



FREE MATCH II MULTI VRF SERVICE MANUAL

T1/R410A/50Hz
(GC201106 -I)



Большая библиотека технической документации
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каталоги, инструкции, сервисные мануалы, схемы.

CONTENTS



| | |
|---|-----------|
| PRODUCT | 2 |
| 1 MODELS LIST | 2 |
| 1.1 Outdoor Unit | 2 |
| 1.2 Indoor Unit..... | 2 |
| 2 NOMENCLATURE | 4 |
| 2.1 Nomenclature of Outdoor Unit | 4 |
| 2.2 Nomenclature of indoor unit | 4 |
| 3 FUNCTION | 5 |
| 4 PRODUCT DATA | 6 |
| 4.1 Product data of outdoor..... | 6 |
| 4.2 Product data of indoor | 7 |
| 4.3 Working Temperature Range..... | 12 |
| 5 PIPING DIAGRAM | 13 |
| CONTROL | 15 |
| 1 OPERATION FLOWCHART | 15 |
| 1.1 Cooling/Dehumidifying Operation | 16 |
| 1.2 Heating Operation..... | 17 |
| 2 MAIN LOGIC | 18 |
| 2.1 Control Function of Outdoor Unit..... | 18 |
| 2.2 Protection Function | 19 |
| 2.3 other function..... | 20 |
| 2.4 Control Function of Indoor Unit..... | 20 |
| 3 REMOTE CONTROLLER | 23 |
| 3.1 Wired Remote Controller | 23 |
| 3.2 Wireless Remote Controller..... | 28 |
| INSTALLATION | 33 |
| 1 PRECAUTIONS FOR INSTALLATION | 33 |
| 1.1 Precautions for Installation | 33 |
| 1.2 Key Points of Installation | 34 |
| 2 FLOW CHART OF INSTALLATION..... | 35 |
| 3 OUTDOOR UNIT INSTALLATION..... | 36 |
| 3.1 Before Installation | 36 |
| 3.2 Installation Site | 36 |
| 3.3 Caution for Installation..... | 36 |
| 3.4 Dimension Data | 36 |
| 3.5 Installation Clearance Data..... | 37 |
| 4 INDOOR UNIT INSTALLATION | 38 |
| 4.1 Installation of Duct Type..... | 38 |

| | |
|---|-----------|
| 4.2 Installation of Cassette Type..... | 41 |
| 4.3 Installation of Floor Ceiling Type | 47 |
| 5 REFRIGERATION PIPING WORK | 50 |
| 5.1 Connection between Indoor and Outdoor Units..... | 50 |
| 5.2 Refrigerant Charging and Trial Running | 52 |
| 6 ELECTRIC WIRING WORK..... | 55 |
| 6.1 Wiring Principle | 55 |
| 6.2 Electric Wiring Design | 55 |
| 6.3 Specification of Power Supply Wire and Air Switch | 57 |
| MAINTENANCE | 59 |
| 1 TROUBLE TABLE..... | 59 |
| 1.1 Please check the following items before contact the maintenance serviceman..... | 59 |
| 1.2 The conditions listed below are not classified into errors | 59 |
| 1.3 Error description | 60 |
| 2 FLOW CHART OF TROUBLESHOOTING | 64 |
| 3 WIRING DIADRAM..... | 69 |
| 3.1 Outdoor unit | 69 |
| 3.2 Indoor unit | 70 |
| 4 DISASSEMBLY AND ASSEMBLY PROCEDURE OF MAIN PARTS | 72 |
| 4.1 Outdoor Unit..... | 72 |
| 4.2 Indoor Unit..... | 74 |
| 5 EXPLODED VIEWS AND PART LIST | 81 |
| 5.1 Outdoor Unit | 81 |
| 5.2 Indoor Unit..... | 85 |

PRODUCT


PRODUCT 1 MODELS LIST

1.1 Outdoor Unit



| Units Series | Model | Product Code | Capacity | | Ref. | Power Supply | Appearance |
|-------------------------|---------------|--------------|--------------|--------------|-------|------------------------|---|
| | | | Cooling (kW) | Heating (kW) | | | |
| Free Match Outdoor Unit | GWHD(36)NK3AO | CN860W0011 | 9.789 | 11 | R410A | 220~ 240V -1Ph-50Hz |  |
| | GWHD(42)NK3AO | CN860W0020 | 11.6 | 13 | | |  |

1.2 Indoor Unit


1.2.1 Duct type

| Units Series | Model | Product Code | Capacity | | Ref. | Power Supply | Appearance |
|----------------------------------|---------------------|--------------|--------------|--------------|-------|------------------------|---|
| | | | Cooling (kW) | Heating (kW) | | | |
| Free Match Duct Type Indoor Unit | GFH(09)EA-K3DNA1A/I | CN210N0010 | 2.5 | 2.80 | R410A | 220~ 240V -1Ph-50Hz |  |
| | GFH(12)EA-K3DNA1A/I | CN210N0020 | 3.5 | 3.85 | | | |
| | GFH(18)EA-K3DNA1A/I | CN210N0030 | 5.0 | 5.50 | | | |
| | GFH(21)EA-K3DNA1A/I | CN210N0040 | 6.0 | 6.60 | | | |
| | GFH(24)EA-K3DNA1A/I | CN210N0050 | 7.1 | 8.00 | | | |

1.2.2 Cassette type

| Units Series | Model | Product Code | Capacity | | Ref. | Power Supply | Appearance |
|--------------------------------------|---------------------|--------------|--------------|--------------|-------|------------------------|---|
| | | | Cooling (kW) | Heating (kW) | | | |
| Free Match Cassette Type Indoor Unit | GKH(12)BA-K3DNA1A/I | CN510N0010 | 3.5 | 3.85 | R410A | 220~ 240V -1Ph-50Hz |  |
| | GKH(18)BA-K3DNA1A/I | CN510N0020 | 5.0 | 5.50 | | | |
| | GKH(24)BA-K3DNA1A/I | CN510N0030 | 7.1 | 8.00 | | | |
| | GKH(12)BA-K3DNA2A/I | CN510N0040 | 3.5 | 4.0 | R410A | 220~ 240V -1Ph-50Hz |  |
| | GKH(18)BA-K3DNA2A/I | CN510N0050 | 4.5 | 5.0 | | | |

1.2.3 Floor ceiling type

| Units Series | Model | Product Code | Capacity | | Ref. | Power Supply | Appearance |
|---|---------------------|--------------|--------------|--------------|-------|-----------------------|---|
| | | | Cooling (kW) | Heating (kW) | | | |
| Free Match Floor/Ceiling Type Indoor Unit | GTH(09)BA-K3DNA1A/I | CN610N0010 | 2.5 | 2.80 | R410A | 220~240V -1Ph-50Hz |  |
| | GTH(12)BA-K3DNA1A/I | CN610N0020 | 3.5 | 3.85 | | | |
| | GTH(18)BA-K3DNA1A/I | CN610N0030 | 5.0 | 5.50 | | | |
| | GTH(24)BA-K3DNA1A/I | CN610N0040 | 7.1 | 8.00 | | | |

2 NOMENCLATURE

2.1 Nomenclature of Outdoor Unit

| | | | | | | | | |
|----|---|---|-----|---|---|---|---|---|
| GW | □ | □ | (□) | □ | □ | □ | □ | O |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

| NO. | Description | Options |
|-----|----------------------|---|
| 1 | GW | Free-Match Code |
| 2 | Cooling Function | C: Cooling Only H: Heat pump |
| 3 | Compressor Frequency | D:DC inverter rotor type |
| 4 | Cooling Capacity | 36 represents 36000Btu/h 1kW=3.412KBtu |
| 5 | Climate Type | T1 |
| 6 | Power Supply | M:380-415V-3Ph-50Hz; K:220-240V-1Ph-50Hz |
| 7 | Refrigerant | R410A |
| 8 | Design No. | A :First generation |
| 9 | O | Outdoor Unit Code O:Outdoor I:Indoor |

2.2 Nomenclature of indoor unit

| | | | | | | | | | | | | | |
|---|---|---|-----|---|---|---|---|---|---|----|----|---|----|
| G | □ | □ | (□) | □ | - | □ | □ | □ | □ | □ | □ | / | I |
| 1 | 2 | 3 | 4 | 5 | | 6 | 7 | 8 | 9 | 10 | 11 | | 12 |

| NO. | Description | Options |
|-----|----------------------|--|
| 1 | G | GREE |
| 2 | Product Type | F:Duct type K:Cassette type T:Floor ceiling type |
| 3 | Cooling Function | C: Cooling Only H: Heat pump |
| 4 | Cooling Capacity | 12 represents 12000Btu/h 1kW=3.412KBtu |
| 5 | Series | Alphabets: Series code + Shell code |
| 6 | Power Supply | M:380-415V-3Ph-50Hz; K:220-240V-1Ph-50Hz |
| 7 | Refrigerant | R410A |
| 8 | Compressor Frequency | D:DC inverter rotor type |
| 9 | Climate Type | T1 |
| 10 | Panel Code | 1 Alphabet +1 Numeral |
| 11 | Design No. | A :First generation |
| 12 | I | Indoor Unit Code O:Outdoor I:Indoor |

3 FUNCTION

| Function | | Duct type | Cassette type | Floor ceiling type |
|-------------------------------------|----------------------------|-----------|---------------|--------------------|
| For Comfortable Air Conditioning | Fan operation Mode | • | • | • |
| | Auto Swing Controller | - | • | • |
| | Timer Selector | • | • | • |
| | Auto Mode Operation | • | • | • |
| | Cool Mode Operation | • | • | • |
| | Heat Mode Operation | • | • | • |
| | Dry Mode Operation | • | • | • |
| | Fan Mode Operation | • | • | • |
| | Sleep mode setting | • | • | • |
| | Drain Pump | • | • | - |
| For Flexible Control | Wired Controller | • | • | • |
| | Wireless Remote Controller | • | • | • |

•:Have Functions

- :No Functions

4 PRODUCT DATA

4.1 Product data of outdoor

| Model | Heat pump | | GWHD(36)NK3AO | GWHD(42)NK3AO |
|--|-------------------|-----------------|------------------------|------------------------|
| | Product Code | | CN860W0011 | CN860W0020 |
| Capacity | Cooling | kW | 9.789 | 11.6 |
| | Heating | kW | 11 | 13 |
| Capacity adjustment range | | % | 23% ~ 150% | 19%~ 150% |
| EER | | kW/kW | 3.23 | 3.23 |
| COP | | kW/kW | 3.65 | 3.67 |
| Power supply | | V-Ph-Hz | 220~240-1-50 | 220~240-1-50 |
| Refrigerant | Type | | R410A | R410A |
| | Charge volume | kg | 3.6 | 4.8 |
| Compressor | Brand | | MITSUBISHI | MITSUBISHI |
| | Type | | DC inverter rotor type | DC inverter rotor type |
| | Quantity | | 1 | 1 |
| Moisture protection | | | IP×4 | IP×4 |
| Wiring connection | Area*quantity | mm ² | 6*3 | 6*3 |
| Connecting pipe | Connection method | | Flare Connection | Flare Connection |
| Sound pressure level | | dB(A) | 54 | 54 |
| Outline dimension | W×D×H | mm | 950×412×840 | 1015×440×1103 |
| Package dimension | W×D×H | mm | 1100×450×905 | 1155×490×1220 |
| Net weight | | kg | 73 | 102 |
| Gross weight | | kg | 78 | 112 |
| Maximum drive IDU NO. | | unit | 4 | 5 |
| Max. equivalent connection pipe length | | m | 70 | 80 |
| Loading quantity | | 20'GP | 52 | 22 |
| | | 40' GP | 108 | 48 |
| | | 40' HQ | 108 | 48 |

Notes:

- The rated cooling capacity data is measured under the following work condition: Indoor Temperature is 27°C DB, 19 °C WB. Outdoor Temperature is 35 °C DB. The rated heating capacity data is measured under the following work condition: Indoor Temperature is 20°C DB. Outdoor Temperature is 7°C DB, 6°C WB.
- The data will change with the change of products. Refer to those parameters listed on nameplate.
- Noise was tested in semi-silenced room, so the actual noise value will be a little higher for change of ambient.

4.2 Product data of indoor

4.2.1 Duct Type

| Model | Heat pump | | GFH(09)EA-K3DNA1A/I | GFH(12)EA-K3DNA1A/I | GFH(18)EA-K3DNA1A/I |
|---------------------------|-------------------|-------------------|---------------------|---------------------|---------------------|
| | Product Code | | CN210N0010 | CN210N0020 | CN210N0030 |
| Capacity | Cooling | kW | 2.5 | 3.5 | 5.0 |
| | Heating | kW | 2.80 | 3.85 | 5.50 |
| Power supply | | V-Ph-Hz | 220 ~ 240-1- 50 | 220 ~ 240-1- 50 | 220 ~ 240-1- 50 |
| Motor power input | | kW | 0.075 | 0.065 | 0.08 |
| Air flow volume | | m ³ /h | 450 | 550 | 700 |
| | | CFM | 265 | 324 | 412 |
| Sound pressure level(H/L) | | dB(A) | 37/31 | 39/32 | 40/33 |
| Fan motor | Output | kW | 0.041 | 0.036 | 0.044 |
| | Running current | A | 0.406 | 0.348 | 0.428 |
| Connecting pipe | Gas | inch | 3/8"(Φ9.52mm) | 3/8"(Φ9.52mm) | 1/2"(Φ12.7mm) |
| | Liquid | inch | 1/4"(Φ6.35mm) | 1/4"(Φ6.35mm) | 1/4"(Φ6.35mm) |
| | Connection method | | Flare Connection | Flare Connection | Flare Connection |
| Drain pipe | External dia. | mm | Φ20 | Φ20 | Φ20 |
| | Thickness | mm | 1.5 | 1.5 | 1.5 |
| Outline dimension | W×D×H | mm | 700×615×200 | 700×615×200 | 900×615×200 |
| Package dimension | W×D×H | mm | 893×743×305 | 893×743×305 | 1123×743×305 |
| Net Weight | | kg | 22 | 23 | 27 |
| Gross weight | | kg | 27 | 29 | 36 |
| Loading quantity | | 20'GP | 108 | 108 | 90 |
| | | 40' GP | 234 | 234 | 180 |
| | | 40' HQ | 234 | 234 | 180 |

Notes:

- The rated cooling capacity data is measured under the following work condition: Indoor Temperature is 27°C DB, 19 °C WB. Outdoor Temperature is 35 °C DB. The rated heating capacity data is measured under the following work condition: Indoor Temperature is 20°C DB. Outdoor Temperature is 7°C DB, 6°C WB.
- The data will change with the change of products. Refer to those parameters listed on nameplate.
- Noise was tested in semi-silenced room, so the actual noise value will be a little higher for change of ambient.

