HAKKO HOT AIR GENERATOR

HAP2000 Series

HAP2031(F)／2051(F)／2076(F)
HAP2081(F)／2101(F)
HAP2151(F)／2201(F)
HAP2301(F)／2402(F)
HAP2051T／2101T

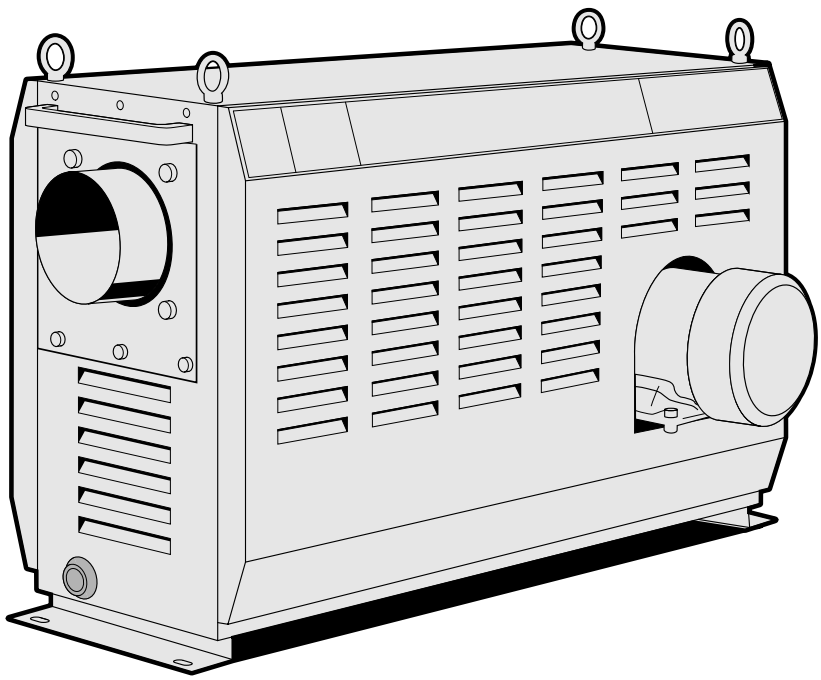
Please check the followings when goods arrived.

- The name plate of the goods ,if all goods ordered are included or not.
- Whether being not damaged and deformed by the accident during transportation.
- Whether there are any slack in bolts, nuts & etc.

HANDLING MANUAL

Thank you for your purchasing

Please follow instructions herein thoroughly for correct use.
Hold this manual at convenient place for reminding.



HAKKO ELECTRIC MACHINE WORKS CO., LTD.

B3-2021-04

CONTENTS

PREFACE

This describes on installation, operation, checking and maintenance of HAKKO's Hot Air Generator “HAP2000 series”. Please use device well with full knowledge!. Hold this manual at convenient place for reminding. let us know when it has been lost or unreadable with dirties.

IMPORTANT SAFETY INFORMATION

In handling of HAKKO's Hot Air Generator "HAP2000 series". comply well with instructions herein with through reading and understanding.

There are several dangerous portions involved in HAKKO's Hot Air Generator "HAP2000series", such as high temperature portion to generate hot wind, might be cause of fire burn, working portion, might be cause of winding up and high voltage portion, might be cause of electric shock .

Those things and portions mentioned in the above, if they are not handled properly, might become cause of death incident or fire.

It is difficult for the company to imagine all about potential risks which might occur in the future, but every probability of risks has been described as many as possible .
To comply with warnings and instructions described herein is to ensure more safety.

Warnings on danger are specified in 3 kinds ,which are expressed with warning label attached on products and shown in this manual.

⚠DANGER	In case of not complying with instructions, an operetor will be dead or injured.
⚠WARNING	In case of not complying with instructions, an operetor might be dead or injured.
⚠CAUTION	In case of not comply with instructions, an operetor might be slightly hurt or materials would be damaged.

Do not modify or repair HAKKO's Hot Air Generator "HAP2000series" without any consultation to HAKKO shop. It might damage seriously safety factor of a device to repair for the things not mentioned in the manual.

CAUTION FOR SAFETY (keep strictly)

⚠DANGER

●Do not heat explosive or flammable gas and use a device in those gas circumstance

The device is not classified in explosive proof specification.
Do not heat explosive or flammable gas and use a device in those gas circumstance, it might cause of explosion and firing.

⚠WARNING

●Do not dissolve and/or modify

Do not dissolve and/or modify device. It will cause of firing, electricity shock and failure.

●Do not touch high temperature portion by hand

It is high temperature around exhaust outlet. Do not touch high temperature portion by hand. It will cause of firing, electricleakage and burn.

●Do not take off a cover during operation

Do not operate without side cover. It will cause of firing, electric leakage and burn.

●Do not close inlet and outlet during operation

Do not close inlet and outlet during operation. It will cause of firing and out of order.

●Do not splash water onto main body and controller

It might cause of electricity shock or out of order.

●Do not operate by wet hand

Do not operate by wet hand.
It will cause of electric shock.

●Do not use in circumstance under dusty and yarn worn.

It will cause of fire due to heated yarn flame exhausted from outlet of Hot Air Generator.

● In case of powder transportation line by hot wind, a check valve shall be installed at outlet

It will cause of fire or explosion when powder flow reverse from outlet.

⚠WARNING

●Do not touch terminals of heater

Do not touch terminals of heater and power source during operation.
It will cause of electric shock or burn.

●Do not insert things and hand at in and outlet

It will cause of fire or damage.

⚠CAUTION

●Do not put flammable things at around outlet

It will cause of fire or damage.

●Do not put flammable things around inlet

It will cause of fire or out of order, if it should be suctioned.

●Do not use outdoors

This is only for indoor use.
Do not use outdoors where it is sunny and rainy.
It will cause of fire.

●Do not heat corrosive gas or humidity air

It will cause of electric shock or out of order.

●Comply strictly with regular power and voltage

Do not use others than indicated power and voltage. It will cause of fire, electric shock, out of order.

●Set earth certainly

It will cause of electric leakage or shock.

●Keep designated temperature range

Keep designated temperature range of outlet of device. If higher temperature than the designated set used. It will cause of fire or out of order.

●Keep designated temperature range of inlet air

In circulation system use, Keep designated temperature range of every inlet of each device. If higher or lower temperature than the designated set used, It will cause of fire or out of order.

《MAIN SPECIFICATION》

HAP2000 SERIES

Model No.		HAP2031	HAP2051	HAP2076	HAP2081	HAP2101
Product Code		00700210	00700220	00700230	00700240	00700250
Power Source		3-phase 200V（50/60Hz）				
Total Wattage		3.2 kW	5.2 kW	7.7 kW	8.3 kW	10.3 kW
Heater Wattage		3 kW	5 kW	7.5 kW	8 kW	10 kW
Air Temp. Range of Outlet		room temp.～350℃＊				
Max. Air Flow（50/60Hz）		4.0／4.8 ㎥/min（damper full open） 3.2／3.8 ㎥/min（damper 2/3 open） 2.0／2.4 ㎥/min（damper 1/3 open）			6.7／7.8 ㎥/min（damper full open） 5.7／6.6 ㎥/min（damper 2/3 open） 3.6／4.3 ㎥/min（damper 1/3 open）	
Air Flow Adjustment Type		Adjusts with air-intake adjustment plate				
Suction Diameter		φ 75 ㎜（with air-intake adjustment plate）			φ100 ㎜（with air-intake adjustment plate）	
Outlet Diameter		φ 73 ㎜ (stainless pipe)			φ 98 ㎜ (stainless pipe)	
Suction Air Temperature		－10℃～230℃				
Blower Specific-ation	Max. Air Flow	5.4／6.2 ㎥/min（50/60Hz）			8.8／10.4 ㎥/min（50/60Hz）	
	Max. Static Pressuer	0.63／0.91 kPa（50/60Hz）			0.95／1.35 kPa（50/60Hz）	
	Wattage	3 phase 200V 0.15kW			3 phase 200V 0.3kW	
	Noise at Max.Air Flow	55／59 dB（50/60Hz）			64／66 dB（50/60Hz）	
Power Source Electric Wire		4core×3.5㎟×3m		4core×5.5㎟×3m	4core×5.5㎟×3m	4core×8㎟×3m
Weight		28 kg			34 kg	35 kg

＊ Air temperature varies depend on usage conditions. Use with conditions of under maximum temperature.

Model No.		HAP2151	HAP2201	HAP2301	HAP2402
Product Code		00700260	00700270	00700280	00700292
Power Source		3-phase 200V（50/60Hz）			
Total Wattage		16.5 kW	21.5 kW	31.5 kW	41.5 kW
Heater Wattage		15 kW	20 kW	30 kW	40 kW
Air Temp. Range of Outlet		room temp.～350℃＊			
Max. Air Flow（50/60Hz）		13.4／15.5 ㎥/min（damper full open） 11.8／14.0 ㎥/min（damper 2/3 open） 7.9／9.2 ㎥/min（damper 1/3 open）		21／25 ㎥/min（damper full open） 19／22 ㎥/min（damper 2/3 open） 13／15 ㎥/min（damper 1/3 open）	
Air Flow Adjustment Type		Adjusts with air-intake adjustment plate			
Suction Diameter		φ 125㎜（with air-intake adjustment plate）		φ 148㎜（damper with flange）	
Outlet Diameter		φ 123㎜ stainless pipe		φ 148㎜ stainless pipe	
Suction Wind Temperature		－10℃～230℃			
Blower Specific-ation	Max. Wind Flow	20／22.6 ㎥/min（50/60Hz）		30／36 ㎥/min（50/60Hz）	
	Max. Static Pressuer	1.61／2.32 kPa（50/60Hz）		1.96／2.85 kPa（50/60Hz）	
	Wattage	3-phase 200V 1.5kW			
	Noise at Max.Air Flow	68／72 dB（50/60Hz）		72／75 dB（50/60Hz）	
Power Source Electric Wire		4core×14㎟×3m	4core×22㎟×3m	4core×38㎟×3m	
Weight		73 kg	76 kg	108 kg	200 kg

＊ Air temperature varies depend on usage conditions. Use with conditions of under maximum temperature.

