

Installation Part

Installation Part

3. Transport and Installation of Heat Recovery Ventilator

3.1 Transport

Before assembled, the product shall be carried as closely to the place of installation as much.

⚠ CAUTION

Do not place any object on the product.

3.2 Assembly

⚠ WARNING

Prevent entry of any foreign substance into the unit, and ensure that there is no foreign substance within the unit before installed and undergoing commissioning. Or else, fire or failure may result.

When listing the unit, be careful not to damage the insulation material of the unit surface.

3.3 Tools and Instruments Used for Installation

S.N.	Tool	S.N.	Tool	S.N.	Tool
1	Hand saw	5	Hexagonal wrench	9	Cable cutter
2	Screwdriver	6	Level meter	10	Ampere meter
3	Pliers	7	Thread end articulator	11	Voltage meter
4	Wrench	8	Lifter (for lifting the unit)	12	Megger

3.4 Installation

⚠ DANGER

• It is forbidden to install the unit in flammable environment to avoid fire or explosion.

⚠ WARNING

**• Please check to ensure the ceiling is solid enough as well as flat and straight.
• It is forbidden to the unit outdoors, otherwise, electrical accident or electricity leakage may occur.**

3.4.1 Factory-supplied Accessories

Check to ensure that the following accessories are packed with the unit.

NOTES

If any of these accessories are not packed with the unit, please contact your dealer.

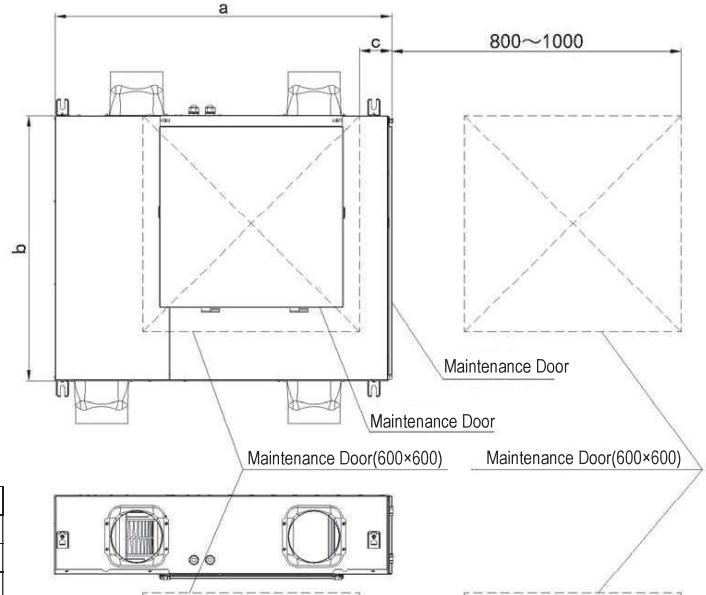
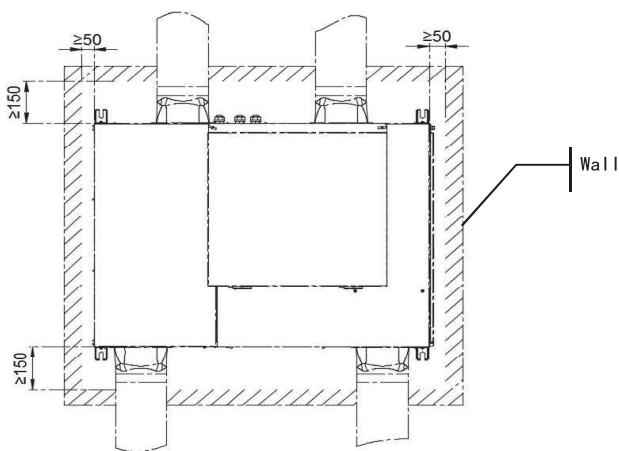
Accessories

- | | |
|-------------------|-----------------------------|
| • Use Instruction | 1copy |
| • Control Switch | 1 piece (Single-phase type) |
| • Bundle | 10 pieces |

3.4.2 Initial Check

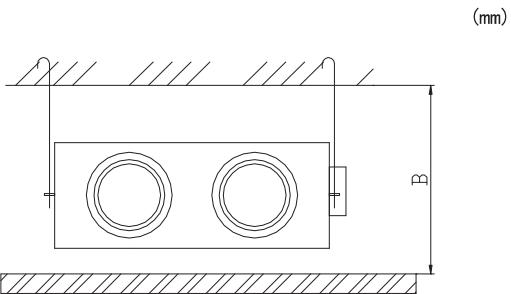
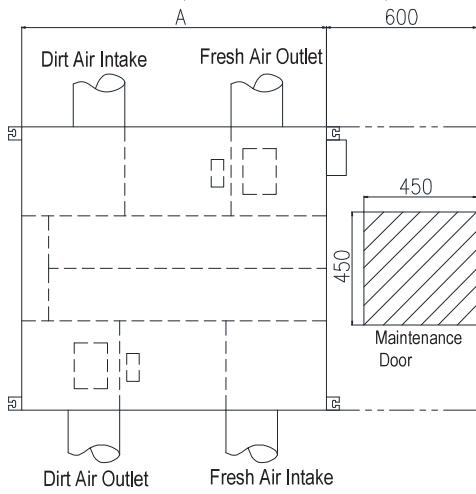
- There is enough space for installing the machine, which is used as operation and maintenance field.

KPI-20H-A-GQ ~ KPI-50H-A-GQ



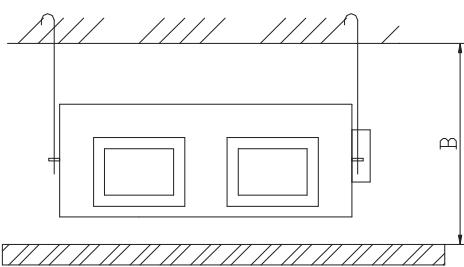
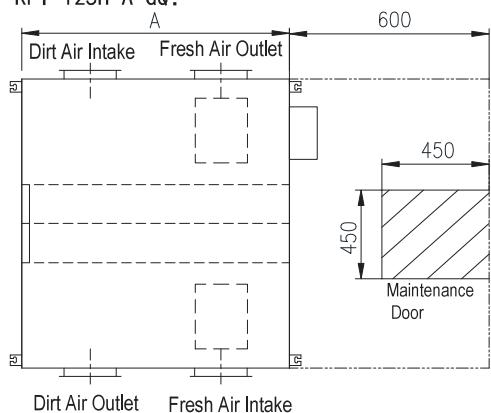
	a	b	c
KPI-20H-A-GQ	950	735	77
KPI-30H-A-GQ	950	735	77
KPI-40H-A-GQ	1100	735	225
KPI-50H-A-GQ	1100	735	225

KPI-65H-A-GQ ~ KPI-100H-A-GQ:



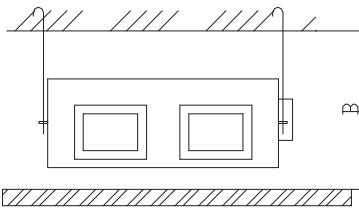
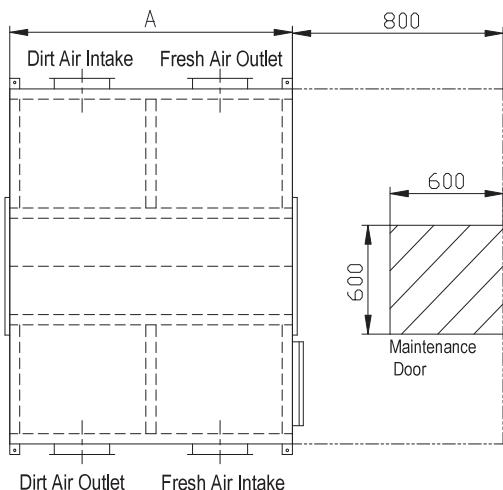
	A	B
KPI-65H-A-GQ	884	450
KPI-80H-A-GQ	1134	450
KPI-100H-A-GQ	1134	450

KPI-125H-A-GQ:



	A	B
KPI-125H-A-GQ	1134	450

KPI-150H-E-GQ ~ KPI-300H-E-GQ:



	A	B
KPI-150H-E-GQ	1300	650
KPI-200H-E-GQ	1400	
KPI-250H-E-GQ	1500	760
KPI-300H-E-GQ	1600	

Fig. 3.1 Operation and Maintenance Space

⚠ WARNING

Insufficient operation and maintenance space may result in that the filter net and core can not be dismantled for cleaning!

- Please consider the air composition in the space from the unit to the room, and select appropriate location to ensure even temperature of the indoor air.
- Remove obstacles hampering the air flow.
- Do not install the unit in a machine room or a kitchen where vapor from oil or its mist flows to the unit and the oil will deposit on the total heat exchanger, thereby reducing the unit performance and break the plastic parts of the unit.
- Pay attention to the following points when the indoor unit is installed in a hospital or a laboratory where there are electronic waves from medical equipment.
 - (a) Do not install the indoor unit where the electromagnetic wave is directly radiated to the electrical box, remote control cable or remote control switch.
 - (b) Install the indoor unit as far as practical or at least 3 meters from the electromagnetic wave radiator.
 - (c) Prepare a steel box and install the remote control switch in it. Prepare a steel conduit tube and wire the remote control cable in it. Then connect the ground wire with the box and the tube.
 - (d) Install a noise filter when the power supply emits harmful noises.
- Do not install the unit in acid or alkaline environment to avoid any corrosion to the total heat exchanger.
- Do not install the unit in following places:
 - (a) Places near corrosive gas source (including the environment containing sulfide).
 - (b) Places where harmful gas may be produced, flow through, deposit and leaked upon detection.
 - (c) Coastal places with salts.
 - (d) Exposure to rain water.
 - (e) Refrigerant warehouse, hot water tank and other places with high temperature and humidity.
- The location introducing fresh air shall be ensured without introduction of exhaust and inflammable gases, and the fresh air inlet will not be covered by snow.

