

HITACHI	HEAT RECOVERY VENTILATOR	
TECHNICAL CATALOGUE & SERVICE MAUNALL	New Release	

HITACHI

Heat Recovery Ventilator

Model

KPI-20H-A-GQ
 KPI-30H-A-GQ
 KPI-40H-A-GQ
 KPI-50H-A-GQ
 KPI-65H-A-GQ
 KPI-80H-A-GQ
 KPI-100H-A-GQ
 KPI-125H-A-GQ
 KPI-150H-E-GQ
 KPI-200H-E-GQ
 KPI-250H-E-GQ
 KPI-300H-E-GQ
 KPF-400H-E-GQ
 KPF-500H-E-GQ

Issue Date:

2021.5

IMPORTANT NOTICE

- HITACHI pursues a policy of continuing improvement in design and performance of products. The right is therefore reserved to vary specifications without notice.
- HITACHI is not responsible for any accidental damages arising from the heat recovery ventilator 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.

NOTES : Useful information for operation and/ or maintenance.

- If you have any questions, contact your distributor or dealer of HITACHI.
- Please install the heat recovery ventilator according to the local standards.
- Service conditions
 - Outdoor air conditions
Temperature range: -10°C ~ 52°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.

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 indoor 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.

NOTES:

- 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.

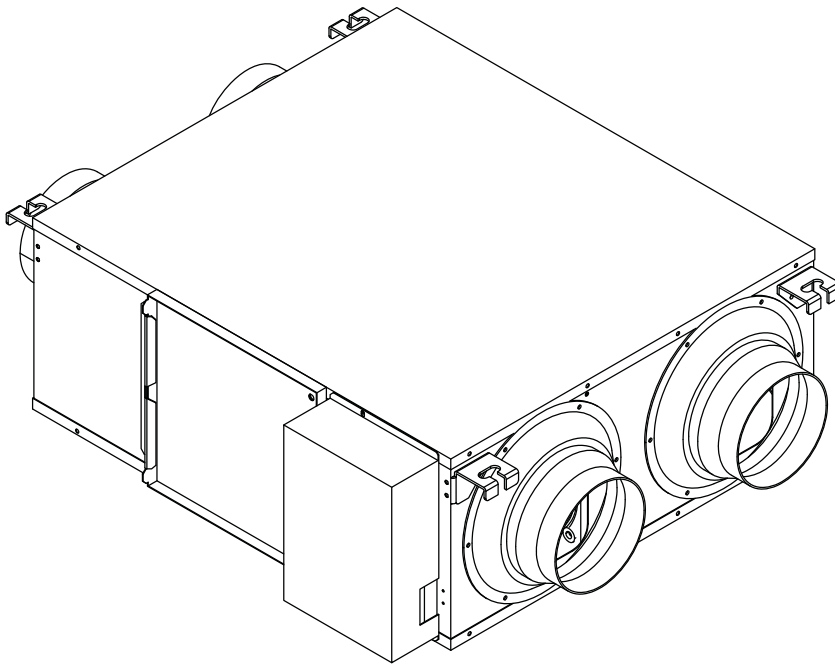


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Design Part

1. Introduction to Heat Recovery Ventilator

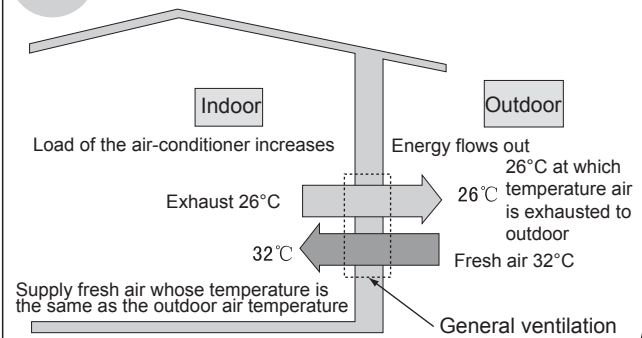
1.1 Energy Saving Characteristic of Heat Recovery Ventilator

The heat recovery ventilator 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.

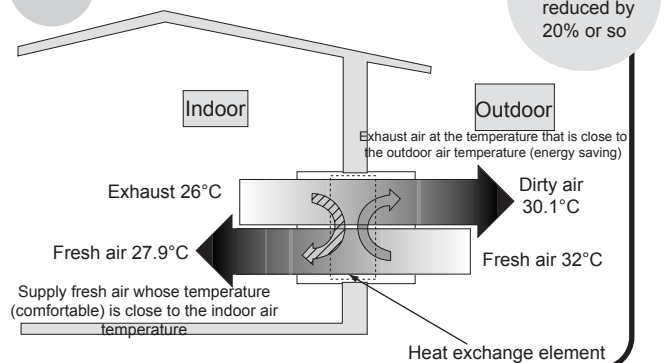
Summer



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.

Summer

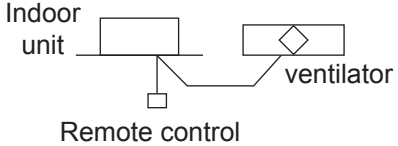
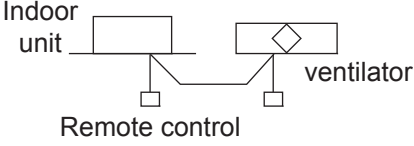


1.2 Working Mode of Heat Recovery Ventilator

1.2.1 Separate running

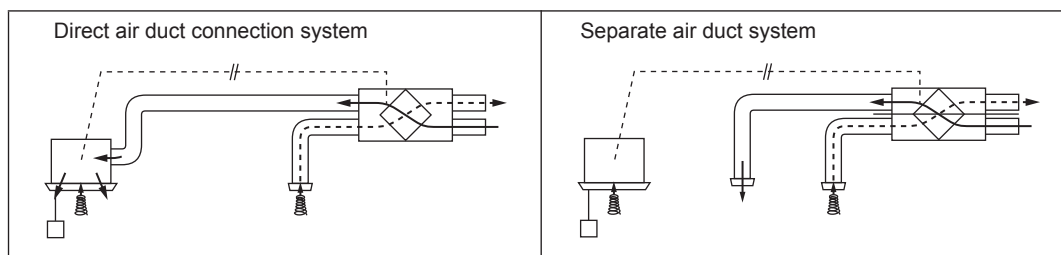
1.2.2 Joint running with indoor unit of on-line system

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	 Indoor unit Remote control ventilator	 Indoor unit Remote control ventilator
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 heat recovery ventilator to air-conditioner centralized control system in the building

Example of installation:



2. Performance Parameters of Heat Recovery Ventilator

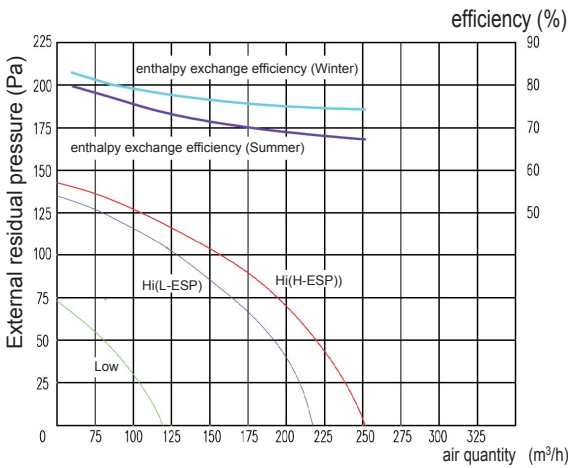
2.1 Parameter List

Model			Unit	KPI-20 H-A-GQ	KPI-30 H-A-GQ	KPI-40 H-A-GQ	KPI-50 H-A-GQ	KPI-65 H-A-GQ	KPI-80 H-A-GQ	KPI-100 H-A-GQ	KPI-125 H-A-GQ
Power				220V ~ 50Hz							
Enthalpy Exchange Efficiency	Cooling	Hi(H-ESP)	%	69	63	64	63	57	60	58	53
		Hi(L-ESP)		69	63	64	63	57	60	58	53
		Lo		76	70	69	65	60	63	63	61
	Heating	Hi(H-ESP)		75	70	70	69	65	70	66	63
		Hi(L-ESP)		75	70	70	69	65	70	66	63
		Lo		78	75	75	71	70	72	69	72
Operating current	Hi(H-ESP)	A	0.6	0.8	1.1	1.6	1.72	2.04	2.35	3.03	
	Hi(L-ESP)		0.5	0.8	1	1.5	1.58	1.93	2.09	2.45	
	Lo		0.4	0.6	0.7	1.1	1.31	1.73	1.92	2.18	
Input Power	Hi(H-ESP)	kW	0.125	0.17	0.235	0.32	2×0.188	2×0.207	2×0.25	2×0.308	
	Hi(L-ESP)		0.11	0.16	0.22	0.31	2×0.173	2×0.188	2×0.228	2×0.266	
	Lo		0.075	0.12	0.135	0.24	2×0.142	2×0.165	2×0.205	2×0.237	
Dimension	L	mm	962	962	1112	1112	1119	1119	1119	1250	
	W		735	735	735	735	884	1134	1134	1135	
	H		220	220	220	270	388	388	388	430	
Flange Size		mm	φ144	φ144	φ144	φ194	φ242	φ242	φ242	320×250 + 320×250	
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 Flow	Hi(H-ESP)	m³/h	200	300	400	500	650	800	1000	1250
		Hi(L-ESP)		200	300	400	500	650	800	1000	1250
		Lo		100	190	230	350	550	650	700	800
	Pressure	Hi(H-ESP)	Pa	70	90	100	140	130	130	165	100
		Hi(L-ESP)		40	60	75	110	100	100	120	50
		Lo		30	50	50	50	100	90	60	30
Total Pressure		Pa	77	106	128	153	139	144	187	111	
Operating Noise	Hi(H-ESP)	dB	32	36	39	40	40	40	43	42	
	Hi(L-ESP)		30	34	37	38	38	38	42	40	
	Lo		25	28	30	31	35	34	34	37	
Net Weigh		kg	38	40	45	51	61	69	69	95	
Service Conditions			Outdoor air conditions :10℃ ~ 52℃ , 85%RH or below; Indoor air conditions :10℃ ~ 45℃ , 85%RH or below.								

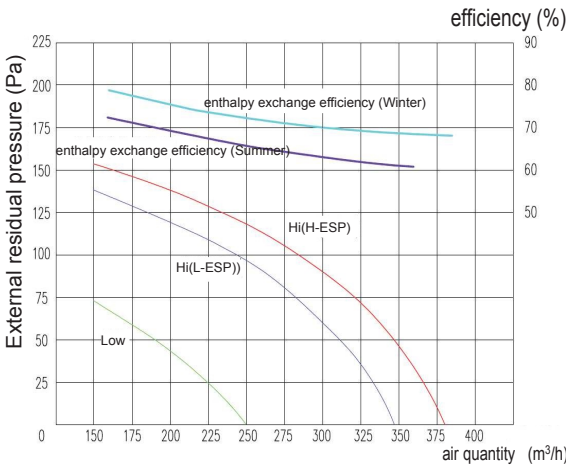
Model			Unit	KPI-150 H-E-GQ	KPI-200 H-E-GQ	KPI-250 H-E-GQ	KPI-300 H-E-GQ	KPF-400 H-E-GQ	KPF-500 H-E-GQ
Power				380V/3N ~ 50Hz					
Enthalpy Exchange Efficiency	Cooling	Hi(H-ESP)	%	57	57	55	56	55	53
		Hi(L-ESP)		-	-	-	-	-	-
		Lo		-	-	-	-	-	-
	Heating	Hi(H-ESP)		68	68	72	72	63	61
		Hi(L-ESP)		-	-	-	-	-	-
		Lo		-	-	-	-	-	-
Operating current	Hi(H-ESP)	A	2.84	3.08	4.19	5.23	5.57	7.51	
	Hi(L-ESP)		-	-	-	-	-	-	
	Lo		-	-	-	-	-	-	
Input Power	Hi(H-ESP)	kW	2×0.44	2×0.81	2×0.925	2×1.08	2×1.47	2×1.98	
	Hi(L-ESP)		-	-	-	-	-	-	
	Lo		-	-	-	-	-	-	
Dimension	L	mm	1500	1500	1700	1750	1400	1700	
	W		1300	1400	1500	1600	850	850	
	H		536	536	640	640	1655	1730	
Flange Size		mm	400×320 + 400×320	400×320 + 400×320	500×350 + 500×350	500×350 + 500×350	400×320 + 590×320	500×350 + 700×320	
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 Flow	Hi(H-ESP)	m³/h	1500	2000	2500	3000	4000	5000
		Hi(L-ESP)		-	-	-	-	-	-
		Lo		-	-	-	-	-	-
	Pressure	Hi(H-ESP)	Pa	165	160	180	200	220	240
		Hi(L-ESP)		-	-	-	-	-	-
		Lo		-	-	-	-	-	-
Total Pressure		Pa	171	171	189	214	265	278	
Operating Noise	Hi(H-ESP)	dB	50	51	53	54	57	58	
	Hi(L-ESP)		-	-	-	-	-	-	
	Lo		-	-	-	-	-	-	
Net Weigh		kg	144	155	180	220	225	260	
Service Conditions				Outdoor air conditions :10℃ ~ 52℃ , 85%RH or below; Indoor air conditions :10℃ ~ 45℃ , 85%RH or below.					

