

LG

SINGLE A™

Cooling Only R410A(50/60Hz)
0CSL0-01A

TOTAL HVAC SOLUTION PROVIDER

ENGINEERING PRODUCT DATA BOOK



SINGLE A™

Part 1 General information

Part 2 Product data

Part 3 Design and installation

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 cost 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 an edge to LG to make better and latest technology products with best quality in optimized time.

SINGLE A systems with are equipped with DC inverter technology and R410A refrigerant which is perfect solution to various installation locations.

LG SINGLE A System consists of a single common outdoor unit for single indoor unit, such as ceiling cassette, ceiling suspended, ceiling concealed duct(H/L).

This Engineering product data book incorporates information about the product itself, its installation and designing for SINGLE A system.

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

LG Electronics Inc.
Air Conditioning & Energy Solution Company

Part 1 General information

- 1. Model line up**
- 2. Nomenclature**



1. Model line up



1.1 Indoor units

| Category | Type | Chassis | Model Name | | | | | | | |
|------------------------|----------------------|---|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | | | Capacity class, kW | | | | | | | |
| | | | 5.0 | 6.0 | 7.0 | 10.5 | 12.5 | 14.1 | 15.8 | |
| Ceiling cassette | 4way |  | TP | ATNQ18GPLE3 | ATNQ21GPLE3 | | | | | |
| | | | TN | | | ATNQ24GNLE3 | | | | |
| | | | TM | | | | ATNQ36GMLE3 | ATNQ42GMLE3 | ATNQ48GMLE3 | ATNQ54GMLE3 |
| Ceiling suspended | |  | VJ | AVNQ18GJLA0 | AVNQ21GJLA0 | AVNQ24GJLA0 | | | | |
| | | | VK | | | | AVNQ36GKLA0 | | | |
| | | | VL | | | | | AVNQ42GLLA0 | AVNQ48GLLA0 | AVNQ54GLLA0 |
| Ceiling concealed duct | High static pressure |  | BH | ABNQ18GHLA0 | ABNQ21GHLA0 | | | | | |
| | | | BG | | | ABNQ24GGLA0 | ABNQ36GGLA0 | | | |
| | | | BR | | | | | ABNQ42GRLA0 | ABNQ48GRLA0 | ABNQ54GRLA0 |
| | Low static pressure |  | L2 | ABNQ18GL2A0 | ABNQ21GL2A0 | | | | | |
| | | | L3 | | | ABNQ24GL3A0 | | | | |

1. Model line up

1.2 Outdoor units

| Model Names | | AUUQ18GH1 ATUQ18GPLE3 AVUQ18GJLA0 ABUQ18GHLA0 ABUQ18GL2A0 | AUUQ21GH1 ATUQ21GPLE3 AVUQ21GJLA0 ABUQ21GHLA0 ABUQ21GL2A0 | AUUQ24GH1 ATUQ24GNLE3 AVUQ24GJLA0 ABUQ24GGLA0 ABUQ24GL3A0 |
|--|----|--|---|---|
| No. of connectable indoor units | | 1 | | |
| Total capacity class index of Connectable Indoor units | kW | 5.0 | 6.0 | 7.0 |
| Connectable indoor unit model names | | ATNQ18GPLE3 AVNQ18GJLA0 ABNQ18GHLA0 ABNQ18GL2A0 | ATNQ21GPLE3 AVNQ21GJLA0 ABNQ21GHLA0 ABNQ21GL2A0 | ATNQ24GNLE3 AVNQ24GJLA0 ABNQ24GGLA0 ABNQ24GL3A0 |
| Power supply | | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz | | |
| Chassis | |  | |  |

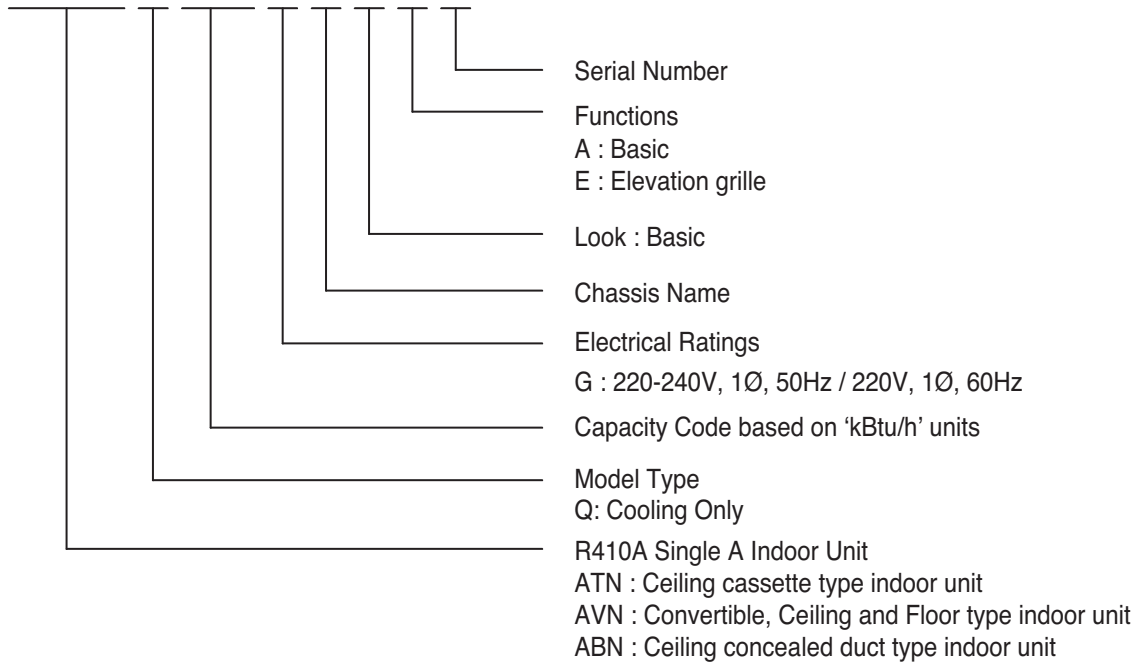
| Model Names | | AUUQ36GH1 ATUQ36GMLE3 AVUQ36GKLA0 ABUQ36GGLA0 | AUUQ42GH1 ATUQ42GMLE3 AVUQ42GLLA0 ABUQ42GRLA0 | AUUQ48GH1 ATNQ48GMLE3 AVNQ48GLLA0 ABNQ48GRLA0 | AUUQ54GH1 ATNQ54GMLE3 AVNQ54GLLA0 ABNQ54GRLA0 |
|--|----|--|--|--|---|
| No. of connectable indoor units | | 1 | | | |
| Total capacity class index of Connectable Indoor units | kW | 10.5 | 12.5 | 14.1 | 15.8 |
| Connectable indoor unit model names | | ATNQ36GMLE3 AVNQ36GKLA0 ABNQ36GGLA0 | ATNQ42GMLE3 AVNQ42GLLA0 ABNQ42GRLA0 | ATNQ48GMLE3 AVNQ48GLLA0 ABNQ48GRLA0 | ATNQ54GMLE3 AVNQ54GLLA0 ABNQ54GRLA0 |
| Power supply | | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz | | | |
| Chassis | |  | | |  |

2. Nomenclature

Global Model Name

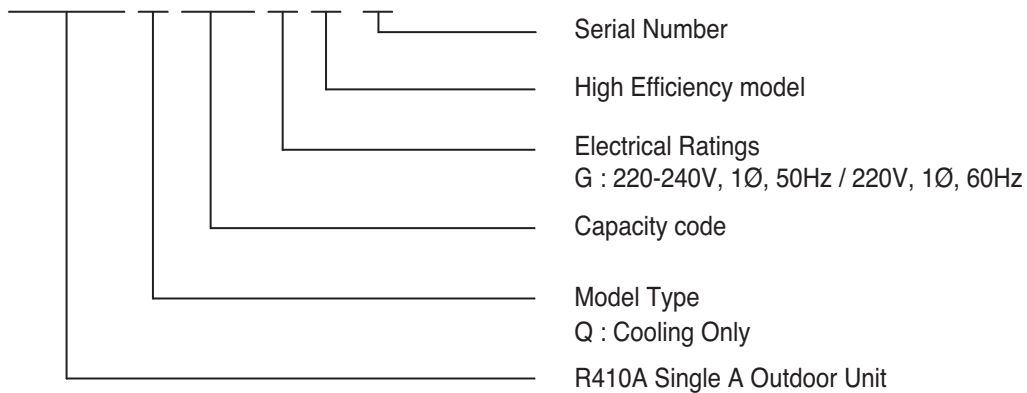
2.1 Indoor units(Global)

A T N Q 24 G N L E 3



2.2 Outdoor units(Global)

A U U Q 24 G H 1



Part 2 Product data

■ Indoor units

- 1. Ceiling cassette 4-way**
- 2. Ceiling suspended**
- 3. Ceiling concealed duct - High static pressure**
- 4. Ceiling concealed duct – Low static pressure**

■ Outdoor unit

■ **Indoor units**

1. Ceiling cassette 4-way

1.1 List of functions

1.2 Specifications

1.3 Dimensions

1.4 Piping diagrams

1.5 Wiring diagrams

1.6 Air flow and temperature distributions (Reference data)

1.7 Sound levels

1. Ceiling cassette 4-way

1.1 List of functions

| Category | Functions | ATNQ18GPLE3 / ATNQ21GPLE3 / ATNQ24GNLE3 / ATNQ36GMLE3 ATNQ42GMLE3 / ATNQ48GMLE3 / ATNQ54GMLE3 |
|------------------------|---|--|
| Air flow | Air supply outlet | 4 |
| | Airflow direction control(left & right) | - |
| | Airflow direction control(up & down) | Auto |
| | Auto swing(left & right) | - |
| | Auto swing(up & down) | O |
| | Airflow steps(fan/cool/heat) | 4 / 5 / - |
| | Chaos swing | X |
| | Chaos wind(auto wind) | O |
| | Jet cool(Power wind) | O |
| | Swirl wind | O |
| Air purifying | Deodorizing filter | - |
| | Plasma air purifier | PTPKM0 |
| | Prefilter(washable / anti-fungus) | O |
| Installation | Drain pump | O |
| | E.S.P. control | X |
| | Electric heater(operation) | X |
| | High ceiling operation | O |
| Reliability | Hot start | X |
| | Self diagnosis | O |
| | Soft dry operation | O |
| Convenience | Auto changeover | X |
| | Auto cleaning | X |
| | Auto operation(artificial intelligence) | X |
| | Auto restart operation | O |
| | Child lock | O |
| | Forced operation | O |
| | Group control | O |
| | Sleep mode | O |
| | Timer(on/off) | O |
| | Timer(weekly) | O |
| Two thermistor control | O | |
| Individual control | Wide wired remote controller | PQRCVSL0/PQRCVSL0QW |
| | Deluxe wired remote controller | PQRCUDS0 |
| | Simple wired remote controller | PQRCUCS0C |
| | Wired remote controller(for hotel use) | PQRCFCS0C |
| | Wireless LCD remote control | PQWRCDF0 |
| CAC network function | General central controller (Non LGAP) | X |
| | Dry contact | PQDSB |
| | Network Solution(LGAP) | O |
| | PDI(power distribution indicator) | X |
| Special function kit | PI 485 | PMNFP14A0 |
| | Zone control | - |
| | CTIE | - |
| Others | Electro thermostat | - |
| | Thermistor | - |

Note:

O : Applied, X : Not applied, - : No relation

* Option : Model name & price are different according to options, and assembled in factory with main unit.

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

1. Ceiling cassette 4-way

1.2 Specifications

| Model Name | | | ATNQ18GPLE3 | ATNQ21GPLE3 |
|--|--------------------------------------|-----------------------------|--------------------------------------|--------------------------------------|
| Power Supply | V, Ø, Hz | | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz |
| Power Input | W | | 1.45 | 1.86 |
| Running Current | A | | 6.3 | 8.1 |
| Casing Color | - | | - | - |
| Dimensions | Body | W x H x D | mm | 840 x 204 x 840 |
| | | W x H x D | inch | 33-1/16 x 8-1/32 x 33-1/16 |
| Net Weight | Body | | kg (lbs) | 20.5 (45.2) |
| Heat Exchanger | (Row x Column x Fins per inch) x No. | | - | (2 x 8 x 19) x 1 |
| | Face Area | | m ² (ft ²) | 0.35 |
| Fan | Type | | - | Turbo Fan |
| | Air Flow Rate | H / M / L | m ³ /min | 17.0 / 15.0 / 13.0 |
| | | H / M / L | ft ³ /min | 600 / 530 / 459 |
| Fan Motor | Type | | - | BLDC |
| | Output | | W x No. | 40 x 1 |
| Dehumidification Rate | | l / h (pts/h) | 2.1 (4.5) | 2.3 (4.9) |
| Sound Pressure Level | H / M / L | | dB(A) | |
| Sound Power Level | Cooling | | dB(A) | |
| Piping Connections | Liquid | | mm(inch) | Ø 6.35 (1/4) |
| | Gas | | mm(inch) | Ø 12.7 (1/2) |
| | Drain (O.D. / I.D.) | | mm | Ø 32.0 / 25.0 |
| Safety Devices | | - | Fuse | Fuse |
| Power and Communication Cable (included Earth) | | No. x mm ² (AWG) | 4C x 0.75 (18) | 4C x 0.75 (18) |
| Decoration Panel | Model Name | | - | PT-UMC1 |
| | Casing Color | | - | Morning Fog |
| | Dimensions | W x H x D | mm | 950 x 25 x 950 |
| | | W x H x D | inch | 37-13/32 x 31/32 x 37-13/32 |
| Net weight | | kg (lbs) | 5.0 (11.0) | 5.0 (11.0) |

Notes :

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
- 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.

1. Ceiling cassette 4-way

| Model Name | | | ATNQ24GNLE3 | ATNQ36GMLE3 |
|--|--------------------------------------|-----------------------------|--------------------------------------|--------------------------------------|
| Power Supply | | V, Ø, Hz | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz |
| Power Input | | W | 1.92 | 3.31 |
| Running Current | | A | 8.3 | 14.4 |
| Casing Color | | - | - | - |
| Dimensions | Body | W x H x D | mm | 840 x 246 x 840 |
| | | W x H x D | inch | 33-1/16 x 9-11/16 x 33-1/16 |
| Net Weight | | kg (lbs) | 22.0 (48.5) | 24.6 (54.2) |
| Heat Exchanger | (Row x Column x Fins per inch) x No. | | - | (2 x 10 x 19) x 1 |
| | Face Area | | m ² (ft ²) | 0.43 |
| Fan | Type | | - | Turbo Fan |
| | Air Flow Rate | H / M / L | m ³ /min | 23.0 / 21.0 / 19.0 |
| | | H / M / L | ft ³ /min | 812 / 742 / 671 |
| Fan Motor | Type | | - | BLDC |
| | Output | | W x No. | 166.3 x 1 |
| Dehumidification Rate | | l / h (pts/h) | 2.5 (5.3) | 2.7 (5.7) |
| Sound Pressure Level | | H / M / L | dB(A) | |
| Sound Power Level | | Cooling | dB(A) | |
| Piping Connections | Liquid | | mm(inch) | Ø 9.52 (3/8) |
| | Gas | | mm(inch) | Ø 15.88 (5/8) |
| | Drain (O.D. / I.D.) | | mm | Ø 32.0 / 25.0 |
| Safety Devices | | - | Fuse | Fuse |
| Power and Communication Cable (included Earth) | | No. x mm ² (AWG) | 4C x 0.75 (18) | 4C x 0.75 (18) |
| Decoration Panel | Model Name | | - | PT-UMC1 |
| | Casing Color | | - | Morning Fog |
| | Dimensions | W x H x D | mm | 950 x 25 x 950 |
| | | W x H x D | inch | 37-13/32 x 31/32 x 37-13/32 |
| Net weight | | kg (lbs) | 5.0 (11.0) | 5.0 (11.0) |

Notes :

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
- 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.

1. Ceiling cassette 4-way

| Model Name | | | ATNQ42GMLE3 | ATNQ48GMLE3 |
|--|--------------------------------------|-----------------------------|--------------------------------------|--------------------------------------|
| Power Supply | V, Ø, Hz | | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz |
| Power Input | W | | 3.88 | 4.44 |
| Running Current | A | | 16.9 | 19.3 |
| Casing Color | - | | - | - |
| Dimensions | Body | W x H x D | mm | 840 x 288 x 840 |
| | | W x H x D | inch | 33-1/16 x 11-11/32 x 33-1/16 |
| Net Weight | Body | | kg (lbs) | 28.0 (61.7) |
| Heat Exchanger | (Row x Column x Fins per inch) x No. | | - | (2 x 12 x 19) x 1 |
| | Face Area | | m ² (ft ²) | 0.53 |
| Fan | Type | | - | Turbo Fan |
| | Air Flow Rate | H / M / L | m ³ /min | 32.0 / 30.0 / 28.0 |
| | | H / M / L | ft ³ /min | 1,130 / 1,060 / 989 |
| Fan Motor | Type | | - | BLDC |
| | Output | | W x No. | 135.8 x 1 |
| Dehumidification Rate | | l / h (pts/h) | 3.4 (7.2) | 3.6 (7.7) |
| Sound Pressure Level | H / M / L | | dB(A) | |
| Sound Power Level | Cooling | | dB(A) | |
| Piping Connections | Liquid | | mm(inch) | Ø 9.52 (3/8) |
| | Gas | | mm(inch) | Ø 15.88 (5/8) |
| | Drain (O.D. / I.D.) | | mm | Ø 32.0 / 25.0 |
| Safety Devices | | - | | Fuse |
| Power and Communication Cable (included Earth) | | No. x mm ² (AWG) | 4C x 0.75 (18) | |
| Decoration Panel | Model Name | | - | |
| | Casing Color | | - | |
| | Dimensions | W x H x D | mm | 950 x 25 x 950 |
| | | W x H x D | inch | 37-13/32 x 31/32 x 37-13/32 |
| Net weight | | kg (lbs) | 5.0 (11.0) | |

Notes :

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
- 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.

1. Ceiling cassette 4-way

| Model Name | | | | ATNQ54GMLE3 | | |
|--|---------------------|--------------------------------------|----------------------|--------------------------------------|---------------|--|
| Power Supply | | V, Ø, Hz | | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz | | |
| Power Input | | W | | 5.23 | | |
| Running Current | | A | | 22.7 | | |
| Casing Color | | - | | - | | |
| Dimensions | Body | W x H x D | mm | 840 x 288 x 840 | | |
| | | W x H x D | inch | 33-1/16 x 11-11/32 x 33-1/16 | | |
| Net Weight | | Body | | kg (lbs) | | |
| Heat Exchanger | | (Row x Column x Fins per inch) x No. | | - | | |
| Face Area | | m ² (ft ²) | | 0.53 | | |
| Fan | Type | | - | | Turbo Fan | |
| | Air Flow Rate | H / M / L | m ³ /min | 32.0 / 30.0 / 28.0 | | |
| | | H / M / L | ft ³ /min | 1,130 / 1,060 / 989 | | |
| Fan Motor | | Type | | - | | |
| Output | | W x No. | | 135.8 x 1 | | |
| Dehumidification Rate | | l / h (pts/h) | | 3.6 (7.7) | | |
| Sound Pressure Level | | H / M / L | | dB(A) | | |
| Sound Power Level | | Cooling | | dB(A) | | |
| Piping Connections | Liquid | | mm(inch) | | Ø 9.52 (3/8) | |
| | Gas | | mm(inch) | | Ø 19.05 (3/4) | |
| | Drain (O.D. / I.D.) | | mm | | Ø 32.0 / 25.0 | |
| Safety Devices | | - | | Fuse | | |
| Power and Communication Cable (included Earth) | | No. x mm ² (AWG) | | 4C x 0.75 (18) | | |
| Decoration Panel | Model Name | | - | | PT-UMC1 | |
| | Casing Color | | - | | Morning Fog | |
| | Dimensions | W x H x D | mm | 950 x 25 x 950 | | |
| | | W x H x D | inch | 37-13/32 x 31/32 x 37-13/32 | | |
| Net weight | | kg (lbs) | | 5.0 (11.0) | | |

Notes :

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
- Piping Length : Interconnected Pipe Length = 5m
- Difference Limit of Elevation (Outdoor ~ Indoor Unit) is Zero.

2. Wiring cable size must comply with the applicable local and national code.

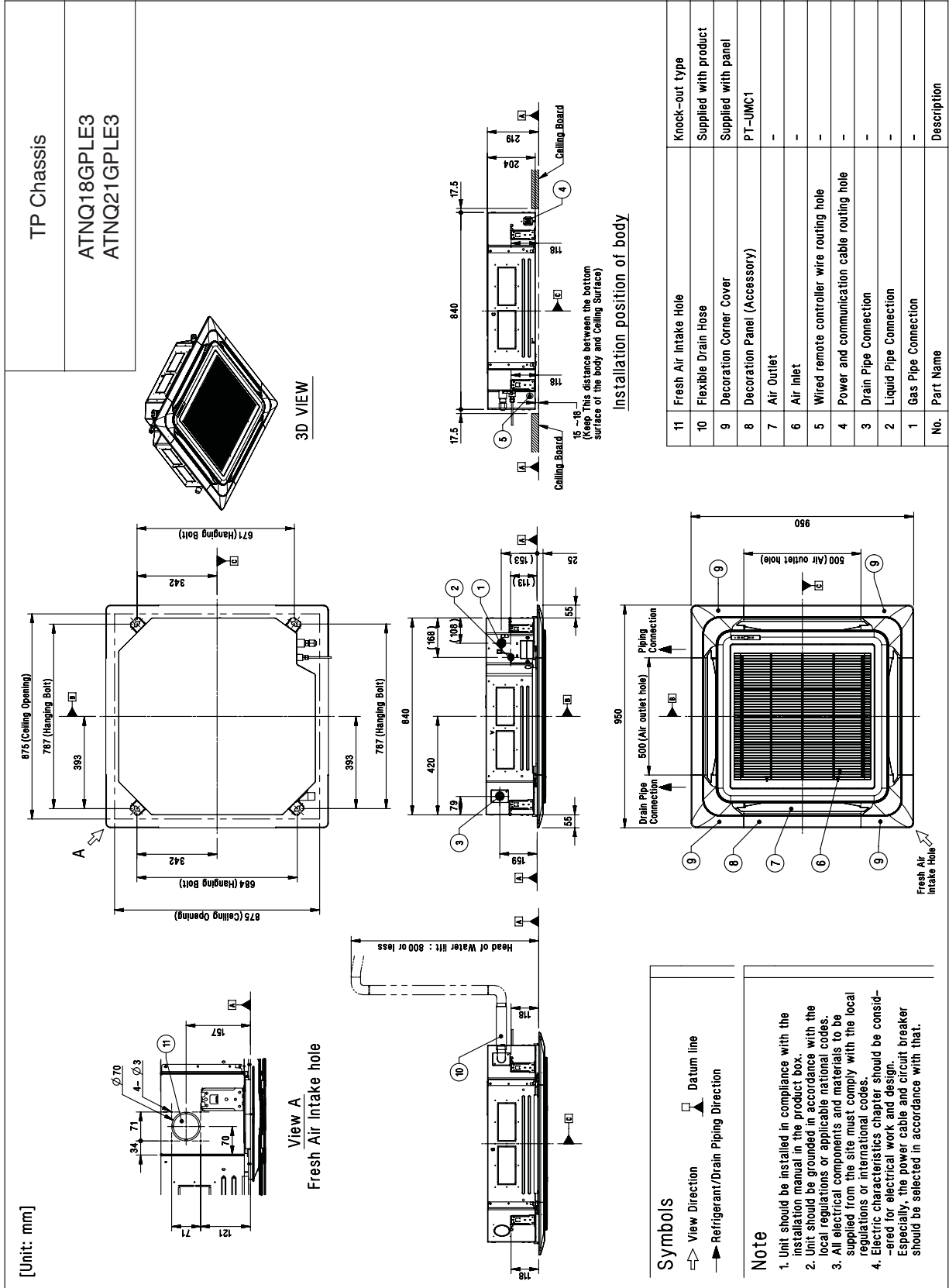
3. Due to our policy of innovation some specifications may be changed without notification.

4. Sound Level Values are measured at Anechoic chamber.

Therefore, these values can be increased owing to ambient conditions during operation.

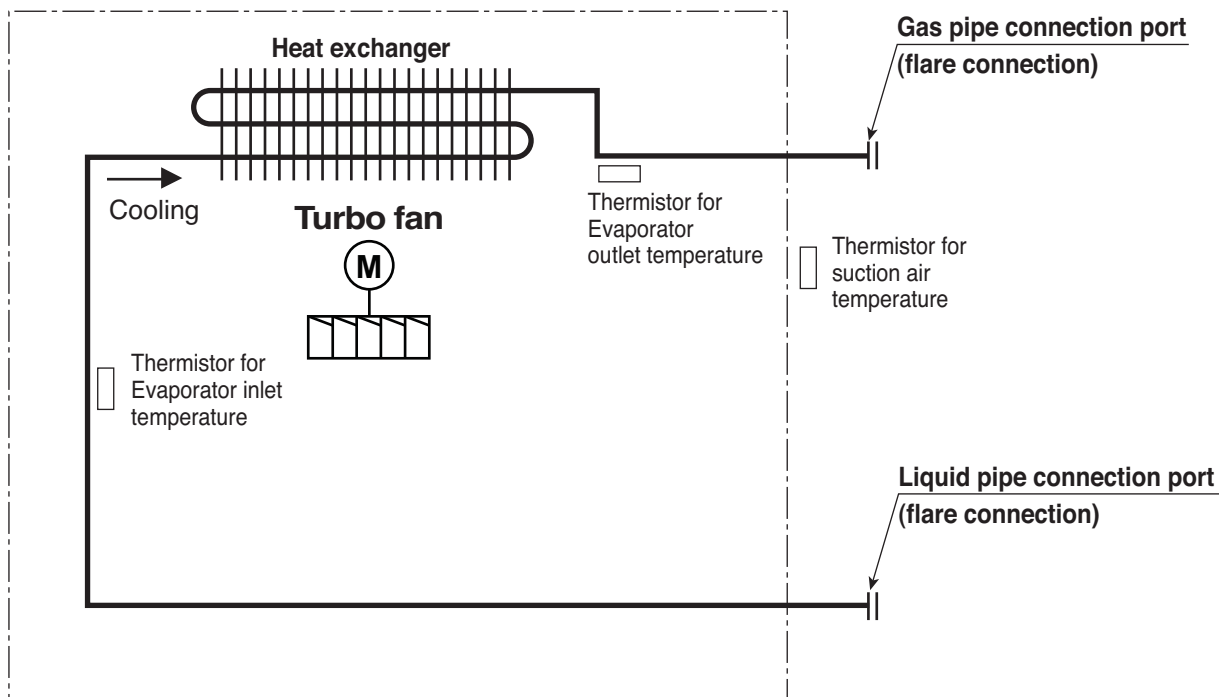
1. Ceiling cassette 4-way

1.3 Dimensions



1. Ceiling cassette 4-way

1.4 Piping diagrams



| Description | PCB Connector |
|--|---------------|
| Thermistor for suction air temperature | CN-ROOM |
| Thermistor for evaporator inlet temperature | CN-PIPE / IN |
| Thermistor for evaporator outlet temperature | CN-PIPE / OUT |

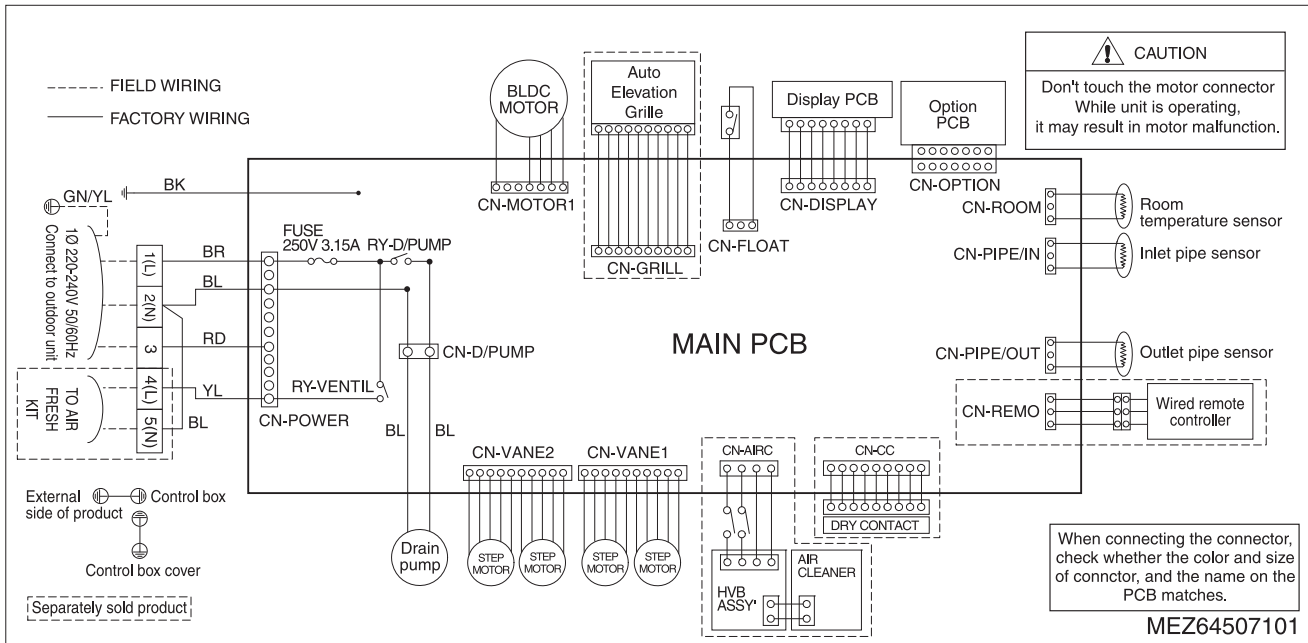
■ Refrigerant pipe connection port diameters

[Unit: mm]

| Model | Gas | Liquid |
|--|-------------|------------|
| ATNQ18GPLE3 ATNQ21GPLE3 | Ø12.7(1/2) | Ø6.35(1/4) |
| ATNQ24GNLE3 ATNQ36GPLE3 ATNQ42GPLE3 ATNQ48GPLE3 | Ø15.88(5/8) | Ø9.52(3/8) |
| ATNQ54GPLE3 | Ø19.05(3/4) | Ø9.52(3/8) |

1. Ceiling cassette 4-way

1.5 Wiring diagrams



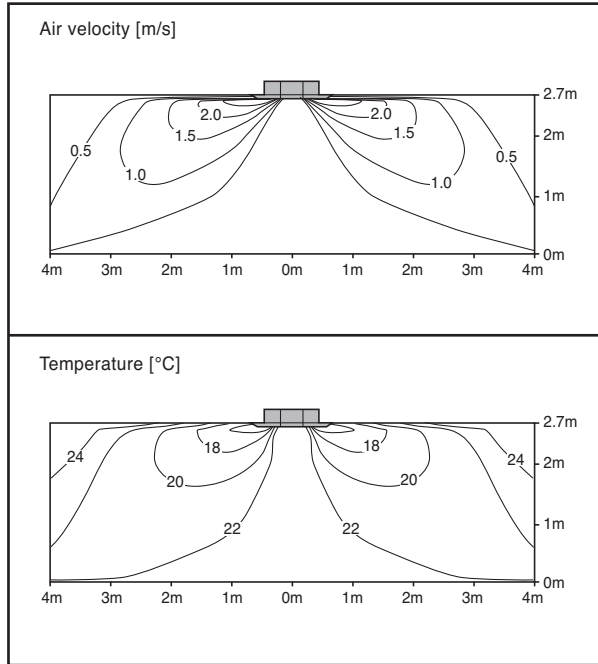
1. Ceiling cassette 4-way

1.6 Air flow and temperature distributions (Reference data)

Model : ATNQ18GPLE3

Cooling

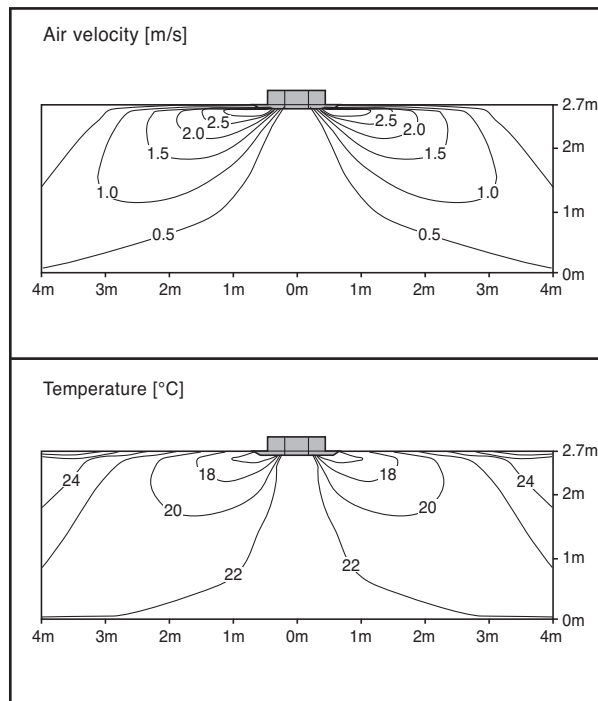
Discharge angle: 30°



Model : ATNQ21GPLE3

Cooling

Discharge angle: 30°

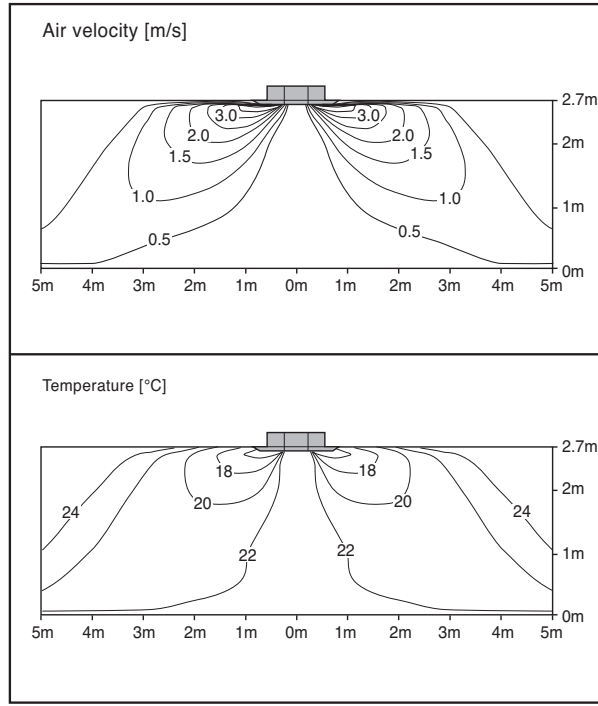


1. Ceiling cassette 4-way

Model : ATNQ24GNLE3

Cooling

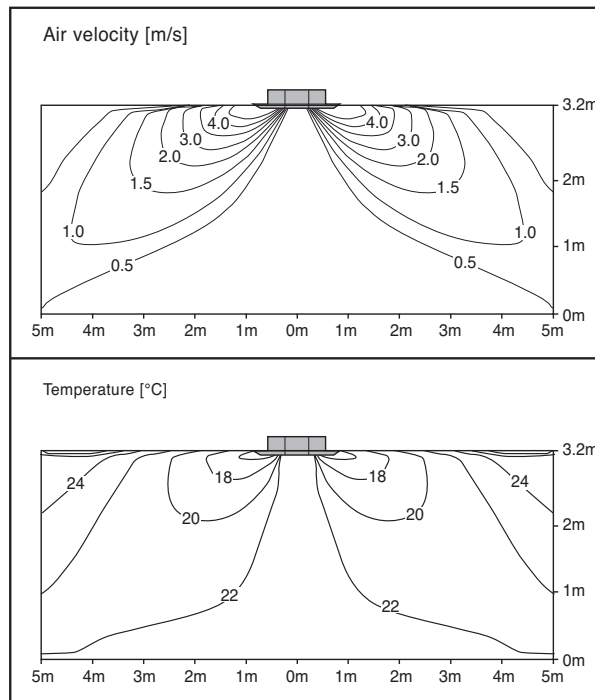
Discharge angle: 30°



Model : ATNQ36GMLE3

Cooling

Discharge angle: 30°

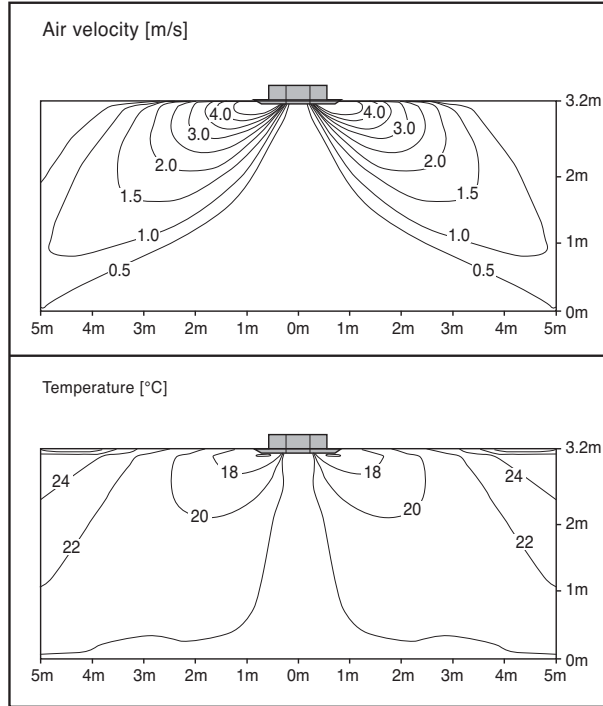


1. Ceiling cassette 4-way

Model : ATNQ42GMLE3 / ATNQ48GMLE3 / ATNQ54GMLE3

Cooling

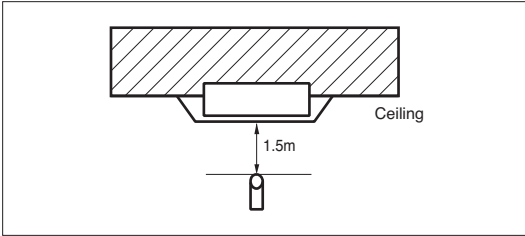
Discharge angle: 30°



1. Ceiling cassette 4-way

1.7 Sound levels

Overall



Notes :

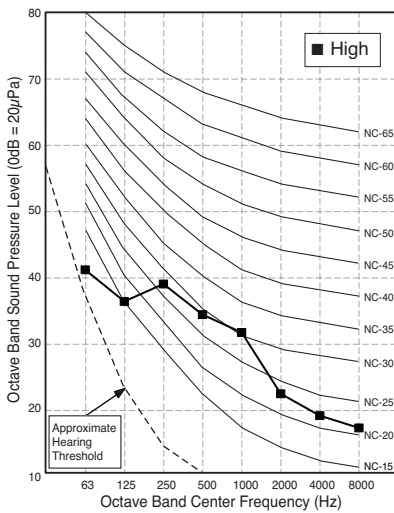
- Sound measured at 1.5m below the center of the unit.
- Data is valid at free field condition
- Data is valid at nominal operation condition
- Reference acoustic pressure 0dB = 20μPa
- Sound level will vary depending on a range of factors such as the construction(acoustic absorption coefficient) of particular room in which the equipment is installed.
- The operating conditions are assumed to be standard.

| Model | Sound Level(H/M/L) [dB(A)] | | |
|-------------|----------------------------|----|----|
| | H | M | L |
| ATNQ18GPLE3 | 36 | 34 | 32 |
| ATNQ21GPLE3 | 40 | 38 | 36 |
| ATNQ24GNLE3 | 40 | 38 | 36 |
| ATNQ36GMLE3 | 43 | 41 | 39 |
| ATNQ42GMLE3 | 44 | 42 | 40 |
| ATNQ48GMLE3 | 44 | 42 | 40 |
| ATNQ54GMLE3 | 44 | 42 | 40 |

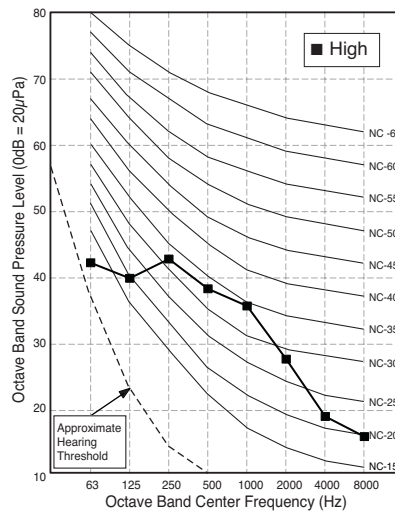
Part 2 Product data_Indoor units

Sound pressure level

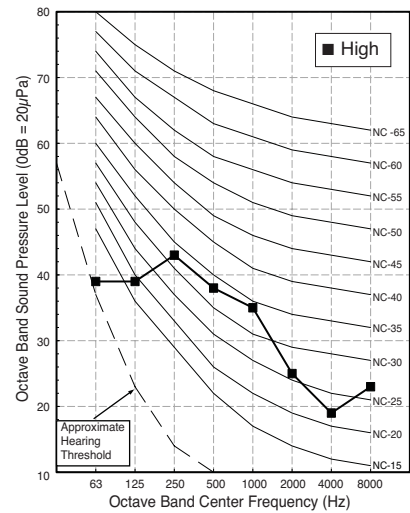
ATNQ18GPLE3



ATNQ21GPLE3

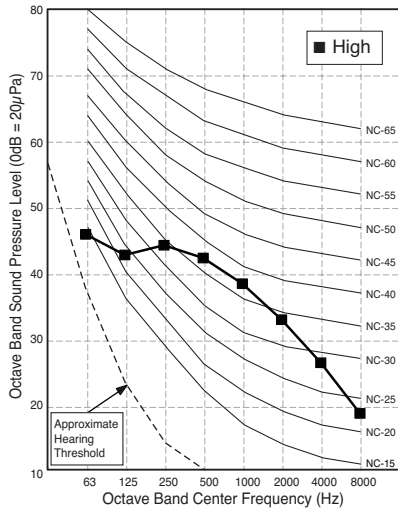


ATNQ24GNLE3

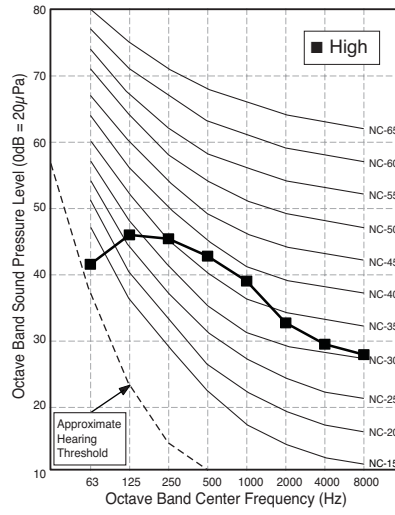


1. Ceiling cassette 4-way

ATNQ36GMLE3



ATNQ42GMLE3
ATNQ48GMLE3
ATNQ54GMLE3



2. Ceiling suspended

2.1 List of functions

2.2 Specifications

2.3 Dimensions

2.4 Piping diagrams

2.5 Wiring diagrams

2.6 Air flow and temperature distributions (Reference data)

2.7 Sound levels

2. Ceiling suspended

2.1 List of functions

| Category | Functions | AVNQ18GJLA0 / AVNQ21GJLA0 / AVNQ24GJLA0 / AVNQ36GKLA0 AVNQ42GLLA0 / AVNQ48GLLA0 / AVNQ54GLLA0 |
|----------------------|---|--|
| Air flow | Air supply outlet | 1 |
| | Airflow direction control(left & right) | Manual |
| | Airflow direction control(up & down) | Auto |
| | Auto swing(left & right) | - |
| | Auto swing(up & down) | O |
| | Airflow steps(fan/cool/heat) | 4/5/- |
| | Chaos swing | X |
| | Chaos wind(auto wind) | X |
| | Jet cool(Power wind) | O |
| | Swirl wind | X |
| Air purifying | Deodorizing filter | X |
| | Plasma air purifier | X |
| | Prefilter(washable / anti-fungus) | O |
| Installation | Drain pump | X |
| | E.S.P. control | X |
| | Electric heater(operation) | X |
| | High ceiling operation | X |
| Reliability | Hot start | X |
| | Self diagnosis | O |
| | Soft dry operation | O |
| Convenience | Auto changeover | X |
| | Auto cleaning | X |
| | Auto operation(artificial intelligence) | X |
| | Auto restart operation | O |
| | Child lock | O |
| | Forced operation | O |
| | Group control | O |
| | Sleep mode | X |
| | Timer(on/off) | O |
| | Timer(weekly) | O |
| Individual control | Wide wired remote controller | PQRCVSL0/PQRCVSL0QW |
| | Deluxe wired remote controller | X |
| | Simple wired remote controller | X |
| | Wired remote controller(for hotel use) | X |
| | Wireless LCD remote control | PQWRCDF0 |
| CAC network function | General central controller (Non LGAP) | X |
| | Dry contact | PQDSB |
| | Network Solution(LGAP) | O |
| | PDI(power distribution indicator) | X |
| | PI 485 | PMNFP14A0 |
| Special function kit | Zone control | X |
| | CTIE | X |
| | Electro thermostat | X |
| Others | Thermistor | X |

Note:

- O: Applied, • X: Not applied, • - : No relation,
- Option: Model name & price are different according to options, and assembled in factory with main unit.
- Accessory: Installed at field, ordered and purchased separately by the corresponding model name, supplied with separate package.

2. Ceiling suspended

2.2 Specifications

| Model Name | | | AVNQ18GJLA0 | AVNQ21GJLA0 |
|--|--------------------------------------|-----------------------------|--------------------------------------|--------------------------------------|
| Power Supply | V, Ø, Hz | | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz |
| Power Input | W | | 1.55 | 1.92 |
| Running Current | A | | 6.7 | 8.3 |
| Casing Color | - | | - | - |
| Dimensions | Body | W x H x D | mm | 950 x 650 x 220 |
| | | W x H x D | inch | 37-13/32 x 25-19/32 x 8-21/32 |
| Net Weight | Body | | kg (lbs) | 20.5(45.2) |
| Heat Exchanger | (Row x Column x Fins per inch) x No. | | - | (3 x 14 x 21) x 1 |
| | Face Area | | m ² (ft ²) | 0.20 (2.15) |
| Fan | Type | | - | Cross flow fan |
| | Air Flow Rate | H / M / L | m ³ /min | 12.4 / 11.4 / 10.4 |
| | | H / M / L | ft ³ /min | 438 / 403 / 367 |
| Fan Motor | Type | | - | BLDC |
| | Output | | W x No. | 60 x 1 |
| Dehumidification Rate | | l / h (pts/h) | | 2.1 (4.5) |
| Sound Pressure Level | H / M / L | | dB(A) | |
| Sound Power Level | Cooling | | dB(A) | |
| Piping Connections | Liquid | | mm(inch) | Ø 6.35 (1/4) |
| | Gas | | mm(inch) | Ø 12.7 (1/2) |
| | Drain (O.D. / I.D.) | | mm | Ø 21.5 / 16.0 |
| Safety Devices | | - | | Fuse |
| Power and Communication Cable (included Earth) | | No. x mm ² (AWG) | | 4C x 0.75 (18) |

Notes :

- 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
 - 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 opration.

2. Ceiling suspended

| Model Name | | | AVNQ24GJLA0 | AVNQ36GKLA0 |
|--|--------------------------------------|-----------------------------|--------------------------------------|--------------------------------------|
| Power Supply | | V, Ø, Hz | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz |
| Power Input | | W | 2.32 | 3.31 |
| Running Current | | A | 10.1 | 14.4 |
| Casing Color | | - | - | - |
| Dimensions | Body | W x H x D | mm | 950 x 650 x 220 |
| | | W x H x D | inch | 37-13/32 x 25-19/32 x 8-21/32 |
| Net Weight | | kg (lbs) | 20.5(45.2) | 29.0(63.9) |
| Heat Exchanger | (Row x Column x Fins per inch) x No. | | - | (3 x 14 x 21) x 1 |
| | Face Area | | m ² (ft ²) | 0.20 (2.15) |
| Fan | Type | | - | Cross flow fan |
| | Air Flow Rate | H / M / L | m ³ /min | 12.4 / 11.4 / 10.4 |
| | | H / M / L | ft ³ /min | 438 / 403 / 367 |
| Fan Motor | Type | | - | BLDC |
| | Output | | W x No. | 60 x 1 |
| Dehumidification Rate | | l / h (pts/h) | 2.5 (5.3) | 2.7 (5.7) |
| Sound Pressure Level | | H / M / L | dB(A) | 44 / 43 / 41 |
| Sound Power Level | | Cooling | dB(A) | - |
| Piping Connections | Liquid | | mm(inch) | Ø 9.52 (3/8) |
| | Gas | | mm(inch) | Ø 15.88 (5/8) |
| | Drain (O.D. / I.D.) | | mm | Ø 21.5 / 16.0 |
| Safety Devices | | - | Fuse | Fuse |
| Power and Communication Cable (included Earth) | | No. x mm ² (AWG) | 4C x 0.75 (18) | 4C x 0.75 (18) |

Notes :

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
- 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 opration.

2. Ceiling suspended

| Model Name | | | AVNQ42GLLA0 | AVNQ48GLLA0 |
|--|--------------------------------------|-----------------------------|--------------------------------------|--------------------------------------|
| Power Supply | V, Ø, Hz | | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz |
| Power Input | W | | 3.88 | 4.44 |
| Running Current | A | | 16.9 | 19.3 |
| Casing Color | - | | - | - |
| Dimensions | Body | W x H x D | mm | 1,750 x 650 x 220 |
| | | W x H x D | inch | 68-29/32 x 25-19/32 x 8-21/32 |
| Net Weight | Body | | kg (lbs) | 35.0 (77.2) |
| Heat Exchanger | (Row x Column x Fins per inch) x No. | | - | (3 x 14 x 21) x 1 |
| | Face Area | | m ² (ft ²) | 0.44 (4.68) |
| Fan | Type | | - | Cross flow fan |
| | Air Flow Rate | H / M / L | m ³ /min | 28.6 / 26.9 / 25.2 |
| | | H / M / L | ft ³ /min | 1,010 / 950 / 890 |
| Fan Motor | Type | | - | BLDC |
| | Output | | W x No. | 60 x 2 |
| Dehumidification Rate | | l / h (pts/h) | 2.7 (5.7) | 3.6 (7.7) |
| Sound Pressure Level | H / M / L | | dB(A) | |
| Sound Power Level | Cooling | | dB(A) | |
| Piping Connections | Liquid | | mm(inch) | Ø 9.52 (3/8) |
| | Gas | | mm(inch) | Ø 15.88 (5/8) |
| | Drain (O.D. / I.D.) | | mm | Ø 21.5 / 16.0 |
| Safety Devices | | - | | Fuse |
| Power and Communication Cable (included Earth) | | No. x mm ² (AWG) | 4C x 0.75 (18) | 4C x 0.75 (18) |

Notes :

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
- 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 opration.

2. Ceiling suspended

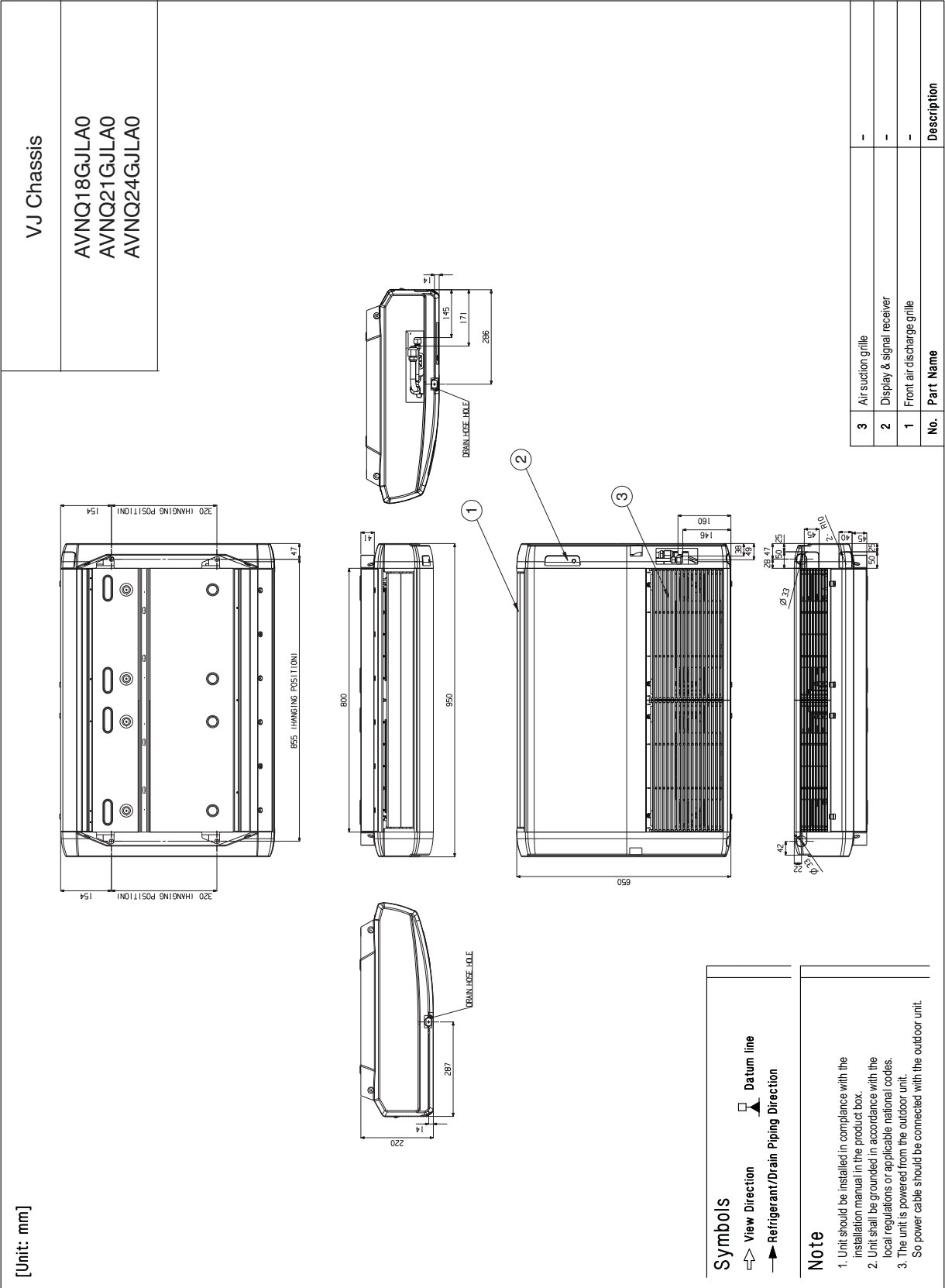
| Model Name | | | AVNQ54GLLA0 | |
|--|--------------------------------------|-----------------------------|--------------------------------------|-------------------------------|
| Power Supply | | V, Ø, Hz | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz | |
| Power Input | | W | 5.23 | |
| Running Current | | A | 22.7 | |
| Casing Color | | - | - | |
| Dimensions | Body | W x H x D | mm | 1,750 x 650 x 220 |
| | | W x H x D | inch | 68-29/32 x 25-19/32 x 8-21/32 |
| Net Weight | Body | kg (lbs) | 35.0 (77.2) | |
| Heat Exchanger | (Row x Column x Fins per inch) x No. | | - | (3 x 14 x 21) x 1 |
| | Face Area | | m ² (ft ²) | 0.44 (4.68) |
| Fan | Type | | - | Cross flow fan |
| | Air Flow Rate | H / M / L | m ³ /min | 31.5 / 29.7 / 28.0 |
| | | H / M / L | ft ³ /min | 1,112 / 1,049 / 989 |
| Fan Motor | Type | | - | BLDC |
| | Output | | W x No. | 60 x 2 |
| Dehumidification Rate | | l / h (pts/h) | 3.6 (7.7) | |
| Sound Pressure Level | H / M / L | | dB(A) | |
| Sound Power Level | Cooling | | dB(A) | |
| Piping Connections | Liquid | | mm(inch) | Ø 9.52 (3/8) |
| | Gas | | mm(inch) | Ø 19.05 (3/4) |
| | Drain (O.D. / I.D.) | | mm | Ø 21.5 / 16.0 |
| Safety Devices | | - | Fuse | |
| Power and Communication Cable (included Earth) | | No. x mm ² (AWG) | 4C x 0.75 (18) | |

Notes :

- 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
 - Piping Length : Interconnected Pipe Length = 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 opration.