3.4.3 Suspension Bolts

Step 1

Select final position and installation direction of the indoor unit, and pay attention to reserve space for pipeline, cables and maintenance.

Step 2

Install suspension bolts as shown in Fig. 3.2

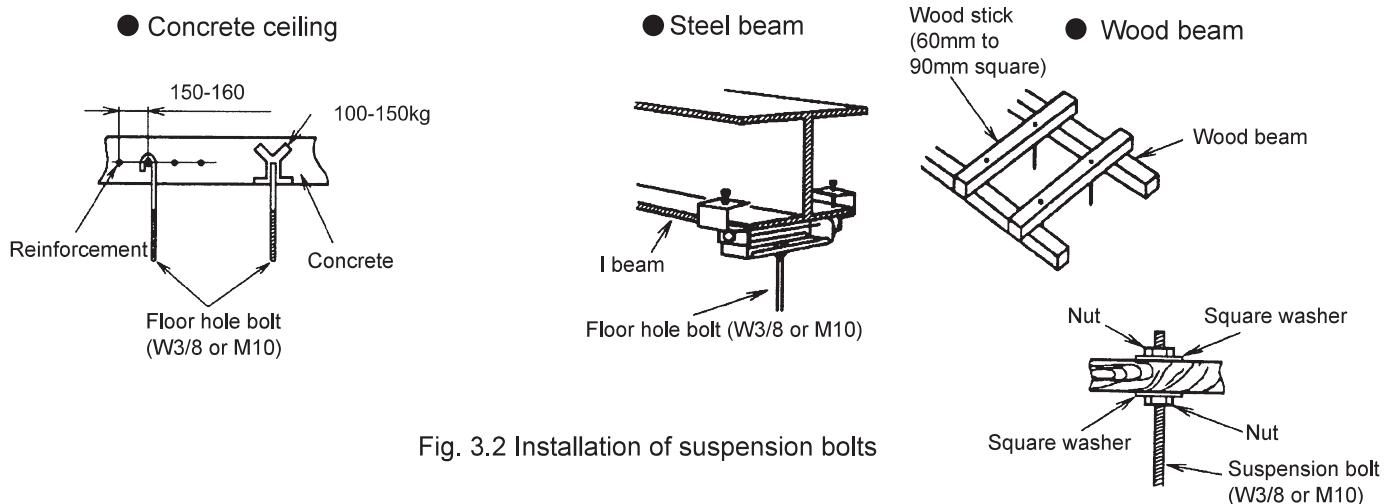


Fig. 3.2 Installation of suspension bolts

3.4.4 Installation

- 3.4.4.1 Mark the positions for connection of the suspension bolt and pipe.
 - a. Mark the position of suspension bolt
 - b. See "2.3 Structure and Lifting Dimension" for installation dimensions

3.4.4.2 Unit installation

Hang the unit as shown in Fig. 3.3.

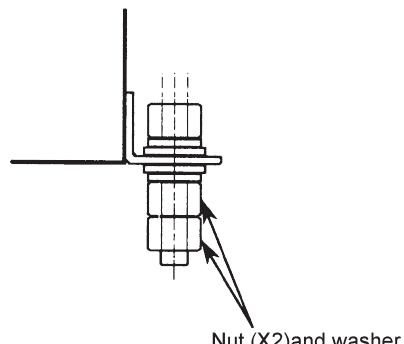


Fig. 3.3 Suspension method

- How to place nuts or suspension bolts:
Put nuts on the four suspension bolts as shown in Fig. 3.4.

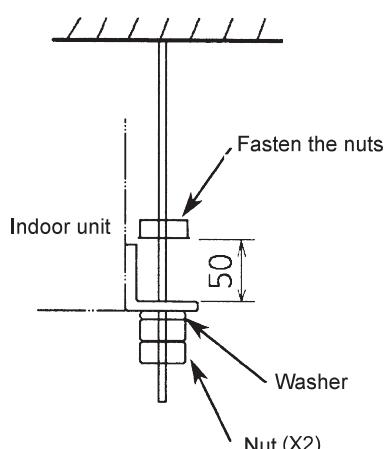


Fig. 3.4 Suspension bolts and nuts

- Suspend the unit

*Hang the suspension bracket onto the nut and washer of every suspension bolt. As shown in Fig. 3.5, start from the left.

*Check that the nuts and washers have been fixed correctly by the fixator of suspension bracket, then hang the right suspension bracket onto the nuts and washers.

(Do not put suspension bolts near the unit during hanging)

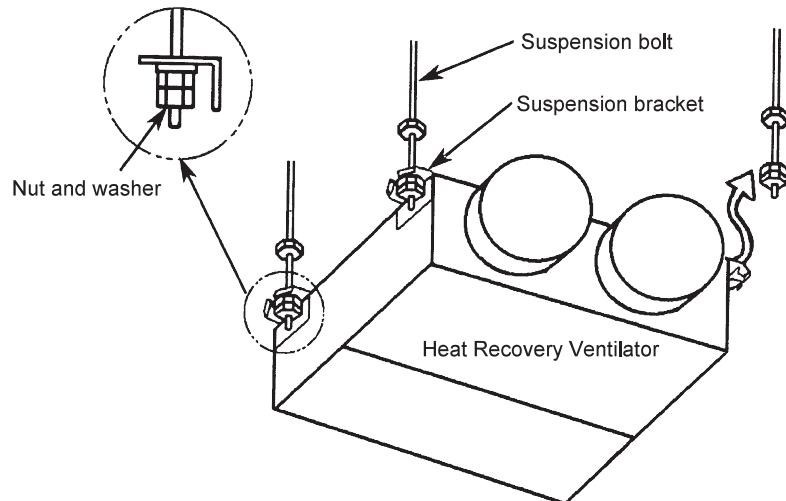


Fig. 3.5 Suspension Method

3.4.4.3 Adjust the machine level

- Check to ensure the entire unit is installed horizontally.
- After adjustment, fasten the suspension bolts and the suspension bracket. To prevent loosening, the thread locking agent shall be smeared onto the bolts.

NOTES

During installation, the unit and relevant components shall be covered by plastic cloth.

3.4.4.4 Connection of air duct

NOTES

The air duct shall be connected with the unit through a hose to avoid abnormal noise or vibration. The unit is equipped with pre-drilled flange for connection of the air duct. If the air duct is connected with the indoor unit through canvas air duct, the noise and vibration can be effectively isolated. The indoor unit is equipped with a hole flange that can be connected with the air duct.

- The air duct connection flange shall be rightly matched with the air duct, and the surroundings shall be wrapped with aluminum tape to prevent air leakage.
- Hang the air duct to avoid the transferring of its weight onto the unit.
- Treat the air duct with heat insulation materials for heat preservation to prevent the generation of condensed water.

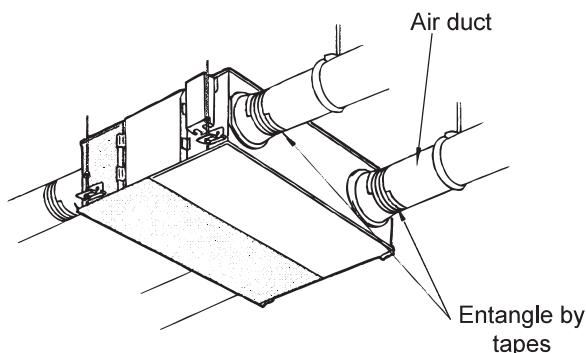


Fig. 3.6 Air Duct Connection

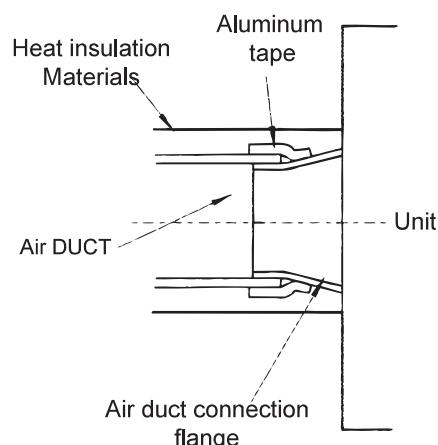


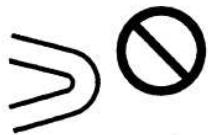
Fig. 3.7 Heat Insulation Treatment

▲ Caution

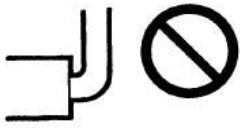
- Before connecting the air duct, check to ensure that no saw-dust or other foreign substances (shredded paper, plastic, etc.) enter into the air duct.
- Do not bump the adjustment air port inside the unit during connection of the air duct.
- Do not install the air duct with the following methods, otherwise, the air flow will be reduced and abnormal noises will be produced.

