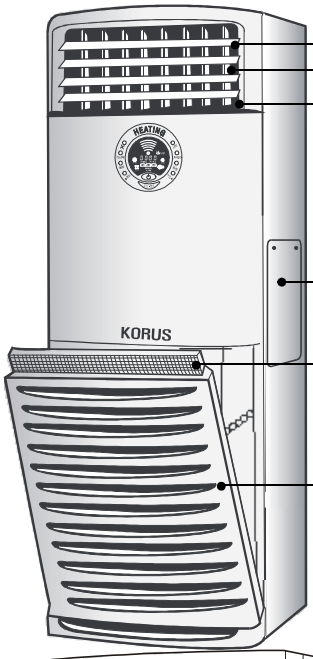
2. Specifications

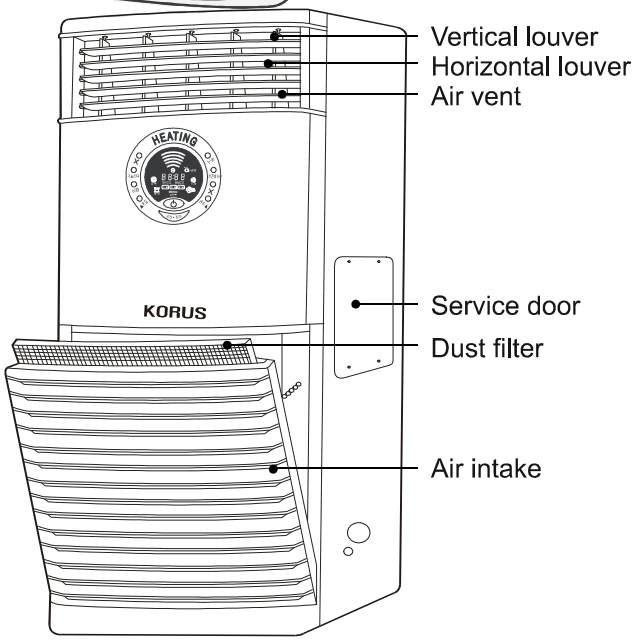
2-1. Oil heater

(1) Indoor unit

• KAH-164KM

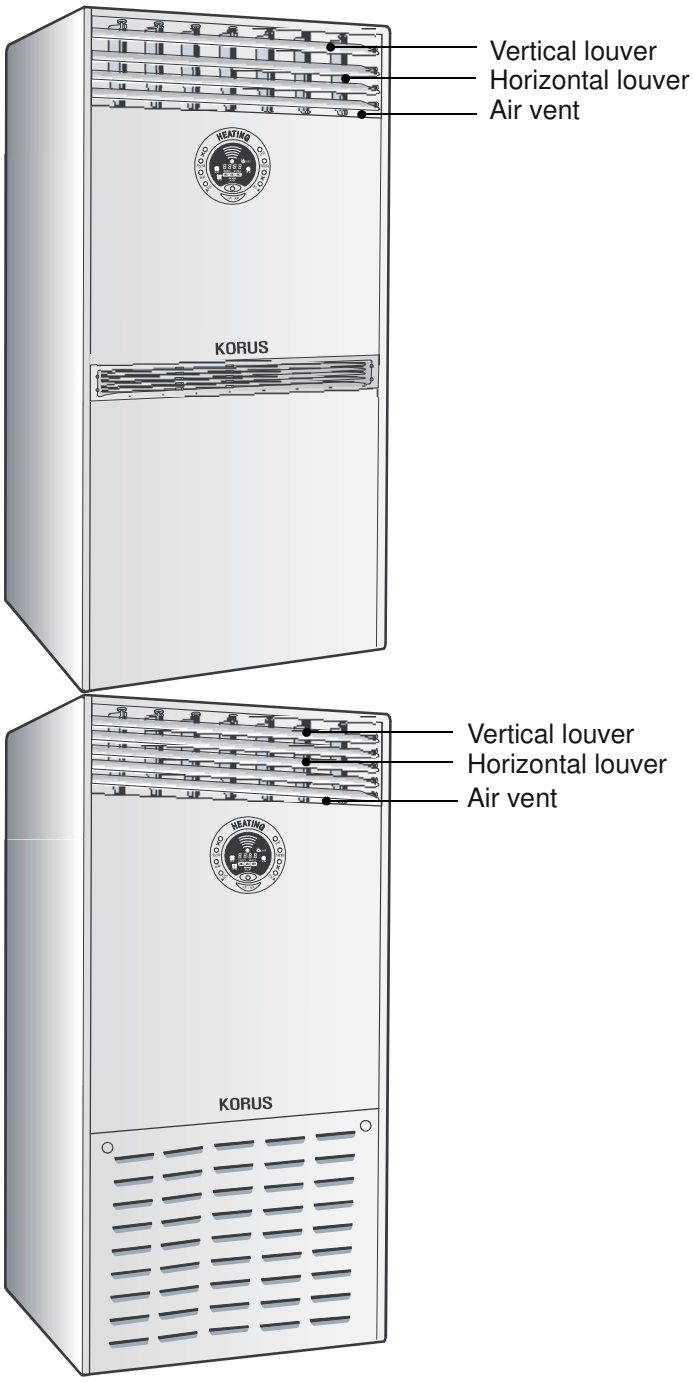


• KAH-264KM

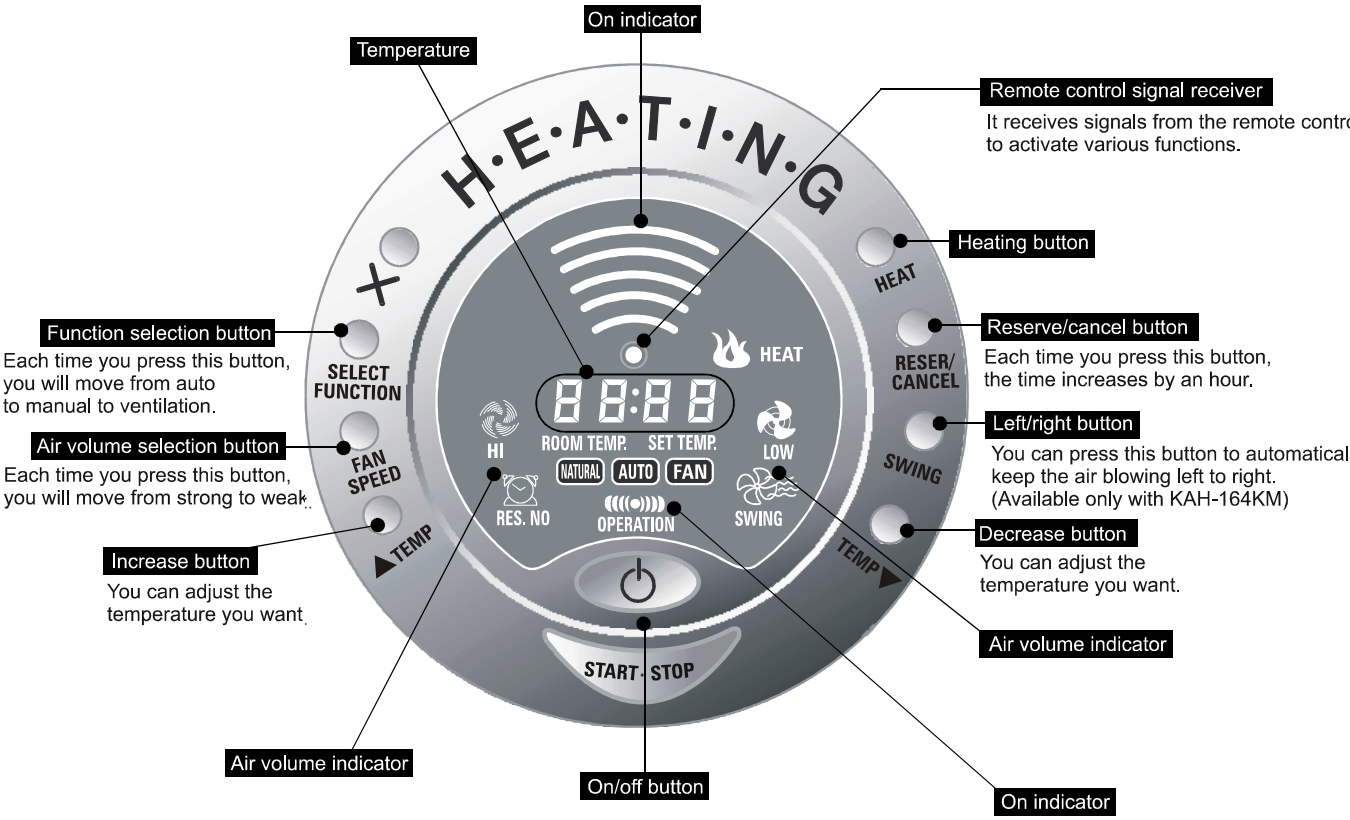


• KAH-364KM

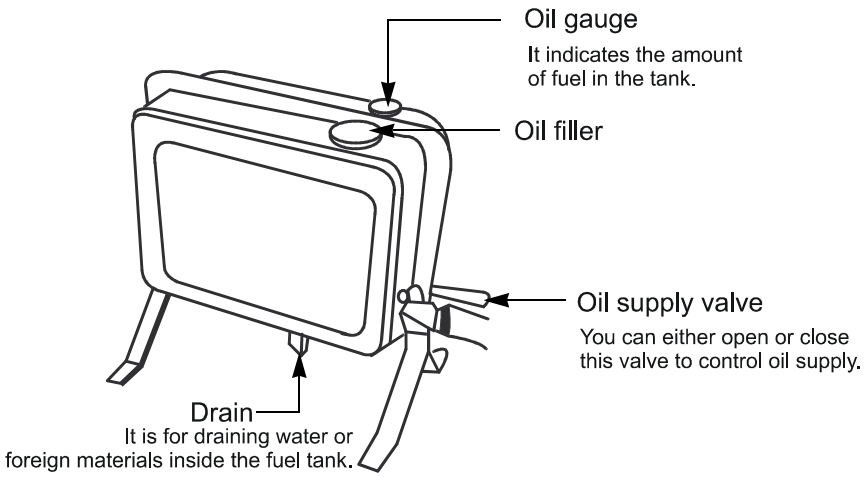
• KAH-564D


Vertical louver
Horizontal louver
Air vent
KORUS
Vertical louver
Horizontal louver
Air vent
KORUS

(2) Control panel (KAH-164KM/264KM/364KM/564D)



(3) Fuel tank



(4) Specifications

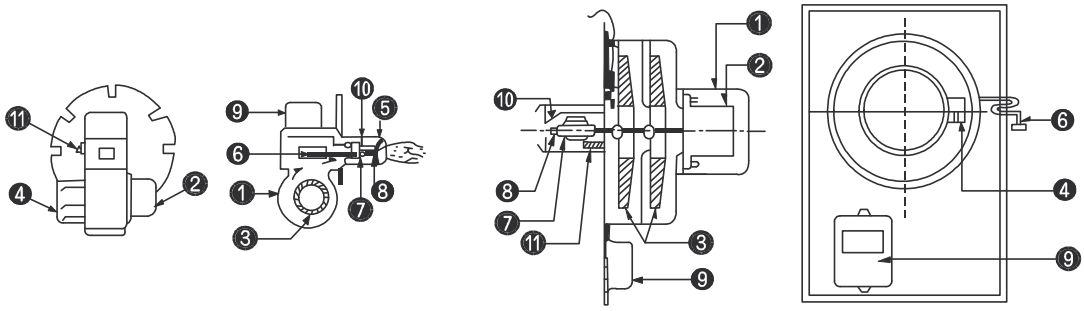
Classification \ MODEL			KAH-164KM	KAH-264KM	KAH-364KM	KAH-564D
Heating capacity		kW	18.6	29.1	36.6	58.1
Fuel consumption		ℓ/ h	2.0	3.1	4.0	6.7
External dimensions	Width	mm	590	750	880	960
	Height	mm	1,810	1,790	1.750	1,880
	Depth	mm	400	440	510	700
Burner	Combustion type		Pressure atomizer forced flue			Forced exhaust
	Ignition type		High voltage discharge			
	Standard oil pressure	kPa	882.4(9.0)	764.7(7.8)	784.3(8.0)	686.3(7.0)
	Motor output	W	15.3	32	56.4	42
Blower	Type		Double suction Sirocco fan			
	Standard air volume	m^3/min	23/18	32/27	45/42	70
	Motor output	W	6P 79W 5μF	6P 126W 8μF	6P 258W 8μF	8P 400W 10μF
Nozzle	Flux	gal/h	0.5	0.85	1.1	1.75
	Injection angle	°	60°			
	Injection type		EH,H			
Controller	Combustion control		Fully automatic combustion control			
	Room temperature control		Room temperature thermistor			
	Cold air prevention		Warm air thermistor (including primary overheat protector)			
Power source	Voltage	V	1 PH 220V 60Hz			
	Current	A	2.0	2.2	3.0	6.8
	Power consumption	W	320	390	540	995
Fuel			Indoor kerosene (kerosene No. 2)			
Dimensions of flue exhaust (sleeve)		Ø	60(90)	70020)		150
Fuel tank		ℓ	50	50	80	80
Weight		kg	86	115	145	245
Basic parts			Basic air supply & exhaust pipe, extended air supply & exhaust pipe, wall sleeve, fuel tank, elbow			Fuel tank
MAIN FUSE			250V, 5A	250V, 5A	250V, 5A	250V, 10A
Safety devices			Primary overheat protector(95°C), 2nd & 3rd overheat protector(145°C), CDS(flame detector)			
Electric precipitator		Option	Optional	None	None	None

	Input	AC220V 60Hz	-	-	-
	Output	DC-4500V/+2500V	-	-	-

1) How it works

The heater consists of the combustion device (burner), the blowing device (blower), the heat exchanging device (combustion chamber and heat exchanger), and the control device for controlling operation and safety. If you turn it on, the burner motor starts, and after a certain amount of time, the pump sucks in the fuel and pressurizes it. The fuel passes through the fuel supply pipes and is sprayed from the nozzle into the combustion chamber. On the other hand, the air sucked in by the burner blower is mixed with the injected fuel inside the combustion chamber, and ignited by the spark from the ignition rod at the same time. The combustion gas is heat-exchanged by the heat exchanger, and discharged outdoors through the smoke pipe. Combustion continues and the temperature inside the combustion chamber rises. Then the convection blower kicks in, and sucks in the indoor air. The air passes the surface of the heat exchanger for heat exchange, and blows warm air indoors through the warm air vent.