2. Ceiling suspended

2.3 Dimensions



2. Ceiling suspended

| VK Chassis | AVNQ36GKLA0 | | | | | | | | | | | | | | |
|-------------------|----------------------------|--|--|-----------|-------------|---|--------------------|---|---|---------------------------|---|---|----------------------------|---|--|
| <p>[Unit: mm]</p> | | <p>Symbols</p> <ul style="list-style-type: none"> ↗ View Direction ↖ Refrigerant/Drain Piping Direction □ Datum line ▲ Datum line | <p>Note</p> <ol style="list-style-type: none"> 1. Unit should be installed in compliance with the installation manual in the product box. 2. Unit shall be grounded in accordance with the local regulations or applicable national codes. 3. The unit is powered from the outdoor unit. So power cable should be connected with the outdoor unit. | | | | | | | | | | | | |
| | | <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>No.</th> <th>Part Name</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">3</td> <td>Air suction grille</td> <td style="text-align: center;">-</td> </tr> <tr> <td style="text-align: center;">2</td> <td>Display & signal receiver</td> <td style="text-align: center;">-</td> </tr> <tr> <td style="text-align: center;">1</td> <td>Front air discharge grille</td> <td style="text-align: center;">-</td> </tr> </tbody> </table> | No. | Part Name | Description | 3 | Air suction grille | - | 2 | Display & signal receiver | - | 1 | Front air discharge grille | - | |
| No. | Part Name | Description | | | | | | | | | | | | | |
| 3 | Air suction grille | - | | | | | | | | | | | | | |
| 2 | Display & signal receiver | - | | | | | | | | | | | | | |
| 1 | Front air discharge grille | - | | | | | | | | | | | | | |

2. Ceiling suspended

[Unit: mm]

VL Chassis

AVNQ42GLLA0
AVNQ48GLLA0
AVNQ54GLLA0

Symbols

- ⇨ View Direction
- ⇨ Refrigerant/Drain Piping Direction
- Datum line

Note

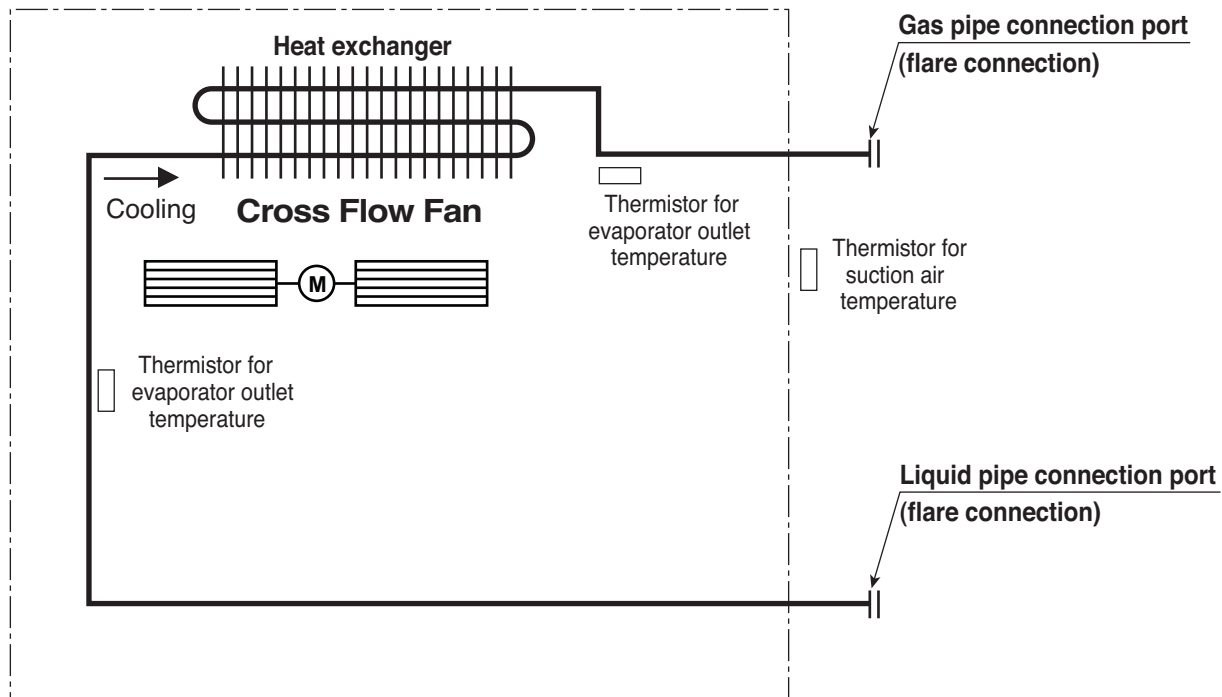
1. Unit should be installed in compliance with the installation manual in the product box.
2. Unit shall be grounded in accordance with the local regulations or applicable national codes.
3. The unit is powered from the outdoor unit.
So power cable should be connected with the outdoor unit.

| No. | Part Name | Description |
|-----|----------------------------|-------------|
| 3 | Air suction grille | - |
| 2 | Display & signal receiver | - |
| 1 | Front air discharge grille | - |

2. Ceiling suspended

2.4 Piping diagrams

Models : AVNQ18GJLA0 / AVNQ21GJLA0 / AVNQ24GJLA0



| Description | PCB Connector |
|--|---------------|
| Thermistor for suction air temperature | CN-ROOM |
| Thermistor for evaporator inlet temperature | CN-PIPE / IN |
| Thermistor for evaporator outlet temperature | CN-PIPE / OUT |

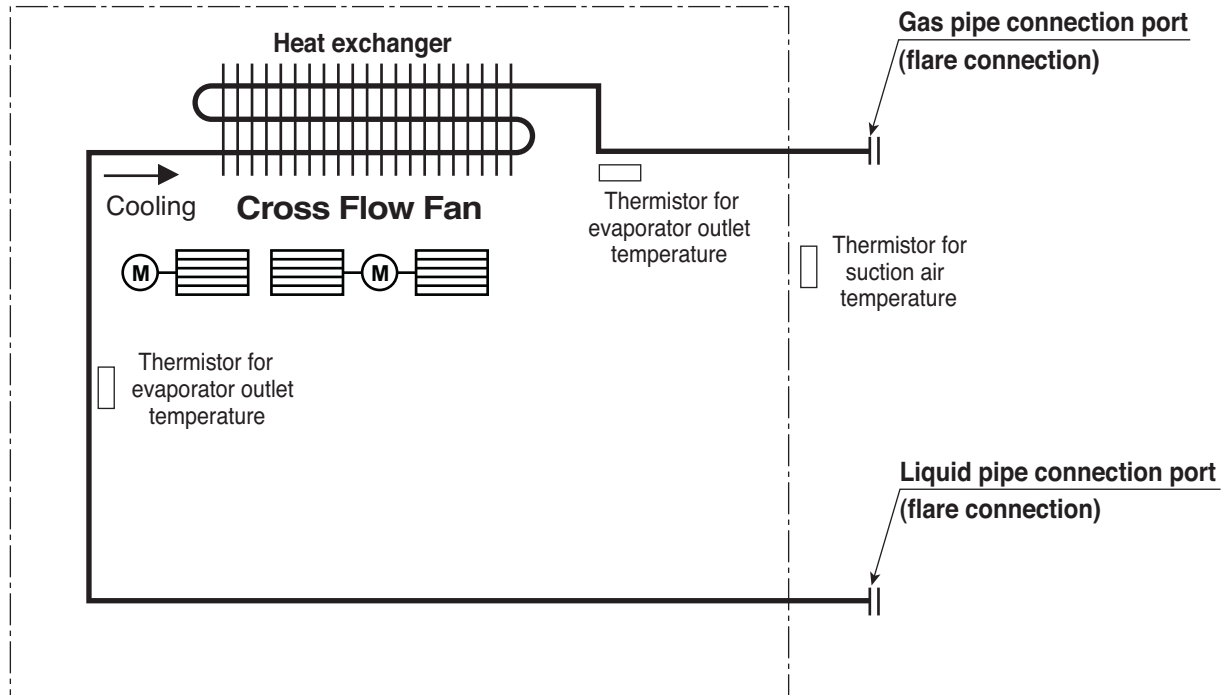
■ Refrigerant pipe connection port diameters

[Unit : mm]

| Model | Gas | Liquid |
|----------------------------|---------------|--------------|
| AVNQ18GJLA0 AVNQ21GJLA0 | Ø 12.7 (1/2) | Ø 6.35 (1/4) |
| AVNQ24GJLA0 | Ø 15.88 (5/8) | Ø 9.52 (3/8) |

2. Ceiling suspended

Models : AVNQ36GKLA0



| Description | PCB Connector |
|--|---------------|
| Thermistor for suction air temperature | CN-ROOM |
| Thermistor for evaporator inlet temperature | CN-PIPE / IN |
| Thermistor for evaporator outlet temperature | CN-PIPE / OUT |

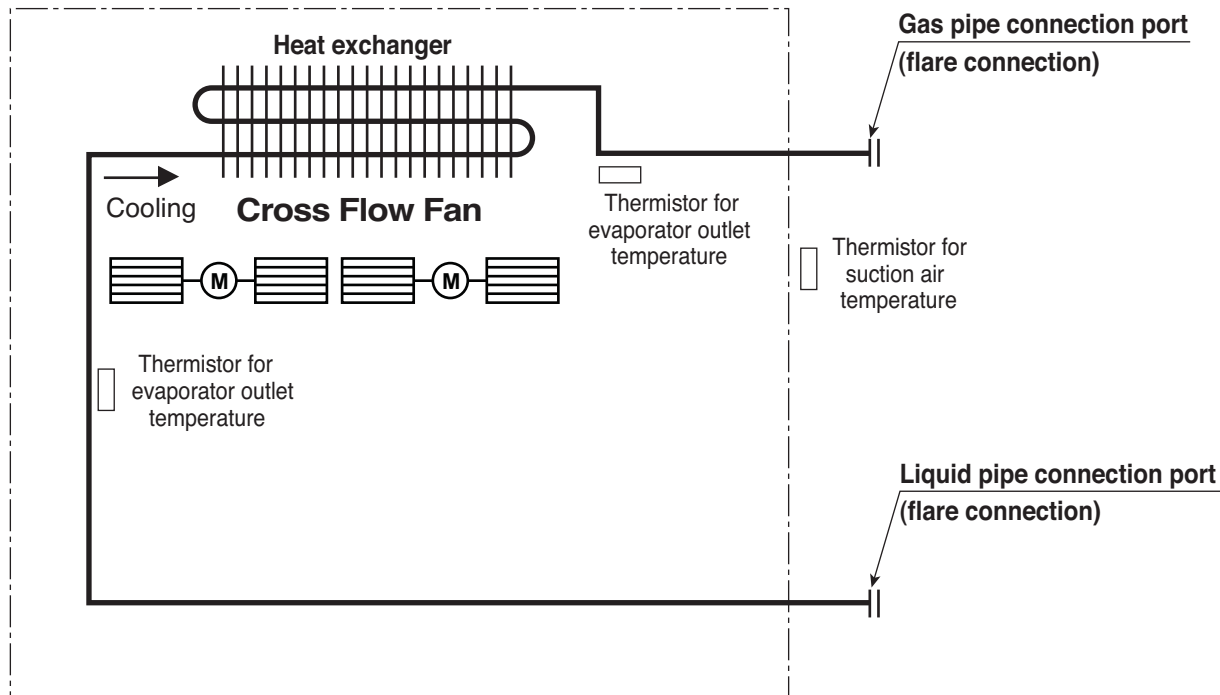
■ Refrigerant pipe connection port diameters

[Unit : mm]

| Model | Gas | Liquid |
|-------------|---------------|--------------|
| AVNQ36GKLA0 | Ø 15.88 (5/8) | Ø 9.52 (3/8) |

2. Ceiling suspended

Models : AVNQ42GLLA0 / AVNQ48GLLA0 / AVNQ54GLLA0



| Description | PCB Connector |
|--|---------------|
| Thermistor for suction air temperature | CN-ROOM |
| Thermistor for evaporator inlet temperature | CN-PIPE / IN |
| Thermistor for evaporator outlet temperature | CN-PIPE / OUT |

■ Refrigerant pipe connection port diameters

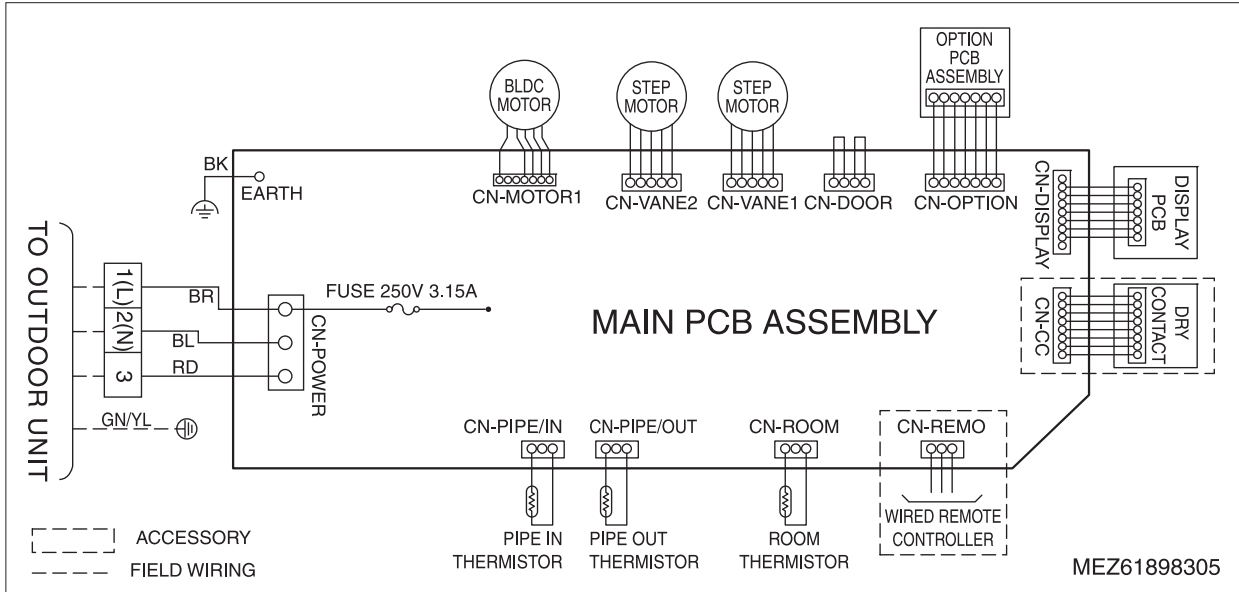
[Unit : mm]

| Model | Gas | Liquid |
|----------------------------|---------------|--------------|
| AVNQ42GLLA0 AVNQ48GLLA0 | Ø 15.88 (5/8) | Ø 9.52 (3/8) |
| AVNQ54GLLA0 | Ø 19.05 (3/4) | Ø 9.52 (3/8) |

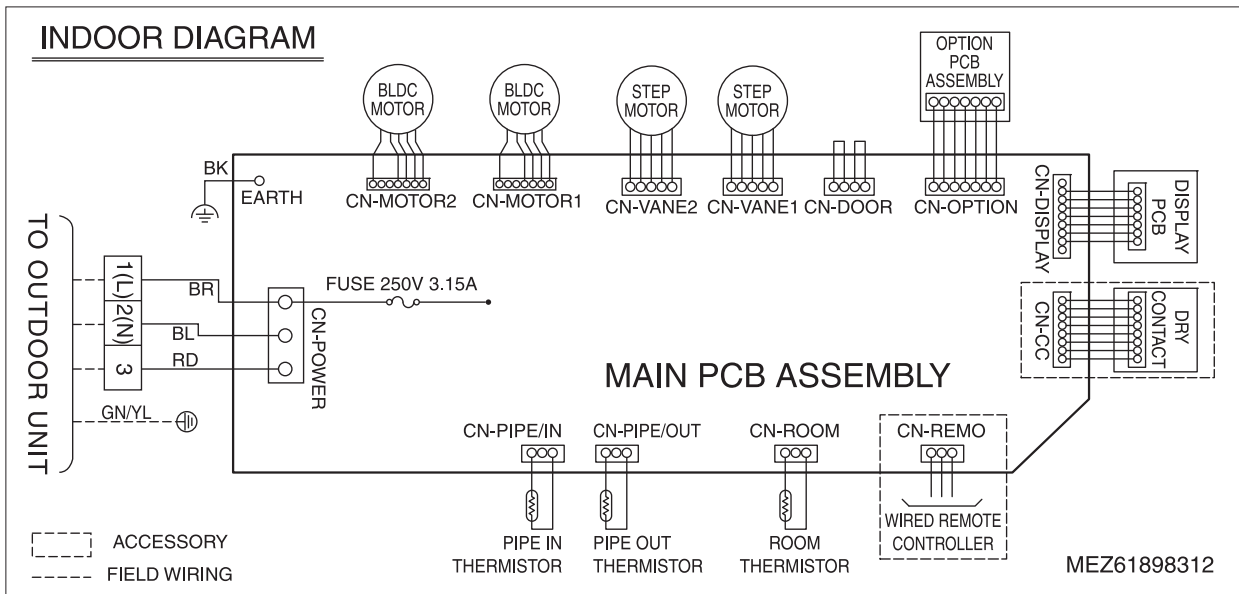
2. Ceiling suspended

2.5 Wiring diagrams

Models : AVNQ18GJLA0 / AVNQ21GJLA0 / AVNQ24GJLA0



Models : AVNQ36KLA0 / AVNQ42GLLA0 / AVNQ48GLLA0 / AVNQ54GLLA0



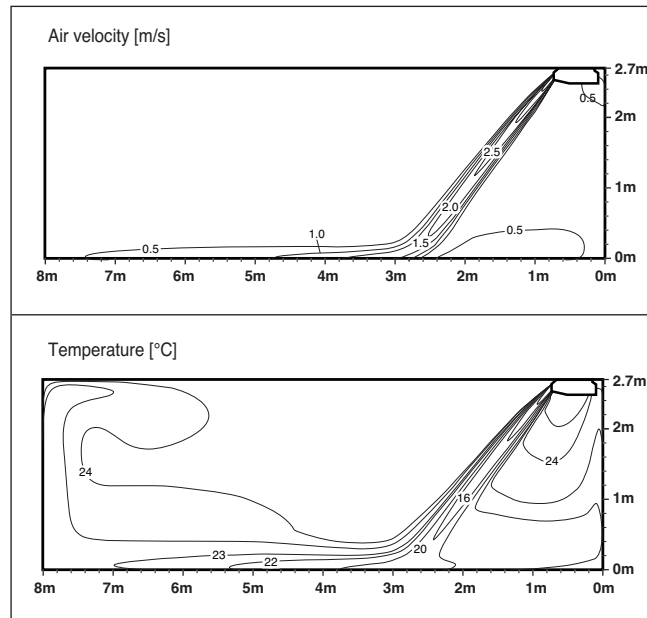
2. Ceiling suspended

2.6 Air flow and temperature distributions (Reference data)

Model : AVNQ18GJLA0 / AVNQ21GJLA0 / AVNQ24GJLA0

Cooling

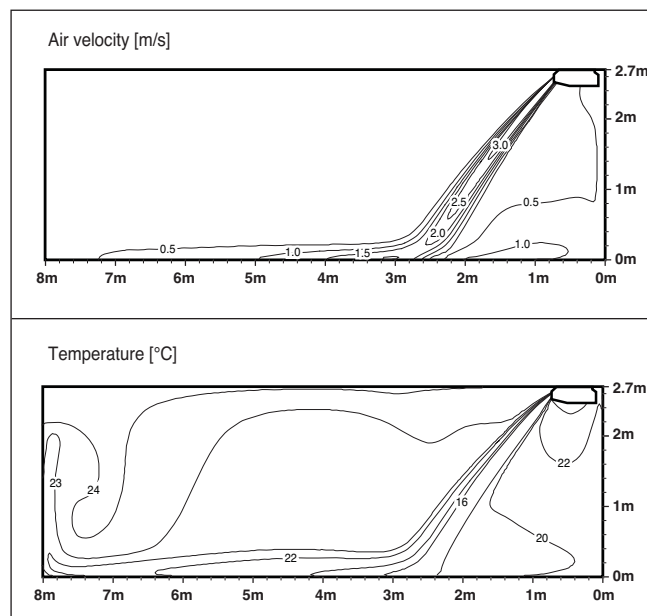
Discharge angle:40°



Model : AVNQ36GKLA0

Cooling

Discharge angle:40°

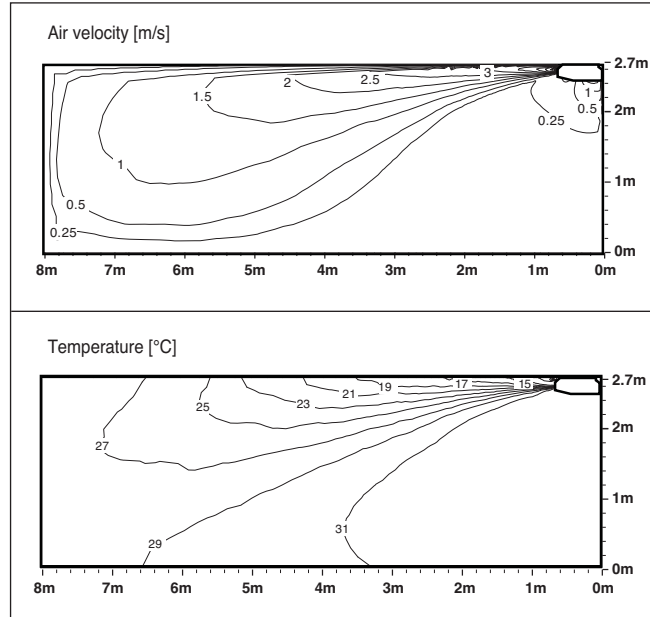


2. Ceiling suspended

Model : AVNQ42GLLA0

Cooling

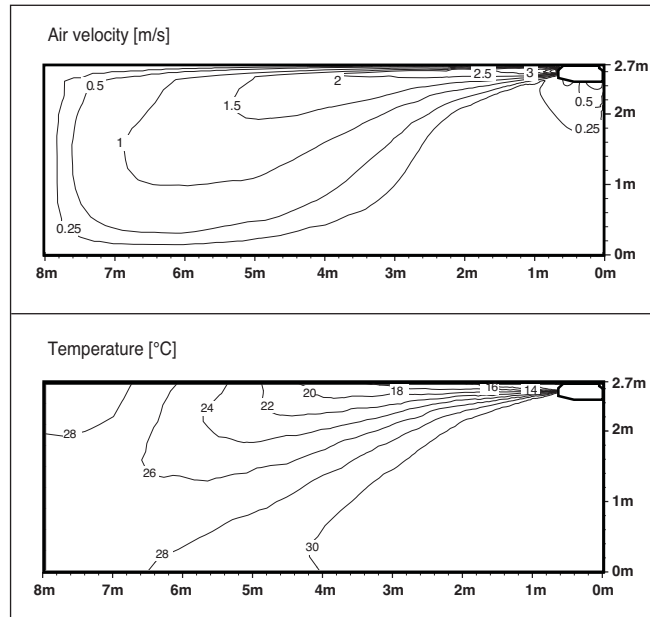
Discharge angle:10°



Model : AVNQ48GLLA0

Cooling

Discharge angle:10°

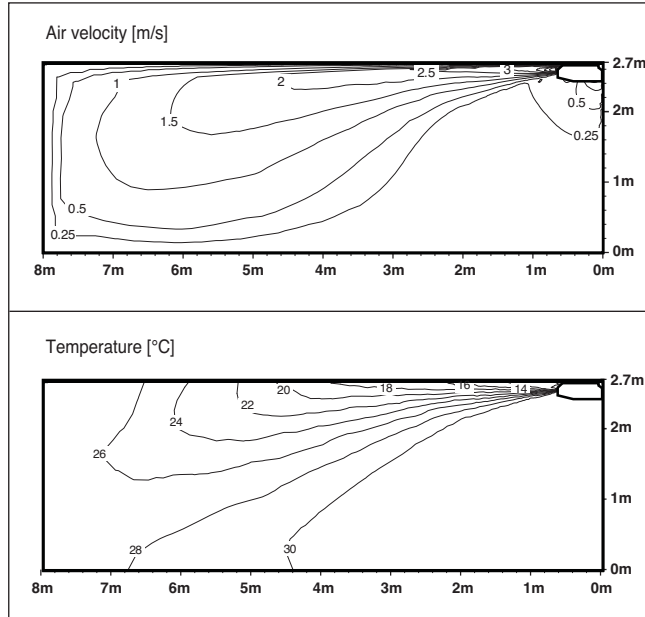


2. Ceiling suspended

Model : AVNQ54GLLA0

Cooling

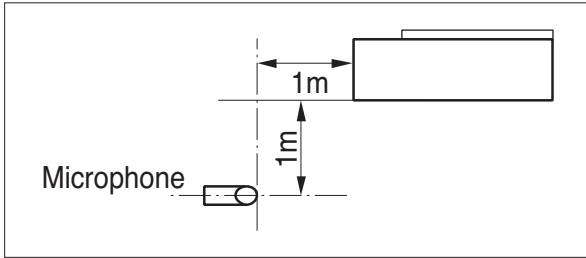
Discharge angle: 10°



2. Ceiling suspended

2.7 Sound levels

Overall



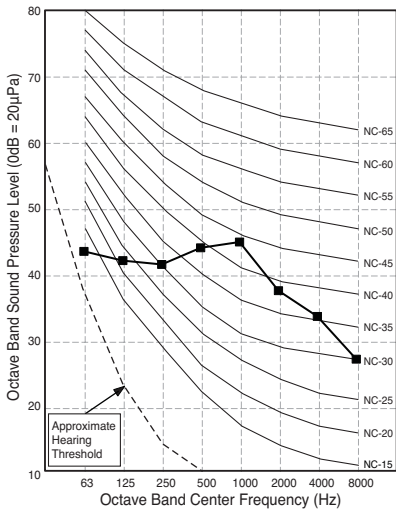
Notes :

- 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.

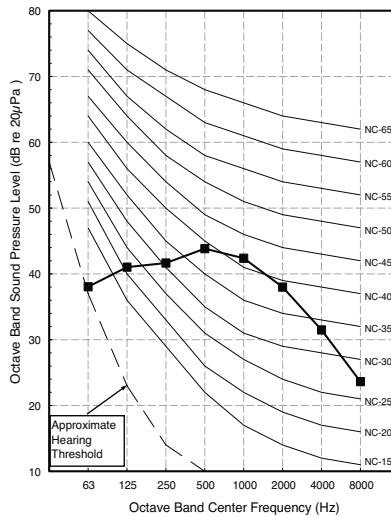
| Model | Sound Level(H/M/L) [dB(A)] | | |
|-------------|----------------------------|----|----|
| | H | M | L |
| AVNQ18GJLA0 | 44 | 43 | 41 |
| AVNQ21GJLA0 | 44 | 43 | 41 |
| AVNQ24GJLA0 | 44 | 43 | 41 |
| AVNQ36GKLA0 | 45 | 43 | 41 |
| AVNQ42GLLA0 | 47 | 46 | 44 |
| AVNQ48GLLA0 | 47 | 46 | 44 |
| AVNQ54GLLA0 | 48 | 47 | 45 |

Sound Pressure Level

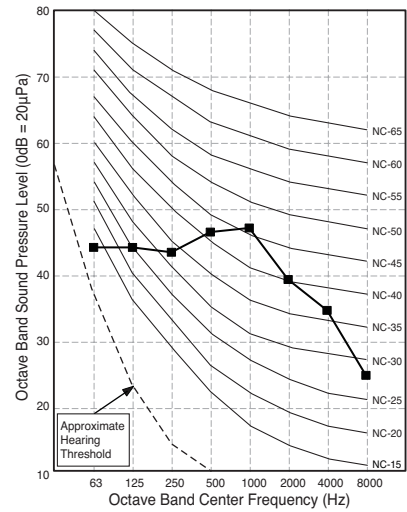
AVNQ18GJLA0
AVNQ21GJLA0



AVNQ24GJLA0

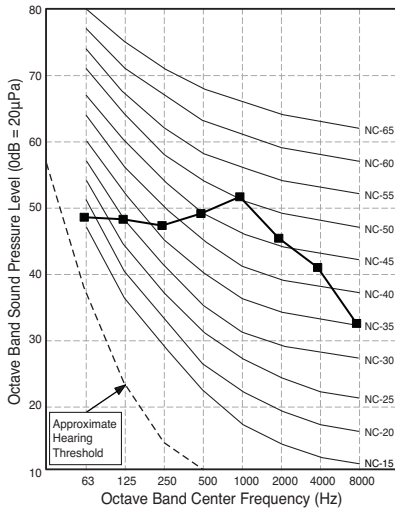


AVNQ36GKLA0

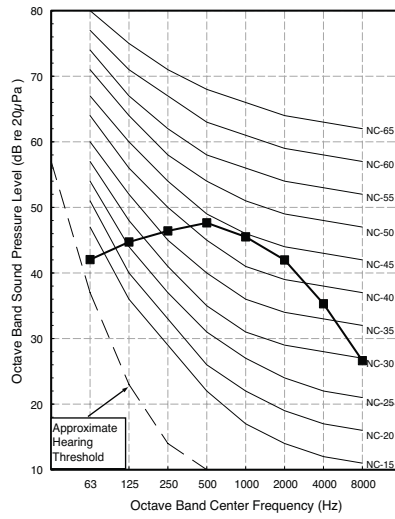


2. Ceiling suspended

AVNQ42GLLA0
AVNQ48GLLA0



AVNQ54GLLA0



3. Ceiling concealed duct - High static pressure

3.1 List of functions

3.2 Specifications

3.3 Dimensions

3.4 Piping diagrams

3.5 Wiring diagrams

3.6 External pressure setting for EZtuning

3.7 Sound levels

3. Ceiling concealed duct - High static pressure

3.1 List of functions

| Category | Functions | ABNQ18GHLA0 / ABNQ21GHLA0 / ABNQ24GGLA0 / ABNQ36GGLA0 ABNQ42GRLA0 / ABNQ48GRLA0 / ABNQ54GRLA0 |
|------------------------|---|--|
| Air flow | Air supply outlet | 2 |
| | Airflow direction control(left & right) | X |
| | Airflow direction control(up & down) | X |
| | Auto swing(left & right) | X |
| | Auto swing(up & down) | X |
| | Airflow steps(fan/cool/heat) | 3 / 3 / - |
| | Chaos swing | X |
| | Chaos wind(auto wind) | X |
| | Jet cool(Power wind) | X |
| | Swirl wind | X |
| Air purifying | Deodorizing filter | X |
| | Plasma air purifier | X |
| | Prefilter(washable / anti-fungus) | O |
| Installation | Drain pump | ABDPG |
| | E.S.P. control | O |
| | Electric heater(operation) | X |
| | High ceiling operation | X |
| Reliability | Hot start | X |
| | Self diagnosis | O |
| | Soft dry operation | O |
| Convenience | Auto changeover | X |
| | Auto cleaning | X |
| | Auto operation(artificial intelligence) | X |
| | Auto restart operation | O |
| | Child lock | O |
| | Forced operation | X |
| | Group control | O |
| | Sleep mode | X |
| | Timer(on/off) | O |
| | Timer(weekly) | O |
| Two thermistor control | O | |
| Individual control | Wide wired remote controller | PQRCVSL0/PQRCVSL0QW |
| | Deluxe wired remote controller | X |
| | Simple wired remote controller | X |
| | Wired remote controller(for hotel use) | X |
| | Wireless LCD remote control | X |
| CAC network function | General central controller (Non LGAP) | X |
| | Dry contact | PQDSB** |
| | Network Solution(LGAP) | O |
| | PDI(power distribution indicator) | X |
| Special function kit | PI 485 | PMNFP14A0 |
| | Zone control | ABZCA |
| | CTIE | X |
| Others | Electro thermostat | X |
| | Thermistor | PQRSTA0 |

Note:

• O: Applied, • X: Not applied, • -: No relation,

** : For ceiling concealed duct models, auto-run function of dry contact is not applicable.

[If RF remote control use, auto-run function of dry contact is applicable.(Refer to accessory PDB)]

• Option: Model name & price are different according to options, and assembled in factory with main unit.

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

3. Ceiling concealed duct - High static pressure

3.2 Specifications

| Model Name | | | ABNQ18GH LA0 | ABNQ21GH LA0 | |
|--|--------------------------------------|--------------------------------|--------------------------------------|--------------------------------------|--------------------|
| Power Supply | | V, Ø, Hz | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz | |
| Power Input | | W x No. | 1.55 | 1.99 | |
| Running Current | | A | 6.7 | 8.7 | |
| Dimensions | Body | W x H x D | mm | 880 x 260 x 450 | |
| | | W x H x D | inch | 34-21/32 x 10-1/4 x 17-23/32 | |
| Net Weight | | kg (lbs) | 26.0 (57.3) | 26.0 (57.3) | |
| Heat Exchanger | (Row x Column x Fins per inch) x No. | | - | (3 x 10 x 21) x 1 | |
| | Face Area | | m ² (ft ²) | 0.15 (1.63) | |
| Fan | Type | | - | Sirocco Fan | |
| | Air Flow Rate | High-static Mode (Factory Set) | H / M / L | m ³ /min | 16.5 / 14.5 / 13.0 |
| | | External Static Pressure | H / M / L | ft ³ /min | 583 / 512 / 459 |
| | | | | Pa (mmAq) | 78 (8) |
| Fan Motor | Type | | - | BLDC | |
| | Output | | W x No. | 154 x 1 | |
| Dehumidification Rate | | l / h (pts/h) | 2.1 (4.5) | 2.3 (4.9) | |
| Sound Pressure Level | | H / M / L | dB(A) 37 / 35 / 33 | | |
| Sound Power Level | | Cooling | dB(A) - | | |
| Piping Connections | Liquid | | mm(inch) | Ø 6.35 (1/4) | |
| | Gas | | mm(inch) | Ø 12.7 (1/2) | |
| | Drain (O.D. / I.D.) | | mm | Ø 25.4 / 20.4 | |
| Safety Devices | | - | Fuse | Fuse | |
| Power and Communication Cable (included Earth) | | No. x mm ² (AWG) | 4C x 0.75 (18) | 4C x 0.75 (18) | |

Notes :

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
- 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 opration.

3. Ceiling concealed duct - High static pressure

| Model Name | | | | ABNQ24GGLA0 | ABNQ36GGLA0 | |
|--|--------------------------------------|--------------------------------|-----------------------------------|--------------------------------------|--------------------------------------|---------------------|
| Power Supply | | V, Ø, Hz | | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz | |
| Power Input | | W x No. | | 2.17 | 3.31 | |
| Running Current | | A | | 9.4 | 14.4 | |
| Dimensions | Body | W x H x D | mm | 1,180 x 298 x 450 | 1,180 x 298 x 450 | |
| | | W x H x D | inch | 46-15/32 x 11-23/32 x 17-23/32 | 46-15/32 x 11-23/32 x 17-23/32 | |
| Net Weight | | Body | | kg (lbs) | 33.0 (72.8) 35.0 (77.2) | |
| Heat Exchanger | (Row x Column x Fins per inch) x No. | | - | (3 x 12 x 21) x 1 | (3 x 10 x 19) x 1 | |
| | Face Area | | m ² (ft ²) | 0.26 (2.77) | 0.21 (2.29) | |
| Fan | Type | | - | Sirocco Fan | Sirocco Fan | |
| | Air Flow Rate | High-static Mode (Factory Set) | H / M / L | m ³ /min | 16.5 / 14.5 / 13.0 | 32.0 / 29.0 / 26.0 |
| | | | H / M / L | ft ³ /min | 583 / 512 / 459 | 1,130 / 1,024 / 918 |
| | External Static Pressure | | Pa (mmAq) | 78 (8) | 98 (10) | |
| Fan Motor | Type | | - | BLDC | BLDC | |
| | Output | | W x No. | 154 x 1 | 154 x 1 | |
| Dehumidification Rate | | | l / h (pts/h) | 2.5 (5.3) | 2.7 (5.7) | |
| Sound Pressure Level | | H / M / L | dB(A) | 42 / 39 / 36 | 42 / 39 / 36 | |
| Sound Power Level | | Cooling | dB(A) | - | - | |
| Piping Connections | Liquid | | mm(inch) | Ø 9.52 (3/8) | Ø 9.52 (3/8) | |
| | Gas | | mm(inch) | Ø 15.88 (5/8) | Ø 15.88 (5/8) | |
| | Drain (O.D. / I.D.) | | mm | Ø 25.4 / 20.4 | Ø 25.4 / 20.4 | |
| Safety Devices | | | - | Fuse | Fuse | |
| Power and Communication Cable (included Earth) | | No. x mm ² (AWG) | | 4C x 0.75 (18) | 4C x 0.75 (18) | |

Notes :

- 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
 - 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 opration.

3. Ceiling concealed duct - High static pressure

| Model Name | | | | ABNQ42GRLA0 | ABNQ48GRLA0 | |
|--|--------------------------------------|--------------------------------|-----------------------------------|--------------------------------------|--------------------------------------|-----------------------|
| Power Supply | | V, Ø, Hz | | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz | |
| Power Input | | W x No. | | 3.88 | 4.43 | |
| Running Current | | A | | 16.9 | 19.3 | |
| Dimensions | Body | W x H x D | mm | 1,230 x 380 x 590 | 1,230 x 380 x 590 | |
| | | W x H x D | inch | 48-7/16 x 14-31/32 x 23-7/32 | 48-7/16 x 14-31/32 x 23-7/32 | |
| Net Weight | | kg (lbs) | | 52.0 (114.6) | 52.0 (114.6) | |
| Heat Exchanger | (Row x Column x Fins per inch) x No. | | - | (3 x 16 x 18) x 1 | (3 x 16 x 18) x 1 | |
| | Face Area | | m ² (ft ²) | 0.36 (3.87) | 0.36 (3.87) | |
| Fan | Type | | - | Sirocco Fan | Sirocco Fan | |
| | Air Flow Rate | High-static Mode (Factory Set) | H / M / L | m ³ /min | 38.0 / 36.0 / 32.0 | 40.0 / 35.0 / 30.0 |
| | | | H / M / L | ft ³ /min | 1,342 / 1,271 / 1,130 | 1,413 / 1,236 / 1,060 |
| | External Static Pressure | | Pa (mmAq) | 98 (10) | 98 (10) | |
| Fan Motor | Type | | - | BLDC | BLDC | |
| | Output | | W x No. | 350 x 1 | 350 x 1 | |
| Dehumidification Rate | | | l / h (pts/h) | 3.4 (7.2) | 3.6 (7.7) | |
| Sound Pressure Level | | H / M / L | dB(A) | 44 / 42 / 40 | 44 / 42 / 40 | |
| Sound Power Level | | Cooling | dB(A) | - | - | |
| Piping Connections | Liquid | | mm(inch) | Ø 9.52 (3/8) | Ø 9.52 (3/8) | |
| | Gas | | mm(inch) | Ø 15.88 (5/8) | Ø 15.88 (5/8) | |
| | Drain (O.D. / I.D.) | | mm | Ø 25.4 / 20.4 | Ø 25.4 / 20.4 | |
| Safety Devices | | | - | Fuse | Fuse | |
| Power and Communication Cable (included Earth) | | No. x mm ² (AWG) | | 4C x 0.75 (18) | 4C x 0.75 (18) | |

Notes :

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
- 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 opration.

3. Ceiling concealed duct - High static pressure

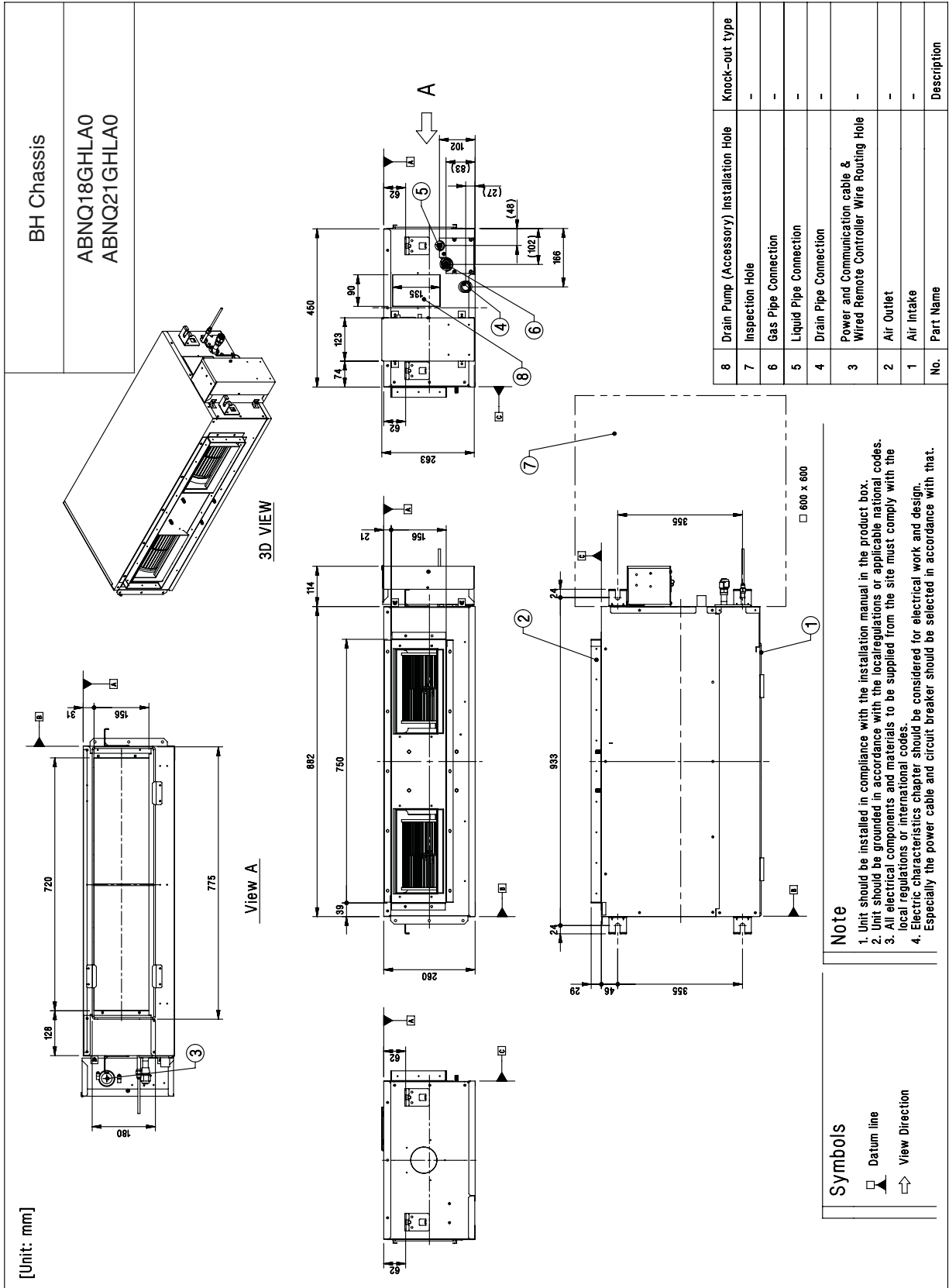
| Model Name | | | | ABNQ54GRLA0 | |
|--|--------------------------------------|--------------------------------|-----------------------------------|--------------------------------------|-----------------------|
| Power Supply | | V, Ø, Hz | | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz | |
| Power Input | | W x No. | | 4.91 | |
| Running Current | | A | | 21.3 | |
| Dimensions | Body | W x H x D | mm | 1,230 x 380 x 590 | |
| | | W x H x D | inch | 48-7/16 x 14-31/32 x 23-7/32 | |
| Net Weight | | kg (lbs) | | 49.0 (108.0) | |
| Heat Exchanger | (Row x Column x Fins per inch) x No. | | - | (3 x 16 x 18) x 1 | |
| | Face Area | | m ² (ft ²) | 0.36 (3.87) | |
| Fan | Type | | - | Sirocco Fan | |
| | Air Flow Rate | High-static Mode (Factory Set) | H / M / L | m ³ /min | 50.0 / 45.0 / 40.0 |
| | | | H / M / L | ft ³ /min | 1,766 / 1,589 / 1,413 |
| | External Static Pressure | | Pa (mmAq) | 98 (10) | |
| Fan Motor | Type | | - | BLDC | |
| | Output | | W x No. | 185 x 2 | |
| Dehumidification Rate | | | l / h (pts/h) | 3.6 (7.7) | |
| Sound Pressure Level | | H / M / L | dB(A) | 46 / 44 / 42 | |
| Sound Power Level | | Cooling | dB(A) | - | |
| Piping Connections | Liquid | | mm(inch) | Ø 9.52 (3/8) | |
| | Gas | | mm(inch) | Ø 19.05 (3/4) | |
| | Drain (O.D. / I.D.) | | mm | Ø 25.4 / 20.4 | |
| Safety Devices | | | - | Fuse | |
| Power and Communication Cable (included Earth) | | | No. x mm ² (AWG) | 4C x 0.75 (18) | |

Notes :

- 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
 - Piping Length : Interconnected Pipe Length = 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 opration.

3. Ceiling concealed duct - High static pressure

3.3 Dimensions



3. Ceiling concealed duct - High static pressure

[Unit: mm]

View A

3D View

BR Chassis

ABNQ42GRLA0
ABNQ48GRLA0
ABNQ54GRLA0

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

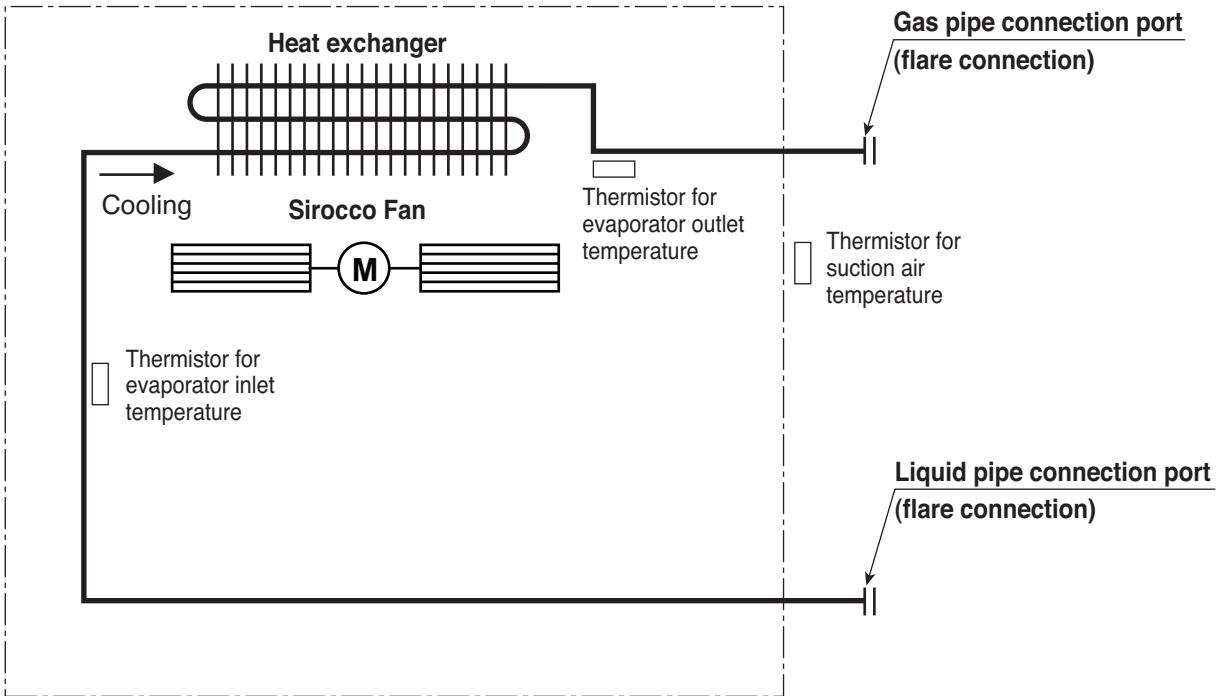
- Datum line
- ↗ View Direction

| No. | Part Name | ABDPG / Knock out Type |
|-----|--|------------------------|
| 8 | Drain Pump (accessory) Installation Hole | - |
| 7 | Inspection Hole | - |
| 6 | Gas Pipe Connection | - |
| 5 | Liquid Pipe Connection | - |
| 4 | Drain Pipe Connection | - |
| 3 | Power and Communication cable Hole & Wired Remote Controller Wire Routing Hole | - |
| 2 | Air Outlet | - |
| 1 | Air Intake | - |

3. Ceiling concealed duct - High static pressure

3.4 Piping diagrams

Models : ABNQ18GHLA0 / ABNQ21GHLA0 / ABNQ24GGLA0 / ABNQ36GGLA0
 ABNQ42GRLA0 / ABNQ48GRLA0 / ABNQ54GRLA0



| Description | PCB Connector |
|--|---------------|
| Thermistor for suction air temperature | CN-ROOM |
| Thermistor for evaporator inlet temperature | CN-PIPE / IN |
| Thermistor for evaporator outlet temperature | CN-PIPE / OUT |

■ Refrigerant pipe connection port diameters

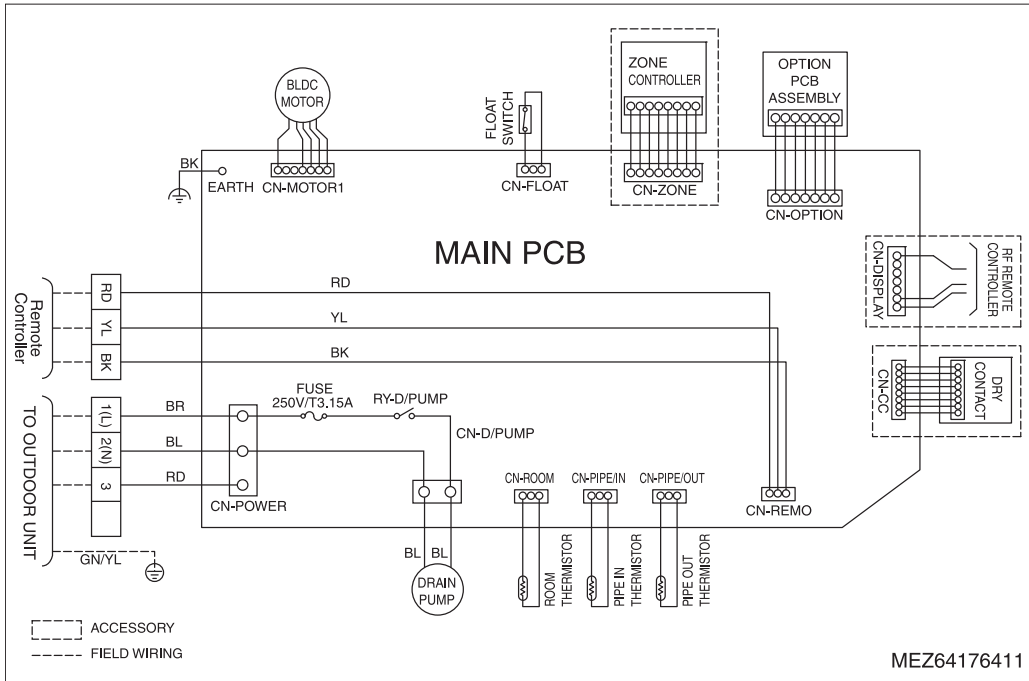
[Unit : mm]

| Model | Gas | Liquid |
|--|---------------|--------------|
| ABNQ18GHLA0 ABNQ21GHLA0 | Ø 12.7 (1/2) | Ø 6.35 (1/4) |
| ABNQ24GGLA0 ABNQ36GGLA0 ABNQ42GRLA0 ABNQ48GRLA0 | Ø 15.88 (5/8) | Ø 9.52 (3/8) |
| ABNQ54GRLA0 | Ø 19.05 (3/4) | Ø 9.52 (3/8) |

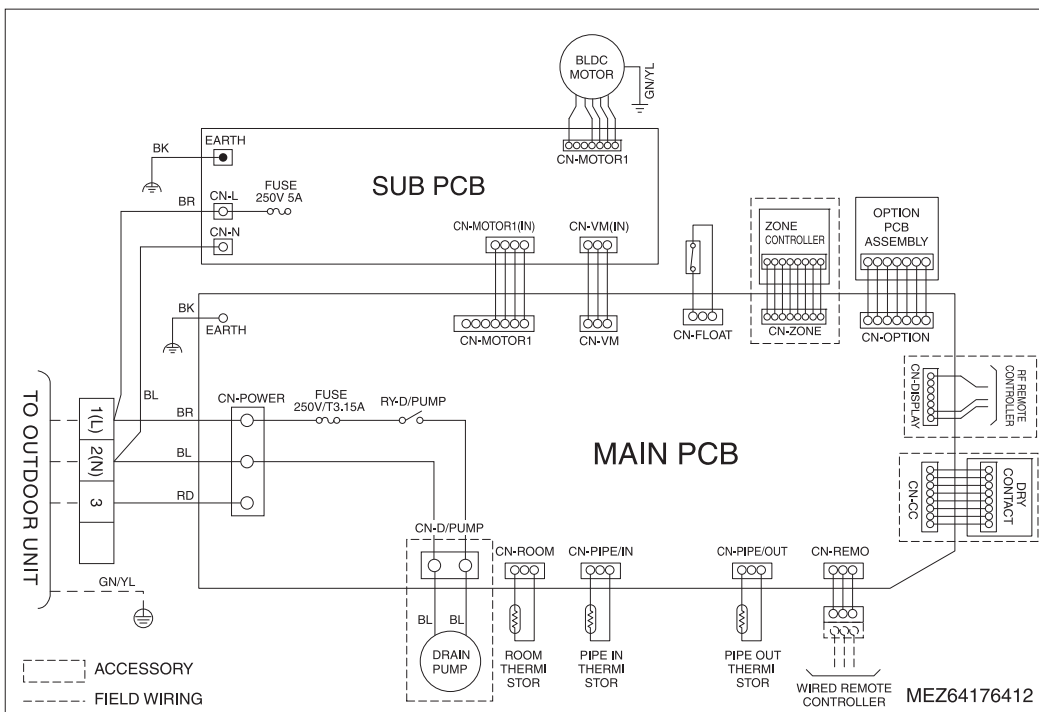
3. Ceiling concealed duct - High static pressure

3.5 Wiring diagrams

Models : ABNQ18GHLA0 / ABNQ21GHLA0 / ABNQ24GGLA0 / ABNQ36GGLA0

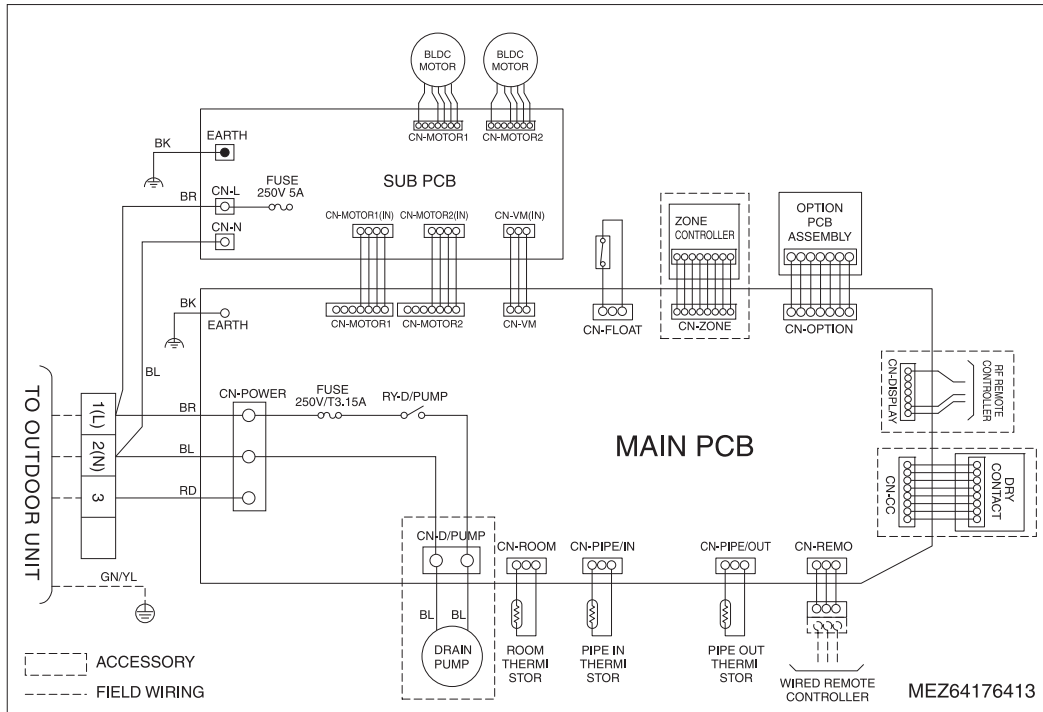


Models : ABNQ42GRLA0 / ABNQ48GRLA0



3. Ceiling concealed duct - High static pressure

Models : ABNQ54GRLA0



3. Ceiling concealed duct - High static pressure

3.6 External pressure setting for

Table 1

Models : ABNQ18GHLA0, ABNQ21GHLA0

(Unit: CMM)

| Setting Value | Static Pressure[mmAq(Pa)] | | | |
|---------------|---------------------------|-------|-------|-------|
| | 2.5(25) | 4(39) | 6(59) | 8(78) |
| 100 | 12.8 | - | - | - |
| 105 | 13.9 | - | - | - |
| 110 | 15.2 | 12.7 | - | - |
| 115 | 16.5 | 14.0 | - | - |
| 120 | 17.8 | 15.3 | 12.7 | - |
| 125 | - | 16.5 | 14.0 | - |
| 130 | - | 17.8 | 15.3 | 12.6 |
| 135 | - | - | 16.5 | 13.5 |
| 140 | - | - | 17.5 | 14.5 |
| 145 | - | - | - | 16.5 |

Models : ABNQ24GGLA0

(Unit: CMM)

| Setting Value | Static Pressure[mmAq(Pa)] | | | | |
|---------------|---------------------------|-------|--------|---------|---------|
| | 6(59) | 8(78) | 10(98) | 12(118) | 14(137) |
| 80 | 14.8 | - | - | - | - |
| 90 | 19.0 | 14.4 | - | - | - |
| 100 | 23.3 | 19.7 | 13.9 | - | - |
| 110 | 26.9 | 24.3 | 19.8 | 14.1 | - |
| 120 | 31.2 | 28.2 | 25.2 | 20.1 | 14.4 |
| 130 | 34.9 | 32.4 | 29.5 | 25.4 | 20.5 |

Models : ABNQ36GGLA0

(Unit: CMM)

| Setting Value | Static Pressure[mmAq(Pa)] | | | |
|---------------|---------------------------|-------|-------|--------|
| | 4(49) | 6(59) | 8(78) | 10(98) |
| 100 | 20.8 | - | - | - |
| 105 | 23.2 | 19.5 | - | - |
| 110 | 26.0 | 21.5 | - | - |
| 115 | - | 23.5 | 19.1 | - |
| 120 | - | 26.3 | 21.6 | - |
| 125 | - | - | 24.0 | 19.9 |
| 130 | - | - | 27.0 | 22.7 |
| 135 | - | - | - | 25.9 |

3. Ceiling concealed duct - High static pressure

Models : ABNQ42GRLA0

(Unit: CMM)

| Setting Value | Static Pressure[mmAq(Pa)] | | | |
|---------------|---------------------------|-------|--------|---------|
| | 6(59) | 8(78) | 10(98) | 12(118) |
| 85 | 31.5 | - | - | - |
| 90 | 36.3 | 29.8 | - | - |
| 95 | 41.3 | 34.5 | 28.4 | - |
| 100 | 45.4 | 39.7 | 33.5 | 27.3 |
| 105 | - | 44.1 | 38.6 | 33.1 |
| 110 | - | - | 44.2 | 38.9 |
| 115 | - | - | - | 44.7 |

Models : ABNQ48GRLA0

(Unit: CMM)

| Setting Value | Static Pressure[mmAq(Pa)] | | | |
|---------------|---------------------------|-------|--------|---------|
| | 6(59) | 8(78) | 10(98) | 12(118) |
| 85 | 31.5 | - | - | - |
| 90 | 36.3 | 29.8 | - | - |
| 95 | 41.3 | 34.5 | 28.4 | - |
| 100 | 45.4 | 39.7 | 33.5 | 27.3 |
| 105 | - | 44.1 | 38.6 | 33.1 |
| 110 | - | - | 44.2 | 38.9 |
| 115 | - | - | - | 44.7 |

Models : ABNQ54GRLA0

(Unit: CMM)

| Setting Value | Static Pressure[mmAq(Pa)] | | | | |
|---------------|---------------------------|-------|--------|---------|---------|
| | 6(59) | 8(78) | 10(98) | 12(118) | 14(137) |
| 95 | 41.3 | - | - | - | - |
| 100 | 45.4 | 39.7 | - | - | - |
| 105 | 49.5 | 44.1 | 38.6 | - | - |
| 110 | - | 48.5 | 44.2 | 38.9 | - |
| 115 | - | - | 49.8 | 44.7 | 42.2 |
| 120 | - | - | - | 50.5 | 48.1 |

* ABNQ42GRLA0 / ABNQ48GRLA0
As far as possible do not set ESP 82,83

3. Ceiling concealed duct - High static pressure

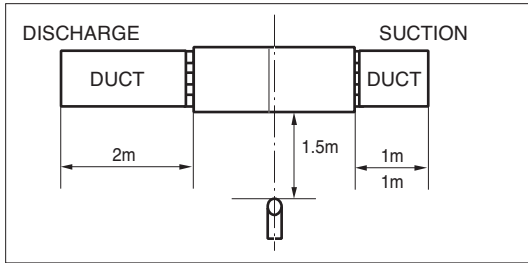
Table 2

| Model | Mode | Set value | Standard ESP (mmAq(Pa)) | CMM | Lower Limit of External Static Pressure (mmAq(Pa)) | Upper Limit of External Static Pressure (mmAq(Pa)) |
|-------------|------|-----------|-------------------------|------|--|--|
| ABNQ18GHLA0 | Hi | 1450 | 8 (78) | 16.5 | 2.5(25) | 8 (78) |
| | Mid | 1400 | | 14.5 | | |
| | Low | 1340 | | 13.0 | | |
| ABNQ21GHLA0 | Hi | 1450 | 8 (78) | 16.5 | 2.5(25) | 8 (78) |
| | Mid | 1400 | | 14.5 | | |
| | Low | 1340 | | 13.0 | | |
| ABNQ24GGLA0 | Hi | 1270 | 8 (78) | 16.5 | 2.5(25) | 8 (78) |
| | Mid | 1210 | | 14.5 | | |
| | Low | 1090 | | 13.0 | | |
| ABNQ36GGLA0 | Hi | 1370 | 10 (98) | 32.0 | 4.0(39) | 10 (98) |
| | Mid | 1310 | | 29.0 | | |
| | Low | 1260 | | 26.0 | | |
| ABNQ42GRLA0 | Hi | 1060 | 10 (98) | 28.0 | 5.0(49) | 10 (98) |
| | Mid | 1020 | | 26.0 | | |
| | Low | 990 | | 32.0 | | |
| ABNQ48GRLA0 | Hi | 1100 | 10 (98) | 40.0 | 5.0(49) | 10 (98) |
| | Mid | 1060 | | 35.0 | | |
| | Low | 1030 | | 30.0 | | |
| ABNQ54GRLA0 | Hi | 1240 | 10 (98) | 50.0 | 5.0(49) | 10 (98) |
| | Mid | 1200 | | 45.0 | | |
| | Low | 1150 | | 40.0 | | |

3. Ceiling concealed duct - High static pressure

3.7 Sound levels

Overall



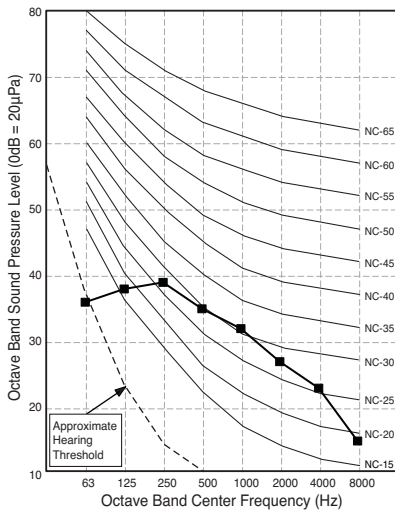
Notes :

- 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.