The following phenomena shall be avoided for installation of pipelines

Over-bending



Bending near the air inlet



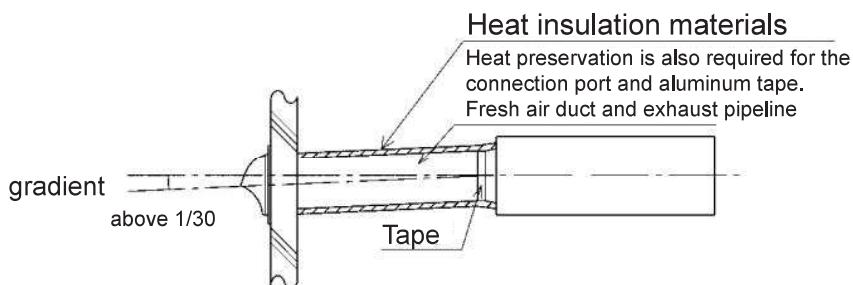
Repeated bending



Shorten the diameter of air duct



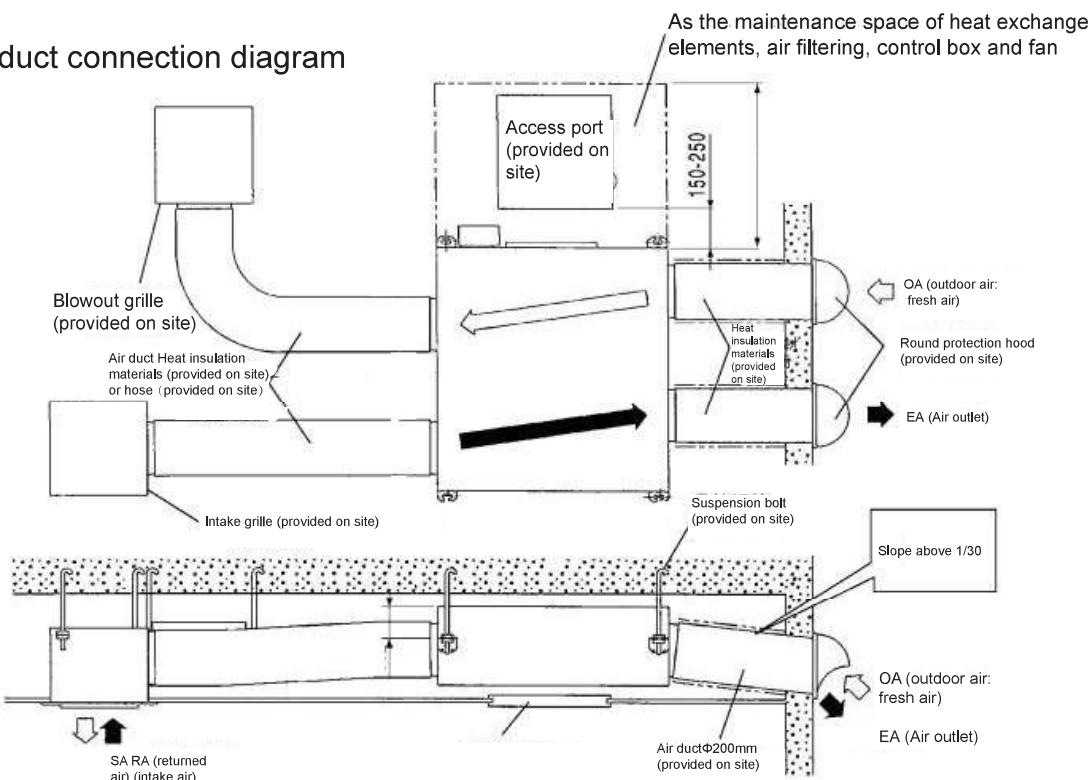
- (1) Insert the air passageway (prepared on site) into each connection port and seal with tapes or sealing bags (prepared on site).



NOTES:

- Pay attention not to bump the blower during construction of the air passageway.
- The diameter of air duct shall not be shrunken suddenly (for example: $\Phi 250 \rightarrow \Phi 150$, $\Phi 200 \rightarrow \Phi 100$).
- For the pipe installed and connected at the outer side of the room, there should be an inclination towards the outdoor during installation (the gradient shall be more than 1/30).
- The outer wall of the pipes (2 pieces) connected with the outside of the room shall be treated for heat preservation.

(2) Air duct connection diagram



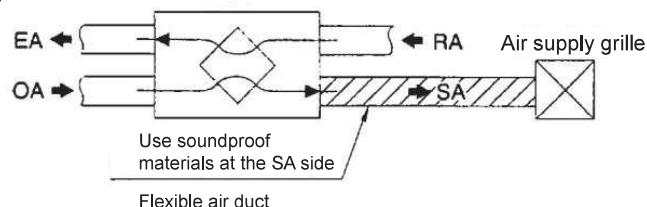
NOTES

- Ensure the interval between OA and EA is more than 3 times of the air duct diameter.
- When it is used in cold area with the ambient temperature below -10 degrees, the air ducts at the inner side (SA and RA sides) shall be treated for heat preservation.
- In quiet places, the equipment shall not be installed in the ceiling.
- Noises at the blowout port(air exhaust port) are generally higher than the rated operation noises, so flexible ducts with the length at more than 2m and silencers shall be set near the air supply and air exhaust pipes to reduce noises.
- When selecting installation materials, please consider the air flow and noise grade in specified places.
- The three-phase type has the condensate water pipe interface, please install the condensate pipe synchronously, and ensure the reliable drainage.

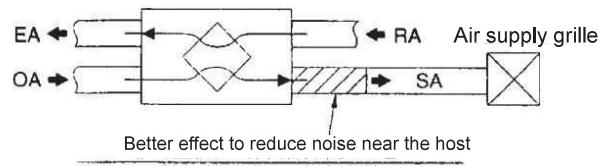
3.4.4.5. Measures and methods to reduce noises

Compared with operation noise of the host machine of the heat recovery ventilator the operation noise at the air supply grille is generally 8-11 dB higher. Countermeasures shall be taken when the heat recovery ventilator is used in quiet places.

- (1) Soundproof materials are used usually in the indoor air supply pipe to reduce the operation noises at the air supply port of the heat recovery ventilator.



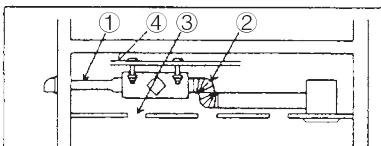
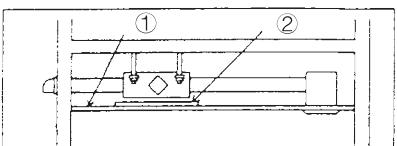
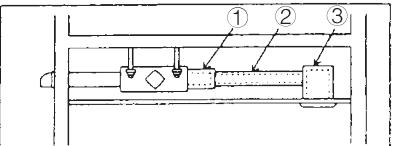
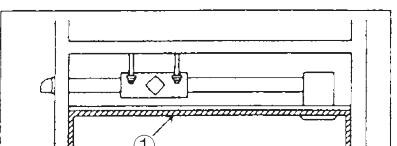
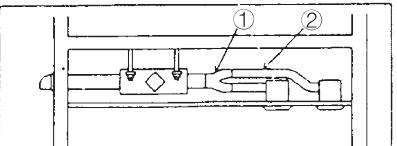
- (2) The adoption of soundproof materials at the side of the air supply pipe near heat recovery ventilator will produce better noise reduction effect than at the side near the intake/exhaust grilles.



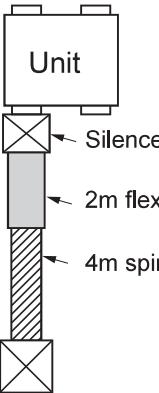
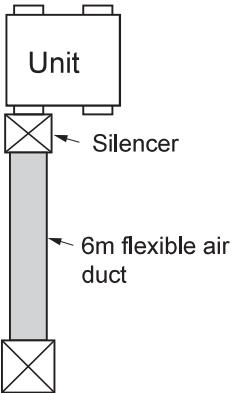
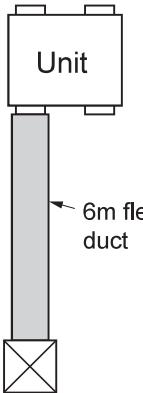
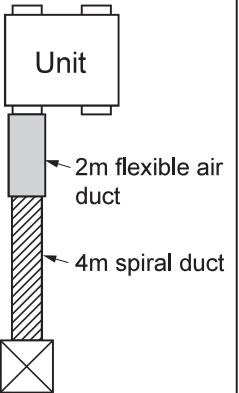
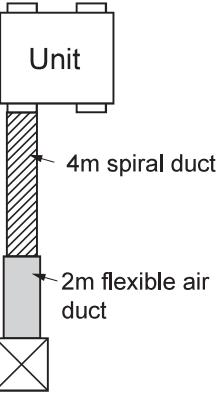
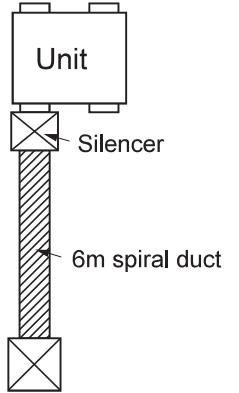
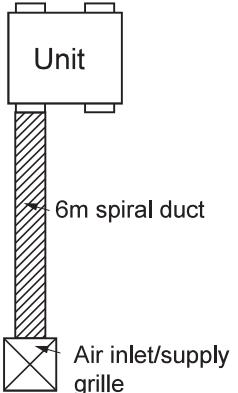
NOTES

- A flexible pipe (2m) shall be connected at the air port at the side where the air is supplied to the indoor.
- Do not connect the rotary air duct and aluminum corrugated pipe directly with the air outlet of the heat recovery ventilator.
- Using flexible pipe in combination with a silencer will produce better effect of reducing noises.

