Chapter 7   Troubleshooting

This chapter explains equipment trouble and how to remedy it.
When trouble is detected by one of the self-check features, the trouble is displayed on the instrumentation panel display and a trouble buzzer is sounded. For trouble undetected in self-checks and misoperation which can be easily mistaken as trouble, see "7.2 Other Troubles".
This chapter also includes trouble information for options.

7.1 Detectable Troubles

⚠ DANGER

- **ELECTRIC SHOCK! Before working on the power circuits on the primary side of the main power switch (leakage breaker), shut OFF primary power supply and check the line is dead. Also, take measures to prevent accidental charging.**
  Working with primary power supply ON runs the risk of electric shock.

- **Shut OFF power from the main power switch BEFORE detaching the electric parts compartment door.**

The ovens are equipped with a buzzer that sounds when detects trouble as well as self-check features which display the trouble on the instrumentation panel display. Displayed alarm codes and their content are given in the alarm table on the following pages. Remedy trouble as described therein.
For trouble which is undetected in self-checks, see "7.2 Other Troubles".
If the trouble cannot be remedied after taking the prescribed action, contact the place of purchase or ESPEC CORP. (Call for service.)

1st and 2nd Degree Alarms

Detectable trouble is manifested either as 1st or 2nd degree alarms. They are defined as follows.

1st degree alarm :   Even after the cause of the trouble has been eliminated, control is NOT automatically restored. The trouble state must be cleared in accordance with the displayed alarm code and the system restarted.

2nd degree alarm :   As soon as the cause of the trouble has been eliminated, control is automatically restored. However, the alarm code will be displayed indefinitely until one of the keys is pressed.

Clearing Alarms

This section explains how to deal with trouble that trips one of the oven's self-checks. The buzzer can be silenced by pressing any of the keys, but follow the below procedure as best possible.

■When a 1st Degree Alarm Occurs

Procedure

1. Press either the $\triangle$ or $\triangledown$ keys to silence the buzzer.

2. Check the alarm code($RL \times \times$)on the display.

3. If the oven is running, press the ⎡OPER./STOP⎤ key to stop the oven.

4. If control power is ON, press the ⎡POWER⎤ key to shut OFF power to the instrumentation.

5. Set the main power switch in the OFF position.

6. Remedy the trouble as explained in the Alarm Tables on the following pages.

7. To resume operation, set the main power switch in the ON position, press the ⎡POWER⎤ key and then press the ⎡OPER./STOP⎤ key in that order.

■When a 2nd Degree Alarm Occurs

Procedure   When the cause of the trouble persists

1. Check the alarm code($RL \times \times$)on the display.

2. Press either the $\triangle$ or $\triangledown$ keys to silence the buzzer.

3. Remedy the trouble as explained in the Alarm Tables on the following pages. When the cause of the trouble has been cleared, normal control is automatically restored. The alarm code is cleared.

When the cause of the trouble has been eliminated

1. Check the alarm code($RL \times \times$)on the display.

2. Press either the $\triangle$ or $\bigtriangledown$ keys to silence the buzzer. The alarm code is cleared.

Alarm Table

Table 7.1 Alarm table

Type	Displayed alarm code/channel code (option)	Trouble	Cause	Remedial action
1st	$RL~00$ $CH00$ 〔0〕	The room temperature compensation input to the temperature controller was disconnected. The oven has been stopped.	The sensor is loosely connected to the RTD terminal on the ES102C temperature controller board or there is an open circuit on the ES102C board.	Turn control power OFF from the POWER key and resume testing. If the same alarm occurs again, call for service.
1st	$RL~00$ $CH01$ 〔0〕	The dry-bulb input to the temperature controller was disconnected. The oven has been stopped.	The sensor is loosely connected to the CH1 terminal on the ES102C temperature controller board or there is an open circuit in the connected thermocouple.	Turn control power OFF from the POWER key and resume testing. If the same alarm occurs again, call for service.
2nd	$RL~01$ 〔1〕	The temperature inside the oven has risen above the upper deviation limit. The heater has been stopped until temperature returns within range.	Either specimens inside the oven are generating heat or the upper deviation limit is set too low.	Remove the heat-generating specimens and/or set the upper deviation limit about 10°C higher than the target temperature. When temperature returns within range, normal control is restored automatically. The alarm can be cleared by pressing the $\triangle$ or $\bigtriangledown$ key.
1st	$RL~02$ 〔2〕	The temperature inside the oven has risen above the absolute high limit. The oven has been stopped.	Either specimens inside the oven are generating heat or the absolute high limit is set too low.	Turn control power OFF from the POWER key. Then, remove the heat-generating specimens and/or set the absolute high limit about 15°C higher than the target temperature. Then, resume testing. If the same alarm occurs again, call for service.

Cont.

Type	Displayed alarm code/channel code (option)	Trouble	Cause	Remedial action
1st	AL03 〔3〕	The temperature inside the oven has dropped below the absolute low limit. The oven has been stopped.	The absolute low limit is set too high.	Turn control power OFF from the POWER key. Correct the absolute low limit setting. Then, resume testing. If the same alarm occurs again, call for service.
1st	AL06 〔6〕	The temperature inside the oven has risen above the overheat protector setting (instrumentation panel). The oven has been stopped.	Either specimens inside the oven are generating heat or the overheat protector is set too low.	Turn control power OFF from the POWER key. Remove the heat-generating specimens and/or correct the overheat protector setting. Resume testing. If the same alarm occurs again, it is possible that the thermal fuse has blown. Call for service.
		The circuit protector for the heater tripped because the heater current has risen. The oven has been stopped.	Short circuit of the oven circuit or over current.	Turn control power OFF from the POWER key. Recover the circuit protector inside of the electric chassis. If the same alarm occurs again, call for service.
1st	AL07 〔7〕 (Not applicable for LG)	The built-in temperature switch of the air circulator motor (electrical parts compartment) tripped because the motor was abnormally hot. The oven has been stopped.	The air circulator motor is overloaded.	Leave the oven OFF until the air circulator cools down. Then, turn control power ON from the POWER key and resume testing.
1st	AL99 〔99〕	The instrumentation detected communication trouble between the CPU board and display board. The oven has been stopped.	Communication error between the CPU board and display board	Reactivate the system from the main power switch (leakage breaker) and resume testing. If the same alarm occurs again, call for service.
		The instrumentation detected system trouble in the display board. The oven has been stopped.	Display board error (i.e.: internal memory, etc.)	Reactivate the system from the main power switch (leakage breaker) and resume testing. If the same alarm occurs again, call for service.
		The instrumentation detected system trouble in the CPU board. The oven has been stopped.	Sequence task error on CPU board	Reactivate the system from the main power switch (leakage breaker) and resume testing. If the same alarm occurs again, call for service.
		The instrumentation detected system trouble in the CPU board. The oven has been stopped.	Temperature control task error on CPU board	Reactivate the system from the main power switch (leakage breaker) and resume testing. If the same alarm occurs again, call for service.