2.2 Performance Characteristic Curve

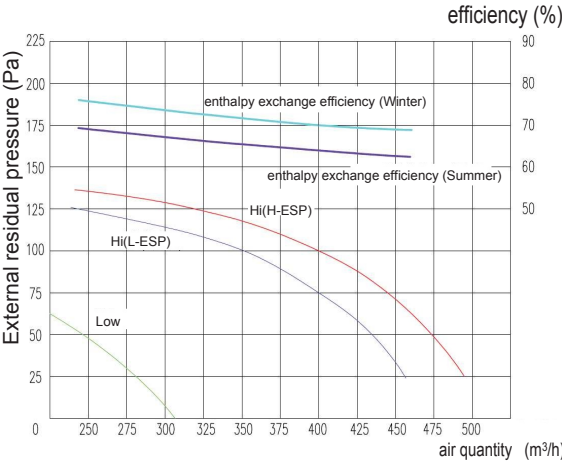
KPI-20H-A-GQ



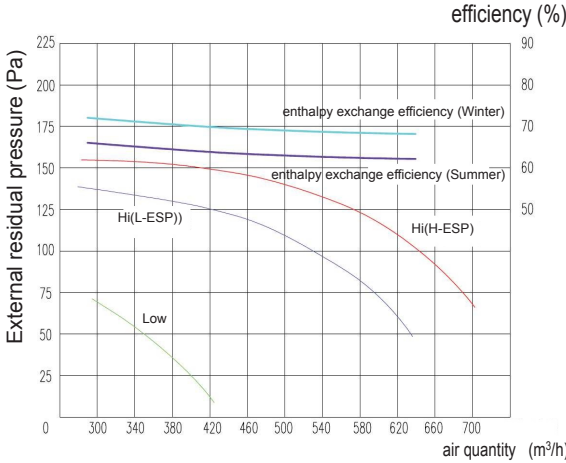
KPI-30H-A-GQ



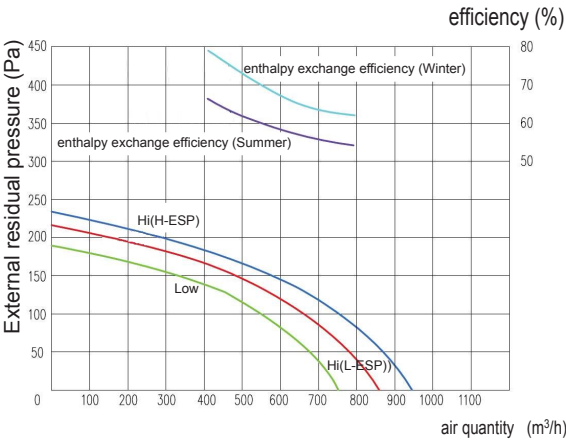
KPI-40H-A-GQ



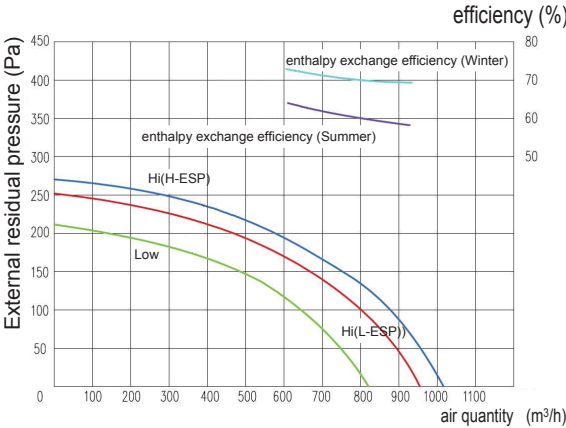
KPI-50H-A-GQ



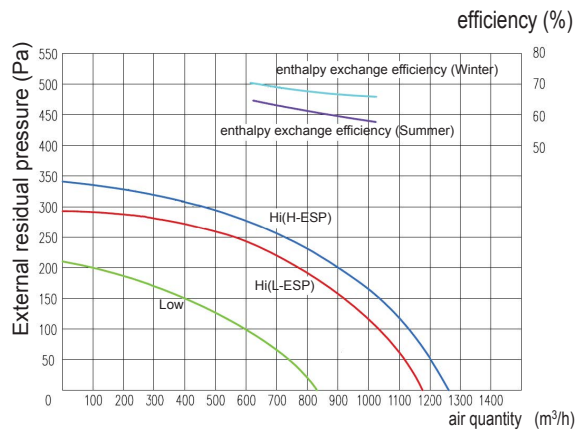
KPI-65H-A-GQ



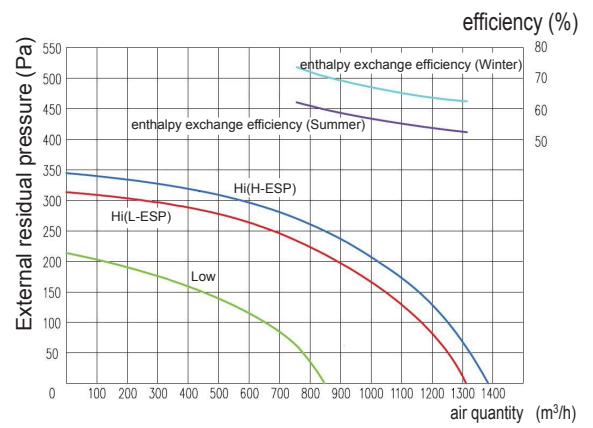
KPI-80H-A-GQ



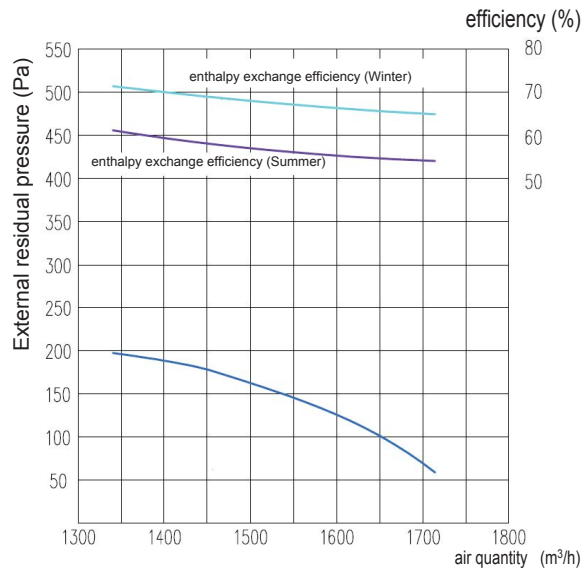
KPI-100H-A-GQ



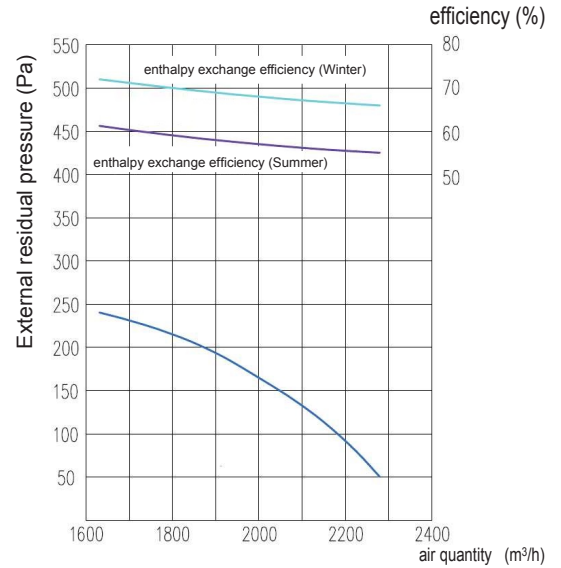
KPI-125H-A-GQ



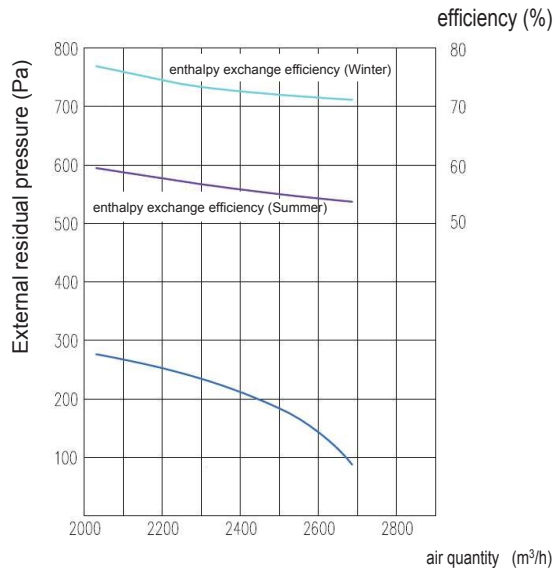
KPI-150H-E-GQ



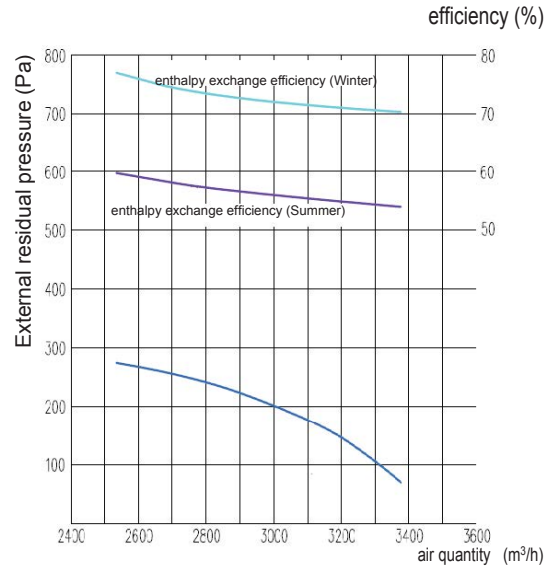
KPI-200H-E-GQ



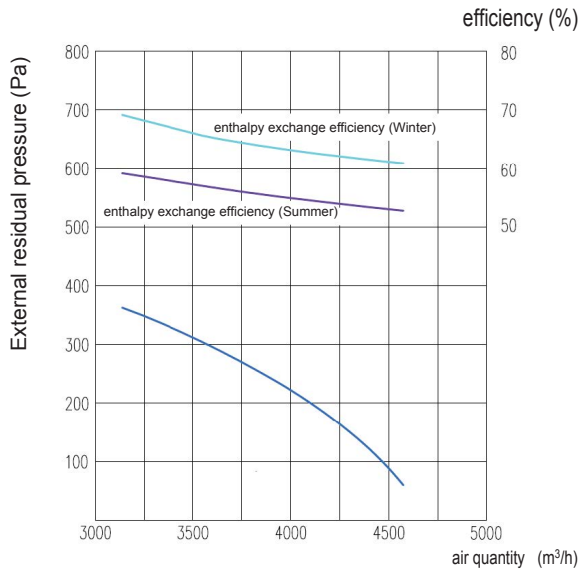
KPI-250H-E-GQ



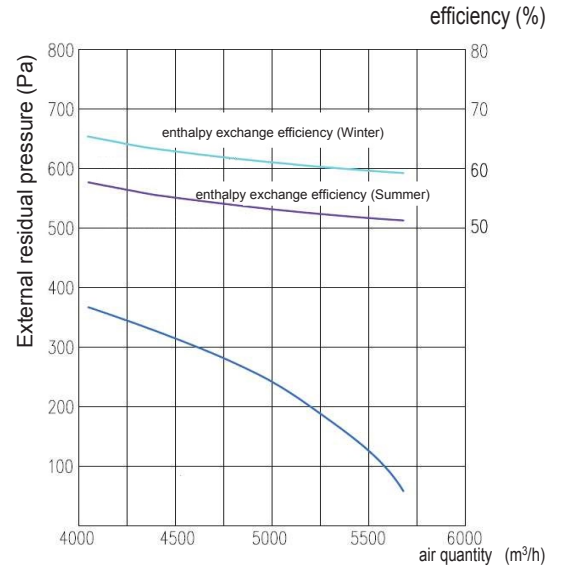
KPI-300H-E-GQ



KPF-400H-E-GQ

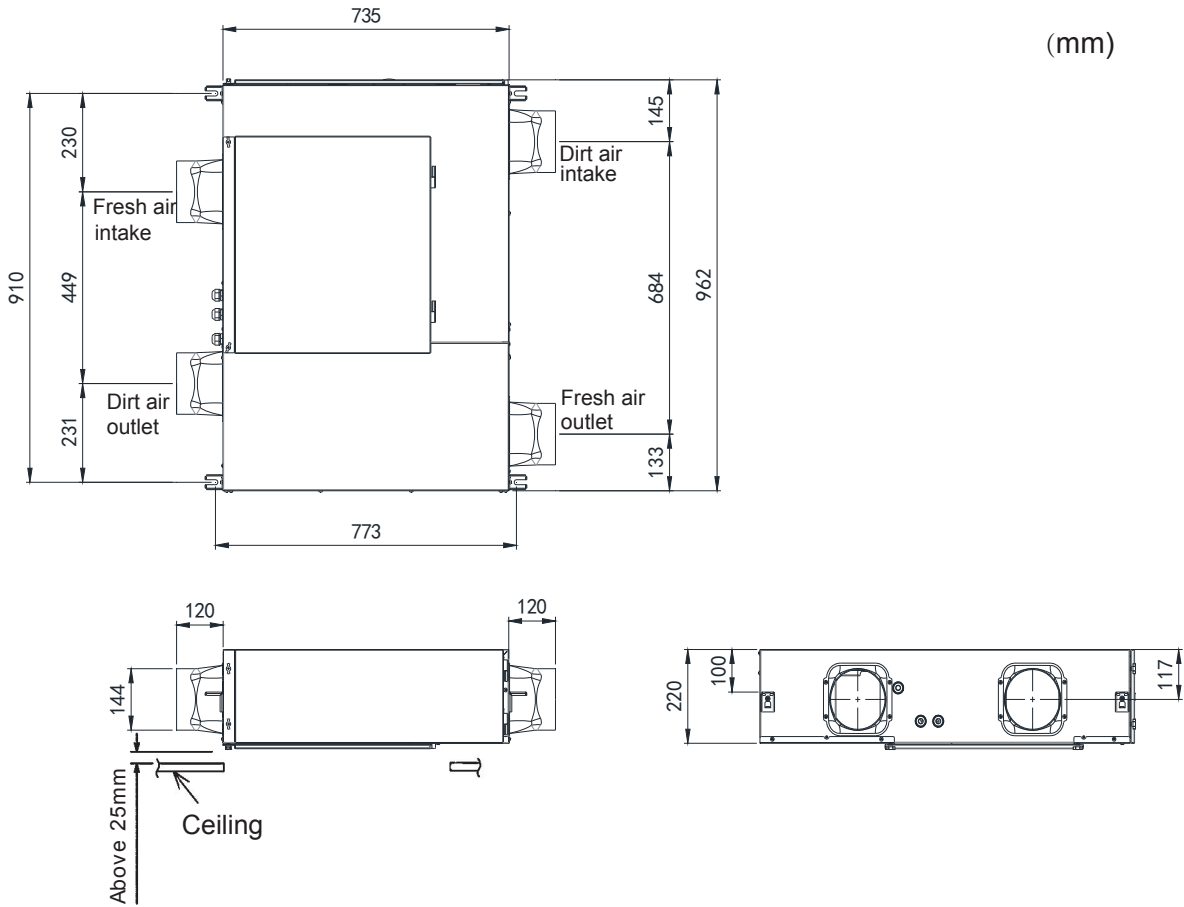


KPF-500H-E-GQ

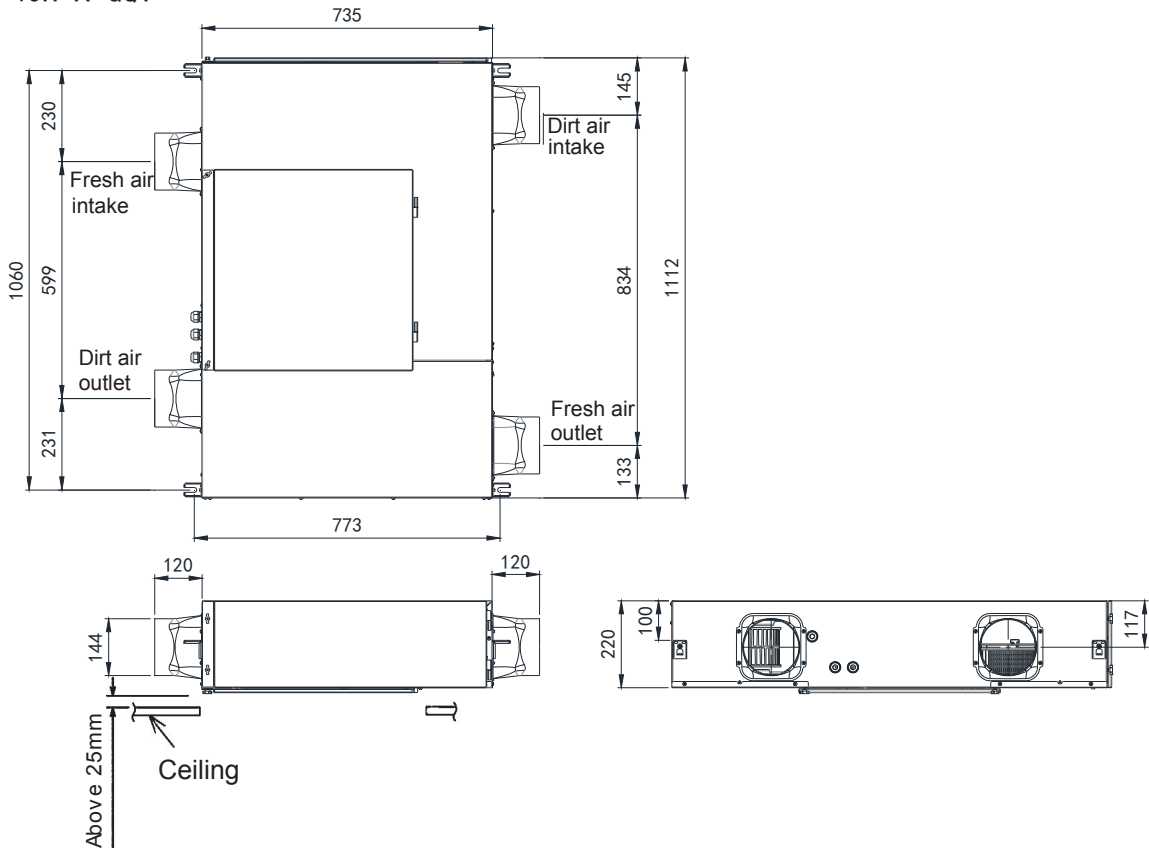


2.3 Structure and Lifting Dimension

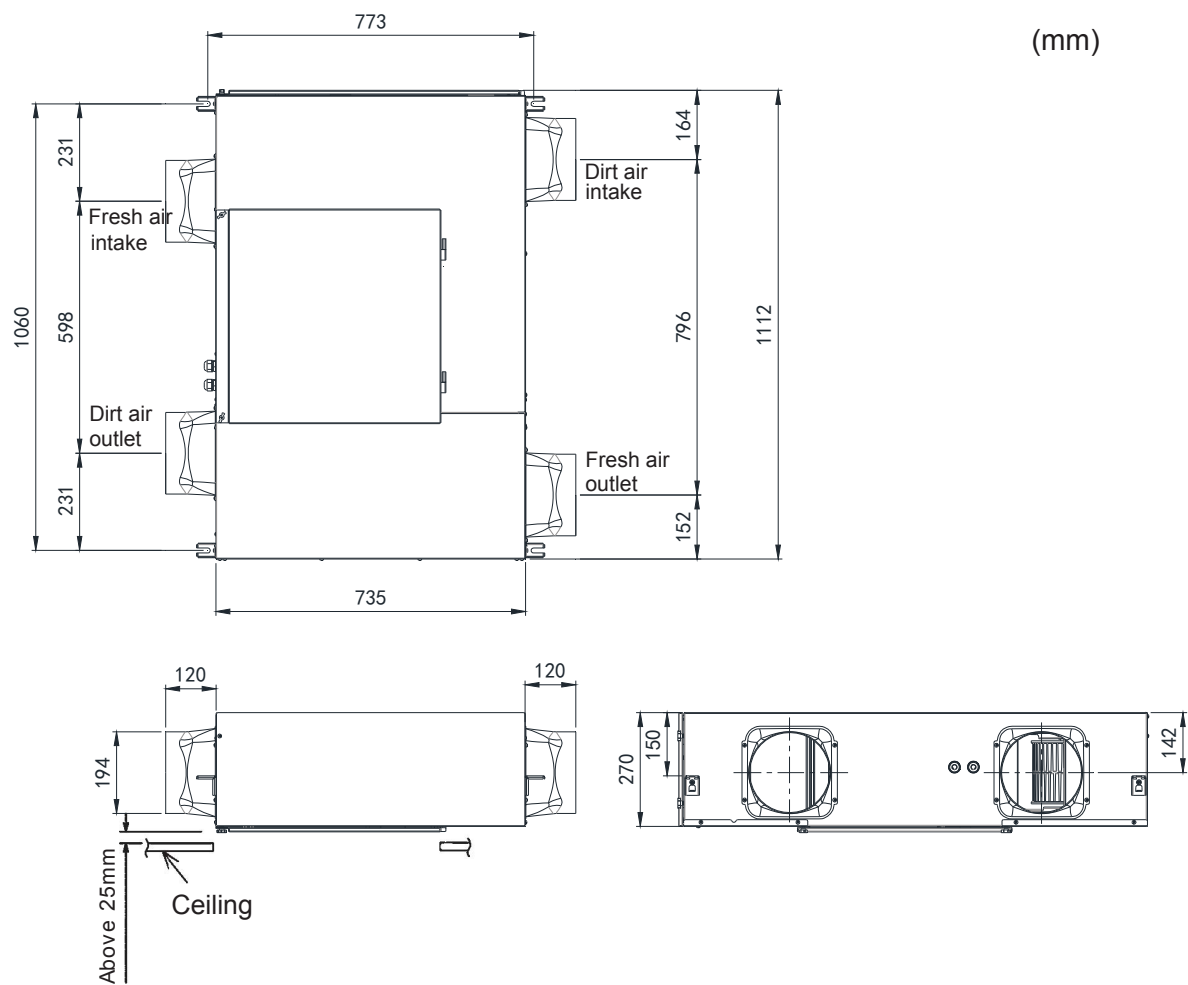
KPI-20H-A-GQ、KPI-30H-A-GQ:



