Clean, repair and rebuilding your Warm Up Regulator (WUR)

This paper is written only for WUR units without vacuum connection. We are still searching for the right material to make the vacuum membrane.

You can find more information about checking the control pressure in an other document on my website www.ferrari400parts.com. You can also find the K Jetronic books as PDF file. In the Webshop you find parts and kits for the WUR.

WUR to start with

Introduction

The purpose of this guide is to provide information to allow someone to disassemble, clean and reassemble the Warm Up Regulator (WUR). It is important to note that Bosch does not consider the WUR a rebuildable part and internal parts are only available in used state. If you decide to work on your WUR you do it at your own risk. Portions of the WUR use very tight tolerances and must be kept absolutely clean. It is possible to ruin a WUR beyond repair by taking it the wrong way apart.

It is recommended that you verify the control pressure with a fuel pressure gauge to confirm that the control pressures are incorrect. You can find the correct pressure in the workshop manual of your car. After assembling the WUR you have to check the fuel pressure again and adjust the fuel pressure.

The photo's used in this paper are taken from a WUR without vacuum connection. Differences will be found with warm-up regulators from other cars but all Bosch warm up regulators share the basic configuration of the one used here.

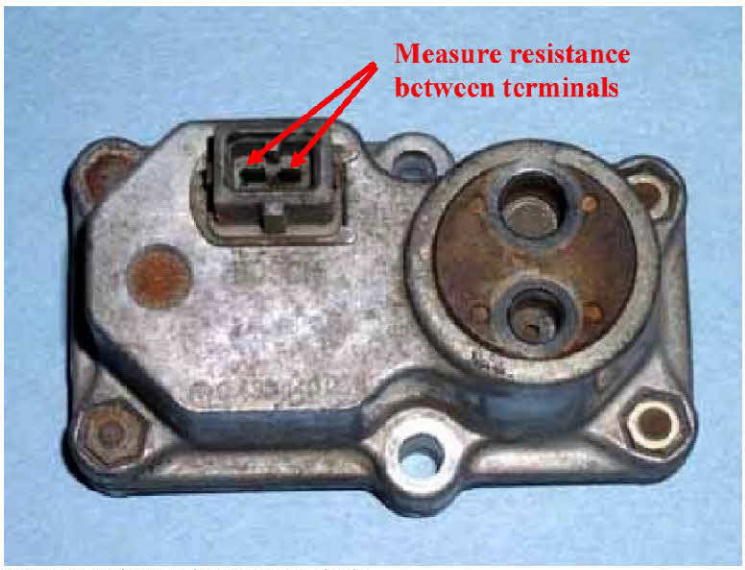
Tools Required:

- Large flat blade screwdriver for back cover screws
- Small flat blade screwdriver for valve body screws
- 10 mm socket wrench for bimetal strip mounting nut
- Ultrasonic bath (optional), carb cleaner
- Soft, clean cloths for cleaning internal parts
- 3 seconds glue

Before digging into the WUR, it is important to understand the basics of what it does so you understand what you are looking at when you disassemble it. Read the chapter about the WUR in the K Jetronic book (see my site) or your Workshop manual from your car.

To disassemble the WUR first remove it from the car. Be careful when you loosen the banjo bolts on the fuel lines, as there might be fuel pressure in the system.