2) Gun type burner



(General type) (FF type)

① Housing ② Motor ③ Blower ④ Air damper ⑤ Draft tube ⑥ Fuel pipe
⑦ Nozzle adaptor ⑧ Nozzle ⑨ Ignition transformer ⑩ Ignition rod ⑪ Flame detector

3) Functions

(Oil heater)

(Oil supply system) Fuel Tank ⇨ Fuel Filter ⇨ Electronic pump ⇨ Nozzle

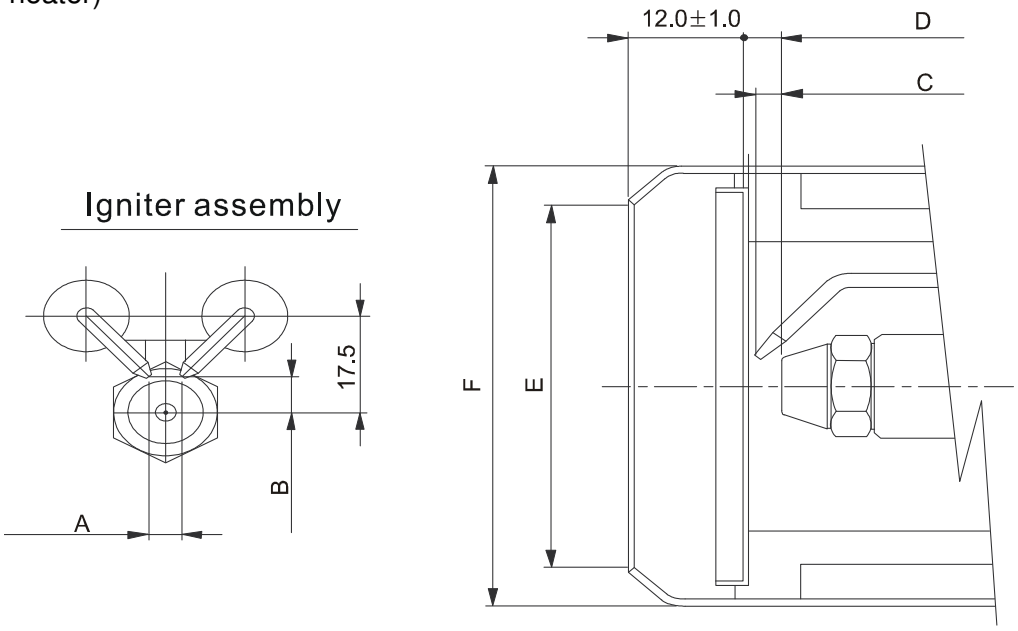
(Blowing system) Motor; Air damper ⇨ Sirocco fan ⇨ Fan case ⇨ Draft tube ⇨ Flame holder

(Ignition system) Ignition transformer ⇨ Ignition rod

(Safety system) Flame detector (CDS)

4) Burner dimensions

(Oil heater)

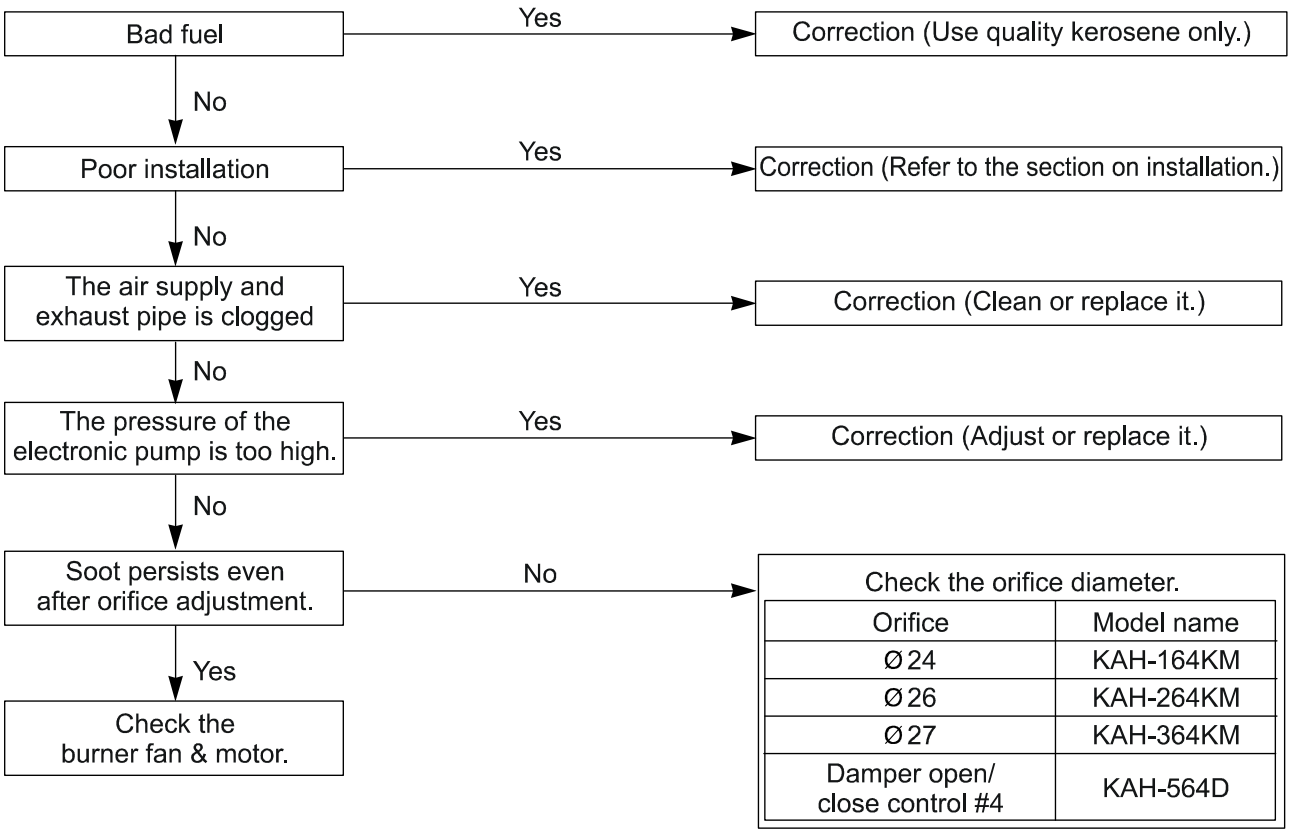


Classification	A	B	C	D	Ø E
KAH-164KM KHC-724CH/964CH	3.0±0.5	6.5±0.5	3.0±0.5	7.0±0.5	Ø 73
KAH-264KM KHC-1154CH	3.0±0.5	6.5±0.5	3.0±0.5	7.0±0.5	Ø 73
KAH-364KM KHC-2504CH	3.0±0.5	6.5±0.5	3.0±0.5	7.0±0.5	Ø 76
KAH-564D	3.0±0.5	7.5±0.5	3.0±0.5	21.0±0.5	Ø 80

6) Checking the burner

* In case of poor combustion, check the burner according to the following procedure.

(1) Procedure for checking the burner of an oil heater (if there is soot)



(2) Relationship between fuel consumption, the amount of air for combustion, and the state of combustion

Phenomenon	Fuel consumption		Amount of air for combustion	
	Much	Little	Much	Little
Soot	◎			◎
Odor	○	◎	◎	○
Poor ignition	○	◎	◎	○
Remarks	* Bad nozzle * Bad electronic pump/solenoid gas valve * Clogged oil filter		* Poor installation * Bad blower for combustion	

◎ Main cause ○ Occurs when there is a lot of difference

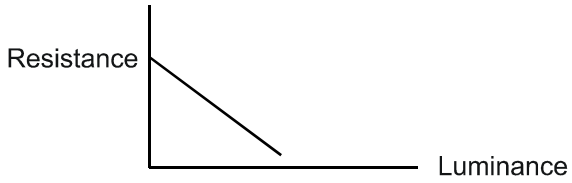
3-1-1. Flame detector

It detects the presence or absence of flame.

1) Types of flame detectors

Flame detector	Principle	Application
CDS	The electric resistance of CDS changes according to the change in surrounding luminance. This property is used to detect the presence of flame.	* Gun type burner
Flame rod	The electric properties of flame, i.e. conduction and rectification, are used to let there be electric current in the flame in order to detect it.	* Gas gun type burner

2) CDS resistance – luminance characteristic curve



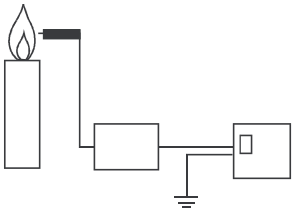
3) Characteristics of CDS resistance (at 25±0.2°C)

Luminance (Lux)	Resistance
50	9KΩ MAX
0	1,000 KΩ MIN

4) Characteristics of the flame rod

Classification	μA
Flame failure	DC 0.7 μA or lower
Ignition	DC 2 μA or higher

How to measure μA



Stable flame	Unstable flame
Little movement of the needle on the instrument board	Much movement of the needle on the instrument board

3-1-2. Thermistor

Electric resistance greatly changes according to the changes in ambient temperature. This property is used to convert temperature into electric resistance.

1) Types of thermistors

No	Thermistor type	Code-No	B integer	Resistance	Maker	Remarks
1	CDS (flame detection sensor)	H32908AB		0 Lux: 500KΩ 10Lux: MIN 7KΩ-MAX 23KΩ	Gangnam Corporation	* If the resistance of CDS(flame detection sensor) is 50K Ω or lower, it detects flame. * If the voltage of the Micom A/D port is 2.5V or lower, it detects flame.
2	R-TH (room temperature sensor)	H42808AB	4100	R25°C 10KΩ	Donggwang Sensor	* Measurement range: -20°C~70°C RTH Short = 4.8V or higher * RTH Open = 0.1V or lower
3	H-TH (Warm air sensor)	H42804AA	3330	R95°C 1.2KΩ	Donggwang Sensor	* Measurement range: -40°C~100°C HTH Short = 4.8V or higher * HTH Open = 0.1V or lower
4	Bimetal thermostat (2nd overheat protection	C41604AA		Operating temperature: 145°C	Pacific Inchang Electronics	Manual recovery

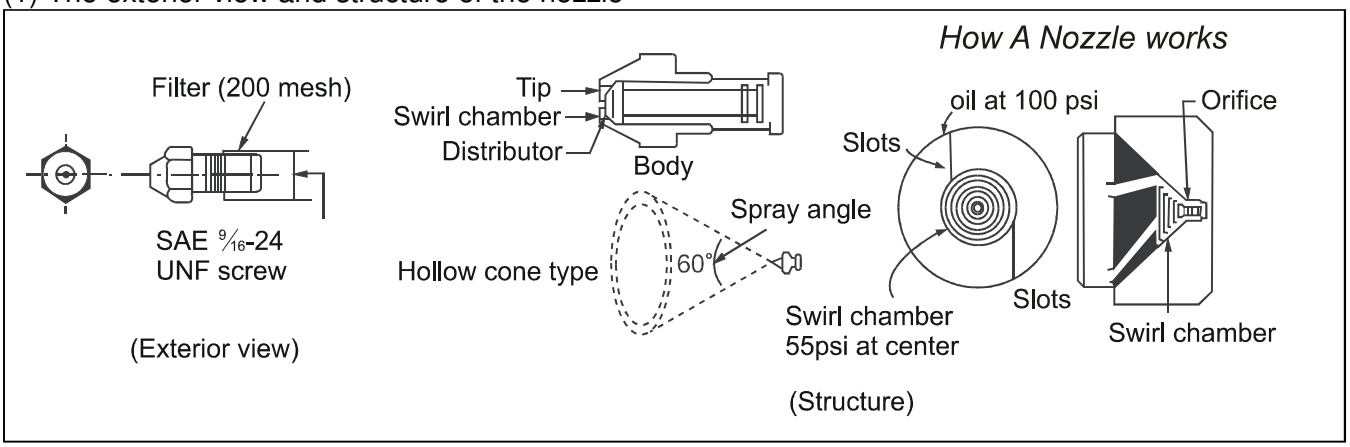
	sensor)					
5	Bimetal thermostat (3rd overheat protection sensor)	C41615AA		Operating temperature: 145°C	Inchang Electronics	Automatic recovery

3-1-3. Nozzle

Fuel is pressurized by the fuel pump, and the nozzle sprays the fuel through the orifice at high speed, and atomizes it. For better atomization, the fuel is swirled inside the nozzle before spraying. In general, as the pressure of the fuel supplied to the nozzle is reduced, the diameter of the particles of the sprayed fuel gets bigger, deteriorating combustion. So it is necessary to maintain the pressure of the fuel pump at 7kg/m^3 or higher.

1) Oil

(1) The exterior view and structure of the nozzle



(2) Nozzle pattern symbols

Name / Pattern (cross-sectional view) / Company name	HOLLOW CONE	SOLID CONE	SEMI SOLID CONE	ALL PURPOSE
DELAVAN	A	B	SS	W
DANFOSS	H	S	B	-
STEINEN	H	Q	-	SS

* Examples

DELAVAN — Name of manufacturer

0.85 — Spray amount (0.85gal/h)

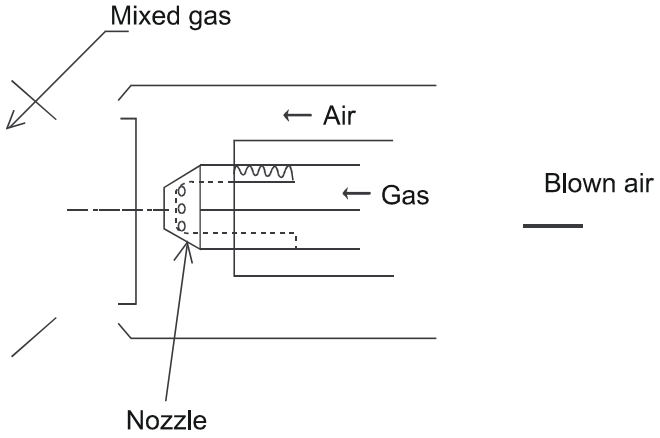
60° — Spray angle (60°)

A — Spray pattern (HOLLOW)

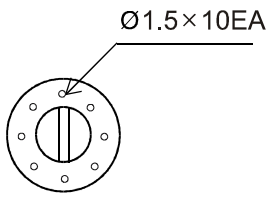
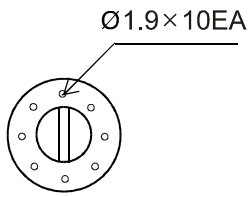
* The nozzle spray amount is indicated in gallons. (USGAL)
* 1 GPH (1gal/h) is 3.7854 l/h.

2) Gas

(1) Structure of the nozzle



(2) Nozzle patterns

KAH-104GN(A)/104GN/134GN KHC-724CG/964CG	KAH-204GN KHC-1154CG/1254CG
	

3-1-4. Ignition transformer

It is a transformer for combustion devices that supplies electricity to oil burners or gas burners.

1) Types

Leakage type transformer	It installs a leakage magnetic circuit between the primary winding wire and the secondary winding wire, and generates the high voltage necessary for starting electric discharge.
Pulse type transformer	It has a switching circuit utilizing the charger/discharger circuit built-in, and uses it to generate pulses, thereby creating the high voltage necessary for starting electric discharge.

2) Characteristics

Entity	Gas (Hot blast heater, Air conditioner/Heater)	Oil (Hot blast heater, Air conditioner/Heater)
Primary current	0.2 A or lower	
Secondary current	28mA± 2mA	
Secondary voltage	18.5kv ± 10%	

3-1-5. Electronic pump

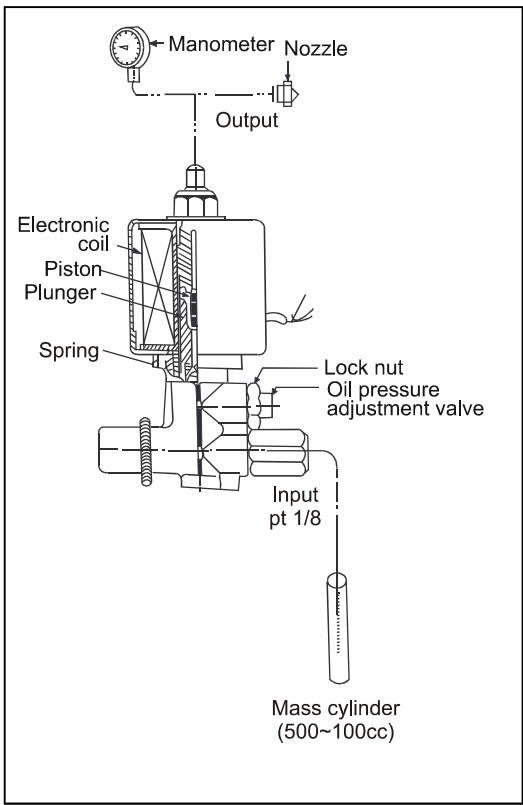
The electronic pump utilizes electronic actions. It sucks in fuel from the fuel tank, and applies constant pressure to the fuel to spray it from the nozzle.

1) How it works

If you apply voltage to the coil, it generates magnetism intermitted by the power rectifier, and moves the plunger up and down. The plunger, in turn, moves the piston. If the electronic coil is magnetized, the plunger is sucked down, and the piston goes down. The inlet valve at the entrance closes, and the outlet valve at the exit keeps the pressure of the fuel constant, and sends it to the nozzle. The valve opens for pressurization, and the fuel is sent to the pressure controller.
If the piston comes down, power supply is cut off for the electronic coil, and the compressed spring pushes up the piston. Then the inlet valve opens and the outlet valve closes, and fuel comes into the pot. This process is repeated. As the pressure controller has a relief valve built-in, if the pressure of the outlet becomes greater than specified due to the load of the nozzle, the relief valve kicks in to send unnecessary pressure back to the outlet and adjust pressure.

