

Please send to the customer who is used this operation manual without fail.

Preservation type

T.S.K Hot-air generator

H-type series

Operation manual Basis operation edition

● Please read without fail before use.

- ◆ Thank you very much for purchasing Hot-air generator this time.
- ◆ Please confirm the model, type, and voltage by the name plate of this machine.
- ◆ The basis operation method of the hot-air generator is entered to this operation manual. Please see the operation manual total edition about Installation, Piping, Power supply, Service terminal, Abnormal detection.



1. Usually operation

2. Timer operation, Timer stop

3. When External sensor is used

4. When External run is used

5. When Temp. alarm is used

6. When External control is used

7. When Cooling operation is used

8. Operation stop

TSK Hot-air generator

- TSK-22H4
- TSK-32H5
- TSK-52H6
- TSK-53H7
- TSK-62H8
- TSK-72H9



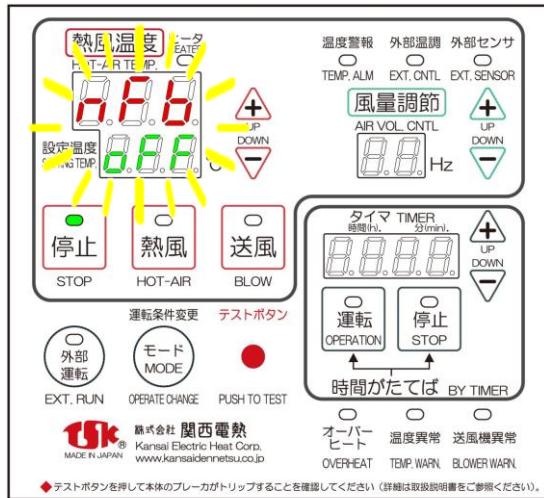
Contents of this operation manual are changed without notice. The figure and display in the operation manual does not guarantee actual specification. We prohibit that changes this operation manual without taking our permission.

Kansai Electric Heat Corp.

1. Usually operation

① Please turn on the factory (primary side) power supply.

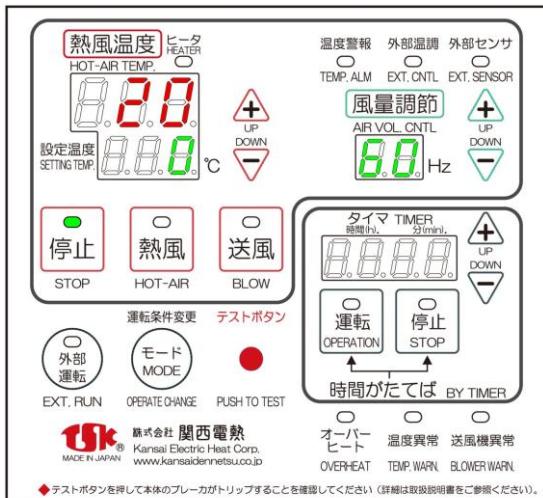
Stop lamp is lighted, "nFb" is flickered to HOT-AIR TEMP., and "oFF" is flickered to SETTING TEMP.



* Operation is not produced in this condition.

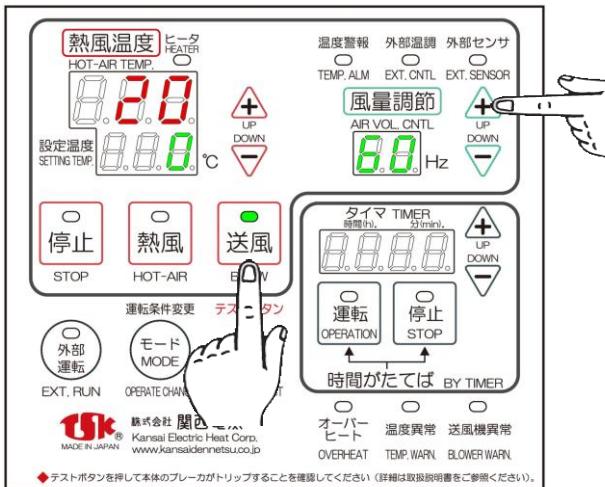
② Please turn on the breaker (NFB) of this

Present temp. is displayed to HOT-AIR TEMP. "0" is displayed to SETTING TEMP., and "60"(Frequency) is displayed to AIR VOL. CNTL. (The fist time)

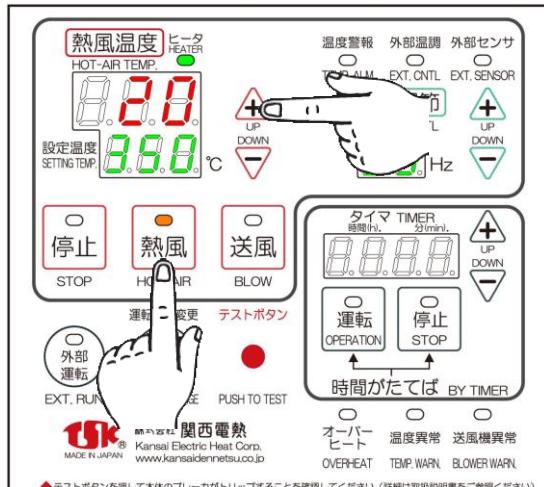


* 2nd thereafter, the setting value of the previous time is displayed to SETTING TEMP. and AIR VOL. CNTL.