(3) Measures to reduce noise

<p>①Measures to reduce noise for large-capacity host machine (065 or more) are described below:</p> <ul style="list-style-type: none"> ●The diameter of air duct is not reduced sharply. (e.g.: $\Phi 250 \rightarrow \Phi 150$、$\Phi 200 \rightarrow \Phi 100$) ●Aluminum corrugated pipe is not excessively bended (especially when the corrugated pipe is connected with the air outlet of the host machine) ●There are undesired holes on the ceiling. ●Do not use materials with insufficient strength to hang the host. 	
<p>②Solutions:</p> <ul style="list-style-type: none"> ●Adopt ceiling component with high soundproof performance (big transmission loss) (Please note this). Particularly, for low frequency noise, material with high soundproof performance will obtain better soundproof effect. ●Soundproof material is laid beneath sound source (Please note this). For some models, it is not necessary to cover the whole unit by soundproof panel. 	
<p>③Air duct is mounted as follows (see right figure):</p> <ul style="list-style-type: none"> ●Silencer ●Flexible air duct ●Noise elimination air supply grille. 	
<p>④If the above solution does not lead to obvious effect, this method may be used :</p> <ul style="list-style-type: none"> ●Decoration material with high sound absorption rate is used in the room. 	
<p>⑤Considering that the noise is produced by air flow in air supply port (air return port), and a better soundproof effect is achieved by using the flexible tube of same length, small diameter and under same flow rate, the followings may be used.</p> <ul style="list-style-type: none"> ●Air duct branch (diverge air volume blown out and reduce the air flow speed at air supply port (air return port)). ●Flexible air duct. 	
<p>⑥ Another effective method to reduce noise is to put the noisy machine in the corner of room, keeping people in the middle of room away from noise disturbance. Try to find the best mounting location where only minimal noise is heard.</p>	

(4) Comparison on common methods (①→⑥ is noise increase order)

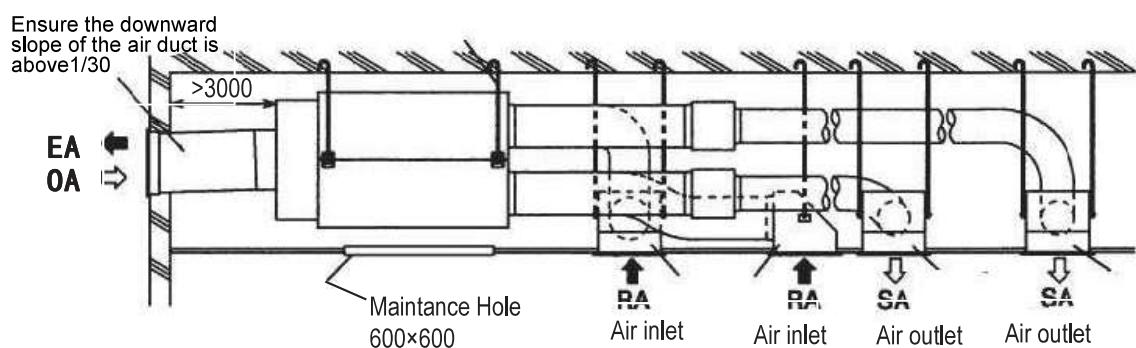
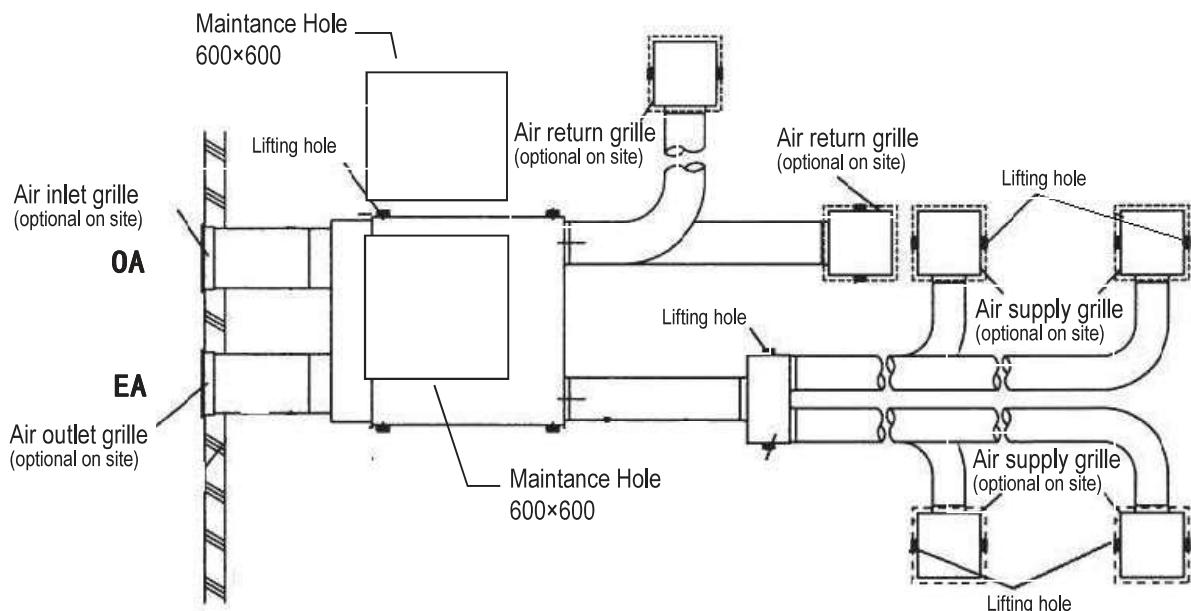
① Mount one silencer +2mm flexible air duct Mount one silencer + 6mm flexible air duct	② Mount 6m flexible air duct	③ Mount 2m flexible air duct						
 								
(Noise effect is not replenished if 2m above air duct is used.)			①	②	③	④	⑤	⑥
			dB(A)		+ 10			
			+ 5					
			Specification					
			- 5					

NOTES:

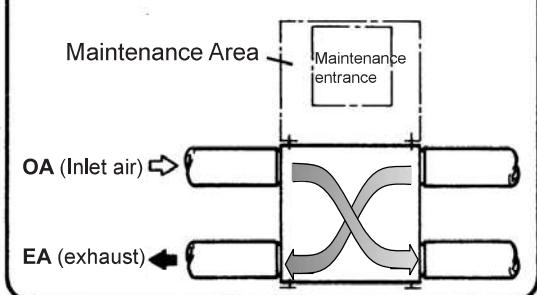
Noise value measured at 1.5m beneath air supply grille meets the Japan JIS criteria and is converted into anechoic chamber value.

Installation examples

KPI-20H-A-GQ ~ KPI-50H-A-GQ



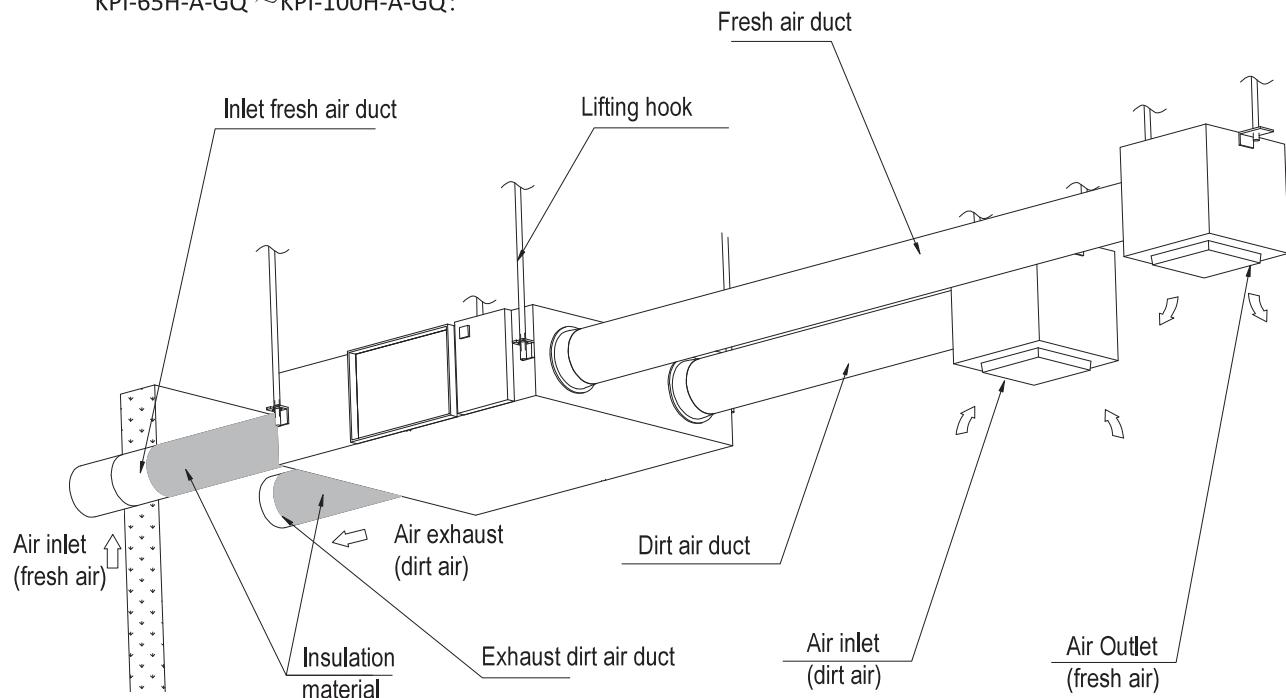
* Reverse installation is allowed based on site situation. Turn 180 degrees, and install after the body of heat recovery ventilation is kept horizontal.