HAP2000F SERIES

Model No.		HAP2031F	HAP2051F	HAP2076F	HAP2081F	HAP2101F
Product Code		00700211	00700221	00700231	00700241	00700251
Power Source		3-phase 200V（50/60Hz）				
Total Wattage		3.2 kW	5.2 kW	7.7 kW	8.3 kW	10.3 kW
Heater Wattage		3 kW	5 kW	7.5 kW	8 kW	10 kW
Air Temp. Range of Outlet		room temp.～350℃*				
Max. Air Flow（50/60Hz）		2.3 ㎥/min～4.8 ㎥/min			3.7 ㎥/min～7.8 ㎥/min	
Air Flow Adjustment Type		inverter varies blower's revolution speed to adjust air intake.				
Inverter Frequency		30Hz～60Hz				
Suction Diameter		φ 75 ㎜			φ 100㎜	
Outlet Diameter		φ 73 ㎜ (stainless pipe)			φ 98㎜ (stainless pipe)	
Suction Air Temperature		－10℃～230℃				
Blower Specific-ation	Max. Air Flow	6.2 ㎥/min			10.4 ㎥/min	
	Max. Static Pressuer	0.91 kPa			1.35 kPa	
	Wattage	3-phase 200V 0.15 kW			3-phase 200V 0.3 kW	
	Noise at Max.Air Flow	59 dB			66 dB	
Power Source Electric Wire		4core×3.5㎟×3m		4core×5.5㎟×3m	4core×5.5㎟×3m	4core×8㎟×3m
Weight		28 kg			34 kg	35 kg

＊ Air temperature varies depend on usage conditions. Use with conditions of under maximum temperature.

Model No.		HAP2151F	HAP2201F	HAP2301F	HAP2402F
Product Code		00700261	00700271	00700281	00700293
Power Source		3-phase 200V（50/60Hz）			
Total Wattage		16.5 kW	21.5 kW	31.5 kW	41.5 kW
Heater Wattage		15 kW	20 kW	30 kW	40 kW
Air Temp. Range of Outlet		room temp.～350℃*			
Max. Air Flow（50/60Hz）		7.7 ㎥/min ～ 15.5 ㎥/min		12 ㎥/min ～ 25 ㎥/min	
Air Flow Adjustment Type		inverter varies blower's revolution speed to adjust air intake.			
Inverter Frequency		30Hz～60Hz			
Suction Diameter		φ 125 ㎜		φ 148 ㎜ pipe	
Outlet Diameter		φ 123 ㎜ (stainless pipe)		φ 148 ㎜ (stainless pipe)	
Suction Air Temperature		－10℃～230℃			
Blower Specific-ation	Max. Air Flow	22.6 ㎥/min		36 ㎥/min	
	Max. Static Pressuer	2.32 kPa		2.85 kPa	
	Wattage	3-phase 200V 1.5 kW			
	Noise at Max.Air Flow	72 dB		75 dB	
Power Source Electric Wire		4core×14㎟×3m	4core×22㎟×3m	4core×38㎟×3m	
Weight		73 kg	76 kg	108 kg	200 kg

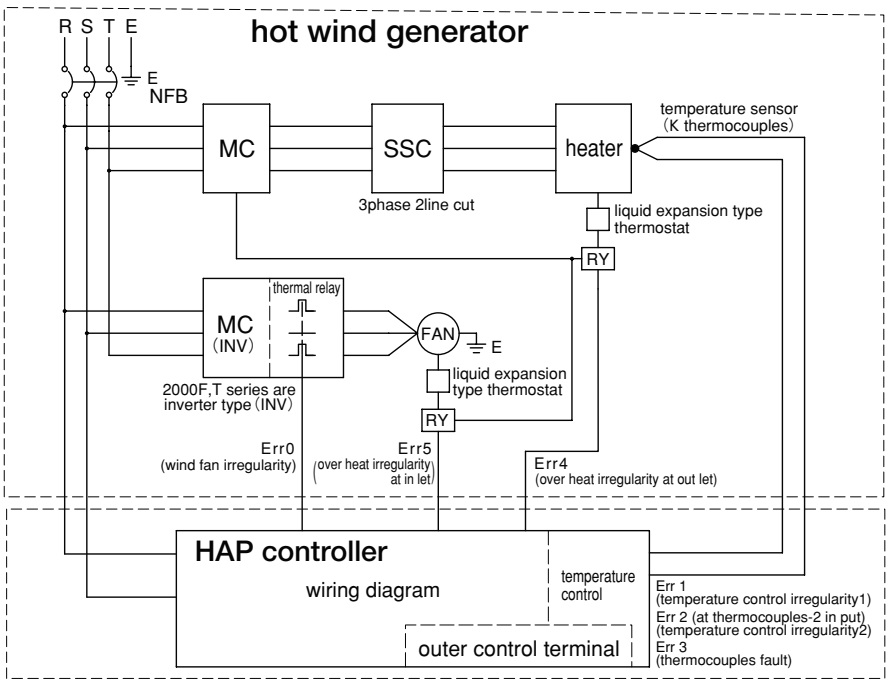
＊ Air temperature varies depend on usage conditions. Use with conditions of under maximum temperature.

HAP2000T SERIES

Model No.		HAP2051T	HAP2101T
Product Code		00700810	00700820
Power Source		3-phase 200V（50/60Hz）	
Total Wattage		5.4 kW	11.5 kW
Heater Wattage		5 kW	10 kW
Air Temp. Range of Outlet		room temp.～300℃*	
Max. Air Flow（50/60Hz）		3.2 ㎥/min ～ 6.5 ㎥/min	7.2 ㎥/min ～ 14.7 ㎥/min
Air Flow Adjustment Type		inverter varies blower's revolution speed to adjust air intake.	
Inverter Frequency		30 Hz～60 Hz	
Suction Diameter		φ 120㎜	φ 150㎜
Outlet Diameter		φ 73㎜ (stainless pipe)	φ 98㎜ (stainless pipe)
Suction Air Temperature		－10℃～150℃	
Blower Specific-ation	Max. Air Flow	9.2 ㎥/min	16.3 ㎥/min
	Max. Static Pressuer	3.0 kPa	5.5 kPa
	Wattage	3-phase 200V 0.4kW	3-phase 200V 1.5kW
	Noise at Max.Air Flow	80 dB	89 dB
Power source electric wire		4core×3.5㎟×3m	4core×8㎟×3m
Weight		42 kg	72 kg

＊ Air temperature varies depend on usage conditions. Use with conditions of under maximum temperature.

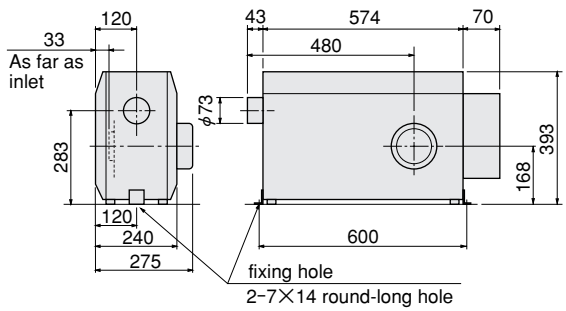
《WIRING DIAGRAM》



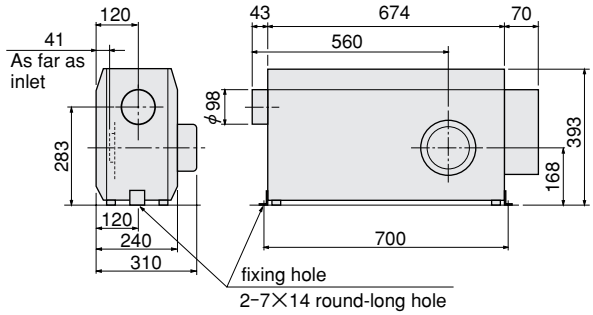
《OUTWARD SIZE》

(Size: mm)

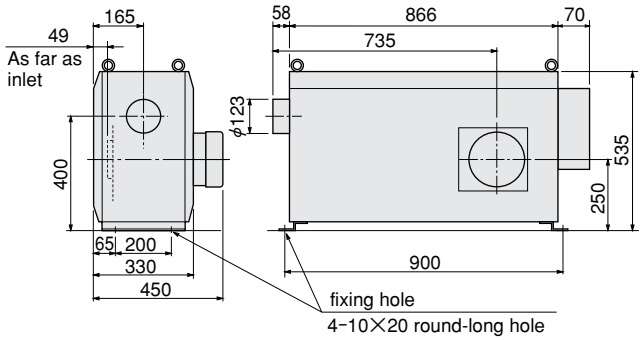
HAP2031 ／HAP2051 ／HAP2076
HAP2031F ／HAP2051F ／HAP2076F



