

The "FixIt" Manual

GAS GRILL REPAIR & MAINTENANCE

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Chapter 9 – Burners, Side Burners, Infrared Burners and Burner Air Shutters

"Badly conceived projects rewarded; foresight fails, for Fortune does not examine causes nor follows merit but meanders through everything without distinction. Clearly something is greater which drives and controls us and subjects the concerns of men to laws of its own." Manilus, "Astronomics" IV, 95-9

You're getting to a part of maintenance and repair that requires sharp attention as well as the ability to know if you've gone too far and need help. The burners must be clean AND reinstalled correctly with the burner venturi opening placed over the valve orifice. You might want to take pictures showing the correct position or leave one burner installed to have a "pattern" to reinstall the new or cleaned one. Start this section carefully if you haven't done it before. Check your work carefully before using the grill and be certain to run down any leaks before using the grill and leaving it unattended when lit. SAFETY ALWAYS!!

I always like to light each burner as I reinstall to check its function and even use a long stemmed lighter to put a flame around the venturi where it meets the orifice. BEWARE THAT A BACKUP FLAME COULD BURN YOU IF YOUR FACE IS CLOSE TO THE BURNER AREA. YOU'LL GET A BACK UP FLAME IF THE BURNER IS NOT MOUNTED CORRECTLY OVER THE ORIFICE.

Grill burners are the central part of the grill. They come in many shapes but are mostly straight tubes that mount from front to back. The opening is usually referred to as the venturi or venturi opening. If the venturi opening is clogged from an insect or rust from inside the grill, it will cause a backup flame between the openings and the valve orifice. You need to get use to removing the burner to check it and keep it clean.

1. To get to the burner, first turn off the control knobs (the gas supply) and disconnect the gas supply.
2. Remove the grids, rock grate or flame tamers.
3. The burner is usually secured by a cotter pin or bolt holding it to the grill body which will likely have to be twisted, ground, drilled or cut away.
4. The burner may have an electrode attached and you'll have to disconnect the wire from the igniter (the part with the button you push) to get the burner out. It might help to look under the control panel to see how the burner comes out.
5. If the burner gets stuck, you have to look from below the grill, the sides or the back to see what is keeping it from coming out.
6. Check the burner inside out. Brush the outside, try to swab the inside and make sure the burner is clean. That is critical to get a clean burn. Use compressed air to blow the burner out as well as from outside through the gas ports.
7. If you have holes burned through the burner they will cause "hot spots". You can usually still use the burner but will have to cook around the hot spots.
8. You might be able to plug any holes, in a pinch, with wadded up aluminum foil if you can't get a replacement in time.
9. If the burner is rusted through, it is time to replace it. Check the warranty in the manual to see if the factory might replace it (them). Be prepared to go through some hoops with them. If they won't replace the burner(s) under warranty, they will usually sell you new ones... sometimes quite cheaply. Aftermarket burners can also be found through dealers online, like www.clagrills.com, who I work for.
10. Reinstall the burner, being careful to place the venturi openings over the valve orifices. Try looking from under the control panel or even from the back of the grill to see the valve orifices just to be certain that they meet the burner venturi opening correctly. Hook up the gas and check for leaks under pressure with soapy water.

11. ***ATTENTION!!*** Failure to mount the venturi opening of the burner over the valve orifice will result in a fire around the valves!!!
12. Hopefully you remembered to hook up the electrode and igniter. You should have checked them out. You may have to go through Chapter 10 - Igniters and Electrodes to make it all work.
13. Light each burner to check the flames on high, medium and low (without the heat plates or grids in the grill).
14. If it everything works, replace the heat plates or grates, along with the back in the grill.

Your grill should be ready to use.