| Model | Heat pump | | GFH(21)EA-K3DNA1A/I | GFH(24)EA-K3DNA1A/I |
|---------------------------|-------------------|-------------------|---------------------|---------------------|
| | Product Code | | CN210N0040 | CN210N0050 |
| Capacity | Cooling | kW | 6.0 | 7.1 |
| | Heating | kW | 6.60 | 8.00 |
| Power supply | | V-Ph-Hz | 220~240-1-50 | 220~240-1-50 |
| Motor power input | | kW | 0.11 | 0.11 |
| Air flow volume | | m ³ /h | 1000 | 1000 |
| | | CFM | 589 | 589 |
| Sound pressure level(H/L) | | dB(A) | 42/34 | 42/34 |
| Fan motor | Output | kW | 0.061 | 0.061 |
| | Running current | A | 0.588 | 0.588 |
| Connecting pipe | Gas | inch | 5/8"(Φ15.9mm) | 5/8"(Φ15.9mm) |
| | Liquid | inch | 3/8"(Φ9.52mm) | 3/8"(Φ9.52mm) |
| | Connection method | | Flare Connection | Flare Connection |
| Drain pipe | External dia. | mm | Φ20 | Φ20 |
| | Thickness | mm | 1.5 | 1.5 |
| Outline dimension | W×D×H | mm | 1100×615×200 | 1100×615×200 |
| Package dimension | W×D×H | mm | 1323×743×305 | 1323×743×305 |
| Net Weight | | kg | 31 | 31 |
| Gross weight | | kg | 41 | 41 |
| Loading quantity | | 20'GP | 72 | 72 |
| | | 40' GP | 162 | 162 |
| | | 40' HQ | 162 | 162 |

Notes:

- The rated cooling capacity data is measured under the following work condition: Indoor Temperature is 27°C DB, 19 °C WB. Outdoor Temperature is 35 °C DB. The rated heating capacity data is measured under the following work condition: Indoor Temperature is 20°C DB. Outdoor Temperature is 7°C DB, 6°C WB.
- The data will change with the change of products. Refer to those parameters listed on nameplate.
- Noise was tested in semi-silenced room, so the actual noise value will be a little higher for change of ambient.

4.2.2 Cassette type

| Model | Heat pump | | GKH(12)BA-K3DNA1A/I | GKH(18)BA-K3DNA1A/I | GKH(24)BA-K3DNA1A/I |
|---------------------------|-------------------|-------------------|---------------------|---------------------|---------------------|
| | Product Code | | CN510N0010 | CN510N0020 | CN510N0030 |
| Capacity | Cooling | kW | 3.5 | 5 | 7.1 |
| | Heating | kW | 3.85 | 5.50 | 8.00 |
| Power supply | | V-Ph-Hz | 220~240-1-50 | 220~240-1-50 | 220~240-1-50 |
| Motor power input | | kW | 0.07 | 0.07 | 0.1 |
| Air flow volume | | m ³ /h | 680 | 680 | 1180 |
| | | CFM | 400 | 400 | 694 |
| Sound pressure level(H/L) | | dB(A) | 37/33 | 37/33 | 39/35 |
| Fan motor | Output | kW | 0.0385 | 0.0385 | 0.055 |
| | Running current | A | 0.374 | 0.374 | 0.535 |
| Connecting pipe | Gas | inch | 3/8"(Φ9.52mm) | 1/2"(Φ12.7mm) | 5/8"(Φ15.9mm) |
| | Liquid | inch | 1/4"(Φ6.35mm) | 1/4"(Φ6.35mm) | 3/8"(Φ9.52mm) |
| | Connection method | | Flare Connection | Flare Connection | Flare Connection |
| Drain pipe | External dia. | mm | Φ31 | Φ31 | Φ31 |
| | Thickness | mm | 3 | 3 | 3 |
| Outline Dimension | Body(W×D×H) | mm | 840×840×190 | 840×840×190 | 840×840×240 |
| | Panel(W×D×H) | mm | 950×950×60 | 950×950×60 | 950×950×60 |
| Package Dimension | Body(W×D×H) | mm | 963×963×273 | 963×963×273 | 963×963×325 |
| | Panel(W×D×H) | mm | 1043×1028×130 | 1043×1028×130 | 1043×1028×130 |
| Net Weight | Body | kg | 25 | 25 | 30 |
| | Panel | kg | 6.5 | 6.5 | 6.5 |
| Gross Weight | Body | kg | 33 | 33 | 38 |
| | Panel | kg | 10 | 10 | 10 |
| Loading quantity | | 20'GP | 72 | 48 | 40 |
| | | 40' GP | 128 | 128 | 108 |
| | | 40' HQ | 144 | 144 | 128 |

Notes:

a. The rated cooling capacity data is measured under the following work condition: Indoor Temperature is 27°C DB, 19 °C WB. Outdoor Temperature is 35 °C DB. The rated heating capacity data is measured under the following work condition: Indoor Temperature is 20°C DB. Outdoor Temperature is 7°C DB, 6°C WB.

b. The data will change with the change of products. Refer to those parameters listed on nameplate.

c. Noise was tested in semi-silenced room, so the actual noise value will be a little higher for change of ambient.

| Model | Heat pump | | GKH(12)BA-K3DNA2A/I | GKH(18)BA-K3DNA2A/I |
|---------------------------|-------------------|-------------------|---------------------|---------------------|
| | Product Code | | CN510N0040 | CN510N0050 |
| Capacity | Cooling | kW | 3.5 | 4.5 |
| | Heating | kW | 4.0 | 5.0 |
| Power supply | | V-Ph-Hz | 220~240-1-50 | 220~240-1-50 |
| Motor power input | | kW | 0.05 | 0.05 |
| Air flow volume | | m ³ /h | 600 | 600 |
| | | CFM | 353 | 353 |
| Sound pressure level(H/L) | | dB(A) | 46 | 46 |
| Fan motor | Output | kW | 0.011 | 0.011 |
| | Running current | A | 0.25 | 0.25 |
| Connecting pipe | Gas | inch | 3/8"(Φ9.52mm) | 1/2"(Φ12.7mm) |
| | Liquid | inch | 1/4"(Φ6.35mm) | 1/4"(Φ6.35mm) |
| | Connection method | | Flare Connection | Flare Connection |
| Drain pipe | External dia. | mm | Φ31 | Φ31 |
| | Thickness | mm | 3 | 3 |
| Outline Dimension | Body(W×D×H) | mm | 570×570×230 | 570×570×230 |
| | Panel(W×D×H) | mm | 650×650×50 | 650×650×50 |
| Package Dimension | Body(W×D×H) | mm | 851×731×325 | 851×731×325 |
| | Panel(W×D×H) | mm | 733×673×117 | 733×673×117 |
| Net Weight | Body | kg | 18 | 18 |
| | Panel | kg | 6.5 | 6.5 |
| Gross Weight | Body | kg | 23 | 23 |
| | Panel | kg | 10 | 10 |
| Loading quantity | | 20'GP | 102 | 102 |
| | | 40' GP | 209 | 209 |
| | | 40' HQ | 246 | 246 |

Notes:

- The rated cooling capacity data is measured under the following work condition: Indoor Temperature is 27°C DB, 19 °C WB. Outdoor Temperature is 35 °C DB. The rated heating capacity data is measured under the following work condition: Indoor Temperature is 20°C DB. Outdoor Temperature is 7°C DB, 6°C WB.
- The data will change with the change of products. Refer to those parameters listed on nameplate.
- Noise was tested in semi-silenced room, so the actual noise value will be a little higher for change of ambient.

4.2.3 Floor ceiling type

| Model | Heat pump | | GTH(09)BA-K3DNA1A/I | GTH(12)BA-K3DNA1A/I |
|---------------------------|-------------------|-------------------|---------------------|---------------------|
| | Product Code | | CN610N0010 | CN610N0020 |
| Capacity | Cooling | kW | 2.5 | 3.5 |
| | Heating | kW | 2.8 | 3.85 |
| Power supply | | V-Ph-Hz | 220~240-1-50 | 220~240-1-50 |
| Motor power input | | kW | 0.055 | 0.055 |
| Air flow volume | | m ³ /h | 650 | 650 |
| | | CFM | 383 | 383 |
| Sound pressure level(H/L) | | dB(A) | 40/36 | 40/36 |
| Fan motor | Output | kW | 0.3 | 0.3 |
| | Running current | A | 0.297 | 0.297 |
| Connecting pipe | Gas | inch | 3/8"(Φ9.52mm) | 3/8"(Φ9.52mm) |
| | Liquid | inch | 1/4"(Φ6.35mm) | 1/4"(Φ6.35mm) |
| | Connection method | | Flare Connection | Flare Connection |
| Drain pipe | External dia. | mm | Φ17 | Φ17 |
| | Thickness | mm | 1.75 | 1.75 |
| Outline dimension | W×D×H | mm | 1220×700×225 | 1220×700×225 |
| Package dimension | W×D×H | mm | 1343×823×315 | 1343×823×315 |
| Net Weight | | kg | 40 | 40 |
| Gross weight | | kg | 50 | 50 |
| Loading quantity | | 20'GP | 48 | 48 |
| | | 40' GP | 96 | 96 |
| | | 40' HQ | 96 | 96 |

Notes:

- The rated cooling capacity data is measured under the following work condition: Indoor Temperature is 27°C DB, 19 °C WB. Outdoor Temperature is 35 °C DB. The rated heating capacity data is measured under the following work condition: Indoor Temperature is 20°C DB. Outdoor Temperature is 7°C DB, 6°C WB.
- The data will change with the change of products. Refer to those parameters listed on nameplate.
- Noise was tested in semi-silenced room, so the actual noise value will be a little higher for change of ambient.

| Model | Heat pump | | GTH(18)BA-K3DNA1A/I | GTH(24)BA-K3DNA1A/I |
|---------------------------|-------------------|-------------------|---------------------|---------------------|
| | Product Code | | CN610N0030 | CN610N0040 |
| Capacity | Cooling | kW | 5 | 7.1 |
| | Heating | kW | 5.5 | 8.0 |
| Power supply | | V-Ph-Hz | 220~240-1-50 | 220~240-1-50 |
| Motor power input | | kW | 0.11 | 0.11 |
| Air flow volume | | m ³ /h | 950 | 1250 |
| | | CFM | 559 | 736 |
| Sound pressure level(H/L) | | dB(A) | 45/40 | 48/40 |
| Fan motor | Output | kW | 0.061 | 0.061 |
| | Running current | A | 0.588 | 0.588 |
| Connecting pipe | Gas | inch | 1/2"(Φ12.7mm) | 5/8"(Φ15.9mm) |
| | Liquid | inch | 1/4"(Φ6.35mm) | 3/8"(Φ9.52mm) |
| | Connection method | | Flare Connection | Flare Connection |
| Drain pipe | External dia. | mm | Φ17 | Φ17 |
| | Thickness | mm | 1.75 | 1.75 |
| Outline dimension | W×D×H | mm | 122×700×225 | 1220×700×225 |
| Package dimension | W×D×H | mm | 1343×823×315 | 1343×823×315 |
| Net Weight | | kg | 40 | 45 |
| Gross weight | | kg | 50 | 54 |
| Loading quantity | | 20'GP | 48 | 48 |
| | | 40' GP | 96 | 96 |
| | | 40' HQ | 96 | 96 |

Notes:

- The rated cooling capacity data is measured under the following work condition: Indoor Temperature is 27°C DB, 19 °C WB. Outdoor Temperature is 35 °C DB. The rated heating capacity data is measured under the following work condition: Indoor Temperature is 20°C DB. Outdoor Temperature is 7°C DB, 6°C WB.
- The data will change with the change of products. Refer to those parameters listed on nameplate.
- Noise was tested in semi-silenced room, so the actual noise value will be a little higher for change of ambient.

4.3 Working Temperature Range

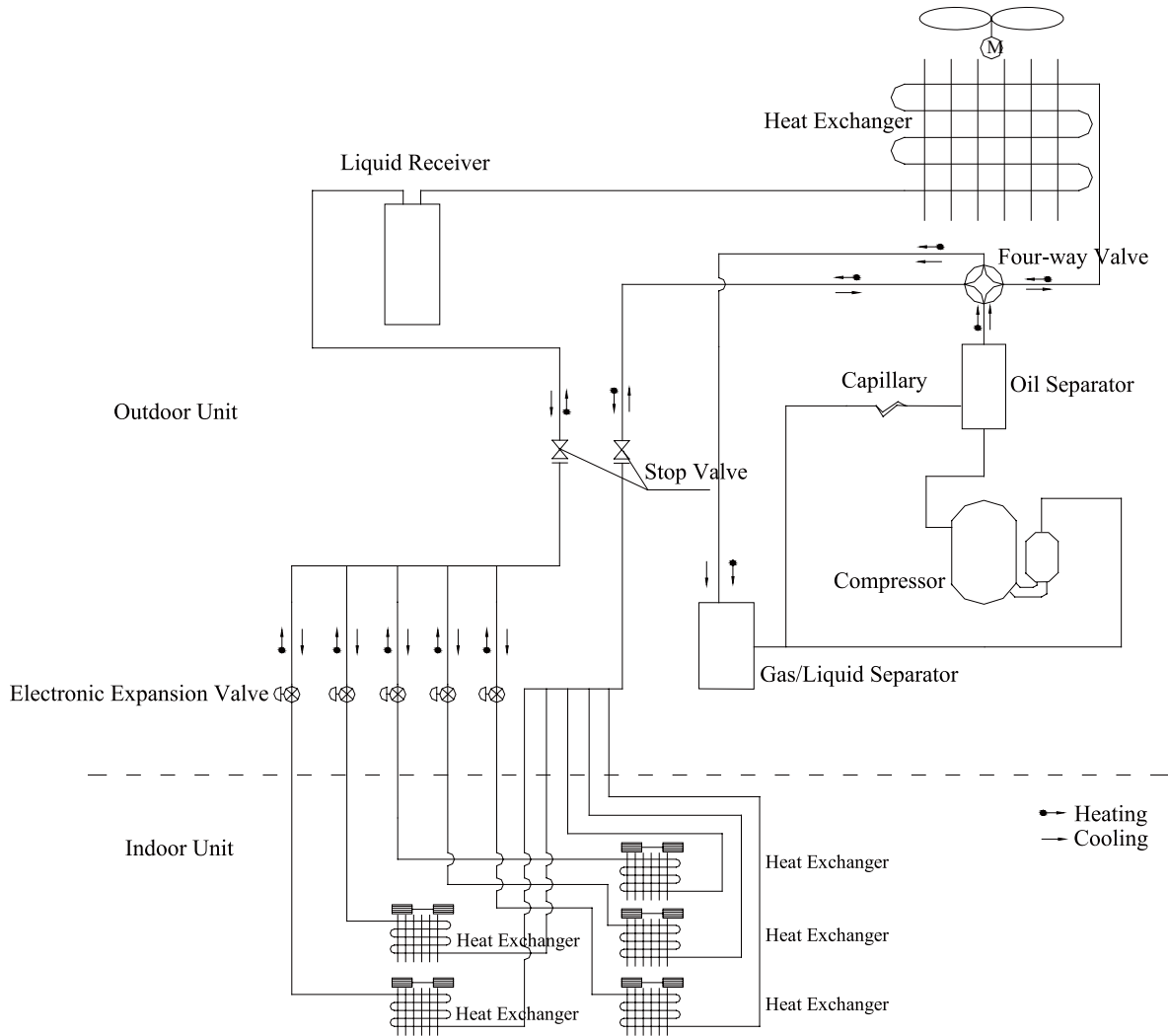
| | Indoor side state | | Outdoor side state | |
|---------------|-------------------|-------------------|--------------------|-------------------|
| | Dry bulb temp. °C | Wet bulb temp. °C | Dry bulb temp. °C | Wet bulb temp. °C |
| Rated Cooling | 27 | 19 | 35 | 24 |
| Max. cooling | 32 | 23 | 48 | 26 |
| Min. cooling | 21 | 15 | 18 | — |
| Rated Heating | 20 | 15 | 7 | 6 |
| Max. heating | 27 | — | 24 | 18 |
| Min. heating | 20 | 15 | — 15 | — 16 |

Notes:

- The heating/cooling capacity and noise listed below are all measured before the shipment.
- All parameters listed below are measured under the standard working conditions. If there is any change, the parameters marked on the nameplate always prevail.
- The heating capacity of the indoor unit just involves that of the heat pump but apart from that of the auxiliary electric heater.