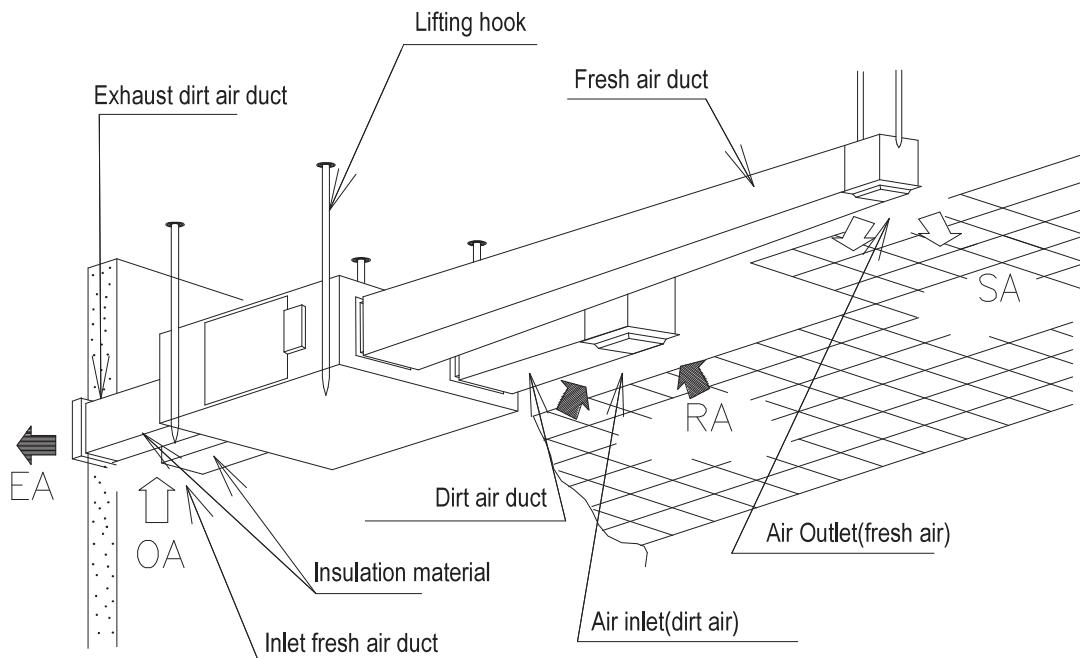
NOTES:

The machine body has the condensate water pipe interface, please install the condensate pipe synchronously, and ensure the reliable drainage.

KPI-65H-A-GQ ~ KPI-100H-A-GQ:



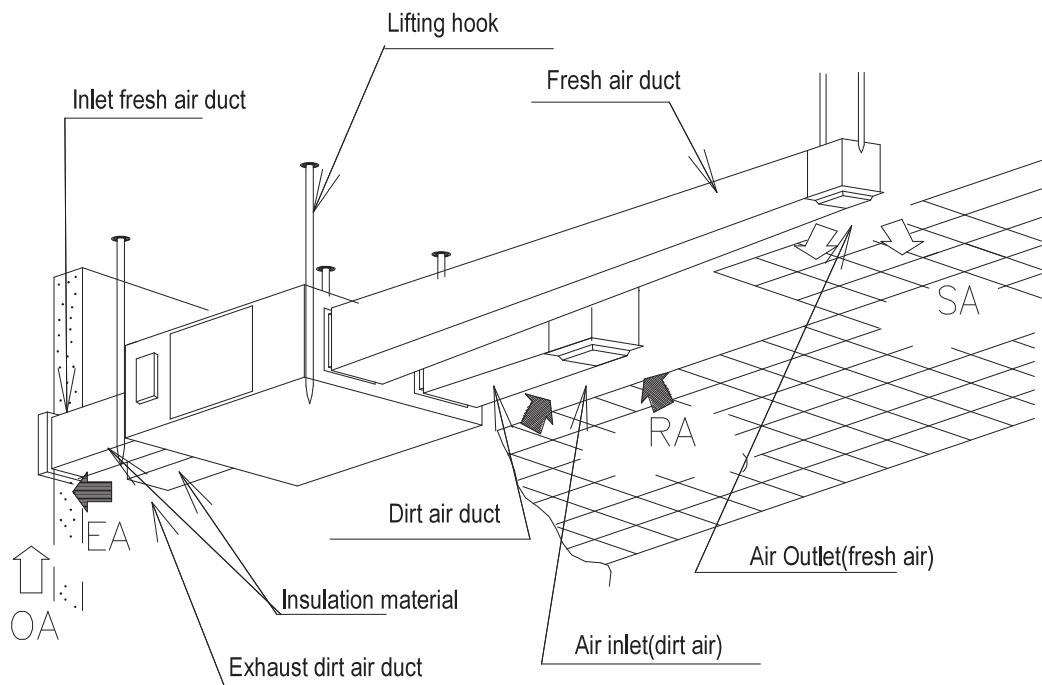
KPI-125H-A-GQ:



CAUTION

- For KPI-65H-A-GQ~KPI-100H-A-GQ, it's allowed to install upside down;
- KPI-125H-A-GQ is not allowed to install upside down; when it's installed horizontal rotation, it may cause sweat issue.

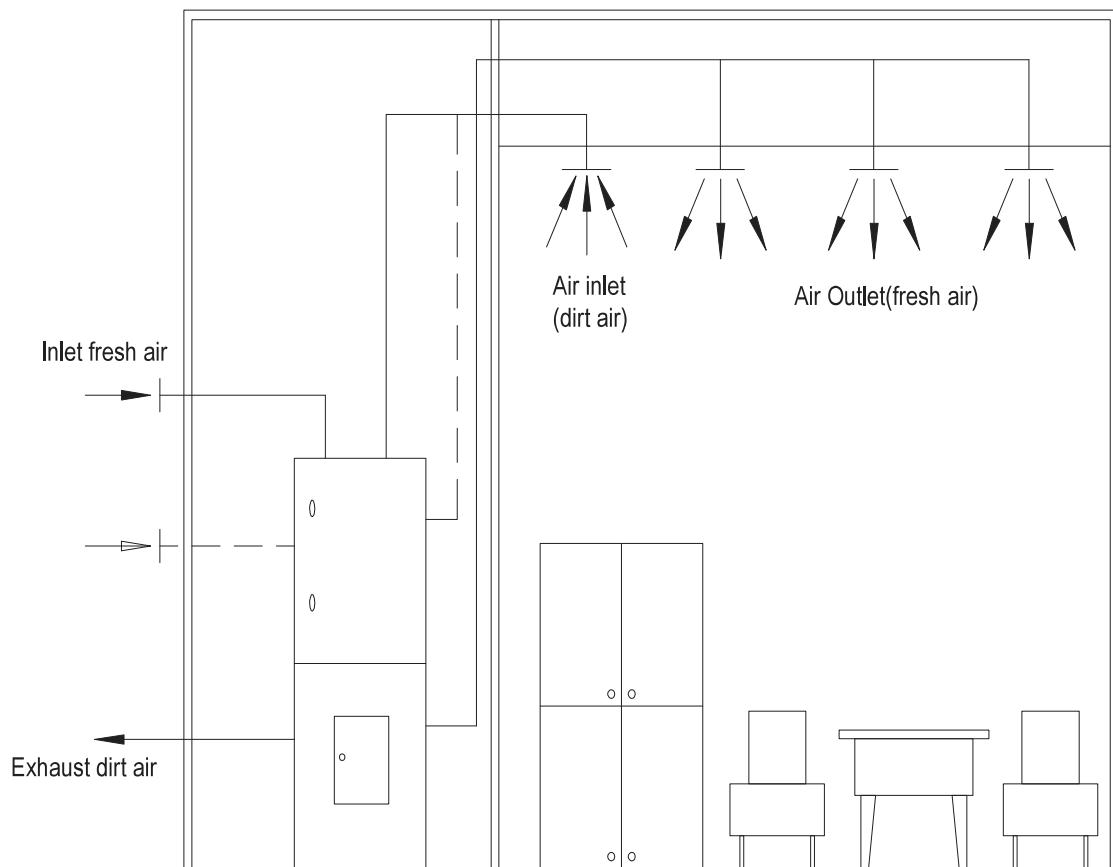
KPI-150H-E-GQ ~ KPI-300H-E-GQ:



⚠ CAUTION

- KPI-150H-E-GQ ~ KPI-300H-E-GQ is not allowed to install reversely !