2) How to adjust pressure

The oil pressure adjustment valve changes oil pressure to adjust fuel consumption. Unfasten the lock nut with a spanner, and turn the adjustment valve tight to increase the oil pressure, and turn it left to decrease the pressure. An electronic pump comes with adjusted pressure when shipped, so you don't need to adjust it after installation. However, if there is any trouble or you need to perform maintenance work, check it and make necessary adjustments.



3) How to measure pressure and flux

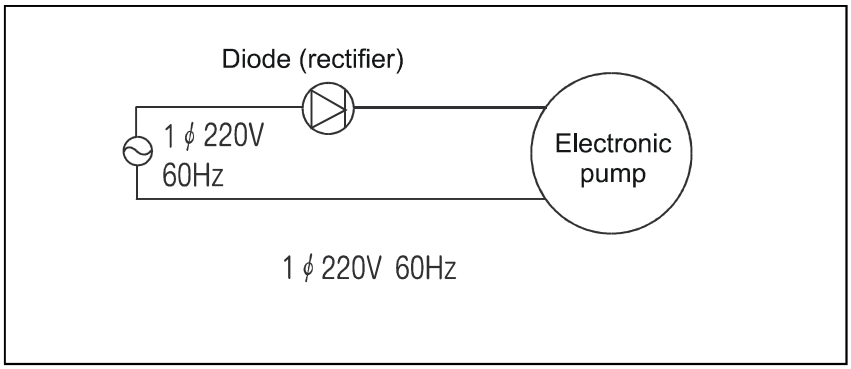
After replacement of a pump or a nozzle, you must check the pressure and flux of the pump. Connect a manometer and a mass cylinder as shown in the above figure, and run the burner for over a minute. Measure the pressure and flux, and adjust them so that they are equal to the standard pressure and flux.

* Hints

① You must use the same electronic pump as indicated in the specifications, and you may not substitute a model with another.

② Do not raise the pressure of the electronic pump above the specified value. If you do so, too much oil will be supplied and the combustion chamber will be overheated.

③ If you connect the electronic pump directly to power source, it will not work. In that case, connect a diode to the wiring as shown below.

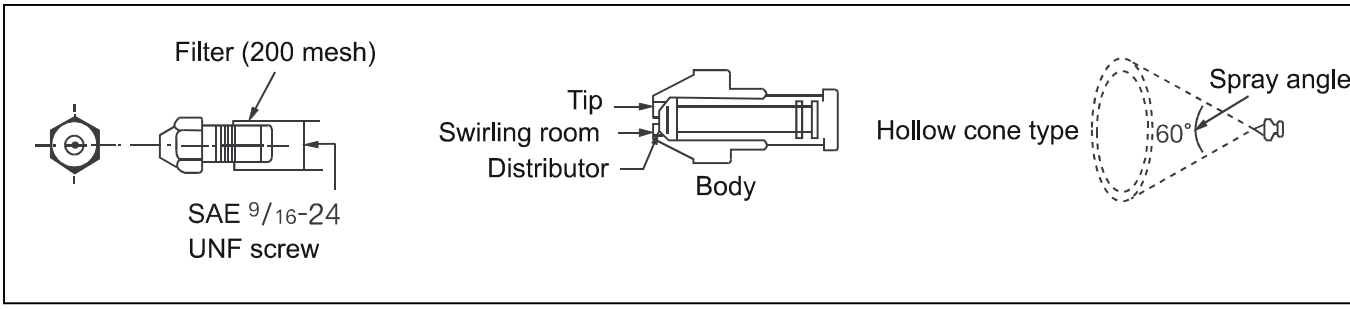


④ If you cannot adjust pressure even when you turn the pressure adjustment screw, make sure that the pipes, the fuel filter, or the entrance to the pump is clogged with foreign materials, or check if there is any leakage of fuel in the pipes.

Entity	KAH-164KM	KAH-264KM	KAH-364KM	KAH-564D
Power source	220/60Hz	220/60Hz	220/60Hz	220/60Hz
Specified pressure	9.0±0.3kgf/cm^2	7.8±0.3kgf/cm^2	8.0±0.3kgf/cm^2	7.0±0.3kgf/cm^2
Insulation resistance	DV500V, 100MΩ or greater	DV500V, 100MΩ or greater	DV500V, 100MΩ or greater	DV500V, 100MΩ or greater

4) Nozzle

The fuel is pressurized at a constant pressure by the electronic pump, and is sprayed into the combustion chamber through the orifice at the tip of the nozzle. It converts the high pressure of the fuel at high speed, and sprays it. As illustrated below, it consists of the body to which a tip is attached, the distributor that swirls the fuel, the fastening screw and the filter.

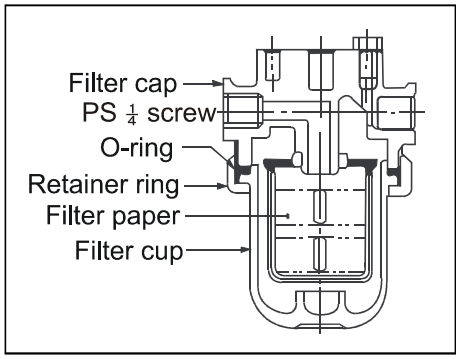


The structure of the nozzle

The fuel filtered by the nozzle filter swirls inside the swirl room, gains speed, and gets sprayed at the nozzle tip. The filter is made of special alloy of 100 mesh (200 mesh at 0.9GPH or lower). The nozzle can be disassembled for cleaning during service, but as it is sophisticatedly processed, it is advisable not to take it off unnecessarily oftentimes, and you should take care not to damage it.

5) Fuel filter (Oil filter)

The oil filter filters out dust and impurities from the fuel. If the filter is clogged because you used fuel mixed with impurities or used the filter for too long, take it apart and clean it with clean kerosene. The figure illustrates the structure of the oil filter.



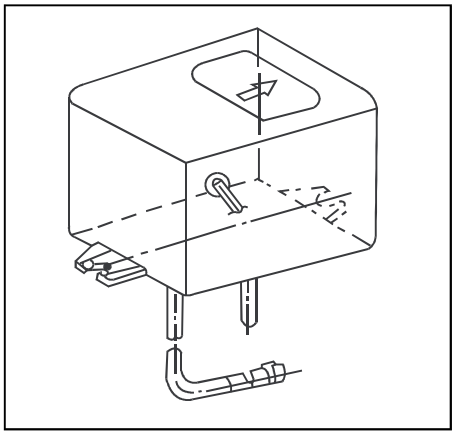
The structure of the oil filter

6) Ignition transformer

To ignite the fuel sprayed from the nozzle, the gun type burner uses the ignition transformer to generate sparks. The ignition transformer is used to transform 220V into higher voltage, and has the following characteristics.

Entity	Gas (hot blast burner, air conditioner/heater)	Kerosene (hot blast burner, air conditioner/heater)
	KAH-104GN(A)/ 134GN/204GN KHC-724CG/964CG/ 1154CG/1254CG	KAH-164KM/264KM/ 364KM/564D KHC-724CH/964CH/ 1154CH/2504CH
Power source	220V/60Hz	
Type	High frequency type	
Primary current	0.2A or lower	
Secondary current	28mA ± 2mA	

This figure illustrates the exterior view of the ignition transformer.



Secondary voltage	18.5kv ± 10%

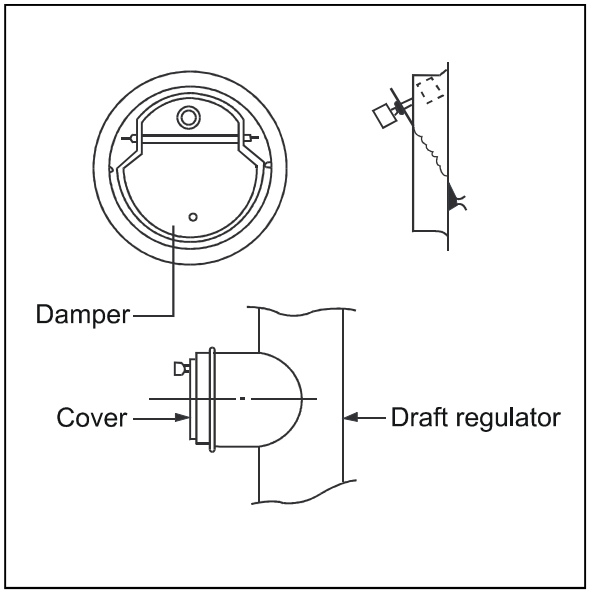
The exterior view of an ignition transformer

3-1-6. Draft regulator

If you installed the heater in a windy place or a place strongly affected by wind, the draft of the exhaust pipe increases due to the influence of the wind. If the exhaust pipe is installed higher than specified, there will be more draft than necessary. If you operate the heater when there is a great amount of draft, there will be a great deal of noise, or the pressure inside the combustion chamber will change abruptly, thereby causing abnormal combustion or extinguishing the fire. The draft regulator prevents such phenomena as described above, always keep the heater burning safely, and maintain an appropriate level of draft, which is -1.5 ~ -2.5mmAq.

The structure of the draft regulator is shown in the figure below, and the principle behind it is as follows. When the draft of the exhaust pipe reaches a certain level, the damper opens in proportion, and sucks low-temperature outside air into the exhaust pipe, thereby lowering the temperature of the exhaust gas. So it automatically adjusts draft appropriately. The draft regulator is used only when excessive draft inside the exhaust pipe needs to be reduced. So it is mistaken to think that it can greatly increase draft.

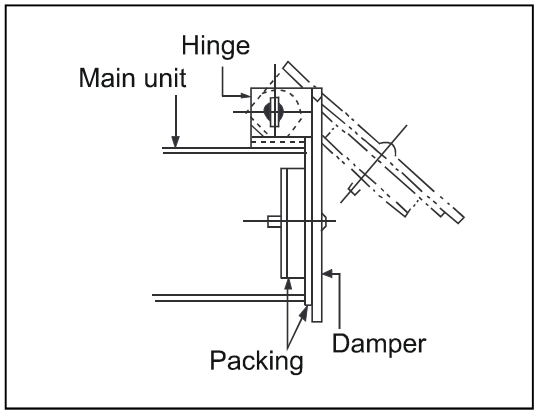
Even if you install the draft regulator, you will need to install the H-type or the C-type top to prevent backdraft in the exhaust pipe. In addition, you must make sure that the exhaust pipe is installed at the specified height. The draft regulator can be installed anywhere: on top of the main unit or in the back of it. When shipped, it is installed on top. When you adjust draft, remove the cover from the main unit, reorient it, and replace it.



The structure of the draft regulator

3-1-7. Explosion-proof system

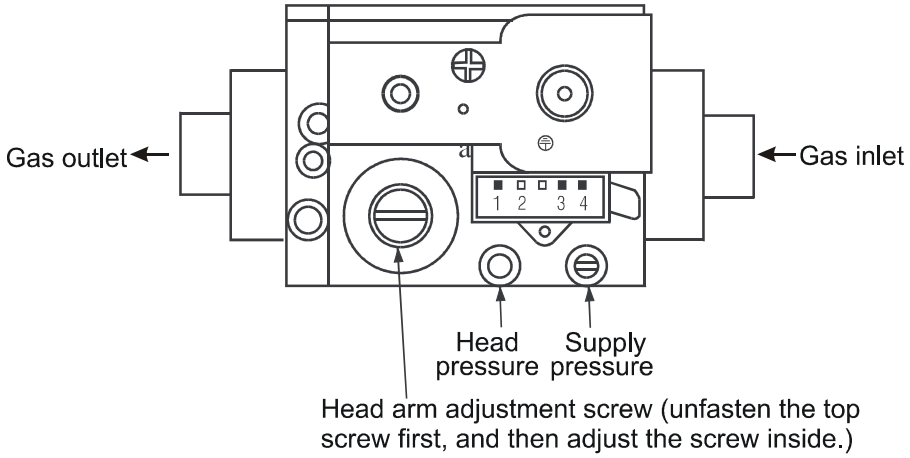
The explosion-proof system protects the combustion chamber of the heater in case abnormal ignition or mistaken operation causes an explosion. The figure illustrates the structure of the explosion-proof system, which consists of the main unit attached to the combustion chamber, and the damper. If there is an explosion, the damper opens to let out combustion gas, thereby protecting the combustion chamber. If you put your face near the damper after switching on the heater during a test run or when checking the burner, it may be very dangerous.



The structure of the explosion-proof system

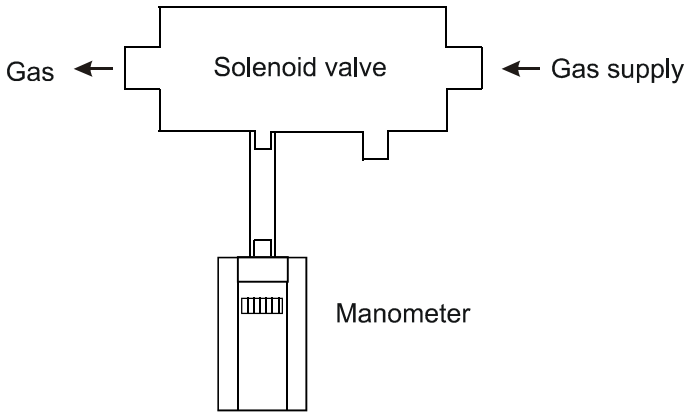
3-1-8. Solenoid valve

It keeps the amount of gas constant. If you apply 220V to it, it opens the gas passage. It is turns on and off.



How to measure the head pressure

As shown in the above figure, connect the manometer, and measure the head pressure.



① Run the product and measure the supply pressure.(100-250mmH_2O)
② Measure the head pressure, and use the head pressure adjustment screw to adjust the head pressure on the basis of the head pressure specifications for different models as described in the specifications.
③ When done with measurement, fasten all loose screws, and check for any leakage.

3-1-9. Controller (Safety controller)

The controller is a combustion monitoring and controlling system for automatic and safe operation of the oil burner. It is used together with the flame detector. Connected to the motor, the solenoid valve, the ignition transformer, and the temperature sensor, it automatically operates them to control combustion and temperature. If there is something wrong with combustion, it serves as a safety switch that stops operation of the burner.

1) Safety function

If the product is started by the temperature sensor when there is something wrong with the flame detection circuit such as the flame detector, no combustion will take place.

2) Safety shutdown

If the product is overheated, it automatically shuts down all electric circuits. If you do not reset the safety switch at this time, the oil burner will not restart.

3) Pre purge

When the unit is switched on, only the burner motor will run before ignition, and the blower will discharge unburned gas from inside the combustion chamber, thereby preventing explosive combustion during ignition.

4) Ignition

After pre-purge, the electronic pump starts running (or the solenoid valve opens), and fuel is sprayed and gets automatically ignited by the sparks generated by the ignition rod. Even after ignition, spark discharge continues for a certain amount of time.

5) Abnormal extinction of flame

If flame is extinguished due to ignition failure or abnormality during operation, the flame detector will immediately detect it and the detection signal will stop operation, and ERROR NO will blink.

6) Intermittent control

If the temperature sensor senses trouble and stops operation, combustion will be stopped, and if combustion restarts, combustion will automatically restart in the same way as the burner is initially ignited.

7) Post purge

When flame is extinguished, the burner blower will kick in and discharge waste gas remaining in the combustion chamber, thereby preventing carbides from staying inside.

8) Safety shutdown during power outage

If power failure occurs during operation, you will need to press the On button again to get the heater running again to prevent users from making mistakes.