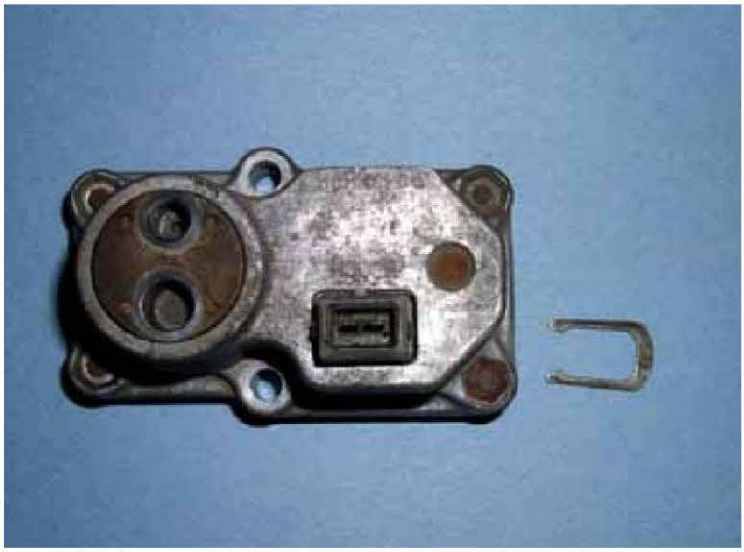
Next, clean the outside of the WUR as much as possible. This will help keep the inside clean once it is disassembled. Check the resistance across the two heater terminals. The resistance is typically between about 15 and 30 ohms depending on the WUR. Your can check the resistance in Ohm (+/- 5%) with the ohms in the table that you find in the download area on my website.



Measure resistance between terminals

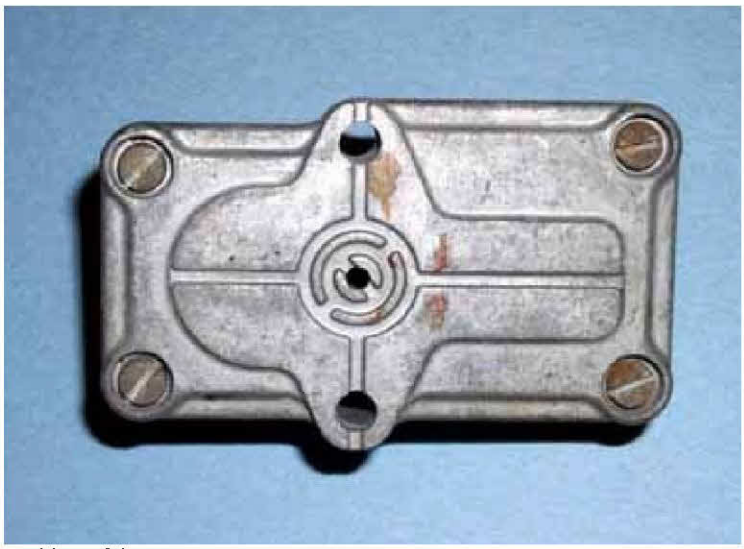
Remove the spring clip that holds the electrical connector on the front of the WUR.

