

The "FixIt" Manual

GAS GRILL REPAIR & MAINTENANCE

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Chapter 11 - Problems that can occur with Gas Grill Valves

"But since such provisions as we can make are full of uncertainty and anguish, it is better to be ready to face with fair assurance anything that can happen, while drawing some consolation from not being sure that it will." Montaigne, Essays, I -24



Members Mark Y0101XC

Problems that Can occur with Gas Grills Valves

The valves are the part of the grill that controls the flow of gas into the burners. Since the valves are closed (I hope) when you removed the orifices, you can remove the orifice, clean it and put it back without having to open the gas system. There isn't any DANGER at this point. If you decide to remove or open the valve, you must be sure you can safely put it back with the gas system sealed as it was originally. If you can't be certain of the gas system being CLOSED, AND WITH NO LEAKS, then its time TO GET HELP and call a technician. When you remove and unscrew parts of the valve it is EASY TO CROSS THREAD the screws when putting it back together. Grill valves are always attached to the manifold.

I have been doing this for the last 25 years and I'm always wary of cross threading my valve screws. The valve screws are usually brass or aluminum and easy to bend or cut across. I ALWAYS reverse them when screwing together. I do this first to be sure they are seated properly together before turning (usually clockwise) to come together. I ALWAYS check for leaks when I've put it back together. I do this with the gas supply on, the control valves closed and check with soapy water. I've taken apart many valves to re-lube, but don't recommend this for anyone but a pro. IF YOU FAIL to close the gas system properly THE CHANCES OF FIRE EXIST!! This section is to be used ONLY for those that are experienced. Otherwise, it can be used as a reference for those who would like to understand while the tech is working on your grill. OK?

1. If the knob breaks off, replace the knob immediately! Many will use pliers or vise grips to turn the stem which usually results in the stem breaking off. Use the pliers carefully. You can get a generic knob replacement at Home Depot until you can find a match for the old knob. If the grill is older, a match may not be available so you have to find a close "aftermarket" replacement from websites like www.clagrills.com.
2. If the stem is broken you will have to replace the valve. The valve is usually part of an assembly attached to a manifold (a pipe or cast brass piece to which all valves and the gas are attached). There are some "aftermarket" replacements, but you usually have to get one from the factory. Usually the factory will only sell the entire valve assembly. Weber sells only assemblies but Ducane (owned by Weber) will sell the valve

replacements. Nexgrill sells only the valves but doesn't like to keep them long. Charbroil usually just sells the assemblies.

3. If the valve stems freezes (gets stuck) it might be able to be rebuilt but usually the whole valve has to be replaced. Rebuilding a valve stem requires opening the valve up, cleaning the insides, re-lubing with heavy gas valve grease and putting the valve back together. You will likely have to replace the valve. No one sells just the stems, so forget that.
4. If the orifice is clogged with a bug or debris from the gas line, you can get the orifice off without removing the valve assembly. However, the burners, flame tamers and valve cover always have to be removed to get to the orifice.
5. Valves will sometimes start to leak through the stems even when in the off position. It is possible to open the valve, clean and lubricate the chamber. I don't recommend this as it is easy to scratch it on the inside and cause a leak, or fail to correctly put it back together correctly. It will be difficult (but slightly easier than a lawnmower carburetor). BE CAREFUL - It is easy to scratch the inside of the chamber which may cause a permanent leak. And, it is difficult to put it back together correctly. There are usually 6 or so ways to put it back together but only one correct way. IF YOU HAVE A LEAKY VALVE, replace it! Call the factory and get a new one.
6. If you have a "flame thrower" valve assembly with igniter problems, you will have to replace the valve assembly most of the time. If the igniter portion isn't working, try cleaning the tube to the electrode. If the stem is broken or frozen it will be very difficult to open, clean and lube the inside chamber. Also see Chapter 9 - Igniters and Electrodes.

Valve Orifice Inspection and Cleaning

Before you start trying to fix your grill, REMEMBER: If you're not sure of working with a gas appliance like a gas grill, GIVE UP and call an appliance technician as FAILURE to be safe could result in unintended fire, damage or SEVERE INJURY!!!

You might suspect a blocked orifice if a burner is very low with the valve in the high position. Or, if one burner starts out with a low flame and gets lower as you light the other burners, you probably have a faulty regulator. See Chapter 6 - LP Parts and Gas Fittings.