③ BLOW lamp (Green) is lighted and blow operation is started by pushing BLOW switch.



④ HOT-AIR lamp (Orange) is lighted and hot-air operation is started by pushing HOT-AIR switch.



HEATER lamp (Green) displays the ON/OFF condition of the heater by the lighting and flickering.

Air volume control setting

(Frequency setting)

Adjust the air volume with the D-type damper for air volume control.

Air volume cannot be adjusted on the control panel.

* A lock screw is attached to the D-type damper for air flow adjustment to secure the minimum air flow. This prevents the damper from being fully closed and secures the minimum airflow. However, please note that operating the unit in this condition may activate safety circuits such as overheat, upper temperature limit at the discharge port, or pressure abnormality, depending on the piping resistance on the discharge side.

Hot-air temp. setting

Hot-air temp. Air volume can be changed to 0 - 350 °C by the 1 °C by the up down key.

* Max. setting temp. of TSK-52HT is 500 °C.

Attention

Hot-air temp. is measured and managed at the outlet temp. sensor position near the heater. But, difference in temp. may occur at the outlet face by the air turbulence of the physical by the increase and decrease of the passage air volume and the pressure loss of the outlet side and inlet side. We recommend to operate the hot-air generator with the temp. inside the oven by using the external sensor to measure more exact temp.

2. Timer operation, Timer stop

Please set up hot-air temp. and air volume optionally control before timer operation or timer stop.

Please set up the timer setting in stop condition. (Timer setting can not be set up during hot-air operation and blow operation.)

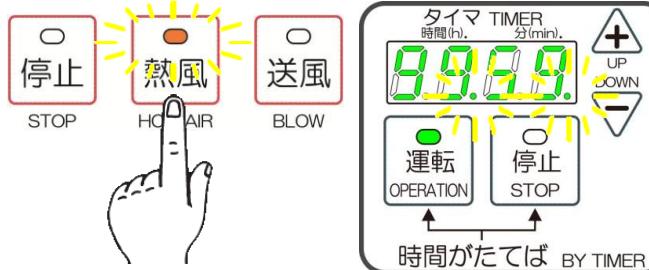
● Timer operation

① Please push OPERATION BY TIMER switch.

OPERATION BY TIMER lamp (Green) is lighted, and "00.00." is flickered to TIMER or the setting time of the previous time is lighted.

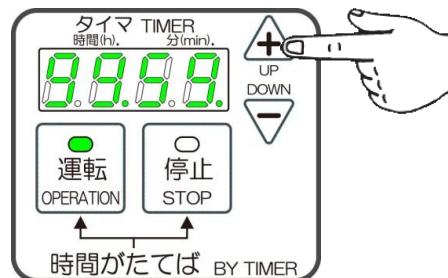


③ Please push HOT-AIR switch.



② Please set up optional time by the up down key.

Time can be set up until 99 hours 59 minutes by 1 minute unit. After setting, the display changes from the flickering to illumination 2 seconds later by separating the hand from the up down key. And, the setting value is registered.



Time counting (Reduction of the setting time) is started (Flickering of the dot display), and hot-air operation is started when the time counting becomes to "00.00.". And, HOT-AIR lamp (Orange) is flickered during time counting, and the lamp changes to lighting after hot-air operation was started.

* Display of the timer becomes to "00.00." after time counting ended.

* Timer operation and timer counting are stopped by pushing STOP switch.

● Timer stop

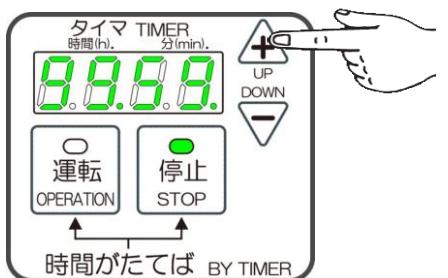
① Please push STOP BY TIMER switch.

STOP BY TIMER lamp (Green) is lighted, and "00.00." is flickered to TIMER or the setting time of the previous time is lighted.

