

# Nortek Global HVAC, LLC

## **Flex Match Series Compact Cassette Type Indoor Unit (For North America)**

Owner's Manual

Heat Pump

Models:

GKH12(3.5)FMK4DH

GKH18(5.3)FMK4DH

- Please read this owner's manual carefully before operation and retain it for future reference
- Specifications & illustrations subject to change without notice or incurring obligations

## User Notice

◆ The total capacity of the indoor units connected can not exceed 150% of that of the outdoor units.

◆ A Breaker(or fuse) needs to be installed in every indoor unit, and the capacity should in according with indoor unit's electrical power. All the indoor units are required to be controlled by a total Switch. This Switch can cut off the electric power supply in case of emergency. The Breaker(or fuse) on each indoor unit help prevent short circuiting and power overload. The total switch controls the power supply of all the indoor units. Before clearing and maintenance, it is very important to turn off the total power supply switch.

◆ In order to turn on the units, the main power switch must be turned on 8 hours before operation.

◆ After receiving the turn off signal, indoor units will continue to run for 20-70 seconds. This clears the unit of conditioned (heated or cooled) air.

◆ When the selected operating mode of the indoor unit clashes with the operating mode of the outdoor unit, the malfunction light will blink after 5s on the indoor unit or remote controller. To restart system change the operation mode of the indoor unit to match the outdoor unit. Cooling mode will match dry mode. Fan mode will match any mode..

◆ The appliance shall not be installed in the laundry.

◆ An all-pole disconnection switch having a contact separation of at least 3mm (1/8 in) in all poles should be connected in fixed wiring.

◆ Main switch provided by end user: it can be locked in "OFF" position with padlock.

◆ The main disconnect device should be as detailed in disconnect user manual at a recommended of 0.6-1.7m (2-5 ft). over current protection is required(UL 1995,CSA C22.2).

◆ The cooling range of the unit is the outdoor environment temp.-5~48°C (23~118°F) DB, the heating range of the unit (only for the heat pump type unit) is the outdoor environment temp. -15~27°C (5~80°F) WB.



This product must not be disposed with the household waste. Please dispose or recycle responsibly..

**Please keep this manual for future reference.**


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### 1 Safety Information

For proper operation, please read this manual carefully and follow instructions.

Please note these two marks:

 **Warning!:** Failure to comply could result in property damage, serious personal injury or death.

 **Caution!** Failure to comply could result in property damage or personal injury.

 **Warning:**

- ◆ Use a fuse with appropriate capacity, otherwise malfunction or fire may occur.
- ◆ Turn off main power immediately in the event of malfunction or if you smell a burning odor from the equipment.

- ◆ Maintain good ventilation.
- ◆ Don't insert finger or other objects into discharge vent or outlet grill.
- ◆ Check the support structure to verify that it has sufficient load-carrying capacity to support the weight of the unit, and it can be securely mounted.

- ◆ To avoid a fire hazard, do not rub or spray paint, oil, insecticide, etc. on the surface of the unit.

- ◆ Do not move the air conditioner after it is installed. Please contact qualified personnel to service or move the equipment.

**An all-pole disconnection switch having a contact separation of at least 3mm (1/8 in) in all poles should be connected in fixed wiring.**

 **Note!:**

- ◆ Please check and make sure that the cord, drainage pipe and tubes are connected in the correct way to prevent leakage of water, refrigerant, electric shock or fire.

- ◆ The main power must grounded to prevent electric shock. Please don't connect the ground line to the gas pipe, water pipe, lightening rod or telephone line.

- ◆ The air conditioner should run for at least 5 minutes. Short cycling could affect the life of the system.

- ◆ Don't let the children operate the air conditioner.
- ◆ Please don't operate the unit by wet hand.
- ◆ Please turn off the main power of the unit before cleaning or changing the filter.
- ◆ Please cut off the main power if the conditioner will not be used for an extended period of time.

