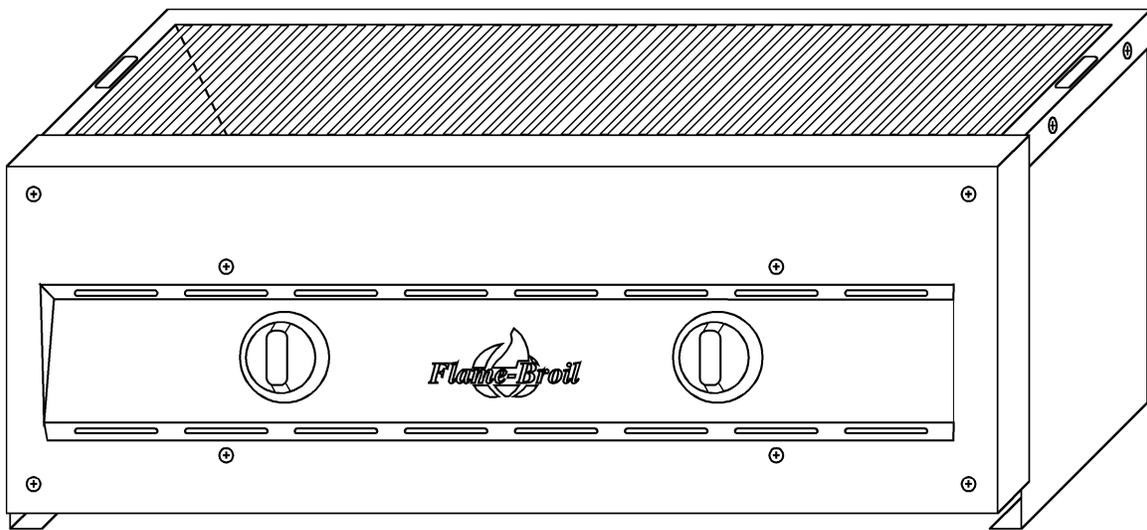


## **BARBECUE EQUIPMENT**

Manufactured by  
K & W Mfg. Co. Inc., Corona, California

### **Installation & Operation Instructions**

For Gas Barbecues Models 5454 and 5458



*This page intentionally blank*

## A Note to You

Thank you for buying a Flame-Broil barbecue grill. To ensure that you enjoy your barbecue equipment for many years, we developed these instructions. They contain valuable information about how to install, operate and maintain your barbecue equipment. Please read them carefully.

Keep this booklet and your sales receipt together in a safe place for future reference. It is important for you to save your sales receipt showing the date of purchase. Proof of purchase will assure you of warranty service.

If you need assistance or service, you can reach us at:

K & W Mfg. Co., Inc.  
23107 Temescal Canyon Road  
Corona CA 92883-5045  
Phone: 951-277-3300  
FAX: 951-277-2070  
www.k-and-w-mfg.com

Happy Barbecuing!

## Limited Warranty

K & W Mfg. Co., Inc. warrants Flame-Broil Barbecue Equipment to be free from defects in design, materials, and workmanship at the time of manufacture.

For a period of five (5) years following purchase, K & W Mfg. Co., Inc. will repair or replace, at the discretion of K & W Mfg. Co., Inc., any Flame-Broil Barbecue unit found to be defective by K & W Mfg. Co., Inc. or their authorized representative. This warranty does not cover the normal wear and tear that occurs from operation of the unit, nor does it include neglect or abuse. The Flame-Broil Barbecue unit must be installed and operated in accordance with the installation and operating instructions of K & W Mfg. Co., Inc., and any local area building and fire codes. K & W Mfg. Co., Inc. shall not be responsible for any indirect, incidental, or other damage.

In order to claim remedy under the five-year warranty, the unit must be returned to the factory, at the owner's expense, with a copy of the purchase receipt. If the unit is found to be defective, K & W Mfg. Co., Inc. will repair or replace the unit at their discretion, and return the unit to the owner at the company's expense.

At any time, K & W Mfg. Co., Inc. will repair or replace any Flame-Broil Barbecue unit, returned to the factory at the owner's cost, for a cost of no more than half of the current suggested retail price of the most similar current model.