5 PIPING DIAGRAM

Schematic Diagram of Free Match Series Inverter Heat Pump Multi VRF System



Schematic Diagram of Free Match Series Inverter Heat Pump Multi VRF System

The outdoor and indoor units start to work once the power is switched on. During the cooling operation, the low temperature, low pressure refrigerant gas from the heat exchanger of each indoor unit gets together and then is taken into the compressor to be compressed into high temperature, high pressure gas, which will soon go to the heat exchanger of the outdoor unit to exchange heat with the outdoor air and then is turned into refrigerant liquid. After passing through the throttling device, the temperature and pressure of the refrigerant liquid will further decrease and then go to the main valve. After that, it will be divided and go to the heat exchanger of each indoor unit to exchange heat with the air which needs to be conditioned. Consequently, the refrigerant liquid become low temperature, low pressure refrigerant gas again. Such a refrigeration cycle goes round and round to achieve the desired refrigeration purpose. During the heating operation, the four-way valve is involved to make the refrigeration cycle run reversely. The refrigerant radiates heat in the heat exchanger of the indoor unit (so do the electric heating devices) and absorb heat in the heat exchanger of the outdoor unit for a heat pump heating cycle so as to achieve the desired heating purpose.



INSTALLATION

INSTALLATION

1 PRECAUTIONS FOR INSTALLATION

1.1 Precautions for Installation

Before installation, please ensure if the installing site, power ratings, possible operating range (pipe distance, height difference between indoor and outdoor unit, power voltage) and installing space are correct and suitable. The outdoor unit is general to all models according to its power.

◆ To ensure correct installation, please make sure to read the Safety Considerations thoroughly before starting the installation works.

◆ The considerations stated below are classified into **⚠WARNING** and **⚠CAUTION**. Those that might cause death or severe injury in case of wrong installation are identified in **⚠WARNING**. However, those that are stated in **⚠CAUTION** may also cause severe accidents sometimes. Therefore, both of them relate to important safety considerations and must be strictly followed..

◆ After completing the installation and test run and confirming that all are normal, please introduce to the client on how to use and repair the machine according to the Operating Instructions. Besides, please deliver the considerations herein to the clients together with the Operating Instructions, and ask them to keep properly.

⚠WARNING!

◆ The installation shall be performed by the vendor or professional dealer from which you buy the machine. If you install by yourself, any improper installation might cause water leakage, electric shock or fire accident.

◆ The installation shall be done correctly according to installation instructions. Improper installation may cause water leakage, electric shock or fire.

◆ To install a large air-conditioning system in a small room, please make sure to take measures to prevent that the refrigerant will not exceed the limit concentration in case of leakage. For the measures to prevent the refrigerant from exceeding the limit concentration, please consult your dealer. If no proper measures, it might cause human suffocation in case of refrigerant leakage.

◆ Please install at a position that is strong enough to support the weight of machine. If the installing position is of low strength, the machine may drop down and thus cause human injury.

◆ Please carry out installation in accordance with the rules for preventing the typhoon or earthquake. The machine may tip over if the installation does not comply with the requirements.

◆ The electrical cabling shall be carried out by qualified electricians in accordance with the Safety Code for Electrical Equipment, relevant local rules and the installation instructions. Make sure to use the special-purpose circuit. If the power circuit capacity is low or the construction is improper, it might cause electric shock or fire accidents.

◆ Please use suitable cables and connect them securely. Please fix the terminal joints securely. The terminal connection shall not be affected due to any external force applied onto the cable. Improper connection and fixing may cause heating and fire accidents.

◆ Keep the cables in correct shape and prevent them from protruding upward. Please protect them securely with repair board. Improper installation may cause heating and fire accidents.

◆ When erecting or relocating the air conditioner, do not let any air enter into cooling circulation system except the specified refrigerant. If any air is mixed, abnormal high pressure will occur in the cooling circulation system, thus causing crack or human injury accidents.

◆ During installation, please always use the attached parts or designated parts. Failure to use the designated parts may cause water leakage, electric shock, fire or refrigerant leakage.

⚠CAUTION:

◆ Please earth securely. Do not connect the earth wires to gas pipe, water pipe, lightning rod or telephone line. Improper earthing might cause electric shock.

◆ Leakage circuit breaker must be installed at some place. No installation of leakage circuit breaker might cause electric shock.

◆ Do not install at a place where inflammable gas might leak. Gas leakage and despot around the machine might cause fire accidents.

◆ To ensure correct drainage of water, the drainage pipe shall be installed according to the installation instructions. Also the heat insulation shall be provided to avoid condensing. Improper installation of the pipe might result in water leakage and lead to possible wetting of the articles in the room.

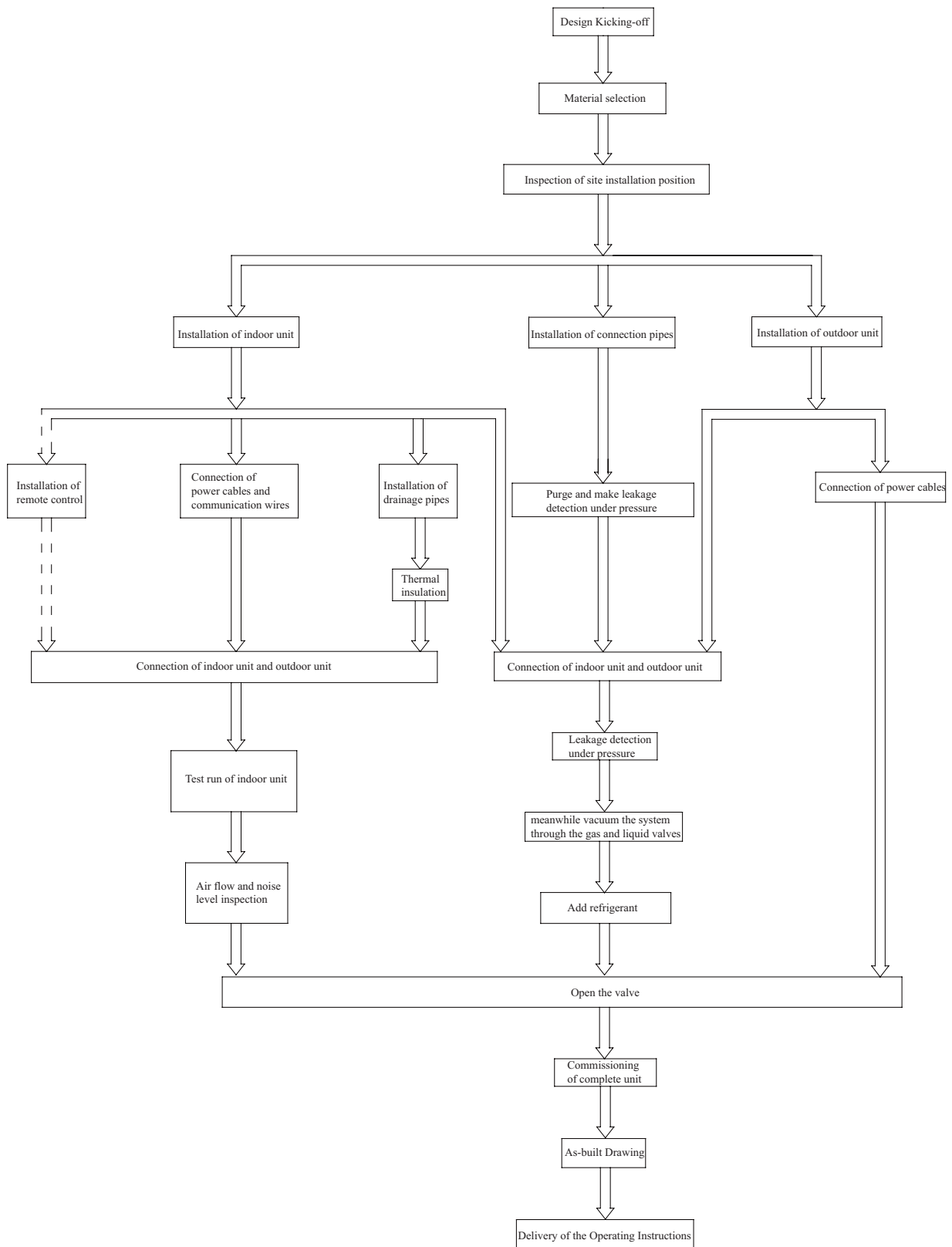
1.2 Key Points of Installation

| Installation Procedures | | | Description and Acceptance Criteria |
|---|--|--------------------|--|
| Material Selection and Equipment Inspection | | | The materials specified on the engineering drawing shall be purchased as specified (e.g. copper tube, thermal insulation tube, PVC pipe, power cables, air switch, etc). The materials not specified on the engineering drawing shall be purchased according to the actual quantity of works (e.g. hanger frame, cable duct, etc). Check if the outdoor unit, indoor unit, communication wires and accessories are complete. |
| Installation of indoor unit | Communication wire | Connection | The power cables shall be separated from communication wires at a least distance of 10cm. To avoid breaking the communication wires, please do not use strong force. For multiple units, please mark them properly. Switch on indoor and outdoor unit, and ensure there is no display of "Communication Wire Error E6". |
| | | Address dial code | Each indoor unit under the same system has a unique address dial code. The wired controller and its corresponding indoor unit have the same address dial code. |
| | Remote Control | | Select the remote control mode. The centralized controller and communication module shall be installed free from the source of interference. |
| | Power cord | | The power cable must meet the specifications. The indoor units under the same system must be arranged under unified power supply. |
| | Drainage Pipe | Installation | The PVC pipes must meet the specifications. A specific gradient must be provided along the water flow direction. Carry out water detection after installation. Carry out thermal insulation to the drainage pipe only after the water detection is accepted. |
| | | Thermal insulation | The thermal insulation tube must meet the specifications. Seal between the thermal insulation pipes to avoid air entry. |
| | Installation of Air Duct (when with high static pressure duct-type unit) | | Design the length of air duct according to static pressure; The air inlet shall be optimally designed to avoid too small size |
| Installation of connection pipes | Welding | | The copper tube must meet the specifications. Ensure it is dry and clean inside the tube. Make sure to charge nitrogen as required for protection when welding the tubes. Please keep to the welding process and ensure the system free of leakage. Add a dual-way filter on liquid pipe side For multiple systems, please mark them properly. Carry out leakage detection under pressure after welding. |
| | Purge and make leakage detection under pressure | | Purge the system clean. Keep the pressure for 24 hours Except for the influence by temperature, it is deemed acceptable if pressure drop is within 0.02MPa. (With the temperature change by 1 °C , the pressure will change by approx. 0.01MPa) |
| | Thermal insulation | | The thermal insulation tube must meet the specifications. Seal between the thermal insulation pipes to avoid air entry. |
| Installation of outdoor unit | | | Select the installing position correctly. Build the foundation according to the anchor bolt position and the dimension of outdoor unit Build the damping device properly. Avoid sharp knock when handling the outdoor unit. The inclination angle shall not be higher than 15°. |
| Connection of indoor unit and outdoor unit | | | Tighten the nuts. Provide proper protection to the outdoor connection pipe, communication wires and power supply. |
| Leakage detection under pressure | | | Keep the pressure for 24 hours. Except for the influence by temperature, it is deemed acceptable if pressure drop is within 0.02MPa. (With the temperature change by 1 °C , the pressure will change by approx. 0.01MPa). |
| Vacuuming | | | Establish vacuum simultaneously in the gas pipe and liquid pipe; The vacuuming time shall be long enough. Put still for 1 hour after vacuuming. It is deemed acceptable if the pressure will not rise. |
| Add refrigerant | | | Add refrigerant according to the volume as specified on the engineering drawing. |
| Open the valve of outdoor unit | | | |
| Commissioning of complete unit | | | |

Remarks:

- Described above are general working procedures. The procedures might vary with the site conditions.
- For detailed installation rules, please see the description in each chapter.

2 FLOW CHART OF INSTALLATION



3 OUTDOOR UNIT INSTALLATION

3.1 Before Installation

- ◆ Check if there is any damage to the unit when receive and unpack the unit, and check if the compressor runs reversely, if the grease oil and refrigerant leak, and if all parts are completely prepared. If there is any damage on the surface or the inner side, please inform the shipping company or the equipment manufacturer in the written form promptly.
- ◆ Check if the model, specs and quantity of the unit are consistent with the contact after receive the unit.