KPF-400H-E-GQ~KPF-500H-E-GQ



3.4.4.6. Wiring

Warning

- Before connection or regular inspection, the main power switch shall be kept off for more than 1 minute.
- Before connection or regular inspection, ensure the fan has been shut down.
- Protect wires and electrical elements, etc. to prevent damage by rats or other small animals. Without protection, rats may bite the elements without protection, leading to fire.
- Avoid electrical wire in contact with refrigerant pipeline, steel plate edge and electrical component. Or else, electrical wire may be damaged and even fire may be caused.

Caution

- Fasten the electrical wires of the heat recovery ventilator with bundles.

Note

Conduit must be hard conduit tube.

(1) General inspection

- Confirm all electrical elements used on the installation site (mains switch, shutdown switch, leads, conduit and wiring terminal) have been selected based on the current data and comply with local electrical standards.
- Check if the power voltage is within the rated voltage range $\pm 10\%$. Grounding wire is concluded in electrical wire. Or else, electrical elements may be damaged.
- Check if the power capacity is satisfied. Or else, the system will not start at too low voltage.
- Check and ensure the grounding line has been connected reliably.
- Ensure insulation resistance is above $1M\Omega$ by measuring the insulation resistance between grounding and electrical element terminals. Or else, do not start system until the reason for electricity leakage is found and solved.

(2) Wiring

Connect power line with terminal board inside electrical box. Connect grounding line with the grounding bolt inside electrical box by referring to Fig. 3.9.

Caution

The lines between single-phase motor type power line, terminal board of total heat exchanger and terminal board of smart three-speed switch will be wired on field.

The three-phase motor type lines dotted will be wired by the constructor on field.

Select and connect power line meeting specification with the terminal of control switch.

Check and ensure the tension of terminal crimping line in each terminal board.

If no conduit is used, rubber ring will be fixed to connection line by glue.

If power line is in serial, it must check and ensure current is less than 50A.

After the wires are connected, seal the connection port of the wires with sealing materials to prevent condensed water or insects from entering.

Warning

- One ELB should be installed on power supply. If it is not installed, electrical shock and even fire may be caused.
- Fasten the screws by the torque below:

M4: 1.0—1.3 N·m

M5: 2.0—2.5 N·m

M6: 4.0—5.0 N·m

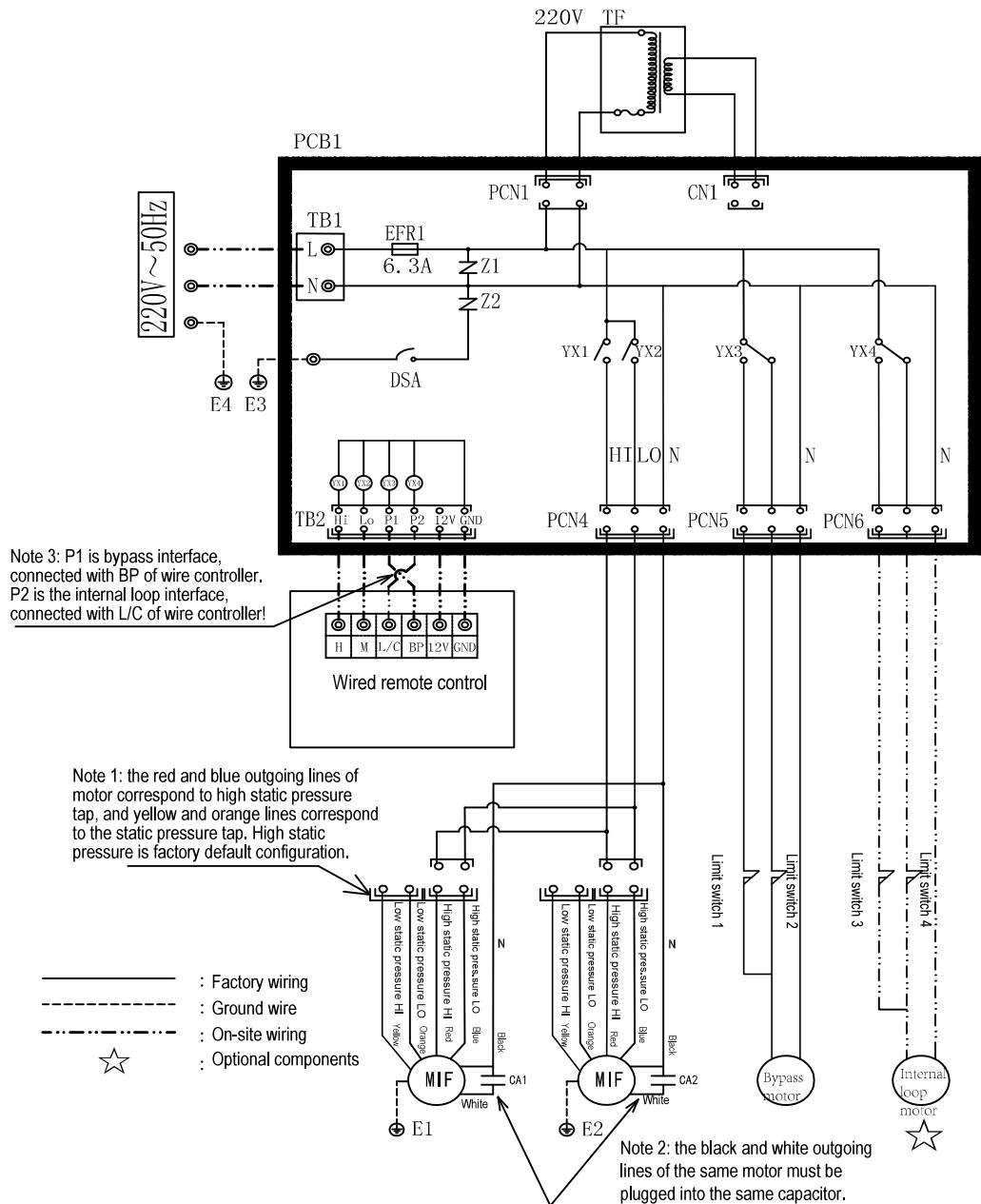
M7: 9.0—11.0 N·m

M10: 18.0—23.0 N·m

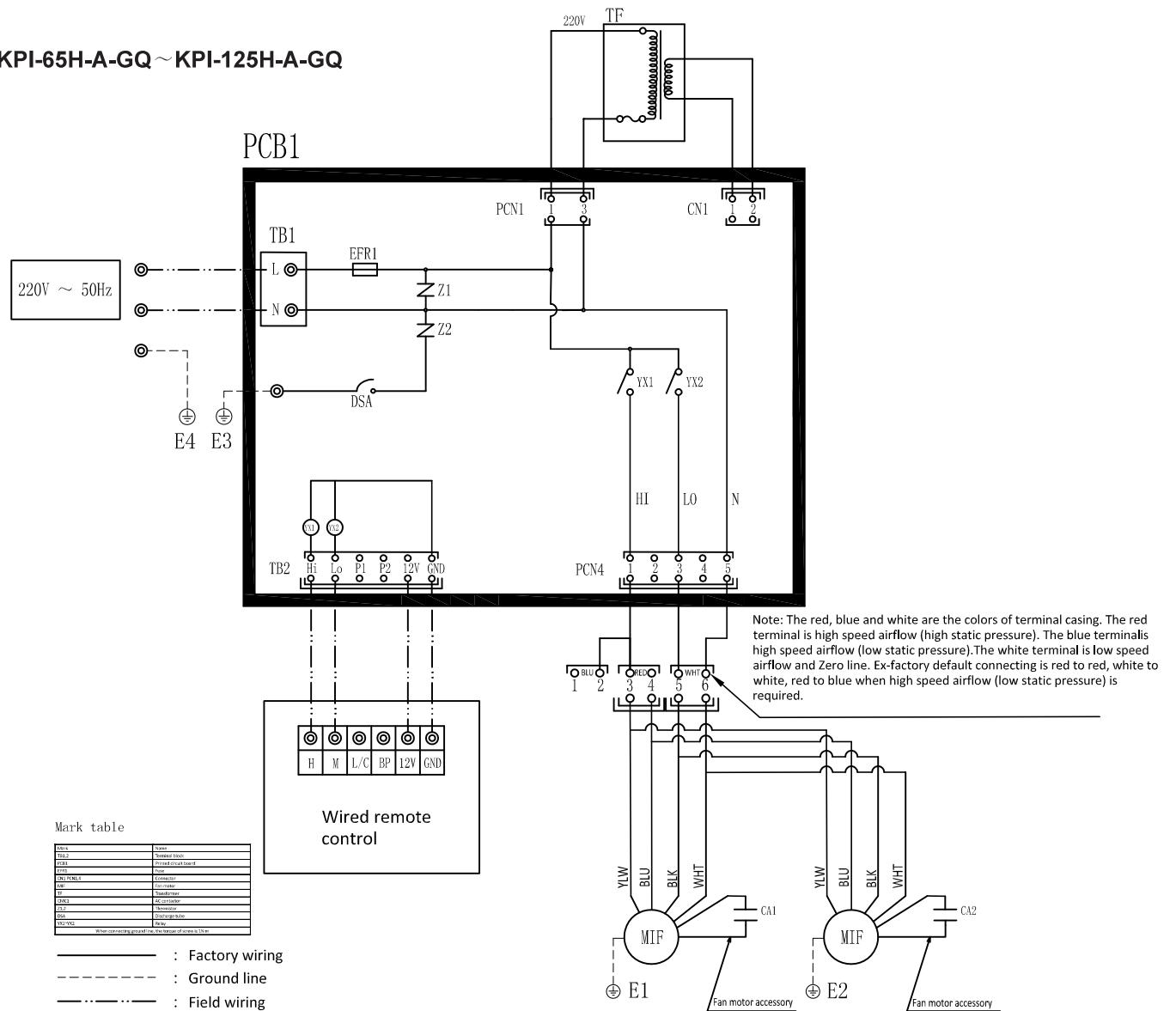
Ensure the above torques are fastened during wiring.