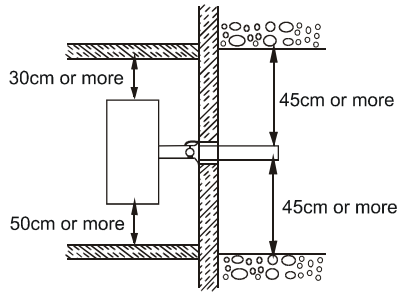
4. Installation

4-1. Decide where to install it

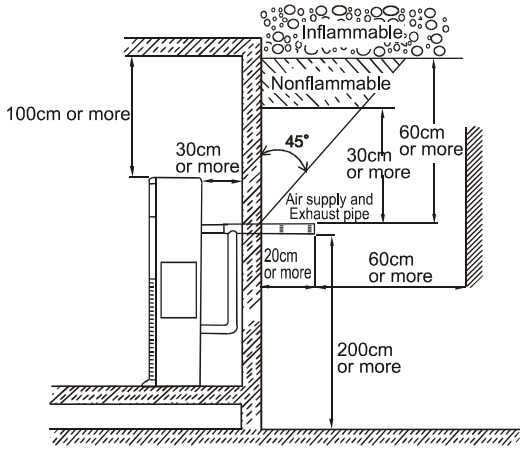
4-1-1. Indoor unit

- As you must install the air supply and exhaust pipe, and connect it to the outdoor unit for yourself, install it close to the wall facing the outdoor unit.
- For even distribution of room temperature, it is best to install it near a window.
- Make sure that no obstacle near the air intake or the exhaust is blocking airflow.
- Install it level on a stable and solid floor.
- (Do not install it in a place where there is too much vibration. Noise is likely.)
- Do not install it near a door or inflammable articles such as curtains. If you use it near curtains, the warm air thermistor may be started.
- Avoid direct sunlight.
- See the figure on the right for standard installation dimensions of the air supply and exhaust pipe.
- The air supply and exhaust pipe must be at least 60cm away from the object located above. (30cm if it is nonflammable.)
- There may be objects on either side, but the air supply and exhaust pipe must be at least 45cm away from the objects.
- If there is a wall or a building in front, the air supply and exhaust pipe must be at least 60cm away from it. (15cm if it is nonflammable.) No obstacles above or on the sides must block airflow.

Plane figure



Side view

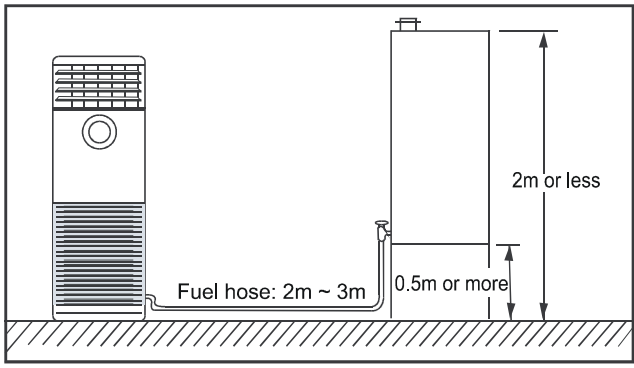


> **Caution**
>
> If objects around it is flame-retardant, the indoor unit must be at least 1m away from objects in the front, at least 45cm away from objects on the sides, and at least 30cm away from objects in the back.

- Where to install the air supply and exhaust pipe
- The air supply and exhaust pipe must be installed on a wall or window leading to the outside.
- Never install it in a place where it goes through the floor or the ceiling.
- Never install it on a collective smoke stack.
- The distance from the indoor unit to the air supply and exhaust pipe must be less than 3m, and there must be fewer than 3 bends. If the extended part is too long, or there are too many bends, the air supply and exhaust pipe may lose balance and abnormal combustion may result.
- If you need to make a hole in the wall, the wall must be less than 20cm thick, and it must not touch any electric wires and gas or water pipes inside the wall. The air supply and exhaust pipe must be level or tilted downward.
- Do not install it in a place where people pass by frequently, or rain or snow accumulates, or directly below eaves.
- Make sure that there is no obstacle or hazardous materials around or near the air supply and exhaust pipe.
- Do not install it in a humid place.

4-1-2. Fuel tank

- It must be installed at least 2m away from the indoor unit, and the hose must be shorter than 3m.
- Avoid a place where it can be moved or tipped over with a small shock.
- Avoid a place where rain or dust can damage it.
- Do not place anything on it, bend it, or let the middle part of the hose be higher than the rest as fuel flow can worsen.
- Install the fuel tank as shown in the figure on the right.



Caution

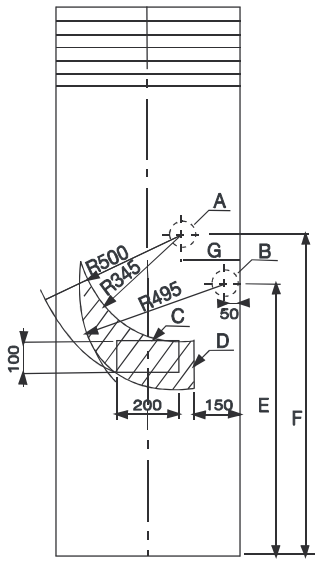
◆ If the fuel tank is installed higher than shown in the figure, the ability of the electronic pump to suck in fuel will deteriorate, thereby causing trouble.

4-4-3. Air supply and exhaust pipe (Standard air supply and xhaust type)

1. Position of the wall hole

A	B	C
KAH-104GN(A)/104GN /134GN/164KM KHC-724CH/724CG/ /964CH/964CG	KAH-204GN KAH-264KM/364KM KHC-1154CH/1154CG /1254CG	KHC-2504CH

- The standard air supply and exhaust type (direct connection type) uses the basic air supply and exhaust pipe and related parts. In addition, depending on the structure of the house, it is possible to use windows to extend the air supply and exhaust pipe. (However, you cannot extend it by more than 3m, and there must be fewer than 3 bends.) For more detailed information, consult the store you purchased the product from.
- Check if there is a column in the wall or any obstacle outdoors before deciding the hole position.
- If the position of the wall hole meets the specifications shown in the figure on the right, you can install it according to the standard air supply and exhaust type.
  * Make sure that the center of the hole is inside the area with deviant lines.



A	Exhaust for the indoor unit
B	Air supply for the indoor unit
C	Wall hole of the air supply and exhaust
D	Standard hole position

	a	b	c
E	800	815	446
F	953	1012	742
G	200	224	308

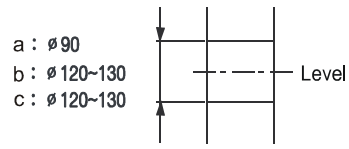
Caution

◆ When installing 2 or more units, the positions of the holes must be at least 50cm away from each other to prevent incomplete combustion due to exhaust gas sucked in by the air intake.

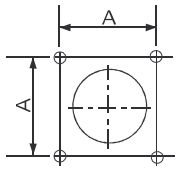
2. Making a hole in the wall

① Before making the hole, check the wall for the presence of any column, gas pipe or water pipe, and electric wire, and the conditions of the outer wall.

② Use a drill to make the hole as shown in the figure.



③ Insert the wood tile for fastening the wall sleeve in the hole.



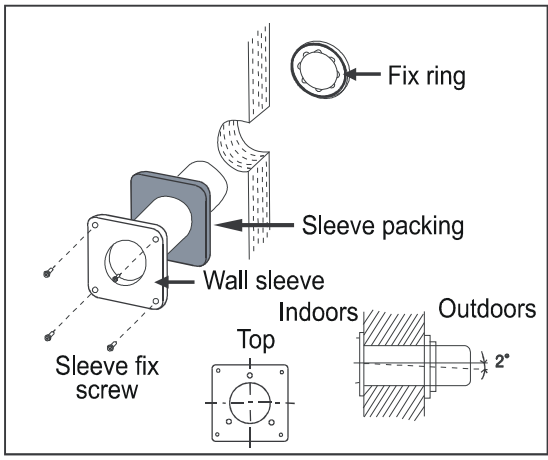
Use wood tiles.

Unit: mm

	a	b	c
A	120	145	145

3. Installing the wall sleeve

- Use: Neat and tidy finish for the wall hole
  ① Insert the packing and the sleeve into the hole, and fasten them with 4 sleeve fix screws.
  ② Insert the fix ring on the outside.

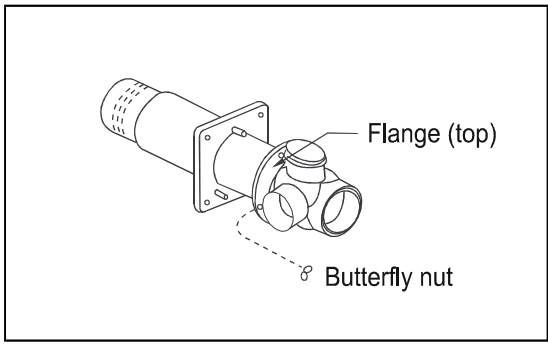


Caution

- Make sure that the 'UP' mark of the wall sleeve is at the top.

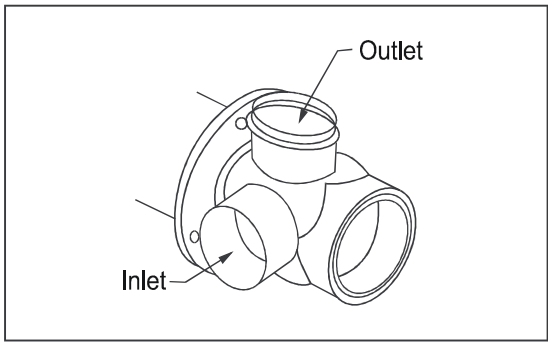
4. Installing the air supply and exhaust pipe

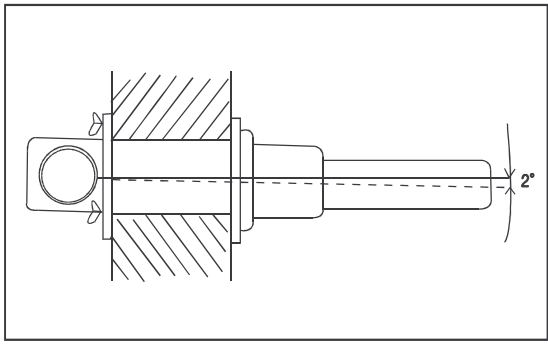
① Unfasten the butterfly nut of the wall sleeve.
② Insert the air supply and exhaust pipe into the wall sleeve, and fasten the butterfly nut with the 'UP' mark of the flange at the top.
③ The pipe and the flange will turn together. In standard installation, make sure that the exhaust faces upward.



Caution

- The air supply and exhaust pipe must be level or lean a little downward. If it faces a little upward or is installed inversely, rain will go inside and damage the product.
- Make sure that there is no dangerous object, inflammable, garden tree, or pet near the tip of the air supply and exhaust pipe.
- Do not install the air supply and exhaust pipe near the neighbor's window.
- As water may drop from the tip of the air supply and exhaust pipe, do not install it in a place where the water may fall into a pond or soil a wall or ceiling.
- Make sure that the air supply hole is out of the sleeve.
- Where it snows heavily, make sure that the air supply and exhaust pipe is not covered with snow.





④ Connect the pipes to the air supply side and the exhaust side.

• Exhaust side

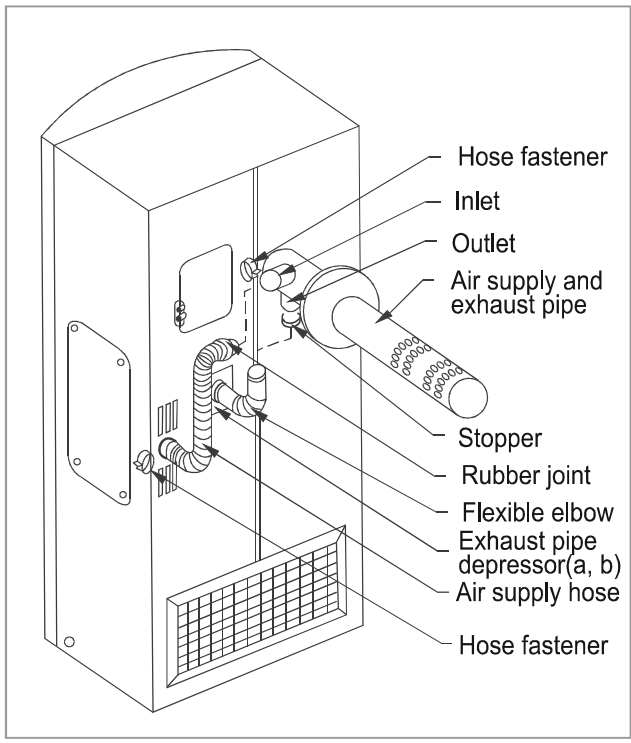
- Connect the flexible elbow to the indoor unit, and fasten it with the exhaust pipe depressors (A and B).
- Connect it to the exhaust pipe and insert the stopper.

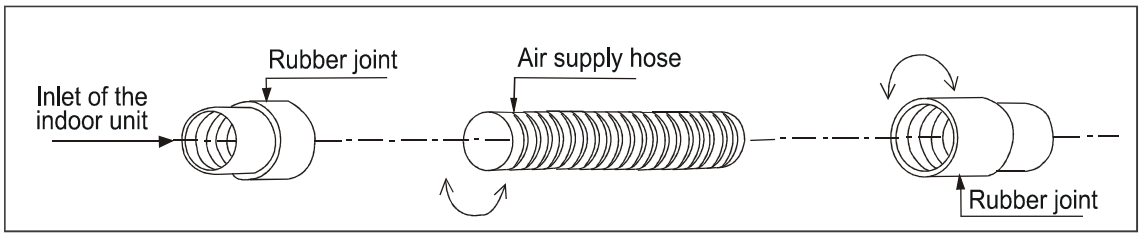
• Air supply side

- Install the rubber joint on either tip of the air supply hose.
- Insert the rubber joint into the air supply pipe of the indoor unit, and fasten it with the hose fastener.

Caution

◆ If the air supply hose is too long, cut it to an appropriate length.





4-4-4. Extended air supply and exhaust pipe

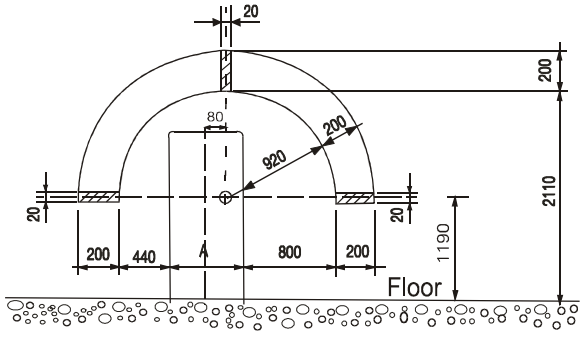
• Use: Use the extended air supply and exhaust pipe set in case the air supply and exhaust pipe is off the standard position. (Extension: 0.58 ~ 1.0m)

1. Hole position of the air supply and exhaust pipe

Ensure that the hole position of the air supply and exhaust pipe is within the area with deviant lines shown in the figure.

Unit:mm

	A
KAH-164KM KAH-104GN(A)/104GN /134GN KHC-724CH/724CG KHC-964CH/964CG	590
KAH-264KM KAH-204GN KHC-1154CH/1154CG KHC-1254CG	750
KHC-2504CH	1050
KAH-364KM	880
KAH-564D	960



2. How to connect it

• Install the air supply and exhaust pipe on the wall.

Caution

- ◆ Make sure that the air supply and exhaust pipe is level or faces a little downward.
- ◆ Securely fasten the connection. The connection must not be longer than 30mm.
- ◆ Wrap aluminum tape around the connecting part (especially the exhaust pipe side) for airtightness.
- ◆ If the air supply and exhaust pipe faces a little upward or is installed inversely, rain will go inside and damage the product.

• Connect the pipes to the exhaust side and the air supply side. (See the following figure.)

① Insert the flexible elbow to the indoor unit, and fasten it with the exhaust pipe depressors (A and B).

② Connect the flexible pipe between the air supply and exhaust pipe and the flexible elbow. Make sure that the O ring is securely inserted.

③ Insert the stopper between the air supply and exhaust pipe and the flexible pipe, and between the flexible pipe and the flexible elbow.

