

Please send this operation manual to the final customer without fail.

Preservation

TSK Hot-air generator

B-type series

Operation manual

● Please read this without fail before use.

- ◆ This time, thank you very much for purchasing the hot-air generator.
- ◆ Please confirm whether the model, type, voltage and the order article are not wrong by the name board of this machine.



<i>1.Attention on use</i>
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TSK Hot-air generator B-type
• TSK-17B



KANSAI ELECTRIC HEAT CORP.

1. Attention on use

✖ Please confirm without fail before use.

For the hot-air generator is used without malfunctioning

◆ Important matters that demand special attention that became the cause of malfunction that occurred in the past is entered. Please inquire with the use method of your company.

- ***If the hot-air generator is used without blow, the heater snaps. Please secure the safety circuit without fail at the time of the trial run.***
- ***Please supply the power supply for safety circuit (DC24V) without fail to the terminal V+ and V-. If the hot-air generator is used without supplying it, the safety circuit is not operated.***
- ***Please secure the safety circuit by the safety circuit terminal. Important accident may occur if the hot-air generator is operated without securing the safety circuit.***
- ***Please attach the demi-filter or CR-filter without fail to the suction side of the hot-air generator.***
- ***Please clean always the filter that is used or wire net of the hot-air generator inlet. (Standard equipment) Heater inside is overheated by the clogging of the filter and the hot-air generator may can not operate. (Wire net is not equipped to the type without blower.)***
- ***Hot-air generator malfunctions when these adhered to the controller inside of the hot-air generator in the case that dust, mine dust, floating objects that pass electricity of carbon fiber, oil, lampblack, oil mist, moisture, and vapor is included to the atmosphere of the setting place of the hot-air generator.***
- ***Hot-air generator can not use in corrosiveness of combustibility gas, inflammability gas, plating, and atmosphere. Please consult us in the advance.***
- ***Leakage of the hot-air is occurred without fail on the characteristic of the flexible hose in the case of the piping by the flexible hose to the outlet and inlet of hot-air generator. Electron devices inside the operation panel are damaged by the hot-air of the high temp. that leaked flows backward to the hot-air generator inside. So, please execute the glass tape for the air leakage prevention that was enclosed to the outlet and inlet.***
- ***Please do not unite or wire that was adjoined the wiring of the in-output signal and sensor with the power supply line, high tone wave line. Electron devices of the inside are damaged by noise.***
- ***Please comply with the instructions of the turn direction of the blower without fail.***
- ***Please use the commercial power supply (50/60Hz) that has the sine wave-like to the power supply of the hot-air generator. Please do not use the power supply that has the distortion wave including a high tone wave from the frequency transformation device absolutely. Electron devices of the inside are damaged by high tone wave and noise.***

2. Installation

① Attachment attitude

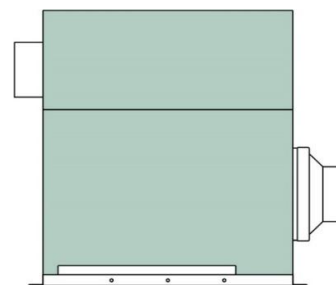
Please comply with the attachment attitude of the right figure.

② Please fix it firmly as occasion demands.

Fixation metal fittings of TSK-17B - 52B can attach to the side. Please fix TSK-62B - 102B, BS, and BP-type firmly by using the fixation hole.

③ Place where can not establish

- Upper part of generation thing
- Neighborhood of combustible
- Place where air pressure is low
- Place where ambients humidity is more than 85%R.H.
- Place where ambients temp. is more than 0 - +40°C.
- Place where acid and corrosiveness gas is floating
- Place where has floating objects that pass electricity (Carbon fiber etc.)
- Place where back is stuck to wall etc.
- Place where height is more than 1000m
- Outdoor, and place where is exposed to the storm
- Places of there are many dust
- Place where has vibration
- Room where is tightly sealed and case inside



※Tilting to either side is not allowed.

3. Piping

① Please fix the piping to the outlet and inlet certainly.