removing the spring



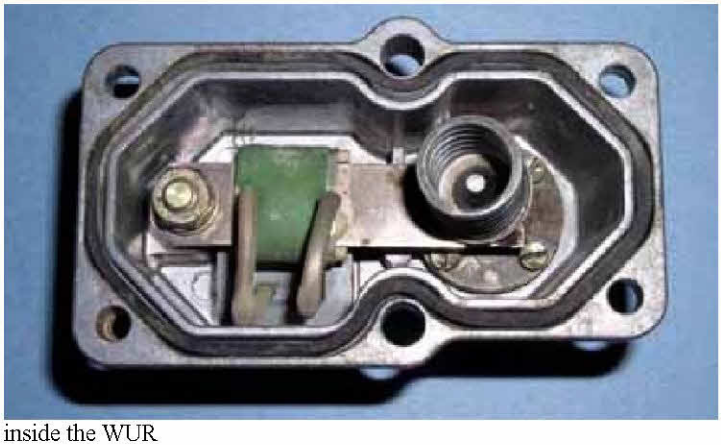
removed spring

Remove the four screws on the back of the WUR



position of the case cover screws

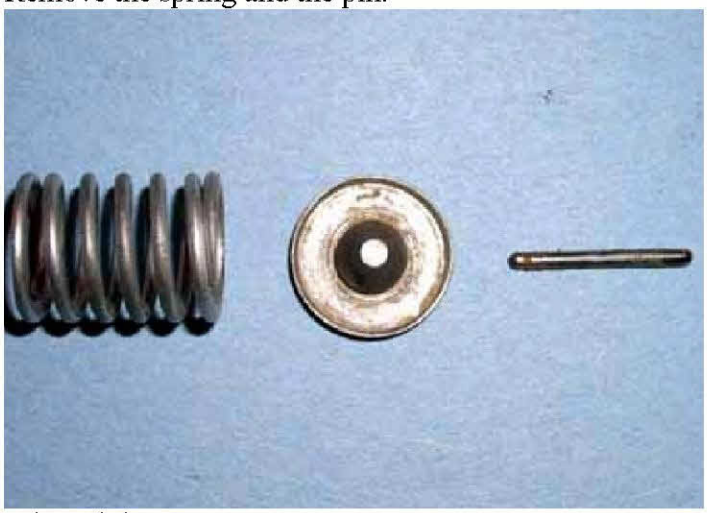
There is a rubber gasket between the top and back parts. You can replace this gasket by a new gasket from the repair kit. Note the position of the spring and pin in relation to the bimetal strip and valve body as you remove the back plate.


inside the WUR

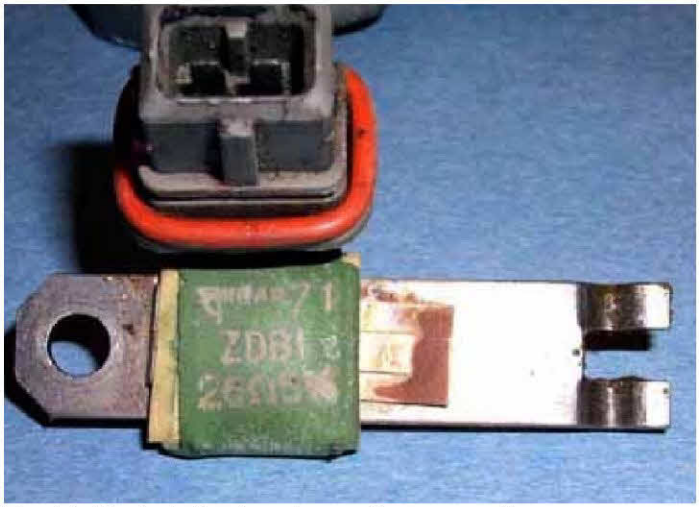
Look at the WUR with the back removed, you can see that the spring which is normally compressed against the back, pushes on a pin that rests in the center of the valve body. That pin transmits the spring force to the metal diaphragm in the valve. The bimetal strip pushes against the spring and controls how much spring force is applied.


spring in the WUR

Remove the spring and the pin.