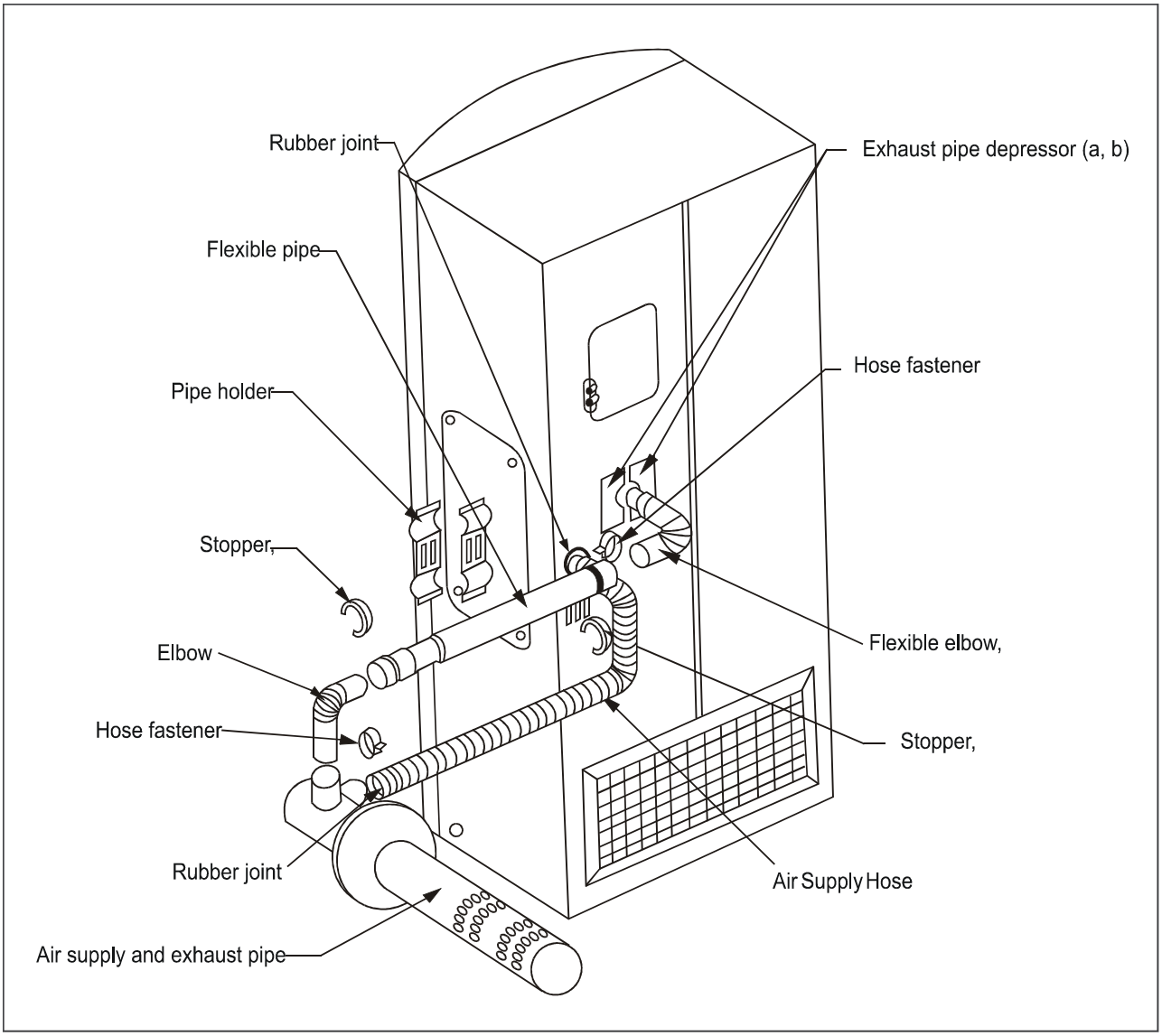
④ Connect the elbow to the air supply and exhaust pipe, and insert the flexible pipe into the elbow.

⑤ Cut the air supply hose to an appropriate length, and connect the rubber joint.

⑥ Connect the rubber joint to the air intake and the flexible pipe, and fasten it with a hose fastener.

⑦ Assemble the metal support, and connect the air supply pipe and the exhaust pipe.

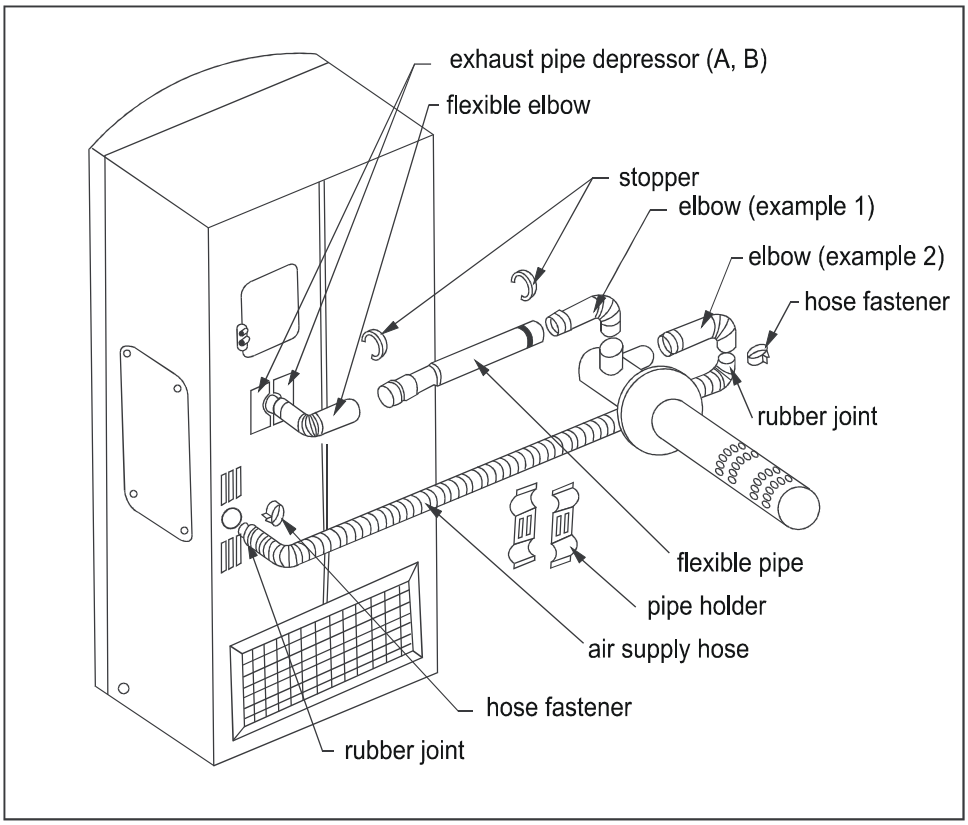
⑧ Securely wrap heat insulating materials around the exhaust pipe. Tightly wrap aluminum tape around the joints of the heat insulating materials.


Rubber joint
Exhaust pipe depressor (a, b)
Flexible pipe
Hose fastener
Pipe holder
Stopper,
Flexible elbow,
Elbow
Hose fastener
Stopper,
Rubber joint
Air Supply Hose
Air supply and exhaust pipe

4-4-5. Elbow

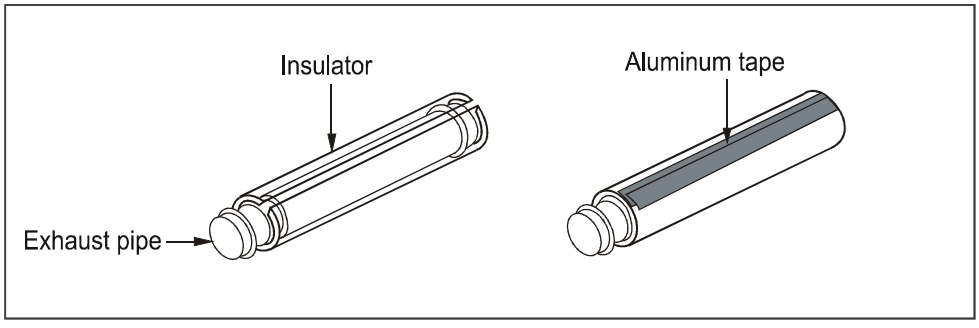
- Use: You can use the elbow for extending the installation range in case the basic air supply and exhaust pipe set or the extended set.
- Example: 1) In case the extended air supply and exhaust pipe set is used, the elbow is used at the air supply part of the air supply and exhaust pipe.
  2) You can use the elbow in case the air supply hose is a little too short, or the flexible elbow and the air supply hose are too close to each other, or it is difficult to turn the air supply hose.

1.



4-4-6. How to insulate the exhaust pipe

- After installing the exhaust pipe, securely wrap heat insulating materials around the exhaust pipe for airtightness. Tightly wrap aluminum tape around the joints of the heat insulating materials. (As the exhaust pipe get hot when the heater is running, you should insulate it.)



5-1-2. Oil heater and countermeasures

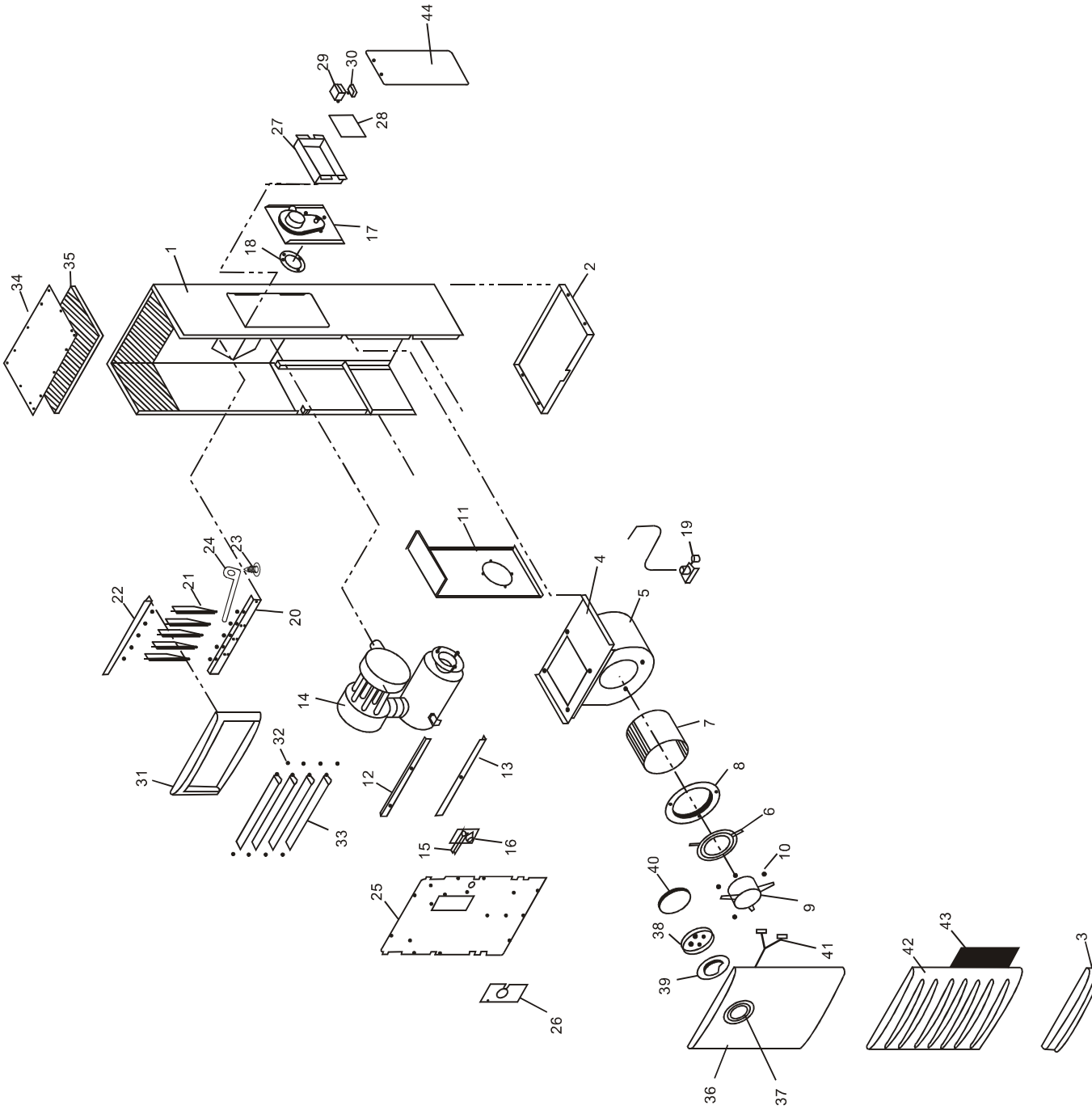
1) Self-diagnosis

No	Item	Condition	Specifications
1	No-ignition or flame failure mode (001)	* There is no ignition within 4 seconds after the electronic pump started working.	4±1 seconds after the electronic pump started working
2	Overheating mode (002)	* The warm air sensor reads 95°C or higher.	The warm air sensor (H-TH) reads 95°C or higher (resistance being 1.2KΩ or lower)
3	Warm air sensor open mode (003)	* The warm air sensor is open.	The warm air sensor reads -30°C or lower. (resistance being 150KΩ or higher)
4	Warm air sensor short mode (004)	* The warm air sensor is shorted.	The warm air sensor reads 197°C or higher (resistance being 0.16KΩ or lower)
5	Similar signal (005)	* The flame sensor (CDS) cannot detect any flame for 7 seconds during the pre purge, pre-ignition and post purge time. * Except for normal combustion conditions, the flame sensor (CDS) detects a flame for 7±1 seconds or more.	Flame sensor detection time (7±1 seconds)
6	Room temperature sensor open, short mode (006)	* The room temperature sensor is open or shorted.	
7	Oil mode (007)	1) In case the oil float switch is on during combustion, the LED display shows “OIL” and a buzzer sounds. 2) The oil float switch has been on since operation began.	The LED display will show “OIL” for 30 seconds, and a warning will be sounded three times every 10 minutes (normal operation). Then it will show “OIL mode” while stopping operation. If you replenish kerosene, no “OIL” mode will not occur.

2) Countermeasures (Oil heater)

Symptom	Cause	Countermeasure
001 MODE	* No kerosene * Contaminated kerosene or use of another type of fuel like light oil * he check valve is not open. * The electronic pump is not working or defective. * The ignitor is not discharging sparks or leaking. * The burner motor is not working properly. * The air supply and exhaust pipe is clogged. * The main PCB is defective. * The CDS terminal has bad contact or is defective. * The CDS is clogged with soot.	Replenish kerosene. Use normal kerosene. Open the check valve. Replace the electronic pump. Check the PCB and replace the ignitor. Check the wirewound resistor of the burner motor and replace it. Readjust the air supply and exhaust pipe. Replace the main PCB. Readjust the CDS or replace it. Remove soot from the CDS.
002 MODE	* The pressure of the electronic pump is too high. * The air filter is clogged. * The outlet grill is clogged. * The blower motor does not have enough air volume. * The temperature sensor is positioned improperly or defective. * Malfunction due to noise. * The main PCB is defective.	Adjust the pressure of the electronic pump or replace it. Clean the air filter. Remove the cause of the clogging. Check the blower motor and replace it. Readjust the position of the temperature sensor. Remove the cause of the noise. Replace the main PCB.
003 MODE	* The temperature sensor is disconnected or its terminal is out of place. * Malfunction due to noise.	Check the temperature sensor terminal and replace it. Remove the cause of the noise.
005 MODE	* The CDS is out of place. * The CDS is defective. * Check the afterimage of the heat exchanger. * Check if the afterimage is caused by the soot inside the heat exchanger	Readjust the CDS. Replace the CDS. Remove what cause the afterimage. Remove the soot inside the heat exchanger.
006 MODE	* The room temperature sensor is disconnected or its terminal is out of place. * The room temperature sensor is shorted.	Check the room temperature sensor and replace it. Replace the room temperature sensor.
OIL MODE	* Kerosene supply mode and no kerosene * The oil sensor is defective.	Replenish kerosene. Replace the oil sensor.