Leakage of the hot-air is occurred without fail on the characteristic of the flexible hose in the case of the piping by the flexible hose to the outlet and inlet of hot-air generator. Electron devices inside the operation panel are damaged by the hot-air of the high temp. that leaked flows backward to the hot-air generator inside. So, please execute the glass tape for the air leakage prevention that was enclosed to the outlet and inlet.

② Please pipe as thickly, short, and gradual curve as possible.

③ Please insulate sufficiently without fail to piping.

④ Please do not hang the pulling load to the outlet flange in the condition that the hot-air generator with the outlet flange was fixed.



Execution example of the glass tape for air leakage prevention

Attention Please pay attention as the wire net for the heater clogging prevention is not equipped to the inlet of the type without blower.

Attention Please use the demi-filter of the option without fail. It becomes the cause of a fire because the garbage etc. that became to the spark is discharged from the outlet if the demi-filter is not used.

Attention Hot-air can not circulate in the case that toluene, thinner, and plentiful vapor are included to suction air. (Please use the heat exchanger.) Please use after the density of gas is diluted to less than 1/50 - 1/100 of the explosion limit by air in the case that combustibility gas is included to suction air.

Attention Please do not touch during operation because the neighborhood of hot-air outlet and the blower at hot-air circulation becomes hot. You may burn.

4. Power supply

① Please ask the connection of the power supply and ground construction work to the electric repairing work technician.

② Terminal structure and arrangement differs by the type. Please wire certainly on the basis of terminal explanation of P3 after the type is confirmed.

③ Please use the commercial power supply (50/60Hz) that has the sine wave-like to the power supply of the hot-air generator. Please do not use the power supply that has the distortion wave including a high tone wave from the frequency transformation device absolutely.

④ Please establish the exclusive use circuit. Please decide the capacity of the sensitivity current in accordance with the following table in the case that the electric leakage circuit breaker is attached.

⑤ Please execute the ground construction work to prevent electric shock accident prevention. (Less than 300V : D-class ground Less than 600V : C-class ground)

Attention Please block the power supply without fail at the time of wiring and inspection. You receive an electric shock when work is conducted in the condition that the power supply is turned ON.

Model	Rough standard of the sensitivity current of the electric leakage circuit
TSK-17B, 22B(P), 32B, 42B(S), 52B(S)	About 50mA
TSK-62B(S), 72B(S), 82B(S)	About 100mA
TSK-92B, 102B	About 200mA

※About 10 times of the early period leakage current are general as the sensitivity current of the electric leakage circuit breaker.