## Unpacking your Barbecue

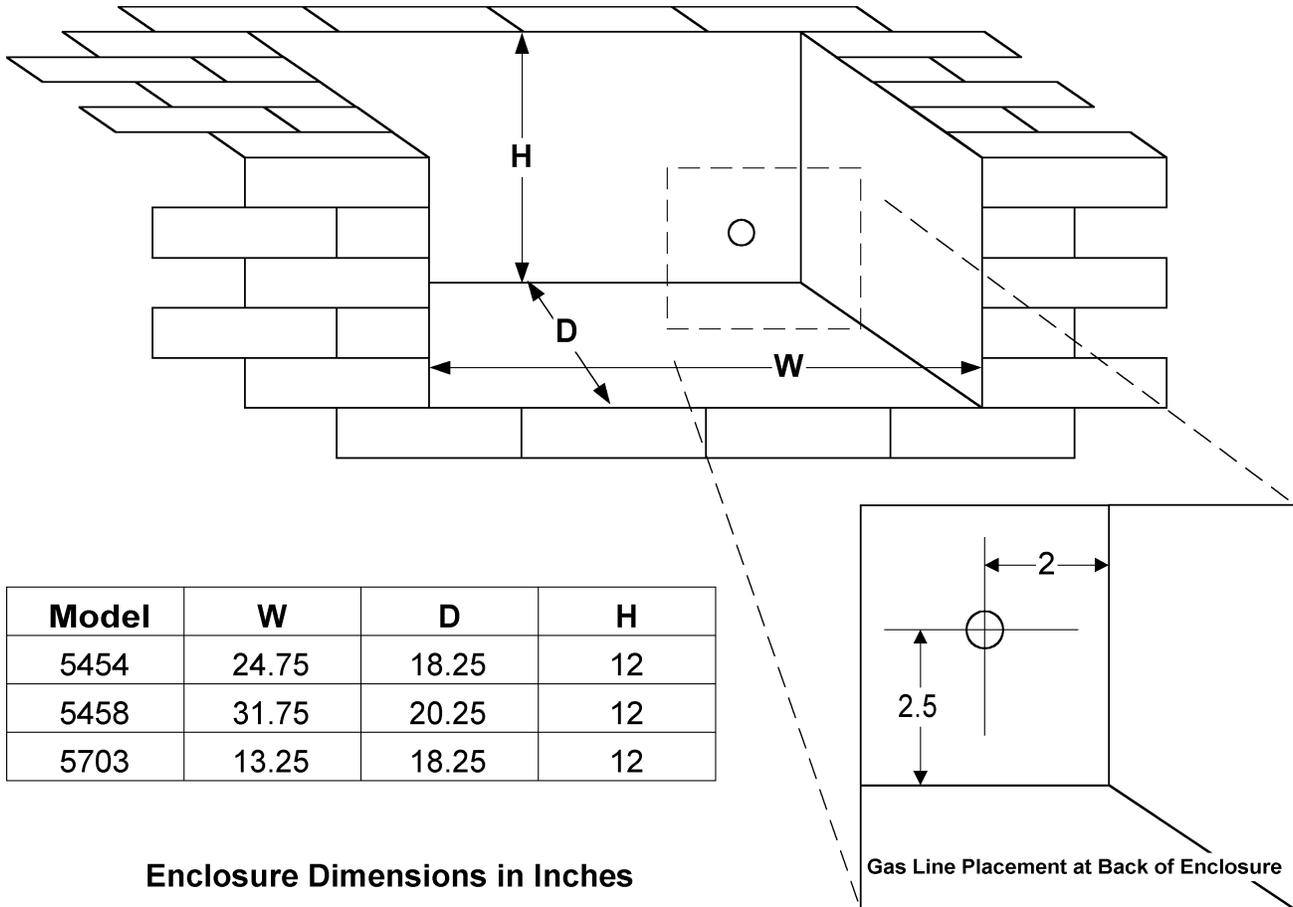
When you unpack your barbecue unit, you should find:

- The main body of the barbecue unit with the burner(s) installed
- A drip tray at the bottom of the unit
- A box inserted into the inner liner of the barbecue unit. This box should contain:
  - ✓ These instructions
  - ✓ Two small hex-head orifices for converting from natural gas to propane (LP).
  - ✓ Two smaller cooking grills
  - ✓ One larger briquet grate
  - ✓ Three or four bags of stainless steel Broilettes

# 1 Installation

## 1.1 Setting up your stand or enclosure

Flame-Broil barbecue equipment may be installed in many different types of enclosures or stands. If you are planning to build a permanent enclosure and/or change your gas plumbing, it is highly recommended that you check with your local building department concerning building codes and permits. The following diagram will provide you with the dimensions your equipment needs to fit its enclosure or stand.