## 2 Installation

### 2.1 Schematic diagram of installation specs

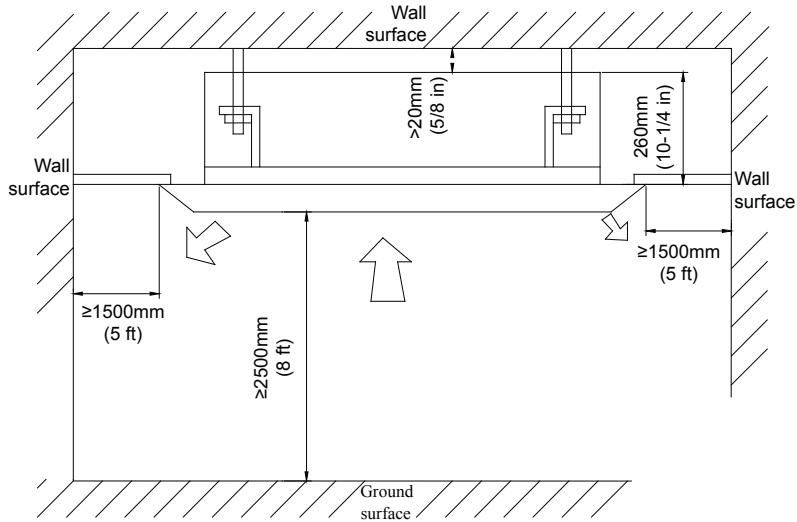


Fig. 1

### 2.2 Select install location of the indoor unit

- (1). Unit should be placed so that air flow throughout the room is not obstructed.
- (2). Unit should be installed with sufficient clearances. See illustration above.
- (3). Select a location that can bear 4 times the weight of the indoor unit. Unit should be able to be mounted securely to avoid vibration noise.
- (4). The unit should be level when mounted.
- (5). Select location where connections to outdoor unit and condensate drain are convenient.
- (6). Be sure to leave sufficient space around unit for service and maintenance. Unit should be mounted 2.5M (8 ft) above the floor.
- (7). When installing the expansion bolt, check if the location can withstand the 4 times the weight of the unit. If not, reinforce before installation (Refer to the cardboard mounting template included with this unit).

#### **⚠ Note!**

Dust in the air and oils from cooking can clog the heat exchanger. This will reduce the operating capacity of the system and could lead to early equipment failure. **Please observe the following.:**

1. Be sure to have an adequately sized vent hood when cooking to remove oils from the air.
2. Do not install air conditioner too close to kitchen or cooking area.

### 2.3 Important notice

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

◆ To the installer: Contact the manufacturer's representatives if you have any question about installing this equipment.

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

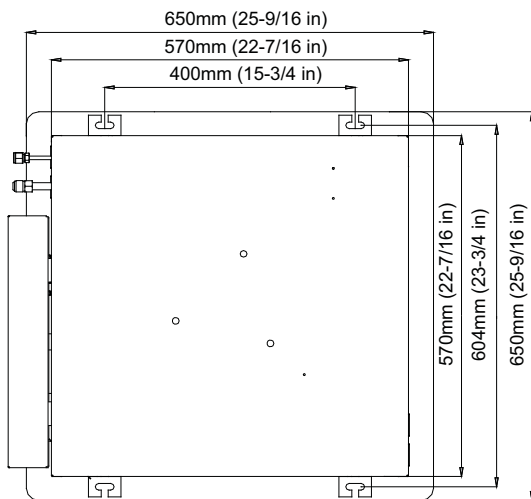


Fig. 2 Install dimension of mode  
GKH12(3.5)FMK4DH & GKH18(5.3)FMK4DH

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

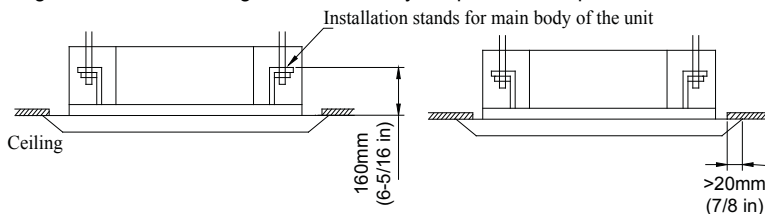


Fig. 3

Notes: The dimension for the ceiling openings with \* marks can be as large as 610mm (2 ft). But the overlapping sections of the ceiling and the decorated surface boards should be maintained at no less than 20mm (7/8 in).

## 2.5 Hoisting air conditioner

- (1). The primary step for installing the indoor unit.

- ◆ When attaching the hoisting stand on hoisting screw, do use nut and gasket individually at the upper and lower of the hoisting stand. The use of gasket anchor board can prevent gasket break.

- (2). Use cardboard installation template.

- ◆ Please refer to the cardboard template for the dimension of ceiling opening.
- ◆ The central mark of the ceiling opening is marked on the cardboard template.
- ◆ Install the cardboard template on the unit by bolt (3 piece), and fix the angle of the drainage pipe at the outlet vent with bolt.

- (3). Place unit in installation location. (Refer to Fig. 3)

- (4). Check if the unit is level.

- ◆ Inner drainage pump and bobber switch are included in the indoor unit. Check if unit is level.