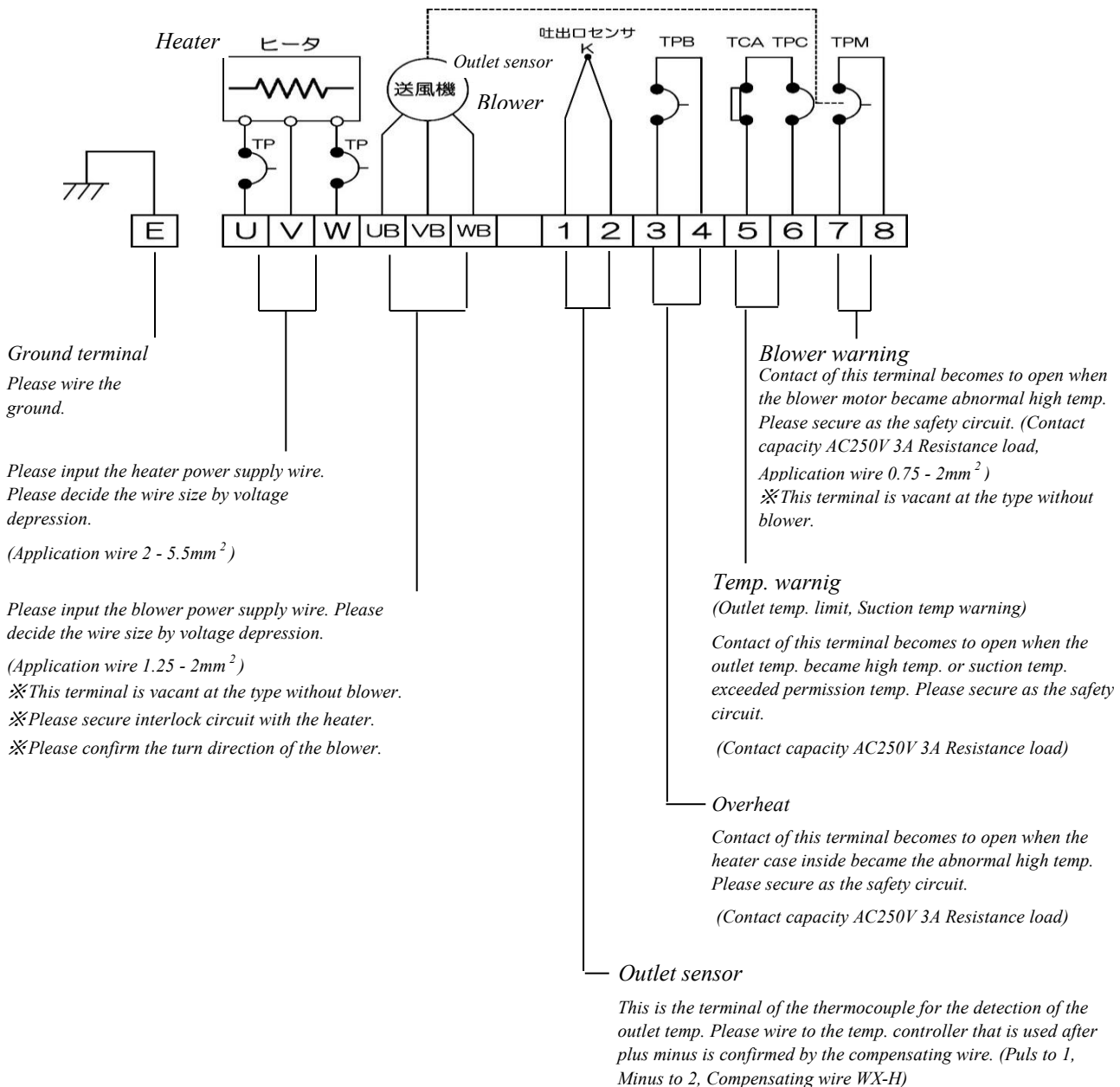
5. Terminal explanation

TSK-17B

Heater current (at 200V)	Three-phases	3kW 8.6A	5kW 14.4A
Blower rating current (200V 50Hz/ 200V · 220V 60Hz)	Three-phase 80W	0.56 / 0.47 · 0.49A	



• Please do not wire each terminal of the outlet sensor, overheat, temp. warning, and blower warning with the power line and harmonic line. (Please do shield processing.)

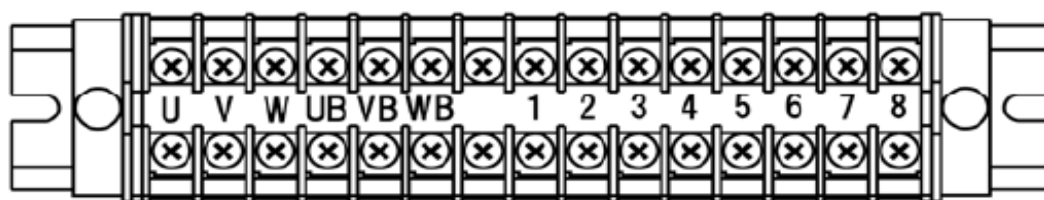


Snapping of the heater can not be prevented f the hot-air generator is operated without

Please refer to P15 of catalog No.4-1 about the circuit example.

6. Wiring

《TSK-17B 端子台》



● Please tighten with proper torque and please use the circle type terminal without fail about the wiring to the heater and blower terminal. Please do not wire in the condition of the electric wire that covering was peeled and please do not use Y-type terminal. Because it may generate by the terminal gets loose.

● Be sure to use a compensating lead wire for the wiring to the outlet sensor terminal ①② strip the coating, and use a Y-type terminal or a round-type terminal and tighten with the proper torque.