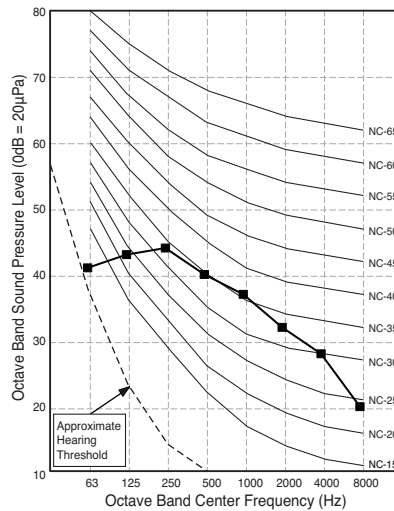
| Model | Sound Level(H/M/L) [dB(A)] | | |
|-------------|----------------------------|----|----|
| | H | M | L |
| ABNQ18GHLA0 | 37 | 35 | 33 |
| ABNQ21GHLA0 | 37 | 35 | 33 |
| ABNQ24GGLA0 | 42 | 39 | 36 |
| ABNQ36GGLA0 | 42 | 39 | 36 |
| ABNQ42GRLA0 | 44 | 42 | 40 |
| ABNQ48GRLA0 | 44 | 42 | 40 |
| ABNQ54GRLA0 | 46 | 44 | 42 |

Sound pressure level

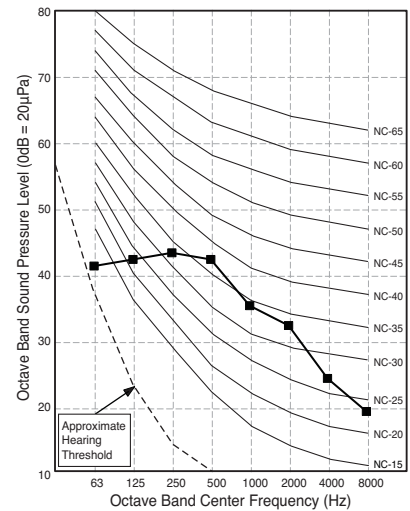
ABNQ18GHLA0
ABNQ21GHLA0



ABNQ24GGLA0

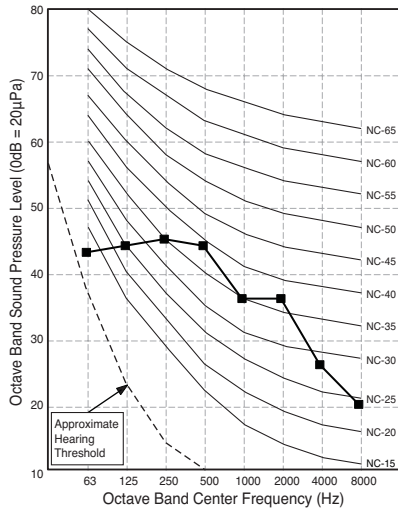


ABNQ36GGLA0

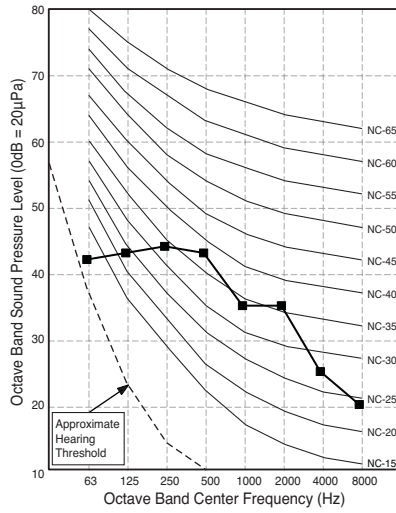


3. Ceiling concealed duct - High static pressure

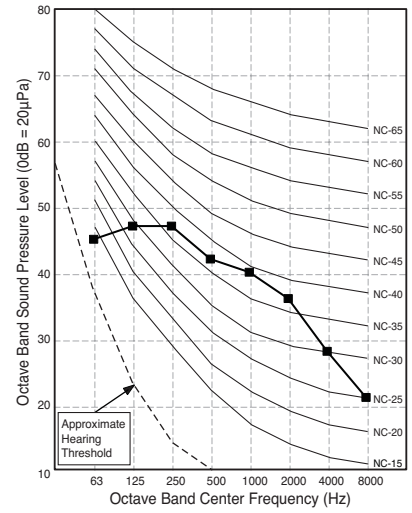
ABNQ42GRLA0



ABNQ48GRLA0



ABNQ54GRLA0



4. Ceiling concealed duct – Low static pressure

4.1 List of functions

4.2 Specifications

4.3 Dimensions

4.4 Piping diagrams

4.5 Wiring diagrams

4.6 External pressure setting for EzTuning

4.7 Sound levels

4. Ceiling concealed duct – Low static pressure

4.1 List of functions

| Category | Functions | ABNQ18GL2A0 / ABNQ21GL2A0 / ABNQ24GL3A0 |
|----------------------|---|---|
| Air flow | Air supply outlet | 2 |
| | Airflow direction control(left & right) | X |
| | Airflow direction control(up & down) | X |
| | Auto swing(left & right) | X |
| | Auto swing(up & down) | X |
| | Airflow steps(fan/cool/heat) | 3 / 3 / - |
| | Chaos swing | X |
| | Chaos wind(auto wind) | X |
| | Jet cool(Power wind) | X |
| | Swirl wind | X |
| Air purifying | Deodorizing filter | X |
| | Plasma air purifier | X |
| | Prefilter(washable / anti-fungus) | O |
| Installation | Drain pump | ABDPG |
| | E.S.P. control | O |
| | Electric heater(operation) | X |
| | High ceiling operation | X |
| Reliability | Hot start | X |
| | Self diagnosis | O |
| | Soft dry operation | O |
| Convenience | Auto changeover | X |
| | Auto cleaning | X |
| | Auto operation(artificial intelligence) | X |
| | Auto restart operation | O |
| | Child lock | O |
| | Forced operation | X |
| | Group control | O |
| | Sleep mode | X |
| | Timer(on/off) | O |
| | Timer(weekly) | O |
| Individual control | Wide wired remote controller | PQRCVSL0/PQRCVSL0QW |
| | Deluxe wired remote controller | X |
| | Simple wired remote controller | X |
| | Wired remote controller(for hotel use) | X |
| | Wireless LCD remote control | X |
| CAC network function | General central controller (Non LGAP) | X |
| | Dry contact | PQDSB** |
| | Network Solution(LGAP) | O |
| | PDI(power distribution indicator) | X |
| Special function kit | PI 485 | PMNFP14A0 |
| | Zone control | ABZCA |
| | CTIE | X |
| Others | Electro thermostat | X |
| | Thermistor | PQRSTA0 |

Note

• O: Applied, • X: Not applied, • - : No relation,

** : For ceiling concealed duct models, auto-run function of dry contact is not applicable.

[If RF remote control use, auto-run function of dry contact is applicable.(Refer to accessory PDB)]

• Option: Model name & price are different according to options, and assembled in factory with main unit.

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

4. Ceiling concealed duct – Low static pressure

4.2 Specifications

| Model Name | | | | ABNQ18GL2A0 | ABNQ21GL2A0 | |
|--|--------------------------------------|--------------------------------|-----------------------------------|--------------------------------------|--------------------------------------|--------------------|
| Power Supply | | V, Ø, Hz | | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz | |
| Power Input | | W x No. | | 1.55 | 1.92 | |
| Running Current | | A | | 6.7 | 8.3 | |
| Dimensions | Body | W x H x D | mm | 900 x 190 x 700 | 900 x 190 x 700 | |
| | | W x H x D | inch | 35-7/16 x 7-15/32 x 27-9/16 | 35-7/16 x 7-15/32 x 27-9/16 | |
| Net Weight | | kg (lbs) | | 22.0 (48.5) | 22.0 (48.5) | |
| Heat Exchanger | (Row x Column x Fins per inch) x No. | | - | (2 x 11 x 18) x 1 | (2 x 11 x 18) x 1 | |
| | Face Area | | m ² (ft ²) | 0.17 (1.81) | 0.17 (1.81) | |
| Fan | Type | | - | Sirocco Fan | Sirocco Fan | |
| | Air Flow Rate | High-static Mode (Factory Set) | H / M / L | m ³ /min | 15.0 / 12.5 / 10.0 | 17.5 / 14.0 / 12.0 |
| | | | H / M / L | ft ³ /min | 530 / 450 / 360 | 620 / 500 / 430 |
| | External Static Pressure | | Pa (mmAq) | 25 (2.54) | 25 (2.54) | |
| Fan Motor | Type | | - | BLDC | BLDC | |
| | Output | | W x No. | 19 x 1 | 19 x 1 | |
| Dehumidification Rate | | l / h (pts/h) | | 2.1 (4.5) | 2.3 (4.9) | |
| Sound Pressure Level | | H / M / L | | dB(A) | 36 / 34 / 31 | |
| Sound Power Level | | Cooling | | dB(A) | - | |
| Piping Connections | Liquid | | mm(inch) | Ø 6.35 (1/4) | Ø 6.35 (1/4) | |
| | Gas | | mm(inch) | Ø 12.7 (1/2) | Ø 12.7 (1/2) | |
| | Drain (O.D. / I.D.) | | mm | Ø 25.4 / 20.4 | Ø 25.4 / 20.4 | |
| Safety Devices | | - | | Fuse | Fuse | |
| Power and Communication Cable (included Earth) | | No. x mm ² (AWG) | | 4C x 0.75 (18) | 4C x 0.75 (18) | |

Notes :

- 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
 - 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 opration.

4. Ceiling concealed duct – Low static pressure

| Model Name | | | | ABNQ24GL3A0 | |
|--|--------------------------------------|--------------------------------|-----------------------------------|--------------------------------------|--------------------|
| Power Supply | | V, Ø, Hz | | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz | |
| Power Input | | W x No. | | 2.32 | |
| Running Current | | A | | 10.1 | |
| Dimensions | Body | W x H x D | mm | 1,100 x 190 x 700 | |
| | | W x H x D | inch | 43-5/16 x 7-15/32 x 27-9/16 | |
| Net Weight | Body | | kg (lbs) | 27.0 (59.5) | |
| Heat Exchanger | (Row x Column x Fins per inch) x No. | | - | (3 x 11 x 18) x 1 | |
| | Face Area | | m ² (ft ²) | 0.21 (2.31) | |
| Fan | Type | | - | Sirocco Fan | |
| | Air Flow Rate | High-static Mode (Factory Set) | H / M / L | m ³ /min | 20.0 / 16.0 / 12.0 |
| | | | H / M / L | ft ³ /min | 710 / 570 / 430 |
| | External Static Pressure | | Pa (mmAq) | 25 (2.54) | |
| Fan Motor | Type | | - | BLDC | |
| | Output | | W x No. | 19 x 2 | |
| Dehumidification Rate | | | l / h (pts/h) | 2.5 (5.3) | |
| Sound Pressure Level | | H / M / L | dB(A) | 39 / 35 / 32 | |
| Sound Power Level | | Cooling | dB(A) | - | |
| Piping Connections | Liquid | | mm(inch) | Ø 9.52 (3/8) | |
| | Gas | | mm(inch) | Ø 15.88 (5/8) | |
| | Drain (O.D. / I.D.) | | mm | Ø 25.4 / 20.4 | |
| Safety Devices | | | - | Fuse | |
| Power and Communication Cable (included Earth) | | No. x mm ² (AWG) | 4C x 0.75 (18) | | |

Notes :

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
- 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.

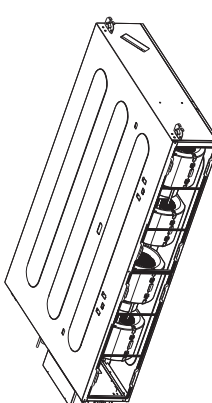
4. Sound Level Values are measured at Anechoic chamber.

Therefore, these values can be increased owing to ambient conditions during opration.

4. Ceiling concealed duct – Low static pressure

4.3 Dimensions

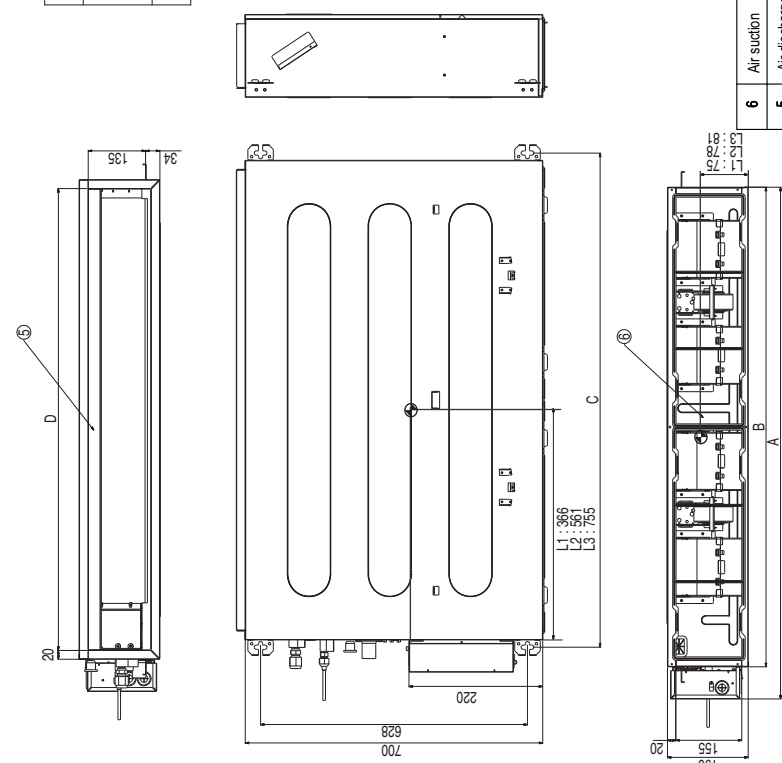
[Unit: mm]



| | A | B | C | D |
|-------------|-------|-------|-------|-------|
| ABNQ18GL2A0 | 974 | 900 | 933 | 860 |
| ABNQ21GL2A0 | 1,174 | 1,100 | 1,133 | 1,060 |

L2/L3 Chassis

ABNQ18GL2A0
ABNQ21GL2A0
ABNQ24GL3A0



⊕ Gravity point

Symbols

- View Direction
- ↔ Refrigerant/Drain Piping Direction
- Datum line

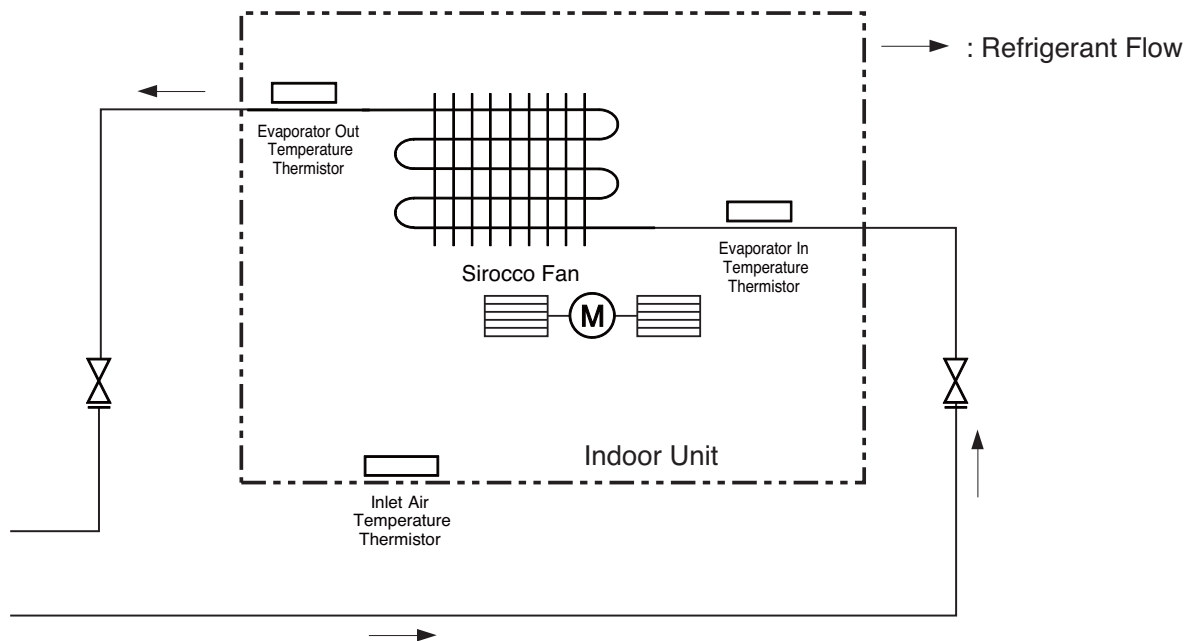
Note

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.

| No. | Part Name | Description |
|-----|-------------------------|-------------|
| 6 | Air suction | - |
| 5 | Air discharge | - |
| 4 | Power supply connection | - |
| 3 | Drain pipe connection | - |
| 2 | Gas pipe connection | - |
| 1 | Liquid pipe connection | - |

4. Ceiling concealed duct – Low static pressure

4.4 Piping diagrams



| Description | PCB Connector |
|---------------------------------------|---------------|
| Inlet Air Temperature Thermistor | CN-ROOM |
| Evaporator In Temperature Thermistor | CN-PIPE/IN |
| Evaporator Out Temperature Thermistor | CN-PIPE/OUT |

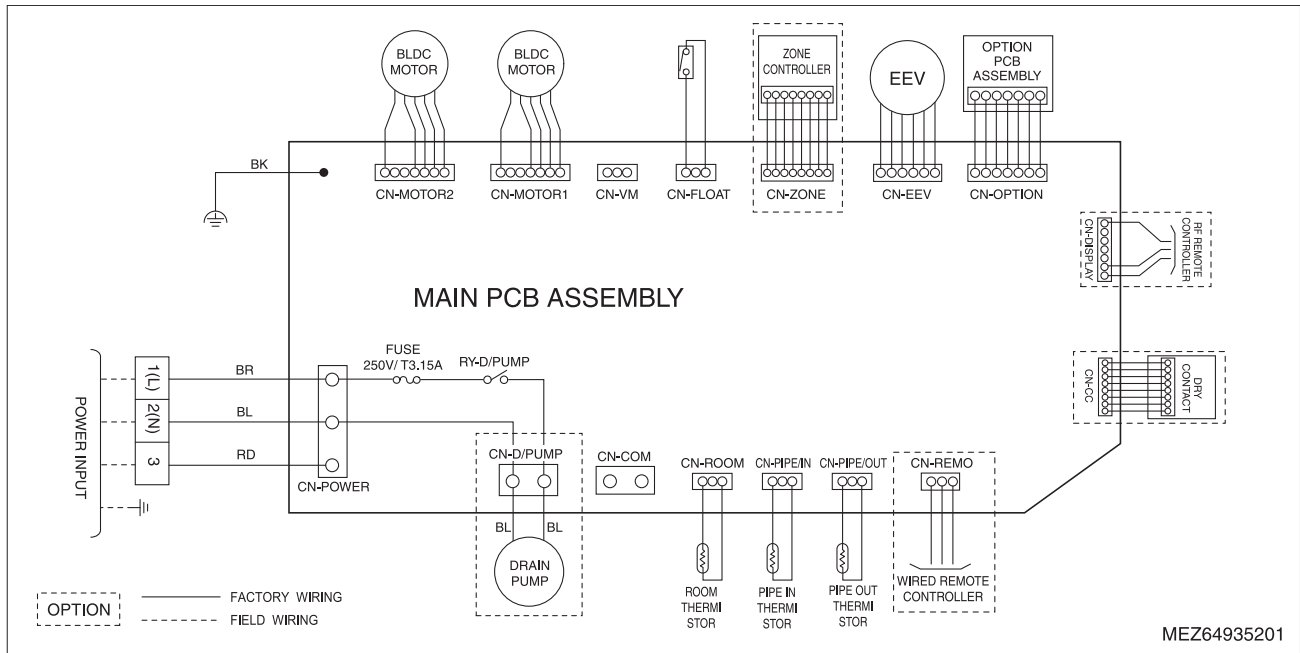
■ Refrigerant pipe connection port diameters

[Unit : mm]

| Model | Gas | Liquid |
|-------------|---------------|--------------|
| ABNQ18GL2A0 | Ø 12.7 (1/2) | Ø 6.35 (1/4) |
| ABNQ21GL2A0 | Ø 12.7 (1/2) | Ø 6.35 (1/4) |
| ABNQ24GL3A0 | Ø 15.88 (5/8) | Ø 9.52 (3/8) |

4. Ceiling concealed duct – Low static pressure

4.5 Wiring diagrams



4. Ceiling concealed duct – Low static pressure

4.6 External pressure setting for

| Static pressure(mmAq) | | 0 | 1 | 2 | 3 | 4 |
|-----------------------|------------------|---------------|-----|-----|-----|-----|
| Model | Step(Hi/Mid/Low) | Setting value | | | | |
| ABNQ18GL2A0 | 15 CMM | 90 | 97 | 105 | 114 | 122 |
| | 12.5 CMM | 82 | 90 | 99 | 109 | 119 |
| | 10 CMM | 75 | 84 | 93 | 103 | 114 |
| ABNQ21GL2A0 | 17.5 CMM | 90 | 97 | 105 | 114 | 122 |
| | 14 CMM | 82 | 90 | 99 | 109 | 119 |
| | 12 CMM | 75 | 84 | 93 | 103 | 114 |
| ABNQ24GL3A0 | 20 CMM | 110 | 117 | 125 | 129 | - |
| | 16 CMM | 100 | 107 | 115 | 121 | 127 |
| | 12 CMM | 90 | 97 | 105 | 114 | 122 |

[Notes]

1. To get the desired Airflow & E.S.P. combination from the table set the matching value from the table. Value other than that in table will not give the combinations of airflow & E.S.P. which are mentioned in the table.
2. Table data is based at 230V. According to the fluctuation of voltage, air flow rate varies.

4. Ceiling concealed duct – Low static pressure

Models: ABNQ18GL2A0 / ABNQ21GL2A0

(Unit : CMM)

| Setting Value | Static Pressure(mmAq(Pa)) | | | | | |
|---------------|---------------------------|--------|--------|--------|--------|--------|
| | 0 (0) | 1 (10) | 2 (20) | 3 (30) | 4 (40) | 5 (50) |
| 75 | 6.50 | - | - | - | - | - |
| 80 | 7.34 | 6.70 | - | - | - | - |
| 85 | 8.20 | 7.55 | 6.69 | - | - | - |
| 90 | 9.07 | 8.43 | 7.56 | 6.47 | - | - |
| 95 | 9.96 | 9.32 | 8.45 | 7.36 | - | - |
| 100 | 10.87 | 10.22 | 9.36 | 8.27 | 6.96 | - |
| 105 | 11.79 | 11.15 | 10.28 | 9.19 | 7.89 | 6.35 |
| 110 | 12.73 | 12.09 | 11.22 | 10.14 | 8.83 | 7.30 |
| 115 | 13.69 | 13.05 | 12.18 | 11.09 | 9.78 | 8.25 |
| 120 | 14.67 | 14.02 | 13.16 | 12.07 | 10.76 | 9.23 |
| 125 | 15.66 | 15.01 | 14.15 | 13.06 | 11.75 | 10.22 |
| 130 | 16.67 | 16.02 | 15.16 | 14.07 | 12.76 | 11.23 |
| 135 | - | - | 16.18 | 15.10 | 13.79 | 12.26 |
| 140 | - | - | - | 16.14 | 14.83 | 13.30 |
| 145 | - | - | - | - | 15.89 | 14.36 |

Models: ABNQ24GL3A0

(Unit : CMM)

| Setting Value | Static Pressure(mmAq(Pa)) | | | | | |
|---------------|---------------------------|--------|--------|--------|--------|--------|
| | 0 (0) | 1 (10) | 2 (20) | 3 (30) | 4 (40) | 5 (50) |
| 85 | 10.19 | - | - | - | - | - |
| 90 | 12.18 | 10.71 | 11.09 | - | - | - |
| 95 | 13.81 | 12.34 | 12.19 | - | - | - |
| 100 | 15.16 | 13.69 | 13.38 | 10.71 | - | - |
| 105 | 16.30 | 14.83 | 14.36 | 11.85 | - | - |
| 110 | 17.31 | 15.85 | 15.23 | 12.86 | 10.97 | - |
| 115 | 18.27 | 16.80 | 16.07 | 13.82 | 11.93 | - |
| 120 | 19.26 | 17.79 | 16.93 | 14.80 | 12.91 | 10.49 |
| 125 | 20.34 | 18.87 | 17.89 | 15.88 | 13.99 | 11.57 |
| 130 | 21.60 | 20.13 | 19.01 | 17.14 | 15.25 | 12.83 |
| 135 | - | 21.64 | 20.36 | 18.66 | 16.76 | 14.35 |
| 140 | - | - | 22.01 | 20.50 | 18.61 | 16.19 |
| 145 | - | - | - | 22.75 | 20.86 | 18.44 |

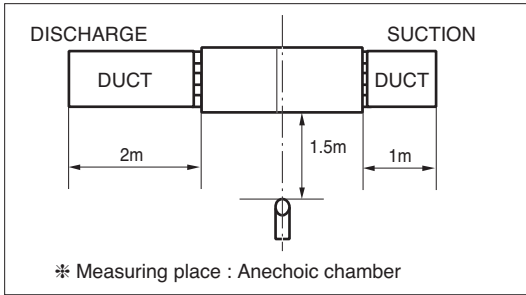
Note :

1. The above table shows the correlation between the air rates and E.S.P.

4. Ceiling concealed duct – Low static pressure

4.7 Sound levels

Overall



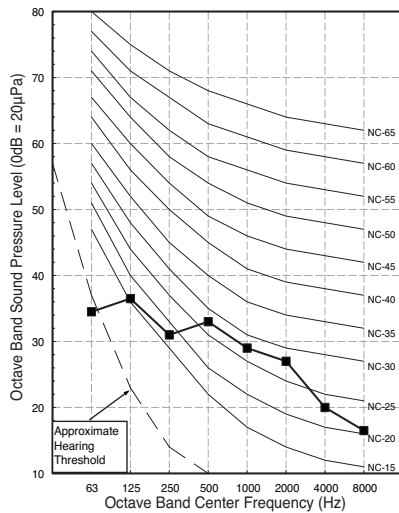
| Model | Sound Level(H/M/L) [dB(A)] | | |
|-------------|----------------------------|----|----|
| | H | M | L |
| ABNQ18GL2A0 | 36 | 34 | 31 |
| ABNQ21GL2A0 | 36 | 34 | 31 |
| ABNQ24GL3A0 | 39 | 35 | 32 |

Notes:

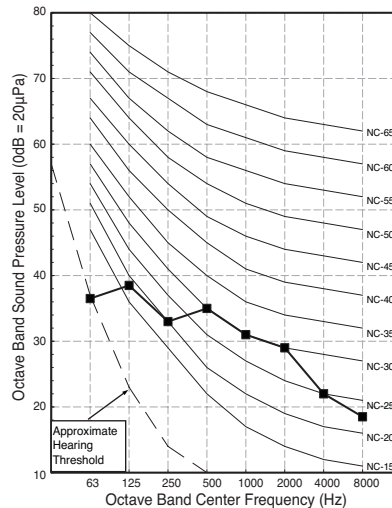
- Sound measured at 1.5m away from the center of the unit
- Operating condition
 - Power source : 220-240V 50Hz / 220V 60Hz
 - Cooling : Indoor temperature (27°C DB, 19°C WB), Outdoor temperature (35°C DB, 24°C WB)
 - Heating : Indoor temperature (20°C DB, 15°C WB), Outdoor temperature (7°C DB, 6°C WB)
- 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 condition is external static pressure 20Pa.

Sound pressure level

ABNQ18GL2A0
ABNQ21GL2A0



ABNQ24GL3A0



■ **Outdoor unit**

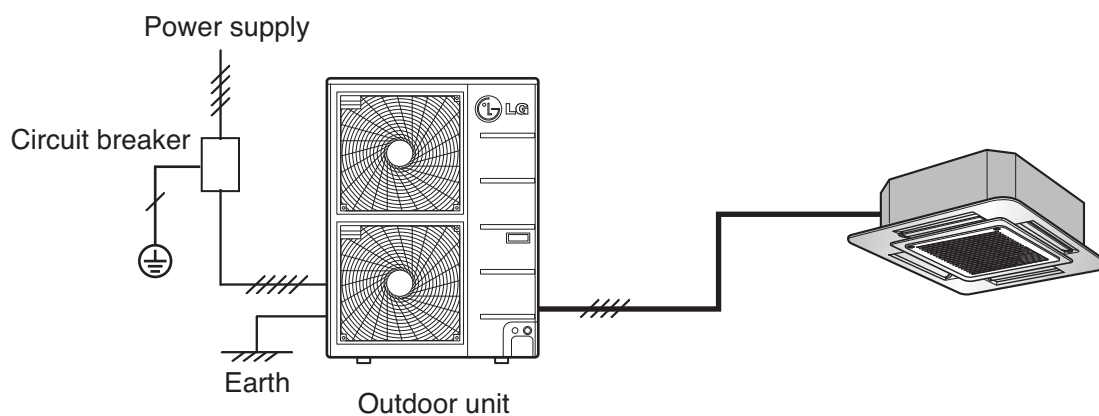
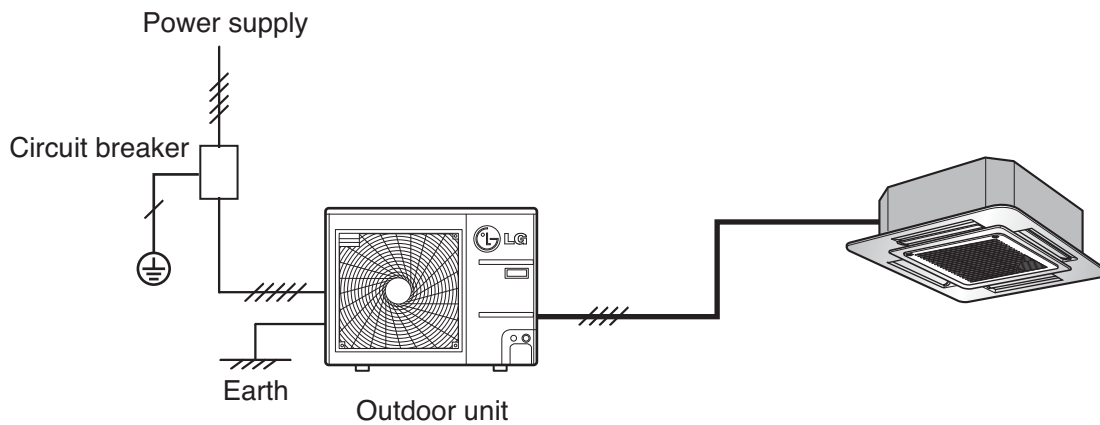
- 1. Power supply**
- 2. List of functions**
- 3. Specifications**
- 4. Dimensions**
- 5. Piping diagrams**
- 6. Wiring diagrams**
- 7. Capacity tables**
- 8. Capacity coefficient factor**
- 9. Operation range**
- 10. Electric characteristics**
- 11. Field wiring diagrams**
- 12. Sound levels**

1. Power supply

| Type | Outdoor unit | Capacity (kW) | Circuit breaker capacity | Power supply |
|--------------------------|--------------|---------------|--------------------------|--------------------------------------|
| Cooling Only Inverter | AUUQ18GH1 | 5.0 | 20A | 200-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz |
| | AUUQ21GH1 | 6.0 | | |
| | AUUQ24GH1 | 7.0 | 25A | |
| | AUUQ36GH1 | 10.5 | 30A | |
| | AUUQ42GH1 | 12.5 | 40A | |
| | AUUQ48GH1 | 14.1 | | |
| | AUUQ54GH1 | 16.0 | | |

External wiring procedure

- The power supply work is needed only to the outdoor unit. The power supply to 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.



2. List of functions

| Category | Functions | AUUQ18GH1/AUUQ21GH1/AUUQ24GH1 AUUQ36GH1/AUUQ42GH1/AUUQ48GH1 AUUQ54GH1 |
|----------------------|---------------------------|---|
| Reliability | Defrost / Deicing | X |
| | High pressure switch | X |
| | Low pressure switch | X |
| | Phase protection | X |
| | Restart delay (3-minutes) | O |
| | Self diagnosis | O |
| | Soft start | O |
| | Test function | X |
| Convenience | Night Silent Operation | O |
| CAC network function | Network solution(LGAP) | O |

| Device | AUUQ18GH1/AUUQ21GH1/AUUQ24GH1 AUUQ36GH1/AUUQ42GH1/AUUQ48GH1 AUUQ54GH1 | |
|-----------------------------------|---|-----------|
| Central Controller | Simple Controller | - |
| | Function controller | - |
| | Function Scheduler | - |
| | AC Ez | - |
| | AC Smart II | - |
| | Option Kit (SD card type) | - |
| | ACP(Advanced Control Platform) | - |
| | AC Manager | - |
| | PI485 | PMNFP14A0 |
| | DO(Digital Output) Kit | - |
| BNU (Building Network Unit) | LONWORKS Gateway | - |
| | BACnet Gateway | - |
| Installation | Y branch | X |
| | Header branch | X |
| | Air Guide | X |
| PDI(power distribution indicator) | PQNUD1S00 | |
| ODU Dry Contact | X | |
| Low Ambient Kit | 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.

3. Specifications

| Combination | Outdoor unit | | AUUQ18GH1 | AUUQ21GH1 | AUUQ24GH1 | |
|-----------------|--------------|-----------------|-------------|-------------------------|-------------------------|-------------------------|
| | Indoor unit | | ATNQ18GPLE3 | ATNQ21GPLE3 | ATNQ24GNLE3 | |
| Capacity | Cooling | Min.~Rated~Max. | kW | 2.0 ~ 5.01 ~ 5.75 | 2.4 ~ 6.00 ~ 6.9 | 2.8 ~ 7.00 ~ 8.0 |
| | | Min.~Rated~Max. | Btu/h | 6,800 ~ 17,100 ~ 19,600 | 8,200 ~ 20,500 ~ 23,500 | 9,600 ~ 23,900 ~ 27,300 |
| | Heating | Min.~Rated~Max. | kW | - | - | - |
| | | Min.~Rated~Max. | Btu/h | - | - | - |
| Power Input | Cooling | Rated | kW | 1.45 | 1.86 | 1.92 |
| | Heating | Rated | kW | - | - | - |
| Running Current | Cooling | Rated | A | 6.30 | 8.09 | 8.35 |
| | Heating | Rated | A | - | - | - |
| EER / COP | | | W / W | 3.45 / 2.90 | 3.23 / 2.80 | 3.65 / 2.70 |
| SEER / SCOP | | | Wh / Wh | 17 / - | 16 / - | 17 / - |

| Combination | Outdoor unit | | AUUQ36GH1 | AUUQ42GH1 | AUUQ48GH1 | |
|-----------------|--------------|-----------------|-------------|--------------------------|--------------------------|--------------------------|
| | Indoor unit | | ATNQ36GMLE3 | ATNQ42GMLE3 | ATNQ48GMLE3 | |
| Capacity | Cooling | Min.~Rated~Max. | kW | 4.0 ~ 10.0 ~ 11.0 | 5.0 ~ 12.5 ~ 13.2 | 5.36 ~ 13.4 ~ 14.7 |
| | | Min.~Rated~Max. | Btu/h | 13,600 ~ 34,100 ~ 37,500 | 17,000 ~ 42,700 ~ 45,000 | 18,300 ~ 45,700 ~ 50,200 |
| | Heating | Min.~Rated~Max. | kW | - | - | - |
| | | Min.~Rated~Max. | Btu/h | - | - | - |
| Power Input | Cooling | Rated | kW | 2.90 | 3.73 | 4.44 |
| | Heating | Rated | kW | - | - | - |
| Running Current | Cooling | Rated | A | 12.6 | 16.2 | 19.3 |
| | Heating | Rated | A | - | - | - |
| EER / COP | | | W / W | 3.45 / 2.70 | 3.35 / 2.60 | 3.02 / 2.60 |
| SEER / SCOP | | | Wh / Wh | 17 / - | 17 / - | 16 / - |

| Combination | Outdoor unit | | AUUQ54GH1 | AUUQ18GH1 | AUUQ21GH1 | |
|-----------------|--------------|-----------------|-------------|--------------------------|-------------------------|-------------------------|
| | Indoor unit | | ATNQ54GMLE3 | ABNQ18GHLA0 | ABNQ21GHLA0 | |
| Capacity | Cooling | Min.~Rated~Max. | kW | 6.32 ~ 15.8 ~ 16.6 | 2.0~ 5.01 ~ 5.75 | 2.4~ 6.01 ~ 6.9 |
| | | Min.~Rated~Max. | Btu/h | 21,600 ~ 53,900 ~ 56,600 | 6,800 ~ 17,100 ~ 19,600 | 8,200 ~ 20,500 ~ 23,500 |
| | Heating | Min.~Rated~Max. | kW | - | - | - |
| | | Min.~Rated~Max. | Btu/h | - | - | - |
| Power Input | Cooling | Rated | kW | 5.23 | 1.55 | 1.99 |
| | Heating | Rated | kW | - | - | - |
| Running Current | Cooling | Rated | A | 22.7 | 6.74 | 8.65 |
| | Heating | Rated | A | - | - | - |
| EER / COP | | | W / W | 3.02 / 2.80 | 3.23 / 2.80 | 3.02 / 2.70 |
| SEER / SCOP | | | Wh / Wh | 16 / - | 16 / - | 16 / - |

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(maximum 3dB(A)) owing to ambient conditions during opration.

Part 2 Product data_ Outdoor unit

3. Specifications

| Combination | Outdoor unit | | | AUUQ24GH1 | AUUQ36GH1 | AUUQ42GH1 |
|-----------------|--------------|-----------------|---------|-------------------------|--------------------------|--------------------------|
| | Indoor unit | | | ABNQ24GGLA0 | ABNQ36GGLA0 | ABNQ42GRLA0 |
| Capacity | Cooling | Min.~Rated~Max. | kW | 2.8 ~ 7.00 ~ 8.0 | 4 ~ 10.0 ~ 11 | 5.00 ~ 12.5 ~ 13.1 |
| | | Min.~Rated~Max. | Btu/h | 9,600 ~ 23,900 ~ 27,300 | 13,600 ~ 34,100 ~ 37,500 | 17,000 ~ 42,700 ~ 45,000 |
| | Heating | Min.~Rated~Max. | kW | - | - | - |
| | | Min.~Rated~Max. | Btu/h | - | - | - |
| Power Input | Cooling | Rated | kW | 2.17 | 3.31 | 3.88 |
| | Heating | Rated | kW | - | - | - |
| Running Current | Cooling | Rated | A | 9.43 | 14.4 | 16.9 |
| | Heating | Rated | A | - | - | - |
| EER / COP | | | W / W | 3.23 / 2.70 | 3.02 / 2.70 | 3.22 / 2.50 |
| SEER / SCOP | | | Wh / Wh | 16 / - | 16 / - | 16 / - |

| Combination | Outdoor unit | | | AUUQ48GH1 | AUUQ54GH1 | AUUQ18GH1 |
|-----------------|--------------|-----------------|---------|--------------------------|--------------------------|-------------------------|
| | Indoor unit | | | ABNQ48GRLA0 | ABNQ54GRLA0 | AVNQ18GJLA0 |
| Capacity | Cooling | Min.~Rated~Max. | kW | 5.36 ~ 13.4 ~ 14.7 | 6.32 ~ 15.8 ~ 16.6 | 2.0 ~ 5.01 ~ 5.75 |
| | | Min.~Rated~Max. | Btu/h | 18,300 ~ 45,700 ~ 50,200 | 21,600 ~ 53,900 ~ 56,600 | 6,800 ~ 17,100 ~ 19,600 |
| | Heating | Min.~Rated~Max. | kW | - | - | - |
| | | Min.~Rated~Max. | Btu/h | - | - | - |
| Power Input | Cooling | Rated | kW | 4.43 | 4.91 | 1.55 |
| | Heating | Rated | kW | - | - | - |
| Running Current | Cooling | Rated | A | 19.3 | 21.3 | 6.74 |
| | Heating | Rated | A | - | - | - |
| EER / COP | | | W / W | 3.02 / 2.50 | 3.22 / 2.80 | 3.23 / 2.80 |
| SEER / SCOP | | | Wh / Wh | 16 / - | 16 / - | 16 / - |

| Combination | Outdoor unit | | | AUUQ21GH1 | AUUQ24GH1 | AUUQ36GH1 |
|-----------------|--------------|-----------------|---------|-------------------------|-------------------------|--------------------------|
| | Indoor unit | | | AVNQ21GJLA0 | AVNQ24GJLA0 | AVNQ36GKLA0 |
| Capacity | Cooling | Min.~Rated~Max. | kW | 2.32 ~ 6.01 ~ 6.67 | 2.8 ~ 7.00 ~ 8.0 | 4.0 ~ 10.0 ~ 11.0 |
| | | Min.~Rated~Max. | Btu/h | 8,200 ~ 20,500 ~ 23,500 | 9,600 ~ 23,900 ~ 27,300 | 13,600 ~ 34,100 ~ 37,500 |
| | Heating | Min.~Rated~Max. | kW | - | - | - |
| | | Min.~Rated~Max. | Btu/h | - | - | - |
| Power Input | Cooling | Rated | kW | 1.92 | 2.32 | 3.31 |
| | Heating | Rated | kW | - | - | - |
| Running Current | Cooling | Rated | A | 8.35 | 10.1 | 14.4 |
| | Heating | Rated | A | - | - | - |
| EER / COP | | | W / W | 3.02 / 2.70 | 3.02 / 2.60 | 3.02 / 2.60 |
| SEER / SCOP | | | Wh / Wh | 16 / - | 16 / - | 16 / - |

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(maximum 3dB(A)) owing to ambient conditions during opration.

4 _ Cooling Only R410A(50/60Hz)

3. Specifications

| Combination | Outdoor unit | | | AUUQ42GH1 | AUUQ48GH1 | AUUQ54GH1 |
|-----------------|--------------|-----------------|---------|--------------------------|--------------------------|--------------------------|
| | Indoor unit | | | AVNQ42GLLA0 | AVNQ48GLLA0 | AVNQ54GLLA0 |
| Capacity | Cooling | Min.~Rated~Max. | kW | 5.0~ 12.5 ~ 13.1 | 5.36 ~ 13.4 ~ 14.7 | 6.32 ~ 15.8 ~ 16.6 |
| | | Min.~Rated~Max. | Btu/h | 17,000 ~ 42,700 ~ 45,000 | 18,300 ~ 45,700 ~ 50,200 | 21,600 ~ 53,900 ~ 56,600 |
| | Heating | Min.~Rated~Max. | kW | - | - | - |
| | | Min.~Rated~Max. | Btu/h | - | - | - |
| Power Input | Cooling | Rated | kW | 3.88 | 4.44 | 5.23 |
| | Heating | Rated | kW | - | - | - |
| Running Current | Cooling | Rated | A | 16.9 | 19.3 | 22.7 |
| | Heating | Rated | A | - | - | - |
| EER / COP | | | W / W | 3.22 / 2.50 | 3.02 / 2.50 | 3.02 / 2.80 |
| SEER / SCOP | | | Wh / Wh | 16 / - | 16 / - | 16 / - |

| Combination | Outdoor unit | | | AUUQ18GH1 | AUUQ21GH1 | AUUQ24GH1 |
|-----------------|--------------|-----------------|---------|-------------------------|-------------------------|-------------------------|
| | Indoor unit | | | ABNQ18GL2A0 | ABNQ21GL2A0 | ABNQ24GL3A0 |
| Capacity | Cooling | Min.~Rated~Max. | kW | 2 ~ 5.01 ~ 5.75 | 2.32 ~ 6.01 ~ 6.67 | 2.8 ~ 7.00 ~ 8.0 |
| | | Min.~Rated~Max. | Btu/h | 6,800 ~ 17,100 ~ 19,600 | 8,200 ~ 20,500 ~ 23,500 | 9,600 ~ 23,900 ~ 27,300 |
| | Heating | Min.~Rated~Max. | kW | - | - | - |
| | | Min.~Rated~Max. | Btu/h | - | - | - |
| Power Input | Cooling | Rated | kW | 1.55 | 1.92 | 2.32 |
| | Heating | Rated | kW | - | - | - |
| Running Current | Cooling | Rated | A | 6.74 | 8.35 | 10.1 |
| | Heating | Rated | A | - | - | - |
| EER / COP | | | W / W | 3.23 / 2.80 | 3.02 / 2.70 | 3.02 / 2.60 |
| SEER / SCOP | | | Wh / Wh | 16 / - | 16 / - | 16 / - |

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(maximum 3dB(A)) owing to ambient conditions during operation.

3. Specifications

| Outdoor unit | | | | AUUQ18GH1 | AUUQ21GH1 |
|--|-------------------------------------|-------------|--------------------------------------|--------------------------------------|--------------------------------------|
| Power Supply | | | V, Ø, Hz | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz |
| Starting Current | Cooling | Max. | A | - | - |
| | Heating | Max. | A | - | - |
| Wiring Connections | Power Supply Cable (included Earth) | | No. x mm ² (AWG) | 3C x 2.5 (12) | 3C x 2.5 (12) |
| 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 | 30-5/16 x 20-7/8 x 11-3/8 | 30-5/16 x 20-7/8 x 11-3/8 |
| Net Weight | | | kg (lbs) | 36.0 (79.4) | 36.0 (79.4) |
| Compressor | Type | | - | Twin Rotary | Twin Rotary |
| | Model | | Model x No. | GKT141MBA x 1 | GKT141MBA 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) | 900 (31.7) | 900 (31.7) |
| | Chargeless-Pipe Length | | m (ft) | 7.5 (24.6) | 7.5 (24.6) |
| | Additional Charging Volume | | g/m (oz/ft) | 20 (0.22) | 20 (0.22) |
| Control | | - | Electronic Expansion Valve | Electronic Expansion Valve | |
| Refrigerant Oil | Type | | - | FVC68D | FVC68D |
| | Charged volume | | cc x No. | 470 x 1 | 470 x 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 ³ /min x No. | 50 x 1 | 50 x 1 |
| Fan Motor | Type | | - | BLDC | BLDC |
| | Output | | W x No. | 43.0 x 1 | 43.0 x 1 |
| Sound Pressure Level | Cooling | Rated | dB(A) | 47 | 47 |
| | Heating | Rated | dB(A) | - | - |
| Sound Power Level | | Cooling | Rated | dB(A) | - |
| Piping Connections | Liquid | Outer Dia. | mm(inch) | Ø 6.35 (1/4) | Ø 6.35 (1/4) |
| | Gas | Outer Dia. | mm(inch) | Ø 12.7 (1/2) | Ø 12.7 (1/2) |
| Piping Length | | Max. | m (ft) | 30 (98.4) | 30 (98.4) |
| Maximum Height Difference | Outdoor Unit ~ Indoor Unit | Max. | m (ft) | 15 (49.2) | 15 (49.2) |
| Operation Range (Outdoor Temperature) | Cooling | Min. ~ Max. | °C DB (°F DB) | -5 (23.0) ~ 48 (118.4) | -5 (23.0) ~ 48 (118.4) |
| | Heating | Min. ~ Max. | °C WB (°F WB) | - | - |

Note :

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

3. Specifications

| Outdoor unit | | | | AUUQ24GH1 | AUUQ36GH1 |
|---------------------------------------|-------------------------------------|-------------|--------------------------------------|--------------------------------------|--------------------------------------|
| Power Supply | | | V, Ø, Hz | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz |
| Starting Current | Cooling | Max. | A | - | - |
| | Heating | Max. | A | - | - |
| Wiring Connections | Power Supply Cable (included Earth) | | No. x mm ² (AWG) | 3C x 2.5(12) | 3C x 4.0(10) |
| Casing Color | | | - | Warm Gray | Warm Gray |
| Dimensions | | W x H x D | mm | 870 x 655 x 320 | 950 x 834 x 330 |
| | | W x H x D | inch | 34-1/4 x 25-25/32 x 12-19/32 | 37-13/32 x 32-27/32 x 13 |
| Net Weight | | | kg (lbs) | 44.0 (97.0) | 65.0 (143.3) |
| Compressor | Type | | - | Twin Rotary | Twin Rotary |
| | Model | | Model x No. | GKT176MB x 1 | GPT442MA x 1 |
| | Motor type | | - | BLDC | BLDC |
| | Motor Output | | W x No. | 1,500 (at 60Hz) x 1 | 4000 (at 60Hz) x 1 |
| Refrigerant | Type | | - | R410A | R410A |
| | Precharged Amount | | g (oz) | 1,100 (38.8) | 1,900 (67.0) |
| | Chargeless-Pipe Length | | m (ft) | 7.5 (24.6) | 7.5 (24.6) |
| | Additional Charging Volume | | g/m (oz/ft) | 40 (0.43) | 40 (0.43) |
| Control | | - | Electronic Expansion Valve | Electronic Expansion Valve | |
| Refrigerant Oil | Type | | - | FVC68D | FVC68D |
| | Charged volume | | cc x No. | 670 x 1 | 1,300 x 1 |
| Heat Exchanger | | | (Row x Column x Fins per inch) x No. | (2 x 30 x 21) x 1 | (2 x 40 x 21) x 1 |
| Fan | Type | | - | Propeller | Propeller |
| | Air Flow Rate | | m ³ /min x No. | 50 x 1 | 58 x 1 |
| Fan Motor | Type | | - | BLDC | BLDC |
| | Output | | W x No. | 85.0 x 1 | 124.0 x 1 |
| Sound Pressure Level | Cooling | Rated | dB(A) | 48 | 48 |
| | Heating | Rated | dB(A) | - | - |
| Sound Power Level | | Cooling | Rated | dB(A) | - |
| Piping Connections | Liquid | Outer Dia. | mm(inch) | Ø 9.52 (3/8) | Ø 9.52 (3/8) |
| | Gas | Outer Dia. | mm(inch) | Ø 15.88 (5/8) | Ø 15.88 (5/8) |
| Piping Length | | Max. | m (ft) | 50 (164.0) | 50 (164.0) |
| Maximum Height Difference | Outdoor Unit ~ Indoor Unit | Max. | m (ft) | 30 (98.4) | 30 (98.4) |
| Operation Range (Outdoor Temperature) | Cooling | Min. ~ Max. | °C DB (°F DB) | -15 (5.0) ~ 48 (118.4) | -15 (5.0) ~ 48 (118.4) |
| | Heating | Min. ~ Max. | °C WB (°F WB) | - | - |

Note :

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

3. Specifications

| Outdoor unit | | | | AUUQ42GH1 | AUUQ48GH1 |
|---------------------------------------|---|-------------|-----------------------------|--------------------------------------|--------------------------------------|
| Power Supply | | | V, Ø, Hz | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz |
| Starting Current | Cooling | Max. | A | - | - |
| | Heating | Max. | A | - | - |
| Wiring Connections | Power Supply Cable (included Earth) | | No. x mm ² (AWG) | 3C x 5.0 (8) | 3C x 5.0 (8) |
| Casing Color | | | - | Warm Gray | Warm Gray |
| Dimensions | | W x H x D | mm | 950 x 834 x 330 | 950 x 834 x 330 |
| | | W x H x D | inch | 37-13/32 x 32-27/32 x 13 | 37-13/32 x 32-27/32 x 13 |
| Net Weight | | | kg (lbs) | 67.0 (147.7) | 67.0 (147.7) |
| Compressor | Type | | - | Twin Rotary | Twin Rotary |
| | Model | | Model x No. | GPT442MB x 1 | GPT442MB x 1 |
| | Motor type | | - | BLDC | BLDC |
| | Motor Output | | W x No. | 4000 (at 60Hz) x 1 | 4000 (at 60Hz) x 1 |
| Refrigerant | Type | | - | R410A | R410A |
| | Precharged Amount | | g (oz) | 2,300 (81.1) | 2,300 (81.1) |
| | Chargeless-Pipe Length | | m (ft) | 7.5 (24.6) | 7.5 (24.6) |
| | Additional Charging Volume | | g/m (oz/ft) | 40 (0.43) | 40 (0.43) |
| Control | | | - | Electronic Expansion Valve | Electronic Expansion Valve |
| Refrigerant Oil | Type | | - | FVC68D | FVC68D |
| | Charged volume | | cc x No. | 1,300 x 1 | 1,300 x 1 |
| Heat Exchanger | #1_(Row x Column x Fins per inch) x No. | | - | (3 x 40 x 21) x 1 | (3 x 40 x 21) x 1 |
| | #2_(Row x Column x Fins per inch) x No. | | - | (2 x 32 x 14) x 1 | (2 x 32 x 14) x 1 |
| Fan | Type | | - | Propeller | Propeller |
| | Air Flow Rate | | m ³ /min x No. | 60 x 1 | 60 x 1 |
| Fan Motor | Type | | - | BLDC | BLDC |
| | Output | | W x No. | 124.0 x 1 | 124.0 x 1 |
| Sound Pressure Level | Cooling | Rated | dB(A) | 52 | 52 |
| | Heating | Rated | dB(A) | - | - |
| Sound Power Level | Cooling | Rated | dB(A) | - | - |
| Piping Connections | Liquid | Outer Dia. | mm(inch) | Ø 9.52 (3/8) | Ø 9.52 (3/8) |
| | Gas | Outer Dia. | mm(inch) | Ø 15.88 (5/8) | Ø 15.88 (5/8) |
| Piping Length | | Max. | m (ft) | 50 (164.0) | 50 (164.0) |
| Maximum Height Difference | Outdoor Unit ~ Indoor Unit | Max. | m (ft) | 30 (98.4) | 30 (98.4) |
| Operation Range (Outdoor Temperature) | Cooling | Min. ~ Max. | °C DB (°F DB) | -15 (5.0) ~ 48 (118.4) | -15 (5.0) ~ 48 (118.4) |
| | Heating | Min. ~ Max. | °C WB (°F WB) | - | - |

Note :

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

3. Specifications

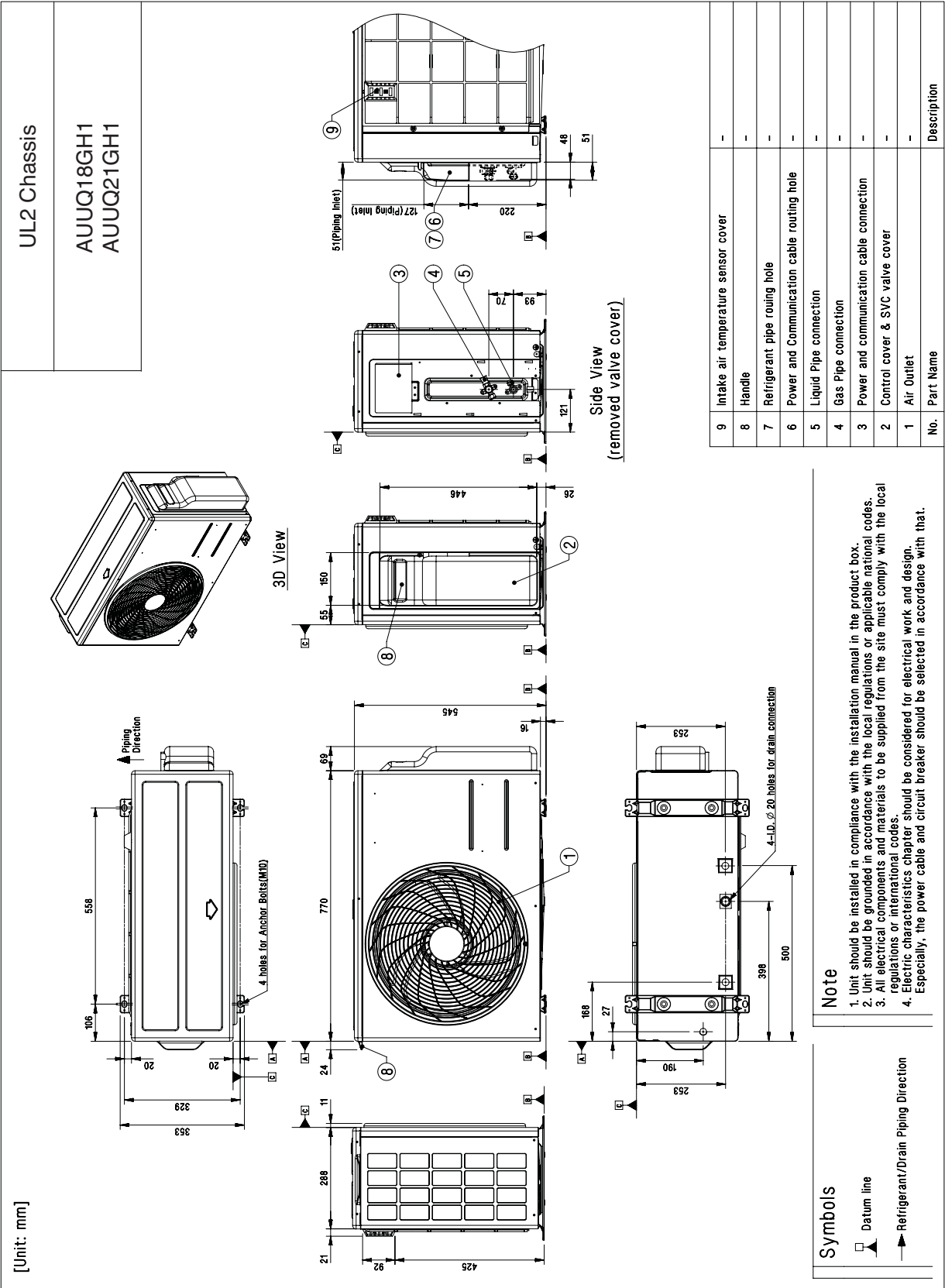
| Outdoor unit | | | | AUUQ54GH1 |
|---------------------------------------|---|-------------|-----------------------------|--------------------------------------|
| Power Supply | | V, Ø, Hz | | 220-240V, 1Ø, 50Hz 220V, 1Ø, 60Hz |
| Starting Current | Cooling | Max. | A | - |
| | Heating | Max. | A | - |
| Wiring Connections | Power Supply Cable (included Earth) | | No. x mm ² (AWG) | 3C x 5.0 (8) |
| Casing Color | | | - | Warm Gray |
| Dimensions | | W x H x D | mm | 950 x 1,380 x 330 |
| | | W x H x D | inch | 37-13/32 x 54-11/32 x 13 |
| Net Weight | | | kg (lbs) | 96.0 (211.6) |
| Compressor | Type | | - | Twin Rotary |
| | Model | | Model x No. | GPT442MB x 1 |
| | Motor type | | - | BLDC |
| | Motor Output | | W x No. | 4000 (at 60Hz) x 1 |
| Refrigerant | Type | | - | R410A |
| | Precharged Amount | | g (oz) | 3,300 (116.4) |
| | Chargeless-Pipe Length | | m (ft) | 7.5 (24.6) |
| | Additional Charging Volume | | g/m (oz/ft) | 40 (0.43) |
| Control | | - | Electronic Expansion Valve | |
| Refrigerant Oil | Type | | - | FVC68D |
| | Charged volume | | cc x No. | 1,300 x 1 |
| Heat Exchanger | #1_(Row x Column x Fins per inch) x No. | | - | (3 x 66 x 21) x 1 |
| | #2_(Row x Column x Fins per inch) x No. | | - | (2 x 32 x 14) x 1 |
| Fan | Type | | - | Propeller |
| | Air Flow Rate | | m ³ /min x No. | 55 x 2 |
| Fan Motor | Type | | - | BLDC |
| | Output | | W x No. | 124.0 x 2 |
| Sound Pressure Level | Cooling | Rated | dB(A) | 55 |
| | Heating | Rated | dB(A) | - |
| Sound Power Level | Cooling | Rated | dB(A) | - |
| Piping Connections | Liquid | Outer Dia. | mm(inch) | Ø 9.52 (3/8) |
| | Gas | Outer Dia. | mm(inch) | Ø 19.05 (3/4) |
| Piping Length | | Max. | m (ft) | 50 (164.0) |
| Maximum Height Difference | Outdoor Unit ~ Indoor Unit | Max. | m (ft) | 30 (98.4) |
| Operation Range (Outdoor Temperature) | Cooling | Min. ~ Max. | °C DB (°F DB) | -15 (5.0) ~ 48 (118.4) |
| | Heating | Min. ~ Max. | °C WB (°F WB) | - |

Note :