5-2-3. KAH-164KM



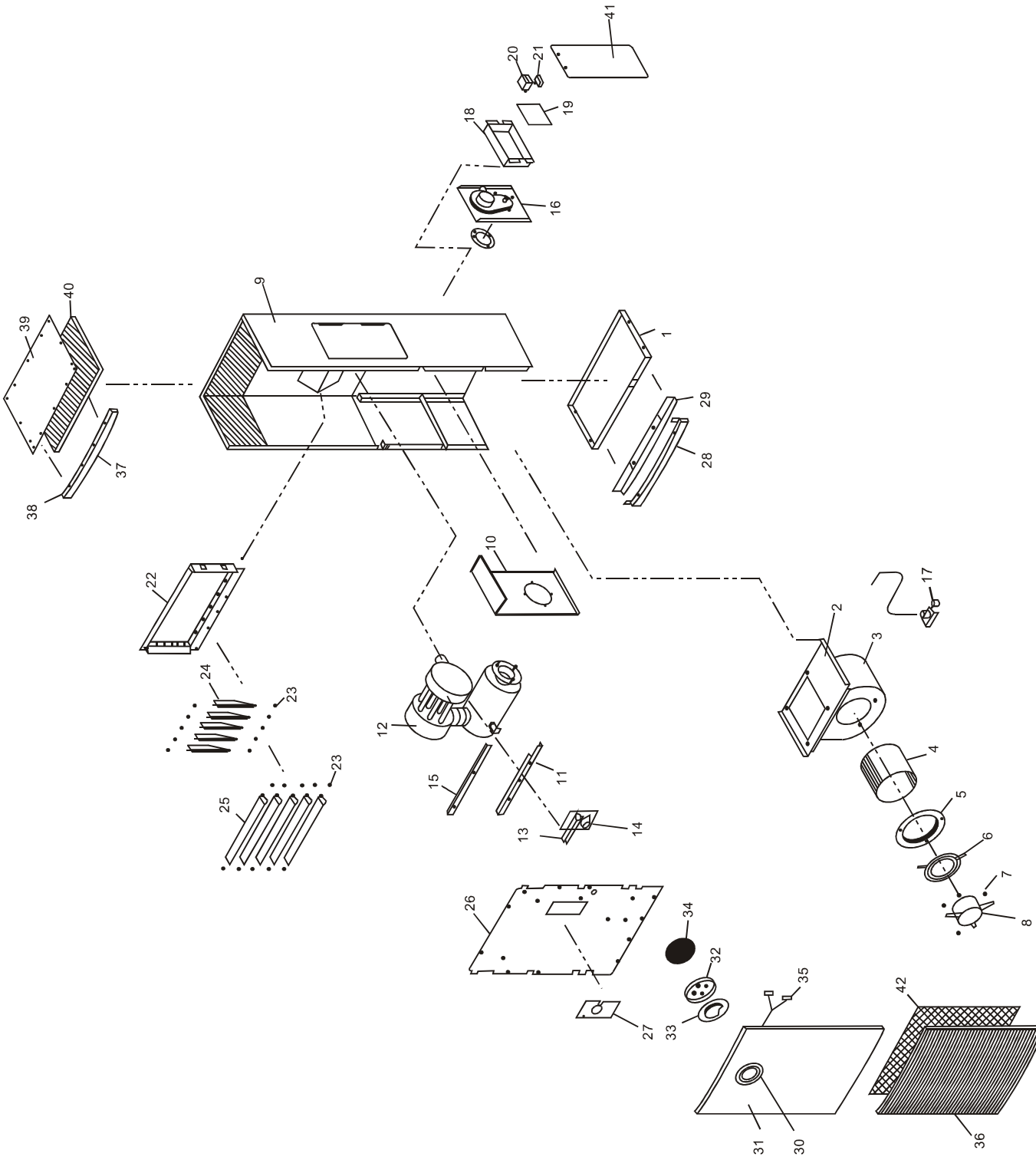
Part list

No.	Part name	Item No.	Part		Unit	Quantity	Remarks
	(DWG. NAME)	(CODE NO)	Material	Specification		KAH-164KM	
1	ASS'Y-CABINET	G20804AA	ASS'Y	590 * 1,810 * 321	EA	1	
2	BASE I N	C31609AB	G I	1.6t * 648 * 421	EA	1	
3	BASE DECO	A20006BA	HIPS	SG970,G7352	EA	1	
4	FAN PLATE	H32890AA	G I	1.6 * 628 * 401	EA	1	
5	ASS'Y FAN CASE	H32891AA	ASS'Y		EA	1	
6	Safety net	H36448AA	SWM-B	Ø 2.8	EA	1	
7	BLOWER ASS'Y	H32822AA	ABS+GF	ASS'Y	EA	1	
8	BLOWER MOUTH LF	H32899AA	GI	1.0t * 304 * 304	EA	1	
9	ASS'Y MOTOR IN	G30851CA	K602	220V,6lHz	EA	3	
10	BUSING RUBBER	H44013AA	NBR	t5.0 * Ø 24	EA	1	
11	BURNER BARRIER	C31621AC	GI	0.8t	EA	1	
12	HOLDER HEX UP	H32835AA	GI	1.2t	EA	1	
13	HOLDER HEX LOW	H32827AB	GI	1.2t * 50 * 564	EA	1	
14	ASS'Y HEATER	C31623AA	ASS'Y	STS304	EA	1	
15	HEAT THERMISTOR	H42804AA	ASS'Y	95°C/OFF	EA	1	
16	BIMETAL THERMISTOR	H42822AA	ASS'Y	145°C/OFF	EA	1	
17	ASS'Y BURNER	H32832AA	ASS'Y	16,000kcal/h	EA	1	
18	GASKET BURNER	H42805AA	GLASS WOOL	3.0t * 140 * 140	EA	1	
19	ASS'Y ELEC VALVE	H32813BA	ASS'Y	220V,9.0kg/cm^{2}f	EA	1	
20	HOLDER-BLADE-LOW	G30843AB	EGI	1.0T	EA	1	
21	BLADE-V	G30846AD	NY +GF15%		EA	5	
22	HOLDER-BLADE-UP	G30847AB	EGI	1.0T	EA	1	
23	SWING MOTOR	X90011AA	ASS'Y	AC 220V/240V, 60Hz	EA	1	
24	SWING BLADE HOLDER	G30845AA	PBT	BLK	EA	1	
25	FRONT BARRIER	C31656CB	GI	0.8t * 568 * 1073	EA	1	
26	COVER PLATE	H42807AA	GI	0.8t * 130 * 250	EA	1	
27	ELEC-BASE	H32921AA	ABS	390g,heat-resistant,BLK	EA	1	
28	ASS'Y MAIN PCB	H32967AA	ASS'Y		EA	1	
29	POWER TRANS	C31660AA	ASS'Y	DC 17V, 0.6AμF	EA	1	
30	MOTOR CAPACITOR	H42847BA	ASS'Y	400VAC,5μF	EA	18	

Part list

No.	Part name	Part No.	Part		Unit	Quantity	Remarks
	(DWG. NAME)	(CODE NO)	Material	Specification		KAH-164KM	
31	OUTLET GRILLE	A20002AB	HIPS	SG970,G7352	EA	1	
32	BOSS RUBBER	A40016AA	SILICON	BLK	EA	18	
33	ASS'Y BLADE-H	C31662AB	ASS'Y	SC-91438T	SET	4	
34	TOP PANEL	C31642AB	EGI	0.8t * 574 * 369	EA	1	
35	SPONGE TOP PANEL	H36401AB	PU FOAM	20t * 340 * 540	EA	1	
36	ASS'Y FRONT IN	A20003AB	ASS'Y		EA	1	
37	PANEL BODY	C31663AA	ABS	HI153-8A890C	EA	1	
38	PANEL COVER	A30199BA	HIPS	SG970-13273B	EA	1	
39	ASS'Y PANEL PCB	H36404AA	ASS'Y		EA	1	
40	CPONGE PANEL COVER A	C16012AA	PU FOAM	Ø 180 * 10t	EA	1	
41	CONNECTOR WIRE	H32855AA	ASS'Y	1050mm	SET	1	
42	AIR INLET GRILLE	C21612AB	ASS'Y	SG970,G7352	SET	1	
43	AIR FILTER	H32920AA	PP	505 *740	EA	1	
44	SERVICE COVER	H32859AA	EGI	T0.8 * 310 * 562	EA	1	

5-2-4. KAH-264KM



Part list

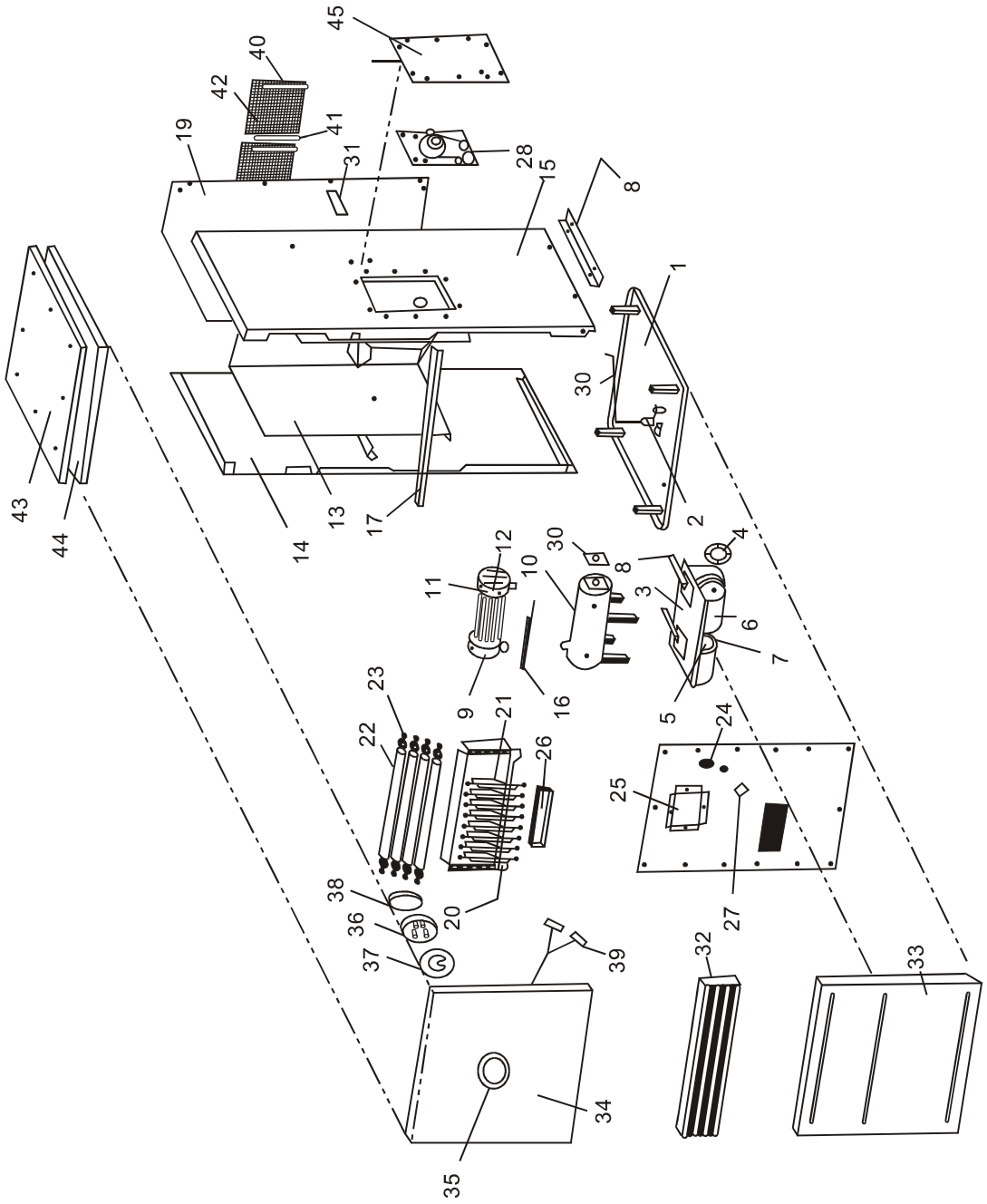
No.	Part name	Part No.	Part		Unit	Quantity	Remarks
	(DWG. NAME)	(CODE NO)	Material	Specification		KAH-264KM	
1	BASE I N	G 31201 AA	G I	16t * 478 * 828	EA	1	
2	FAN PLATE	H33210CA	G I	1.6t * 457 * 788	EA	1	
3	ASS'Y FAN CASE	H32891AA	ASS'Y		SET	1	
4	BLOWER ASS'Y	H32822AA	ABS	ASS'Y	EA	1	
5	BELL MOUTH LF	H32899AA	SBHG1	1.0t	EA	1	
6	Safety net	H36448AA	SWM-B	Ø 2.8	EA	1	
7	BUSING RUBBER	H44013AA	NBR	T5.0 * Ø 24	EA	3	
8	ASS'Y MOTOR IN	G30851CA	K602	220V,60Hz	EA	1	
9	ASS'Y CABINET	H23202BA	ASS'Y	750t * 440 * 1790	EA	1	
10	BURNER BARRIER	H33217BA	GI	0.8t * 440 * 870	EA	1	
11	HOLDER HEX-LOW	H33218BA	GI	1.2t * 60 * 697	EA	1	
12	ASS'Y HEATER	H33219AA	ASS'Y		EA	1	
13	HEAT THERMISTOR	H42804AA	ASS'Y	95°C/OFF	EA	1	
14	BIMETAL THERMISTOR	H42822AA	ASS'Y	145°C/OFF	EA	1	
15	HOLDER HEX UP	H33220BA	GI	1.2t * 75 * 700	EA	1	
16	ASS'Y BURNER	H33221AA	ASS'Y	25,000kcal/h	EA	1	
17	ASS'Y ELEC PUMP	H33208BA	ASS'Y	7.8Kgf/cm^2	EA	1	
18	ELEC-BASE	H32921AA	ABS	390g,heat-resistant,BLK	EA	1	
19	ASS'Y MAIN PCB	H32967AA	ASS'Y		EA	1	
20	POWER TRANS	G30804BA	ASS'Y	DC 17V, 0.6A	EA	1	
21	MOTOR CAPACITOR	H42847EA	ASS'Y	400VAC,8µF	EA	1	
22	ASS'Y OUTLET GRILL	H23206CA	ASS'Y	SC-94445T	EA	1	
23	BOSS RUBBER	A40016AA	SILICON. BLK		EA	20	
24	BLADE-V	A30164AA	EGI, BLK	1.0t * 45 * 276	EA	5	
25	ASS'Y BLADE-H	H33223AA	ASS'Y	SC-94445T	EA	5	
26	FRONT BARRIER	H33248AA	GI	0.8t * 696 * 1063	EA	1	
27	COVER PLATE	H4280AA	GI	0.8t * 130 * 250	EA	1	
28	INLAY LOW	H33226AA	EGI,VCM	0.7t * 79 * 779	EA	1	
29	SUPPORT INLAY LOW	H33227AA	GI	1.6t * 126 * 650	EA	1	

30	ASS'Y FRONT IN	H23215AA	ASS'Y		EA	1	

Part list

No.	Part name	Part No.	Part		Unit	Quantity	Remarks
	(DWG. NAME)	(CODE NO)	Material	Specification		KAH-264KM	
31	PANEL BODY	C31663AA	ABS	H153-8A890C	EA	1	
32	PANEL COVER	A30199BA	HIPS	SG970-13273B	EA	1	
33	ASS'Y PANEL PCB	H36404AA	ASS'Y	For heating only	EA	1	
34	SPONGE PANEL COVER A	C16012AA	PU FOAM	Ø 180 x 10t	EA	1	
35	CONNECTOR WIRE	H32855AA	ASS'Y	1050mm	EA	1	
36	ASS'Y INLET GRILLE	H23218AA	ASS'Y		EA	1	
37	INLAY UP	C32091AA	VCM	0.7t * 79 * 779	EA	1	
38	DECOLATION	C32072AA	ABS	Cr plated	EA	1	
39	TOP PLATE	H33232AA	EGI	0.8t*434*746	EA	1	
40	SPONGE TOP PLATE	H33212BA	PU FAOM	715 * 425 * 20t	EA	1	
41	SERVICE COVER	H32859AA	EGI	T0.8 * 310 * 562	EA	1	
42	ASS'Y FILTER	H33253AA	MSWR-PVC	690 *650	EA	1	