If you strip the coating of the compensating conductor and wire it as it is, you will not be able to measure the normal temperature and you will not be able to control the temperature.

● For the wiring of the safety circuit terminal ③~⑧, strip the wire, use a Y-type terminal or a round-type terminal, and tighten it with an appropriate torque. If you strip the wire and wire it as it is, it will come into contact with the adjacent wire, the safety circuit will not operate normally, and the hot air generator cannot be protected.

7. Safety circuit

7-1 Temp. warning

Model that the discharge temp. upper limit (TCA) was installed : All model (Auto-return type)

Model that the suction temp. warning (TCC) was installed : TSK-22B - TSK-102B (Auto-return type)

Model that the suction temp. warning (TPC) was installed : TSK-17B (Auto-return type)

Sensor that opens or closes the contact of the terminal and temp. warning lamp (Red) is lighted (except TSK-17B) is built in the case that discharge temp. or suction temp. exceeded the upper limit.

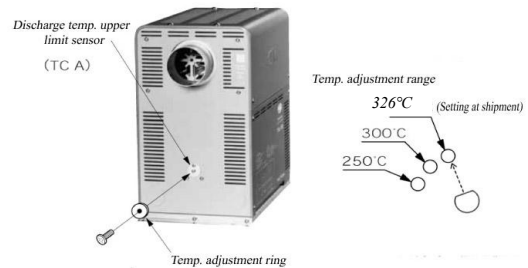
《Main cause》

- Upper limit of the outlet temp. is exceeding when the temp. of the place that parted is controlled.
- High temp. more than the max. suction temp. is sucking
- Air volume is decreasing by the excessive pressure loss
- Air volume is decreasing by the wire net of inlet is clogged

《Return method》

It returns automatically when the hot-air generator was cooled sufficiently after the cause of abnormality is removed.

* Setting of the discharge temp. upper limit sensor can change to 300 °C or 250 °C. (At the time of shipment 326 °C) Please turn the temp. setting ring and please fix to the position of each temp.



7-2 Overheat

Model that TPB was installed : TSK-17B (Manual return type)

Sensor that opens or closes the contact of the terminal and overheat lamp (Red) is lighted (except TSK-17B) is built in the case that the heater case became the abnormal high temp.

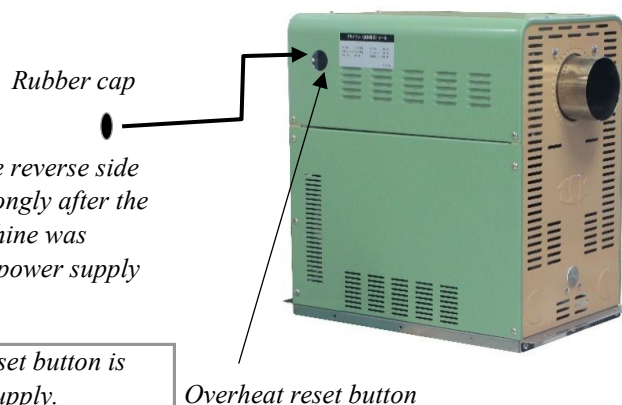
《Main cause》

- Air volume is decreasing by the wire net of inlet is clogged
- Resistance of the outlet by adjacency of the product
- Sufficient exhaust outlet of the oven etc. can not be secured
- Lock of blower motor by the foreign substance was mixed

• TSK-17B

Please remove the rubber cap of the this machine reverse side and please push the reset button of the inside strongly after the cause of the overheat was removed and this machine was cooled sufficiently. At this time, please block the power supply without fail.

Attention : You receive an electric shock if the reset button is pushed without blocking the power supply.



7-3 Blower warning (TPM)

Model that was installed : TSK-17B - TSK-102B Detection hold type (Auto-return type)

Sensor that opens the contact of the terminal is built in the case that the motor becomes abnormal high temp. by the over load, over current, and lock condition of the blower.

《Main cause》

- Wear of the bearing
- Use of the nozzle of the narrow opening extremely
- Voltage other than the rating
- Piping of the big pressure loss

《Return method》

It returns automatically when the blower was cooled sufficiently after the cause of abnormality is removed.