### 1.1.1 Combustible Materials

Our barbecue units are intended for use in masonry or other fireproof locations. **They are not insulated.** They should **never** be in contact with any combustible materials.

While operating your barbecue equipment, you should be at least **2 feet** from any combustible house sidings. In addition, you should **never** operate your barbecue equipment under a roof overhang or patio cover made from combustible materials.

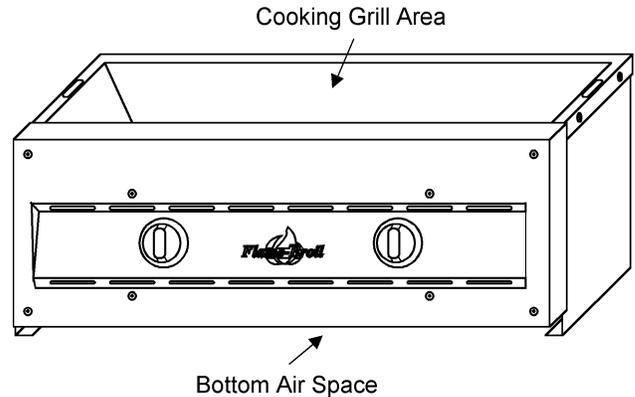
### 1.1.2 Drainage

Allowing water to pool in and around your barbecue equipment will increase the normal wear and tear to the components, and lower their life expectancy. We recommend that you provide for drainage when building your enclosure so that water will not pool underneath the barbecue, or inside the enclosure.

### 1.1.3 Ventilation

Blockage of fresh airflow into and around your barbecue equipment will cause overheating, poor combustion and possible damage to components. There is an air space at the bottom of the barbecue units, below the face. This air space must remain open for your barbecue equipment to operate properly.

Our barbecues are also designed to vent through the cooking grill area. Therefore, air must be allowed to flow through the top of the unit. Only use a Flame-Broil barbecue accessory to cover the cooking grill area.



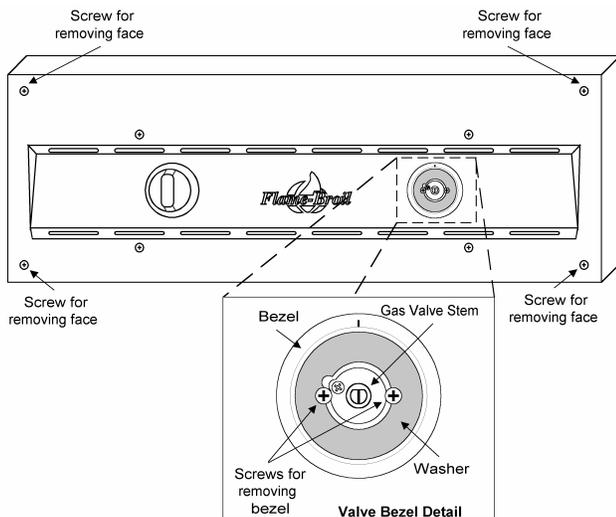
### 1.2 Gas Connections

**CAUTION:** Propane, also known as LP, is a gas that is heavier than the surrounding air. You should not store your propane bottle in an area that can trap any escaping gas. This means that your storage area must be vented at the level of the base of your tank.

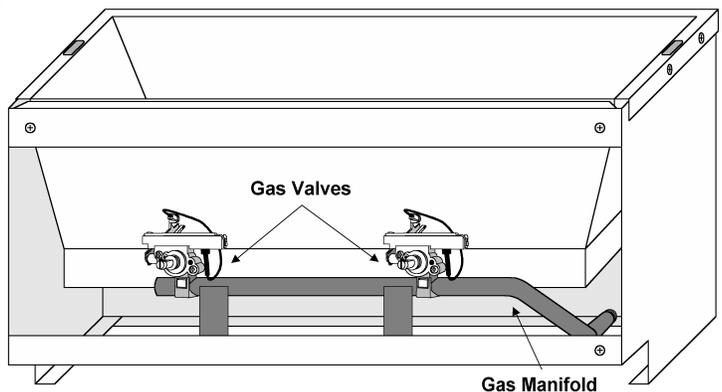
Please study this connection information carefully. If you do not feel confident about making these connections yourself, please get help from a professional plumber or gas appliance installer before proceeding.