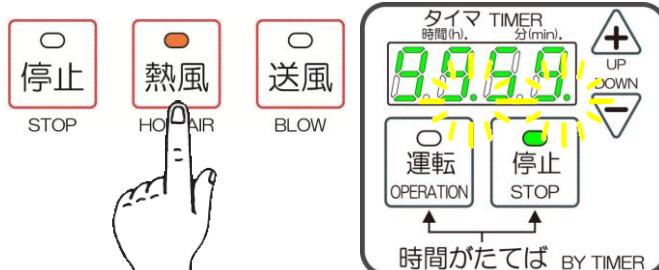


② Please set up optional time by the up down key.

Time can be set up until 99 hours 59 minutes by 1 minute unit. After setting, the display changes from the flickering to illumination 2 seconds later by separating the hand from the up down key. And, the setting value is registered.



③ Please push HOT-AIR switch.



Time counting (Reduction of the setting time) is started (Flickering of the dot display), and hot-air operation is started. Hot-air operation is stopped when the time counting becomes to "00.00.". And, HOT-AIR lamp (Orange) is lighted during hot-air operation, and the lamp changes to flickering after hot-air operation was started.

* Display of the timer becomes to "00.00." after time counting ended.

* Timer operation and timer counting are stopped by pushing STOP switch.

3. When External sensor is used

- The temp. of the place that part is controlled by the external sensor. Please set up after the external sensor is connected to the external sensor input terminal of the service terminal.
- Hot-air temp. setting of SETTING TEMP. value is the setting of the external sensor position, and hot-air temp. of HOT-AIR TEMP. value is the temp. of the external sensor position in the case that the external sensor is used.

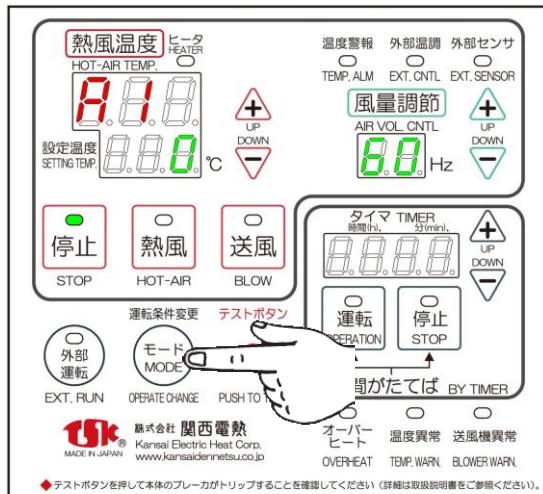
① Please connect the external sensor to the external sensor input terminal of the service terminal without that mistakes plus and minus.

TSK-22H4 External sensor input terminal
E.S+ and E.S-

TSK-52H6 External sensor input terminal
A6 (+) and A7(-)

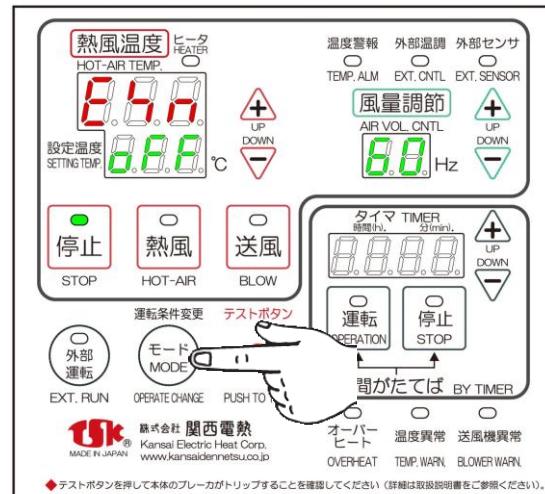
② Please continue to push MODE switch (About 2 seconds).

"A1" is displayed to HOT-AIR, and "0" is displayed to SETTING TEMP.



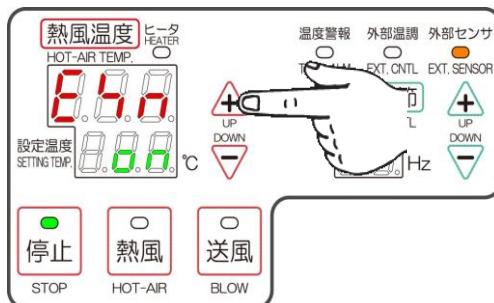
③ Please push MODE switch 2 times once again.

"ESn" is displayed to HOT-AIR, and "oFF" is displayed to SETTING TEMP.