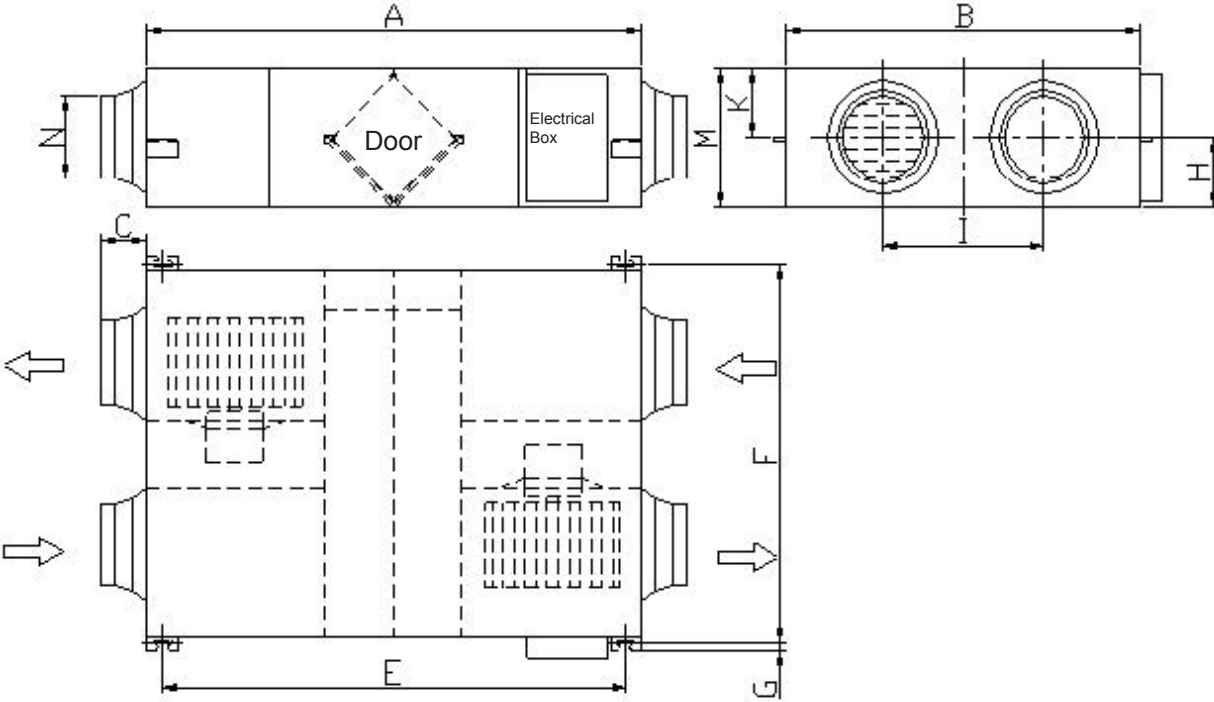
KPI-40H-A-GQ:



KPI-50H-A-GQ:



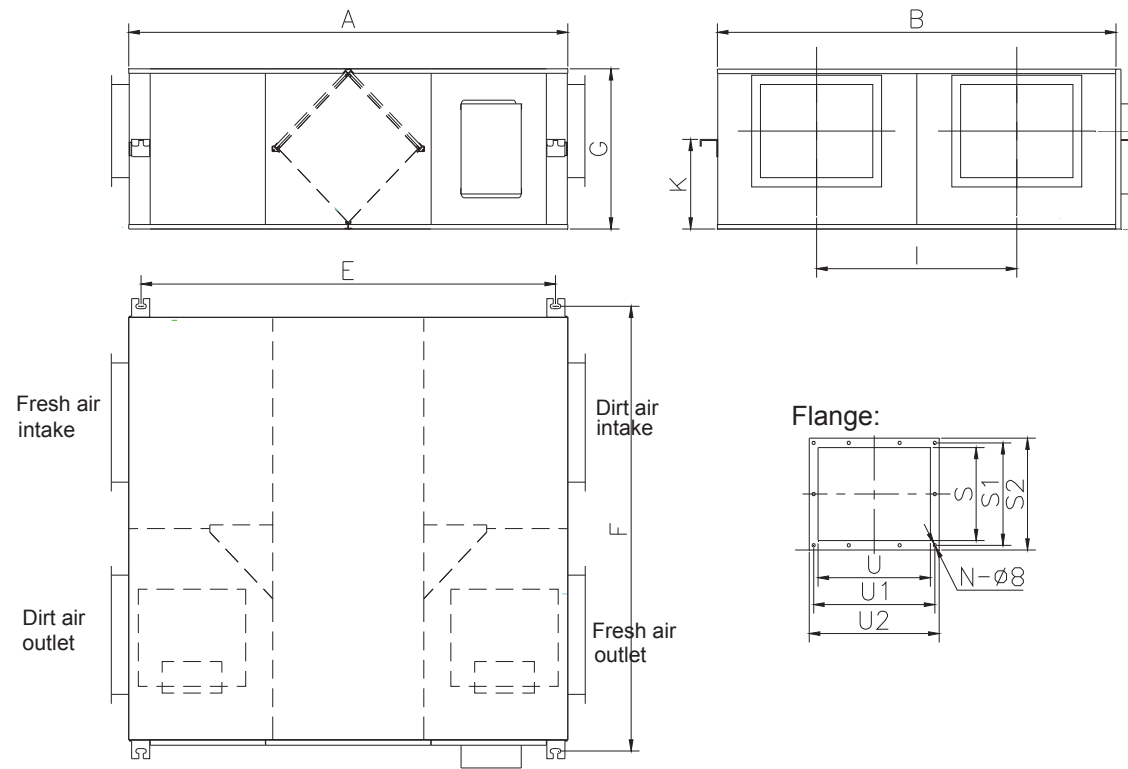
KPI-65H-A-GQ ~ KPI-100H-A-GQ:



(mm)

	A	B	C	E	F	G	I	K	H	M	N
KPI-65H-A-GQ	1119	884	85	1048	940	19	428	170	194	388	Φ 242
KPI-80H-A-GQ	1119	1134	85	1048	1190	19	678	170	194	388	Φ 242
KPI-100H-A-GQ	1119	1134	85	1048	1190	19	678	170	194	388	Φ 242

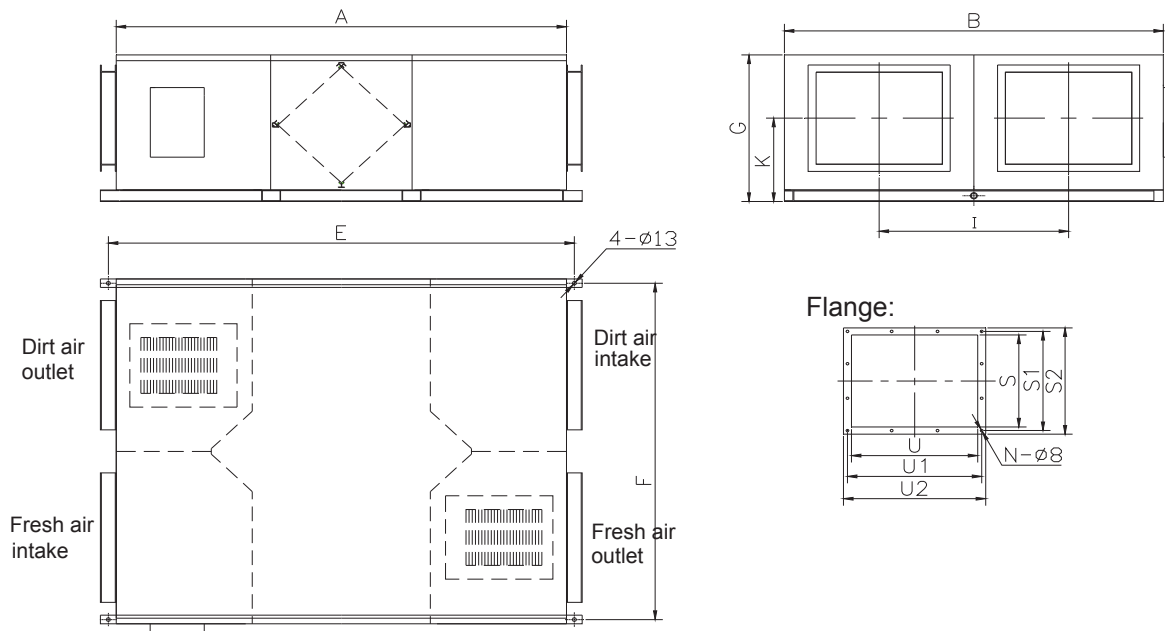
KPI-125H-A-GQ:



(mm)

	A	B	E	F	G	I	K	H	S	S1	S2	U	U1	U2	N
KPI-125H-A-GQ	1250	1135	1180	1194	430	570	240.5	263	250	275	300	320	345	370	10

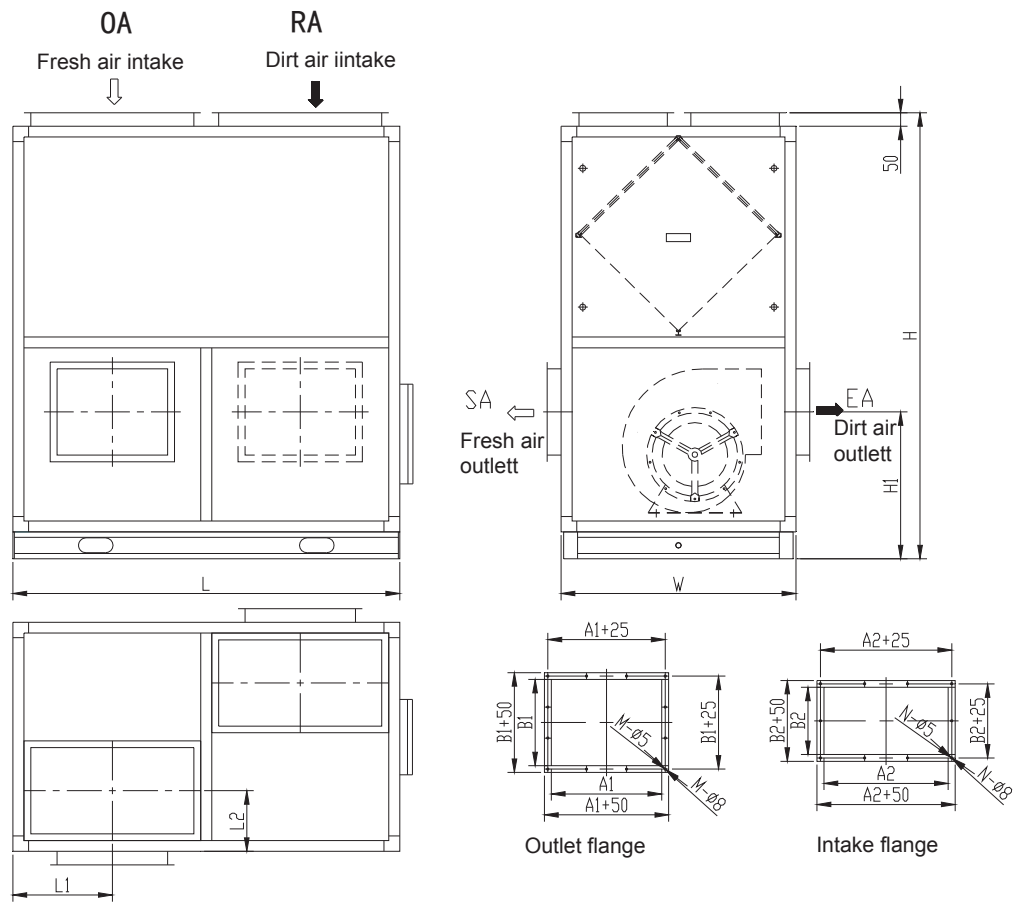
KPI-150H-E-GQ ~ KPI-300H-E-GQ:



(mm)

	A	B	E	F	G	I	K	S	S1	S2	U	U1	U2	N
KPI-150H-E-GQ	1500	1300	1550	1270	536	650	326	400	425	450	320	345	370	12
KPI-200H-E-GQ	1500	1400	1550	1370	536	700	326	400	425	450	320	345	370	12
KPI-250H-E-GQ	1700	1500	1750	1470	640	750	395	500	525	550	350	375	400	12
KPI-300H-E-GQ	1750	1600	1800	1570	680	800	395	500	525	550	350	375	400	12

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



(mm)

	L	L1	L2	W	H	H1	A1	B1	A2	B2	M	N
KPF-400H-E-GQ	1400	360	225	850	1655	545	400	320	590	320	12	12
KPF-500H-E-GQ	1700	435	225	850	1730	570	500	350	700	320	14	16

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.

