# What’s inside of an oven toaster?

**Submission**

Almost everyone has an oven toaster in the kitchen, while they are not aware of its inside and do not know how it works. It is one of the simple systems in the house but it is still a system. We better learn what parts exist in the toaster to efficiently use and keep it.

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**Heating element**

An element is a type of semiconductor wire that can withstand a large amount of electricity and has the property of heating and dissipating heat. The elements are usually made of nickel and chrome. This wire is placed in an insulated and non-conductive cylinder. By giving voltage to the element, it starts to heat up. In fact, the element converts electrical energy into heat energy. The element wire is placed inside the insulation cylinder according to the type of application.

**Heat switch sensor**

A thermoswitch is a type of switch and sensor that regulates temperature indoors. They are usually used in devices that generate heat or cold. This switch keeps the set temperature constant by turning the device on and off (on and off). When the temperature of the device reaches the set temperature, the thermoswitch switches off the device and turns on again a few degrees after the temperature of the device decreases.

**Oven selector switch**

This type switch is mostly used in step voltage sources. In the toaster, this type of selector is used to be able to work in four ways inclusing off, up and down, up and finally in the down position of the elements. These keys are rotating and are step by step.

**30 minutes timer switch**

This type of timer switch has the ability to set the time from 1 to 30 minutes. This type of timer is used in oven toasters. This timer switch has a mechanism like a watch, therefore this is mechanical. There are so many gears inside of this timer. It has a bell to remind us about the set time for a toaster. It is called switch because it works like a switch. When we set the time, it turns on the oven toaster and when the set time is over, it turns off the oven toaster.

**Neon lamp**

A neon lamp is a miniature gas discharge lamp. There are many Noble gases inside of the lamp glass capsule such as neon. The light that the lamp emits is in the red spectrum. Actually, this type of lamp is used in high voltage circuits. When the electric voltage connects to this lamp, atoms become excited and the electrons emit a photon.

**Closed end crimp connector**

Closed end crimp connector can be called crimp caps, closed end connectors, or crimp connectors as well. A crimp connector is a type of solderless electrical connector used for terminating stranded wire. They are quick, inexpensive, easy and permanent electrical connection of two or more wires.

**Crimp connector AMP**

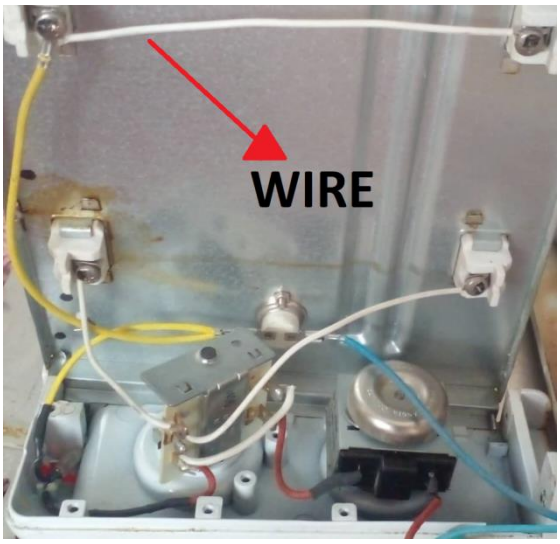
Crimp connector AMP is another type of crimp connectors and has the same mechanism.

**Heat shrink tube**

Heat shrink tubing is a shrinkable tube that shrinks radically when exposed to heat. Produced using a two-step process, heat shrink is available in a wide range of materials to suit almost any application. Heat shrink tubing has many useful applications including providing electrical insulation to wires, connections, joints, terminals, and splices, as well as bundling loose items such as wires.

**Wire/wiring**

Wires are like roped that can conduct the electricity energy. Usually, wires are made of copper. Heat-resistant wires are used in heat-generating devices. It is not correct to use ordinary wires in an oven toaster because the wires are melted. The picture below shows the oven toaster wirings.