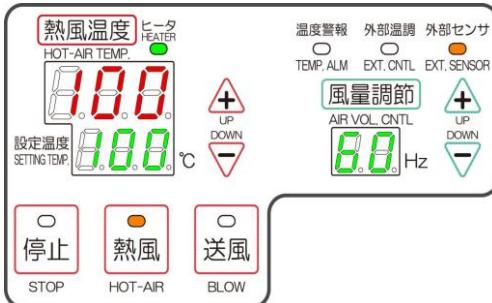
④ Please change SETTING TEMP. to "on".

Please return to the display of usually operation condition by pushing MODE switch 1 time after setting.



⑤ Please start hot-air operation after setting the optional temp. and air volume.

EXT. SENSOR lamp (Orange) is lighted when external sensor setting is changed to "on".



* Barn out operates and operation is not started if the external sensor is set up in condition the external sensor is not connected (Refer to P14 of Operation manual Total adition).

* Please return SETTING TEMP. to "oFF" when the use of the external sensor is stopped.

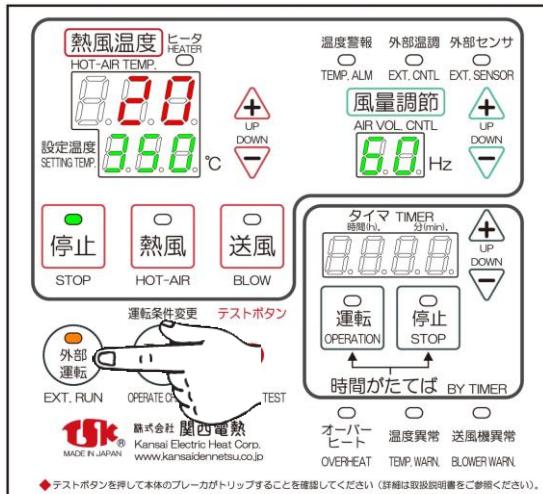
Attention

Hot-air temp. is measured and managed at the outlet temp. sensor position near the heater. But, difference in temp. may occur at the outlet face by the air turbulence of the physical by the increase and decrease of the passage air volume and the pressure loss of the outlet side and inlet side. We recommend to operation the hot-air generator with the temp. inside the oven by using the external sensor to measure more exact temp.

4. When using a remote operation switch

- All models are equipped with a remote operation switch (with 6m cord) as standard. The hot-air generator can be operated at a distance by remote operation switch.

② Please continue to push EXT. RUIN switch in stoppage condition after setting optional temp. and air volume (About 2 seconds).
EXT. RUN lamp (Orange) is lighted.



③ Operate by remote operation switch

BLOW lamp (Green) is lighted at the time of blow operation by the external run ON/OFF signal is ON, external heater ON/OFF signal is OFF.



HOT-AIR lamp (Orange) is lighted at the time of hot-air operation by the external run ON/OFF signal is ON, external heater ON/OFF signal is ON.



* Hot-air generator can not be restarted for about 20 seconds after this machine was stopped by the external run. (BLOW or HOT-AIR lamp is flickered at the time of the waiting condition of restarting, and this machine is started 20 seconds later from stoppage.) And, please the external control function when highly frequent heater ON/OFF is necessary because life of the inside relay becomes short if the external heater ON/OFF is turned ON/OFF frequently.

- * BLOW switch and HOT-AIR switch are ineffective at the time of EXT. RUN mode (These can not operate).
- * External run is reset by pushing STOP switch. And, OPERATION and STOP BY TIMER can not be operated by the external run.
- * EXT. RUN mode is canceled by NFB of this machine is turned OFF. But, this is not canceled by the primary power supply is turned OFF.

5. When External run is used

- Operation, stop, and heater ON/OFF of the hot-air generator can be operated by the signal from the outside.

Disconnect the wires of the remote operation switch connected to the service terminal of the main unit.

TSK-22H4/32H5 Remote operation switch

- External run ON/OFF terminal E.R
- External heater ON/OFF terminal E.H
- Input common terminal COM

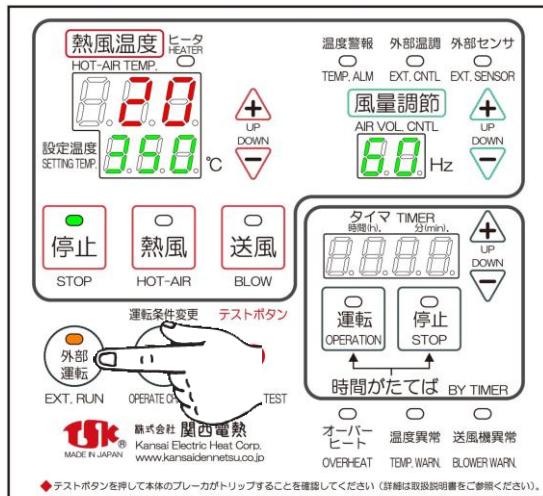
- ① Please connect the outside signal (Unvoltage contact signal) to the external run ON/OFF terminal and external heater ON/OFF terminal of the service terminal.