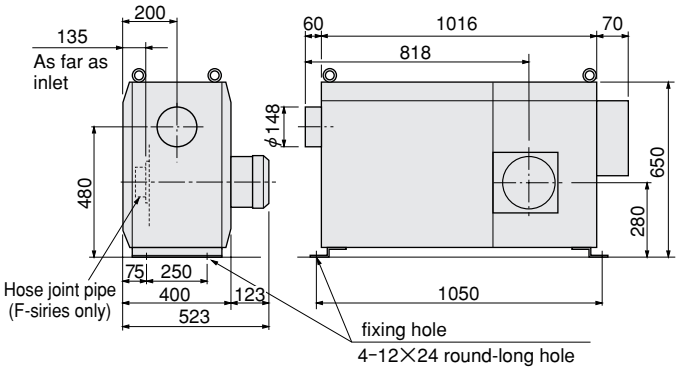
HAP2081 ／HAP2101
HAP2081F ／HAP2101F



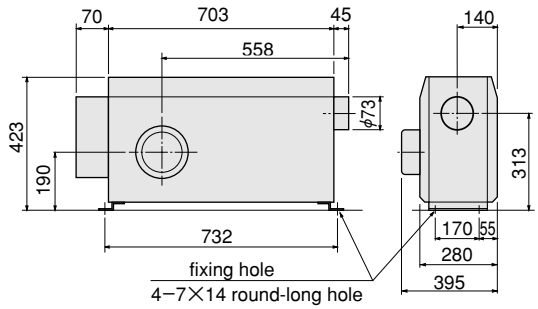
HAP2151 ／HAP2201
HAP2151F ／HAP2201F



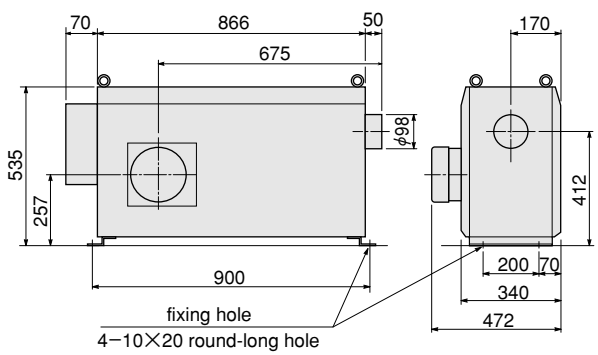
HAP2301 ／HAP2402
HAP2301F ／HAP2402F



HAP2051T

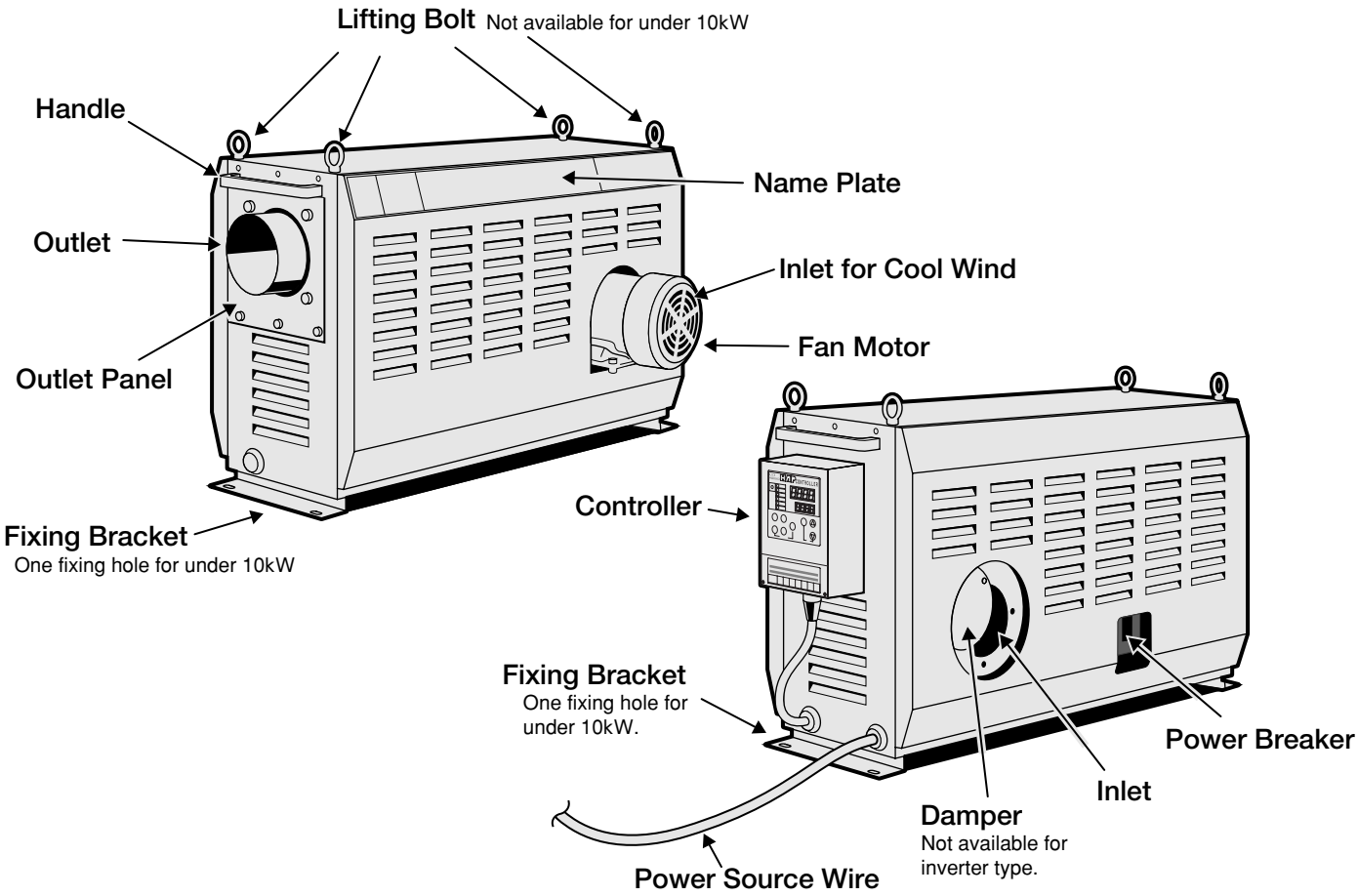


HAP2101T

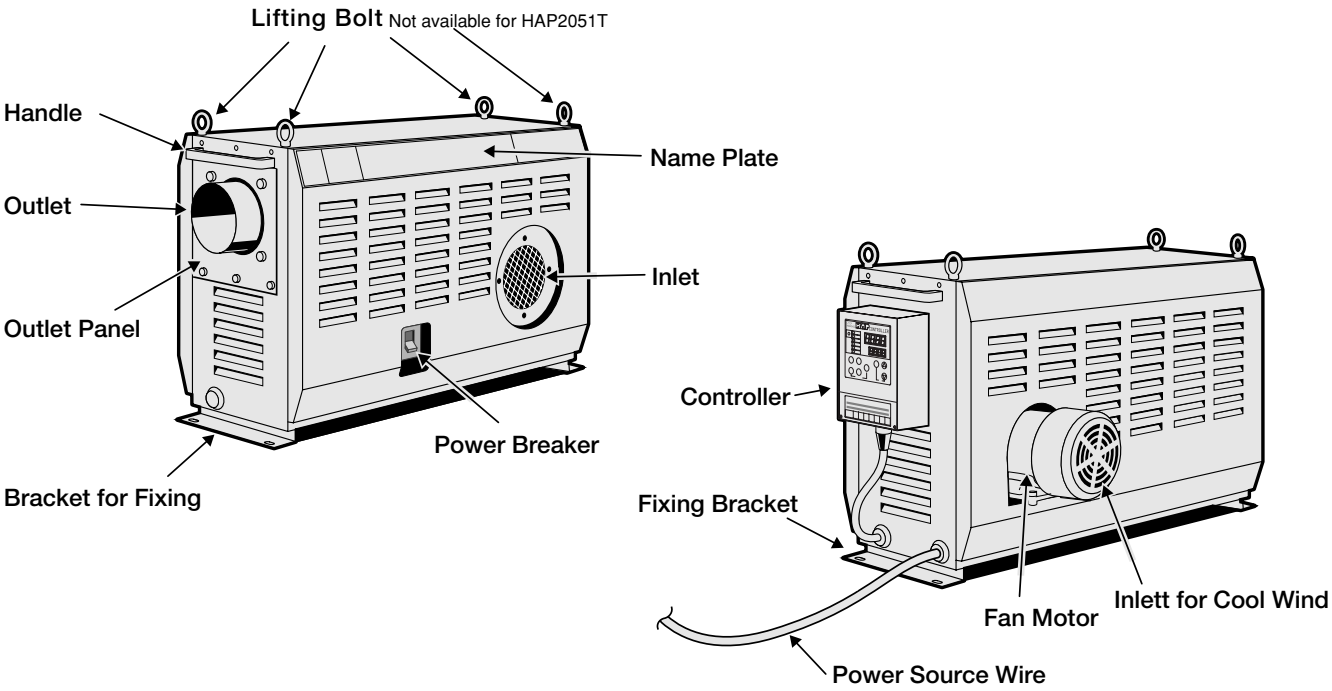


《MAIN BODY》

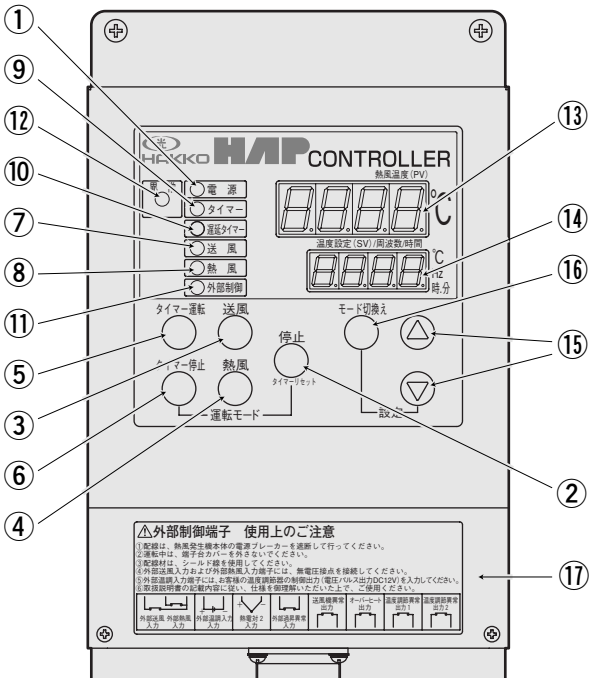
■HAP2000 SERIES／HAP2000F SERIES



■HAP2051T／HAP2101T



《CONTROLLER》



① Power Lamp
It lights on by power breaker "ON".

② Stop Key
To stop hot wind generator.
Pushing "stop key" during a Hot Air Generator being working on, count of delay timer starts and a Hot Air Generator stops after finishing timer count up.

③ Wind Fan Key
To operate wind fan.
Pushing "wind fan key" during a Hot Air Generator being working on, count of delay timer starts and a Hot Air Generator continues operation after finishing timer count up.

④ Hot Wind Fan Key
To operate hot wind fan.

⑤ Timer Operation Key
To operate hot wind fan after passing setting time.

⑥ Timer Stop Key
To stop operation of hot wind fan after passing setting time, hot wind fan will stop. after finishing two minutes operation of wind fan by delay timer.

⑦ Wind Fan Lamp
To light on during wind fan operation.
Wind fan lamp will go on and off only when wind fan operation stops after finishing count up delay timer, during delay timer working.

⑧ Hot Wind Lamp
To light on during hot wind fan working.

⑨ Timer Lamp
It lights on and off during timer being working on or timer being counting during timer being stopping.

⑩ Delay Timer Lamp
It lights on and off during delay timer being counting.

⑪ Outer Control Lamp
It lights on when input of outer control(outer wind fan, outer hot wind fan and outer temperature control) is set.