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

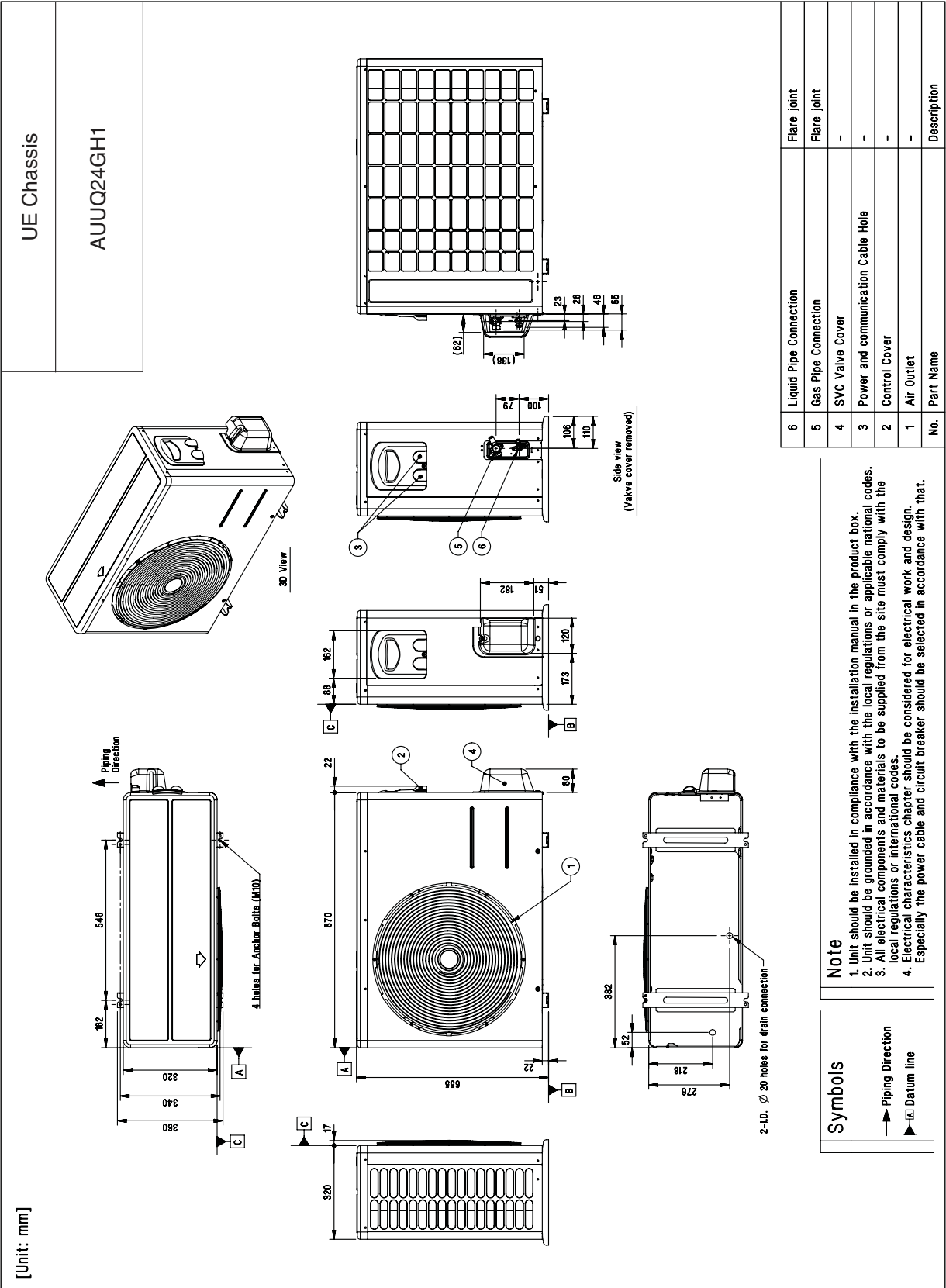
SINGLE A™

4. Dimensions



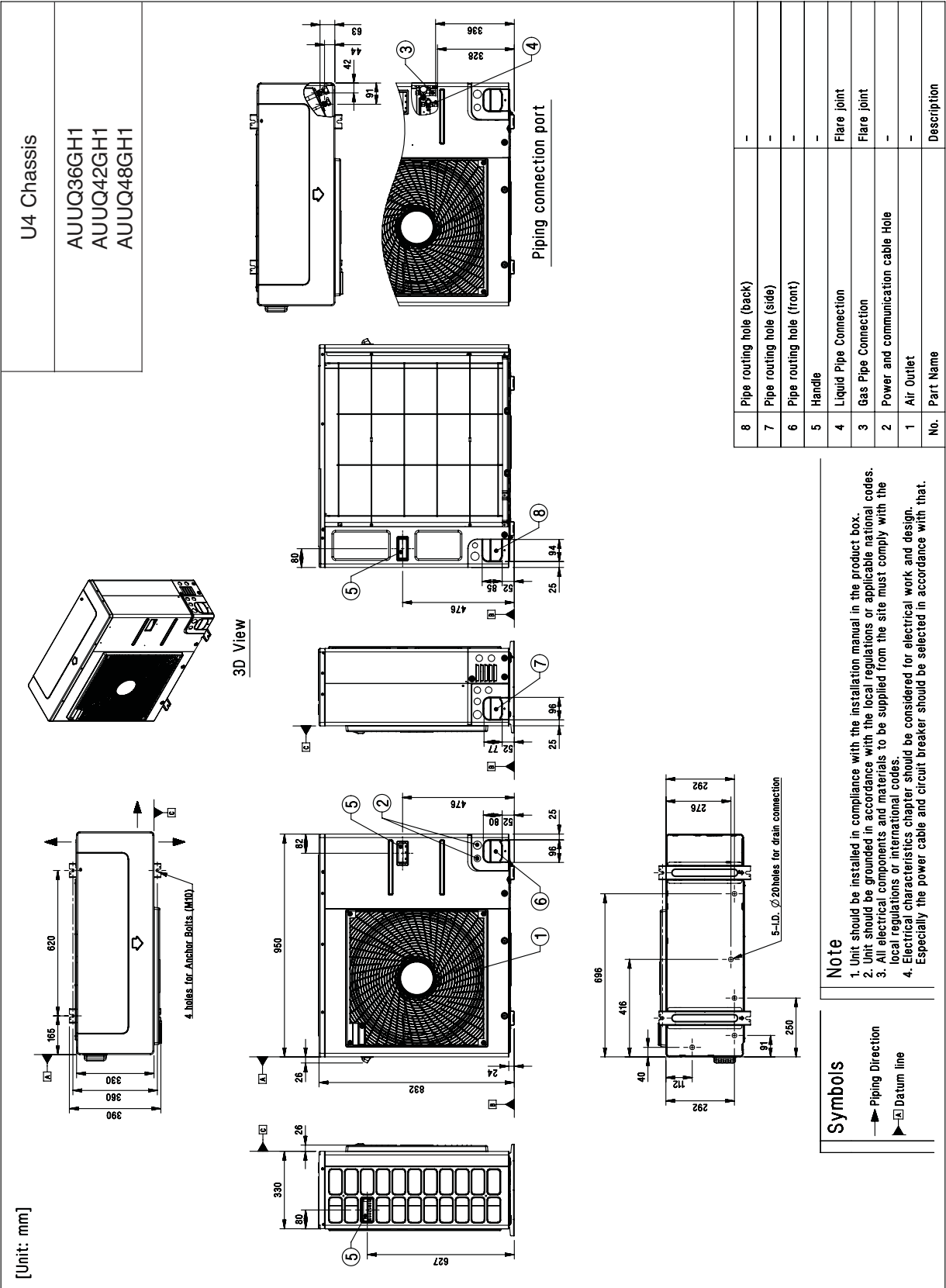
SINGLE A™

4. Dimensions



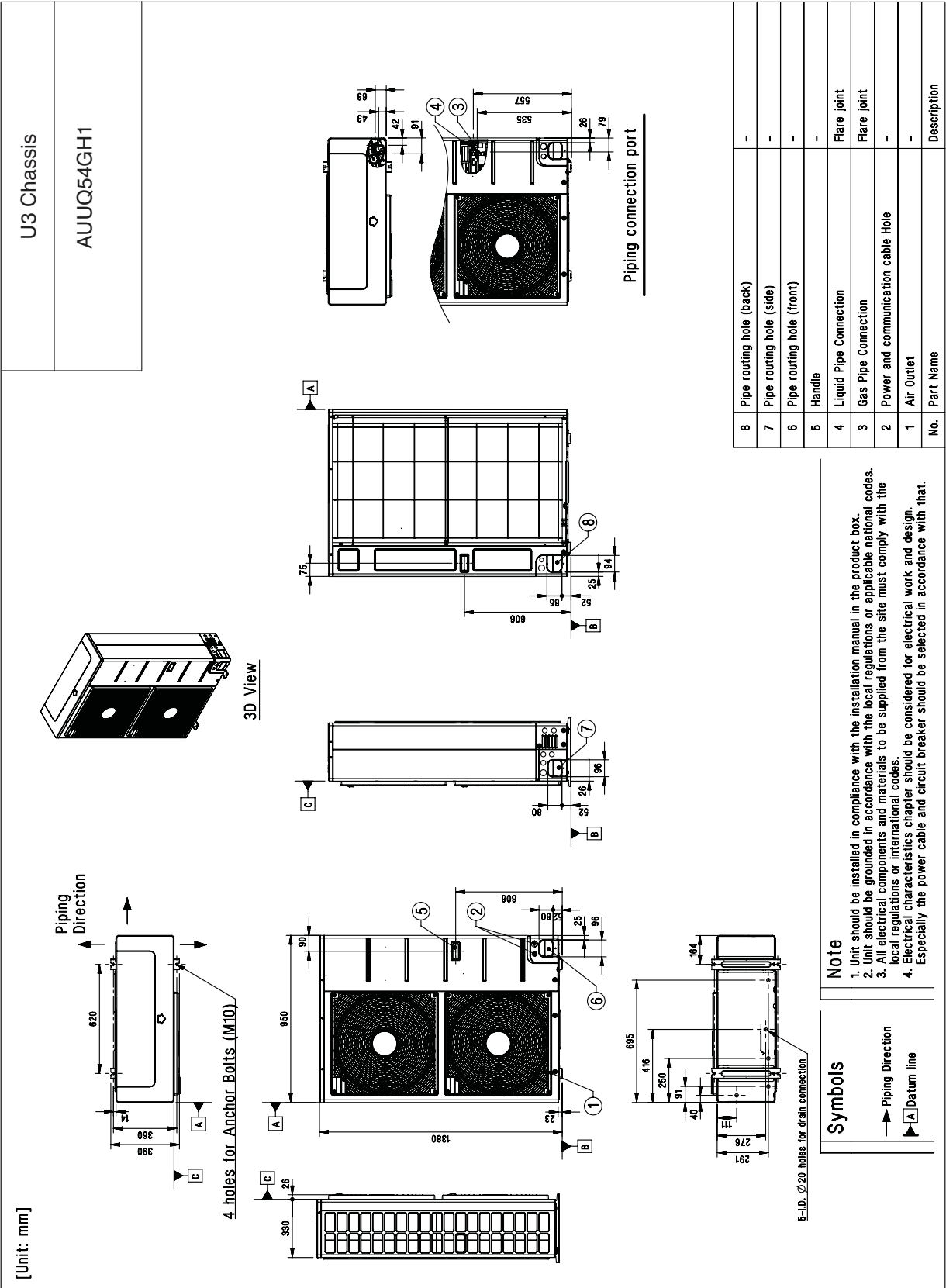
SINGLE A[™]

4. Dimensions



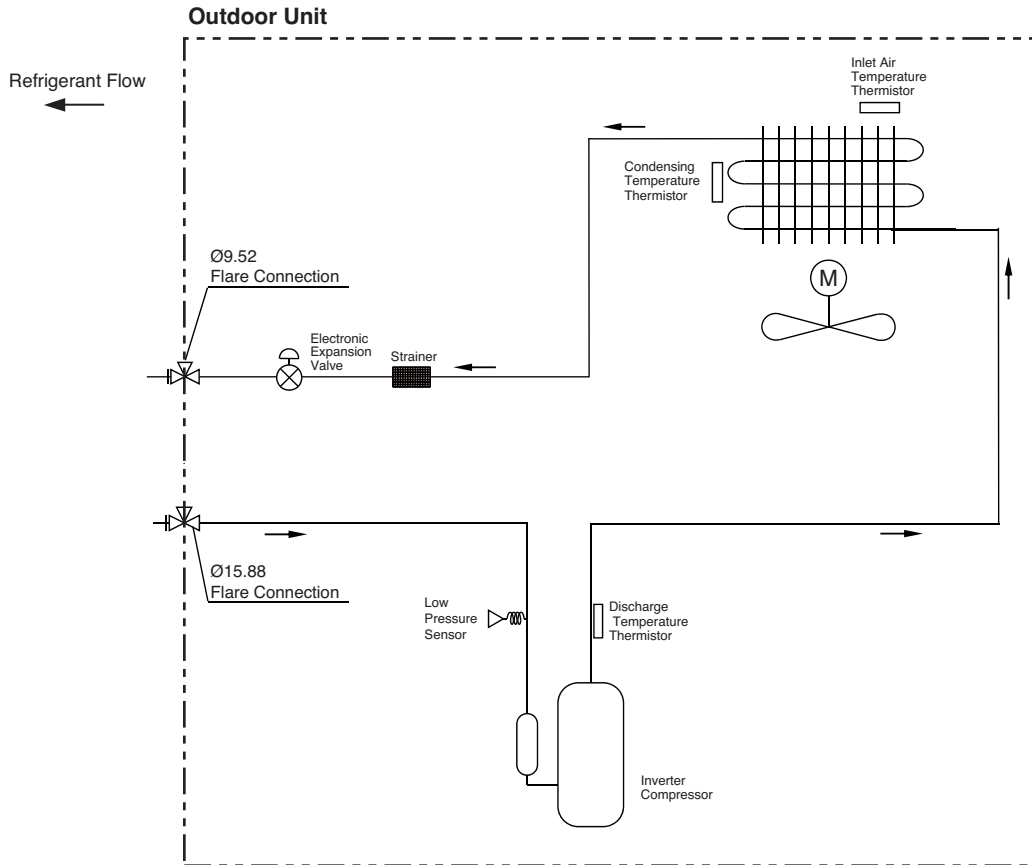
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4. Dimensions



5. Piping diagrams

Models : AUUQ18GH1 / AUUQ21GH1 / AUUQ24GH1



| LOC. | Description | PCB Connector |
|------|--|---------------|
| EEV | Electronic Expansion Valve | CN-EEV |
| Th1 | Thermistor for discharge pipe temperature | CN-DISCHARGE |
| Th2 | Thermistor for outdoor air temperature | CN-AIR |
| Th3 | Thermistor for condenser middle pipe temperature | CN-MID |
| Th4 | Pressure sensor | CN-PRESS |

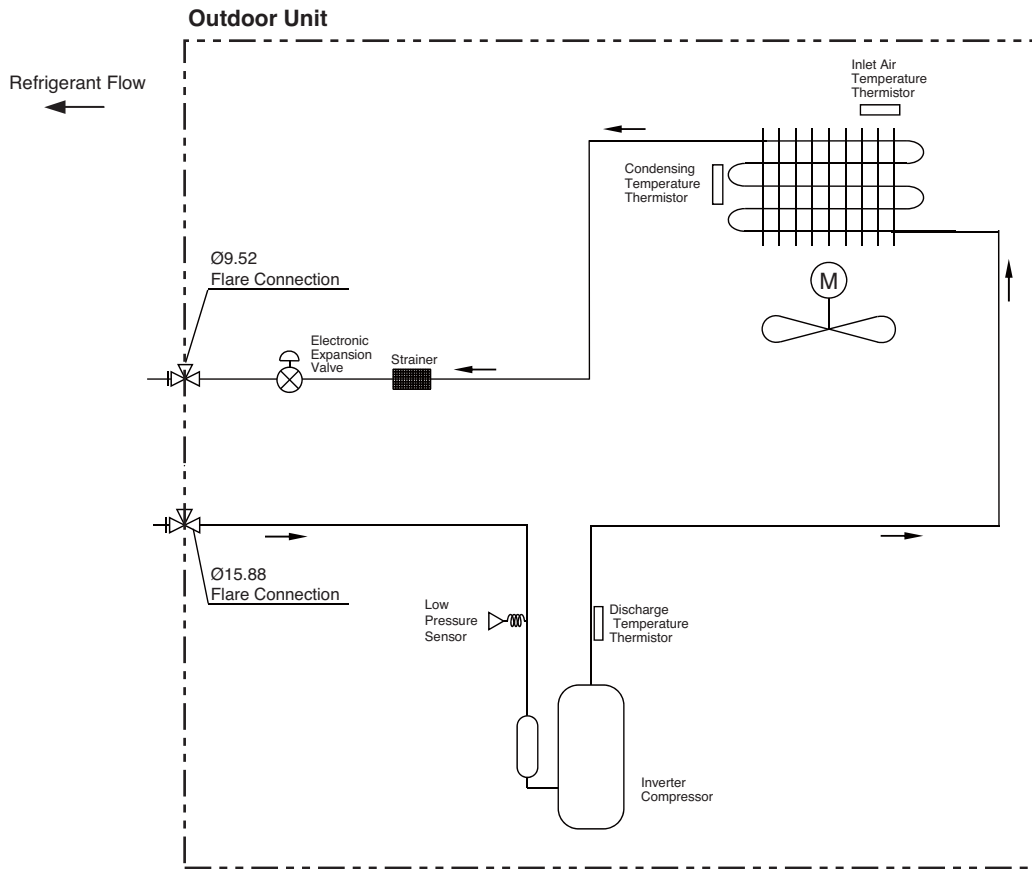
■ Refrigerant pipe connection port diameters

Unit : mm

| Model | Gas | Liquid |
|------------------------|--------------|-------------|
| AUUQ18GH1 AUUQ21GH1 | Ø 12.7(1/2) | Ø 6.35(1/4) |
| AUUQ24GH1 | Ø 15.88(5/8) | Ø 9.52(3/8) |

5. Piping diagrams

Models : AUUQ36GH1



Part 2 Product data_Outdoor unit

| LOC. | Description | PCB Connector |
|------|--|---------------|
| EEV | Electronic Expansion Valve | CN-EEV1 |
| Th1 | Thermistor for discharge pipe temperature | CN-TH3 |
| Th2 | Thermistor for outdoor air temperature | CN-TH2 |
| Th3 | Thermistor for condenser middle pipe temperature | CN-TH4 |
| Th4 | Pressure sensor | CN-TH1 |

■ Refrigerant pipe connection port diameters

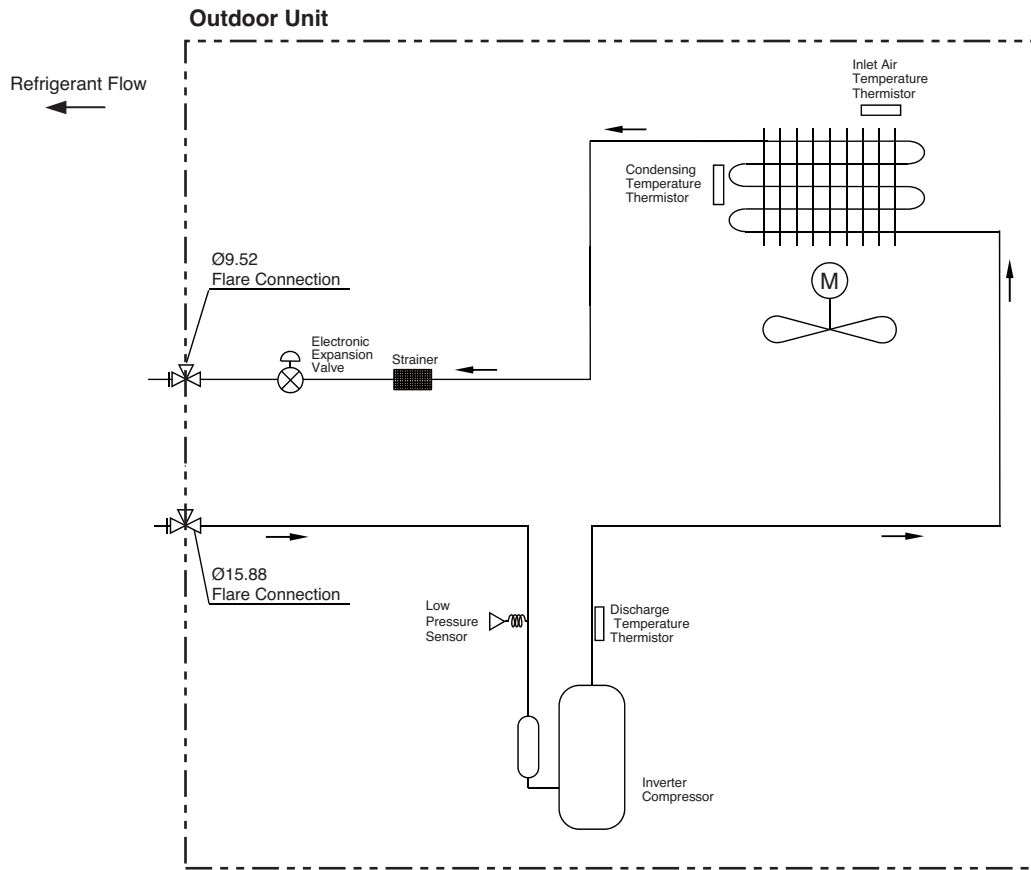
Unit : mm

| Model | Gas | Liquid |
|-----------|--------------|-------------|
| AUUQ36GH1 | Ø 15.88(5/8) | Ø 9.52(3/8) |

5. Piping diagrams

Models : AUUQ42GH1 / AUUQ48GH1

Part 2 Product data_ Outdoor unit



| LOC. | Description | PCB Connector |
|------|--|---------------|
| EEV | Electronic Expansion Valve | CN-EEV1 |
| Th1 | Thermistor for discharge pipe temperature | CN-TH3 |
| Th2 | Thermistor for outdoor air temperature | CN-TH2 |
| Th3 | Thermistor for condenser middle pipe temperature | CN-TH4 |
| Th4 | Pressure sensor | CN-TH1 |

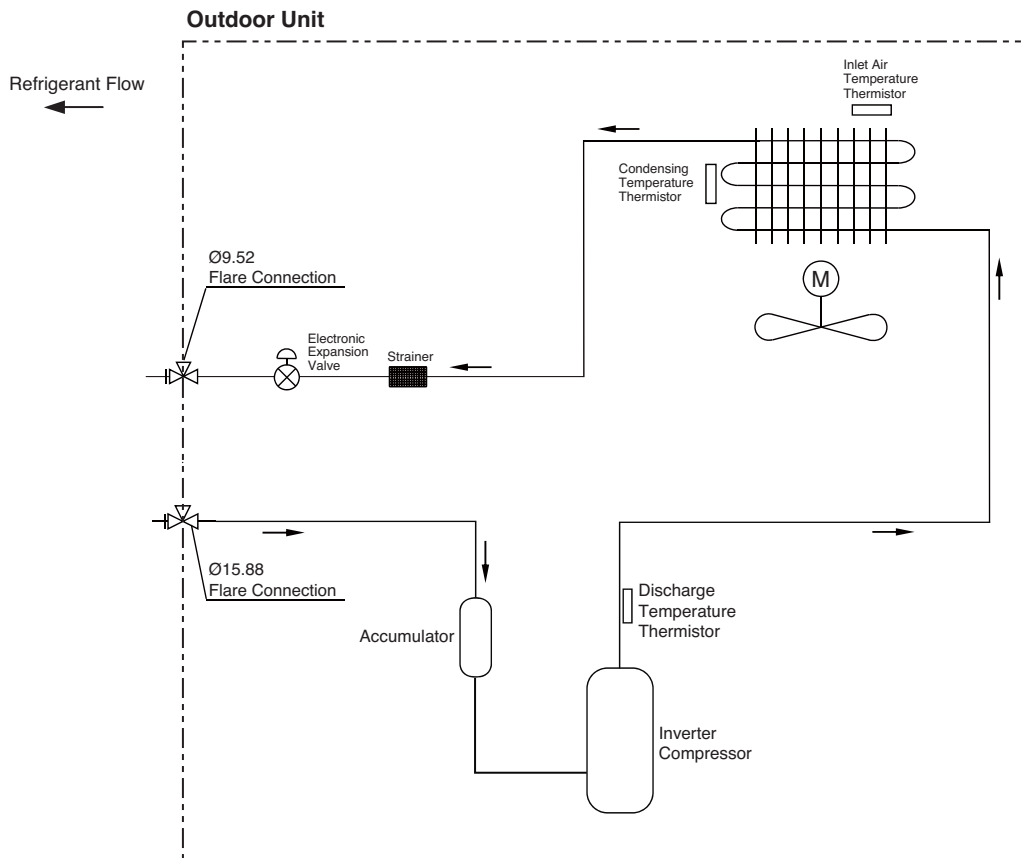
■ Refrigerant pipe connection port diameters

Unit : mm

| Model | Gas | Liquid |
|------------------------|--------------|-------------|
| AUUQ42GH1 AUUQ48GH1 | Ø 15.88(5/8) | Ø 9.52(3/8) |

5. Piping diagrams

Models : AUUQ54GH1



| Description | PCB Connector |
|-----------------------------------|-----------------|
| Inlet Air Temperature Thermistor | CN_TH2 |
| Discharge Temperature Thermistor | CN_TH3 |
| Condensing Temperature Thermistor | CN_TH4 |
| High Pressure Sensor | P-SENSOR (H)-RD |
| Electronic Expansion Valve | CN_EEV1 |

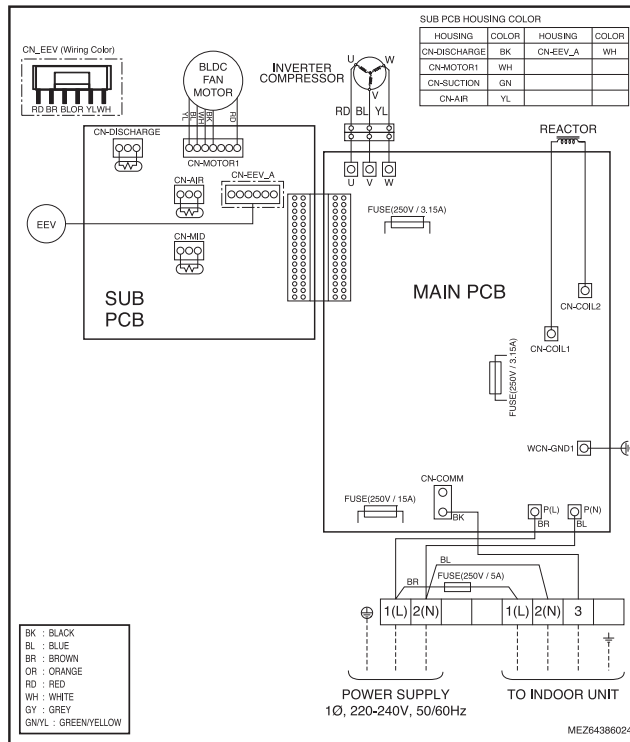
Refrigerant pipe connection port diameters

Unit : mm

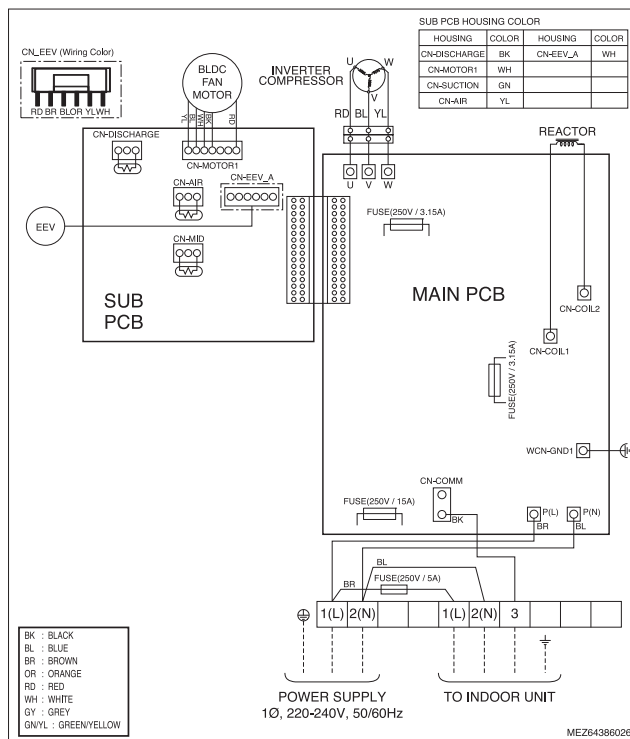
| Model | Gas | Liquid |
|-----------|--------------|--------------|
| AUUQ54GH1 | Ø 19.05(3/4) | Ø 9.52 (3/8) |

6. Wiring diagrams

Models : AUUQ18GH1 / AUUQ21GH1

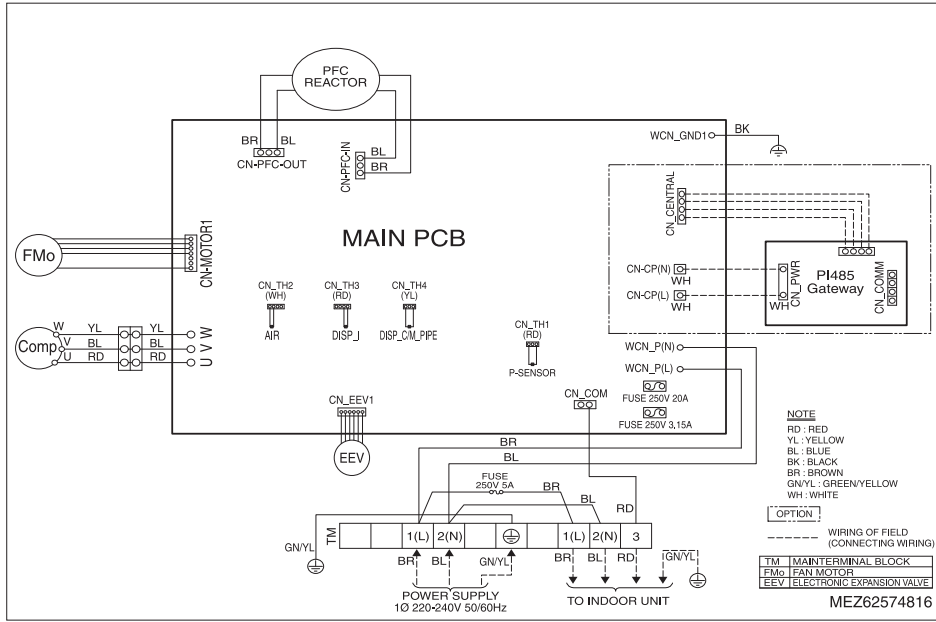


Models : AUUQ24GH1

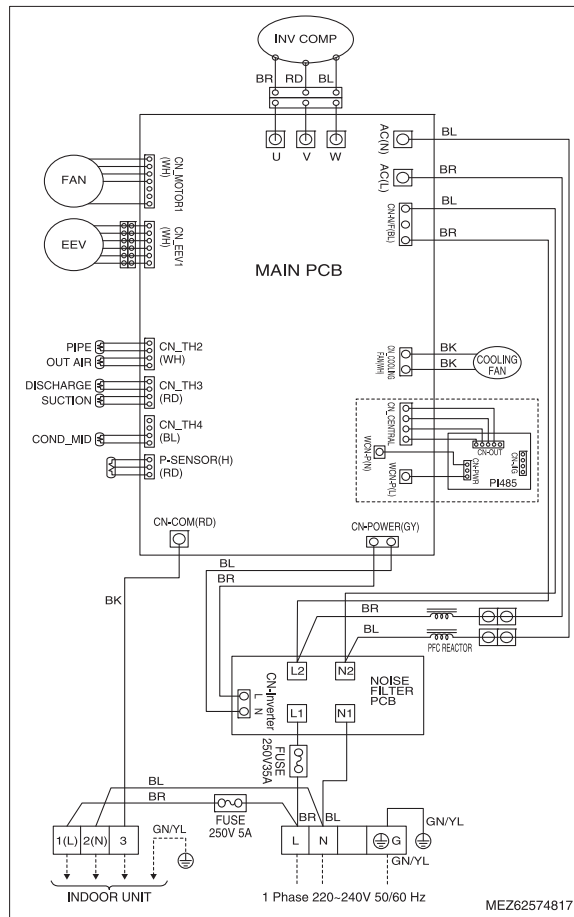


6. Wiring diagrams

Models : AUUQ36GH1

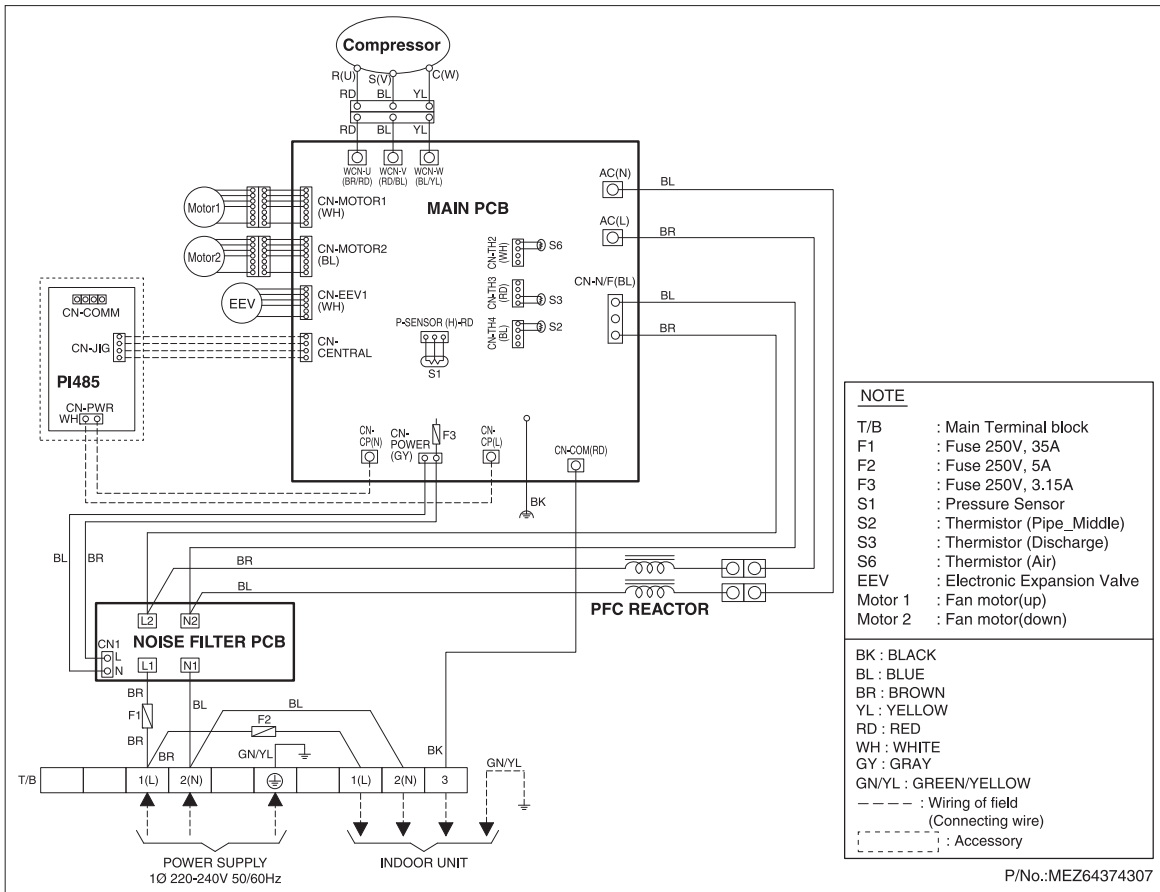


Models : AUUQ42GH1 / AUUQ48GH1



6. Wiring diagrams

Models : AUUQ54GH1



| NOTE | |
|-------------|-------------------------------------|
| T/B | : Main Terminal block |
| F1 | : Fuse 250V, 35A |
| F2 | : Fuse 250V, 5A |
| F3 | : Fuse 250V, 3.15A |
| S1 | : Pressure Sensor |
| S2 | : Thermistor (Pipe_Middle) |
| S3 | : Thermistor (Discharge) |
| S6 | : Thermistor (Air) |
| EEV | : Electronic Expansion Valve |
| Motor 1 | : Fan motor(up) |
| Motor 2 | : Fan motor(down) |
| BK | : BLACK |
| BL | : BLUE |
| BR | : BROWN |
| YL | : YELLOW |
| RD | : RED |
| WH | : WHITE |
| GY | : GRAY |
| GN/YL | : GREEN/YELLOW |
| - - - - | : Wiring of field (Connecting wire) |
| - · - · - · | : Accessory |

P/No.:MEZ64374307

Part 2 Product data_ Outdoor unit

7. Capacity tables

7.1 Cooling Capacity

Models : AUUQ18GH1 + ATNQ18GPLE3

| Outdoor Air Temperature | Indoor Air Temperature : °CDB / °CWB | | | | | | | | | | | | | | | | | |
|-------------------------|--------------------------------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|
| | 20.0 / 14.0 | | | 22.0 / 16.0 | | | 25.0 / 18.0 | | | 27.0 / 19.0 | | | 30.0 / 22.0 | | | 32.0 / 24.0 | | |
| °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| 20.0 | 4.92 | 4.81 | 0.80 | 5.22 | 4.87 | 1.09 | 5.52 | 4.91 | 1.17 | 5.67 | 4.95 | 1.19 | 6.13 | 5.05 | 1.19 | 6.43 | 5.15 | 1.18 |
| 25.0 | 4.70 | 4.65 | 0.84 | 5.00 | 4.72 | 1.10 | 5.30 | 4.77 | 1.18 | 5.45 | 4.82 | 1.20 | 5.91 | 4.93 | 1.22 | 6.21 | 5.03 | 1.23 |
| 32.0 | 4.41 | 4.46 | 1.12 | 4.71 | 4.55 | 1.32 | 5.01 | 4.61 | 1.39 | 5.16 | 4.66 | 1.41 | 5.61 | 4.79 | 1.44 | 5.91 | 4.89 | 1.47 |
| 35.0 | 4.28 | 4.31 | 1.25 | 4.58 | 4.40 | 1.42 | 4.88 | 4.47 | 1.48 | 5.01 | 4.51 | 1.45 | 5.47 | 4.65 | 1.52 | 5.77 | 4.76 | 1.55 |
| 40.0 | 3.94 | 3.81 | 1.26 | 4.24 | 3.90 | 1.43 | 4.53 | 3.97 | 1.48 | 4.67 | 4.01 | 1.46 | 5.13 | 4.15 | 1.53 | 5.43 | 4.26 | 1.56 |
| 43.0 | 3.73 | 3.53 | 1.26 | 4.03 | 3.62 | 1.43 | 4.33 | 3.69 | 1.49 | 4.47 | 3.73 | 1.46 | 4.93 | 3.87 | 1.53 | 5.22 | 3.98 | 1.56 |
| 46.0 | 3.53 | 3.25 | 1.27 | 3.83 | 3.34 | 1.44 | 4.12 | 3.41 | 1.49 | 4.26 | 3.45 | 1.46 | 4.72 | 3.59 | 1.53 | 5.02 | 3.70 | 1.57 |
| 48.0 | 3.39 | 3.07 | 1.27 | 3.69 | 3.16 | 1.44 | 3.99 | 3.23 | 1.49 | 4.12 | 3.27 | 1.47 | 4.58 | 3.41 | 1.54 | 4.88 | 3.52 | 1.57 |

Models : AUUQ21GH1 + ATNQ21GPLE3

| Outdoor Air Temperature | Indoor Air Temperature : °CDB / °CWB | | | | | | | | | | | | | | | | | |
|-------------------------|--------------------------------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|
| | 20.0 / 14.0 | | | 22.0 / 16.0 | | | 25.0 / 18.0 | | | 27.0 / 19.0 | | | 30.0 / 22.0 | | | 32.0 / 24.0 | | |
| °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| 20.0 | 5.89 | 5.51 | 1.03 | 6.26 | 5.58 | 1.39 | 6.62 | 5.63 | 1.51 | 6.80 | 5.68 | 1.52 | 7.34 | 5.79 | 1.52 | 7.71 | 5.90 | 1.51 |
| 25.0 | 5.64 | 5.33 | 1.07 | 6.00 | 5.41 | 1.41 | 6.36 | 5.47 | 1.51 | 6.54 | 5.52 | 1.54 | 7.08 | 5.65 | 1.56 | 7.44 | 5.76 | 1.58 |
| 32.0 | 5.29 | 5.11 | 1.44 | 5.65 | 5.21 | 1.70 | 6.01 | 5.28 | 1.78 | 6.19 | 5.34 | 1.80 | 6.73 | 5.48 | 1.85 | 7.09 | 5.61 | 1.88 |
| 35.0 | 5.13 | 4.94 | 1.61 | 5.49 | 5.04 | 1.83 | 5.85 | 5.12 | 1.89 | 6.01 | 5.17 | 1.86 | 6.56 | 5.33 | 1.95 | 6.92 | 5.45 | 1.99 |
| 40.0 | 4.72 | 4.37 | 1.59 | 5.08 | 4.47 | 1.81 | 5.44 | 4.55 | 1.88 | 5.60 | 4.60 | 1.84 | 6.15 | 4.76 | 1.93 | 6.51 | 4.88 | 1.97 |
| 43.0 | 4.48 | 4.04 | 1.58 | 4.83 | 4.14 | 1.80 | 5.19 | 4.22 | 1.87 | 5.35 | 4.27 | 1.83 | 5.91 | 4.43 | 1.92 | 6.26 | 4.55 | 1.96 |
| 46.0 | 4.23 | 3.72 | 1.57 | 4.59 | 3.82 | 1.79 | 4.94 | 3.90 | 1.85 | 5.11 | 3.95 | 1.82 | 5.66 | 4.11 | 1.91 | 6.02 | 4.23 | 1.95 |
| 48.0 | 4.07 | 3.52 | 1.56 | 4.42 | 3.62 | 1.78 | 4.78 | 3.70 | 1.85 | 4.94 | 3.75 | 1.82 | 5.50 | 3.91 | 1.91 | 5.85 | 4.03 | 1.95 |

Models : AUUQ24GH1 + ATNQ24GNLE3

| Outdoor Air Temperature | Indoor Air Temperature : °CDB / °CWB | | | | | | | | | | | | | | | | | |
|-------------------------|--------------------------------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|
| | 20.0 / 14.0 | | | 22.0 / 16.0 | | | 25.0 / 18.0 | | | 27.0 / 19.0 | | | 30.0 / 22.0 | | | 32.0 / 24.0 | | |
| °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| 20.0 | 6.86 | 6.86 | 1.06 | 7.29 | 6.95 | 1.44 | 7.71 | 7.01 | 1.55 | 7.92 | 7.07 | 1.57 | 8.55 | 7.21 | 1.57 | 8.98 | 7.35 | 1.56 |
| 25.0 | 6.57 | 6.64 | 1.11 | 6.99 | 6.74 | 1.45 | 7.41 | 6.81 | 1.56 | 7.62 | 6.88 | 1.59 | 8.25 | 7.03 | 1.61 | 8.67 | 7.18 | 1.63 |
| 32.0 | 6.16 | 6.37 | 1.49 | 6.58 | 6.49 | 1.75 | 7.00 | 6.58 | 1.84 | 7.21 | 6.66 | 1.86 | 7.84 | 6.83 | 1.91 | 8.26 | 6.99 | 1.94 |
| 35.0 | 5.98 | 6.15 | 1.66 | 6.39 | 6.28 | 1.88 | 6.81 | 6.38 | 1.95 | 7.00 | 6.44 | 1.92 | 7.64 | 6.64 | 2.01 | 8.06 | 6.80 | 2.05 |
| 40.0 | 5.50 | 5.44 | 1.79 | 5.92 | 5.57 | 2.02 | 6.33 | 5.67 | 2.08 | 6.52 | 5.73 | 2.05 | 7.16 | 5.93 | 2.14 | 7.58 | 6.09 | 2.18 |
| 43.0 | 5.21 | 5.03 | 1.87 | 5.63 | 5.16 | 2.09 | 6.05 | 5.26 | 2.16 | 6.24 | 5.32 | 2.13 | 6.88 | 5.52 | 2.22 | 7.29 | 5.68 | 2.26 |
| 46.0 | 4.93 | 4.64 | 1.95 | 5.34 | 4.77 | 2.17 | 5.76 | 4.87 | 2.24 | 5.95 | 4.93 | 2.21 | 6.59 | 5.13 | 2.30 | 7.01 | 5.29 | 2.34 |
| 48.0 | 4.74 | 4.38 | 2.00 | 5.15 | 4.51 | 2.22 | 5.57 | 4.61 | 2.29 | 5.76 | 4.67 | 2.26 | 6.40 | 4.87 | 2.35 | 6.82 | 5.03 | 2.39 |

• **Symbol**

AFR : Air flow rate [m³/min]
 DB : Dry bulb temperature [°C]
 WB : Wet bulb temperature [°C]
 TC : Total capacity [kW]
 SHC : Sensible Heating Capacity [kW]
 PI : Power Input [kW]
 (Comp.+ indoor fan motor+outdoor fan motor)

• **Notes**

1. All capacities are net, evaporator fan motor heat is deducted.
2. Indicates Rated capacity at standard condition.
3. Direct interpolation is permissible. Do not extrapolate
4. Capacities are based on the following conditions:
 - Interconnecting Piping Length 7.5m
 - Level Difference of Zero.

7. Capacity tables

Models : AUUQ36GH1 + ATNQ36GMLE3

| Outdoor Air Temperature | Indoor Air Temperature : °CDB / °CWB | | | | | | | | | | | | | | | | | |
|-------------------------|--------------------------------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|
| | 20.0 / 14.0 | | | 22.0 / 16.0 | | | 25.0 / 18.0 | | | 27.0 / 19.0 | | | 30.0 / 22.0 | | | 32.0 / 24.0 | | |
| °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| 20.0 | 9.81 | 9.05 | 1.60 | 10.41 | 9.17 | 2.17 | 11.01 | 9.25 | 2.35 | 11.31 | 9.33 | 2.38 | 12.22 | 9.52 | 2.37 | 12.82 | 9.70 | 2.36 |
| 25.0 | 9.38 | 8.76 | 1.67 | 9.98 | 8.90 | 2.19 | 10.58 | 8.99 | 2.36 | 10.88 | 9.08 | 2.40 | 11.78 | 9.28 | 2.44 | 12.38 | 9.47 | 2.46 |
| 32.0 | 8.81 | 8.41 | 2.25 | 9.40 | 8.57 | 2.65 | 10.00 | 8.69 | 2.78 | 10.30 | 8.79 | 2.81 | 11.20 | 9.02 | 2.88 | 11.79 | 9.22 | 2.93 |
| 35.0 | 8.54 | 8.12 | 2.51 | 9.13 | 8.29 | 2.85 | 9.73 | 8.42 | 2.95 | 10.00 | 8.50 | 2.90 | 10.92 | 8.76 | 3.04 | 11.51 | 8.97 | 3.10 |
| 40.0 | 7.40 | 6.64 | 2.45 | 8.00 | 6.81 | 2.79 | 8.59 | 6.94 | 2.90 | 8.86 | 7.02 | 2.85 | 9.78 | 7.28 | 2.99 | 10.38 | 7.49 | 3.05 |
| 43.0 | 6.72 | 5.82 | 2.42 | 7.31 | 5.99 | 2.76 | 7.91 | 6.12 | 2.87 | 8.18 | 6.20 | 2.82 | 9.10 | 6.46 | 2.96 | 9.69 | 6.67 | 3.02 |
| 46.0 | 6.04 | 5.04 | 2.39 | 6.63 | 5.21 | 2.73 | 7.23 | 5.34 | 2.83 | 7.50 | 5.42 | 2.78 | 8.42 | 5.68 | 2.92 | 9.01 | 5.89 | 2.99 |
| 48.0 | 5.58 | 4.55 | 2.37 | 6.18 | 4.72 | 2.71 | 6.77 | 4.85 | 2.81 | 7.05 | 4.93 | 2.76 | 7.96 | 5.19 | 2.90 | 8.56 | 5.40 | 2.96 |

Models : AUUQ42GH1 + ATNQ42GMLE3

| Outdoor Air Temperature | Indoor Air Temperature : °CDB / °CWB | | | | | | | | | | | | | | | | | |
|-------------------------|--------------------------------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|
| | 20.0 / 14.0 | | | 22.0 / 16.0 | | | 25.0 / 18.0 | | | 27.0 / 19.0 | | | 30.0 / 22.0 | | | 32.0 / 24.0 | | |
| °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| 20.0 | 12.27 | 10.39 | 2.06 | 13.02 | 10.53 | 2.79 | 13.78 | 10.62 | 3.02 | 14.15 | 10.71 | 3.05 | 15.29 | 10.93 | 3.05 | 16.04 | 11.13 | 3.04 |
| 25.0 | 11.73 | 10.06 | 2.15 | 12.48 | 10.21 | 2.82 | 13.24 | 10.32 | 3.04 | 13.61 | 10.42 | 3.08 | 14.74 | 10.66 | 3.13 | 15.49 | 10.87 | 3.16 |
| 32.0 | 11.02 | 9.65 | 2.89 | 11.76 | 9.84 | 3.41 | 12.51 | 9.97 | 3.58 | 12.89 | 10.09 | 3.62 | 14.01 | 10.35 | 3.70 | 14.76 | 10.59 | 3.77 |
| 35.0 | 10.68 | 9.33 | 3.22 | 11.42 | 9.52 | 3.66 | 12.17 | 9.67 | 3.79 | 12.51 | 9.76 | 3.73 | 13.66 | 10.06 | 3.91 | 14.40 | 10.30 | 3.99 |
| 40.0 | 9.26 | 7.63 | 3.17 | 10.00 | 7.82 | 3.61 | 10.75 | 7.97 | 3.74 | 11.09 | 8.06 | 3.68 | 12.24 | 8.36 | 3.86 | 12.98 | 8.60 | 3.94 |
| 43.0 | 8.41 | 6.68 | 3.14 | 9.15 | 6.87 | 3.58 | 9.89 | 7.02 | 3.71 | 10.24 | 7.11 | 3.65 | 11.38 | 7.41 | 3.83 | 12.13 | 7.65 | 3.91 |
| 46.0 | 7.55 | 5.79 | 3.11 | 8.30 | 5.98 | 3.55 | 9.04 | 6.13 | 3.68 | 9.38 | 6.22 | 3.62 | 10.53 | 6.52 | 3.80 | 11.27 | 6.76 | 3.88 |
| 48.0 | 6.98 | 5.23 | 3.09 | 7.73 | 5.42 | 3.53 | 8.47 | 5.57 | 3.66 | 8.81 | 5.66 | 3.60 | 9.96 | 5.96 | 3.78 | 10.70 | 6.20 | 3.86 |

Models : AUUQ48GH1 + ATNQ48GMLE3

| Outdoor Air Temperature | Indoor Air Temperature : °CDB / °CWB | | | | | | | | | | | | | | | | | |
|-------------------------|--------------------------------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|
| | 20.0 / 14.0 | | | 22.0 / 16.0 | | | 25.0 / 18.0 | | | 27.0 / 19.0 | | | 30.0 / 22.0 | | | 32.0 / 24.0 | | |
| °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| 20.0 | 13.13 | 10.84 | 2.45 | 13.94 | 10.98 | 3.33 | 14.75 | 11.08 | 3.60 | 15.15 | 11.17 | 3.64 | 16.36 | 11.40 | 3.64 | 17.17 | 11.61 | 3.61 |
| 25.0 | 12.56 | 10.49 | 2.56 | 13.36 | 10.65 | 3.35 | 14.17 | 10.77 | 3.62 | 14.57 | 10.87 | 3.67 | 15.78 | 11.12 | 3.73 | 16.58 | 11.34 | 3.76 |
| 32.0 | 11.79 | 10.07 | 3.44 | 12.59 | 10.26 | 4.06 | 13.39 | 10.40 | 4.26 | 13.79 | 10.52 | 4.31 | 14.99 | 10.80 | 4.41 | 15.79 | 11.04 | 4.49 |
| 35.0 | 11.43 | 9.73 | 3.84 | 12.23 | 9.93 | 4.36 | 13.02 | 10.08 | 4.52 | 13.39 | 10.18 | 4.44 | 14.62 | 10.49 | 4.65 | 15.41 | 10.74 | 4.75 |
| 40.0 | 9.91 | 7.95 | 3.58 | 10.71 | 8.15 | 4.10 | 11.50 | 8.30 | 4.25 | 11.87 | 8.40 | 4.18 | 13.10 | 8.71 | 4.39 | 13.89 | 8.96 | 4.49 |
| 43.0 | 9.00 | 6.97 | 3.42 | 9.79 | 7.17 | 3.94 | 10.59 | 7.32 | 4.10 | 10.96 | 7.42 | 4.02 | 12.18 | 7.73 | 4.23 | 12.98 | 7.98 | 4.33 |
| 46.0 | 8.08 | 6.04 | 3.26 | 8.88 | 6.24 | 3.78 | 9.68 | 6.39 | 3.94 | 10.04 | 6.49 | 3.86 | 11.27 | 6.80 | 4.08 | 12.07 | 7.05 | 4.17 |
| 48.0 | 7.48 | 5.45 | 3.16 | 8.27 | 5.65 | 3.68 | 9.07 | 5.80 | 3.83 | 9.43 | 5.90 | 3.76 | 10.66 | 6.21 | 3.97 | 11.46 | 6.46 | 4.07 |

• Symbol

| | |
|---|-----------------------|
| AFR : Air flow rate | [m ³ /min] |
| DB : Dry bulb temperature | [°C] |
| WB : Wet bulb temperature | [°C] |
| TC : Total capacity | [kW] |
| SHC : Sensible Heating Capacity | [kW] |
| PI : Power Input | [kW] |
| (Comp.+ indoor fan motor+outdoor fan motor) | |

• Notes

- All capacities are net, evaporator fan motor heat is deducted.
- Indicates Rated capacity at standard condition.
- Direct interpolation is permissible. Do not extrapolate
- Capacities are based on the following conditions:
 - Interconnecting Piping Length 7.5m
 - Level Difference of Zero.

7. Capacity tables

Models : AUUQ54GH1 + ATNQ54GMLE3

| Outdoor Air Temperature | Indoor Air Temperature : °CDB / °CWB | | | | | | | | | | | | | | | | | |
|-------------------------|--------------------------------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|
| | 20.0 / 14.0 | | | 22.0 / 16.0 | | | 25.0 / 18.0 | | | 27.0 / 19.0 | | | 30.0 / 22.0 | | | 32.0 / 24.0 | | |
| °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| 20.0 | 15.49 | 11.95 | 2.89 | 16.45 | 12.11 | 3.92 | 17.40 | 12.21 | 4.23 | 17.88 | 12.32 | 4.28 | 19.31 | 12.56 | 4.28 | 20.26 | 12.80 | 4.26 |
| 25.0 | 14.82 | 11.56 | 3.02 | 15.77 | 11.74 | 3.95 | 16.72 | 11.87 | 4.26 | 17.19 | 11.98 | 4.32 | 18.62 | 12.25 | 4.40 | 19.56 | 12.50 | 4.43 |
| 32.0 | 13.91 | 11.10 | 4.05 | 14.86 | 11.31 | 4.78 | 15.80 | 11.47 | 5.02 | 16.27 | 11.59 | 5.07 | 17.69 | 11.90 | 5.19 | 18.64 | 12.17 | 5.29 |
| 35.0 | 13.49 | 10.72 | 4.52 | 14.43 | 10.94 | 5.13 | 15.37 | 11.11 | 5.32 | 15.80 | 11.22 | 5.23 | 17.25 | 11.56 | 5.48 | 18.19 | 11.84 | 5.59 |
| 40.0 | 11.69 | 8.77 | 4.07 | 12.63 | 8.99 | 4.68 | 13.57 | 9.16 | 4.87 | 14.00 | 9.27 | 4.78 | 15.45 | 9.61 | 5.03 | 16.39 | 9.89 | 5.14 |
| 43.0 | 10.62 | 7.68 | 3.80 | 11.56 | 7.90 | 4.41 | 12.50 | 8.07 | 4.60 | 12.93 | 8.18 | 4.51 | 14.38 | 8.52 | 4.76 | 15.32 | 8.80 | 4.87 |
| 46.0 | 9.54 | 6.65 | 3.53 | 10.48 | 6.87 | 4.14 | 11.42 | 7.04 | 4.33 | 11.85 | 7.15 | 4.24 | 13.30 | 7.49 | 4.49 | 14.24 | 7.77 | 4.60 |
| 48.0 | 8.82 | 6.00 | 3.35 | 9.76 | 6.22 | 3.96 | 10.70 | 6.39 | 4.15 | 11.13 | 6.50 | 4.06 | 12.58 | 6.84 | 4.31 | 13.52 | 7.12 | 4.42 |

Models : AUUQ18GH1 + ABNQ18GH1A0

| Outdoor Air Temperature | Indoor Air Temperature : °CDB / °CWB | | | | | | | | | | | | | | | | | |
|-------------------------|--------------------------------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|
| | 20.0 / 14.0 | | | 22.0 / 16.0 | | | 25.0 / 18.0 | | | 27.0 / 19.0 | | | 30.0 / 22.0 | | | 32.0 / 24.0 | | |
| °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| 20.0 | 4.91 | 4.80 | 0.86 | 5.21 | 4.87 | 1.16 | 5.52 | 4.91 | 1.26 | 5.67 | 4.95 | 1.27 | 6.12 | 5.05 | 1.27 | 6.42 | 5.14 | 1.26 |
| 25.0 | 4.70 | 4.65 | 0.89 | 5.00 | 4.72 | 1.17 | 5.30 | 4.77 | 1.26 | 5.45 | 4.82 | 1.28 | 5.90 | 4.92 | 1.30 | 6.20 | 5.02 | 1.31 |
| 32.0 | 4.41 | 4.46 | 1.20 | 4.71 | 4.55 | 1.42 | 5.01 | 4.61 | 1.49 | 5.16 | 4.66 | 1.50 | 5.61 | 4.78 | 1.54 | 5.91 | 4.89 | 1.57 |
| 35.0 | 4.28 | 4.31 | 1.34 | 4.58 | 4.40 | 1.52 | 4.87 | 4.47 | 1.58 | 5.01 | 4.51 | 1.55 | 5.47 | 4.65 | 1.62 | 5.77 | 4.76 | 1.66 |
| 40.0 | 3.94 | 3.81 | 1.33 | 4.23 | 3.90 | 1.51 | 4.53 | 3.97 | 1.56 | 4.67 | 4.01 | 1.54 | 5.13 | 4.15 | 1.61 | 5.43 | 4.26 | 1.64 |
| 43.0 | 3.73 | 3.52 | 1.32 | 4.03 | 3.61 | 1.50 | 4.33 | 3.68 | 1.55 | 4.46 | 3.72 | 1.53 | 4.92 | 3.86 | 1.60 | 5.22 | 3.97 | 1.63 |
| 46.0 | 3.53 | 3.25 | 1.31 | 3.82 | 3.34 | 1.49 | 4.12 | 3.41 | 1.55 | 4.26 | 3.45 | 1.52 | 4.72 | 3.59 | 1.59 | 5.02 | 3.70 | 1.63 |
| 48.0 | 3.39 | 3.07 | 1.30 | 3.69 | 3.16 | 1.48 | 3.99 | 3.23 | 1.54 | 4.12 | 3.27 | 1.51 | 4.58 | 3.41 | 1.59 | 4.88 | 3.52 | 1.62 |

Models : AUUQ21GH1 + ABNQ21GH1A0

| Outdoor Air Temperature | Indoor Air Temperature : °CDB / °CWB | | | | | | | | | | | | | | | | | |
|-------------------------|--------------------------------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|
| | 20.0 / 14.0 | | | 22.0 / 16.0 | | | 25.0 / 18.0 | | | 27.0 / 19.0 | | | 30.0 / 22.0 | | | 32.0 / 24.0 | | |
| °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| 20.0 | 5.89 | 5.38 | 1.10 | 6.26 | 5.45 | 1.49 | 6.62 | 5.49 | 1.61 | 6.80 | 5.54 | 1.63 | 7.34 | 5.65 | 1.63 | 7.71 | 5.76 | 1.62 |
| 25.0 | 5.64 | 5.20 | 1.15 | 6.00 | 5.28 | 1.50 | 6.36 | 5.34 | 1.62 | 6.54 | 5.39 | 1.64 | 7.08 | 5.51 | 1.67 | 7.44 | 5.63 | 1.69 |
| 32.0 | 5.29 | 4.99 | 1.54 | 5.65 | 5.09 | 1.82 | 6.01 | 5.16 | 1.91 | 6.19 | 5.22 | 1.93 | 6.73 | 5.36 | 1.98 | 7.09 | 5.48 | 2.01 |
| 35.0 | 5.13 | 4.82 | 1.72 | 5.49 | 4.93 | 1.95 | 5.85 | 5.00 | 2.02 | 6.01 | 5.05 | 1.99 | 6.56 | 5.20 | 2.09 | 6.92 | 5.33 | 2.13 |
| 40.0 | 4.72 | 4.26 | 1.71 | 5.08 | 4.37 | 1.94 | 5.44 | 4.44 | 2.02 | 5.60 | 4.49 | 1.98 | 6.15 | 4.64 | 2.08 | 6.51 | 4.77 | 2.12 |
| 43.0 | 4.48 | 3.94 | 1.71 | 4.83 | 4.05 | 1.94 | 5.19 | 4.12 | 2.01 | 5.35 | 4.17 | 1.98 | 5.91 | 4.32 | 2.07 | 6.26 | 4.45 | 2.11 |
| 46.0 | 4.23 | 3.63 | 1.70 | 4.59 | 3.74 | 1.93 | 4.94 | 3.81 | 2.00 | 5.11 | 3.86 | 1.97 | 5.66 | 4.01 | 2.07 | 6.02 | 4.14 | 2.11 |
| 48.0 | 4.07 | 3.43 | 1.70 | 4.42 | 3.54 | 1.93 | 4.78 | 3.61 | 2.00 | 4.94 | 3.66 | 1.97 | 5.50 | 3.81 | 2.06 | 5.85 | 3.94 | 2.10 |

• Symbol

| | |
|---|-----------------------|
| AFR : Air flow rate | [m ³ /min] |
| DB : Dry bulb temperature | [°C] |
| WB : Wet bulb temperature | [°C] |
| TC : Total capacity | [kW] |
| SHC : Sensible Heating Capacity | [kW] |
| PI : Power Input | [kW] |
| (Comp.+ indoor fan motor+outdoor fan motor) | |

• Notes

- All capacities are net, evaporator fan motor heat is deducted.
- Indicates Rated capacity at standard condition.
- Direct interpolation is permissible. Do not extrapolate
- Capacities are based on the following conditions:
 - Interconnecting Piping Length 7.5m
 - Level Difference of Zero.