3.2 Installation Site

- ◆ The unit may be installed on balcony, roof, special platform or any other position easy to install and able to support the weight.
- ◆ Select the place with good ventilation, where the exhaust is smooth and will not be circulated. Meanwhile, the exhaust from the unit shall not affect the neighbors.
- ◆ The air discharged from the unit will not flow back, and there shall be adequate service space around the machine.
- ◆ Around the unit there shall be no strong heat source or exhaust port of other equipment, nor any strong hot steam or inflammable gas.
- ◆ When several units are to be installed, adequate suction space shall be ensured to avoid short-circuit circulation.
- ◆ Install at a place that will not be affected by rainstorm in winter.
- ◆ Install at a place where there is no obstruction close to the air inlet or outlet.
- ◆ Around the machine body, drainage channel shall be provided for discharge of cold or warm water.
- ◆ The indoor connection pipe is easy to connect outdoors.
- ◆ The indoor and outdoor units shall be installed to minimize the length and bends of refrigerant pipe.
- ◆ Install close to power socket for easy connection of the cables.
- ◆ Open space required around the unit.
- ◆ Fasten the machine onto the supporting legs and base with M12 screw combination.

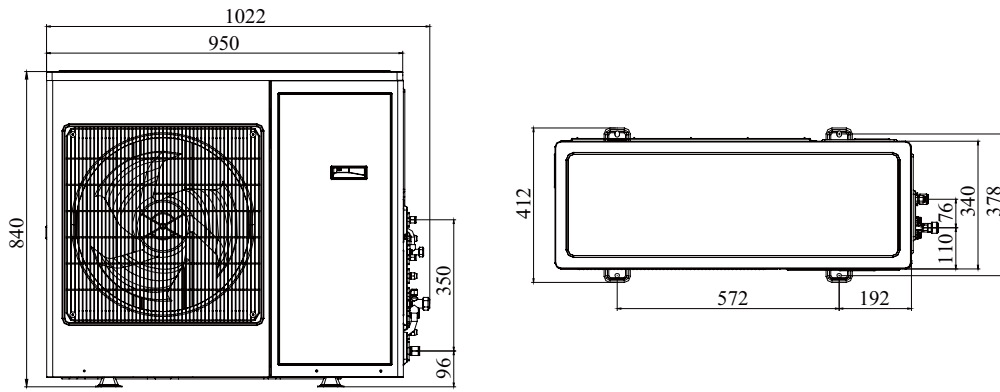
3.3 Caution for Installation

The following rules should be followed when the installation location is being considered so as to let the unit run well enough.

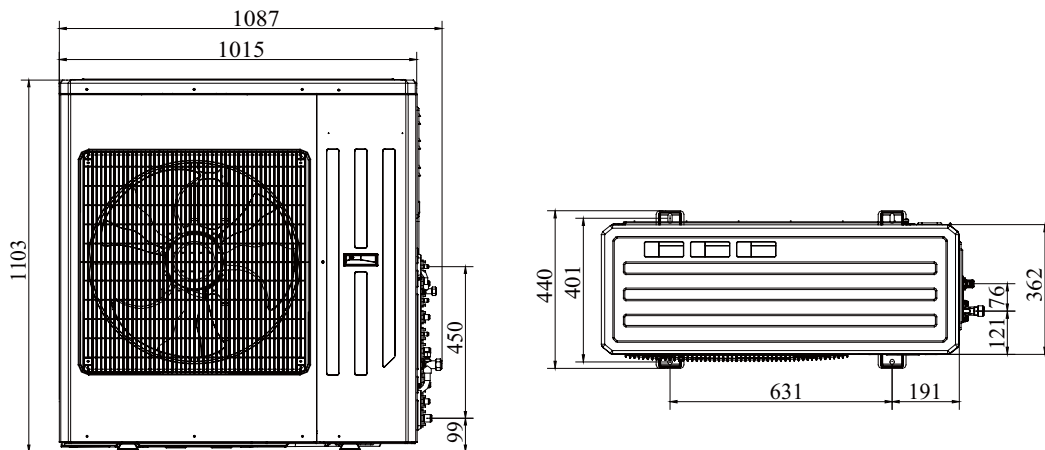
- ◆ The discharged air from the outdoor unit won't return back and enough space should be left for maintenance around the unit.
- ◆ The installation location should be in good condition so that the unit is able to take in and discharge enough air. Besides, make sure there is no obstacle at the air inlet/outlet of the unit. If there is, remove it.
- ◆ The unit must be installed where it is secure enough to support the weight of the unit and capable of reducing to some extent noise and vibration to make sure they do not bother your neighbors.
- ◆ The designated lifting hole must be used for lifting the unit and protect the unit carefully during lifting to prevent damaging the metal sheet which would result in rusting in future.
- ◆ The unit should be installed where there is as little as direct sunlight.
- ◆ The unit must be installed where the rain water and defrosting water can be drained.
- ◆ The unit must be installed where the unit won't be covered by the snow and won't be affected by rubbish and oil fog.
- ◆ Rubber or spring shock absorbers should be used during the installation of the outdoor unit to meet the noise and vibration requirements.
- ◆ The installation dimensions should meet the requirement covered in this manual and the outdoor unit must be fixed securely.
- ◆ The installation should be carried out by the professionally skilled personnel.

3.4 Dimension Data

The following figure is applicable to the Outdoor units of: GWHD(36)NK3AO

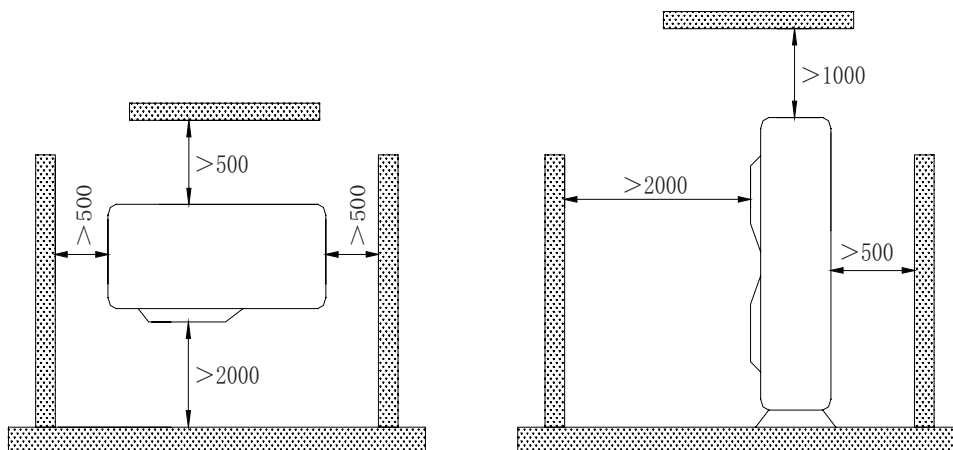


The following figure is applicable to the Outdoor units of: GWHD(42)NK3AO



3.5 Installation Clearance Data

Installation Space Requirements of the Outdoor Unit: GWHD(36)NK3AO、GWHD(42)NK3AO



4 INDOOR UNIT INSTALLATION

4.1 Installation of Duct Type

4.1.1 Before Installation

Check if there is any damage to the indoor unit, and the wireless controller and other part and components are prepared completely.

4.1.2 Installation Site

- The selection of the installation place of the air conditioner unit

The installation must accord with the national and local safe criterion.
Since the quality of installation would affect the operation directly, user should contact the seller and have the conditioner installed and tested by the professional install personnel according to the install instruction instead of install by himself/herself.
Only connect the power after all the installation works are finished.

- The selection of the installation place of the indoor unit
- ◆ Prevent direct sun burn.
- ◆ Make sure that the top steeve, ceiling, and the structure of the construction etc. is strong enough to bear the weight of the unit.
- ◆ The drainage pipe is easy to drain.
- ◆ The air flow is not blocked at the outlet and intake vents.
- ◆ The connecting pipe indoor and outdoor can by lead to outside conveniently.
- ◆ The unit cannot be installed in the place where stored the flammability, easy exploded thing or the place where would have leakage of flammability and exploded gas.
- ◆ The unit cannot be installed in the place where has the corrupt gas and serious dust, saline fog, lampblack and huge humidity.

Note:

The air conditioner unit installed in the following place may have malfunction, if the malfunction cannot prevent, please contact the Nominated Repair Center Of Gree Electric Appliances, Inc. Of Zhuhai.

- a. The place with greasy all around;
- b. The seashore place with salinity and alkali;
- c. The place with vulcanized gas(such as vulcanized hot spring);
- d. The place with high frequency equipment (such as wireless equipment, electric welding machine and medical treatment equipment);
- e. The place with special environment.

4.1.3 Caution for Installation

- ◆ Ensure the hanger is strong enough to withstand the weight of the unit.
- ◆ The drainage of the drain pipe is easy.
- ◆ No obstacle is in the inlet/outlet and the air circulation is in good condition.
- ◆ Ensure the installation space is left for the access to maintenance.
- ◆ It should be far away from where there is heat source, leakage of inflammable, explosive substances, or smog.
- ◆ It is the ceiling type unit (concealed in the ceiling).
- ◆ The power cords and connection lines of the indoor and outdoor units must be at least 1m away from the TV set or radio to avoid the image interference and noise (even if 1m is kept, the noise may be produced due to the strong electric wave).

4.1.4 Dimension Data

Note: the unit in the followings figures is mm, unless otherwise specified.

Applicable to GFH(09)EA-K3DNA1A/I,GFH(12)EA-K3DNA1A/I,GFH(18)EA-K3DNA1A/I, GFH(21)EA-K3DNA1A/I, GFH(24)EA-K3DNA1A/I:

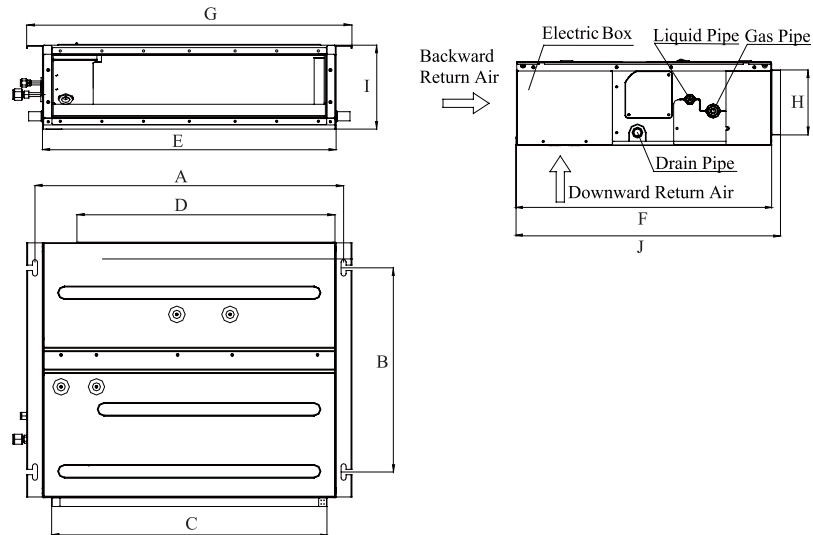
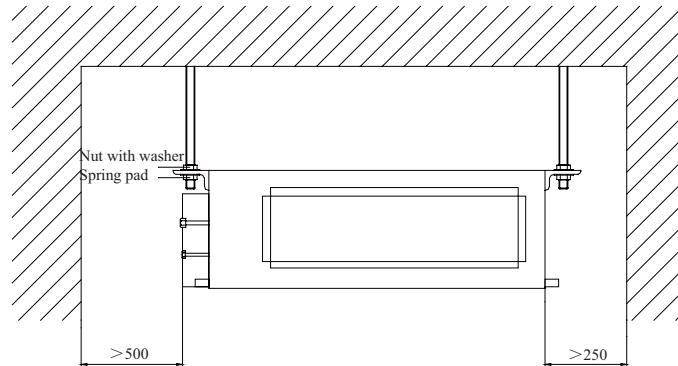


Table Outline Dimensions:

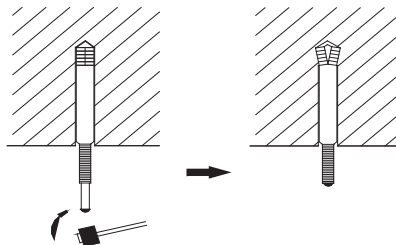
| Item | A | B | C | D | E | F | G | H | I | J |
|---------------------|------|-----|------|------|------|-----|------|-----|-----|-----|
| Model | | | | | | | | | | |
| GFH(09)EA-K3DNA1A/I | 742 | 491 | 662 | 620 | 700 | 615 | 782 | 156 | 200 | 635 |
| GFH(12)EA-K3DNA1A/I | | | | | | | | | | |
| GFH(18)EA-K3DNA1A/I | 942 | 491 | 862 | 820 | 900 | 615 | 982 | 156 | 200 | 635 |
| GFH(21)EA-K3DNA1A/I | 1142 | 491 | 1062 | 1020 | 1100 | 615 | 1182 | 156 | 200 | 635 |
| GFH(24)EA-K3DNA1A/I | | | | | | | | | | |

4.1.5 Installation Clearance Data

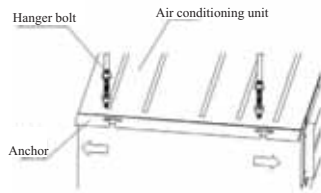


a. Installation of the Indoor Unit

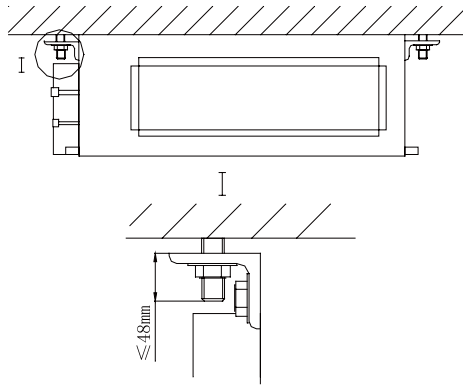
Insert the M10 expansion bolt into the hole, and then knock the nail into the bolt. Refer to the Outline Dimension Drawings of the Indoor Unit for the distance between holes and see Fig.3 for the installation of the expansion bolt.



Install the hanger on the indoor unit:



Install the indoor unit on the ceiling:



⚠ CAUTION:

- a. Prior to the installation, please make a good preparation for all piping (refrigerant pipe, drain pipe) and wiring (wires of the wired controller, wires between the indoor and outdoor unit) of the indoor unit to make the further installation much easier.
- b. If there is an opening in the ceiling, it is better to reinforce it to keep it flat and prevent it vibrating. Consult the user and builder for more details.
- c. If the strength of the ceiling is not strong enough, a beam made of angle iron can be used and then fix the unit on it.
- d. If the indoor unit is not installed in the air conditioning area, please use sponge around the unit to prevent condensing. The thickness of the sponge depends on the actual installation environment.

