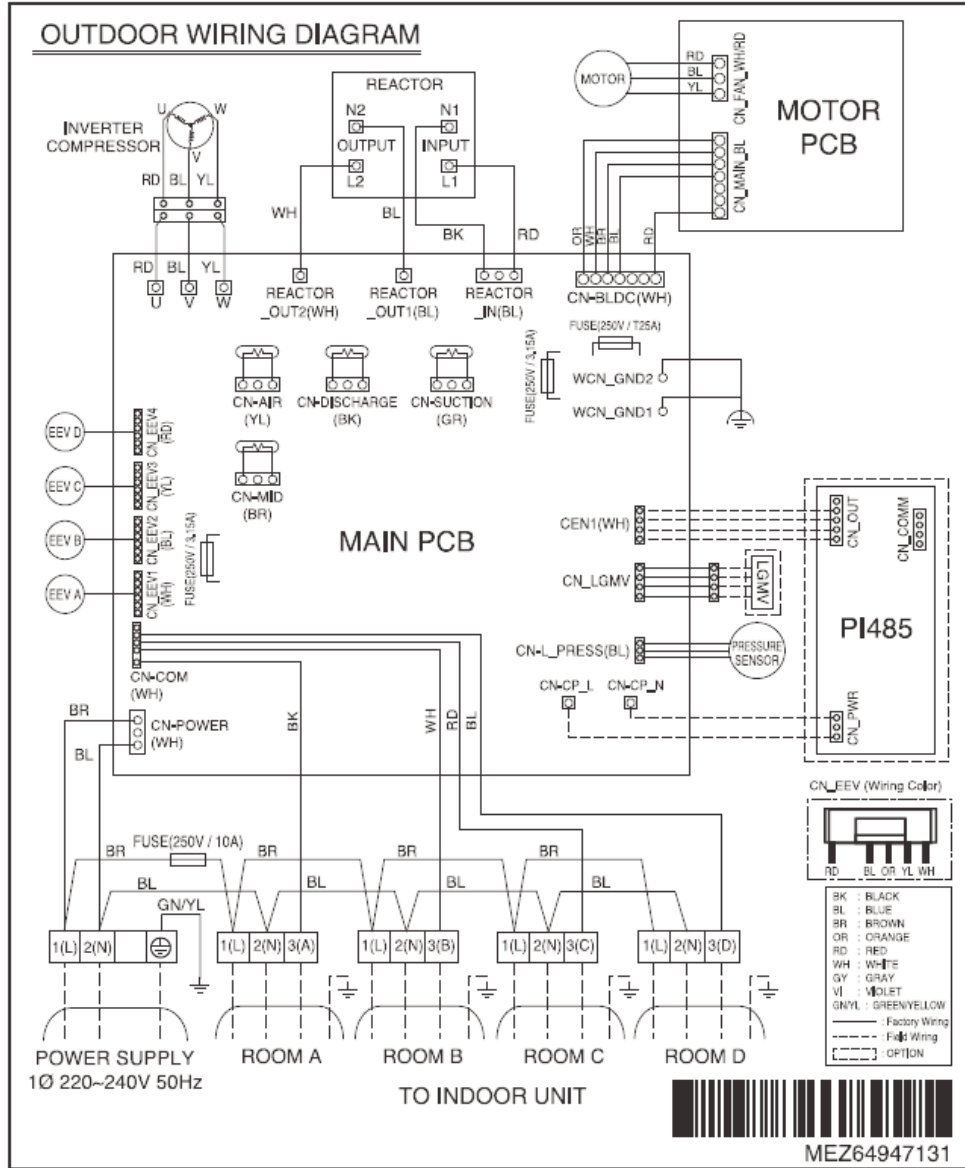
\* This function may be applied differently depending on the application model.

Part 2 Product data Outdoor units

# MULTI F

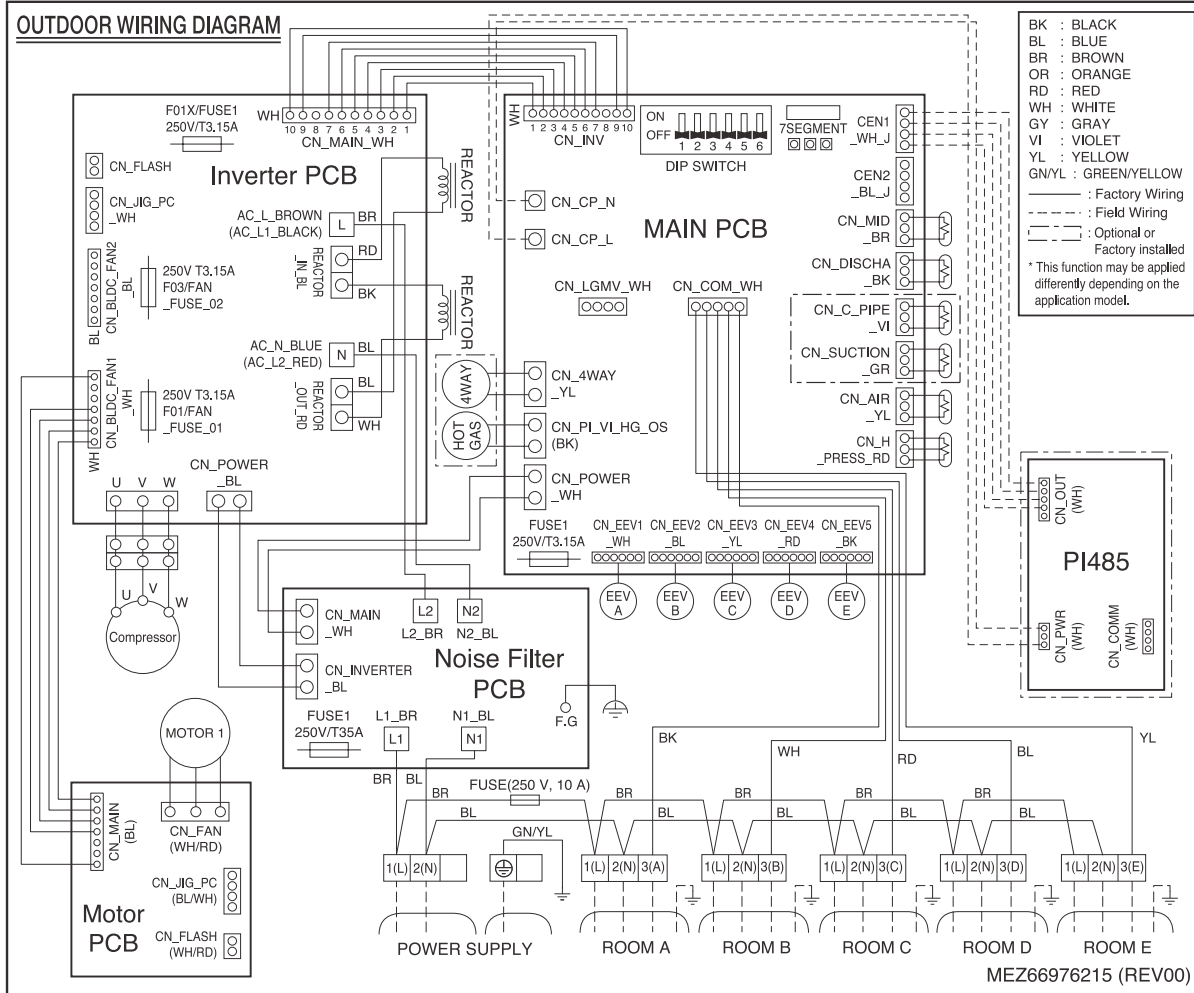
## 1. Multi piping type MULTI F

Models : A4UQ36GFD0



# 1. Multi piping type MULTI F

Models : A5UQ48GFA1



Part 2 Product data Outdoor units

# 1. Multi piping type MULTI F

## 1.7 Capacity tables

**Models : A2UQ18GFD0**

### [Cooling Capacity]

Operation	Combination Capacity Index	Outdoor Air Temperature (°CDB)	Indoor Air Temperature (°CWB)												
			14		16		18		19		22		24		
			TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	
1 Unit	9	22	2.51	0.42	2.67	0.57	2.82	0.62	2.90	0.63	3.14	0.63	3.29	0.63	
		25	2.45	0.45	2.61	0.59	2.76	0.64	2.84	0.64	3.08	0.66	3.23	0.66	
		32	2.31	0.60	2.47	0.71	2.62	0.75	2.70	0.76	2.94	0.77	3.10	0.79	
		35	2.25	0.67	2.41	0.77	2.57	0.79	2.64	0.78	2.88	0.82	3.04	0.83	
		40	2.15	0.74	2.31	0.80	2.47	0.81	2.55	0.81	2.78	0.82	2.94	0.84	
		43	2.09	0.73	2.25	0.76	2.41	0.76	2.49	0.76	2.72	0.76	2.88	0.78	
	12	46	2.03	0.65	2.19	0.66	2.35	0.64	2.43	0.64	2.66	0.64	2.82	0.65	
		22	3.34	0.49	3.55	0.66	3.76	0.72	3.87	0.72	4.18	0.73	4.39	0.73	
		25	3.27	0.52	3.48	0.68	3.68	0.73	3.79	0.74	4.10	0.76	4.31	0.76	
		32	3.08	0.70	3.29	0.82	3.50	0.86	3.60	0.87	3.92	0.89	4.13	0.91	
		35	3.00	0.78	3.21	0.88	3.42	0.92	3.52	0.90	3.84	0.94	4.05	0.96	
		40	2.87	0.85	3.08	0.92	3.29	0.93	3.39	0.94	3.71	0.95	3.92	0.97	
	18	43	2.79	0.84	3.00	0.88	3.21	0.87	3.32	0.87	3.63	0.88	3.84	0.90	
		46	2.71	0.75	2.92	0.76	3.13	0.74	3.24	0.74	3.55	0.74	3.76	0.75	
		22	5.02	0.89	5.33	1.20	5.64	1.30	5.80	1.31	6.27	1.32	6.59	1.32	
		25	4.90	0.94	5.21	1.23	5.53	1.33	5.68	1.35	6.15	1.37	6.47	1.38	
		32	4.62	1.26	4.94	1.49	5.25	1.56	5.41	1.58	5.88	1.62	6.19	1.65	
		35	4.50	1.41	4.82	1.60	5.13	1.66	5.28	1.63	5.76	1.71	6.07	1.74	
	2 Units	9+9	40	4.31	1.55	4.62	1.67	4.93	1.69	5.09	1.70	5.56	1.72	5.88	1.76
			43	4.19	1.52	4.50	1.59	4.82	1.58	4.97	1.58	5.44	1.60	5.76	1.63
			46	4.07	1.36	4.38	1.38	4.70	1.34	4.85	1.33	5.32	1.33	5.64	1.36
			22	5.02	0.89	5.33	1.20	5.64	1.30	5.80	1.31	6.27	1.32	6.59	1.32
			25	4.90	0.94	5.21	1.23	5.53	1.33	5.68	1.35	6.15	1.37	6.47	1.38
			32	4.62	1.26	4.94	1.49	5.25	1.56	5.41	1.58	5.88	1.62	6.19	1.65
9+12		35	4.50	1.41	4.82	1.60	5.13	1.66	5.28	1.63	5.76	1.71	6.07	1.74	
		40	4.31	1.55	4.62	1.67	4.93	1.69	5.09	1.70	5.56	1.72	5.88	1.76	
		43	4.19	1.52	4.50	1.59	4.82	1.58	4.97	1.58	5.44	1.60	5.76	1.63	
		46	4.07	1.36	4.38	1.38	4.70	1.34	4.85	1.33	5.32	1.33	5.64	1.36	
		22	5.02	0.89	5.33	1.20	5.64	1.30	5.80	1.31	6.27	1.32	6.59	1.32	
		25	4.90	0.94	5.21	1.23	5.53	1.33	5.68	1.35	6.15	1.37	6.47	1.38	
9+18		32	4.62	1.26	4.94	1.49	5.25	1.56	5.41	1.58	5.88	1.62	6.19	1.65	
		35	4.50	1.41	4.82	1.60	5.13	1.66	5.28	1.63	5.76	1.71	6.07	1.74	
		40	4.31	1.55	4.62	1.67	4.93	1.69	5.09	1.70	5.56	1.72	5.88	1.76	
		43	4.19	1.52	4.50	1.59	4.82	1.58	4.97	1.58	5.44	1.60	5.76	1.63	
		46	4.07	1.36	4.38	1.38	4.70	1.34	4.85	1.33	5.32	1.33	5.64	1.36	
		22	5.02	0.89	5.33	1.20	5.64	1.30	5.80	1.31	6.27	1.32	6.59	1.32	
12+12		25	4.90	0.94	5.21	1.23	5.53	1.33	5.68	1.35	6.15	1.37	6.47	1.38	
		32	4.62	1.26	4.94	1.49	5.25	1.56	5.41	1.58	5.88	1.62	6.19	1.65	
		35	4.50	1.41	4.82	1.60	5.13	1.66	5.28	1.63	5.76	1.71	6.07	1.74	
		40	4.31	1.55	4.62	1.67	4.93	1.69	5.09	1.70	5.56	1.72	5.88	1.76	
		43	4.19	1.52	4.50	1.59	4.82	1.58	4.97	1.58	5.44	1.60	5.76	1.63	
		46	4.07	1.36	4.38	1.38	4.70	1.34	4.85	1.33	5.32	1.33	5.64	1.36	
12+18	22	5.02	0.89	5.33	1.20	5.64	1.30	5.80	1.31	6.27	1.32	6.59	1.32		
	25	4.90	0.94	5.21	1.23	5.53	1.33	5.68	1.35	6.15	1.37	6.47	1.38		
	32	4.62	1.26	4.94	1.49	5.25	1.56	5.41	1.58	5.88	1.62	6.19	1.65		
	35	4.50	1.41	4.82	1.60	5.13	1.66	5.28	1.63	5.76	1.71	6.07	1.74		
	40	4.31	1.55	4.62	1.67	4.93	1.69	5.09	1.70	5.56	1.72	5.88	1.76		
	43	4.19	1.52	4.50	1.59	4.82	1.58	4.97	1.58	5.44	1.60	5.76	1.63		
		46	4.07	1.36	4.38	1.38	4.70	1.34	4.85	1.33	5.32	1.33	5.64	1.36	

**Notes:**

- Capacities are based on the following conditions.  
Corresponding refrigerant piping length : 7.5m  
Level difference : 0m
- TC : Total Capacity (kW)  
PI : Power Input (kW)

# MULTI F

## 1. Multi piping type MULTI F

Models : A3UQ24GFD0

### [Cooling Capacity]

Operation	Combination Capacity Index	Outdoor Air Temperature (°CDB)	Indoor Air Temperature (°CWB)											
			14		16		18		19		22		24	
			TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW
1 Unit	9	22	2.51	0.42	2.67	0.57	2.82	0.62	2.90	0.63	3.14	0.63	3.29	0.63
		25	2.45	0.45	2.61	0.59	2.76	0.64	2.84	0.64	3.08	0.66	3.23	0.66
		32	2.31	0.60	2.47	0.71	2.62	0.75	2.70	0.76	2.94	0.77	3.10	0.79
		35	2.25	0.67	2.41	0.77	2.57	0.79	2.64	0.78	2.88	0.82	3.04	0.83
		40	2.15	0.74	2.31	0.80	2.47	0.81	2.55	0.81	2.78	0.82	2.94	0.84
		43	2.09	0.73	2.25	0.76	2.41	0.76	2.49	0.76	2.72	0.76	2.88	0.78
	12	46	2.03	0.65	2.19	0.66	2.35	0.64	2.43	0.64	2.66	0.64	2.82	0.65
		22	3.34	0.49	3.55	0.66	3.76	0.72	3.87	0.72	4.18	0.73	4.39	0.73
		25	3.27	0.52	3.48	0.68	3.68	0.73	3.79	0.74	4.10	0.76	4.31	0.76
		32	3.08	0.70	3.29	0.82	3.50	0.86	3.60	0.87	3.92	0.89	4.13	0.91
		35	3.00	0.78	3.21	0.88	3.42	0.92	3.52	0.90	3.84	0.94	4.05	0.96
		40	2.87	0.85	3.08	0.92	3.29	0.93	3.39	0.94	3.71	0.95	3.92	0.97
	18	43	2.79	0.84	3.00	0.88	3.21	0.87	3.32	0.87	3.63	0.88	3.84	0.90
		46	2.71	0.75	2.92	0.76	3.13	0.74	3.24	0.74	3.55	0.74	3.76	0.75
		22	5.02	0.89	5.33	1.20	5.64	1.30	5.80	1.31	6.27	1.32	6.59	1.32
		25	4.90	0.94	5.21	1.23	5.53	1.33	5.68	1.35	6.15	1.37	6.47	1.38
		32	4.62	1.26	4.94	1.49	5.25	1.56	5.41	1.58	5.88	1.62	6.19	1.65
		35	4.50	1.41	4.82	1.60	5.13	1.66	5.28	1.63	5.76	1.71	6.07	1.74
	24	40	4.31	1.55	4.62	1.67	4.93	1.69	5.09	1.70	5.56	1.72	5.88	1.76
		43	4.19	1.52	4.50	1.59	4.82	1.58	4.97	1.58	5.44	1.60	5.76	1.63
		46	4.07	1.36	4.38	1.38	4.70	1.34	4.85	1.33	5.32	1.33	5.64	1.36
		22	6.69	1.16	7.11	1.56	7.53	1.69	7.74	1.72	8.36	1.73	8.78	1.73
		25	6.53	1.23	6.95	1.61	7.37	1.73	7.58	1.76	8.21	1.79	8.62	1.81
		32	6.16	1.65	6.58	1.95	7.00	2.04	7.21	2.07	7.84	2.11	8.26	2.15
2 Units	9+9	35	6.01	1.84	6.42	2.09	6.84	2.17	7.03	2.13	7.68	2.23	8.10	2.28
		40	5.74	2.02	6.16	2.18	6.58	2.21	6.79	2.22	7.42	2.25	7.83	2.30
		43	5.58	1.98	6.00	2.07	6.42	2.07	6.63	2.07	7.26	2.09	7.68	2.13
		46	5.43	1.78	5.84	1.80	6.26	1.76	6.47	1.74	7.10	1.74	7.52	1.78
		22	5.02	0.89	5.33	1.20	5.64	1.30	5.80	1.31	6.27	1.32	6.59	1.32
		25	4.90	0.94	5.21	1.23	5.53	1.33	5.68	1.35	6.15	1.37	6.47	1.38
	9+12	32	4.62	1.26	4.94	1.49	5.25	1.56	5.41	1.58	5.88	1.62	6.19	1.65
		35	4.50	1.41	4.82	1.60	5.13	1.66	5.28	1.63	5.76	1.71	6.07	1.74
		40	4.31	1.55	4.62	1.67	4.93	1.69	5.09	1.70	5.56	1.72	5.88	1.76
		43	4.19	1.52	4.50	1.59	4.82	1.58	4.97	1.58	5.44	1.60	5.76	1.63
		46	4.07	1.36	4.38	1.38	4.70	1.34	4.85	1.33	5.32	1.33	5.64	1.36
		22	5.85	1.02	6.22	1.38	6.59	1.49	6.77	1.51	7.32	1.53	7.68	1.53
	9+18	25	5.72	1.08	6.08	1.42	6.45	1.53	6.63	1.55	7.18	1.58	7.55	1.59
		32	5.39	1.46	5.76	1.72	6.12	1.80	6.31	1.82	6.86	1.87	7.22	1.90
		35	5.25	1.63	5.62	1.85	5.99	1.91	6.15	1.88	6.72	1.97	7.09	2.01
		40	5.02	1.78	5.39	1.92	5.76	1.95	5.94	1.96	6.49	1.99	6.85	2.03
		43	4.89	1.75	5.25	1.83	5.62	1.83	5.80	1.82	6.35	1.84	6.72	1.88
		46	4.75	1.57	5.11	1.59	5.48	1.55	5.66	1.54	6.21	1.54	6.58	1.57
	9+24	22	6.69	1.16	7.11	1.56	7.53	1.69	7.74	1.72	8.36	1.73	8.78	1.73
		25	6.53	1.23	6.95	1.61	7.37	1.73	7.58	1.76	8.21	1.79	8.62	1.81
		32	6.16	1.65	6.58	1.95	7.00	2.04	7.21	2.07	7.84	2.11	8.26	2.15
		35	6.01	1.84	6.42	2.09	6.84	2.17	7.03	2.13	7.68	2.23	8.10	2.28
		40	5.74	2.02	6.16	2.18	6.58	2.21	6.79	2.22	7.42	2.25	7.83	2.30
		43	5.58	1.98	6.00	2.07	6.42	2.07	6.63	2.07	7.26	2.09	7.68	2.13
12+12	46	5.43	1.78	5.84	1.80	6.26	1.76	6.47	1.74	7.10	1.74	7.52	1.78	
	22	6.69	1.16	7.11	1.56	7.53	1.69	7.74	1.72	8.36	1.73	8.78	1.73	
	25	6.53	1.23	6.95	1.61	7.37	1.73	7.58	1.76	8.21	1.79	8.62	1.81	
	32	6.16	1.65	6.58	1.95	7.00	2.04	7.21	2.07	7.84	2.11	8.26	2.15	
	35	6.01	1.84	6.42	2.09	6.84	2.17	7.03	2.13	7.68	2.23	8.10	2.28	
	40	5.74	2.02	6.16	2.18	6.58	2.21	6.79	2.22	7.42	2.25	7.83	2.30	

## 1. Multi piping type MULTI F

Operation	Combination Capacity Index	Outdoor Air Temperature (°CDB)	Indoor Air Temperature (°CWB)											
			14		16		18		19		22		24	
			TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW
2 Unit	12+18	22	6.69	1.16	7.11	1.56	7.53	1.69	7.74	1.72	8.36	1.73	8.78	1.73
		25	6.53	1.23	6.95	1.61	7.37	1.73	7.58	1.76	8.21	1.79	8.62	1.81
		32	6.16	1.65	6.58	1.95	7.00	2.04	7.21	2.07	7.84	2.11	8.26	2.15
		35	6.01	1.84	6.42	2.09	6.84	2.17	7.03	2.13	7.68	2.23	8.10	2.28
		40	5.74	2.02	6.16	2.18	6.58	2.21	6.79	2.22	7.42	2.25	7.83	2.30
		43	5.58	1.98	6.00	2.07	6.42	2.07	6.63	2.07	7.26	2.09	7.68	2.13
		46	5.43	1.78	5.84	1.80	6.26	1.76	6.47	1.74	7.10	1.74	7.52	1.78
3 Units	9+9+9	22	6.69	1.16	7.11	1.56	7.53	1.69	7.74	1.72	8.36	1.73	8.78	1.73
		25	6.53	1.23	6.95	1.61	7.37	1.73	7.58	1.76	8.21	1.79	8.62	1.81
		32	6.16	1.65	6.58	1.95	7.00	2.04	7.21	2.07	7.84	2.11	8.26	2.15
		35	6.01	1.84	6.42	2.09	6.84	2.17	7.03	2.13	7.68	2.23	8.10	2.28
		40	5.74	2.02	6.16	2.18	6.58	2.21	6.79	2.22	7.42	2.25	7.83	2.30
		43	5.58	1.98	6.00	2.07	6.42	2.07	6.63	2.07	7.26	2.09	7.68	2.13
		46	5.43	1.78	5.84	1.80	6.26	1.76	6.47	1.74	7.10	1.74	7.52	1.78
	9+9+12	22	6.69	1.16	7.11	1.56	7.53	1.69	7.74	1.72	8.36	1.73	8.78	1.73
		25	6.53	1.23	6.95	1.61	7.37	1.73	7.58	1.76	8.21	1.79	8.62	1.81
		32	6.16	1.65	6.58	1.95	7.00	2.04	7.21	2.07	7.84	2.11	8.26	2.15
		35	6.01	1.84	6.42	2.09	6.84	2.17	7.03	2.13	7.68	2.23	8.10	2.28
		40	5.74	2.02	6.16	2.18	6.58	2.21	6.79	2.22	7.42	2.25	7.83	2.30
		43	5.58	1.98	6.00	2.07	6.42	2.07	6.63	2.07	7.26	2.09	7.68	2.13
		46	5.43	1.78	5.84	1.80	6.26	1.76	6.47	1.74	7.10	1.74	7.52	1.78
	9+12+12	22	6.69	1.16	7.11	1.56	7.53	1.69	7.74	1.72	8.36	1.73	8.78	1.73
		25	6.53	1.23	6.95	1.61	7.37	1.73	7.58	1.76	8.21	1.79	8.62	1.81
		32	6.16	1.65	6.58	1.95	7.00	2.04	7.21	2.07	7.84	2.11	8.26	2.15
		35	6.01	1.84	6.42	2.09	6.84	2.17	7.03	2.13	7.68	2.23	8.10	2.28
		40	5.74	2.02	6.16	2.18	6.58	2.21	6.79	2.22	7.42	2.25	7.83	2.30
		43	5.58	1.98	6.00	2.07	6.42	2.07	6.63	2.07	7.26	2.09	7.68	2.13
		46	5.43	1.78	5.84	1.80	6.26	1.76	6.47	1.74	7.10	1.74	7.52	1.78

**Notes:**

- Capacities are based on the following conditions.  
Corresponding refrigerant piping length : 7.5m(25 ft) Level difference : 0 m(0 ft)
- TC : Total Cooling Capacity(kW)
- PI : Power Input(kW)



# 1. Multi piping type MULTI F

Models : A3UQ30GFD1

## [Cooling Capacity]

Operation	Combination Capacity Index	Outdoor Air Temperature (°CDB)	Indoor Air Temperature (°CWB)											
			14		16		18		19		22		24	
			TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW
1 Unit	9	22	2.51	0.48	2.67	0.65	2.82	0.70	2.90	0.71	3.14	0.71	3.29	0.71
		25	2.45	0.51	2.61	0.66	2.76	0.72	2.84	0.73	3.08	0.74	3.23	0.75
		32	2.31	0.68	2.47	0.80	2.62	0.84	2.70	0.85	2.94	0.87	3.10	0.89
		35	2.25	0.76	2.41	0.86	2.57	0.90	2.64	0.88	2.88	0.92	3.04	0.94
		40	2.15	0.84	2.31	0.90	2.47	0.91	2.55	0.92	2.78	0.93	2.94	0.95
		43	2.09	0.82	2.25	0.86	2.41	0.86	2.49	0.85	2.72	0.86	2.88	0.88
	46	2.03	0.73	2.19	0.74	2.35	0.73	2.43	0.72	2.66	0.72	2.82	0.74	
	12	22	3.34	0.51	3.55	0.68	3.76	0.74	3.87	0.75	4.18	0.75	4.39	0.76
		25	3.27	0.54	3.48	0.70	3.68	0.76	3.79	0.77	4.10	0.78	4.31	0.79
		32	3.08	0.72	3.29	0.85	3.50	0.89	3.60	0.90	3.92	0.92	4.13	0.94
		35	3.00	0.80	3.21	0.91	3.42	0.95	3.52	0.93	3.84	0.97	4.05	0.99
		40	2.87	0.88	3.08	0.95	3.29	0.96	3.39	0.97	3.71	0.98	3.92	1.00
		43	2.79	0.86	3.00	0.91	3.21	0.90	3.32	0.90	3.63	0.91	3.84	0.93
	18	22	2.71	0.78	2.92	0.79	3.13	0.77	3.24	0.76	3.55	0.76	3.76	0.78
		25	5.02	0.77	5.33	1.03	5.64	1.12	5.80	1.14	6.27	1.14	6.59	1.15
		32	4.90	0.81	5.21	1.07	5.53	1.15	5.68	1.16	6.15	1.18	6.47	1.20
		35	4.62	1.09	4.94	1.29	5.25	1.35	5.41	1.37	5.88	1.40	6.19	1.43
		40	4.50	1.22	4.82	1.38	5.13	1.43	5.28	1.41	5.76	1.48	6.07	1.51
		43	4.31	1.34	4.62	1.44	4.93	1.46	5.09	1.47	5.56	1.49	5.88	1.52
	24	22	4.19	1.31	4.50	1.37	4.82	1.37	4.97	1.37	5.44	1.38	5.76	1.41
		25	6.69	1.01	7.11	1.36	7.53	1.47	7.74	1.49	8.36	1.50	8.78	1.50
		32	6.53	1.07	6.95	1.40	7.37	1.51	7.58	1.53	8.21	1.55	8.62	1.57
		35	6.16	1.43	6.58	1.69	7.00	1.77	7.21	1.79	7.84	1.84	8.26	1.87
		40	6.01	1.60	6.42	1.82	6.84	1.88	7.03	1.85	7.68	1.94	8.10	1.98
43		5.74	1.76	6.16	1.89	6.58	1.92	6.79	1.92	7.42	1.95	7.83	2.00	
2 Units	9+9	22	5.58	1.72	6.00	1.80	6.42	1.80	6.63	1.79	7.26	1.81	7.68	1.85
		25	5.43	1.54	5.84	1.56	6.26	1.53	6.47	1.51	7.10	1.51	7.52	1.55
		32	5.02	0.77	5.33	1.03	5.64	1.12	5.80	1.14	6.27	1.14	6.59	1.15
		35	4.90	0.81	5.21	1.07	5.53	1.15	5.68	1.16	6.15	1.18	6.47	1.20
		40	4.62	1.09	4.94	1.29	5.25	1.35	5.41	1.37	5.88	1.40	6.19	1.43
		43	4.50	1.22	4.82	1.38	5.13	1.43	5.28	1.41	5.76	1.48	6.07	1.51
	9+12	22	4.31	1.34	4.62	1.44	4.93	1.46	5.09	1.47	5.56	1.49	5.88	1.52
		25	4.19	1.31	4.50	1.37	4.82	1.37	4.97	1.37	5.44	1.38	5.76	1.41
		32	4.07	1.18	4.38	1.19	4.70	1.16	4.85	1.15	5.32	1.15	5.64	1.18
		35	5.85	0.89	6.22	1.20	6.59	1.30	6.77	1.31	7.32	1.32	7.68	1.32
		40	5.72	0.94	6.08	1.23	6.45	1.33	6.63	1.35	7.18	1.37	7.55	1.38
		43	5.39	1.26	5.76	1.49	6.12	1.56	6.31	1.58	6.86	1.62	7.22	1.65
	9+18	22	5.25	1.41	5.62	1.60	5.99	1.66	6.15	1.63	6.72	1.71	7.09	1.74
		25	5.02	1.55	5.39	1.67	5.76	1.69	5.94	1.70	6.49	1.72	6.85	1.76
		32	4.89	1.52	5.25	1.59	5.62	1.58	5.80	1.58	6.35	1.60	6.72	1.63
		35	4.75	1.36	5.11	1.38	5.48	1.34	5.66	1.33	6.21	1.33	6.58	1.36
		40	7.53	1.24	8.00	1.67	8.47	1.81	8.70	1.83	9.41	1.85	9.88	1.85
		43	7.35	1.31	7.82	1.72	8.29	1.85	8.52	1.88	9.23	1.91	9.70	1.93
	9+24	22	6.93	1.76	7.40	2.08	7.87	2.18	8.11	2.21	8.82	2.26	9.29	2.30
		25	6.76	1.97	7.23	2.23	7.70	2.31	7.91	2.28	8.64	2.38	9.11	2.43
		32	6.46	2.16	6.93	2.33	7.40	2.36	7.64	2.37	8.34	2.40	8.81	2.45
		35	6.28	2.12	6.75	2.21	7.22	2.21	7.46	2.21	8.16	2.23	8.64	2.28
		40	6.10	1.90	6.58	1.92	7.05	1.88	7.28	1.86	7.99	1.86	8.46	1.90
		43	8.36	1.47	8.89	1.98	9.41	2.15	9.67	2.17	10.45	2.19	10.98	2.19
12+12	22	8.16	1.56	8.69	2.04	9.21	2.20	9.47	2.23	10.26	2.27	10.78	2.29	
	25	7.70	2.09	8.23	2.47	8.75	2.59	9.01	2.62	9.80	2.68	10.32	2.73	
	32	7.51	2.33	8.03	2.65	8.55	2.75	8.79	2.70	9.60	2.83	10.12	2.89	
	35	7.18	2.56	7.70	2.76	8.22	2.80	8.49	2.81	9.27	2.85	9.79	2.91	
	40	6.98	2.51	7.50	2.63	8.03	2.62	8.29	2.62	9.07	2.64	9.59	2.70	
	43	6.78	2.25	7.31	2.28	7.83	2.23	8.09	2.21	8.87	2.21	9.40	2.26	

# MULTI F

## 1. Multi piping type MULTI F

Operation	Combination Capacity Index	Outdoor Air Temperature (°CDB)	Indoor Air Temperature (°CWB)											
			14		16		18		19		22		24	
			TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW
2 Unit	12+18	22	8.36	1.47	8.89	1.98	9.41	2.15	9.67	2.17	10.45	2.19	10.98	2.19
		25	8.16	1.56	8.69	2.04	9.21	2.20	9.47	2.23	10.26	2.27	10.78	2.29
		32	7.70	2.09	8.23	2.47	8.75	2.59	9.01	2.62	9.80	2.68	10.32	2.73
		35	7.51	2.33	8.03	2.65	8.55	2.75	8.79	2.70	9.60	2.83	10.12	2.89
		40	7.18	2.56	7.70	2.76	8.22	2.80	8.49	2.81	9.27	2.85	9.79	2.91
		43	6.98	2.51	7.50	2.63	8.03	2.62	8.29	2.62	9.07	2.64	9.59	2.70
	46	6.78	2.25	7.31	2.28	7.83	2.23	8.09	2.21	8.87	2.21	9.40	2.26	
	12+24	22	8.36	1.47	8.89	1.98	9.41	2.15	9.67	2.17	10.45	2.19	10.98	2.19
		25	8.16	1.56	8.69	2.04	9.21	2.20	9.47	2.23	10.26	2.27	10.78	2.29
		32	7.70	2.09	8.23	2.47	8.75	2.59	9.01	2.62	9.80	2.68	10.32	2.73
		35	7.51	2.33	8.03	2.65	8.55	2.75	8.79	2.70	9.60	2.83	10.12	2.89
		40	7.18	2.56	7.70	2.76	8.22	2.80	8.49	2.81	9.27	2.85	9.79	2.91
		43	6.98	2.51	7.50	2.63	8.03	2.62	8.29	2.62	9.07	2.64	9.59	2.70
	18+18	22	8.36	1.47	8.89	1.98	9.41	2.15	9.67	2.17	10.45	2.19	10.98	2.19
		25	8.16	1.56	8.69	2.04	9.21	2.20	9.47	2.23	10.26	2.27	10.78	2.29
		32	7.70	2.09	8.23	2.47	8.75	2.59	9.01	2.62	9.80	2.68	10.32	2.73
		35	7.51	2.33	8.03	2.65	8.55	2.75	8.79	2.70	9.60	2.83	10.12	2.89
		40	7.18	2.56	7.70	2.76	8.22	2.80	8.49	2.81	9.27	2.85	9.79	2.91
		43	6.98	2.51	7.50	2.63	8.03	2.62	8.29	2.62	9.07	2.64	9.59	2.70
	18+24	22	8.36	1.47	8.89	1.98	9.41	2.15	9.67	2.17	10.45	2.19	10.98	2.19
		25	8.16	1.56	8.69	2.04	9.21	2.20	9.47	2.23	10.26	2.27	10.78	2.29
		32	7.70	2.09	8.23	2.47	8.75	2.59	9.01	2.62	9.80	2.68	10.32	2.73
		35	7.51	2.33	8.03	2.65	8.55	2.75	8.79	2.70	9.60	2.83	10.12	2.89
		40	7.18	2.56	7.70	2.76	8.22	2.80	8.49	2.81	9.27	2.85	9.79	2.91
43		6.98	2.51	7.50	2.63	8.03	2.62	8.29	2.62	9.07	2.64	9.59	2.70	
3 Units	9+9+9	22	7.53	1.24	8.00	1.67	8.47	1.81	8.70	1.83	9.41	1.85	9.88	1.85
		25	7.35	1.31	7.82	1.72	8.29	1.85	8.52	1.88	9.23	1.91	9.70	1.93
		32	6.93	1.76	7.40	2.08	7.87	2.18	8.11	2.21	8.82	2.26	9.29	2.30
		35	6.76	1.97	7.23	2.23	7.70	2.31	7.91	2.28	8.64	2.38	9.11	2.43
		40	6.46	2.16	6.93	2.33	7.40	2.36	7.64	2.37	8.34	2.40	8.81	2.45
		43	6.28	2.12	6.75	2.21	7.22	2.21	7.46	2.21	8.16	2.23	8.64	2.28
	9+9+12	22	8.36	1.47	8.89	1.98	9.41	2.15	9.67	2.17	10.45	2.19	10.98	2.19
		25	8.16	1.56	8.69	2.04	9.21	2.20	9.47	2.23	10.26	2.27	10.78	2.29
		32	7.70	2.09	8.23	2.47	8.75	2.59	9.01	2.62	9.80	2.68	10.32	2.73
		35	7.51	2.33	8.03	2.65	8.55	2.75	8.79	2.70	9.60	2.83	10.12	2.89
		40	7.18	2.56	7.70	2.76	8.22	2.80	8.49	2.81	9.27	2.85	9.79	2.91
		43	6.98	2.51	7.50	2.63	8.03	2.62	8.29	2.62	9.07	2.64	9.59	2.70
	9+9+18	22	8.36	1.47	8.89	1.98	9.41	2.15	9.67	2.17	10.45	2.19	10.98	2.19
		25	8.16	1.56	8.69	2.04	9.21	2.20	9.47	2.23	10.26	2.27	10.78	2.29
		32	7.70	2.09	8.23	2.47	8.75	2.59	9.01	2.62	9.80	2.68	10.32	2.73
		35	7.51	2.33	8.03	2.65	8.55	2.75	8.79	2.70	9.60	2.83	10.12	2.89
		40	7.18	2.56	7.70	2.76	8.22	2.80	8.49	2.81	9.27	2.85	9.79	2.91
		43	6.98	2.51	7.50	2.63	8.03	2.62	8.29	2.62	9.07	2.64	9.59	2.70
	9+9+24	22	8.36	1.47	8.89	1.98	9.41	2.15	9.67	2.17	10.45	2.19	10.98	2.19
		25	8.16	1.56	8.69	2.04	9.21	2.20	9.47	2.23	10.26	2.27	10.78	2.29
		32	7.70	2.09	8.23	2.47	8.75	2.59	9.01	2.62	9.80	2.68	10.32	2.73
		35	7.51	2.33	8.03	2.65	8.55	2.75	8.79	2.70	9.60	2.83	10.12	2.89
		40	7.18	2.56	7.70	2.76	8.22	2.80	8.49	2.81	9.27	2.85	9.79	2.91
		43	6.98	2.51	7.50	2.63	8.03	2.62	8.29	2.62	9.07	2.64	9.59	2.70
9+12+12	22	8.36	1.47	8.89	1.98	9.41	2.15	9.67	2.17	10.45	2.19	10.98	2.19	
	25	8.16	1.56	8.69	2.04	9.21	2.20	9.47	2.23	10.26	2.27	10.78	2.29	
	32	7.70	2.09	8.23	2.47	8.75	2.59	9.01	2.62	9.80	2.68	10.32	2.73	
	35	7.51	2.33	8.03	2.65	8.55	2.75	8.79	2.70	9.60	2.83	10.12	2.89	
	40	7.18	2.56	7.70	2.76	8.22	2.80	8.49	2.81	9.27	2.85	9.79	2.91	
	43	6.98	2.51	7.50	2.63	8.03	2.62	8.29	2.62	9.07	2.64	9.59	2.70	
46	6.78	2.25	7.31	2.28	7.83	2.23	8.09	2.21	8.87	2.21	9.40	2.26		