7. Capacity tables

Models : AUUQ24GH1 + ABNQ24GGLA0

| Outdoor Air Temperature | Indoor Air Temperature : °CDB / °CWB | | | | | | | | | | | | | | | | | |
|-------------------------|--------------------------------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|
| | 20.0 / 14.0 | | | 22.0 / 16.0 | | | 25.0 / 18.0 | | | 27.0 / 19.0 | | | 30.0 / 22.0 | | | 32.0 / 24.0 | | |
| °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| 20.0 | 6.86 | 6.49 | 1.20 | 7.29 | 6.57 | 1.63 | 7.71 | 6.63 | 1.76 | 7.92 | 6.69 | 1.78 | 8.55 | 6.82 | 1.78 | 8.98 | 6.95 | 1.77 |
| 25.0 | 6.57 | 6.28 | 1.25 | 6.99 | 6.37 | 1.64 | 7.41 | 6.44 | 1.77 | 7.62 | 6.51 | 1.79 | 8.25 | 6.65 | 1.82 | 8.67 | 6.79 | 1.84 |
| 32.0 | 6.16 | 6.02 | 1.68 | 6.58 | 6.14 | 1.98 | 7.00 | 6.22 | 2.08 | 7.21 | 6.29 | 2.10 | 7.84 | 6.46 | 2.15 | 8.26 | 6.61 | 2.19 |
| 35.0 | 5.98 | 5.82 | 1.88 | 6.39 | 5.94 | 2.13 | 6.81 | 6.03 | 2.21 | 7.00 | 6.09 | 2.17 | 7.64 | 6.28 | 2.27 | 8.06 | 6.43 | 2.32 |
| 40.0 | 5.50 | 5.15 | 1.87 | 5.92 | 5.27 | 2.12 | 6.33 | 5.36 | 2.20 | 6.52 | 5.42 | 2.16 | 7.16 | 5.61 | 2.26 | 7.58 | 5.76 | 2.31 |
| 43.0 | 5.21 | 4.76 | 1.86 | 5.63 | 4.88 | 2.11 | 6.05 | 4.97 | 2.19 | 6.24 | 5.03 | 2.15 | 6.88 | 5.22 | 2.26 | 7.29 | 5.37 | 2.30 |
| 46.0 | 4.93 | 4.39 | 1.85 | 5.34 | 4.51 | 2.11 | 5.76 | 4.60 | 2.19 | 5.95 | 4.66 | 2.15 | 6.59 | 4.85 | 2.25 | 7.01 | 5.00 | 2.30 |
| 48.0 | 4.74 | 4.15 | 1.85 | 5.15 | 4.27 | 2.10 | 5.57 | 4.36 | 2.18 | 5.76 | 4.42 | 2.14 | 6.40 | 4.61 | 2.25 | 6.82 | 4.76 | 2.29 |

Models : AUUQ36GH1 + ABNQ36GGLA0

| Outdoor Air Temperature | Indoor Air Temperature : °CDB / °CWB | | | | | | | | | | | | | | | | | |
|-------------------------|--------------------------------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|
| | 20.0 / 14.0 | | | 22.0 / 16.0 | | | 25.0 / 18.0 | | | 27.0 / 19.0 | | | 30.0 / 22.0 | | | 32.0 / 24.0 | | |
| °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| 20.0 | 9.81 | 8.52 | 1.83 | 10.41 | 8.63 | 2.48 | 11.01 | 8.71 | 2.68 | 11.31 | 8.78 | 2.71 | 12.22 | 8.96 | 2.71 | 12.82 | 9.13 | 2.69 |
| 25.0 | 9.38 | 8.25 | 1.91 | 9.98 | 8.37 | 2.50 | 10.58 | 8.46 | 2.70 | 10.88 | 8.55 | 2.73 | 11.78 | 8.74 | 2.78 | 12.38 | 8.91 | 2.81 |
| 32.0 | 8.81 | 7.91 | 2.56 | 9.40 | 8.06 | 3.02 | 10.00 | 8.18 | 3.18 | 10.30 | 8.27 | 3.21 | 11.20 | 8.49 | 3.29 | 11.79 | 8.68 | 3.35 |
| 35.0 | 8.54 | 7.65 | 2.86 | 9.13 | 7.80 | 3.25 | 9.73 | 7.93 | 3.37 | 10.00 | 8.00 | 3.31 | 10.92 | 8.25 | 3.47 | 11.51 | 8.44 | 3.54 |
| 40.0 | 7.40 | 6.26 | 2.67 | 8.00 | 6.41 | 3.05 | 8.59 | 6.54 | 3.17 | 8.86 | 6.61 | 3.11 | 9.78 | 6.86 | 3.27 | 10.38 | 7.05 | 3.34 |
| 43.0 | 6.72 | 5.48 | 2.55 | 7.31 | 5.63 | 2.94 | 7.91 | 5.76 | 3.05 | 8.18 | 5.83 | 3.00 | 9.10 | 6.08 | 3.16 | 9.69 | 6.27 | 3.23 |
| 46.0 | 6.04 | 4.75 | 2.43 | 6.63 | 4.90 | 2.82 | 7.23 | 5.03 | 2.94 | 7.50 | 5.10 | 2.88 | 8.42 | 5.35 | 3.04 | 9.01 | 5.54 | 3.11 |
| 48.0 | 5.58 | 4.29 | 2.35 | 6.18 | 4.44 | 2.74 | 6.77 | 4.57 | 2.86 | 7.05 | 4.64 | 2.80 | 7.96 | 4.89 | 2.96 | 8.56 | 5.08 | 3.03 |

Models : AUUQ42GH1 + ABNQ42GRLA0

| Outdoor Air Temperature | Indoor Air Temperature : °CDB / °CWB | | | | | | | | | | | | | | | | | |
|-------------------------|--------------------------------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|
| | 20.0 / 14.0 | | | 22.0 / 16.0 | | | 25.0 / 18.0 | | | 27.0 / 19.0 | | | 30.0 / 22.0 | | | 32.0 / 24.0 | | |
| °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| 20.0 | 12.27 | 12.13 | 2.14 | 13.02 | 12.28 | 2.91 | 13.78 | 12.39 | 3.14 | 14.15 | 12.50 | 3.18 | 15.29 | 12.75 | 3.18 | 16.04 | 12.99 | 3.16 |
| 25.0 | 11.73 | 11.73 | 2.24 | 12.48 | 11.91 | 2.93 | 13.24 | 12.04 | 3.16 | 13.61 | 12.16 | 3.21 | 14.74 | 12.43 | 3.26 | 15.49 | 12.68 | 3.29 |
| 32.0 | 11.02 | 11.26 | 3.01 | 11.76 | 11.48 | 3.55 | 12.51 | 11.64 | 3.72 | 12.89 | 11.77 | 3.76 | 14.01 | 12.08 | 3.85 | 14.76 | 12.35 | 3.92 |
| 35.0 | 10.68 | 10.88 | 3.35 | 11.42 | 11.11 | 3.81 | 12.17 | 11.28 | 3.95 | 12.51 | 11.38 | 3.88 | 13.66 | 11.74 | 4.07 | 14.40 | 12.01 | 4.15 |
| 40.0 | 9.26 | 8.90 | 3.30 | 10.00 | 9.13 | 3.76 | 10.75 | 9.30 | 3.89 | 11.09 | 9.40 | 3.83 | 12.24 | 9.76 | 4.01 | 12.98 | 10.03 | 4.10 |
| 43.0 | 8.41 | 7.80 | 3.27 | 9.15 | 8.03 | 3.72 | 9.89 | 8.20 | 3.86 | 10.24 | 8.30 | 3.80 | 11.38 | 8.66 | 3.98 | 12.13 | 8.93 | 4.06 |
| 46.0 | 7.55 | 6.76 | 3.24 | 8.30 | 6.99 | 3.69 | 9.04 | 7.16 | 3.83 | 9.38 | 7.26 | 3.76 | 10.53 | 7.62 | 3.95 | 11.27 | 7.89 | 4.03 |
| 48.0 | 6.98 | 6.10 | 3.22 | 7.73 | 6.33 | 3.67 | 8.47 | 6.50 | 3.81 | 8.81 | 6.60 | 3.74 | 9.96 | 6.96 | 3.93 | 10.70 | 7.23 | 4.01 |

• Symbol

| | |
|---|-----------------------|
| AFR : Air flow rate | [m ³ /min] |
| DB : Dry bulb temperature | [°C] |
| WB : Wet bulb temperature | [°C] |
| TC : Total capacity | [kW] |
| SHC : Sensible Heating Capacity | [kW] |
| PI : Power Input | [kW] |
| (Comp.+ indoor fan motor+outdoor fan motor) | |

• Notes

- All capacities are net, evaporator fan motor heat is deducted.
- Indicates Rated capacity at standard condition.
- Direct interpolation is permissible. Do not extrapolate
- Capacities are based on the following conditions:
 - Interconnecting Piping Length 7.5m
 - Level Difference of Zero.

7. Capacity tables

Models : AUUQ48GH1 + ABNQ48GRLA0

| Outdoor Air Temperature | Indoor Air Temperature : °CDB / °CWB | | | | | | | | | | | | | | | | | |
|-------------------------|--------------------------------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|
| | 20.0 / 14.0 | | | 22.0 / 16.0 | | | 25.0 / 18.0 | | | 27.0 / 19.0 | | | 30.0 / 22.0 | | | 32.0 / 24.0 | | |
| °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| 20.0 | 13.13 | 12.69 | 2.45 | 13.94 | 12.86 | 3.32 | 14.75 | 12.97 | 3.59 | 15.15 | 13.09 | 3.63 | 16.36 | 13.35 | 3.63 | 17.17 | 13.59 | 3.61 |
| 25.0 | 12.56 | 12.28 | 2.56 | 13.36 | 12.47 | 3.35 | 14.17 | 12.61 | 3.61 | 14.57 | 12.73 | 3.66 | 15.78 | 13.02 | 3.72 | 16.58 | 13.28 | 3.76 |
| 32.0 | 11.79 | 11.79 | 3.43 | 12.59 | 12.01 | 4.05 | 13.39 | 12.18 | 4.25 | 13.79 | 12.32 | 4.30 | 14.99 | 12.64 | 4.40 | 15.79 | 12.93 | 4.48 |
| 35.0 | 11.43 | 11.39 | 3.83 | 12.23 | 11.63 | 4.35 | 13.02 | 11.81 | 4.51 | 13.39 | 11.92 | 4.43 | 14.62 | 12.29 | 4.64 | 15.41 | 12.57 | 4.74 |
| 40.0 | 9.91 | 9.31 | 3.63 | 10.71 | 9.55 | 4.15 | 11.50 | 9.73 | 4.31 | 11.87 | 9.84 | 4.23 | 13.10 | 10.21 | 4.44 | 13.89 | 10.49 | 4.54 |
| 43.0 | 9.00 | 8.16 | 3.51 | 9.79 | 8.40 | 4.03 | 10.59 | 8.58 | 4.18 | 10.96 | 8.69 | 4.11 | 12.18 | 9.06 | 4.32 | 12.98 | 9.34 | 4.42 |
| 46.0 | 8.08 | 7.07 | 3.39 | 8.88 | 7.31 | 3.90 | 9.68 | 7.49 | 4.06 | 10.04 | 7.60 | 3.99 | 11.27 | 7.97 | 4.20 | 12.07 | 8.25 | 4.29 |
| 48.0 | 7.48 | 6.38 | 3.31 | 8.27 | 6.62 | 3.82 | 9.07 | 6.80 | 3.98 | 9.43 | 6.91 | 3.91 | 10.66 | 7.28 | 4.12 | 11.46 | 7.56 | 4.21 |

Models : AUUQ54GH1 + ABNQ54GRLA0

| Outdoor Air Temperature | Indoor Air Temperature : °CDB / °CWB | | | | | | | | | | | | | | | | | |
|-------------------------|--------------------------------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|
| | 20.0 / 14.0 | | | 22.0 / 16.0 | | | 25.0 / 18.0 | | | 27.0 / 19.0 | | | 30.0 / 22.0 | | | 32.0 / 24.0 | | |
| °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| 20.0 | 15.49 | 15.48 | 2.71 | 16.45 | 15.69 | 3.68 | 17.40 | 15.82 | 3.98 | 17.88 | 15.96 | 4.02 | 19.31 | 16.28 | 4.02 | 20.26 | 16.58 | 4.00 |
| 25.0 | 14.82 | 14.98 | 2.83 | 15.77 | 15.21 | 3.71 | 16.72 | 15.38 | 4.00 | 17.19 | 15.53 | 4.06 | 18.62 | 15.88 | 4.13 | 19.56 | 16.20 | 4.16 |
| 32.0 | 13.91 | 14.38 | 3.80 | 14.86 | 14.65 | 4.49 | 15.80 | 14.86 | 4.71 | 16.27 | 15.02 | 4.76 | 17.69 | 15.42 | 4.87 | 18.64 | 15.77 | 4.97 |
| 35.0 | 13.49 | 13.89 | 4.24 | 14.43 | 14.18 | 4.82 | 15.37 | 14.40 | 4.99 | 15.80 | 14.54 | 4.91 | 17.25 | 14.99 | 5.15 | 18.19 | 15.34 | 5.25 |
| 40.0 | 11.69 | 11.36 | 3.82 | 12.63 | 11.65 | 4.39 | 13.57 | 11.87 | 4.57 | 14.00 | 12.01 | 4.49 | 15.45 | 12.46 | 4.72 | 16.39 | 12.81 | 4.83 |
| 43.0 | 10.62 | 9.95 | 3.57 | 11.56 | 10.24 | 4.14 | 12.50 | 10.46 | 4.32 | 12.93 | 10.60 | 4.23 | 14.38 | 11.05 | 4.47 | 15.32 | 11.40 | 4.57 |
| 46.0 | 9.54 | 8.62 | 3.31 | 10.48 | 8.91 | 3.89 | 11.42 | 9.13 | 4.06 | 11.85 | 9.27 | 3.98 | 13.30 | 9.72 | 4.21 | 14.24 | 10.07 | 4.32 |
| 48.0 | 8.82 | 7.78 | 3.14 | 9.76 | 8.07 | 3.72 | 10.70 | 8.29 | 3.89 | 11.13 | 8.43 | 3.81 | 12.58 | 8.88 | 4.04 | 13.52 | 9.23 | 4.15 |

Models : AUUQ18GH1 + AVNQ18GJLA0

| Outdoor Air Temperature | Indoor Air Temperature : °CDB / °CWB | | | | | | | | | | | | | | | | | |
|-------------------------|--------------------------------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|
| | 20.0 / 14.0 | | | 22.0 / 16.0 | | | 25.0 / 18.0 | | | 27.0 / 19.0 | | | 30.0 / 22.0 | | | 32.0 / 24.0 | | |
| °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| 20.0 | 4.91 | 4.38 | 0.86 | 5.21 | 4.43 | 1.16 | 5.52 | 4.47 | 1.26 | 5.67 | 4.51 | 1.27 | 6.12 | 4.60 | 1.27 | 6.42 | 4.69 | 1.26 |
| 25.0 | 4.70 | 4.23 | 0.89 | 5.00 | 4.30 | 1.17 | 5.30 | 4.35 | 1.26 | 5.45 | 4.39 | 1.28 | 5.90 | 4.49 | 1.30 | 6.20 | 4.58 | 1.31 |
| 32.0 | 4.41 | 4.06 | 1.20 | 4.71 | 4.14 | 1.42 | 5.01 | 4.20 | 1.49 | 5.16 | 4.25 | 1.50 | 5.61 | 4.36 | 1.54 | 5.91 | 4.46 | 1.57 |
| 35.0 | 4.28 | 3.93 | 1.34 | 4.58 | 4.01 | 1.52 | 4.87 | 4.07 | 1.58 | 5.01 | 4.11 | 1.55 | 5.47 | 4.24 | 1.62 | 5.77 | 4.33 | 1.66 |
| 40.0 | 3.94 | 3.47 | 1.33 | 4.23 | 3.55 | 1.51 | 4.53 | 3.61 | 1.56 | 4.67 | 3.65 | 1.54 | 5.13 | 3.78 | 1.61 | 5.43 | 3.87 | 1.64 |
| 43.0 | 3.73 | 3.21 | 1.32 | 4.03 | 3.29 | 1.50 | 4.33 | 3.35 | 1.55 | 4.46 | 3.39 | 1.53 | 4.92 | 3.52 | 1.60 | 5.22 | 3.61 | 1.63 |
| 46.0 | 3.53 | 2.96 | 1.31 | 3.82 | 3.04 | 1.49 | 4.12 | 3.10 | 1.55 | 4.26 | 3.14 | 1.52 | 4.72 | 3.27 | 1.59 | 5.02 | 3.36 | 1.63 |
| 48.0 | 3.39 | 2.80 | 1.30 | 3.69 | 2.88 | 1.48 | 3.99 | 2.94 | 1.54 | 4.12 | 2.98 | 1.51 | 4.58 | 3.11 | 1.59 | 4.88 | 3.20 | 1.62 |

• Symbol

AFR : Air flow rate [m³/min]
 DB : Dry bulb temperature [°C]
 WB : Wet bulb temperature [°C]
 TC : Total capacity [kW]
 SHC : Sensible Heating Capacity [kW]
 PI : Power Input [kW]
 (Comp.+ indoor fan motor+outdoor fan motor)

• Notes

- All capacities are net, evaporator fan motor heat is deducted.
- Indicates Rated capacity at standard condition.
- Direct interpolation is permissible. Do not extrapolate
- Capacities are based on the following conditions:
 - Interconnecting Piping Length 7.5m
 - Level Difference of Zero.

7. Capacity tables

Models : AUUQ21GH1 + AVNQ21GJLA0

| Outdoor Air Temperature | Indoor Air Temperature : °CDB / °CWB | | | | | | | | | | | | | | | | | |
|-------------------------|--------------------------------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|
| | 20.0 / 14.0 | | | 22.0 / 16.0 | | | 25.0 / 18.0 | | | 27.0 / 19.0 | | | 30.0 / 22.0 | | | 32.0 / 24.0 | | |
| °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| 20.0 | 5.89 | 4.93 | 1.06 | 6.26 | 4.99 | 1.44 | 6.62 | 5.04 | 1.55 | 6.80 | 5.08 | 1.57 | 7.34 | 5.18 | 1.57 | 7.71 | 5.28 | 1.56 |
| 25.0 | 5.64 | 4.77 | 1.11 | 6.00 | 4.84 | 1.45 | 6.36 | 4.90 | 1.56 | 6.54 | 4.94 | 1.59 | 7.08 | 5.05 | 1.61 | 7.44 | 5.16 | 1.63 |
| 32.0 | 5.29 | 4.58 | 1.49 | 5.65 | 4.66 | 1.75 | 6.01 | 4.73 | 1.84 | 6.19 | 4.78 | 1.86 | 6.73 | 4.91 | 1.91 | 7.09 | 5.02 | 1.94 |
| 35.0 | 5.13 | 4.42 | 1.66 | 5.49 | 4.51 | 1.88 | 5.85 | 4.58 | 1.95 | 6.01 | 4.63 | 1.92 | 6.56 | 4.77 | 2.01 | 6.92 | 4.88 | 2.05 |
| 40.0 | 4.72 | 3.91 | 1.62 | 5.08 | 4.00 | 1.84 | 5.44 | 4.07 | 1.91 | 5.60 | 4.12 | 1.88 | 6.15 | 4.26 | 1.97 | 6.51 | 4.37 | 2.01 |
| 43.0 | 4.48 | 3.61 | 1.59 | 4.83 | 3.70 | 1.81 | 5.19 | 3.77 | 1.88 | 5.35 | 3.82 | 1.85 | 5.91 | 3.96 | 1.94 | 6.26 | 4.07 | 1.98 |
| 46.0 | 4.23 | 3.33 | 1.56 | 4.59 | 3.42 | 1.79 | 4.94 | 3.49 | 1.86 | 5.11 | 3.54 | 1.82 | 5.66 | 3.68 | 1.92 | 6.02 | 3.79 | 1.96 |
| 48.0 | 4.07 | 3.15 | 1.55 | 4.42 | 3.24 | 1.77 | 4.78 | 3.31 | 1.84 | 4.94 | 3.36 | 1.81 | 5.50 | 3.50 | 1.90 | 5.85 | 3.61 | 1.94 |

Models : AUUQ24GH1 + AVNQ24GJLA0

| Outdoor Air Temperature | Indoor Air Temperature : °CDB / °CWB | | | | | | | | | | | | | | | | | |
|-------------------------|--------------------------------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|
| | 20.0 / 14.0 | | | 22.0 / 16.0 | | | 25.0 / 18.0 | | | 27.0 / 19.0 | | | 30.0 / 22.0 | | | 32.0 / 24.0 | | |
| °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| 20.0 | 6.86 | 5.37 | 1.28 | 7.29 | 5.44 | 1.74 | 7.71 | 5.49 | 1.88 | 7.92 | 5.53 | 1.90 | 8.55 | 5.64 | 1.90 | 8.98 | 5.75 | 1.89 |
| 25.0 | 6.57 | 5.19 | 1.34 | 6.99 | 5.27 | 1.75 | 7.41 | 5.33 | 1.89 | 7.62 | 5.38 | 1.92 | 8.25 | 5.50 | 1.95 | 8.67 | 5.62 | 1.97 |
| 32.0 | 6.16 | 4.99 | 1.80 | 6.58 | 5.08 | 2.12 | 7.00 | 5.15 | 2.23 | 7.21 | 5.21 | 2.25 | 7.84 | 5.35 | 2.30 | 8.26 | 5.47 | 2.35 |
| 35.0 | 5.98 | 4.82 | 2.01 | 6.39 | 4.92 | 2.28 | 6.81 | 4.99 | 2.36 | 7.00 | 5.04 | 2.32 | 7.64 | 5.20 | 2.43 | 8.06 | 5.32 | 2.48 |
| 40.0 | 5.50 | 4.26 | 2.07 | 5.92 | 4.36 | 2.34 | 6.33 | 4.43 | 2.42 | 6.52 | 4.48 | 2.38 | 7.16 | 4.64 | 2.50 | 7.58 | 4.76 | 2.54 |
| 43.0 | 5.21 | 3.94 | 2.11 | 5.63 | 4.04 | 2.38 | 6.05 | 4.11 | 2.46 | 6.24 | 4.16 | 2.42 | 6.88 | 4.32 | 2.53 | 7.29 | 4.44 | 2.58 |
| 46.0 | 4.93 | 3.64 | 2.14 | 5.34 | 3.74 | 2.42 | 5.76 | 3.81 | 2.50 | 5.95 | 3.86 | 2.46 | 6.59 | 4.02 | 2.57 | 7.01 | 4.14 | 2.62 |
| 48.0 | 4.74 | 3.44 | 2.17 | 5.15 | 3.54 | 2.44 | 5.57 | 3.61 | 2.52 | 5.76 | 3.66 | 2.48 | 6.40 | 3.82 | 2.60 | 6.82 | 3.94 | 2.65 |

Models : AUUQ36GH1 + AVNQ36GKLA0

| Outdoor Air Temperature | Indoor Air Temperature : °CDB / °CWB | | | | | | | | | | | | | | | | | |
|-------------------------|--------------------------------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|
| | 20.0 / 14.0 | | | 22.0 / 16.0 | | | 25.0 / 18.0 | | | 27.0 / 19.0 | | | 30.0 / 22.0 | | | 32.0 / 24.0 | | |
| °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| 20.0 | 9.81 | 7.99 | 1.83 | 10.41 | 8.09 | 2.48 | 11.01 | 8.16 | 2.68 | 11.31 | 8.24 | 2.71 | 12.22 | 8.40 | 2.71 | 12.82 | 8.56 | 2.69 |
| 25.0 | 9.38 | 7.73 | 1.91 | 9.98 | 7.85 | 2.50 | 10.58 | 7.93 | 2.70 | 10.88 | 8.01 | 2.73 | 11.78 | 8.19 | 2.78 | 12.38 | 8.36 | 2.81 |
| 32.0 | 8.81 | 7.42 | 2.56 | 9.40 | 7.56 | 3.02 | 10.00 | 7.67 | 3.18 | 10.30 | 7.75 | 3.21 | 11.20 | 7.96 | 3.29 | 11.79 | 8.14 | 3.35 |
| 35.0 | 8.54 | 7.17 | 2.86 | 9.13 | 7.32 | 3.25 | 9.73 | 7.43 | 3.37 | 10.00 | 7.50 | 3.31 | 10.92 | 7.73 | 3.47 | 11.51 | 7.91 | 3.54 |
| 40.0 | 7.40 | 5.86 | 2.67 | 8.00 | 6.01 | 3.05 | 8.59 | 6.12 | 3.17 | 8.86 | 6.19 | 3.11 | 9.78 | 6.42 | 3.27 | 10.38 | 6.60 | 3.34 |
| 43.0 | 6.72 | 5.14 | 2.55 | 7.31 | 5.29 | 2.94 | 7.91 | 5.40 | 3.05 | 8.18 | 5.47 | 3.00 | 9.10 | 5.70 | 3.16 | 9.69 | 5.88 | 3.23 |
| 46.0 | 6.04 | 4.45 | 2.43 | 6.63 | 4.60 | 2.82 | 7.23 | 4.71 | 2.94 | 7.50 | 4.78 | 2.88 | 8.42 | 5.01 | 3.04 | 9.01 | 5.19 | 3.11 |
| 48.0 | 5.58 | 4.02 | 2.35 | 6.18 | 4.17 | 2.74 | 6.77 | 4.28 | 2.86 | 7.05 | 4.35 | 2.80 | 7.96 | 4.58 | 2.96 | 8.56 | 4.76 | 3.03 |

• Symbol

| | |
|---|-----------------------|
| AFR : Air flow rate | [m ³ /min] |
| DB : Dry bulb temperature | [°C] |
| WB : Wet bulb temperature | [°C] |
| TC : Total capacity | [kW] |
| SHC : Sensible Heating Capacity | [kW] |
| PI : Power Input | [kW] |
| (Comp.+ indoor fan motor+outdoor fan motor) | |

• Notes

- All capacities are net, evaporator fan motor heat is deducted.
- Indicates Rated capacity at standard condition.
- Direct interpolation is permissible. Do not extrapolate
- Capacities are based on the following conditions:
 - Interconnecting Piping Length 7.5m
 - Level Difference of Zero.

7. Capacity tables

Models : AUUQ42GH1 + AVNQ42GLLA0

| Outdoor Air Temperature | Indoor Air Temperature : °CDB / °CWB | | | | | | | | | | | | | | | | | |
|-------------------------|--------------------------------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|
| | 20.0 / 14.0 | | | 22.0 / 16.0 | | | 25.0 / 18.0 | | | 27.0 / 19.0 | | | 30.0 / 22.0 | | | 32.0 / 24.0 | | |
| °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| 20.0 | 12.27 | 10.66 | 2.14 | 13.02 | 10.80 | 2.91 | 13.78 | 10.89 | 3.14 | 14.15 | 10.99 | 3.18 | 15.29 | 11.21 | 3.18 | 16.04 | 11.42 | 3.16 |
| 25.0 | 11.73 | 10.31 | 2.24 | 12.48 | 10.47 | 2.93 | 13.24 | 10.59 | 3.16 | 13.61 | 10.69 | 3.21 | 14.74 | 10.93 | 3.26 | 15.49 | 11.15 | 3.29 |
| 32.0 | 11.02 | 9.90 | 3.01 | 11.76 | 10.09 | 3.55 | 12.51 | 10.23 | 3.72 | 12.89 | 10.34 | 3.76 | 14.01 | 10.62 | 3.85 | 14.76 | 10.86 | 3.92 |
| 35.0 | 10.68 | 9.56 | 3.35 | 11.42 | 9.76 | 3.81 | 12.17 | 9.91 | 3.95 | 12.51 | 10.01 | 3.88 | 13.66 | 10.32 | 4.07 | 14.40 | 10.56 | 4.15 |
| 40.0 | 9.26 | 7.82 | 3.30 | 10.00 | 8.02 | 3.76 | 10.75 | 8.17 | 3.89 | 11.09 | 8.27 | 3.83 | 12.24 | 8.58 | 4.01 | 12.98 | 8.82 | 4.10 |
| 43.0 | 8.41 | 6.85 | 3.27 | 9.15 | 7.05 | 3.72 | 9.89 | 7.20 | 3.86 | 10.24 | 7.30 | 3.80 | 11.38 | 7.61 | 3.98 | 12.13 | 7.85 | 4.06 |
| 46.0 | 7.55 | 5.93 | 3.24 | 8.30 | 6.13 | 3.69 | 9.04 | 6.28 | 3.83 | 9.38 | 6.38 | 3.76 | 10.53 | 6.69 | 3.95 | 11.27 | 6.93 | 4.03 |
| 48.0 | 6.98 | 5.35 | 3.22 | 7.73 | 5.55 | 3.67 | 8.47 | 5.70 | 3.81 | 8.81 | 5.80 | 3.74 | 9.96 | 6.11 | 3.93 | 10.70 | 6.35 | 4.01 |

Models : AUUQ48GH1 + AVNQ48GLLA0

| Outdoor Air Temperature | Indoor Air Temperature : °CDB / °CWB | | | | | | | | | | | | | | | | | |
|-------------------------|--------------------------------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|
| | 20.0 / 14.0 | | | 22.0 / 16.0 | | | 25.0 / 18.0 | | | 27.0 / 19.0 | | | 30.0 / 22.0 | | | 32.0 / 24.0 | | |
| °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| 20.0 | 13.13 | 10.84 | 2.45 | 13.94 | 10.98 | 3.33 | 14.75 | 11.08 | 3.60 | 15.15 | 11.17 | 3.64 | 16.36 | 11.40 | 3.64 | 17.17 | 11.61 | 3.61 |
| 25.0 | 12.56 | 10.49 | 2.56 | 13.36 | 10.65 | 3.35 | 14.17 | 10.77 | 3.62 | 14.57 | 10.87 | 3.67 | 15.78 | 11.12 | 3.73 | 16.58 | 11.34 | 3.76 |
| 32.0 | 11.79 | 10.07 | 3.44 | 12.59 | 10.26 | 4.06 | 13.39 | 10.40 | 4.26 | 13.79 | 10.52 | 4.31 | 14.99 | 10.80 | 4.41 | 15.79 | 11.04 | 4.49 |
| 35.0 | 11.43 | 9.73 | 3.84 | 12.23 | 9.93 | 4.36 | 13.02 | 10.08 | 4.52 | 13.39 | 10.18 | 4.44 | 14.62 | 10.49 | 4.65 | 15.41 | 10.74 | 4.75 |
| 40.0 | 9.91 | 7.95 | 3.66 | 10.71 | 8.15 | 4.18 | 11.50 | 8.30 | 4.34 | 11.87 | 8.40 | 4.26 | 13.10 | 8.71 | 4.47 | 13.89 | 8.96 | 4.57 |
| 43.0 | 9.00 | 6.97 | 3.55 | 9.79 | 7.17 | 4.07 | 10.59 | 7.32 | 4.23 | 10.96 | 7.42 | 4.15 | 12.18 | 7.73 | 4.36 | 12.98 | 7.98 | 4.46 |
| 46.0 | 8.08 | 6.04 | 3.44 | 8.88 | 6.24 | 3.96 | 9.68 | 6.39 | 4.12 | 10.04 | 6.49 | 4.04 | 11.27 | 6.80 | 4.25 | 12.07 | 7.05 | 4.35 |
| 48.0 | 7.48 | 5.45 | 3.37 | 8.27 | 5.65 | 3.89 | 9.07 | 5.80 | 4.04 | 9.43 | 5.90 | 3.97 | 10.66 | 6.21 | 4.18 | 11.46 | 6.46 | 4.28 |

Models : AUUQ54GH1 + AVNQ54GLLA0

| Outdoor Air Temperature | Indoor Air Temperature : °CDB / °CWB | | | | | | | | | | | | | | | | | |
|-------------------------|--------------------------------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|-------------|-------|------|
| | 20.0 / 14.0 | | | 22.0 / 16.0 | | | 25.0 / 18.0 | | | 27.0 / 19.0 | | | 30.0 / 22.0 | | | 32.0 / 24.0 | | |
| °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| 20.0 | 15.49 | 11.95 | 2.89 | 16.45 | 12.11 | 3.92 | 17.40 | 12.21 | 4.23 | 17.88 | 12.32 | 4.28 | 19.31 | 12.56 | 4.28 | 20.26 | 12.80 | 4.26 |
| 25.0 | 14.82 | 11.56 | 3.02 | 15.77 | 11.74 | 3.95 | 16.72 | 11.87 | 4.26 | 17.19 | 11.98 | 4.32 | 18.62 | 12.25 | 4.40 | 19.56 | 12.50 | 4.43 |
| 32.0 | 13.91 | 11.10 | 4.05 | 14.86 | 11.31 | 4.78 | 15.80 | 11.47 | 5.02 | 16.27 | 11.59 | 5.07 | 17.69 | 11.90 | 5.19 | 18.64 | 12.17 | 5.29 |
| 35.0 | 13.49 | 10.72 | 4.52 | 14.43 | 10.94 | 5.13 | 15.37 | 11.11 | 5.32 | 15.80 | 11.22 | 5.23 | 17.25 | 11.56 | 5.48 | 18.19 | 11.84 | 5.59 |
| 40.0 | 11.69 | 8.77 | 4.19 | 12.63 | 8.99 | 4.80 | 13.57 | 9.16 | 4.99 | 14.00 | 9.27 | 4.90 | 15.45 | 9.61 | 5.15 | 16.39 | 9.89 | 5.26 |
| 43.0 | 10.62 | 7.68 | 3.99 | 11.56 | 7.90 | 4.60 | 12.50 | 8.07 | 4.79 | 12.93 | 8.18 | 4.70 | 14.38 | 8.52 | 4.95 | 15.32 | 8.80 | 5.06 |
| 46.0 | 9.54 | 6.65 | 3.79 | 10.48 | 6.87 | 4.40 | 11.42 | 7.04 | 4.59 | 11.85 | 7.15 | 4.50 | 13.30 | 7.49 | 4.75 | 14.24 | 7.77 | 4.86 |
| 48.0 | 8.82 | 6.00 | 3.66 | 9.76 | 6.22 | 4.27 | 10.70 | 6.39 | 4.46 | 11.13 | 6.50 | 4.36 | 12.58 | 6.84 | 4.62 | 13.52 | 7.12 | 4.73 |

• Symbol

| | |
|---|-----------------------|
| AFR : Air flow rate | [m ³ /min] |
| DB : Dry bulb temperature | [°C] |
| WB : Wet bulb temperature | [°C] |
| TC : Total capacity | [kW] |
| SHC : Sensible Heating Capacity | [kW] |
| PI : Power Input | [kW] |
| (Comp.+ indoor fan motor+outdoor fan motor) | |

• Notes

- All capacities are net, evaporator fan motor heat is deducted.
- Indicates Rated capacity at standard condition.
- Direct interpolation is permissible. Do not extrapolate
- Capacities are based on the following conditions:
 - Interconnecting Piping Length 7.5m
 - Level Difference of Zero.

7. Capacity tables

Models : AUUQ18GH1 + ABNQ18GL2A0

| Outdoor Air Temperature | Indoor Air Temperature : °CDB / °CWB | | | | | | | | | | | | | | | | | |
|-------------------------|--------------------------------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|
| | 20.0 / 14.0 | | | 22.0 / 16.0 | | | 25.0 / 18.0 | | | 27.0 / 19.0 | | | 30.0 / 22.0 | | | 32.0 / 24.0 | | |
| °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| 20.0 | 4.91 | 4.11 | 0.86 | 5.21 | 4.16 | 1.16 | 5.52 | 4.20 | 1.26 | 5.67 | 4.24 | 1.27 | 6.12 | 4.32 | 1.27 | 6.42 | 4.40 | 1.26 |
| 25.0 | 4.70 | 3.98 | 0.89 | 5.00 | 4.04 | 1.17 | 5.30 | 4.08 | 1.26 | 5.45 | 4.12 | 1.28 | 5.90 | 4.21 | 1.30 | 6.20 | 4.30 | 1.31 |
| 32.0 | 4.41 | 3.82 | 1.20 | 4.71 | 3.89 | 1.42 | 5.01 | 3.94 | 1.49 | 5.16 | 3.99 | 1.50 | 5.61 | 4.09 | 1.54 | 5.91 | 4.18 | 1.57 |
| 35.0 | 4.28 | 3.69 | 1.34 | 4.58 | 3.76 | 1.52 | 4.87 | 3.82 | 1.58 | 5.01 | 3.86 | 1.55 | 5.47 | 3.98 | 1.62 | 5.77 | 4.07 | 1.66 |
| 40.0 | 3.94 | 3.26 | 1.33 | 4.23 | 3.33 | 1.51 | 4.53 | 3.39 | 1.56 | 4.67 | 3.43 | 1.54 | 5.13 | 3.55 | 1.61 | 5.43 | 3.64 | 1.64 |
| 43.0 | 3.73 | 3.02 | 1.32 | 4.03 | 3.09 | 1.50 | 4.33 | 3.15 | 1.55 | 4.46 | 3.19 | 1.53 | 4.92 | 3.31 | 1.60 | 5.22 | 3.40 | 1.63 |
| 46.0 | 3.53 | 2.78 | 1.31 | 3.82 | 2.85 | 1.49 | 4.12 | 2.91 | 1.55 | 4.26 | 2.95 | 1.52 | 4.72 | 3.07 | 1.59 | 5.02 | 3.16 | 1.63 |
| 48.0 | 3.39 | 2.63 | 1.30 | 3.69 | 2.70 | 1.48 | 3.99 | 2.76 | 1.54 | 4.12 | 2.80 | 1.51 | 4.58 | 2.92 | 1.59 | 4.88 | 3.01 | 1.62 |

Models : AUUQ21GH1 + ABNQ21GL2A0

| Outdoor Air Temperature | Indoor Air Temperature : °CDB / °CWB | | | | | | | | | | | | | | | | | |
|-------------------------|--------------------------------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|
| | 20.0 / 14.0 | | | 22.0 / 16.0 | | | 25.0 / 18.0 | | | 27.0 / 19.0 | | | 30.0 / 22.0 | | | 32.0 / 24.0 | | |
| °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| 20.0 | 5.89 | 4.87 | 1.06 | 6.26 | 4.93 | 1.44 | 6.62 | 4.97 | 1.55 | 6.80 | 5.02 | 1.57 | 7.34 | 5.12 | 1.57 | 7.71 | 5.21 | 1.56 |
| 25.0 | 5.64 | 4.71 | 1.11 | 6.00 | 4.78 | 1.45 | 6.36 | 4.83 | 1.56 | 6.54 | 4.88 | 1.59 | 7.08 | 4.99 | 1.61 | 7.44 | 5.09 | 1.63 |
| 32.0 | 5.29 | 4.52 | 1.49 | 5.65 | 4.60 | 1.75 | 6.01 | 4.67 | 1.84 | 6.19 | 4.72 | 1.86 | 6.73 | 4.85 | 1.91 | 7.09 | 4.95 | 1.94 |
| 35.0 | 5.13 | 4.37 | 1.66 | 5.49 | 4.46 | 1.88 | 5.85 | 4.52 | 1.95 | 6.01 | 4.57 | 1.92 | 6.56 | 4.71 | 2.01 | 6.92 | 4.82 | 2.05 |
| 40.0 | 4.72 | 3.86 | 1.65 | 5.08 | 3.95 | 1.88 | 5.44 | 4.01 | 1.94 | 5.60 | 4.06 | 1.91 | 6.15 | 4.20 | 2.00 | 6.51 | 4.31 | 2.04 |
| 43.0 | 4.48 | 3.57 | 1.65 | 4.83 | 3.66 | 1.87 | 5.19 | 3.72 | 1.94 | 5.35 | 3.77 | 1.91 | 5.91 | 3.91 | 2.00 | 6.26 | 4.02 | 2.04 |
| 46.0 | 4.23 | 3.29 | 1.64 | 4.59 | 3.38 | 1.87 | 4.94 | 3.44 | 1.93 | 5.11 | 3.49 | 1.90 | 5.66 | 3.63 | 1.99 | 6.02 | 3.74 | 2.03 |
| 48.0 | 4.07 | 3.11 | 1.64 | 4.42 | 3.20 | 1.86 | 4.78 | 3.26 | 1.93 | 4.94 | 3.31 | 1.90 | 5.50 | 3.45 | 1.99 | 5.85 | 3.56 | 2.03 |

Models : AUUQ24GH1 + ABNQ24GL3A0

| Outdoor Air Temperature | Indoor Air Temperature : °CDB / °CWB | | | | | | | | | | | | | | | | | |
|-------------------------|--------------------------------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|-------------|------|------|
| | 20.0 / 14.0 | | | 22.0 / 16.0 | | | 25.0 / 18.0 | | | 27.0 / 19.0 | | | 30.0 / 22.0 | | | 32.0 / 24.0 | | |
| °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| 20.0 | 6.86 | 5.89 | 1.28 | 7.29 | 5.97 | 1.74 | 7.71 | 6.02 | 1.88 | 7.92 | 6.07 | 1.90 | 8.55 | 6.19 | 1.90 | 8.98 | 6.31 | 1.89 |
| 25.0 | 6.57 | 5.70 | 1.34 | 6.99 | 5.79 | 1.75 | 7.41 | 5.85 | 1.89 | 7.62 | 5.91 | 1.92 | 8.25 | 6.04 | 1.95 | 8.67 | 6.16 | 1.97 |
| 32.0 | 6.16 | 5.47 | 1.80 | 6.58 | 5.57 | 2.12 | 7.00 | 5.65 | 2.23 | 7.21 | 5.72 | 2.25 | 7.84 | 5.87 | 2.30 | 8.26 | 6.00 | 2.35 |
| 35.0 | 5.98 | 5.28 | 2.01 | 6.39 | 5.40 | 2.28 | 6.81 | 5.48 | 2.36 | 7.00 | 5.53 | 2.32 | 7.64 | 5.70 | 2.43 | 8.06 | 5.84 | 2.48 |
| 40.0 | 5.50 | 4.67 | 2.00 | 5.92 | 4.79 | 2.27 | 6.33 | 4.87 | 2.35 | 6.52 | 4.92 | 2.31 | 7.16 | 5.09 | 2.42 | 7.58 | 5.23 | 2.47 |
| 43.0 | 5.21 | 4.32 | 1.99 | 5.63 | 4.44 | 2.26 | 6.05 | 4.52 | 2.34 | 6.24 | 4.57 | 2.30 | 6.88 | 4.74 | 2.42 | 7.29 | 4.88 | 2.46 |
| 46.0 | 4.93 | 3.98 | 1.98 | 5.34 | 4.10 | 2.25 | 5.76 | 4.18 | 2.34 | 5.95 | 4.23 | 2.30 | 6.59 | 4.40 | 2.41 | 7.01 | 4.54 | 2.46 |
| 48.0 | 4.74 | 3.76 | 1.98 | 5.15 | 3.88 | 2.25 | 5.57 | 3.96 | 2.33 | 5.76 | 4.01 | 2.29 | 6.40 | 4.18 | 2.40 | 6.82 | 4.32 | 2.45 |

• Symbol

| | |
|---|-----------------------|
| AFR : Air flow rate | [m ³ /min] |
| DB : Dry bulb temperature | [°C] |
| WB : Wet bulb temperature | [°C] |
| TC : Total capacity | [kW] |
| SHC : Sensible Heating Capacity | [kW] |
| PI : Power Input | [kW] |
| (Comp.+ indoor fan motor+outdoor fan motor) | |

• Notes

- All capacities are net, evaporator fan motor heat is deducted.
- Indicates Rated capacity at standard condition.
- Direct interpolation is permissible. Do not extrapolate
- Capacities are based on the following conditions:
 - Interconnecting Piping Length 7.5m
 - Level Difference of Zero.

8. Capacity coefficient factor

1) Rate of change in capacity due to the main piping length

Rate of change in cooling capacity

| Main piping length(m) | | 7.5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|-------------------------------|--------------------|-----|------|------|------|------|------|------|------|------|------|
| Rate of change in capacity(%) | 5.1 kW | 100 | 99.6 | 98.8 | 98.0 | 97.2 | 96.4 | 95.6 | 94.8 | 94.0 | 93.2 |
| | 6.1 kW | 100 | 99.6 | 98.8 | 98.0 | 97.2 | 96.4 | 95.6 | 94.8 | 94.0 | 93.2 |
| | 7.0 kW | 100 | 99.6 | 98.8 | 98.0 | 97.2 | 96.4 | 95.6 | 94.8 | 94.0 | 93.2 |
| | 10kW,12.5kW,13.4kW | 100 | 99.7 | 98.6 | 97.3 | 95.8 | 94.4 | 93.1 | 91.8 | 90.4 | 89.1 |
| | 15.8 kW | 100 | 99.3 | 97.9 | 96.6 | 95.2 | 93.8 | 92.5 | 91.1 | 89.8 | 88.4 |

2) Calculation of actual system capacity

① Outdoor unit rated capacity

$$Q_{\text{odu(rated)}} \text{ [from specification table]}$$

② Outdoor unit capacity at T_i , T_o temperature.

$$Q_{\text{odu}(T_i, T_o)} \text{ [from capacity table]}$$

③ Outdoor unit capacity coefficient factor

$$F_{(T_i, T_o)} = Q_{\text{odu}(T_i, T_o)} / Q_{\text{odu(rated)}}$$

④ Piping correction factor [from capacity coefficient factor table]

$$F_{\text{main (length, elevation)}} \text{ for main piping length or elevation}$$

$$F_{\text{branch (length, elevation)}} \text{ for branch piping length or elevation}$$

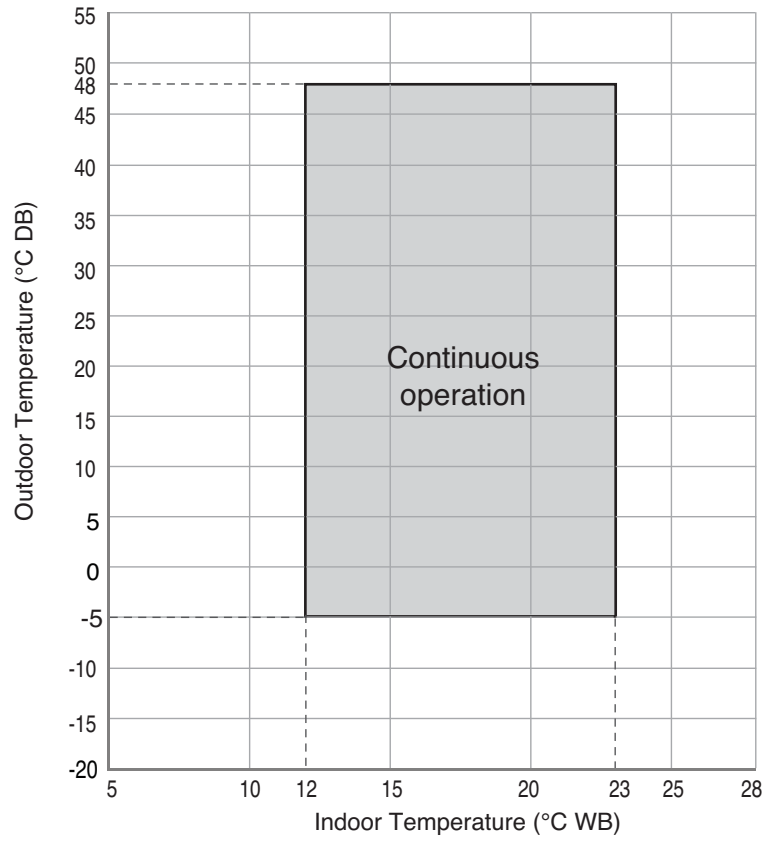
⑤ Individual indoor unit combinational capacity

$$Q_{\text{idu (combi)}} = Q_{\text{odu(rated)}} \times Q_{\text{idu(rated)}} / Q_{\text{idu(rated-total)}}$$

⑥ Individual indoor unit actual capacity

$$Q_{\text{idu (actual)}} = Q_{\text{odu(combi)}} \times F_{(T_i, T_o)} \times F_{\text{main (length, elevation)}} \times F_{\text{branch (length, elevation)}}$$

9. Operation range



10. Electric characteristics

| Unit | | | | Power | | Compressor | | OFM | |
|-----------|------------------|--------------------------|--------------------------|-------|-------|------------|-----|-------|-----|
| Model | Type | Voltage/Hz | Voltage range | MCA | MOP | MSC | RLA | kW | FLA |
| AUUQ18GH1 | 1 Phase inverter | 220-240 / 50 220 / 60 | Min. : 198 Max. : 264 | 12.45 | 21.45 | - | 9 | 0.043 | 1.2 |
| AUUQ21GH1 | | | | 12.45 | 21.45 | - | 9 | 0.043 | 1.2 |
| AUUQ24GH1 | | | | 16.20 | 28.20 | - | 12 | 0.084 | 1.2 |
| AUUQ36GH1 | | | | 19.00 | 33.00 | - | 14 | 0.137 | 1.5 |
| AUUQ42GH1 | | | | 24.10 | 42.10 | - | 18 | 0.171 | 1.6 |
| AUUQ48GH1 | | | | 24.10 | 42.10 | - | 18 | 0.171 | 1.6 |
| AUUQ54GH1 | | | | 24.10 | 42.10 | - | 18 | 0.171 | 1.6 |

Notes :

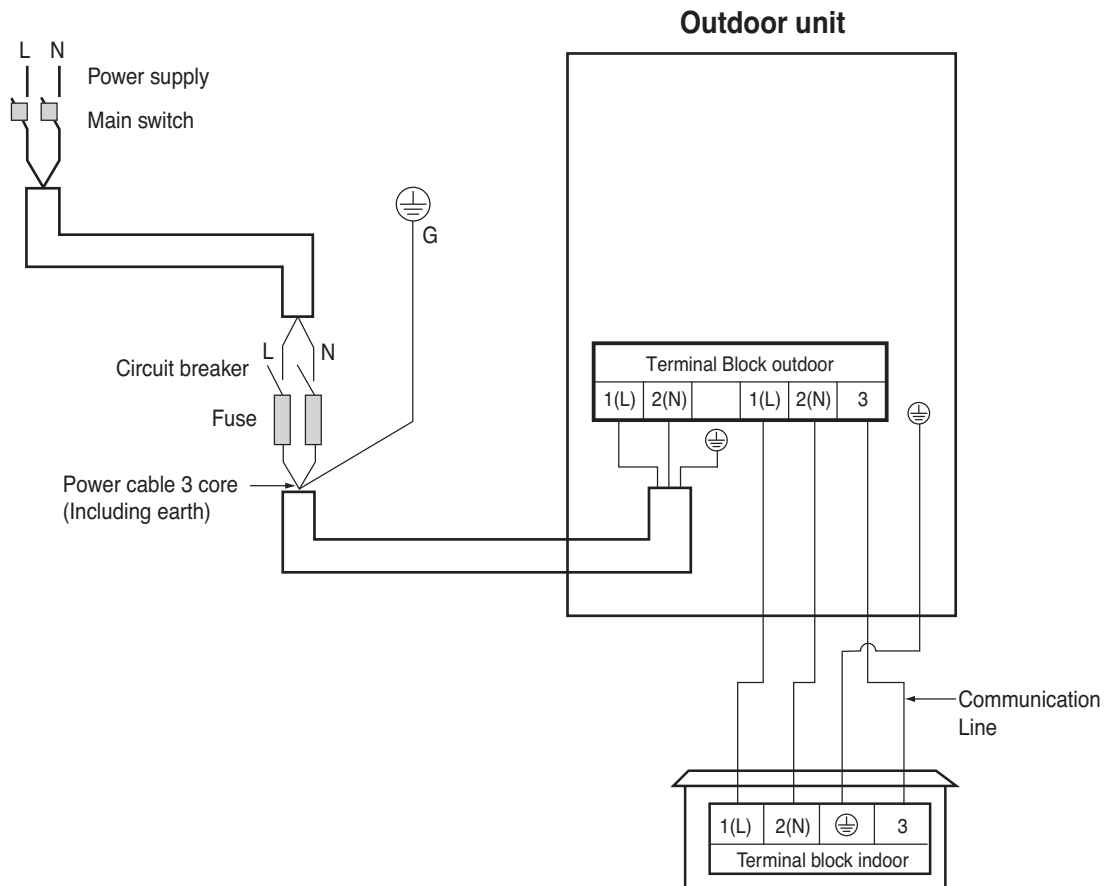
- Voltage range
Voltage supplied to the unit terminals should be within the minimum and maximum range
- Maximum allowable voltage unbalance between phase is 2 %
- MCA / MOP
 $MCA = (1.25 \times Load1) + Load2 + Load3$
 $MOP = (2.25 \times Load1) + Load2 + Load3$
 - Load1 : Rated running current of largest motor (compressor or other motor)
 - Load2 : sum of current for all other motors
 - Load3 : any other load rated 1.0A or more
- Select wire spec. based on the MCA
- Recommended circuit breaker is ELCB (Earth Leakage circuit breaker)
- MSC & RLA are measured as the compressor only test condition.
- MSC values
- RLA is measured during each individual compressor test condition.
- OFM is measured as the outdoor unit test condition

| |
|---|
| <p>MCA : Minimum Circuit Amperes (A) MOP : Maximum rating over current protective device MSC : Maximum Starting Current RLA : Rated Load Amperes (A) OFM : Outdoor Fan Motor kW : Fan Motor rated output (kW) FLA : Full Load Amperes (A)</p> |
|---|

11. Field wiring diagrams

1. All wiring must comply with LOCAL REGULATIONS.
2. Select a power source that is capable of supplying the current as required by the air conditioner.
3. Feed the power source to the unit via a distribution switch board designed for this purpose.
4. The terminal screws inside the control box may be loose due to vibration during transport.
Check the screws for loose connection.
(Running the air conditioner with loose connection can overload and damage electrical components.)
5. Always ground the air conditioner with a grounding wire and connector to meet the LOCAL REGULATION.

Models : AUUQ18GH1 / AUUQ21GH1 / AUUQ24GH1

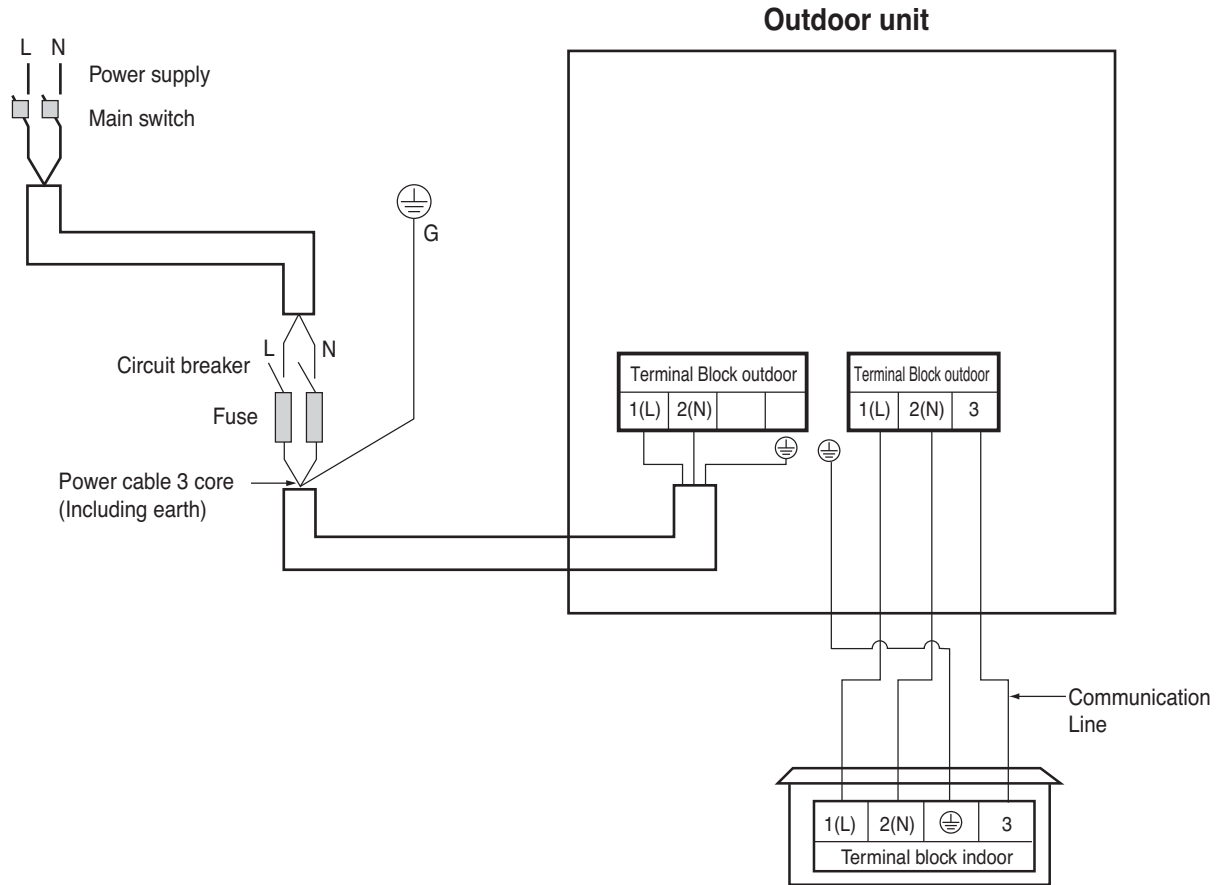


Notes:

1. All wirings, components and materials to be procured on the site should be according to the standard
2. Use copper conductor only
3. Install circuit breaker for safety
4. Unit should be grounded in compliance with the applicable local and national codes
5. Wiring cable size must comply with the applicable local and national code.

11. Field wiring diagrams

Models : AUUQ36GH1 / AUUQ42GH1 / AUUQ48GH1 / AUUQ54GH1

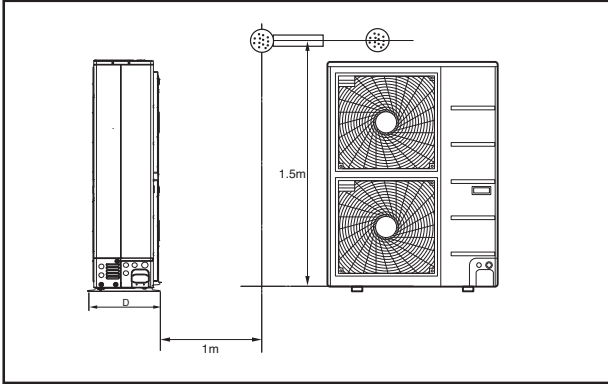


Notes:

1. All wirings, components and materials to be procured on the site should be according to the standard
2. Use copper conductor only
3. Install circuit breaker for safety
4. Unit should be grounded in compliance with the applicable local and national codes
5. Wiring cable size must comply with the applicable local and national code.