⑫ Lamp For Irregularity
It lights on at irregularity occurrence.

⑬ Display for Present Value
It shows temperature measured at operation mode.
It shows codes of mode, such as frequency setting mode, timer setting mode or remaining time of timer mode.
It lights on with power breaker "ON".

⑭ Setting Value Display
It shows setting temperature at operation mode.
It shows setting value of frequency at frequency setting mode. (only for HAP2000F、HAP2000Tseries)
It shows timer setting value at timer setting mode.
It shows error code at irregularity occurrence.
It lights on with power breaker "ON".

⑮ Data Alteration Key
It alters each setting value.

⑯ Mode Changing Key
It changes modes in order such as operation mode, frequency setting mode(only for inverter equipped type), timer setting mode, remaining time of timer mode and mode of thermocouple monitor for warning.

⑰ Outer Control Terminal Cover
This is outer control terminal cover. Removing a cover, you will see outer control terminal. Please refer to P19 for more details about outer control terminal.

《INSTALLATION PLACE》

●This is for indoor use specification and conditions for installation place shall be complied with followings.

① Ambient temperature：0～40℃
② Humidity under R.H.80％
③ No explosive or corrosive gas used.
④ No rain or wind directly affected.
⑤ Little dust.
⑥ No sealing More than 50mm away from wall to cooling wind inlet of fan motor.
⑦ Floor of installation place shall be flat, hard and even.

⚠CAUTION

To move device, two men should co-operate.

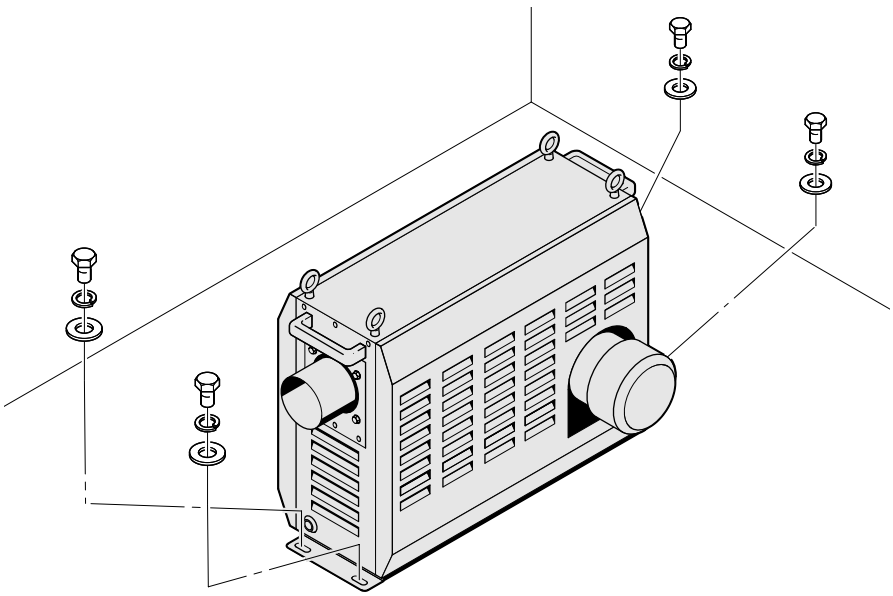
＊Horizontal level installation is basic standard if it is required to install in different way
Please consult with our shop.

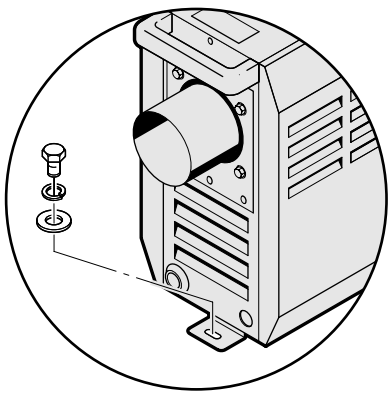
《INSTALLATION》

(1) It is required to install in horizontal level.

(2) Keep space for maintenance and repair works.

(3) Fix fixing brackets for in and outlet with bolts, washers and spring washers set forth below. (bolts, washers and spring washers are not included)





Bracket for fixing has one hole under 10kW（except for HAP2051T）

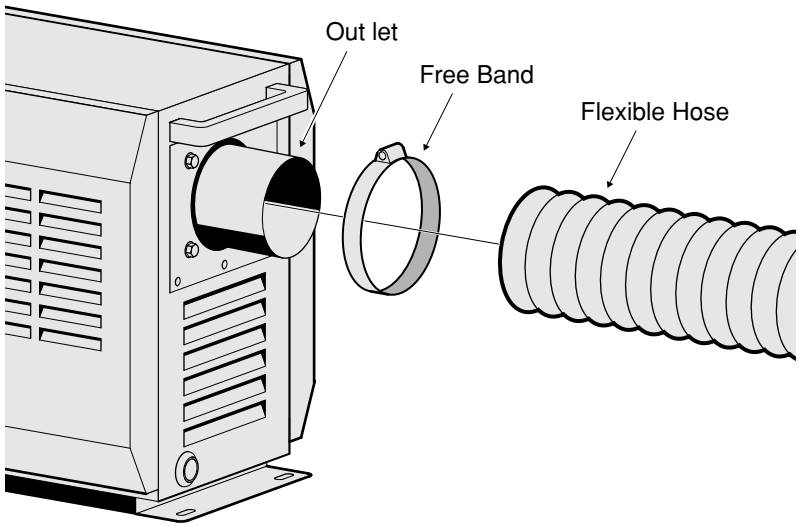
TYPE	BOLT SIZE	QUANTITY
HAP2031／HAP2051／HAP2076／HAP2081／HAP2101 HAP2031F／HAP2051F／HAP2076F／HAP2081F／HAP2101F	M6	2 p'ce
HAP2051T	M6	4 p'ce
HAP2151／HAP2201／HAP2151F／HAP2201F／HAP2101T	M8	4 p'ce
HAP2301／HAP2402／HAP2301F／HAP2402F	M10	4 p'ce

《PIPING CONNECTION》

(1) In connection of flexible hose with outlet, fasten flexible hose with "free band"

⚠CAUTION

Select and use suitable materials of flexible hose in accordance with temperature of hot wind used. It will be cause of fire.

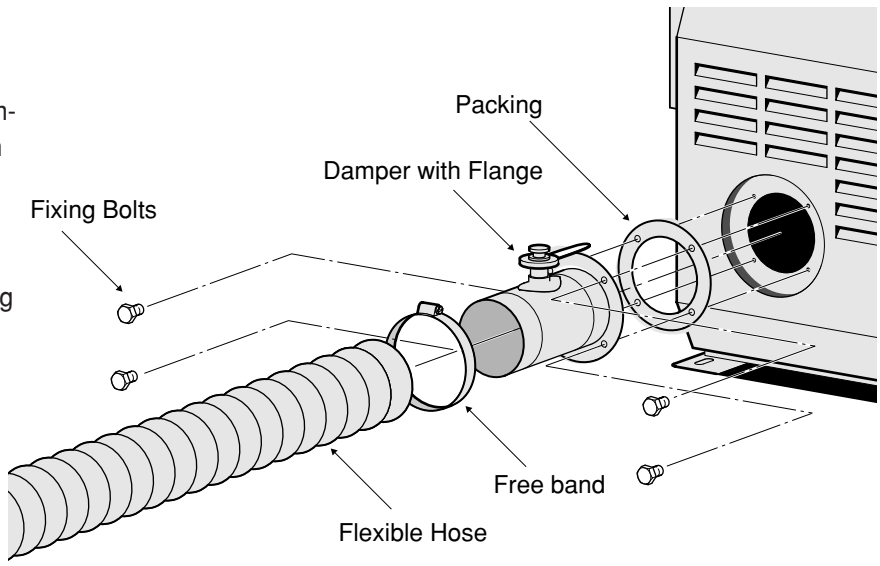


(2) In circular system use, insert flexible hose into inlet and fasten flexible hose with "free band" after fixing optional parts "hose fixing metal" or "damper with flange" with inlet.

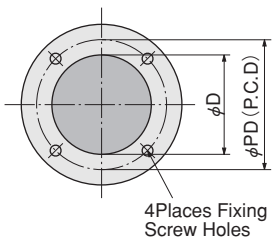
（for HAP2301 and HAP2402, "damper with flange" is attached. For HAP2301F、HAP2402F, "hose fixing metal" is attached.）

* Inner diameter of connecting hose is to be referred to diameter of inlet and outlet shown in specification.

* Fix hose fixing metal or damper with flange by 4 fixing bolts. (free band and flexible hose are optional parts)



Inret Size



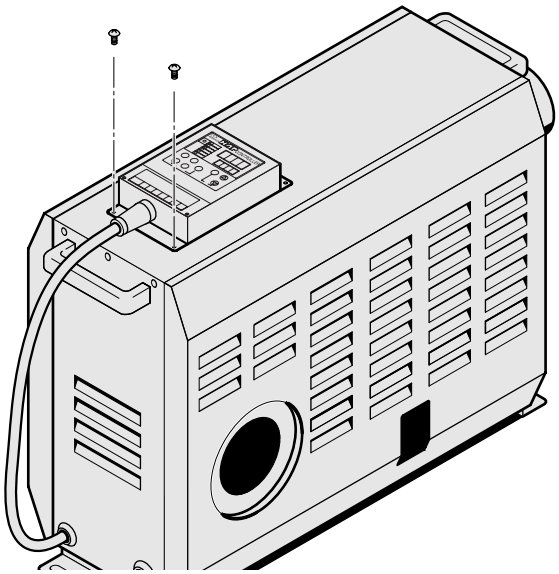
TYPE	ϕ D	ϕ PD	Fixing Bolts Size/Piece
HAP2031／HAP2051／HAP2076／HAP2031F／HAP2051F／HAP2076F	ϕ75㎜	ϕ96㎜	M5×12／4 p'ce
HAP2081／HAP2101／HAP2081F／HAP2101F	ϕ100㎜	ϕ120㎜	M5×12／4 p'ce
HAP2051T	ϕ120㎜	ϕ140㎜	M5×12／4 p'ce
HAP2151／HAP2201／HAP2151F／HAP2201F	ϕ125㎜		M5×12／4 p'ce
HAP2301／HAP2402／HAP2301F／HAP2402F／HAP2101T	ϕ150㎜	ϕ180㎜	M8×15／4 p'ce

《ELECTRIC WIRING》

(1) Controller is normally located at opposite side of outlet, besides the aforementioned Following might be possible.

