

HISENSE Total Heat Exchanger

Hisense

Technical Data

Model

HKF-15B1EC	HKF-15B2EC
HKF-25B1EC	HKF-25B2EC
HKF-35B1EC	HKF-35B2EC
HKF-50B1EC	HKF-50B2EC
HKF-65B1EC	HKF-65B2EC
HKF-80B1EC	HKF-80B2EC
HKF-100B1EC	HKF-100B2EC
HKF-150B1EE	HKF-150B2EE
HKF-200B1EE	HKF-200B2EE
HKF-250B1EE	HKF-250B2EE
HKF-300B1EE	HKF-300B2EE
HKL-400B1EE	HKL-400B2EE
HKL-500B1EE	HKL-500B2EE

HISENSE Total Heat Exchanger

Technical Data

No.:TC22014011B

IMPORTANT NOTICE

- HISENSE pursues a policy of continuing improvement in design and performance of products. The right is therefore reserved to vary specifications without notice.
- HISENSE is not responsible for any accidental damages arising from the total heat exchanger running in the specific environment.
- The equipment only serves as fresh air ventilator.
- No part of this manual may be reproduced without written permission.
- Signal words (DANGER, WARNING and CAUTION) are used to identify levels of hazard seriousness. Definitions for identifying hazard levels are provided below with their respective signal words.



WARNING

: Hazards or unsafe practices which COULD result in severe personal injury or death.



CAUTION

: Hazards or unsafe practices which COULD result in minor personal injury or product or property damage.

NOTE : Useful information for operation and/ or maintenance.

- If you have any questions, contact your distributor or dealer of Hisense .
- Please install the total heat exchanger according to the local standards.
- Service conditions
 - Outdoor air conditions
Temperature range: -10°C ~ 45°C; relative humidity: 85% or lower.;
 - Indoor air conditions
Temperature range: -10°C ~ 45°C; relative humidity: 85% or lower.;
 - Installation requirements
Same as the indoor environment.
Indoor environment referred to herein means rooms where the air-conditioning equipment is installed.
In the refrigerator warehouse or other places where abrupt changes always occur in temperature, though their temperature falls within the above-mentioned temperature range, the use of the unit is not allowed.
- Our total heat exchanger underwent a confirmation test in the conditions as listed in the table below according to the GB/T 21087-2007, in which no condensed water drips. If the actual working conditions are more unfavorable than those as listed in the table, then there may be condensed water dripping.

GB/T 21087-2007 air-air energy recovery equipment
Annex F (normative) Condensation Test Methods

Mode	Indoor Conditions			Outdoor Conditions			Running State	Test Duration (h)
	Dry Bulb Temperature	Web Bulb Temperature	* Relative Humidity (Reference) %	Dry Bulb Temperature	Web Bulb Temperature	* Relative Humidity (Reference) %		
Refrigeration state in Summer	22°C±0.2	17°C±0.1	60	35°C±0.2	29°C±0.1	65	Run	4h
Heating state in Winter	20°C±0.2	14°C±0.1	50	-5°C±0.2	-6°C±0.1	75	Run	4h
Heating state in Winter	20°C±0.2	14°C±0.1	50	-15°C±0.2	-	-	Stop	4h

※ The reference relative humidity is calculated according to the GB/T 21087-2007.

CAUTION:

The user must be guided how to run the unit correctly according to the manual.

Safety Summary



WARNING

- The installation must take place according to the manual, and the unit shall not be altered without permission. Improper installation may cause water leakage, electric shock, fire and other accidents.
- The unit shall be installed in a place that can bear its weight. If the place's bearing capacity is insufficient, or the unit is not properly installed, the unit may drop and cause personal injury.
- The unit shall not be installed where the ambient temperature is in excess of 45°C, because its running at high temperature may cause deformation of the filter screen and heat exchange core or burn out the motor.
- The exhaust from the exhaust port shall be prevented from being sucked through the external air suction port, because such exhaust can cause air pollution indoors and threaten health.
- The external air suction port shall be placed far away from inflammable gas. Incorrect installation may cause loss of indoor oxygen and serious consequences.
- A separate power supply circuit shall be provided for the air-conditioner, and all electrical work shall be carried out by the professionals according to the local laws and the installation manual.
- To avoid electric shock or fire, an electric leakage breaking protector shall be installed.
- If the electric leakage breaking protector or fuse often breaks down, please promptly contact your local dealer.
- Ensure that the earth wire is reliably connected. If it is poorly connected, an electric shock may occur. Do not connect the earth wire to the refrigerant pipe, drain pipe, lighting circuit or communication cable.
- Connect a fuse of specified capacity.
- The wires, electrical parts, etc. shall be protected from being bitten by the mice or other little animals. If they are bitten, fire may result.
- It is suggested that the unit should be inspected or maintained by the qualified maintenance personnel other than by the user himself/ herself.
- Prior to each maintenance, stop the unit, and be sure to turn off the power supply switch.
- A filter is strongly suggested. Without a filter, the exchange core may be blocked, leading to reduced performance and damage at last.
- Do not operate the unit by wet hands, or it will bring an electric shock.
- If any abnormal phenomenon (e.g. fire, peculiar smell, etc) is discovered, please immediately cut off the power supply, and contact the local dealer.
- Do not use the unit for other purposes, such as storage of some precision instruments, foods, animals and plants, artworks, etc.
- Do not place any combustion apparatus within the air flow from the unit.
- Do not direct the air flow from the unit to the children, animals or plants.
- Do not place or use any combustible jetting fluid near the unit or intake or blowing grille, or fire may result.

- If the unit is out of service for a long time, please cut off the power supply.
- Do not block the intake or blowing grille. If the air flow cannot cover the whole room, the unit may be caused to break down.
- Do not spray any jetting fluid into the remote control (e.g. pesticide, detergent, etc).
- Do not press any hard object against the remote control switch.
- Do not clean the unit housing with benzene or diluent, or it may be cracked or discolored, or the unit may break down.



CAUTION

- Do not install the indoor unit, outdoor unit, remote control switch and cable within approximately 3m from strong electromagnetic wave radiation sources (such as medical equipment, etc).
- Do not step on or place any article on the unit.
- Install the air duct of the unit at a right downward slope (greater than 1/30), to avoid entry of rainwater into the unit. If it is incorrectly installed, water may enter the building, damage the furniture and cause electric shock and fire.

NOTE:

- After the unit is installed, be sure to start? it to confirm whether it can run normally or not.

CHECKING PRODUCT RECEIVED

- Upon receiving this product, inspect it for any shipping damage.
- Claims for damage, either apparent or concealed, should be filed immediately with the shipping company.
- Check the model number, electrical characteristics (power supply, voltage and frequency) and accessories to determine if they are correct.
- The standard utilization of the unit shall be explained in these instructions.
- Therefore, the utilization of the unit in the conditions other than those indicated in these instructions is not recommended.
- Please contact your local agent, as the occasion arises.

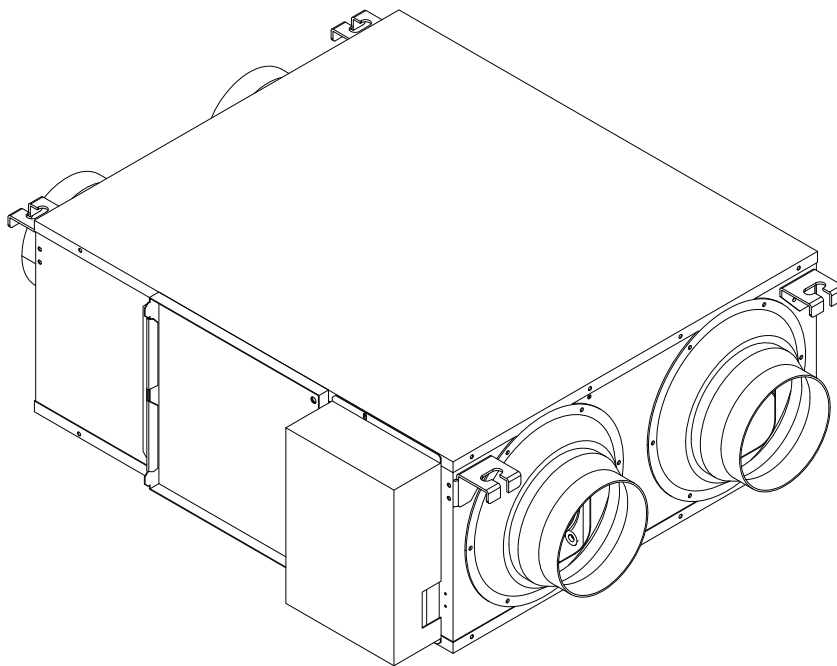


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Design Part

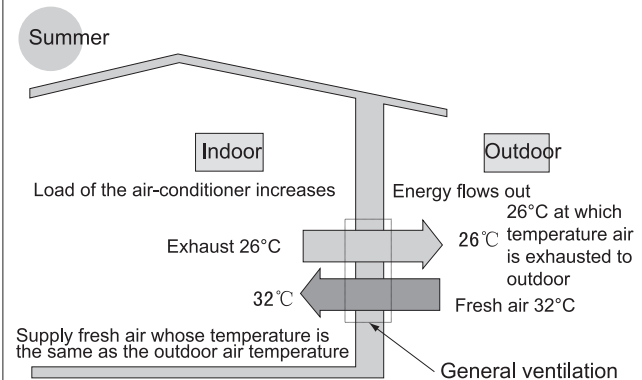
1. Introduction to Total Heat Exchanger

1.1 Energy Saving Characteristic of Total Heat Exchanger

The total heat exchanger provides reliable ventilation in the mode of total heat exchange, and produces great energy-saving effect.

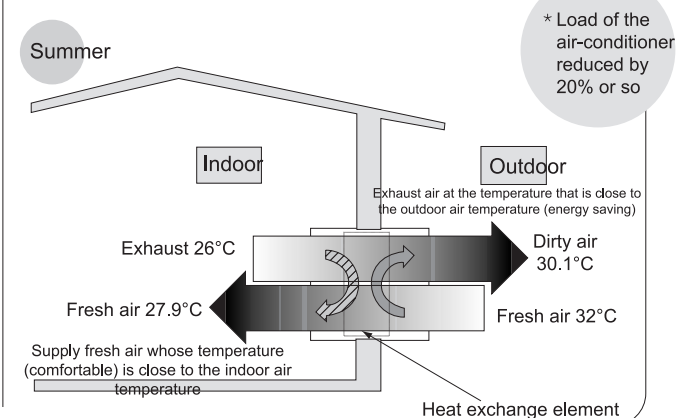
The traditional ventilation mode has negative effect on energy saving of the air-conditioner.

- Energy flows out with exhaust.
- Load increases with introduction of fresh air.
- Big temperature difference exists between fresh air and indoor air, damaging temperature distribution and causing uncomfortable.



The total heat exchange mode greatly reduces energy loss.

- Recover cold/ heat quantity from exhaust.
- Reduce load of the air-conditioner that increases with introduction of fresh air.
- Fresh air goes into total heat exchange with exhaust air, and its temperature becomes close to the indoor air temperature, creating a comfortable environment.

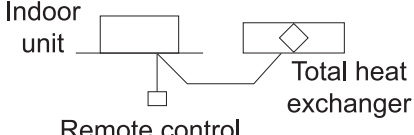
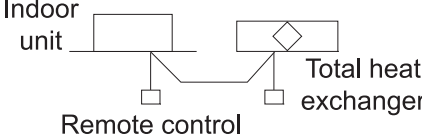


1.2 Working Mode of Total Heat Exchanger

1.2.1 Separate running

1.2.2 Joint running with indoor unit of on-line system

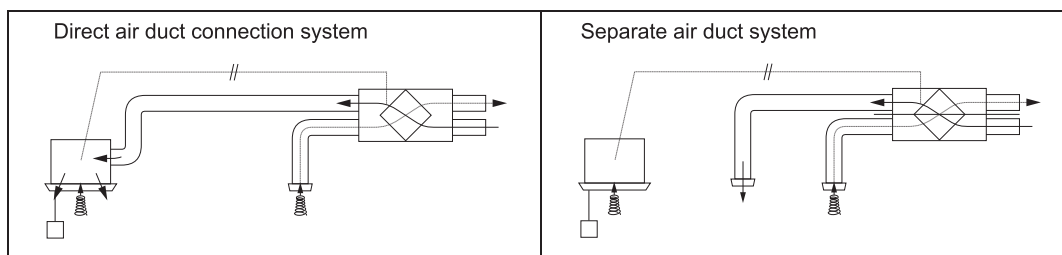
The unit can be controlled by either the indoor unit remote control or the special remote control.

Characteristic	Joint running with indoor unit	Separate running
Structure		
Feature	- It can be operated by the indoor unit remote control. - Its fan speed can be given by initial setting.	- It can be operated by either the indoor unit remote control or the special remote control. - Its fan speed can be changed by the total heat exchanger switch.

1.2.3 Connection of total heat exchanger to air-conditioner centralized control system in the building

Its running is controlled by the central controller. For the details, see “4.4 Installation – Description of Centralized Control”.

Example of installation:



2. Performance Parameters of Total Heat Exchanger

2.1 Parameter List

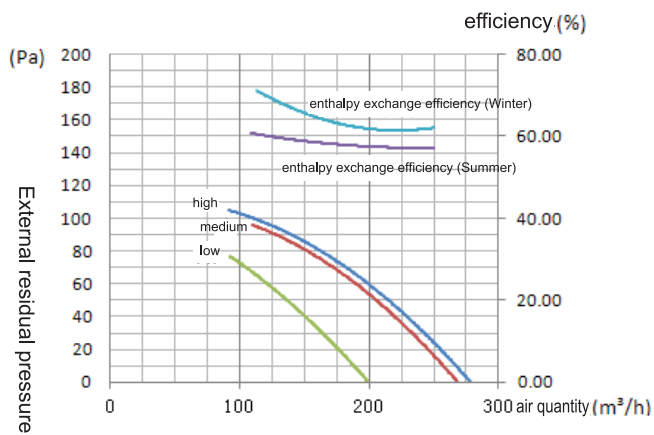
Parameter List of Total Heat Exchanger										
Model			Unit	HKF-15B1EC HKF-15B2EC	HKF-25B1EC HKF-25B2EC	HKF-35B1EC HKF-35B2EC	HKF-50B1EC HKF-50B2EC	HKF-65B1EC HKF-65B2EC	HKF-80B1EC HKF-80B2EC	HKF-100B1EC HKF-100B2EC
Power				220-240V~50Hz						
Enthalpy Exchange Efficiency	Cooling	Hi	%	58	57	55	56	57	58	56
		Me		58	57	55	56	57	58	56
		Lo		60	59	57	58	59	59	58
	Heating	Hi		65	63	62	63	63	66	63
		Me		65	63	62	63	63	66	63
		Lo		69	68	65	65	68	68	66
Operating current		Hi	A	0.38	0.66	0.76	1.82	1.75	1.98	4.68
		Me		0.36	0.56	0.75	1.71	1.62	1.88	4.18
		Lo		0.31	0.52	0.71	1.52	1.51	1.75	3.47
Input Power		Hi	KW	2×0.041	2×0.069	2×0.083	2×0.189	2×0.193	2×0.211	2×0.510
		Me		2×0.038	2×0.055	2×0.079	2×0.157	2×0.178	2×0.196	2×0.450
		Lo		2×0.029	2×0.049	2×0.075	2×0.124	2×0.164	2×0.18	2×0.363
Dimension		W	mm	665	745	745	825	1115	1115	1115
		D		580	600	805	905	885	1135	1135
		H		265	270	270	270	390	390	390
Flange Size			mm	Φ144	Φ144	Φ144	Φ194	Φ242	Φ242	Φ242
Heat Exchange System				air-to-air cross-flow total heat (sensible heat + heat) exchange						
Heat Exchanger				plastic-framed core + high-efficient heterogeneous membrane						
Fan	Type			centrifugal fan						
	Air Quantity	Hi	m³ /h	150	250	350	500	650	800	1000
		Me		150	250	350	500	650	800	1000
		Lo		110	190	270	400	550	650	700
	Pressure	Hi	Pa	85	85	100	130	130	130	165
		Me		70	65	75	110	100	100	120
		Lo		65	60	65	100	100	90	60
Total Pressure		Pa	96	96	121	143	139	144	187	
Operating Noise		Hi	dB	30	32	34	39	40	42	44
		Me		29	31	33	38	38	40	42
		Lo		28	28	31	36	35	37	38
Net Weight			kg	25	30	35	40	62	72	79
Service Conditions				-10℃~45℃ DB 85%RH or below						

Parameter List of Total Heat Exchanger									
Model			Unit	HKF-150B1EE HKF-150B2EE	HKF-200B1EE HKF-200B2EE	HKF-250B1EE HKF-250B2EE	HKF-300B1EE HKF-300B2EE	HKL-400B1EE HKL-400B2EE	HKL-500B1EE HKL-500B2EE
Power				380-415V/3N~ 50Hz					
Enthalpy Exchange Efficiency	Cooling	Hi	%	55	54	54	55	55	53
		Me		-	-	-	-	-	-
		Lo		-	-	-	-	-	-
	Heating	Hi		63	62	62	63	63	61
		Me		-	-	-	-	-	-
		Lo		-	-	-	-	-	-
Operating current		Hi	A	2.78	2.89	3.86	5.12	5.89	8.78
		Me		-	-	-	-	-	-
		Lo		-	-	-	-	-	-
Input Power		Hi	KW	2×0.41	2×0.52	2×0.72	2×1.16	2×1.71	2×2.2
		Me		-	-	-	-	-	-
		Lo		-	-	-	-	-	-
Dimension		W	mm	1500	1550	1610	1700	1625	1625
		D		1200	1400	1330	1500	1330	1330
		H		540	540	600	640	1050	1050
Flange Size			mm	320×300+320×300	320×300+320×300	365×275+500×350	365×275+500×350	370×330+500×690	370×330+500×690
Heat Exchange System				air-to-air cross-flow total heat (sensible heat + heat) exchange					
Heat Exchanger				plastic-framed core + high-efficient heterogeneous membrane					
Fan	Type			centrifugal fan					
	Air Quantity	Hi	m³/h	1500	2000	2500	3000	4000	5000
		Me		-	-	-	-	-	-
		Lo		-	-	-	-	-	-
	Pressure	Hi	Pa	180	160	180	200	220	240
		Me		-	-	-	-	-	-
		Lo		-	-	-	-	-	-
	Total Pressure		Pa	191	180	208	241	270	318
Operating Noise		Hi	dB	48	49	53	56	57	58
		Me		-	-	-	-	-	-
		Lo		-	-	-	-	-	-
Net Weight			kg	151	172	185	222	312	321
Service Conditions				-10℃~45℃ DB 85%RH or below					