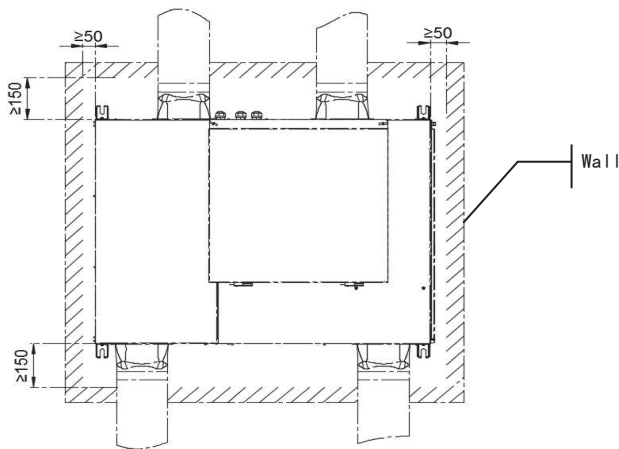
Accessories

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

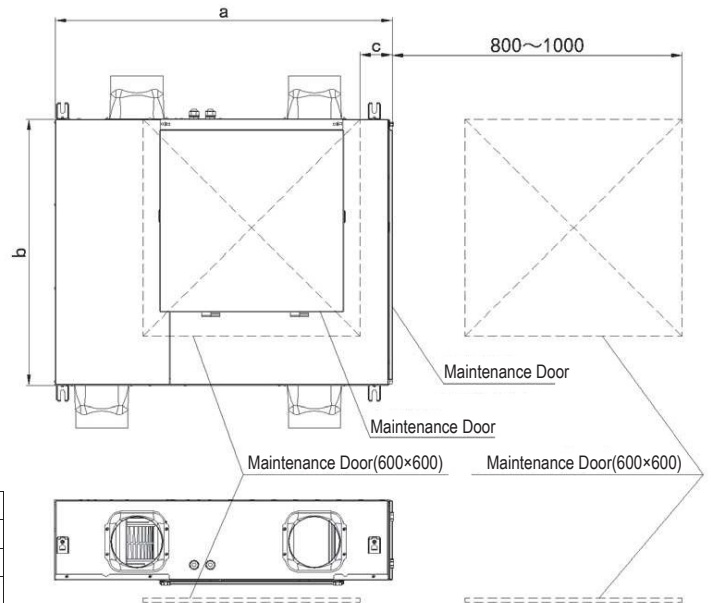
3.4.2 Initial Check

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

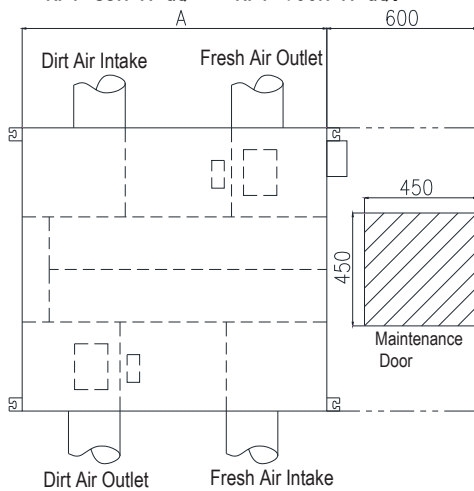
KPI-20H-A-GQ ~ KPI-50H-A-GQ



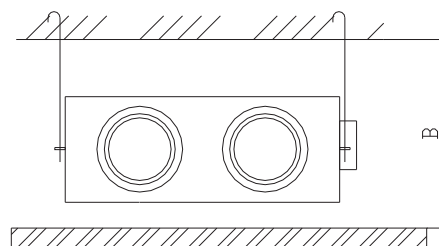
	a	b	c
KPI-20H-A-GQ	950	735	77
KPI-30H-A-GQ	950	735	77
KPI-40H-A-GQ	1100	735	225
KPI-50H-A-GQ	1100	735	225



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

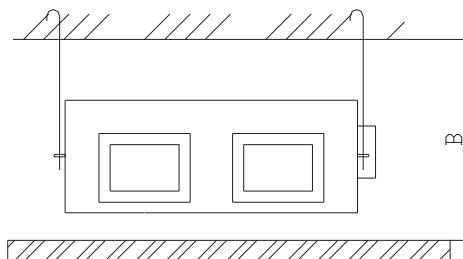
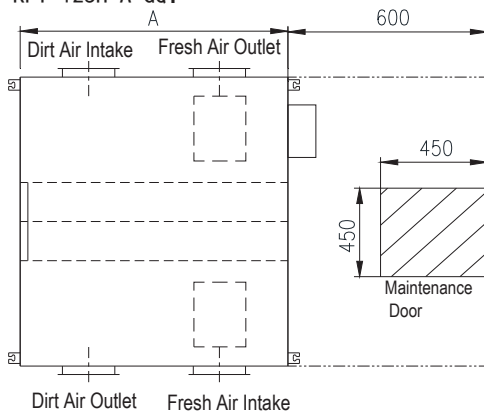


(mm)



	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

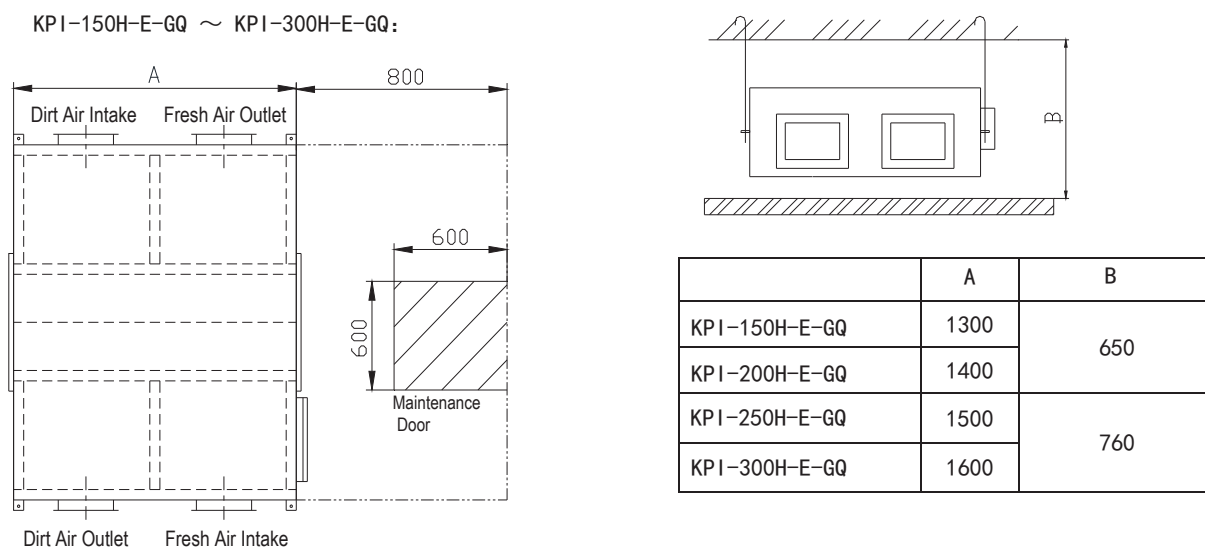


Fig. 3.1 Operation and Maintenance Space

⚠ 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

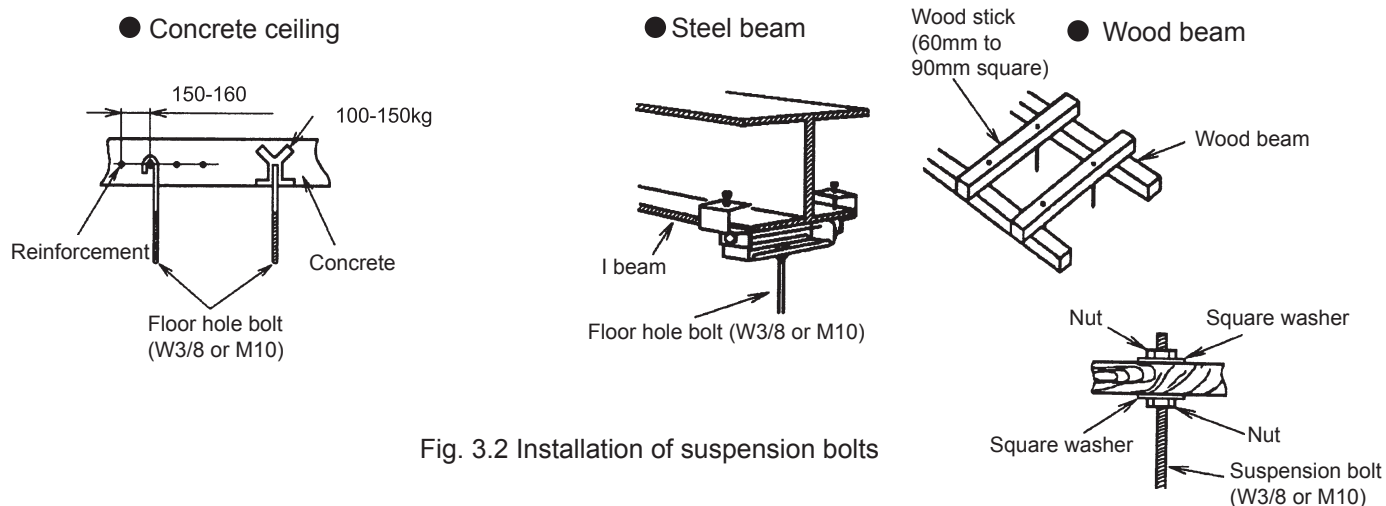


Fig. 3.2 Installation of suspension bolts

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.

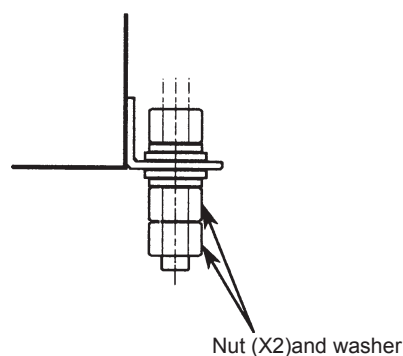


Fig. 3.3 Suspension method

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

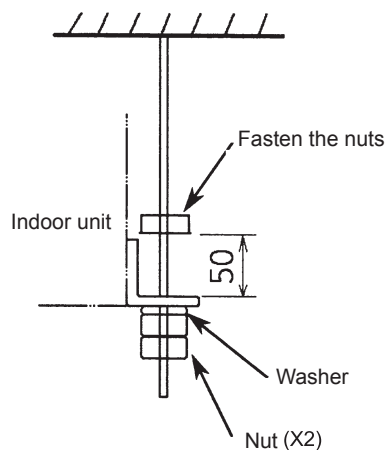


Fig. 3.4 Suspension bolts and nuts

- 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)

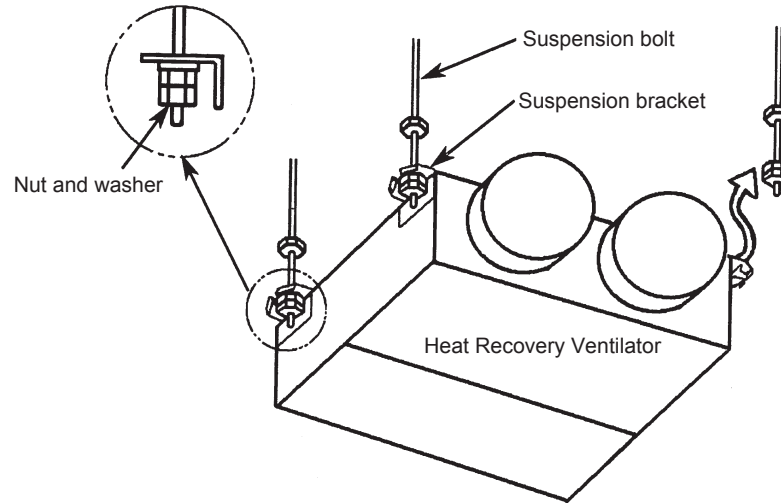


Fig. 3.5 Suspension Method

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.

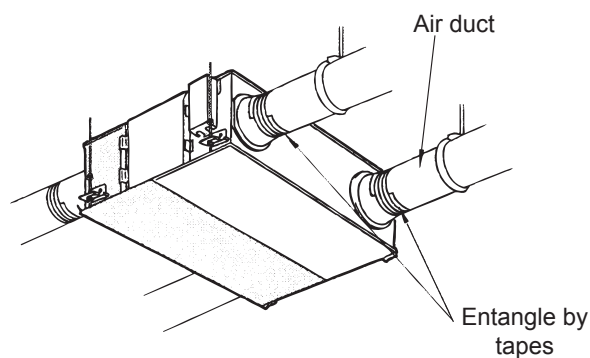


Fig. 3.6 Air Duct Connection

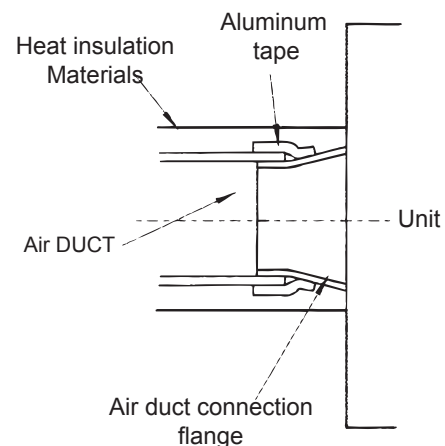


Fig. 3.7 Heat Insulation Treatment

⚠ 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



Repeated bending



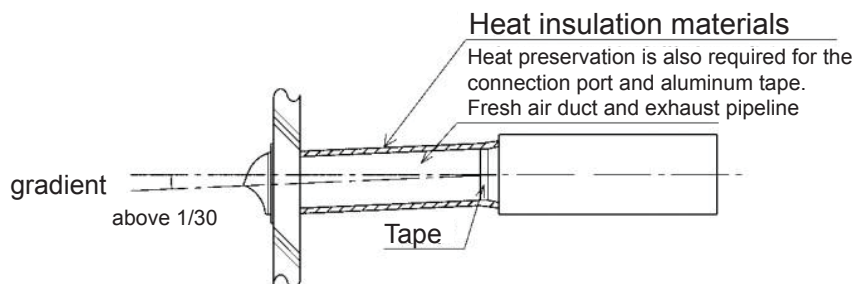
Bending near the air inlet



Shorten the diameter of air duct



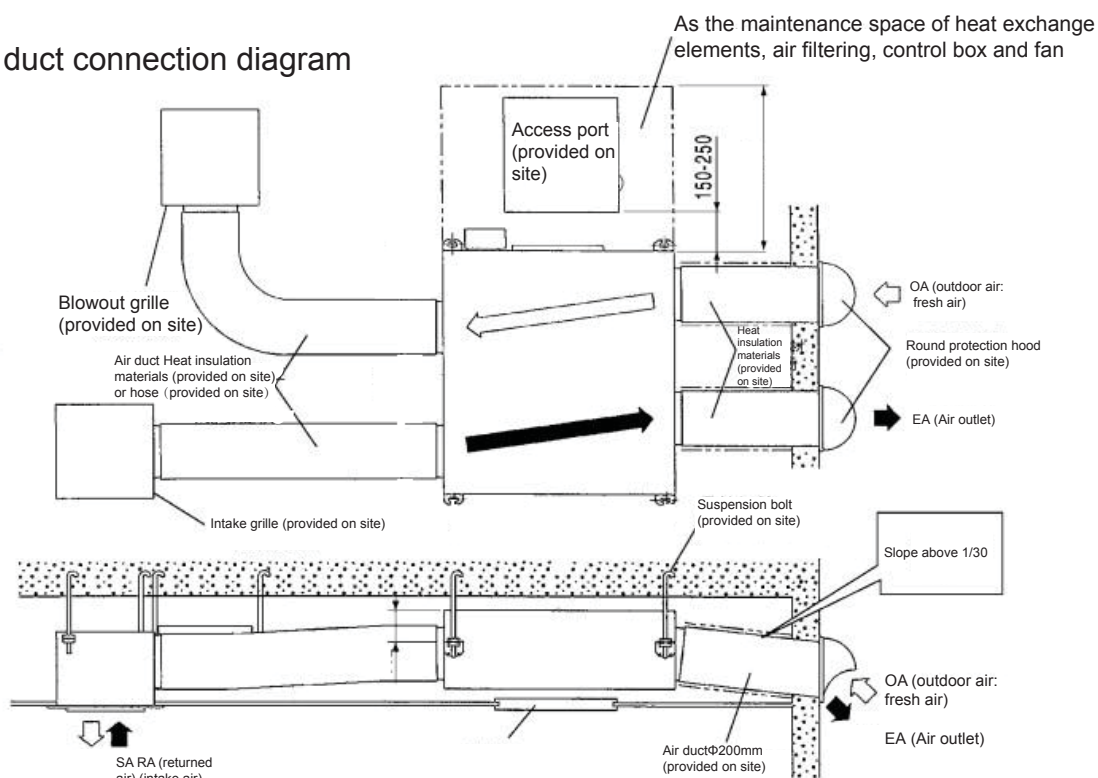
- (1) Insert the air passageway (prepared on site) into each connection port and seal with tapes or sealing bags (prepared on site).



NOTES:

- Pay attention not to bump the blower during construction of the air passageway.
- The diameter of air duct shall not be shrunk 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



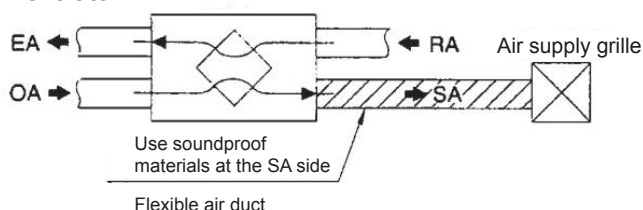
NOTES

- 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.

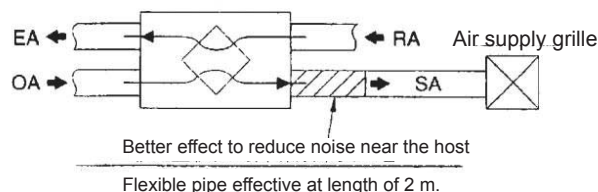
3.4.4.5. Measures and methods to reduce noises

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.