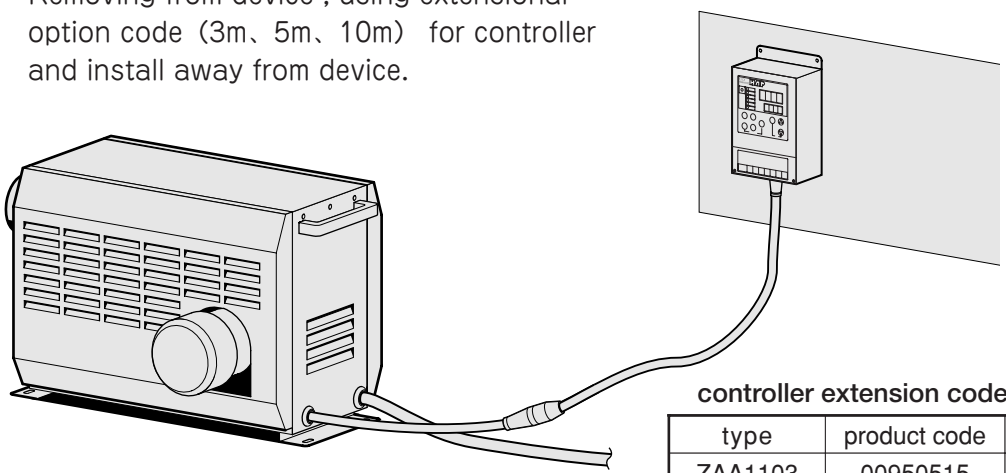
① Fixing to on upper surface

Removing from on side cover, fix controller on to upper cover at M4 two tapping holes with screws.



② Fixing to on remote-control board

Removing from device , using extensional option code（3m、5m、10m） for controller and install away from device.



controller extension code (option)

type	product code	length
ZAA1103	00950515	3 m
ZAA1105	00950525	5 m
ZAA1110	00950535	10 m

(2) Connect power code to breaker of installation.

Those are R (red)、S (white)、T (black) and earth (green)
Fasten tightly with solders ring terminals.

⚠CAUTION **Shut down power source surely when wiring works are taken.**

⚠CAUTION **Set earth wire to ground.**

《TRIAL OPERATION・ADJUSTMENT》 ・・・・・・・・

After finishing device installation and electric wiring, check if correct action is taken in trial operation.

1. START UP

(1) Put on installation breaker at customer.

(2) Put on device power breaker. ➡ ・It lights on "power lamp" of controller.

2. OPERATION

(1) Push "wind fan" key of controller.

➡ ・It lights on "wind fan lamp" of controller and wind fan starts rotation.

check point: after pushing "wind fan" key, pushing "stop" key at once then check if rotation direction of wind fan is as arrow direction as indicated at inlet before wind fan stopping. In case of reverse rotation of wind fan, change two wires each other (2phase) (not required for inverter equipped)

⚠CAUTION **In case of reverse rotation of wind fan, maximum wind volume and static pressure will go down. In other conditions, over heated irregularity might often occur, use device in right rotation direction.**

(2) Push "hot wind" key of controller.

➡ ・It lights on "hot wind lamp" of controller and electrifies heater.

Check point: check if it electrifies heater temperature indication of temperature controller goes up.

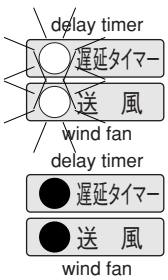
3. STOP

(1) Push "stop" key of controller.

➡ ・It puts off "hot wind lamp" of controller and stops electrifying heater.

・"delay timer lamp" and "wind fan lamp" start going on and off.

・after finishing delay timer counting, "delay timer lamp" and "wind fan lamp" put out lights and wind fan stops.



During "delay timer lamp" is going on and off, wind fan operates for the time（2 minutes）in delay timer counting.

⚠CAUTION **In order to cool down heater, delay timer starts counting when it puts off to heater and wind fan operates during counting.**
When "wind fan lamp" goes on and off as same as "delay timer lamp" goes on and off (in case of pushing "stop key" during hot wind fan working), after finishing"delay timer" counting up, wind fan stops working.

When "wind fan lamp" goes on and off as same as "delay timer lamp" goes on and off (in case of pushing "wind fan key" during hot wind fan working), after finishing "delay timer" counting up, wind fan continues working.
During delay timer is counting on, wind fan continues working until timer counting up, even if stop key has been pushed.

⚠CAUTION **Check if electric wiring is correct, before starting operation.**
Also check if piping connection with device are firm and correct.

《WIND FAN OPERATION・HOT WIND FAN OPERATION》

(1) Put on a breaker of device. ➡ It lights on "power lamp".

(2) In case of wind fan operation. Push "wind fan" key of controller.

➡ It lights on "wind fan lamp" and wind fan starts rotation.

(3) In case of hot wind fan operation. Push "hot wind" key of controller.

➡ It lights on "hot wind lamp" and switch on fan and heaters.

(4) To alter setting temperature of hot wind, refer to 17 pages for temperature setting.

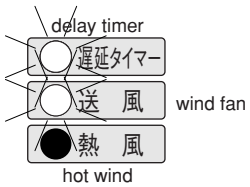
In case of hot wind fan operation. Push "hot wind" key of controller.

《STOP》

(1) Push "stop" key of controller.

➡ To stop from wind fan operation, it put off "wind fan lamp" and fan stops.

To stop from hot wind fan operation, it put off "hot wind fan lamp" and "delay timer lamp" and "wind fan lamp" go on and off, it put off heater.



During "delay timer lamp" is going on and off, wind fan operates for the time (2 minutes) in delay timer counting.

After finishing "delay time" counting up, it puts off "delay timer lamp" and " wind fan lamp", wind fan stops.

> In order to cool down heater, delay timer starts counting when it puts off to heater, wind fan operates for counting.
>
> When "wind fan lamp" goes on and off as same as "delay timer lamp" goes on and off (in case of pushing "stop key" during hot wind fan working), after finishing "delay timer" counting up, wind fan stops working.
>
> When "wind fan lamp" goes on and off as same as "delay timer lamp" goes on and off (in cases of pushing "wind fan key" during hot wind fan working), after finishing "delay timer" counting up, wind fan continues working.
>
> During delay timer is counting on, wind fan continues working until timer counting up, even if stop key has been pushed.

(2) Checking operation stop of wind fan and put off power breaker of device. ➡ It puts off "power lamp" of controller.

《TIMER OPERATION》

It is the mode in which hot wind fan operation starts after setting time has passed.

(1) Put on a breaker of device.

➡ It lights on "power lamp".

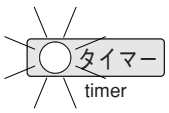
(2) Set temperature of hot wind.
(refer to page17 on how to set)

(3) Set time of timer.
(refer to page18 on how to set)

⚠CAUTION **During timer is counting on, if setting value of timer has been changed, setting value set becomes effective.**

(4) Push "timer operation" key of controller.

➡ "timer lamp" goes on and off after timer has started.



After setting time has passed, it lights on "hot wind lamp" and switch on fan and heater.

It puts off "timer lamp" simultaneously.

☞ To check remaining time of timer

During timer operation or stopping, it is possible to check remaining time of timer. Refer to page 18 on the detail of how to check.

《TIMER STOP》

It is the mode in which operation stops automatically after setting time has passed.

(1) Put on a breaker of device.

➡ It lights on "power lamp" of controller.

(2) Set temperature of hot wind.
(Refer to page17 on how to set)

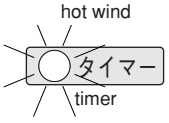
(3) Set time of timer.
(Refer to page18 on how to set)

⚠CAUTION **During timer is counting on, if setting value of timer has been changed, setting value set becomes effective.**

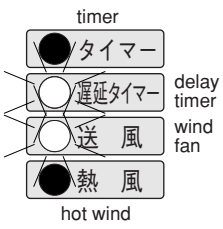
(4) Push "timer stop" key of controller.

➡illt lights on "hot wind lamp" and switch on fan and heater.

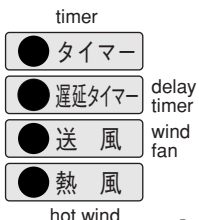
"timer lamp" goes on and off after timer has started.



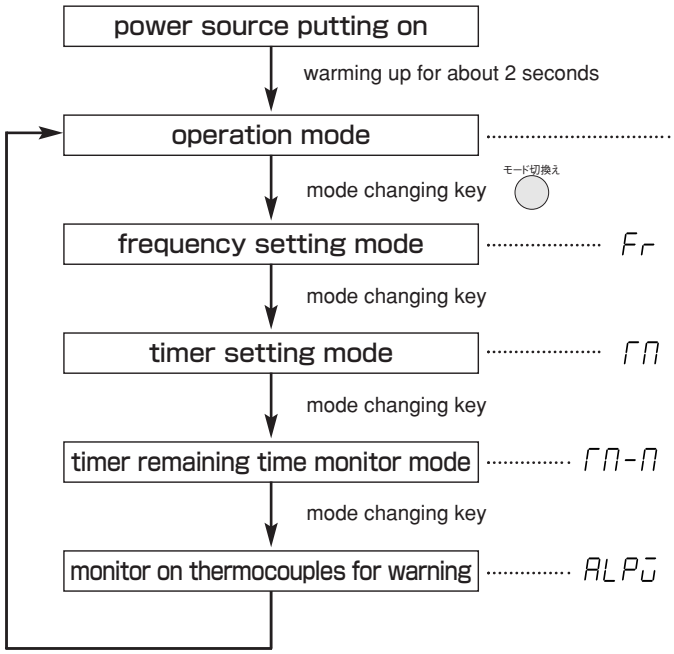
After setting time has passed, it puts off heater and wind fan operates for the time (2 minutes) .it puts off "hot wind lamp" and "timer lamp" it goes on and off "delay timer lamp" and "wind fan lamp".



After 2 minutes has passed, it puts off wind fan and stop operation it puts off "delay timer lamp" and "wind fan lamp".



《OPERATION METHODS SUMMARY》



Temperature setting, hot wind temperature indication.