## Install of The Compact Panel Cassette Type Indoor Unit

(If the unit is slanted away from the condensate drain, there may be a malfunction of the bobber switch and water leakage.)

(5). Back out the gasket anchor board used to prevent gasket break off and tighten the nut on it.

(6). Remove the cardboard template.

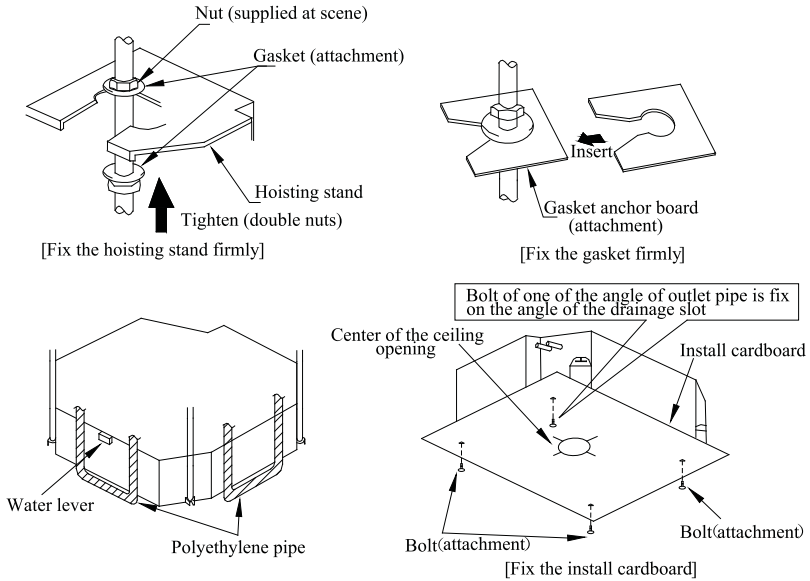


Fig. 4

**⚠ Note!:** Please tighten the nuts and bolts.

### 2.6 Connection of the refrigerant pipe

- ◆ When connecting the pipe to the unit use a wrench and torque wrench as shown in Fig. 5.
- ◆ Spread refrigerant oil lubricant to inside and outside of flare nut. Begin turning flare nut by hand, then tighten with a wrench.
- ◆ Refer to Table 1 to check for required torque (Note: over-tightening can cause damage to the nut or pipe and cause refrigerant leakage).
- ◆ Examine the connection pipe for leaks. Apply heat insulation, as shown in the Fig. 5.
- ◆ Wrap tubes and heat preservation sheath with PTFE tape as shown

## Install of The Compact Panel Cassette Type Indoor Unit

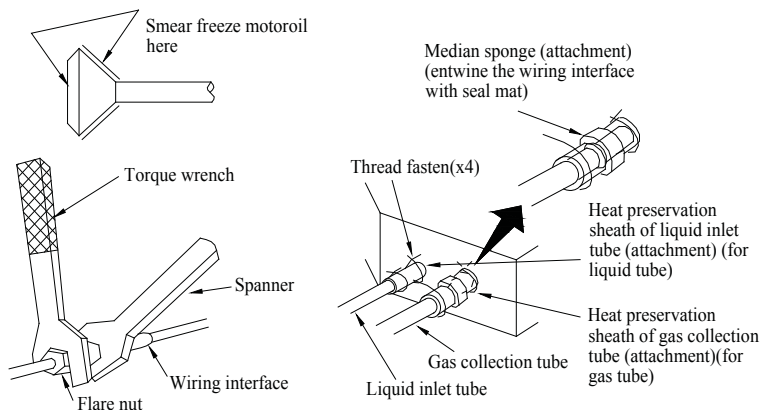


Fig. 5

Table 1: The tightening torque needed for tightening nut

Diameter (Inch)	Surface thickness (mm)	Tightening torque (N · m)
$\phi 1/4''$	$\geq 0.5$	15-30 (N · m)
$\phi 3/8''$	$\geq 0.71$	30-40 (N · m)
$\phi 1/2''$	$\geq 1$	45-50 (N · m)
$\phi 5/8''$	$\geq 1$	60-65 (N · m)
$\phi 3/4''$	$\geq 1$	70-75 (N · m)

## 2.7 Drainage hose

### (1). Install the drain hose

- ◆ The diameter of the drain hose should be larger than or equal to the connection pipe diameter. (The diameter of polythene pipe: Outer diameter 25mm (1 in) Surface thickness  $\geq 1.5\text{mm}$ )
- ◆ Drain hose should be as short as possible with sloping gradient should at least 1/100 to prevent the formation of air bubble.
- ◆ If drain hose cannot have sufficient slope, a drain raising pipe should be added.
- ◆ To prevent drooping of the drain hose, the distance between hoisting stand should be 1 to 1.5m (3 to 5 ft).