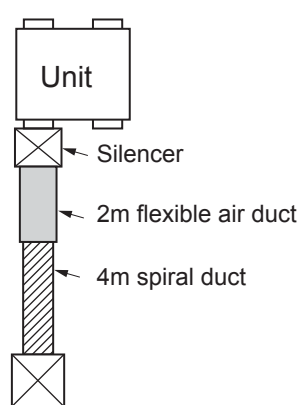
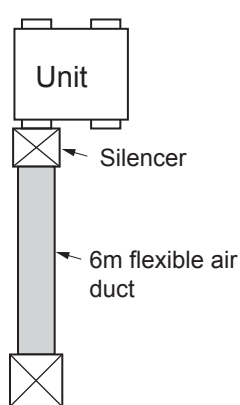
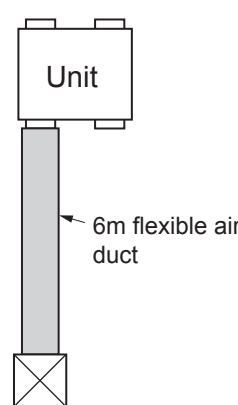
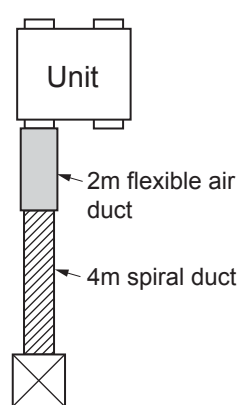
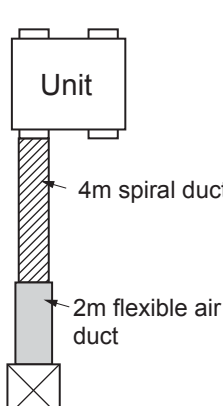
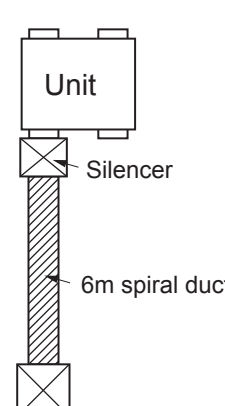
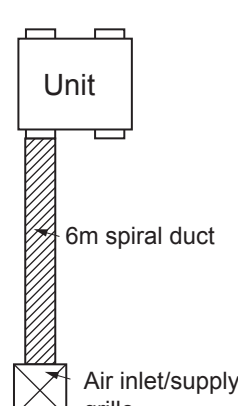
NOTES

- 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

① Measures to reduce noise for large-capacity host machine (065 or more) are described below: ● 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.	
② Solutions: ● 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.	
③ Air duct is mounted as follows (see right figure): ● Silencer ● Flexible air duct ● Noise elimination air supply grille.	
④ If the above solution does not lead to obvious effect, this method may be used : ● Decoration 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. ● Air duct branch (diverge air volume blown out and reduce the air flow speed at air supply port (air return port)). ● Flexible 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)

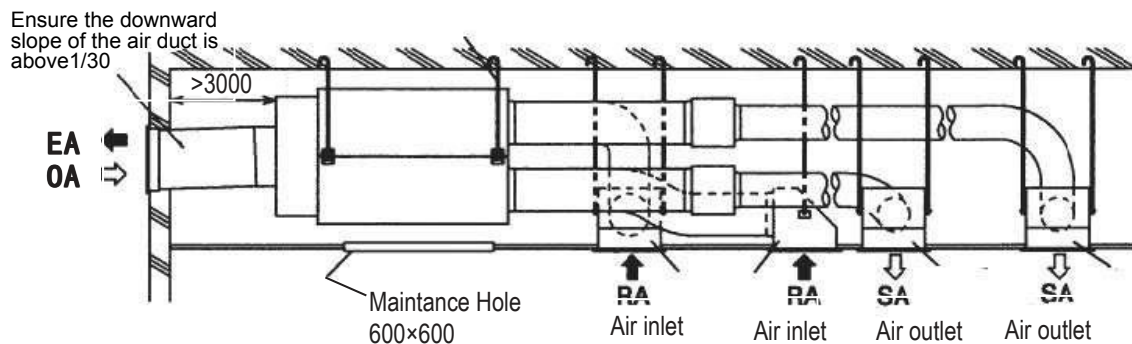
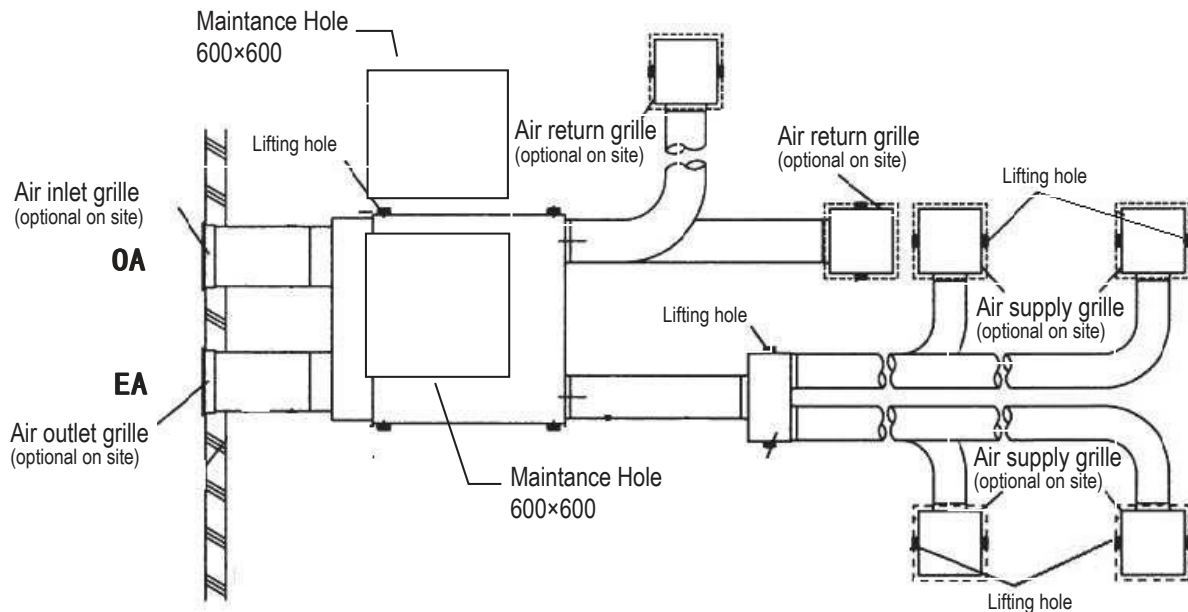
① Mount one silencer +2mm flexible air duct Mount one silencer + 6mm flexible air duct		② Mount 6m flexible air duct	③ Mount 2m flexible air duct							
 Silencer 2m flexible air duct 4m spiral duct  Silencer 6m flexible air duct (Noise effect is not replenished if 2m above air duct is used.)		 6m flexible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

NOTES:

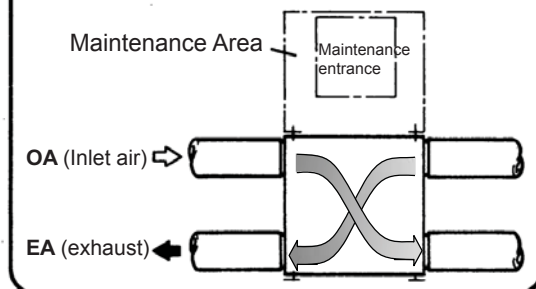
Noise value measured at 1.5m beneath air supply grille meets the Japan JIS criteria and is converted into anechoic chamber value.

Installation examples

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



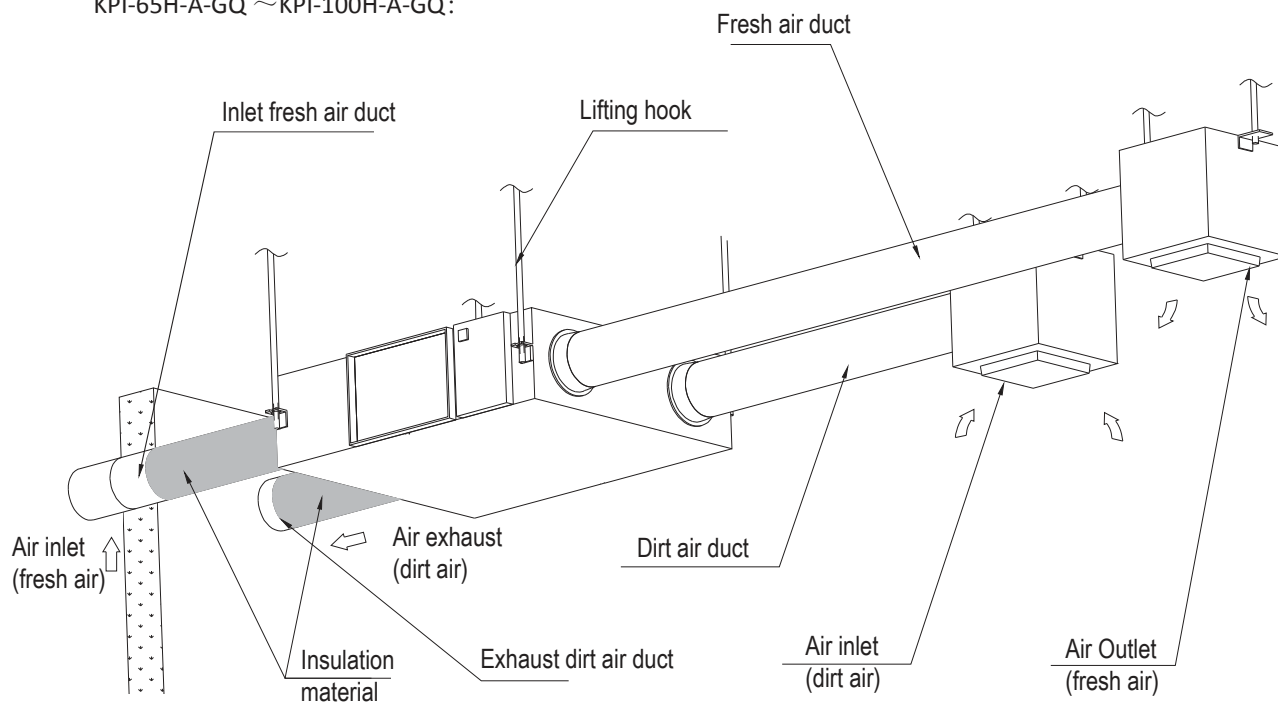
※ Reverse installation is allowed based on site situation. Turn 180 degrees, and install after the body of heat recovery ventilation is kept horizontal.



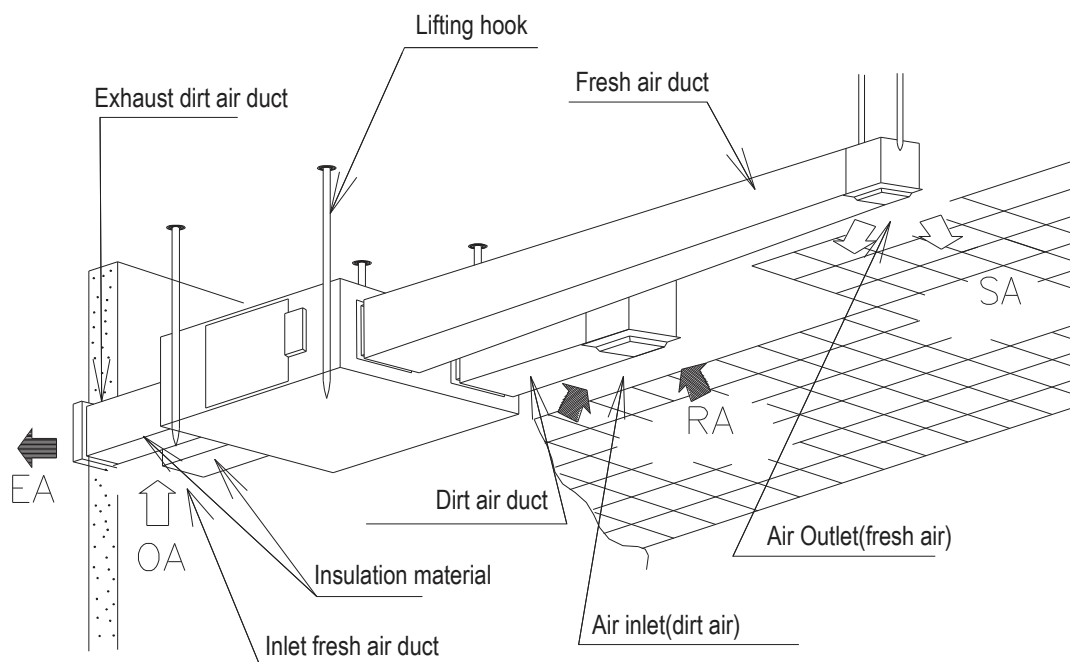
NOTES:

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:



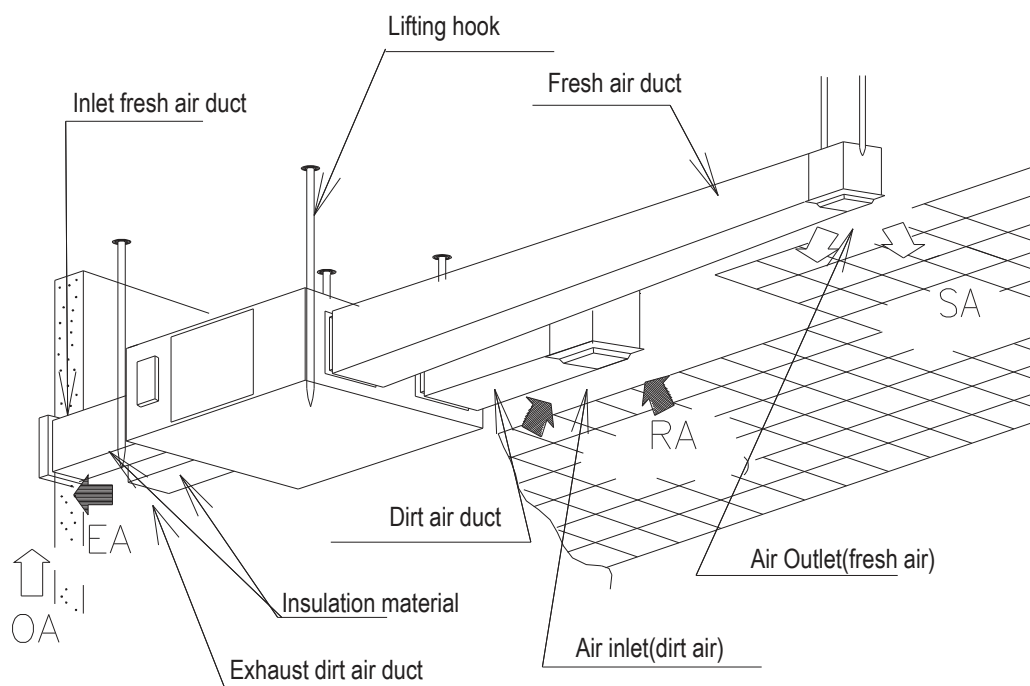
KPI-125H-A-GQ:



⚠ 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.