TSK-22H4/32H5

- External run ON/OFF terminal E.R and COM
- External heater ON/OFF terminal E.H and COM
- Terminal voltage is less than DC12V 3.6mA

- ② Please continue to push EXT. RUN switch in stoppage condition after setting optional temp. and air volume (About 2 seconds).

EXT. RUN lamp (Orange) is lighted.



TSK-52H6 ~ 72H9 :

- External run ON/OFF terminal A1 and A3
- External heater ON/OFF terminal A2 and A3
- Terminal voltage is less than DC12V 7mA

- ③ Please operate by the outside signal.

BLOW lamp (Green) is lighted at the time of blow operation by the external run ON/OFF signal is ON, external heater ON/OFF signal is OFF.



HOT-AIR lamp (Orange) is lighted at the time of hot-air operation by the external run ON/OFF signal is ON, external heater ON/OFF signal is ON.



* Hot-air generator can not be restarted for about 20 seconds after this machine was stopped by the external run. (BLOW or HOT-AIR lamp is flickered at the time of the waiting condition of restarting, and this machine is started 20 seconds later from stoppage.) And, please the external control function when highly frequent heater ON/OFF is necessary because life of the inside relay becomes short if the external heater ON/OFF is turned ON/OFF frequently.

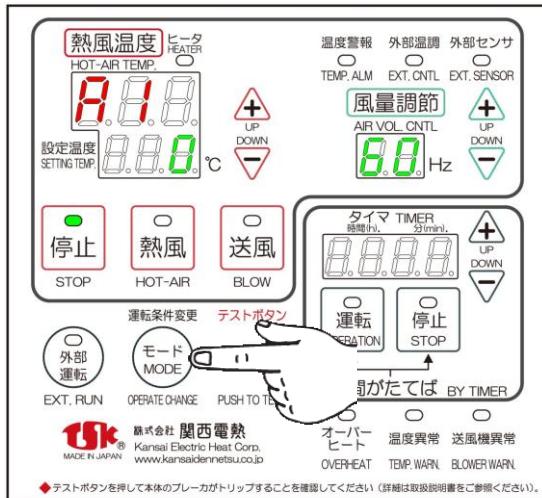
- * BLOW switch and HOT-AIR switch are ineffective at the time of EXT. RUN mode (These can not operate).
- * External run is reset by pushing STOP switch. And, OPERATION and STOP BY TIMER can not be operated by the external run.
- * EXT. RUN mode is canceled by NFB of this machine is turned OFF. But, this is not canceled by the primary power supply is turned OFF.

6. When Temp. alarm is used

- Alarm signal can be output when discharge hot-air temp. exceeded the optional regular range to setting temp. Please use as occasion demands. (This is ineffective at the time of shipment.)

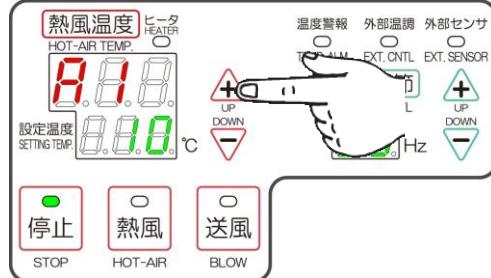
① Please continue to push MODE switch (About 2 seconds).

"A1" is displayed to HOT-AIR TEMP., "0" is displayed to SETTING TEMP.



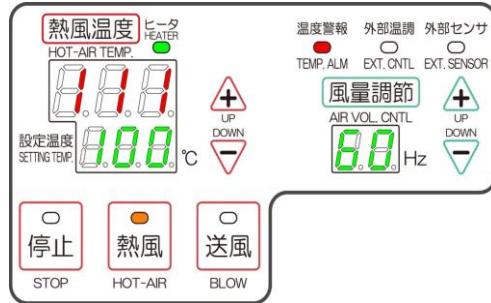
② Please set up the optional temp. range by the up down key.

Please return to the display of usually operation condition by pushing MODE switch 3 times after setting.



③ Please start hot-air operation.

Alarm is output from the service terminal and TEMP.ALM lamp (Red) is lighted when hot-air temp. becomes more than +10 °C or less than -10 °C when "10" were set up. (Excerpt for temp. rising at the time of the hot-air operation start.)