## 1. Multi piping type MULTI F

Operation	Combination Capacity Index	Outdoor Air Temperature (°CDB)	Indoor Air Temperature (°CWB)											
			14		16		18		19		22		24	
			TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW
3 Units	9+12+18	22	8.36	1.47	8.89	1.98	9.41	2.15	9.67	2.17	10.45	2.19	10.98	2.19
		25	8.16	1.56	8.69	2.04	9.21	2.20	9.47	2.23	10.26	2.27	10.78	2.29
		32	7.70	2.09	8.23	2.47	8.75	2.59	9.01	2.62	9.80	2.68	10.32	2.73
		35	7.51	2.33	8.03	2.65	8.55	2.75	8.79	2.70	9.60	2.83	10.12	2.89
		40	7.18	2.56	7.70	2.76	8.22	2.80	8.49	2.81	9.27	2.85	9.79	2.91
		43	6.98	2.51	7.50	2.63	8.03	2.62	8.29	2.62	9.07	2.64	9.59	2.70
	12+12+12	46	6.78	2.25	7.31	2.28	7.83	2.23	8.09	2.21	8.87	2.21	9.40	2.26
		22	8.36	1.47	8.89	1.98	9.41	2.15	9.67	2.17	10.45	2.19	10.98	2.19
		25	8.16	1.56	8.69	2.04	9.21	2.20	9.47	2.23	10.26	2.27	10.78	2.29
		32	7.70	2.09	8.23	2.47	8.75	2.59	9.01	2.62	9.80	2.68	10.32	2.73
		35	7.51	2.33	8.03	2.65	8.55	2.75	8.79	2.70	9.60	2.83	10.12	2.89
		40	7.18	2.56	7.70	2.76	8.22	2.80	8.49	2.81	9.27	2.85	9.79	2.91
	12+12+18	43	6.98	2.51	7.50	2.63	8.03	2.62	8.29	2.62	9.07	2.64	9.59	2.70
		46	6.78	2.25	7.31	2.28	7.83	2.23	8.09	2.21	8.87	2.21	9.40	2.26
		22	8.36	1.47	8.89	1.98	9.41	2.15	9.67	2.17	10.45	2.19	10.98	2.19
		25	8.16	1.56	8.69	2.04	9.21	2.20	9.47	2.23	10.26	2.27	10.78	2.29
		32	7.70	2.09	8.23	2.47	8.75	2.59	9.01	2.62	9.80	2.68	10.32	2.73
		35	7.51	2.33	8.03	2.65	8.55	2.75	8.79	2.70	9.60	2.83	10.12	2.89
		40	7.18	2.56	7.70	2.76	8.22	2.80	8.49	2.81	9.27	2.85	9.79	2.91
		43	6.98	2.51	7.50	2.63	8.03	2.62	8.29	2.62	9.07	2.64	9.59	2.70
		46	6.78	2.25	7.31	2.28	7.83	2.23	8.09	2.21	8.87	2.21	9.40	2.26

**Notes:**

- Capacities are based on the following conditions.  
Corresponding refrigerant piping length : 7.5m(25 ft)  
Level difference : 0 m(0 ft)
- TC : Total Cooling Capacity(kW)
- PI : Power Input(kW)

# 1. Multi piping type MULTI F

Models : A4UQ36GFD0

## [Cooling Capacity]

Operation	Combination Capacity Index	Outdoor Air Temperature (°CDB)	Indoor Air Temperature (°CWB)											
			14		16		18		19		22		24	
			TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW
1 Unit	9	22	2.51	0.48	2.67	0.65	2.82	0.70	2.90	0.71	3.14	0.71	3.29	0.71
		25	2.45	0.51	2.61	0.66	2.76	0.72	2.84	0.73	3.08	0.74	3.23	0.75
		32	2.31	0.68	2.47	0.80	2.62	0.84	2.70	0.85	2.94	0.87	3.10	0.89
		35	2.25	0.76	2.41	0.86	2.57	0.90	2.64	0.88	2.88	0.92	3.04	0.94
		40	2.15	0.84	2.31	0.90	2.47	0.91	2.55	0.92	2.78	0.93	2.94	0.95
		43	2.09	0.82	2.25	0.86	2.41	0.86	2.49	0.85	2.72	0.86	2.88	0.88
	46	2.03	0.73	2.19	0.74	2.35	0.73	2.43	0.72	2.66	0.72	2.82	0.74	
	12	22	3.34	0.51	3.55	0.68	3.76	0.74	3.87	0.75	4.18	0.75	4.39	0.76
		25	3.27	0.54	3.48	0.70	3.68	0.76	3.79	0.77	4.10	0.78	4.31	0.79
		32	3.08	0.72	3.29	0.85	3.50	0.89	3.60	0.90	3.92	0.92	4.13	0.94
		35	3.00	0.80	3.21	0.91	3.42	0.95	3.52	0.93	3.84	0.97	4.05	0.99
		40	2.87	0.88	3.08	0.95	3.29	0.96	3.39	0.97	3.71	0.98	3.92	1.00
		43	2.79	0.86	3.00	0.91	3.21	0.90	3.32	0.90	3.63	0.91	3.84	0.93
	18	22	2.71	0.78	2.92	0.79	3.13	0.77	3.24	0.76	3.55	0.76	3.76	0.78
		25	5.02	0.77	5.33	1.03	5.64	1.12	5.80	1.14	6.27	1.14	6.59	1.15
		32	4.90	0.81	5.21	1.07	5.53	1.15	5.68	1.16	6.15	1.18	6.47	1.20
		35	4.62	1.09	4.94	1.29	5.25	1.35	5.41	1.37	5.88	1.40	6.19	1.43
		40	4.50	1.22	4.82	1.38	5.13	1.43	5.28	1.41	5.76	1.48	6.07	1.51
		43	4.31	1.34	4.62	1.44	4.93	1.46	5.09	1.47	5.56	1.49	5.88	1.52
	24	22	4.19	1.31	4.50	1.37	4.82	1.37	4.97	1.37	5.44	1.38	5.76	1.41
		25	6.69	1.01	7.11	1.36	7.53	1.47	7.74	1.49	8.36	1.50	8.78	1.50
		32	6.53	1.07	6.95	1.40	7.37	1.51	7.58	1.53	8.21	1.55	8.62	1.57
		35	6.16	1.43	6.58	1.69	7.00	1.77	7.21	1.79	7.84	1.84	8.26	1.87
		40	6.01	1.60	6.42	1.82	6.84	1.88	7.03	1.85	7.68	1.94	8.10	1.98
43		5.74	1.76	6.16	1.89	6.58	1.92	6.79	1.92	7.42	1.95	7.83	2.00	
2 Units	9+9	22	5.58	1.72	6.00	1.80	6.42	1.80	6.63	1.79	7.26	1.81	7.68	1.85
		25	5.43	1.54	5.84	1.56	6.26	1.53	6.47	1.51	7.10	1.51	7.52	1.55
		32	5.02	0.77	5.33	1.03	5.64	1.12	5.80	1.14	6.27	1.14	6.59	1.15
		35	4.90	0.81	5.21	1.07	5.53	1.15	5.68	1.16	6.15	1.18	6.47	1.20
		40	4.62	1.09	4.94	1.29	5.25	1.35	5.41	1.37	5.88	1.40	6.19	1.43
		43	4.50	1.22	4.82	1.38	5.13	1.43	5.28	1.41	5.76	1.48	6.07	1.51
	9+12	22	4.31	1.34	4.62	1.44	4.93	1.46	5.09	1.47	5.56	1.49	5.88	1.52
		25	4.19	1.31	4.50	1.37	4.82	1.37	4.97	1.37	5.44	1.38	5.76	1.41
		32	4.07	1.18	4.38	1.19	4.70	1.16	4.85	1.15	5.32	1.15	5.64	1.18
		35	5.85	0.89	6.22	1.20	6.59	1.30	6.77	1.31	7.32	1.32	7.68	1.32
		40	5.72	0.94	6.08	1.23	6.45	1.33	6.63	1.35	7.18	1.37	7.55	1.38
		43	5.39	1.26	5.76	1.49	6.12	1.56	6.31	1.58	6.86	1.62	7.22	1.65
	9+18	22	5.25	1.41	5.62	1.60	5.99	1.66	6.15	1.63	6.72	1.71	7.09	1.74
		25	5.02	1.55	5.39	1.67	5.76	1.69	5.94	1.70	6.49	1.72	6.85	1.76
		32	4.89	1.52	5.25	1.59	5.62	1.58	5.80	1.58	6.35	1.60	6.72	1.63
		35	4.75	1.36	5.11	1.38	5.48	1.34	5.66	1.33	6.21	1.33	6.58	1.36
		40	7.53	1.24	8.00	1.67	8.47	1.81	8.70	1.83	9.41	1.85	9.88	1.85
		43	7.35	1.31	7.82	1.72	8.29	1.85	8.52	1.88	9.23	1.91	9.70	1.93
	9+24	22	6.93	1.76	7.40	2.08	7.87	2.18	8.11	2.21	8.82	2.26	9.29	2.30
		25	6.76	1.97	7.23	2.23	7.70	2.31	7.91	2.28	8.64	2.38	9.11	2.43
		32	6.46	2.16	6.93	2.33	7.40	2.36	7.64	2.37	8.34	2.40	8.81	2.45
		35	6.28	2.12	6.75	2.21	7.22	2.21	7.46	2.21	8.16	2.23	8.64	2.28
		40	6.10	1.90	6.58	1.92	7.05	1.88	7.28	1.86	7.99	1.86	8.46	1.90
		43	9.20	1.58	9.77	2.13	10.35	2.30	10.64	2.34	11.50	2.35	12.07	2.36
12+12	22	8.98	1.67	9.56	2.19	10.13	2.36	10.42	2.40	11.28	2.44	11.86	2.46	
	25	8.47	2.25	9.05	2.65	9.62	2.78	9.91	2.81	10.78	2.88	11.35	2.93	
	32	8.26	2.51	8.83	2.85	9.41	2.95	9.67	2.90	10.56	3.04	11.13	3.10	
	35	7.90	2.75	8.47	2.97	9.05	3.01	9.33	3.02	10.20	3.06	10.77	3.13	
	40	7.68	2.70	8.25	2.82	8.83	2.82	9.12	2.81	9.98	2.84	10.55	2.90	
	43	7.46	2.42	8.04	2.45	8.61	2.39	8.90	2.37	9.76	2.37	10.34	2.43	

# 1. Multi piping type MULTI F

Operation	Combination Capacity Index	Outdoor Air Temperature (°CDB)	Indoor Air Temperature (°CWB)												
			14		16		18		19		22		24		
			TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	
2 Unit	12+18	22	8.36	1.47	8.89	1.98	9.41	2.15	9.67	2.17	10.45	2.19	10.98	2.19	
		25	8.16	1.56	8.69	2.04	9.21	2.20	9.47	2.23	10.26	2.27	10.78	2.29	
		32	7.70	2.09	8.23	2.47	8.75	2.59	9.01	2.62	9.80	2.68	10.32	2.73	
		35	7.51	2.33	8.03	2.65	8.55	2.75	8.79	2.70	9.60	2.83	10.12	2.89	
		40	7.18	2.56	7.70	2.76	8.22	2.80	8.49	2.81	9.27	2.85	9.79	2.91	
		43	6.98	2.51	7.50	2.63	8.03	2.62	8.29	2.62	9.07	2.64	9.59	2.70	
	12+24	46	6.78	2.25	7.31	2.28	7.83	2.23	8.09	2.21	8.87	2.21	9.40	2.26	
		22	10.03	1.68	10.66	2.27	11.29	2.46	11.60	2.50	12.54	2.52	13.17	2.52	
		25	9.80	1.79	10.43	2.34	11.05	2.52	11.37	2.56	12.31	2.61	12.94	2.63	
		32	9.24	2.40	9.87	2.83	10.50	2.97	10.81	3.01	11.76	3.08	12.38	3.13	
		35	9.01	2.68	9.64	3.04	10.26	3.15	10.55	3.10	11.52	3.25	12.15	3.32	
		40	8.61	2.94	9.24	3.17	9.87	3.22	10.18	3.22	11.12	3.28	11.75	3.35	
	18+18	43	8.38	2.88	9.00	3.02	9.63	3.01	9.95	3.01	10.89	3.04	11.51	3.10	
		46	8.14	2.59	8.77	2.62	9.39	2.56	9.71	2.53	10.65	2.53	11.28	2.60	
		22	10.03	1.68	10.66	2.27	11.29	2.46	11.60	2.50	12.54	2.52	13.17	2.52	
		25	9.80	1.79	10.43	2.34	11.05	2.52	11.37	2.56	12.31	2.61	12.94	2.63	
		32	9.24	2.40	9.87	2.83	10.50	2.97	10.81	3.01	11.76	3.08	12.38	3.13	
		35	9.01	2.68	9.64	3.04	10.26	3.15	10.55	3.10	11.52	3.25	12.15	3.32	
	18+24	40	8.61	2.94	9.24	3.17	9.87	3.22	10.18	3.22	11.12	3.28	11.75	3.35	
		43	8.38	2.88	9.00	3.02	9.63	3.01	9.95	3.01	10.89	3.04	11.51	3.10	
		46	8.14	2.59	8.77	2.62	9.39	2.56	9.71	2.53	10.65	2.53	11.28	2.60	
		22	10.03	1.68	10.66	2.27	11.29	2.46	11.60	2.50	12.54	2.52	13.17	2.52	
		25	9.80	1.79	10.43	2.34	11.05	2.52	11.37	2.56	12.31	2.61	12.94	2.63	
		32	9.24	2.40	9.87	2.83	10.50	2.97	10.81	3.01	11.76	3.08	12.38	3.13	
	24+24	35	9.01	2.68	9.64	3.04	10.26	3.15	10.55	3.10	11.52	3.25	12.15	3.32	
		40	8.61	2.94	9.24	3.17	9.87	3.22	10.18	3.22	11.12	3.28	11.75	3.35	
		43	8.38	2.88	9.00	3.02	9.63	3.01	9.95	3.01	10.89	3.04	11.51	3.10	
		46	8.14	2.59	8.77	2.62	9.39	2.56	9.71	2.53	10.65	2.53	11.28	2.60	
		22	10.03	1.68	10.66	2.27	11.29	2.46	11.60	2.50	12.54	2.52	13.17	2.52	
		25	9.80	1.79	10.43	2.34	11.05	2.52	11.37	2.56	12.31	2.61	12.94	2.63	
	3 Units	9+9+9	32	9.24	2.40	9.87	2.83	10.50	2.97	10.81	3.01	11.76	3.08	12.38	3.13
			35	9.01	2.68	9.64	3.04	10.26	3.15	10.55	3.10	11.52	3.25	12.15	3.32
			40	8.61	2.94	9.24	3.17	9.87	3.22	10.18	3.22	11.12	3.28	11.75	3.35
			43	8.38	2.88	9.00	3.02	9.63	3.01	9.95	3.01	10.89	3.04	11.51	3.10
			46	8.14	2.59	8.77	2.62	9.39	2.56	9.71	2.53	10.65	2.53	11.28	2.60
			22	7.53	1.24	8.00	1.67	8.47	1.81	8.70	1.83	9.41	1.85	9.88	1.85
		9+9+12	25	7.35	1.31	7.82	1.72	8.29	1.85	8.52	1.88	9.23	1.91	9.70	1.93
			32	6.93	1.76	7.40	2.08	7.87	2.18	8.11	2.21	8.82	2.26	9.29	2.30
			35	6.76	1.97	7.23	2.23	7.70	2.31	7.91	2.28	8.64	2.38	9.11	2.43
			40	6.46	2.16	6.93	2.33	7.40	2.36	7.64	2.37	8.34	2.40	8.81	2.45
			43	6.28	2.12	6.75	2.21	7.22	2.21	7.46	2.21	8.16	2.23	8.64	2.28
			46	6.10	1.90	6.58	1.92	7.05	1.88	7.28	1.86	7.99	1.86	8.46	1.90
		9+9+18	22	8.36	1.47	8.89	1.98	9.41	2.15	9.67	2.17	10.45	2.19	10.98	2.19
			25	8.16	1.56	8.69	2.04	9.21	2.20	9.47	2.23	10.26	2.27	10.78	2.29
			32	7.70	2.09	8.23	2.47	8.75	2.59	9.01	2.62	9.80	2.68	10.32	2.73
			35	7.51	2.33	8.03	2.65	8.55	2.75	8.79	2.70	9.60	2.83	10.12	2.89
			40	7.18	2.56	7.70	2.76	8.22	2.80	8.49	2.81	9.27	2.85	9.79	2.91
			43	6.98	2.51	7.50	2.63	8.03	2.62	8.29	2.62	9.07	2.64	9.59	2.70
9+9+24		46	6.78	2.25	7.31	2.28	7.83	2.23	8.09	2.21	8.87	2.21	9.40	2.26	
		22	10.03	1.68	10.66	2.27	11.29	2.46	11.60	2.50	12.54	2.52	13.17	2.52	
		25	9.80	1.79	10.43	2.34	11.05	2.52	11.37	2.56	12.31	2.61	12.94	2.63	
		32	9.24	2.40	9.87	2.83	10.50	2.97	10.81	3.01	11.76	3.08	12.38	3.13	
		35	9.01	2.68	9.64	3.04	10.26	3.15	10.55	3.10	11.52	3.25	12.15	3.32	
		40	8.61	2.94	9.24	3.17	9.87	3.22	10.18	3.22	11.12	3.28	11.75	3.35	
		43	8.38	2.88	9.00	3.02	9.63	3.01	9.95	3.01	10.89	3.04	11.51	3.10	
		46	8.14	2.59	8.77	2.62	9.39	2.56	9.71	2.53	10.65	2.53	11.28	2.60	
		22	10.03	1.68	10.66	2.27	11.29	2.46	11.60	2.50	12.54	2.52	13.17	2.52	
		25	9.80	1.79	10.43	2.34	11.05	2.52	11.37	2.56	12.31	2.61	12.94	2.63	
		32	9.24	2.40	9.87	2.83	10.50	2.97	10.81	3.01	11.76	3.08	12.38	3.13	
		35	9.01	2.68	9.64	3.04	10.26	3.15	10.55	3.10	11.52	3.25	12.15	3.32	

# MULTI F

## 1. Multi piping type MULTI F

Operation	Combination Capacity Index	Outdoor Air Temperature (°CDB)	Indoor Air Temperature (°CWB)											
			14		16		18		19		22		24	
			TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW
3 Units	9+12+12	22	9.20	1.58	9.77	2.13	10.35	2.30	10.64	2.34	11.50	2.35	12.07	2.36
		25	8.98	1.67	9.56	2.19	10.13	2.36	10.42	2.40	11.28	2.44	11.86	2.46
		32	8.47	2.25	9.05	2.65	9.62	2.78	9.91	2.81	10.78	2.88	11.35	2.93
		35	8.26	2.51	8.83	2.85	9.41	2.95	9.67	2.90	10.56	3.04	11.13	3.10
		40	7.90	2.75	8.47	2.97	9.05	3.01	9.33	3.02	10.20	3.06	10.77	3.13
		43	7.68	2.70	8.25	2.82	8.83	2.82	9.12	2.81	9.98	2.84	10.55	2.90
	9+12+18	46	7.46	2.42	8.04	2.45	8.61	2.39	8.90	2.37	9.76	2.37	10.34	2.43
		22	10.03	1.68	10.66	2.27	11.29	2.46	11.60	2.50	12.54	2.52	13.17	2.52
		25	9.80	1.79	10.43	2.34	11.05	2.52	11.37	2.56	12.31	2.61	12.94	2.63
		32	9.24	2.40	9.87	2.83	10.50	2.97	10.81	3.01	11.76	3.08	12.38	3.13
		35	9.01	2.68	9.64	3.04	10.26	3.15	10.55	3.10	11.52	3.25	12.15	3.32
		40	8.61	2.94	9.24	3.17	9.87	3.22	10.18	3.22	11.12	3.28	11.75	3.35
	9+12+24	43	8.38	2.88	9.00	3.02	9.63	3.01	9.95	3.01	10.89	3.04	11.51	3.10
		46	8.14	2.59	8.77	2.62	9.39	2.56	9.71	2.53	10.65	2.53	11.28	2.60
		22	10.03	1.68	10.66	2.27	11.29	2.46	11.60	2.50	12.54	2.52	13.17	2.52
		25	9.80	1.79	10.43	2.34	11.05	2.52	11.37	2.56	12.31	2.61	12.94	2.63
		32	9.24	2.40	9.87	2.83	10.50	2.97	10.81	3.01	11.76	3.08	12.38	3.13
		35	9.01	2.68	9.64	3.04	10.26	3.15	10.55	3.10	11.52	3.25	12.15	3.32
	9+18+18	40	8.61	2.94	9.24	3.17	9.87	3.22	10.18	3.22	11.12	3.28	11.75	3.35
		43	8.38	2.88	9.00	3.02	9.63	3.01	9.95	3.01	10.89	3.04	11.51	3.10
		46	8.14	2.59	8.77	2.62	9.39	2.56	9.71	2.53	10.65	2.53	11.28	2.60
		22	10.03	1.68	10.66	2.27	11.29	2.46	11.60	2.50	12.54	2.52	13.17	2.52
		25	9.80	1.79	10.43	2.34	11.05	2.52	11.37	2.56	12.31	2.61	12.94	2.63
		32	9.24	2.40	9.87	2.83	10.50	2.97	10.81	3.01	11.76	3.08	12.38	3.13
	12+12+12	35	9.01	2.68	9.64	3.04	10.26	3.15	10.55	3.10	11.52	3.25	12.15	3.32
		40	8.61	2.94	9.24	3.17	9.87	3.22	10.18	3.22	11.12	3.28	11.75	3.35
		43	8.38	2.88	9.00	3.02	9.63	3.01	9.95	3.01	10.89	3.04	11.51	3.10
		46	8.14	2.59	8.77	2.62	9.39	2.56	9.71	2.53	10.65	2.53	11.28	2.60
		22	10.03	1.68	10.66	2.27	11.29	2.46	11.60	2.50	12.54	2.52	13.17	2.52
		25	9.80	1.79	10.43	2.34	11.05	2.52	11.37	2.56	12.31	2.61	12.94	2.63
	12+12+18	32	9.24	2.40	9.87	2.83	10.50	2.97	10.81	3.01	11.76	3.08	12.38	3.13
		35	9.01	2.68	9.64	3.04	10.26	3.15	10.55	3.10	11.52	3.25	12.15	3.32
		40	8.61	2.94	9.24	3.17	9.87	3.22	10.18	3.22	11.12	3.28	11.75	3.35
		43	8.38	2.88	9.00	3.02	9.63	3.01	9.95	3.01	10.89	3.04	11.51	3.10
		46	8.14	2.59	8.77	2.62	9.39	2.56	9.71	2.53	10.65	2.53	11.28	2.60
		22	10.03	1.68	10.66	2.27	11.29	2.46	11.60	2.50	12.54	2.52	13.17	2.52
	12+12+24	25	9.80	1.79	10.43	2.34	11.05	2.52	11.37	2.56	12.31	2.61	12.94	2.63
		32	9.24	2.40	9.87	2.83	10.50	2.97	10.81	3.01	11.76	3.08	12.38	3.13
		35	9.01	2.68	9.64	3.04	10.26	3.15	10.55	3.10	11.52	3.25	12.15	3.32
		40	8.61	2.94	9.24	3.17	9.87	3.22	10.18	3.22	11.12	3.28	11.75	3.35
		43	8.38	2.88	9.00	3.02	9.63	3.01	9.95	3.01	10.89	3.04	11.51	3.10
		46	8.14	2.59	8.77	2.62	9.39	2.56	9.71	2.53	10.65	2.53	11.28	2.60
	12+18+18	22	10.03	1.68	10.66	2.27	11.29	2.46	11.60	2.50	12.54	2.52	13.17	2.52
		25	9.80	1.79	10.43	2.34	11.05	2.52	11.37	2.56	12.31	2.61	12.94	2.63
		32	9.24	2.40	9.87	2.83	10.50	2.97	10.81	3.01	11.76	3.08	12.38	3.13
		35	9.01	2.68	9.64	3.04	10.26	3.15	10.55	3.10	11.52	3.25	12.15	3.32
		40	8.61	2.94	9.24	3.17	9.87	3.22	10.18	3.22	11.12	3.28	11.75	3.35
		43	8.38	2.88	9.00	3.02	9.63	3.01	9.95	3.01	10.89	3.04	11.51	3.10
4 Units	9+9+9+9	46	8.14	2.59	8.77	2.62	9.39	2.56	9.71	2.53	10.65	2.53	11.28	2.60
		22	10.03	1.68	10.66	2.27	11.29	2.46	11.60	2.50	12.54	2.52	13.17	2.52
		25	9.80	1.79	10.43	2.34	11.05	2.52	11.37	2.56	12.31	2.61	12.94	2.63
		32	9.24	2.40	9.87	2.83	10.50	2.97	10.81	3.01	11.76	3.08	12.38	3.13
		35	9.01	2.68	9.64	3.04	10.26	3.15	10.55	3.10	11.52	3.25	12.15	3.32
		40	8.61	2.94	9.24	3.17	9.87	3.22	10.18	3.22	11.12	3.28	11.75	3.35

# 1. Multi piping type MULTI F

Operation	Combination Capacity Index	Outdoor Air Temperature (°CDB)	Indoor Air Temperature (°CWB)											
			14		16		18		19		22		24	
			TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW
4 Units	9+9+9+12	22	10.03	1.68	10.66	2.27	11.29	2.46	11.60	2.50	12.54	2.52	13.17	2.52
		25	9.80	1.79	10.43	2.34	11.05	2.52	11.37	2.56	12.31	2.61	12.94	2.63
		32	9.24	2.40	9.87	2.83	10.50	2.97	10.81	3.01	11.76	3.08	12.38	3.13
		35	9.01	2.68	9.64	3.04	10.26	3.15	10.55	3.10	11.52	3.25	12.15	3.32
		40	8.61	2.94	9.24	3.17	9.87	3.22	10.18	3.22	11.12	3.28	11.75	3.35
		43	8.38	2.88	9.00	3.02	9.63	3.01	9.95	3.01	10.89	3.04	11.51	3.10
	9+9+9+18	22	10.03	1.68	10.66	2.27	11.29	2.46	11.60	2.50	12.54	2.52	13.17	2.52
		25	9.80	1.79	10.43	2.34	11.05	2.52	11.37	2.56	12.31	2.61	12.94	2.63
		32	9.24	2.40	9.87	2.83	10.50	2.97	10.81	3.01	11.76	3.08	12.38	3.13
		35	9.01	2.68	9.64	3.04	10.26	3.15	10.55	3.10	11.52	3.25	12.15	3.32
		40	8.61	2.94	9.24	3.17	9.87	3.22	10.18	3.22	11.12	3.28	11.75	3.35
		43	8.38	2.88	9.00	3.02	9.63	3.01	9.95	3.01	10.89	3.04	11.51	3.10
	9+9+12+12	22	10.03	1.68	10.66	2.27	11.29	2.46	11.60	2.50	12.54	2.52	13.17	2.52
		25	9.80	1.79	10.43	2.34	11.05	2.52	11.37	2.56	12.31	2.61	12.94	2.63
		32	9.24	2.40	9.87	2.83	10.50	2.97	10.81	3.01	11.76	3.08	12.38	3.13
		35	9.01	2.68	9.64	3.04	10.26	3.15	10.55	3.10	11.52	3.25	12.15	3.32
		40	8.61	2.94	9.24	3.17	9.87	3.22	10.18	3.22	11.12	3.28	11.75	3.35
		43	8.38	2.88	9.00	3.02	9.63	3.01	9.95	3.01	10.89	3.04	11.51	3.10
	9+9+12+18	22	10.03	1.68	10.66	2.27	11.29	2.46	11.60	2.50	12.54	2.52	13.17	2.52
		25	9.80	1.79	10.43	2.34	11.05	2.52	11.37	2.56	12.31	2.61	12.94	2.63
		32	9.24	2.40	9.87	2.83	10.50	2.97	10.81	3.01	11.76	3.08	12.38	3.13
		35	9.01	2.68	9.64	3.04	10.26	3.15	10.55	3.10	11.52	3.25	12.15	3.32
		40	8.61	2.94	9.24	3.17	9.87	3.22	10.18	3.22	11.12	3.28	11.75	3.35
		43	8.38	2.88	9.00	3.02	9.63	3.01	9.95	3.01	10.89	3.04	11.51	3.10
	9+12+12+12	22	10.03	1.68	10.66	2.27	11.29	2.46	11.60	2.50	12.54	2.52	13.17	2.52
		25	9.80	1.79	10.43	2.34	11.05	2.52	11.37	2.56	12.31	2.61	12.94	2.63
		32	9.24	2.40	9.87	2.83	10.50	2.97	10.81	3.01	11.76	3.08	12.38	3.13
		35	9.01	2.68	9.64	3.04	10.26	3.15	10.55	3.10	11.52	3.25	12.15	3.32
		40	8.61	2.94	9.24	3.17	9.87	3.22	10.18	3.22	11.12	3.28	11.75	3.35
		43	8.38	2.88	9.00	3.02	9.63	3.01	9.95	3.01	10.89	3.04	11.51	3.10
	12+12+12+12	22	10.03	1.68	10.66	2.27	11.29	2.46	11.60	2.50	12.54	2.52	13.17	2.52
		25	9.80	1.79	10.43	2.34	11.05	2.52	11.37	2.56	12.31	2.61	12.94	2.63
		32	9.24	2.40	9.87	2.83	10.50	2.97	10.81	3.01	11.76	3.08	12.38	3.13
		35	9.01	2.68	9.64	3.04	10.26	3.15	10.55	3.10	11.52	3.25	12.15	3.32
		40	8.61	2.94	9.24	3.17	9.87	3.22	10.18	3.22	11.12	3.28	11.75	3.35
		43	8.38	2.88	9.00	3.02	9.63	3.01	9.95	3.01	10.89	3.04	11.51	3.10

**Notes:**

- Capacities are based on the following conditions.  
Corresponding refrigerant piping length : 7.5m(25 ft)  
Level difference : 0 m(0 ft)
- TC : Total Cooling Capacity(kW)
- PI : Power Input(kW)

