



Toaster - Step 3: frequent breakdowns

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INTRODUCTION

This device is relatively simple and the problems are easy to identify. Nevertheless, take the time to **read the manual** to practice a repair under good conditions. Next, read the **two tutorials** on the functions and how they work. **You will maximize your chances of success.**

Experience shows that the three main problems are related to **heat resistance, the bipolar switch contacts, and the electronic circuit**. We will go into detail about the first two, but we will not tackle the third seeing as no toaster has the same electronics. In the final case, you will need to inspect and test the components one by one, desoldering them as needed. Note that it is difficult, almost impossible to procure the schematics for these devices.

The problems may be of another nature. Here are a few possibilities:

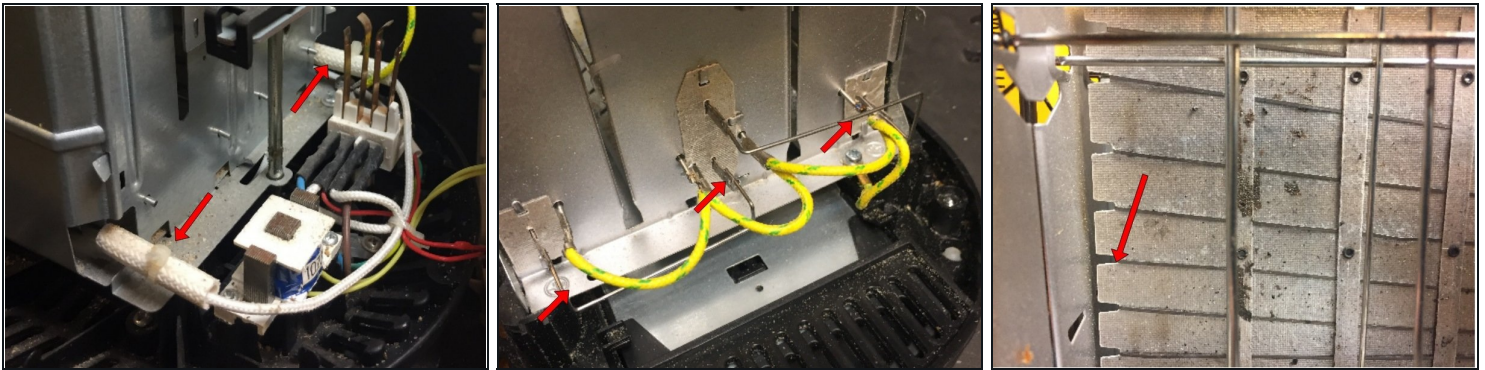
Electric problems:

****** Verify the continuity of the cable, wire to wire, between the main socket and the switch, then from the inter towards the resistors, electronic circuit, and electromagnet.

- Verify the value of the electromagnetic coil with an ohmmeter. The coil may be cut (rare). Take this opportunity to clean the top of the electromagnetic coil on which is stuck to the movable part of the lever. Crumbs often fall there and this can cause dysfunction (the lever has trouble staying down)

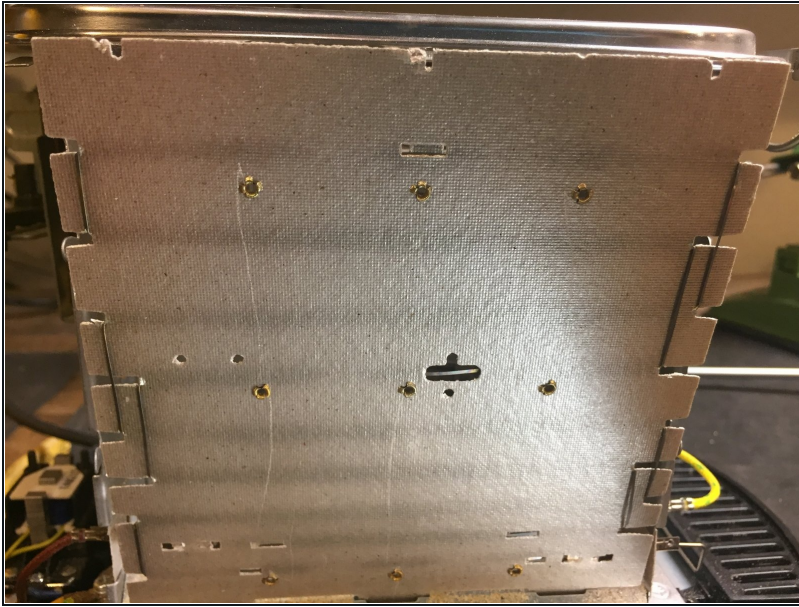
Mechanical problems: the mechanism lifting and dropping the pans could be stuck. In that case, use flat pliers to re-establish proper operation by straightening the elements of the mechanism.