7-4 Thermal Protection (TP)

Model that was installed (Manual return type)

The heater housing is equipped with a thermal cut-off (bimetallic thermostat) that automatically cuts off the power to the heater if the housing temperature reaches 150°C or higher.

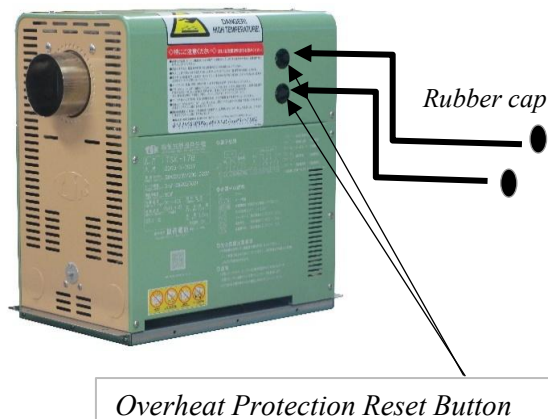
Please note that since this overheat protector serves as a final safety circuit, it will automatically switch to forced ventilation mode when activated; however, it does not produce any external output while in operation.

《Main cause》

- Air volume is decreasing by the wire net of inlet is clogged
- Resistance of the outlet by adjacency of the product
- Sufficient exhaust outlet of the oven etc. can not be secured
- Lock of blower motor by the foreign substance was mixed

Please remove the rubber cap of the this machine reverse side and please push the reset button of the inside strongly after the cause of the overheat was removed and this machine was cooled sufficiently. At this time, please block the power supply without fail.

Attention : You receive an electric shock if the reset button is pushed without blocking the power supply.



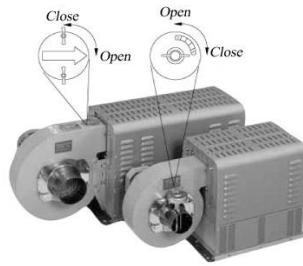
8. Air volume control

• Please adjust the air volume by the dumper in the case that the temp. that was set up does not rise.

《 TSK-17B 》



《 TSK-22B - 102B 》



* Hot-air generator may become the over load by piping. At the time, please squeeze the air volume properly by the dumper.

Attention

- Please inspect and clean always as the wire net of the inlet is clogging. It is very dangerous because the heater is overheated abnormal when the hot-air generator is operated in the condition that the wire net was clogged.
- Please tighten the butterfly screw firmly after the dumper was adjusted. Drying may not produced sufficiently by the air volume changes during operation when the hot-air generator is operated in the condition that the screw got loose.
- Please do not adjust the dumper at the time of hot-air circulation. You may burn by becoming hot the dumper.
- Dumper does not become all close to safety because the min. air volume is flowed.

9. Maintenance inspection

Inspection of the inlet wire net and filter

- ◆ Wire net is equipped to the inlet of the hot-air generator. Please inspect always and clean periodically the wire net of the inlet and filter (option). Overheat or temp. warning occurs by the inside of the heater case becomes a abnormal high temp. if the wire net and filter is clogged.

Individual inspection

- ◆ We suggest that the individual inspection is conducted in the case that the use period exceeded 10 years because this machine is used safely.

【Individual inspection item】

- Measurement of the insulation resistance value
- Tightening inspection of each terminal
- Inspection and clean of the foreign substance mixing inside the controller
- Inspection and clean of the foreign substance mixing inside the heater case and inlet
- Action and generation inspection of the electricity part
- Measurement of the heater current value
- Inspection by watching eyes of the other

Please ask to the electrician about the individual inspection.

Attention Please do not conduct the insulation resistance voltage test to this machine. (It had conducted at the time of shipment.) It becomes the cause of malfunction.



Hot-air generator

Maker
Sales



KANSAI ELECTRIC HEAT CORP.

4-18, Takaidanishi 5-chome, Higashiosaka-city, 577-8566 JAPAN

TEL : +816-6785-6001

FAX : +816-6785-6002

URL : <https://kansaidennetsu.co.jp/>

E-mail : sales@kansaidennetsu.co.jp