The valve orifice is a small hex headed screw (with a tiny hole drilled to a precise size for BTU's and LP or Natural Gas) that goes into the end of the valve. That is where the gas exits into the burner. The orifice end of the valve goes into the venturi (open) end of the burner. It is opposite the end of the valve with the stem. Even though the hole is small, bugs can still get in to nest. I have found spiders, ants and even small dirt daubers inside the orifice.

Occasionally, in Natural Gas copper lines, copper sulfide can coat the copper lining. It can then dry and flake off into the line going through the valve and clog the orifice. This can cut the flow of gas into the burner. In LP hoses, which have been left open (not hooked up to the LP bottle), bugs or water can clog the line or regulator and stop the gas flow. Clogged gas lines are a major source of gas grill breakdowns.

To remove the valve orifices in order to inspect and clean, follow these steps:

1. Remove the cooking grids, rock and grate or heat plates and then the burners. It is common for burners to be bolted or pinned down to the grill body. This can be a real problem since you may have to grind, drill, saw or twist the rusted bolt to get the burner out.

2. Now you can inspect the orifice and decide how to unscrew it. In the sheet metal box type grills common today, sometimes you can use a socket to unscrew it. **NOW BEFORE** removing the screw-orifice, be sure that you can hold or catch the orifice. **IF YOU DROP THE ORIFICE** you will lose it! Before unscrewing the orifice, open the cabinet door of the cart (if you have one) and look under the control panel to see if the valve and orifice are visible. You might be able to loosen the orifice with pliers or channel locks. Either way you may want to hold your left hand under the valve to catch the orifice if it drops. Use the socket from inside the grill or the pliers to loosen the orifice and try to remove with your fingers.
3. Assuming you've removed the orifice and are now holding it, take it inside the house or to a place where you have a flat surface that is safe from dropping (and maybe from losing) it.
4. Hold the orifice up against some light to see if it's clogged. Take a small safety pin or toothpick to clean out the inside. Be sure that it's clean. Put the orifice in a baggie or envelope to make it hard to lose.
5. Return to the grill and try to look into the open end of the valve. Try turning on the gas to that valve to see if the gas pressure is good. You should feel it on high with your finger.
6. If you're convinced you have a good gas flow, reinstall the orifice. Be careful not to cross thread as it should screw in easily. If it does not screw in easily, it might be cross threading. Unscrew and retry, then finger tighten only as there is little pressure when the valve is open against the orifice.
7. Reinstall the burner and be sure the open-venturi end of the burner is over the orifice and the burner is sitting properly.
8. **BE SURE YOUR GAS CONNECTIONS ARE SECURE!** Test with soapy water. The leak will bubble. If you smell gas with the valves in the off position then, with the burner exposed, open the valve to high and light. **BE CAREFUL! BE CERTAIN TO KEEP YOUR FACE AWAY FROM THE GRILL AS YOU LIGHT.** Use a long stemmed lighter to make it easier. Inspect the flame of the burner on high against the other burners. If it looks like a good flame to you then the problem should be solved. If the flame is still low, you likely have another blockage somewhere in the gas line before the orifice.

Replacing a Valve

DANGER!! REMEMBER!! If you have little personal experience with gas appliance repair and **CANNOT** be sure of safety precautions (like no flames or hot surfaces around when you're testing for leaks or testing the burners) then **CALL AN APPLIANCE TECHNICIAN!**

If you have determined that the valve needs replacing you might want to review the decision. Use these points to see if that's still the best bet:

1. If your initial reason for looking at the valve (as a possible problem) is that you had a flame under the control panel or where the burner meets the valve orifice, then you probably have a clogged or totally rusted through burner. See Chapter 9 - Burners, Side Burners, Infrared Burners and Burner Air Shutters. A clogged or rusted through burner will cause the gas to back up and ignite around the valve. You might see the flame around the valves or even the knobs. If you have cleaned the burner, and determined that the valve is leaking or won't turn, check the next point.
2. If not enough gas is coming through the orifice when the knob is in the high position, and you have cleaned the orifice, and if all the valves still have too little gas going through the orifice, you probably have a faulty gas regulator. It is unlikely (but can happen) that all the burners have clogged orifices. Otherwise go to the next point.
3. If the valve stem is frozen or broken (twisted off); you'll have to replace it. Find the model number and the serial number of your grill and call the factory. Sometimes they

put the customer service number on the grill spec plate found somewhere out of the way on the grill. It should also be in the manual. If you don't have the manual you'll have to do a search online for the customer service number or homepage Also see Page 67 of this manual "Index of Manufacturers' Phone Numbers & Websites". Try different search phrases and check the sites shown.