5-2-5. KAH-364KM



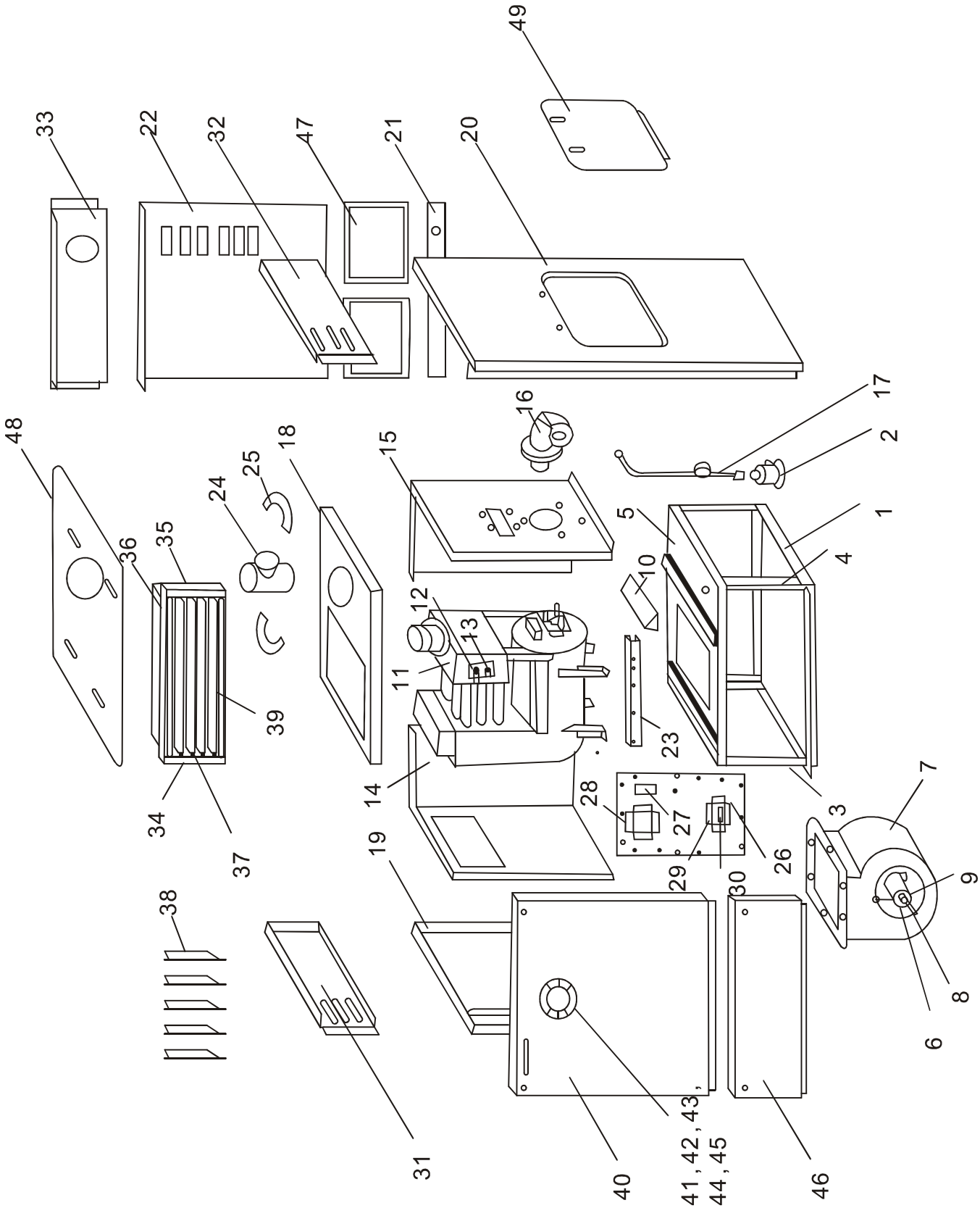
Part list

No.	Part name	Part No.	Part		Unit	Quantity	Remarks
	(DWG. NAME)	(CODE NO)	Material	Specification		KAH-364KM	
1	BASE I N	H33606AA	G I	2.0 * 919.6 * 539.6	EA	1	
2	ASS'Y ELEC PUMP	H33607AA		8.0Kg/ cm^2	EA	1	
3	FAN PLATE	H33611AA	G I	2.0t * 539.6 * 931.6	EA	1	
4	BELL MOUTH	C32012AA	ABS	BLK	EA	4	
5	BLOWER ASS'Y	C32014AA	ABS	240 *220L	EA	2	
6	ASS'Y FAN CASE	C32016AA	GI	ASS'Y	EA	2	
7	MOTOR	H33612AA		1,220V,60Hz	EA	1	
8	AIR GUIDE D	H33613AA	GI	0.6 * 150 * 320	EA	2	
9	ASS'Y HEX CHAMBER	E33602AA	ASS'Y	STS304	EA	1	
10	ASS'Y COMBU CHAMBER	E33601AA	ASS'Y	STS430	EA	1	
11	HEAT THERMOSTOR	H42804AA	ASS'Y	95°C/OFF	EA	1	
12	BIMETAL THERMOSTOR	H42822AA	ASS'Y	145°C/OFF	EA	1	
13	SHUTTER PLATE LF	H23606AA	GI	0.8t	EA	1	
14	CABINET-LF	H23608AA	EGI	1.0t * 608.7 * 1964	EA	1	
15	CABINET-RH	H23610AA	EGI	1.0t * 608.7 * 1964	EA	1	
16	HOLDER HEX LOW	H33622AA	GI	1.6t * 846 * 75	EA	1	
17	HOLDER HEX UP	H33623AA		1.6t * 846 * 84.4	EA	1	
18	SIDE HOLDER	H43203AA	SC-94445T	SCPI	EA	2	
19	CABINET BACK	H33625AA	GI	1.0t * 850 * 1370	EA	1	
20	ASS'Y OUTLET GRILL	H33626AA	ASS'Y		EA	1	
21	BLADE-V	H33629AA	EGI,BLK	0.8t	EA	7	
22	BLADE-H	H33224BA	EGI,SC-94445T	0.7t	EA	4	
23	BOSS RUBBER	A40016AA	SILICON. BLK		EA	22	
24	FRONT BARRIER	H33623AA	GI	0.8t	EA	1	
25	CONTROL COVER	H33624AA	GI	0.8t	EA	1	
26	SUB MIDDLE GIRLLE	H33625AA	EGI	0.8t * 4634 * 108.4	EA	1	
27	COVER PLATE	H42807AA	GI	0.8t * 130 * 250	EA	1	
28	ASS'Y BUNER	H33626AA	ASS'Y		EA	1	
29	BASKET BURNETR	H42805BA	ASS'Y	31,500kcal/h	EA	1	
30	ASS'Y OIL TUBE	H36444AA	ASS'Y		EA	1	

Part list

No.	Part name	Part No.	Part		Unit	Quantity	Remarks
	(DWG. NAME)	(CODE NO)	Material	Specification		KAH-364KM	
31	ASS'Y PANEL PCB	H36402AA	ASS'Y		EA	1	
32	MIDDLE GIRLLE	H33627AA	ABS	SG970-13273B	EA	1	
33	FRONT LOW	H33628AA	EGI	0.8t * 882 * 763	EA	1	
34	FRONT IN	H33630AA	EGI	0.8t * 882 * 763	EA	1	
35	PANEL BODY	C31661AA	ABS	HI153-8A890C	EA	1	
36	PANEL COVER	A30199BA	HIPS	SG970-13273B	EA	1	
37	ASS'Y PANEL PCB	H36404AA	ASS'Y		EA	1	
38	SPONGE PANEL COVER A	C16012AA	PU FOAM	Ø 180 * 10t	EA	1	
39	CONNECTOR WIRE	H32855AA	ASS'Y	1050mm	EA	1	
40	FILTER GUIDE LF	H43610AA	GI	1.2t * 507 * 50	EA	2	
41	FILTER GUIDE RH	H43611AA	GI	1.2t * 507 * 50	EA	2	
42	AIR FILTER	H33632AA	PE,BLK	430* 410	EA	2	
43	TOP PLATE	H33634AA	EGI	1.0t * 876 * 545	EA	1	
44	SPONGE TOP PLATE	H33635AA	PU FOAM		EA	1	
45	SERVICE COVER	H33636AA	EGI	1.0t * 380 * 460	EA	1	

5-2-6. KAH-564D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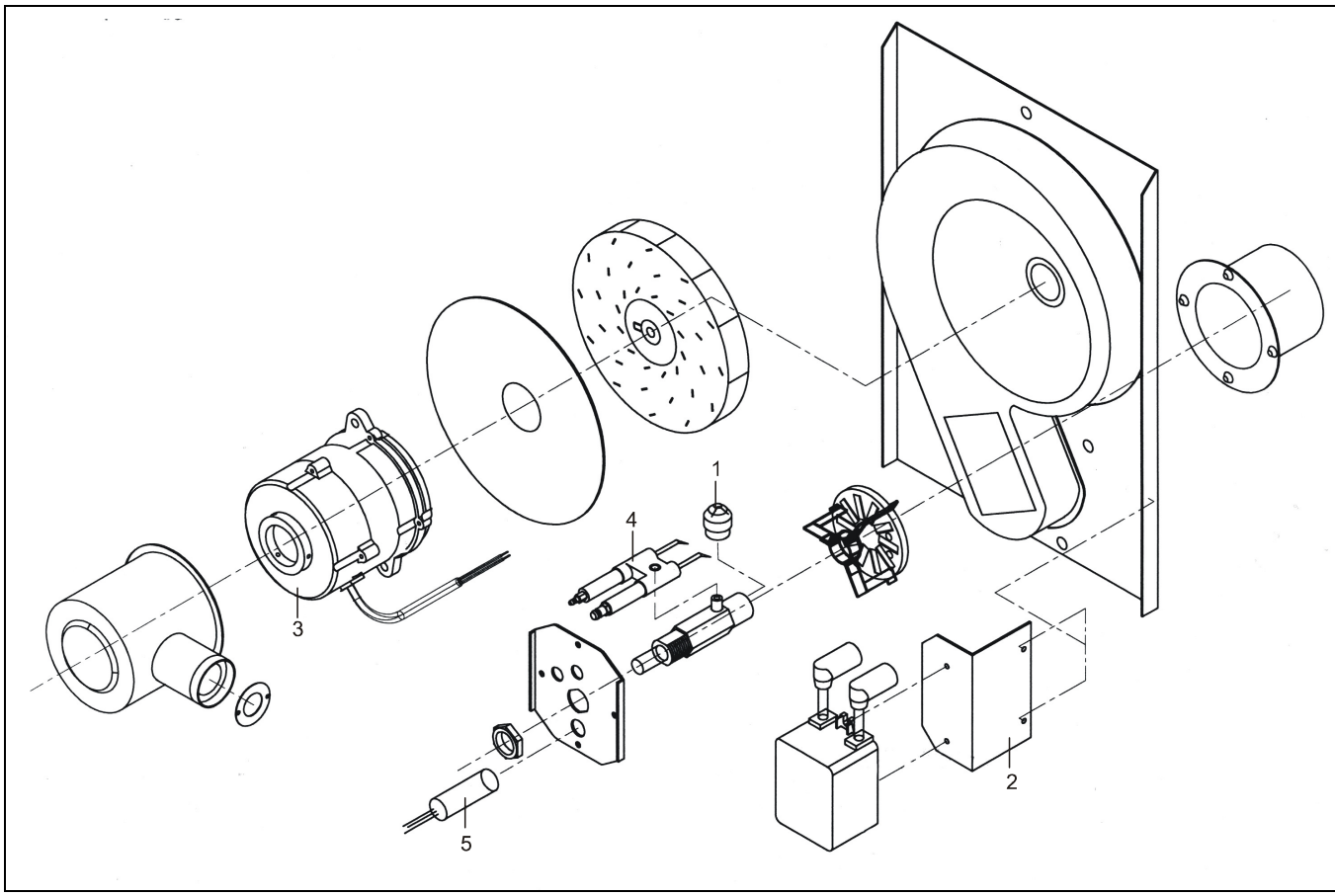
Part list

No.	Part name	Part No.	Part		Unit	Quantity	Remarks
	(DWG. NAME)	(CODE NO)	Material	Specification		KAH-564D	
1	BASE I N	H34006AA	EGI	2.0 * 1030.4 * 736.6	EA	1	
2	ASS'Y ELEC PUMP	H34007AA	ASS'Y		EA	1	
3	LEG-LF	H34008AA	GI	2.3t * 160 * 645	EA	2	
4	LEG-RH	H34009AA	GI	2.3t * 160 * 645	EA	2	
5	ASS'Y FAN PLATE	H34010AA	ASS'Y		EA	1	
6	ASS'Y BLOWER	H34014AA	ASS'Y		EA	1	
7	ASS'Y FAN CASE	H34015AA	SCP1		EA	1	
8	MOTOR BRACKET	H34016AA	SCP1		EA	3	
9	BLOWER-MOTOR	H34017AA	ASS'Y		EA	1	
10	AIR GUIDE	H34019AA	GI		EA	1	
11	ASS'Y HEATER	H34020AA	ASS'Y		EA	1	
12	HEAT THERMISTOR	H42804AA	95°C/OFF		EA	1	
13	BIMETAL THERMISTOR	H42822AA	145°C/OFF		EA	1	
14	CABINET IN-LF	H24003AA	GI	0.7t * 1051.6 * 1095	EA	1	
15	CABINET IN-RH	H24004AA	GI	0.7t * 1051.6 * 1095	EA	1	
16	ASS'Y BURNER	H34021AA		50,000kcal/h	EA	1	
17	ASS'Y OIL TUBE	H34022AA	ASS'Y		EA	1	
18	DUCT PLATE	H34023AA	GI	2.3t * 700 * 998	EA	1	
19	CABINET-LF	H24001AA	EGI	0.8t * 1605 * 780	EA	1	
20	CABINET-RH	H24002AA	EGI	1.0t * 1605 * 780	EA	1	
21	CABI BACK LOW	H34024AA	GI	1.0t * 100 * 928	EA	1	
22	CABINET BACK	H34026AA	GI	0.8t * 922 * 1085.2	EA	1	
23	HOLDER FRONT BRACKET	H34027AA	GI	1.6t * 735 * 45	EA	1	
24	ASS'Y EX PIPE	H34028AA	STS304		EA	1	
25	HOLDER EX PIPE	H34029AA	GI	0.8t	EA	2	
26	FRONT BARRIER	H34031AA	GI	1.0t * 737.6 * 1.34.2	EA	1	
27	COVER PLATE	H42807AA	GI	0.8t * 130 * 250	EA	1	
28	COVER CONTROL	H33624AA	GI	0.8t	EA	1	
29	ELEC BASE	H34032AA	GI	0.8t	EA	1	
30	ASS'Y MAIN PCB	H36402AA	ASS'Y		EA	1	

Part list

No.	Part name	Part No.	Part		Unit	Quantity	Remarks
	(DWG. NAME)	(CODE NO)	Material	Specification		KAH-564D	
31	SIDE GRILLE LF	H34032AA	EGI	0.8t * 318 * 738	EA	1	
32	SIDE GRILLE RH	H34033AA	EGI	0.8t * 318 * 738	EA	1	
33	CABI BACK UP	H34034AA	GI	0.8t * 330 * 926	EA	1	
34	GIRLLE FRAME SIDE-LF	H34035AA	EGI	1.2t * 316 * 126	EA	1	
35	GIRLLE FRAME SIDE-RH	H34051AA	EGI	1.2t * 316 * 126	EA	1	
36	GIRLLE FRAME UP/LOW	H34036AA	EGI	1.0t * 126 * 938	EA	2	
37	BOSS RUBBER	A40016AA	SILICON	NBR	EA	18	
38	BLADE-V	H34038AA	EGI,BLK	0.8t	EA	7	
39	ASS'Y BLADE-H	H34039AA	ASS'Y		EA	5	
40	FRONT IN	H34040AA	EGI	0.8t * 925 * 1082	EA	1	
41	PANEL BODY	C31663AA	ABS	HI153-8A890C	EA	1	
42	PANEL COVER	A30199BA	HIPS	SG970-13273B	EA	1	
43	ASS'Y PANEL PCB	H36404AA	ASS'Y		EA	1	
44	SPONGE PANEL COVER A	C16012AA	PU FOAM	Ø 180 * 10t	EA	1	
45	CONNECTOR WIRE	H32855AA	ASS'Y	1050mm	EA	1	
46	FRONT LOW	H34042AA	EGI	0.8t * 634 * 964	EA	1	
47	AIR FILTER	H34043AA	PE	474 * 455	EA	2	
48	TOP PLATE	H34045AA	GI	0.8t * 693 * 954	EA	1	
49	SERVICE COVER	H33636AA	EGI	1.0t * 380 * 460	EA	1	