2.2 Performance Characteristic Curve

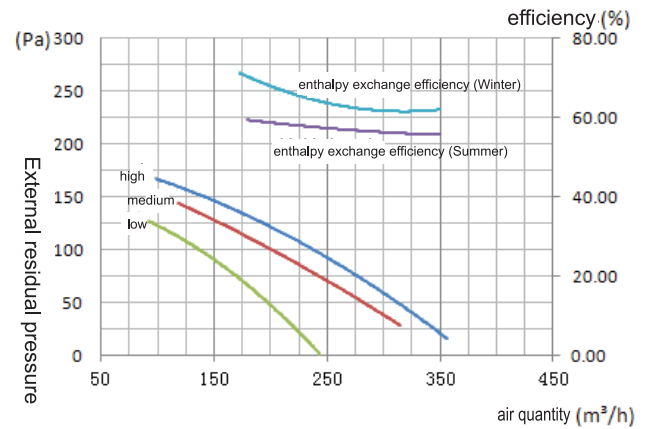
HKF-15B1EC

HKF-15B2EC



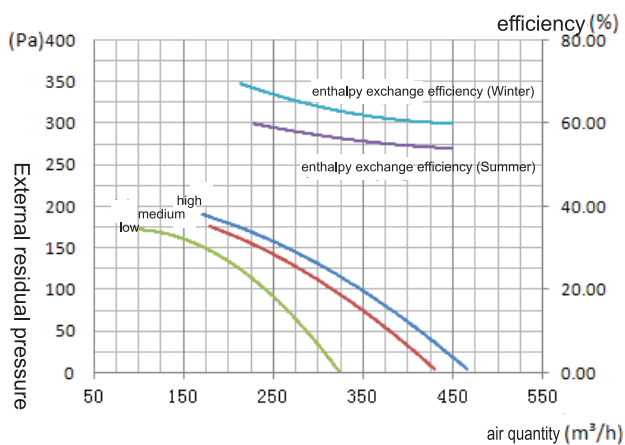
HKF-25B1EC

HKF-25B2EC



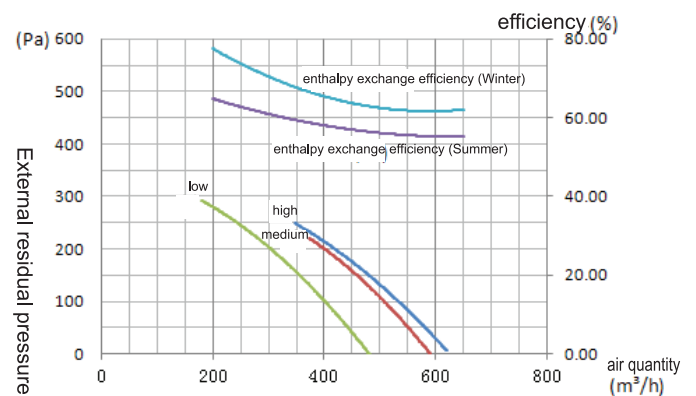
HKF-35B1EC

HKF-35B2EC



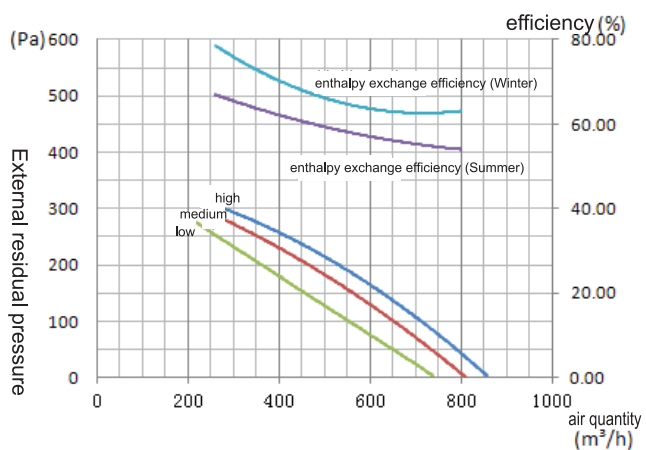
HKF-50B1EC

HKF-50B2EC



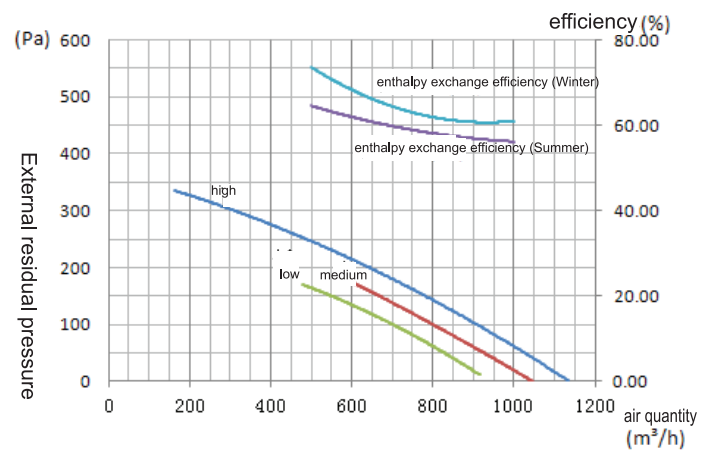
HKF-65B1EC

HKF-65B2EC

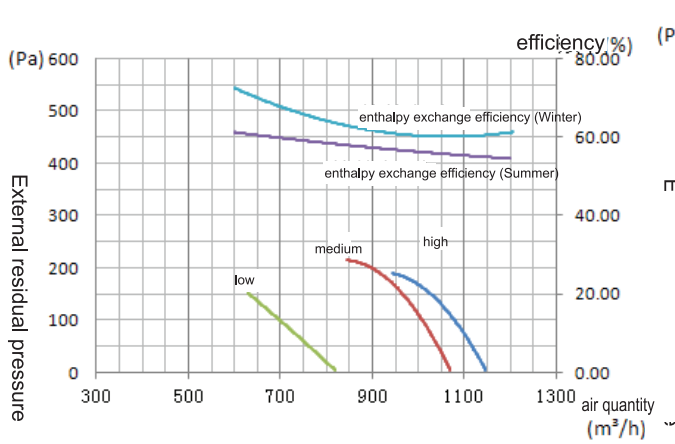


HKF-80B1EC

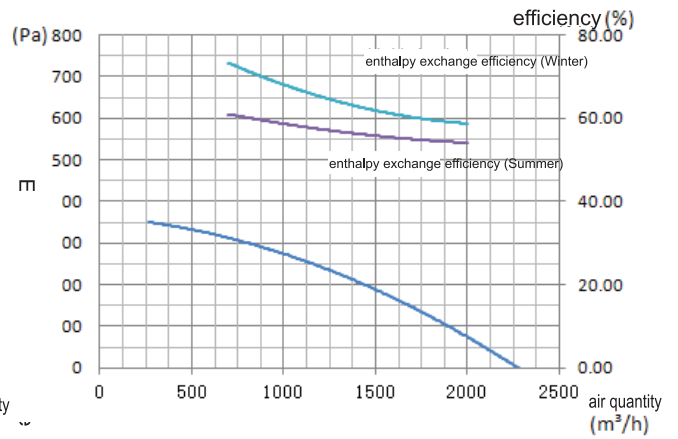
HKF-80B2EC



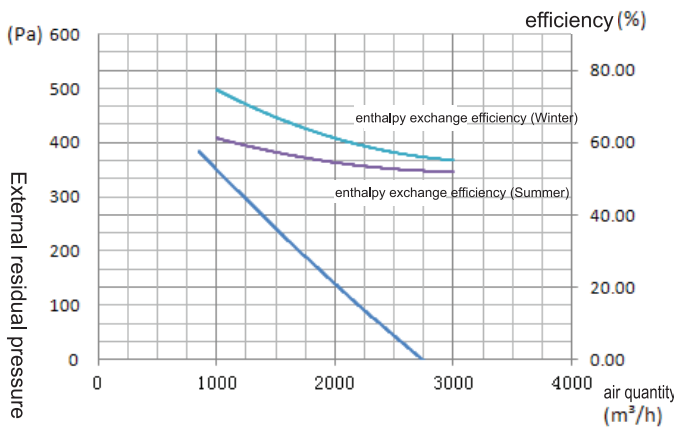
HKF-100B1EC
HKF-100B2EC



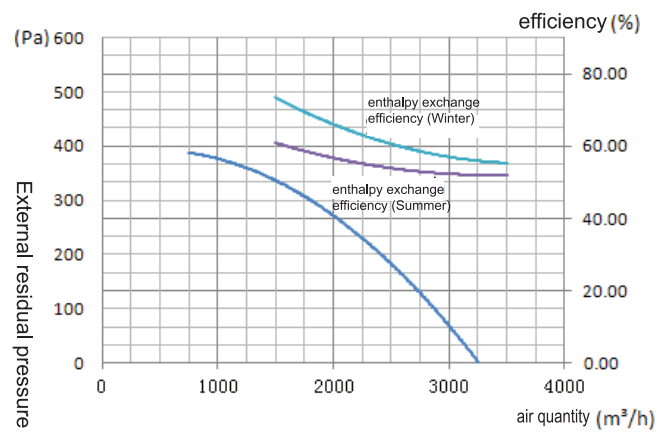
HKF-150B1EE
HKF-150B2EE



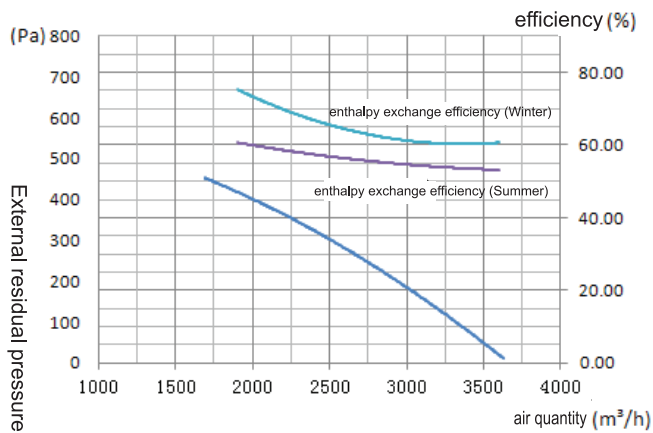
HKF-200B1EE
HKF-200B2EE



HKF-250B1EE
HKF-250B2EE

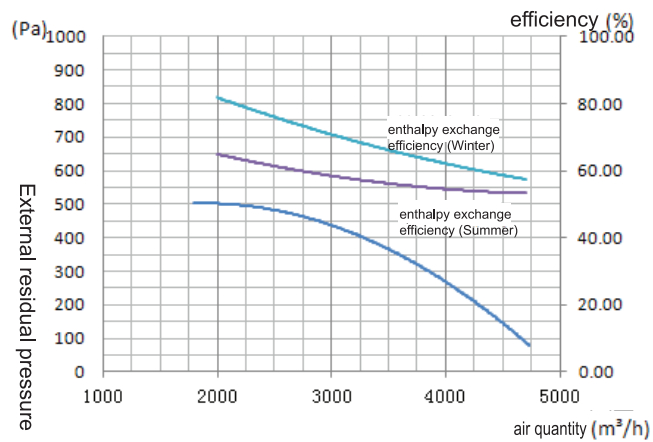


HKF-300B1EE
HKF-300B2EE



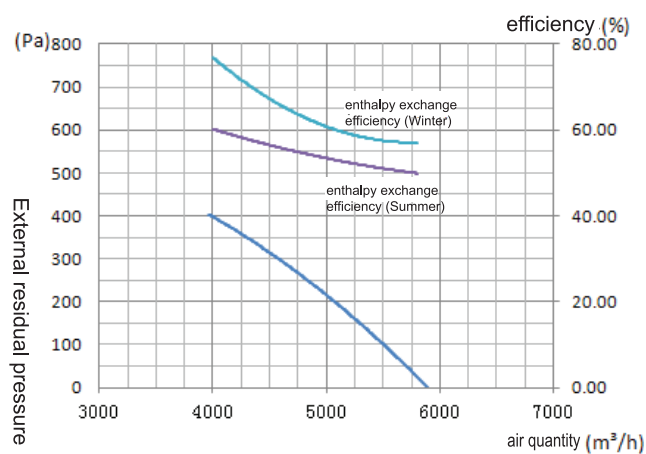
HKL-400B1EE

HKL-400B2EE



HKL-500B1EE

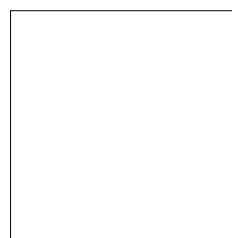
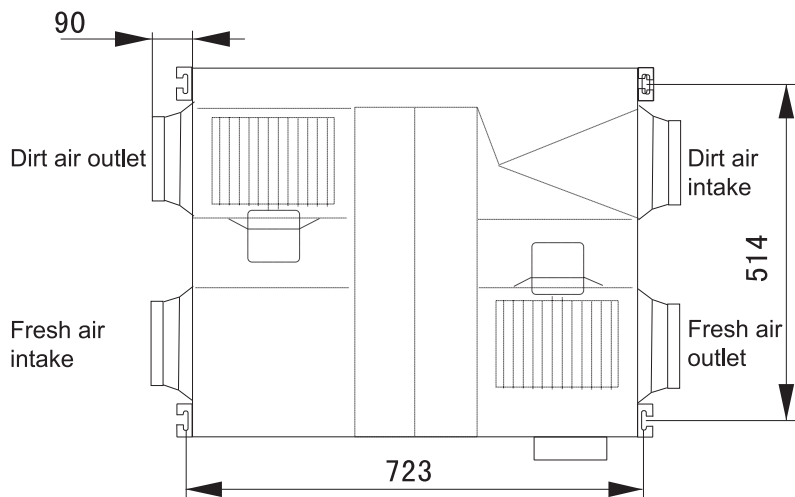
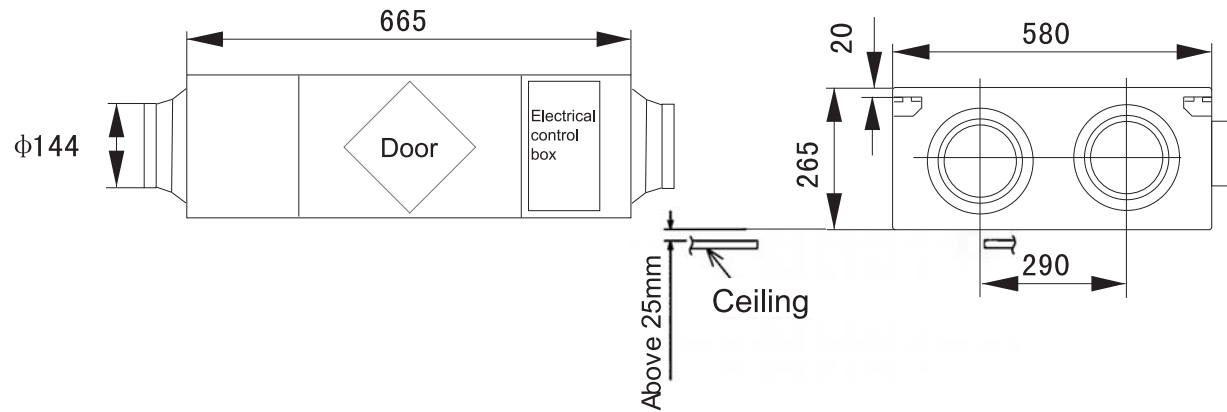
HKL-500B2EE



2.3 Structure and Lifting Dimension

HKF-15B1EC

HKF-15B2EC



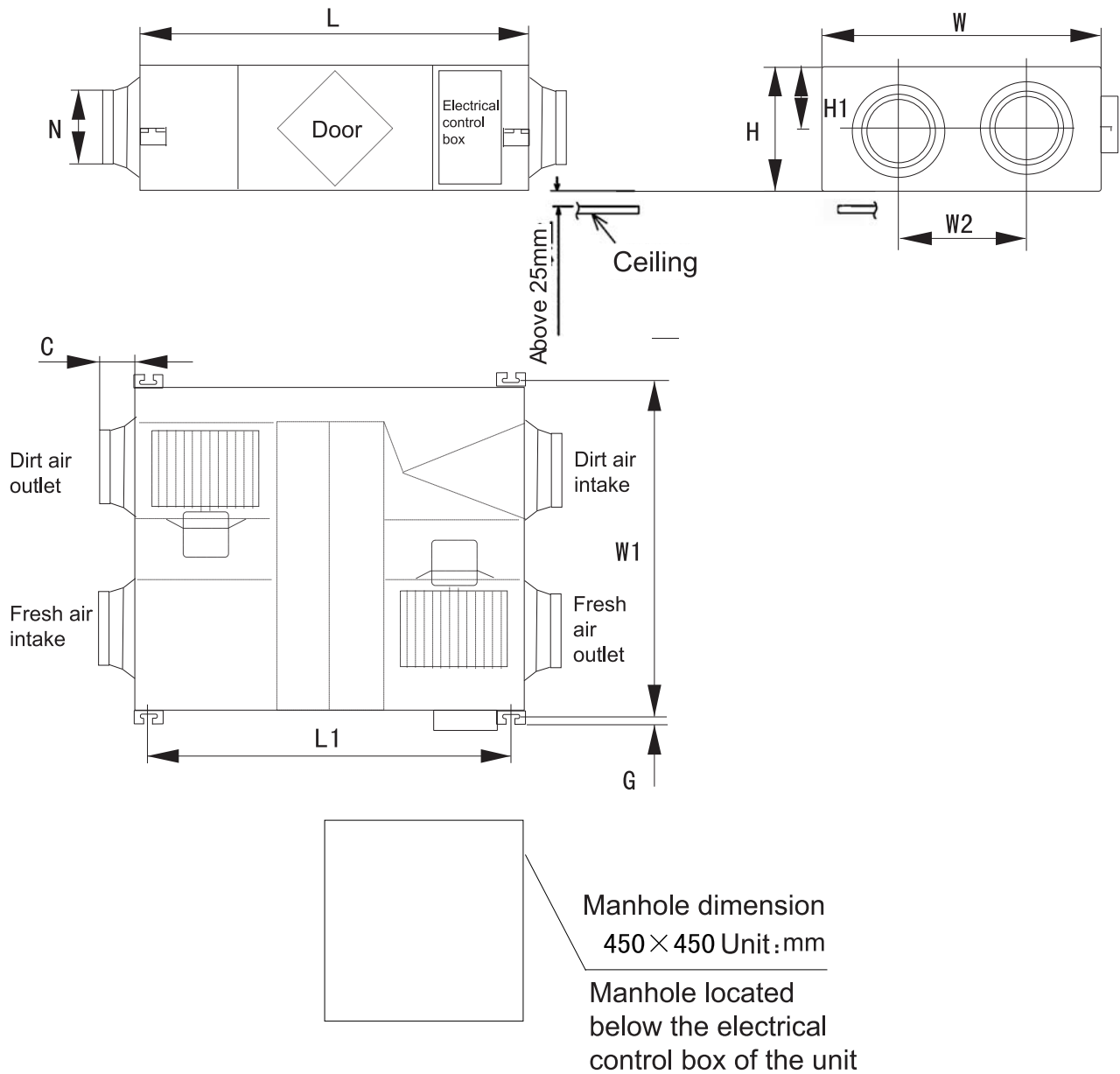
■ Manhole dimension

450×450 Unit : mm

Manhole located
below the
electrical control
box of the unit

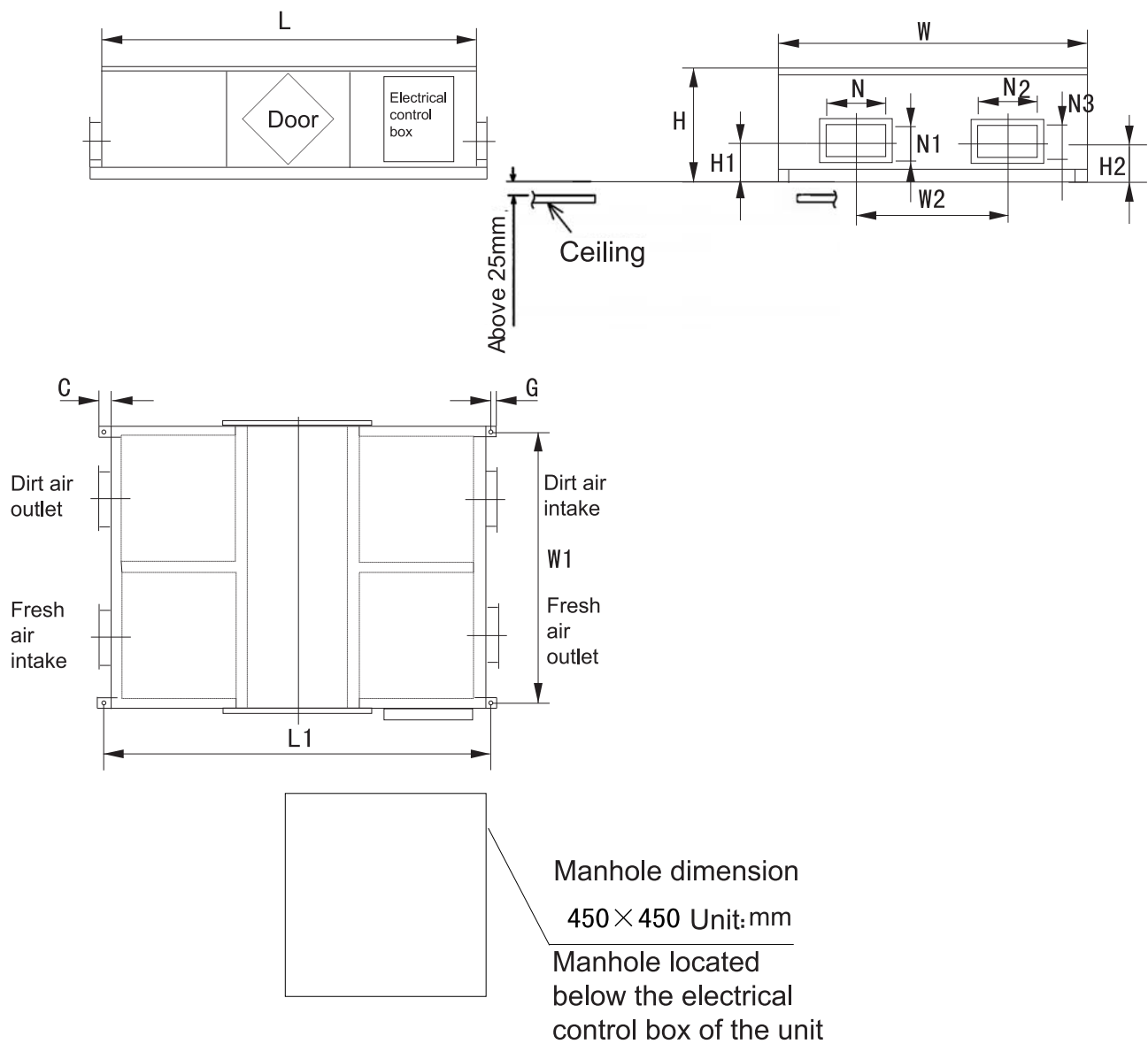
HKF-25B1EC ~ HKF-100B1EC

HKF-25B2EC ~ HKF-100B2EC



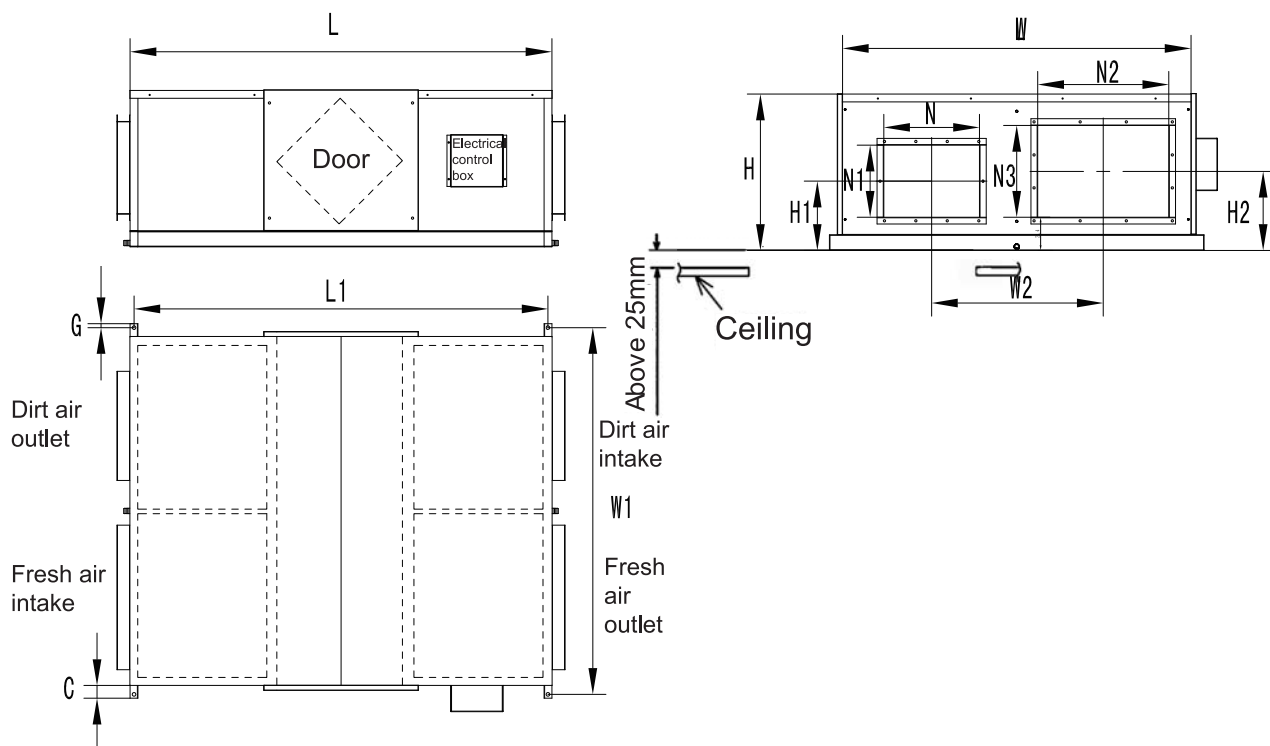
Model	L	L1	W	W1	W2	H	C	G	N	H1
HKF-25B1EC / HKF-25B2EC	745	675	600	656	315	270	90	19	$\phi 144$	110
HKF-35B1EC / HKF-35B2EC	745	675	805	861	480	270	90	19	$\phi 144$	110
HKF-50B1EC / HKF-50B2EC	825	755	905	961	500	270	96	19	$\phi 194$	110
HKF-65B1EC / HKF-65B2EC	1115	1050	885	941	430	390	80	19	$\phi 242$	175
HKF-80B1EC / HKF-80B2EC	1115	1050	1135	1191	675	390	80	19	$\phi 242$	175
HKF-100B1EC / HKF-100B2EC	1115	1050	1135	1191	675	390	80	19	$\phi 242$	175

HKF-150B1EE ~ HKF-200B1EE
 HKF-150B2EE ~ HKF-200B2EE



Model	L	L1	W	W1	W2	H	H1	C	G	N	N1	N2	N3	H2
HKF-150B1EE / HKF-150B2EE	1500	1550	1200	1170	600	540	250	50	25	320	300	320	300	250
HKF-200B1EE / HKF-200B2EE	1550	1600	1400	1370	700	540	250	50	25	320	300	320	300	250

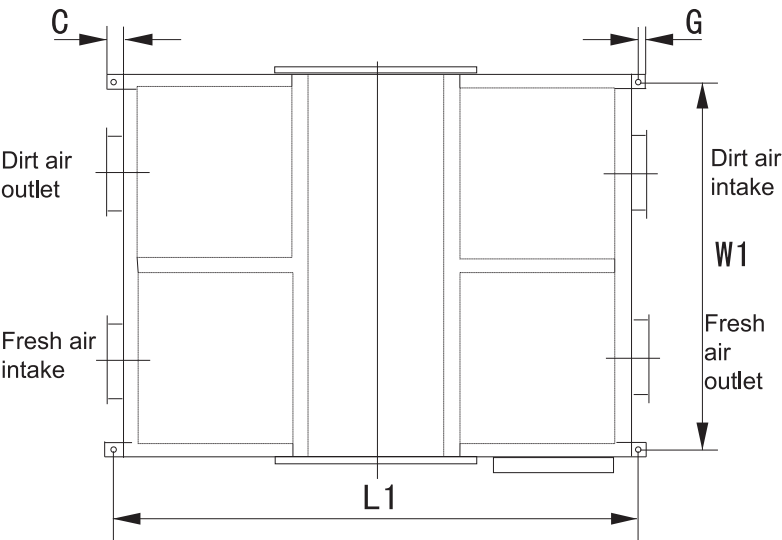
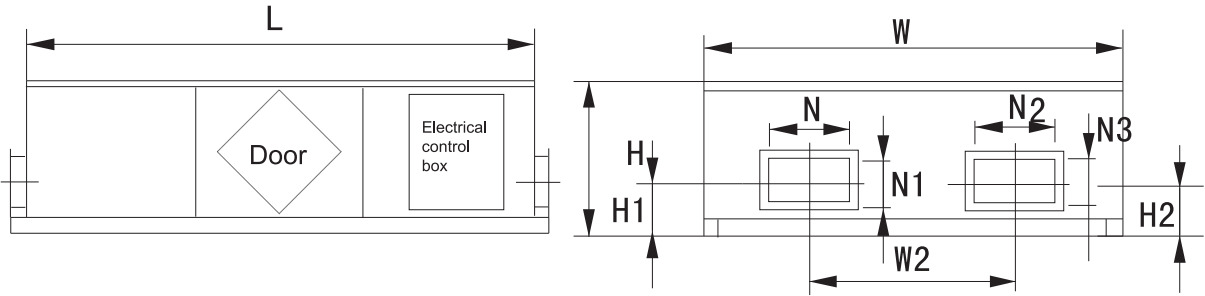
HKF-250B1EE ~ HKF-300B1EE
 HKF-250B2EE ~ HKF-300B2EE



Manhole dimension
 450×450 Unit:mm
 Manhole located
 below the electrical
 control box of the unit

Model	L	L1	W	W1	W2	H	H1	C	G	N	N1	N2	N3	H2
HKF-250B1EE / HKF-250B2EE	1610	1580	1330	1400	655	600	265	50	15	365	275	500	350	300
HKF-300B1EE / HKF-300B2EE	1700	1670	1500	1570	750	640	272	50	15	365	275	500	350	309

HKL-400B1EE ~ HKL-500B1EE
HKL-400B2EE ~ HKL-500B2EE



Model	L	L1	W	W1	W2	H	H1	C	G	N	N1	N2	N3	H2
HKL-400B1EE / HKL-400B2EE	1625	1675	1330	1300	665	1050	490	50	25	370	330	500	690	475
HKL-500B1EE / HKL-500B2EE	1625	1675	1330	1300	665	1050	490	50	25	370	330	500	690	475

3. Filter Box (Option)

3.1 Introduction to Filter Box

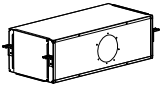
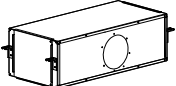
1. Scope of Application

The filter box is applicable to the total heat exchanger made by Hisense .