4.1.6 Horizontality Check of the Indoor Unit

After the installation of the indoor unit, its horizontality must be checked to make sure the unit keep horizontal fore and aft and keep an inclination of 5° toward the drain pipe right and left.

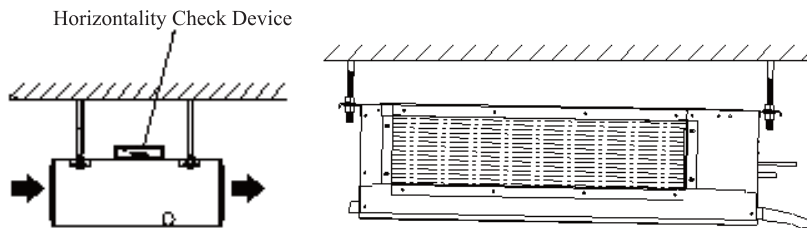
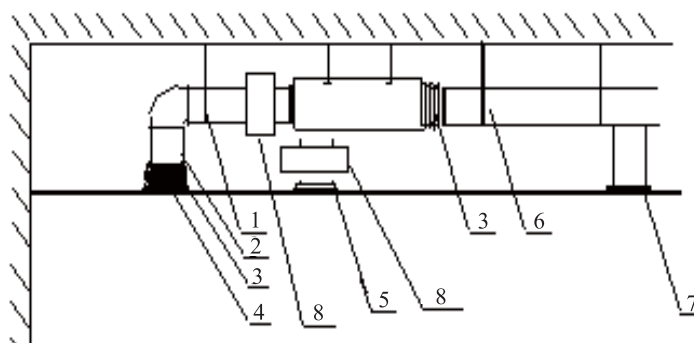


Fig.6

4.1.7 Installation of the Air Supply Duct

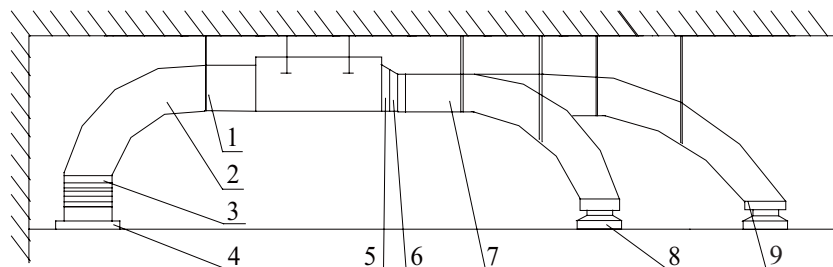
- a. Installation of the Rectangular Air Supply Duct



Table

| No. | Name | No. | Name |
|-----|------------------|-----|----------------------|
| 1 | Hanger | 5 | Filter Screen |
| 2 | Return Air Duct | 6 | Main Air Supply Duct |
| 3 | Canvas Duct | 7 | Air Supply Outlet |
| 4 | Return Air Inlet | 8 | Plenum Box |

b. Installation of the Round Air Supply Duct



Table

| No. | Name | No. | Name |
|-----|-------------------|-----|-----------------|
| 1 | Hanger | 6 | Transition Duct |
| 2 | Return Air Duct | 7 | Air Supply Duct |
| 3 | Canvas Duct | 8 | Diffuser |
| 4 | Return Air Louver | 9 | Diffuser Joint |
| 5 | Air Supply Outlet | | |

c. Installation Steps of the Round Air Supply Duct

- 1) Preinstall the outlet of the round duct on the transition duct and then fix it by the self-tapping screw.
- 2) Place the transition duct to the air outlet of the unit and fix it with rivet.
- 3) Connect the outlet to the duct and then tighten them with tape. Other installation details are not covered herein.

⚠CAUTION:

a. The maximum length of the duct means the maximum length of the air supply duct plus the maximum length of the return air duct.

b. For the unit with the auxiliary electric heating function, if the round duct is to be adopted, then the straight length of the transition duct can not be less than 200mm.

c. The duct is either rectangular or round and connected with the air inlet/outlet of the indoor unit. Among all air supply outlets, at least one should be kept open. As for the round duct, it needs a transition duct of which the size should match with the air supply outlet of the unit. After the fitting of the transition duct, it is the turn of the round duct, which is better to be kept 10 meters far away from the corresponding diffuser. The standard accessories supplied by GREE is the transition duct 200mm long and round air outlet $\phi 200$, however, those of other specifications can be purchased.

4.2 Installation of Cassette Type

4.2.1 Before Installation

Check if there is any damage to the indoor unit, and the wireless controller and other part and components are prepared completely.

4.2.2 Installation Site

Select install location of the indoor unit

- a. Obstruct should put away from the intake or outlet vent of the indoor unit so that the airflow can be blown though all the room.
- b. Make sure that the installation had accord with the requirement of the schematic diagram of installation spaces.
- c. Select the place where can stand 4 times of the weight of the indoor unit and would not increase the operating noise and oscillate.
- d. The horizontally of the installation place should be guaranteed.
- e. Select the place where easy drain condensated coagulated water, and easy connect with outdoor unit.

f. Make sure that there are enough space for care and maintenance. Make sure that the weight between the indoor unit and ground is above 1800mm.

g. When installing the steeve bolt, check if the install place can stand the weight 4 times of the unit's. If not, reinforce before installation. (Refer to the install cardboard and find where should be reinforced)

⚠ Note!

There will be lots of lampblack and dust stick on the acentric, heat exchanger and water pump in dining room and kitchen, which would reduce the capacity of heat exchanger, lead water leakage and abnormal operation of the water pump.

The following treatment should be taken under this circumstance:

a. Ensure that the smoke trap above cooker has enough capacity to obviate lampblack to prevent the indraft of the lampblack by the air conditioner.

b. Keep the air conditioner far from the kitchen so that the lampblack would not be indraft by the air conditioner.

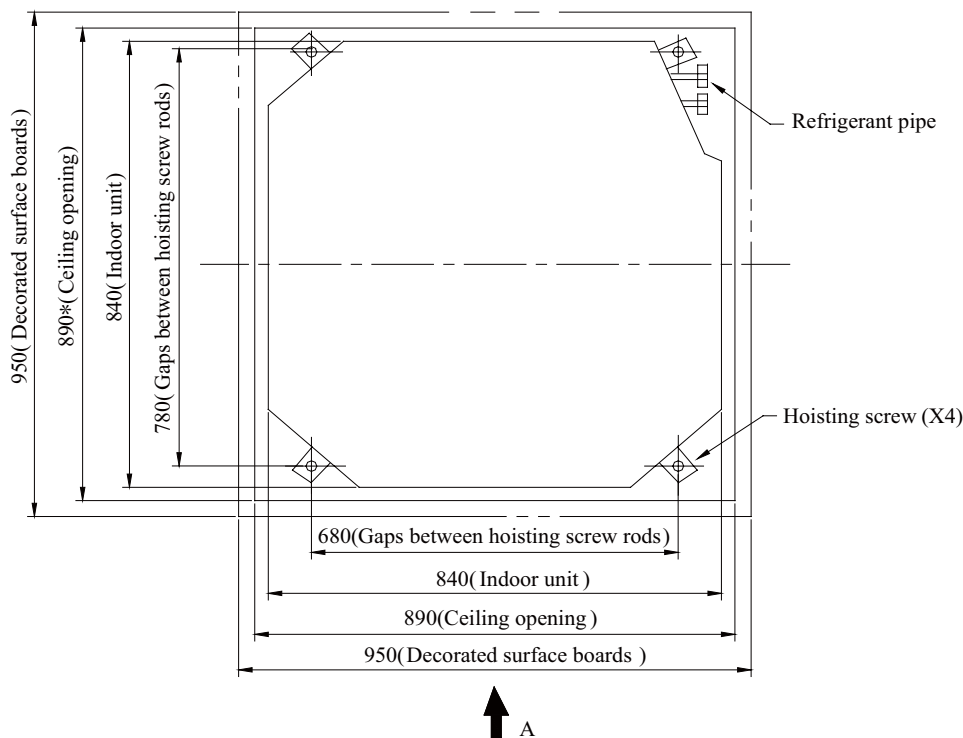
★ Important notice:

◆ To guarantee the good performance, the unit must be installed by professional personnel according with this instruction.

◆ Please contact the local Gree special nominated repair department before installation. Any malfunction caused by the unit that is installed by the department that is not special nominated by GREE would not deal with on time by the inconvenience of the business contact.

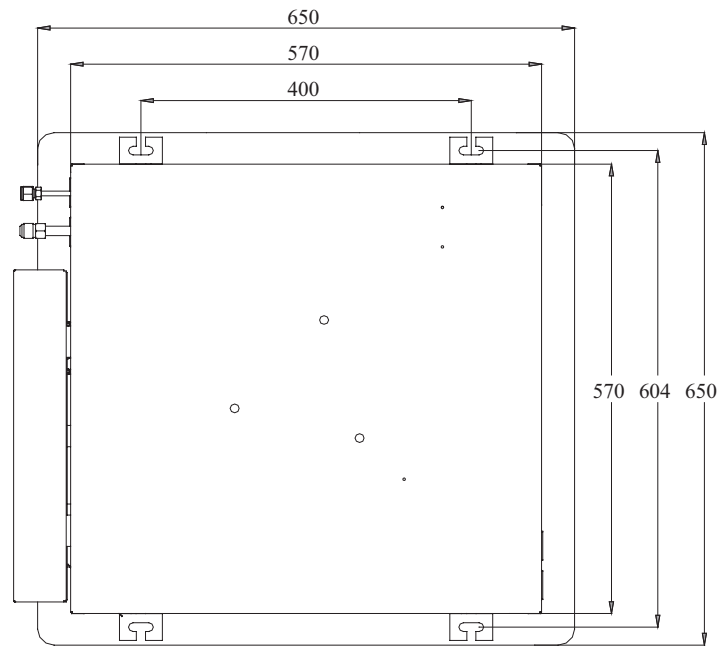
4.2.3 Dimension Data

Dimension of ceiling opening and location of the hoisting screw (M10)



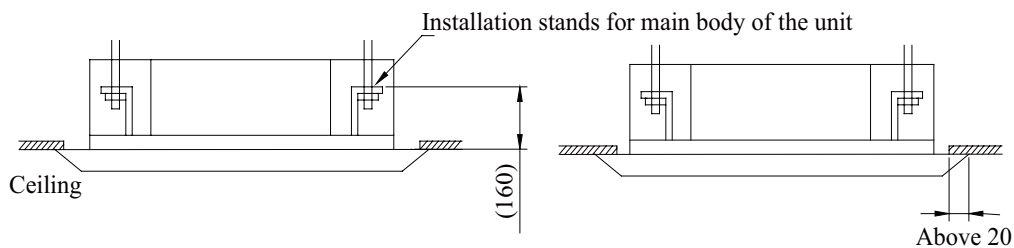
Install dimension of mode

GKH(12)BA-K3DNA1A/I; GKH(18)BA-K3DNA1A/I; GKH(24)BA-K3DNA1A/I



Install dimension of mode GKH(12)BA-K3DNA2A/I;GKH(18)BA-K3DNA2A/I

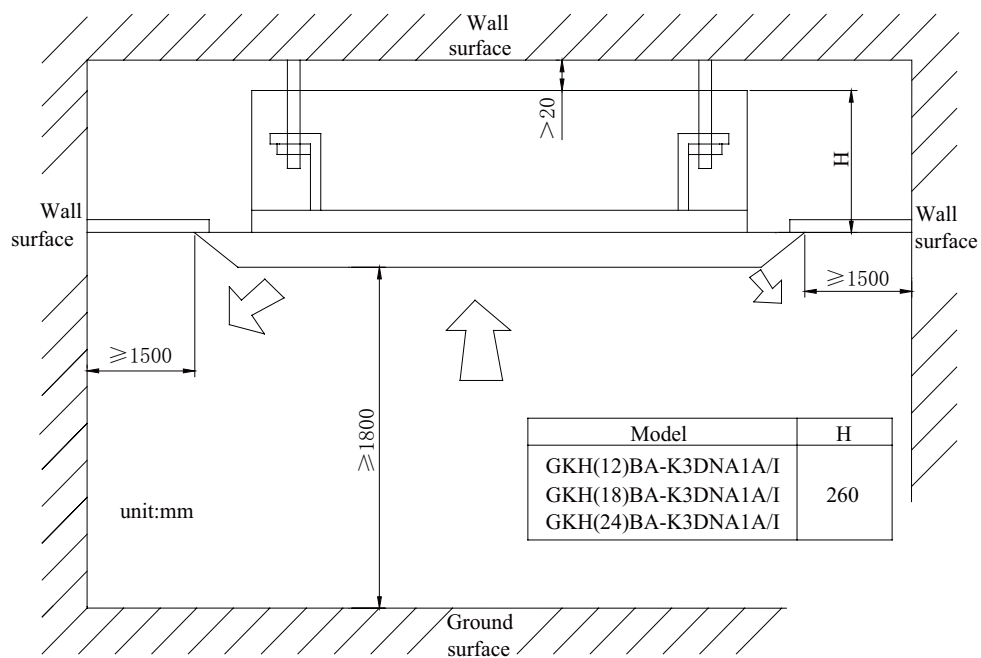
- ◆ The drilling of holes in the ceiling must be done by the professional personnel.



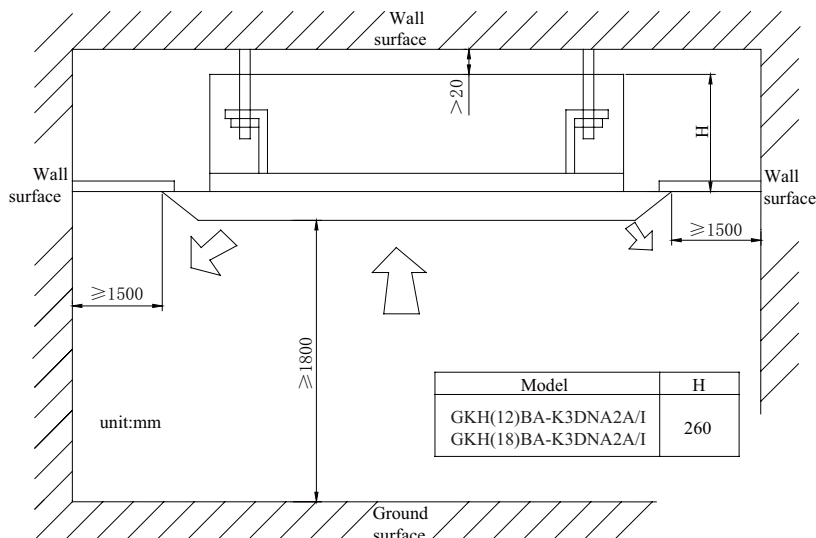
Notes: The dimension for the ceiling openings with * marks can be as large as 910mm. But the overlapping sections of the ceiling and the decorated surface boards should be maintained at no less than 20mm.