Finally, you have the replacement valve and are ready to change it.

1. Turn off the gas and disconnect the gas supply to the valve assembly.
2. Pull the grids, heat plates and burners.
3. Pull the knobs.
4. Loosen the valve cover. Usually the valve assembly is attached to the valve cover and to the grill. Hopefully the valve assembly and cover will come off easily. You may have to remove a gas connection to the side burner.
5. You should be able to see the entire valve assembly. Most grills today have the valves clamped onto a long pipe manifold. Remove the screws, holding the valve to the valve cover.
6. Remove a screw holding the clamp to the valve and remove the valve from the manifold
7. Compare the old valve and the replacement. Be certain that the new valve came with an orifice. If not, use the old one. Install the new valve and make sure its position matches other valves on the manifold.
8. At this point it is much easier to tighten the screws on the clamp a little to secure the gas supply. So, hook up the gas supply, open the gas supply and check for leaks. Reinstall the valve assembly and check for leaks again.
9. Install a burner on the replaced valve and check the flame on high.
10. Install the other burners and test before putting the heat plates and grids in place.
11. Recheck connections for leaks with soapy water.

You should be ready to use the grill.

Old Style Gas Grill Valve Assemblies

The early gas grills were simple. The grill sat on a round post and the gas valve was in the post with the stem sticking out with a knob. Later versions had two knobs and a burner that usually had two venturi going down into the post and into the valve orifices.

The valve was screwed into a manifold that attached the valve to the post and had the incoming gas line attached as well. Sometimes the valve was screwed into the gas regulator which was mounted to the post. Later, the valve assembly was moved to the lower front of the grill and attached with a bracket, and a valve cover was added. Many people still have the 40 year old grills from the old days.

When you have a problem with these valves you might find yourself at a dead end. A few of these are still sold "aftermarket" through different dealers like www.clagrills.com. You will likely have to use the old manifold and even the old orifices.

These older valves are much simpler and can still be found today. Broilmaster, Modern Home Products, Broil King, and Broil Mate still sell grills very much the same as they were twenty years ago. To correct a valve problem in the older type gas valve assemblies, you would follow the same procedures as stated in the previous section. ***AGAIN!*** If you're not sure about safety when working with gas appliances ***GET A TECH'S*** help. It could be ***DANGEROUS!***

Problems that can occur with Gas Grill Valves Images



Pull the knobs - you may need to use your fingertips from both hands. Pliers might break the knobs.



I had to remove the right shelf tray to get to the two screws holding the control panel. I left the top screw to keep the panel secure and to simply rotate up.



Remove the two bottom screws holding the control panel on the right side



I had to loosen a clip behind the gas fitting (On the left side of the control panel) to get to the screw holding the left side of the valve cover. The other screw was exposed.



With the top screw holding the valve cover on each side, you can rotate the valve cover to expose the valves. The rotisserie valve is on the right side. It's easier to see the valves and the orifices from the side of the valve that goes into the burner. The valves are attached to the wall between the grill and the control panel. It is also attached to the black manifold pipe (if you need to change the valves).



You'll have to remove the orifice and a nut holding the valve to a plate next to the grill. You will also need to have a clamp holding the valve to the manifold, if you need to replace the valve.
BE CAREFUL NOT TO STRIP THE SCREW THREADS!!!



The orifice from the right valve is under another valve.



To replace the valve, remove the screws holding the valve to the manifold. **CHECK FOR LEAKS AND TEST** before using the grill.



This is a valve assembly from an old post mounted valve gas grill. The manifold is the center piece that attaches to the post and receives the gas supply. The orifices are located in the valve ends that the burner venturi tubes slide over.



This is a valve assembly from a Turbo, which is a lot more complicated. This shows the extensions for gas to burners, electrode wire and a gas pilot type feed to the electrode. The valves are attached by a clamp to the pipe manifold.



This is an orifice removed from a valve extension fitting.



This is a valve assembly from Capt'n Cook with "flame thrower" igniters. These igniters are clamped to a pipe manifold.



This is showing a Phoenix Grill valve assembly with a brass manifold in the center and the LP hose and regulator attached to the manifold.



This is a used valve assembly from Great Outdoors 1000. Remove the screws holding the cover plate. **DON'T LOSE THE SCREWS!!!**