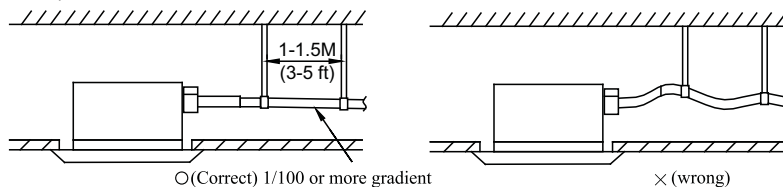


Fig. 6

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

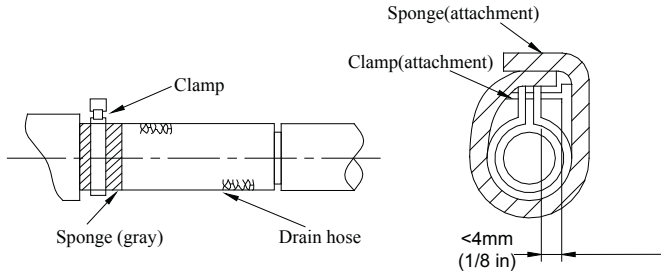


Fig. 7

## Drain setup pipe note

- ◆ The install height of the drain raising pipe should less than 280mm (11 in).
- ◆ The drain raising pipe should form a right angle with the unit, and distance to unit should be less than 300mm (11 in).

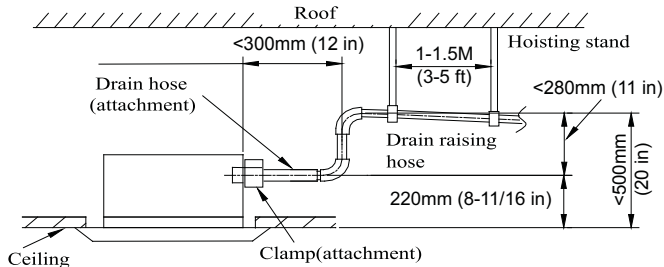


Fig. 8

## Instruction

- ◆ The slope gradient of the attached drain hose should be within 75mm (3 in) so that the drain hole doesn't isn't exposed unnecessary stress.

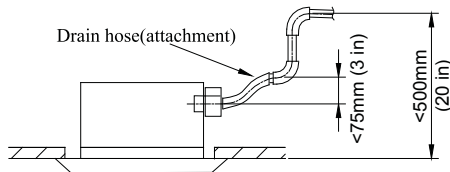
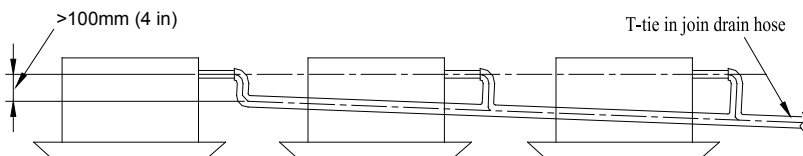


Fig. 9

- ◆ If drain hoses from several units are being installed together, please install according to the following diagram.



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

Fig. 10

- (2). Check the smoothness of drain after installation.

## Install of The Compact Panel Cassette Type Indoor Unit

- ◆ Check the drain by adding 600cc (20 oz) water slowly into the outlet vent or test hole.
- ◆ Check the drain in cooling mode after providing power to the unit.

[ Way of immiting ]

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

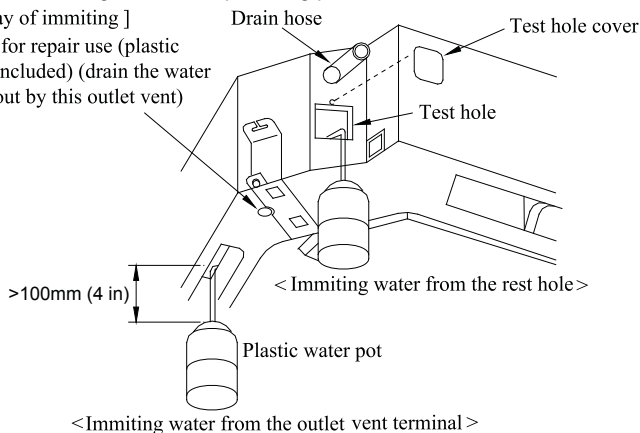


Fig. 11

## 2.8 Electrical wiring

**⚠ Note: The supply power for all indoor unit must be connected to outdoor unit.**

- ◆ Please see the wiring diagram included with the unit.
- ◆ All the installation of electrical wiring must be done by professional personnel.
- ◆ Make sure unit is properly grounded.