**Power cord**

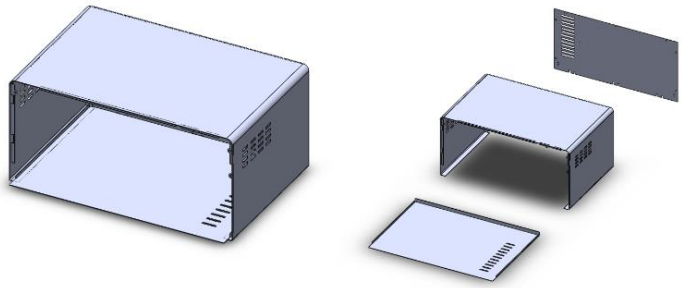
A power cord, line cord, or mains cable is an electrical cable that temporarily connects an appliance to the mains electricity supply via a wall socket or extension cord. The terms are generally used for cables using a power plug to connect to a single-phase alternating current power source at the local line voltage (generally 100 to 240 volts, depending on the location).

**Tension spring**

Tension springs are another name for extension springs. Extension springs have no pitch between the coils and have a function opposite to that of compression springs. While compression springs are meant to be compressed extension, tension springs are meant to be extended or pulled. The load applied to extension springs stretches the tightly wound coils apart and spreads them open. Tension springs resist the pulling force that is placed upon them and this creates a sling back effect when the force is removed, causing it to return to its original shape. Tension springs usually have hooks on the ends to facilitate the function of being extended. In the oven toaster, a tension spring is used for the door.

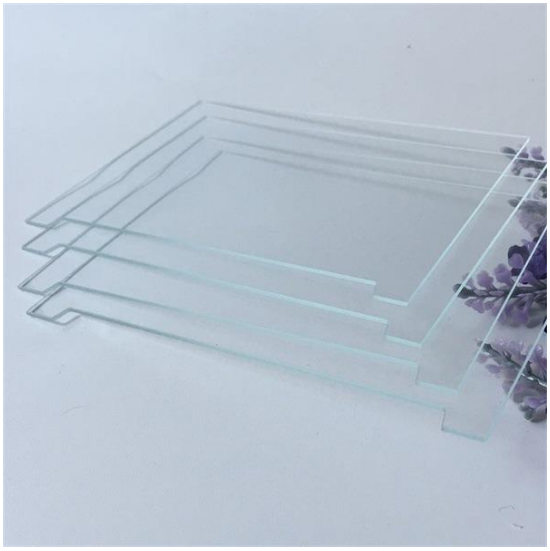
**Oven toaster body**

The body covers inside of the oven toaster. This oven toaster's back and bottom are metallic (aluminum) and the body of the upside and left side and right side are plastic.



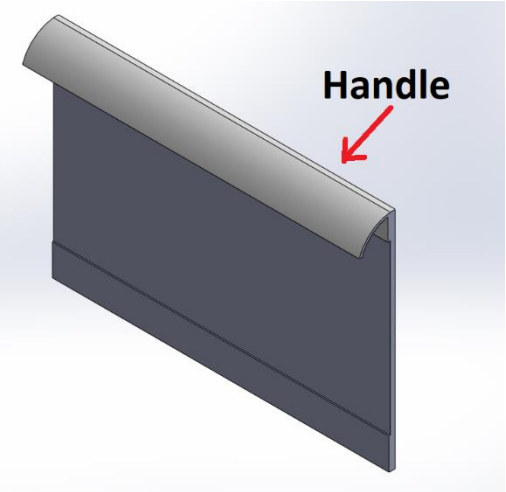
**Glass**

Heat resistant borosilicate Pyrex glass tempered glass sheet use in the oven door. This special type of glass can be heat resistant. Usage of glass for oven door is great because helps its users to see the inside.



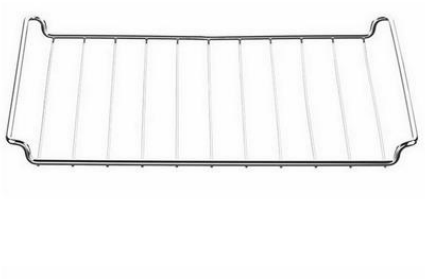
**Handle**

Handle is a part that connects to the glass door of the oven toaster using which we can open or close the oven toaster glass door.