Frequency setting.

Timer setting.

Indication of timer remaining time at timer operation and timer stop modes.

One of two, which are thermocouples set in device or for outer control terminal and thermocouples-2 connected with in put, is set for control and the other is set for warning, then indication shows temperature for thermocouples for warning Normally it shows " - - - - ".

Refer about function of thermocouples-2 to "HAP controller handling manuals details division".

It is available from h.p. http://www.hakko.co.jp/ for "HAP controller handling manuals details division".

《HOW TO SET CONTROL TEMPERATURE》

1. Put on a breaker of device.
   - ➡ It lights on "power lamp" of controller. It shows " . . . . " for 2 seconds in present value display and setting value display.
   - ➡ Then it shows operation mode.

present temperature.

present setting temperature.

2. Change a target value of setting value display, pushing "data changing key ▲ ▼ ".
   - ➡ It will cease going on and off after 5 seconds and fix value. Also it is possible to fix value with pushing mode changing key during value going on and off. (in this case, it will go into frequency setting mode).

going on and off during changing.

setting value is fixed with finishing going on and off.

⚠CAUTION **It is impossible to control lower temperature than of suction air.**

《HOW TO SET FREQUENCY》

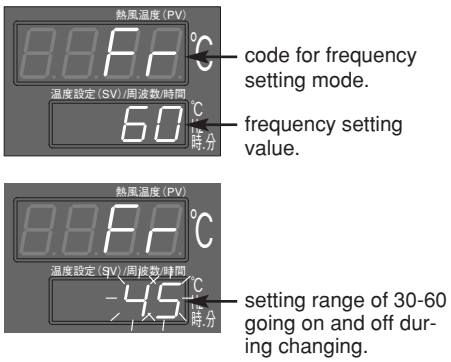
⚠CAUTION **Indication is shown for HAP2000Fseries and HAP2000T series、for HAP2000 series but it is not effective due to without inverter.**

1. Push "mode changing key" one time in operation mode.

   ➡ Present value display goes into " Fr " and into frequency setting mode.

2. Pushing "data changing key" ▲ ▼ and change target value of setting value display. Range for setting is 30- 60[Hz].

   ➡ After 5 seconds, going on and off will cease and fix. it is also possible to fix value with pushing "mode changing key". (in this case, it goes into timer setting mode)



《HOW TO SET TIMER》

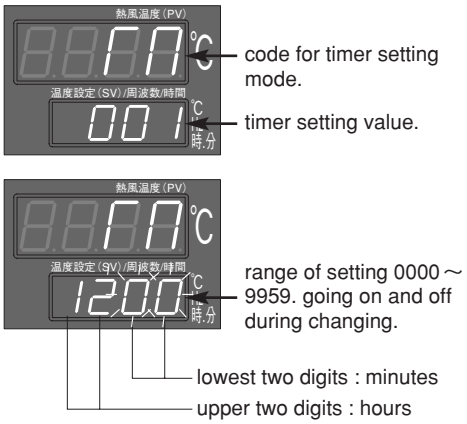
This is setting methods of timer which counts with "timer operation mode" and "timer stop mode".

1. Push twice mode changing key at operation mode.

   ➡ Present value display changes into " Tn " and into timer setting mode.

2. Pushing "data changing key" ▲ ▼ and change target value of setting value display. Range for setting is 00hr 00min～99 hrs 59min.

   ➡ After 5 seconds, going on and off will cease and fix. it is also possible to fix value with pushing "mode changing key". (hence, into remaining time of timer monitor mode)



⚠CAUTION **If setting is made in 00hrs00min, timer becomes not effective. Operation key for timer and stop key for timer also become not effective.**

⚠CAUTION **During timer operation or stopping, if time for setting is changed, value set later will be effective.**

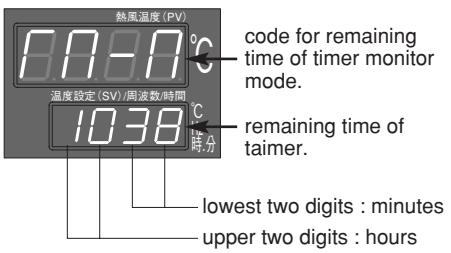
《HOW TO CHECK REMAINING TIME OF TIMER》

During timer operation or stopping, it is possible to check remaining time of timer.

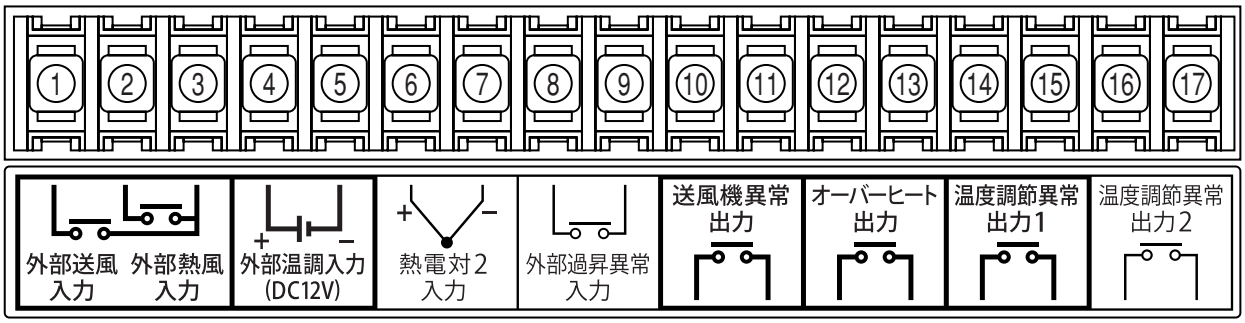
1. Push "mode changing key" three times at operation mode.

   ➡ Present value display changes into " Tn-n " and thereafter into checking mode of remaining time of timer. Remaining time of timer is indicated in setting display.

⚠CAUTION **Push "mode changing key" two times in monitor of remaining time of timer and it will go into operation mode, but 5 min after without any operation it goes operation mode automatically.**



《OUTER CONTROL TERMINAL》



terminal screw size : M3

① **Wind fan in put of outer control** *1 : To operate wind fan with in put of non voltage contact signal from outside. (device specification : DC24V/abt. 5mA)

② **Hot wind fan in put of outer control** *1 : To operate hot wind fan with in put of non voltage contact signal from outside. (device specification : DC24V/abt. 5mA)

③ **Wind fan of outer control・hot wind COM**

④⑤ **Outer temperature control in put (+ −)** *1 : To control temperature from outside in put of outer temperature controller signal of SSR. (DC12V resistant ampere: 10mA)

⑥⑦ **Thermocouple 2 in put (+ −)** *1 *2 : To adjust temperature from outside in put outer temperature sensor. (K type thermocouples non contact type)

⑧⑨ **Outer over heating irregularity in put** : By adopting overheating prevention switch (closure contact signal in irregularity), to oversee outer overheating and control to stop out put of Hot Air Generator in overheating irregularity. (device specification DC24V /abt. 5mA)

⑩⑪ **Irregular out put of wind fan** : In irregularity of wind fun motor occurring, wind fan becomes irregular and contact out put will be ON. (closure contact in irregularity AC100/200V 1A resistant road)

⑫⑬ **Over heat out put** : Contact out put becomes ON in case that liquid expansion type thermostat equipped in a main device detects over heat irregularity or irregularity of outer over heating. (closure contact in irregularity AC100/200V 1A resistant road)

⑭⑮ **Out put of temperature control irregularity1** : When temperature is controlled by thermocouples equipped with device, or temperature control irregularity occurs, contact out put becomes ON. (closure contact in irregularity AC100/200V 1A resistant road)

⑯⑰ **Out put of temperature control irregularity 2** *1 : When it is controlled by outer temperature sensor(thermocouples-2) or temperature control irregularity occurs then contact out put becomes ON.(closure contact in irregularity AC100/200V 1A resistant road)

＊1 : In order to good effect of in put of outer control wind fan (①、③)、in put of outer control hot wind fan (②、③)、in put of outer temperature control (④、⑤) and in put of thermocouples-2 (⑥、⑦), it is required to set parameter of controller. Refer for more details to manual 23 pages "materials" or "HAPcontroller handling manuals details division."

＊2 : In order to effect in put of thermocouples-2, earth type thermocouple is not available, hence non earth K type thermocouples is recommendable.

STEPS AFTER IRREGULARITY OCCURRENCE

- When irregularity occurs, it power off to heater or to wind fan and heater. It lights on irregular lamp and indicates error code responding to irregular conditions.
- If irregularity occurs once, irregular condition has been maintained and even irregularity has been solved, device will not work again. To release irregular conditions maintained, it is required to re-switch on after switching off.

＜List of error code＞

Error Code	Name	Irregularity Contents
Err0	Wind Fan irregularity	In case that ampere to motor excesses maximum allowance volume due to coil heating of wind fan, it is indicated. By this indication of code it puts off to wind fan and heater. It puts ON out put of wind fan irregularity at outer control terminal.
Err 1	Irregularity 1 of temperature control	Indication comes when temperature sensor set at outlet shows +20℃ compared with set temperature. By this indication of code it puts off to heater. and wind fan operation begins with starting delay timer. It puts ON out put of irregularity 1 of temperature control at outer control terminal.
Err2	Irregularity 2 of temperature control	Indication comes when irregularity occurs in accordance with setting to catch temperature irregularity by thermocouples connected with in put of thermocouples-2 at outer control terminal. By this indication of code it puts off to heater. and wind fan operation begins with starting delay timer. It puts ON out put of irregularity 2 of temperature control at outer control terminal.
Err3	Irregularity of thermocouples failure	Indication comes when thermocouples failure is detected. By this indication it puts off to heater. and wind fan operation begins with starting delay timer. It puts ON out put of irregularity 1 of temperature control at outer control terminal if thermocouples set at outlet becomes failure, it puts ON out put of irregularity 2 of temperature control at outer control terminal. If thermocouples set at inlet at outer control terminal 2 becomes failure.
Err4	Over heat temperature irregularity	In case that temperature in heater box excesses maximum allowance temperature. Liquid expansive thermostat located in heater box becomes ON and indicates irregularity. By this indication it puts off to heater. and wind fan operation begins with starting delay timer. it puts ON out put of over heat at outer control terminal.
Err5	Irregularity of suction air temperature	In case that suction air temperature becomes high and excesses maximum allowance temperature, Liquid expansive thermostat located in outlet of wind fan becomes ON, it indicates irregularity of suction air temperature. By this indication it puts off to heater. and wind fan operation begins with starting delay timer it puts ON out put of over heat at outer control terminal.
Err7	Irregularity of outer over heat temperature	It is indicated when irregularity occurs through connection with in put of irregularity of outer over heat. By this indication it puts off to heater. and wind fan operation begins with starting delay timer It puts ON out put of over heat at outer control terminal.