### Unit and controller wiring connection

- ◆ Connection wiring (communication):

① Open electric box cover, drag the wiring (communication) from the rubber plug A, and attachd them individually by fastener.

② Wire according to the circuit diagram inside the panel door.

- ◆ Attach with fastener after connection.
- ◆ Wrap the small sponge on the electric wire (to prevent condensation).
- ◆ Attach tightly with fastener after connection and then secure the electric box.
- ◆ Connect the 3 cord rubber wire to the counter terminal of the 3 way terminal board.

Reference Power cord standard table.

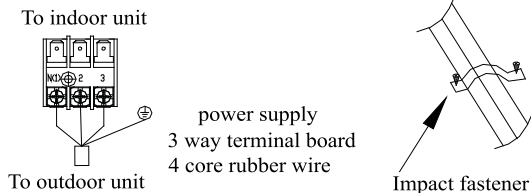


Fig. 12

Power cord standard table

Model	Power Supply (V, Ph, Hz)	Min. Sectional Area of Earth Wire(AWG)	Min. Sectional Area of Power Cord(AWG)
GKH12(3.5)FMK4DH	208~203V-1Ph-60Hz	UL1015 AWG 18*1	UL1015 AWG 18*3
GKH18(5.3)FMK4DH	208~203V-1Ph-60Hz	UL1015 AWG 18*1	UL1015 AWG 18*3

## 2.9 Install the panel

(1). Install the panel to the indoor unit body by matching the position of the swing flap motor of the panel to the piping position of the indoor unit as shown by Fig. 13.

(2). Install the panel

- ① . Install the panel on the indoor unit temporarily. Hang the latch on the hook that is located on the opposite side of the swing flap on the panel of the indoor unit. (2 positions)
- ② . Hang the remaining 2 latches to the hooks on the sides of the indoor unit. (Be careful not to let the swing motor lead wire get caught in the sealing material.)
- ③ . Screw the 4 hexagon head screws under the latches in about 15mm (1/2 in). (The panel will rise)
- ④ . Adjust the panel by turning it toward the direction pointed by the arrow as shown in Fig. 13, so that the adjust board connect the ceiling well.
- ⑤ . Tighten the screws until the thickness of the sealing material between panel and indoor unit is 5-8mm (1/4-1/8 in).

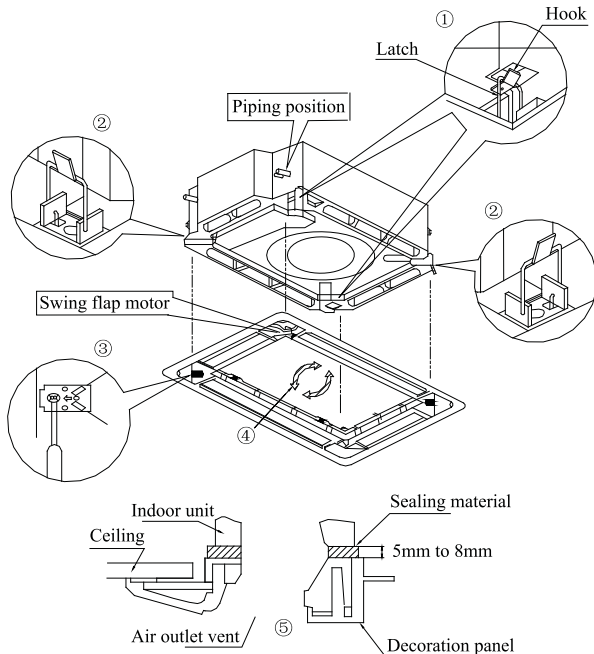


Fig. 13

# Install of The Compact Panel Cassette Type Indoor Unit

## Notes:

- ① . Improper installation of the screws may cause condensate dripping as shown in Fig. 14.