- * This machine is not stopped by the temp. alarm.
- * Temp. alarm output is ineffective if setting of temp. alarm is "0".
- * Temp. alarm is output as the unvoltage contact signal (Contact capacity AC250V 1A DC30V 1A) from temp. alarm output terminal.
 - TSK-22H4/32H5: Temp. alarm output terminal T.A and COM
 - TSK-52H6 ~ 72H9 : Temp. alarm output terminal B4 and B7

7. When External control is used

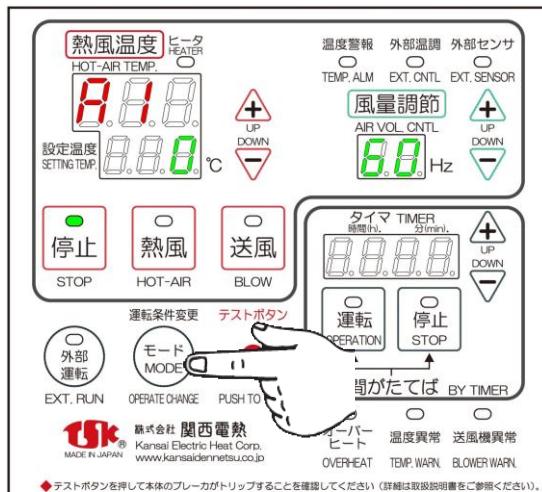
- Hot-air generator is controlled by the signal of the temp. controller that was established in the outside. At this time, temp. controller of this machine can be used as the discharge temp. upper limiter.
- Hot-air temp. setting of SETTING TEMP. and hot-air temp. display of HOT-AIR TEMP. is the temp. of the outlet sensor in the case that the external control function was used.

① Please prepare the temp. sensor that measures the temp. of the outside and the temp. controller that control the temp. of the outside. Please connect the output of the outside temp. controller to the external control input terminal of the service terminal without that mistakes plus and minus. (There is polarity.)

TSK-	External control input terminal	TSK-52H6 ~	External control input terminal
22H4/32H5 :	E.C+ and E.C-	72H9	A4 (+) and A5(-)
SSR drive reverse action output (DC12V - 24V)		SSR drive reverse action output (DC12V - 24V)	

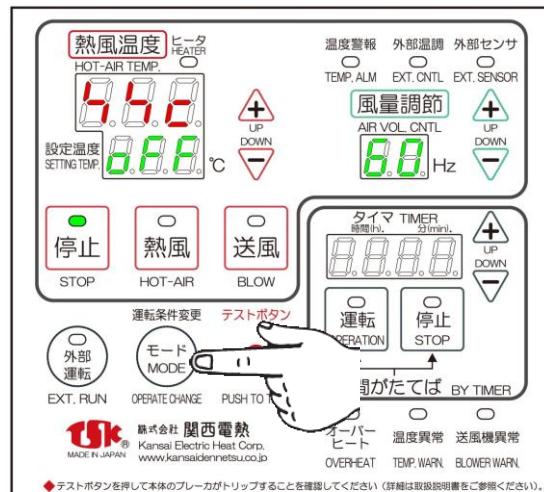
② Please continue to push MODE switch (About 2 seconds).

"A1" is displayed to HOT-AIR, and "0" is displayed to SETTING TEMP.



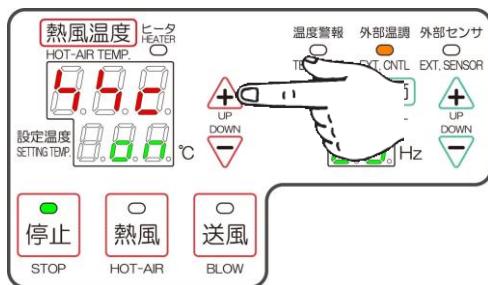
③ Please push MODE switch 1 time once again.

"SSc" is displayed to HOT-AIR, and "oFF" is displayed to SETTING TEMP.



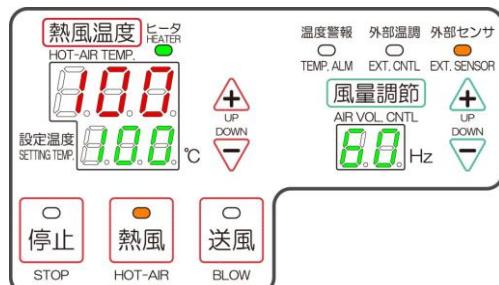
④ Please change SETTING TEMP. to "on".

Please return to the display of usually operation condition by pushing MODE switch 2 times after setting.



⑤ Please start hot-air operation after setting the optional temp. and air volume, and please start even temp. control by the temp. controller of the outside simultaneously.

EXT. CNTL lamp (Orange) is lighted when external control setting is changed to "on".