2. Installation Position of High-efficient Filter Box

The filter box used for the total heat exchanger shall be installed at the fresh air intake side of the total heat exchanger.

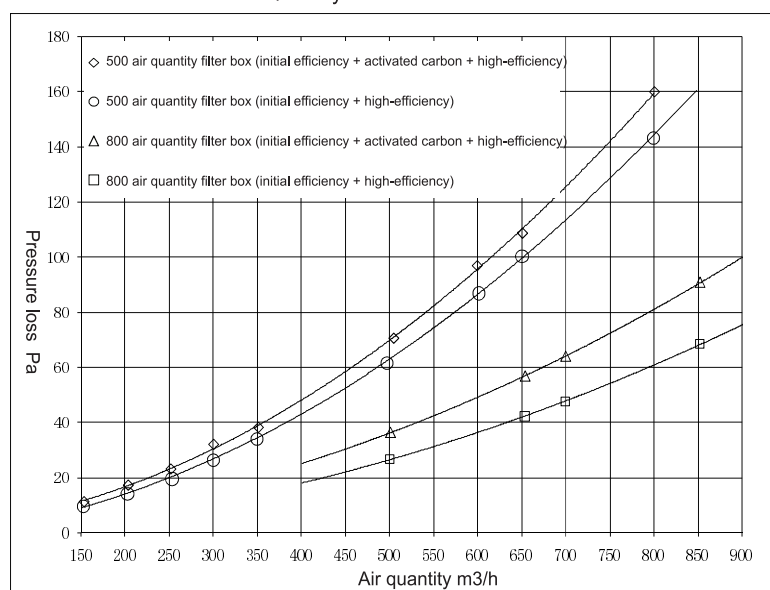
3. Model

filter box model	diagram	dimension: L * W * H (mm)	applicable model	replaceable filter screen model
HF-500H-FE (common)		800*370*270	HKF-15B1EC ~ HKF-50B1EC HKF-15B2EC ~ HKF-50B2EC	initial efficiency filter screen H7C03920A high efficiency filter screen H7C03921A
HF-500HD-FE (deodorant)				initial efficiency filter screen H7C03920A activated carbon filter screen H7C03923A high efficiency filter screen H7C03921A
HF-800H-FE (common)		1000*370*370	HKF-65B1EC / HKF-80B1EC HKF-65B2EC / HKF-80B2EC	initial efficiency filter screen H7C03920B high efficiency filter screen H7C03921B
HF-800HD-FE (deodorant)				initial efficiency filter screen H7C03920B filter screen H7C03923B high efficiency filter screen H7C03921B

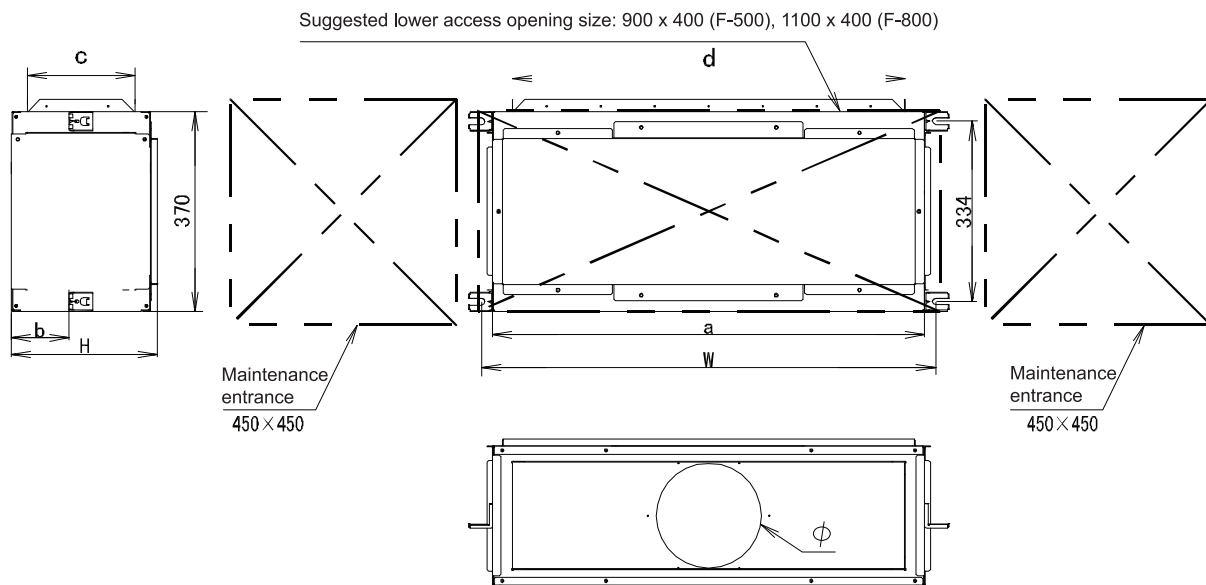
3.2 Air Quantity – Pressure Loss Relationship of Filter Box

name	air quantity m ³ /h	pressure loss	
		deodorant (initial efficiency + activated carbon + high-efficiency)	common (initial efficiency + high efficiency)
HF-500HD-FE (deodorant) HF-500H-FE (common)	150	11.5Pa	8.9Pa
	200	17.4Pa	13.6Pa
	250	24.4Pa	19.1Pa
	300	32.4Pa	25.5Pa
	350	41.5Pa	32.7Pa
	500	75.1Pa	59.5Pa
HF-800HD-FE (deodorant)	650	56.8Pa	42.1Pa
HF-800H-FE (common)	800	81.3Pa	61Pa

Air Quantity – Pressure Loss Curve Chart



3.3 Structure and Lifting Dimension of Filter Box



Size Table

Model \ Size	a	b	c	d	W	H	ϕ
HF-500HD-FE (deodorant)	800	107	200	728	840	270	194
HF-500H-FE (common)							
HF-800HD-FE (deodorant)	1000	157	270	928	1040	370	242
HF-800H-FE (common)							

Installation Part

Installation Part_____

4. Transport and Installation of Total Heat Exchanger

4.1 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.

4.2 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.

4.3 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

4.4 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.

4.4.1 Factory-supplied accessories

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

Note

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

Accessories

- | | |
|--------------------|-----------------------------|
| 1. Use Instruction | 1 copy |
| 2. Control Switch | 1 piece (Single-phase type) |
| 3. Bundle | 10 pieces |

4.4.2 Initial Check

- There is enough space for installing the machine, which is used as operation and maintenance field, seen in Fig. 4.1.

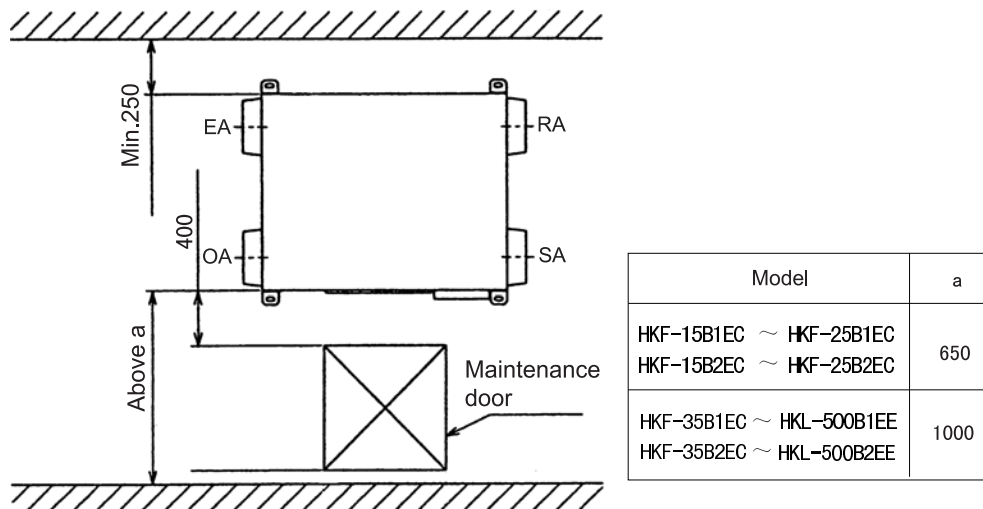


Fig. 4.1 Operation and Maintenance Space

⚠ 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.

4.4.3 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. 4.2

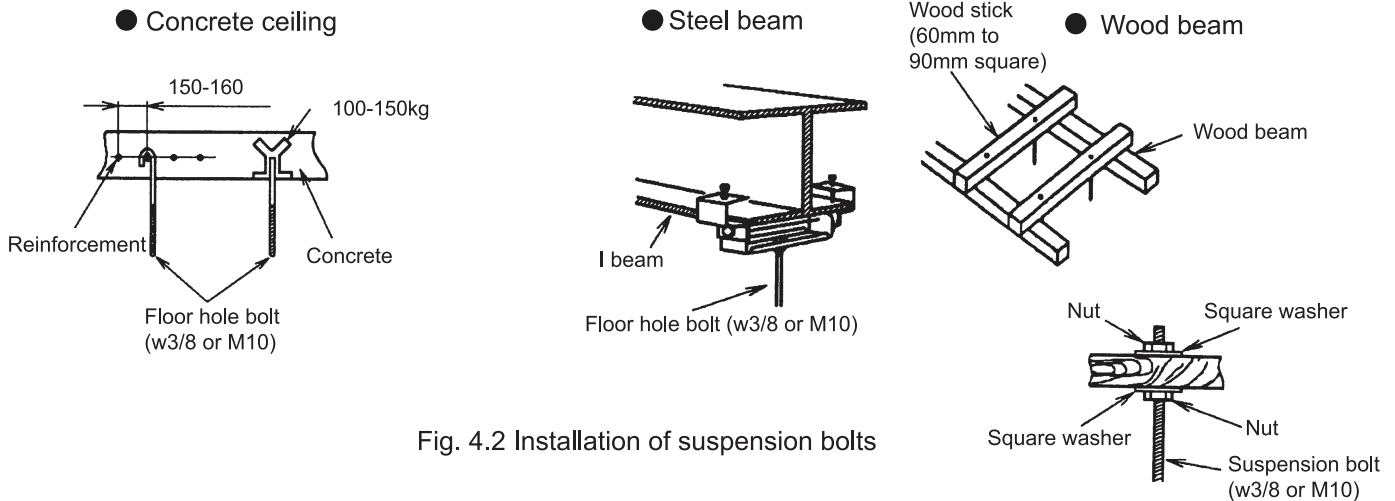


Fig. 4.2 Installation of suspension bolts

4.4.4 Installation

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
2. Unit installation

Hang the unit as shown in Fig. 4.3.

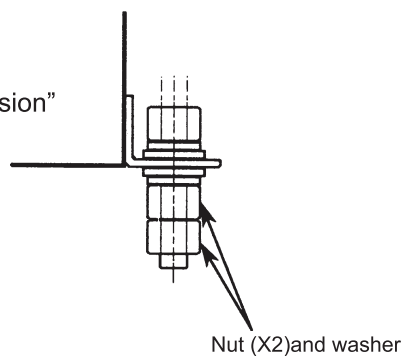


Fig. 4.3 Suspension method

- a. How to place nuts or suspension bolts

Put nuts on the four suspension bolts as shown in Fig. 4.4.

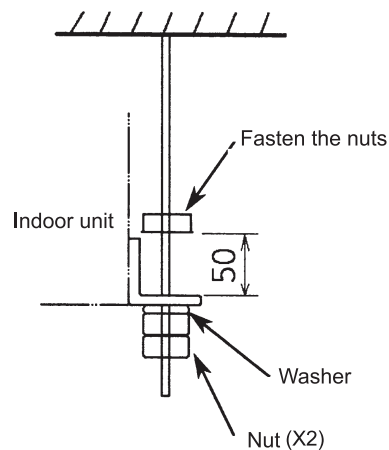


Fig. 4.4 Suspension bolts and nuts

b. Suspend the unit

*Hang the suspension bracket onto the nut and washer of every suspension bolt. As shown in Fig. 4.5, 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)

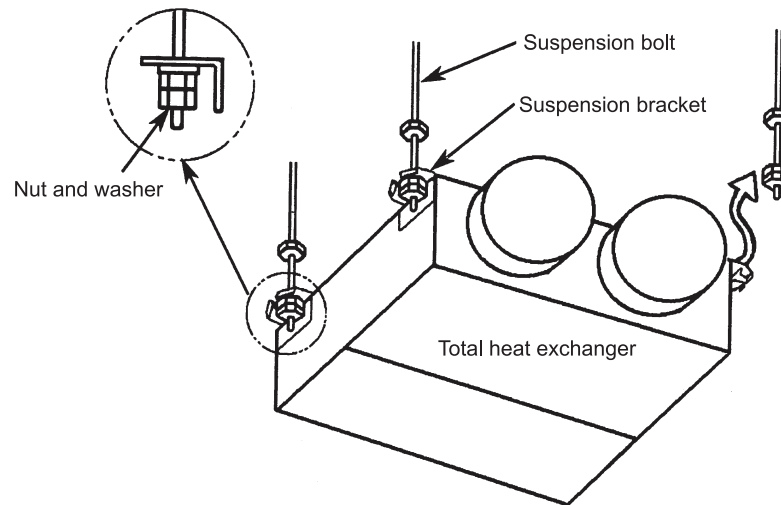


Fig. 4.5 Suspension Method

3. Adjust the machine level

a. Check to ensure the entire unit is installed horizontally.

b. After adjustment, fasten the suspension bolts and the suspension bracket. To prevent loosening, the thread locking agent shall be smeared onto the bolts.

Note

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

4. Connection of air duct

Note

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.

(a) 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.

(b) Hang the air duct to avoid the transferring of its weight onto the unit.

(c) Treat the air duct with heat insulation materials for heat preservation to prevent the generation of condensed water.

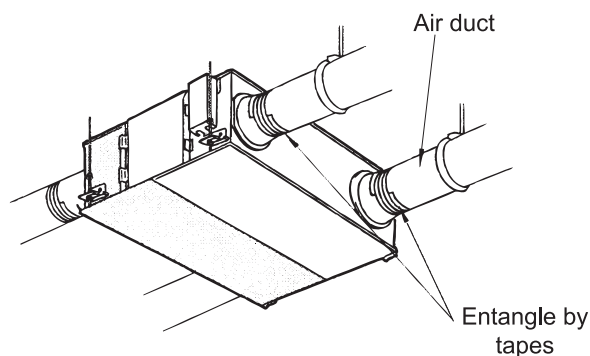


Fig. 4.6 Air Duct Connection

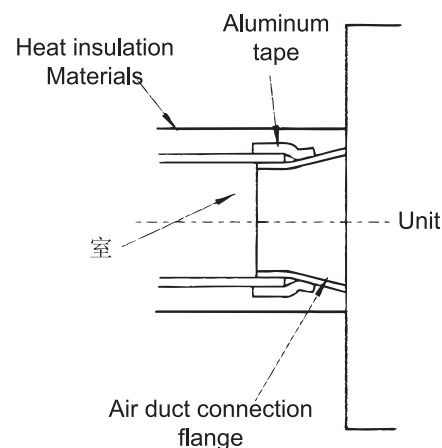


Fig. 4.7 Heat Insulation Treatment

⚠ 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

(1) Over-bending



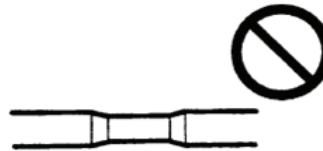
(2) Repeated bending



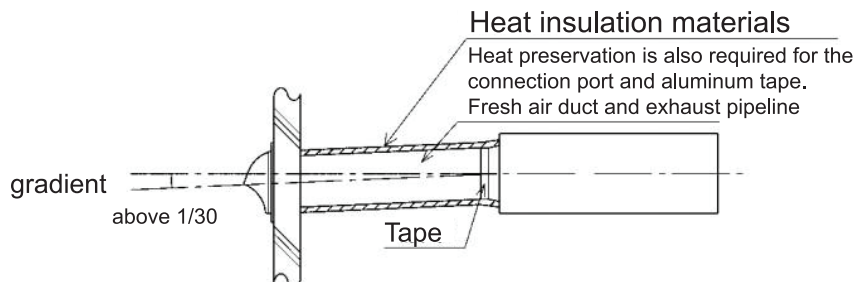
(3) Bending near the air inlet



(4) Shorten the diameter of air duct



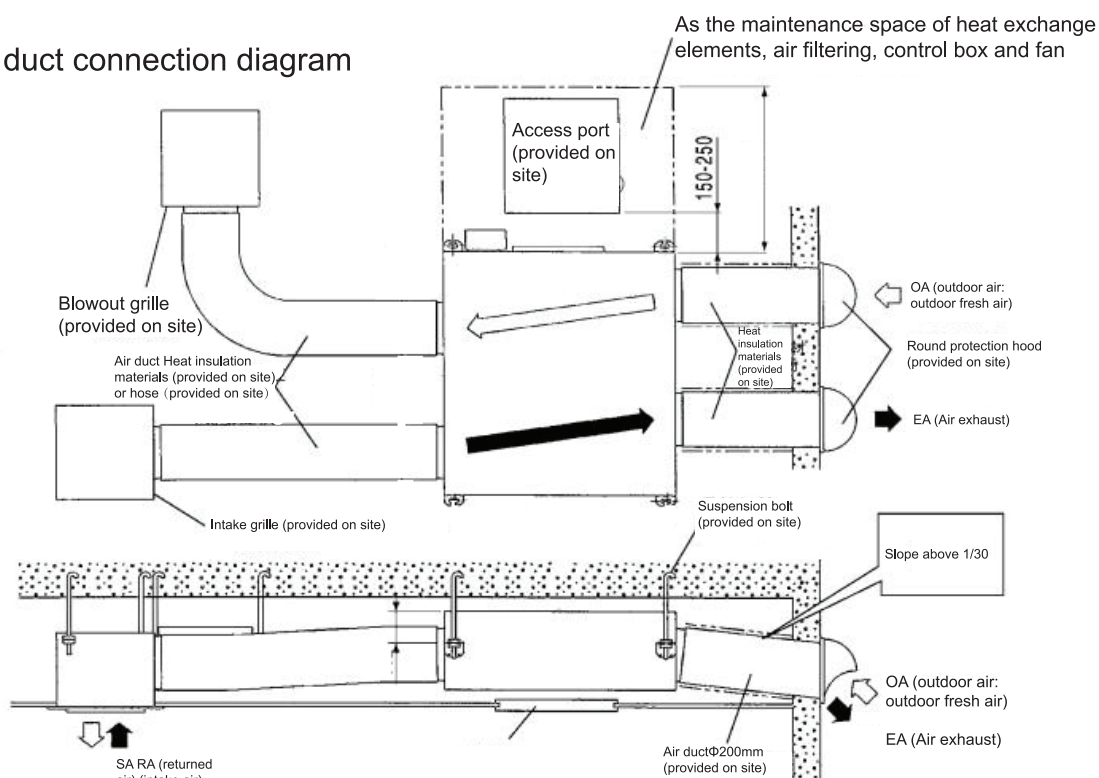
- (1) Insert the air passageway (prepared on site) into each connection port and seal with tapes or sealing bags (prepared on site).



Note:

- 1) Pay attention not to bump the blower during construction of the air passageway.
- 2) The diameter of air duct shall not be shrunken suddenly (for example: $\Phi 250 \rightarrow \Phi 150$, $\Phi 200 \rightarrow \Phi 100$).
- 3) 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).
- 4) 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



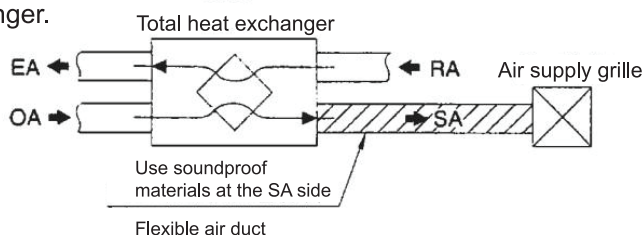
Note:

- 1) Ensure the interval between OA and EA is more than 3 times of the air duct diameter.
- 2) 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.
- 3) In quiet places, the equipment shall not be installed in the ceiling.
- 4) 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.
- 5) When selecting installation materials, please consider the air flow and noise grade in specified places.
- 6) The three-phase type has the condensate water pipe interface, please install the condensate pipe synchronously, and ensure the reliable drainage.

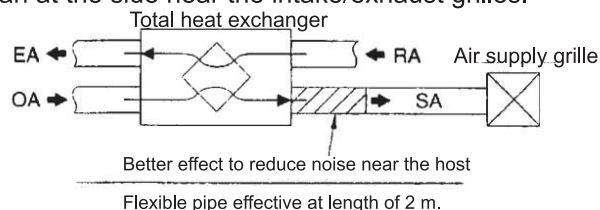
5. Measures and methods to reduce noises

Compared with operation noise of the host machine of the total heat exchanger, the operation noise at the air supply grille is generally 8-11 db higher. Countermeasures shall be taken when the total heat exchanger 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 total heat exchanger.