When Err 1 ~ Err7 occurs, wind fan operates by starting delay timer, but during delay timer is counting or after timer counting up if stop key is not pushed then wind fan continues in operation.

Error codes above shall be shown in case of original setting of controller parameter at ex-works. There are various functions available with IN and OUT of outer control terminal of HAPcontroller.

Be cautious about error indication which might come from parameter modification not described in this manual. Refer for more details to "HAP controller handling manual details division".

《IRREGULARITY AND REPAIR》

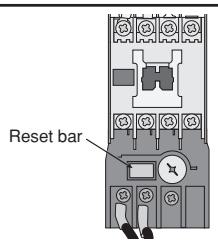
- Stop operation and power off certainly when irregularity occurs. Re-start operation after cooling down and solving cause of failure.
- Don't hesitate to get in touch with sales shop, or HAKKO's sales office if repair can not be completely conducted.

⚠CAUTION
Power off certainly when repair is conducted.

Irregularity	Cause	Repair
Irregular sound from wind fan	Foreign body is stopped at suction.	Check suction at wind fan.
	Damper board loosen.	Check suction at wind fan.
	Wind fan reverse rotation by wiring error.	Check wiring.
No temperature rising	Supply power voltage lower.	Check power voltage.
	Too much air volume compared with setting temperature	Adjust wind volume.
	Heater failure.	Exchange heater.*1
Wind fan irregularity (Err0)	Foreign body is stopped at suction.	Check suction at wind fan.
	Closure of outlet of furnace and etc.	Check outlet of furnace and etc.
	Too much resistant of piping.	Check possibility of pressure loss of piping.
	Wind fan reverse rotation by wiring error.	Check rotation direction and wiring.
	Failure of wind fan, inverter or thermal relay.	Exchange defective parts.*1
Irregularity of temperature control (Err1、Err2) or irregularity of over heat temperature (Err4)	Foreign body is stopped at suction.	Check suction at wind fan.
	Closure of outlet of furnace and etc.	Check outlet of furnace and etc.
	Too much resistant of piping.	Check possibility of pressure loss of piping.
	Failure of SSR.	Exchange SSR.
	Setting error of controller parameter.	Check parameter setting with "list of controller parameter" in 30 pages.*2
Irregularity of thermocouple failure (Err3)	Thermocouples failure.	Exchange thermocouples.*1 Exchange thermocouples failed, connected with outer control terminal.
	Setting error of controller parameter.	Check parameter setting with "list of controller parameter" in 30 pages.*2
Irregularity of suction air temperature (Err5)	High temperature of suction air.	Get suction air temperature lower, mixing fresh air.
Irregularity of outer over heat temperature (Err7)	In put terminal is to be reversed.	Non voltage contact is used to be ON (closed) in irregularity occurrence.
	Closure of outlet of furnace and etc.	Check outlet of furnace and etc.
	Too much resistant of piping.	Check possibility of pressure loss of piping.
Foul smell in over 250℃	Foreign body is stopped at outlet and piping.	Check at outlet and piping.
	Burning smell of insulation binder.	Smell will be disappeared in a few days.

*1 : Don't hesitate to get in touch with sales shop, or HAKKO's sales office.

*2 : The mdel that does not get inverter takes off a side cover, and please push a reset bar (a blue switch) of a magnet-contactors.



《DAILY MAINTENANCE AND ARRANGEMENT》····

1 Prior to operation

- Check please if foreign body is not adhered at suction of wind fan.
- Check please if relaxation between Hot Air Generator and piping is or not.
- Check please if foreign body is not stopped at outlet.

2 During operation

- Check if irregular sound from wind fan can be heard or not.
- Check if foul smell is born or not.

3 Daily maintenance

- Remove dust, if any, on the top of device by a cleaner.
- Wipe controller, if any dirty part exists, with wet cloth well pressed with water or neutral gender detergent.

■ABOUT STOCK

In case of long-time stocking or less-operation, please follow instructions set forth below so as to easy re-use without troubles.

(1) In case of stocking in as being packed ...

- Stock indoor in less temperature difference and dry humidity.
- Do not stock in double accumulation.

(2) In case of stock as being installed ...

- Cover whole of device not to have water and foreign body come in.
- Operate device 2～3 minutes per every 3 month and lubricate grease in bearing of device.

Ex. 1) Outer wind fan operation・outer hot wind operation.

It is available to set in put of outer control.

・Pushing "mode change key" long-time 1 second at operation mode.

➡ Present value display changes "Fr" to " AT " one after the other.

top of parameter block 1 mode.

・Pushing " ▲ key" one time at " AT " mode.

➡ Present value display changes " dCC ".

outer control input effective/not effective setting code.

invalid with "OFF".

・Pushing "mode change key" one time at " dCC " mode.

➡ " oFF " of set value display goes on and off.

it goes on and off with mode change key.

・Push " ▲ key" one time.

➡ set value display is changed in " on ".

change into "ON" during going on and off.

・Push "mode change key" one time.

➡ " on " of set value display lights on and fix. "outer control lamp" lights on and setting of outer control in put becomes available.

fix with mode change key. valid with "ON".

・Pushing "mode change key" long-time 2 second.

➡ Come back to operation mode.

＊ In power off condition of before or after parameter setting, referring to 19 pages, connect non voltage contacts to input of outer control wind fan ,input of outer control hot wind fan and terminal of outer control wind fan・hot fan COM respectively.

ex. 2) Temperature control with outer temperature controller

It becomes effective to set in put of outer temperature control.

· Pushing "mode change key" long-time 1 second at operation mode.

➡ Present value display changes " Fr " to " AT " one after the other.

top of parameter block 1 mode.

· Pushing " ▲ key" two times at " AT " mode.

➡ Present value display changes " dCCT ".
Set value display change " oFF ".

outer control input effective/not effective setting code.

invalid with "OFF".

· Push "mode change key", " ▲ key" and "mode change key" each one time in order.

➡ set value display is changed in " on " and is fixed. Outer control lamp lights on and it is available to set outer temperature control in put.

valid with "on".

· Pushing "mode change key" long-time 2 seconds.

➡ Come back to operation mode.

＊In power off condition of before or after parameter setting, referring to 19 pages, connect outer temperature control input +terminal and outer temperature control -terminal to out put of SSR control of temperature controller. (DC12V pulse out put)

Ex.3) Control outer temperature to equip thermocouples with outer part of wind fan and to connect to in put of thermocouples-2 outer control terminal.

Alarm of thermocouples-2 is limited at+20℃ upper variation (when it becomes +20℃ compared with value set, it puts off heater and puts ON out put 2 of temperature control irregularity of outer terminal)

* Wire k type thermocouples with in put terminal of thermocouples-2 of outer control terminal, before setting parameter, in condition of power off. Use non earth contact type of thermocouples.

1. It is designated that a sensor for temperature control of Hot Air Generator is a thermocouples wired with in put of thermocouples-2 of outer control terminal.

· Push "mode change key" for 3 seconds long time in operation mode.

➡ It changes for present value display to"Fr", "AT", "P" one after the other.

top of parameter block 2 mode.

· Push "key" eight times in "P" mode.

➡ It changes for present value display to "CSEL" and for set value display to "1". It goes to mode of in put indication of controlled thermocouples.

code of in put indication of control thermocouples.

control with "1" of thermocouples equipped in device.

· Push "mode change key", "▲ key"、and "mode change key" each one time in order.

➡ Set value display is changed in "2" and is fixed. It sets controlled by thermocouples wired with in put of thermocouples-2 of outer control terminal.

control with "2" of thermocouples to in put of thermocouples-2 of outer control terminal.

2. Variation upper limit warning is as warning set of thermocouples wired with thermocouples-2 in put. (it is not required to change variation value of +20℃ as of initial value)

· Push "▼ key" three times in "CSEL" mode.

➡ It changes for present value display to "ALM2" and for set value display to "0". It goes to set mode of kinds of warning of temperature control irregularity 2.

warning of temperature control irregularity 2 type: correspond to thermocouples-2 in put.

without warning with "0".

· After having "0" go on and off with pushing "mode change key", set value "5" with pushing "▲key" then fix with pushing "mode change key".

➡ It has set that variation upper limit warning is at warning set of temperature control irregularity 2.

variation upper limit warning with "5".

· Push "mode change key" for 2 seconds long time.

➡ It comes back to operation mode. Operate with temperature setting.

set temperature after returning back to operation mode .

⚠CAUTION **With the setting of above, it shows temperature of thermocouples wired with thermocouples-2 in put in present value display of operation mode.**

Ex.4) Control temperature outside with thermocouples-2 in put of outer control terminal wired with thermocouples to be located outside Hot Air Generator.

Alarm of thermocouples-2 limits at variation upper +30℃ (heater is put off when it becomes +30℃ against setting value, it puts on out put 2 of temperature control irregularity of outer terminal) when it becomes 280℃ at thermocouples combined with outlet of device, it puts off heater and operates wind fan, then it puts on heater again at 277℃(two points temperature control by outer thermocouples and thermocouples located at outlet)

* Before setting parameter, in condition of power off, wire k type thermocouples with in put terminal of thermocouples-2 of outer control terminal, Use non earth contact type of thermocouples.

1. Sensor controlling temperature of Hot Air Generator is as thermocouples wired with in put of thermocouples-2 of outer control terminal

· Push "mode change key" for 3 seconds long time in operation mode.

➡ present value display changes to "Fr", "AT" and "P".

ahead view of parameter block 2.

· Push "▲ key" eight times at "P" indication mode.

➡ Present value display changes to "CSEL", set value display changes to "1" and it goes into in put indication mode of thermocouples for control.

in put of thermocouples for control a code indicated.

"1": to control with thermocouples assembled in device.

· Push "mode change key", "▲ key" and "mode change key" each one time in order.