Be sure to use pipe tape or pipe joint compound approved for gas when making your connections. Check all connections for leaks with a soapy solution (50% water / 50% detergent) before lighting the barbecue unit for the first time. Bubbles indicate a leak that must be repaired before proceeding.

We recommend that you remove the face of the unit for easier access. Be sure to first remove all of the loose components and accessories from the unit. Next, you remove the knobs by pulling them straight out from the valve bezel. The knobs fit tight on the valve stems. You may need to carefully lever the knobs from their stems with a screwdriver. Now, you need to remove the bezels. Remove the two screws that hold each bezel to the face with a large washer. Then, remove the four screws retaining the face to the frame. Carefully lift the face away



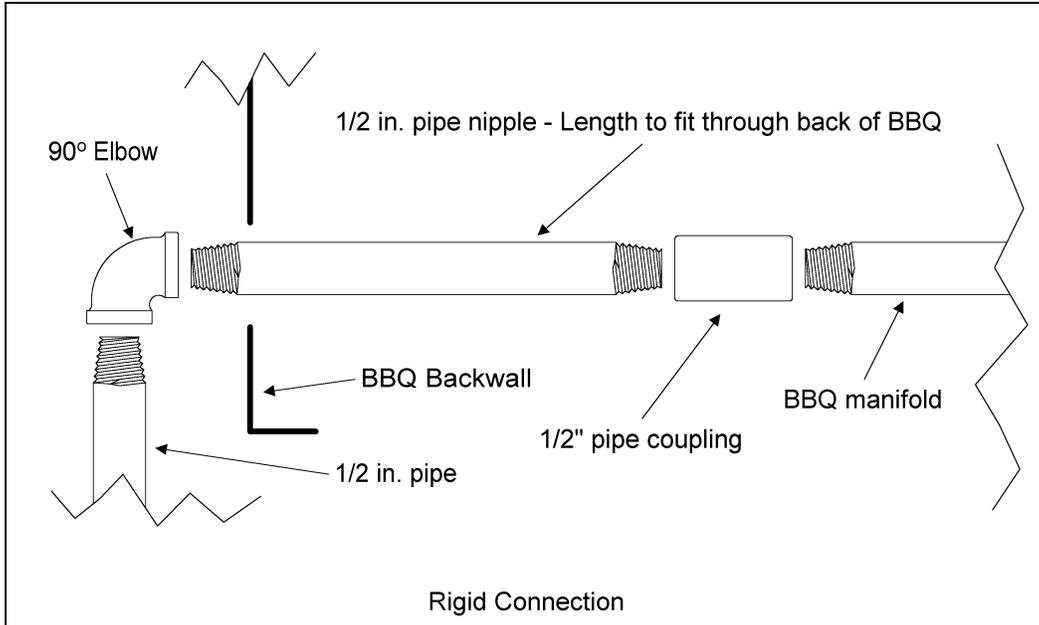
from the frame.  
(Occasionally, we need to add spacers between the face and the frame to ensure that the cooking grills will fit correctly. Be sure to save any spacers you may find there.)