12. Sound levels

Overall



Notes :

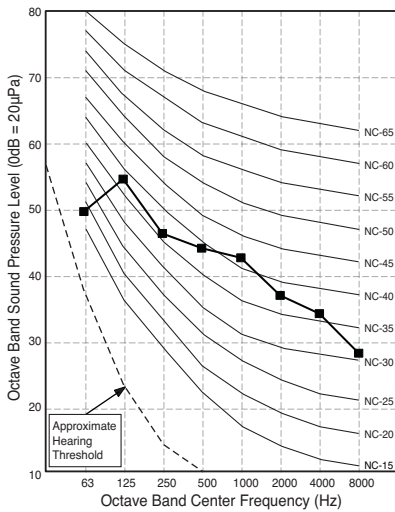
- Sound measured at 1m away from the center of the unit.
- Data is valid at free field condition.
- Data is valid at nominal operation condition.
- Reference acoustic pressure 0dB = 20µPa
- Sound level will vary depending on a range of factors such as the construction(acoustic absorption coefficient)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

| Model | Sound Level (dB(A)) |
|-----------|---------------------|
| AUUQ18GH1 | 47 |
| AUUQ21GH1 | 47 |
| AUUQ24GH1 | 48 |
| AUUQ36GH1 | 48 |
| AUUQ42GH1 | 52 |
| AUUQ48GH1 | 52 |
| AUUQ54GH1 | 55 |

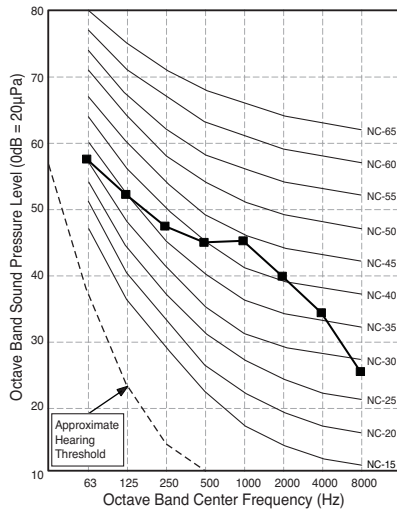
Part 2 Product data_ Outdoor unit

Sound pressure level

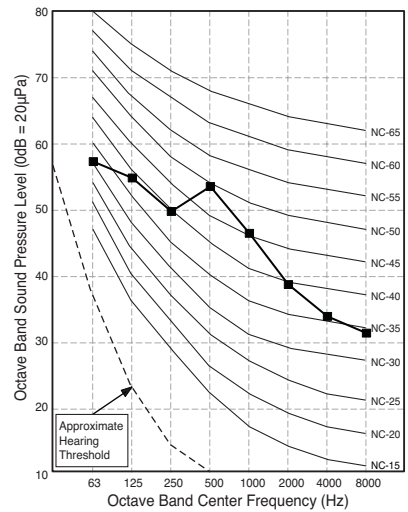
**AUUQ18GH1
AUUQ21GH1**



AUUQ24GH1

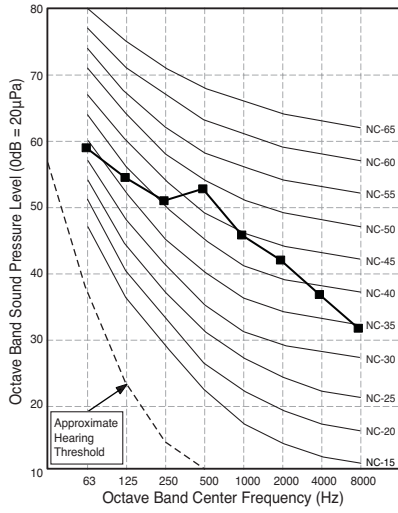


AUUQ36GH1

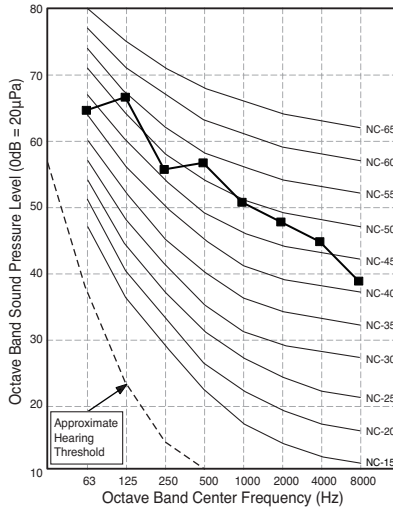


12. Sound levels

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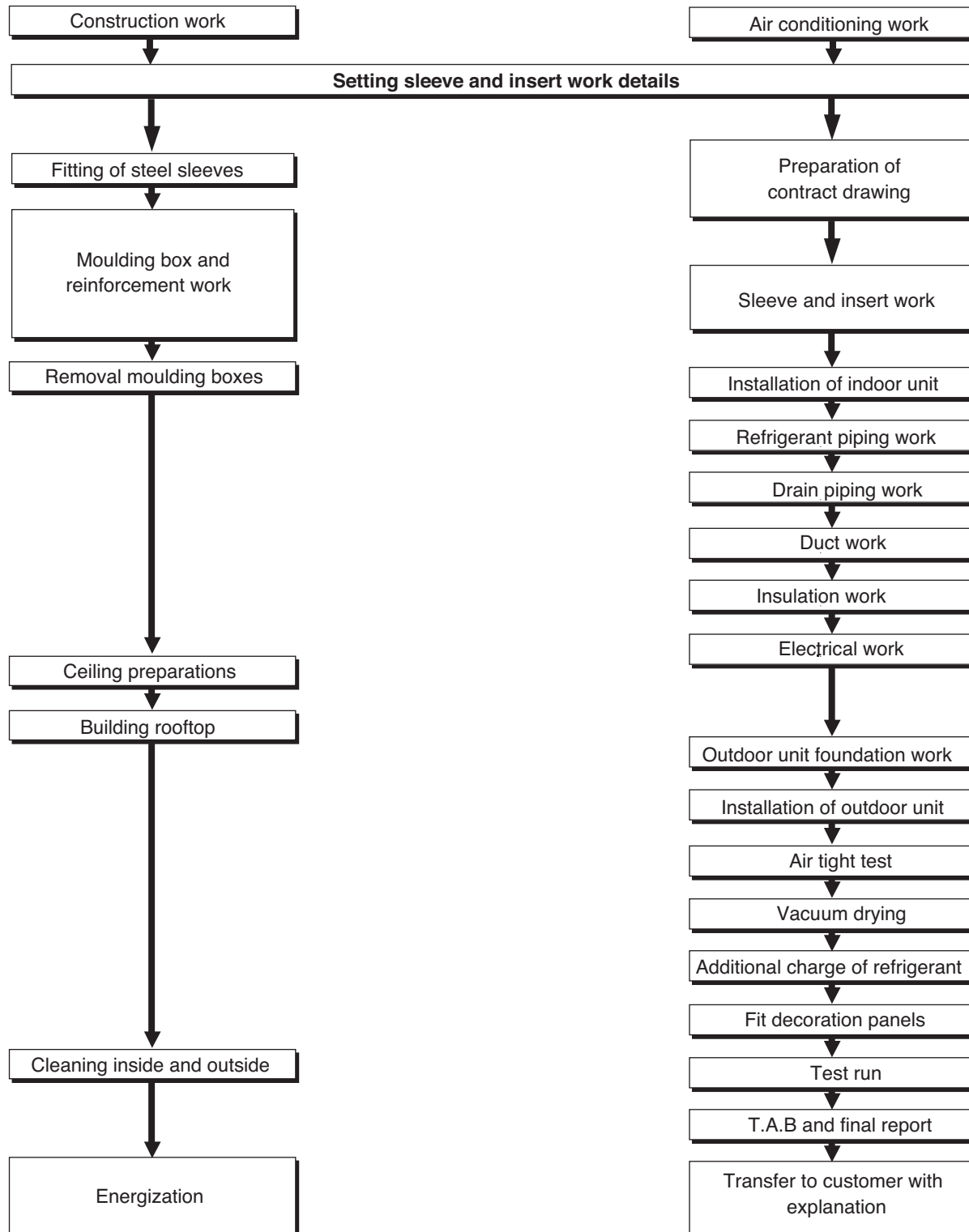
Part 3 Design and installation

- 1. General installation guideline**
- 2. Guideline for each installation process**
- 3. Installation of indoor unit**
 - 3.2 Ceiling cassette 4-way**
 - 3.3 Ceiling suspended**
 - 3.4 Ceiling concealed duct - High static pressure**
 - 3.5 Ceiling concealed duct – Low static pressure**
- 4. 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

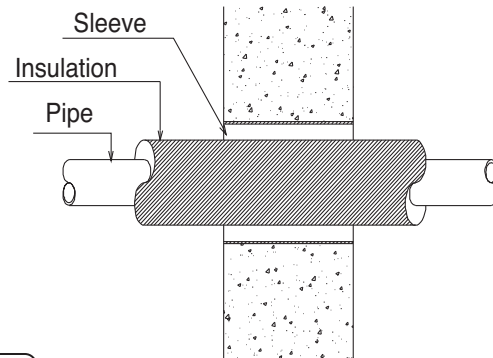
1. Sleeve work should be performed to make a space for passing pipe and wire through the wall or ground under construction.

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

2.1.3 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

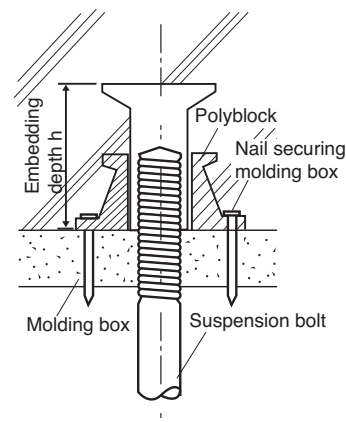
Cable conduit should be considered under the local regulation & laws.

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

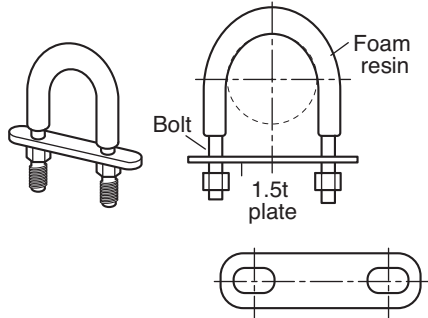
Example : Through holes in a reinforced concrete beam



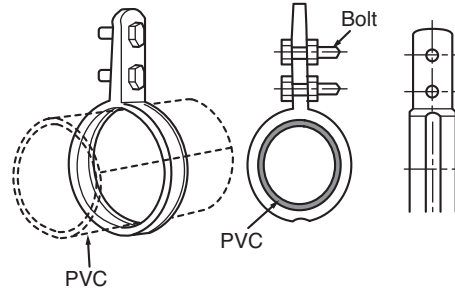
2. Guideline for each installation process

2. Support work.

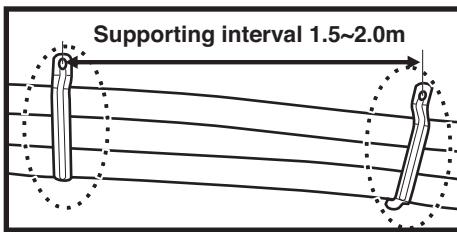
■ Insulated U-bolt type supporting



■ Insulated O-ring band type supporting



■ Saddle supporting

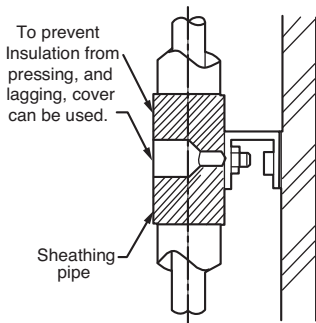


⚠ CAUTION

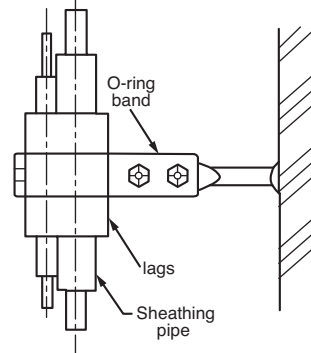
During saddle supporting work, insulation should not be pressed by saddle as this can lead to tearing of insulation and thus falling of condensed water during product operation.

a) Supporting with insulated pipe

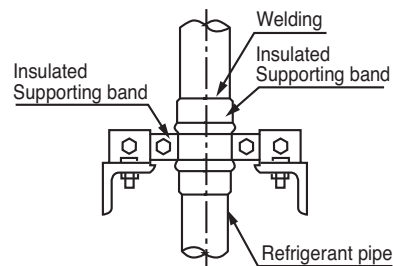
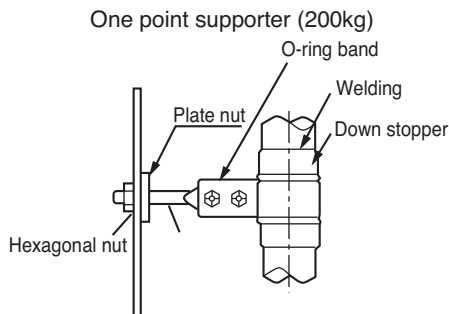
① U-bolt supporting



② O-ring band supporting



B) Down stopper supporting



2. Guideline for each installation process

2.2 Refrigerant piping work

2.2.1 Flaring work

NOTE Choice of material for refrigerant piping
Copper pipe selection

- 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/cm²)
- If not, we recommend to use with phosphorus deoxidized copper type
- Generally used copper pipe specifications as follows;

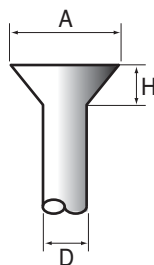
| Size(ø)mm | Torque kg·f.m | Thickness | |
|-----------|------------------|-----------|-------|
| | | R22 | R410A |
| 6.35 | 1.80~2.50 | 0.7 | 0.8 |
| 9.52 | 3.40~4.20 | 0.8 | 0.8 |
| 12.70 | 5.50~6.60 | 0.8 | 0.8 |
| 15.88 | 6.30~8.20 | 1.0 | 1.0 |
| 19.05 | 9.90~12.1 | 1.0 | 1.0 |

* 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.

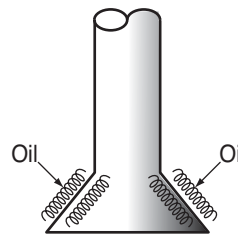
CAUTION

Flare connection and procedure

- Stiffened pipe must always be annealed at least once prior to the flaring work.
- 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.)



- Set the flaring tool to make sure the flare size remains within the prescribed limits.
- Coat the inner and outer surface of the flare with refrigerant 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 (mm) | Required flare height H (mm) |
|-----------------------------|-------|-----------------------------------|---------------------------------|
| (in) | (mm) | | |
| 1/4 | 6.35 | 8.6~9.0 | 1.1~1.3 |
| 3/8 | 9.52 | 12.6~13.0 | 1.5~1.7 |
| 1/2 | 12.7 | 15.8~16.2 | 1.6~1.8 |
| 5/8 | 15.88 | 19.0~19.4 | 1.6~1.8 |
| 3/4 | 19.05 | 22.9~23.3 | 1.9~2.1 |

CAUTION

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

2. Guideline for each installation process

2.2.2 Pipe connection and flaring works

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

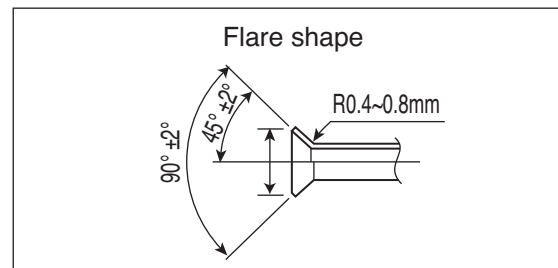
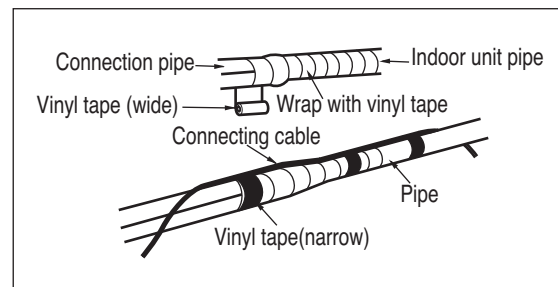
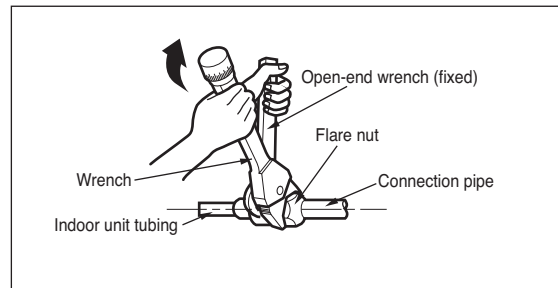
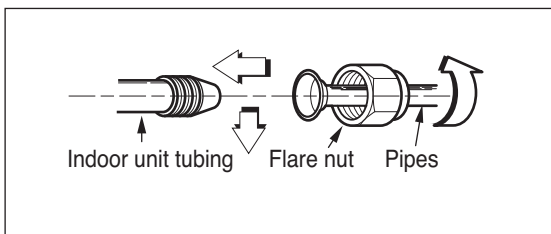
- ① Align the center of the piping and sufficiently tighten the flare nut by hand.
- ② Tighten the flare nut with a wrench. Wrap the insulation material around the connecting portion.

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.



2.2.3. SVC valve fitting

Cautions on handling SVC valve

- The figure below shows the name of each part required in handling SVC valve. At the time of shipment, SVC valve is closed.
- If only a torque wrench is used to loosen or tighten the flare nut, the side plate may be distorted. Make sure to fix SVC valve with a spanner, then loosen or tighten the flare nut with a torque wrench.
- When it is expected that the operating pressure will be low (for example, when cooling will be performed while the outside air temperature is low), seal sufficiently the flare nut in SVC valve on the gas line with silicon sealant to prevent freezing.

[Valve operation method]

Prepare hexagon wrenches (whose size is 4 mm).

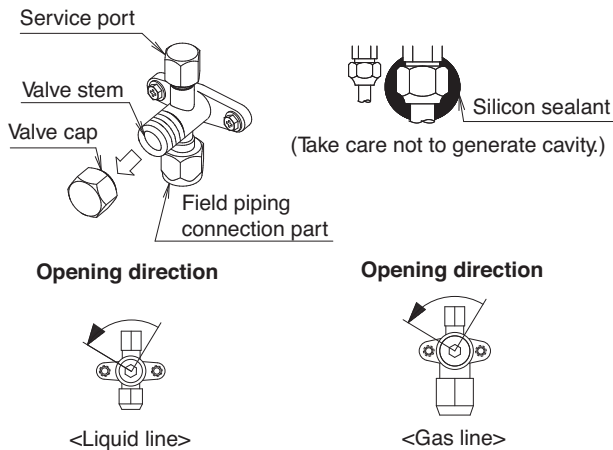
How to open the stop valve

1. Insert a hexagon wrench into the valve stem, and turn the valve stem counterclockwise.
2. When the valve stem cannot be turned any more, stop turning. Now, the valve is open.

2. Guideline for each installation process

How to close the stop valve

1. Insert a hexagon wrench into the valve stem, and turn the valve stem clockwise.
2. When the valve stem cannot be turned any more, stop turning. Now, the valve is closed.

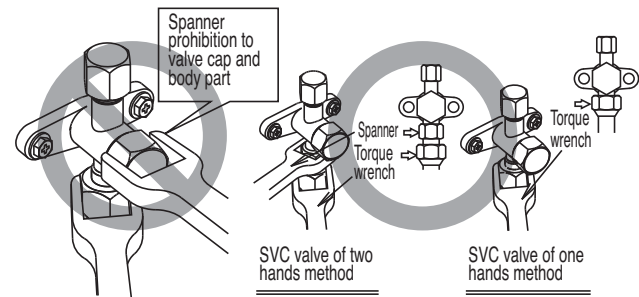


Cautions on handling the service port

- Use charge hose equipped with push in the work.
- After the work, make sure to tighten the valve cap securely.

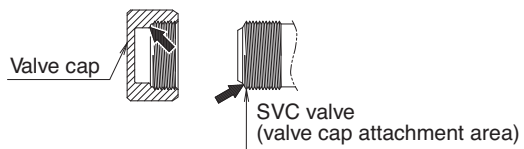
Do not apply any force to the valve cap

Using a spanner on the valve cap and the valve body could cause a refrigerant leak.



Cautions on handling the valve cap

- The valve is sealed in the arrow area. Take care not to damage the arrow area.



- After handling the valve, make sure to tighten the valve cap securely.

2. Guideline for each installation process

2.2.4 Brazing work

CAUTION

Brazing of refrigerant piping :

The following precaution should be taken.

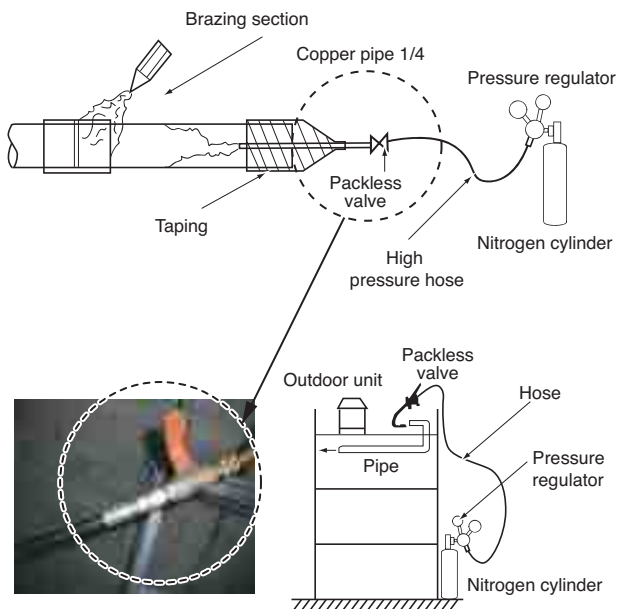
1. Do not use flux when brazing copper to copper refrigerant piping.

(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.)

1. Nitrogen flushing method (During brazing)



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.

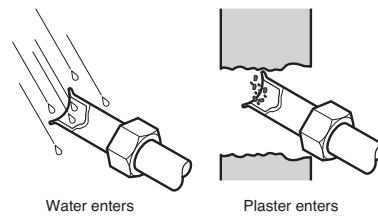
These oxidation bubbles are then carried along inside the pipes to cause damage to various members of the system such as valve or compressors and the system ceases to function properly.

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.

CAUTION



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

CAUTION

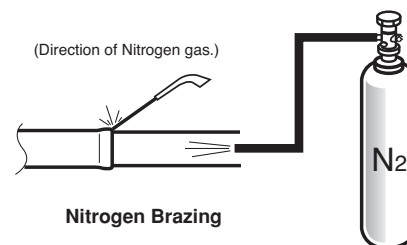
Pipe bending

Annealed copper pipe with small diameter ($\text{Ø}6.35$ or $\text{Ø}9.52$) 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 ($\text{Ø}15.88$ 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 $0.05\sim 0.1\text{kg/cm}^2\text{G}$)
- 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).

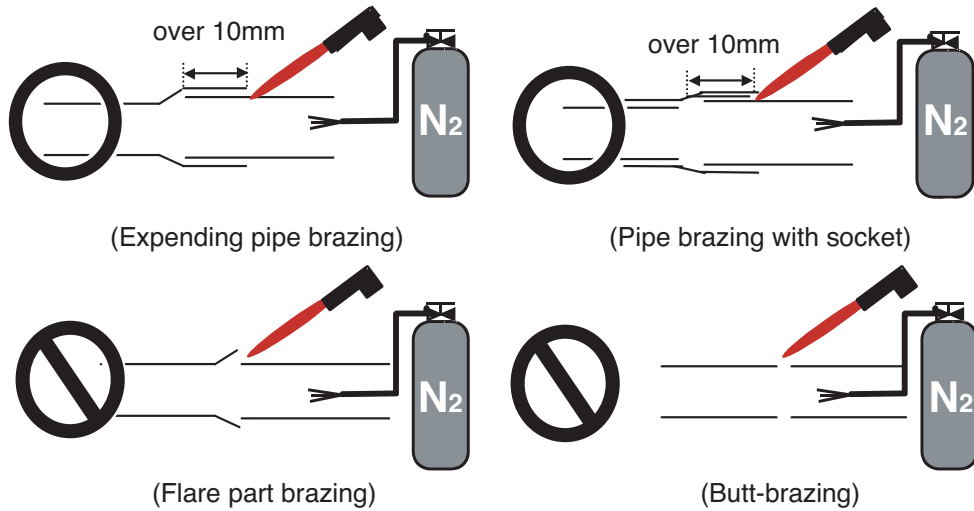


Table 1: Correlation of nozzle tip and size of refrigeration piping

(Unit : mm)

| | Nozzle tip No. | Brazing filler diameter Ø | | | | | | | | | | | |
|-------------|----------------|---------------------------|-------|-------|-------|-------|-------|-------|-----|-----|-----|--|--|
| | | # 200 | # 225 | # 250 | # 315 | # 400 | # 450 | # 500 | 1.6 | 2.4 | 3.2 | | |
| Piping size | Ø6.35 | | | | | | | | | | | | |
| | Ø9.52 | | | | | | | | | | | | |
| | Ø12.7 | | | | | | | | | | | | |
| | Ø15.9 | | | | | | | | | | | | |
| | Ø19.1 | | | | | | | | | | | | |
| | Ø22.2 | | | | | | | | | | | | |
| | Ø25.4 | | | | | | | | | | | | |
| | Ø31.8 | | | | | | | | | | | | |
| | Ø38.1 | | | | | | | | | | | | |
| | Ø44.5 | | | | | | | | | | | | |

CAUTION

1. Generally expending pipe brazing is performed with pan-coil type copper pipe, and socket blazing 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

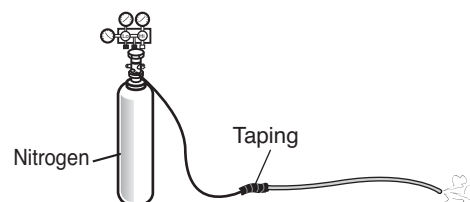
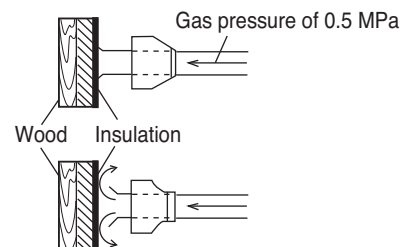
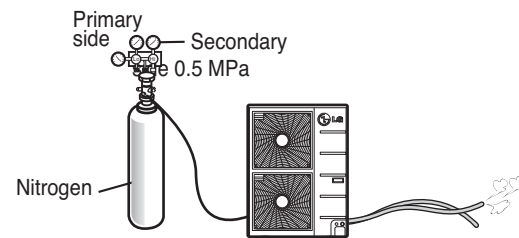
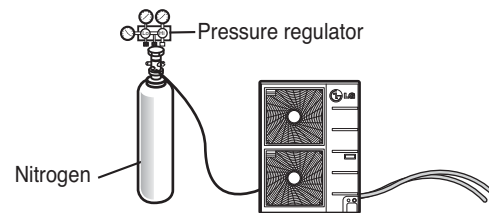
Flushing is a method of cleaning extraneous matter out of pipes using pressurized gas.

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 BD 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 BD 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 ³ / min (lpm) |
|----------|-------------------|--|------------|--------------------------------|---|
| Single A | Cassette 4 way | Ø 32 / 25 mm | Standard | 800 | 400 (0.4) |
| | Ceiling and floor | Ø 21.5 / 16 mm | - | - | - |
| | Duct | Ø 25.4 / 20.4 mm | Accessory | 700 | 400 (0.4) |

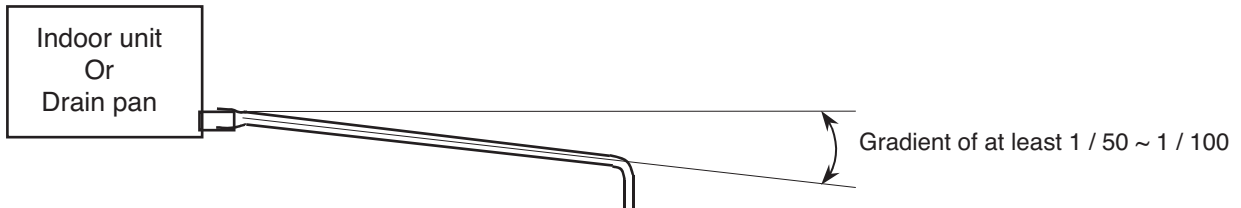
[Reference Table] Drain amount per capacity

| 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.

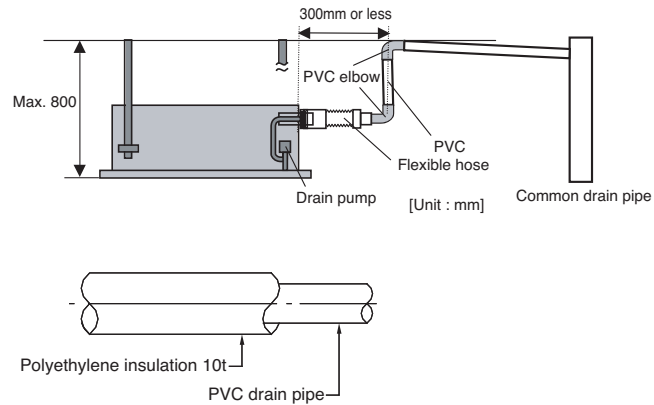
Clamp hanger supporting work is for hanging refrigerant pipe, drain pipe and cables.

It can prevent vibrating noise from passing through pipe.

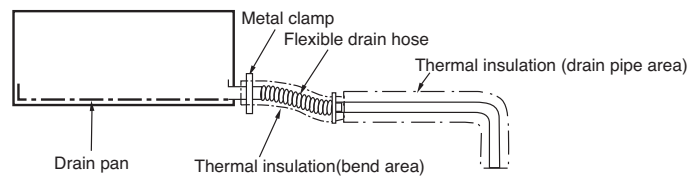
We recommend set anchor bolt for supporting indoor unit and strong anchor bolt for supporting pipes and cables

2. Guideline for each installation process

4. Models with drain pump:



5. Models without drain pump



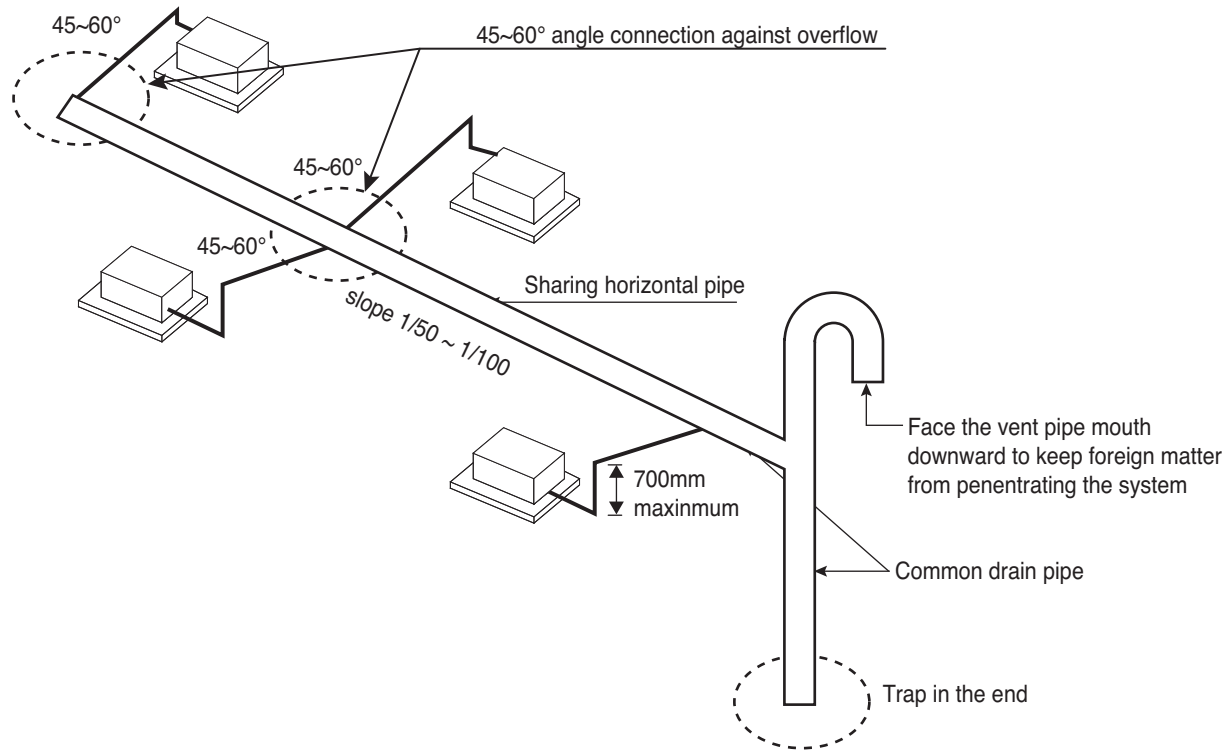
2. Guideline for each installation process

2.3.2 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 pipe 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

2.3.3 Caution for drain piping work

Notice on drain working

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



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

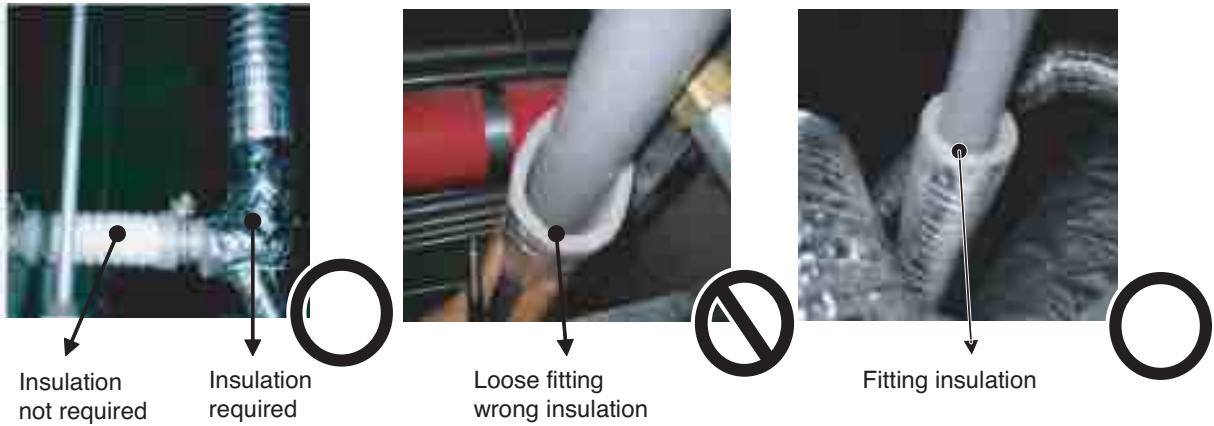


<Reverse slope>

2. Guideline for each installation process

Drain pipe insulation

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



- Do not use the loose fitting insulation.

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.

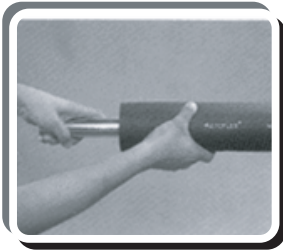
2. Guideline for each installation process

2.4 Insulation work

2.4.1 Insulation



1) Operational steps



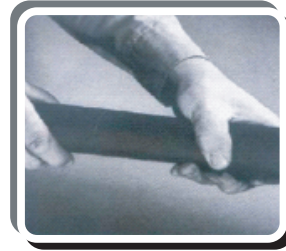
① EPDM length should be more longer than pipe length. Do not extend EPDM by force.



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.

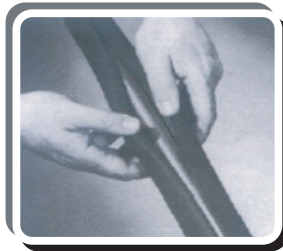


④ Dry it until it becomes thick, sticky and does not get detached.

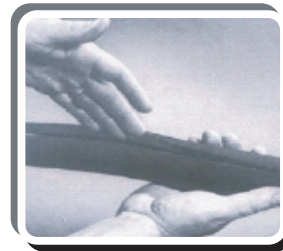
2) Bending vertical side of insulation



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.

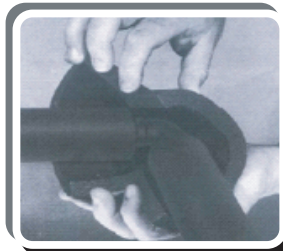


④ Dry it until it becomes thick and sticky.

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

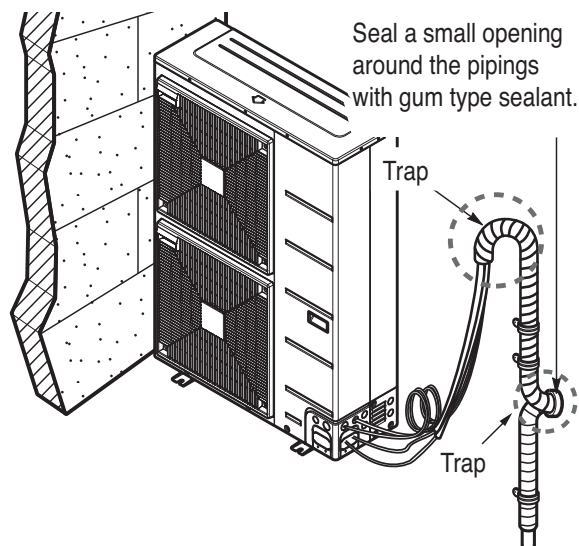
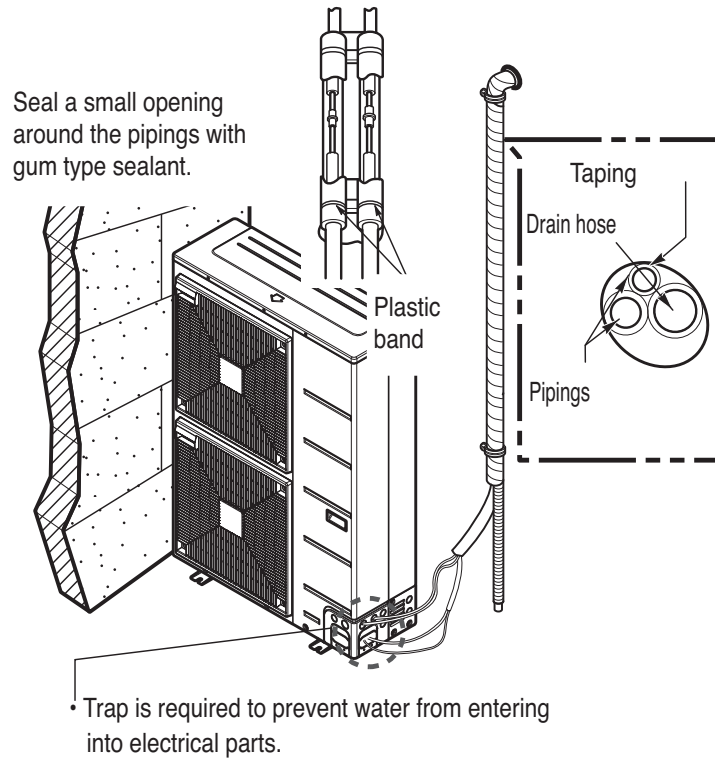
2.4.2 Forming the piping

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.

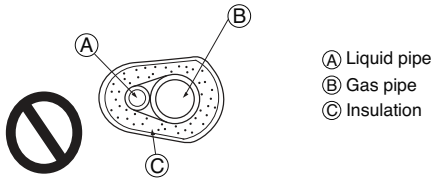
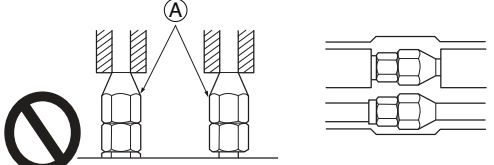
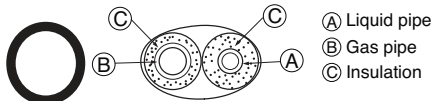
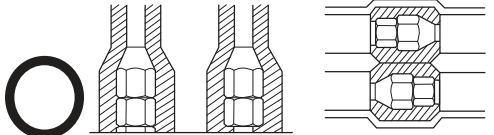


2. Guideline for each installation process

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

- Thickness decision of insulation tube
 - Insulation material: EPDM or polyethylene foam
 - Thermal conductivity 0.035 kcal~0.040kcal/mh°C
 - Heat resistance=85°C(Cooling only) or more
100°C(Heat pump) or over
- The thickness of the thermal insulation material must be determined in the light of the pipe sizes.

| Pipe size | Thickness of insulation material |
|----------------|----------------------------------|
| 6.35 ~ 25.4 mm | 10mm or more |
| 25.4 ~ | 15mm |

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

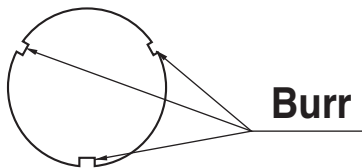
2.5 Electrical work

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 use of 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.
- 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

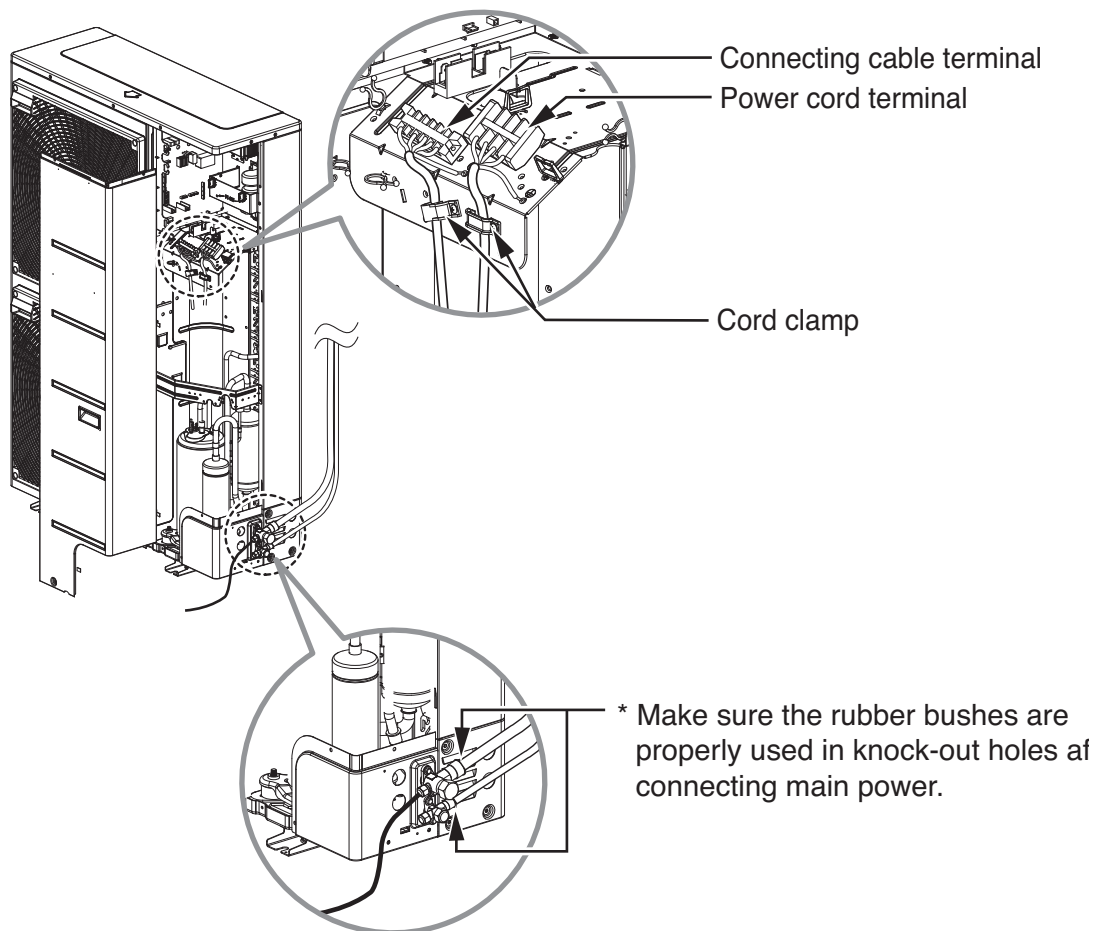
2.5.2 Control wiring / power supply

- 1) All wiring must comply with LOCAL REGULATIONS.
- 2) Select a power source that is capable of supplying the current as required by the air conditioner.
- 3) Feed the power source to the unit via a distribution switch board designed for this purpose.
- 4) The terminal screws inside the control box may be loose due to vibration during transport.
Check the screws for loose connection.
(Running the air conditioner with loose connection can overload and damage electrical components.)
- 5) Always ground the air conditioner with a grounding wire and connector to meet the LOCAL REGULATION.

Connecting the cable to Outdoor Unit

- Remove the side panel for wiring connection.
- Use the cord clamp to fix the cord.
- Earthing work
 - Connect the cable of diameter more to the earthing terminal provided in the control box and do earthing.

* Please check !!



CAUTION

- The circuit diagram is not subject to change without notice.
- Be sure to connect wires according to the wiring diagram.
- Connect the wires firmly, so that not to be pulled out easily.
- Connect the wires according to color codes by referring the wiring diagram.

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.

Checking method

1) Preparation

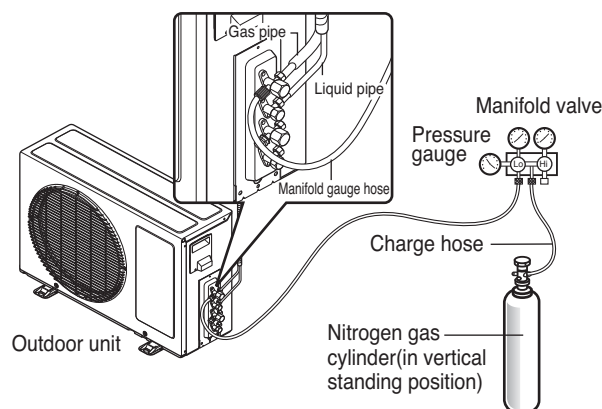
- Check that each pipe (both liquid and gas side pipes) between the indoor and outdoor units have been properly connected and all wiring for the test run has been completed. Remove the service valve caps from both the gas and the liquid side on the outdoor unit. Check that both the liquid and the gas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

2.6.2 Essential points of testing

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

- a) 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 1: increase pressure to 1.5MPa
for 3 minutes or more

Step 3: increase pressure to 3.8MPa
for approximate 24 hours

Indicates existence
of major leaks

Indicates existence
of major leaks

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.

- b) 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

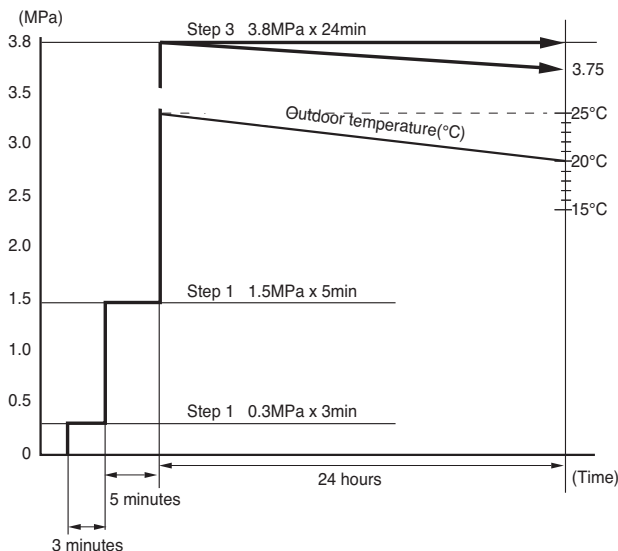
2. Guideline for each installation process

Example:

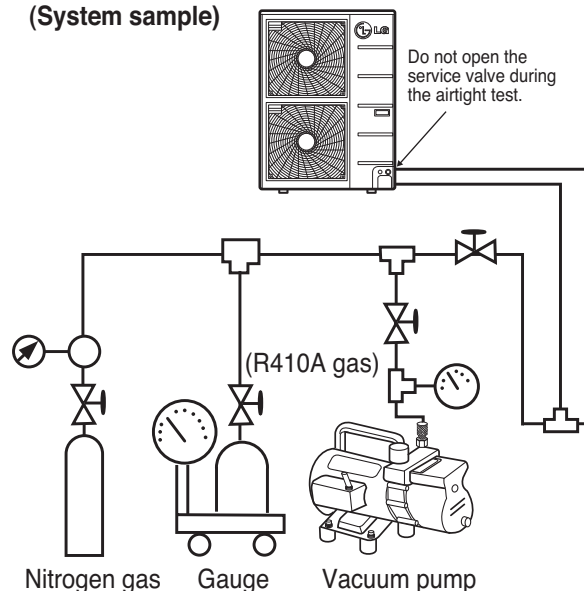
During of pressurizing: 3.8MPa 25°C

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.



(System sample)



Important points

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

- 1) Indoor side
- 2) Indoor side + vertical pipes
- 3) Indoor side + vertical pipes + outdoor side

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 checkBubbles will reveal the presence of a leakage.

[Check 2]

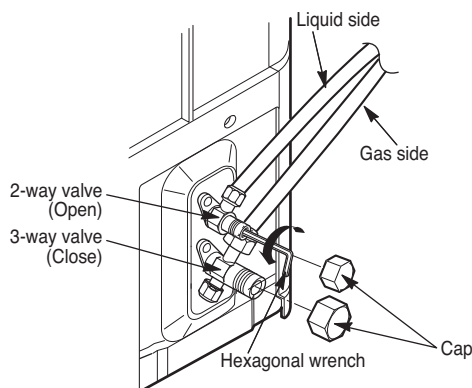
(When searching for a minor leak or when there has been a fall in pressure while the system has been fully pressurized but the source of the leak cannot be traced.)

1. Release the nitrogen until the pressure reaches 0.3MPa.
2. Increase pressure to 1.5MPa using gaseous refrigerant(R410).
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.)

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 counter-clockwise 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 works

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 mmHg | Pressure | |
|----------------------------|-----------------------------|----------|------|
| | | 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 |

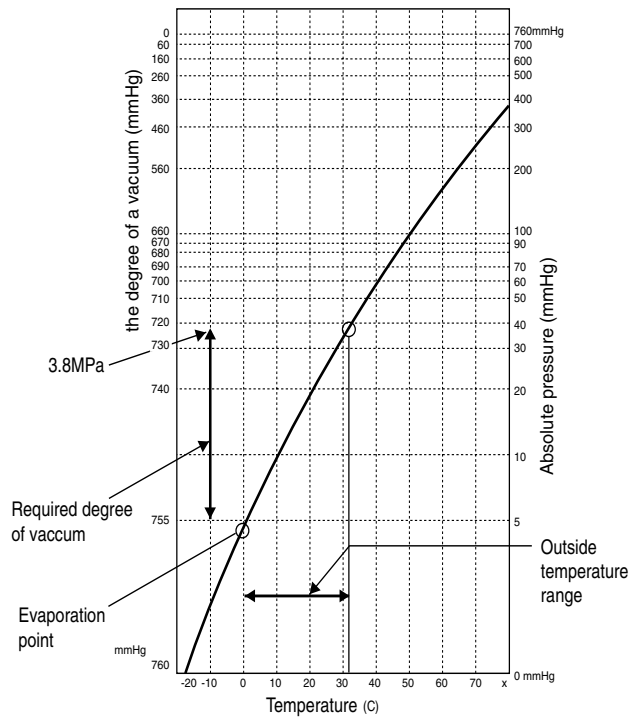
The evacuation of air conditioner piping provides the following effects.

1. Vacuum drying
2. 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



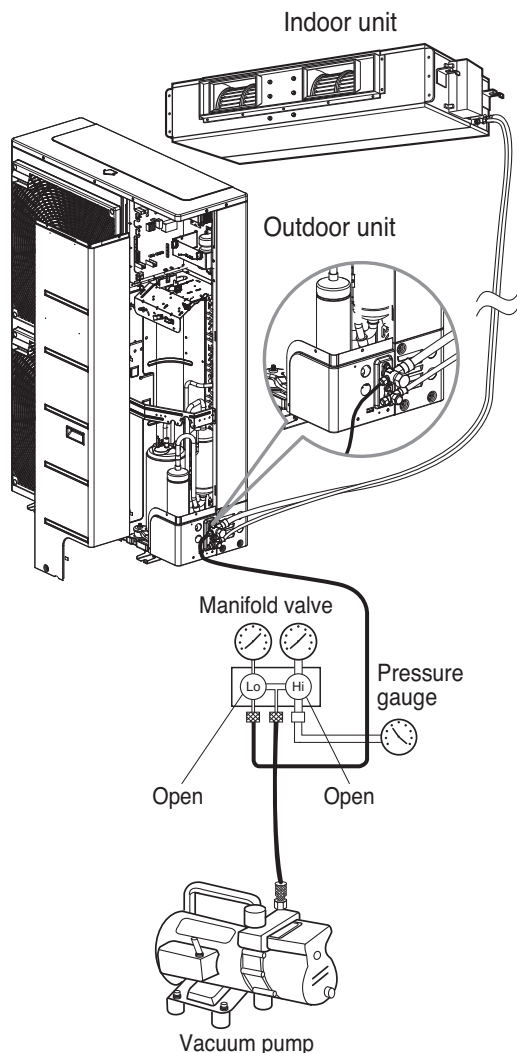
2.7.2 Evacuation

1. Connect the charge hose end described in the preceding steps to the vacuum pump to evacuate the tubing and indoor unit. Confirm the "Lo and Hi" 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.

| Required time for evacuation when 30 gal/h vacuum pump is used | |
|--|---|
| If tubing length is less than 10 m(33 ft) | If tubing length is longer than 10 m(33 ft) |
| 30 min. or more | 60 min. or more |
| 0.07 kPa or less | |

2. When the desired vacuum is reached, close the "Lo and Hi" knob of the manifold valve and stop the vacuum pump.

2. Guideline for each installation process



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.

2.7.3 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 m³/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

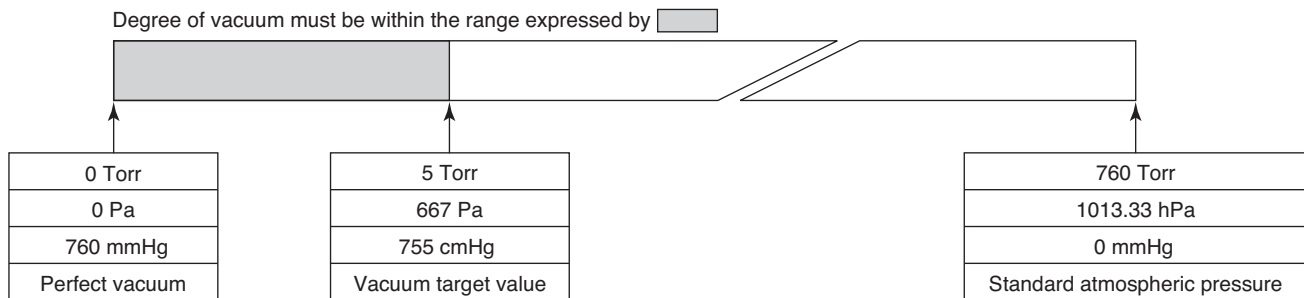
Ultimate vacuum varies largely according to use of the vacuum pump. Vacuum pumps used for vacuum forming cannot be used for vacuum drying. (A vacuum pump with a high degree of vacuum is required.)

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 ² | 0 | -1.033 |
| Absolute Pressure | kg/cm ² abs | 1.033 | 0 |
| Torr | Torr | 760 | 0 |
| Micron | Micron | 760000 | 0 |
| mmHg | mmHg | 0 | 760 |
| Pa | Pa | 1013.33 | 0 |

2. Guideline for each installation process

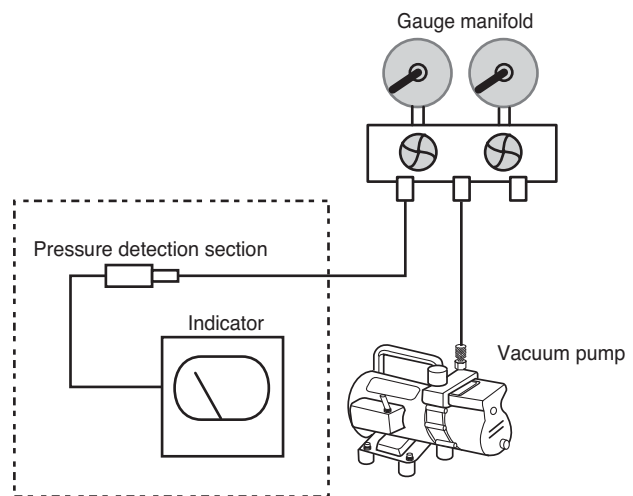


2) Vacuum pump maintenance

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.



(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

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.

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.

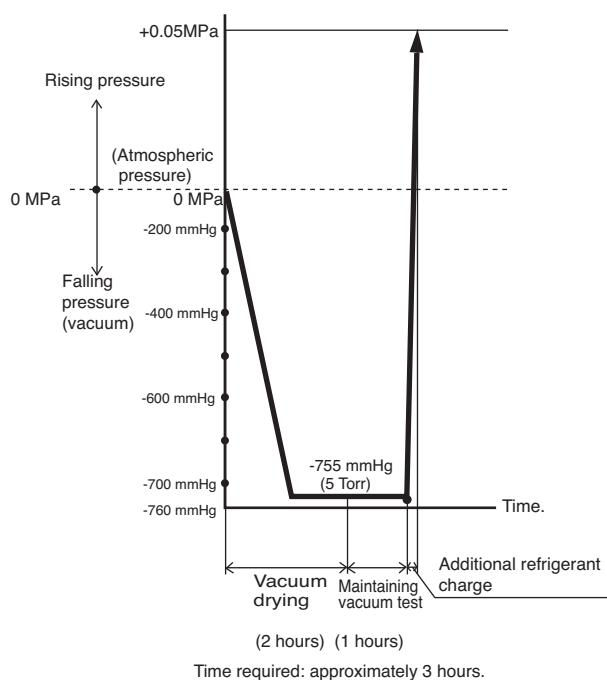
Connect the charging cylinder to the liquid pipe service port and charge with the required amount of refrigerant.

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

Refrigerant charging

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.

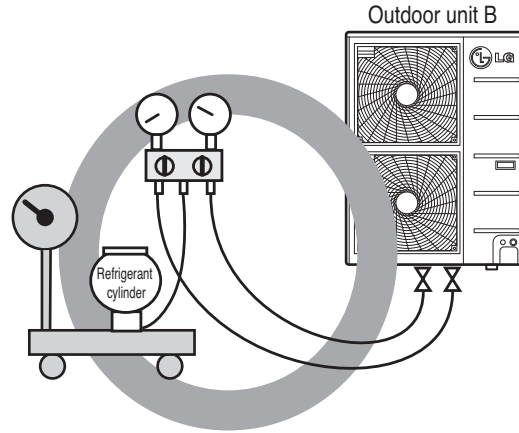
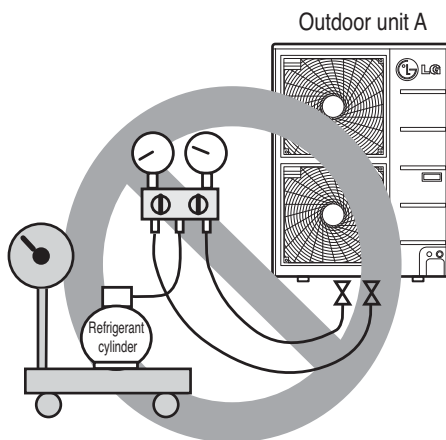
R-410A is a non-azeotrope refrigerants. Therefore, these refrigerants must be charged in the Liquid state.

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

NOTE

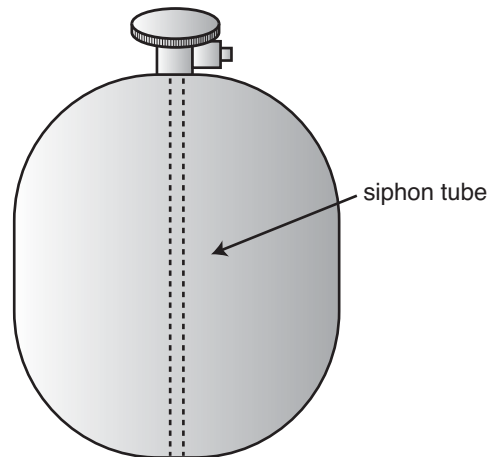
Make sure that the refrigerant (liquid) is taken out from the bottom part of the refrigerant cylinder.

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)

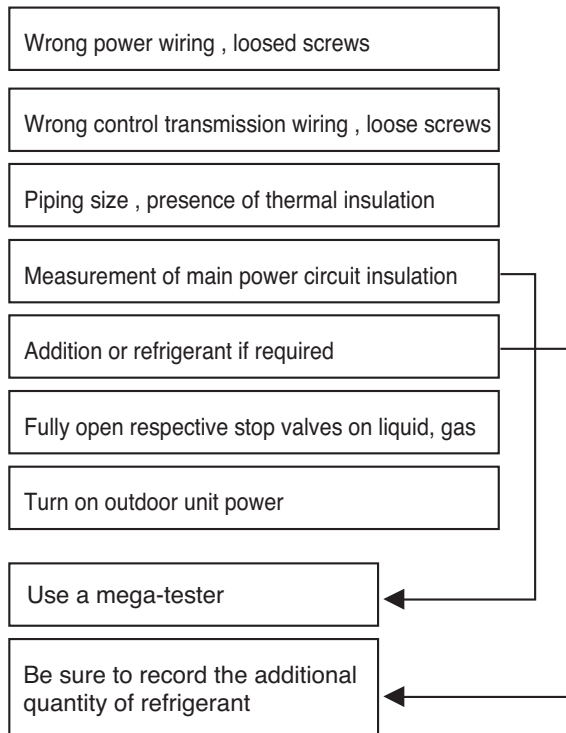


2. Guideline for each installation process

2.9 Trial test run operation

2.9.1 Test run procedure

Check the following before turning power on

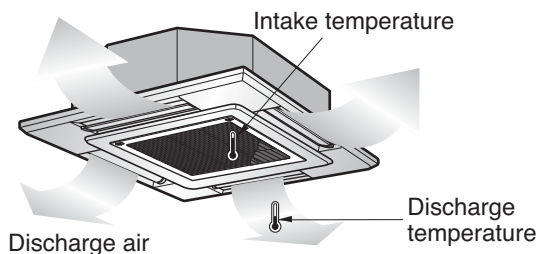


2.9.2 Evaluation performance

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 ² G |

NOTE

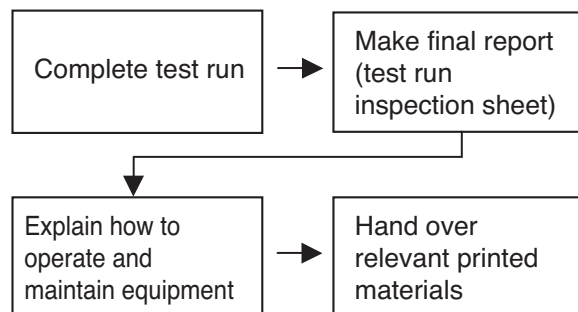
: If the actual pressure is higher than shown, the system is most likely overcharged so extra refrigerant should be removed.

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.

2.9.3 Transfer to customer with explanation

1. Operational step



- a) The measurements taken during the test run should be recorded and kept on a test run inspection sheet.
- b) 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.
- c) Explain to the customer how to operate and maintain the equipment and let him try it.
- d) 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.
- e) Service contact address.

List of equipment which has been delivered

Installation drawing

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

1 set of operation manuals


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


Equipment guarantees.

3. Installation of indoor 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 thoroughly.

 **WARNING**: This symbol indicates the possibility of death or serious injury.

 **CAUTION**: 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.**

 **WARNING**

Do not use a defective or underrated circuit breaker.

- There is risk of fire or electric shock.

Always use this appliance on a dedicated circuit 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 field wiring diagram. Do not connect the ground wire to gas or water pipes lighting 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.

Do not modify or extend the power cable. 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 installation foundation. Be sure that the installation area does not deteriorate with age.