Step 1 — Rupture of the heating element



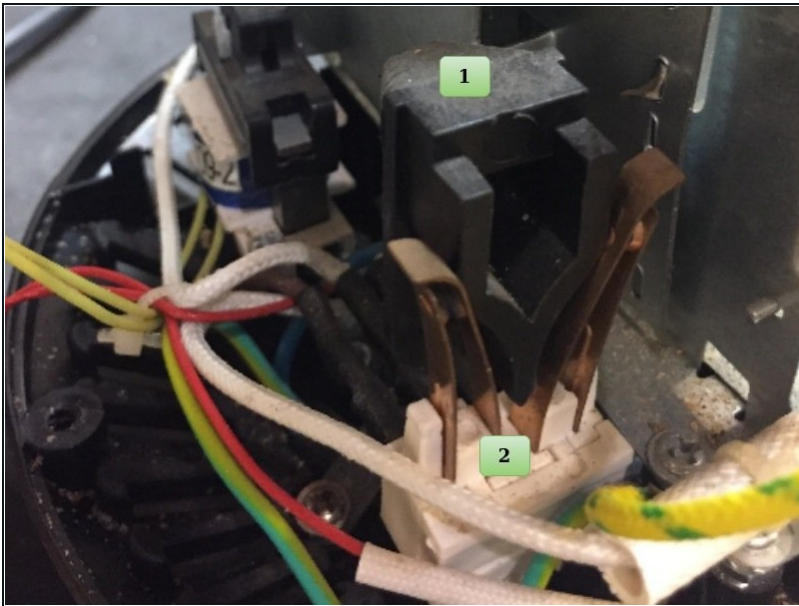
- A common failure is a broken heating element. If the toaster does not heat up, or if the lever does not stay down **(1)**, check the continuity of the resistance circuit with a multimeter.
- To test the elements, connect the multimeter to the input terminal and then find the output terminal (in this case they are the white wires) and measure the resistance. It should be a resistance of less than 100 ohms **(2)**.
- If the element is broken, we need to find where the break is. We follow the length of the wire, which is wound around isolating plates made of [mica](#). There are four in this toaster. The heating elements are connected in series at the back of the device by exposed wires. We can use these to make measurements.
- ☑ On some toasters, the power supply of the electronic board is taken from the resistor circuit (in series). If the heating element is broken, then the electro-magnet which holds the lever down, won't stick.
- ☑ Given that most toasters have a power rating of between 600 W and 1200 W, $R = V^2/P$
 $R = 220^2/600 = 80 \text{ ohms}$ $R = 220^2/1200 = 40 \text{ ohms}$

Step 2 — Damaged heat resistor



- When the damage has been located, the repair can be carried out. The heat resistor is made with an alloy of nickel and chrome, and nichrome **(*1)** that's impossible to weld with ease. It is therefore necessary to create a connection either with a piece of wire as a strap, or with the crimping sleeve **(*2)**
- Warning: The disassembly to access the insulating plates is a delicate process. We must focus on solutions that allow repair without having to disassemble. See video **(*2)**
- ① **(*1)** Nichrome wire coils are available on the internet for the repair of electronic cigarettes
- **(*2)** watch the video <https://youtu.be/YXq3go-NgYE> from 10 minutes)

Step 3 — Bipolar switch



- Since the power of the device is between 600 and 1200W, the bipolar switch (marker 2) must support a current between 2.5 and 5A **(1)**, which is important given its small size. When contacts deteriorate, their resistance will increase and the heat will dissipate in the switch and eventually burn them.
- If the contacts have been fried, the repair will involve cleaning them with a small fine file by squeezing the file between the contacts with a clamp if necessary. Make sure that the cam (1) closes the two contacts well by pushing downright on the slats.
- ☑ An improvement can be made by adding a triac to replace the inter responsible for energy switching; the switch will then only function as a control. This modification can be viewed on the electronic diagram in the "how it works" section.
- (1) Knowing that the power of toasters is generally between 600 and 1200w, $P=U \cdot I >$
 $I=1200/220 = 5,5A >$
 $I=600/220=2,7A$

There you are! After having studied the previous two guides on toasters, the functionalities, and the different sub-assemblies that compose it, we have reviewed the main causes for toaster breakdowns.

We hope this empowers you to know more about your device and have the capacity to repair it yourself.

If you enjoyed this guide (or not!), don't hesitate to leave us feedback. And if you are our area ([Atelier Soudé](#), come visit us. We organize workshops for co-repair, popularization sessions, and more...