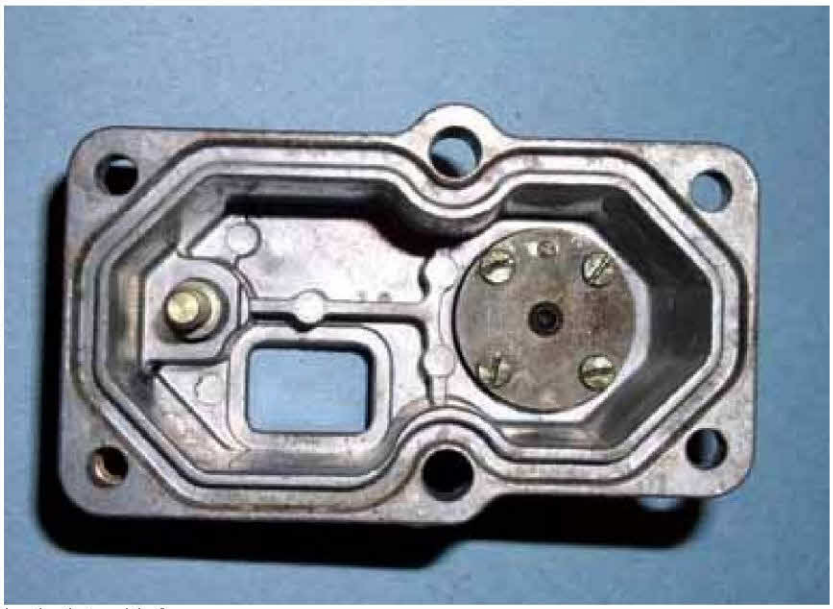

spring and pin

Carefully remove the bimetal strip by loosening the nut holding it on its mounting pin. Inspect the bimetal strip for damage in the ceramic coating on the heater. The heater element resistance should be printed on the heater. In this case it is 26 ohms +1- 5%.



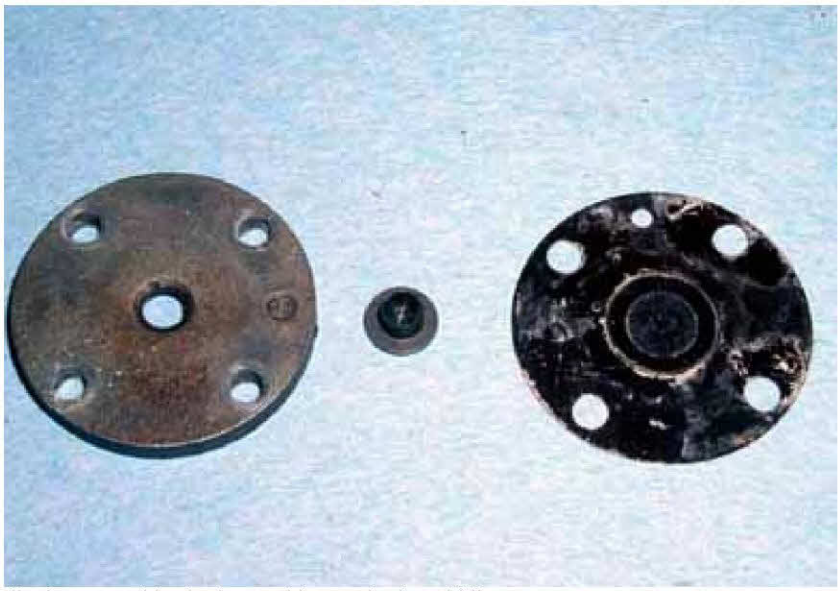
bimetal strip check the ohms signs on the green coating

Now for the sensitive part, cleanliness in this area is very important. Carefully remove the four screws holding the back plate of the valve body. Because they are sometimes very thigh attached by corrosion knock with a (yellow) plastic or rubber hammer on the top of the screwdriver on top of the screws to make them loose. Very carefully remove the valve back plate. Be careful not to lose the "button" in the center of the back plate.



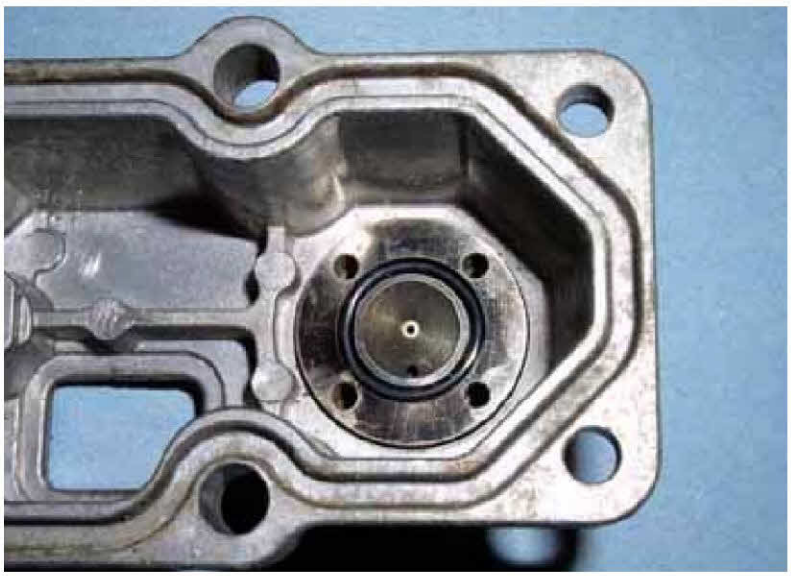
back plate with four screws

If it did not come off with the back plate, try to very carefully lift the thin metal diaphragm off the valve body. Take your time; if you damage this piece in any way you have just ruined your WUR. It is not necessary to loosen the diaphragm from the black plate if they stick together so only removed it if it sticks to the case cover.