# MULTI F

## 1. Multi piping type MULTI F

Models : A5UQ48GFA1

### [Cooling Capacity]

Operation	Combination Capacity Index	Outdoor Air Temperature (°CDB)	Indoor Air Temperature (°CWB)											
			14		16		18		19		22		24	
			TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW
1 Unit	9	22	2.51	0.41	2.67	0.55	2.82	0.60	2.90	0.60	3.14	0.61	3.30	0.61
		25	2.45	0.43	2.61	0.57	2.77	0.61	2.84	0.62	3.08	0.63	3.24	0.64
		32	2.31	0.58	2.47	0.69	2.63	0.72	2.71	0.73	2.94	0.74	3.10	0.76
		35	2.25	0.65	2.41	0.74	2.57	0.76	2.64	0.75	2.88	0.79	3.04	0.80
		40	2.16	0.71	2.31	0.77	2.47	0.78	2.55	0.78	2.78	0.79	2.94	0.81
		43	2.10	0.70	2.25	0.73	2.41	0.73	2.49	0.73	2.72	0.73	2.88	0.75
	12	46	2.04	0.63	2.19	0.63	2.35	0.62	2.43	0.61	2.66	0.61	2.82	0.63
		22	3.35	0.55	3.56	0.74	3.77	0.80	3.87	0.81	4.19	0.82	4.39	0.82
		25	3.27	0.58	3.48	0.76	3.69	0.82	3.79	0.83	4.11	0.85	4.32	0.86
		32	3.08	0.78	3.29	0.92	3.50	0.97	3.61	0.98	3.92	1.00	4.13	1.02
		35	3.01	0.87	3.21	0.99	3.42	1.03	3.52	1.01	3.84	1.06	4.05	1.08
		40	2.87	0.96	3.08	1.03	3.29	1.05	3.40	1.05	3.71	1.07	3.92	1.09
	18	43	2.79	0.94	3.00	0.98	3.21	0.98	3.32	0.98	3.63	0.99	3.84	1.01
		46	2.72	0.84	2.92	0.85	3.13	0.83	3.24	0.83	3.55	0.83	3.76	0.85
		22	5.02	0.92	5.34	1.24	5.65	1.34	5.81	1.36	6.28	1.37	6.59	1.37
		25	4.90	0.97	5.22	1.28	5.53	1.38	5.69	1.40	6.16	1.42	6.47	1.43
		32	4.63	1.31	4.94	1.54	5.25	1.62	5.41	1.64	5.88	1.68	6.20	1.71
		35	4.51	1.46	4.82	1.66	5.14	1.72	5.28	1.69	5.76	1.77	6.08	1.81
	24	40	4.31	1.60	4.62	1.73	4.94	1.75	5.10	1.76	5.57	1.79	5.88	1.82
		43	4.19	1.57	4.51	1.65	4.82	1.64	4.98	1.64	5.45	1.66	5.76	1.69
		46	4.07	1.41	4.39	1.43	4.70	1.39	4.86	1.38	5.33	1.38	5.64	1.41
		22	6.69	1.39	7.10	1.87	7.52	2.03	7.73	2.05	8.36	2.07	8.78	2.07
		25	6.53	1.47	6.95	1.93	7.36	2.08	7.57	2.11	8.20	2.14	8.62	2.16
		32	6.16	1.98	6.58	2.33	7.00	2.45	7.21	2.47	7.83	2.53	8.25	2.58
2 Units	9 + 9	35	6.00	2.20	6.42	2.50	6.84	2.59	7.03	2.55	7.67	2.67	8.09	2.73
		40	5.74	2.42	6.16	2.61	6.58	2.65	6.78	2.65	7.41	2.69	7.83	2.75
		43	5.58	2.37	6.00	2.48	6.42	2.48	6.63	2.47	7.25	2.50	7.67	2.55
		46	5.42	2.13	5.84	2.15	6.26	2.10	6.47	2.08	7.10	2.08	7.51	2.13
		22	5.02	0.86	5.34	1.17	5.65	1.26	5.81	1.28	6.28	1.29	6.59	1.29
		25	4.90	0.92	5.22	1.20	5.53	1.29	5.69	1.31	6.16	1.34	6.47	1.35
	9 + 12	32	4.63	1.23	4.94	1.45	5.25	1.53	5.41	1.54	5.88	1.58	6.20	1.61
		35	4.51	1.37	4.82	1.56	5.14	1.62	5.28	1.59	5.76	1.67	6.08	1.70
		40	4.31	1.51	4.62	1.63	4.94	1.65	5.10	1.65	5.57	1.68	5.88	1.72
		43	4.19	1.48	4.51	1.55	4.82	1.55	4.98	1.54	5.45	1.56	5.76	1.59
		46	4.07	1.33	4.39	1.34	4.70	1.31	4.86	1.30	5.33	1.30	5.64	1.33
		22	5.85	1.09	6.21	1.47	6.58	1.59	6.76	1.61	7.31	1.62	7.68	1.62
	12 + 12	25	5.71	1.15	6.08	1.51	6.44	1.63	6.63	1.65	7.17	1.68	7.54	1.70
		32	5.39	1.55	5.75	1.83	6.12	1.92	6.30	1.94	6.85	1.99	7.22	2.02
		35	5.25	1.73	5.62	1.96	5.98	2.03	6.15	2.00	6.71	2.10	7.08	2.14
		40	5.02	1.90	5.39	2.05	5.75	2.07	5.93	2.08	6.48	2.11	6.85	2.16
		43	4.88	1.86	5.25	1.95	5.61	1.94	5.80	1.94	6.35	1.96	6.71	2.00
		46	4.74	1.67	5.11	1.69	5.48	1.65	5.66	1.63	6.21	1.63	6.57	1.67
	9 + 18	22	6.69	1.30	7.10	1.76	7.52	1.91	7.73	1.93	8.36	1.95	8.78	1.95
		25	6.53	1.38	6.95	1.81	7.36	1.95	7.57	1.98	8.20	2.02	8.62	2.03
		32	6.16	1.86	6.58	2.19	7.00	2.30	7.21	2.33	7.83	2.38	8.25	2.43
		35	6.00	2.07	6.42	2.36	6.84	2.44	7.03	2.40	7.67	2.52	8.09	2.57
		40	5.74	2.28	6.16	2.45	6.58	2.49	6.78	2.50	7.41	2.54	7.83	2.59
		43	5.58	2.23	6.00	2.34	6.42	2.33	6.63	2.33	7.25	2.35	7.67	2.40
12 + 18	46	5.42	2.00	5.84	2.03	6.26	1.98	6.47	1.96	7.10	1.96	7.51	2.01	
	22	7.52	1.53	7.99	2.06	8.46	2.23	8.70	2.26	9.40	2.28	9.88	2.28	
	25	7.35	1.62	7.82	2.12	8.29	2.29	8.52	2.32	9.23	2.36	9.70	2.38	
	32	6.93	2.18	7.40	2.57	7.87	2.70	8.11	2.73	8.81	2.79	9.28	2.84	
	35	6.75	2.43	7.22	2.76	7.69	2.86	7.91	2.81	8.64	2.95	9.11	3.00	
	40	6.46	2.67	6.93	2.87	7.40	2.91	7.63	2.92	8.34	2.97	8.81	3.03	



# 1. Multi piping type MULTI F

Operation	Combination Capacity Index	Outdoor Air Temperature (°CDB)	Indoor Air Temperature (°CWB)											
			14		16		18		19		22		24	
			TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW
2 Unit	9 + 24	22	9.20	1.97	9.77	2.66	10.35	2.88	10.63	2.91	11.50	2.94	12.07	2.94
		25	8.98	2.09	9.55	2.73	10.13	2.95	10.42	2.99	11.28	3.04	11.86	3.07
		32	8.47	2.80	9.05	3.31	9.62	3.47	9.91	3.51	10.77	3.59	11.35	3.66
		35	8.26	3.13	8.83	3.55	9.41	3.68	9.67	3.62	10.56	3.79	11.13	3.87
		40	7.89	3.44	8.47	3.70	9.04	3.75	9.33	3.76	10.19	3.82	10.77	3.91
		43	7.68	3.37	8.25	3.52	8.83	3.52	9.11	3.51	9.98	3.55	10.55	3.62
	46	7.46	3.02	8.03	3.06	8.61	2.99	8.90	2.96	9.76	2.96	10.34	3.03	
	12 + 24	22	10.03	2.18	10.66	2.95	11.29	3.19	11.60	3.24	12.54	3.26	13.17	3.26
		25	9.80	2.32	10.42	3.04	11.05	3.27	11.37	3.32	12.31	3.38	12.93	3.41
		32	9.24	3.11	9.87	3.67	10.50	3.86	10.81	3.90	11.75	3.99	12.38	4.07
		35	9.01	3.48	9.63	3.95	10.26	4.09	10.55	4.02	11.52	4.21	12.14	4.30
		40	8.61	3.82	9.24	4.11	9.87	4.17	10.18	4.18	11.12	4.25	11.75	4.34
		43	8.38	3.74	9.00	3.91	9.63	3.91	9.94	3.90	10.89	3.94	11.51	4.02
	18 + 18	22	10.03	2.18	10.66	2.95	11.29	3.19	11.60	3.24	12.54	3.26	13.17	3.26
		25	9.80	2.32	10.42	3.04	11.05	3.27	11.37	3.32	12.31	3.38	12.93	3.41
		32	9.24	3.11	9.87	3.67	10.50	3.86	10.81	3.90	11.75	3.99	12.38	4.07
		35	9.01	3.48	9.63	3.95	10.26	4.09	10.55	4.02	11.52	4.21	12.14	4.30
		40	8.61	3.82	9.24	4.11	9.87	4.17	10.18	4.18	11.12	4.25	11.75	4.34
		43	8.38	3.74	9.00	3.91	9.63	3.91	9.94	3.90	10.89	3.94	11.51	4.02
	18 + 24	22	11.71	2.62	12.44	3.54	13.17	3.84	13.54	3.89	14.64	3.92	15.37	3.92
		25	11.43	2.79	12.16	3.65	12.90	3.93	13.26	3.99	14.36	4.06	15.09	4.09
		32	10.79	3.74	11.52	4.41	12.25	4.63	12.62	4.68	13.71	4.80	14.45	4.88
		35	10.51	4.18	11.24	4.74	11.97	4.91	12.31	4.83	13.44	5.06	14.17	5.17
		40	10.05	4.59	10.78	4.94	11.51	5.01	11.88	5.02	12.98	5.10	13.71	5.21
43		9.77	4.49	10.50	4.70	11.24	4.69	11.60	4.68	12.70	4.73	13.43	4.84	
24 + 24	22	13.38	3.06	14.22	4.14	15.06	4.48	15.47	4.54	16.70	4.58	17.60	4.58	
	25	13.07	3.25	13.90	4.26	14.74	4.59	15.16	4.66	16.40	4.74	17.20	4.78	
	32	12.33	4.37	13.17	5.15	14.00	5.41	14.42	5.47	15.68	5.60	16.50	5.70	
	35	12.01	4.88	12.85	5.54	13.69	5.74	14.07	5.64	15.36	5.91	16.20	6.03	
	40	11.49	5.35	12.32	5.77	13.16	5.85	13.58	5.87	14.83	5.96	15.67	6.09	
	43	11.17	5.25	12.01	5.49	12.84	5.48	13.26	5.47	14.52	5.52	15.35	5.65	
3 Units	9 + 9 + 9	22	7.18	1.24	7.63	1.68	8.08	1.82	8.30	1.84	9.00	1.86	9.40	1.86
		25	7.01	1.32	7.46	1.73	7.91	1.87	8.13	1.89	8.80	1.92	9.30	1.94
		32	6.62	1.77	7.06	2.09	7.51	2.20	7.74	2.22	8.41	2.27	8.90	2.32
		35	6.45	1.98	6.89	2.25	7.34	2.33	7.55	2.29	8.24	2.40	8.70	2.45
		40	6.16	2.17	6.61	2.34	7.06	2.38	7.29	2.38	7.96	2.42	8.41	2.47
		43	5.99	2.13	6.44	2.23	6.89	2.23	7.12	2.22	7.79	2.24	8.24	2.29
	9 + 9 + 12	22	7.85	1.41	8.34	1.90	8.83	2.06	9.07	2.09	9.80	2.10	10.30	2.10
		25	7.66	1.49	8.15	1.96	8.64	2.11	8.89	2.14	9.60	2.18	10.10	2.20
		32	7.23	2.01	7.72	2.37	8.21	2.48	8.46	2.51	9.19	2.57	9.70	2.62
		35	7.04	2.24	7.53	2.54	8.02	2.63	8.25	2.59	9.01	2.72	9.50	2.77
		40	6.73	2.46	7.23	2.65	7.72	2.69	7.96	2.69	8.70	2.74	9.19	2.79
		43	6.55	2.41	7.04	2.52	7.53	2.52	7.78	2.51	8.51	2.54	9.00	2.59
	9 + 12 + 12	22	8.51	1.58	9.04	2.13	9.58	2.30	9.84	2.34	10.64	2.35	11.17	2.36
		25	8.31	1.67	8.84	2.19	9.38	2.36	9.64	2.40	10.44	2.44	10.97	2.46
		32	7.84	2.25	8.37	2.65	8.91	2.78	9.17	2.81	9.97	2.88	10.50	2.93
		35	7.64	2.51	8.17	2.85	8.71	2.95	8.95	2.90	9.77	3.04	10.30	3.10
		40	7.31	2.75	7.84	2.97	8.37	3.01	8.64	3.02	9.44	3.06	9.97	3.13
		43	7.11	2.70	7.64	2.82	8.17	2.82	8.44	2.81	9.23	2.84	9.77	2.90
	9 + 9 + 18	22	9.18	1.74	9.75	2.36	10.33	2.55	10.61	2.58	11.47	2.61	12.05	2.61
		25	8.96	1.85	9.53	2.42	10.11	2.61	10.40	2.65	11.26	2.70	11.83	2.72
		32	8.46	2.49	9.03	2.93	9.60	3.08	9.89	3.11	10.75	3.19	11.33	3.25
		35	8.24	2.78	8.81	3.15	9.39	3.27	9.65	3.21	10.53	3.36	11.11	3.43
		40	7.88	3.05	8.45	3.28	9.03	3.33	9.31	3.34	10.17	3.39	10.75	3.46
		43	7.66	2.99	8.23	3.12	8.81	3.12	9.10	3.11	9.96	3.14	10.53	3.21
46	7.44	2.68	8.02	2.71	8.59	2.65	8.88	2.62	9.74	2.62	10.31	2.69		

# MULTI F

## 1. Multi piping type MULTI F

Operation	Combination Capacity Index	Outdoor Air Temperature (°CDB)	Indoor Air Temperature (°CWB)											
			14		16		18		19		22		24	
			TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW
3 Units	12 + 12 + 12	22	9.18	1.74	9.75	2.36	10.33	2.55	10.61	2.58	11.47	2.61	12.05	2.61
		25	8.96	1.85	9.53	2.42	10.11	2.61	10.40	2.65	11.26	2.70	11.83	2.72
		32	8.46	2.49	9.03	2.93	9.60	3.08	9.89	3.11	10.75	3.19	11.33	3.25
		35	8.24	2.78	8.81	3.15	9.39	3.27	9.65	3.21	10.53	3.36	11.11	3.43
		40	7.88	3.05	8.45	3.28	9.03	3.33	9.31	3.34	10.17	3.39	10.75	3.46
		46	7.44	2.68	8.02	2.71	8.59	2.65	8.88	2.62	9.74	2.62	10.31	2.69
	9 + 12 + 18	22	9.83	1.91	10.45	2.58	11.06	2.79	11.37	2.83	12.29	2.85	12.91	2.85
		25	9.60	2.02	10.22	2.65	10.83	2.86	11.14	2.90	12.06	2.95	12.68	2.98
		32	9.06	2.72	9.68	3.21	10.29	3.37	10.60	3.40	11.52	3.48	12.14	3.55
		35	8.83	3.03	9.44	3.44	10.06	3.57	10.34	3.51	11.29	3.68	11.90	3.75
		40	8.44	3.33	9.06	3.59	9.67	3.64	9.98	3.65	10.90	3.71	11.52	3.79
		46	7.98	2.93	8.59	2.97	9.21	2.90	9.51	2.87	10.44	2.87	11.05	2.94
	9 + 9 + 24	22	10.50	2.08	11.16	2.80	11.81	3.04	12.14	3.08	13.13	3.10	13.78	3.10
		25	10.25	2.20	10.91	2.89	11.57	3.11	11.89	3.16	12.88	3.21	13.53	3.24
		32	9.67	2.96	10.33	3.49	10.99	3.66	11.31	3.71	12.30	3.79	12.96	3.86
		35	9.43	3.30	10.08	3.75	10.74	3.89	11.04	3.82	12.05	4.00	12.71	4.08
		40	9.01	3.63	9.67	3.91	10.33	3.96	10.65	3.97	11.64	4.04	12.30	4.12
		46	8.76	3.55	9.42	3.72	10.08	3.71	10.41	3.70	11.39	3.74	12.05	3.82
	12 + 12 + 18	22	10.50	2.08	11.16	2.80	11.81	3.04	12.14	3.08	13.13	3.10	13.80	3.10
		25	10.25	2.20	10.91	2.89	11.57	3.11	11.89	3.16	12.88	3.21	13.50	3.24
		32	9.67	2.96	10.33	3.49	10.99	3.66	11.31	3.71	12.30	3.79	12.96	3.86
		35	9.43	3.30	10.08	3.75	10.74	3.89	11.04	3.82	12.05	4.00	12.71	4.08
		40	9.01	3.63	9.67	3.91	10.33	3.96	10.65	3.97	11.64	4.04	12.30	4.12
		46	8.76	3.55	9.42	3.72	10.08	3.71	10.41	3.70	11.39	3.74	12.05	3.82
	9 + 12 + 24	22	11.17	2.24	11.86	3.03	12.56	3.28	12.91	3.33	14.00	3.35	14.70	3.35
		25	10.90	2.38	11.60	3.12	12.30	3.36	12.65	3.41	13.70	3.47	14.40	3.50
		32	10.29	3.20	10.98	3.77	11.68	3.96	12.03	4.01	13.08	4.10	13.80	4.18
		35	10.02	3.57	10.72	4.05	11.42	4.20	11.74	4.13	12.82	4.33	13.50	4.42
		40	9.58	3.92	10.28	4.22	10.98	4.28	11.33	4.30	12.38	4.36	13.08	4.46
		46	9.32	3.84	10.02	4.02	10.72	4.01	11.07	4.01	12.11	4.05	12.81	4.14
	9 + 18 + 18	22	11.17	2.24	11.86	3.03	12.56	3.28	12.91	3.33	14.00	3.35	14.70	3.35
		25	10.90	2.38	11.60	3.12	12.30	3.36	12.65	3.41	13.70	3.47	14.40	3.50
		32	10.29	3.20	10.98	3.77	11.68	3.96	12.03	4.01	13.08	4.10	13.80	4.18
		35	10.02	3.57	10.72	4.05	11.42	4.20	11.74	4.13	12.82	4.33	13.50	4.42
		40	9.58	3.92	10.28	4.22	10.98	4.28	11.33	4.30	12.38	4.36	13.08	4.46
		46	9.32	3.84	10.02	4.02	10.72	4.01	11.07	4.01	12.11	4.05	12.81	4.14
	12 + 12 + 24	22	13.38	2.80	14.22	3.78	15.06	4.09	15.47	4.15	16.70	4.18	17.60	4.18
		25	13.07	2.97	13.90	3.89	14.74	4.19	15.16	4.26	16.40	4.33	17.20	4.37
		32	12.33	3.99	13.17	4.71	14.00	4.94	14.42	5.00	15.68	5.11	16.50	5.21
		35	12.01	4.45	12.85	5.05	13.69	5.24	14.07	5.15	15.36	5.40	16.20	5.51
		40	11.49	4.89	12.32	5.27	13.16	5.34	13.58	5.36	14.83	5.44	15.67	5.56
		46	11.17	4.79	12.01	5.01	12.84	5.01	13.26	4.99	14.52	5.04	15.35	5.16
	12 + 18 + 18	22	13.38	2.80	14.22	3.78	15.06	4.09	15.47	4.15	16.70	4.18	17.60	4.18
		25	13.07	2.97	13.90	3.89	14.74	4.19	15.16	4.26	16.40	4.33	17.20	4.37
		32	12.33	3.99	13.17	4.71	14.00	4.94	14.42	5.00	15.68	5.11	16.50	5.21
		35	12.01	4.45	12.85	5.05	13.69	5.24	14.07	5.15	15.36	5.40	16.20	5.51
		40	11.49	4.89	12.32	5.27	13.16	5.34	13.58	5.36	14.83	5.44	15.67	5.56
		46	11.17	4.79	12.01	5.01	12.84	5.01	13.26	4.99	14.52	5.04	15.35	5.16
9 + 18 + 24	22	13.38	2.80	14.22	3.78	15.06	4.09	15.47	4.15	16.70	4.18	17.60	4.18	
	25	13.07	2.97	13.90	3.89	14.74	4.19	15.16	4.26	16.40	4.33	17.20	4.37	
	32	12.33	3.99	13.17	4.71	14.00	4.94	14.42	5.00	15.68	5.11	16.50	5.21	
	35	12.01	4.45	12.85	5.05	13.69	5.24	14.07	5.15	15.36	5.40	16.20	5.51	
	40	11.49	4.89	12.32	5.27	13.16	5.34	13.58	5.36	14.83	5.44	15.67	5.56	
	46	11.17	4.79	12.01	5.01	12.84	5.01	13.26	4.99	14.52	5.04	15.35	5.16	

# 1. Multi piping type MULTI F

Operation	Combination Capacity Index	Outdoor Air Temperature (°CDB)	Indoor Air Temperature (°CWB)												
			14		16		18		19		22		24		
			TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	
3 Units	12 + 18 + 24	22	13.38	2.80	14.22	3.78	15.06	4.09	15.47	4.15	16.70	4.18	17.60	4.18	
		25	13.07	2.97	13.90	3.89	14.74	4.19	15.16	4.26	16.40	4.33	17.20	4.37	
		32	12.33	3.99	13.17	4.71	14.00	4.94	14.42	5.00	15.68	5.11	16.50	5.21	
		35	12.01	4.45	12.85	5.05	13.69	5.24	14.07	5.15	15.36	5.40	16.20	5.51	
		40	11.49	4.89	12.32	5.27	13.16	5.34	13.58	5.36	14.83	5.44	15.67	5.56	
		43	11.17	4.79	12.01	5.01	12.84	5.01	13.26	4.99	14.52	5.04	15.35	5.16	
	18 + 18 + 18	22	13.38	2.80	14.22	3.78	15.06	4.09	15.47	4.15	16.70	4.18	17.60	4.18	
		25	13.07	2.97	13.90	3.89	14.74	4.19	15.16	4.26	16.40	4.33	17.20	4.37	
		32	12.33	3.99	13.17	4.71	14.00	4.94	14.42	5.00	15.68	5.11	16.50	5.21	
		35	12.01	4.45	12.85	5.05	13.69	5.24	14.07	5.15	15.36	5.40	16.20	5.51	
		40	11.49	4.89	12.32	5.27	13.16	5.34	13.58	5.36	14.83	5.44	15.67	5.56	
		43	11.17	4.79	12.01	5.01	12.84	5.01	13.26	4.99	14.52	5.04	15.35	5.16	
	9 + 24 + 24	22	13.38	2.80	14.22	3.78	15.06	4.09	15.47	4.15	16.70	4.18	17.60	4.18	
		25	13.07	2.97	13.90	3.89	14.74	4.19	15.16	4.26	16.40	4.33	17.20	4.37	
		32	12.33	3.99	13.17	4.71	14.00	4.94	14.42	5.00	15.68	5.11	16.50	5.21	
		35	12.01	4.45	12.85	5.05	13.69	5.24	14.07	5.15	15.36	5.40	16.20	5.51	
		40	11.49	4.89	12.32	5.27	13.16	5.34	13.58	5.36	14.83	5.44	15.67	5.56	
		43	11.17	4.79	12.01	5.01	12.84	5.01	13.26	4.99	14.52	5.04	15.35	5.16	
	12 + 24 + 24	22	13.38	2.80	14.22	3.78	15.06	4.09	15.47	4.15	16.70	4.18	17.60	4.18	
		25	13.07	2.97	13.90	3.89	14.74	4.19	15.16	4.26	16.40	4.33	17.20	4.37	
		32	12.33	3.99	13.17	4.71	14.00	4.94	14.42	5.00	15.68	5.11	16.50	5.21	
		35	12.01	4.45	12.85	5.05	13.69	5.24	14.07	5.15	15.36	5.40	16.20	5.51	
		40	11.49	4.89	12.32	5.27	13.16	5.34	13.58	5.36	14.83	5.44	15.67	5.56	
		43	11.17	4.79	12.01	5.01	12.84	5.01	13.26	4.99	14.52	5.04	15.35	5.16	
	18 + 18 + 24	22	13.38	2.80	14.22	3.78	15.06	4.09	15.47	4.15	16.70	4.18	17.60	4.18	
		25	13.07	2.97	13.90	3.89	14.74	4.19	15.16	4.26	16.40	4.33	17.20	4.37	
		32	12.33	3.99	13.17	4.71	14.00	4.94	14.42	5.00	15.68	5.11	16.50	5.21	
		35	12.01	4.45	12.85	5.05	13.69	5.24	14.07	5.15	15.36	5.40	16.20	5.51	
		40	11.49	4.89	12.32	5.27	13.16	5.34	13.58	5.36	14.83	5.44	15.67	5.56	
		43	11.17	4.79	12.01	5.01	12.84	5.01	13.26	4.99	14.52	5.04	15.35	5.16	
	18 + 24 + 24	22	13.38	2.80	14.22	3.78	15.06	4.09	15.47	4.15	16.70	4.18	17.60	4.18	
		25	13.07	2.97	13.90	3.89	14.74	4.19	15.16	4.26	16.40	4.33	17.20	4.37	
		32	12.33	3.99	13.17	4.71	14.00	4.94	14.42	5.00	15.68	5.11	16.50	5.21	
		35	12.01	4.45	12.85	5.05	13.69	5.24	14.07	5.15	15.36	5.40	16.20	5.51	
		40	11.49	4.89	12.32	5.27	13.16	5.34	13.58	5.36	14.83	5.44	15.67	5.56	
		43	11.17	4.79	12.01	5.01	12.84	5.01	13.26	4.99	14.52	5.04	15.35	5.16	
	24 + 24 + 24	22	13.38	2.80	14.22	3.78	15.06	4.09	15.47	4.15	16.70	4.18	17.60	4.18	
		25	13.07	2.97	13.90	3.89	14.74	4.19	15.16	4.26	16.40	4.33	17.20	4.37	
		32	12.33	3.99	13.17	4.71	14.00	4.94	14.42	5.00	15.68	5.11	16.50	5.21	
		35	12.01	4.45	12.85	5.05	13.69	5.24	14.07	5.15	15.36	5.40	16.20	5.51	
		40	11.49	4.89	12.32	5.27	13.16	5.34	13.58	5.36	14.83	5.44	15.67	5.56	
		43	11.17	4.79	12.01	5.01	12.84	5.01	13.26	4.99	14.52	5.04	15.35	5.16	
	4 Units	9 + 9 + 9 + 9	22	10.03	1.80	10.66	2.44	11.29	2.64	11.60	2.67	12.50	2.69	13.20	2.70
			25	9.80	1.92	10.42	2.51	11.05	2.70	11.37	2.74	12.30	2.79	12.90	2.81
			32	9.24	2.57	9.87	3.03	10.50	3.18	10.81	3.22	11.75	3.30	12.40	3.36
			35	9.01	2.87	9.63	3.26	10.26	3.38	10.55	3.32	11.52	3.48	12.10	3.55
			40	8.61	3.15	9.24	3.40	9.87	3.44	10.18	3.45	11.12	3.51	11.75	3.58
			43	8.38	3.09	9.00	3.23	9.63	3.23	9.94	3.22	10.89	3.25	11.51	3.32
9 + 9 + 9 + 12		22	10.87	2.02	11.55	2.72	12.23	2.95	12.57	2.99	13.60	3.01	14.30	3.01	
		25	10.61	2.14	11.29	2.80	11.97	3.02	12.31	3.07	13.30	3.12	14.00	3.15	
		32	10.02	2.87	10.69	3.39	11.37	3.56	11.71	3.60	12.73	3.68	13.40	3.75	
		35	9.76	3.21	10.44	3.64	11.12	3.77	11.43	3.71	12.48	3.89	13.20	3.97	
		40	9.33	3.52	10.01	3.79	10.69	3.85	11.03	3.86	12.05	3.92	12.73	4.00	
		43	9.07	3.45	9.75	3.61	10.43	3.61	10.77	3.60	11.79	3.63	12.47	3.71	
		22	8.82	3.10	9.50	3.13	10.18	3.06	10.52	3.03	11.54	3.03	12.22	3.11	

# MULTI F

## 1. Multi piping type MULTI F

Operation	Combination Capacity Index	Outdoor Air Temperature (°CDB)	Indoor Air Temperature (°CWB)											
			14		16		18		19		22		24	
			TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW
4 Units	9 + 9 + 12 + 12	22	11.71	2.23	12.44	3.02	13.17	3.27	13.54	3.31	14.60	3.34	15.40	3.34
		25	11.43	2.37	12.16	3.10	12.90	3.35	13.26	3.40	14.40	3.45	15.10	3.48
		32	10.79	3.18	11.52	3.76	12.25	3.94	12.62	3.99	13.71	4.08	14.40	4.16
		35	10.51	3.55	11.24	4.03	11.97	4.18	12.31	4.11	13.44	4.31	14.20	4.40
		40	10.05	3.90	10.78	4.20	11.51	4.26	11.88	4.27	12.98	4.34	13.71	4.43
		43	9.77	3.82	10.50	4.00	11.24	3.99	11.60	3.99	12.70	4.03	13.43	4.12
	9 + 12 + 12 + 12	22	12.54	2.44	13.33	3.30	14.11	3.58	14.51	3.62	15.70	3.65	16.50	3.65
		25	12.25	2.60	13.03	3.40	13.82	3.66	14.21	3.72	15.40	3.78	16.20	3.82
		32	11.56	3.49	12.34	4.11	13.13	4.32	13.52	4.36	14.70	4.47	15.50	4.55
		35	11.26	3.89	12.05	4.42	12.83	4.58	13.19	4.50	14.40	4.72	15.20	4.81
		40	10.77	4.27	11.55	4.60	12.34	4.67	12.73	4.68	13.91	4.75	14.69	4.86
		43	10.47	4.19	11.26	4.38	12.04	4.37	12.43	4.36	13.61	4.41	14.39	4.51
	9 + 9 + 9 + 18	22	12.54	2.44	13.33	3.30	14.11	3.58	14.51	3.62	15.68	3.65	16.50	3.65
		25	12.25	2.60	13.03	3.40	13.82	3.66	14.21	3.72	15.39	3.78	16.20	3.82
		32	11.56	3.49	12.34	4.11	13.13	4.32	13.52	4.36	14.70	4.47	15.48	4.55
		35	11.26	3.89	12.05	4.42	12.83	4.58	13.19	4.50	14.40	4.72	15.18	4.81
		40	10.77	4.27	11.55	4.60	12.34	4.67	12.73	4.68	13.91	4.75	14.69	4.86
		43	10.47	4.19	11.26	4.38	12.04	4.37	12.43	4.36	13.61	4.41	14.39	4.51
	9 + 9 + 12 + 18	22	13.38	2.66	14.22	3.60	15.06	3.89	15.47	3.95	16.70	3.98	17.60	3.98
		25	13.07	2.83	13.90	3.70	14.74	3.99	15.16	4.05	16.40	4.12	17.20	4.15
		32	12.33	3.80	13.17	4.48	14.00	4.70	14.42	4.75	15.68	4.86	16.50	4.96
		35	12.01	4.24	12.85	4.81	13.69	4.98	14.07	4.90	15.36	5.14	16.20	5.24
		40	11.49	4.65	12.32	5.01	13.16	5.08	13.58	5.10	14.83	5.18	15.67	5.29
		43	11.17	4.56	12.01	4.77	12.84	4.76	13.26	4.75	14.52	4.80	15.35	4.91
	12 + 12 + 12 + 12	22	13.38	2.66	14.22	3.60	15.06	3.89	15.47	3.95	16.70	3.98	17.60	3.98
		25	13.07	2.83	13.90	3.70	14.74	3.99	15.16	4.05	16.40	4.12	17.20	4.15
		32	12.33	3.80	13.17	4.48	14.00	4.70	14.42	4.75	15.68	4.86	16.50	4.96
		35	12.01	4.24	12.85	4.81	13.69	4.98	14.07	4.90	15.36	5.14	16.20	5.24
		40	11.49	4.65	12.32	5.01	13.16	5.08	13.58	5.10	14.83	5.18	15.67	5.29
		43	11.17	4.56	12.01	4.77	12.84	4.76	13.26	4.75	14.52	4.80	15.35	4.91
	9 + 9 + 9 + 24	22	13.38	2.66	14.22	3.60	15.06	3.89	15.47	3.95	16.70	3.98	17.60	3.98
		25	13.07	2.83	13.90	3.70	14.74	3.99	15.16	4.05	16.40	4.12	17.20	4.15
		32	12.33	3.80	13.17	4.48	14.00	4.70	14.42	4.75	15.68	4.86	16.50	4.96
		35	12.01	4.24	12.85	4.81	13.69	4.98	14.07	4.90	15.36	5.14	16.20	5.24
		40	11.49	4.65	12.32	5.01	13.16	5.08	13.58	5.10	14.83	5.18	15.67	5.29
		43	11.17	4.56	12.01	4.77	12.84	4.76	13.26	4.75	14.52	4.80	15.35	4.91
	9 + 12 + 12 + 18	22	13.38	2.66	14.22	3.60	15.06	3.89	15.47	3.95	16.70	3.98	17.60	3.98
		25	13.07	2.83	13.90	3.70	14.74	3.99	15.16	4.05	16.40	4.12	17.20	4.15
		32	12.33	3.80	13.17	4.48	14.00	4.70	14.42	4.75	15.68	4.86	16.50	4.96
		35	12.01	4.24	12.85	4.81	13.69	4.98	14.07	4.90	15.36	5.14	16.20	5.24
		40	11.49	4.65	12.32	5.01	13.16	5.08	13.58	5.10	14.83	5.18	15.67	5.29
		43	11.17	4.56	12.01	4.77	12.84	4.76	13.26	4.75	14.52	4.80	15.35	4.91
	9 + 9 + 12 + 24	22	13.38	2.66	14.22	3.60	15.06	3.89	15.47	3.95	16.70	3.98	17.60	3.98
		25	13.07	2.83	13.90	3.70	14.74	3.99	15.16	4.05	16.40	4.12	17.20	4.15
		32	12.33	3.80	13.17	4.48	14.00	4.70	14.42	4.75	15.68	4.86	16.50	4.96
		35	12.01	4.24	12.85	4.81	13.69	4.98	14.07	4.90	15.36	5.14	16.20	5.24
		40	11.49	4.65	12.32	5.01	13.16	5.08	13.58	5.10	14.83	5.18	15.67	5.29
		43	11.17	4.56	12.01	4.77	12.84	4.76	13.26	4.75	14.52	4.80	15.35	4.91
9 + 9 + 18 + 18	22	13.38	2.66	14.22	3.60	15.06	3.89	15.47	3.95	16.70	3.98	17.60	3.98	
	25	13.07	2.83	13.90	3.70	14.74	3.99	15.16	4.05	16.40	4.12	17.20	4.15	
	32	12.33	3.80	13.17	4.48	14.00	4.70	14.42	4.75	15.68	4.86	16.50	4.96	
	35	12.01	4.24	12.85	4.81	13.69	4.98	14.07	4.90	15.36	5.14	16.20	5.24	
	40	11.49	4.65	12.32	5.01	13.16	5.08	13.58	5.10	14.83	5.18	15.67	5.29	
	43	11.17	4.56	12.01	4.77	12.84	4.76	13.26	4.75	14.52	4.80	15.35	4.91	
46	10.85	4.09	11.69	4.14	12.53	4.04	12.95	4.00	14.20	4.01	15.04	4.10		

# 1. Multi piping type MULTI F

Operation	Combination Capacity Index	Outdoor Air Temperature (°CDB)	Indoor Air Temperature (°CWB)											
			14		16		18		19		22		24	
			TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW
4 Units	12 + 12 + 12 + 18	22	13.38	2.66	14.22	3.60	15.06	3.89	15.47	3.95	16.70	3.98	17.60	3.98
		25	13.07	2.83	13.90	3.70	14.74	3.99	15.16	4.05	16.40	4.12	17.20	4.15
		32	12.33	3.80	13.17	4.48	14.00	4.70	14.42	4.75	15.68	4.86	16.50	4.96
		35	12.01	4.24	12.85	4.81	13.69	4.98	14.07	4.90	15.36	5.14	16.20	5.24
		40	11.49	4.65	12.32	5.01	13.16	5.08	13.58	5.10	14.83	5.18	15.67	5.29
		43	11.17	4.56	12.01	4.77	12.84	4.76	13.26	4.75	14.52	4.80	15.35	4.91
	9 + 12 + 12 + 24	22	13.38	2.66	14.22	3.60	15.06	3.89	15.47	3.95	16.70	3.98	17.60	3.98
		25	13.07	2.83	13.90	3.70	14.74	3.99	15.16	4.05	16.40	4.12	17.20	4.15
		32	12.33	3.80	13.17	4.48	14.00	4.70	14.42	4.75	15.68	4.86	16.50	4.96
		35	12.01	4.24	12.85	4.81	13.69	4.98	14.07	4.90	15.36	5.14	16.20	5.24
		40	11.49	4.65	12.32	5.01	13.16	5.08	13.58	5.10	14.83	5.18	15.67	5.29
		43	11.17	4.56	12.01	4.77	12.84	4.76	13.26	4.75	14.52	4.80	15.35	4.91
	9 + 12 + 18 + 18	22	13.38	2.66	14.22	3.60	15.06	3.89	15.47	3.95	16.70	3.98	17.60	3.98
		25	13.07	2.83	13.90	3.70	14.74	3.99	15.16	4.05	16.40	4.12	17.20	4.15
		32	12.33	3.80	13.17	4.48	14.00	4.70	14.42	4.75	15.68	4.86	16.50	4.96
		35	12.01	4.24	12.85	4.81	13.69	4.98	14.07	4.90	15.36	5.14	16.20	5.24
		40	11.49	4.65	12.32	5.01	13.16	5.08	13.58	5.10	14.83	5.18	15.67	5.29
		43	11.17	4.56	12.01	4.77	12.84	4.76	13.26	4.75	14.52	4.80	15.35	4.91
	9 + 9 + 18 + 24	22	13.38	2.66	14.22	3.60	15.06	3.89	15.47	3.95	16.70	3.98	17.60	3.98
		25	13.07	2.83	13.90	3.70	14.74	3.99	15.16	4.05	16.40	4.12	17.20	4.15
		32	12.33	3.80	13.17	4.48	14.00	4.70	14.42	4.75	15.68	4.86	16.50	4.96
		35	12.01	4.24	12.85	4.81	13.69	4.98	14.07	4.90	15.36	5.14	16.20	5.24
		40	11.49	4.65	12.32	5.01	13.16	5.08	13.58	5.10	14.83	5.18	15.67	5.29
		43	11.17	4.56	12.01	4.77	12.84	4.76	13.26	4.75	14.52	4.80	15.35	4.91
	12 + 12 + 12 + 24	22	13.38	2.66	14.22	3.60	15.06	3.89	15.47	3.95	16.70	3.98	17.60	3.98
		25	13.07	2.83	13.90	3.70	14.74	3.99	15.16	4.05	16.40	4.12	17.20	4.15
		32	12.33	3.80	13.17	4.48	14.00	4.70	14.42	4.75	15.68	4.86	16.50	4.96
		35	12.01	4.24	12.85	4.81	13.69	4.98	14.07	4.90	15.36	5.14	16.20	5.24
		40	11.49	4.65	12.32	5.01	13.16	5.08	13.58	5.10	14.83	5.18	15.67	5.29
		43	11.17	4.56	12.01	4.77	12.84	4.76	13.26	4.75	14.52	4.80	15.35	4.91
	12 + 12 + 18 + 18	22	13.38	2.66	14.22	3.60	15.06	3.89	15.47	3.95	16.70	3.98	17.60	3.98
		25	13.07	2.83	13.90	3.70	14.74	3.99	15.16	4.05	16.40	4.12	17.20	4.15
		32	12.33	3.80	13.17	4.48	14.00	4.70	14.42	4.75	15.68	4.86	16.50	4.96
		35	12.01	4.24	12.85	4.81	13.69	4.98	14.07	4.90	15.36	5.14	16.20	5.24
		40	11.49	4.65	12.32	5.01	13.16	5.08	13.58	5.10	14.83	5.18	15.67	5.29
		43	11.17	4.56	12.01	4.77	12.84	4.76	13.26	4.75	14.52	4.80	15.35	4.91
	9 + 12 + 18 + 24	22	13.38	2.66	14.22	3.60	15.06	3.89	15.47	3.95	16.70	3.98	17.60	3.98
		25	13.07	2.83	13.90	3.70	14.74	3.99	15.16	4.05	16.40	4.12	17.20	4.15
		32	12.33	3.80	13.17	4.48	14.00	4.70	14.42	4.75	15.68	4.86	16.50	4.96
		35	12.01	4.24	12.85	4.81	13.69	4.98	14.07	4.90	15.36	5.14	16.20	5.24
		40	11.49	4.65	12.32	5.01	13.16	5.08	13.58	5.10	14.83	5.18	15.67	5.29
		43	11.17	4.56	12.01	4.77	12.84	4.76	13.26	4.75	14.52	4.80	15.35	4.91
	9 + 18 + 18 + 18	22	13.38	2.66	14.22	3.60	15.06	3.89	15.47	3.95	16.70	3.98	17.60	3.98
		25	13.07	2.83	13.90	3.70	14.74	3.99	15.16	4.05	16.40	4.12	17.20	4.15
		32	12.33	3.80	13.17	4.48	14.00	4.70	14.42	4.75	15.68	4.86	16.50	4.96
		35	12.01	4.24	12.85	4.81	13.69	4.98	14.07	4.90	15.36	5.14	16.20	5.24
		40	11.49	4.65	12.32	5.01	13.16	5.08	13.58	5.10	14.83	5.18	15.67	5.29
		43	11.17	4.56	12.01	4.77	12.84	4.76	13.26	4.75	14.52	4.80	15.35	4.91
9 + 9 + 24 + 24	22	13.38	2.66	14.22	3.60	15.06	3.89	15.47	3.95	16.70	3.98	17.60	3.98	
	25	13.07	2.83	13.90	3.70	14.74	3.99	15.16	4.05	16.40	4.12	17.20	4.15	
	32	12.33	3.80	13.17	4.48	14.00	4.70	14.42	4.75	15.68	4.86	16.50	4.96	
	35	12.01	4.24	12.85	4.81	13.69	4.98	14.07	4.90	15.36	5.14	16.20	5.24	
	40	11.49	4.65	12.32	5.01	13.16	5.08	13.58	5.10	14.83	5.18	15.67	5.29	
	43	11.17	4.56	12.01	4.77	12.84	4.76	13.26	4.75	14.52	4.80	15.35	4.91	
46	10.85	4.09	11.69	4.14	12.53	4.04	12.95	4.00	14.20	4.01	15.04	4.10		