**Slide rack for oven toaster**

This is the part of the over toaster where the dish is placed in.

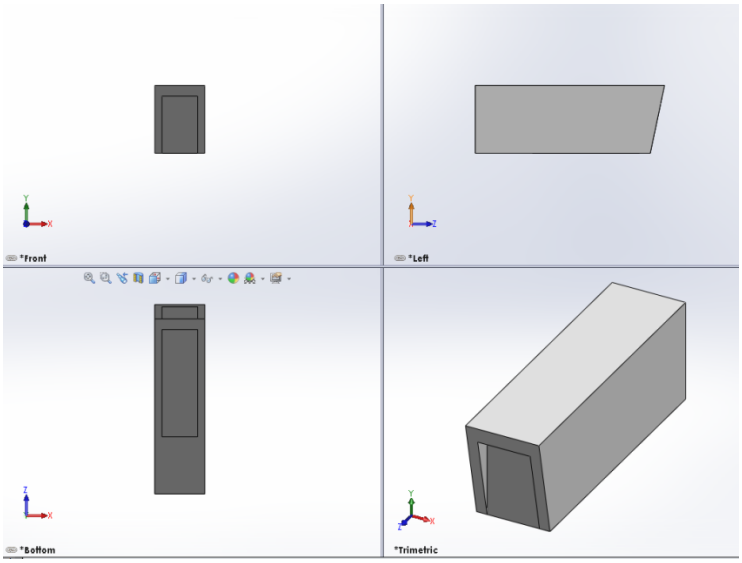


**Control knob for timer and temperature**

The control knob is a rotary device used to provide manual input adjustments to a mechanical or electrical system when grasped and turned by a human operator. The control knob works by turning a shaft that connects to the component which produces the actual input.

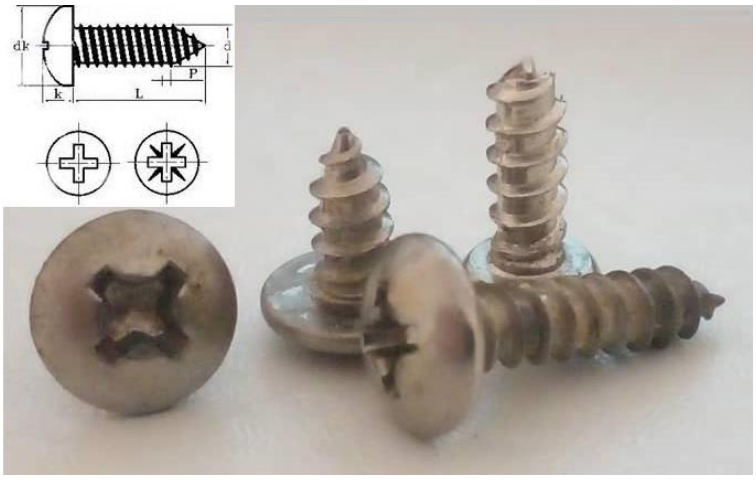
**Foots**

Foots are used in the down of the oven toaster holding the oven toaster.



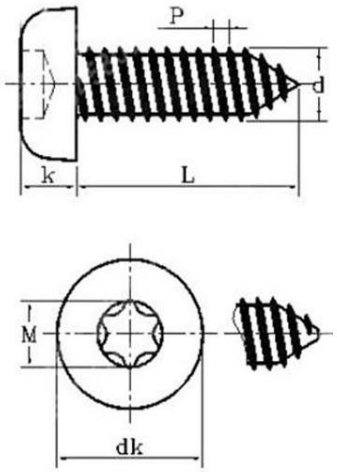
**Philips sheet metal screw**

Philips sheet metal screw is a type of sheet metal screws. This type of sheet metal screw has a pan head. A sheet metal screw is a special type of fastener designed to be used with sheet metal. Sheet metal screws are characterized by the presence of exterior threading covering their entire shank. By looking at the shank of a conventional screw, one can notice that it is only partially covered with exterior threading. The exterior threading does not begin until part of the way up the screw's shank. Sheet metal screws are distinguished from other screws by featuring a shank which is completely covered with external threading. Almost all of the screws of the oven toaster are sheet metal screws.