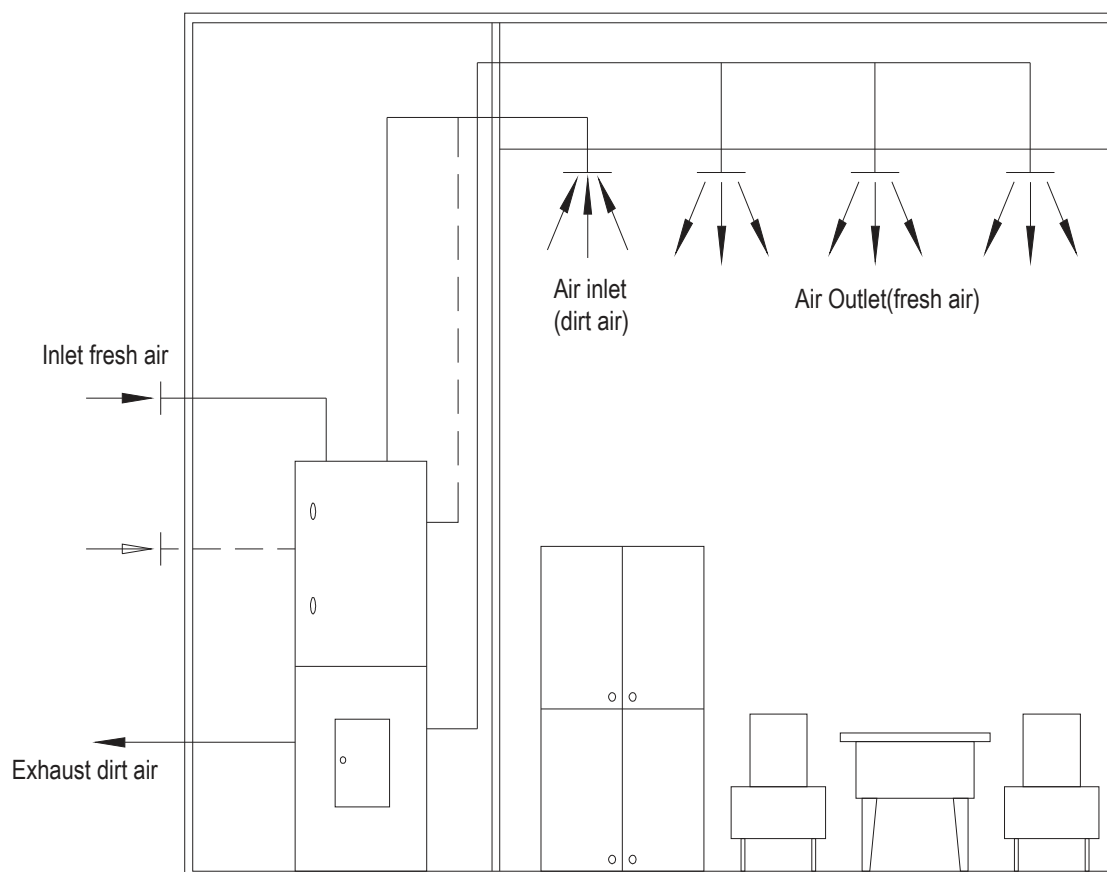
KPI-150H-E-GQ ~ KPI-300H-E-GQ:



⚠ 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 $1\text{M}\Omega$ 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

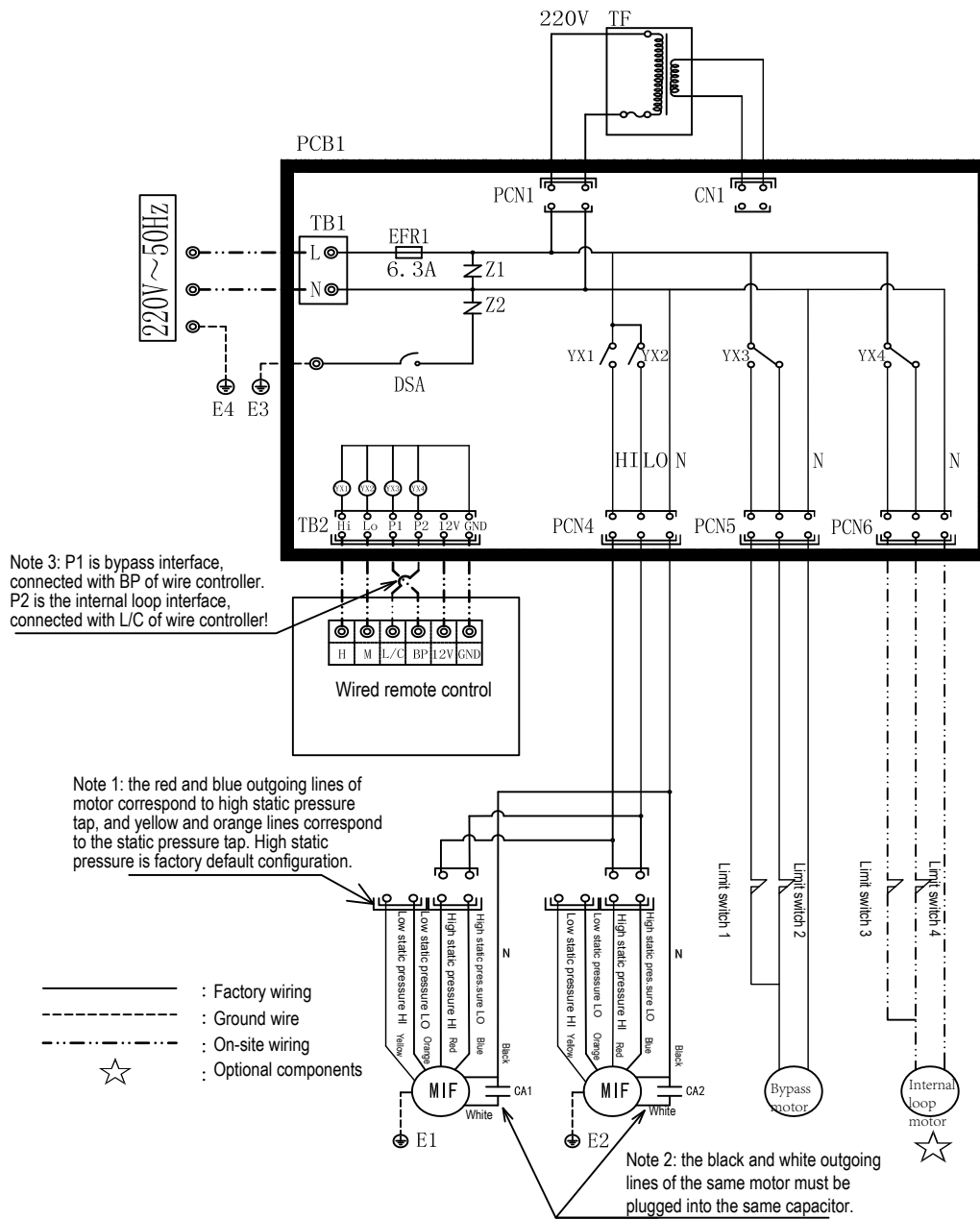
M7: 9.0—11.0 N•m

M10: 18.0—23.0 N•m

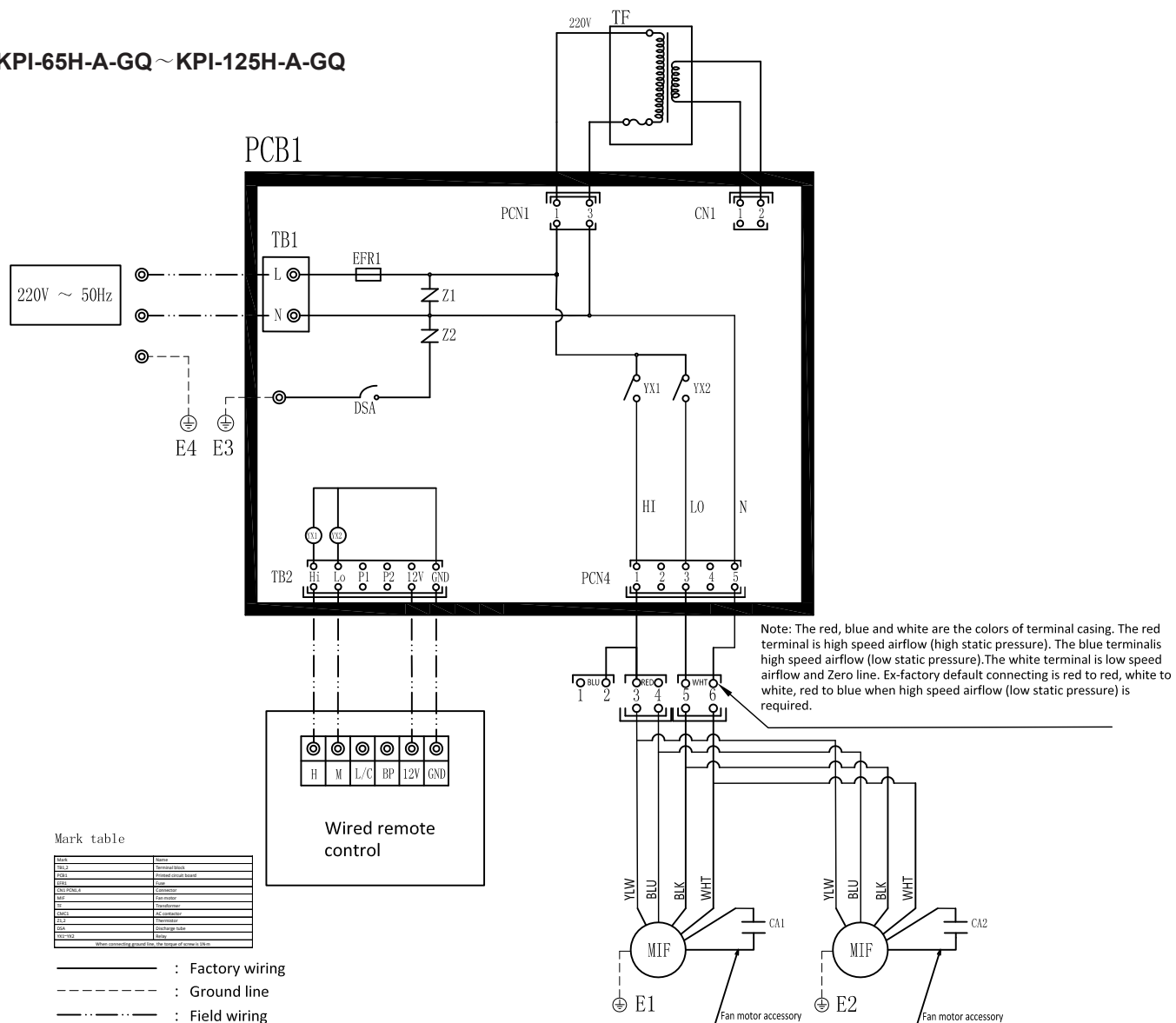
Ensure the above torques are fastened during wiring.

(3) Circuit connection diagram

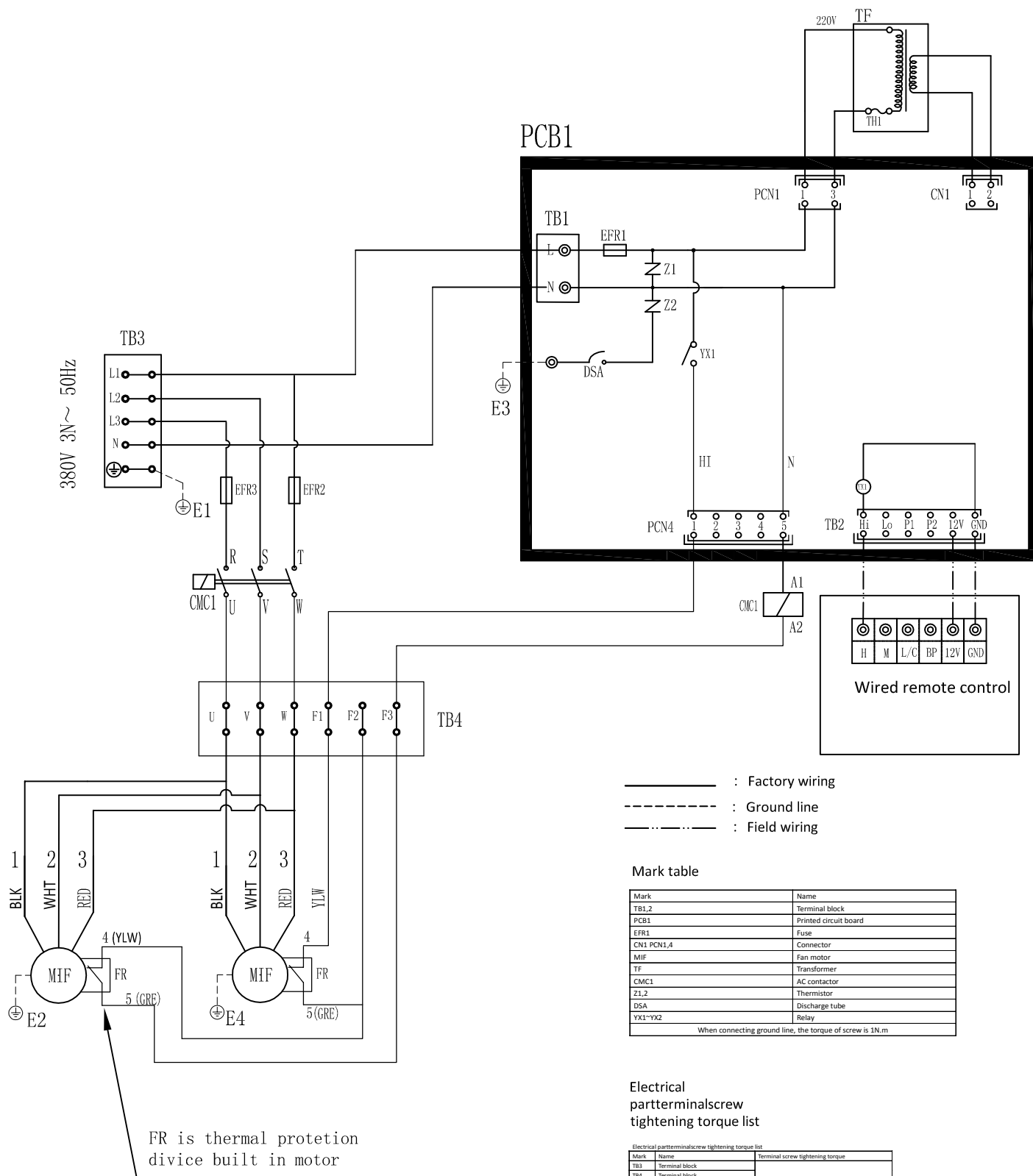
KPI-20H-A-GQ ~ KPI-50H-A-GQ



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



KPI-150H-E-GQ ~ KPF-500H-E-GQ



- : Factory wiring
- - - - - : Ground line
- : Field wiring

Mark table

Mark	Name
TB1,2	Terminal block
PCB1	Printed circuit board
EFR1	Fuse
CN1 PCN1,4	Connector
MIF	Fan motor
TF	Transformer
CMC1	AC contactor
Z1,2	Thermistor
DSA	Discharge tube
YX1~YX2	Relay

When connecting ground line, the torque of screw is 1N.m

Electrical partterminalscrew tightening torque list

Mark	Name	Terminal screw tightening torque
TB1	Terminal block	
TB4	Terminal block	
CMC1	AC contactor	Main terminal
		Auxiliary terminal
EFR2-3	Power fuses	

(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)	*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	

NOTES:

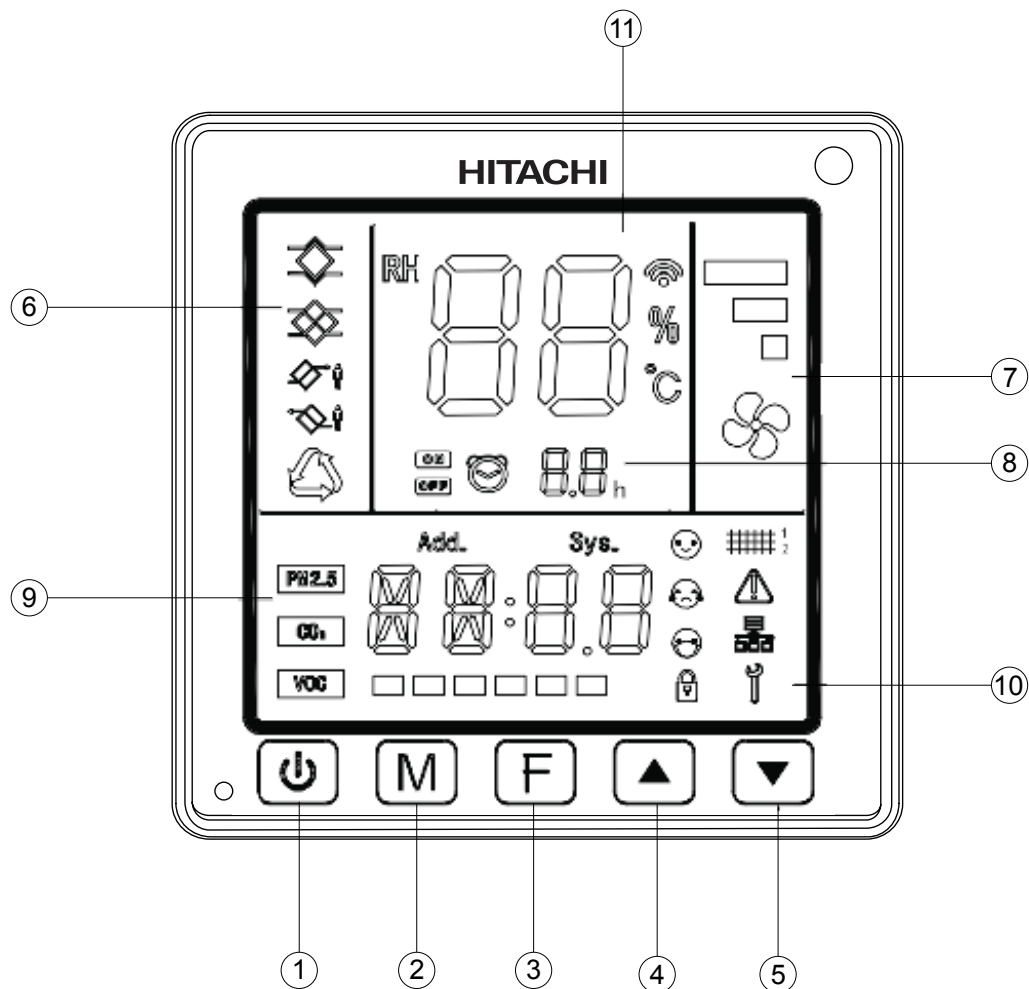
- Field lines shall be installed in accordance with local laws and regulations.
(Wiring on the installation site shall be in accordance with local laws and regulations.)
- Refer to relevant standards for the above power line dimensions.
- Shield lines will be used for the control system and shall be 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		Before Use
 WARNING	• 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	

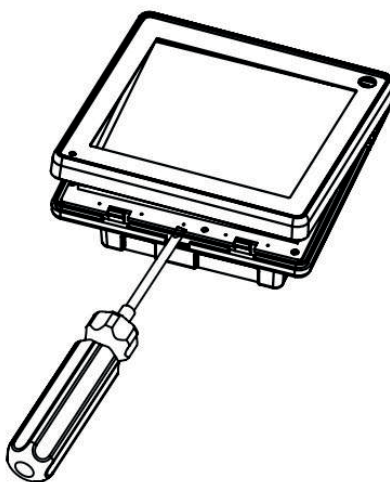
Electric Works	
 WARNING	• Only a certified personnel should perform electrical wiring. Allow a qualified personnel to perform the electrical wiring installation. Improper installation may lead to electric shock. • Perform the electric wiring according to the local and national standards, and as specified 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:

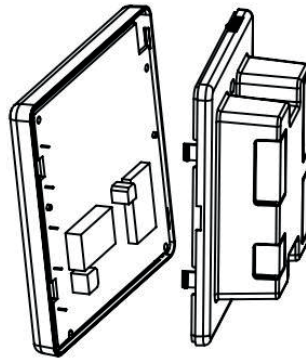
Controllerx1

Screws (M4×25mm)x2

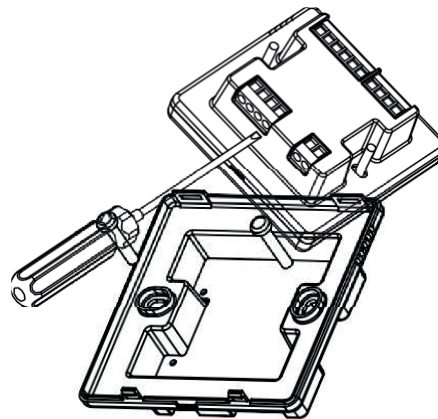
Manualx1



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.