# MULTI F

## 1. Multi piping type MULTI F

Operation	Combination Capacity Index	Outdoor Air Temperature (°CDB)	Indoor Air Temperature (°CWB)												
			14		16		18		19		22		24		
			TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	
4 Units	12 + 12 + 18 + 24	22	13.38	2.66	14.22	3.60	15.06	3.89	15.47	3.95	16.70	3.98	17.60	3.98	
		25	13.07	2.83	13.90	3.70	14.74	3.99	15.16	4.05	16.40	4.12	17.20	4.15	
		32	12.33	3.80	13.17	4.48	14.00	4.70	14.42	4.75	15.68	4.86	16.50	4.96	
		35	12.01	4.24	12.85	4.81	13.69	4.98	14.07	4.90	15.36	5.14	16.20	5.24	
		40	11.49	4.65	12.32	5.01	13.16	5.08	13.58	5.10	14.83	5.18	15.67	5.29	
		43	11.17	4.56	12.01	4.77	12.84	4.76	13.26	4.75	14.52	4.80	15.35	4.91	
	12 + 18 + 18 + 18	22	13.38	2.66	14.22	3.60	15.06	3.89	15.47	3.95	16.70	3.98	17.60	3.98	
		25	13.07	2.83	13.90	3.70	14.74	3.99	15.16	4.05	16.40	4.12	17.20	4.15	
		32	12.33	3.80	13.17	4.48	14.00	4.70	14.42	4.75	15.68	4.86	16.50	4.96	
		35	12.01	4.24	12.85	4.81	13.69	4.98	14.07	4.90	15.36	5.14	16.20	5.24	
		40	11.49	4.65	12.32	5.01	13.16	5.08	13.58	5.10	14.83	5.18	15.67	5.29	
		43	11.17	4.56	12.01	4.77	12.84	4.76	13.26	4.75	14.52	4.80	15.35	4.91	
	9 + 12 + 24 + 24	22	13.38	2.66	14.22	3.60	15.06	3.89	15.47	3.95	16.73	3.98	17.57	3.98	
		25	13.07	2.83	13.90	3.70	14.74	3.99	15.16	4.05	16.41	4.12	17.25	4.15	
		32	12.33	3.80	13.17	4.48	14.00	4.70	14.42	4.75	15.68	4.86	16.51	4.96	
		35	12.01	4.24	12.85	4.81	13.69	4.98	14.07	4.90	15.36	5.14	16.20	5.24	
		40	11.49	4.65	12.32	5.01	13.16	5.08	13.58	5.10	14.83	5.18	15.67	5.29	
		43	11.17	4.56	12.01	4.77	12.84	4.76	13.26	4.75	14.52	4.80	15.35	4.91	
	9 + 18 + 18 + 24	22	13.38	2.66	14.22	3.60	15.06	3.89	15.47	3.95	16.73	3.98	17.57	3.98	
		25	13.07	2.83	13.90	3.70	14.74	3.99	15.16	4.05	16.41	4.12	17.25	4.15	
		32	12.33	3.80	13.17	4.48	14.00	4.70	14.42	4.75	15.68	4.86	16.51	4.96	
		35	12.01	4.24	12.85	4.81	13.69	4.98	14.07	4.90	15.36	5.14	16.20	5.24	
		40	11.49	4.65	12.32	5.01	13.16	5.08	13.58	5.10	14.83	5.18	15.67	5.29	
		43	11.17	4.56	12.01	4.77	12.84	4.76	13.26	4.75	14.52	4.80	15.35	4.91	
	12 + 12 + 24 + 24	22	13.38	2.66	14.22	3.60	15.06	3.89	15.47	3.95	16.73	3.98	17.57	3.98	
		25	13.07	2.83	13.90	3.70	14.74	3.99	15.16	4.05	16.41	4.12	17.25	4.15	
		32	12.33	3.80	13.17	4.48	14.00	4.70	14.42	4.75	15.68	4.86	16.51	4.96	
		35	12.01	4.24	12.85	4.81	13.69	4.98	14.07	4.90	15.36	5.14	16.20	5.24	
		40	11.49	4.65	12.32	5.01	13.16	5.08	13.58	5.10	14.83	5.18	15.67	5.29	
		43	11.17	4.56	12.01	4.77	12.84	4.76	13.26	4.75	14.52	4.80	15.35	4.91	
	12 + 18 + 18 + 24	22	13.38	2.66	14.22	3.60	15.06	3.89	15.47	3.95	16.73	3.98	17.57	3.98	
		25	13.07	2.83	13.90	3.70	14.74	3.99	15.16	4.05	16.41	4.12	17.25	4.15	
		32	12.33	3.80	13.17	4.48	14.00	4.70	14.42	4.75	15.68	4.86	16.51	4.96	
		35	12.01	4.24	12.85	4.81	13.69	4.98	14.07	4.90	15.36	5.14	16.20	5.24	
		40	11.49	4.65	12.32	5.01	13.16	5.08	13.58	5.10	14.83	5.18	15.67	5.29	
		43	11.17	4.56	12.01	4.77	12.84	4.76	13.26	4.75	14.52	4.80	15.35	4.91	
	18 + 18 + 18 + 18	22	13.38	2.66	14.22	3.60	15.06	3.89	15.47	3.95	16.73	3.98	17.57	3.98	
		25	13.07	2.83	13.90	3.70	14.74	3.99	15.16	4.05	16.41	4.12	17.25	4.15	
		32	12.33	3.80	13.17	4.48	14.00	4.70	14.42	4.75	15.68	4.86	16.51	4.96	
		35	12.01	4.24	12.85	4.81	13.69	4.98	14.07	4.90	15.36	5.14	16.20	5.24	
		40	11.49	4.65	12.32	5.01	13.16	5.08	13.58	5.10	14.83	5.18	15.67	5.29	
		43	11.17	4.56	12.01	4.77	12.84	4.76	13.26	4.75	14.52	4.80	15.35	4.91	
	5 Units	9 + 9 + 9 + 9 + 9	22	12.54	2.18	13.33	2.94	14.11	3.19	14.51	3.23	15.68	3.25	16.47	3.26
			25	12.25	2.31	13.03	3.03	13.82	3.27	14.21	3.31	15.39	3.37	16.17	3.40
			32	11.56	3.11	12.34	3.66	13.13	3.85	13.52	3.89	14.70	3.98	15.48	4.06
			35	11.26	3.47	12.05	3.94	12.83	4.08	13.19	4.01	14.40	4.20	15.18	4.29
			40	10.77	3.81	11.55	4.10	12.34	4.16	12.73	4.17	13.91	4.24	14.69	4.33
			43	10.47	3.73	11.26	3.90	12.04	3.90	12.43	3.89	13.61	3.93	14.39	4.01
9 + 9 + 9 + 9 + 12		22	13.38	2.39	14.22	3.23	15.06	3.50	15.47	3.54	16.73	3.57	17.57	3.57	
		25	13.07	2.54	13.90	3.32	14.74	3.58	15.16	3.64	16.41	3.70	17.25	3.73	
		32	12.33	3.41	13.17	4.02	14.00	4.22	14.42	4.27	15.68	4.37	16.51	4.45	
		35	12.01	3.80	12.85	4.32	13.69	4.48	14.07	4.40	15.36	4.61	16.20	4.71	
		40	11.49	4.18	12.32	4.50	13.16	4.56	13.58	4.58	14.83	4.65	15.67	4.75	
		43	11.17	4.09	12.01	4.28	12.84	4.28	13.26	4.27	14.52	4.31	15.35	4.41	
		22	13.38	2.66	14.22	3.60	15.06	3.89	15.47	3.95	16.73	3.98	17.57	3.98	
		25	13.07	2.83	13.90	3.70	14.74	3.99	15.16	4.05	16.41	4.12	17.25	4.15	
		32	12.33	3.80	13.17	4.48	14.00	4.70	14.42	4.75	15.68	4.86	16.51	4.96	
		35	12.01	4.24	12.85	4.81	13.69	4.98	14.07	4.90	15.36	5.14	16.20	5.24	
		40	11.49	4.65	12.32	5.01	13.16	5.08	13.58	5.10	14.83	5.18	15.67	5.29	
		46	10.85	3.67	11.69	3.72	12.53	3.63	12.95	3.60	14.20	3.60	15.04	3.68	

# 1. Multi piping type MULTI F

Operation	Combination Capacity Index	Outdoor Air Temperature (°CDB)	Indoor Air Temperature (°CWB)											
			14		16		18		19		22		24	
			TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW
5 Units	9 + 9 + 9 + 12 + 12	22	13.38	2.39	14.22	3.23	15.06	3.50	15.47	3.54	16.73	3.57	17.57	3.57
		25	13.07	2.54	13.90	3.32	14.74	3.58	15.16	3.64	16.41	3.70	17.25	3.73
		32	12.33	3.41	13.17	4.02	14.00	4.22	14.42	4.27	15.68	4.37	16.51	4.45
		35	12.01	3.80	12.85	4.32	13.69	4.48	14.07	4.40	15.36	4.61	16.20	4.71
		40	11.49	4.18	12.32	4.50	13.16	4.56	13.58	4.58	14.83	4.65	15.67	4.75
		43	11.17	4.09	12.01	4.28	12.84	4.28	13.26	4.27	14.52	4.31	15.35	4.41
	9 + 9 + 9 + 9 + 18	22	13.38	2.39	14.22	3.23	15.06	3.50	15.47	3.54	16.73	3.57	17.57	3.57
		25	13.07	2.54	13.90	3.32	14.74	3.58	15.16	3.64	16.41	3.70	17.25	3.73
		32	12.33	3.41	13.17	4.02	14.00	4.22	14.42	4.27	15.68	4.37	16.51	4.45
		35	12.01	3.80	12.85	4.32	13.69	4.48	14.07	4.40	15.36	4.61	16.20	4.71
		40	11.49	4.18	12.32	4.50	13.16	4.56	13.58	4.58	14.83	4.65	15.67	4.75
		43	11.17	4.09	12.01	4.28	12.84	4.28	13.26	4.27	14.52	4.31	15.35	4.41
	9 + 9 + 12 + 12 + 12	22	13.38	2.39	14.22	3.23	15.06	3.50	15.47	3.54	16.73	3.57	17.57	3.57
		25	13.07	2.54	13.90	3.32	14.74	3.58	15.16	3.64	16.41	3.70	17.25	3.73
		32	12.33	3.41	13.17	4.02	14.00	4.22	14.42	4.27	15.68	4.37	16.51	4.45
		35	12.01	3.80	12.85	4.32	13.69	4.48	14.07	4.40	15.36	4.61	16.20	4.71
		40	11.49	4.18	12.32	4.50	13.16	4.56	13.58	4.58	14.83	4.65	15.67	4.75
		43	11.17	4.09	12.01	4.28	12.84	4.28	13.26	4.27	14.52	4.31	15.35	4.41
	9 + 9 + 9 + 12 + 18	22	13.38	2.39	14.22	3.23	15.06	3.50	15.47	3.54	16.73	3.57	17.57	3.57
		25	13.07	2.54	13.90	3.32	14.74	3.58	15.16	3.64	16.41	3.70	17.25	3.73
		32	12.33	3.41	13.17	4.02	14.00	4.22	14.42	4.27	15.68	4.37	16.51	4.45
		35	12.01	3.80	12.85	4.32	13.69	4.48	14.07	4.40	15.36	4.61	16.20	4.71
		40	11.49	4.18	12.32	4.50	13.16	4.56	13.58	4.58	14.83	4.65	15.67	4.75
		43	11.17	4.09	12.01	4.28	12.84	4.28	13.26	4.27	14.52	4.31	15.35	4.41
	9 + 12 + 12 + 12 + 12	22	13.38	2.39	14.22	3.23	15.06	3.50	15.47	3.54	16.73	3.57	17.57	3.57
		25	13.07	2.54	13.90	3.32	14.74	3.58	15.16	3.64	16.41	3.70	17.25	3.73
		32	12.33	3.41	13.17	4.02	14.00	4.22	14.42	4.27	15.68	4.37	16.51	4.45
		35	12.01	3.80	12.85	4.32	13.69	4.48	14.07	4.40	15.36	4.61	16.20	4.71
		40	11.49	4.18	12.32	4.50	13.16	4.56	13.58	4.58	14.83	4.65	15.67	4.75
		43	11.17	4.09	12.01	4.28	12.84	4.28	13.26	4.27	14.52	4.31	15.35	4.41
	9 + 9 + 9 + 9 + 24	22	13.38	2.39	14.22	3.23	15.06	3.50	15.47	3.54	16.73	3.57	17.57	3.57
		25	13.07	2.54	13.90	3.32	14.74	3.58	15.16	3.64	16.41	3.70	17.25	3.73
		32	12.33	3.41	13.17	4.02	14.00	4.22	14.42	4.27	15.68	4.37	16.51	4.45
		35	12.01	3.80	12.85	4.32	13.69	4.48	14.07	4.40	15.36	4.61	16.20	4.71
		40	11.49	4.18	12.32	4.50	13.16	4.56	13.58	4.58	14.83	4.65	15.67	4.75
		43	11.17	4.09	12.01	4.28	12.84	4.28	13.26	4.27	14.52	4.31	15.35	4.41
	9 + 9 + 12 + 12 + 18	22	13.38	2.39	14.22	3.23	15.06	3.50	15.47	3.54	16.73	3.57	17.57	3.57
		25	13.07	2.54	13.90	3.32	14.74	3.58	15.16	3.64	16.41	3.70	17.25	3.73
		32	12.33	3.41	13.17	4.02	14.00	4.22	14.42	4.27	15.68	4.37	16.51	4.45
		35	12.01	3.80	12.85	4.32	13.69	4.48	14.07	4.40	15.36	4.61	16.20	4.71
		40	11.49	4.18	12.32	4.50	13.16	4.56	13.58	4.58	14.83	4.65	15.67	4.75
		43	11.17	4.09	12.01	4.28	12.84	4.28	13.26	4.27	14.52	4.31	15.35	4.41
	12 + 12 + 12 + 12 + 12	22	13.38	2.39	14.22	3.23	15.06	3.50	15.47	3.54	16.73	3.57	17.57	3.57
		25	13.07	2.54	13.90	3.32	14.74	3.58	15.16	3.64	16.41	3.70	17.25	3.73
		32	12.33	3.41	13.17	4.02	14.00	4.22	14.42	4.27	15.68	4.37	16.51	4.45
		35	12.01	3.80	12.85	4.32	13.69	4.48	14.07	4.40	15.36	4.61	16.20	4.71
		40	11.49	4.18	12.32	4.50	13.16	4.56	13.58	4.58	14.83	4.65	15.67	4.75
		43	11.17	4.09	12.01	4.28	12.84	4.28	13.26	4.27	14.52	4.31	15.35	4.41
9 + 9 + 9 + 12 + 24	22	13.38	2.39	14.22	3.23	15.06	3.50	15.47	3.54	16.73	3.57	17.57	3.57	
	25	13.07	2.54	13.90	3.32	14.74	3.58	15.16	3.64	16.41	3.70	17.25	3.73	
	32	12.33	3.41	13.17	4.02	14.00	4.22	14.42	4.27	15.68	4.37	16.51	4.45	
	35	12.01	3.80	12.85	4.32	13.69	4.48	14.07	4.40	15.36	4.61	16.20	4.71	
	40	11.49	4.18	12.32	4.50	13.16	4.56	13.58	4.58	14.83	4.65	15.67	4.75	
	43	11.17	4.09	12.01	4.28	12.84	4.28	13.26	4.27	14.52	4.31	15.35	4.41	

# MULTI F

## 1. Multi piping type MULTI F

Operation	Combination Capacity Index	Outdoor Air Temperature (°CDB)	Indoor Air Temperature (°CWB)											
			14		16		18		19		22		24	
			TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW
5 Units	9 + 9 + 9 + 18 + 18	22	13.38	2.39	14.22	3.23	15.06	3.50	15.47	3.54	16.73	3.57	17.57	3.57
		25	13.07	2.54	13.90	3.32	14.74	3.58	15.16	3.64	16.41	3.70	17.25	3.73
		32	12.33	3.41	13.17	4.02	14.00	4.22	14.42	4.27	15.68	4.37	16.51	4.45
		35	12.01	3.80	12.85	4.32	13.69	4.48	14.07	4.40	15.36	4.61	16.20	4.71
		40	11.49	4.18	12.32	4.50	13.16	4.56	13.58	4.58	14.83	4.65	15.67	4.75
		43	11.17	4.09	12.01	4.28	12.84	4.28	13.26	4.27	14.52	4.31	15.35	4.41
	9 + 12 + 12 + 12 + 18	22	13.38	2.39	14.22	3.23	15.06	3.50	15.47	3.54	16.73	3.57	17.57	3.57
		25	13.07	2.54	13.90	3.32	14.74	3.58	15.16	3.64	16.41	3.70	17.25	3.73
		32	12.33	3.41	13.17	4.02	14.00	4.22	14.42	4.27	15.68	4.37	16.51	4.45
		35	12.01	3.80	12.85	4.32	13.69	4.48	14.07	4.40	15.36	4.61	16.20	4.71
		40	11.49	4.18	12.32	4.50	13.16	4.56	13.58	4.58	14.83	4.65	15.67	4.75
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	9 + 9 + 12 + 12 + 24	22	13.38	2.39	14.22	3.23	15.06	3.50	15.47	3.54	16.73	3.57	17.57	3.57
		25	13.07	2.54	13.90	3.32	14.74	3.58	15.16	3.64	16.41	3.70	17.25	3.73
		32	12.33	3.41	13.17	4.02	14.00	4.22	14.42	4.27	15.68	4.37	16.51	4.45
		35	12.01	3.80	12.85	4.32	13.69	4.48	14.07	4.40	15.36	4.61	16.20	4.71
		40	11.49	4.18	12.32	4.50	13.16	4.56	13.58	4.58	14.83	4.65	15.67	4.75
		43	11.17	4.09	12.01	4.28	12.84	4.28	13.26	4.27	14.52	4.31	15.35	4.41
	9 + 9 + 12 + 18 + 18	22	13.38	2.39	14.22	3.23	15.06	3.50	15.47	3.54	16.73	3.57	17.57	3.57
		25	13.07	2.54	13.90	3.32	14.74	3.58	15.16	3.64	16.41	3.70	17.25	3.73
		32	12.33	3.41	13.17	4.02	14.00	4.22	14.42	4.27	15.68	4.37	16.51	4.45
		35	12.01	3.80	12.85	4.32	13.69	4.48	14.07	4.40	15.36	4.61	16.20	4.71
		40	11.49	4.18	12.32	4.50	13.16	4.56	13.58	4.58	14.83	4.65	15.67	4.75
		43	11.17	4.09	12.01	4.28	12.84	4.28	13.26	4.27	14.52	4.31	15.35	4.41
	12 + 12 + 12 + 12 + 18	22	13.38	2.39	14.22	3.23	15.06	3.50	15.47	3.54	16.73	3.57	17.57	3.57
		25	13.07	2.54	13.90	3.32	14.74	3.58	15.16	3.64	16.41	3.70	17.25	3.73
		32	12.33	3.41	13.17	4.02	14.00	4.22	14.42	4.27	15.68	4.37	16.51	4.45
		35	12.01	3.80	12.85	4.32	13.69	4.48	14.07	4.40	15.36	4.61	16.20	4.71
		40	11.49	4.18	12.32	4.50	13.16	4.56	13.58	4.58	14.83	4.65	15.67	4.75
		43	11.17	4.09	12.01	4.28	12.84	4.28	13.26	4.27	14.52	4.31	15.35	4.41
	9 + 9 + 9 + 18 + 24	22	13.38	2.39	14.22	3.23	15.06	3.50	15.47	3.54	16.73	3.57	17.57	3.57
		25	13.07	2.54	13.90	3.32	14.74	3.58	15.16	3.64	16.41	3.70	17.25	3.73
		32	12.33	3.41	13.17	4.02	14.00	4.22	14.42	4.27	15.68	4.37	16.51	4.45
		35	12.01	3.80	12.85	4.32	13.69	4.48	14.07	4.40	15.36	4.61	16.20	4.71
		40	11.49	4.18	12.32	4.50	13.16	4.56	13.58	4.58	14.83	4.65	15.67	4.75
		43	11.17	4.09	12.01	4.28	12.84	4.28	13.26	4.27	14.52	4.31	15.35	4.41
	9 + 12 + 12 + 12 + 24	22	13.38	2.39	14.22	3.23	15.06	3.50	15.47	3.54	16.73	3.57	17.57	3.57
		25	13.07	2.54	13.90	3.32	14.74	3.58	15.16	3.64	16.41	3.70	17.25	3.73
		32	12.33	3.41	13.17	4.02	14.00	4.22	14.42	4.27	15.68	4.37	16.51	4.45
		35	12.01	3.80	12.85	4.32	13.69	4.48	14.07	4.40	15.36	4.61	16.20	4.71
		40	11.49	4.18	12.32	4.50	13.16	4.56	13.58	4.58	14.83	4.65	15.67	4.75
		43	11.17	4.09	12.01	4.28	12.84	4.28	13.26	4.27	14.52	4.31	15.35	4.41
	9 + 12 + 12 + 18 + 18	22	13.38	2.39	14.22	3.23	15.06	3.50	15.47	3.54	16.73	3.57	17.57	3.57
		25	13.07	2.54	13.90	3.32	14.74	3.58	15.16	3.64	16.41	3.70	17.25	3.73
		32	12.33	3.41	13.17	4.02	14.00	4.22	14.42	4.27	15.68	4.37	16.51	4.45
		35	12.01	3.80	12.85	4.32	13.69	4.48	14.07	4.40	15.36	4.61	16.20	4.71
		40	11.49	4.18	12.32	4.50	13.16	4.56	13.58	4.58	14.83	4.65	15.67	4.75
		43	11.17	4.09	12.01	4.28	12.84	4.28	13.26	4.27	14.52	4.31	15.35	4.41
9 + 9 + 12 + 18 + 24	22	13.38	2.39	14.22	3.23	15.06	3.50	15.47	3.54	16.73	3.57	17.57	3.57	
	25	13.07	2.54	13.90	3.32	14.74	3.58	15.16	3.64	16.41	3.70	17.25	3.73	
	32	12.33	3.41	13.17	4.02	14.00	4.22	14.42	4.27	15.68	4.37	16.51	4.45	
	35	12.01	3.80	12.85	4.32	13.69	4.48	14.07	4.40	15.36	4.61	16.20	4.71	
	40	11.49	4.18	12.32	4.50	13.16	4.56	13.58	4.58	14.83	4.65	15.67	4.75	
	43	11.17	4.09	12.01	4.28	12.84	4.28	13.26	4.27	14.52	4.31	15.35	4.41	



## 1. Multi piping type MULTI F

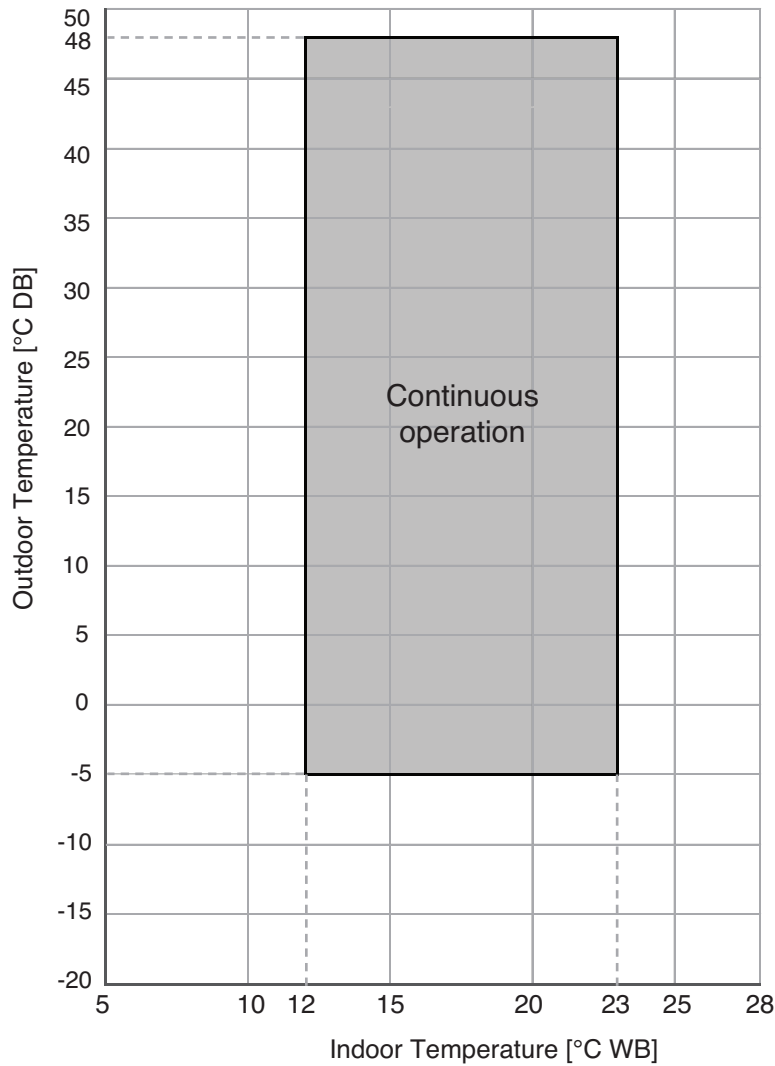
Operation	Combination Capacity Index	Outdoor Air Temperature (°CDB)	Indoor Air Temperature (°CWB)											
			14		16		18		19		22		24	
			TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW
5 Units	9 + 9 + 18 + 18 + 18	22	13.38	2.39	14.22	3.23	15.06	3.50	15.47	3.54	16.73	3.57	17.57	3.57
		25	13.07	2.54	13.90	3.32	14.74	3.58	15.16	3.64	16.41	3.70	17.25	3.73
		32	12.33	3.41	13.17	4.02	14.00	4.22	14.42	4.27	15.68	4.37	16.51	4.45
		35	12.01	3.80	12.85	4.32	13.69	4.48	14.07	4.40	15.36	4.61	16.20	4.71
		40	11.49	4.18	12.32	4.50	13.16	4.56	13.58	4.58	14.83	4.65	15.67	4.75
		43	11.17	4.09	12.01	4.28	12.84	4.28	13.26	4.27	14.52	4.31	15.35	4.41
	46	10.85	3.67	11.69	3.72	12.53	3.63	12.95	3.60	14.20	3.60	15.04	3.68	
	12 + 12 + 12 + 12 + 24	22	13.38	2.39	14.22	3.23	15.06	3.50	15.47	3.54	16.73	3.57	17.57	3.57
		25	13.07	2.54	13.90	3.32	14.74	3.58	15.16	3.64	16.41	3.70	17.25	3.73
		32	12.33	3.41	13.17	4.02	14.00	4.22	14.42	4.27	15.68	4.37	16.51	4.45
		35	12.01	3.80	12.85	4.32	13.69	4.48	14.07	4.40	15.36	4.61	16.20	4.71
		40	11.49	4.18	12.32	4.50	13.16	4.56	13.58	4.58	14.83	4.65	15.67	4.75
		43	11.17	4.09	12.01	4.28	12.84	4.28	13.26	4.27	14.52	4.31	15.35	4.41
	46	10.85	3.67	11.69	3.72	12.53	3.63	12.95	3.60	14.20	3.60	15.04	3.68	
	12 + 12 + 12 + 18 + 18	22	13.38	2.39	14.22	3.23	15.06	3.50	15.47	3.54	16.73	3.57	17.57	3.57
		25	13.07	2.54	13.90	3.32	14.74	3.58	15.16	3.64	16.41	3.70	17.25	3.73
		32	12.33	3.41	13.17	4.02	14.00	4.22	14.42	4.27	15.68	4.37	16.51	4.45
		35	12.01	3.80	12.85	4.32	13.69	4.48	14.07	4.40	15.36	4.61	16.20	4.71
		40	11.49	4.18	12.32	4.50	13.16	4.56	13.58	4.58	14.83	4.65	15.67	4.75
		43	11.17	4.09	12.01	4.28	12.84	4.28	13.26	4.27	14.52	4.31	15.35	4.41
	46	10.85	3.67	11.69	3.72	12.53	3.63	12.95	3.60	14.20	3.60	15.04	3.68	

### Notes:

- Capacities are based on the following conditions.  
Corresponding refrigerant piping length : 7.5m(25 ft)  
Level difference : 0 m(0 ft)
- TC : Total Cooling Capacity(kW)
- PI : Power Input(kW)

1.8 Operation range

Cooling

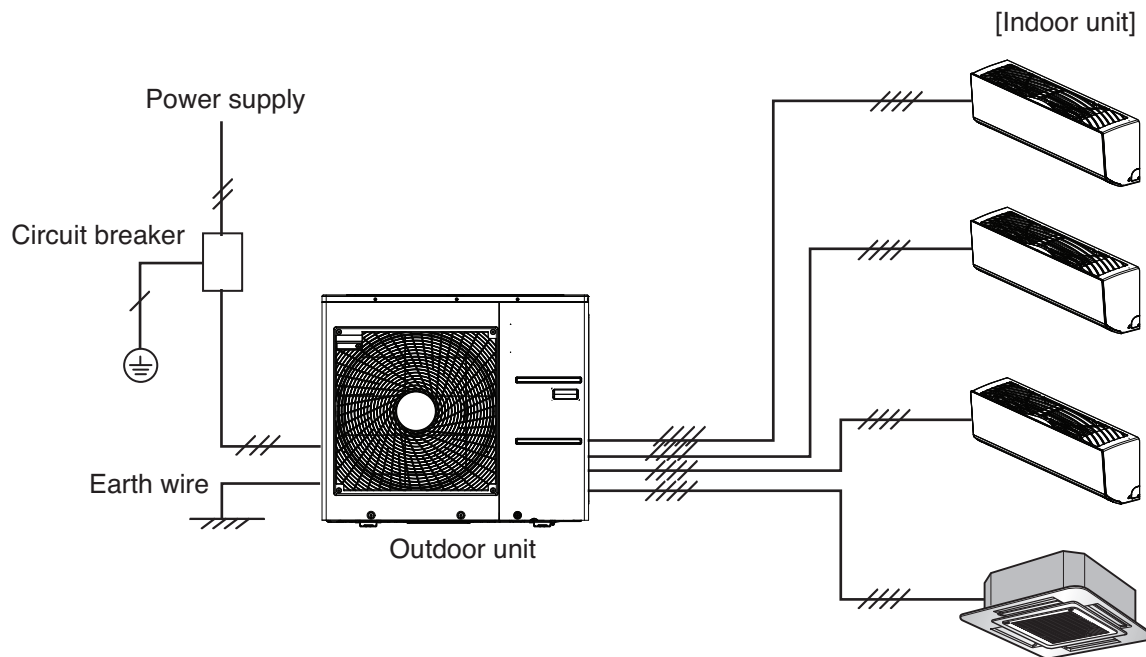


# 1. Multi piping type MULTI F

## 1.9 Electric characteristics

### External wiring procedure

- The power supply work is needed only to the outdoor unit. The power supply to the BD unit and the indoor unit is conducted through the communication wiring. Therefore, the power supply work can be carried out at just one place of the outdoor unit. It will simplify the work procedure and save cost.
- Wiring cable size must comply with the applicable local and national code.



## 1. Multi piping type MULTI F

Unit		Voltage,Hz	Voltage range	Power		COMP		OFM	
Model	Type			MCA	MFA	MSC	RLA	kW	FLA
A2UQ18GFD0	Inverter	230, 50 220, 60	Min.:187 Max.:276	11.1	15	-	8.4	0.043	0.2
A3UQ24GFD0				14.8	20	-	11.2	0.043	0.2
A3UQ30GFD1				15.9	20	-	12.0	0.085	0.3
A4UQ36GFD0				20.9	25	-	15.6	0.124	0.6
A5UQ48GFA1				32.1	40	-	24.4	0.124	0.6

### Notes :

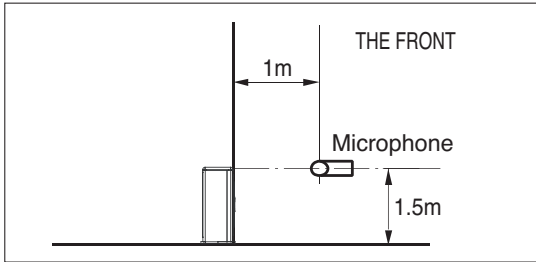
1. Voltage range  
Voltage supplied to the unit terminals should be within the minimum and maximum range.
2. Maximum allowable voltage unbalance between phase is 2%.
3. Select wire spec. based on the larger value of MCA.
4. RLA is measured during each individual compressor test condition.
5. OFM is measured as the outdoor unit test condition.
6. MFA is used to select the circuit breaker and ground fault circuit interrupter, and all installation site must require attachment of an earth leakage breaker. [circuit breaker type is ELCB(Earth Leakage Circuit Breaker)].