**Button head Torx security screws**

A Torx screw is a type of screw characterized by a six-lobed, star-patterned screw drive. Torx drive is a trademark commonly referred to as star drive or, simply, a six-lobe. It is often abbreviated to TX or 6lobe. Torx is available as an internal and external drive although it is most commonly used as a socket within the head (internal). It aimed to replace Phillips, which was prone to cam-out, and the internal hex drive, which tended to fail during high torque by rounding off. The external drive Torx is less common, however, it has gained some popularity in machine screws and lag screws as an alternative drive head type to hex. This type of screw is used in the back of the oven toaster. Four of the screws are used in the oven toaster.



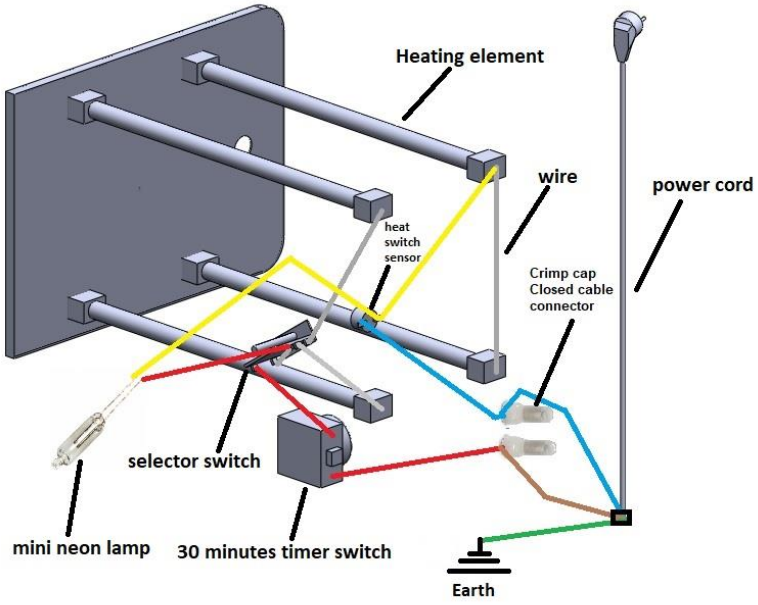

**Summary report**

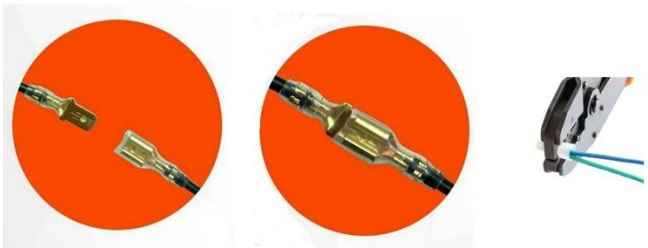
At first, place the heating element, heat switch sensor, 30 minutes timer switch, oven selector switch, and mini neon lamp inside the oven toaster. It is time to connect these parts to each other using wire. The image below shows the connection of all the parts to each other. The green wire should be connected to the bottom body of the oven toaster (earth). Other wires are connected to the power cord. We need to use two closed-end crimp connectors for wires and do the following steps:

Step 1: Strip two wires and then insert them into the one closed end connector.