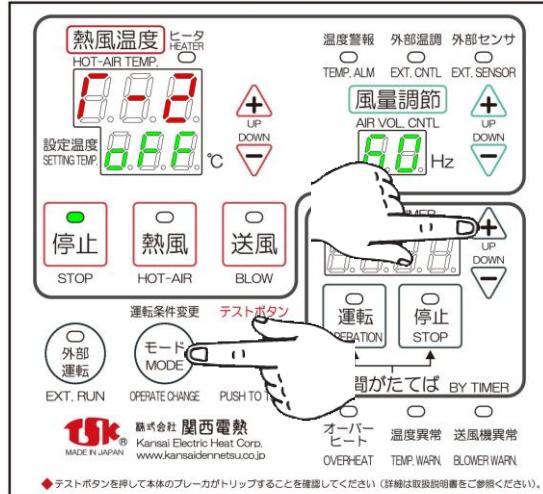
* Hot-air generator is controlled by temp. that reached any early of temp. that was set up with the temp. controller of the outside or discharge setting temp. of the hot-air generator. So, please set up each temp. in consideration of the radiation of piping etc.

* Please return SETTING TEMP. to "oFF" when the use of the external control function is stopped.

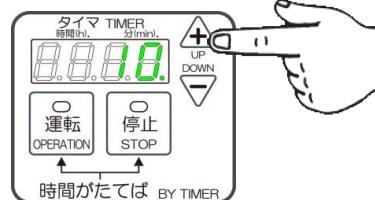
8. When Cooling operation is used

- Only in the case that timer operation is selected, cooling operation function can be used. Blow operation in optional time is conducted after the hot-air operation by the timer is conducted, and operation is stopped.
- Cooling operation for heater snapping of a wire prevention is not necessary because the hot-air generator of the our company is set up the watt density of the heater low. So, please use for the burn prevention of the piping etc. by the remainder heat after operation stoppage and for cooling after the work of the drying heating product.

① Please continue to push TIMER UP key while pushing MODE switch in stoppage condition. "T-2" is displayed to HOT-AIR TEMP., and "oFF" is displayed to SETTING TEMP.

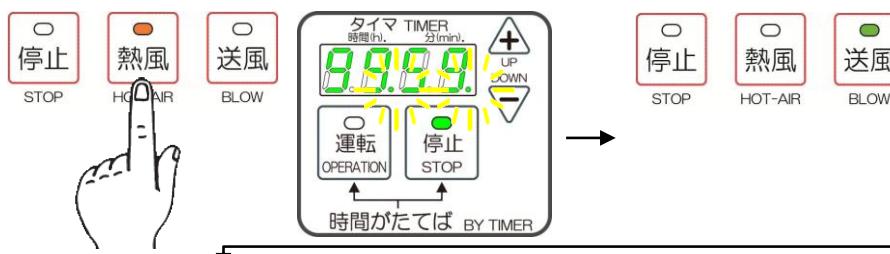


③ Please set up optional cooling time by the up down key.
Please return to the display of usually operation condition by pushing MODE switch 1 time after setting.

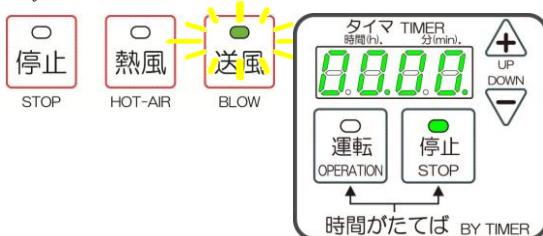


⑤ Please push HOT-AIR switch.

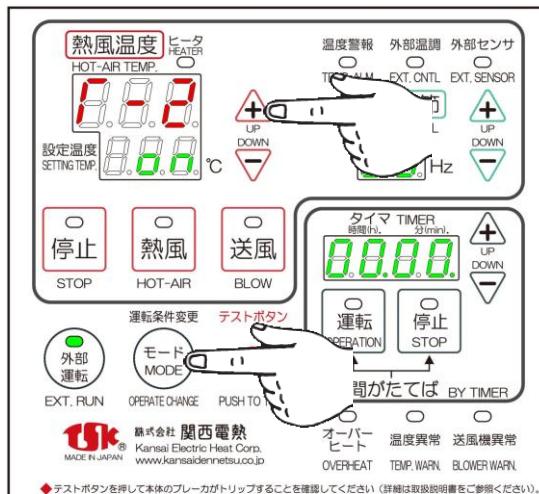
Time counting is started (Flickering of the dot display), and hot-air operation is started. And, HOT-AIR lamp (Orange) is lighted during hot-air operation.



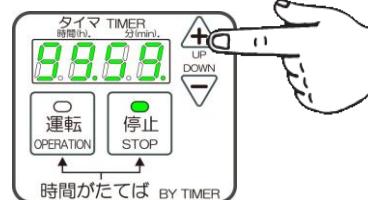
Cooling operation (Blow operation) is stopped when the time counting becomes to "00.00.", and BLOW lamp (Green) is flickered.