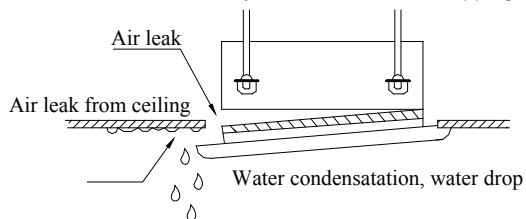


Fig. 14

- ② . If gap still exist between ceiling and decoration panel after tightening the screws, readjust the height of the indoor unit. (As shown in Fig. 15)

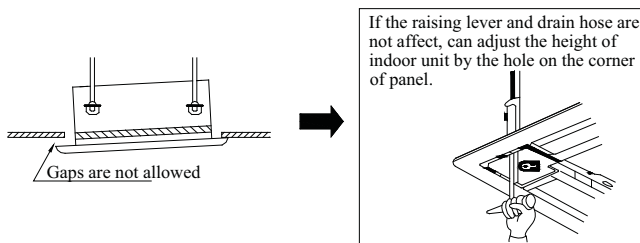


Fig. 15

※ Be sure no gap left between the ceiling and the panel.

- ③ . Wiring of the decoration panel (Fig. 16)

Connect the joints for swing flap motor lead wire (at 2 places) installed on the panel.

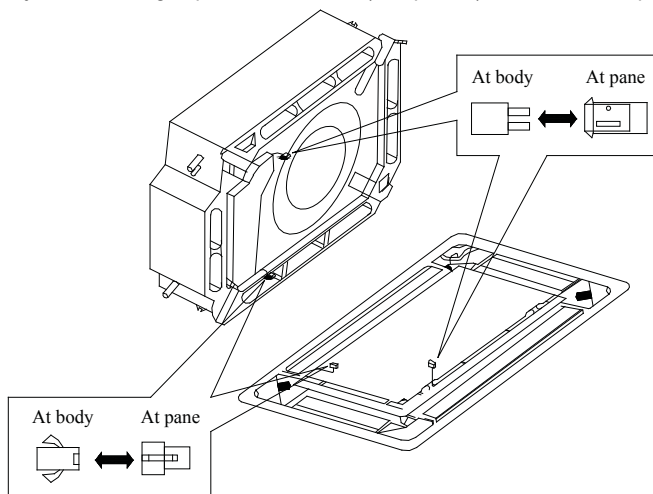
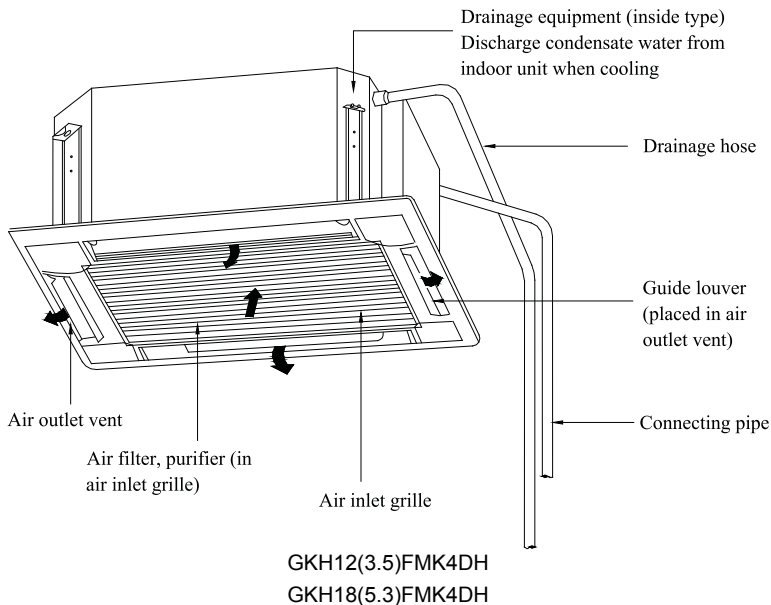


Fig. 16

### 3 Identification of Parts of Compact Panel Cassette Type Indoor Unit



### 4 Working Temperature Range

Working Temperature Range

	Indoor Conditions		Outdoor Conditions	
	Dry bulb temp. °C (°F)	Wet bulb temp. °C (°F)	Dry bulb temp. °C (°F)	Wet bulb temp. °C (°F)
Rated Cooling	27 (81)	19 (66)	35 (95)	24 (74)
Max. cooling	32 (90)	23 (73)	48 (118)	26 (79)
Min. cooling	21 (70)	15 (59)	18 (64)	—
Rated Heating	20 (68)	15 (59)	7 (45)	6 (43)
Max. heating	27 (81)	—	24 (75)	18 (64)
Min. heating	20 (68)	15 (59)	-15 (5)	-16 (3)

### 5 Troubleshooting

#### **Warning!**

◆ Turn off main power immediately if malfunction is detected, or if you smell a burning odor coming from the air conditioner. Failure to shut down unit could result in further equipment damage, electrical shock or fire.