MCA : Minimum Circuit Amperes. (A)  
MFA : Maximum Fuse Amperes (A)  
MSC : Maximum Starting Current. (A)  
RLA : Rated Load Amperes. (A)  
OFM : Outdoor Fan Motor.  
kW : Fan Motor rated output. (kW)  
FLA : Full Load Amperes. (A)

# 1. Multi piping type MULTI F

## 1.10 Sound levels

### Overall



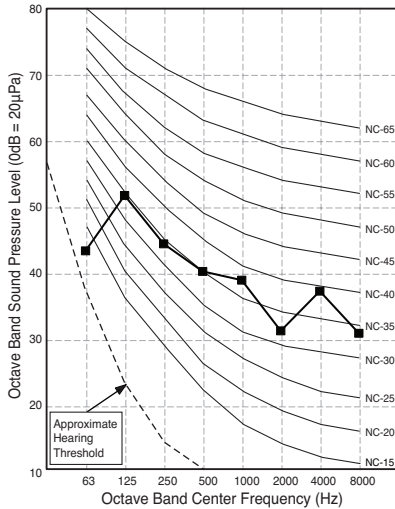
**Notes:**

- Sound measured at 1m away from the unit.
- Data is valid at free field condition.
- Data is valid at nominal operation condition.
- Reference acoustic pressure 0dB=20μPa.
- Sound level will vary depending on a range of factors such as the construction(acoustic absorption coefficient) of particular room in which the equipment is installed.
- The operating conditions are assumed to be standard.

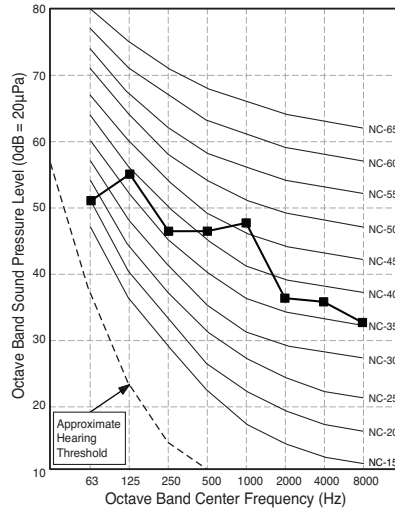
Model	Sound Pressure Level [dB(A)]
A2UQ18GFD0	48
A3UQ24GFD0	49
A3UQ30GFD1	50
A4UQ36GFD0	51
A5UQ48GFA1	54

### Sound pressure level

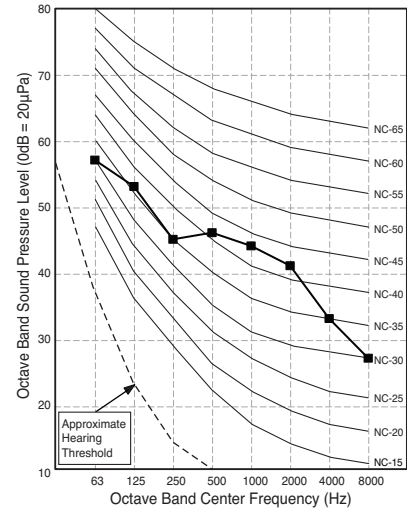
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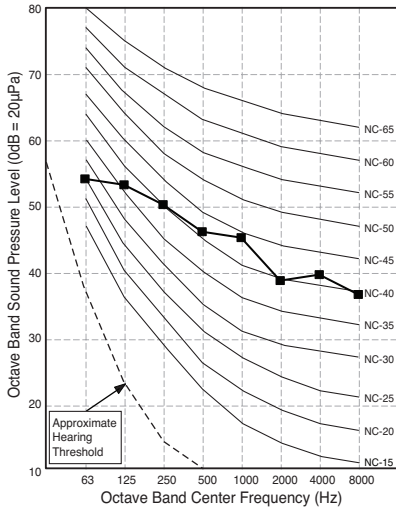
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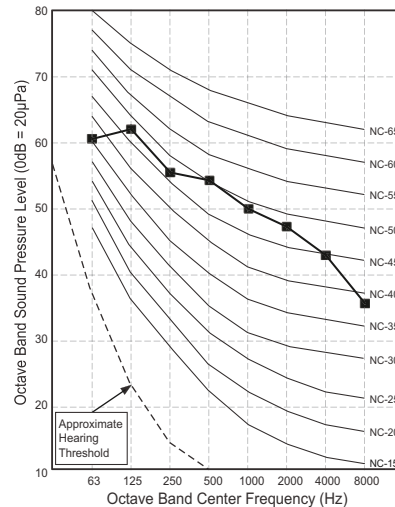
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**A4UQ36GFD0**



**A5UQ48GFA1**



# MULTI F

## R410A(50/60Hz)

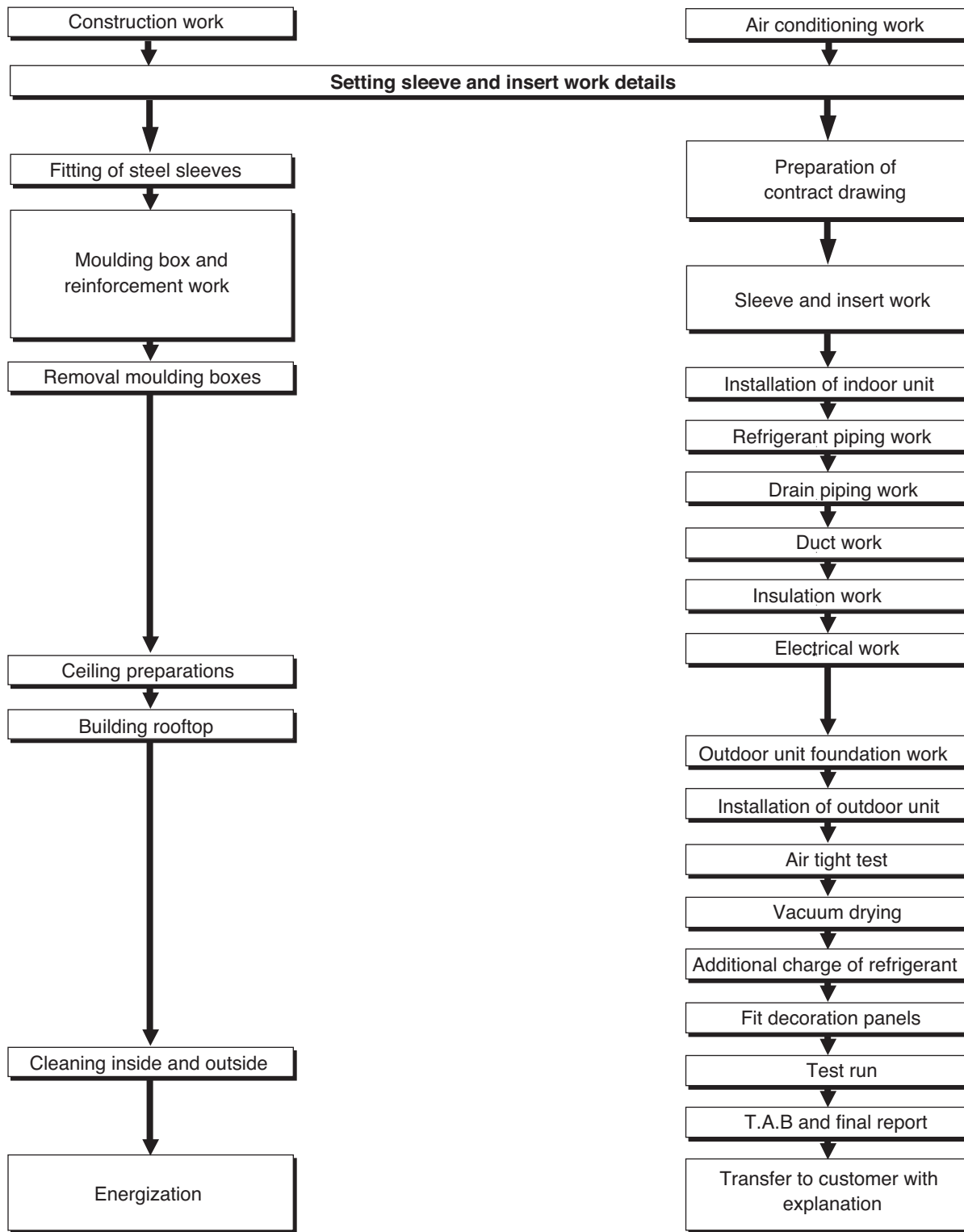
### **Part 3 Design and installation**

- 1. General installation guideline**
- 2. Guideline for each installation process**
- 3. Installation of outdoor unit**

# 1. General installation guideline

## 1.1 Installation process & Guideline

Striking a balance between system installation & General construction work.



1. The division of the work should be thoroughly clarified.
2. keep a constant check on the progress of the construction work to avoid deviations from the air conditioning work schedule.

# 1. General installation guideline

## 1.2 Checking the drawing

### Installation procedure

### Remarks

Determination of work scope	..... Check and confirm required loads calculation, model selection, drawings etc.
Preparation of contract drawings	..... Make a relationship between outdoor ,indoor controller and option connection clear. (prepare control circuit diagram)
Sleeve and insert works	..... Determine sleeve position, size and counts as required
Installation of indoor units	..... Check model name to make sure the fitting is made correctly
Refrigerant piping works	..... Special attention to dryness , cleanness and tightness
Drain pipe works	..... Make sure that the drain pipe diameter is big enough and adjust it to downward gradient
Duct works	..... Make sure airflow is sufficient
Insulation works	..... Make sure no gap is left where the insulating materials are joined
Electrical work	..... Multiple core cable must not be used (suitable cable should be selected)
Outdoor unit foundation works	..... The foundation must be vibration proof and in level
Installation of outdoor units	..... Avoid airflow short circuit and ensure sufficient space is allowed for servicing
Air tight test	..... For 24 hours at 3.8MPa(R410a) or 2.8MPa(R22) there must be no drop in pressure
Vacuum drying	..... Less than 5 Torr (At least more than 1hr)
Additional charge of refrigerant	..... Charge the refrigerant accurately by using a charging cylinder
Fit decoration panels	..... Make sure there are no gaps left between facing materials used on the ceiling
Test run	..... Follow the testing operation check sheet
Transfer to customer with explanation	..... Explain to customer or operator the manual etc



## 2. Guideline for each installation process

### 2.1 Sleeve and insert work

#### 2.1.1 Positioning of the pipe holes

- 1) The through holes for the drain piping should be positioned such that pipes have a downward gradient (the gradient must be at least 1/100. The thickness of the insulating materials must also be taken into consideration.)
- 2) The diameter of the through holes for the refrigerant piping should include an allowance for the thickness of the heat insulation materials.
- 3) Attention should be paid to the construction of the beam themselves since there are sometimes parts of the beam which cannot be used to accommodate through holes.

#### 2.1.2 Selection of sleeve

Sleeve work should be performed to make a space for passing pipe and wire through the wall or ground under construction.

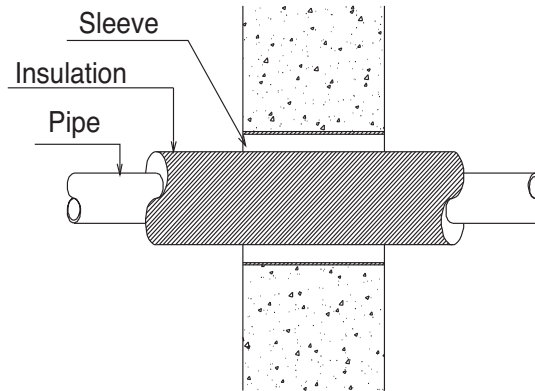
For example if gas pipe and liquid pipe is 12.7mm , 6.35mm the sleeve diameter is minimum 79.05mm .

Gas pipe diameter	12.7mm
Liquid pipe diameter	6.35mm
Insulation thickness(gas pipe)	10mm x 2
Insulation thickness(liquid pipe)	10mm x 2
20mm surplus	20mm
Total sleeve diameter	79.05mm

\* Assumption : Gas pipe insulation thickness and liquid pipe insulation thickness is 10mm and 10mm respectively

## 2. Guideline for each installation process

### 2.1.3 Sleeve type



**NOTE**

Sleeve type should be considered as per local regulation & laws.

**CAUTION**

1. In high voltage generation places, water-proof flexible conduit should be used. (in substation room, in elevator room)
2. Conduit should be chosen in accordance with electrical installation regulation.

**NOTE**

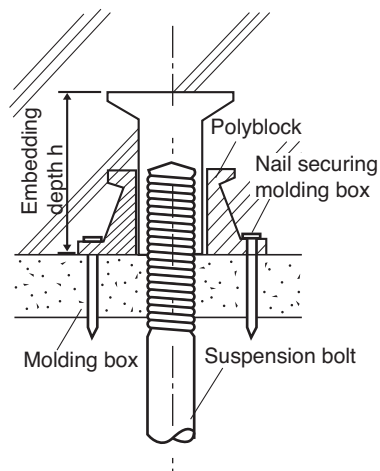
Cable conduit should be considered under the local regulation & laws.

### 2.1.4 Insert work and support work

An insert is a metal tool which is inserted into a floor or beam before the concrete is set such that fittings such as duct, pipes or suspension bolts for hanging units can be fitted into the place later. The positioning of the inserts must be decided early.

1) Insert work

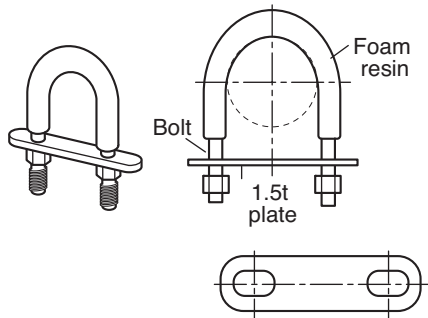
**Example :** Through holes in a reinforced concrete beam



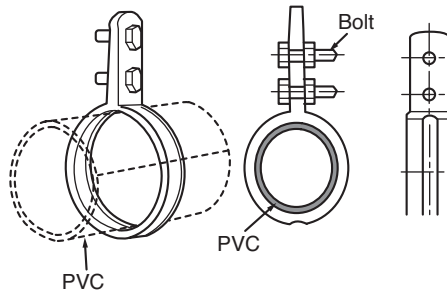
## 2. Guideline for each installation process

### 2) Support work.

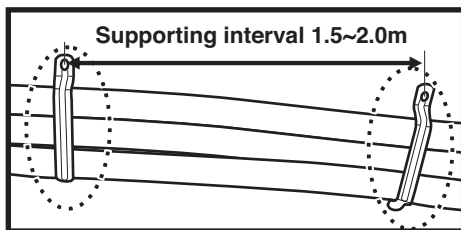
#### ■ Insulated U-bolt type supporting



#### ■ Insulated O-ring band type supporting



#### ■ Saddle supporting

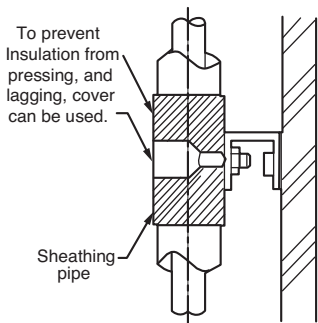


### ⚠ CAUTION

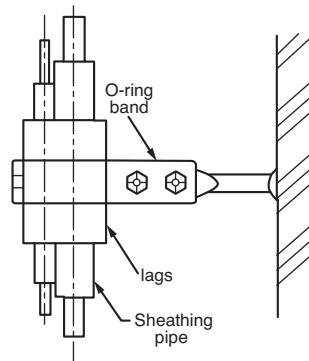
During saddle supporting work, insulation should not be pressed by saddle as this can lead to tearing of insulation and thus falling of condensed water during product operation.

#### a) Supporting with insulated pipe

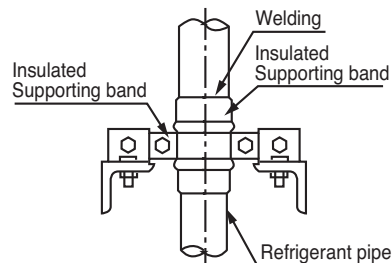
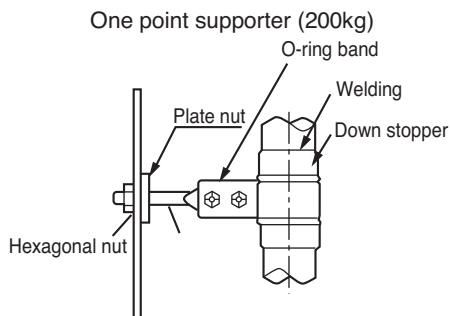
##### ① U-bolt supporting



##### ② O-ring band supporting



#### B) Down stopper supporting



## 2. Guideline for each installation process

### 2.2 Refrigerant piping work

#### 2.2.1 Principles of refrigerant piping

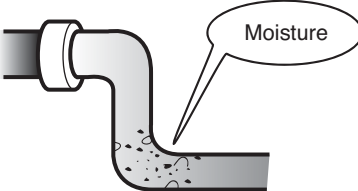


The “ principles of refrigerant piping “ must be strictly observed.

	Cause of problem	Action to avoid problem
Dry	-Rainwater, work water, etc gets into pipes from outside -Moisture generated inside pipe due to condensation	Flushing → Pipe covering → Vacuum drying
Clean	-Formation of oxides inside pipes during soldering -Dirt,dust or other extraneous material gets into pipes from outside	Replace Nitrogen → Pipe covering Flushing → Pipe covering
Air tight	-Leak from soldered area -Leak from flared area -Leak from flange area	Use the proper materials Adhere strictly to standard soldering work practice. Adhere strictly to standard flaring work practice. Adhere strictly to standard flaring connection work practice.

- The end of all copper pipes should be capped to protect them from dust or water particles while safe keeping



The 3 principles of refrigerant piping work

Dry	Clean	Air tight
Make sure there is no moisture inside the pipes	Make sure there is no dirt inside the pipes	Make sure the refrigerant does not leak out.
		

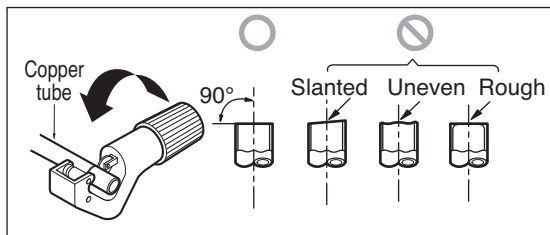
## 2. Guideline for each installation process

### 2.2.2 Flaring work

Main cause for gas leakage is due to defect in flaring work. Carry out correct flaring work in the following procedure.

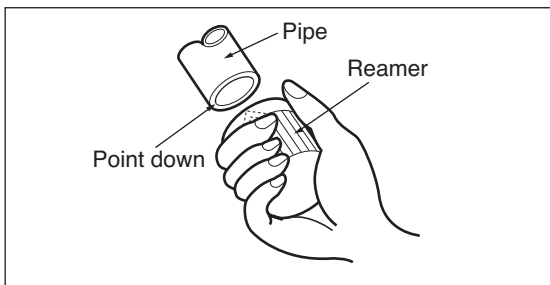
#### 1) Cut the pipes and the cable.

- ① Use the piping kit accessory or the pipes purchased locally.
- ② Measure the distance between the indoor and the outdoor unit.
- ③ Cut the pipes a little longer than measured distance.
- ④ Cut the cable 1.5m longer than the pipe length.



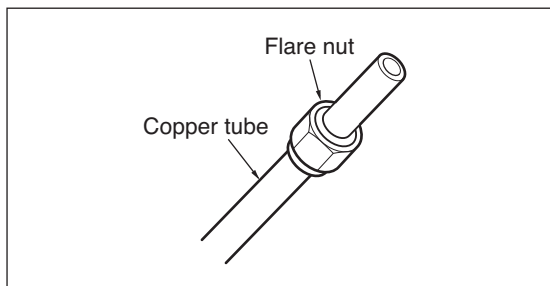
#### 2) Burrs removal

- ① Completely remove all burrs from the cut cross section of pipe/tube.
- ② Put the end of the copper tube/pipe in a downward direction as you remove burrs in order to avoid dropping of burrs into the tubing.



#### 3) Putting nut on

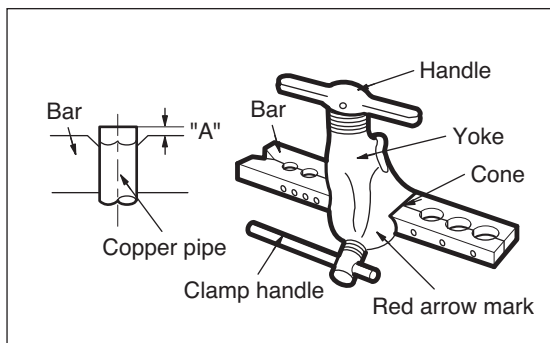
- ① Remove flare nuts attached to indoor and outdoor unit, then put them on pipe/tube having completed burr removal. (not possible to put them on after flaring work)



#### 4) Flaring work

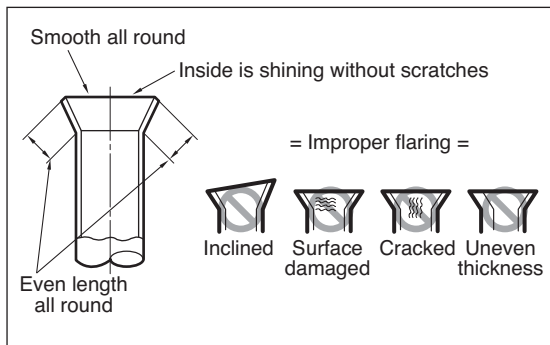
- ① Carry out flaring work using flaring tool as shown below.
- ② Firmly hold copper pipe in a die in the dimension shown in the table below.

Outer diameter		A
mm	inch	mm
Ø6.35	1/4	1.1~1.3
Ø9.52	3/8	1.5~1.7
Ø12.7	1/2	1.6~1.8
Ø15.88	5/8	1.6~1.8
Ø19.05	3/4	1.9~2.1



#### 5) Check after flaring

- ① Compare the flared work with figure on right side.
- ② If flare is found to be defective, cut off the flared section and do flaring work again.



## 2. Guideline for each installation process

**NOTE** **Choice of material for refrigerant piping**  
**Copper pipe selection**

- a. The wall thickness of the refrigerant piping should comply with relevant local and national regulation for R410A the design pressure is 3.8MPa.(38.7kgf/cm<sup>2</sup>)
- b. If not, we recommend to use with phosphorus deoxidized copper type
- c. Generally used copper pipe specifications as follows;

Size(ø)mm	Thickness
	R410A
6.35	0.8
9.52	0.8
12.70	0.8
15.88	1.0
19.05	1.0

\* Never use the pipe which is mixed scrap or a pipe used somewhere else  
 The method how to distinguish the pipe mixed scarp : check the oxidization evidence after leaving the pipe for 24hour.

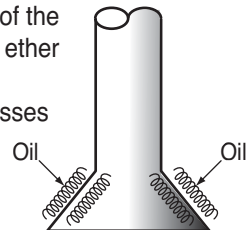
**CAUTION**

**Flare connection and procedure**

- 1. Stiffened pipe must always be annealed at least once prior to the flaring work.
- 2. A pipe cutter must be used to cut the pipe. (A large pipe cutter must be used where the pipe has a large diameter. When cutting a pipe which is too big for the pipe cutter a metal saw may be used but care must be taken to ensure that the debris from sawing does not get into the pipe.)



- 3. Set the flaring tool to make sure the flare size remains within the prescribed limits.
- 4. Coat the inner and outer surface of the flare with refrigerator oil (Ester or ether oil). (this ensures that the flare nut passes smoothly, preventing the pipe from twisting.)  
 Do not use SUNISO-4GS oil.



External diameter of pipe D		Pipe widening dimension A
(in)	(mm)	
1/4	6.35	8.6~9.0
3/8	9.52	12.6~13.0
1/2	12.7	15.8~16.2
5/8	15.88	19.0~19.4
3/4	19.05	22.9~23.3

**CAUTION**

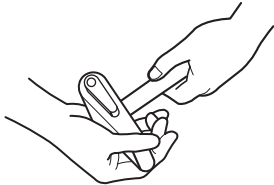
- 1. Burrs should be carefully removed.
- 2. 2 spanners should be used to grip the pipe.
- 3. The flare nut must be inserted before starting the flaring operation.
- 4. The appropriate amount of torque should be used to tighten the flare nut.
- 5. Check that there is no superficial damage to the surface of the flare.

## 2. Guideline for each installation process

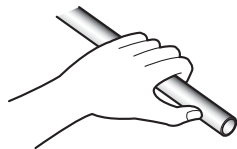
### NOTE

### Flange connection and procedure

- 1) Cut the pipe using a pipe cutter.



- 2) The cut edge has burrs.  
(the amount of burrs becomes larger when pipe wall is thick)



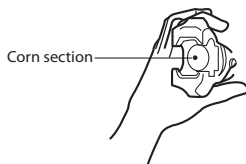
- 3) Remove the burrs using a reamer  
(Be careful not to let particles enter the pipe.  
Point the pipe end downward during cutting)



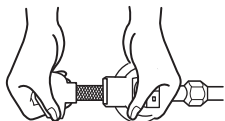
- 4) Clean the inside of the pipe  
(use a thin stick with a cloth wrapped around it)



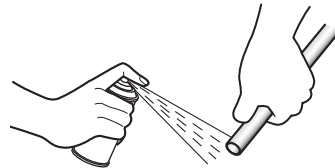
- 5) Before flaring, clean the cone section of the flaring tool.



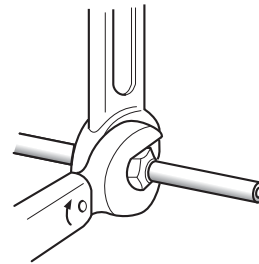
- 6) Flare the pipe.  
Rotate the flaring tool 3 or 4 turns after a clicking sound is produced. this results in a clean flared surface



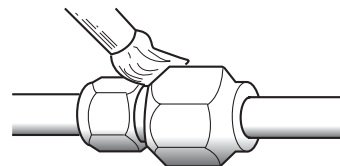
- 7) Apply refrigerant oil on the inside and outside of the flared section.  
(Do not apply SUNISO oil)  
(Be careful to keep dust away)



- 8) Tighten the flare nut. (Use a torque wrench to apply the proper tightening force)



- 9)
- Check for gas leaks.  
(Check at the threaded section of the flare nut for gas leak)
  - Spray –type gas leak detecting products are available on the market.
  - Soap water may be used to check for leaks, but use only neutral soap to prevent corrosion of the flare nut.
  - Be sure to wipe the nut area clean after the gas leak check.



## 2. Guideline for each installation process

### 2.2.3 Pipe connection flaring

#### NOTE

1. After installation completion make sure to open the valve. operating the unit with the valve shut off will destroy the compressor (Refer to the additional refrigerant charge detail information)
2. Use R410A to add refrigerant. All field piping must be installed by a licensed refrigeration technician
3. Must comply with local and national standard regulations.

#### 1) Connecting the piping to the indoor unit and drain hose to drain pipe

- ① Align the center of the piping and sufficiently tighten the flare nut by hand.
- ② Tighten the flare nut with a wrench. Wrap the insulation material around the connecting portion.

#### 2) Wrap the insulation material around the connecting portion.

- ① Overlap the connection pipe insulation material and the indoor unit pipe insulation material. Bind them together with vinyl tape so that there is no gap.
- ② Wrap the area which accommodates the rear piping housing section with vinyl tape.
- ③ When the piping is passed through a tray, duct work or a sleeve the insulation wrapping on the pipe is not required.

#### 3) Close up a socket out of use with a brass cap.

- ① Align the center of the piping and sufficiently tighten the brass cap by hand.
- ② Tighten the brass cap with a wrench.
- ③ Wrap the area contacted with insulation.

#### CAUTION

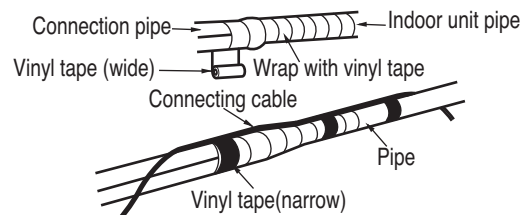
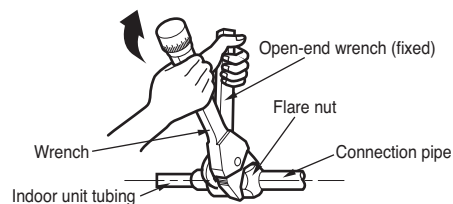
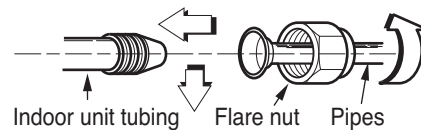
Over tightening of the flare nuts in the pipes may cause nuts to crack or the refrigerant to leak.

#### CAUTION

Improper piping and flaring can lead to the leakage of refrigerant

#### NOTE

For flaring work of the piping, follow the instructions in the installation manual to each unit.



#### CAUTION

Never use the plastic cap during closing.



## 2. Guideline for each installation process

### 2.2.4 Brazing work

**CAUTION**

**Brazing of refrigerant piping :**

The following precaution should be taken.

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

(Particularly for the HFC refrigerant piping)

Therefore, use the phosphor copper brazing filler metal (BCuP) which does not require flux.

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

If brazing work is carried out without passing nitrogen gas through the pipes then it allows the formation of oxidation bubbles on the inside surface of the pipes.

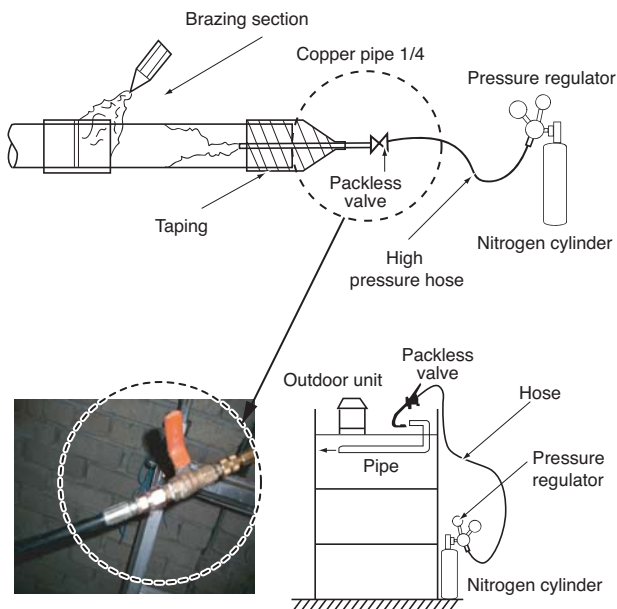
These oxidation bubbles are then carried along inside the pipes to cause damage to various members of the system such as valve or compressors and the system ceases to function properly.

In order to avoid this problem nitrogen is passed through the pipe while the soldering work is being carried out.

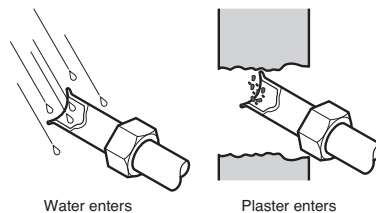
This operation work is known as nitrogen replacement.(Air is replaced by nitrogen)

This is standard work during all brazing works.

1) Nitrogen flushing method (During brazing)



**CAUTION**



Make sure to keep the connecting piping dry (away from water) , clean (away from dust) , and air tight (avoid refrigerant leakage)

**CAUTION**

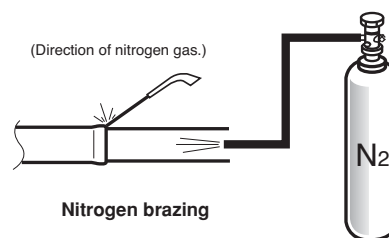
**Pipe bending**

Annealed copper pipe with small diameter (Ø6.35 or Ø9.52) can be easily bent manually. In this case, secure large R (radius) for the bend section and gradually bend pipe. If annealed copper pipe is large in diameter (Ø15.88 or over), bend pipe with bender. Use bender appropriate for the pipe diameter.

**CAUTION**

**Nitrogen brazing**

- a. This procedure is designed to prevent formation of oxidation film by filling piping with inert gas. Note that excessive gas pressure will generate pinholes at brazed points. (Nitrogen gas: Supply pressure 0.05~0.1kg/cm<sup>2</sup>G)
- b. When supplying inert gas, be sure to open one end of piping.



## 2. Guideline for each installation process

Brazing work should be carried out either downwards or sideways.  
An upward direction should be avoided wherever possible(to prevent leakage).

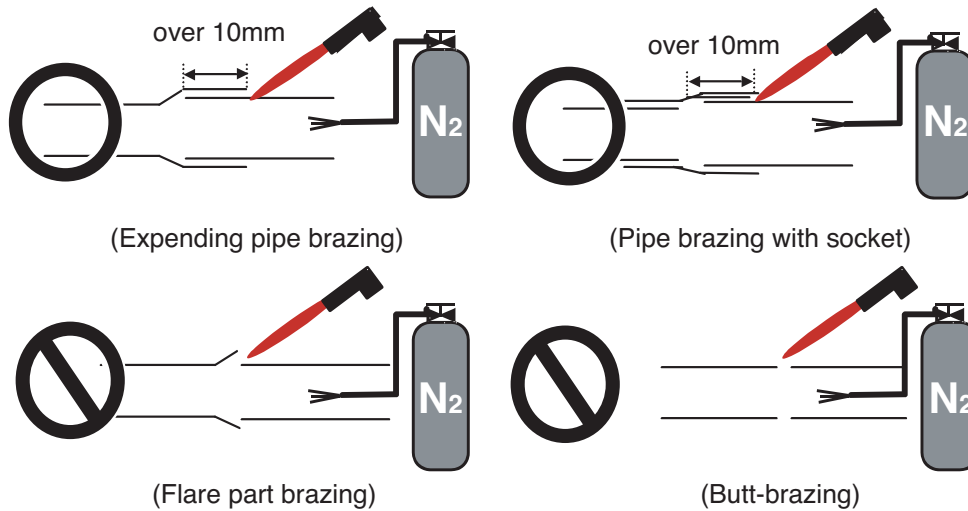


Table 1: Correlation of nozzle tip and size of refrigeration piping

[Unit : mm]

Piping size	Nozzle tip No.							Brazing filler diameter Ø		
	# 200	# 225	# 250	# 315	# 400	# 450	# 500	1.6	2.4	3.2
6.35										
9.52										
12.7										
15.9										
19.1										
22.2										
25.4										
31.8										
38.1										
44.5										

**CAUTION**

1. Generally expending pipe brazing is performed with pan-coil type copper pipe, and socket brazing is performed with straight copper pipe.
2. Do not perform flare part brazing or butt-brazing.
3. Brazing should be performed on welding table.
4. Any dust should enter in the pipe while brazing.
5. Distance of copper pipe support spacing is within 1~2m
6. The copper pipe should not be secured directly by metal brackets.

## 2. Guideline for each installation process

### 2.2.5 Refrigerant pipe flushing

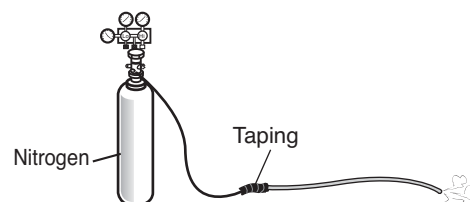
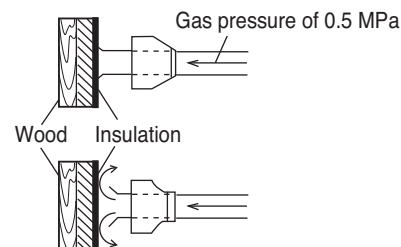
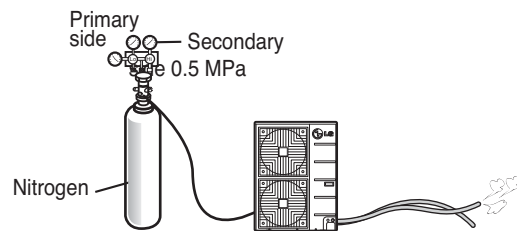
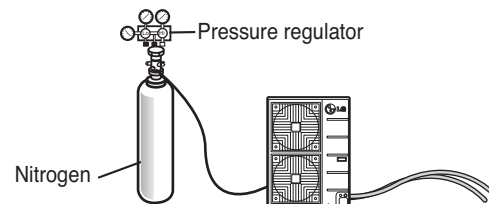
Flushing is a method of cleaning extraneous matter out of pipes using pressurized gas.