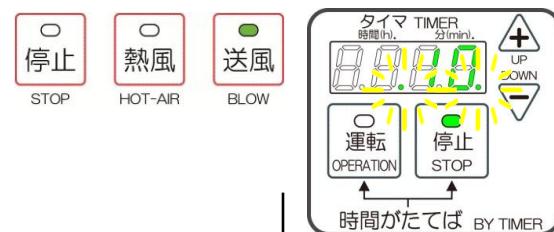
② Please change SETTING TEMP. to "on" by up key, and push MODE switch 1 time. "00.00." is flickered to TIMER.



④ Please set up the hot-air operation time by pushing STOP BY TIMER.



Cooling operation (Blow operation) is started by the timer after hot-air operation is stopped by the timer operation. And, BLOW lamp (Green) is lighted during cooling operation.



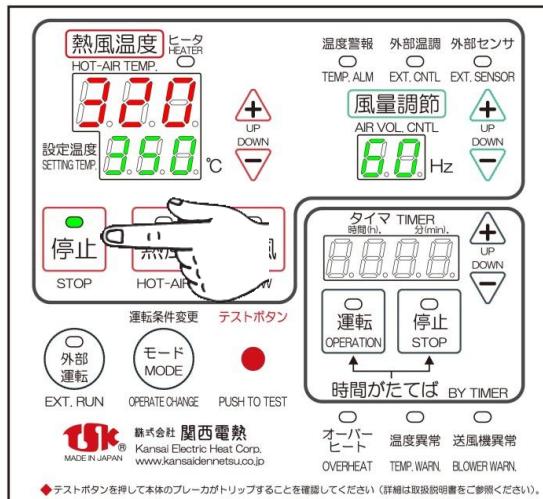
* Timer operation is stopped by pushing STOP switch. (Timer setting is returned to the initial setting value.)

9. Operation stop

- Please push STOP switch in the case that the hot-air generator is stopped at the time of usually operation.
Please turn off even the factory power supply side in the case that the hot-air generator is not used the long time.

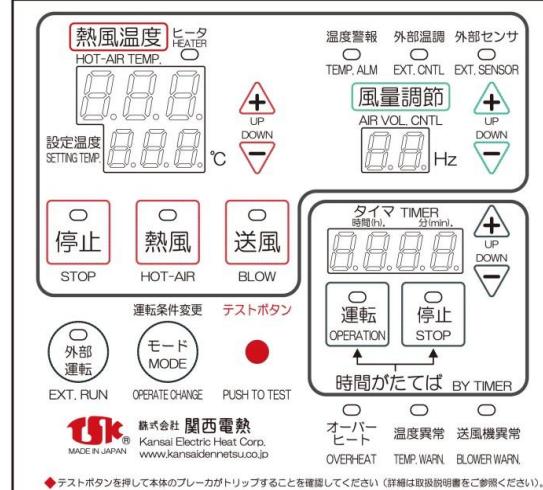
① Please push STOP switch.

STOP lamp (Green) is lighted, and all operation is stopped.



② Please turn off even the factory power supply side in the case that the hot-air generator is not used the long time.

All display is not lighted.



* Breaker of this machine (NFB) does not need to turn off.

- ※ Please turn off the factory side power supply or the breaker of this machine (NFB) after the hot-air generator is stopped by STOP switch without fail. Hot-air generator may malfunction if the hot-air generator is stopped by the factory side power supply or the breaker of this machine during operation.
- ※ External run mode is canceled if the breaker of this machine is turned off and is turned on again when the hot-air generator is operated or stopped by the outside run function. Please block by the factory side power supply (Primary power supply) without fail in the case that the power supply is blocked when this machine is operated by the external run mode. (External run mode is held by the input of the factory side power supply.)

Please do not operate and stop the hot-air generator by the electromagnet contact device etc. that was established to the primary side of the hot-air generator. The inside electron devices damage by surge voltage.

Please turn on the breaker (NFB) of the hot-air generator constantly. Please do not do on/off as the operation switch. The inside electron devices damage by surge voltage.

- About the instantaneous stoppage action at the time of the power failure

- In all the machine types except for TSK-18, the hot-air generator is returned automatically to the operation condition before the block if the input (return) of the power supply is within one second case of instantaneous block of the factory side power supply by power failure etc. Hot-air generator is stopped and may become to the condition that blower warning occurred when the power supply was input (return) in the case that power supply block time is for more than one second. In this case, please turn off the breaker of this machine at first and turn on once again. And, the operation is started once again. (At this time, the external run mode is canceled.)



Manufact
urer



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MEMO