◆ Do not move the unit once installed. Contact professional technician for service.

#### 5.1 Check the following items before contacting maintenance center

Issue	Reason	Remedy
Air conditioner doesn't run at all	Blown fuse or breaker	Change fuse or close breaker
	Power outage	Restart when there is power supply
	Power supply not properly connected	Connect power correctly
	Low batteries of wireless remote controller	Change new batteries
	Wireless remote controller out of control range	Move remote to within 8m (25 ft) of air conditioner
Air conditioner runs but stops immediately	Blockage in inlet or outlet vent of indoor or outdoor unit	Clean out blockage
Abnormal cooling or heating	Blockage in inlet or outlet vent of indoor or outdoor unit	Clean out blockage
	Improper of temp. setting	Adjust settings with wireless remote controller
	Low setting of fan speed	Adjust settings with wireless remote controller
	Incorrect air flow direction	Adjust settings with wireless remote controller
	Door or window opened	Close
	Ambient temp. rise from direct sunlight	Hang curtain over windows
	Too many people in room	
	Too many heat sources in room	Remove heat sources
	Filter blocked by dirt	Clean filter

## 5.2 Instruction

If problem(s) persist, contact qualified service personnel.

## 5.3 The following circumstances are not malfunctions

“Malfunction”		Reason
Air conditioner doesn't run	Doesn't start up unit immediately after turned off	The overload protects switch requires a 3 minutes delay.
	Doesn't start immediately when power supplied	1 minute delay after startup
Mist is blown from air conditioner	When cooling	The high humidity air in room is cooled rapidly
Noise is heard from air conditioner	Slight click sound heard once begin running	Sound of initialization for electric expansion valve
	Hissing sound heard continuously when cooling	The sound of refrigerant flowing through coil
	Hissing sound heard when starting or stopping	The sound of refrigerant flow stopping
	Slight hissing sound heard when running or after running	Sound of drainage system
	Creaking sound heard when running or after running	It is the sound of the skin plate expanding/contracting due to temperature change
Dust be blown for air conditioner	After a long period of inactivity	Dust has collected inside air conditioner
Odor emitted from air conditioner	When running	Any odors in the room (cigarette smoke, etc.) will be recirculated back into the room.

## 5.4 After-sales Service

When having maintenance issues, please contact the local service center.

### 6 Maintenance Method

**When air conditioner won't be used for a long time, please cut off the main power supply.**

#### **Warning!**

- ◆ Turn off the unit at the main power supply when cleaning the air conditioner, otherwise electric shock may occur.
- ◆ Do not wash/rinse air conditioner with water or electric shock may occur.

#### 6.1 Cleaning air filter

Air filters should be cleaned by professionals for proper operation and to ensure personal safety.

In areas with very dusty conditions, air filter should be cleaned often (about once every 6 months or more frequently if needed).

##### (1). Open air inlet grille

Loosen two screws on the air inlet grille with a screwdriver. Pull the 2 handles on air inlet grille at the same time as indicated by arrows in Fig. 17. Pull down slowly. (Reverse when closing)

##### (2). Remove air filter

As shown in Fig. 18, pull the handle behind air inlet grille, lift and remove. Remove the 3 purifiers on the filter.

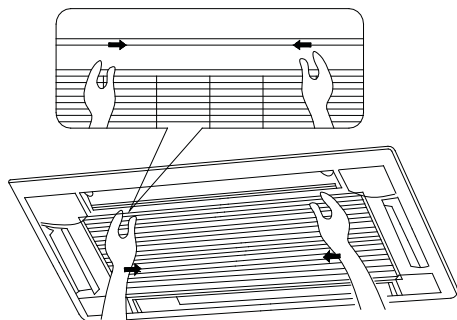


Fig. 17

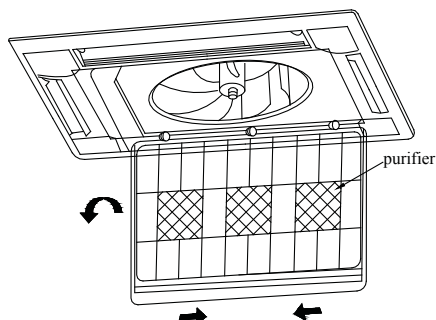


Fig. 18

##### (3). Clean

Use cleaner or water to wash filter. If the filter is very dirty (for example, oil stain), use warm water (but not over 45°C [113°F]) with mild detergent, then dry in the shade.

#### **Note !**

Do not clean the filter with hot water (more than 45°C [113°F]) as this may fade or warp the filter. Do not dry it with a hair dryer or over open flame as this may warp the filter.