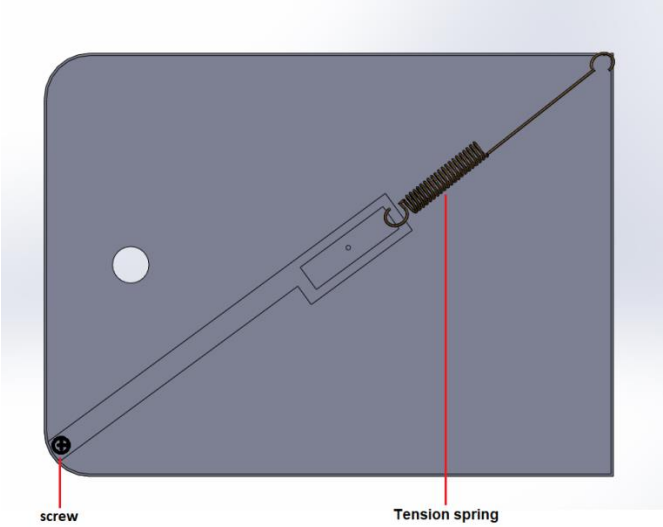
Step 2: Crimp the end connector with pliers.

Step 3: Connection between wires and connector is done.

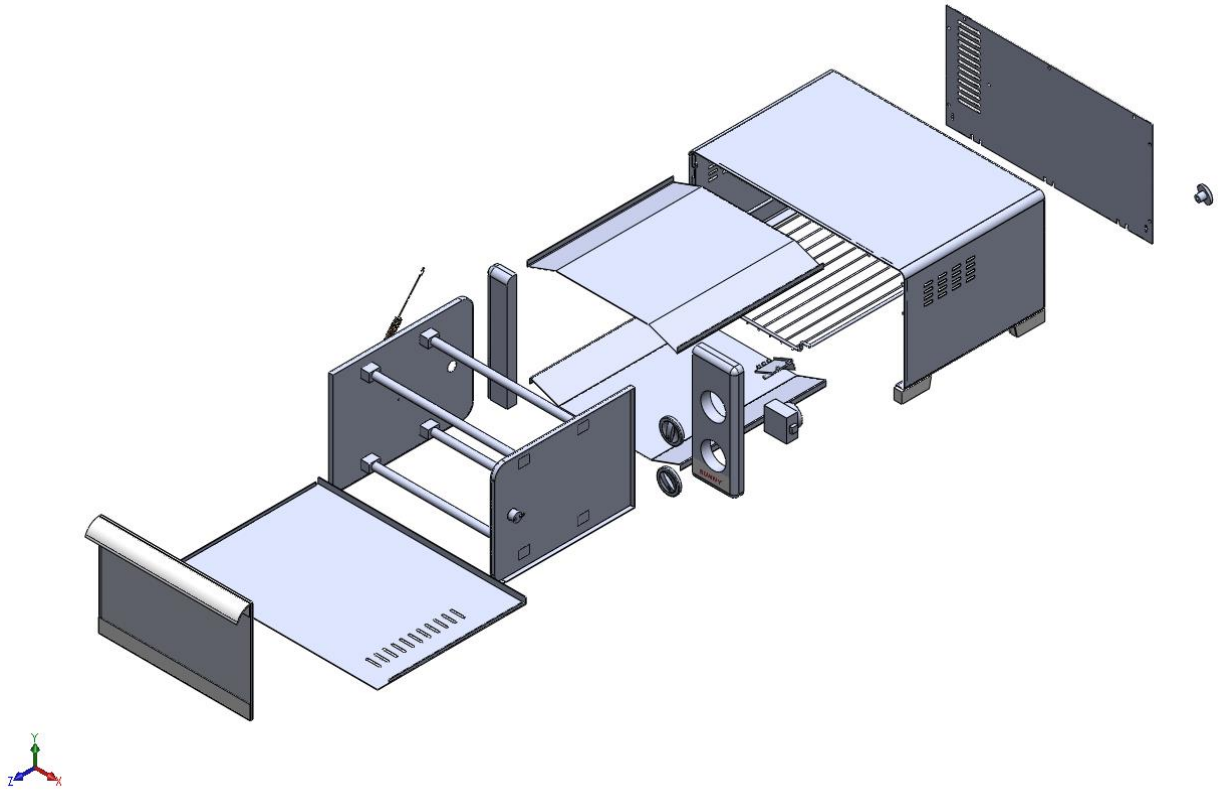


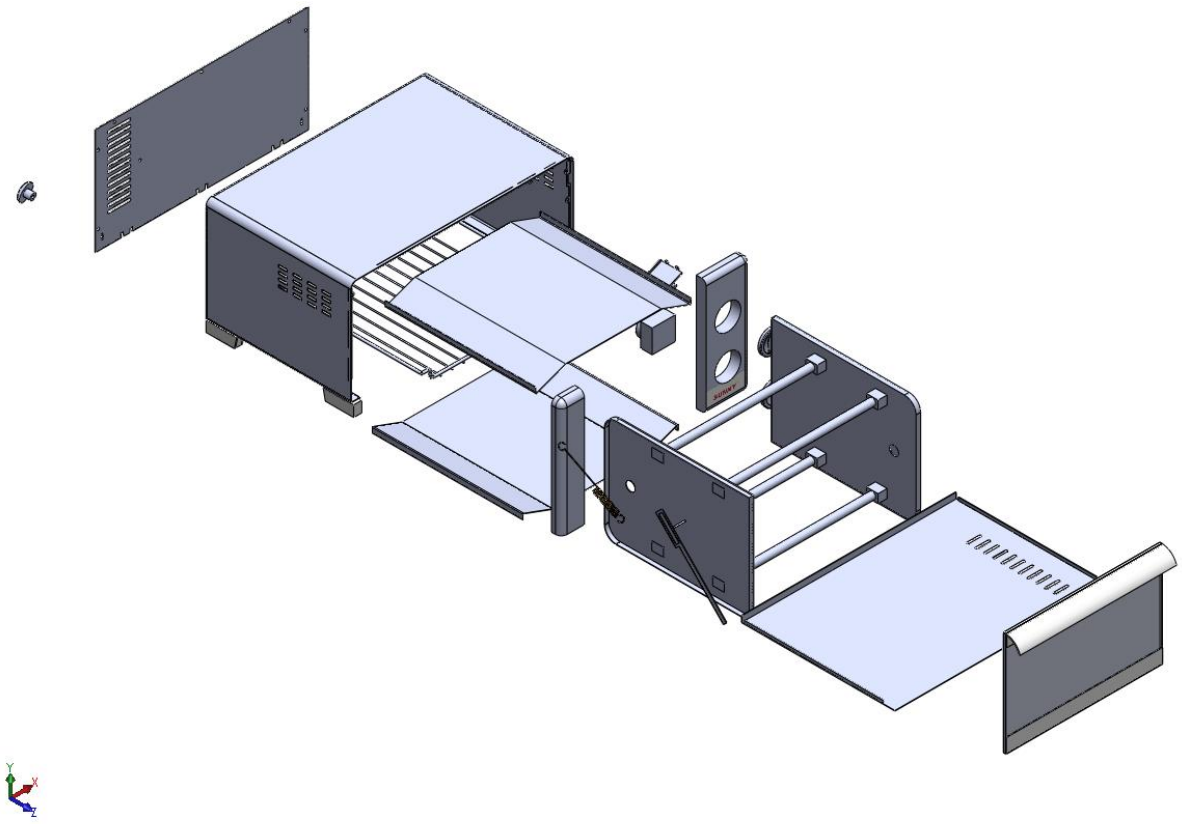



It is time to connect the Control Knob to the 30 minutes timer switch shaft and selector switch shaft. On the other hand, we need to connect the tension spring to a little metallic part and screw it to the oven toaster door. The door cannot fall down due to the spring.