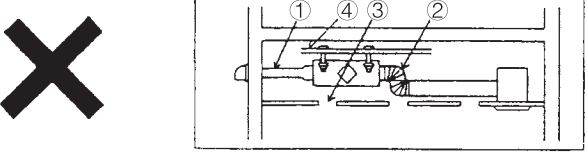
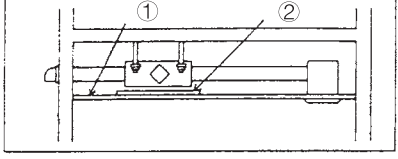
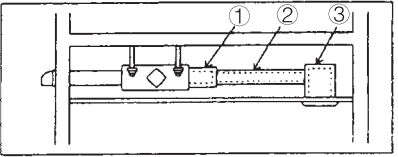
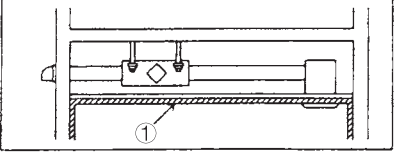
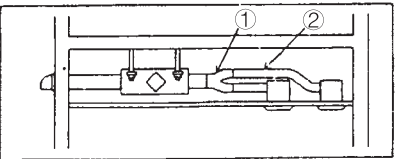
- (2) The adoption of soundproof materials at the side of the air supply pipe near the total heat exchanger will produce better noise reduction effect than at the side near the intake/exhaust grilles.



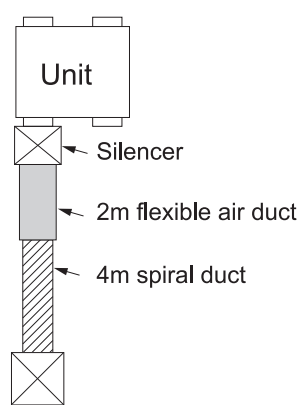
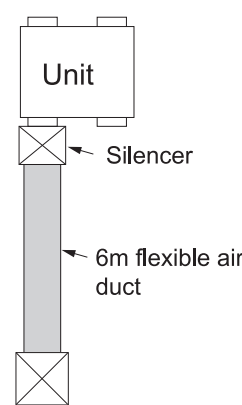
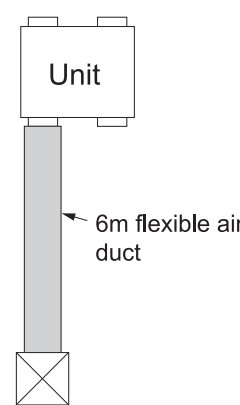
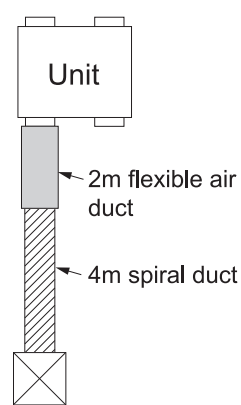
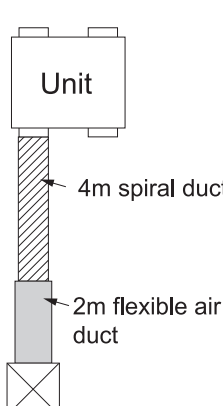
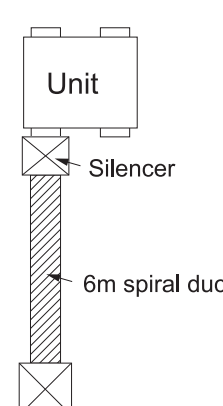
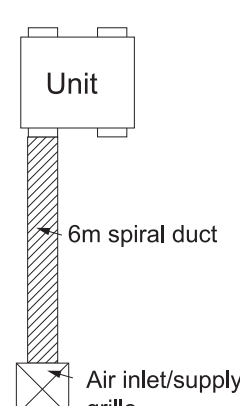
Note:

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

(3) Measures to reduce noise

1. Measures to reduce noise for large-capacity host machine (650 or more) are described below: ①The diameter of air duct is not reduced sharply. (e.g.: $\Phi 250 \rightarrow \Phi 150$、$\Phi 200 \rightarrow \Phi 100$) ②Aluminum corrugated pipe is not excessively bended(especially when the corrugated pipe is connected with the air outlet of the host machine) ③There are undesired holes on the ceiling. ④Do not use materials with insufficient strength to hang the host.	
2. Solutions: ①Adopt 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. ②Soundproof material is laid beneath sound source (Please note this). For some models, it is not necessary to cover the whole unit by soundproof panel.	
3. Air duct is mounted as follows (see right figure): ① Silencer ② Flexible air duct ③Noise elimination air supply grille.	
4. If the above solution does not lead to obvious effect, this method may be used : ①Decoration material with high sound absorption rate is used in the room.	
5. Considering 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. ①Air duct branch (diverge air volume blown out and reduce the air flow speed at air supply port (air return port)). ②Flexible air duct.	
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.	

(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.)																																																																
④ Mount 2m flexible air duct at exhaust grille of air inlet	⑤ Mount one silencer	⑥ 6m spiral duct.			①	②	③	④	⑤	⑥																																																						
				<table><tr><td>dB(A)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>+ 10</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>+ 5</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Specification</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>- 5</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>						dB(A)											+ 10											+ 5											Specification											- 5										
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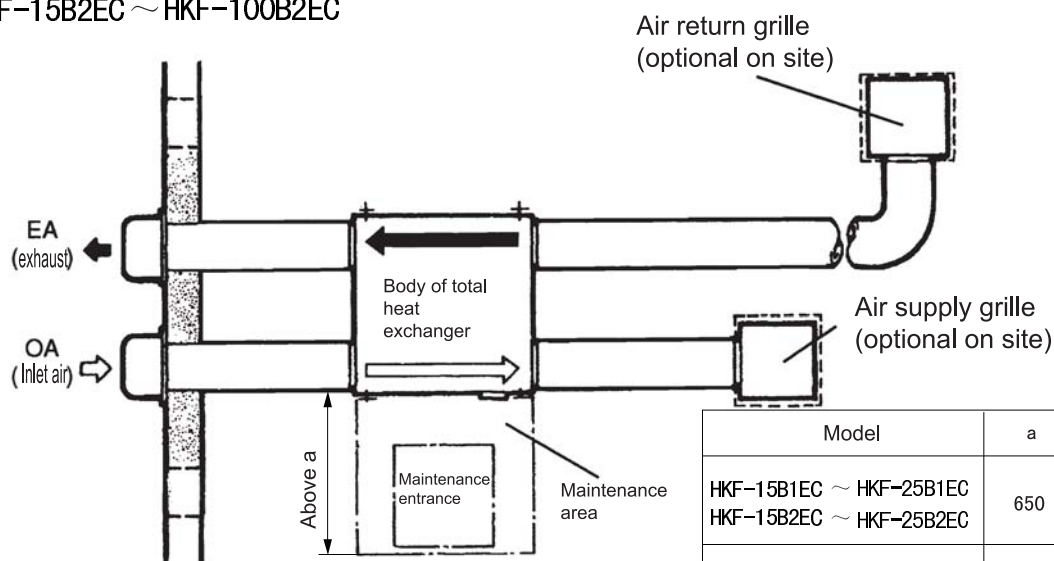
Note :

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

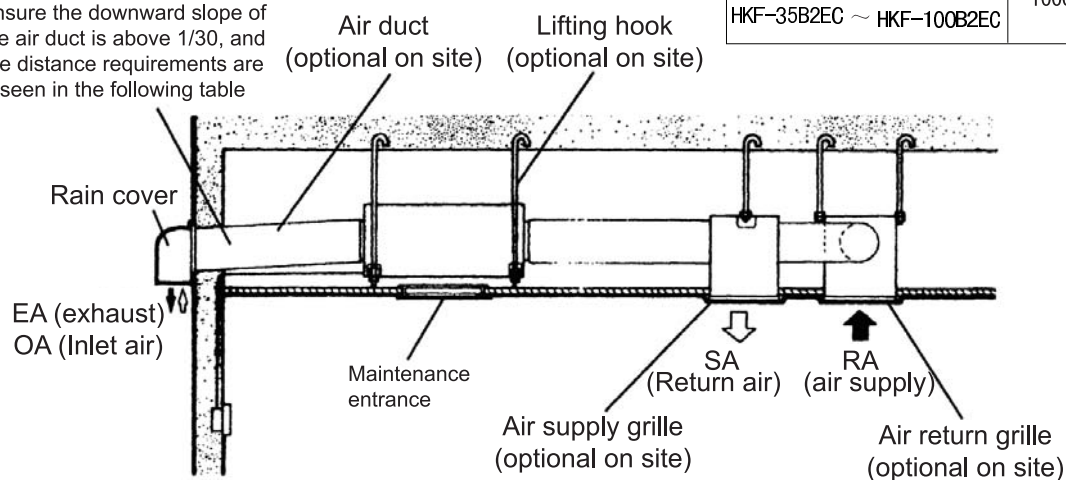
Installation examples

HKF-15B1EC ~ HKF-100B1EC

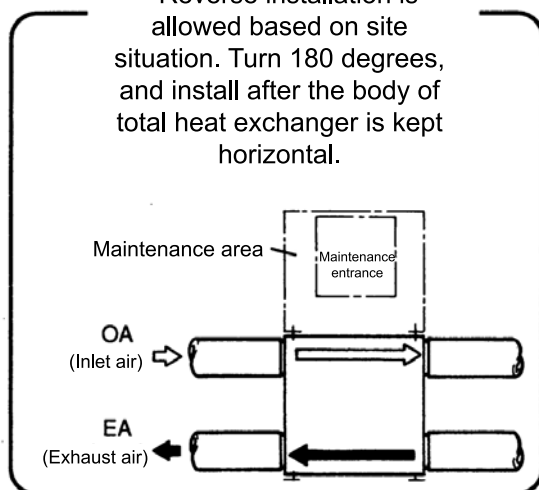
HKF-15B2EC ~ HKF-100B2EC



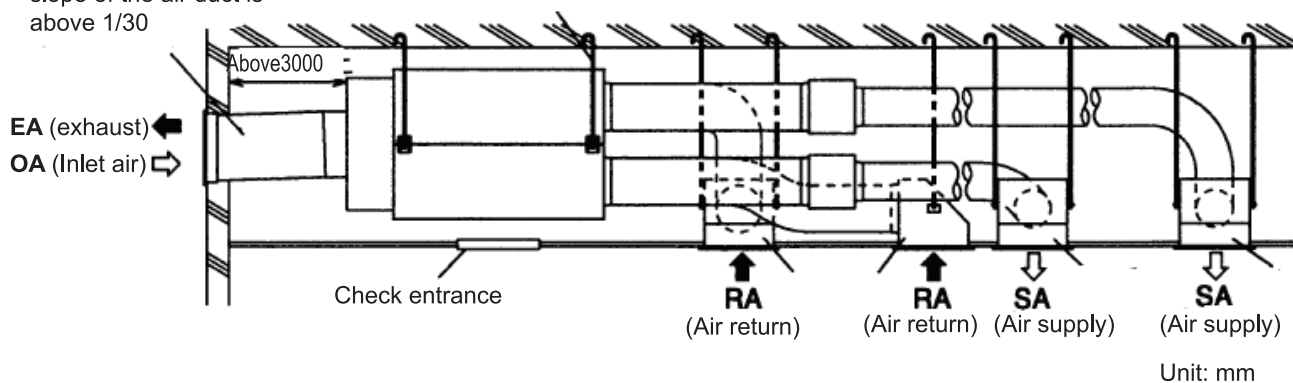
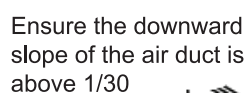
Ensure the downward slope of the air duct is above 1/30, and the distance requirements are seen in the following table



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



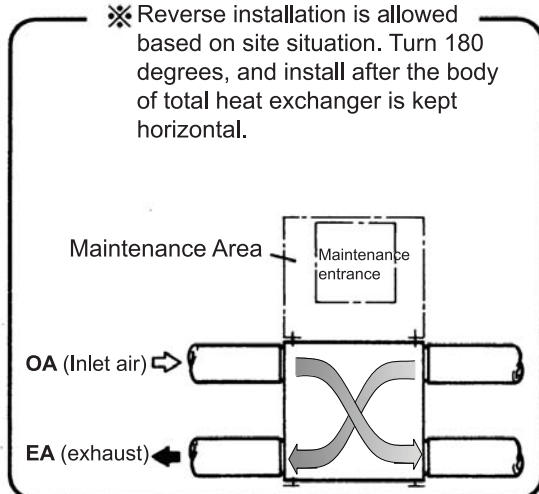
HKF-150B2EE $\sim$ HKF-300B2EE



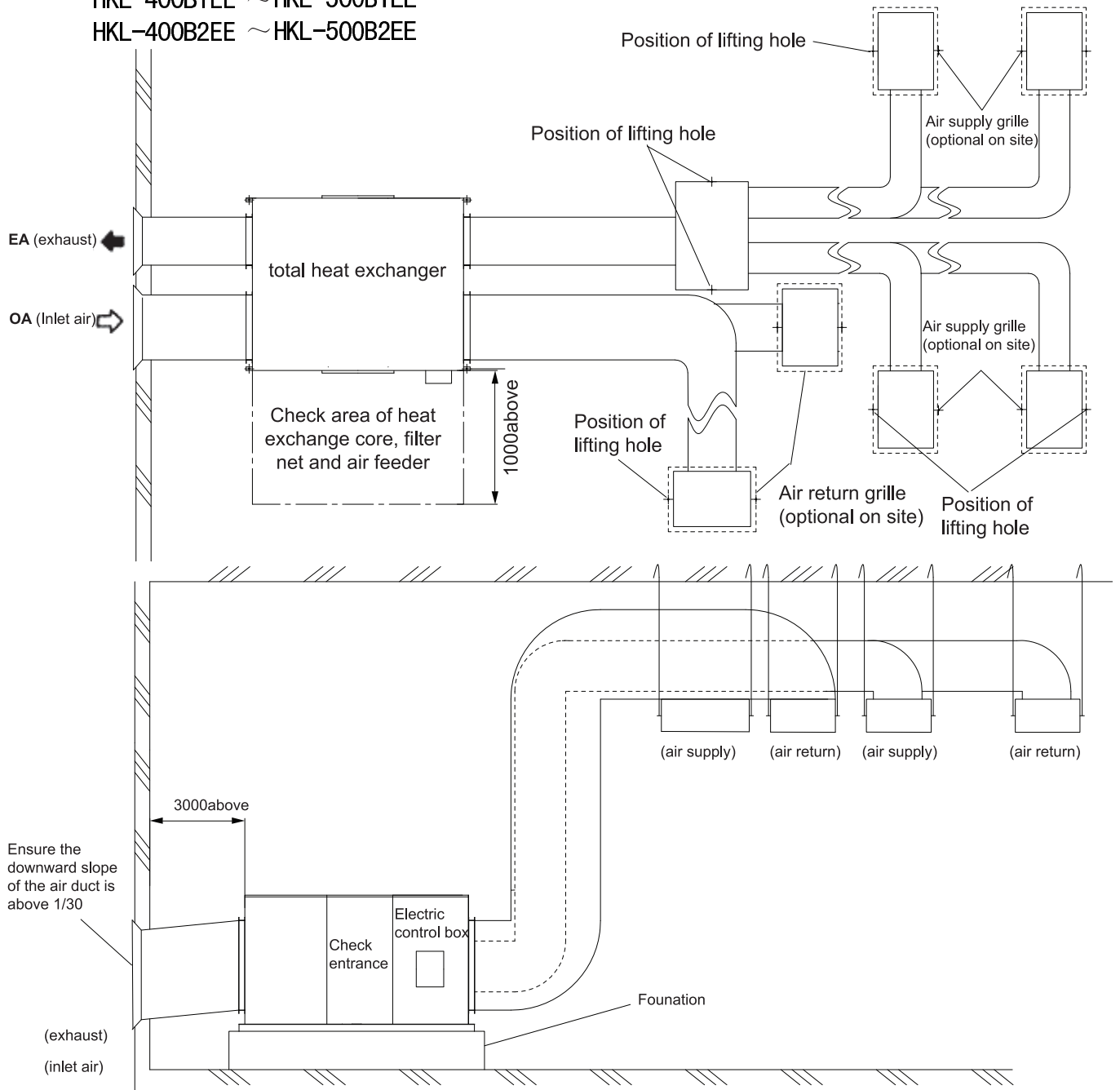
✱ Reverse installation is allowed — based on site situation. Turn 180 degrees, and install after the body of total heat exchanger is kept horizontal.

Note:

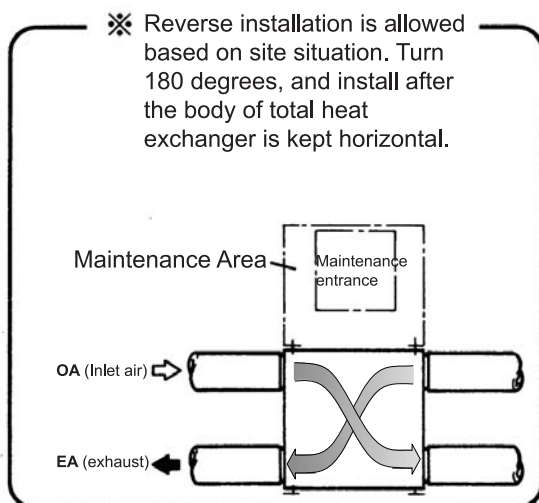
The machine body has the condensate water pipe interface, please install the condensate pipe synchronously, and ensure the reliable drainage.



HKL-400B1EE ~ HKL-500B1EE
HKL-400B2EE ~ HKL-500B2EE



Unit: mm



⚠ Caution

- Transport the equipment to a place near the installation location as much as possible before unpacking. Don't put anything on the equipment.
- Do not damage the heat insulation materials on the surface during lifting.
- Before installation and commissioning, do not put any irrelevant material into the unit to ensure the unit is free of any sundries. Otherwise, fire or accident may occur.
- The machine body has the condensate water pipe interface, please install the condensate pipe synchronously, and ensure the reliable drainage.

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 total heat exchanger with bundles.

Note

Conduit must be hard conduit tube.

a. General inspection

- (1) 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 national electrical standards.
- (2) 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.
- (3) Check if the power capacity is satisfied. Or else, the system will not start at too low voltage.
- (4) Check and ensure the grounding line has been connected reliably.
- (5) Ensure insulation resistance is above 1Ω 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.

b. Wiring

- (1) Connect power line with terminal board inside KPI electrical box. Connect grounding line with the grounding bolt inside KPI electrical box by referring to Fig. 4.8 and 4.9.

Caution

1. 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.
2. The three-phase motor type lines dotted will be wired by the constructor on field.
3. Select and connect power line meeting specification with the terminal of control switch.
4. Check and ensure the tension of terminal crimping line in each terminal board.
5. If no conduit is used, rubber ring will be fixed to connection line by glue.
6. If power line is in serial, it must check and ensure current is less than 50A.
7. 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 is 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.

c. Circuit connection diagram

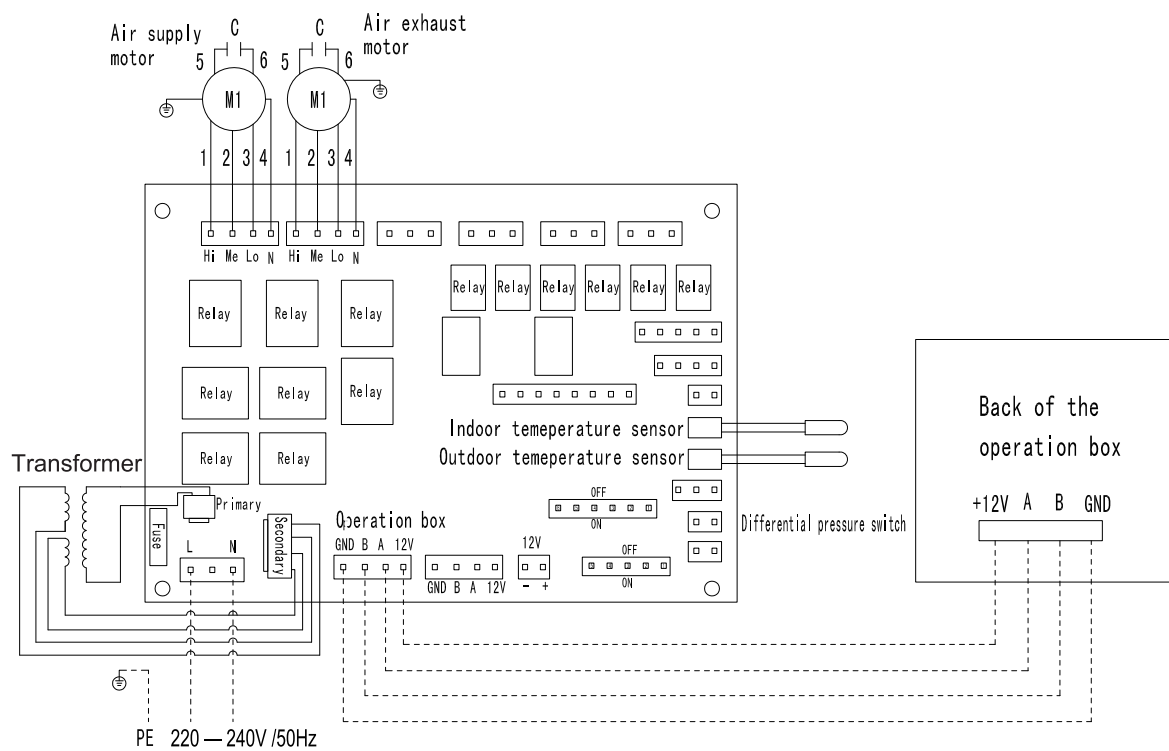


Fig. 4.8 Single-phase circuit connection diagram (HKF-15B1EC ~ HKF-100B1EC)