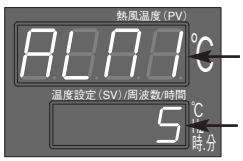
➡ set value display is changed in "2" and is fixed. Control is set with thermocouples wired with in put of thermocouples-2 of outer control terminal.

"2": to control with thermocouples of in put of thermocouples-2 of outer control terminal.

2. Absolute value upper limit warning is as warning set of thermocouples assembled in outlet of main body.

· Push "▼ key" four times at "CSEL" indication mode.

➡ Present value display changes to "ALM1", set value display changes to "5" and it goes into indication mode of warning kinds of temperature control irregularity 1.



warning of temperature control irregularity 1 type: correspond to thermocouples of outlet of device.

"5": variation upper limit warning.

· Set value to "1" with pushing "mode change key" and after having "5" go on and off and pushing "▼ key" then fix with pushing "mode change key".

➡ It is set that absolute value upper limit warning is as type of warning of temperature control irregularity 1.

alter setting value "1": absolute value upper limit warning.

3. Variation upper limit warning is as set of warning of thermocouples wired with thermocouples-2 in put.

· Push "▲ key" one time in "ALN1" mode.

➡ It changes for present value display to "ALN2" and for set value display to "0". It goes to set mode of kinds of warning of temperature control irregularity 2.

warning of temperature control irregularity 2. type : correspond to in put of thermocouples for control.

"0":without warning

· Set value to "5" with pushing "mode change key" and after having "0" go on and off and pushing "▲ key" then fix with pushing "mode change key".

➡ It is set that warning of variation upper limit is as type of warning of temperature control irregularity 2.

"5": variation upper limit warning.

4. Altering set for indication of temperature control irregularity 1. It is set for thermocouples assembled in outlet of device not to indicate irregularity in reaching at temperature for working.

· Push "▲ key" one time in "ALN2" mode.

➡ It changes for present value display to "AL IL" and for set value display to "on". It goes to set mode of temperature control irregularity 1.

indication of temperature control irregularity 1. setting : corresponding with thermocouples at outlet of device.

indication with "on"

· Set value to "oFF" with pushing "mode change key" and after having "on" been going on and off and pushing "▲ key" then fix with pushing "mode change key".

➡ It has been set for temperature control irregularity 1 not to indicate irregularity in reaching at temperature for working.

alter setting value non indication with "oFF"

5. After altering set (latch: self holding) of temperature control irregularity 1, set re-put on heater with releasing irregularity.

· Push "▲ key" three times in "AL IL" mode.

➡ It changes for present value display to "A IoP" and for set value display to "on". It goes to set mode of latch of temperature control irregularity 1.

latch setting of temperature control irregularity 1 : corresponding with thermocouples at outlet of device.

"on" : self holding

· Set value to "oFF" with pushing "mode change key" and after having "on" been going on and off and pushing "▼ key". Then fix with pushing "mode change key"

➡ After releasing latch of temperature control irregularity 1, it is set for temperature control irregularity 1 with thermocouples at outlet to re-put on heater with releasing irregularity.

"oFF" : without holding

· Push "mode change key" for 2 seconds long time.

➡ It changes to operation mode.

6. Alter temperature of working of temperature control irregularity 1, so as to put off heater in 280℃ with thermocouples equipped at outlet of device.

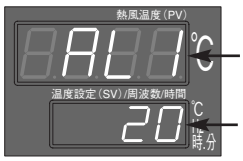
· Push "mode change key" for 1 second long time in operation mode.

➡ It changes for present value display to "AT" mode.

heading mode of parameter block 1

· Push "▲ key" four times in "AT" mode.

➡ It changes for present value display to "AL 1" and for set value display to "20". It goes to set mode of working temperature of temperature control irregularity 1.



action of temperature control irregularity 1 code of temperature setting mode

initial setting value of temperature control irregularity 1

· Set value to "280" with pushing "mode change key" and after having "20" go on and off and pushing "▲ key". Then fix with pushing "mode change key".

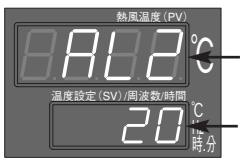
➡ It has been set at 280℃ of working temperature of temperature control irregularity 1.

alter setting value starting work at 280℃

7. It is set for working temperature of temperature control irregularity 2 at 30℃, so as to put off heater in +30℃ compared with setting value at thermocouples wired with thermocouples-2 in put.

· Push "▲ key" one time in "AL 1" mode.

➡ It changes for present value display to "AL2" and for set value display to "20". It goes to set mode of working temperature of temperature control irregularity 2.



action of temperature control irregularity 2 code of temperature setting mode.

initial setting value of temperature control irregularity 2

· Set value to "30" with pushing "mode change key" and after having "20" go on and off and pushing "▲ key". Then fix with pushing "mode change key".

➡ It has been set at 30℃ of working temperature of temperature control irregularity 2.

alter setting value starting work at 30℃

· Push "mode change key" for 2 seconds long time.

➡ It changes to operation mode.

⚠CAUTION **By completion of the above setting, it shows temperature of thermocouples wired with thermocouples-2 in put in present value display of operation mode. It shows temperature of thermocouples assembled with outlet in monitor "ALPU" of thermocouples for warning. (refer to page 17)**

《LIST OF CONTROLLER PARAMETER》

	Parameter	Name	Initial Value	Blind Set	Mask Set	Mask Value
parameter block 0	（運転画面）	SV	50	—	—	—
	Fr	Fr	60		indication	dSP1-1
	TM	TM	0.01		indication	dSP1-2
	TM-M	TM-M	0		indication	dSP1-4
	ALPV	ALPV	----		indication	dSP1-8
parameter block 1	AT	AT	0	not required	indication	dSP2-1
	Fr-L	Fr-L	30		not indication	dSP2-2
	Fr-H	Fr-H	60		not indication	dSP2-4
	diC	diC	oFF		indication	dSP2-8
	diCT	diCT	oFF		indication	dSP2-16
	TMd	TMd	on		not indication	dSP2-32
	TMdY	TMdY	0.02		indication	dSP2-64
	AL1	AL1	20		indication	dSP2-128
	AL2	AL2	20		indication	dSP3-1
	LoC	LoC	0		indication	dSP3-2
parameter block 2	P	P	5	not required	indication	dSP4-1
	I	I	120		indication	dSP4-2
	d	d	30		indication	dSP4-4
	HYS	HYS	2		not indication	dSP4-8
	bAL	bAL	0		not indication	dSP4-16
	Ar	Ar	100		not indication	dSP4-32
	TC	TC	2		indication	dSP4-64
	P1n2	P1n2	3		not indication	dSP4-128
	P1SL	P1SL	0		not indication	dSP5-1
	P1SU	P1SU	400		not indication	dSP5-2
	P2n2	P2n2	3		not indication	dSP5-4
	P2SL	P2SL	0		not indication	dSP5-8
	P2SU	P2SU	400		not indication	dSP5-16
	dP	dP	0		not indication	dSP5-32
	PVOF	PVOF	0		not indication	dSP5-64
	SVOF	SVOF	0		not indication	dSP5-128
	dF	dF	5		not indication	dSP6-1
	ALM1	ALM1	5		indication	dSP6-2
	ALM2	ALM2	0		indication	dSP6-4
	AL1L	AL1L	on		indication	dSP6-8
	AL2L	AL2L	on		indication	dSP6-16
	iSEL	iSEL	1		indication	dSP6-32
	A1oP	A1oP	on		indication	dSP6-64
	A2oP	A2oP	on		indication	dSP6-128

	Parameter	Name	Initial Value	Blind Set	Mask Set	Mask Value
parameter block 3	P1n1	P1n1	0	not required	not indication	dSP7-1
	P2n2	P2n1	0		not indication	dSP7-2
	SU-L	SV-L	0		not indication	dSP7-4
	SU-H	SV-H	350		not indication	dSP7-8
	CT	CT	0		not indication	dSP7-16
	Hb	Hb	0		not indication	dSP7-32
	A1hY	A1hY	3		not indication	dSP7-64
	A2hY	A2hY	3		not indication	dSP7-128
	oUT1	oUT1	----		indication	dSP8-1
	rCJ	rCJ	on		not indication	dSP8-2
	Stno	Stno	1		not indication	dSP8-4
	CoM	CoM	0		not indication	dSP8-8
	dSP1	dSP1	0		indication	—
	dSP2	dSP2	38		indication	—
	dSP3	dSP3	0		indication	—
	dSP4	dSP4	184		indication	—
	dSP5	dSP5	255		indication	—
	dSP6	dSP6	1		indication	—
	dSP7	dSP7	255		indication	—
	dSP8	dSP8	14		indication	—
blind mode	brM	brM	—	—	—	—
	br1	br1	on		—	—
	br2	br2	on		—	—
	br3	br3	on		—	—

Please refer to this list, when it is required to return value of controller parameter to initial value. Also refer to "HAP controller handling manual, details version" for each parameter details.

○ About blind mode

br1 indicates first block with on, all parameters of first block are not indicated with "oFF". So do br2 and br3 .

○ About mask

In dSP1～dSP8 of 3rd block, indication/no indication of each parameter are independently set.

Ex.)：it is assumed dSP2 as 167 , parameter of dSP2-1、dSP2-2、dSP2-4、dSP2-32、dSP2-128 of mask values become not indicated.
（167＝1＋2＋4＋32＋128）

AFTER SERVICE

● If query and/or advice arises…

Hot Air Generator telephone service section

We have technical service section for Hot Air Genarators. If query and/or advice arises for selecting proper type, do not hesitate to consult to our service section as follows.

East Japan HAKKO CO., LTD. TOKYO BRANCH THERMAL DEVICE SALES DIVISION MS SECTION TEL.03(3464)8764
West Japan HAKKO CO., LTD. OSAKA BRANCH THERMAL DEVICE SALES DIVISION MS SECTION TEL.06(6453)9101
(Monday to Friday : 9 AM to 6 PM)

We have maintenance service for Hot Air Genarators

If query and/or request arises for maintenance, checking, repairing, do not hesitate to contact to Hakko's sales branch, sales office, distributors listed as follows:

All of Branches & Sales Offices of HAKKO CO.,LTD & the Affiliated Companies

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HEAD OFFICE / TOKYO BRANCH
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