5-4-2. Oil burner



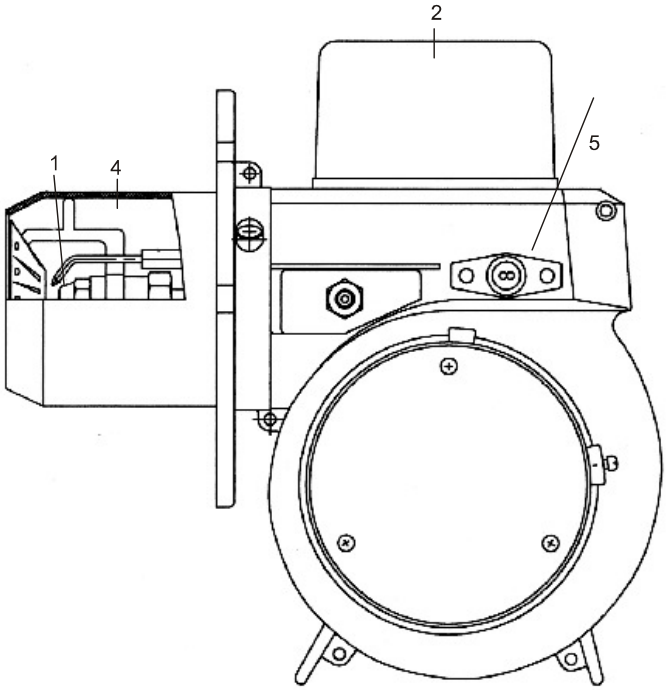
Part list

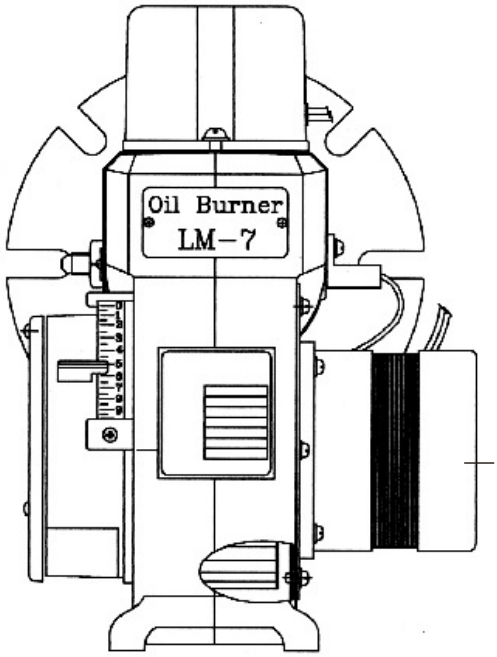
Applicable models: Gas burner/solenoid valve

N0.	Part name	Part No.	Part		Unit	Quantity						Remarks
						KAH			KHC			
	(DWG. NAME)	(CODE NO)	Material	Specification		164 KM	264 KM	364 KM	724CH/ 964CH	1154 CH	2504 CH	
1	NOZZLE	H42846AA	ASS'Y	0.5G/H 60EH	EA	1			1			
		H43215AA	ASS'Y	0.8G/H 60EH	EA		1			1		
		H43651AA	ASS'Y	1.1G/H 60EH	EA			1				
		H44602AA	ASS'Y	1.25G/H 60EH	EA						1	
2	IG TRANS	H32906AA	ASS'Y	AC220V	EA	1	1	1	1	1	1	
3	BURNER MOTOR	H32907AA	ASS'Y	PL-8213DHK	EA	1			1			
		H43216AA	ASS'Y	PL-8222KDHK	EA		1			1		
		H33650AA	ASS'Y	PL-82225KDHK	EA			1			1	
4	Ignition rod	H32909AA	Epoxy/STS		EA	1	1	1	1	1	1	

5	C D S	H32908AA	ASS'Y	P930-05		1	1	1	1	1	1	

5-4-3. Oil burner assembly diagram(KAH-564D)

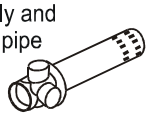
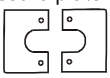


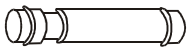
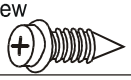


Part list

N0.	Part name	Part No.	Part		Unit	Quantity	Remarks
	(DWG. NAME)	(CODE NO)	Material	Specification		KAH-564D	
1	NOZZLE	H42846AA	ASS'Y	1.75G/H 80EH	EA	1	
2	IG TRANS	H43215AA	ASS'Y	AC220V	EA	1	
3	BURNER MOTOR	H43651AA	ASS'Y	PL-8228KDC8	EA	1	
4	IGNITION ROD	H32909AA	Epoxy/STS		EA	1	
5	CDS	H32906AA	ASS'Y	P930-06	EA	1	

5-4-4. Air supply and exhaust pipe

Part name		Quantity A	Quantity B	Remarks
Air supply and exhaust pipe 		1	1	It sucks in air from the outdoor unit, and discharges exhaust outdoors. (Install it on a wall)
Tapping screw 	ø 4 × 20	4	4	A screw for fastening the air supply and exhaust pipe
Flexible elbow 	ø 60	1	–	Installed on the flue exhaust of the indoor unit
	ø 70	–	1	
Exhaust pipe pressure plate A 	ø 63	2	–	For fastening the flexible elbow on the indoor unit
	ø 73	–	2	
Exhaust pipe pressure plate B 		2	2	For fastening the flexible elbow on the indoor unit
Tapping screw Stopper 	ø 4 × 10	2	2	A screw for fastening the air supply and exhaust pipe
Stopper 	ø 69	1	–	For preventing the flexible elbow and the air supply and exhaust pipe from separating from each other
	ø 79	–	1	
Air supply hose 		1	1	For connecting the air supply and exhaust pipe to the air intake of the indoor unit
Rubber joint 	D: ø 80 d: ø 64	2	1	Used with the air supply hose
	D: ø 80 d: ø 76	–	1	
Hose fastener 	ø 64	2	1	For fastening the rubber joint
	ø 76	–	1	
Machine screw 	M4 × 35	2	2	For fastening the exhaust pipe pressure plate
Elbow 		1	1	For installing the air supply and exhaust pipe

Part name		Quantity A	Quantity B	Remarks
Flexible pipe 		2	2	Extended air supply and exhaust pipe
Pipe holder 		4	4	
Stopper 		2	2	
Screw 	M4 × 20	4	4	
Nut 	M4	4	4	
Wall sleeve 	ø 90 A:120	1	–	Wall sleeve
	ø 115 A:145	–	1	
Butterfly nut 		3	3	
Fix ring 	ø 90	1	–	
	ø 115	–	1	
Sleeve packing 	ø 90 A:120	1	–	
	ø 115 A:145	–	1	
Sleeve fastening screw 	ø 4 × 18	4	4	

* Classification of the models

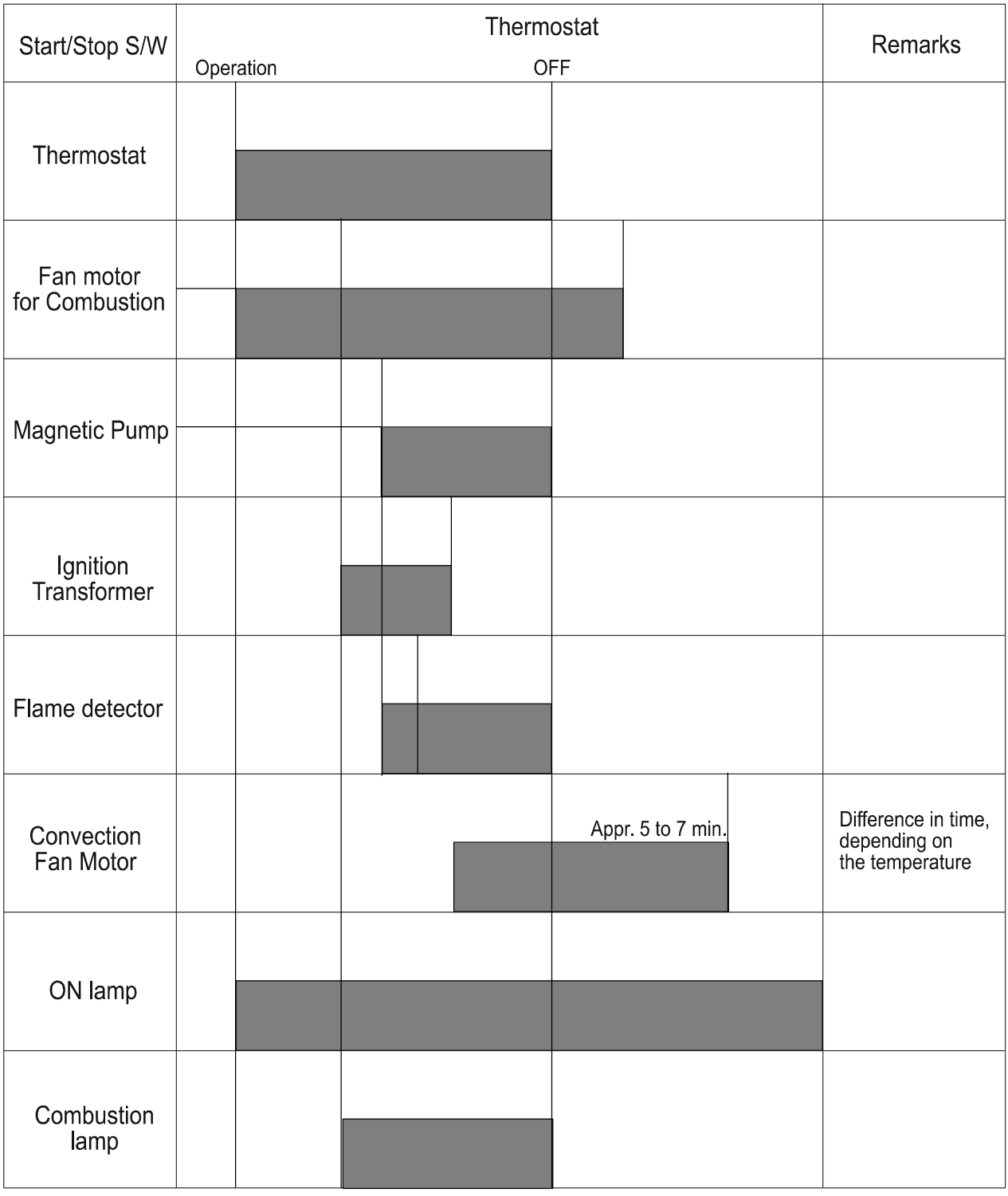
A	B
KAH-164KM KHC-724CH/CG 964CH/CG	KAH-204GN KAH-264KM/364KM KHC-1154CH/CG KHC-1254CG KHC-2504CH

5-7. TIME CHART

5-7-1. Oil heater (for heating)

TIME CHART

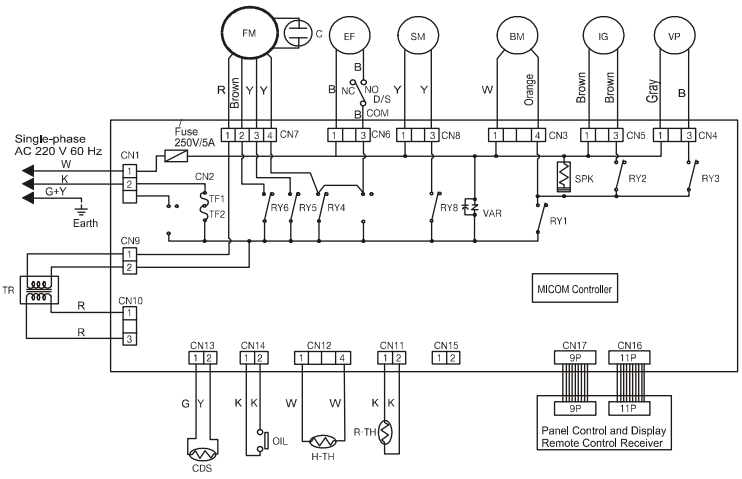
Oil heater



6-2. Oil heater

■KAH-164KM

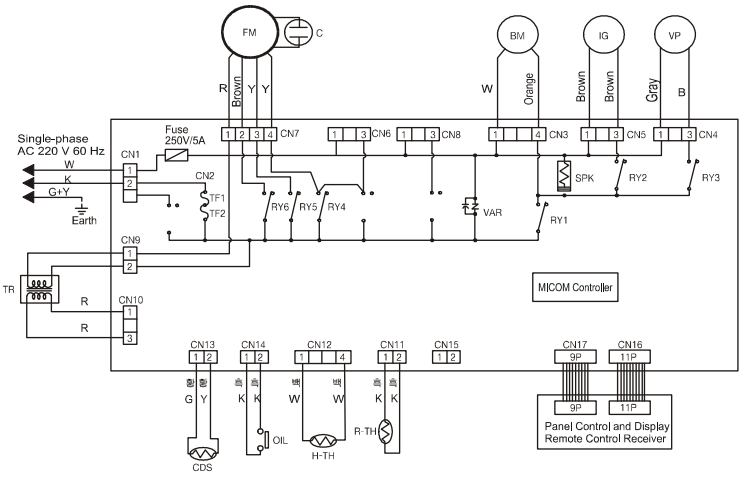
Circuit diagram for the indoor unit (B)



Legend	Name
FM	Fan motor for the Indoor unit
R-TH	Room temperature thermistor
H-TH	Warm air thermistor
OIL	Oil sensor
VAR	Varistor
RY1-6,8	Relay
TR	Power Transformer
TF1,TF2	Temperature fuse (145˚C)
BM	Burner motor
CDS	Ignition detector
VP	Magnetic pump
IG	Ignition transformer
C	Capacitor
SPK	Spark killer
SM	Swing motor
EF	Electric precipitator(optional)
D/S	Door Switch(optional)

■KAH-264KM/364KM

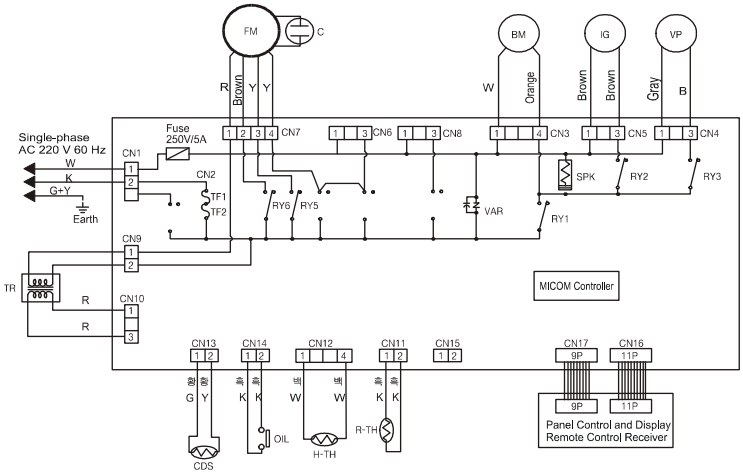
Circuit diagram for the indoor unit (C)



Legend	Name
FM	Fan motor for the Indoor unit
R-TH	Room temperature thermistor
H-TH	Warm air thermistor
OIL	Oil sensor
VAR	Varistor
RY1-6	Relay
TR	Power Transformer
TF1,TF2	Temperature fuse (145˚C)
BM	Burner motor
CDS	Ignition detector
VP	Magnetic pump
IG	Ignition transformer
C	Capacitor
SPK	Spark killer

■KAH-564D

Circuit diagram for the indoor unit(D)



Legend	Name
FM	Fan motor for the Indoor unit
R-TH	Room temperature thermistor
H-TH	Warm air thermistor
OIL	Oil sensor
VAR	Varistor
RY1-3,5-6	Relay
TR	Power Transformer
TF1,TF2	Temperature fuse (145°C)
BM	Burner motor
CDS	Ignition detector
VP	Magnetic pump
IG	Ignition transformer
C	Capacitor
SPK	Spark killer