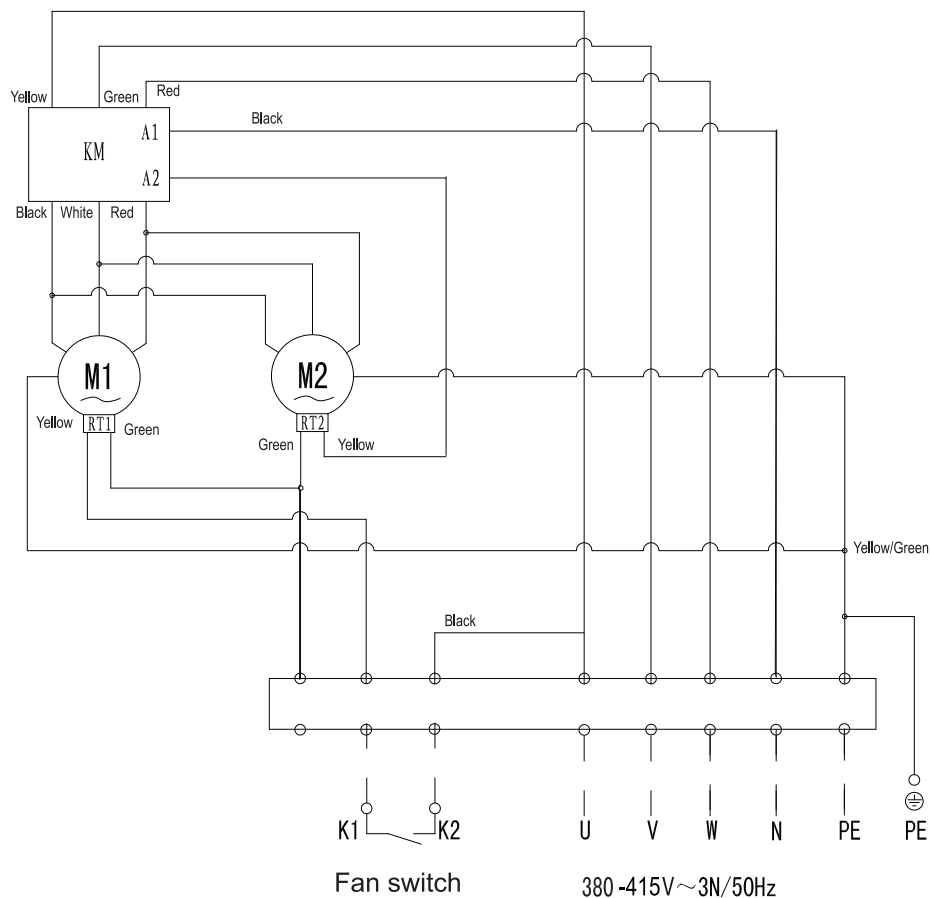


Fig. 4.9 Three-phase circuit connection diagram (HKF-150B1EE ~ HKL-500B1EE)

Note: The connection of KM contactor, RT motor overheating protection contact and the dotted line part are implemented on site. The blower switch should be prepared by the contractor on site.

d. 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
HKF-15B1EC ~ HKF-100B1EC HKF-15B2EC ~ HKF-100B2EC	220-240V ~ 50Hz	5A	2.5 mm ²	0.75mm ²
HKF-150B1EE ~ HKL-500B1EE HKF-150B2EE ~ HKL-500B2EE	380-415V ~ 50Hz	9A	2.5 mm ²	0.75mm ²

Specifications of power line

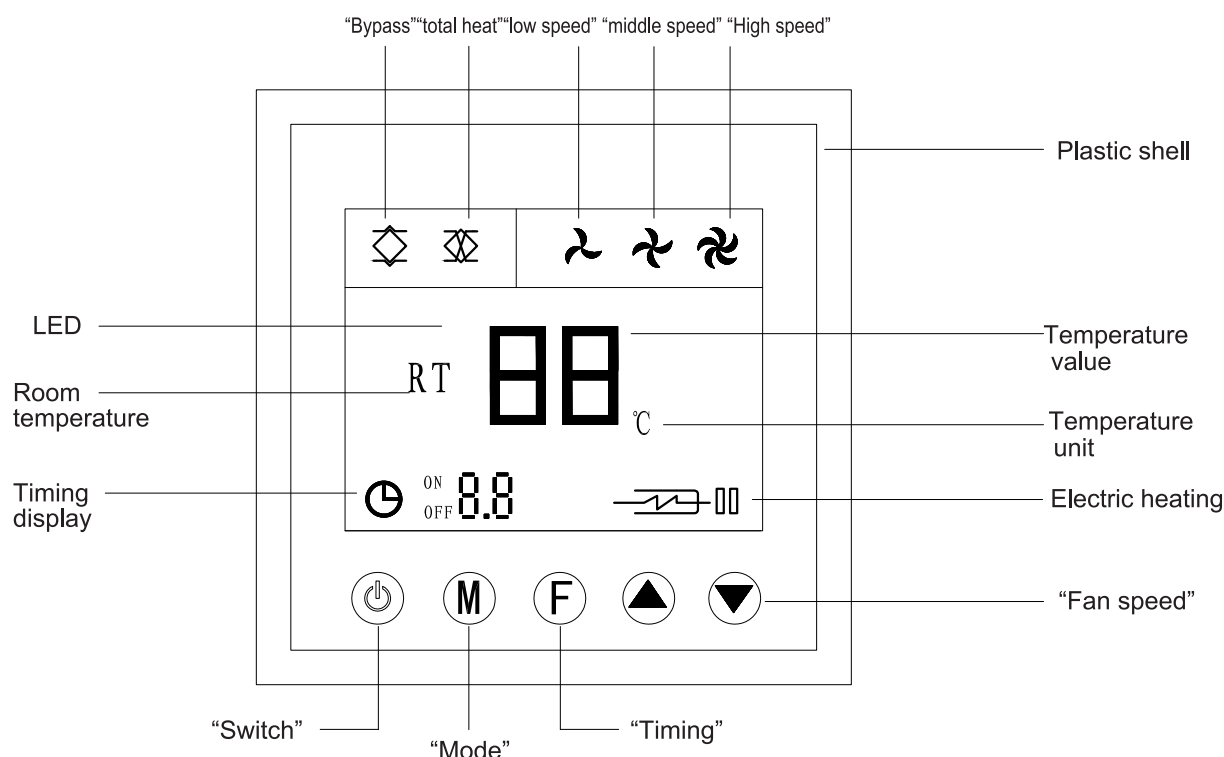
Total current (A)	Line (mm ²)	*1 When the current exceeds 63A, serial connection is not allowed.
$I \leq 6$	2.5	
$6 < I \leq 10$	2.5	
$10 < I \leq 16$	2.5~4	
$16 < I \leq 25$	2.5~6	
$25 < I \leq 32$	4~10	
$32 < I \leq 40$	6~16	
$40 < I \leq 63$	10~25	
$63 < I$	※1	

Note:

- (1) 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.)
- (2) Refer to relevant standards for the above power line dimensions.
- (3) Shield lines will be used for the control system and shall be grounded.
- (4) Power lines shall be sheathed copper conductors.
- (5) When the power lines are connected in series, add up the current values and select wires.
- (6) 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.

7. Install Wired Controller (Only for independent running of total heat exchanger)

a. Description of user interface



b. Symbol description:

- *1) Mode: Bypass Mode, Total Heat Recovery Mode;
- 2) Air speed: High Speed, Medium Speed, Low Speed;
- 3) Temperature: RT indicates indoor temperature; the temperature value, temperature unit;
- 4) Timing open. ON means boot time, OFF means shutdown time. Timing length.
- *5) Electric heating open.

c. Key description:

Switch key, Mode key, Timing key, and Fan Speed key

d. Function description:

- 1) For each time of pressing on , it means startup or shutdown;
- *2) When the machine is on, for each time of pressing on , the unit will shift between mode and mode. After the mode is confirmed, the icon will flash 5 times, confirm and enter into setting mode.
- 3) When the machine is on, for each time of pressing on or , the unit will shift in the sequence of "low-medium-high-low". After selecting the air speed, the icon will flash 5 times, and the air supply blower and the air exhaust blower will operate at the set air speed.
- 4) When the machine is on, for each time of pressing on Timing key , Timing Icon will appear, and the shutdown time will be increased or decreased 1 hour for each time of pressing or . Pressing on Time key again to confirm the set mode. The time setting will be canceled when pressing the Time key thirdly.

5) When the machine is off, for each time of pressing on Timing key **F** , Timing Icon will appear, and the boot time will be increased or decreased 1 hour for each time of pressing ▲ or ▼ . Pressing on Time key again to confirm the set mode.

The time setting will be canceled when pressing the Time key thirdly.

e. The temperature display is constantly turned on and can not be adjusted.

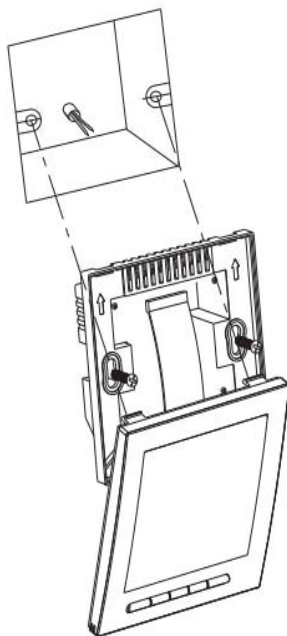
* Note: 1. The bypass mode and Electric heating are only available on specified models.

And standard configuration models have no bypass mode, and Electric heating.

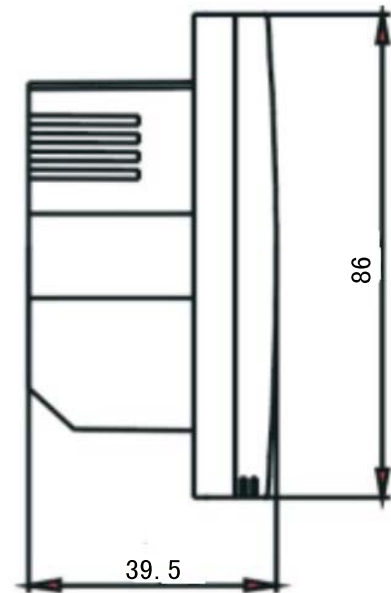
The pressing on mode key has no influence to the operation of the unit.

2. The wired controller is only used on models of single-phase power source,

f. Installation diagram of rear cover



g. Dimension (86X86X39.5mm)



h. Installation notes:

- (1) Installation must be performed when the power is disconnected, or else, system components may be damaged.
- (2) Select correct place for installation. (Approx. 1.6 meter above the ground). Do not install the product where it is exposed to sunshine or humidity.
- (3) Altitude: no more than 2000m.
- (4) If it is installed in bathroom, please use special waterproof face mask (at the supply of the Contractor).
- (5) Connect fire line, null line and fan coil correctly as required by needs and according to the wiring diagram in the back of product.

8. Installation of HYPE-G01H (For centralized control) model (jointly running in combination with multi-connected air-conditioner)

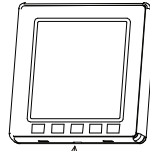
①. Installation

Make sure the parts are included in the package before installation:

Remoter 1 Assembly screws (M4X20mm) 2

[Installation notes]

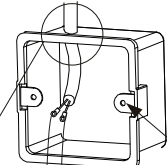
- 1) Separate the body from assembly base. Insert a slot type screwdriver into 2 notches beneath remoter. Rotate the screwdriver to separate the body. Snap-fit near notches may be damaged by inserted screwdriver, leading to the failure of assembling the body. So, pay attention to this when you separate them.
- 2) Fix the base of remoter and handle electrical wires: Put the lower enclosure of remoter in 86 installation box and fasten it by assembly screws.



Notch

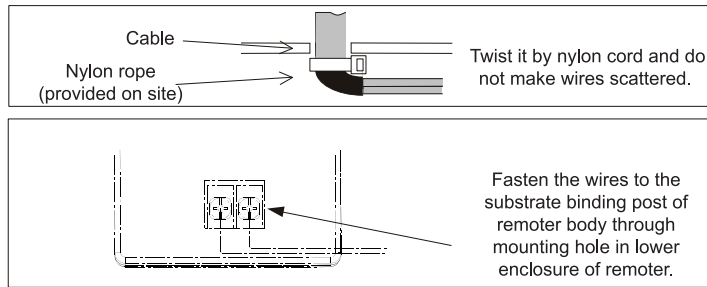


Slot type screwdriver, top width 6mm See from the bottom of remoter

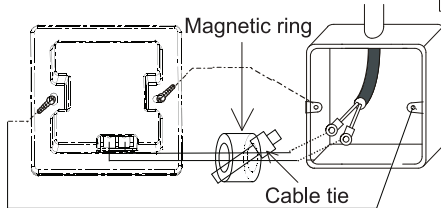


Assembly screw

a. exposed cable



b. install leads



86 installation box

Assembly bolt (M4x20mm)

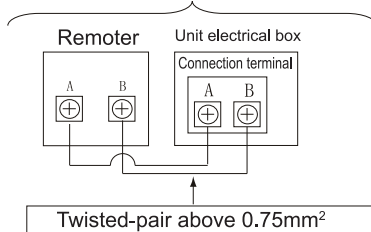
- 3) Make communication leads go through magnetic ring. Tighten the magnetic ring and leads by cable tie.
- 4) Embed the body into the assembly base. Firstly, embed it from the upper side. Attention should be paid that do not strain the cable.
- 5) User selects if the protective film is torn from the LED.

Protective film

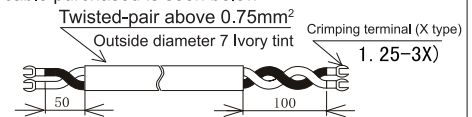
②. Guides for wiring

! : The wiring is performed only when the power is disconnected, or else, it may lead to the failure of PCB and remoter.

Only one unit is connected



● The specification of extended cable purchased is seen below



Note

- Please use 0.3—0.75mm² cable (total length is no more than 30m). If the wire is 30m longer, twisted-pair will be used (0.75mm²). (The maximal total length of wire is 400m). If other types of cable are used, wrong operation may be caused due to noise wave etc.
- Excessive cable used by remoter and unit must keep 30cm from power line.
- If, wires are retained within 30cm above, the cable must be put into sticker wiring tube and the contact grade D on one side is applied. If not so, wrong operation may be caused to the unit due to power disturbance.
- Wiring between remoter and the unit, address setting of the unit etc.
- If, cable of remoter occurs crack, please seal it by Vinyl adhesive. Or else, failure may be caused by insect entering remoter box.
- Make sure the remoter keeps more than 0.5m from fluorescent lamp.
- In actual installation, the remoter must be installed so that the user can look at the remoter horizontally when uses it. The angle of view at each direction is within 30°.

③. Test run

1) Power on

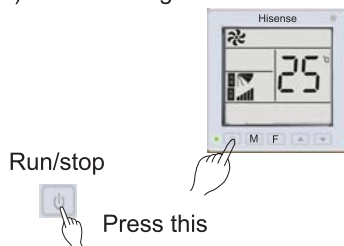
Power on all indoor units

Note

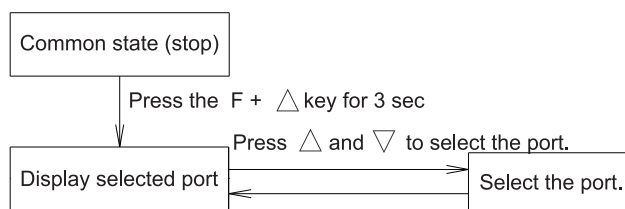
It is normal if only a small part of LED on the remoter turns on after short period of powering on.

2) For the models with automatic address searching function, please wait for 3 min to automatically set up address (Based on the setting, sometimes.)

3) Enter running mode.



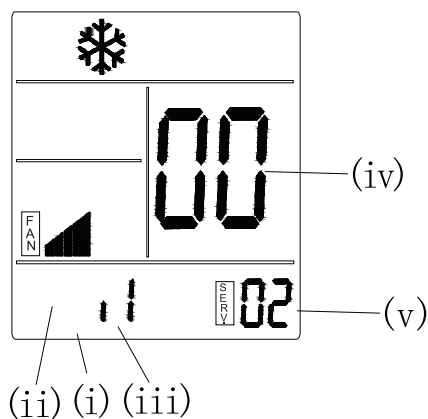
④. Set up input and output by remoter



State transfer of input and output setting mode

- (1) Press the button [F] + Δ for 3 sec in stop condition and enter input and output state.
- (2) After entering input and output state, press Δ ∇ to select the port.
- (3) After entering input and output state, press the button [mode] to adjust the types of signals.
- (4) Press the button [F] + Δ to quit input and output state.

Display of port setting:



- (i) No texts of "address" and "system" are displayed.
- (ii) The first two digits of 7-digit code are displayed off, which is used to display the time setting by timer.
- (iii) The last two digits of 7-digit code display the port of indoor unit setting input and output object, seen in Table 1.
- (iv) The 7-digit code used to display temperature displays the type of distributed signal to the port, seen in Fig. 2.
- (v) Service code displays as 02.

● Table 1 Relation between Input and Output Number and Connector

Input and Output Number		Setting object (connector no.)	Setting upon shipment		Setting
Input and output	Display		Setting contents	Display	
Input 1	1	CN3 no. 1-2	Remote start and stop 1 (grade)	0 3	
Input 2	2	CN3 no. 3-2	Prohibited by remoter after forcible stop	0 6	
Input 1	0 1	CN7 no. 1-2	Running	0 1	
Input 2	0 2	Cn7 no. 1-3	Alarm	0 2	
Input 3	0 3	CN8 no. 1-2	Heating and temperature control off	0 6	

● Table 1 Input and input setting contents and display code

Display code	Input	Output
0 0	Not set yet	Not set yet
0 1	Room temperature control (cooling)	Running
0 2	Room temperature control (heating)	Alarm
0 3	Remote start/stop 1 (grade)	Cooling
0 4	Remote start/stop 2 (running pulse)	Cooling off
0 5	Remote start/stop 2 (stop pulse)	Heating
0 6	Prohibited by remoter after forcible stop	Heating off
0 7	Remote cooling and heating switch	None

- The setting is modified after power-on for 3 min.
- Long press the button [Function] + ^ for 3 sec in input and output setting state when setting is stopped and enter common mode. In input and output setting state, the system will automatically enter common mode if no button is pressed within 10 min.

⑤. Spot inspection menu

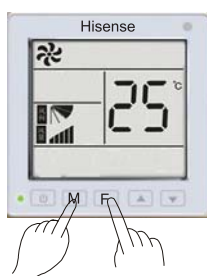
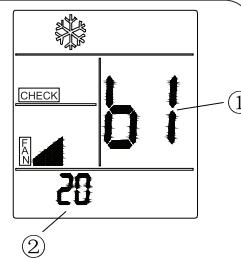
Display various states of air-conditioners.

● LED shows spot inspection in spot inspection mode

In any situation capable of transferring to spot inspection mode, long press the button [F] + [M] for 3 sec. The temperature setting 7-digit code displays the latest alarm code. If no alarm is sent, it will display 00. Short press the button [F] to transfer to spot inspection mode 1 and select the item by $\triangle$ ∇ .

① It is used to display spot inspection item and initial display item is b1.

② It is used to display the item value in spot inspection. Initial temperature value displayed.

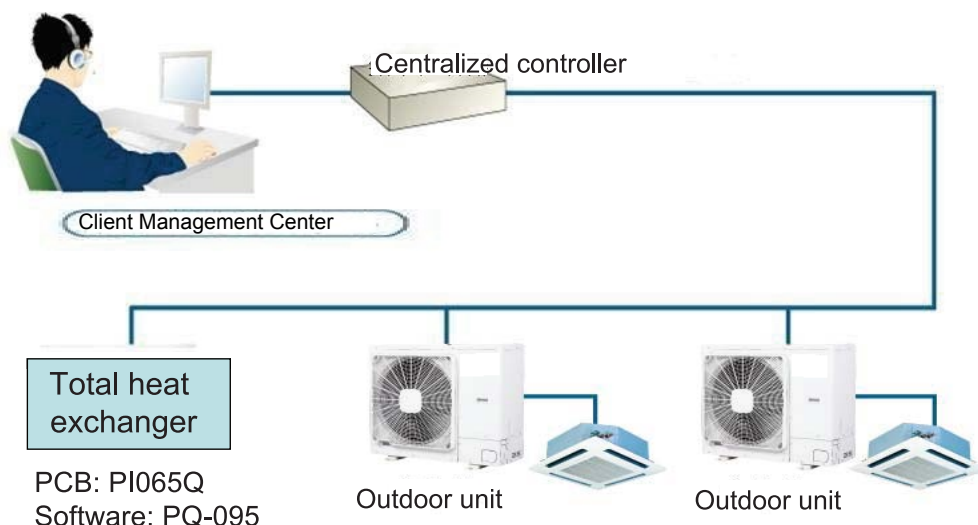


Press and hold [F] and [M] for 3 sec in common mode.

Description of Centralized Control

①. Centralized control

Connection diagram of total heat exchanger and air-conditioner system



Note:

1. A 86 wired controller is provided together with total heat exchanger when centralized control is realized. type: HYPE-G01H.
2. This system can realize remote on/off and the remote switch of air volume through centralized controller (ambient temperature and appropriate place, HARC40, WEBCU....).
3. 86 wired control has used the communication protocol of second generation. So, the number of communication nodes in internetworking will satisfy the limit of controllers to be linked in such protocol.
4. LED has only air supply mode when 86 wired controller is connected to total heat exchanger.
5. Centralized controller can control the on/off and the wind speed of total heat exchanger by remote control.

②. Linkage with other indoor units

Notes to linkage function:

Model HKF-15B1EC(15B2EC) ~ HKL-500B1EE(500B2EE) total heat exchangers at 13 capacities can realize linkage with other indoor units.

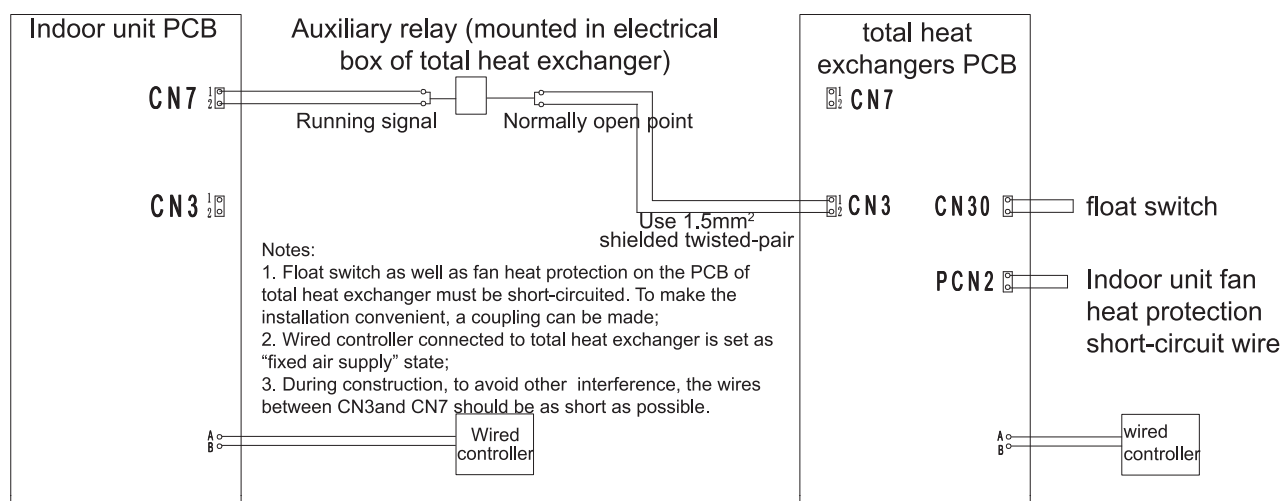


Fig. 4.10 Connection diagram of total heat exchanger linkage works

- Note: 1. The wires between “CN7” on indoor unit PCB and the PI065Q of total heat exchanger are placed in accessory bag and the wire is 10m long. The wire can be extended if necessary. However, to keep the system stable, the wire is not longer than 30m.
2. The model of controller used by total heat exchanger is HX-E-G01H.

Instructions to site operation:

1. Take connection line from accessory bag (connection line labeled as “CN7” and “CN25”, standard configuration for centralized control model) and confirm the works demands.
2. Connect the “CN7” on indoor unit PCB and “CN25” of total heat exchanger together by connection line.
3. Power on indoor unit and total heat exchanger and check operation.
4. Power off and organize the connection lines, the installation complete.

Four points to be noted during installation and commissioning:

1. Float switch (FS) as well as fan protection terminal (49FE) on PCB of total heat exchanger should be short-circuited.
2. Total heat exchanger uses PI065Q PCB, software version PQ-095, wired controller is 86 wired controller HX-E-G01H.
3. Wired controller connected to total heat exchanger is set as “fixed air supply” state.
4. During construction, to avoid other interference, the wires between CN3 and CN7 should be as short as possible.