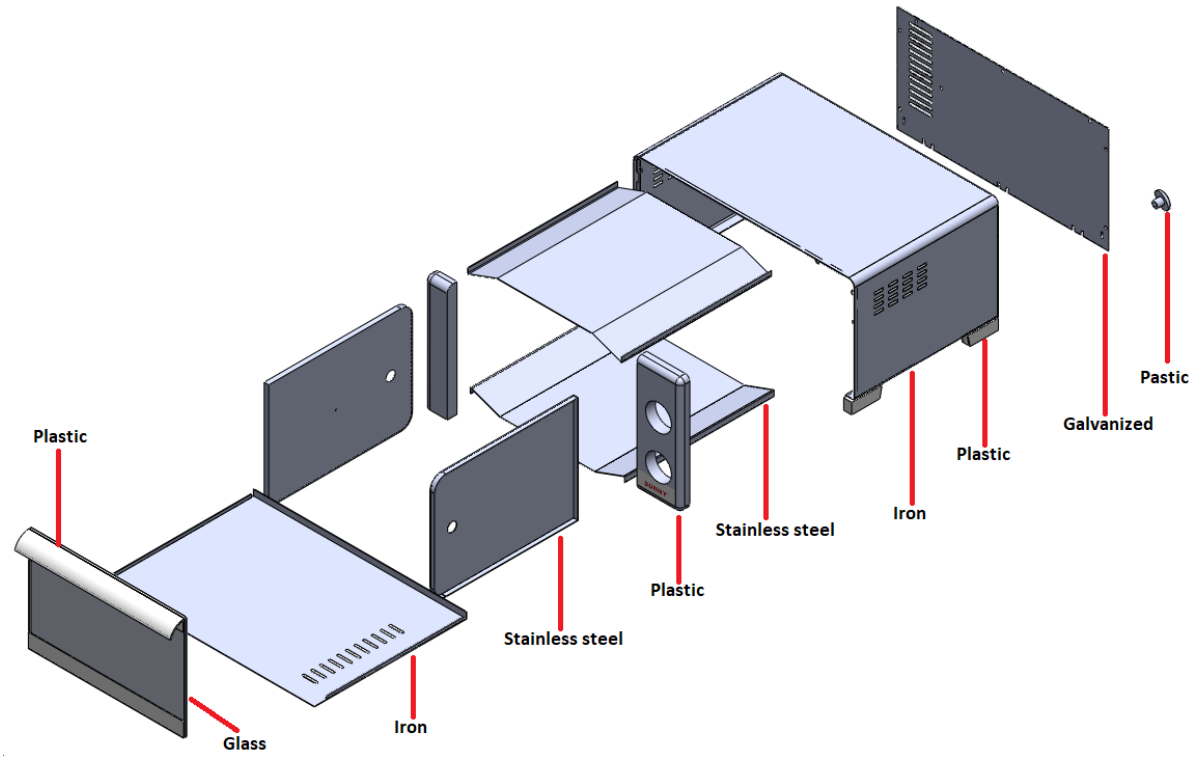



It is time to assemble all of the parts together with screws. We need a Phillips screwdriver for Phillips sheet metal screws and need a Torx security screwdriver for button head Torx security screws.





When the power cord is connected to the power outlet, electric energy goes into the oven toaster. In the oven toaster, the power outlet is supplying the electric energy. When we set the time for bake, we actually set the 30 minutes timer switch, and when we set which heating element works, we actually work with the oven selector switch. At this moment, the heat switch sensor senses the heat, and when the heat arrives at maximum, the sensor switch turns off the oven toaster make the oven cool. After many minutes, when the heat gets lower, the oven toaster starts to work again. When the mini neon lamp is on, it means the oven toaster is on too, and when the lamp turns off the oven toaster is off. The heat is reduced using the holes located on the body of the oven. Inside the body is made by stainless steel because it never ruins by heat and it is better to use thin sheet of stainless steel for oven toaster's the inside body. Back body is made of Galvanized sheet. The front body is made of plastic and this oven toaster has a clear plastic part for the mini neon lamp. Top, right and left side body are made of Iron sheet and electrostatic paint. The glass of the door is Pyrex glass considering as a unique choice because this glass is made for oven toasters. We made an oven toaster with dimensions Length: 385mm, Width: 250mm, and Height: 180mm.



**Final picture of the oven toaster**

(Drawn using Solid works software)