2.2.4 Installation Clearance Data

GKH(12)BA-K3DNA1A/I;GKH(18)BA-K3DNA1A/I; GKH(24)BA-K3DNA1A/I

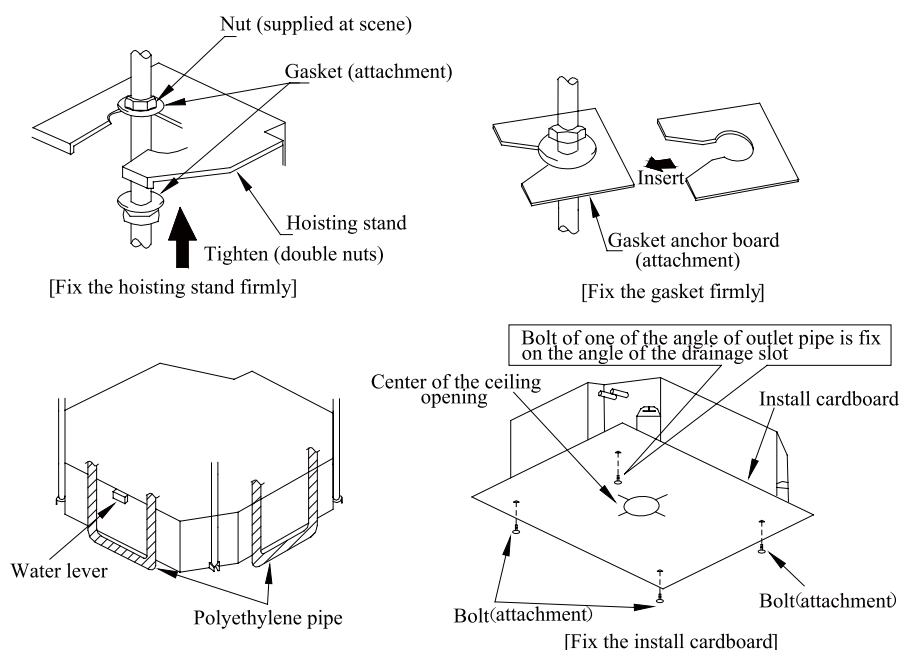


GKH(12)BA-K3DNA2A/I;GKH(18)BA-K3DNA2A/I



★ Main body of hoisting air conditioner

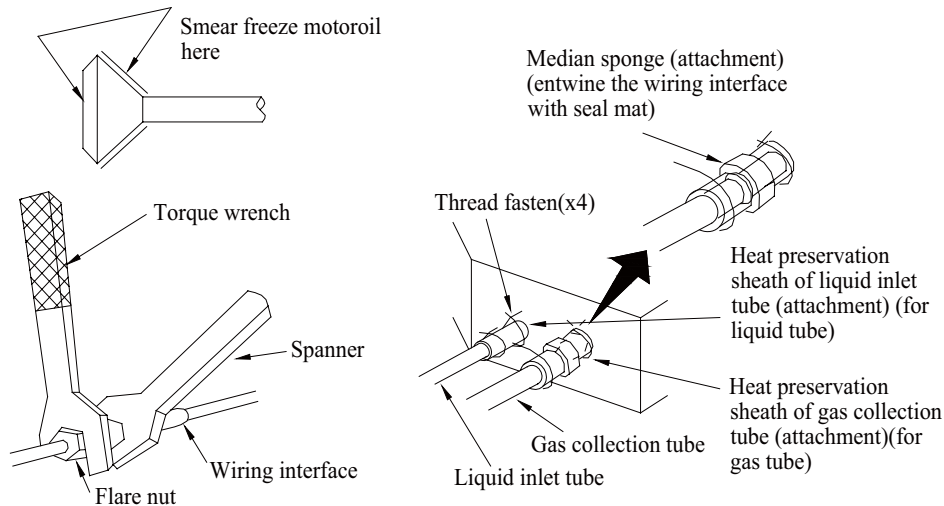
- The primary step for install the indoor unit.
 - ◆ When attach the hoisting stand on hoisting screw, do use nut and gasket individually at the upper and lower of the hoisting stand to fix it. The use of gasket anchor board can prevent gasket break off.
- Use install cardboard
 - ◆ Please refer to the install cardboard about the dimension of ceiling opening.
 - ◆ The central mark of the ceiling opening is marked on the install cardboard.
 - ◆ Install the install cardboard on the unit by bolt (3 piece), and fix the angle of the drainage pipe at the outlet vent by bolt.
- Adjust the unit to the suitable install place.
- Check if the unit is horizontal.
 - ◆ Inner drainage pump and bobber switch are included in the indoor unit, check if 4 angle of every unit are horizontal by water lever. (If the unit is slant toward the opposite of the coagulate water flow, there may be malfunction of the bobber switch and lead water drop.)
- Backout the gasket anchor board used to prevent gasket break off and tighten the nut on it.
- Backout the install cardboard.



▲ Note!

- Please do tighten the nuts and bolts to prevent air conditioner break off.
- ★ Connection of the refrigerant pipe
- ◆ When connect the pipe to the unit or backout it from the unit, please do use both spanner and torque wrench.

- ◆ When connect, smear both inside and outside of the flare nut with freeze motor oil, screw it by hand and then tighten it with spanner.
- ◆ Refer to form 1 to check if the wrench had been tightened (too tight would mangle the nut and lead leakage).
- ◆ Examine the connection pipe to see if it had gas leakage, then take the treatment of heat insulation, as shown in the fig.5.
- ◆ Only use median sponge to entwine the wiring interface of the gas pipe and heat preservation sheath of the gas collection tube.



Form 1: The tightening torque needed for tightening nut

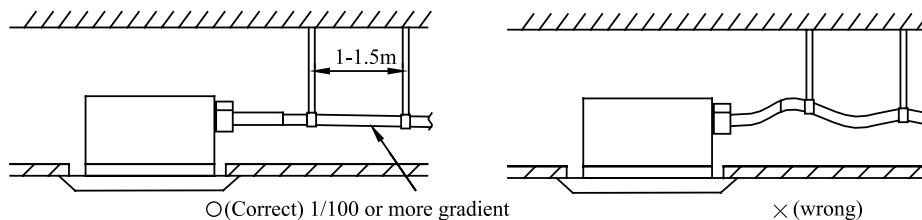
| Diameter (Inch) | Surface thickness (mm) | Tightening torque (N · m) |
|-----------------|------------------------|---------------------------|
| φ1/4" | ≥ 0.5 | 15-30 (N · m) |
| φ3/8" | ≥ 0.71 | 30-40 (N · m) |
| φ1/2" | ≥ 1 | 45-50 (N · m) |
| φ5/8" | ≥ 1 | 60-65 (N · m) |
| φ3/4" | ≥ 1 | 70-75 (N · m) |

★ Drainage hose

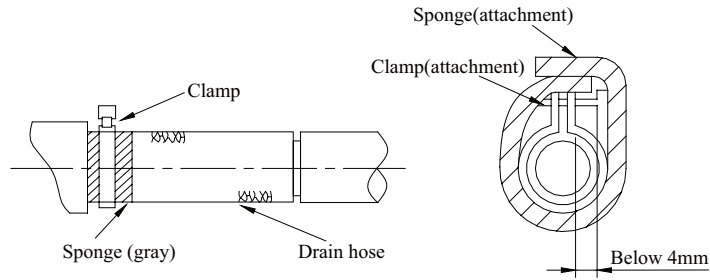
a. Install the drain hose

◆ The diameter of the drain hose should be equal or bigger than the connection pipe's. (The diameter of polythene pipe: Outer diameter 25mm Surface thickness ≥ 1.5mm)

- ◆ Drain hose should be short and drooping gradient should at less 1/100 to prevent the formation of air bubble.
- ◆ If drain hose cannot has enough drooping gradient, drain raising pipe should be added.
- ◆ To prevent bent of the drain hose, the distance between hoisting stand should is 1 to 1.5m.

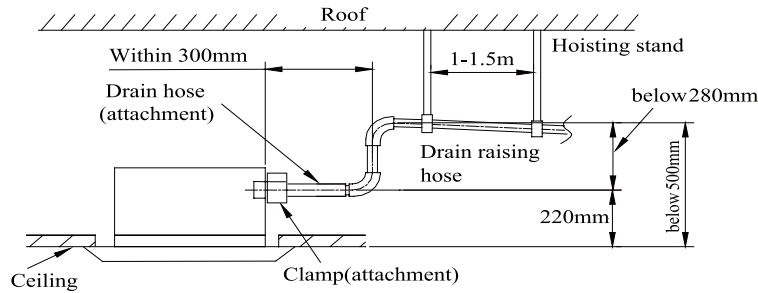


- ◆ Use the drain hose and clamp attached. Insert the drain hose to the drain vent, and then tighten the clamp.
- ◆ Entwine the big sponge on the clamp of drain hose to insulate heat.
- ◆ Heat insulation should be done to indoor drain hose.



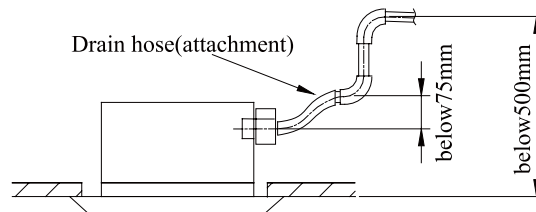
Drain stepup pipe note

- ◆ The install height of the drain raising pipe should less than 280mm.
- ◆ The drain raising pipe should form a right angle with the unit, and distance to unit should not beyond 300mm.

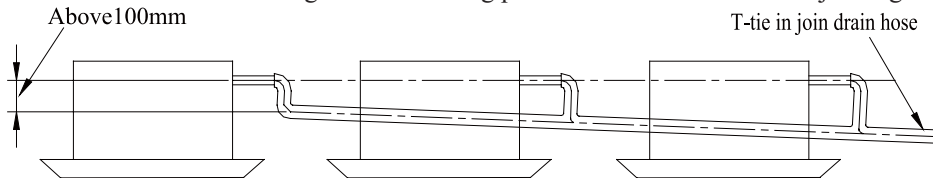


Instruction

- ◆ The slant gradient of the attached drain hose should be within 75mm so that the drain hole doesn't has to endure the unnecessary outside force.



- ◆ Please install the drain hose according to the following process if several drain hoses join together.



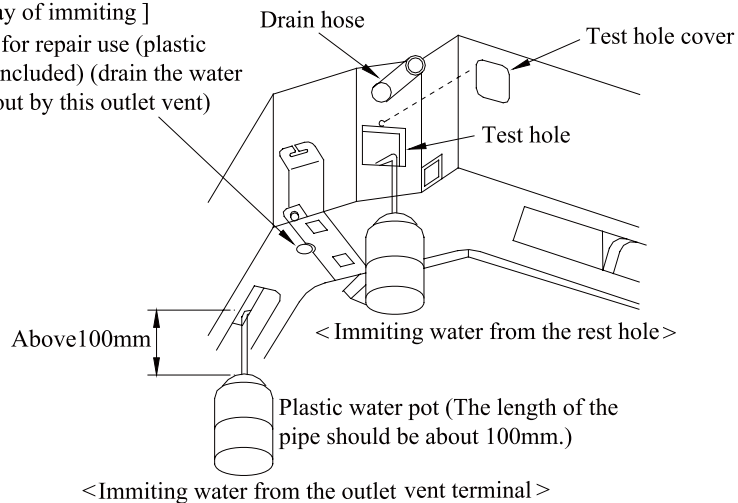
The specs of the selected join drain hose should fits the running capacity of the unit.

b. Check the smoothness of drain after installation.

- ◆ Check the drain state by immiting 600cc water slowly from the outlet vent or test hole.
- ◆ Check the drain in the state of refrigerating after installation of the electric circuit.

[Way of immiting]

Drain vent for repair use (plastic stopper is included) (drain the water in waterspout by this outlet vent)



4.3 Installation of Floor Ceiling Type

4.3.1 Before Installation

Check if there is any damage to the indoor unit, and the wireless controller and other part and components are prepared completely.

4.3.2 Installation Site

Selection of Installation Location for Air Conditioner Unit

The installation of air conditioner unit must be in accordance with national and local safety codes. Installation quality will directly affect the normal use of air conditioner unit. The user is prohibited from installation by himself. Please contact your dealer after buying this machine. Professional installation workers will provide installation and test services according to installation manual. Do not connect to power until all installation work is completed.

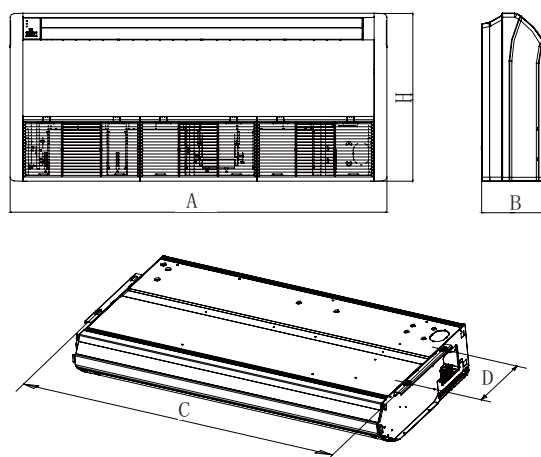
Selection of Installation Location

- ◆ Such a place where cool air can be distributed throughout the room.
- ◆ Such a place where is condensation water is easily drained out.
- ◆ Such a place that can handle the weight of indoor unit.
- ◆ Such a place, which has easy access for maintenance.
- ◆ Such a place where is permitting easy connection with the outdoor unit.
- ◆ Such a place where is 1m or more away from other electric appliances such as television, audio device, etc.
- ◆ Avoid a location where there is heat source, high humidity or inflammable gas.
- ◆ Do not use the unit in the immediate surroundings of a laundry, a bath, a shower or a swimming pool.
- ◆ Be sure that the installation conforms to the installation dimension diagram.

4.3.3 Dimension Data

When installing the indoor unit, you can refer the paper pattern for installation, and make sure that the drainage side must be 10mm lower than the other side in order to drain the condensation water fluently.