Notes to linkage wire connection:

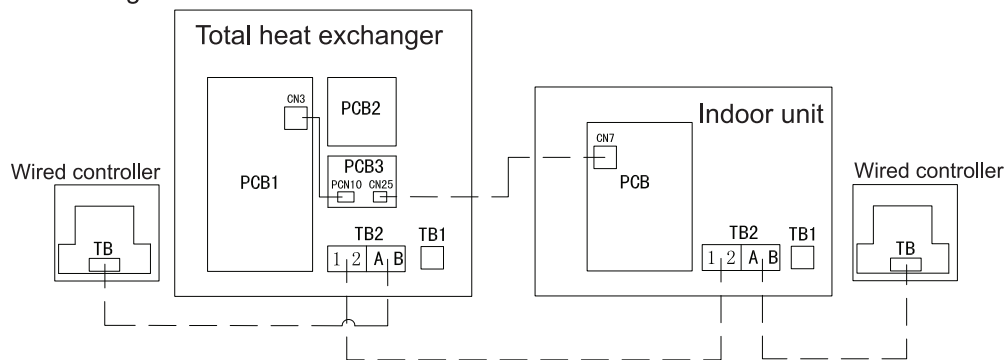


Fig.4.11 Wiring Diagram of Systems Linked with Indoor Unit

The running of total heat controller can be independently controlled by wired controller used for centralized control. The wired controller can be used to start and stop indoor unit and total heat exchanger.

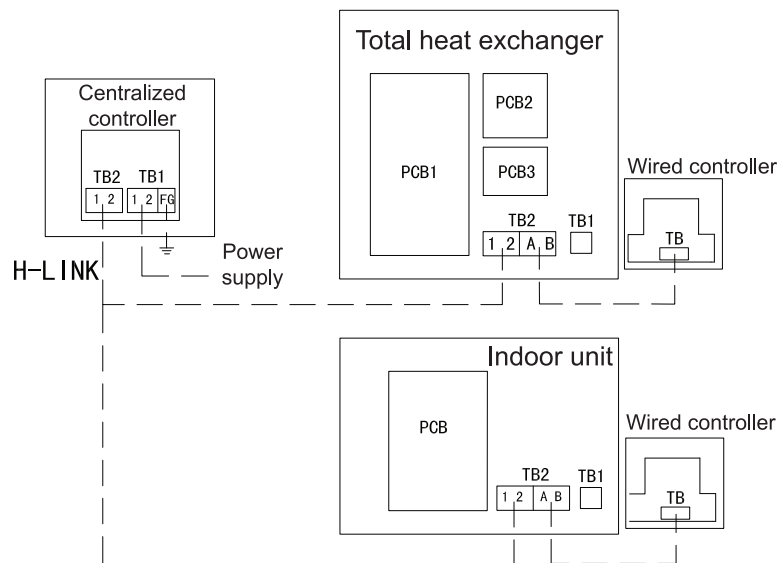


Fig. 4.12 Wiring Diagram of Centralized Control System

When the wired controlled used for centralized control is connected, the operation of startup and shutdown can be executed by centralized controller, indoor unit or the wired controller used for centralized control. When the display screen shows “centralized control”, the wired controller used for centralized control shall not be used for startup, shutdown or timing operation, and other operations can still be controlled by such wired controller.

③ Safety design of fuse in electrical box of total heat exchanger connected with centralized control

1. Current values of total heat exchanger are seen in Table 1:

Table 4.1 Actual Current Values

Type	Working Current at Each Air Volume (Actual)		
	High/HI	Middle/ME	Low/LO
HKF-15B1EC HKF-15B2EC	0.38	0.36	0.31
HKF-25B1EC HKF-25B2EC	0.66	0.56	0.52
HKF-35B1EC HKF-35B2EC	0.76	0.75	0.71
HKF-50B1EC HKF-50B2EC	1.82	1.71	1.52
HKF-65B1EC HKF-65B2EC	1.75	1.62	1.51
HKF-80B1EC HKF-80B2EC	1.98	1.88	1.75
HKF-100B1EC HKF-100B2EC	4.68	4.18	3.47
HKF-150B1EE HKF-150B2EE	2.78	—	—
HKF-200B1EE HKF-200B2EE	2.89	—	—
HKF-250B1EE HKF-250B2EE	3.86	—	—
HKF-300B1EE HKF-300B2EE	5.12	—	—
HKL-400B1EE HKL-400B2EE	5.89	—	—
HKL-500B1EE HKL-500B2EE	8.78	—	—

Centralized control plan meets Hisense Hitachi design criteria: BZT20017 Design Criteria for Fuse Types

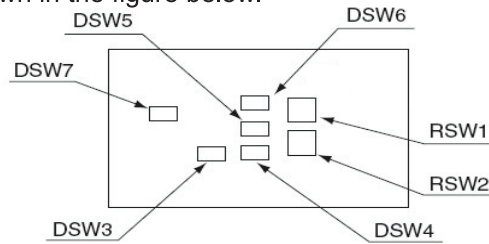
2. Total heat exchanger uses two motors in parallel. The types of fuses in each model are seen in Table 2 below:

Table 4.2 Types of Fuses in Each Model

Type	High/HI (A)	Hisense baseplate fuse	Electrical box fuse
HKF-15B2EC	0.38	250V/5A	—
HKF-25B2EC	0.66		
HKF-35B2EC	0.76		
HKF-50B2EC	1.82		
HKF-65B2EC	1.75		
HKF-80B2EC	1.98		
HKF-100B2EC	4.68		250V/8A *1
HKF-150B2EE	2.78		250V/4A *2
HKF-200B2EE	2.89		250V/8A *2
HKF-250B2EE	3.86		
HKF-300B2EE	5.12		250V/10A *2
HKL-400B2EE	5.89		
HKL-500B2EE	8.78		250V/16A *2

④ DIP switch setting

1. The setting of DIP switch shall be performed when the unit power is OFF; otherwise, the setting is invalid.
2. The position of DIP switch is shown in the figure below.



3. The PCB in the unit is equipped with 2 rotary switches and 5 dip switches. Before testing run, set these DIP switches according to the following instructions. Do not start the unit unless these switches are setup.

(1) Unit No. setting (RSW1&RSW6)

Set the No. of all units and serially, by following setting position shown in the table below. The unit number shall not be the same with that of other units in multi-link system.

	DSW6 (Tens digit)	RSW1 (Units digit)	Ex) Set at No. 16 Unit
Setting method 1			
Setting method 2			
	Note: 8121 encoding method		

Before shipment, DSW6 and RSW1 are set to "0". Max. 64 indoor units are available to be connected.

Note: set according to setting method 1 when the machine has rotary switches.

set according to setting method 2 when the machine has no rotary switches.

(2) Refrigerant Cycle No. Setting (RSW2&DSW5) Setting is required.

Setting position before shipment is all OFF.

Setting of Refrigerant Cycle

	DSW5 (Tens digit)	RSW2 (Units digit)	Ex) Set at No. 5 Unit
Setting method 1			
Setting method 2			
	Note: 8121 encoding method		

Before shipment, DSW5 and RSW2 are set to "0". Max. 64 indoor units are available to be connected.

Note: set according to setting method 1 when the machine has rotary switches.

set according to setting method 2 when the machine has no rotary switches.

(3) Capacity Code Setting (DSW3) and Unit Model Setting (DSW4)

No setting is required.

	Model
Setting position	
	Set No. 1,3,4 pin ON

Note:

The symbol "■" indicates the position of DIP switch.



Caution

The position shown in the figure is the factory status.

Installation Position Diagram of Electrical Box and Total Heat Exchanger Case:

No	Installation Position of Electrical Box	No	Installation Position of Electrical Box
	HKF-15B1EC HKF-15B2EC	8	HKF-150B1EE HKF-150B2EE
2	HKF-25B1EC ~ HKF-25B2EC HKF-35B1EC ~ HKF-35B2EC	9	HKF-200B1EE HKF-200B2EE
3	HKF-50B1EC HKF-50B2EC	10	HKF-250B1EE HKF-250B2EE
4	HKF-65B1EC HKF-65B2EC	11	HKF-300B1EE HKF-300B2EE
5	HKF-80B1EC HKF-80B2EC	12	HKL-400B1EE HKL-400B2EE
6	HKF-100B1EC HKF-100B2EC	13	HKL-500B1EE HKL-500B2EE

4.5 Test Run

Warning

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

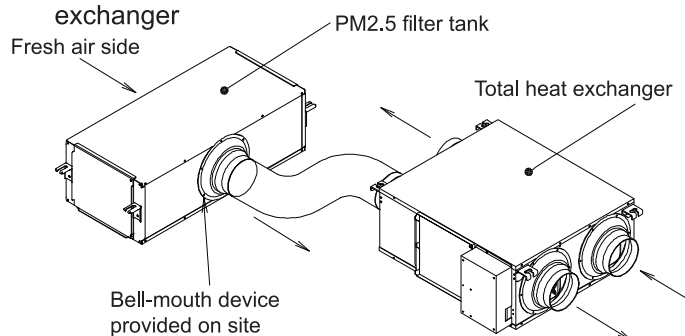
- (A) Check to ensure that the electrical resistance is more than 1 MΩ, by measuring the resistance between ground and the terminal of the electrical parts. If not, do not operate the system until the leakage point is found (out) and repaired.
- (B) Check there is no abnormal sound or vibration on the machine.

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

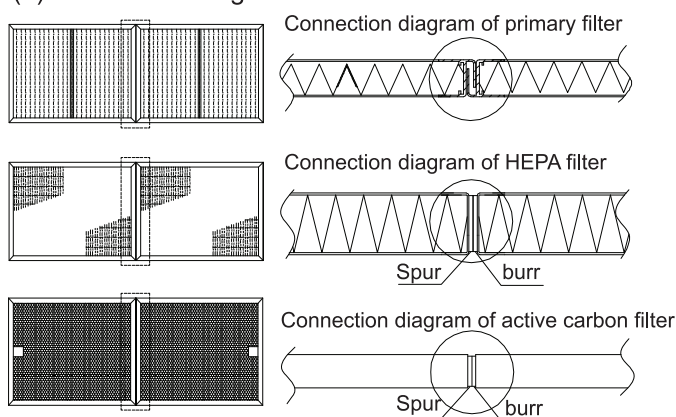
- (1) After lifting and adjusting the entire machine, energize it according to the connection diagram and at the same time adjust the high, medium and low grades of the smart switch at any grade, then the machine starts working. Users can shift grades according to the pollution level of indoor air.
- (2) 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.
- (3) In case of abnormality, lease shift special breaker to [OFF] immediately and confirm the wire connection again.

4.6 Installation of filter module (optional)

- (1) Installation diagram of filter tank used in total heat exchanger



- (2) Connection diagram of filter



Maintenance Part

5. Maintenance

- Maintenance of total heat exchanger (2-4 times every year)
If the total heat exchanger is used for a long time, the filter net will be blocked by dust and dirt, leading to reduced ventilation volume, undesired ventilation and noises. Please clean the filter net regularly regarding the dirt and dust adhered to it.
The breaker must be cut off before panel is disassembled for maintenance and repair.

5.1 Maintenance

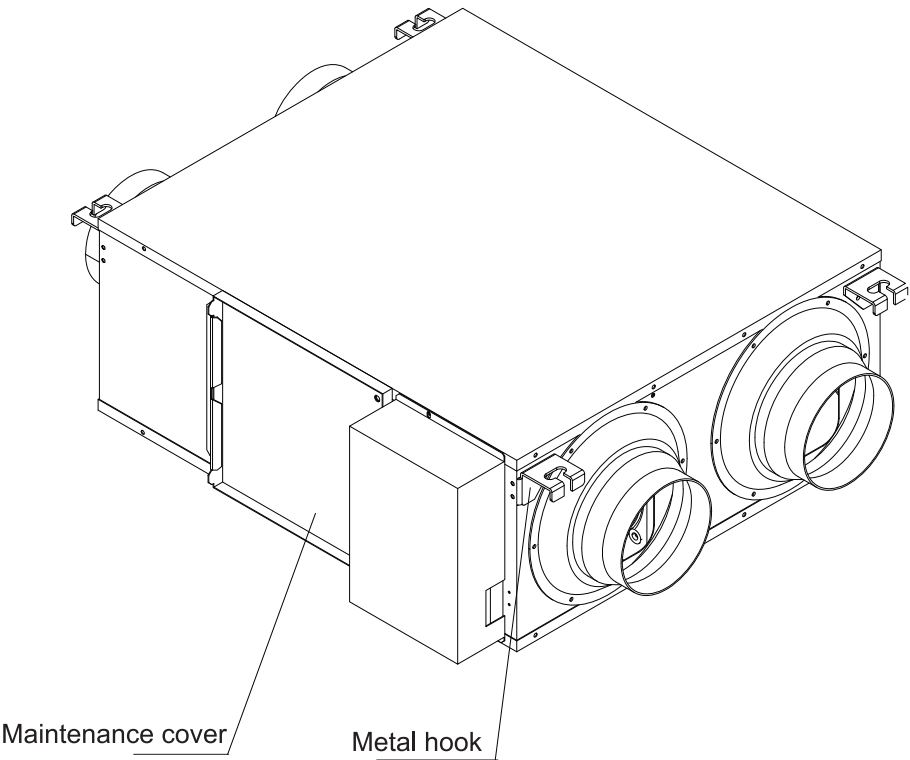
Maintenance must be performed by qualified personnel.

⚠ Warning	
All supply circuits must be cut off before terminal equipment is connected.	
Stop the system and turn off the power supply before cleaning or maintenance. Otherwise, it will bring an electrical shock or touching running parts.	
Do not clean total heat exchanger by clean water, or it will bring an electric shock.	

⚠ Caution	
Wear gloves when cleaning, or it may bring injury.	
Pay attention to the safety under your feet. Pay attention to the safety when working high above the ground.	

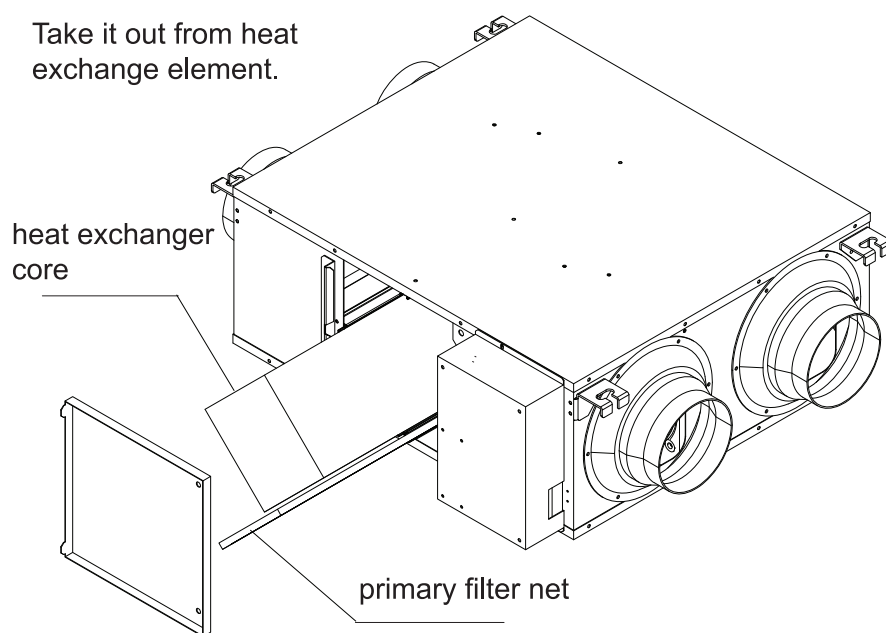
5.1.1 Clean filter net

Get to the ceiling through the access, remove screws on maintenance cover and remove it.



2. Remove filter net

Take it out from heat exchange element.



3. Clean filter net

Clean it by vacuum cleaner or water.

■ Use vacuum cleaner



■ Clean by water



If the filter is badly dirtied clean it with soft brush and neutral detergent.
Dry filter net after cleaning.



- Caution ■ Do not clean filter net by hot water more than 50 °C, or it may bring discoloration or deformation.
- Do not make filter net close to ignition source, or it may bring fire.
 - Do not use gasoline diluent or other chemical solvent, or it may bring discoloration or deformation.

4. Install filter net

Dry filter net and keep it in cool place for 20 to 30 min. Install it in original place after it is totally dry.



Caution Install filter net after maintenance.

(Heat exchange element may be affected if filter net is not installed.)

Filter net is optional and replaceable.

5. Install maintenance cover

For the remoter displaying filter net sign, power it on after maintenance and press the reset button of filter net.

To change the time of showing filter net cleaning signal, please contact the dealer.



Caution Do not move filter net unless cleaning, or it may bring failure.

5.1.2 Clean heat exchange element

Note Always clean.

Clean two to four times every year (for normal office use) (Always clean if necessary).



Warning If the handle of heat exchange element is damaged or falls off, replace it, or falling risk may occur.

1. Remove maintenance cover.

2. Remove filter net.

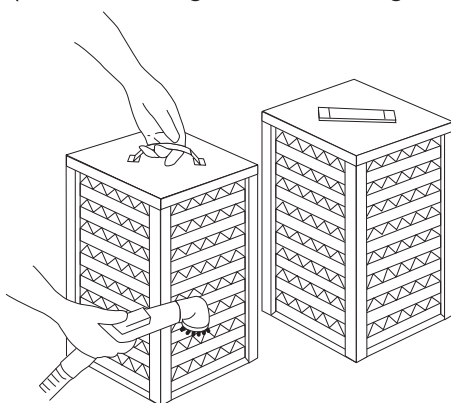
3. Take out heat exchange element.

Pull out filter net and heat exchange element.

4. Remove dust and foreign matter from heat exchange element by using vacuum cleaner.

■ Use vacuum cleaner with a brush at its suction side.

■ Gently touch heat exchange element by brush when cleaning (Do not damage heat exchange element).



Caution ■ Do not forcibly touch heat exchange element by vacuum cleaner when cleaning, or it may damage the meshes.

■ Do not clean heat exchange element by water.

■ If heat exchange element is very dirt, please contact with the dealer for professional cleaning or replacement.

5. Push heat exchange element into the barrier and fix it tightly.

6. Install the filter net in place.

7. Make sure the maintenance is tightly installed.

6. Troubleshooting

6.1 Conking out and Solutions

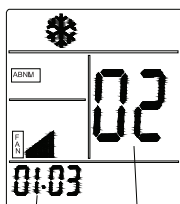
Check the following points if this unit works abnormally.

Symptom	Cause	Solution
The unit does not work.	If power supply occurs failure:	Restart it after repair.
	Power supply failure	Replace fuse or set up breaker.
	fuse is burnt out or breaker is disconnected?	It is normal. Operate the unit by air-conditioner remoter or centralized controller. Refer to the section 2. Operation.
	Is the centralized control sign lighted up on the remote controller?	It is in pre-heat or pre-cool running. It is in stop mode. After pre-heat or pre-cool time, it enters running mode. Refer to the section 2. Operation.
Small air volume and big noise.	Filter net or heat exchange element is blocked?	Refer to the section 3. Maintenance.
Big air volume and noise.	Filter net or heat exchange element is installed at specified position?	Refer to the section 3. Maintenance.

Take the following measures if any failure occurs. Please contact with the dealer.

This system must be maintained by professional personnel.

Warning If heat exchanger works abnormally, e.g. producing burnt smell (e.g.), please turn off the power supply immediately and contact with the dealer. If continue running,, it may lead to failure, electric shock and fire.

Symptom	Measures
Safety device such as fuse, breaker or leakage circuit breaker starts frequently or switch does not work.	Do not turn on power supply.
Remoter button does not work.	Turn off mains switch.
Alarm display Flash abnormal situation of the unit	Notify Hitachi dealer about the type and displayed alarm code.
 Abnormal unit address alarm code	
Other faults	Stop the unit.

Alarm code	Alarm name	Cause
01	(indoor protection device action)	Float switch action (high water level in water pan, not short-circuited etc)
03	Outdoor and indoor communication fault	Outdoor fuse is burnt out. Outdoor and indoor communication line (line is broken or wrongly connected etc).
11	Air return temperature sensor abnormal	Connection line of sensor is wrongly connected, occurs open-circuit or short-circuit etc.
19	Indoor fan and motor abnormal	Indoor fan and motor is too hot and blocked.

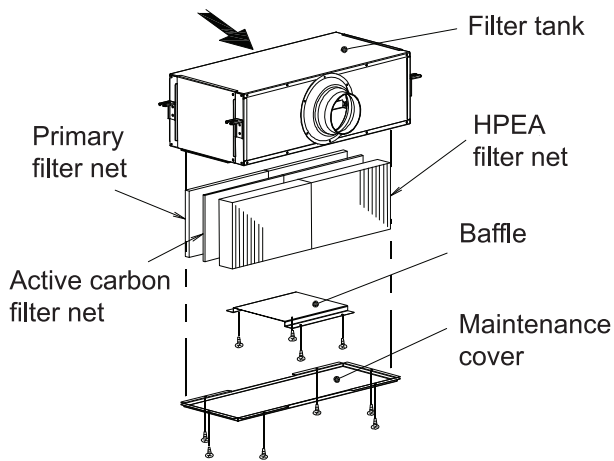
7. Maintenance for Filter Tank (Optional)

7.1 Maintenance Description

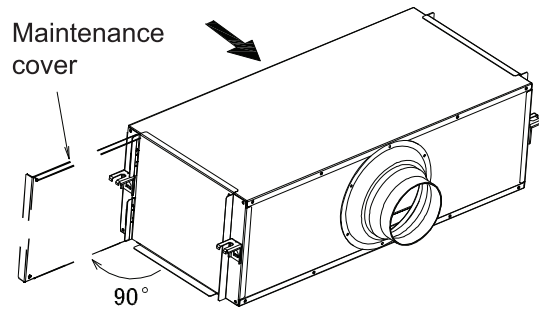
- ① Ordinary filter tank is built with primary filter net and HPEA filter net before shipment. Deodorizing filter net is built with primary filter net, active carbon filter net and HPEA filter net.
- ② Primary filter net is plastic net made of nylon. Take it out from components for maintenance. Clean it by water or vacuum cleaner. When the filter net is too dirt, clean it by detergent or neutral soap water. Clean by water and dry. Then install it in place.
- ③ Active carbon filter net is replaced once every one to two years and cleaned every three to six months. Take it from component and wipe out dust by soft brush. Then install it in place. (Active carbon filter net can not be cleaned by water but exposed to the sunshine).
- ④ HPEA filter net is made of non-woven fabric, not allowing water washing at life span of 1 year. It varies with environment. Recommend replacing it every three to six months. Purchase and replace it by referring to the “Replaceable Filter Net Type”.