Side Burners

Side burners are found on many grills and, while a nice complement, are usually no more than 12500 BTU, the same as your average stove burner in the house. They can be use to simmer a sauce but not for serious wok or frying. Since they are not used regularly, the burner venturi can easily be clogged by insects or even rust that occurs naturally in the burner. It's a good idea to pull the burner, brush it and swab out the venturi. At least check it by lighting it when using the main part of the grill. With all gas burners it is necessary for the venturi and burner to be clean to get the best performance. To clean the burners follow these steps:

1. Lift the grids and heat plates out.
2. Find the bolt holding the burner down to the grill (usually from underneath the side burner shelf) and take it out. Be careful not to lose the bolt as those side burners usually require the bolt to be secured to the grill. They won't sit in place.
3. You'll have to disconnect the electrode wire to clear the burner from the shelf.
4. Use a wire brush or steel wool to clean the outside of the burner and check the gas ports to be sure they are clean. A safety pin will usually work to clean rust or dirt. For the cast iron side burners, a sharp ice pick or 1/16 drill bit will help clear the rust out but it is easy to break these off in the gas port.
5. Use a coat hanger wire to clear out insects, spider webs or dirt daubers' nests that might be in the venturi. Try to get any rust that is loose inside the burner out by shaking it with the venturi down.
6. Compressed air might help to clear the burner.
7. Before installing the burner back in the side shelf bracket, remove the gas orifice (or jet at the end of the valve that goes into the burner) and check the inside by holding it up to the light. You can usually blow it manually. ***BE CAREFUL!!*** You don't want to lose the orifice as they can be impossible to replace.
8. If the orifice (jet) is clear, screw it carefully back into the valve. It only needs to be hand tightened.
9. Reinstall the burner and hook up the electrode wire.
10. Light the burner, trying the igniter as well. Look for the spark. You may have to review Chapter 10 - Igniters and Electrodes in order to get that to work. They are usually easy to light with a long stemmed lighter.
11. If you're convinced the burner is working well, put the grate and cover back. It should be ready to use.
12. If it's not performing well, go through the steps from the start looking for what might have been missed on the first try.

Infrared Burners

Many of the Box type, stainless steel grills sold in the last 10 years have an infrared burner mounted on the back of the grill. It's used for roasting meats, usually on a rotisserie spit.

Some grills, like TEC and some Charbroil, have an infrared burner mounted under the main cooking grid. These burners have a honeycomb ceramic plate. Sometimes the burners are under a stainless steel screen which is mounted in a sheet metal box with an orifice attached to the box. It may have a venturi tube coming from the box. Since the valve is on the front of the grill, a copper tube goes from the orifice to the valve. Attached to the burner is usually a thermocouple. A thermocouple is a small metal probe next to the rotisserie burner connected by heavy wire to the rotisserie valve and is used to close the burner if it's not properly lit. After regular use, and in as little as one year, the infrared burner can become clogged or start to break apart. It will then stop working properly. The thermocouple can also fail, which will close the control valve and you won't be able to use the burner.

To clean the infrared burner you will need an air compressor to blow out the burner from outside and from the venturi opening where the gas goes in. You will likely have to remove the orifice to get the air nozzle lined up to blow it out from there. Of course remember to TURN OFF the gas supply and check any gas connections for leaks before using the grill again.

If you have an infrared control valve that requires you to hold down the knob for a minute before being able to release the knob (with the burner still lit) you might have a safety valve problem. You either have a bad thermocouple or the burner has deteriorated to the point that it can't generate enough heat to keep the safety valve open. Because these burners can fail to stay lit when they wear out, the factories usually put in the thermocouple as a safety effort. Try these steps to clean and check the infrared burner:

1. Turn off the gas supply
2. Find the venturi opening of the burner behind the grill and see if you need to remove the orifice in order to put the compressed air nozzle into the burner to blow it out.
3. Go ahead and blow it out from that side and BEWARE that a cloud of burner dust could blow from the burner surface. You may want to keep your face away from the burner face or wear a dust filter.
4. Blow the burner surface with the air compressor.
5. Try lighting the burner and see how the flame looks. As the burner gets older they usually won't be the same color when lit.
6. If, after cleaning, the burner will not stay lit, you have either a burner needing replacement or a bad thermocouple. The only way, at this point, to find out if the problem is the burner or thermocouple is to replace each, one at a time.
7. Infrared burners and thermocouples are usually only available from the factory or a factory dealer, although the thermocouple might be found at a local appliance repair parts store. You would need to have the grill model number as well as the old thermocouple when you go into the store. These appliance repair parts stores usually carry some grill parts and they might be a dealer for your brand.
8. After safely hooking up the gas and checking for leaks, relight the burner and check the flame and heat.