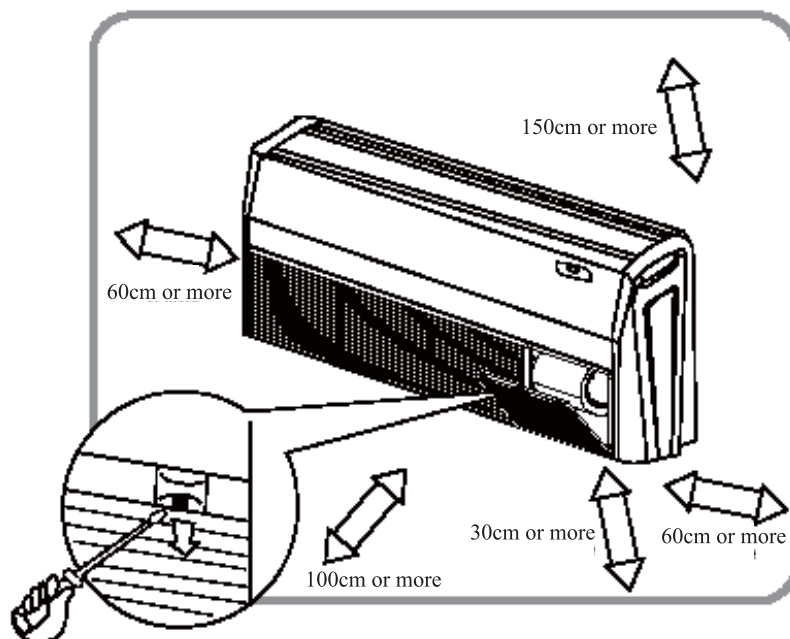
Unit:mm



| Model | A | B | H | C | D |
|---------------------|------|-----|-----|------|-----|
| GTH(09)BA-K3DNA1A/I | 1220 | 225 | 700 | 1158 | 280 |
| GTH(12)BA-K3DNA1A/I | | | | | |
| GTH(18)BA-K3DNA1A/I | | | | | |
| GTH(24)BA-K3DNA1A/I | | | | | |

4.3.4 Installation Clearance Data

- a. Space dimension for installation of the unit
The space around the unit is adequate for ventilation .



b. Important Notice

- ◆ The unit must be installed by the professional personnel according to this install instruction to ensure the well use.

Please contact the local Gree special nominated repair department before installation. Any malfunction caused by the unit that is installed by the department that is not special nominated by Gree would not deal with on time by the inconvenience of the business contact.

- ◆ It should be done by professional personnel when the air conditioner unit is moved to other place.

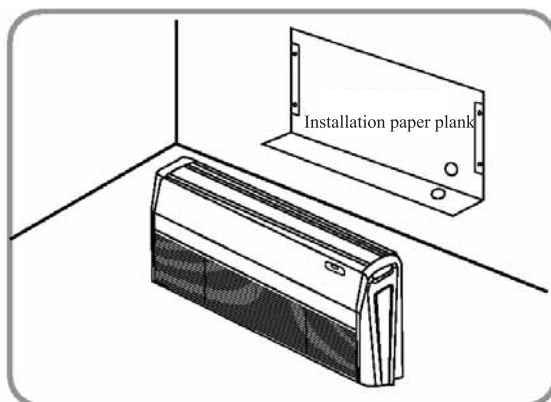
c. There are 2 styles of installation

* **Ceiling type**

* **Floor type**

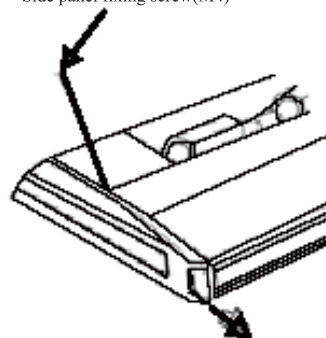
1) Each type is similar to the other as follows:

Determine the mounting position on ceiling or wall by using paper pattern to indicate indoor frame. Mark the pattern and pull out the paper pattern. (Refer to ①)



①

Side panel fixing screw(M4)



②

2) Remove the return grill, the side panel and the hanger bracket from the indoor unit as per procedure bellow.

- ◆ Press the fixing knob of the air intake grilles, the grilles will be opened wider and then pull them out from the indoor.

- ◆ Remove the side panel fixing screw and pull to the front direction (arrow direction) to remove. Side panel fixing screw (Refer to ②).

- ◆ Loosen two hanger bracket setting bolts (M8) on each side for less than 10mm. Remove two hanger bracket fixing bolts (M6) on the rear side. Detach the hanger bracket by pulling it backward (Refer to ④).

3) Set the suspension bolt. (Use W3/8 or M10 size suspension bolts)

Adjust the distance from the unit to the ceiling slab beforehand (Refer to ③)

4) Fix the hanger bracket to the suspension bolt.

⚠ **Warning !**

- ◆ Make sure that extended suspension bolt from the ceiling stays inside the arrowed position. Readjust the hanger

bracket when it is outside the arrowed position. (Refer to ⑤)

◆ Suspension bolt stays inside the cap of indoor unit. Never remove the cap.

5) Lift the unit and slide forward unit the dent. (Refer to ⑥)

6) Screw tightly both hanger bracket-setting bolts (M8). (Refer to ④)

7) Screw tightly both hanger bracket-fixing bolts (M6) to prevent the movement of the indoor unit. (Refer to ④)

8) Adjust the height so that rear side of the drainpipe slightly inclines to improve drainage.

⚠ Caution !

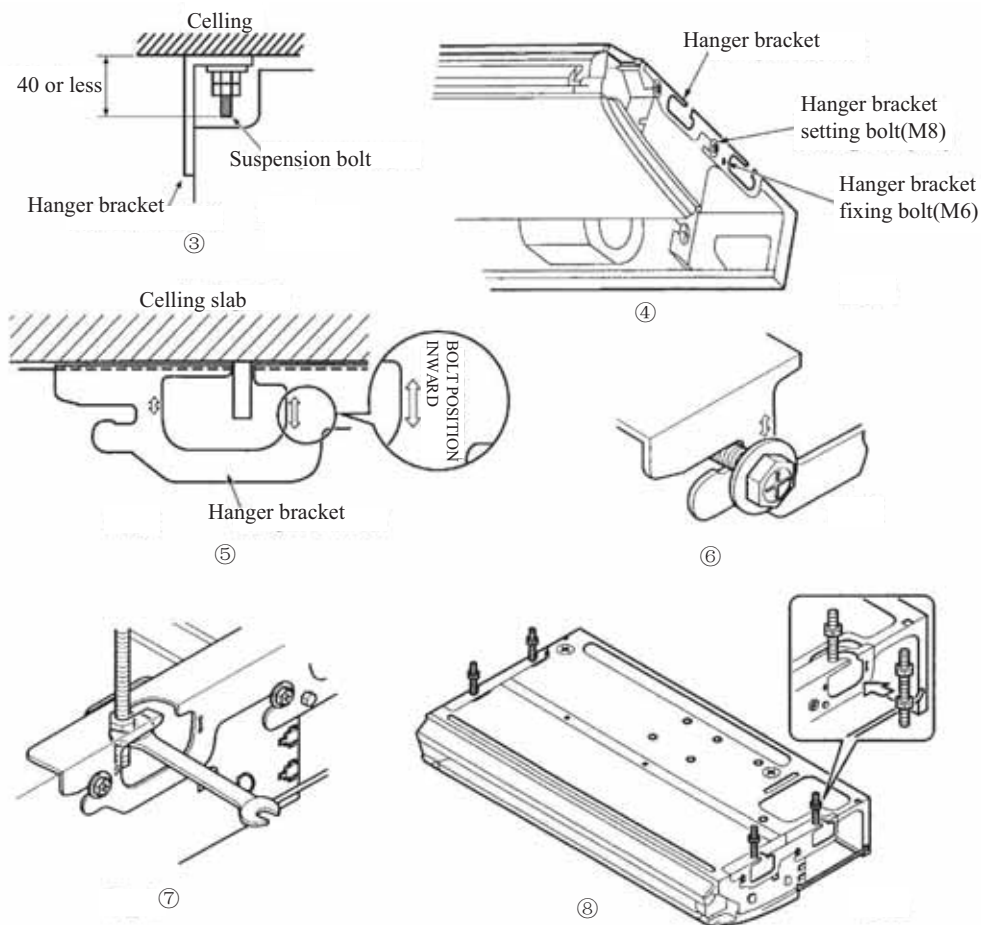
◆ Adjust the height by turning the nut with a spanner.

◆ Insert the spanner from the hanger bracket opening. (Refer to ⑦)

In case of hanging

It is possible to install using inward facing hanger brackets by not removing the brackets from the indoor unit. (Refer to ⑧)

Be sure to use only the specified accessories and parts for installation work.



5 REFRIGERATION PIPING WORK

5.1 Connection between Indoor and Outdoor Units

a. Wiring of the Power Cord

⚠ CAUTION !

A breaker must be installed, capable of cutting off the power supply for the whole system.

- 1) Open the side plate.
 - 2) Let the power cord go through the rubber ring.
 - 3) Connect the power card to the terminals “L”, “N” and also the earthing bolt, and then connect the wiring terminals “N(1,2,3)” of the indoor unit to those of the outdoor unit correspondingly.
 - 4) Fix the power cord with wire clips.
- b. Capacity Level and Capacity Code of the Indoor and Outdoor Units

| | Capacity Level | Capacity Code |
|--------------|----------------|---------------|
| Indoor Unit | 09 | 25 |
| | 12 | 35 |
| | 18 | 50 |
| | 21 | 60 |
| | 24 | 71 |
| Outdoor Unit | 36 | 100 |
| | 42 | 120 |

◆ One outdoor unit is capable of driving five at maximum and two at minimum indoor units.

◆ Total capacity of the indoor units can be among 50%-150% of that of the outdoor unit.

- 1) The outdoor unit with capacity level 36 can drive up to four sets of indoor units, while the outdoor unit 42 can drive up to five.
 - 2) The sum of the capacity codes of the indoor units should be among 50%-150% of that of the outdoor unit.
- c. Allowable Length and Height Fall of the Refrigerant Pipe

| | Allowable Length | | Refrigerant Pipe | |
|--------------------------------|------------------------------|-----|-------------------|-----------------------|
| | 36 | 42 | 36 | 42 |
| Total Length(m) | 70 | 80 | $L_1+L_2+L_3+L_4$ | $L_1+L_2+L_3+L_4+L_5$ |
| Max. Length for Single Unit(m) | 20 | 25 | L_x | |
| Max. installation altitude | Outdoor unit and indoor unit | 15 | 15 | H1 |
| | Indoor unit and indoor unit | 7.5 | 7.5 | H2 |

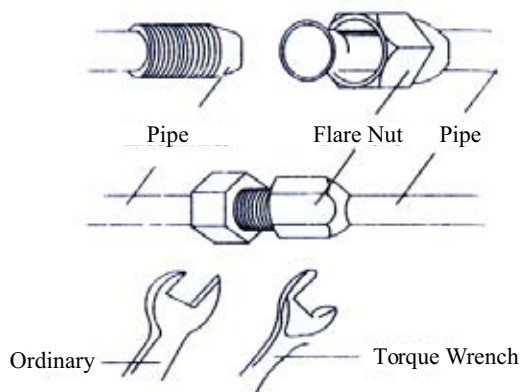
Dimension of the Refrigerant Pipe of the Indoor Unit

unit:mm

| Capacity Level of the Indoor Unit | Gas Pipe | Liquid Pipe |
|-----------------------------------|----------|-------------|
| 09,12 | φ9.52 | φ6.35 |
| 18 | φ12.7 | φ6.35 |
| 21,24 | φ15.9 | φ9.52 |

d. Piping between the Indoor and Outdoor Units

- 1) Refer to Fig.6 for the moments of torque for tightening screws.
- 2) Let the flare end of the copper pipe point at the screw and then tighten the screw by hand.
- 3) After that, tighten the screw by the torque wrench unit it clatters.



4) The bending degree of the pipe can not be too small; otherwise it will crack. And please use a pipe bender to bend the pipe.

5) Wrap the exposed refrigerant pipe and the joints by sponge and then tighten them with the plastic tape.

Moments of Torque for Tightening Screws

| Diameter | Wall Thickness (mm) | Moment of Torque |
|----------|---------------------|------------------|
| φ6.35mm | ≥ 0.5 | 15-30 (N·m) |
| φ9.52mm | ≥ 0.71 | 30-40(N·m) |
| φ12.7mm | ≥ 1 | 45-50(N·m) |
| φ15.9mm | ≥ 1 | 60-65(N·m) |

⚠CAUTION !

a. During the connection of the indoor unit and the refrigerant pipe, never pull any joints of the indoor unit by force; otherwise the capillary pipe or other pipe may crack, which then would result in leakage.

b. The refrigerant pipe should be supported by brackets, that is, don't let the unit withstand the weight of it.

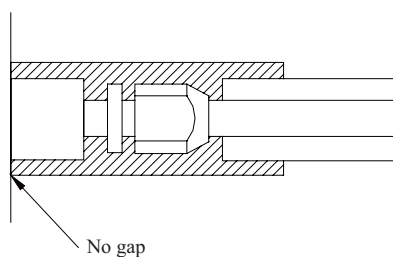
⚠CAUTION !

For the GMV multi VRF system, each pipe should be labeled to tell which system it belongs to avoid mistaken inaccurate piping.

e. Installation of the Protection Layer of the Refrigerant Pipe

1) The refrigerant pipe should be insulated by the insulating material and plastic tape in order to prevent condensing and leaking.

2) The joints of the indoor unit should be wrapped with the insulating material and no gas is allowed on the joint of the indoor unit.



⚠CAUTION !

After the pipe is protected well enough, never bend it to form a small angle; otherwise it would crack or break

f. Wrapping the pipe with tape:

1) Bundle the refrigerant pipe and electric wire together with tape, and separate them from the drain pipe to prevent the condensate water overflowing.

2) Wrap the pipe from the bottom of the outdoor unit to the top of the pipe where it enters the wall. During the wrapping, the later circle should cover half of the former one.

3) Fix the wrapped pipe on the wall with clamps.

⚠CAUTION !

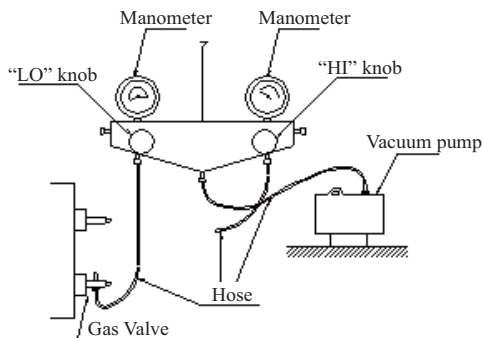
a. Do not wrap the pipe too tightly; otherwise the insulation effect would be weakened. Additionally, make sure the drain hose is separated from the pipe

b. After that, fill the hole on the wall with sealing material to prevent wind and rain coming into the room.