7.2 Maintenance diagram

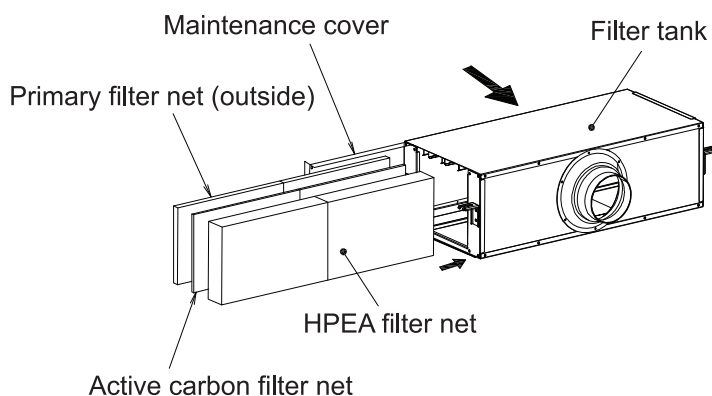
① Maintenance diagram



② Diagram of side maintenance cover



③ Side maintenance diagram of filter net



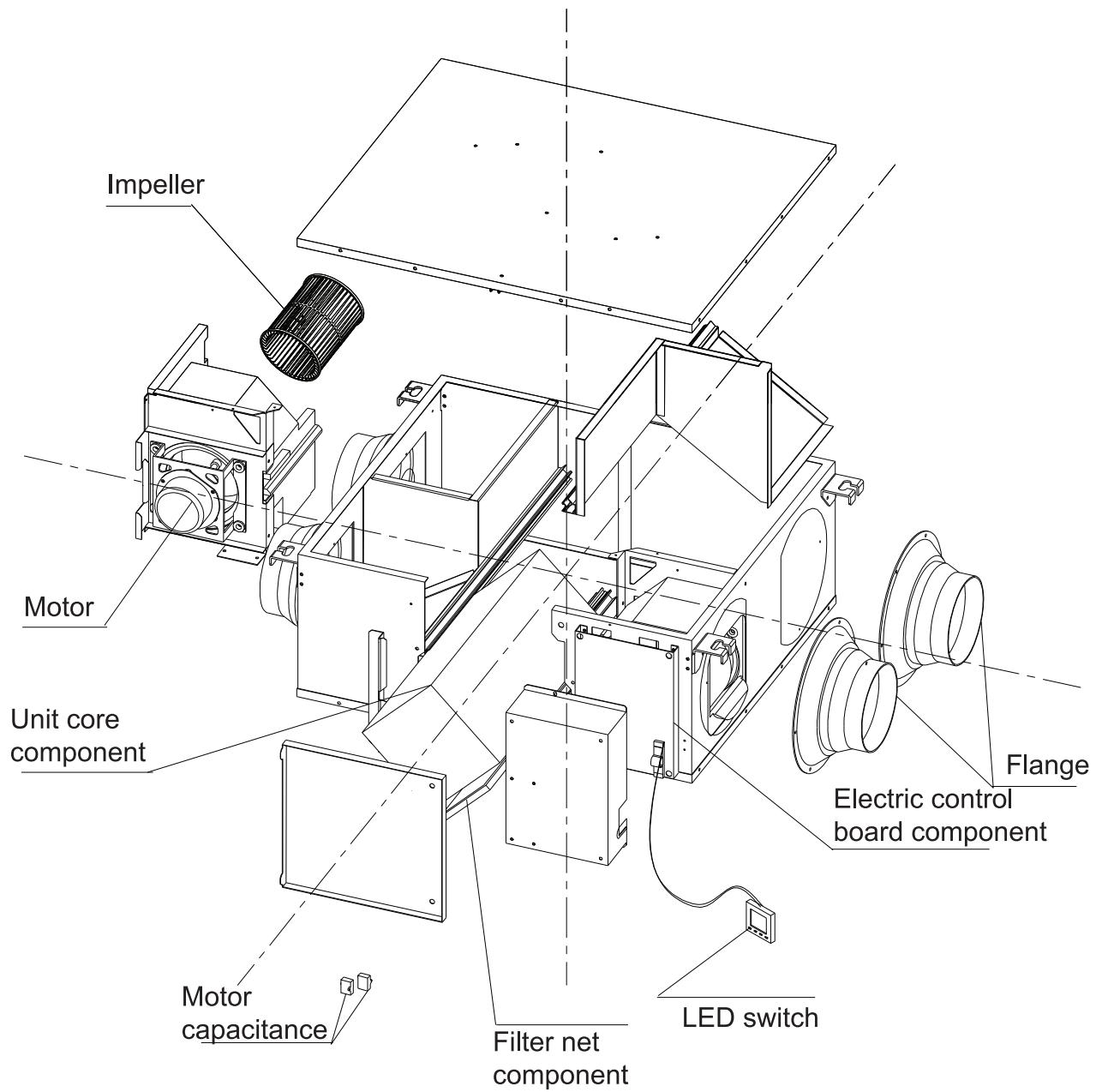
Annex 1: Explosive View of Total Heat Exchanger

Model:

HKF-15B1EC HKF-15B2EC

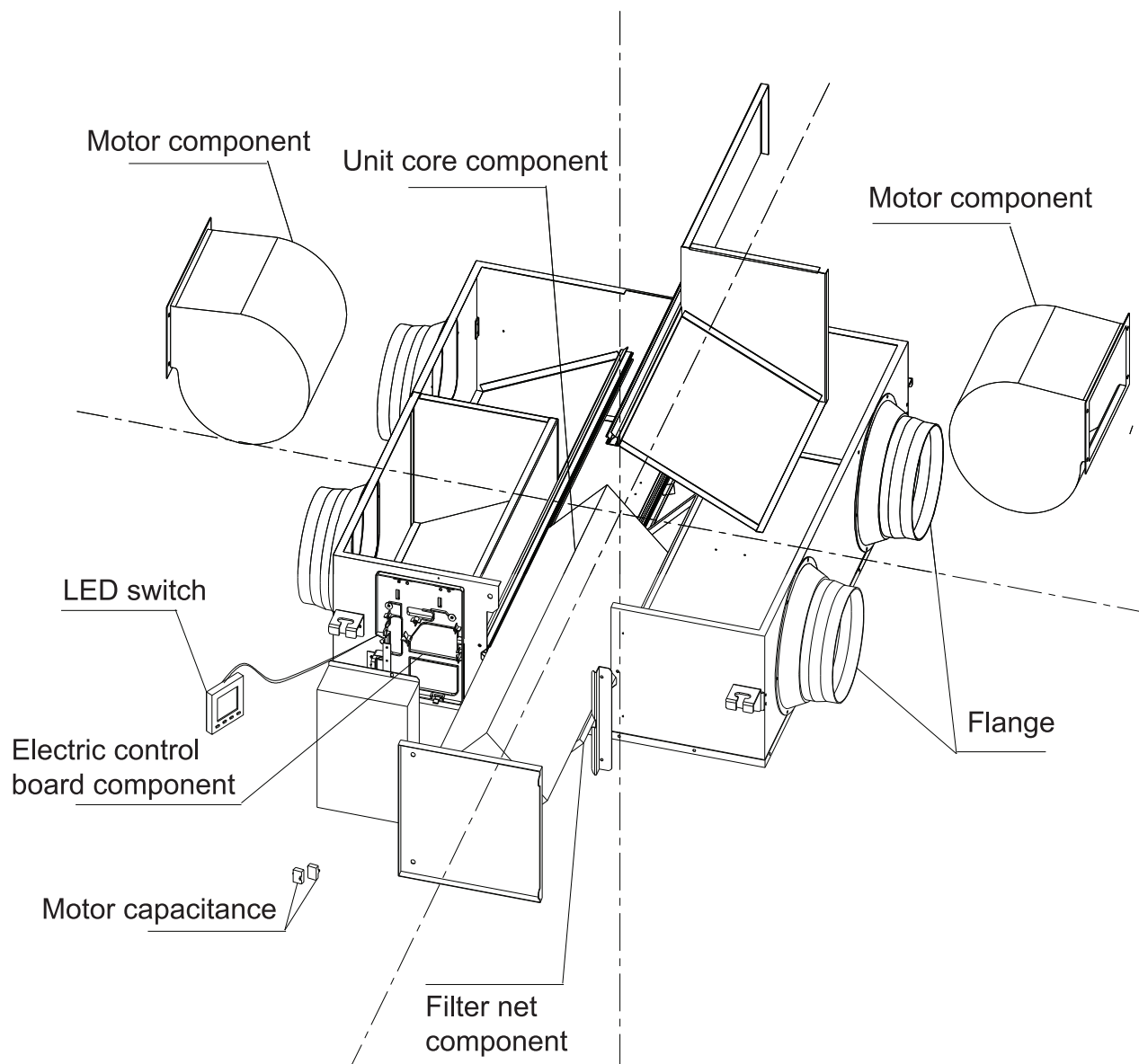
HKF-25B1EC HKF-25B2EC

HKF-35B1EC HKF-35B2EC



Model:

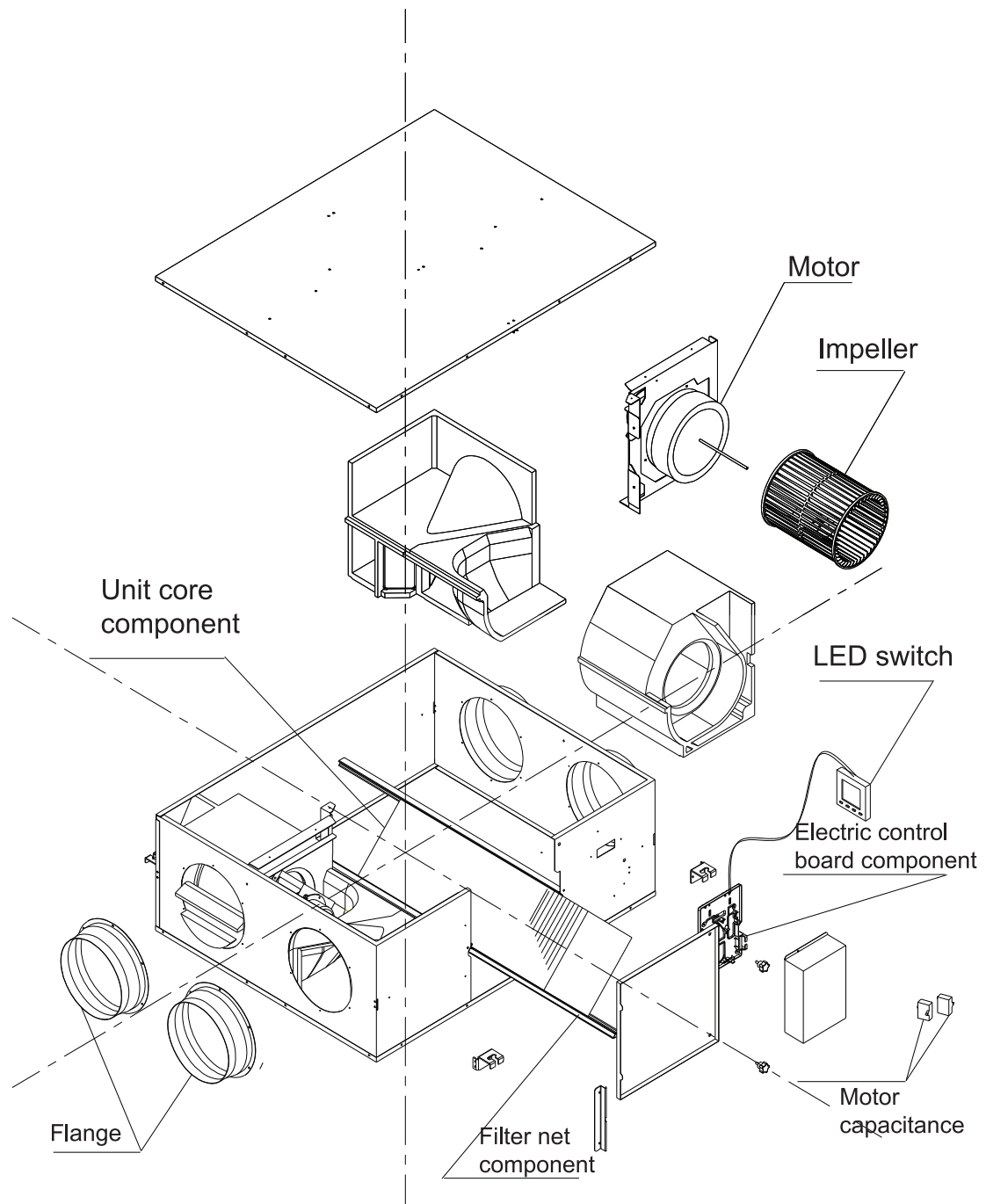
HKF-50B1EC HKF-50B2EC
HKF-100B1EC HKF-100B2EC



Model:

HKF-65B1EC HKF-65B2EC

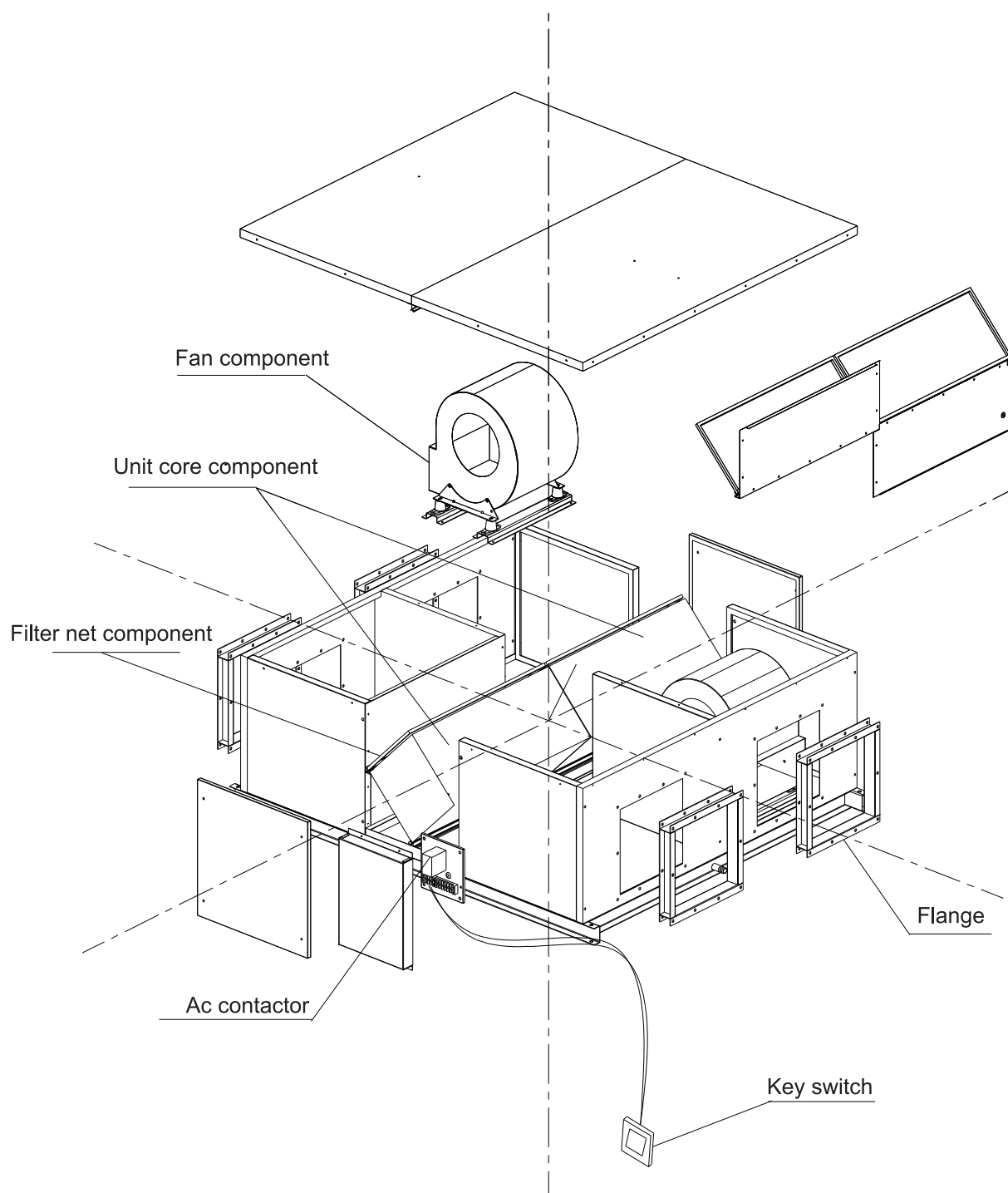
HKF-80B1EC HKF-80B2EC



Model:

HKF-150B1EE HKF-150B2EE

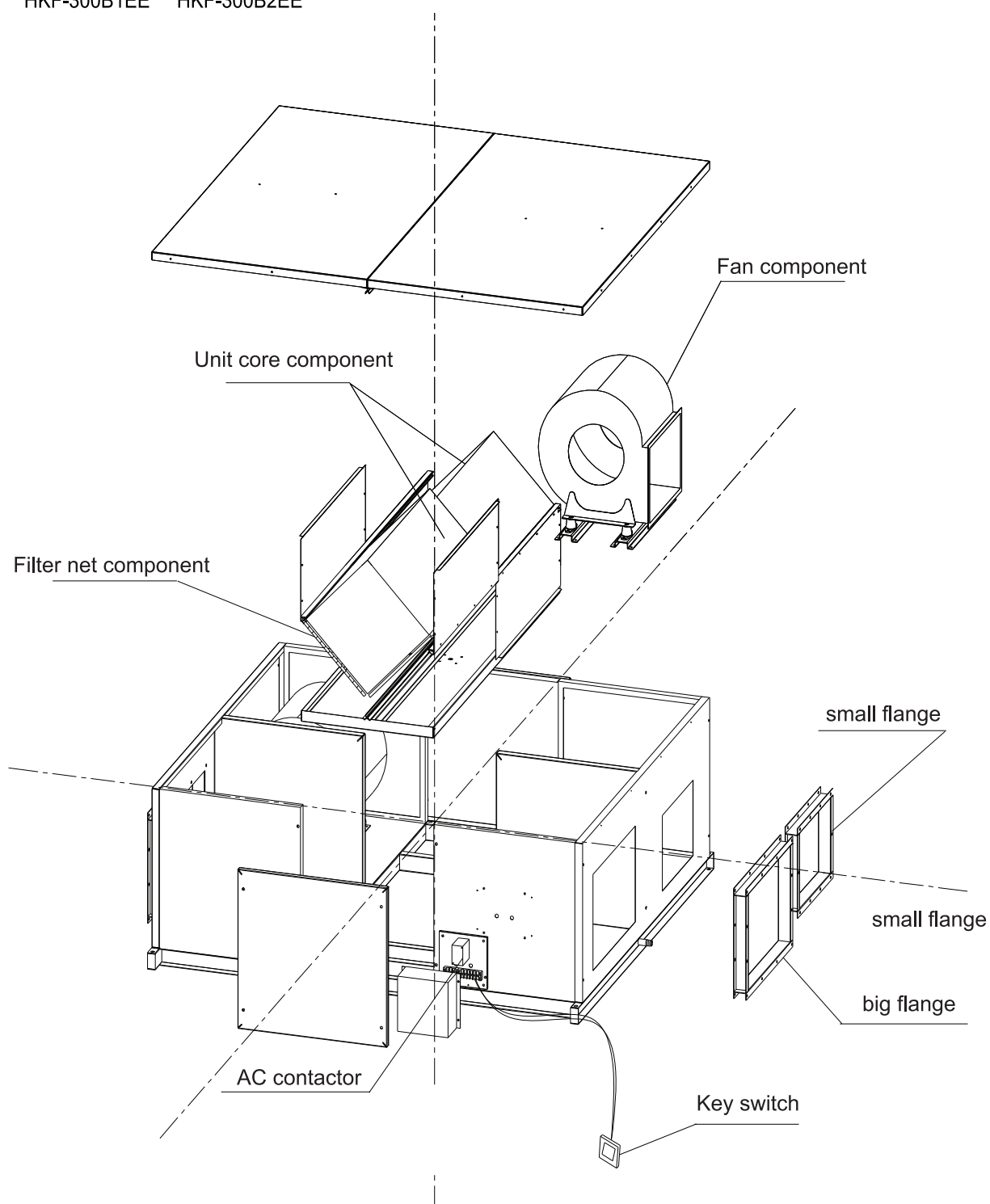
HKF-200B1EE HKF-200B2EE



Model:

HKF-250B1EE HKF-250B2EE

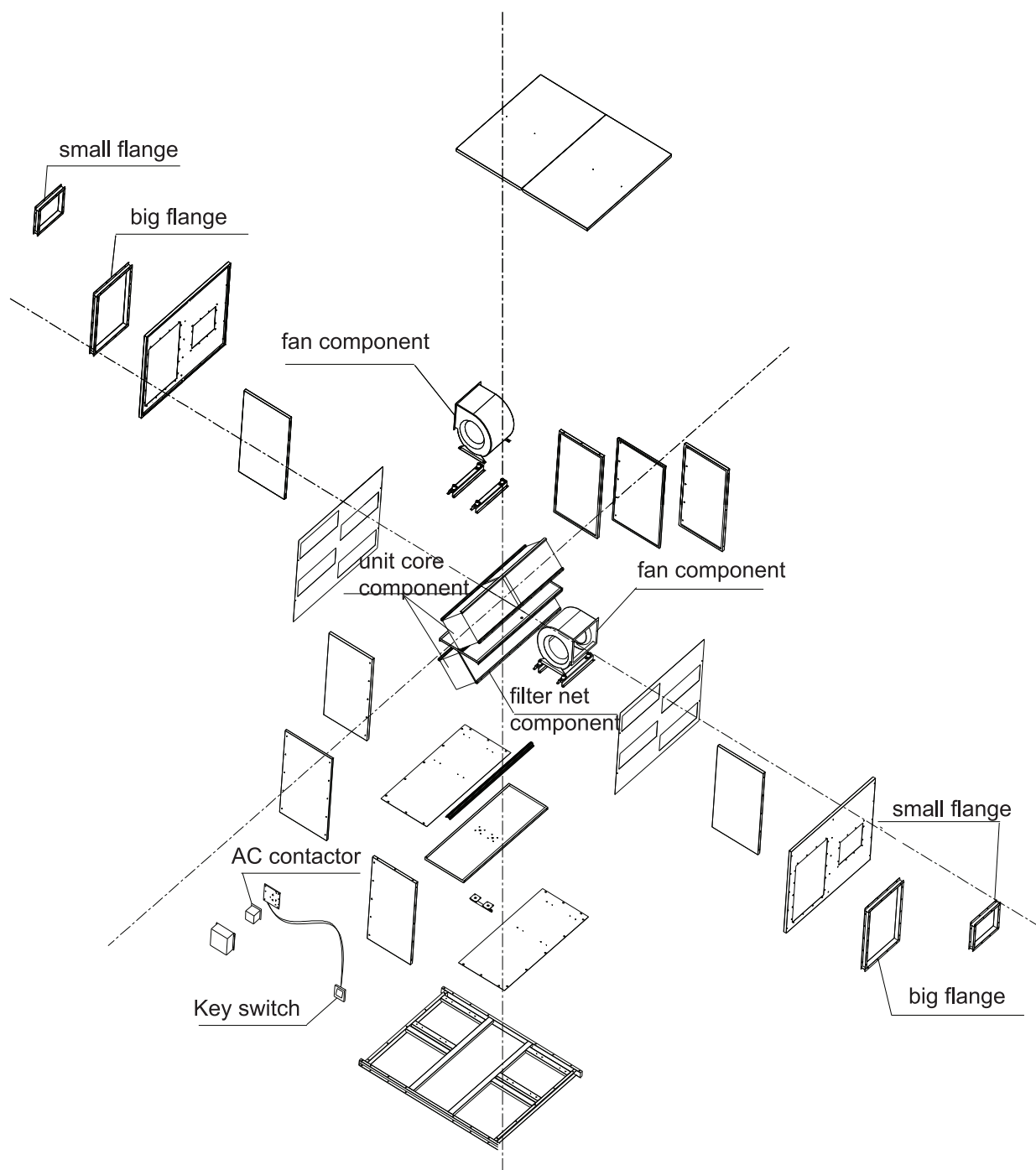
HKF-300B1EE HKF-300B2EE



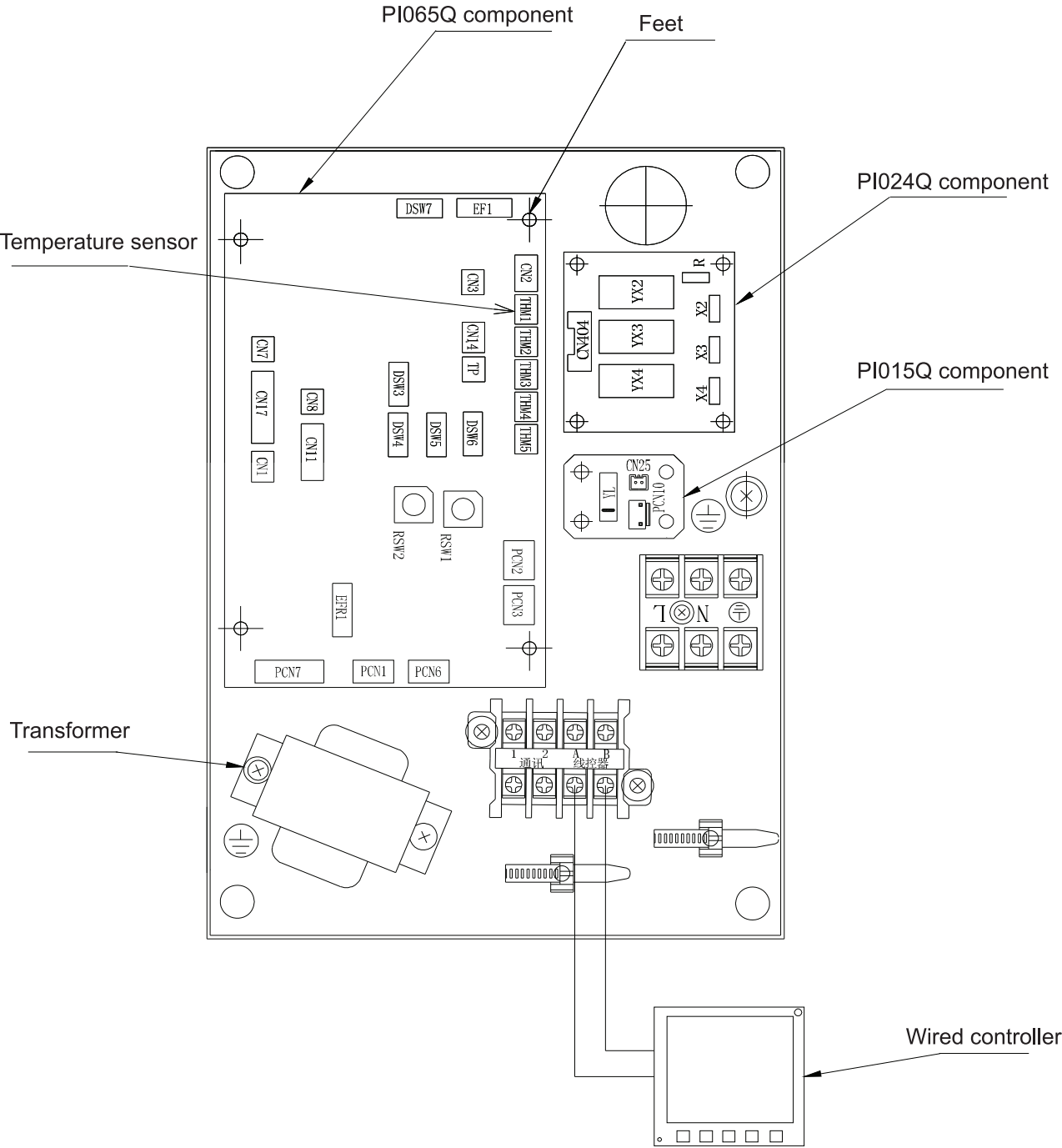
Model:

HKL-400B1EE HKL-400B2EE

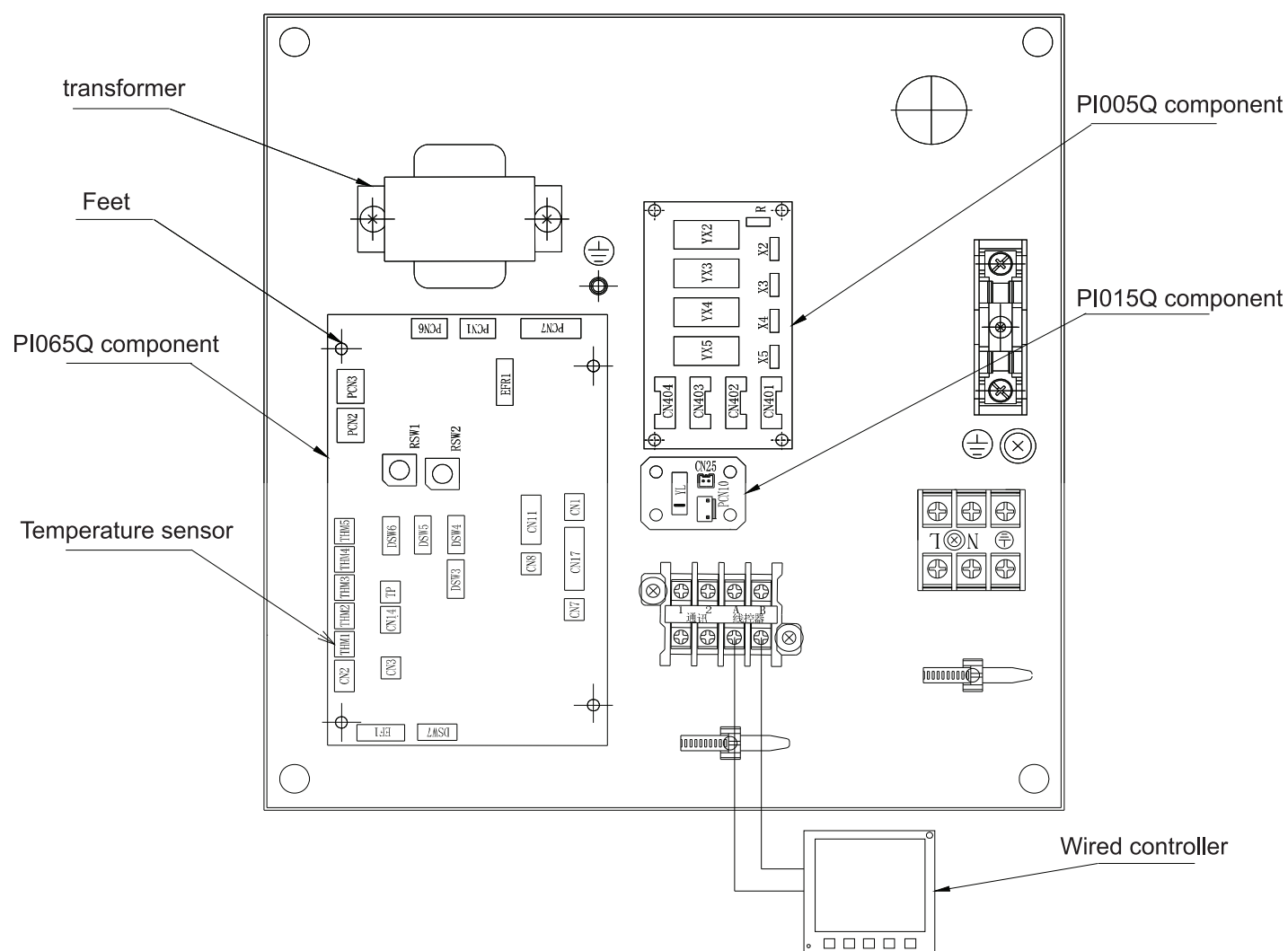
HKL-500B2EE HKL-500B2EE



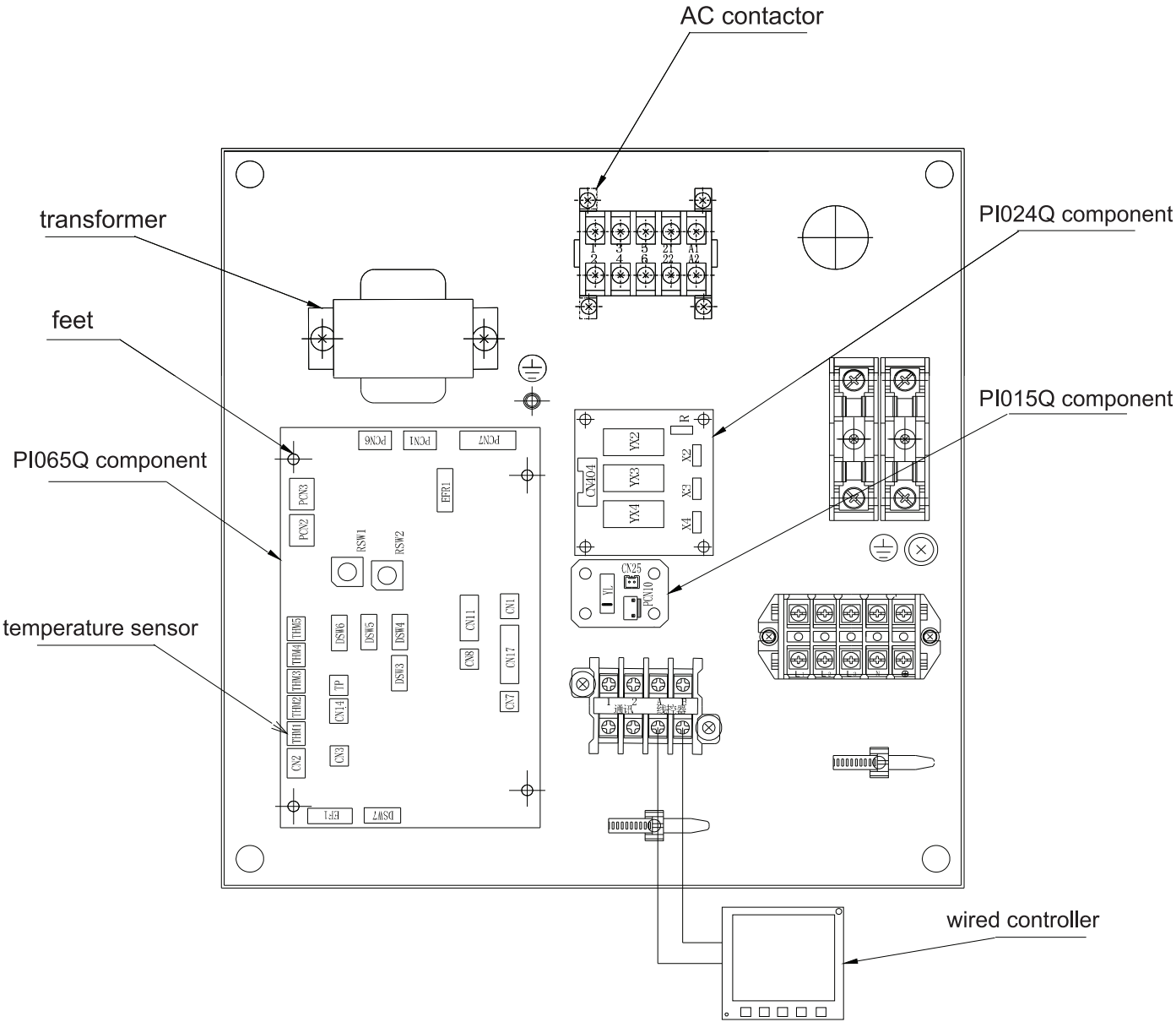
Annex 2: Centralized Control Electric Box of Total Heat Exchanger
HKF-15B2EC-HKF-80B2EC electric box



Centralized Control Electric Box of Total Heat Exchanger
HKF-100B2EC electric box

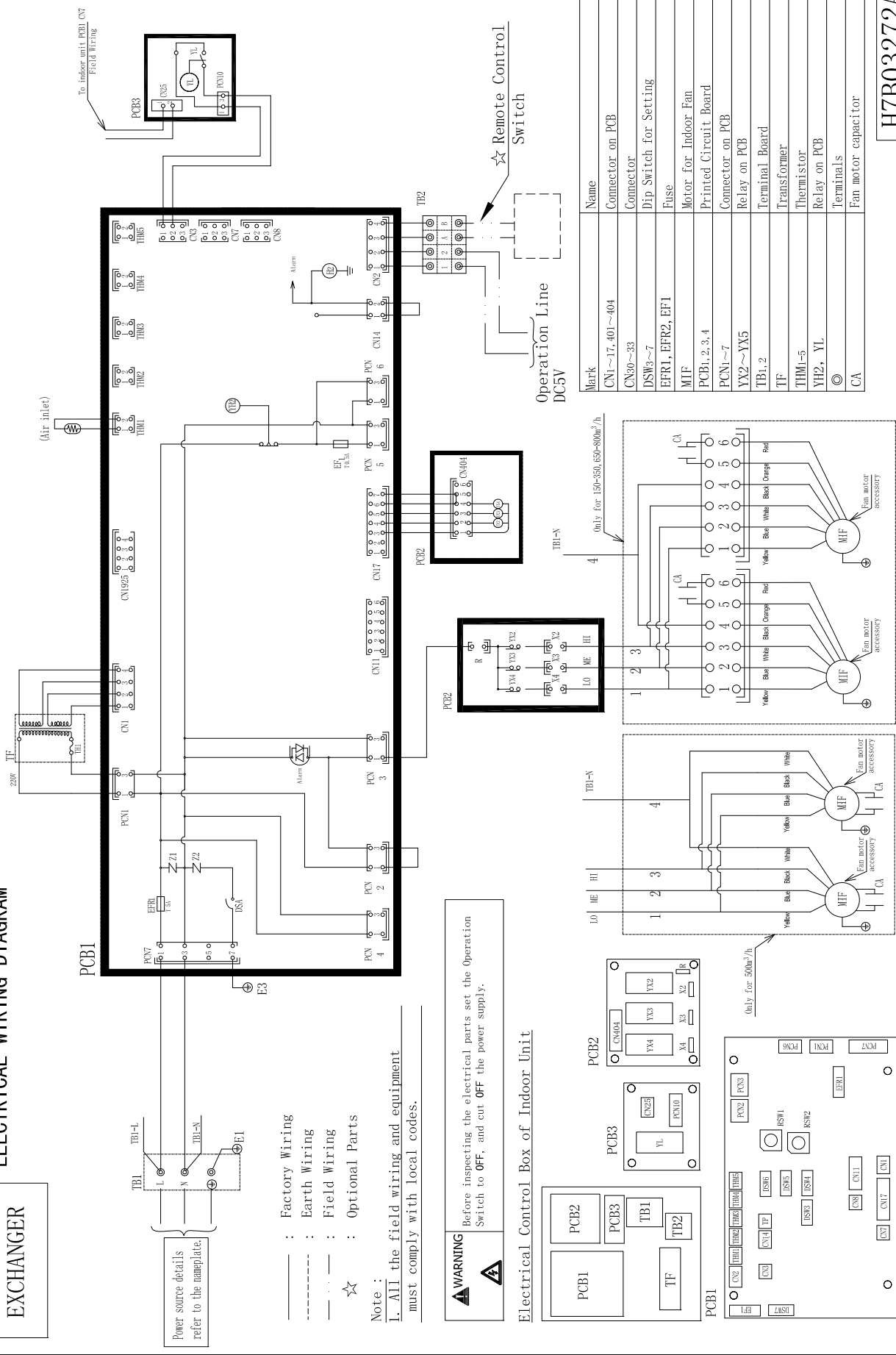


Centralized Control Electric Box of Total Heat Exchanger
HKF-150B2EE-HKL-500B2EE electric box

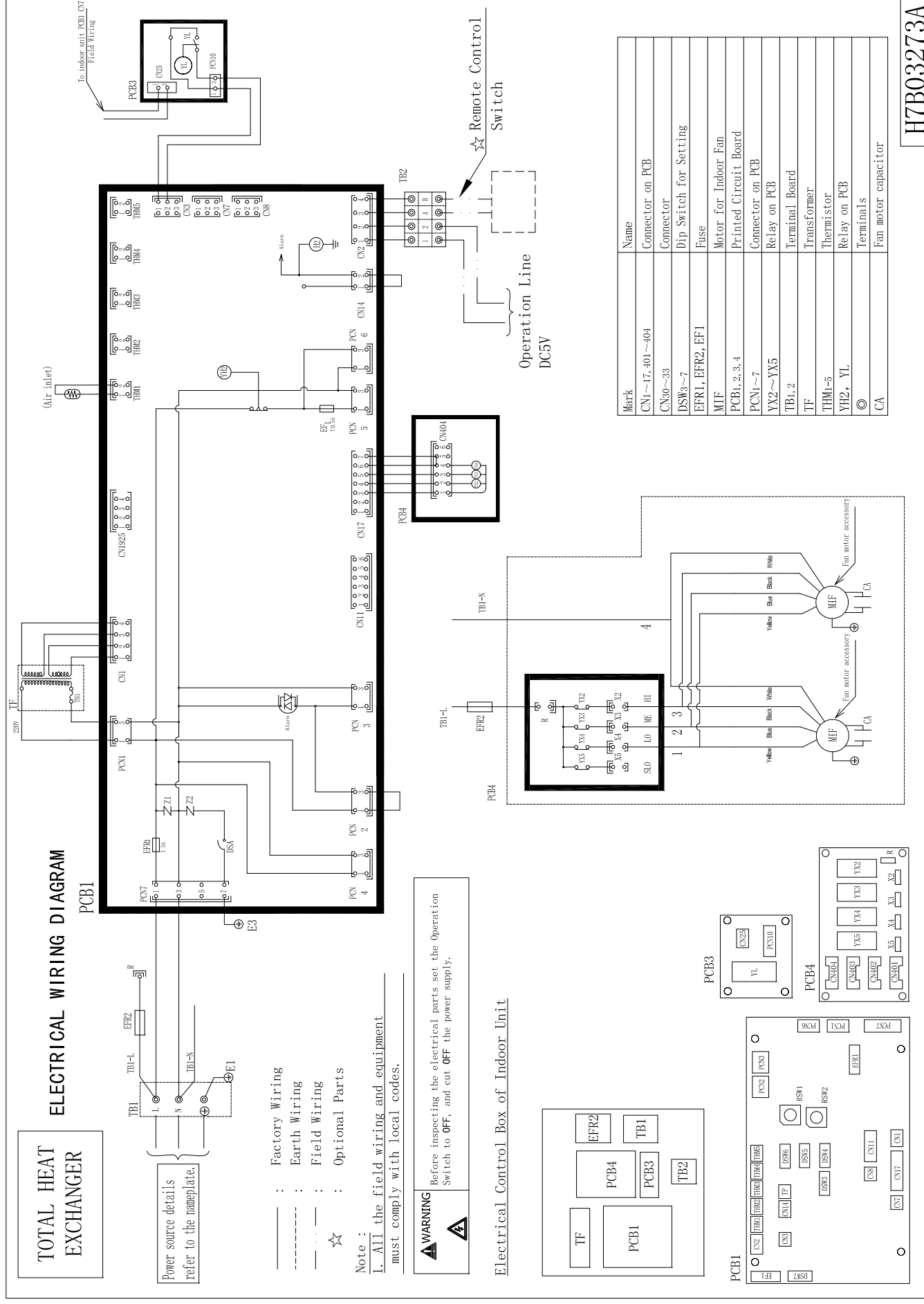


TOTAL HEAT
EXCHANGER

ELECTRICAL WIRING DIAGRAM

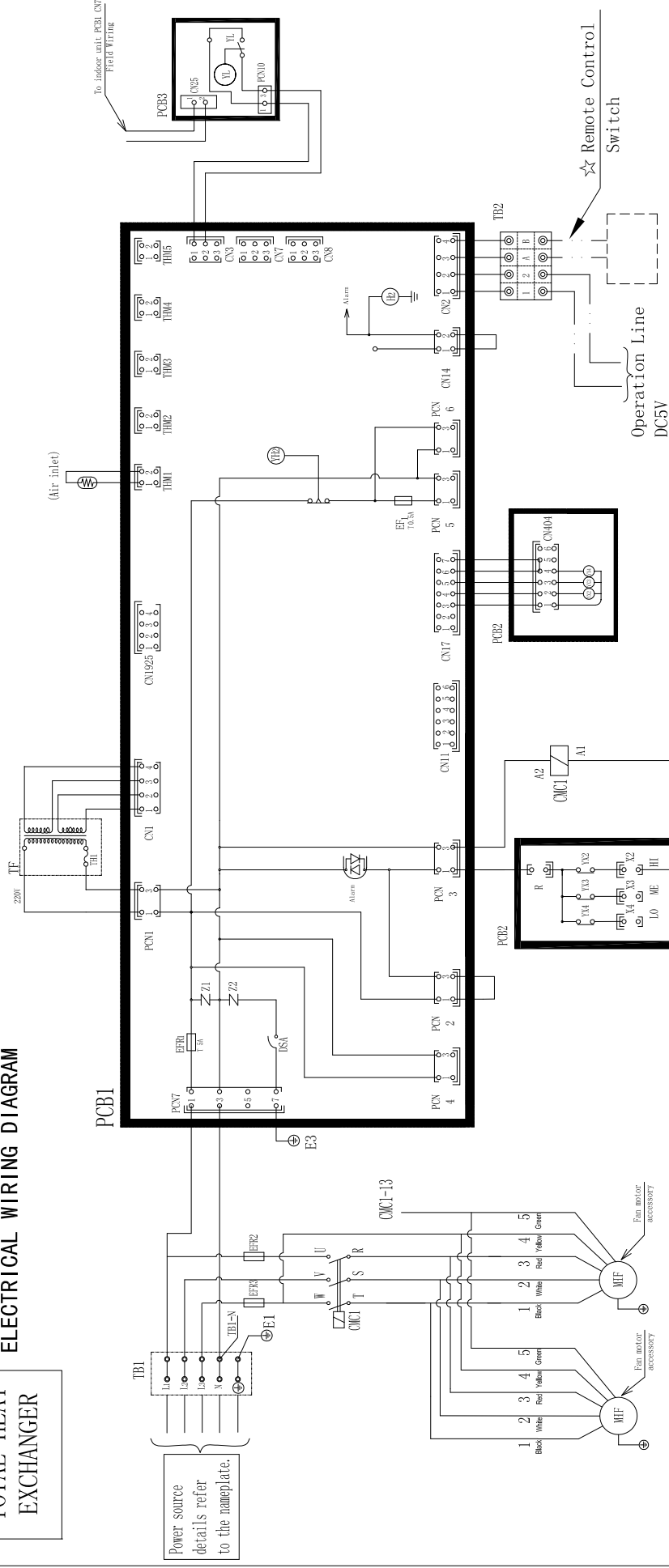


H7B03272A



TOTAL HEAT
EXCHANGER

ELECTRICAL WIRING DIAGRAM



Mark	Name
CN1~17, 401~404	Connector on PCB
CN30~33	Connector
DSW3~7	Dip Switch for Setting
EF1, EFR2, EFR3, EF1	Fuse
MF	Motor for Indoor Fan
PCB1, 2, 3	Printed Circuit Board
PCN1~7	Connector on PCB
YX2~YX4	Relay on PCB
TB1, 2	Terminal Board
TF	Transformer
THM1~5	Thermistor
YH2, YL	Relay on PCB
CWC1	Contact for Compressor Motor
◎	Terminals

_____	:	Factory Wiring
-----	:	Earth Wiring
_____	:	Field Wiring
☆	:	Optional Parts