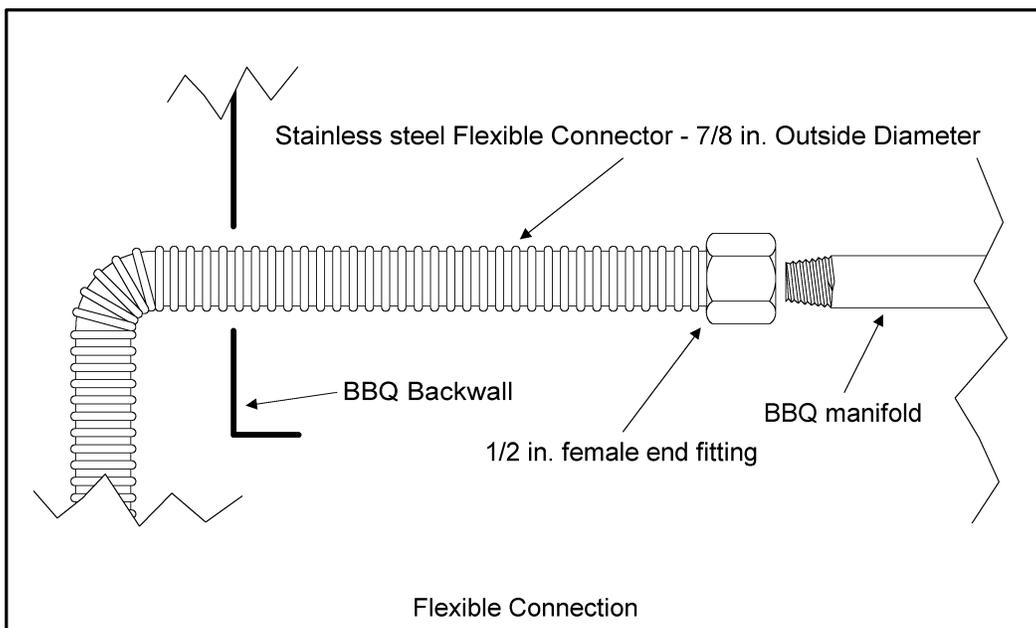
Barbecue with Face Removed

## 1.2.1 Permanent Gas Connection

Standard 1/2 in. iron gas pipe is recommended to make the connection from your household gas supply to your barbecue equipment. A shut-off valve in the gas line is recommended for safety and convenience. If the barbecue unit is accessible to children, a shut-off valve with a removable key is highly recommended.

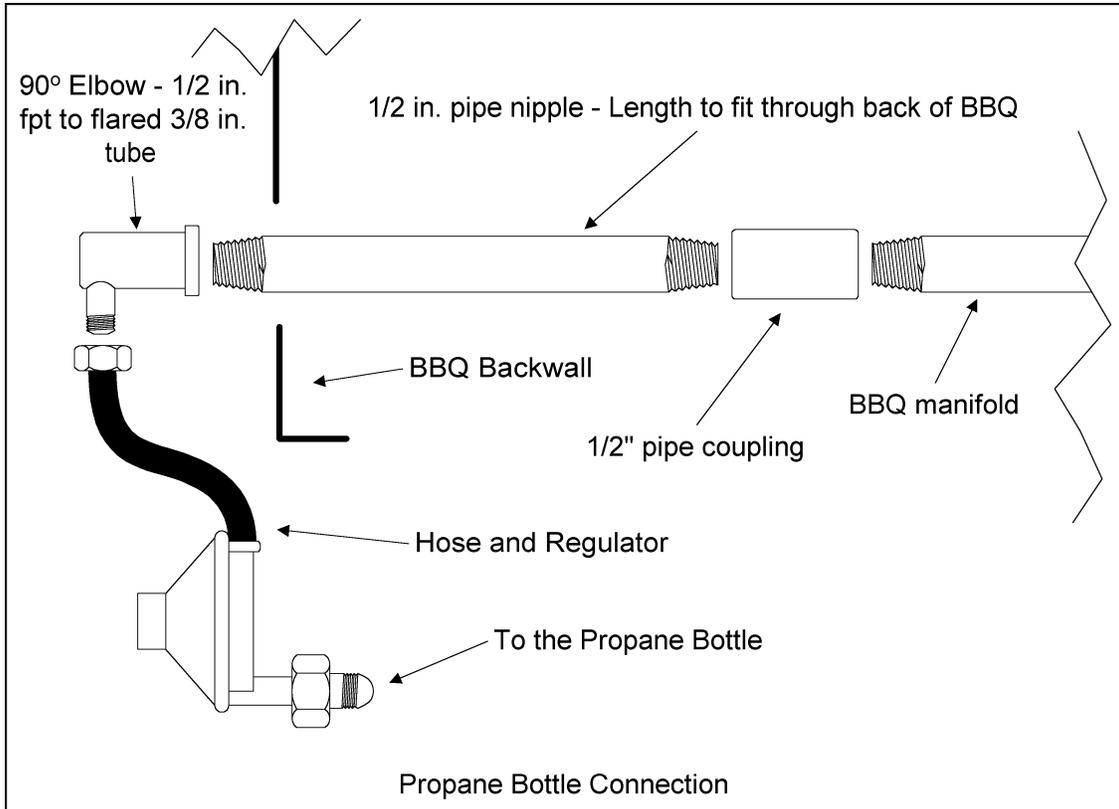


Stainless steel flexible connectors may be used for difficult locations. A 7/8 in. outside diameter connector is the recommended size. Smaller sizes may cause a gas flow restriction. This problem is usually indicated by a whistling sound in the gas line, and not enough heat available for cooking. The barbecue manifold will require a 1/2 in. female end fitting.