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

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 unit 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.

Be sure to use only those parts which are listed in the service 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.

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.

Do not use the product in a tightly closed space for a long time. Perform ventilation regularly.

- Oxygen deficiency could occur and hence harm your health.

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

- There is risk of electric shock or fire.

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

- Otherwise the unit may fall and cause severe injury.

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.

3. Installation of indoor unit

Ventilate the product room from time to time when operating it together with a stove, or heating element etc.

- Oxygen deficiency can occur and hence harm your health.

Turn the main power when cleaning or repairing the product.

- There is risk of electric shock.

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

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

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.

Install the drain hose to ensure that water is drained away properly.

- A bad connection may cause water leakage.

Keep level even when installing the product.

- To avoid vibration or noise.

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

- Low pressure levels may cause failure of product.

Do not block the inlet or outlet of air flow.

- It may cause product failure.

Use a soft cloth to clean. Do not use harsh detergents, solvents or splashing water etc .

- There is risk of fire, electric shock, or damage to the plastic parts of the product.

Do not step on or put anything on the product. (outdoor units)

- 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.

Replace the all batteries in the remote control with new ones of the same type. Do not mix old and new batteries or different types of batteries.

- There is risk of fire or explosion.

If the liquid from the batteries gets onto your skin or clothes, wash it well with clean water. Do not use the remote if the batteries have leaked.

- The chemicals in batteries could cause burns or other health hazards.

Do not use the product for special purposes, such as preserving foods, works of art, etc. It is a consumer air conditioner, not a precision refrigeration system.

- There is risk of damage or loss of property.

Do not touch the metal parts of the product when removing the air filter.

- There is risk of personal 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 turn off the power immediately after stopping the operation.

- Always wait for 5 minutes before turning off the power otherwise water leakage and troubles can occur.

Do not let the air conditioner run for a long time when the humidity is very high and a door or a window is left open.

- Moisture may condense and wet or damage furniture.

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

- This could harm to your health.

Do not drink the water drained from the product.

- It is not sanitary and could cause serious health issues.

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

- Be careful and avoid personal injury.

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

Do not recharge or disassemble the batteries. Do not dispose off batteries in fire.

- They may burn or explode.

3. Installation of indoor 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 owner's manual.

1. 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.

3.1.2 Selecting installation site for indoor units

1. 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 and 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 example 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.
 - 14) The indoor artcool, artcool mirror, wallmount unit may not be directly installed on the wall. Use the attached installation plate before installing the unit.
 - 15) Obey the local and national regulations and limits regarding airconditioner installation.

3. Installation of indoor unit

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

1. Items to be checked after completion of installation 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 or heating. | |
| 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 during electric leakage. | |
| Is wiring size correct according to specifications? | The unit may malfunction or the components burn out. | |
| Is there something blocking the air outlet or inlet of either the indoor or outdoor units? | It may result in insufficient cooling or heating. | |
| Are refrigerant piping length and additional refrigerant charge noted down? | The refrigerant charge in the system is not clear. | |

3.1.3 Before installation

1. 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.

- 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.
- When using the wireless remote controller, refer to the installation manual attached to the wireless remote controller.

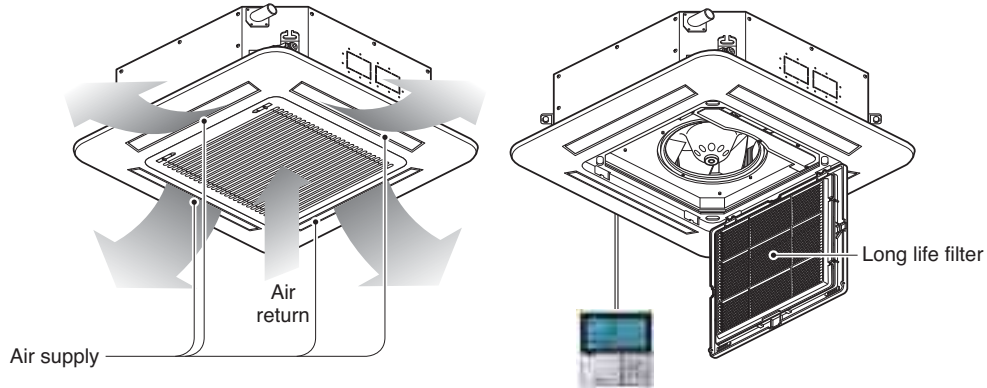
NOTE

- **Be sure to read this manual before installing the indoor unit.**
- 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 indoor unit

3.2 Ceiling cassette 4-way

- Please read the instruction sheets completely before installing the product.
- When the power cord is damaged, replacement work shall be performed by authorized personnel only.
- Installation work must be performed in accordance with the national wiring standards by authorized personnel only.



3.2.1 Accessories

Check whether the following accessories are included with your unit.

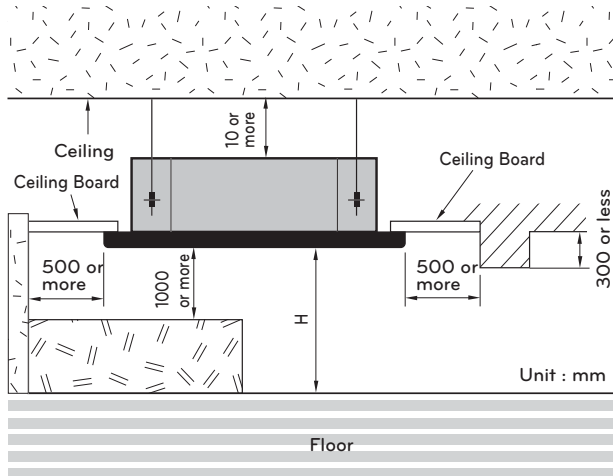
1) Standard accessories

| Name | Drain hose | Clamp metal | Washer for hanging bracket | Clamp | Insulation for fitting | (Other) |
|----------|------------|-------------|----------------------------|-------|---|---|
| Quantity | 1 EA | 1 EA | 8 EA | 8 EA | 1 SET | |
| Diagram | | | | | for gas pipe for liquid pipe | <ul style="list-style-type: none"> • Paper pattern for installation • Owner's manual • Installation manual |

3. Installation of indoor unit

3.2.2 Selection of the best location

- There should not be any heat source or steam near the unit.
- There should not be any obstacles to the air circulation.
- There should be provision of easy condensate drain.
- Taking into accounting the noise prevention criteria, spot the installation location.
- Do not install the unit near the door way.
- Keep proper distances, of the unit, from ceiling, fence, floor, walls and other obstacles as shown in figure.
- The indoor unit must have the maintenance space.

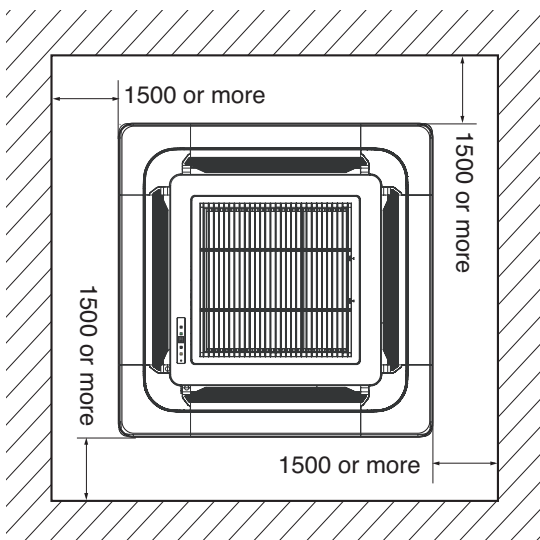


NOTE

Above figure means minimum value. Please keep these value at least.

• High Ceiling mode selection

| Capacity | ≤ 9.0 kW | >9.0kW | Mode Selection |
|----------------|------------------------------------|------------------------------------|--------------------|
| Ceiling Height | $H \leq 2.3\text{m}$ | $H \leq 2.7\text{m}$ | Low Ceiling |
| | $2.3\text{m} < H \leq 2.7\text{m}$ | $2.7\text{m} < H \leq 3.2\text{m}$ | Standard |
| | $2.7\text{m} < H \leq 3.1\text{m}$ | $3.2\text{m} < H \leq 3.6\text{m}$ | High Ceiling |
| | $3.1\text{m} < H \leq 3.6\text{m}$ | $3.6\text{m} < H \leq 4.2\text{m}$ | Super High Ceiling |

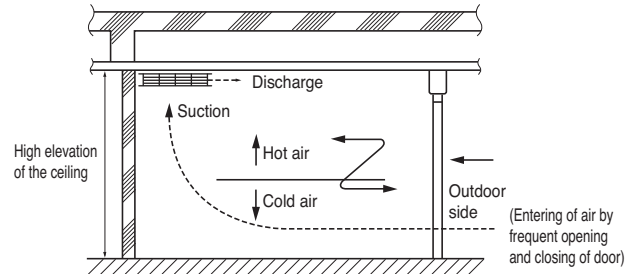


3.2.3 Precautions regarding cassette indoor unit installation

1) Main points about the indoor installation

• In case of high height ceiling

In general commercial places and offices though the height of the ceiling is 2.3~2.7m, the ceiling height can be 3.1~3.6m. In such cases because of the temperature difference with the floor the heating effect can fall down.

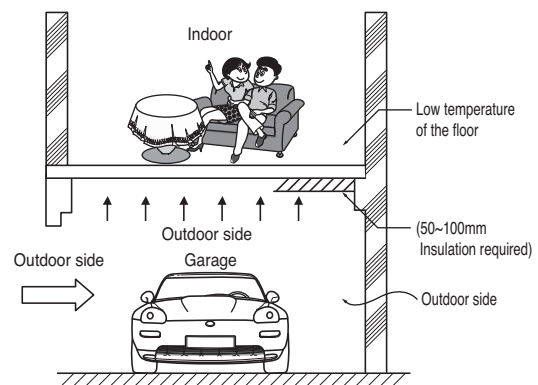


• Countermeasure method

- ① Air conditioner must be able to operate in high ceiling conditioner.
- ② Plan to install the circulator.
- ③ The air discharge port is made to give more airflow to the down wood directions.
- ④ The gate or exit of the building is protected by dual door system.

2) In case the floor or surfaces of the place to be air conditioned is in direct contact with the outdoor air

- The floor of the heating room indirect contact with the storeroom, garage or the outside air receives the cold air at the floor and the floor temperature decrease will feel cold at the feet.



In such places where the feet comes in direct contact with floors will give a cold feeling to the floor.

3. Installation of indoor unit

Countermeasure:

- Use the carpet on the floor (compared to the tiles the carpet over it will have a 3 degree rise in temperature)
- Insulating the floor.
- Floor heating

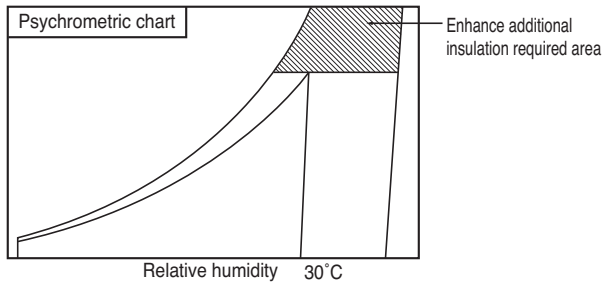
CAUTION

Case of cold air intake:

The duct surface will have the dew drops so a insulation on the duct is a must.(Insulation material: a glass wool of thickness 25 mm will be appropriate.)

3) In case of high temperature or high humidity between the false ceiling and ceiling slab(near by the sea, river, lake, spa)

- In case of temperature of 30 degree and humidity above 80%, the units body as well as the piping insulation should be strengthened. Refer to the picture given below.



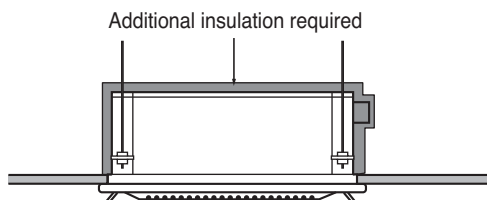
Places having the temperature and humidity of the surrounding and the

The surrounding water sources(sea, river etc.)

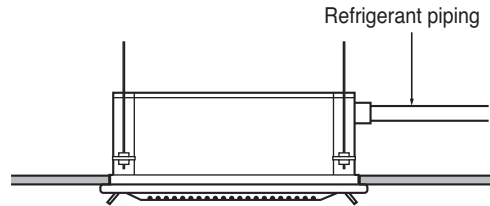
In case the steam is generated between the false ceiling and the ceiling slab

Due to some nearby by steam source.

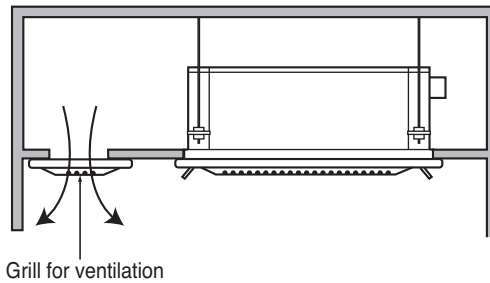
- Indoor unit: Insulate the unit body with some insulation like glass wool atleast 10 mm in thickness.



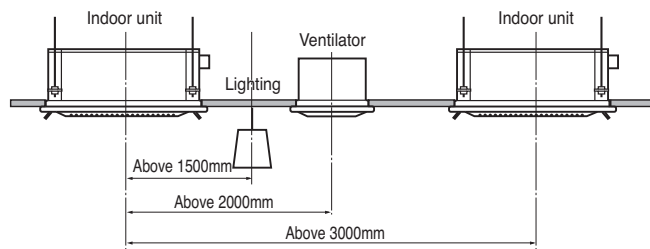
- In case of the multi flow type, use the high humidity kit. Otherwise the dew drops can be seen in the unit body.
- Refrigerant piping: Increase the piping insulation thickness with thickness above 20 mm.



- Others: Inside the ceiling near th air tight seal places (no escape of the humidity)



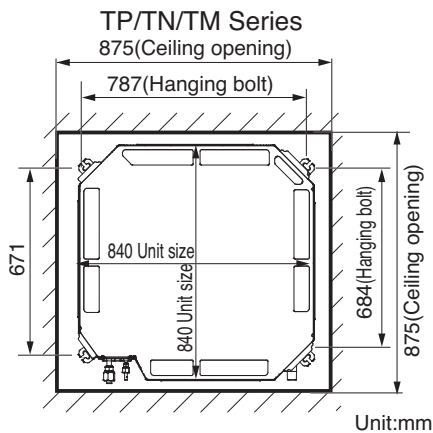
In case of multiple indoor cassette units (recommended)



3. Installation of indoor unit

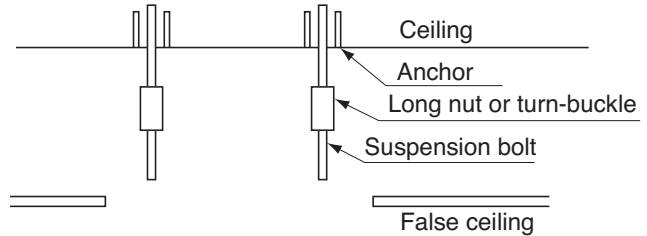
3.2.4 Ceiling opening dimensions and hanging bolt location

- ① The dimensions of the paper pattern for installation are the same as those of the ceiling opening dimensions.
- ② Select and mark the position for fixing bolts and piping hole.
- ③ Decide the position for fixing bolts slightly tilted to the drain direction after considering the direction of drain hose.
- ④ Drill the hole for anchor bolt on the wall.



1) Install the suspension bolts.

(Use either a W3/8" or M10 size bolt) Use a hole-in anchor for existing ceilings, and a sunken insert, sunken anchor or other field supplied parts for new ceilings to reinforce the ceiling to bear the weight of the unit. Adjust clearance from the ceiling before proceeding further.



NOTE

All the above parts are field supplied.

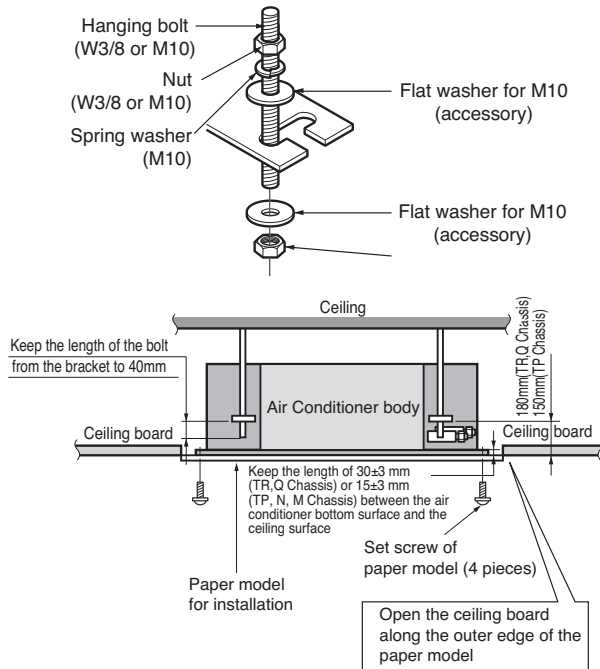
3. Installation of indoor unit

3.2.5 Indoor unit installation

- Installing of the accessories (except for the decoration panel) before installing the indoor unit is easier.

1) Install the indoor unit temporarily.

- Attach the hanger bracket to the suspension bolt. Be sure to fix it securely by using a nut and washer from the upper and lower sides of the hanger bracket.



- The following parts is option.
- Hanger Bolt - W 3/8 or M10
- Nut - W 3/8 or M10
- Spring Washer - M10
- Plate Washer - M10

Drill the piping hole on the wall slightly tilted to the outdoor side using a \varnothing 70 hole-core drill.

2) For new ceilings

(1) Refer to the paper pattern for ceiling opening dimension.

- The center of the ceiling opening is indicated on the paper pattern for installation. The center of the unit is indicated on the label attached to the unit and on the paper pattern for installation.
- First remove paper packaging material from the 4 corners of the paper pattern for installation, fix the paper pattern to the unit with screws.
- Ceiling height is shown on the side of the paper pattern for installation. Adjust the height of the unit according to this indication.

<Ceiling work>

(2) Adjust the unit to the right position for installation.

(3) Assure that the unit is horizontal.

- The indoor unit is equipped with a built-in drain pump and float switch. At each of the unit's 3 corners, verify that it is level by using a water-level or a water-filled vinyl tube. (Otherwise it will result in the malfunctioning of unit and cause water to drip.)

(4) Remove the washer fixing plate used for preventing the washer from falling and tighten the upper nut.

(5) Remove the paper pattern for installation

3) For existing ceilings

(1) Adjust the height and position of the unit.

(2) Perform steps 3 and 4 in "5.1 For new ceilings".

3.2.6 Connecting pipes to the indoor unit

1) Refrigerant piping work

please refer "REFRIGERANT PIPING WORK".

2) Piping insulation

- Perform heat insulation work completely on both gas and the liquid pipe. Because improper insulation will result condensate formation over pipe.
- Use the heat insulation material for the refrigerant piping which has an excellent heat resistance (over 120°C).
- Precautions in high humidity circumstance:
- Refer to insulation work

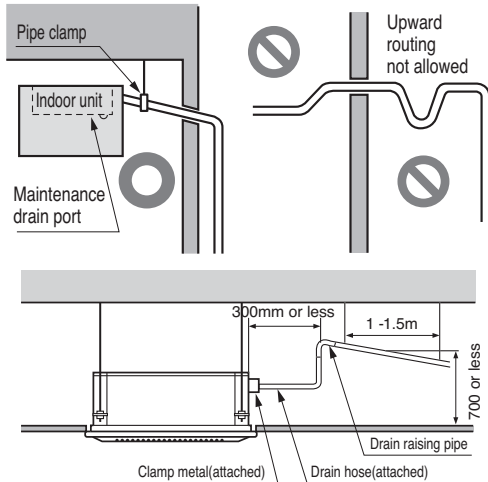
CAUTION

- Make sure to insulate any field piping all the way to the piping connection inside the unit. Any exposed piping may cause condensation or burns if touched.

3. Installation of indoor unit

3) Indoor unit drain piping

- Drain piping must have down-slope (1/50 to 1/100): be sure not to provide up-and-down slope to prevent reversal flow.
- During drain piping connection, be careful not to exert extra force on the drain port on the indoor unit.
- The outside diameter of the drain connection on the indoor unit is 32mm.



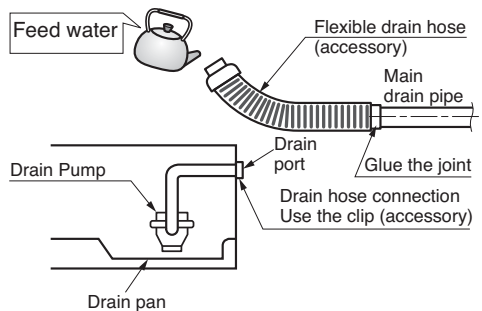
Piping material: Polyvinyl chloride pipe VP-25 and pipe fittings

- Be sure to execute heat insulation on the drain piping.
- Install the drain raising pipes at a right angle to the indoor unit and no more than 300mm from the unit.

Heat insulation material: Polyethylene foam with thickness more than 8 mm.

4) Drain test

The air conditioner uses a drain pump to drain water. Use the following procedure to test the drain pump operation:



- Connect the main drain pipe to the exterior and leave it provisionally until the test comes to an end.
- Feed water to the flexible drain hose and check the piping for leakage.
- Be sure to check the drain pump for normal operating and noise when electrical wiring is complete.
- When the test is complete, connect the flexible drain hose to the drain port on the indoor unit.

3.2.7 Decoration panel

The decoration panel has its installation direction.

Before installing the decoration panel, always remove the paper template.

1. Remove the packing and take out air inlet grille from front panel.

Front grille



2. Remove the Corner covers of the panel.

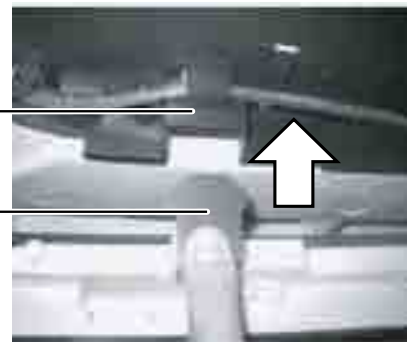
Coner cover



3. Fit the panel on the unit by inserting hooks as shown in picture.

Hook clip

Hook

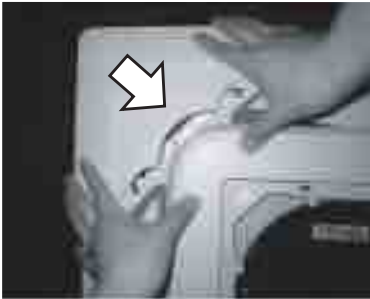


3. Installation of indoor unit

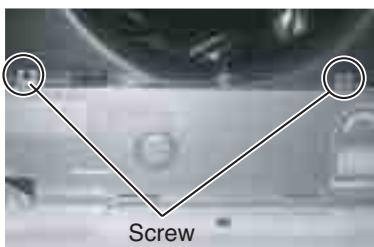
4. Insert two screws on diagonal corners of panel. Do not tighten the bolts completely. (The fixing screws are included in the indoor unit box.)
Check the alignment of panel with the ceiling. Height can be adjusted using hanging bolts as shown in picture. Insert the other two screws and tighten all screws completely.



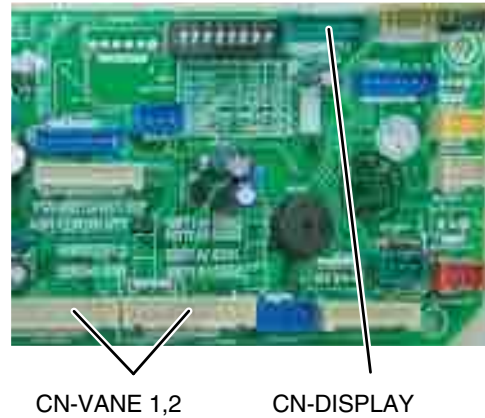
5. Fit the corner covers.



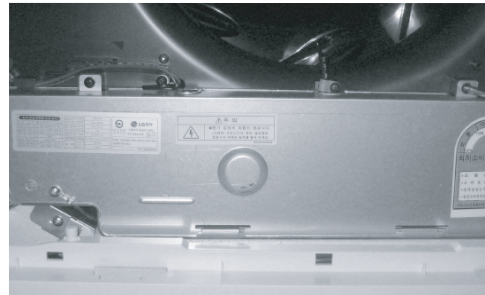
6. Open two screws of control panel cover.



7. Connect one display connector and two vane control connectors of front panel to indoor unit PCB.
The position marking on PCB is as:
Display connector : CN-DISPLAY
Vane control connector: CN-VANE 1,2



8. Close the cover for control box.



9. Install the air inlet grille and Filter on the panel.

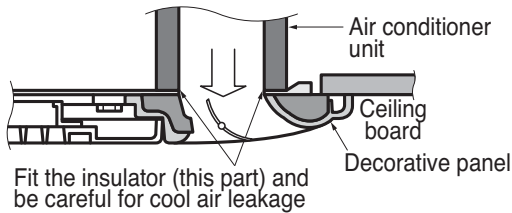


3. Installation of indoor unit

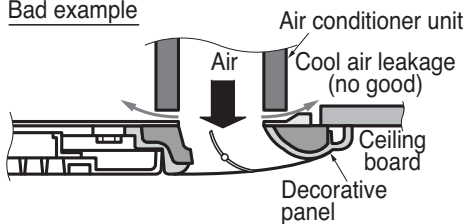
CAUTION

Install certainly the decoration panel.
Cool air leakage causes sweating.
→ Water drops fall.

Good example

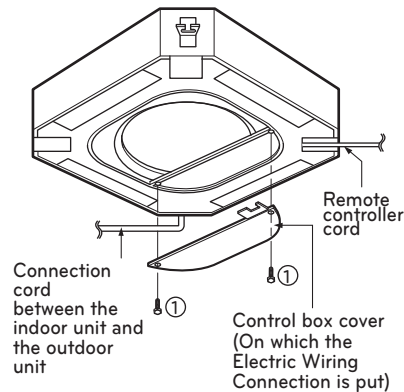


Bad example



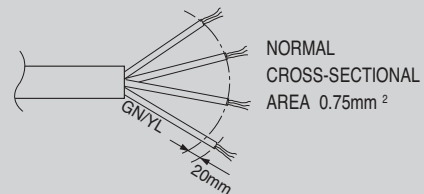
2) Wiring Connection

- ① Open the control box cover and connect the Remote controller cord and Indoor power wires.
- ② Remove the control box cover for electrical connection between the indoor and outdoor unit.
(Remove screws ①)
- ③ Use the cord clammer to fix the cord.



CAUTION

- The connected cable connected to the indoor and outdoor unit should be complied with the following specifications (Rubber insulation, type H05RN-F approved by HAR or SAA).



- If the supply cord is damaged, it must be replaced by a special cord or assembly available from the manufacturer of its service agent.

3.2.8 Electric wiring work

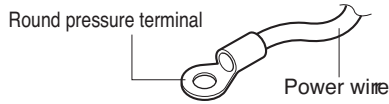
1) General instructions

- ① All field supplied parts and materials, electric works must conform to local codes.
Use copper wire only.
- ② Follow the "WIRING DIAGRAM" attached to the unit body to wire the outdoor unit, indoor units and the remote controller.
- ③ All wiring must be performed by an authorized electrician.
- ④ This system consists of multiple indoor units. Mark each indoor unit as unit A, unit B..., and be sure the terminal board wiring to the outdoor unit and indoor units are properly matched. If wiring and piping between the outdoor unit and an indoor units are mismatched, the system may cause a malfunction.
- ⑤ A circuit breaker capable of shutting down the power supply to the entire system must be installed.

3. Installation of indoor unit

Precautions when laying power wiring

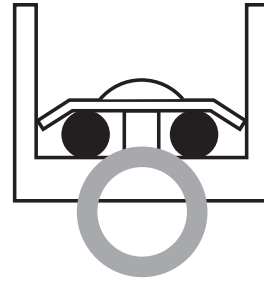
Use round pressure terminals for connections to the power terminal block.



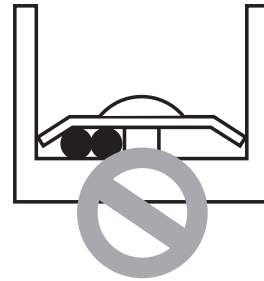
When none are available, follow the instructions below.

- Do not connect wiring of different thicknesses to the power terminal block. (Slack in the power wiring may cause abnormal heat.)
- When connecting wiring which is the same thickness, do as shown in the figure below.
- For wiring, use the designated power wire and connect firmly, then secure to prevent outside pressure being exerted on the terminal block.
- Use an appropriate screwdriver for tightening the terminal screws. A screwdriver with a small head will strip the head and make proper tightening impossible.
- Over-tightening the terminal screws may break them.

Connect same thickness wiring to both sides.



It is forbidden to connect two to one side.



It is forbidden to connect wiring of different thicknesses.



⚠ WARNING

- Make sure that the screws of the terminal are free from looseness.

3. Installation of indoor unit

3.3 Ceiling suspended

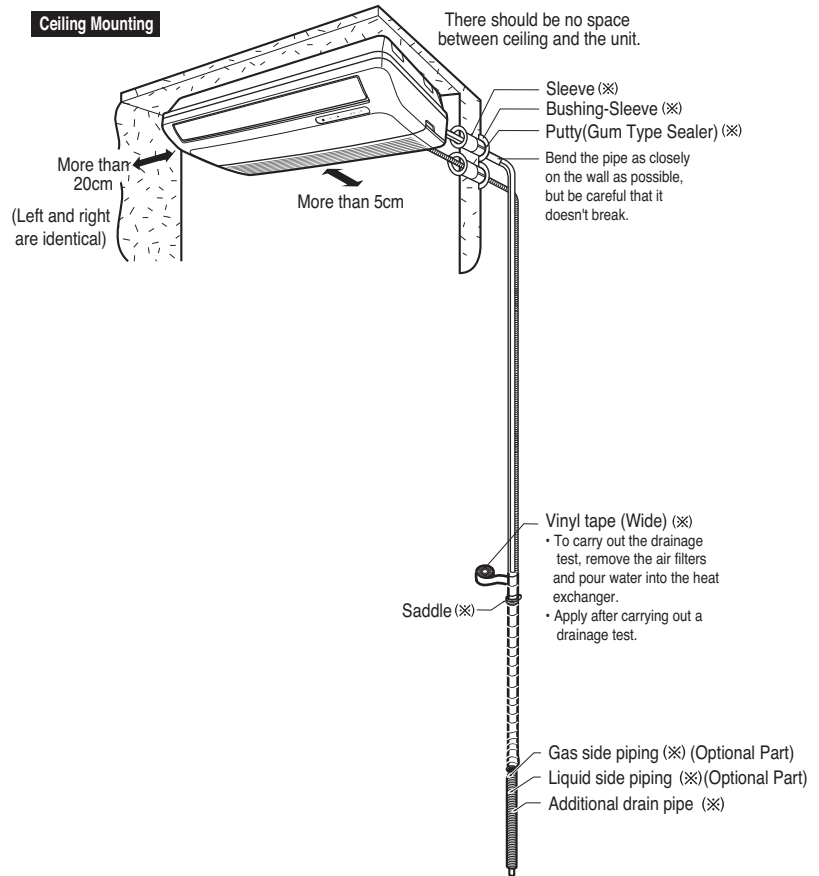
- Please read the instruction sheets completely before installing the product.
- When the power cord is damaged, replacement work shall be performed by authorized personnel only.
- Installation work must be performed in accordance with the national wiring standards by authorized personnel only.

1) Installation parts provided

- Installation Plate (VE, 1pcs)
- Washer Bolt (M8 × L25, 4pcs, type "A")
- Floor Mount Bracket (1pcs)
- Drain Hose, Insulated
- Drain Hose Hanger and screw

2) The other installation parts needed

- Suspension Bolt
- Bolts for Mount Bracket
- Connecting Tube(mm)
 - Gas side : Ø9.52, Ø12.7
 - Liquid side : Ø6.35
- Connecting Cable
- Drain Hose Extended



3.3.1 Accessories

Check the following accessories are included with your unit.

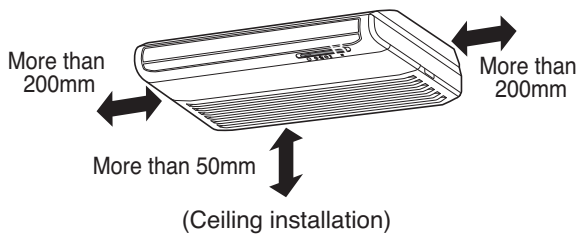
1) Standard accessories

| Name | Drain hose | Clamp metal | Washer for hanging basket | Clamp | Insulation for fitting | (Other) |
|----------|------------|-------------|---------------------------|-------|---|---|
| Quantity | 1 EA | 1 EA | 8 EA | 6 EA | 1 set | |
| Diagram | | | | | for gas pipe for liquid pipe | <ul style="list-style-type: none"> • Owner's manual • Installation manual |

3. Installation of indoor unit

3.3.2 Selection of the best location

- There should not be any heat source or steam near the unit.
- There should not be any obstacles to the air circulation.
- There should be provision of easy condensate drain.
- Taking into accounting the noise prevention criteria, spot the installation location.
- Do not install the unit near the door way.
- Keep proper distances, of the unit, from ceiling, fence, floor, walls and other obstacles as shown in figure.
- The indoor unit must have the maintenance space.
- The mounting ceiling or wall should be strong and solid enough to protect it from the vibration.



3.3.3 Installation

VJ/K/L Chassis

1) Open the cover

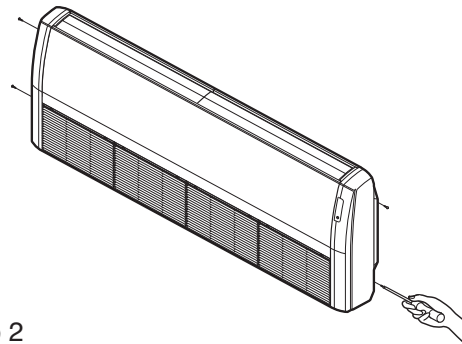
The wall you select shou

- ① Remove four screws from side-cover.
- ② Unlock side-cover from side panel slightly (Tap the side-cover with your palm on the backside)
- ③ Knock out the pipe hole from the left sidecover with nipper/plier.

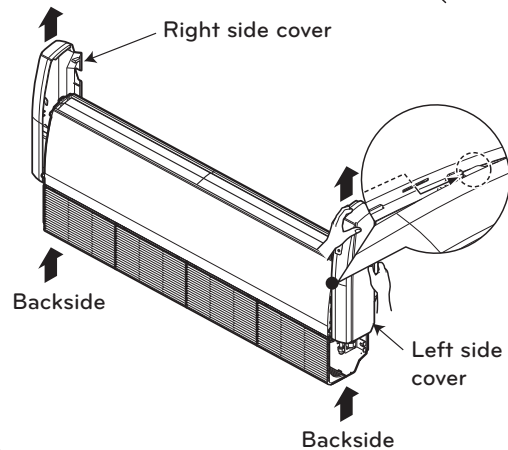
CAUTION

- Hold the side-cover with other hand while tapping to prevent it to fall down.

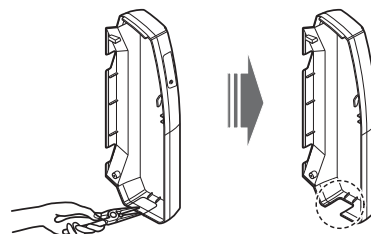
Step 1



Step 2



Step 3



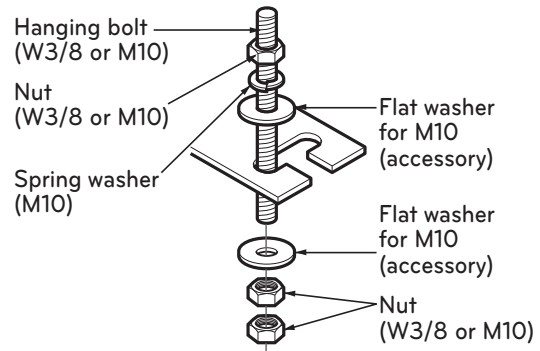
3. Installation of indoor unit

2) Mounting the anchor nut and bolt

- ① Prepare 4 suspension bolts. (Each bolts length should be same.)
- ② Measure and mark the position for the Suspension bolts and the piping hole.
- ③ Drill the hole for anchor nut on the ceiling.
- ④ Insert the nuts and washer onto the suspension bolts for locking the suspension bolts on the ceiling.
- ⑤ Mount the suspension bolts to the anchor-nuts firmly.
- ⑥ Secure the hangers onto the Suspension bolts (adjust level roughly.) using nuts, washers and spring washers.
- ⑦ Adjust a level with a level gauge on the direction of left-right, back-forth by adjusting suspension bolts.
- ⑧ Adjust a level on the direction of top-bottom by adjusting suspension bolts. Then the unit will be declined to the bottomside so as to drain well.

[Unit : mm]

| DIMENSION MODEL | A | B |
|--------------------|------|-----|
| VL | 1655 | 320 |
| VK | 1255 | 320 |
| VJ | 855 | 320 |



- The following parts is option.

Hanging Bolt - W 3/8 or M10

Nut - W 3/8 or M10

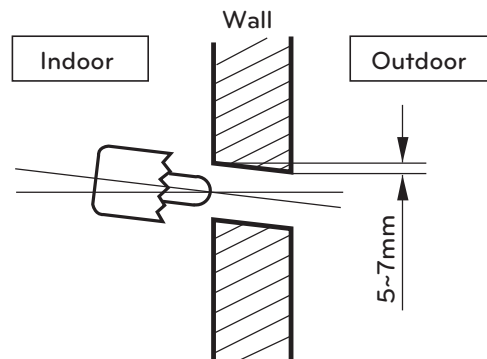
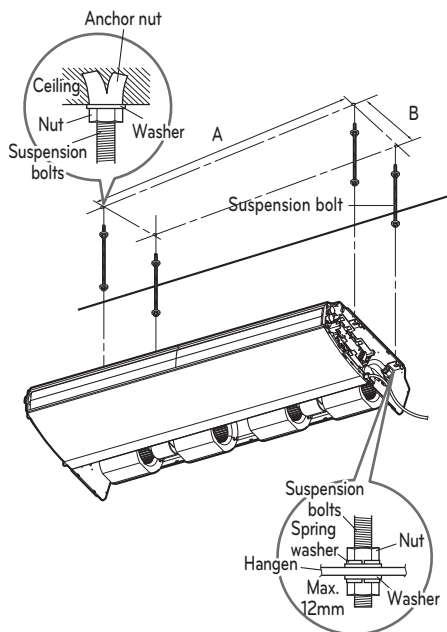
Spring Washer - M10

Plate Washer - M10

CAUTION

Tighten the nut and bolt to prevent unit falling.

- Drill the piping hole on the wall slightly tilted to the outdoor side using a $\varnothing 70$ hole-core drill.



3. Installation of indoor unit

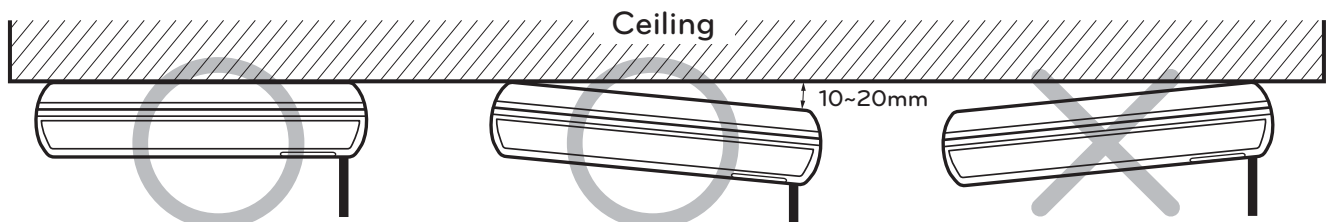
⚠ CAUTION

Installation Information For Declination

- Install declination of the indoor unit is very important for the drain of the convertible type air conditioner.
- Minimum thickness of the insulation for the connecting pipe shall be 10mm.
- If the Installation Plates are fixed to horizontal line, the indoor unit after installing will be declined to the bottomside.

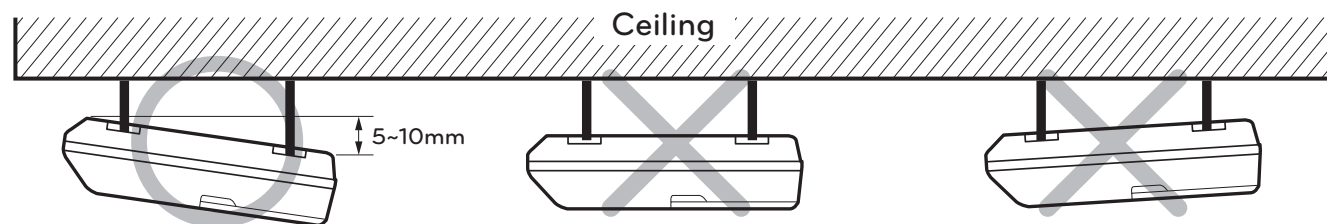
Front of view

- The unit must be horizontal or inclined at angle.
- The inclination should be less than or equal to 1° or in between 10 to 20mm inclined in drain direction as shown in fig.



Side of view

- The unit must be declined to the bottomside of the unit when finished installation.



3. Installation of indoor unit

3.3.4 Piping and drainage

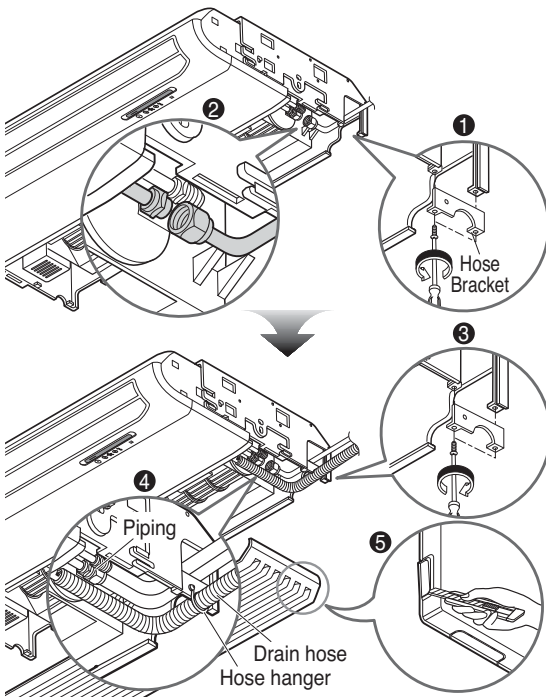
1) Installation on the ceiling

• Connecting the pipes to the indoor unit

The pipe can be connected to right side, bottom or back of the unit.

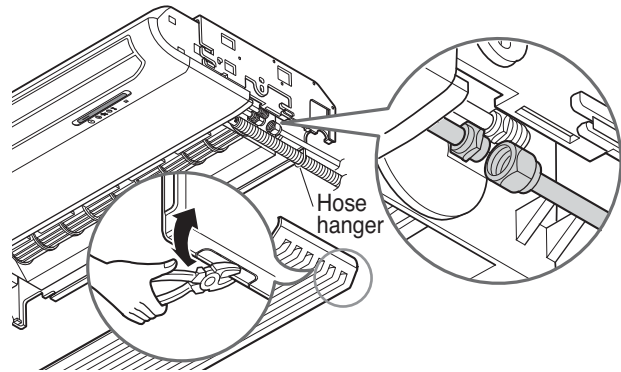
- For the right side piping

- ① After bending an end of the connecting tube, align the center of the pipings and sufficiently tighten the flare nut with fingers.
- ② Finally, tighten the flare nut with torque wrench until the wrench clicks.
- ③ Connect the drain hose insulated to the drain outlet. Drain hose should go under the hose bracket as shown in figure ④.
- ④ Hang the drain hose on the hose hanger and fix it to the hole of the hose bracket with a screw.



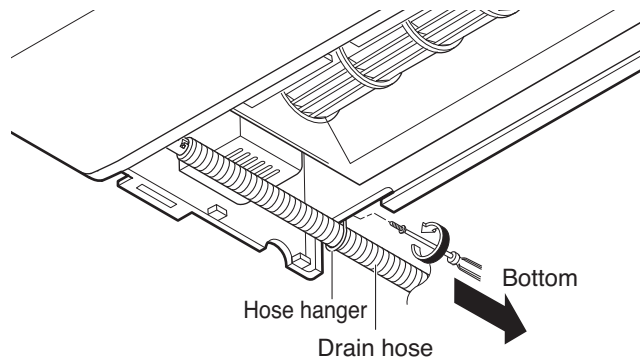
- For the bottom side piping

- ① Remove the knock-out from the bottomside of inlet grille
- ② Align the center of the pipings and sufficiently tighten the flare nut with fingers.
- ③ Finally, tighten the flare nut with torque wrench until the wrench clicks.
- ④ Connect the drain hose insulated to the drain outlet.
- ⑤ Hang the drain hose on the hose hanger and fix it to the hole of cabinet bottom with a screw.



• Connecting the drain hose

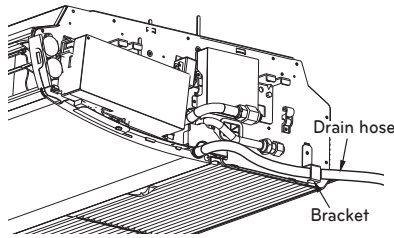
- ① The drain hose can be connected to not only the right side but also left side of the unit.
- ② If the drain hose is connected to the left side, it should go through the cabinet bottom.
- ③ Hang the drain hose on the hose hanger and fix it to the hole of cabinet bottom with a screw.



• Indoor Unit Drain Piping

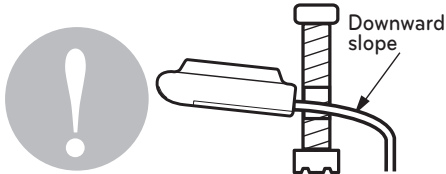
- Drain piping must have down-slope (1/50 to 1/100): be sure not to provide up-and-down slope to prevent reversal flow.
- During drain piping connection, be careful not to exert extra force on the drain port on the indoor unit.
- Remove the rubber stopper before connecting drain hose.
- Hook on the bracket after connecting the drain hose as below.

3. Installation of indoor unit

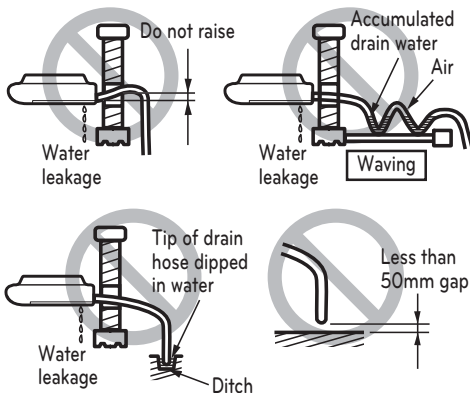


• Drain piping

- The drain hose should point downward for easy drain flow.



- Do not make drain piping like the following.

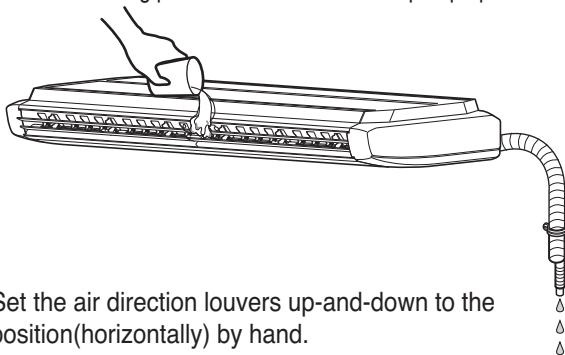


- Be sure to execute heat insulation on the drain piping.

Heat insulation material: Polyethylene foam with thickness more than 8 mm.

• Drain test

- Use the following procedure to test the drain pump operation:



- Set the air direction louvers up-and-down to the position(horizontally) by hand.
- Pour a glass of water on the evaporator using a kettle.
- Ensure the water flows through the drain hose of the indoor unit without any leakage and goes out the drain exit.

3.3.5 Electric wiring work

1) General instructions

- ① All field supplied parts and materials, electric works must conform to local codes. Use copper wire only.
- ② Follow the "WIRING DIAGRAM" attached to the unit body to wire the outdoor unit, indoor units and the remote controller.
- ③ All wiring must be performed by an authorized electrician.
- ③ This system consists of multiple indoor units. Mark each indoor unit as unit A, unit B..., and be sure the terminal board wiring to the outdoor unit and indoor unit are properly matched. If wiring and piping between the outdoor unit and an indoor unit are mismatched, the system may cause a malfunction.
- ④ A circuit breaker capable of shutting down the power supply to the entire system must be installed.

2) Wiring connection

- Connecting cables to the indoor unit

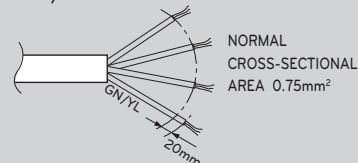
- ① Remove the air guide - L by loosening 2 screws after removing the inlet grille from the Indoor unit.
- ② Connect the wires to the terminals on the control board individually according to the outdoor unit connection.
 - Ensure that the color of the wires of outdoor unit and the terminal No. are the same as those of indoor unit respectively

- Wiring Connection

- ① Connect the wires to the terminals on the control board individually according to the outdoor unit connection.

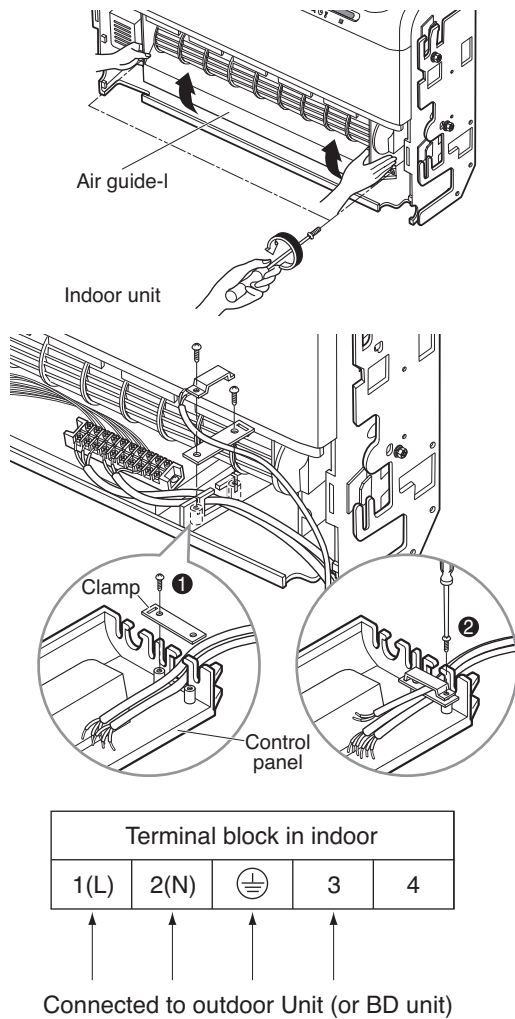
⚠ CAUTION

- The connecting cable connected to the indoor and outdoor unit should be complied with the following specifications (Rubber insulation, type H05RN-F approved by HAR or SAA).



- If the supply cord is damaged, it must be replaced by a special cord or assembly available from the manufacturer of its service agent.

3. Installation of indoor unit



CAUTION

- Make sure that the screws of the terminal are fixed tightly.

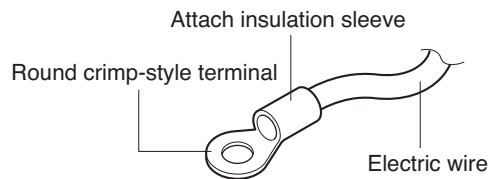
CAUTION

- Make sure to attach the sealing material (field supplied) to hole of wiring to prevent the infiltration of foreign particle from outside. Otherwise a short-circuit may occur inside the electric parts box
- When clamping the wires, be sure no pressure is applied to the wire connections by using the included clamping material to make appropriate clamps. Also, when wiring, make sure the cover on the electric parts box fits snugly by arranging the wires neatly and attaching the electric parts box cover firmly. When attaching the electric parts box cover, make sure no wires get caught in the edges. Pass wiring through the holes to prevent damage to them.
- Make sure the remote controller wiring, the wiring between the units, and other electrical wiring do not pass through the same locations outside of the unit, separating them properly, otherwise electrical noise (external static) could cause mistaken operation or breakage.

NOTE

1. Use round crimp-style terminals for connecting wires to the power supply terminal block. If unavailable, observe the following points when wiring.

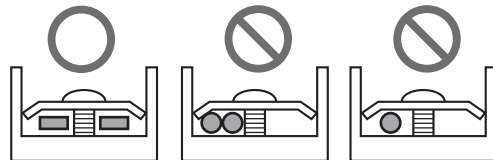
- ① Do not connect wires of different gauge to the same power supply terminal.
- ② Use the specified electric wire. connect the wire securely to the terminal. Lock the wire down without applying excessive force to the terminal.



2. Tightening torque for the terminal screws.

- ① Use the correct screw driver for tightening the terminal screws. If the blade of screwdriver is too small, the head of the screw might be damaged, and the screw will not be properly tightened.
- ② If the terminal screws are tightened too hard, screws might be damaged.

3. Do not connect wires of different gauge to the same grounding terminal. Loose connection may deteriorate protection.



Connect wires of the same gauge to both sides

4. Outside of the unit, keep proper separation between transmission and power supply wiring. The equipment may malfunction if subjected to electrical (external) noise.

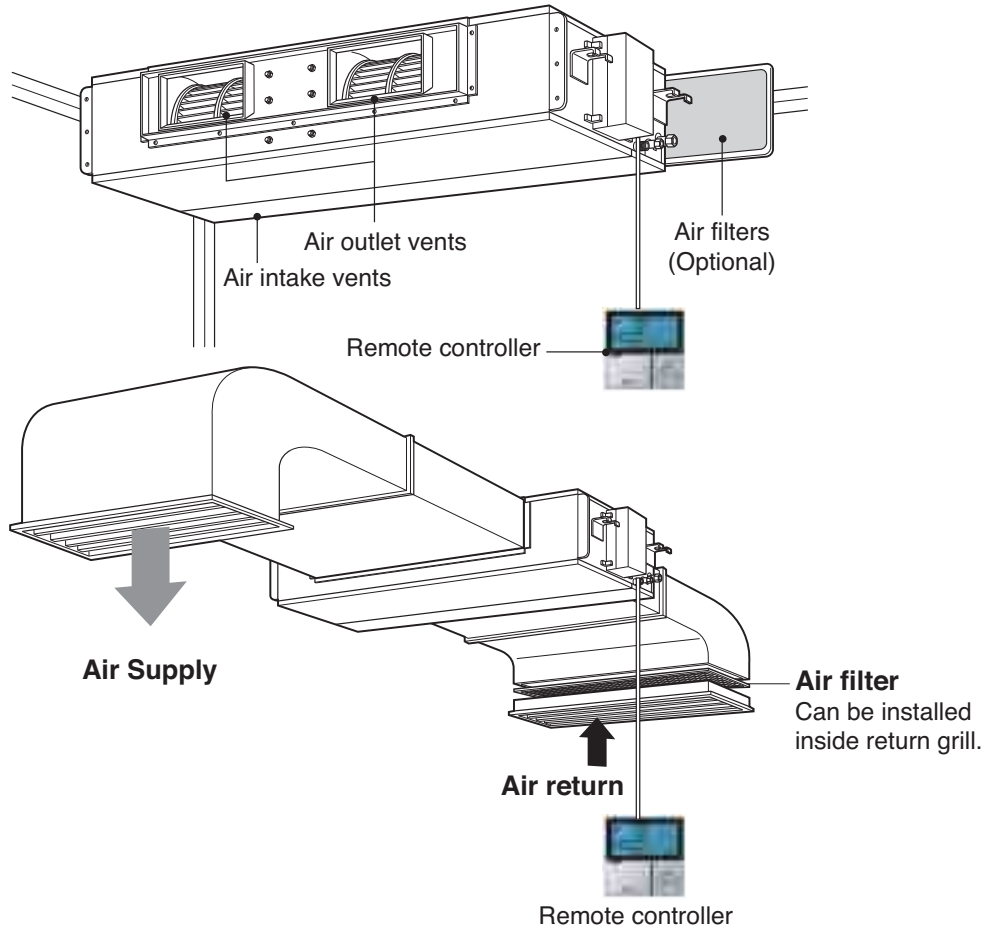
5. Never connect power supply wiring to the terminal block for remote controller wiring. A mistake of the sort could damage the entire system.

6. Use only specified wire and tightly connect wires to terminals. Be careful wires do not place external stress on terminals. Keep wiring in neat order and so as not to obstruct other equipment such as popping open the electric parts box cover. Make sure the cover closes tight. Incomplete connections could result in overheating, and in worse case, electric shock or fire.

3. Installation of indoor unit

3.4 Ceiling concealed duct - High static pressure


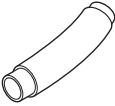

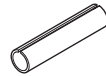
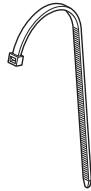

- Please read the instruction sheets completely before installing the product.
- When the power cord is damaged, replacement work shall be performed by authorized personnel only.
- Installation work must be performed in accordance with the national wiring standards by authorized personnel only.



3.4.1 Accessories

Check whether the following accessories are included with your unit.

1) Standard accessories

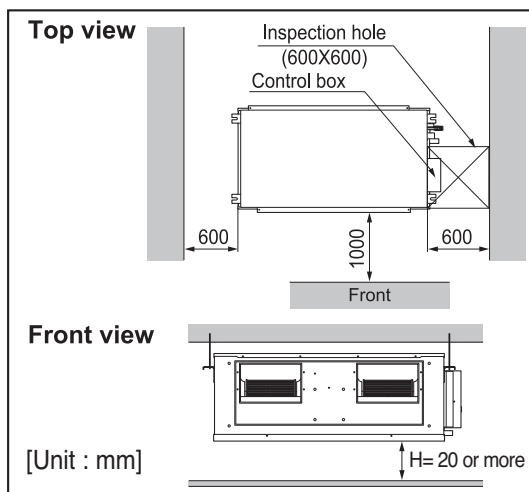
| Name | Clamp metal | Drain hose | Insulation for fitting | Clamp | Screws for duct flanges | (Other) |
|----------|---|---|---|---|--|--|
| Quantity | 1 EA | 1 EA | 1 set | 6 EA | 1 set | |
| Shape |  |  |  for gas pipe  for liquid pipe |  |  | <ul style="list-style-type: none"> • Owner's manual • Installation manual • Washers(8 pcs.) |

3. Installation of indoor unit

3.4.2 Selection of the best location

Install the air conditioner in the location that satisfies the following conditions.

- The place shall easily bear a load of the indoor unit.
- The place should have enough area for inspection as shown in figure.
- The place where the unit shall be leveled.
- The place shall allow easy water drainage. (Suitable dimension "H" is necessary to get a slope to drain as figure.)
- The place shall easily connect with the outdoor unit.
- The place where the unit is not affected by an electrical noise.
- The place where air circulation in the room will be good.
- There should not be any heat source or steam near the unit.



3.4.3 Ceiling dimension, also hanging bolt location and service space

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

- If supporting structural members are not strong enough to take the unit's weight, the unit could fall out of place and cause serious injury.
- Where sufficient clearance of maintenance and service can be ensured.
- Where optimum air distribution can be ensured.
- Where nothing blocks the air passage.
- Where condensate can be properly drained.
- Where piping between indoor and outdoor units is possible within the allowable limit (Refer to the installation manual of the outdoor unit.)
- Keep the indoor and outdoor units, power cable and transmission wiring, at least 1 m from TVs and radios, to prevent distorted pictures and static. (Depending on the type and source of the electrical waves, static may be heard even when more than 1 m away.)

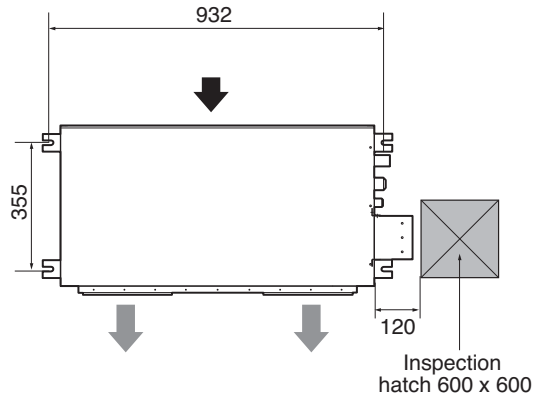
NOTE

If the service panel is at the top of the unit, then provide sufficient service clearance as per convenience.