#### NOTE

Refrigerant pipe flushing of 3 major effects

1. Removal of oxidation bubbles formed inside copper pipes when “nitrogen replacement is insufficient” during soldering work
2. Removal of extraneous material and moisture from pipes when covering has been insufficient
3. Checks connections in pipes linking outdoor and indoor units (Both liquid and gas pipes)

- ① Set pressure regulator on nitrogen cylinder.
- ② Connect the charge hose from pressure regulator to service port on the liquid pipe side of the outdoor unit before its connection to B/D unit or indoor unit.
- ③ Open the main valve on the nitrogen cylinder and set the pressure regulator to 0.5MPa.
- ④ Ensure that nitrogen is flowing through the pipe properly.
- ⑤ For flushing block the end of the pipe with wood insulation block.
- ⑥ When the pressure becomes great remove the block quickly.
- ⑦ Do step 6 & 7 repeatedly till cleanness is ensured.
- ⑧ Connect the charge hose from pressure regulator to service port on the gas pipe side of outdoor unit before its connection to B/D unit or indoor unit.
- ⑨ Flow the steps 3, 4, 5, 6, 7.
- ⑩ In case of BD unit system, before connecting to indoor units, each pipe should be flushed individually.
- ⑪ Flow the steps 3, 4, 5, 6, 7.



#### CAUTION

After welding the pipe, nitrogen flushing is strongly recommended.

## 2. Guideline for each installation process

### 2.3 Drain piping work

The purpose of drain piping is to prevent damage of products and ceiling materials by proper draining of dew condensation which is generated from the evaporator of indoor unit when the hot vapors come in contact with the evaporator.

#### 1) Application

Pipes for draining water generated from indoor unit on cooling operation

#### Specification for drain piping

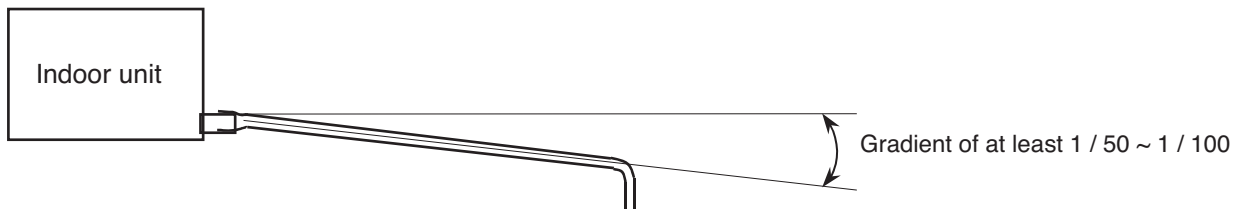
Type		Drain pipe diameter (External/ Internal)	Drain pump	Drain pump discharge head (mm)	Drain amount (at 10mm height)
					cm <sup>3</sup> /min (lpm)
Multi F Multi F DX	1 way	Ø32/25mm	Standard	TU Chassis: 700 TT Chassis: 800	400 (0.4)
	4 way	Ø32/25mm	Standard	TR/Q Chassis : 700 TP Chassis : 800	400 (0.4)
	Duct	Ø32/25mm	Accessory	700	400 (0.4)
	ART COOL	-	By gravity slope	-	-
	Wall Mounted	-	By gravity slope	-	-

kW	Air flow rate (CMH)	Drain amount (lpm)	Remark
2.04	8	0.128	Indoor temp. : 26C DB Indoor humidity RH : 85%  Outlet temp. :14C DB Outlet temp. RH: 50%
2.33	8.5	0.137	
2.91	10.5	0.169	
4.36	11.5	0.185	
5.82	17	0.273	
7.28	19	0.305	
8.73	21	0.337	
10.2	23	0.369	
11.6	25	0.402	
14.6	34	0.546	

## 2. Guideline for each installation process

### 2.3.1 Drain pipe slope and support

- Slope gradient for drain should be (1/50~1/100mm) and PVC pipes should be used.
- Support hanger should be at 1~1.5m interval to prevent from loosening and dropping.
- Drain pipe insulation  
: The inside temperature of drain pipe is about 10°C. When high temperature and humidity air touches the surface of pipe, dew condensation occurs. To prevent that, drain pipe keeps warm using insulation with polyethylene 10mm thickness.



#### 1) Application

Refrigerant pipe length contracts and expands on heating and cooling repeatedly. So supporting work is needed not to hinder each copper pipe connection part.

#### 2) Supporting distance for common drain pipe

[Table]The interval of the supporting hanger for drainage pipe

Pipe diameter (mm)	Ø20~40	Ø40~50	Ø65~125
Max. interval(m)	Below 1.0	Below 1.2	Below 1.5

#### 3) Anchor bolt supporting work

Anchor bolt supporting work should be used for supporting a heavy indoor unit to ceiling.

Clamp hanger supporting work is for hanging refrigerant pipe, drain pipe and cables.

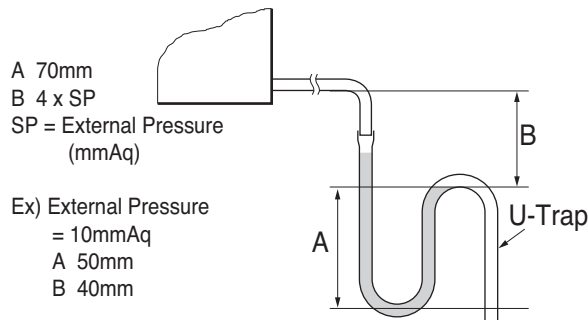
It can prevent vibrating noise from passing through pipe.

We recommend set anchor bolt for supporting indoor unit and strong anchor bolt for supporting pipes and cables

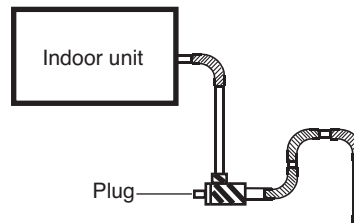
[Reference Table] Drain amount per capacity

## 2. Guideline for each installation process

### 2.3.2 Drain pipe trap (only for high static duct)

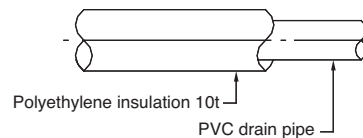
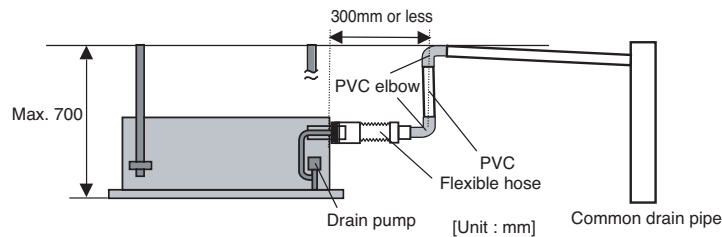


#### <U-trap size calculations>

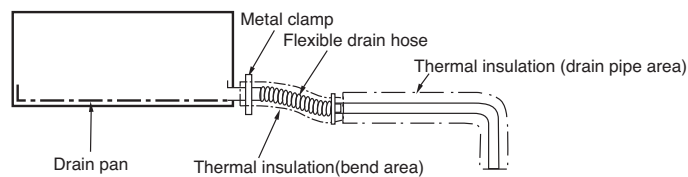


- In case of duct high static pressure, the U trap maintains a positive pressure on the indoor side of the unit.

#### 1) Models with drain pump



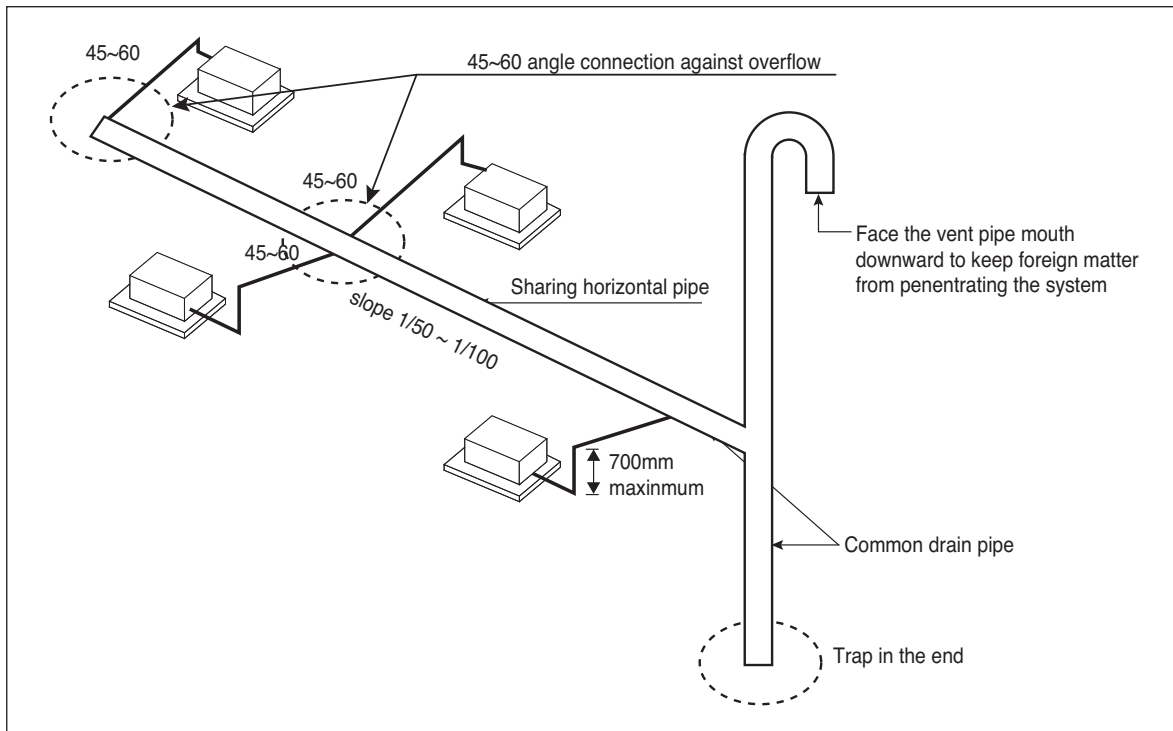
#### 2) Models without drain pump



## 2. Guideline for each installation process

### 2.3.3 Grouped drain pipes

It is standard work practice to make connections to the main pipe from above.  
 The pipe down from the combination should be as large as possible.  
 The diameter of ventilation pipe should be same or larger than drain pipe diameter.



**NOTE**

1. Trap is required if the pie is open towards sewage to prevent bad smell from coming to indoor.
2. Do not connect drain pipe with building common drain pipe in heavy snow area. It might block the pipe with ice and remaining collected water can get back to indoor unit.  
 Provide separate air conditioner drain pipe.

**Grouped drain piping standard**

- For drain pipe diameter selection, refer to the following table.
- The drainpipe should be used for only air conditioners. If you share it for rainwater drain, you should be careful of a back flow, leakage, bad odor and so on.
- Use separate drain pipe for polluted water or wasted water

[Table] Drain pipe diameter selection standard

Sum of the capacity of indoor units (Btu/h)	~80,000	~200,000	~400,000	~600,000	~1000,000
Internal diameter (External)	25(32)	32(40)	40(50)	50(60)	65(75)

**NOTE**

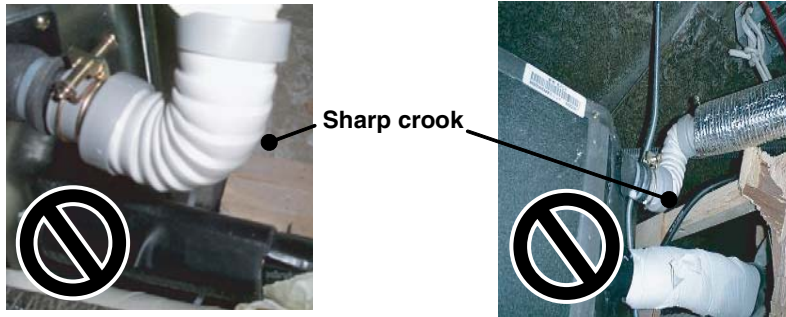
Select the diameter of the horizontal pipe bigger than vertical.

## 2. Guideline for each installation process

### 2.3.4 Caution for drain piping work

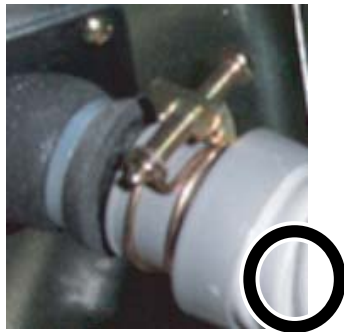
#### 1) Notice on drain working

- ① Flexible tube should not be crooked sharply.  
The tube can be broken by continuous vibration for a long time.



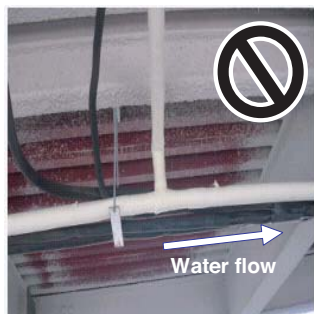
#### **CAUTION**

Flexible tube should be connected with clamp concentrically.  
If not, water will leak from the connection.



<clamp connection>

- ② No reverse slope for drain connection



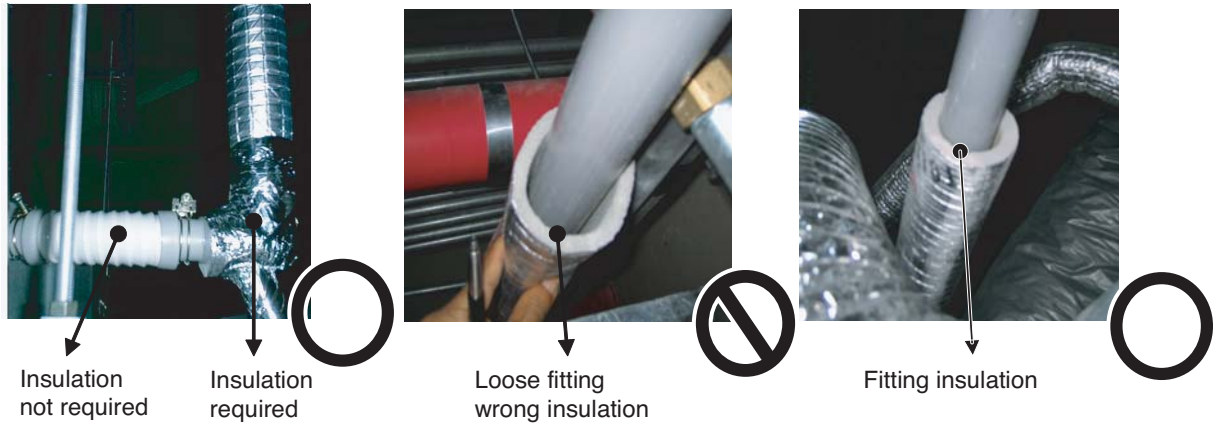
<Reverse slope>



## 2. Guideline for each installation process

### 2) Drain pipe insulation

- Drain pipe should be insulated all connected joints and ends.



- Do not use the loose fitting insulation.

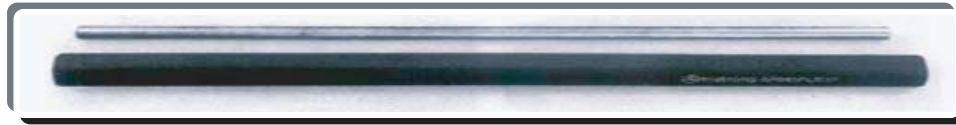
### 3) Drain water leakage test

- Water leakage test should be performed 24 hours later after drain work finishing.
- In the test, only water should be used. Other liquids are unacceptable.

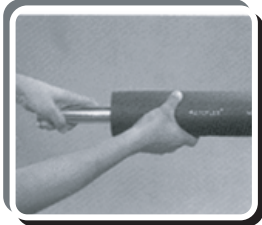
## 2. Guideline for each installation process

### 2.4 Insulation work

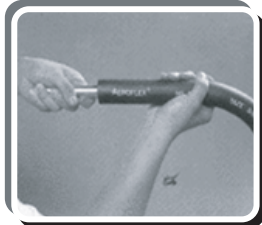
#### 2.4.1 Insulation



##### 1) Operational steps



① EPDM length should be more longer than pipe length. Do not extend EPDM by force.



② Put the pipe in EPDM insulation carefully so that the pipe will not get damaged with EPDM.



③ Bond on both side of cut surfaces of move sure to use the correct type of bond for EPDM cut surface attaching.

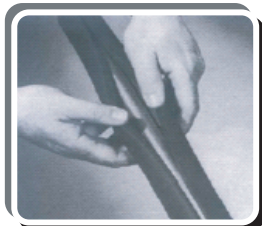


④ Dry it until it becomes thick, sticky and does not get detached.

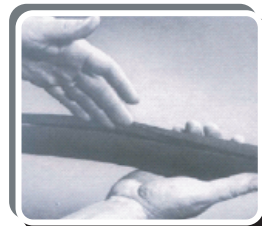
##### 2) Bending vertical side of insulation



① Use the original uncut insulation material.



② Only in specialcase is the vertical cutting of the insulation allowed.



③ Bond both sides of the surface of EPDM and press them together for long lasting bonding.



④ Dry it until it becomes thick and sticky.

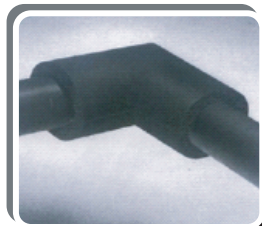
##### 3) 'L' Fitting connection part insulation



① All of the fitting connecting parts should be insulated. Bring face to face the each end of EPDM on fitting connection part.



② Make fitting cover to fit the EPDM insulation fitting cover should be overlapped with insulation min 1 inch (2.5cm).



③ Bond the both cutting sides of fitting cover.

## 2. Guideline for each installation process

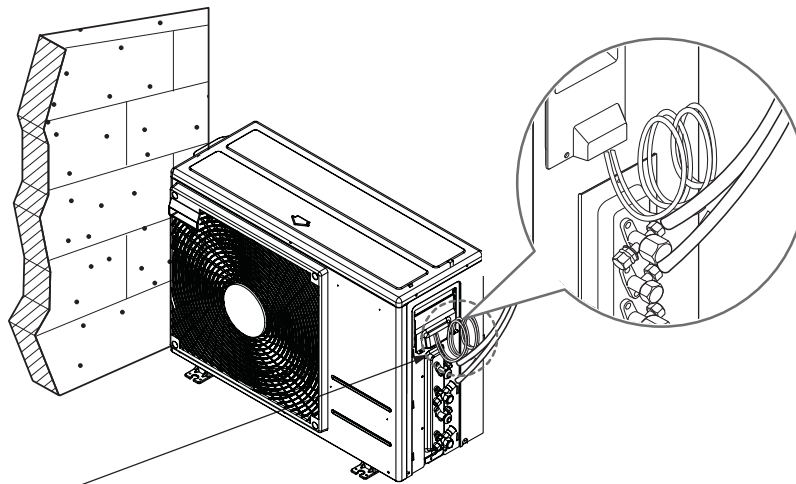
### 2.4.2 Forming the piping

1) Form the piping by wrapping the connecting portion of the indoor unit with insulation material and secure it with two kinds of vinyl tape.

• If you want to connect an additional drain hose, the end of the drain outlet should be routed above the ground. Secure the drain hose appropriately.

2) In cases where the outdoor unit is installed below the indoor unit perform the following.

- ① Tape the piping, drain hose and transmission cable from down to up.
- ② Secure the tapped piping along the exterior wall using saddle or equivalent.



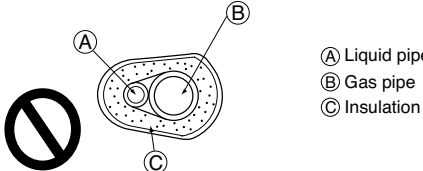
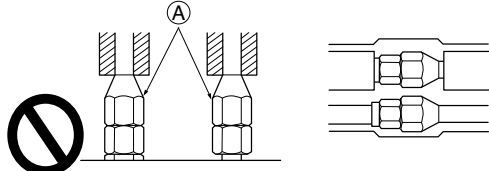
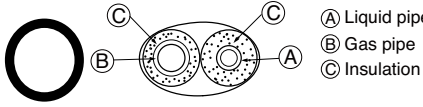
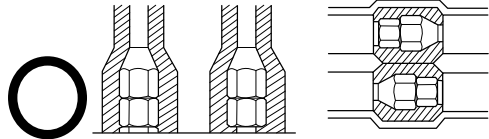
• The cable is required to prevent rain water from entering into electrical parts of outdoor unit.

## 2. Guideline for each installation process

### 2.4.3 Essential points of thermal insulation

#### 1) Thermal insulation of refrigerant piping

Be sure to give insulation work to refrigerant piping by covering liquid pipe and gas pipe separately with enough thickness heat-resistant insulation materials, so that no gap is observed in the joint between indoor unit and insulating material, and insulating materials themselves. When insulation work is insufficient, there is a possibility of condensation drip, etc. pay special attention to insulation work to ceiling plenum.

<p>Wrong method</p>	<ul style="list-style-type: none"> <li>Do not insulate gas or low pressure pipe and liquid or high pressure pipe together.</li> </ul>  <p>             (A) Liquid pipe              (B) Gas pipe              (C) Insulation         </p>	<ul style="list-style-type: none"> <li>Be sure to fully insulate connecting portion.</li> </ul>  <p>(A) These parts are not insulated.</p>
<p>Correct method</p>	 <p>             (A) Liquid pipe              (B) Gas pipe              (C) Insulation         </p>	

#### 2) Caution during insulation work

- In case the cables are installed in the conduit, a finishing tape is not required.
- Defect and insufficient insulation can cause condensation drops.
- Binding the insulation too tight may result in dew drops.
- Be sure not to tie rap the insulation but put special taping or the clamp at the connecting portion.
- The insulation overlapping part at the piping connection must be a distance from the flaring part at the pipe connection.

#### 3) Insulation tube thickness

##### ① Thickness decision of insulation tube

- Insulation material: EPDM or polyethylene foam
- Thermal conductivity 0.035 kcal~0.040kcal/mh°C
- Heat resistance=100°C(Cooling only) or more  
120°C(Heat pump) or over

##### ② The thickness of the thermal insulation material must be determined in the light of the pipe sizes.

Pipe size	Thickness of insulation material (normal)
6.35 ~ 25.4 mm	10mm or more
25.4 ~	15mm

③ It will be necessary to increase the thickness of insulation in the above table when conditions are hot and humid.

④ Where a customer supplies his own specifications then these must be adhered to.

#### CAUTION

Outdoor temperature and humidity around the cooling piping might exceed 30°C and RH80%, reinforce the insulation on the cooling piping (at least 20mm thick)

## 2. Guideline for each installation process

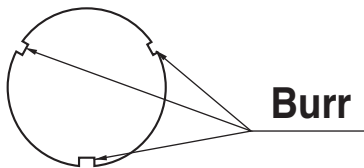
### 2.5. Electrical work

#### 2.5.1 Precautions

##### ⚠ CAUTION

When knocking out knock holes

- To punch a knock hole, hit on it with a hammer.
- After knocking out the holes, we recommend you paint the edges and areas around the edges using paint to prevent rusting.
- When passing electrical wiring through the knock holes, remove any burrs from the knock holes and wrap the wiring with protective tape to prevent damage.



If there are any possibilities that small animals or insects enter the system through the knock holes, plug the holes with packing materials (to be prepared onsite).

##### Use a conduit for the cable

- Outside the unit, make sure the thin signal cable (i.e. for the remote control, between units, etc.) and the thick electric wiring do not pass near each other, and the shield signal cable, is recommended. Otherwise, the outdoor unit may be affected by electrical noise (external noise), and malfunction or fail.
- Secure the wiring with the accessory clamps so that it does not touch the piping.
- Make sure the wiring and the electric parts box cover do not stick up above the structure, and close the cover firmly.

##### ⚠ CAUTION

Do not operate the air conditioner until the refrigerant piping work is completed.

(Operating the air conditioner before the refrigerant piping work is completed may damage the compressor.)

- Install an earth leakage circuit breaker.  
Since this is an inverter air conditioner. In order to prevent malfunction of the earth leakage breaker itself, use a breaker resistant to higher harmonics.
- After finishing the electric work, confirm that each electric part and terminal inside the electric parts box is connected securely.

##### NOTE

- Only professional electricians having sufficient knowledge should perform the electrical wiring work. Perform the electrical wiring work in accordance with the electrical wiring diagram. Make sure to set OFF the branch switch and over current breaker before starting the work.
- Install an earth leakage breaker.
- Perform grounding to the indoor units and outdoor units.
  - Do not connect the ground wire to gas pipes, sewage pipes, lightning rods telephone ground wires.
  - Gas pipes … Can explode or catch fire if gas leaks.
  - Sewage pipes… Provides no grounding effect if hard plastic pipes are used.
  - Telephone ground wires and lightning rods … dangerous when struck by lightning due to abnormal rise in the electrical potential in the ground.

## 2. Guideline for each installation process

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- Use only copper wires.
- Make sure to shut down the power before starting the electric wiring work.  
Do not set ON any switch until the work is completed.
- The outdoor unit has an inverter compressor which generates noise and charges the outer casing with the leakage current. The outdoor unit should be grounded so that the effect of the generated noise on other equipment can be reduced, and that the outer casing can be discharged.
- Never install a phase advancing capacitor for power factor improvement.  
(Even if it is installed, the power factor is not improved. And if it is installed, the outdoor unit is abnormally overheated.)
- Use specified electric wires in the wiring, and connect them securely.  
Fix them in such a way that external force is not applied at the terminals  
(transmission wiring in the local field and ground terminal).
- Never push excessive electric wires into the units.
- Protect electric wires with conduit tubes or other proper tubes so that they will not be damaged by edges of knock holes.
- Do not use multi conductor cable which have more than 5 wires in one core.

## 2. Guideline for each installation process

### 2.6. Air tight test

#### 2.6.1 Air purging

Air and moisture remaining in the refrigerant system have undesirable effects as indicated below.

- ① Pressure in the system rises.
- ② Operating current rises.
- ③ Cooling (or heating) efficiency drops.
- ④ Moisture in the refrigerant circuit may freeze and block capillary tubing.
- ⑤ Water may lead to corrosion of parts in the refrigeration system. Therefore, the indoor/outdoor unit and connecting tube must be checked for leak tight, and vacuumed to remove incondensable gas and moisture in the system.

#### 1)Checking method

##### ① Preparation

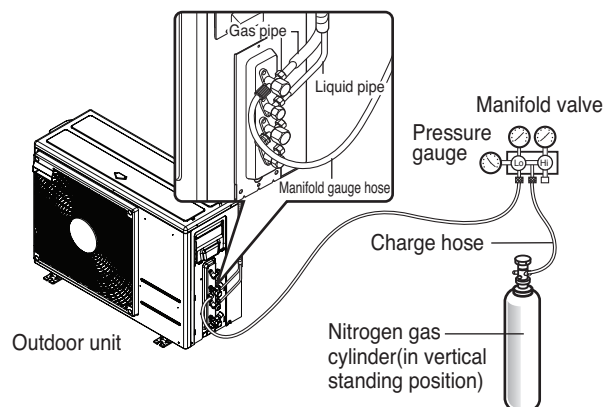
- Check that each pipe (both liquid and gas side pipes) between the indoor and outdoor units have been properly connected and all wiring for the test run has been completed. Remove the service valve caps from both the gas and the liquid side on the outdoor unit. Check that both the liquid and the gas side service valves on the outdoor unit are kept closed at this stage.

##### ② Leakage test

- Connect the manifold valve (with pressure gauges) and dry nitrogen gas cylinder to this service port with charge hoses.

#### CAUTION

Be sure to use a manifold valve for leakage test. If it is not available, use a stop valve for this purpose. The "Hi" knob of the manifold valve must always be kept close.



#### CAUTION

To avoid nitrogen entering the refrigerant system in a liquid state, the top of the cylinder must be higher than its bottom when you pressurize the system. Usually, the cylinder is used in a vertical standing position.

1. Do a leakage test of all joints of the Tubing (both indoor and outdoor) and both gas and liquid side service valves. Bubbles indicate a leak. Be sure to wipe off the soap with a clean cloth.
2. After the system is found to be free of leaks, relieve the nitrogen pressure by loosening the charge hose connector at the nitrogen cylinder. When the system pressure is reduced to normal, disconnect the hose from the cylinder.

## 2. Guideline for each installation process

### 2.6.2 Essential points of testing

The key to successful testing is strict adherence to the following procedure:

- 1) The liquid and gas piping in each refrigerant system should be pressurized in turn in accordance with the following steps. (Nitrogen gas must be used.)

- Step 1: increase pressure to 0.3MPa for 3 minutes or more
- Step 2: increase pressure to 1.5MPa for 3 minutes or more
- Step 3: increase pressure to 3.8MPa for approximate 24 hours
- Major leaks indicate
- Minor leaks indicate

Increasing the system pressure to 3.8MPa does not guarantee the identification of minor leaks if pressure is maintained for only a short time. It is therefore recommended that the system remain pressurized in accordance with Step 3 above for at least 24 hours.

#### NOTE

Piping should not be pressured more than 3.8MPa.

- 2) Check for pressure drop

If there is no drop in pressure then the test is deemed a success.

If the pressure drops then the leak must be located. See following page.

However, if there is a change in the ambient temperature between the pressurizing stage and the time when you check for a drop in pressure then you will have to adjust your calculations accordingly since a change of 1°C can account for a pressure change of approximately 0.01MPa.

Compensating adjustment value:

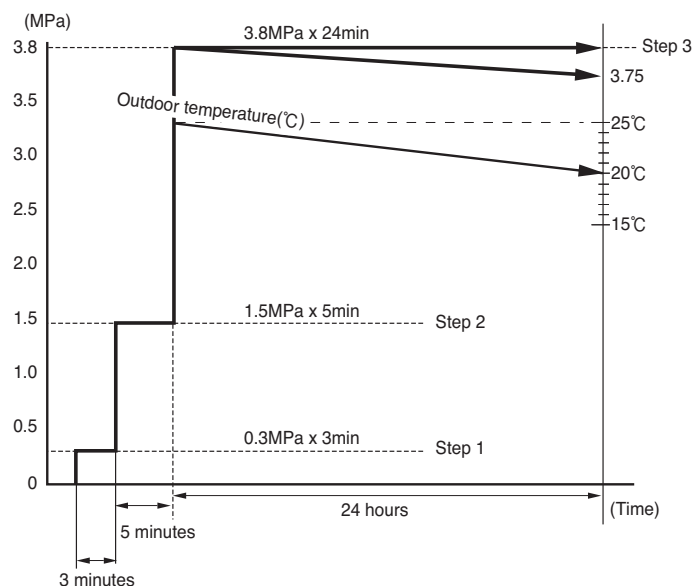
(temperature at time of pressurizing – temperature at time of checking) x 0.01

#### Example:

During of pressurizing: 3.8MPa 25°C

24 hours later: 3.75MPa 20°C

Although the gauge pressure is dropped from 3.8MPa to 3.75MPa, it can be safely assumed that there is no leakage because the gauge pressure can also drop due to the change in outdoor temperature.





## 2. Guideline for each installation process

### 2.6.3 Checking for leakage

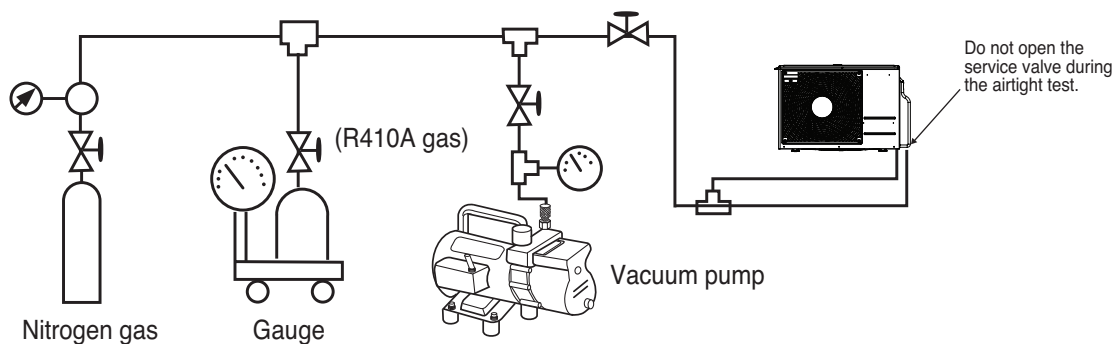
[Check 1] (Where pressure falls while carrying out Steps 1 to 3 described on previous page)

- ▶ Check by measure gage.....Gas detector.
- ▶ Check by ear.....Listen for the sound of a major leakage.
- ▶ Check by hand.....Check for leak by feeling around jointed sections with hand.
- ▶ Bubble check .....Bubbles will reveal the presence of a leakage.

[Check 2] (When searching for a minor leak or when there has been a fall in pressure while the system has been fully pressurized but the source of the leak cannot be traced.)

- ① Release the nitrogen until the pressure reaches 0.3MPa.
- ② Increase pressure to 1.5MPa using gaseous refrigerant(R410A).
- ③ Search for the source of the leakage using a leakage detector such as a halide torch or a propane or electronic detector.
- ④ If the source of the leakage still cannot be traced then repressurize with nitrogen up to 3.8MPa and check again.  
(The pressure must not be increased to more than 3.8MPa.)

(System sample)



#### Important points

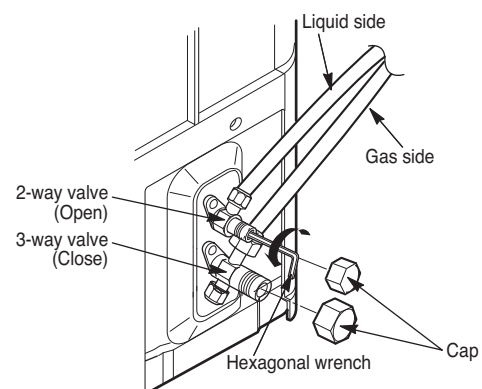
Where the lengths of piping involved are particularly long then the air tight test should be carried out block by block.

- Indoor side
- Indoor side + vertical pipes
- Indoor side + vertical pipes + outdoor side

#### CAUTION

##### Soap water method

1. Remove the caps from the 2-way and 3-way valves.
2. Remove the service-port cap from the 3-way valve.
3. To open the 2-way valve turn the valve stem counterclockwise approximately 90°, wait for about 2~3 sec, and close it.
4. Apply a soap water or a liquid neutral detergent on the indoor unit connection or outdoor unit connections by a soft brush to check for leakage of the connecting points of the piping.
5. If bubbles appear then those points have leakage.



## 2. Guideline for each installation process

### 2.7. Vacuum drying work

#### 2.7.1 What is Vacuum drying?

Vacuum drying is : The use of a vacuum pump to vaporize(gasify) the moisture (liquid) inside the pipe and expel it leaving the pipes completely dry inside.

At 1 atm(760mmHg) the boiling point (evaporating temperature) of water is 100°C but if a vacuum is created inside the pipes using a vacuum pump then the boiling point is rapidly reduced as the degree of the vacuum is increased.

If the boiling point is reduced to a level below that of the ambient temperature then the moisture in the pipes will evaporate.

#### Example

When outside temperature is 11.7°C as shown in the table on the right , the degree of vacuum must be lowered below -750mmHg

Boiling point of water(°C)	the degree of a vacuum	Pressure	
	mmHg	Pa	Torr
40	-705	7333	55
30	-724	4800	36
26.7	-735	3333	25
24.4	-738	3066	22
22.2	-740	2666	20
20.6	-742	2400	18
17.8	-745	2000	15
15.0	-747	1733	13
11.7	-750	1333	10
7.2	-752	1066	8
0	-755	667	5

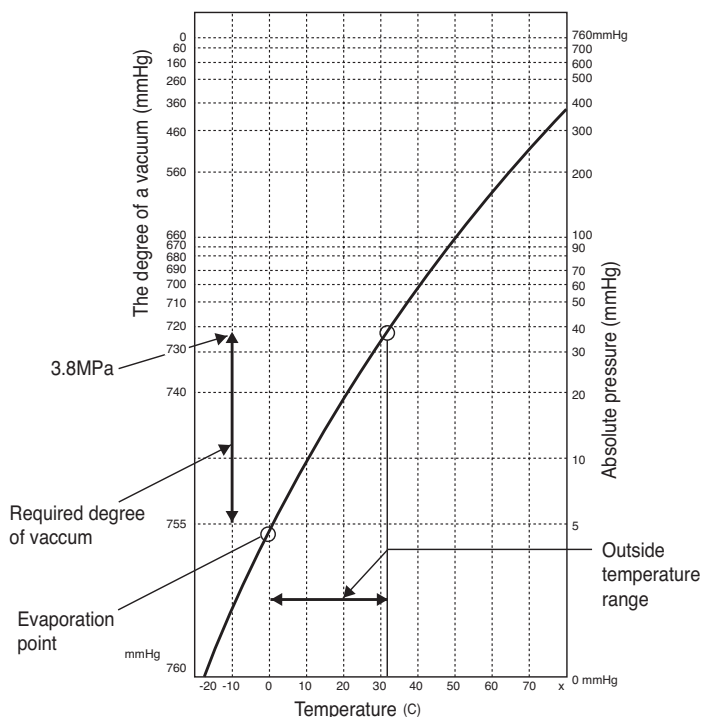
The evacuation of air conditioner piping provides the following effects.