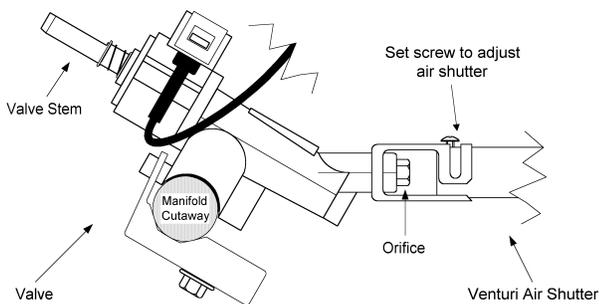
## 1.2.2 Propane (LP) Bottle Connection

You must use a fuel pressure regulator with your propane bottle because the gas is stored under pressure. We recommend using iron gas pipe to extend outside of the body of your unit before connecting to the hose and regulator.



**CAUTION:** Propane, also known as LP, is a gas that is heavier than the surrounding air. You should not store your propane bottle in an area that can trap any escaping gas. This means that your storage area must be vented at the level of the base of your tank.

## 1.3 Natural Gas to Propane (LP) Conversion



Gas Valve with Venturi Air Shutter

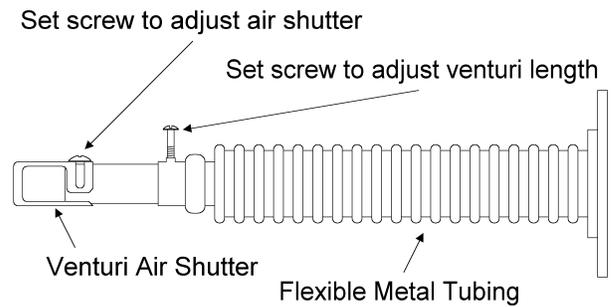
Your barbecue equipment normally comes from the factory ready to use natural gas. To use propane, you need to change the orifice on your gas valves. The orifice is on the end of the valve opposite from the stem where the control knob mounts.

You will need to slide the venturi air shutter from over the orifice, and move it out of the way. Using a 1/4 inch wrench, remove the natural gas orifice and replace it with the LP orifice that came with your equipment. Replace the venturi by sliding the air shutter back over the orifice end of the valve.

## 1.4 Adjusting the Fuel Mixture

After you have completed your gas connections, you should check for the proper fuel and air mixture. (Please remember to check all of the gas connections for leaks with a 50/50 soap bubble solution.) With the face removed, temporarily replace the control knobs. Turn the gas on and light the BBQ. (See the lighting instructions in the Operation section.) If the flames burn with a slightly yellow tip, and do not lift from the burner ports, no further adjustment is necessary.

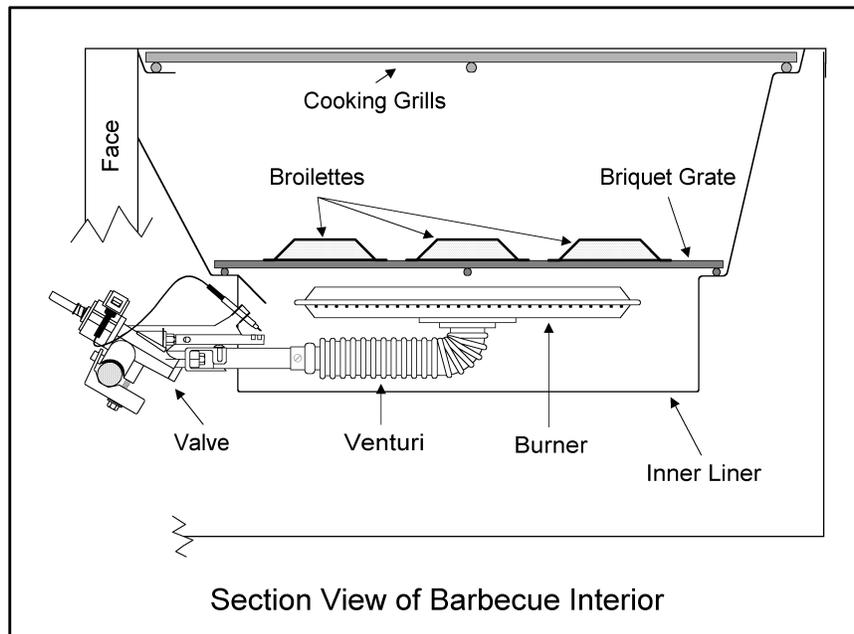
To adjust combustion, loosen the air shutter set screw. For excessive yellow flame, you turn the air shutter to increase the air shutter opening. For flame that lifts off the burner ports, you turn air shutter to decrease the air shutter opening. After adjusting the fuel mixture, tighten the air shutter screw.