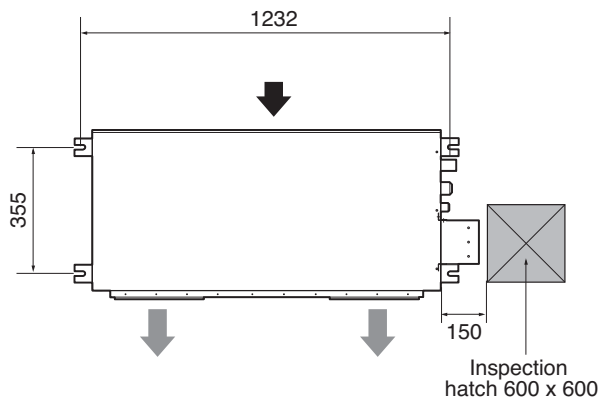
2) Relative positions of indoor unit, suspension bolt and inspection hatch size

[BH Chassis]

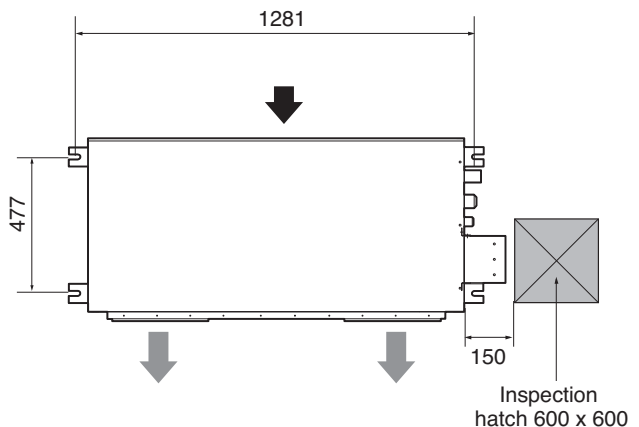
[Unit : mm]



[BG Chassis]



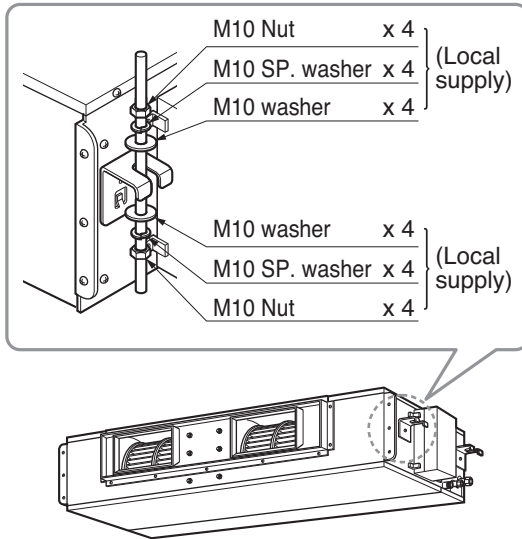
[BR Chassis]



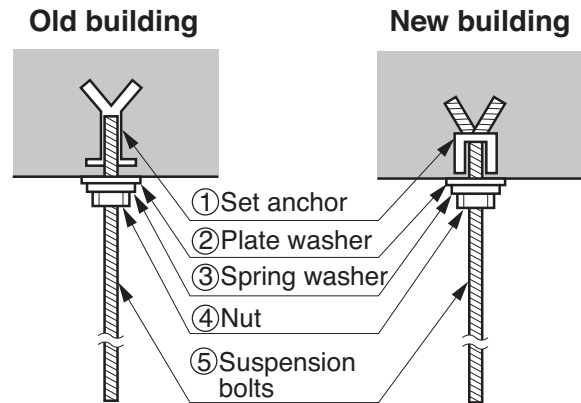
3. Installation of indoor unit

3.4.4 Position of suspension bolt

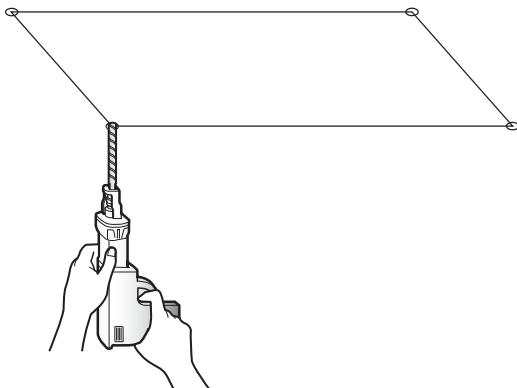
- ① Install the unit leaning to a drainage hole side as given in the figure above for easy water drainage.
- ② A place where the unit will be leveled and that can support the weight of the unit.
- ③ A place where the unit can withstand its vibration.
- ④ A place where service can be easily performed.



- ⑦ Insert the set anchor and washer on the suspension bolts for locking the suspension bolts on the ceiling.
- ⑧ Mount the suspension bolts to the set anchor firmly.
- ⑨ Secure the installation plates on the suspension bolts (adjust level roughly) using nuts, washers and spring washers.



- ⑤ Select and mark the position for fixing bolts.
- ⑥ Drill the hole for set anchor on the face of ceiling.



CAUTION

- Tighten the nut and bolt to prevent unit from falling.

3. Installation of indoor unit

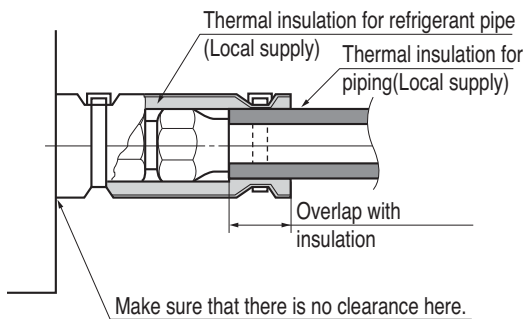
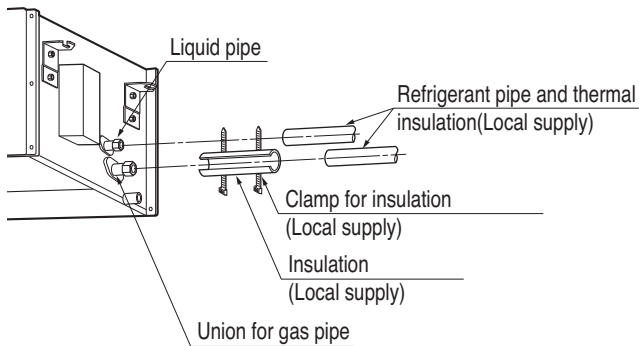
3.4.5 Connection pipes to the indoor unit

1) Refrigerant piping work

please refer "REFRIGERANT PIPING WORK".

2) Piping insulation

- ① Perform heat insulation work completely on both gas and the liquid pipe. Because improper insulation will result due condensate formation over pipe.
- ② Use the heat insulation material for the refrigerant piping which has an excellent heat resistance (over 120°C).
- ③ Precautions in high humidity circumstance.
- ④ Refer to the insulation works.



CAUTION

- Make sure to insulate any field piping all the way to the piping connection inside the unit. Any exposed piping may cause condensation or burns if touched.

3) Indoor unit drain piping

- ① During drain piping connection, be careful not to exert extra force on the drain port on the indoor unit.
- ② The outside diameter of the drain connection on the indoor unit is 32mm.

Piping material: Polyvinyl chloride pipe inner diameter \varnothing 25mm and pipe fitting

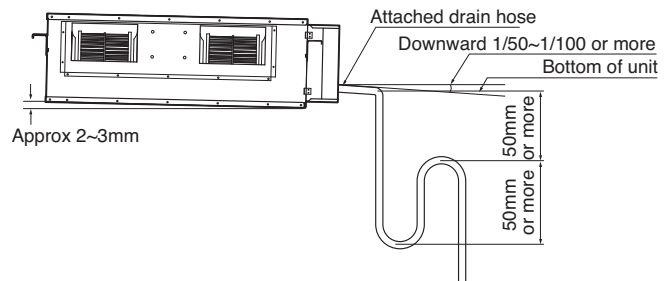
CAUTION

1. Decline Installation of indoor unit is very important for the drain of the duct type air conditioner.
2. Minimum thickness of the insulation for the connecting pipe should be 5mm.

4) Caution for gradient of unit and drain piping

- Without drain pump

- ① Always lay the drain with downward inclination (1/50 to 1/100). Prevent any upward flow or reverse flow in any part.
- ② 10mm or thicker formed thermal insulation shall always be provided for the drain pipe.

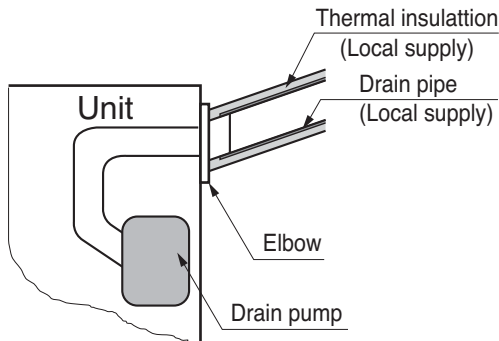
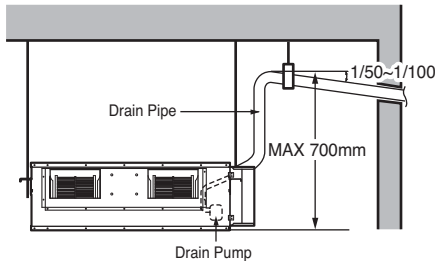


- ※ U-trap is not required for low static model in which the external static pressure is below 50 pa(5mm Aq)

3. Installation of indoor unit

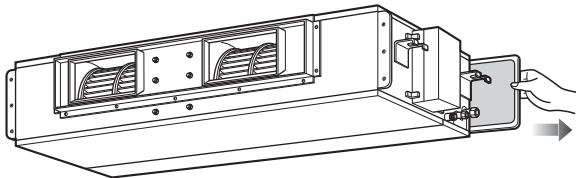
- With drain pump

- ① Possible drain head is upto 700mm.
- ② Keep the drain pipe downward stope upto 1/50~1/100. Prevent any upward flow or reverse flow in any part.
- ③ 10mm or thicker insulation should be provided for the drain pipe.



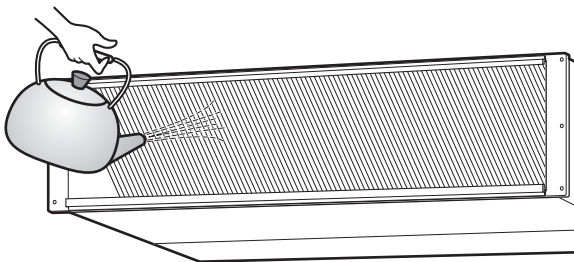
5) Checking the drain

- ① Remove the air filter.



- ② Check the drain.

- Pour enough water on the drain pan.
- Ensure that water flows through the drain pipe from indoor unit without any leakage.



3.4.6 Electric wiring work

1) General instructions

- ① All field supplied parts and materials, electric works must conform to local codes. Use copper wire only.
- ② Follow the "WIRING DIAGRAM" attached to the unit body to wire the outdoor unit, indoor units and the remote controller.
- ③ All wiring must be performed by an authorized electrician.
- ④ This system consists of multiple indoor units. Mark each indoor unit as unit A, unit B..., and be sure the terminal board wiring to the outdoor unit and indoor unit are properly matched. If wiring and piping between the outdoor unit and an indoor unit are mismatched, the system may cause a malfunction.
- ⑤ A circuit breaker capable of shutting down the power supply to the entire system must be installed.

3. Installation of indoor unit

2) Wiring connection

Connect the wires to the terminals on the control board individually according to the outdoor unit connection.

- ① Ensure that the color of the wires of outdoor unit and the terminal No. are the same as those of indoor unit respectively.



↑ ↑ ↑ ↑
Connected to outdoor Unit (or BD unit)

- ② If the supply cord is damaged, it must be replaced by a special cord or assembly available from the manufacturer of its service agent.

⚠ WARNING

- Make sure that the screws of the terminal are fixed tightly.

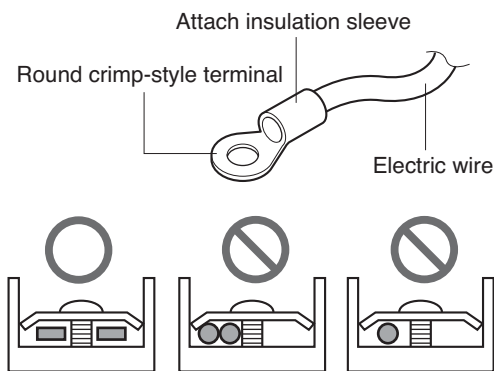
⚠ CAUTION

- Make sure to attach the sealing material or (field supplied) to hole of wiring to prevent the infiltration of foreign particle from outside. Otherwise a short-circuit may occur inside the electric parts box
- When clamping the wires, be sure no pressure is applied to the wire connections by using the included clamping material to make appropriate clamps. Also, when wiring, make sure the cover on the electric parts box fits snugly by arranging the wires neatly and attaching the electric parts box cover firmly. When attaching the electric parts box cover, make sure no wires get caught in the edges. Pass wiring through the holes to prevent damage to them.
- Make sure the remote controller wiring, the wiring between the units, and other electrical wiring do not pass through the same locations outside of the unit, separating them properly, otherwise electrical noise (external static) could cause product malfunction.

NOTE

1. Use round crimp-style terminals for connecting wires to the power supply terminal block. If unavailable, observe the following points when wiring.

- ① Do not connect wires of different gauge to the same power supply terminal.
- ② Use the specified electric wire. Connect the wire securely to the terminal. Lock the wire down without applying excessive force to the terminal.



Connect wires of the same gauge to both sides

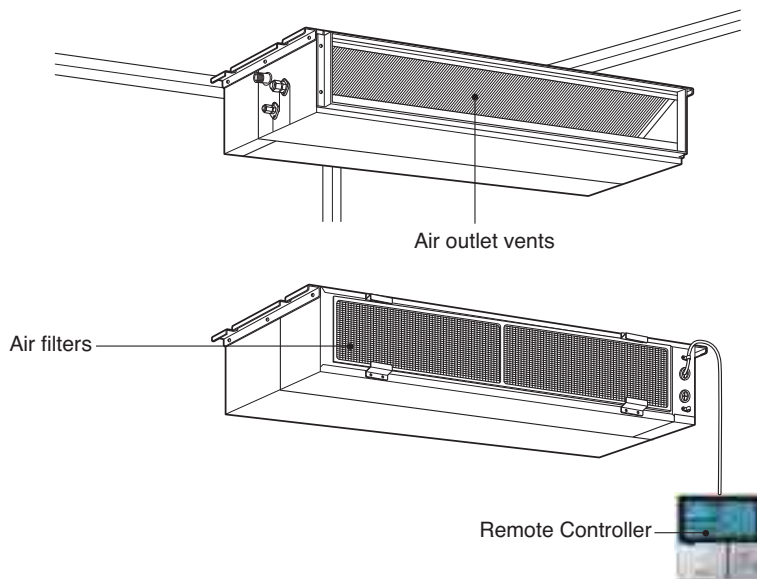
2. Tightening torque for the terminal screws.

- ① Use the correct screwdriver for tightening the terminal screws. If the blade of screwdriver is too small, the head of the screw might be damaged, and the screw will not be properly tightened.
 - ② If the terminal screws are tightened too hard, screws might be damaged.
3. Do not connect wires of different gauge to the same grounding terminal. Loose connection may deteriorate protection.
 4. Outside of the unit, keep proper separation between transmission and power supply wiring. The equipment may malfunction if subjected to electrical (external) noise.
 5. Never connect power supply wiring to the terminal block for remote controller wiring. A mistake of the sort could damage the entire system.
 6. Use only specified wire and tightly connect wires to terminals. Be careful wires do not place external stress on terminals. Keep wiring in neat order and so as not to obstruct other equipment such as popping open the electric parts box cover. Make sure the cover closes tight. Incomplete connections could result in overheating, and in worse case, electric shock or fire.

3. Installation of indoor unit

3.5 Ceiling concealed duct – Low static pressure

- Please read the instruction sheets completely before installing the product.
- When the power cord is damaged, replacement work shall be performed by authorized personnel only.
- Installation work must be performed in accordance with the national wiring standards.



3.5.1 Accessories

Check the following accessories are included with your unit.

1) Standard accessories

| Name | Clamp metal | Insulation for fitting | Screws for duct flanges | Clamp | (Other) |
|----------|-------------|---|-------------------------|-------|---|
| Quantity | 1 EA | 1 set | 1 set | 8 EA | |
| Diagram | | for gas pipe for liquid pipe | | | <ul style="list-style-type: none"> • Owner's manual • Installation manual |

3. Installation of indoor unit

3.5.2 Selection of the best location

Install the air conditioner in the location that satisfies the following conditions.

- The place shall easily bear a load exceeding four times the indoor unit's weight.
- The place shall be able to inspect the unit as the figure.
- The place where the unit shall be leveled.
- The place shall allow easy water drainage. (Suitable dimension "H" is necessary to get a slope to drain as figure.)
- The place shall easily connect with the outdoor unit.
- The place where the unit is not affected by an electrical noise.
- The place where air circulation in the room will be good.
- There should not be any heat source or steam near the unit.

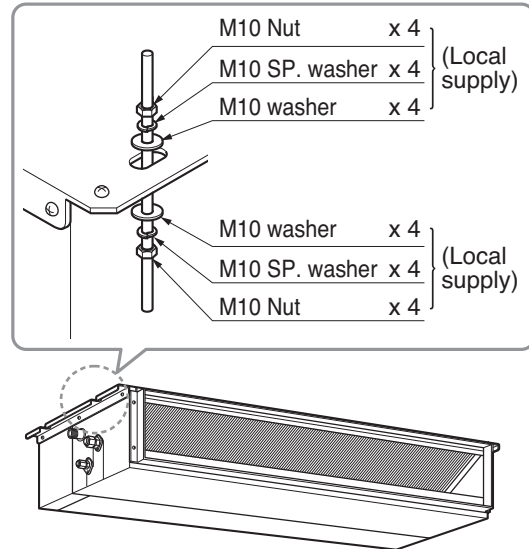
3.5.3 Ceiling dimension and hanging bolt location and service space

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

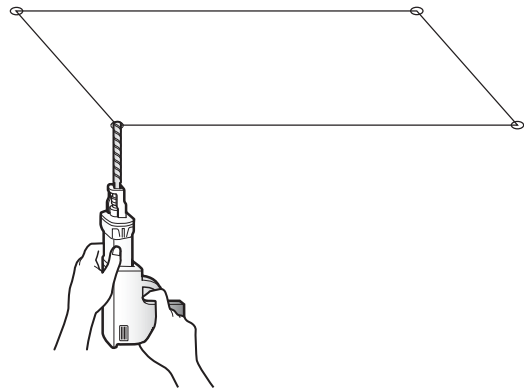
- If supporting structural members are not strong enough to take the unit's weight, the unit could fall out of place and cause serious injury.
- Where sufficient clearance of maintenance and service can be ensured.
- Where optimum air distribution can be ensured.
- Where nothing blocks the air passage.
- Where condensate can be properly drained.
- Where piping between indoor and outdoor units is possible within the allowable limit (Refer to the installation manual of the outdoor unit.)
- Keep the indoor and outdoor units, power cable and transmission wiring, at least 3.3ft from TVs and radios, to prevent distorted pictures and static. (Depending on the type and source of the electrical waves, static may be heard even when more than 3.3ft away.)

3.5.4 Position of suspension bolt

- ① A place where the unit will be leveled and that can support the weight of the unit.
- ② A place where the unit can withstand its vibration.
- ③ A place where service can be easily performed.



- ④ Select and mark the position for fixing bolts.
- ⑤ Drill the hole for set anchor on the face of ceiling.

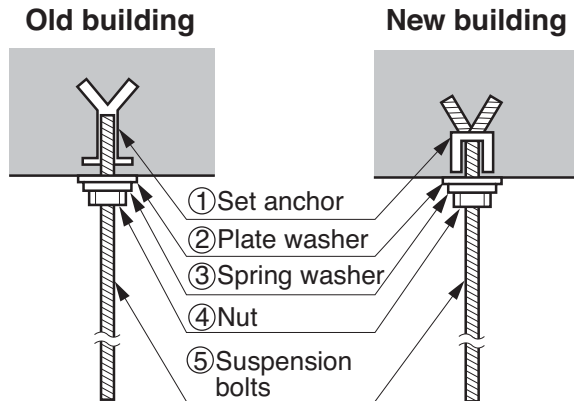


CAUTION

- Tighten the nut and bolt to prevent the unit falling.

3. Installation of indoor unit

- ⑥ Insert the set anchor and washer onto the suspension bolts for locking the suspension bolts on the ceiling.
- ⑦ Mount the suspension bolts to the set anchor firmly.
- ⑧ Secure the installation plates onto the suspension bolts (adjust level roughly) using nuts, washers and spring washers.



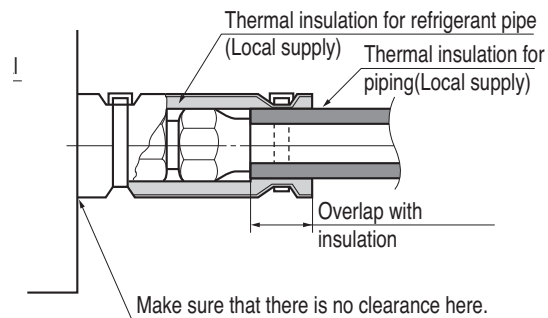
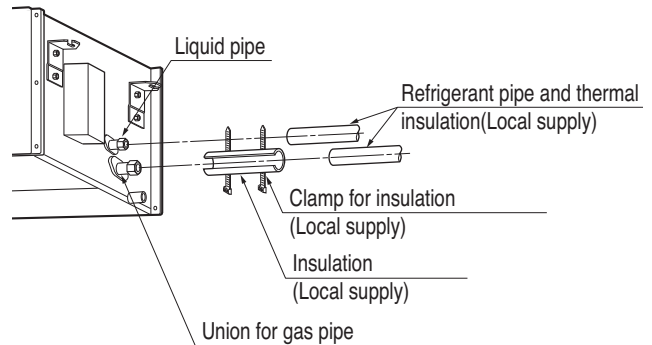
3.5.5 Connecting pipes to the indoor unit

1) Refrigerant piping work

please refer "REFRIGERANT PIPING WORK".

2) Piping insulation

- ① Perform heat insulation work completely on both gas and the liquid pipe. Because improper insulation will result condensate formation over pipe.
Use the heat insulation material for the refrigerant piping which has an excellent heat resistance (over 248°F).
- ② Precautions in high humidity circumstance: This air conditioner has been tested according to the "KS Conditions" and confirmed that there is not any default. However, if it is operated for a long time in high humid atmosphere (dew point temperature: more than 73°F), water drops are liable to fall. In this case, add heat insulation material according to the following procedure:
- ③ Heat insulation material : Adiabatic glass wool with thickness 13/32 to 13/16 inch.
- ④ Stick glass wool on all air conditioners that are located in ceiling atmosphere.



CAUTION

- Make sure to insulate any field piping all the way to the piping connection inside the unit. Any exposed piping may cause condensation or burns if touched.

3. Installation of indoor unit

3) Indoor unit drain piping

- ① Drain piping must have down-slope (1/50 to 1/100): be sure not to provide up-and-down slope to prevent reversal flow.
- ② During drain piping connection, be careful not to exert extra force on the drain port on the indoor unit.
- ③ The outside diameter of the drain connection on the indoor unit is 1 1/4 inch.

Piping material: Polyvinyl chloride pipe inner diameter \varnothing 1 inch and pipe fittings

CAUTION

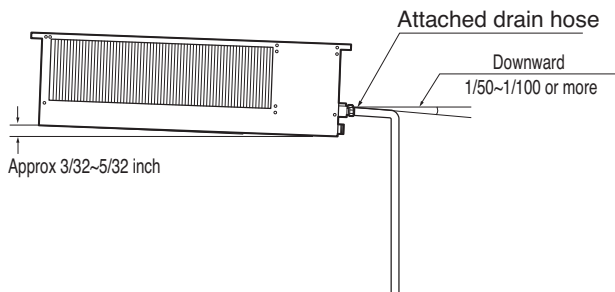
1. Decline Installation of indoor unit is very important for the drain of the duct type air conditioner.
2. Minimum thickness of the insulation for the connecting pipe should be 7/32 inch.

4) Caution for gradient of unit and drain piping

- Without drain pump:

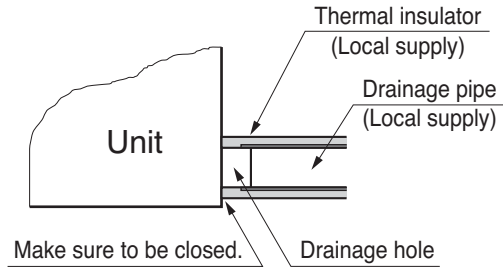
- Always lay the drain with downward inclination (1/50 to 1/100). Prevent any upward flow or reverse flow in any part.
- 7/32 inch or thicker formed thermal insulation shall always be provided for the drain pipe.

Correct method

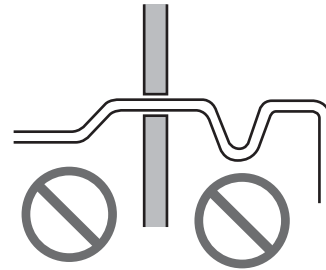


- ※ U-trap is not required for low static model in which the external static pressure is below 50 pa(5mm Aq)

- Lay the drain hose with a downware inclination so water will drain out.



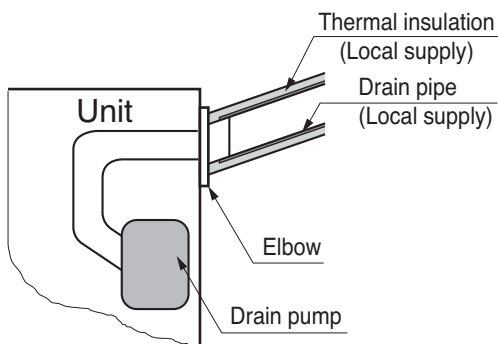
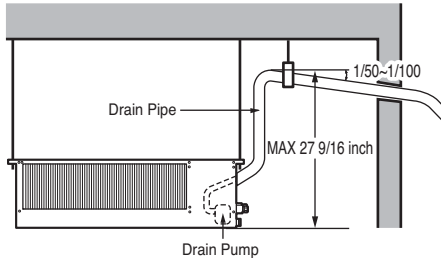
Wrong method



3. Installation of indoor unit

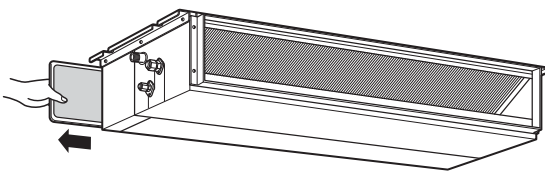
- With drain pump

- ① Possible drain head height is upto 27 6/19 inch. So the drain head should be below 27 6/19 inch.
- ② Keep the drain hose downward upto 1/50~1/100 inclination. Prevent any upward flow or reverse flow in any part.
- ③ 7/32 inch or thicker insulation should be provided for the drain pipe.



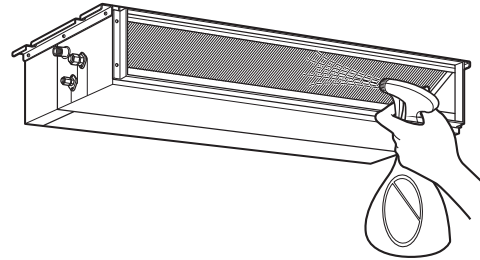
5) Checking the drainage

- ① Remove the air filter.



② Check the drainage

- Spray one or two glasses of water on the evaporator.
- Ensure that water flows through the drain hose from indoor unit without any leakage.



3.5.6 Electric wiring work

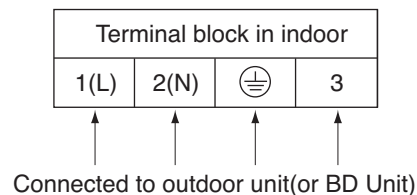
1) General instructions

- ① All field supplied parts and materials, electric works must conform to local codes. Use copper wire only.
- ② Follow the "WIRING DIAGRAM" attached to the unit body to wire the outdoor unit, indoor units and the remote controller.
- ③ All wiring must be performed by an authorized electrician.
- ④ This system consists of multiple indoor units. Mark each indoor unit as unit A, unit B..., and be sure the terminal board wiring to the outdoor unit and ID unit are properly matched. If wiring and piping between the outdoor unit and an indoor unit are mismatched, the system may cause a malfunction.
- ⑤ A circuit breaker capable of shutting down the power supply to the entire system must be installed.

2) Wiring connection

Connect the wires to the terminals on the control board individually according to the outdoor unit connection.

- Ensure that the color of the wires of outdoor unit and the terminal No. are the same as those of indoor unit respectively



3. Installation of indoor unit

Clamping of cables

- ① Arrange 2 power cables on the control panel.
- ② First, fasten the steel clamp with a screw to the inner boss of control panel.
- ③ For the cooling model, fix the other side of the clamp with a screw strongly. For the heat pump model, put the 0.75mm² cable (thinner cable) on the clamp and tighten it with a plastic clamp to the other boss of the control panel.
- ④ In Australia, the length of power supply cord measured from the entry of the power supply cord to the middle of live pin on the power plug should be over 5.9ft.

CAUTION

- Make sure that the screws of the terminal are fixed tightly.

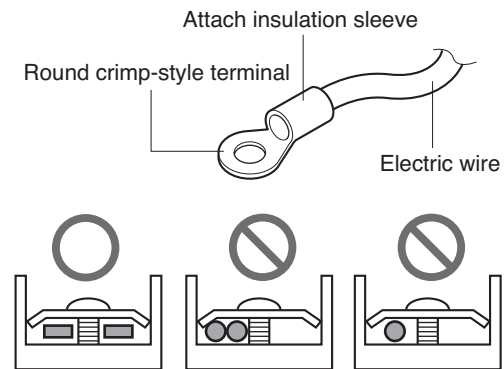
CAUTION

- Make sure to attach the sealing material or (field supplied) to hole of wiring to prevent the infiltration of foreign particle from outside. Otherwise a short-circuit may occur inside the electric parts box
- When clamping the wires, be sure no pressure is applied to the wire connections by using the included clamping material to make appropriate clamps. Also, when wiring, make sure the cover on the electric parts box fits snugly by arranging the wires neatly and attaching the electric parts box cover firmly. When attaching the electric parts box cover, make sure no wires get caught in the edges. Pass wiring through the wiring through holes to prevent damage to them.
- Make sure the remote controller wiring, the wiring between the units, and other electrical wiring do not pass through the same locations outside of the unit, separating them properly, otherwise electrical noise (external static) could cause product malfunction.

NOTE

1. **Use round crimp-style terminals for connecting wires to the power supply terminal block. If unavailable, observe the following points when wiring.**

- Do not connect wires of different gauge to the same power supply terminal.
- Use the specified electric wire. Connect the wire securely to the terminal. Lock the wire down without applying excessive force to the terminal.



Connect wires of the same gauge to both sides

2. **Tightening torque for the terminal screws.**

- Use the correct screwdriver for tightening the terminal screws. If the blade of screwdriver is too small, the head of the screw might be damaged, and the screw will not be properly tightened.
- If the terminal screws are tightened too hard, screws might be damaged.

3. **Do not connect wires of different gauge to the same grounding terminal. Loose connection may deteriorate protection.**

4. **Outside of the unit, keep proper separation between transmission and power supply wiring. The equipment may malfunction if subjected to electrical (external) noise.**

5. **Never connect power supply wiring to the terminal block for remote controller wiring. A mistake of the sort could damage the entire system.**


6. **Use only specified wire and tightly connect wires to terminals. Be careful wires do not place external stress on terminals. Keep wiring in neat order and so as not to obstruct other equipment such as popping open the electric parts box cover. Make sure the cover closes tight. Incomplete connections could result in overheating, and in worse case, electric shock or fire.**


4. Installation of outdoor Unit

4.1 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 thoroughly.

 **WARNING**: This symbol indicates the possibility of death or serious injury.

 **CAUTION**: 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.**

 **WARNING**

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.

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 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.

4. Installation of outdoor Unit

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.



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.

4.1.1 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.

4.1.2 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.

4.1.3 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.

4. Installation of outdoor Unit

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 (NH3.etc.). NH3 gas will cause corrosion of outdoor unit metallic parts.

4.1.4 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.)

4. Installation of outdoor Unit

4.1.5 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.

4. Installation of outdoor Unit

4.2 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.

4.2.1 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.

4.2.2 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.

4. Installation of outdoor Unit

4.3. Foundation

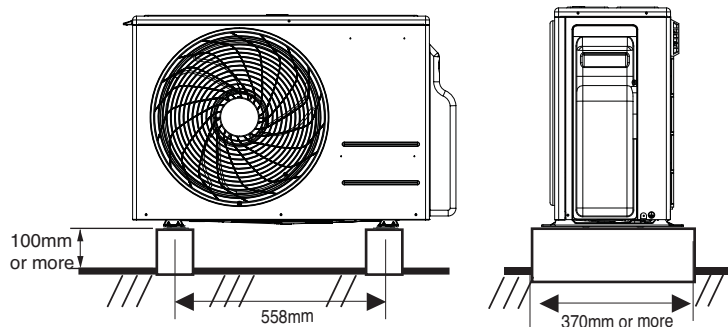
SINGLE A™

For good drain of outdoor unit, keep the bottom height from icing upward.

AUUQ18GH1 AUUQ21GH1

<Basic intensity>

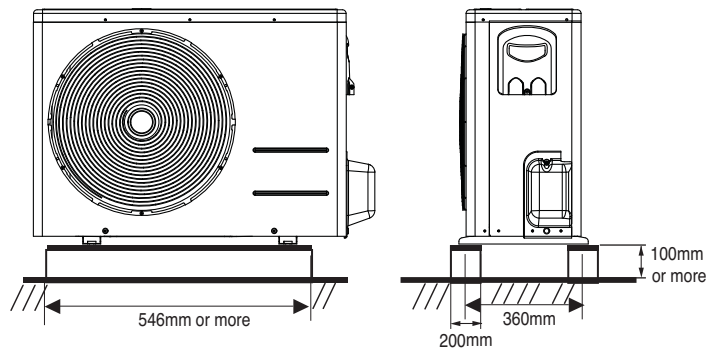
| Bolt Factor | M10-J type |
|---------------------|---------------|
| Concrete height | 100mm or more |
| Bolt inserted depth | 70mm or more |



AUUQ24GH1

<Basic intensity>

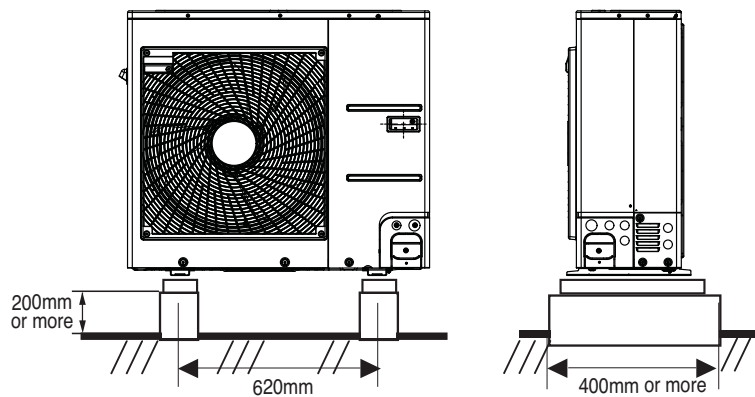
| Bolt Factor | M10-J type |
|---------------------|---------------|
| Concrete height | 100mm or more |
| Bolt inserted depth | 70mm or more |



AUUQ36GH1 AUUQ42GH1 AUUQ48GH1

<Basic intensity>

| Bolt Factor | M10-J type |
|---------------------|---------------|
| Concrete height | 200mm or more |
| Bolt inserted depth | 70mm or more |

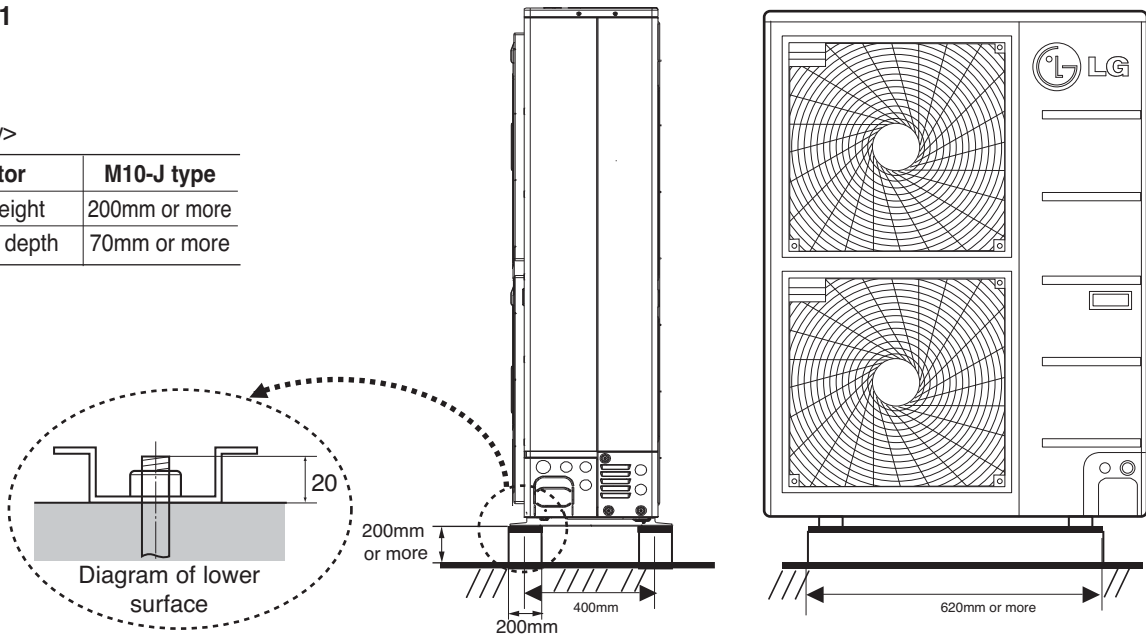


4. Installation of outdoor Unit

AUUQ54GH1

<Basic intensity>

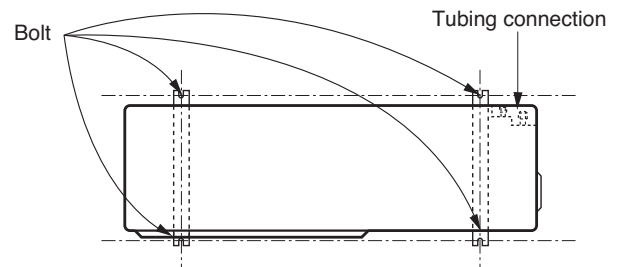
| Bolt Factor | M10-J type |
|---------------------|---------------|
| Concrete height | 200mm or more |
| Bolt inserted depth | 70mm or more |



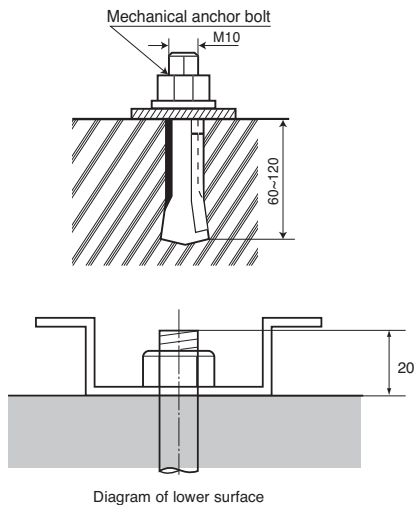
4.4 Settlement of the outdoor unit

- 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.

Settlement draw of outdoor units



Bolt construction work



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.)

4. Installation of outdoor Unit

4.5 Selection of the best location

This Single A 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 not for ice to grow upward.
 - b. Fit a suitable hood or a awning over the unit not to attach outdoor unit heat exchanger directly.
 - c. In very cold snowing area, please consult with your consultant.
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.

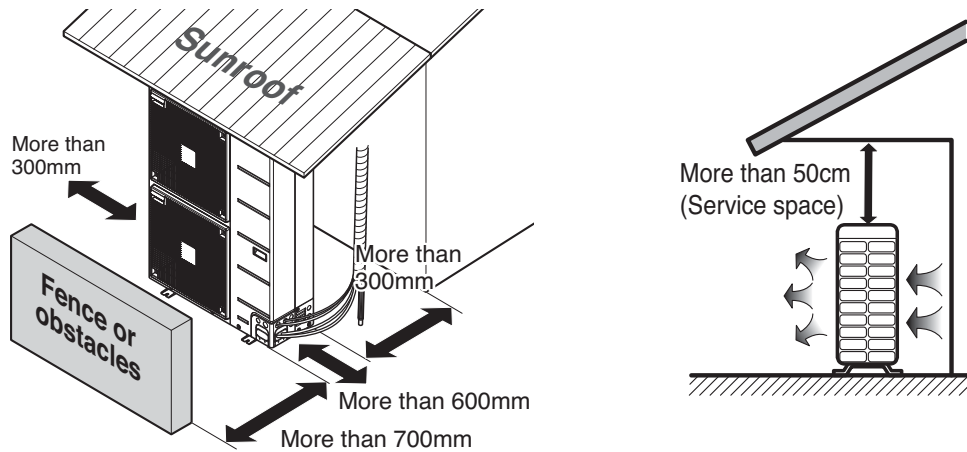
CAUTION

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 an serious explosion.

4. Installation of outdoor Unit

4.6 Clearance space

4.6.1 Clearance around outdoor unit



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

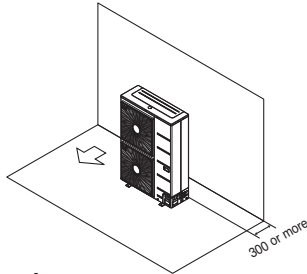
4. Installation of outdoor Unit

Clearance of side discharge unit (unit : mm).

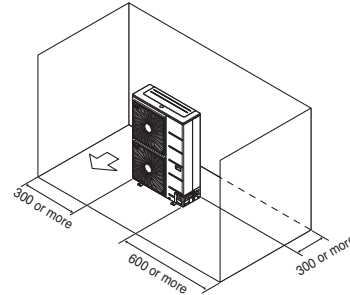
1. Where there is an obstacle on the air intake side:

■ No obstacle above

- Obstacle on the suction side only

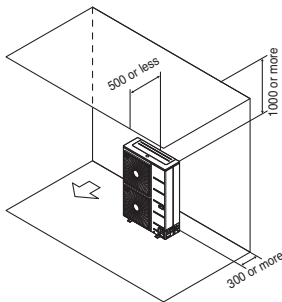


- Obstacle on the both sides

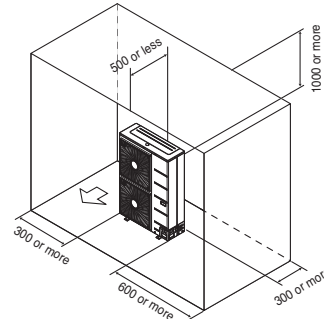


■ Obstacle above, too

- Obstacle on the air intake side, too

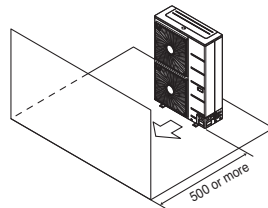


- Obstacle on the air intake side, and both sides

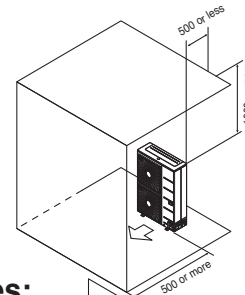


2. Where there is an obstacle on the discharge side:

■ No obstacle above



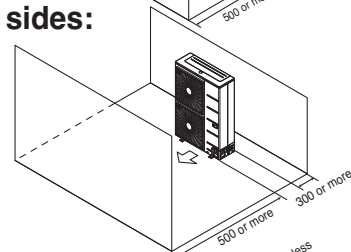
■ Obstacle above, too



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

■ Where the obstacles on the discharge side is higher than the unit:

- No obstacle above

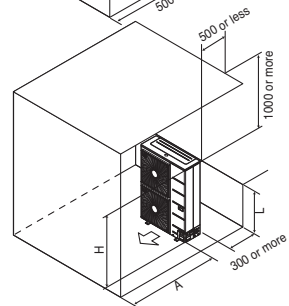


- Obstacle above, too

The relations between H, A and L are as follows:

| | L | A |
|------------|------------------------------|------|
| $L \leq H$ | $0 < L \leq 1/2H$ | 750 |
| | $1/2H < L$ | 1000 |
| $H < L$ | Set the stand as: $L \leq H$ | |

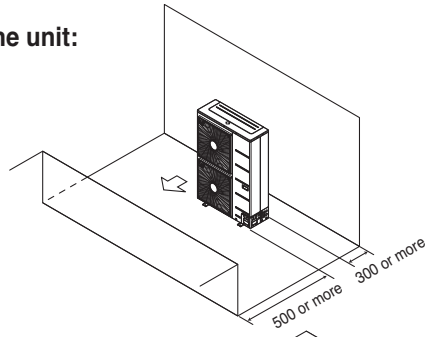
Close the bottom of the installation frame to prevent the discharged air from being bypassed.



4. Installation of outdoor Unit

■ Where the obstacles on the discharge side is lower than the unit:

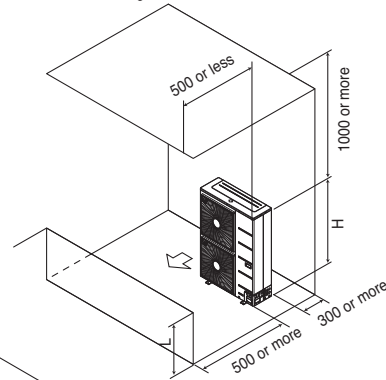
- No obstacle above



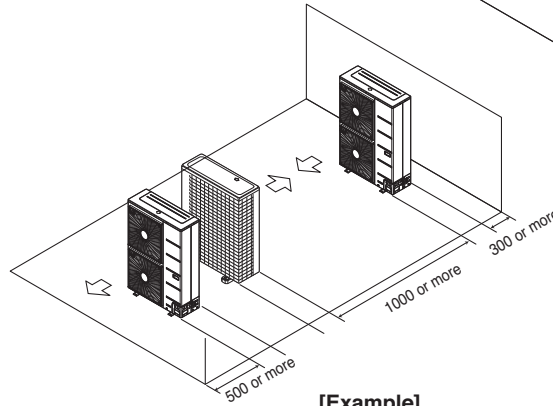
- Obstacle above, too

'L' should be lower than 'H'

Close the bottom of the installation frame to prevent the discharged air from being bypassed.



4. Series installation



3.6.2 Air guide work

In case of out door 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.

3.6.3 Lightning safety zone

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

Safety zone

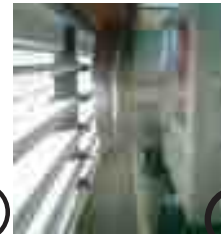
| | | | | |
|----------------------|----|----|----|----|
| Building Height [m] | 20 | 30 | 45 | 60 |
| Protection Angle [°] | 55 | 45 | 35 | 25 |

- 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.

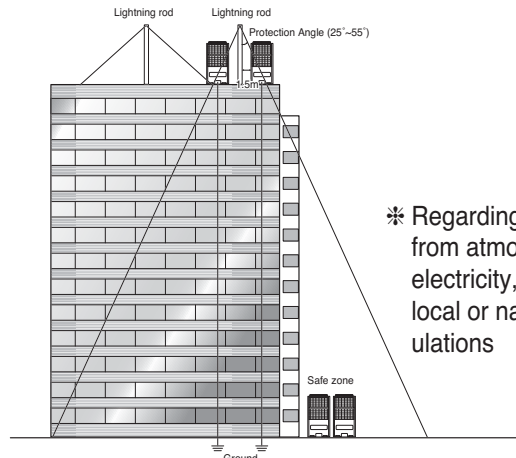
[Example]



<Without air guide>
Safety notice activation



<With air guide>
Normal operation



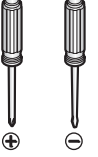
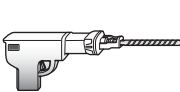
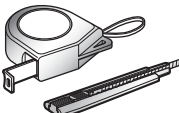
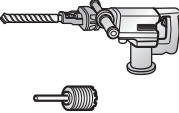
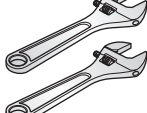
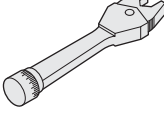

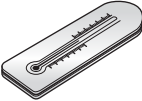

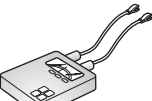

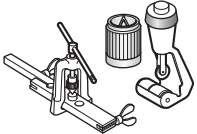
* Regarding the safety from atmosphere electricity, follow the local or national regulations

4. Installation of outdoor Unit

4.7 Outdoor unit piping

4.7.1 Outdoor unit piping

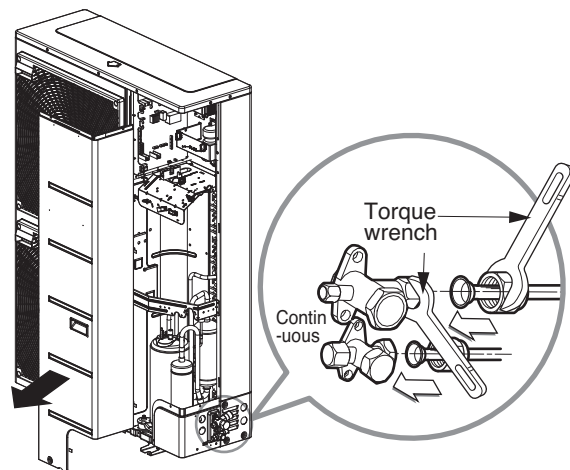
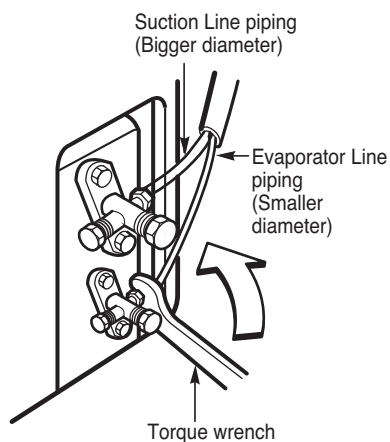
Required tools

| | | | | | |
|---|---|---|--|---|---|
|  |  |  |  |  |  |
| 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 |

4.7.2 Connecting piping

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.



※ When tighten the pipe, hold the haxagonal body.

4. Installation of outdoor Unit

4.8 Outdoor unit installation requirements

4.8.1 Piping elevation and length

• Free joint single outdoor

| Model | Capacity | Pipe Size | | Length A(m) | | Elevation B(m) | | Additional Refrigerant (g/m) |
|-----------|----------|-------------|------------|-------------|------|----------------|------|------------------------------|
| | | Gas | Liquid | Standard | Max. | Standard | Max. | |
| AUUQ18GH1 | 5kW | Ø12.7(1/2) | Ø6.35(1/4) | 7.5 | 30 | 5 | 15 | 20 |
| AUUQ21GH1 | 6kW | Ø15.88(5/8) | Ø9.52(3/8) | 7.5 | 30 | 5 | 15 | 20 |
| AUUQ24GH1 | 7kW | Ø15.88(5/8) | Ø9.52(3/8) | 7.5 | 50 | 5 | 30 | 40 |
| AUUQ36GH1 | 10kW | Ø15.88(5/8) | Ø9.52(3/8) | 7.5 | 50 | 5 | 30 | 40 |
| AUUQ42GH1 | 12.5kW | Ø15.88(5/8) | Ø9.52(3/8) | 7.5 | 50 | 5 | 30 | 40 |
| AUUQ48GH1 | 14kW | Ø15.88(5/8) | Ø9.52(3/8) | 7.5 | 50 | 5 | 30 | 40 |
| AUUQ54GH1 | 15.8kW | Ø19.05(3/4) | Ø9.52(3/8) | 7.5 | 50 | 5 | 30 | 40 |

• Ceiling Cassette

| Model | Capacity | Pipe Size | | Length A(m) | | Elevation B(m) | | Additional Refrigerant (g/m) |
|-------------|----------|-------------|------------|-------------|------|----------------|------|------------------------------|
| | | Gas | Liquid | Standard | Max. | Standard | Max. | |
| ATUQ18GPLE3 | 5kW | Ø12.7(1/2) | Ø6.35(1/4) | 7.5 | 30 | 5 | 15 | 20 |
| ATUQ21GPLE3 | 6kW | Ø15.88(5/8) | Ø9.52(3/8) | 7.5 | 30 | 5 | 15 | 20 |
| ATUQ24GNLE3 | 7kW | Ø15.88(5/8) | Ø9.52(3/8) | 7.5 | 50 | 5 | 30 | 40 |
| ATUQ36GMLE3 | 10kW | Ø15.88(5/8) | Ø9.52(3/8) | 7.5 | 50 | 5 | 30 | 40 |
| ATUQ42GMLE3 | 12.5kW | Ø15.88(5/8) | Ø9.52(3/8) | 7.5 | 50 | 5 | 30 | 40 |
| ATUQ48GMLE3 | 14kW | Ø15.88(5/8) | Ø9.52(3/8) | 7.5 | 50 | 5 | 30 | 40 |
| ATUQ54GMLE3 | 15.8kW | Ø19.05(3/4) | Ø9.52(3/8) | 7.5 | 50 | 5 | 30 | 40 |

• Ceiling Suspended Air conditioner

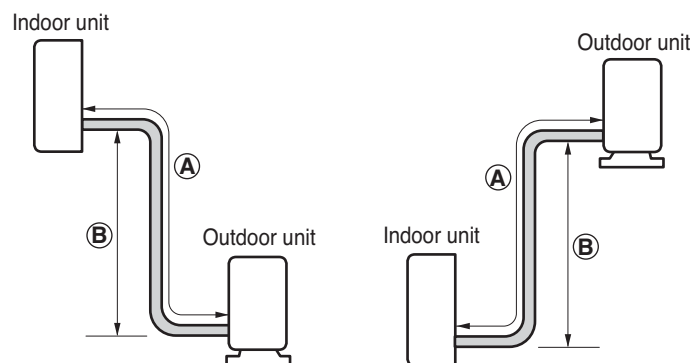
| Model | Capacity | Pipe Size | | Length A(m) | | Elevation B(m) | | Additional Refrigerant (g/m) |
|-------------|----------|-------------|------------|-------------|------|----------------|------|------------------------------|
| | | Gas | Liquid | Standard | Max. | Standard | Max. | |
| AVUQ18GJLA0 | 5kW | Ø12.7(1/2) | Ø6.35(1/4) | 7.5 | 30 | 5 | 15 | 20 |
| AVUQ21GJLA0 | 6kW | Ø15.88(5/8) | Ø9.52(3/8) | 7.5 | 30 | 5 | 15 | 20 |
| AVUQ24GJLA0 | 7kW | Ø15.88(5/8) | Ø9.52(3/8) | 7.5 | 50 | 5 | 30 | 40 |
| AVUQ36GKLA0 | 10kW | Ø15.88(5/8) | Ø9.52(3/8) | 7.5 | 50 | 5 | 30 | 40 |
| AVUQ42GLLA0 | 12.5kW | Ø15.88(5/8) | Ø9.52(3/8) | 7.5 | 50 | 5 | 30 | 40 |
| AVUQ48GLLA0 | 14kW | Ø15.88(5/8) | Ø9.52(3/8) | 7.5 | 50 | 5 | 30 | 40 |
| AVUQ54GLLA0 | 15.8kW | Ø19.05(3/4) | Ø9.52(3/8) | 7.5 | 50 | 5 | 30 | 40 |

4. Installation of outdoor Unit

- Ceiling Concealed Duct
- Ceiling Concealed Duct – Low static

| Model | Capacity | Pipe Size | | Length A(m) | | Elevation B(m) | | Additional (g/m) |
|----------------------------|----------|-------------|------------|-------------|------|----------------|------|------------------|
| | | Gas | Liquid | Standard | Max. | Standard | Max. | |
| ABUQ18GHLA0 ABUQ18GL2A0 | 5kW | Ø12.7(1/2) | Ø6.35(1/4) | 7.5 | 30 | 5 | 15 | 20 |
| ABUQ21GHLA0 ABUQ21GL2A0 | 6kW | Ø15.88(5/8) | Ø9.52(3/8) | 7.5 | 30 | 5 | 15 | 20 |
| ABUQ24GGLA0 ABUQ24GL3A0 | 7kW | Ø15.88(5/8) | Ø9.52(3/8) | 7.5 | 50 | 5 | 30 | 40 |
| ABUQ36GGLA0 | 10kW | Ø15.88(5/8) | Ø9.52(3/8) | 7.5 | 50 | 5 | 30 | 40 |
| ABUQ42GRLA0 | 12.5kW | Ø15.88(5/8) | Ø9.52(3/8) | 7.5 | 50 | 5 | 30 | 40 |
| ABUQ48GRLA0 | 14kW | Ø15.88(5/8) | Ø9.52(3/8) | 7.5 | 50 | 5 | 30 | 40 |
| ABUQ54GRLA0 | 15.8kW | Ø19.05(3/4) | Ø9.52(3/8) | 7.5 | 50 | 5 | 30 | 40 |

If installed tube is shorter than 7.5 m, additional charging is not necessary.
 Additional Refrigerant = (A - 7.5) x Additional refrigerant (g)



CAUTION

- Capacity is based on standard length and maximum allowance length is on the basis of reliability.
- Improper refrigerant charge may result in abnormal cycle.

Night Silent Operation setting

1. Open the side panel of outdoor unit.
2. Set the DIP switch.

| | |
|----------------|----------------------------|
| DIP Switch ON | Night Silent Operation ON |
| DIP Switch OFF | Night Silent Operation OFF |

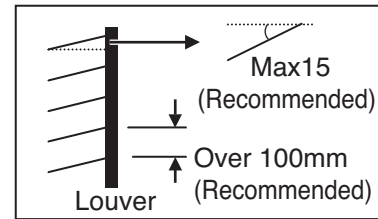
3. Close the side panel.

4. Installation of outdoor Unit

4.9 Outdoor unit cabin

4.9.1 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

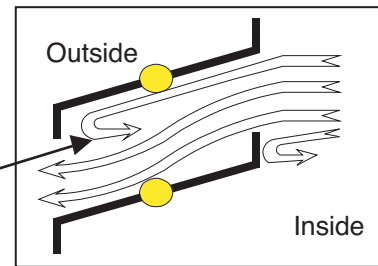


Section

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

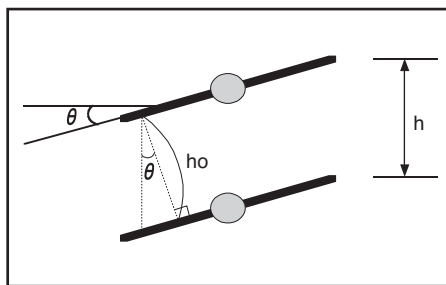


NOTE

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



$$\theta = 15^\circ$$

$$h_o = h \cdot \cos \theta$$

$$\text{Total face area}(A) = H \cdot W$$

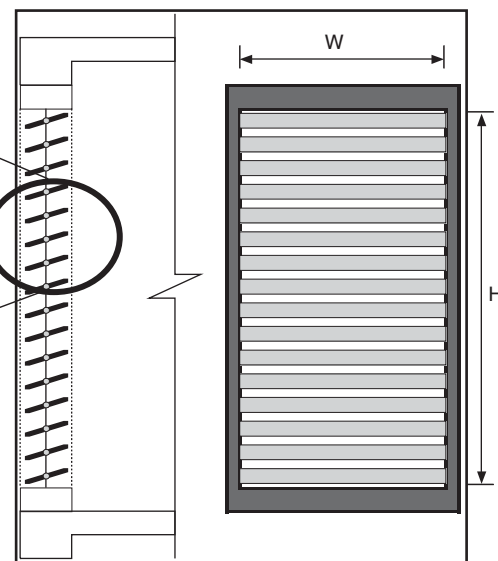
$$\text{Number of open space}(N) = (\text{number of louver} - 1)$$

$$\text{Effective face area}(A_f) = h_o \cdot W \cdot N$$

$$\text{Louver opening rate}(n) = A_f / A$$

$$\therefore A_f = A \cdot n$$

Effective face area of cross section



[Side view]

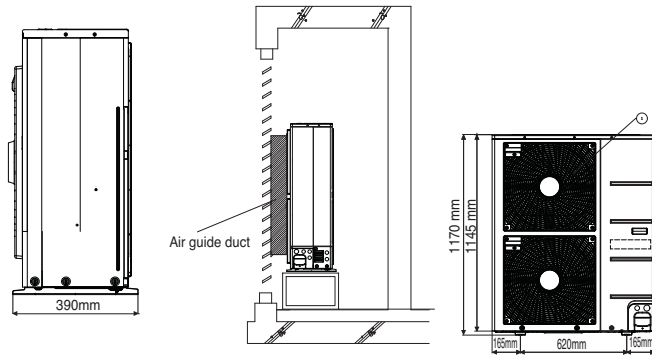
[Front view]

4. Installation of outdoor Unit

4.9.2 Air flow rate confirmation

Example. 1

[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 1.9 m = 2.28 m ² |
| ■ Louver shielding dimension by product | (B) = 0.95 m x 1.17 m = 1.11 m ² |
| ■ Suction able louver dimension | (A-B) = 1.17 m ² |
| ■ Equivalent suction dimension (Opening rate 80%) | = 1.17 m ² x 0.8 = 0.94 m ² |
| ■ Equivalent suction air volume | = 0.94 m ² x 2.5 m/s x 60s = 141 m ³ /min |
| ■ Required air volume / equivalent volume | = 141 m ³ /min / 90 m ³ /min(product airflow rate) = 157 % |
| | → OK |



P/No.: MFL62069310



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