5.2 Refrigerant Charging and Trial Running

a. Refrigerant Charging

- 1) The refrigerant has been charged into the outdoor unit before shipment, while additional refrigerant still need be charged into the refrigerant pipe during the field installation.
- 2) Check if the liquid valve and the gas valve of the outdoor unit are closed fully.
- 3) As shown in the following figure, expel the gas inside the indoor unit and refrigerant pipe out by the vacuum pump.



- 4) When the compress is not running, charge the R410A refrigerant into the refrigerant pipe from the liquid valve of the outdoor unit (do not do it from the gas valve)

b. Calculation of the Additional Refrigerant Charge

1) Refrigerant Charge in the Outdoor Unit before Shipment

| Model | GWHD(36)NK3AO | GWHD(42)NK3AO |
|-------------------------|---------------|---------------|
| Refrigerant Charge (kg) | 3.6 | 4.8 |

Notes:

- a. The refrigerant charge mentioned in the table above is not included those charged additionally in the indoor unit and the refrigerant pipe.
- b. The amount of the additional refrigerant charge is dependent on the diameter and length of the liquid refrigerant pipe which is decided by the actual yield installation requirement.
- c. Record the additional refrigerant charge for future maintenance.

2) Calculation of the Additional Refrigerant Charge

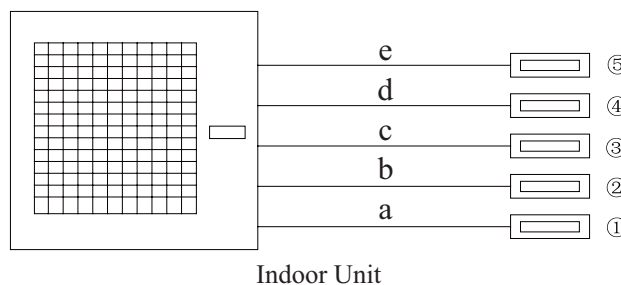
If the total refrigerant pipe length (liquid pipe) is smaller than that listed in the table below, no additional refrigerant will be charged.

| Model | Total Liquid Pipe Length (a+b+c+d+e) |
|---------------|--------------------------------------|
| GWHD(36)NK3AO | ≤ 40m |
| GWHD(42)NK3AO | ≤ 50m |

Additional Refrigerant Charge₂ = \sum Extra Liquid Pipe Length × 22g/m (liquid pipe 1/4").

Note: if the total refrigerant pipe length is larger than that listed in the table above, the additional refrigerant for the extra length of the pipe needs to be charged as per 22g/m.

3) Example : GWHD (42) NK3AO



Indoor Unit

| Serial No. | Model |
|---------------|---------------------------------|
| Indoor Unit ⑤ | Ducted Type GFH(09)EA-K3DNA1A/I |
| Indoor Unit ④ | Ducted Type GFH(09)EA-K3DNA1A/I |
| Indoor Unit ③ | Ducted Type GFH(09)EA-K3DNA1A/I |
| Indoor Unit ② | Ducted Type GFH(09)EA-K3DNA1A/I |
| Indoor Unit ① | Ducted Type GFH(18)EA-K3DNA1A/I |

Liquid Refrigerant Pipe

| Serial No. | e | d | c | b | a |
|------------|-------|-------|-------|-------|-------|
| Diameter | φ6.35 | φ6.35 | φ6.35 | φ6.35 | φ9.52 |
| Length | 20m | 20m | 15m | 5m | 5m |

The total length of each liquid refrigerant pipe is: $e+d+c+b+a=20+20+15+5+5=65\text{m}$. Thus, the minimum additional refrigerant charge= $(65-50)\times 0.022=0.33\text{kg}$ (Note: no additional refrigerant is needed for the liquid pipe within 50m).

4) Additional Refrigerant Charge Record

Indoor Unit

| No. | Indoor Unit Model | Additional Refrigerant Charge(kg) |
|-------|-------------------|-----------------------------------|
| 1 | | |
| 2 | | |
| | | |
| N | | |
| Total | | |

Refrigerant Pipe

| Diameter | Total Length(m) | Additional Refrigerant Charge(kg) |
|----------|-----------------|-----------------------------------|
| Φ15.9 | | |
| Φ12.7 | | |
| Φ9.52 | | |
| Φ6.35 | | |
| Total | | |

c. Items to be checked after the Installation

| Items to be Checked | Possible Errors | Check Results |
|---|--|---------------|
| Has each part and component the of unit installed securely? | The unit may fall off, vibrate or generate noise. | |
| Has the gas leakage test been taken? | The cooling (heating) capacity may be poor. | |
| Is the thermal insulation sufficient? | Dews and water drops may be generated. | |
| Does the drainage go well? | Dews and water drops may be generated. | |
| Is the actual power voltage in line with the value marked on the nameplate? | The unit may break down or some components may be burnt out. | |
| Are the wiring and the piping correct? | The unit may break down or some components may be burnt out. | |
| Has the unit been earthed reliably? | There may be a danger of electric shock. | |
| Does the wire meet the regulated requirement? | The unit may break down or the component may be burnt out. | |
| Is there any obstacle at the air inlet/outlet of the indoor/outdoor unit? | The cooling (heating) capacity may be poor | |
| Have the length of the refrigerant pipe and the refrigerant charge been recorded? | It may be hard to know the exact refrigerant charge. | |



d. Trial Running

1) Check before the Trial Running

- ◆ Check if the appearance of the unit and the piping system are damaged during the transportation.
- ◆ Check if the wiring terminals of the electronic component are secure.
- ◆ Check if the rotation direction of the fan motor is right.
- ◆ Check if all valves in the system are fully opened.

2) Trial Running

◆ The trial running should be carried out by the professionally skilled personnel on the premise that all items listed above are in normal conditions.

- ◆ Let the unit energized and switch the wired controller or the remoter controller to “ON”.
- ◆ The fan motor and compressor of the outdoor unit will run automatically in one minute.
- ◆ If there is some unusual sound after the compressor is started, turn off the unit for an immediate check.

6 ELECTRIC WIRING WORK

6.1 Wiring Principle

6.1.1 Itemized Description of Cautions.

The electrical installation must be done by professional electricians.

The electrical installation must be done in accordance with applicable technical codes and other rules.

⚠ WARNING!

Please make sure to install earth leakage circuit breaker. Earth leakage circuit breaker must be installed to prevent electric shock or fire.

CAUTIONS!

The air conditioner must be securely earthed. Incorrect earthing may cause electric shock or fire.

◆ All the electric installations must be carried out by specialist technicians in accordance with the local laws, rules and these instructions.

◆ The indoor unit and outdoor unit shall use different power supplies. The indoor units under the same system must be powered by a unified power source. All the indoor units can only be controlled by one master power switch. Rated supply voltage and special circuit for air conditioner must be used.

◆ The earthing shall be secure. The earthing wire shall be connected to the special earthing device on the construction. The installation must be done by specialist technicians. Never connect the earth lead to the gas pipe, water pipe, lightning rod or telephone earth wire.

◆ To avoid electric shock or any accident due to mal-operation, the air switch and shock-resistant earth leakage circuit breaker that can cut off the power supply of the complete system must be installed. The air switch shall have both the magnetic tripping and thermal tripping functions to ensure protection against the short circuit and overload. Electric shock or fire might be caused if no installation of earth leakage circuit breaker. Do not switch on the power before completion of the electrical work. Make sure to cut off the power supply before repair.

◆ Under no condition could use the capacitor to improve the power factor.

◆ Please use cable conduit for power cords.

◆ Do not lay the electronic control cables (remote control and signal line) outside the machine with other cables; otherwise the machine might become malfunctioned or failed due to electrical noise.

◆ The power cord must be always connected to the power cord terminal board, and fixed by using the lock connector included with the machine. Meanwhile, prevent them from contacting the fitting pipe. The diameter of power cords shall be large enough. See below for the detailed specifications. The damaged power cords and connection lines must be replaced with the designated cables. When connecting the cable, please confirm that all the electrical components inside the electric box shall have no coupling or terminal loosened. (Improper installation of electric box cover may lead to potential water leakage, which will cause the unit abnormal or short circuit).

◆ Earth lead must be connected before connecting the power cord. An earth lead longer than the power cord shall be provided.

◆ For site wiring, please refer to the circuit diagram attached on the machine body.

6.1.2 Earthing Requirements

1) The air conditioner is classified into the Class I appliances, so its earthing must be reliable.

2) The yellow-green line of the air conditioner is the earth line and can not be used for other purpose, cut off or fixed by the self-tapping screw; otherwise it would cause the hazard of electric shock.

3) The reliable earth terminal should be provided and the earth wire can not be connected to any of the following places.

① Running water pipe;

② Coal gas pipe;

③ Sewage pipe;

④ Other places where the professional personnel think unreliable

6.2 Electric Wiring Design

⚠ Caution: The power of every indoor unit should be connected in outdoor unit.

a. Open surface panel.

b. Remove the electrical box cover.

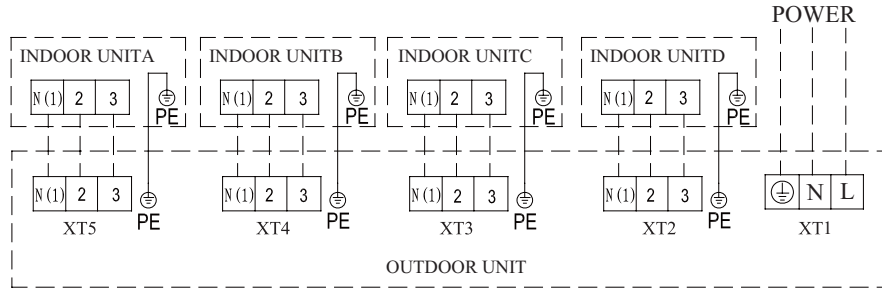
c. Route the power connection cord from the back of the indoor unit and pull it toward the front through the wiring hole upward.

d. Connect the wiring (communication) through the piping hole of the chassis and the bottom of the appliance upward, then connect the brown wire to the Terminal board "3"; black wire (the communication wire) to the Terminal board "2"; blue wire to the Terminal board "N(1)", and connect the earthing wire to the screw terminal on the electric box.

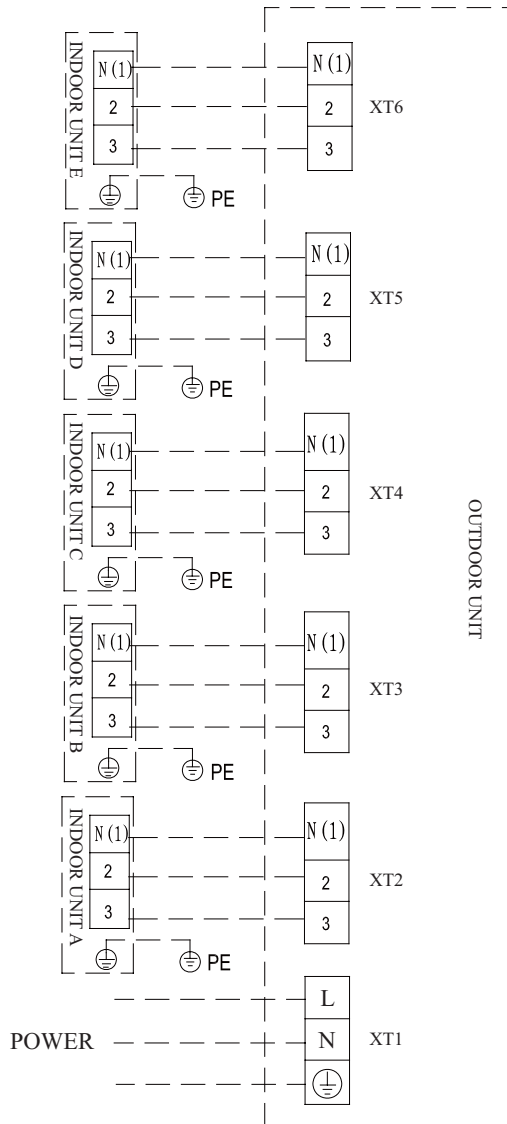
Clamp them with the corresponding wire clamp packed in the chassis;

- e. Reassemble the electrical box cover.
- f. Recover the surface panel.
- g. The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.

GWHD(36)NK3AO



GWHD(42)NK3AO



⚠ Caution !

- a. The incorrect of wiring connecting would lead malfunction of some of the electric elements.
- b. Make sure that the lead between the connect end and the clamp end has some need space after the wire is fixed.
- c. The appliance shall be installed in accordance with national wiring regulations.

Noise Precautions

- 1) The air conditioning unit should be installed where ventilation is in good condition, otherwise the working capability of the unit would be reduced or working noise would be increased.
- 2) The air conditioning unit should be installed on the base frame which is stable and secure enough to withstand the weight of the unit; otherwise it would incur vibration and noise.
- 3) During the installation, a consideration should be taken that the produced hot air or noise should not affect neighbors and surroundings.
- 4) Do not stack obstacles near the air outlet of the outdoor unit; otherwise it would reduce the working capability of the unit or increase the working noise.
- 5) In the event of the occurrence of abnormal noise, please contact the sales agent as soon as possible.

Accessories for Installation

Refer to the packing list for the accessories of the indoor and outdoor units respectively.

6.3 Specification of Power Supply Wire and Air Switch

- 1) The installation must be done in accordance with the national wiring regulations.
- 2) Only the power cord with the rated voltage and exclusive circuit for the air conditioning can be used.
- 3) Do not pull the power cord by force.
- 4) The electric installation should be carried out by the professional personnel as instructed by the local laws, regulations and also this manual.
- 5) The diameter of the power cord should be large enough and once it is damaged it must be replaced by the dedicated one.
- 6) The earthing should be reliable and the earth wire should be connected to the dedicated device of the building by the professional personnel. Besides, the air switch coupled with the leakage current protection switch must be equipped, which is of enough capacity and of both magnetic and thermal tripping functions in case of the short circuit and overload.

| Models | Power Supply | Capacity of the Air Switch | Recommended Cord (pieces× sectional area) |
|---------------|----------------|----------------------------|--|
| GWHD(36)NK3AO | 220-240V~ 50Hz | 32A | 6mm ² ×3 |
| GWHD(42)NK3AO | 220-240V~ 50Hz | 32A | 6mm ² ×3 |