Venturi

## 1.5 Finishing the Installation

Now you can replace the face. (Do not forget any spacers you may have found between face and frame.)



The briquet grate goes on the first shelf above the burner(s). The briquet grate is the single grill piece.

Then, the Broilettes are laid down. Flame-Broil barbecue units are equipped with stainless steel Broilettes. No rock is used with Broilettes. Your barbecue grill comes with sufficient Broilettes for efficient usage. It is not necessary for the Broilettes to cover the entire briquet grate. It is only important that the areas above the flames from the burners be covered.

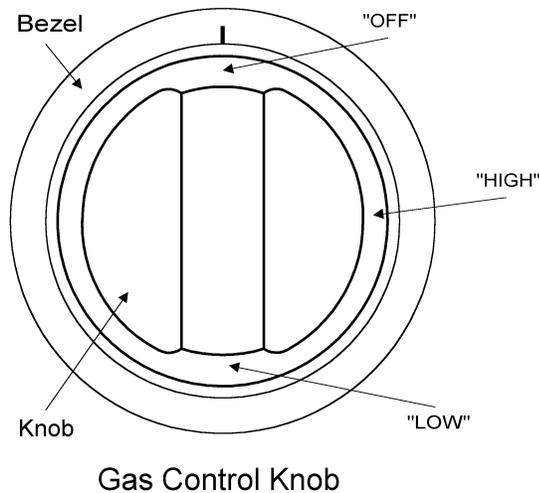
Now, place the two cooking grills on the top shelf. If you purchased the oven accessory, place the oven in the top shelf, and the two cooking grills inside the oven.

You are ready to barbecue.

## 2 Operation

**CAUTION:** Do not leave your barbecue equipment unattended after the burner has been lit. Most fires and accidents occur when the unit has been left unattended while the flame is burning.

### 2.1 Lighting the Burner(s)



Your barbecue is equipped with two gas control valves with built-in ignitors. Each valve is operated with its own knob on the face. The knobs are labeled "OFF" at the twelve o'clock position, "HIGH" at the three o'clock position and "LOW" at the six o'clock position.

The gas control knob is operated by depressing the knob and turning towards the "HIGH" position. It is important to depress before turning the knob. The knob can be damaged by turning it without first depressing it. Turning the knob towards the "HIGH" position will start the gas to flow to the burner. When the knob reaches the "HIGH" position, the built-in ignitor will generate a spark (making a snapping sound), and the spark will light the gas. After the knob is in the "HIGH" position, the knob can be turned freely between "HIGH" and "LOW". To shut the gas off, depress the knob while it is in the "HIGH" position, and turn to the "OFF" position. Again, it is important to depress the knob before turning to avoid damaging the knob.

#### 2.1.1 To light the burner

Depress the knob in the "OFF" position, and slowly turn the knob towards the "HIGH" position. It is helpful allow the gas a little time to flow from the valve to the burner before reaching the "HIGH" position. When the knob reaches the "HIGH" position, the built-in ignitor will generate a spark (making a snapping sound), and the spark will light the gas. If the burner does not light, turn off the gas. Allow any gas to dissipate for a few minutes. Repeat this lighting procedure. If the unit still does not light, use the troubleshooting section on lighting. If you have determined that the ignitor is not functioning, you may use a match for lighting until you have a chance to clean ignitor or replace the valve.

#### 2.1.2 To light the burner with a match

**Strike the match first.** Drop the lit match into the unit, close to the burner's edge. Make sure the match stays lit, and turn the knob to the "HIGH" position. The burner should light within 5 seconds of turning on the gas. If the burner does not light, turn off the gas. Use the troubleshooting section to check for an obstruction in your gas supply. If you still cannot light the burner, please contact us for help.