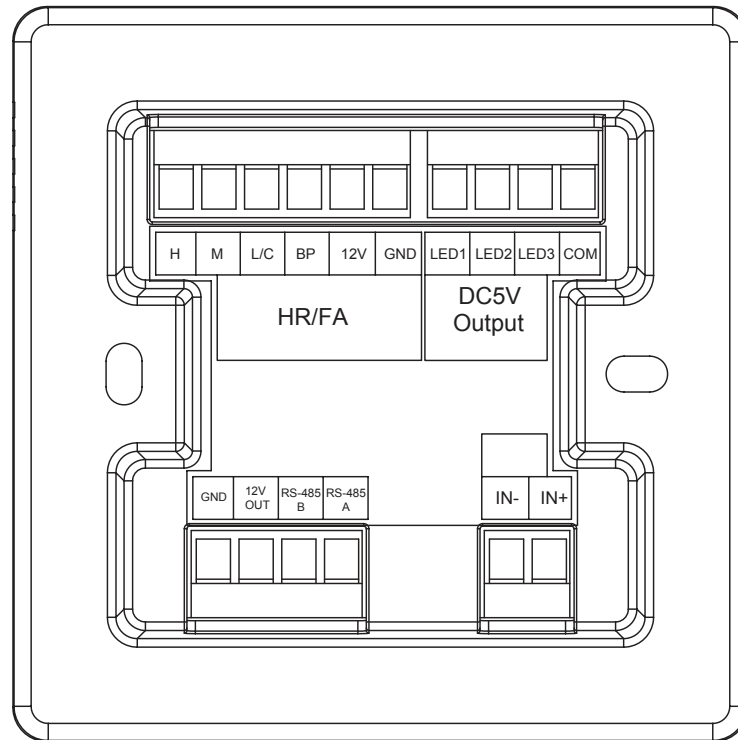
3. Connect the wires as per details mentioned in Electrical Wiring section.
4. Use two screws available in the package to fix the rear panel of the controller to the wall. Available wire box specification is type86



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:

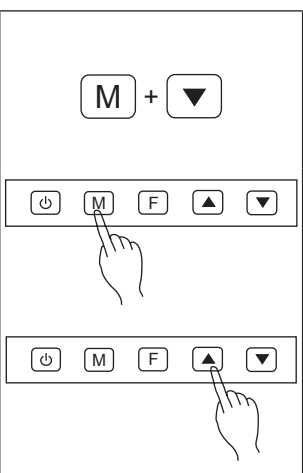
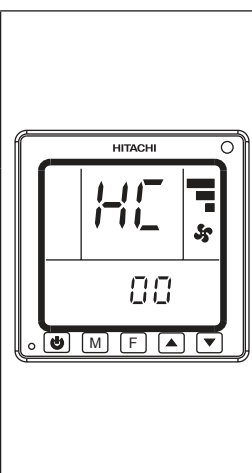
Item	Wired Controller Terminal	Connect To	Terminal Input/Output
Connection heating/fresh air	H	Electric box	Weak electricity
	M		Weak electricity
	L/C		Weak electricity
	BP		Weak electricity
	12V		Power input
	GND		Power input
-	GND	485 communication device	Shared
	12V		Weak electricity
	RS-485 B		Weak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

Note:

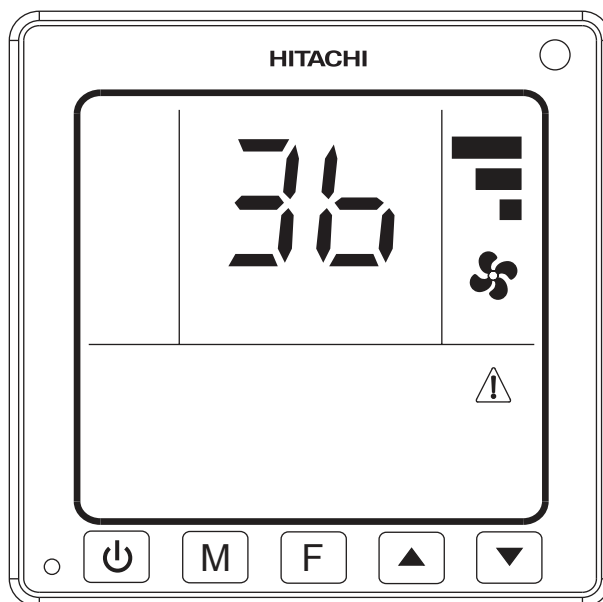
1. If it requires to connect the central control system, connect the wired controller to the corresponding terminal of 485 communication device.
2. If air-box connection is required, connect the wired controller to the terminal of 485 communication device of air-box.
3. If there is a gap between wire 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	- 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 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.
- (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.

Maintenance Part

4. Maintenance

■ Maintenance of heat recovery ventilation (2-4 times every year)

If the heat recovery ventilation 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.

4.1 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.

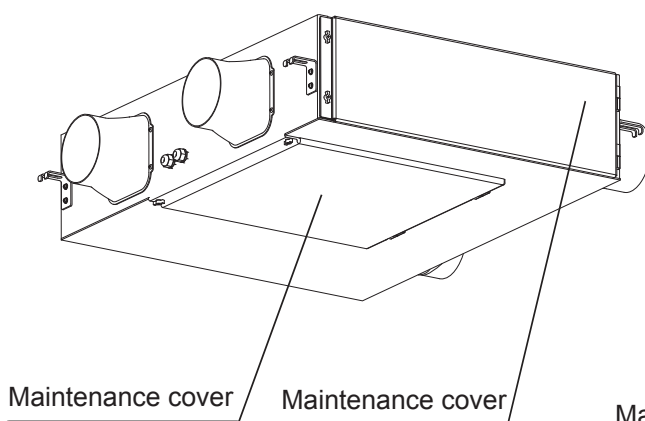
 Caution
Wear gloves when cleaning, or it may bring injury.
Pay attention to the safety under your feet. Pay attention to the safety when working high above the ground.

4.1.1 Clean Filter Net

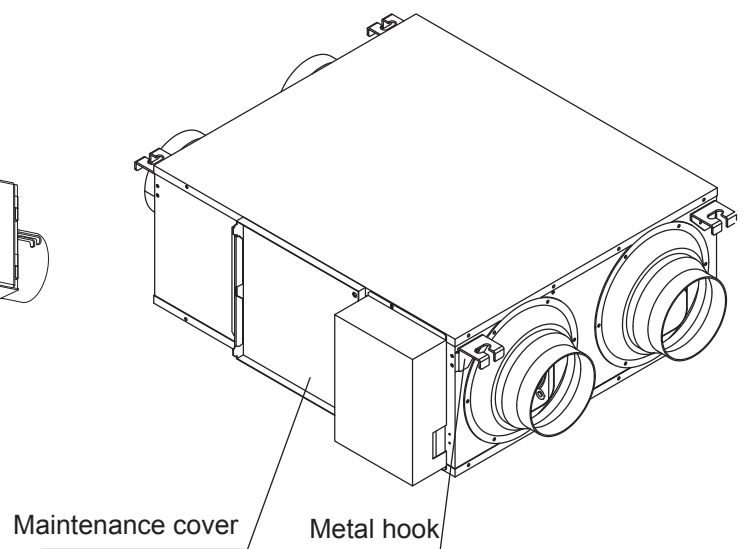
(1).Remove maintenance cover

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

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

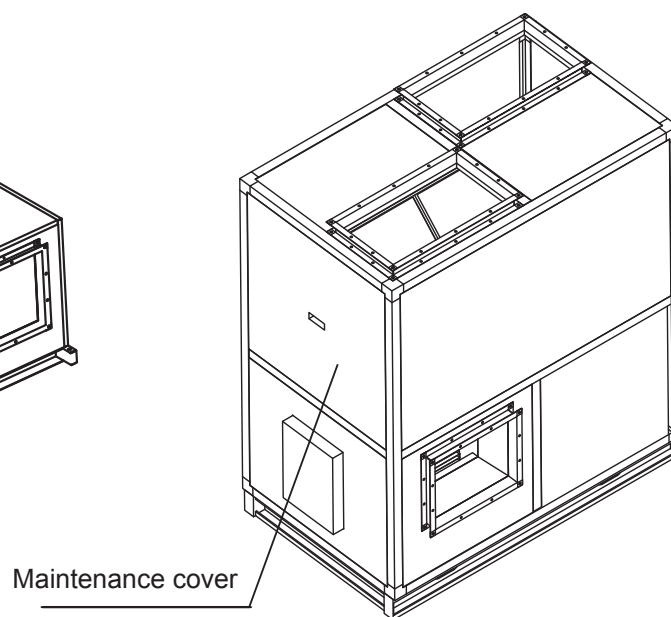
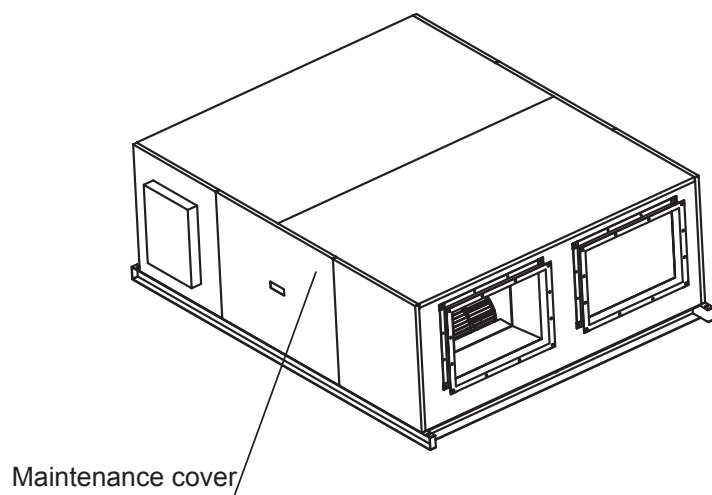


KPI-65H-A-GQ~KPI-125H-A-GQ



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

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

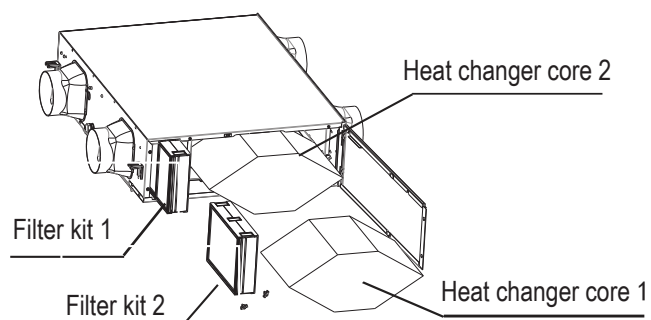
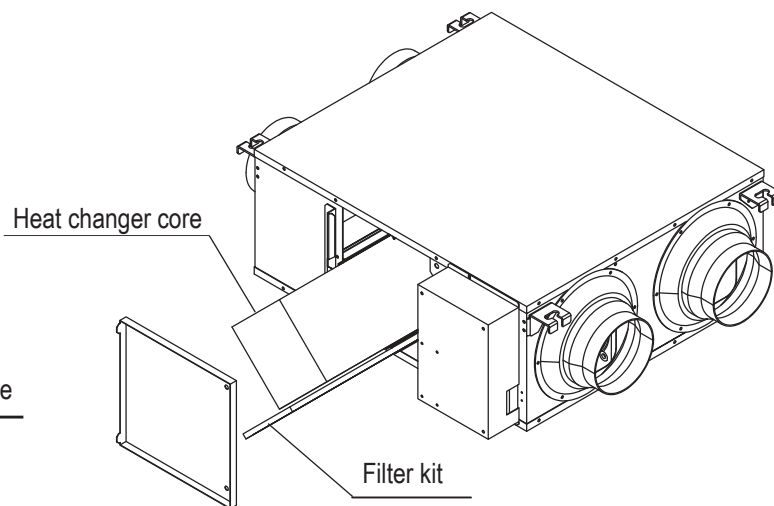
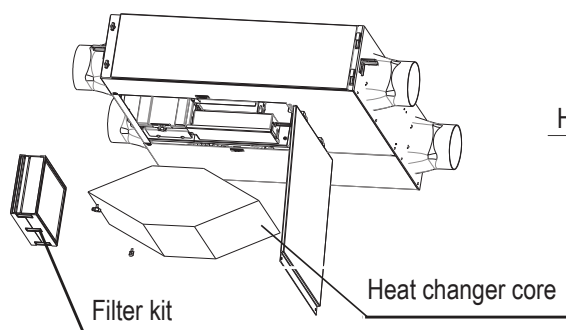


(2). Remove filter net

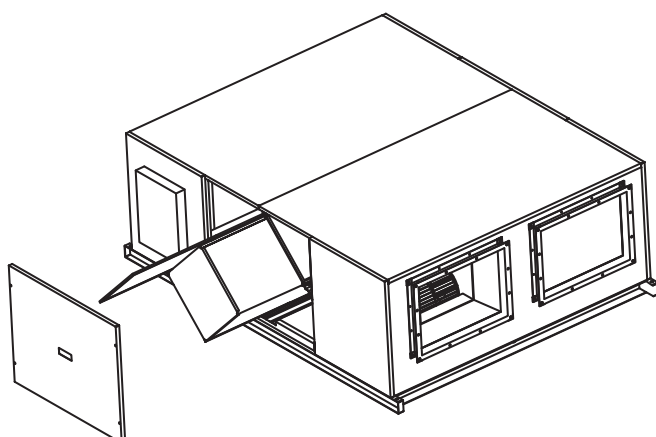
Take it out from heat exchange element.

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

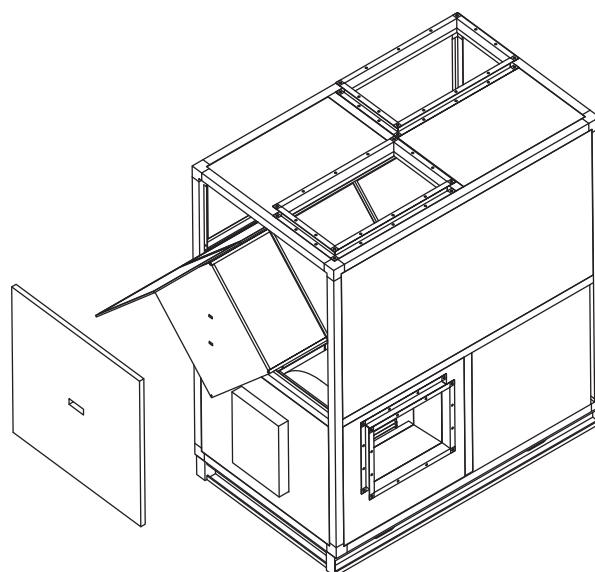
KPI-65H-A-GQ~KPI-125H-A-GQ



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



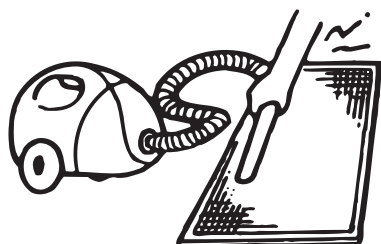
KPF-400H-E-GQ~KPF-500H-E-GQ



(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.

4.1.2 Clean Heat Exchange Element

NOTES 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.