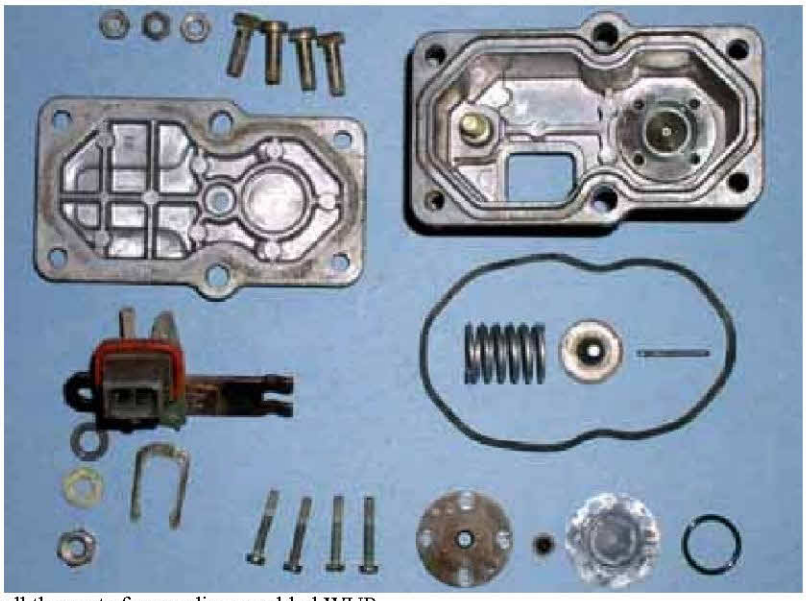


diaphragm and back plate and button in the middle

Remove the rubber 0-ring. You can replace this 0-ring with the o ring from the repair kit. It will change the WUR control pressure by a few psi. I have found that a new 0-ring can lower the control pressure by as much as 5psi in some cases.

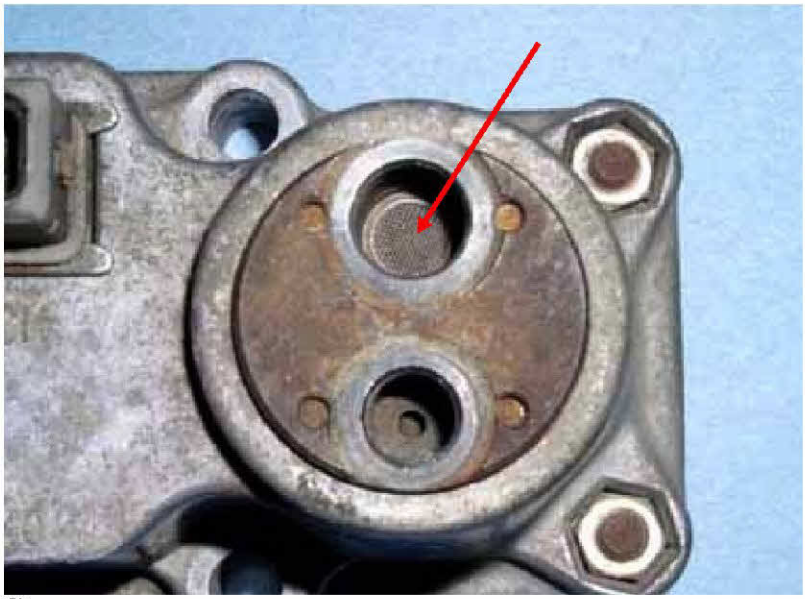


With everything apart, clean all the metal pieces with some choke/carb cleaner to remove any dirt and fuel varnish. Do not use anything other than a soft cloth to clean the internal surfaces of the valve. The cast cover can be cleaned with a wire brush from the outside. If there is visible rust on the flat machined surfaces of the valve inside then the WUR is bad.