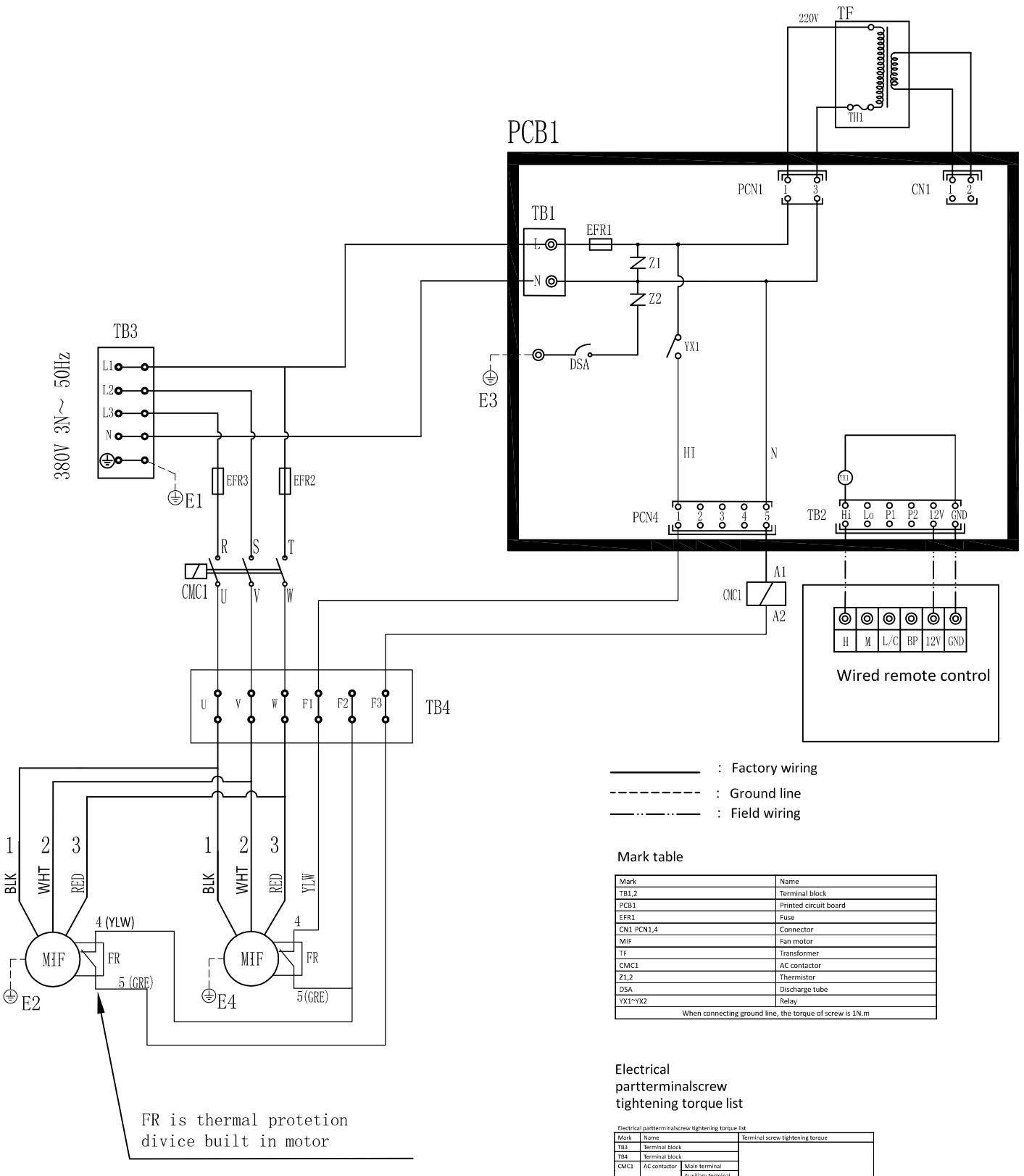
(3) Circuit connection diagram

KPI-20H-A-GQ ~ KPI-50H-A-GQ



KPI-65H-A-GQ ~ KPI-125H-A-GQ





(4) Selection of wire diameter

Maximum diameter of wires and power lines connected on site

Model	Power	Maximum current	Diameter of power line	Diameter of control line
KPI-20H-A-GQ ~ KPI-125H-A-GQ	220V ~ 50Hz	5A	2.5 mm ²	0.75mm ²
KPI-150H-E-GQ~KPF-500H-E-GQ	380V/3N ~50Hz	9A	2.5 mm ²	0.75mm ²

Specifications of power line

Total current (A)	Line (mm ²)	
$I \leq 6$	2.5	*1 When the current exceeds 63A, serial connection is not allowed.
$6 < I \leq 10$	2.5	
$10 < I \leq 16$	2.5~4	
$16 < I \leq 25$	2.5~6	
$25 < I \leq 32$	4~10	
$32 < I \leq 40$	6~16	
$40 < I \leq 63$	10~25	
$63 < I$	*1	

NOTES:

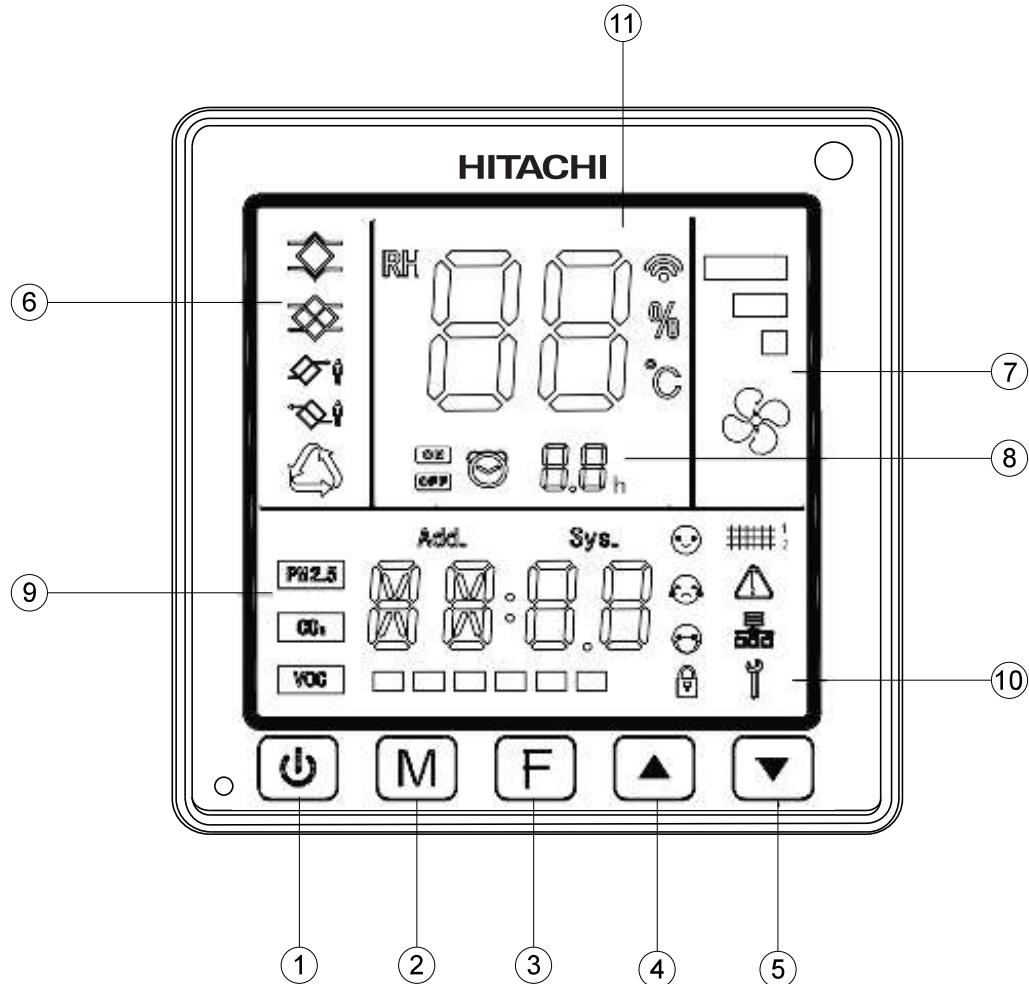
- Field lines shall be installed in accordance with local laws and regulations.
(Wiring on the installation site shall be in accordance with local laws and regulations.)
- Refer to relevant standards for the above power line dimensions.
- Shield lines will be used for the control system and shall be grounded.
- Power lines shall be sheathed copper conductors.
- When the power lines are connected in series, add up the current values and select wires.
- Between the power source and the unit, a switch that can ensure all-pole disconnection and this switch contact shall be 3mm away or more.

3.4.4.7 Wired Controller (Only for independent running of total heat exchanger)

(1) Description of user interface

Model Name: HPC-P1KQN

The complete display is shown only for description. The actual display may vary during operation.