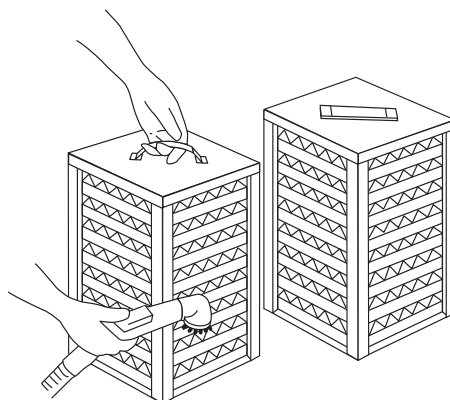
(3) Take out heat exchange element.

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.

5. Troubleshooting

5.1 Trouble and Solutions

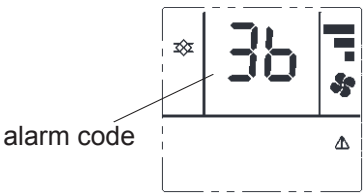
Check the following points if this unit works abnormally.

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.

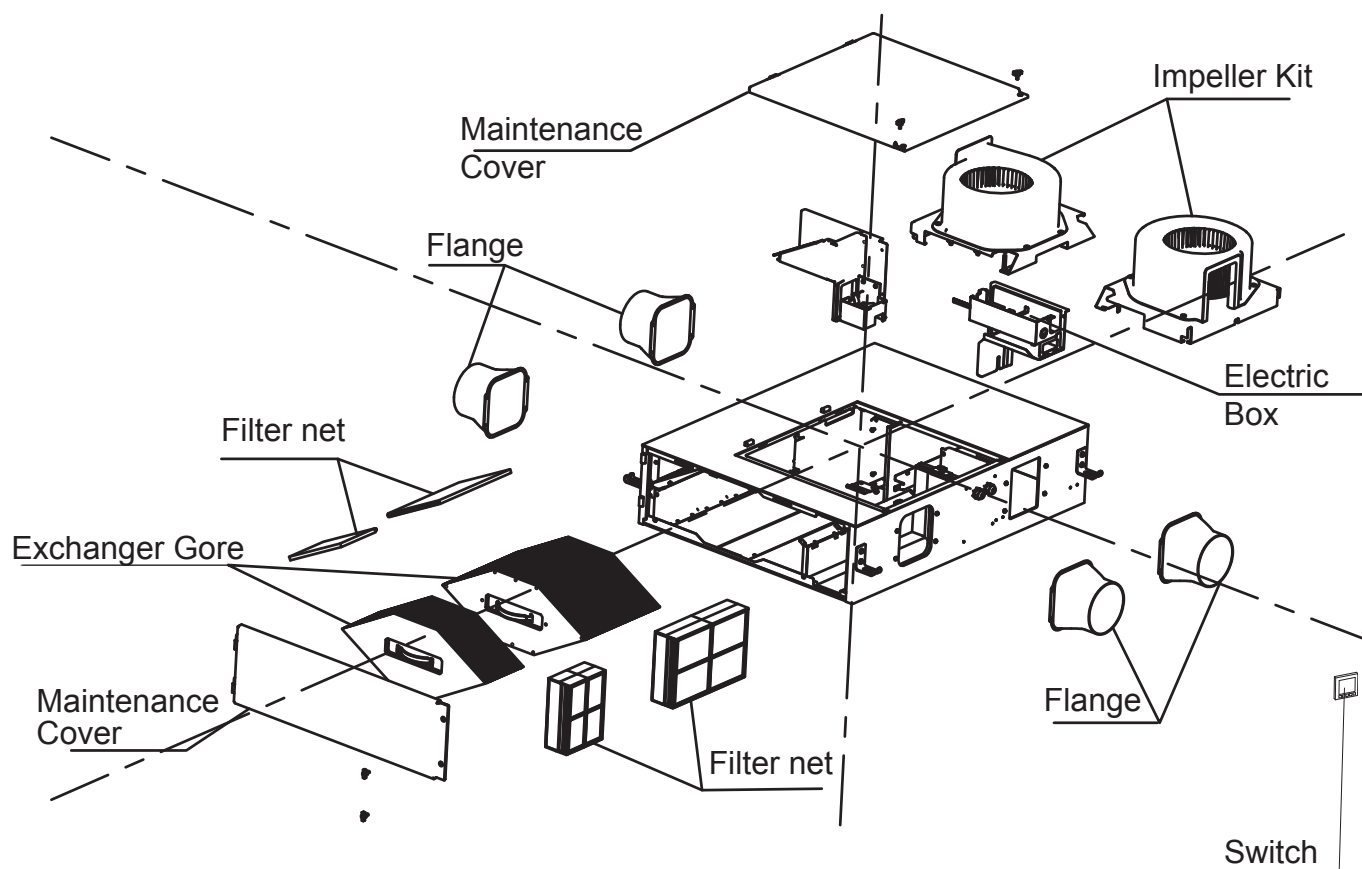
 **Warning** If heat exchanger works abnormally, e.g. producing burnt smell (e.g.), please turn off the power supply immediately and contact with the dealer. If continue running,, it may lead to failure, electric shock and fire.

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.
Other faults	Stop the unit.

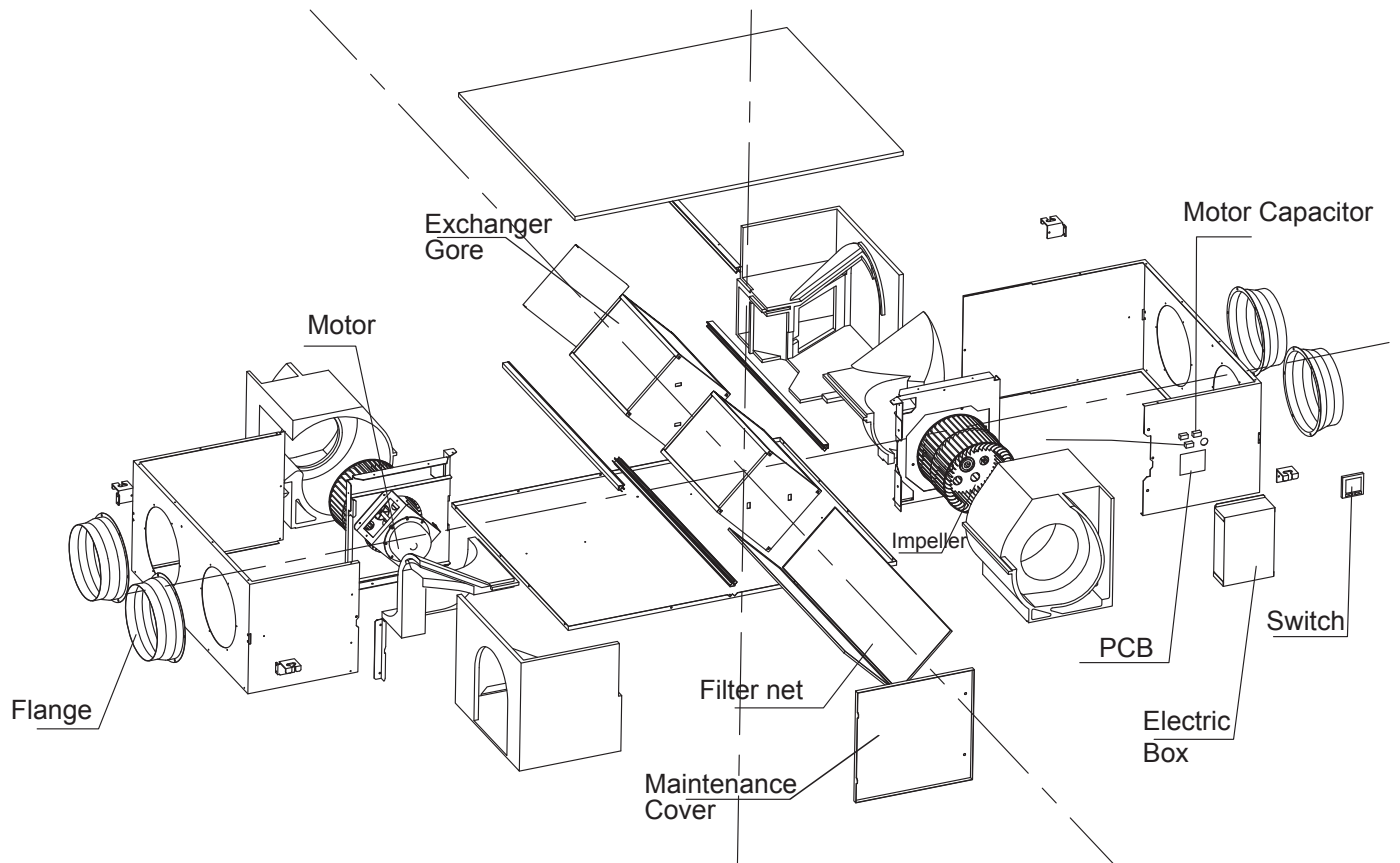
Alarm code	Alarm name	Cause
01	(indoor protection device action)	Float switch action (high water level in water pan, not short-circuited etc)
19	Indoor fan and motor abnormal	Indoor fan and motor is too hot and blocked.
3b	Model code error	Unit model code is not set.

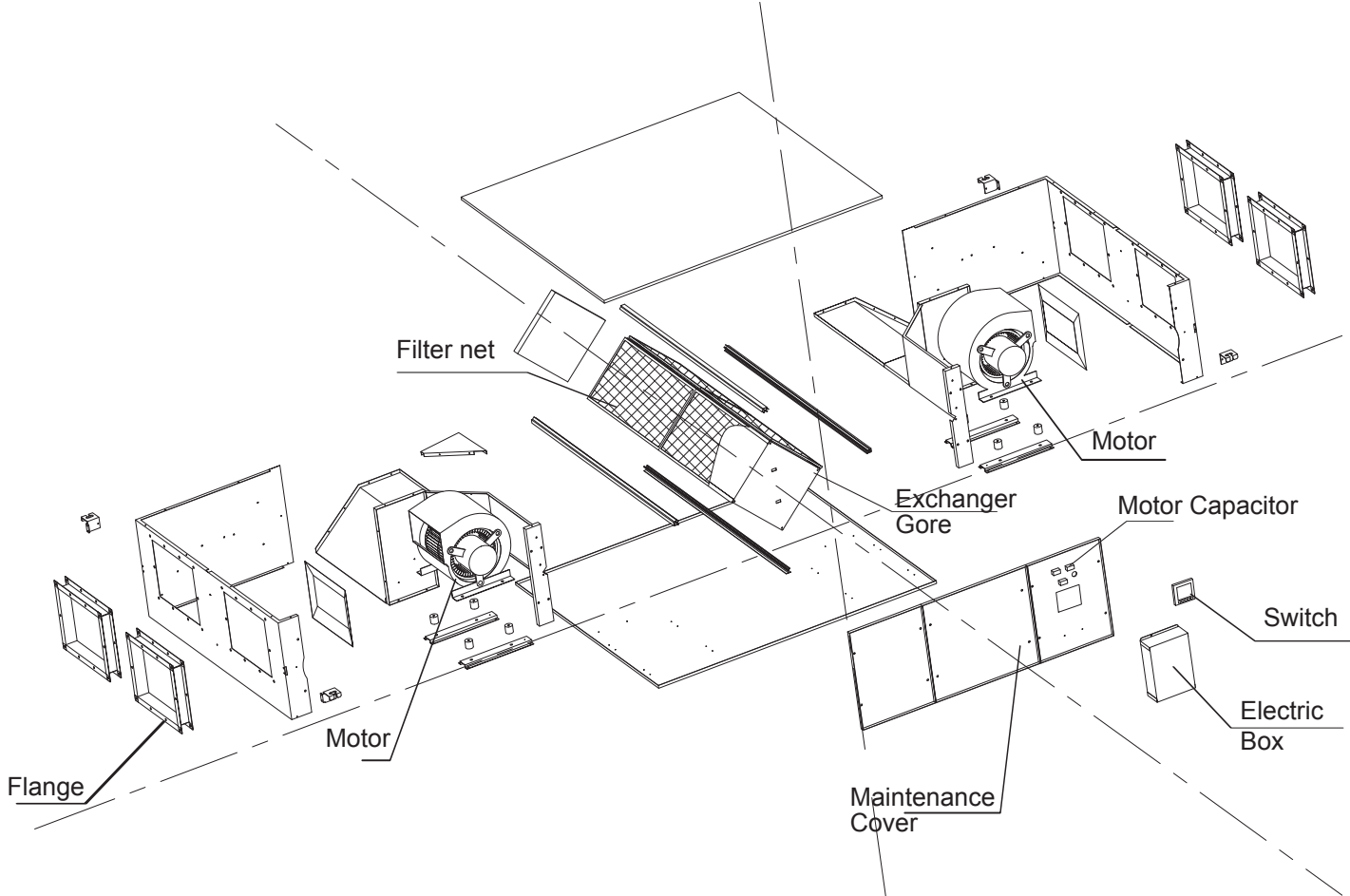
Annex : Location of Spare Parts of Heat Recovery Ventilator

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



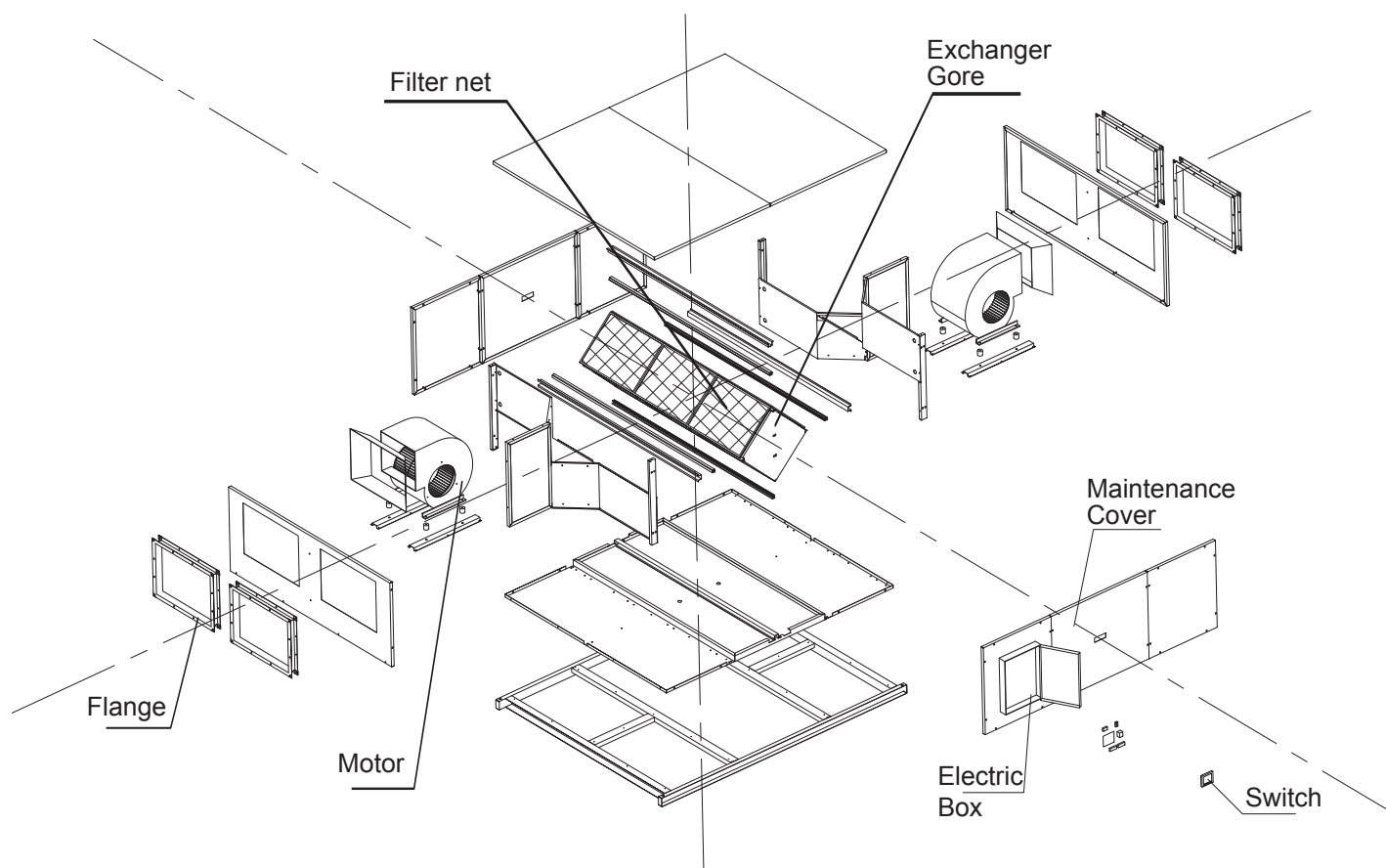
KPI-65H-A-GQ ~ KPI-100H-A-GQ





Model:

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



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