##### (4). Reinstall air filter

Replace the 3 purifiers on filter. Install filter on the several tabs on top of air inlet grille. Pull the handle behind air inlet grille toward inside to reattach filter as shown in Fig. 19.

##### (5). Close air inlet grille (Refer to the 1st step)

## Maintenance

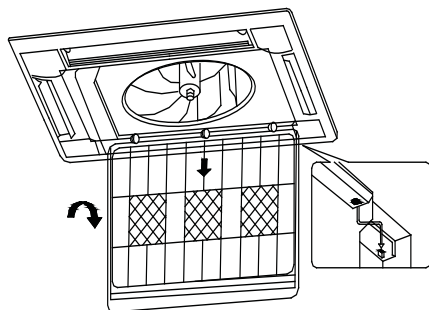


Fig. 19

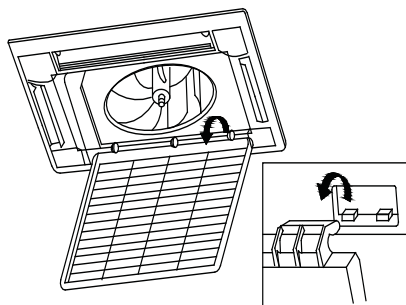


Fig. 20

### 6.2 Clean air inlet grille

- (1). Open air inlet grille (the same with the 1st step of Clean Air Filter)
- (2). Take out air filter (the same with the 2nd step of Clean Air Filter)
- (3). Take out air inlet grille

Open air inlet grille to an angle of 45°, as shown in Fig. 20, and lift it.

- (4). Clean

Clean it with soft brush, water with mild detergent.

#### **Note !**

Do not use water above 45°C (113°F) to wash the panel to prevent fading or warping.

- (5). Install air inlet grille (refer to 3rd step)
- (6). Install air filter (refer to the 4th step of Clean Air Filter)
- (7). Close air inlet grille (refer to the 1st step)

### 6.3 Install and change of air purifier

- (1). Open air inlet grille (the same as in 1st step of Clean Air Filter)
- (2). Disassemble purifier

As shown in Fig. 21, disassemble air filter. Remove bolts holding purifier on filter. Then air purifier can be removed.

- (3). Take replacement static fibre net filter and install on air filter.
- (4). Install air filter (the same as the 4th step of Clean Air Filter)

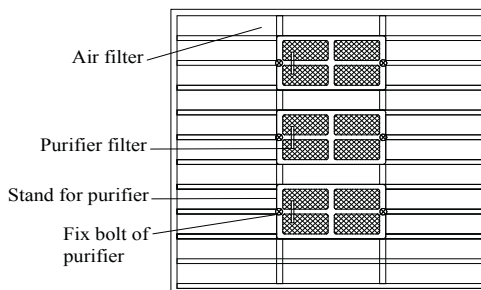


Fig. 21

### Function and usage period for air purifying

- ◆ Could adsorb CO, CO<sub>2</sub>, benzene, aldehydes and odors.
- ◆ Adsorbs dust, pollen, bacteria, and material up to 1μm (1 micrometer) in air.
- ◆ Usage period is 6 months to 1 year. Purchase new purifier as necessary.

### 6.4 Clean Outlet vent and Surface Panel

- ◆ Clean the surface panel with soft dry cloth or wet cloth with mild detergent.
- ◆ Do not clean surface panel with gasoline, benzene, cleansing powder, etc.
- ◆ If the guide louver is too dirty, it may be removed to be cleaned. (As described below)

#### Disassembly and installation of guide louver

##### (1). Disassemble guide louver

Loosen bolts in both end of guide louver.



**Note !**

Carefully wipe guide louver with mild cleaning detergent or plain water.

##### (2). Install guide louver

Rotate guide louver slightly. Install the protruding edge of both end into grooves on both end of guide louver, and then tighten bolts.

### 6.5 Maintenance before or after usage season

#### Preseason checklist

- ◆ Check if there is blockage in inlet or outlet vent of air conditioner.
- ◆ Check if the grounding wire is secure.
- ◆ Check if the air filter has been correctly installed.
- ◆ If air conditioner has been turned off for an extended period, turn on main power at least 8 hours before turning on air conditioner.

#### Post-season checklist

- ◆ Clean filter and body of air conditioner.
- ◆ Cut off the main power supply of air conditioner.
- ◆ The cooling or heating operation and sound level should be checked.
- ◆ If operation or sound level have changed, refer to information on the rating plate.



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