Item	Description
1	On/off button
2	Mode button
3	Function button
4	Up button
5	Down button
6	Mode indication: indicates the mode setting status
7	Fan speed indication: indicates the fan speed setting
8	Timer setting: indicates the timer countdown
9	Indication air quality (air-box connection is needed)
10	Additional function area
11	Temperature indication: shows the current indoor

(2) Installation

Installation	
	<ul style="list-style-type: none">• Install the device in strict accordance with these instructions. Install the appliance on a surface strong enough to support the weight of appliance. The appliance may fall down if installed on a weak location or if not installed properly.• Do not install the device in a location prone to the presence of flammable gas or liquid. These gases if enters inside the controller, may cause electric shock or fire

Before Use

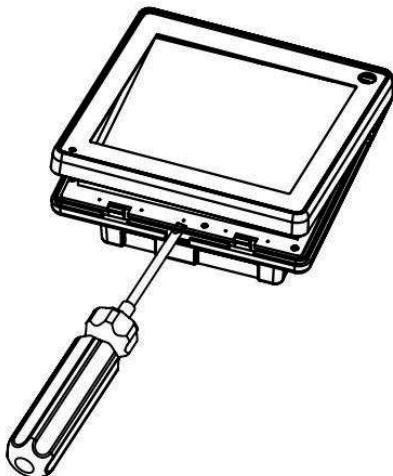
Electric Works	
	<ul style="list-style-type: none">• Only a certified personnel should perform electrical wiring. Allow a qualified personnel to perform the electrical wiring installation. Improper installation may lead to electric shock.• Perform the electric wiring according to the local and national standards, and as specified in this manual. Make sure to use specified power supply. Insufficient power capacity may lead to electric shock, fire and so on• Ensure to use the specified wire. Improper wire selection may lead to electric shock, fire and so on.• Cut-off the power supply completely when opening the maintenance cover of full heat exchanger or the fresh air purifier for electrical wiring work. Otherwise, it may lead to electric shock.

Ensure the availability of following parts in installation package before installation:

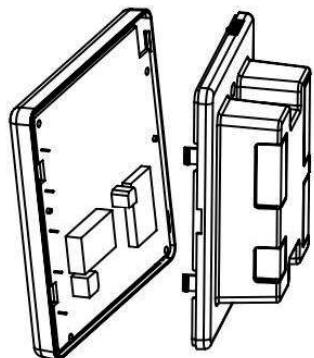
Controllerx1

Screws (M4×25mm)x2

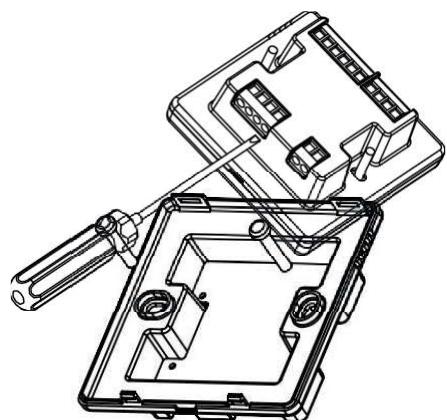
Manualx1



1. Open the main control board: Insert a 3.5mm wide straight screwdriver in the card slot to a depth of 4mm. Pry open with slight force and open the hook.



2. Remove the rear cover and cut down the power supply.



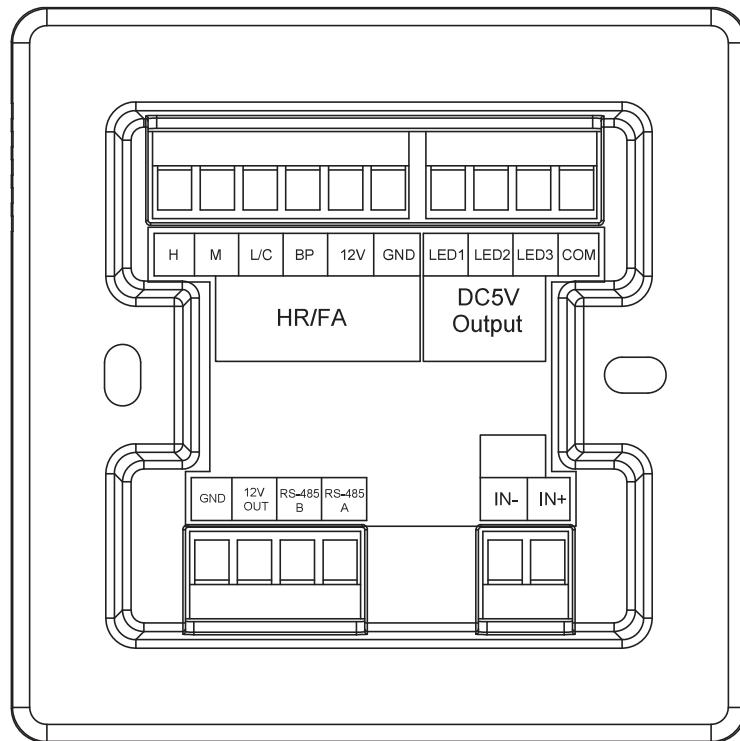
3. Connect the wires as per details mentioned in Electrical Wiring section.
4. Use two screws available in the package to fix the rear panel of the controller to the wall. Available wire box specification is type86



5. Hang 2 hooks above the controller at an angle of 30°. Slightly press the two opposite corners below the controller, lock the upper cover. This completes the installation.

(3) Electrical Wiring

Note: Turn off the power supply during wiring installation. Otherwise an electric shock may occur.



Controller wiring is shown in the below table:

Item	Wired Controller Terminal	Connect To	Terminal Input/Output
Connection heating/fresh air	H	Electric box	Weak electricity
	M		Weak electricity
	L/C		Weak electricity
	BP		Weak electricity
	12V		Power input
	GND		Power input
-	GND	485 communication device	Shared
	12V		Weak electricity
	RS-485 B		Weak electricity
	RS-485 A		Weak electricity
Linkage	IN-	External input	Switch input
	IN+		Switch input

Note:

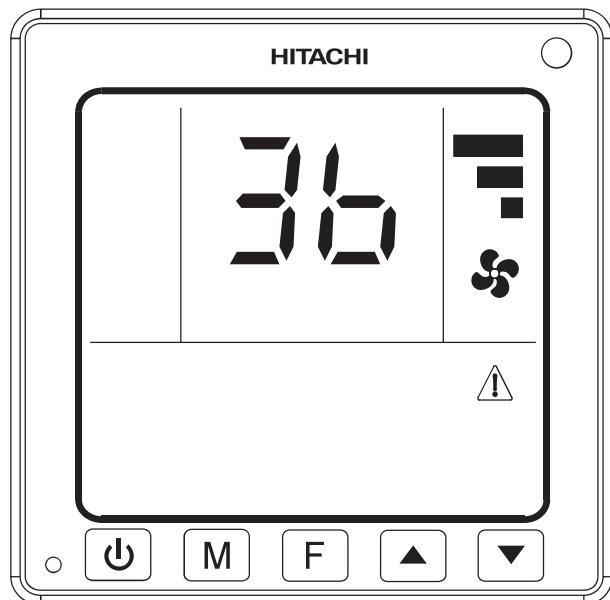
1. If it requires to connect the central control system, connect the wired controller to the corresponding terminal of 485 communication device.
2. If air-box connection is required, connect the wired controller to the terminal of 485 communication device of air-box.
3. If there is a gap between wire and connection part of the controller, seal the gap with vinyl insulation tape to avoid water, insects getting inside the controller causing failure.

Function and Action

Set the mode code HC as per the total-heat-exchanger model connected to the wired remote controller.

Model setting <ul style="list-style-type: none"> Stop status, Press M and ▼ and hold for 3 seconds. Enter the model setting status as shown in the right side. Press M to switch between high or low position of HC. Press ▲ OR ▼ to select the value. After setting is complete, press M and ▼ and hold for 3 seconds to return to normal mode. 	
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Note: If unit model code is not set, the display shows alarm code "3b" as alarm indication.



※ Please set the unit code according to the model of the full-heat-exchanger connected.

Model	Function	Setting Value of HC
KPI-65H-A-GQ~KPI-125H-A-GQ	2-stage fan speed, only in full-heat mode	22
KPI-150H-E-GQ~KPI-300H-E-GQ	1-stage fan speed, only in full-heat mode	12
KPF-400H-E-GQ~KPF-500H-E-GQ		
KPI-20H-A-GQ~KPI-50H-A-GQ	Two-stage fan speed, bypassing, full-heat	23

3.5 Test Run

Warning

Do not operate the system until all the check points have been clearly checked

- (1) Check to ensure that the electrical resistance is more than $1 \text{ M}\Omega$, by measuring the resistance between ground and the terminal of the electrical parts. If not, do not operate the system until the leakage point is found (out) and repaired.
- (2) Check there is no abnormal sound or vibration on the machine.

Test run should be performed according to “Installation & Maintenance Manual”.

- After lifting and adjusting the entire machine, energize it according to the connection diagram and at the same time adjust the high, medium and low grades of the smart switch at any grade, then the machine starts working. Users can shift grades according to the pollution level of indoor air.
- When shifting the grade of the smart switch, 2-3 min should be left between each grade. shift after the blower runs smoothly to ensure the service life of motor.
- In case of abnormality, please shift special breaker to [OFF] immediately and confirm the wire connection again.