

Troubleshooting Guide for Gaggia Kit Not Heating Properly

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A. For Heating Issues in Brew-Control Mode

In the brew-control mode, the PID controller, the solid-state relay, and the heater should work in synchrony. You can tell the status of each part by looking at the controller's OUT indicator (which is located on the left side of the display window), the red indicator on the solid-state relay (SSR), and the coffee-ready light on the Gaggia machine (the neon lamp that turns on when machine is ready). On a Gaggia machine and a kit that work properly, when the controller's OUT indicator turns on, the red indicator on the SSR should also turn on, and the coffee-ready light on the Gaggia should turn off; when the controller's OUT light turns off, the red indicator on the SSR should turn off, but the coffee-ready light on the machine should turn on.

Note. *The basic kit, KIT-GG, only regulates the brew water temperature. Once the steam-button is flipped to ON position, the boiler is controlled by the steam-thermostat.*

To troubleshoot a system that is not working properly, please check the status of each part and see if it matches with one of the following situations.

1) If the controller's OUT indicator is ON, the SSR's indicator is ON, the coffee-ready indicator is also ON, but the coffee machine doesn't heat up, there are three possibilities.

- a) For kit with steam control or pre-infusion function, the SSR's output wires are hooked to the wrong wire of steam-control thermostat.
- b) The heater is broken. To verify whether the heater is broken, you can use a multimeter to measure the resistance when the machine is turned off and unplugged. A working heater should have about 12 ohm resistance (or 48 ohm for 220V model).
- c) The thermal protection thermostat or the thermal protection fuse was tripped.

2) If the controller's OUT indicator is ON, but the SSR's indicator is OFF, the coffee-ready indicator is also ON, the problem is between the controller and SSR. Use a multimeter to measure the voltage between pin 3 and pin 4 of the SSR. There should be a 7-8 VDC between them (or a 12 VDC on newer controllers). If there is a 7-8 VDC between pin 3 and 4 on the SSR, check if the polarity is correct. The pin 3 should be positive. If there is voltage and polarity is right, the SSR is defective. If there is no voltage between pin 3 and 4 of the SSR, try to measure the voltage at the back of the controller between terminal 9 and 10. If there is still no voltage, the controller is defective. Otherwise, the wires might be the problem.

3) If the controller's OUT indicator is ON, the SSR's indicator is ON, but the espresso-ready light is also ON (which means the heater is not heating), the problem is between the SSR and the heater. Use a multimeter to measure the AC voltage between pin 1 and 2 of the SSR (meter needs to be set for AC voltage). If there is a 120 VAC (or

220VAC for the 220 V line voltage model), the SSR is defective, assuming the heater is functional and is connected to the SSR correctly.

4) If the controller's OUT indicator is OFF, the SSR's indicator is OFF, but the coffee-ready light is also OFF (which means the heater is still heating and the temperature is rising), the SSR might have failed at the shorted position. Remove the wire from the pin 4 of the SSR to see if the heater will stop heating. If it still heats up, we can confirm that the SSR is shorted. (If the heating stops, that means that both the controller and the input side of the SSR are not working properly, which is unlikely to happen.)

B. For Heating Issues in Steam-Control Mode (KIT-GGP)

In steam mode, the controller's OUT indicator will not turn on and off to show the status of the output. However, the red indicator on the SSR and the steam-ready indicator on the Gaggia should still be reversely-synchronized as described above. That means the red indicator on the SSR should turn on when the temperature is below 149°C (or 300°F), and it should turn off when temperature is above 149°C (or 300°F).

5) If the machine works fine in brew-control mode, but it won't heat above the brew temperature in steam-control mode, there are three possibilities.

- a) The wiring on the SSR's output side (pin 1 and 2) is wrong. There are two thicker wires connected to the SSR's output inside (pin1 and pin 2). Each of these wires should be connected to one of the wires removed from the brew-thermostat and the steam-thermostat. However, there is one piece of wire that originally connects these two thermostats together, which should not be connected to the SSR. If a user mistakenly takes this piece of wire and connects it to the wires from the SSR, the coffee machine and the kit won't be able to heat up properly.
- b) The controller's steam-control settings are wrong. The value of AH1 needs to be smaller than the value of AL1 (i.e., $AH1 < AL1$). By default, $AH1 = 148^{\circ}\text{C}$ (299°F), $AL1 = 149^{\circ}\text{C}$ (300°F). If it was reversed, the steam-control function will not work. The OUTY (access code 0089) should be set to 3 for steam-control and pre-infusion model.
- c) The controller's steam-control output is defective or not connected properly. You should check synchronization of the SSR's indicator and the steam-ready indicator on Gaggia. In steam-control mode, when the temperature reading is below the AH1, 149°C (or 300°F), the indicator on the SSR should be ON, and there should be 6-8 VDC output between terminal 3 and 10 on the controller (or 12 VDC on newer models). If not, controller's output might be defective.

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