all the parts from a disassembled WUR

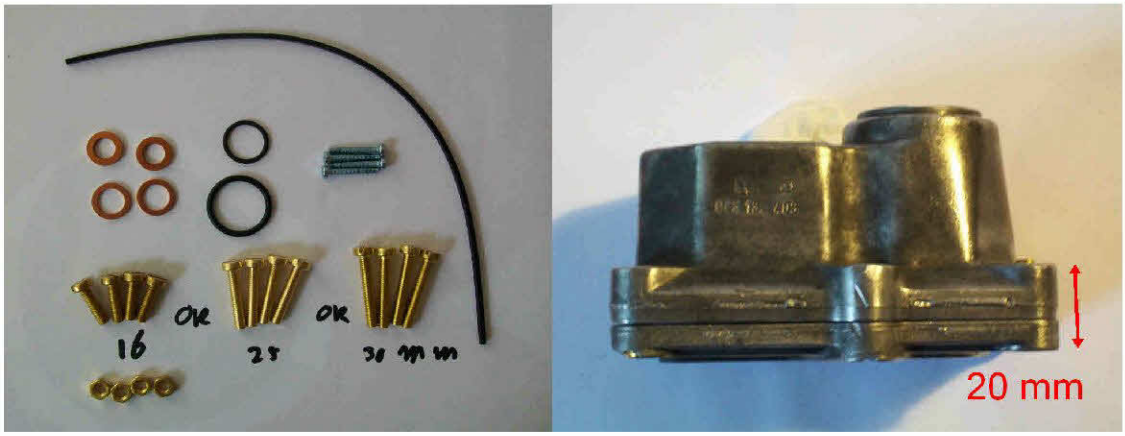
Check the filter screen in the inlet port of the valve body; this is one of the most common causes of WUR problems. This in port get clogged up over the years. To clean this you can use a ultrasonic bath. Place the cover upside down in an ultrasonic bath. You can also use carb cleaner or compressed air to clean these ports. Do not remove the filter screen inside.



filter screen

Assembly

To assemble the WUR you have to replace some parts. You can find these parts in the repair rebuild kit The 16 mm bolts are for the 20 mm high cover.



repair / rebuild kit

Assembly of the WUR is just the reverse order of disassembly. Make sure everything is absolutely clean. Replace the O ring (often in red color) at the bottom of the Bosch connector. Make sure the 0-ring in the valve is correctly positioned. Replace the four screws and tighten screws as uniformly as possible.

To cut the square cord put in the groove of the cast cover. Mark the place to cut the cord. Cut the cord with a scissor make a straight cut. You can glue the end of the cord with one second glue together. Make sure that the cord isn't twisted when gluing it together.

cutting the cord

Install the bimetal strip making sure as you tighten its mounting nut that the end cutout is centered over the valve body. Place the pin in the button on the valve. A small drop of general purpose (acid free) grease will help keep the pin in place.

position of the pin

Place the spring in place on the bimetal strip. See picture “spring in the wur”.

Install the back cover making sure the spring is seated correctly in its recess in the back cover. Make sure the rubber gasket is installed correctly. Tighten the four back cover screws as uniformly as possible.

Install the WUR on your car and check the control pressure. Makes sure that you use new copper washer to install the WUR on your car to prevent fuel leakage. You can adjust the control pressure by knocking the mounting bolt of the bimetal strip in the WUR. Knocking on the metal bolt end will increase the pressure. If the pressure is to high open the WUR again and knock on the other end of the bolt.

position of the mounting end.

Check your work shop manual for the correct control pressure figures.