To change the infrared burner you should follow these steps:

1. Turn off the gas supply and check to remove any covers on the back of the grill where the orifice is mounted.
2. You'll need to disconnect the copper gas line from the orifice or the orifice from the sheet metal bracket that is part of the burner.
3. The infrared burner is probably attached by sheet metal screws to the back of the grill. Often the screws are rusted in and will have to be loosened by vise grips or even drilled off with an electric drill.

4. You should be able to pull it out from inside the grill. You may have to pull one end out first and then the end with the venturi next.
5. If the new burner doesn't have new screws, you'll want to get some new ones from a hardware store. Put in the new burner and secure the sheet metal screws.
6. Install the orifice and reconnect the gas supply. Since that line goes to the orifice which has the hole in it, the line cannot leak and it doesn't need to be more than snug.
7. Reattach the thermocouple and try relighting the burner.

To replace the thermocouple follow these steps.

1. Turn off the gas supply and remove the main valve cover that is over the rotisserie control valve.
2. Disconnect the end of the thermocouple at the burner and unscrew the end that's attached to the valve. It is a long, thin copper line with a hex head attached to the valve. You may need a small open end wrench or adjustable wrench to get it off.
3. Watch where the line goes through the grill as you will need to rethread the line so that the end with the hex head goes into the valve and the other ends up at the burner held by a bracket.
4. Reconnect the gas supply and try lighting the rotisserie burner.

Burner Air Shutters

All burners have an opening next to the venturi opening that slides over the orifice (jet) of the valve. The air shutter is there to allow some air to mix with the gas before leaving the burner for ignition. It's not uncommon for LP grills to have one opening without any adjustment since the factory design is intended only one type of gas to be use with that model.

If the air shutter has an adjustment, it should be about half closed for LP and full open for Natural Gas. Natural Gas needs more air for a blue flame and LP Gas needs a smaller opening for the blue flame. If you get a jet sound with the flame and the flame is igniting away from the burner, your air shutter is too open and needs to be slightly closed. The original burner may have a screen over the air shutter. If so, it is there only in an attempt to keep bugs out. You should try to check the flame of a new or cleaned burner without the heat plates and grids in the grill.

Try the burner with air shutter as it arrived and note the flame. If it is yellow try to open the air shutter. You might have to improvise a bigger opening if the air shutter doesn't have an adjustment. Some of the cast iron burners have a hole without an adjustment. Some have a bolt that screw into the neck of the venturi. This bolt should be screwed in more for LP and less for Natural Gas.

Burners, Side Burners, Infrared Burners and Burner Air Shutters Images



This is a Ducane S Burner, from a 15 year-old model, which shows the rusted part. The electrode needs replacing, but the burner still has a year or so of life left.



This is a Ducane burner with a portion brushed off. It needs a total brush down and to be blown out.



This is from a Great Outdoors DG450. This burner hasn't had much use. Note the two bolts holding it to the grill bottom. You will probably have to grind off the bolt heads to get the burner out when it needs replacing.



DG450 Burner.



This Kenmore grill (made by Charbroil) is showing a rusted out burner that is in need of replacement. Also, the heat shield and a few other items should be replaced. The grill, though, can be fixed.



Members Mark burner showing rusted gas ports partially closed.



Burner brushed down and partially cleaned.



Cleaned (reamed) gas ports using a 1/16 drill bit.



Blow out the burner through venturi opening with compressed air.



Blow gas ports with compressed air.



Swab venturi with venturi brush or wire coat hanger.



Great Outdoors 1000 cast iron burners. The right one needs the gas ports cleaned and blown out there as well as through the venturi openings.



My Falcon burner could be brushed down and the gas ports reamed with drill bit. Then it should be blown out with compressed air. It isn't worth it to me.