- Vacuum drying
- Removes air and nitrogen(used in air-tightness test) from the inside of pipes.

Therefore , it is necessary to ensure that both purposes have been achieved in the vacuum drying operation.

**NOTE**

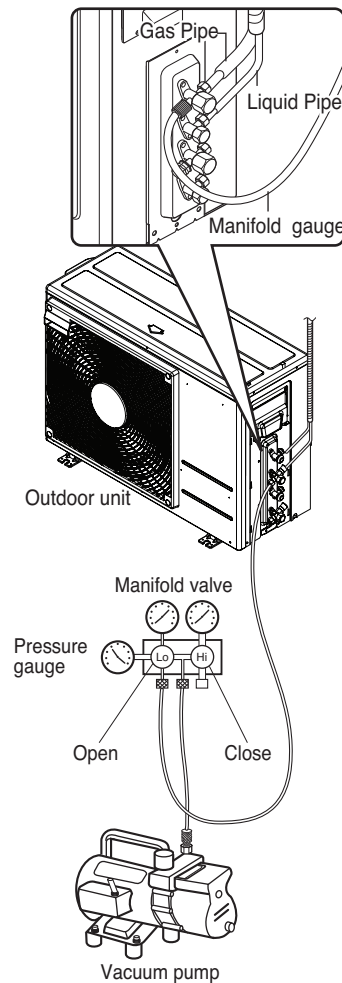
Key point: Maintain a vacuum level of -755mmHg



## 2. Guideline for each installation process

### 2.7.2 Evacuation

- ① Connect the manifold hose end described in the preceding steps to the vacuum pump to evacuate the tubing and indoor unit. Confirm the "Lo" knob of the manifold valve is open. Then, run the vacuum pump. The operation time for evacuation varies with tubing length and capacity of the pump. The following table shows the time required for evacuation.
- ② When the desired vacuum is reached, close the "Lo" knob of the manifold valve and stop the vacuum pump.



#### CAUTION

#### Finishing the job

1. With a service valve wrench, turn the valve stem of liquid side valve counter-clockwise to fully open the valve.
2. Turn the valve stem of gas side valve counter-clockwise to fully open the valve.
3. Loosen the charge hose connected to the gas side service port slightly to release the pressure, then remove the hose.
4. Replace the flare nut and fasten the flare nut securely with an adjustable wrench. This process is very important to prevent leakage from the system.
5. Replace the valve caps at both gas and liquid side service valves and fasten them tight. This completes air purging with a vacuum pump. The air conditioner is now ready for test run.

## 2. Guideline for each installation process

### 2.7.3 Choosing a vacuum pump

#### The necessity for counter flow prevention

After the vacuum process of the refrigerant cycle, the inside of the hose will be vacuumed after stopping the vacuum pump, the oil of vacuum pump may flow back. Moreover, if the vacuum pump stops during the operation for some reason. Therefore, in order to prevent the counter flow from the vacuum pump, a check valve is required.

#### 1) Vacuum pump performance

The 2 most important things for determining vacuum pump performance are as follows:

- ① Exhaust velocity
- ② Degree of vacuum

##### ① Exhaust velocity

Exhaust volume is usually expressed as l/min or m<sup>3</sup>/hr. The larger the number, the faster the vacuum is achieved. Generally speaking, the faster the exhaust velocity, the larger and heavier the vacuum pump itself is. Commercially available vacuum pumps (exhaust velocity of 20 - 30 l/min) usually take an extremely long time to achieve vacuum. (We recommend a vacuum pump of approx. 60 - 100 l/min.)

##### ② Degree of vacuum

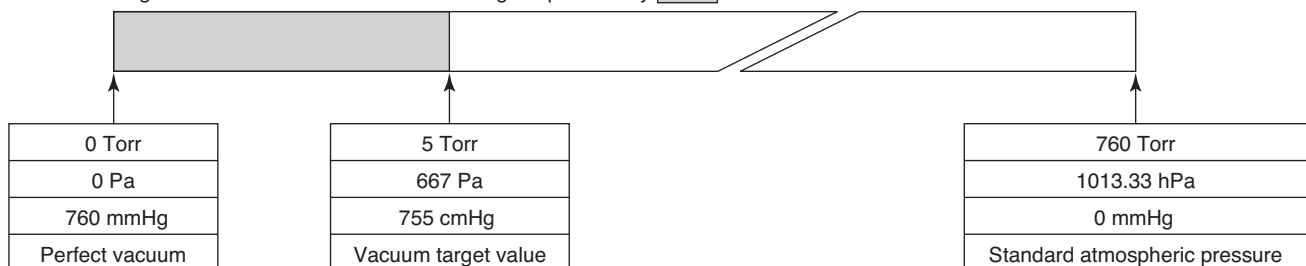
Ultimate vacuum varies largely according to use of the vacuum pump. Vacuum pumps used for vacuum forming cannot be used for vacuum drying. (A vacuum pump with a high degree of vacuum is required.)

When selecting a vacuum, you should select one which is capable of achieving 0.2 Torr of ultimate vacuum.

Degree of vacuum is expressed in Torr, micron, mmHg, and Pascal (Pa). The units correlate as follows:

	Unit	Standard atmospheric pressure	Perfect vacuum
Gauge pressure	kg/cm <sup>2</sup>	0	-1.033
Absolute pressure	kg/cm <sup>2</sup> abs	1.033	0
Torr	Torr	760	0
Micron	Micron	760000	0
mmHg	mmHg	0	760
Pa	Pa	1013.33	0

Degree of vacuum must be within the range expressed by



## 2. Guideline for each installation process

### 2) Vacuum pump maintenance

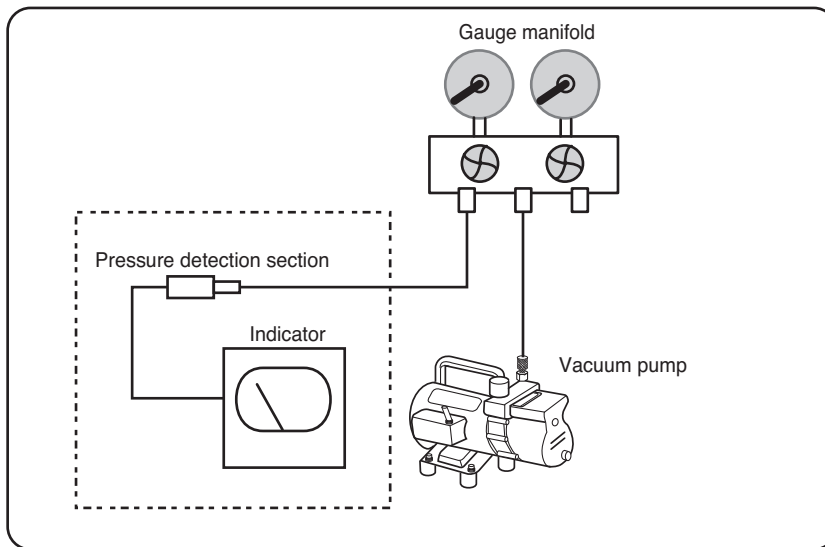
Because of their nature, most vacuum pumps contain large amounts of oil which lubricates bearings, etc., and functions to enhance airtightness of pistons. When using a vacuum pump to discharge air from refrigerant piping, moisture in the air tends to get mixed in with the oil. You must therefore change oil periodically and make sure the proper oil level is maintained. (Perform periodic inspections in accordance with the operating instructions.)

### 3) Degree of vacuum measurement

An extremely accurate vacuum gauge is required to test degree of vacuum. You cannot accurately measure degree of vacuum with the compound gauge on the gauge manifold. A Pirani vacuum gauge is required to measure degree of vacuum accurately. Because Pirani gauges are very sensitive and require extreme care when using, they are not very suitable for use in the field. You should therefore use the Pirani gauge to calibrate the attached vacuum gauge on the gauge manifold and the degree of vacuum of the vacuum pump.

### 4) Calibration method

- ① Connect a Pirani vacuum gauge and the gauge manifold vacuum gauge (760 mmHg) to the vacuum pump at the same time, and run the pump for about 3 minutes.
- ② Make sure the reading of the Pirani vacuum gauge is 5 Torr (667 Pa ) or less. The reading of conventional vacuum pumps lowers to about 0.2 Torr.  
If the reading is not 5 Torr or less, check the vacuum pump oil. (Oil is low in many cases.)
- ③ Check the attached gauge on the gauge manifold. Adjust the gauge if the reading is not exactly correct.
- ④ Adjust the gauge manifold valve so that the Pirani vacuum gauge reads 5 Torr.
- ⑤ Mark the position indicated by the gauge manifold gauge with an oil based ink pen.
- ⑥ Use the mark of the gauge manifold as a target when vacuuming in the field.



(Reference) Types of vacuum pump with respect to maximum degree of vacuum

Type	Maximum degree of vacuum		Use	
	Expulsion capacity		Vacuum drying	Air expulsion
Oil rotary (Oil using)	0.02 mmHg	100 l/min	Suitable	Suitable
Oilless rotary (No need of oil)	10 mmHg	50 l/min	Unsuitable	Suitable
	0.02 mmHg	40 l/min	Suitable	Suitable

← Many handy pumps fall into this category

## 2. Guideline for each installation process

### 2.7.4 Vacuum drying procedure

There are two vacuum drying methods and the appropriate one should always be chosen to confirm with individual local conditions.

[Normal vacuum drying].....The standard method

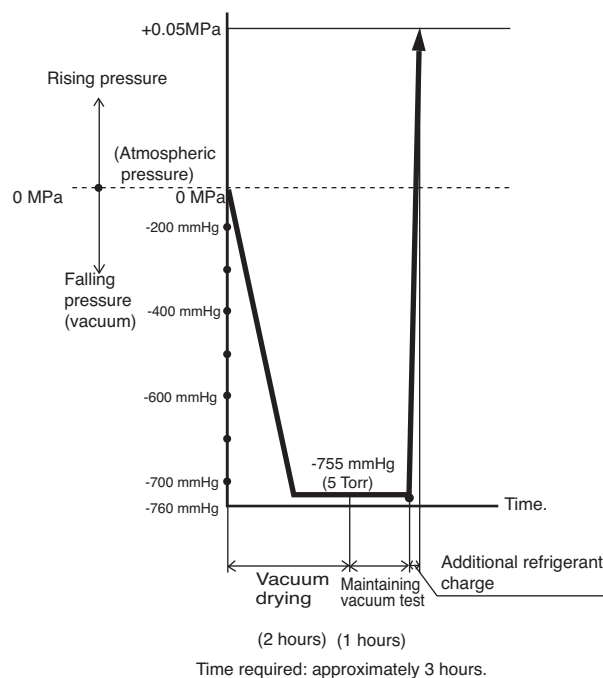
#### [Operational steps]

- ① Vacuum drying (1st time): Connect a manifold gauge to the service port of the liquid or gas pipe and operate the vacuum pump for at least 2 hours.  
(The degree of vacuum produced should be in excess of 5 Torr)  
If after 2 hours the vacuum produced has not exceeded 5 Torr then either there is moisture in the pipe or there is a leak.  
Operate the vacuum pump for further one more hour.  
If, even after 3 hours, the vacuum has not reached 5 Torr then check the system for a leak.
- ② Carry out vacuum test.  
Produce a vacuum in excess of 5 Torr and do not release it for an hour or more. Check the vacuum gauge to make sure that it has not risen. (If the gauge rise then there is still moisture in the pipe or there is a leak somewhere.)
- ③ Additional charge of refrigerant.  
Connect the charging cylinder to the liquid pipe service port and charge with the required amount of refrigerant.
- ④ Open stop valve to the full.  
Open the stop valve on the liquid and the gas pipes to the full.

#### NOTE

Vacuums should be produced in both the liquid and the gas pipes.

(Because there are a large number of functional components in the indoor unit which cut off the vacuum mid-way through)



## 2. Guideline for each installation process

### 2.8 Additional charge of refrigerant

#### 2.8.1 Refrigerant charging instructions

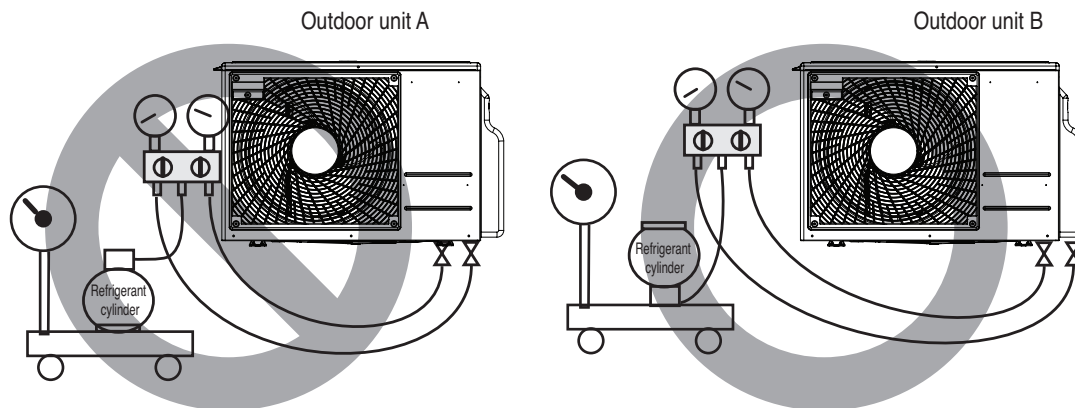
- ① The results of all calculations must be recorded. (make a list)
- ② The refrigerant will need to be additionally charged when the distance between the outdoor Unit and the most distant indoor unit is more than length (refer to section 8 outdoor unit installation condition)
- ③ The additional charging operation should be carried out by input of liquid into the liquid pipes from a charging cylinder following completion of the Vacuum drying operation.
- ④ When the additional charging operation cannot be satisfactorily completed, use the action of the compressor to complete the additional charging during the test run.

R-410A is a non-azeotrope refrigerants. Therefore, these refrigerants must be charged in the Liquid state.

When charging the refrigerant into equipment from the cylinder, turn the refrigerant cylinder upside down.

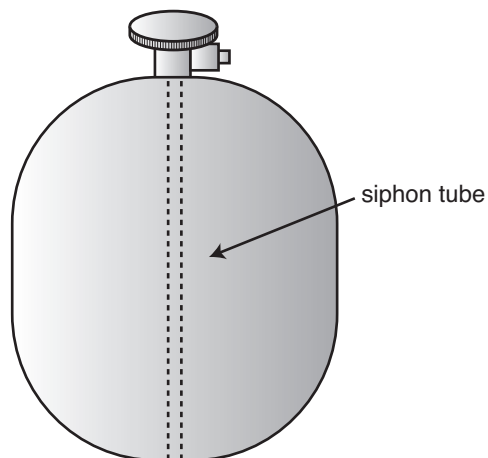
#### NOTE

Make sure that the refrigerant (liquid) is taken out from the bottom part of the refrigerant cylinder. Do not take out the refrigerant (gas) at the upper of the refrigerant cylinder for charging.



#### CAUTION

- Since some refrigerant cylinders differ in the internal mechanism, it is necessary to examine the cylinder carefully. (Some cylinders have a siphon tube to eliminate the need for turning it upside down)



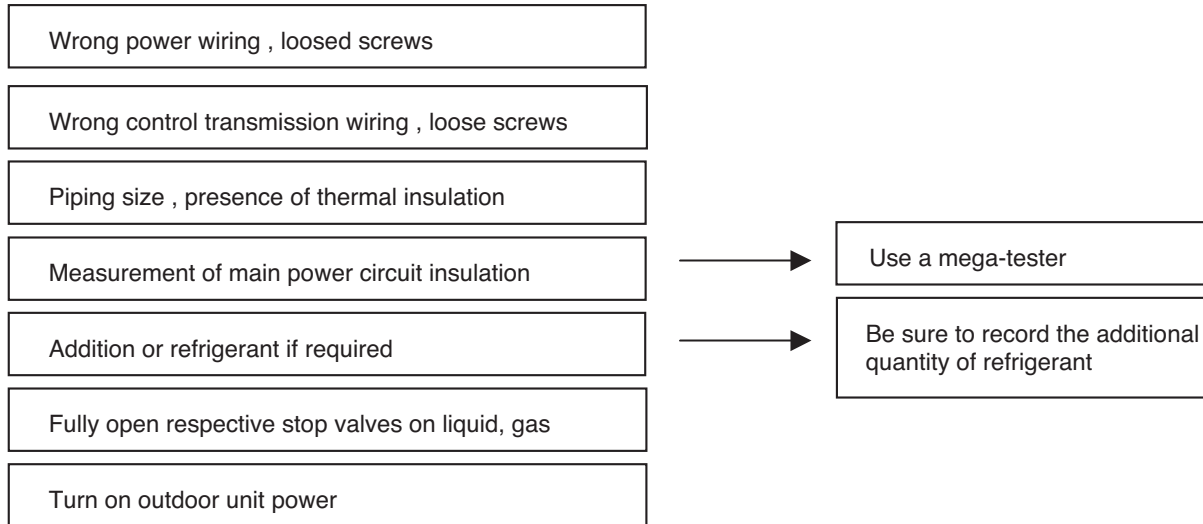
## 2. Guideline for each installation process

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### 2.9 Trial test run operation

#### 2.9.1 Test run procedure

Check the following before turning power on





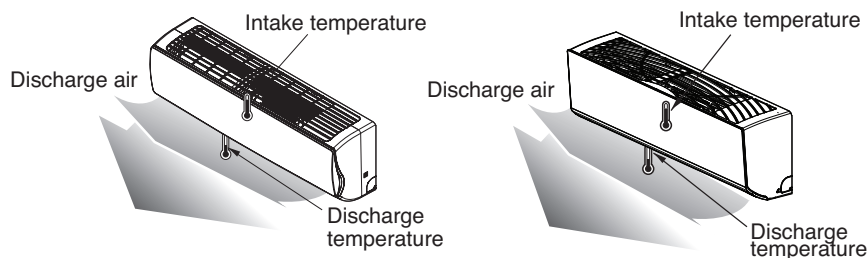
## 2. Guideline for each installation process

### 2.9.2 Evaluation performance

Evaluation of the performance

Operate unit for 15~20 minutes, then check the system refrigerant charge:

- ① Measure the pressure of the gas side service valve.
- ② Measure the temperature of the intake and discharge of air.
- ③ Ensure the difference between the intake temperature and the discharge is more than 8°C



- ④ For reference, the gas side pressure of optimum condition is as below. (Cooling)

Refrigerant	Outside ambient Temp.	The pressure of the gas side service valve.
R410A	35°C (95°F)	8.0~10.0kg/cm <sup>2</sup> G

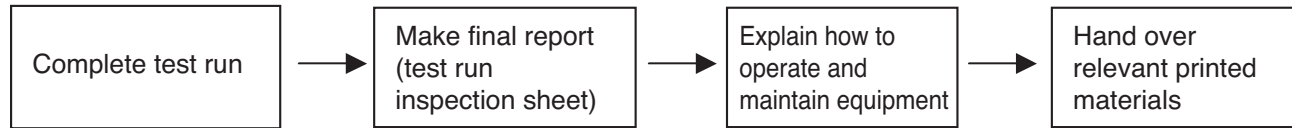
#### NOTE

: If the actual pressure is higher than shown, the system is most likely overcharged so extra refrigerant should be removed.  
 If the actual pressure is lower than shown, the system is most likely undercharged so extra refrigerant should be added.  
 The air conditioner is now ready for use.

## 2. Guideline for each installation process

### 2.9.3 Transfer to customer with explanation

#### Operational step



- ① The measurements taken during the test run should be recorded and kept on a test run inspection sheet.
- ② Do not forget to record the length of the refrigerant piping and the refrigerant additional charging volume on the plate on the back of the outdoor unit external notice board, as this information will be required for servicing the system.
- ③ Explain to the customer how to operate and maintain the equipment and let him try it.
- ④ Assemble all the relevant diagrams and other printed matter which is required to operate the system and hand over to the customer (on the spot) and request him to keep it handy.
- ⑤ Service contact address.

List of equipment which has been delivered

Installation drawing

1 set of operation manuals

Names of those responsible for the work (emergency contact address)

Equipment guarantees.

It is essential to prepare a control wiring diagram which clarifies the refrigerant system and the control system.

## 3. Installation of outdoor unit

### 3.1 Safety precautions

Please strictly follow the instructions given in the Installation manual .Improper installation by ignoring the instructions can lead to damage to life and property.

Make sure to read the following safety instructions very carefully and throughly .



This symbol indicates the possibility of death or serious injury.



This symbol indicates the possibility of injury or damage to properties.

■ The meanings of the symbols used in this manual are as shown below.



**Be sure not to do.**



**Be sure to follow the instruction.**



**Do not use a defective or underrated circuit breaker.**

- There is risk of fire or electric shock.

**Do not use a multi consent. Always use this appliance on a dedicated circuit and breaker.**

- Otherwise it can cause electric shock or fire.

**For electrical work, contact the dealer, seller, a qualified electrician, or an authorized service center. Do not disassemble or repair the product by yourself.**

- There is risk of fire or electric shock.

**Always ground the product as per the wiring diagram. Do not connect the ground wire to gas or water pipes lightning rod or telephone ground wire.**

- There is risk of fire or electric shock.

**Install the panel and the cover of control box securely.**

- There is risk of fire or electric shock due to dust , water etc.

**Use the correctly rated breaker or fuse.**

- There is risk of fire or electric shock.

**If the power cable or cord has scratches or skin peeled off or deteriorated then immediately replace it.**

- There is risk of fire or electric shock.

**For installation, removal or reinstall, always contact the dealer or an authorized service center.**

- There is risk of fire, electric shock, explosion, or injury.

**Do not install the product on a defective foundation. Be sure that the installation area does not deteriorate with age.**

- If the foundation collapses, the air conditioner could fall with it, causing property damage, product failure, and personal injury.

**Never install the outdoor unit at a place from where it can fall down.**

- The falling outdoor unit can cause damage or injury or even death of a person and also damage or malfunctioning of the product itself.

**When the product is soaked (flooded or submerged) in water, contact an authorized service center for repair before using it again.**

- There is risk of fire or electric shock.

**In outdoor units the the step up capacitor supplies high voltage electricity to the electrical components. Be sure to discharge the capacitor completely before conducting the repair work.**

- An charged capacitor can cause electrical shock.

### 3. Installation of outdoor unit

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**Be sure to use only those parts which are listed in the svc parts list. Never attempt to modify the equipment.**

- The use of inappropriate parts can cause an electrical shock, excessive heat generation or fire.

**Indoor/outdoor wiring connections must be secured tightly and the cable should be routed properly so that there is no force pulling the cable at the connection terminals.**

- Improper or loose connections can cause excessive heat generation or fire.

**Safely dispose off the packing materials.**

- Things like screws, nails, batteries, broken things etc after installation or svc can cause injury to small kids. Tear away and throw away the plastic packaging bags so that children will not play with them.

**Make sure to check that the power cable plug is not dirty, loose or broken, then only insert the plug completely.**

- Dirty, loose or broken power plug can cause electric shock or fire.

**During svc be sure to check the refrigerant to be used.**

- Incorrect refrigerant used can prevent the normal operation of the unit.

**When installing the unit, use the installation kit provided with the product.**

- Otherwise the unit may fall and cause severe injury .

**Do not touch, operate, or repair the product with wet hands.**

- There is risk of electric shock or fire.

**Do not place a heater or other appliances near the power cable.**

- There is risk of fire and electric shock.

**Do not allow water to run into electric parts. Install the unit away from water sources**

- There is risk of fire, failure of the product, or electric shock.

**Do not store or use or even allow flammable gas or combustibles near the product.**

- There is risk of fire or failure of product.

**If strange sounds, smell or smoke comes from the product, immediately turn the breaker off or disconnect the power supply cable.**

- There is risk of electric shock or fire.

**Do not open the front grill of the product during operation. (Do not touch the electrostatic filter, if the unit is so equipped.)**

- There is risk of physical injury, electric shock, or product failure.

**Turn the main power off when cleaning or repairing the product.**

- There is risk of electric shock.

**When the product is not to be used for a long time, turn off the circuit breaker.**

- There is risk of product damage or failure, or unintended operation.

**Take care to ensure that nobody especially kids could step on or fall onto the outdoor unit.**

- This could result in personal injury and product damage.

### 3. Installation of outdoor unit

---

#### CAUTION

**Use two or more people to lift and transport the product.**

- Avoid personal injury.

**Do not install the product where it will be exposed to sea wind (salt spray) directly.**

- It may cause corrosion on the product. Corrosion, particularly on the condenser and evaporator fins, could cause product malfunction or inefficient operation.

**Keep level even when installing the product.**

- To avoid vibration or noise.

**Do not install the product where the noise or hot air from the outdoor unit could damage or disturb the neighborhoods.**

- It may cause a problem for your neighbors and hence dispute.

**Always check for gas (refrigerant) leakage after installation or repair of product.**

- Low refrigerant levels may cause failure of product.

**Do not block the inlet or outlet of air flow.**

- It may cause product failure.

**Do not step on or put anything on the product.**

- There is risk of personal injury and failure of product.

**Do not insert hands or other objects through the air inlet or outlet while the product is operating.**

- There are sharp and moving parts that could cause personal injury.

**Be cautious when unpacking and installing the product.**

- Sharp edges could cause injury. Be especially careful of the case edges and the fins on the condenser and evaporator.

**If the refrigerant gas leaks during the repair, do not touch the leaking refrigerant gas.**

- The refrigerant gas can cause frostbite (cold burn).

**Do not tilt the unit when removing or uninstalling it.**

- The condensed water inside can cause spill and wet the furniture and the floor.

**Do not mix air or gas other than the specified refrigerant used in the system.**

- If air enters the refrigerant system, an excessively high pressure results, causing equipment damage or injury.

**If the refrigerant gas leaks during the installation or operation ventilate the area immediately.**

- Otherwise it can be harmful for your health.

**Do not expose your skin or kids or plants to the cool or hot air draft.**

- This could harm to your health.

**Use a firm stool or ladder when cleaning, maintaining or repairing the product at an height.**

- Be careful and avoid personal injury.

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

## 3. Installation of outdoor unit

### 3.1.1 Points for explanation about operations

The items with WARNING and CAUTION marks in the operation manual are the items pertaining to possibilities for bodily injury and material damage in addition to the general usage of the product. Accordingly, it is necessary that you make a full explanation about the described contents and also ask your customers to read the operation manual.

### 3.1.2 Note to the installer

Be sure to instruct customers how to properly operate the unit (especially cleaning filters, operating different functions, and adjusting the temperature) by having them carry out operations themselves while looking at the manual.

### 3.1.3 Selecting installation site for outdoor units

Select an installation site where the following conditions are fulfilled and that meets with your customer's approval.

- ① Location strong enough to bear the weight of the unit.
- ② Location accessible and having enough clearance for inspection and service in the future.
- ③ Location allowing easy condensate drainage suitable gradient of the unit and the drain pipe.
- ④ Piping between the indoor and outdoor unit is possible within the allowable limits.
- ⑤ Location free from electrical noise.
- ⑥ Location allowing optimum air distribution without any blocking to air flow.
- ⑦ Location having no risk of flammable gas leakage.
- ⑧ Location free from mineral oil mist or an oil spray or vapor eg in kitchen .It could result in leakage .
- ⑨ Location free from corrosive gases such as sulphurous acid gas because it corrodes the copper pipes or soldered parts resulting in leakage .
- ⑩ Location free from any machinery emitting electromagnetic waves which may disturb the control system thus causing malfunction of the unit .
- ⑪ Location free from flammable gases , carbon fibre , or ignitable dust suspensions in the air or where volatile flames are handled like gasoline or thinner. Operating in such conditions may result in fire .
- ⑫ Install the indoor and outdoor units, power supply wiring and connecting wires at least 1m. away from televisions or radios in order to prevent image interference or noise. (Depending on the radio waves, a distance of 1m. may not be sufficient enough to eliminate the noise.)
- ⑬ Consider whether the place where the unit will be installed can support the full weight of the unit, and reinforce it with boards and beams, etc. if needed before proceeding with the installation. Also, reinforce the place to prevent vibration and noise before installing. (The installation pitch can be found on the paper pattern for installation (3), so refer to it when considering the necessity for reinforcing the location.)
- ⑭ Obey the local and national regulations and limits regarding airconditioner installation.
- ⑮ Location free from lavatory (NH<sub>3</sub>.etc.). NH<sub>3</sub> gas will cause corrosion of outdoor unit metallic parts.

## 3. Installation of outdoor unit

### 3.1.4 For the following items, take special care during construction and check after installation is finished

1. Items to be checked after completion of work

Items to be checked	If not properly done, what is likely to occur	Check
Are the indoor and outdoor unit fixed firmly?	The units may drop, vibrate or make noise.	
Is the gas leak test finished?	It may result in insufficient cooling.	
Is the unit fully insulated?	Condensate water may drip.	
Does drainage flow smoothly?	Condensate water may drip.	
Does the power supply voltage correspond to that shown on the name plate?	The unit may malfunction or the components burn out.	
Are wiring and piping correct?	The unit may malfunction or the components burn out.	
Is the unit safely grounded?	It may be dangerous at electric leakage.	
Is wiring size according to specifications?	The unit may malfunction or the components burn out.	
Is something blocking the air outlet or inlet of either the indoor or outdoor units?	It may result in insufficient cooling.	
Are refrigerant piping length and additional refrigerant charge noted down?	The refrigerant charge in the system is not clear.	

#### CAUTION

- **Be very careful about product transportation.**  
Some products use PP bands for packaging. Do not use any PP bands for a means of transportation. It is dangerous.
- **Safely dispose of the packing materials.**  
Packing materials, such as nails and other metal or wooden parts, may cause stabs or other injuries.  
Tear apart and throw away plastic packaging bags so that children will not play with them. If children play with a plastic bag which was not torn apart, they face the risk of suffocation.

#### NOTE

- **Install the indoor and outdoor units, power supply wiring and connecting wires at least 1m. away from televisions or radios in order to prevent image interference or noise.**  
(Depending on the radio waves, a distance of 1m. may not be sufficient enough to eliminate the noise.)

### 3.1.5 Before installation

- **During product unpacking and removing it from the packing case, be sure to lift it without exerting any pressure on other parts, especially, horizontal flaps, the refrigerant piping, drain piping, and other resin parts.**
- Be sure to remove a cushion (corrugated paper) located between the heat exchanger and the right air filter.
- Be sure to check the type of R410A refrigerant to be used before installing the unit. (Using an incorrect refrigerant will prevent normal operation of the unit.)
- The accessories needed for installation must be retained in your custody until the installation work is completed. Do not discard them!
- Decide upon a line of transport.
- Leave the unit inside its packaging while moving, until reaching the installation site. Where unpacking is unavoidable, use a sling of soft material or protective plates together with a rope when lifting, to avoid damage or scratches to the unit.
- For the installation of an outdoor unit, refer to the installation manual attached to the outdoor unit.
- When using the wireless remote controller, refer to the installation manual attached to the wireless remote controller.
- Entrust installation to the place of purchase or an authorized serviceman. Improper installation could lead to leaks and in worst cases, electric shock or fire.
- Use only parts provided with the unit or parts satisfying required specifications. Unspecified parts could cause the unit to fall out of place, or could lead to leaks and, in the worst cases, electric shock or fire.

## 3. Installation of outdoor unit

### 3.2 Introduction

This installation guidance describes the procedures for outdoor unit installation, piping, wiring, and control between outdoor units, indoor units and controller.

Installation of the indoor units is not described in this part. Please refer to the installation guidance manual which supplied with indoor units for their respective installation.

#### 3.2.1 Lifting method

- ① When carrying the unit suspended, pass the ropes under the unit and use the two fork lift slots each at the front and rear.
- ② Always lift the unit with ropes attached at four points so that impact is not applied to the unit.
- ③ Attach the ropes to the unit at an angle of 40° or less.
- ④ Use two ropes at least 7 m long.

#### **CAUTION**

##### **Be very careful when carrying the product.**

- PP bands are used to pack some products. Do not use them as a mean for transportation because they are dangerous.
- Do not touch heat exchanger fins with your bare hands. Otherwise you may get a cut.
- Tear plastic packaging bag and scrap it so that children cannot play with it. Otherwise plastic packaging bag may suffocate children to death.
- When carrying in outdoor unit, be sure to support it at four points. Carrying in and lifting with 3-point support may make outdoor unit unstable, resulting in a fall of it.

#### 3.2.2 Inspecting and handling the unit

At the time of delivery, the package should be checked for any damage from out side and inside. If damaged then it should be reported to the carrier claims agent immediately. When handling the unit refer to following cautions:

- ① Handle the unit with care. Keep the unit upright in order to avoid inside components damage.
- ② If a forklift is to be used it should pass the forklift arms through the openings at the bottom of the unit.
- ③ If a crane is used, lift the unit preferably with 2 ropes of at least 7m length.
- ④ When lifting the unit with a crane, always use protectors to prevent belt damage and pay attention to the position of the unit's center of gravity.
- ⑤ Bring the unit in original package to prevent damage during local transport.



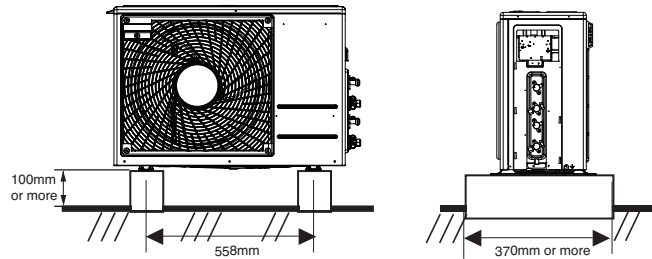
### 3. Installation of outdoor unit

#### 3.3 Foundation

**A2UQ18GFD0  
A3UQ24GFD0**

<Basic intensity>

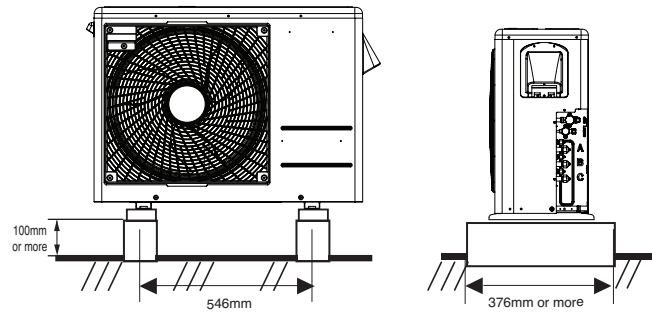
Bolt Factor	M10-J type
Concrete height	100mm or more
Bolt inserted depth	70mm or more



**A3UQ30GFD1**

<Basic intensity>

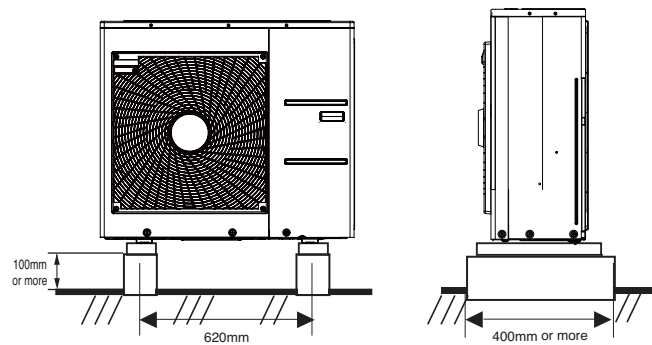
Bolt Factor	M10-J type
Concrete height	100mm or more
Bolt inserted depth	70mm or more



**A4UQ36GFD0, A5UQ48GFA1**

<Basic intensity>

Bolt Factor	M10-J type
Concrete height	100mm or more
Bolt inserted depth	70mm or more

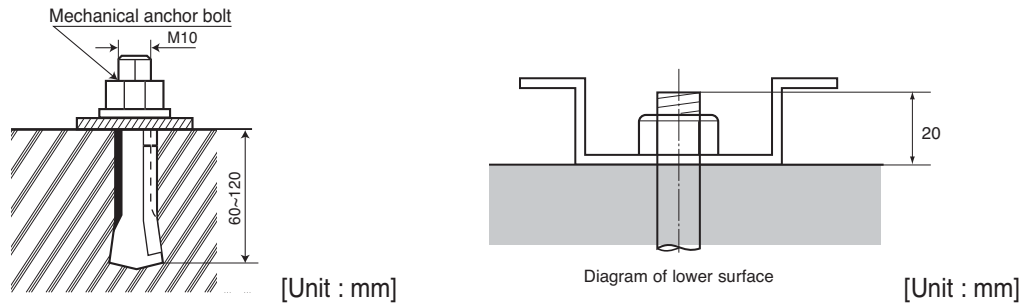


## 3. Installation of outdoor unit

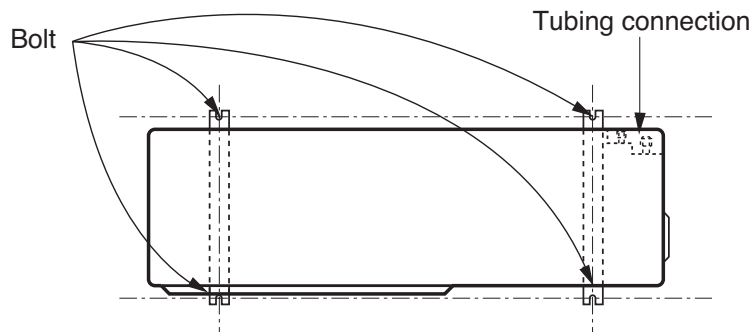
### 3.4 Settlement of the outdoor unit

- Anchor the outdoor unit with a bolt and nut tightly and horizontally on a concrete or rigid mount.
- When installing on the wall, roof or rooftop, anchor the mounting base securely with a nail or wire assuming the influence of wind and earthquake.
- In the case when the vibration of the unit is conveyed to the house, secure the unit with an anti-vibration rubber.

#### Bolt construction work



#### Settlement draw of outdoor units



#### CAUTION

- The ingredients of foundation : Cement : Sand : Gravel for the concrete should 1 : 2 : 4 ratio
- The foundation surface should be finished with mortar.
- The edges of foundation should be rounded.
- A drain passage should be made around the foundation to thoroughly drain water away from the equipment installation area.
- If installing the outdoor units on the roof, the roof's strength have to be checked.
- Care should be taken for weather - proofing
- Blocking all gaps of outdoor unit, for passing piping and wiring, using sealing material (Field supply)  
(Animals and bugs might enter in the machine.)

## 3. Installation of outdoor unit

### 3.5 Selection of the best location

This Multi F & Multi F DX unit is suitable for installation in a residential and commercial environmental situation.

If installed near a household appliance it can cause electromagnetic interference.

The units should be installed in a location that meets the following requirements:

- ① A robust and strong base which can support the weight of the unit and will not degrade easily
- ② If an awning is built over the unit to prevent direct sunlight or rain exposure, make sure that the discharge air of the condenser is not restricted.
- ③ It is recommended that the outdoor unit should be fenced to avoid animals or plants being exposed in the direct path of the discharged air .
- ④ Ensure proper spaces between the unit and its surrounding as given in the figure.
- ⑤ Ensure that the water shall not cause any damage by overflowing in case of water condensation
- ⑥ The noise, vibration and hot discharged air of the outdoor unit should not annoy the surrounding environment.
- ⑦ Ensure that there is no damage to the pipes in long run as it may cause the refrigerant leakage.
- ⑧ In case the outdoor may have heavy snow :
  - a. Make foundation at a suitable height.
  - b. Fit a suitable hood or a awning over the unit.
- ⑨ Rooftop Installations : If the outdoor unit is installed on a roof structure, be sure to level the unit. Ensure the roof structure and anchoring method are adequate for the unit location. Consult local codes regarding rooftop mounting.

#### **CAUTION**

An inverter air conditioner can cause electronic noise generated from broadcasting frequency. Make sure to maintain proper distances between the products and electric wires keeping away from stereo, TV set or other appliances

1. Branch switch, over current breaker
2. Remote controller
3. Cool/heat selector
4. Radio or TV set
5. Wireless microphone

If frequency signal of AM broadcasting or TV Set is non stable, keep distances of 3m or more from product and use electric wire along with conduit tubes for power and transmission cable.

#### **CAUTION**

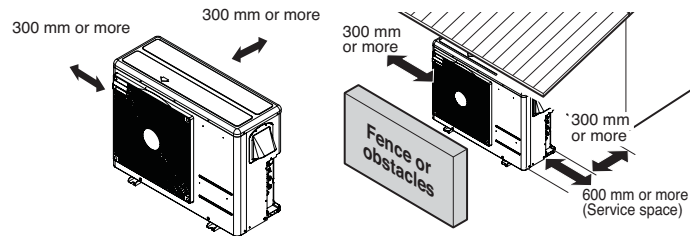
1. Actually the R410A refrigerant is not toxic, nonflammable and odor free. Any how if the refrigerant is leaked then its concentration may exceed the allowable limit depending on the related space volume.  
Due to this, it is necessary to take measures for the volume size against leakage.
2. Do not install unit in following locations.
  - Locations where sulfurous acids or this kind of other corrosive gases might be help to corrode of copper piping and soldered joints, and can cause refrigerant leakage.
  - Locations such as kitchens or cuisine which contain a lot of hot oil or steam or where oil may splatter to the product. Can cause the unit to make leak or other serious problem.
  - Locations where electromagnetic waves is prevalent. The electromagnetic waves may cause the control system to malfunction or causing an abnormal operation.
  - Locations where inflammable gas might leak, where combined gasoline, methane or other volatile substances, carbon dust and other incendiary substances are found in the atmosphere. Leaked gas may accumulate around the unit, can cause a serious explosion.

## 3. Installation of outdoor unit

### 3.6 Clearance space

#### 3.6.1 Clearance around outdoor unit

- Ensure that the space around the back is more than 300 mm on the opposite to the PCB side and secure 600 mm space near the compressor and PCB side of the air conditioner for service.



\* Outdoor unit is representative. Actual appearance of outdoor unit may be different but clearances will stay the same.

### 3. Installation of outdoor unit

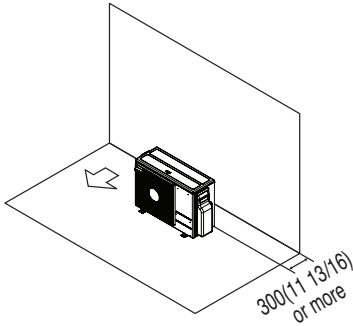
#### Clearance of side discharge unit [Unit:mm(inch)]

#### 1) Where there is an obstacle on the air intake side:

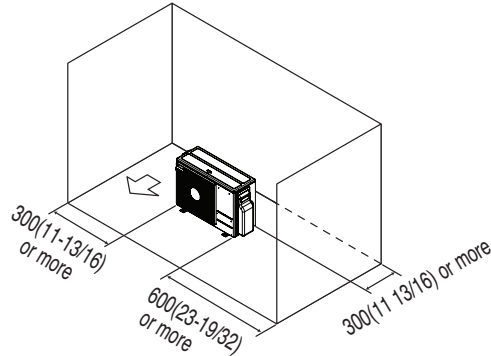
##### (1) Stand alone installation

###### ■ No obstacle above

- Obstacle on the air intake side only

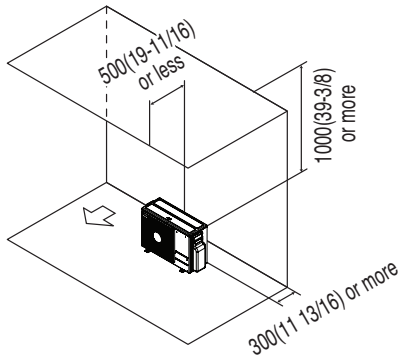


- Obstacle on the both left and right sides

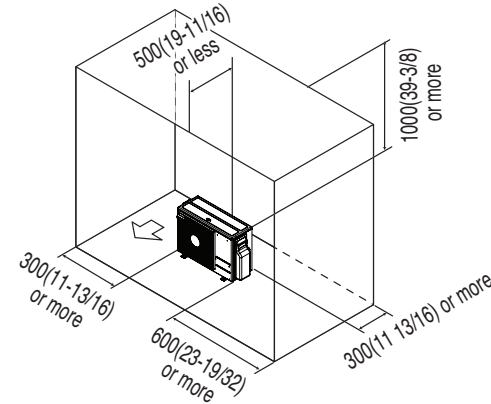


###### ■ Obstacle above, too

- Obstacle on the air intake side, too



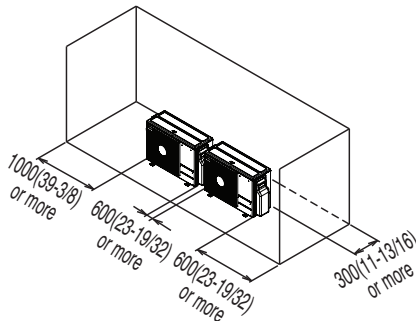
- Obstacle on the air intake side, and both sides



##### (2) Collective installation

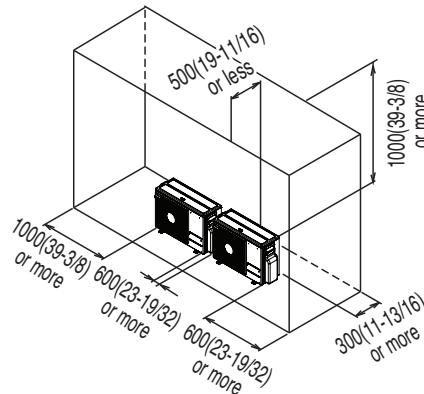
###### ■ No obstacle above

- Obstacle on the both sides



###### ■ Obstacle above, too

- Obstacle on the air intake side, and both side

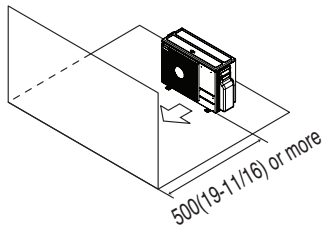


### 3. Installation of outdoor unit

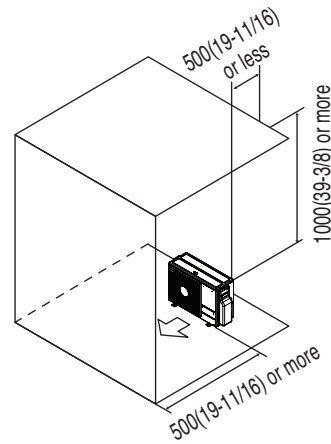
#### 2) Where there is an obstacle on the discharge side:

##### (1) Stand alone installation

■ No obstacle above

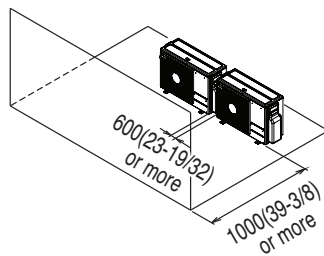


■ Obstacle above, too

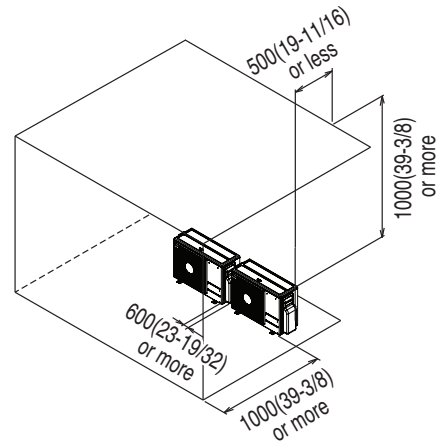


##### (2) Collective installation

■ No obstacle above



■ Obstacle above, too



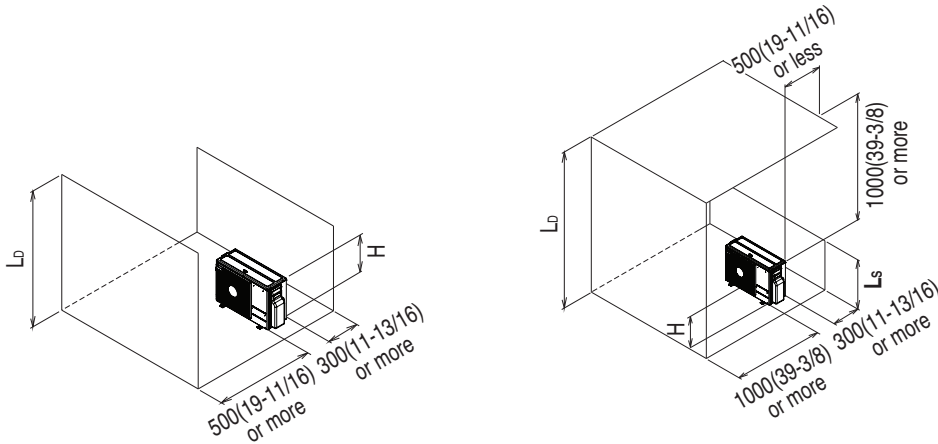
### 3. Installation of outdoor unit

#### 3) Where there are obstacles on both suction and discharge sides:

##### (1) Stand alone installation

###### ■ Where the obstacles on the discharge side is higher than the unit ( $L_D > H$ ):

- No obstacle above
- Obstacle above, too

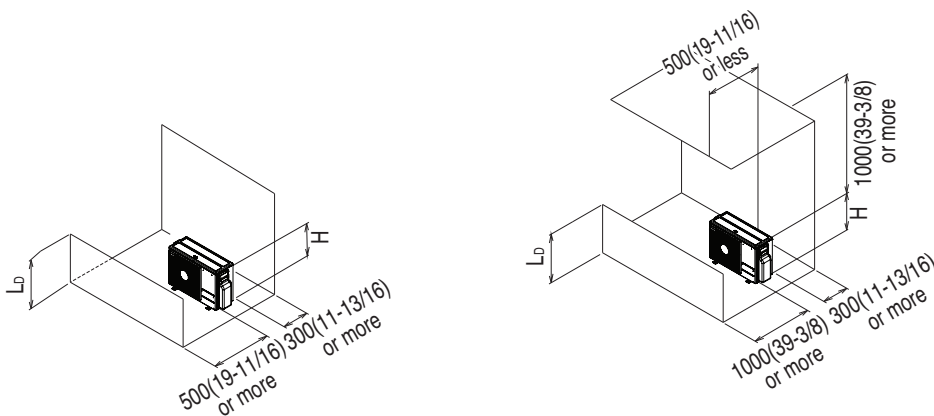


When the obstacles above also, close the bottom of the installation frame to prevent the discharged air from being bypassed.

In case that height ( $L_S$ ) of obstacles on the suction side is higher than the unit height ( $H$ ), set the stand as ' $L_S \leq H$ '. ' $L_S$ ' should be lower than ' $H$ '.

###### ■ Where the obstacles on the discharge side is lower than the unit ( $L_D \leq H$ ):

- No obstacle above
- Obstacle above, too



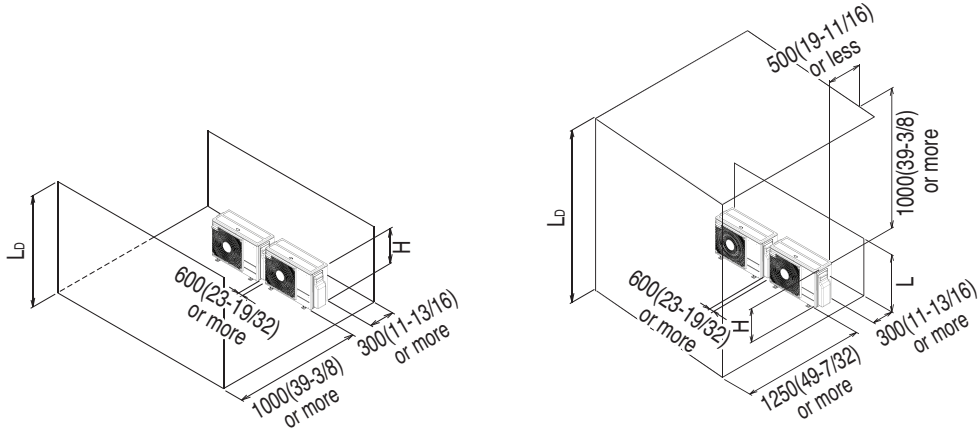
When the obstacles above also, close the bottom of the installation frame to prevent the discharged air from being bypassed.

### 3. Installation of outdoor unit

#### (2) Collective installation

■ Where the obstacles on the discharge side is higher than the unit ( $L_D > H$ ):

- No obstacle above
- Obstacle above, too

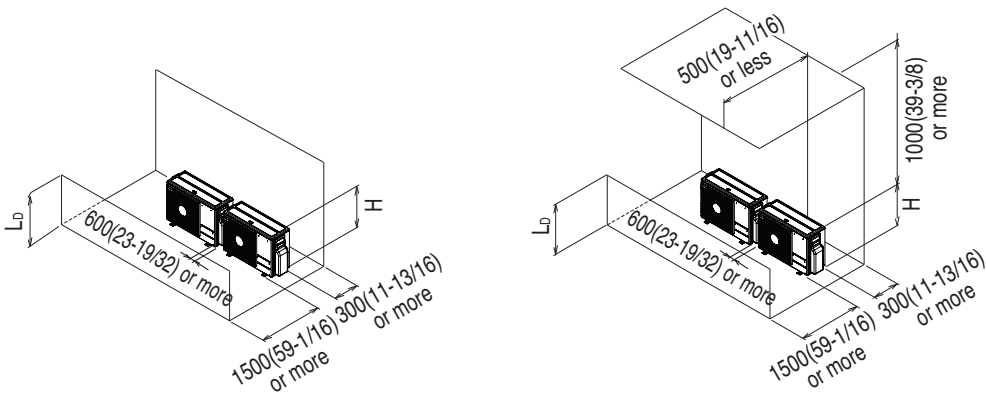


When the obstacles above also, close the bottom of the installation frame to prevent the discharged air from being bypassed.

In case that height ( $L_s$ ) of obstacles on the suction side is higher than the unit height ( $H$ ), set the stand as ' $L_s \leq H$ '. ' $L_s$ ' should be lower than ' $H$ '.

■ Where the obstacles on the discharge side is lower than the unit ( $L_D \leq H$ ):

- No obstacle above
- Obstacle above, too



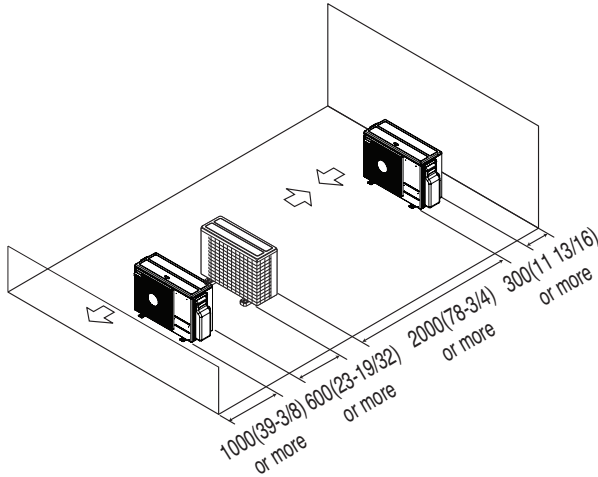
When the obstacles above also, close the bottom of the installation frame to prevent the discharged air from being bypassed.



### 3. Installation of outdoor unit

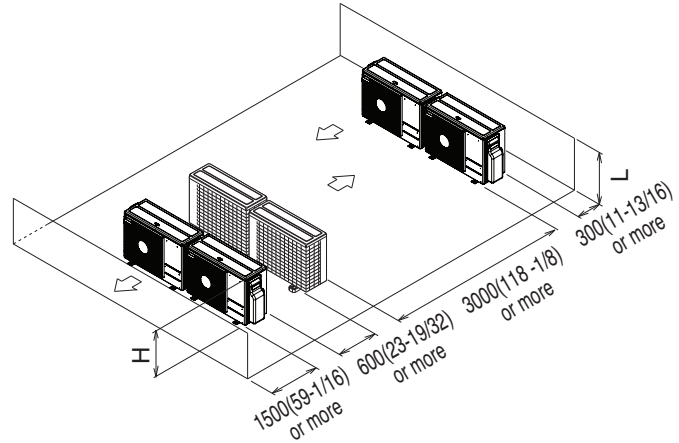
#### 4) Series installation

##### ■ One row of stand alone installation



##### ■ Rows of collective installation (2 or more)

• L should be smaller than H :  $L \leq H$



#### 3.6.2 Air guide work

In case of outdoor unit is located outdoor cabin of apartment or flats, then the efficiency can drop and system pressure increases thus finally damaging the compressor or other components in the system by heat short circuit.

[Example]



<Without air guide>  
Safety device activation



<With air guide>  
Normal operation

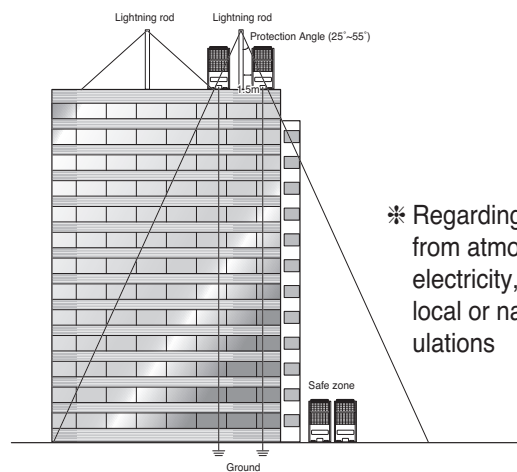
#### 3.6.3 Lightning safety zone

1) To protect outdoor unit from lightning, it should be placed within lightning safety zone.

##### Safety zone

Building Height [m]	20	30	45	60
Protection Angle [°]	55	45	35	25

- 2) Power cable and communication cable should be 1.5m away from lightning rod.
- 3) High resistance grounded system should be performed against induced lightning or indirect stroke.
- 4) If the building has no lightning protection, outdoor may be damage from lightning. This should be informed to customer or building owner in advance.



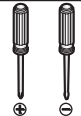
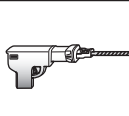
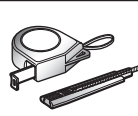
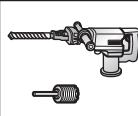

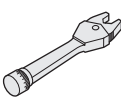
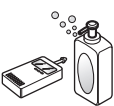


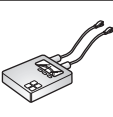


\* Regarding the safety from atmosphere electricity, follow the local or national regulations

### 3. Installation of outdoor unit

#### 3.7 Outdoor unit piping

##### 3.7.1 Outdoor unit piping

Required tools

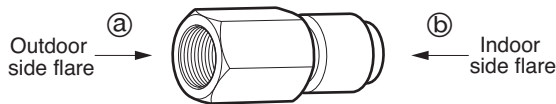
			
Screw Driver	Drill M/C f 3.5/F14.5	Measuring Tape, Blade	Core drill
			
Spanner	Torque Wrench	Soap Foam	Thermometer
			
Hexagonal wrench(4mm, 5mm)	Hook Meter	Multi Tester	Flare Set

##### 3.7.2 Connecting piping

1) Connecting socket must be used when connecting the piping to the indoor and outdoor units

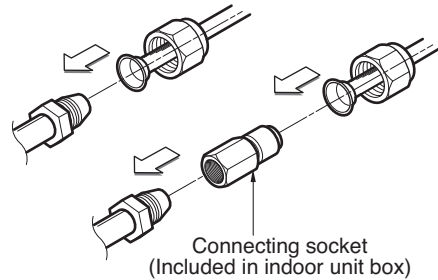
■ Multi F connecting socket [Unit : mm(inch)]

IDU Capacity	Gas		Liquid	
	a	b	a	b
18k, 24k	Ø9.52→Ø12.7		Not necessary	



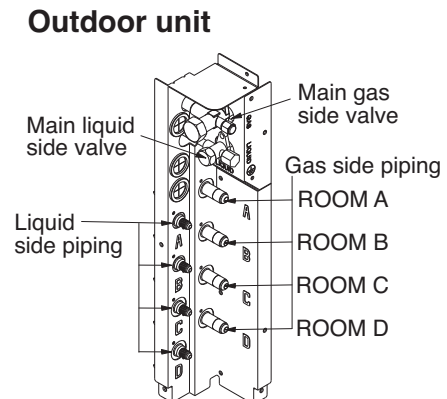
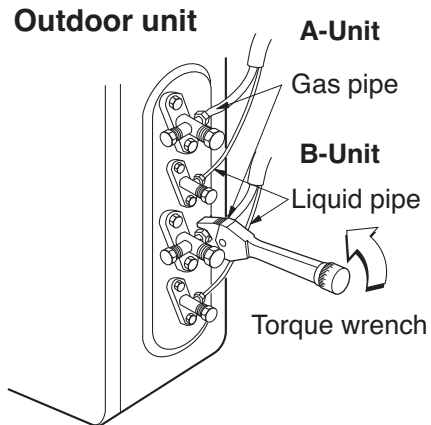
\* Connecting socket will be provided with indoor unit in same box.

2) Align the center of the piping and sufficiently tighten the flare nut by hand.



3) Finally, tighten the flare nut with torque wrench until the wrench clicks.

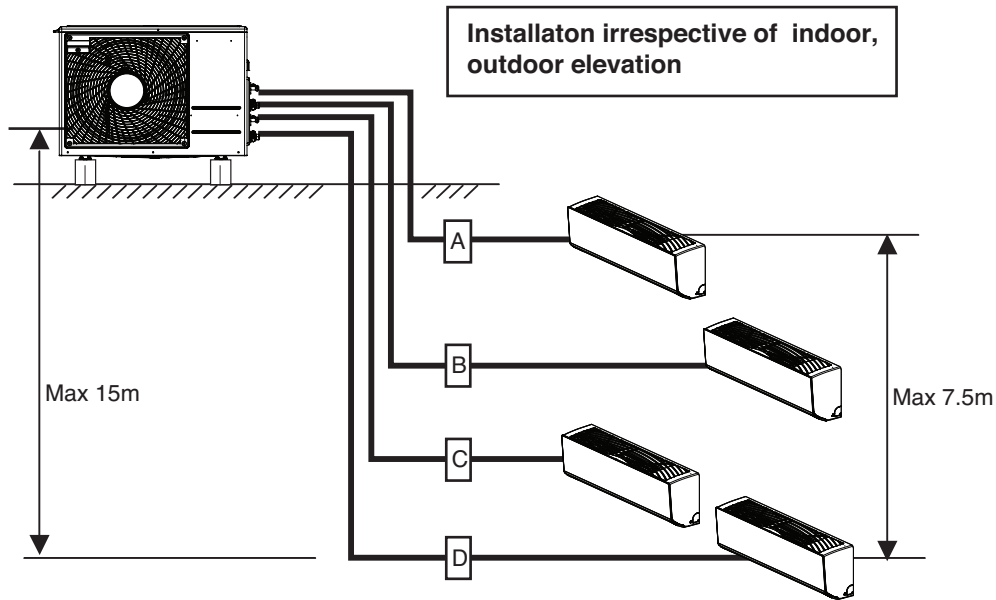
- When tightening the flare nut with torque wrench, ensure the direction for tightening follows the arrow on the wrench.



### 3. Installation of outdoor unit

#### 3.8 Outdoor unit installation requirements

##### 3.8.1 Piping elevation and length



Model [Outdoor unit]	Standard length A,B,C,D(m)	Max piping length each indoor unit				Max total piping length (m)
		A(m)	B(m)	C(m)	D(m)	
A2UQ18GFD0	7.5	20	20	-	-	30
A3UQ24GFD0	7.5	25	25	25	-	50
A3UQ30GFD1	7.5	25	25	25	-	60
A4UQ36GFD0	7.5	25	25	25	25	70
A5UQ48GFA1	7.5	25	25	25	25	85

Piping length should be minimum 3m.

##### 3.8.2 Refrigerant charge

The calculation of the additional charge should be taken into account for the additional length of pipe.

##### ■ MULTI F™ (1Ø) Additional charge Table

(Unit : g)

Model	A2UQ18GFD0	A3UQ24GFD0	A3UQ30GFD1	A4UQ36GFD0	A5UQ48GFA1
Total pipingLength(m)					
30	X	X	X	X	X
40	-	X	X	X	X
50	-	X	X	X	200
60	-	-	X	X	400
70	-	-	-	X	600
85	-	-	-	-	900

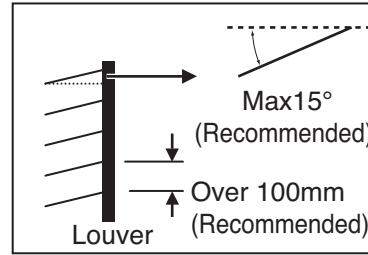
(X : No add, - : Does not apply)

### 3. Installation of outdoor unit

#### 3.9 Outdoor unit cabin

##### 3.9.1 Outdoor cabin louver requirement

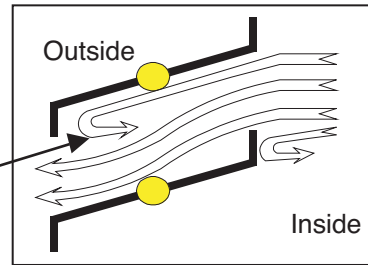
- 1) Outdoor cabin type : Manual door open type
- 2) Louver angle : less than 15° on the horizontal base
- 3) Louver interval: over 100mm (recommend)
- 4) Louver shape : wing type or plane type



Section

**CAUTION**

- Opening rate and suction should be considered for louvered outdoor room.
- Do not use 'S' type louver.



Noise can occur due to the backward flow of the air passing through the louver blade

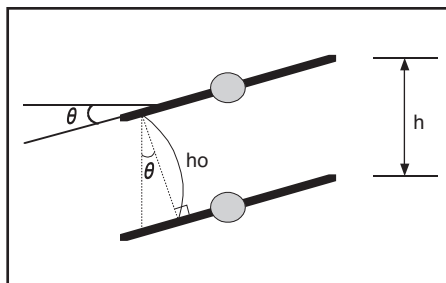


**NOTE**

The problem in case the louver opening rate is small.

1. Noise can occur due to the increased velocity of the air passing through louver blade.
2. Noise can occur due to the louver blade vibrations.
3. Drop in outdoor fan performance (Excess static pressure damage can cause drop in the performance as well as outdoor heat exchange efficiency).
4. In case the louver opening rate is small or there is insufficient air flow exchange, it might stop the air conditioner.

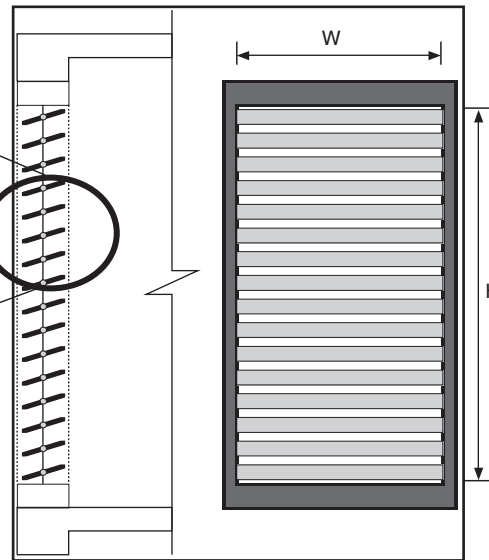
#### Opening rate by louver radian



$\theta \leq 15^\circ$   
 $h_o = h \cdot \cos \theta$   
 Total face area(A) = H \* W  
 Number of open space (N) = (number of louver - 1)  
 Effective face area(Af) =  $h_o \cdot W \cdot N$   
 Louver opening rate (n) = Af/A

$\therefore Af = A \cdot n$

Effective face area of cross section



[Side view]

[Front view]

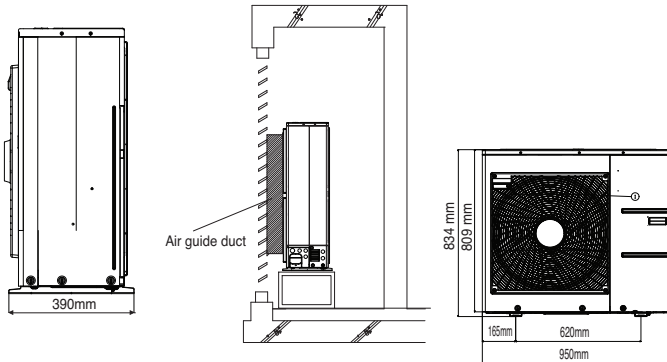
### 3. Installation of outdoor unit

#### 3.9.2 Air flow rate confirmation

##### Example. 1

■ Application Model : A4UQ36GFD0 Airflow rate 60 m<sup>3</sup>/min

[Total opening rate]



- Case : velocity of discharging air: 5m/s,  
velocity of suction air: 2.5m/s
- Openness rate = 80% or more
- \* Openness rate =  $\frac{\text{Effective face area}(A_f)}{\text{Total face area}(A)}$
- Air guide of discharging air part should be equipped.

- |   |  |
|---|--|
| ■ Louver total dimension (excluding frame)        | (A) = 1.2 m x 1.5 m = 1.8 m <sup>2</sup>   |
| ■ Louver shielding dimension by product           | (B) = 0.95 m x 0.83 m = 0.79 m <sup>2</sup>  |
| ■ Suction able louver dimension                   | (A-B) = 1.01 m <sup>2</sup>  |
| ■ Equivalent suction dimension (Opening rate 80%) | = 1.01 m <sup>2</sup> x 0.8 = 0.81 m <sup>2</sup>                                    |
| ■ Equivalent suction air volume                   | = 0.81 m <sup>2</sup> x 2.5 m/s x 60s = 121.5 m <sup>3</sup> /min                    |
| ■ Required air volume / equivalent volume         | = 121.5 m <sup>3</sup> /min / 60 m <sup>3</sup> /min(product airflow rate) = 202.5 % |
|   | → OK   |

# MULTI F

## R410A(50/60Hz)

### **Part 4 Special Part**

- 1. Installation guide at the seaside**
- 2. Seasonal wind and cautions in winter**

# 1. Installation guide at the seaside



## CAUTION

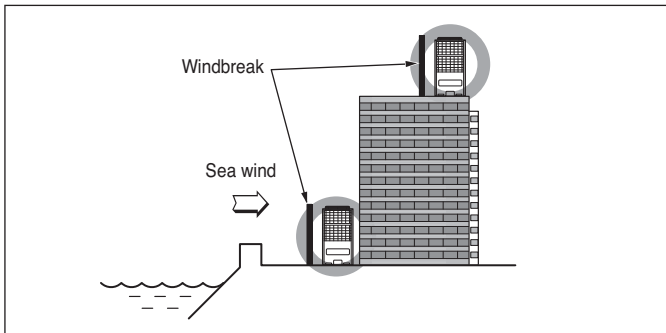
1. Air conditioners should not be installed in areas where corrosive gases, such as acid or alkaline gas, are produced.
2. Do not install the product where it could be exposed to sea wind (salty wind) directly. It can result corrosion on the product. Corrosion, particularly on the condenser and evaporator fins, could cause product malfunction or inefficient performance.
3. If outdoor unit is installed close to the seaside, it should avoid direct exposure to the sea wind. Otherwise it needs additional anticorrosion treatment on the heat exchanger.

## Selecting the location(Outdoor Unit)

- 1) If the outdoor unit is to be installed close to the seaside, direct exposure to the sea wind should be avoided. Install the outdoor unit on the opposite side of the sea wind direction.



- 2) In case, to install the outdoor unit on the seaside, set up a windbreak not to be exposed to the sea wind.



- It should be strong enough like concrete to prevent the sea wind from the sea.
- The height and width should be more than 150% of the outdoor unit.
- It should be keep more than 70 cm of space between outdoor unit and the windbreak for easy air flow.

- 3) Select a well-drained place.

Periodic ( more than once/year ) cleaning of the dust or salt particles stuck on the heat exchanger by using water

## 2. Seasonal wind and cautions in winter

- Sufficient measures are required in a snow area or severe cold area in winter so that product can be operated well.
- Get ready for seasonal wind or snow in winter even in other areas.
- Install a suction and discharge duct not to let in snow or rain.
- Install the outdoor unit not to come in contact with snow directly. If snow piles up and freezes on the air suction hole, the system may malfunction. If it is installed at snowy area, attach the hood to the system.
- Install the outdoor unit at the higher installation console by 50cm than the average snowfall (annual average snowfall) if it is installed at the area with much snowfall.
- Where snow accumulated on the upper part of the Outdoor Unit by more than 10cm, always remove snow for operation.



1. The height of H frame must be more than 2 times the snowfall and its width shall not exceed the width of the product. (If width of the frame is wider than that of the product, snow may accumulate)
2. Don't install the suction hole and discharge hole of the Outdoor Unit facing the seasonal wind.



P/No.: MFL67502706



**Air Solution**

LG Electronics Inc, 128, Yeoui-daero,  
Yeongdeungpo-gu, Seoul, Korea  
(07336)  
<http://partner.lge.com>

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