### 2.2 Adjusting the Flame

The highest flame setting is with the gas control knob set at the "HIGH" position. To adjust to a lower flame, depress the gas control knob and turn counterclockwise. The lowest flame setting is at the "LOW" position. The flame will adjust between these two settings.

To turn off the flame, depress the gas control knob and turn clockwise to the "OFF" position.

## 2.3 Troubleshooting

Here are some of the common problems that sometimes occur with gas barbecue equipment. If these solutions do not solve your problem, please contact us for help.

### 2.3.1 It won't light.

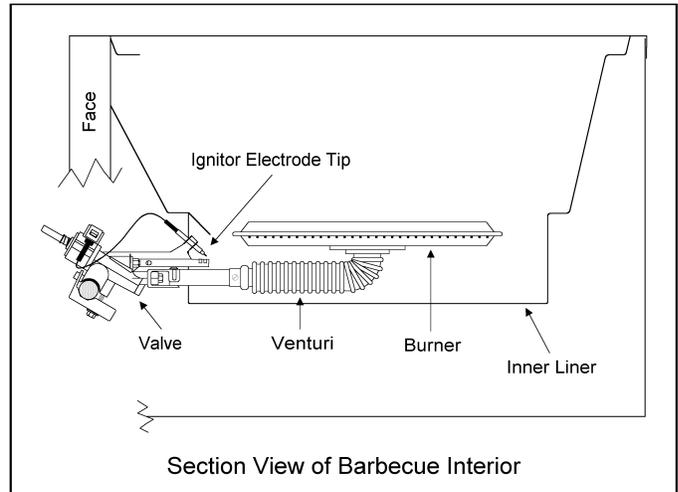
There are two possible reasons for the unit not to light.

a) The ignitor isn't sparking.

With the gas shut off, watch the electrode tip while turning the knob to the "HIGH" position. It may be necessary to use a small hand mirror to see the electrode tip. A spark should jump from the electrode tip. If there is no spark, follow the maintenance procedure for the ignitor.

b) The gas is not reaching the ignitor or the burner(s). There is an obstruction somewhere in the gas supply.

- Check that the source of your gas supply is turned on at your shut-off valve or your propane bottle.
- Check for any blockage of the gas control valve, or the venturi and burner. Follow the maintenance procedure on cleaning the valves, venturis and burner(s).
- Check for any restriction in your gas supply lines. A common problem is to use a pipe or flexible connector with a smaller diameter than recommended when installing the gas connections. Review the gas connection instructions in the Installation section.



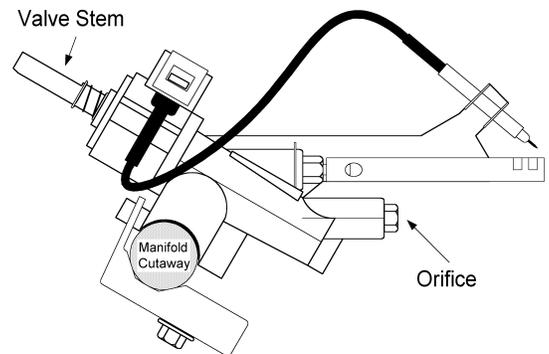
### 2.3.1 It won't get hot.

a) The LP gas valve orifices are being used when the barbecue equipment is burning natural gas.

The table on the left gives the drill size of the holes in the orifices. If you do not have a drill set to test your orifices, try comparing all of the orifices that came with your equipment. The hole in the natural gas orifices is larger than the hole in the LP orifices. If your barbecue equipment is burning natural gas, the orifices with the larger holes should be installed in the gas control valves.

b) An obstruction is partially blocking the gas supply to the burner(s).

- Check that the source of your gas supply is turned on at your shut-off valve or your propane bottle.
- Check for any blockage of the gas control valve, or the venturi and burner. Follow the maintenance procedure on cleaning the valves, venturis and burner(s).
- Check for any restriction in your gas supply lines. A common problem is to use a pipe or flexible connector with a smaller diameter than recommended when installing the gas connections. Review the gas connection instructions in the Installation section.



Model	Natural	L.P.
5454	#49	#54
5458	#43	#51

Orifice Hole/Drill Size Table

### 2.3.1 It gets too hot.

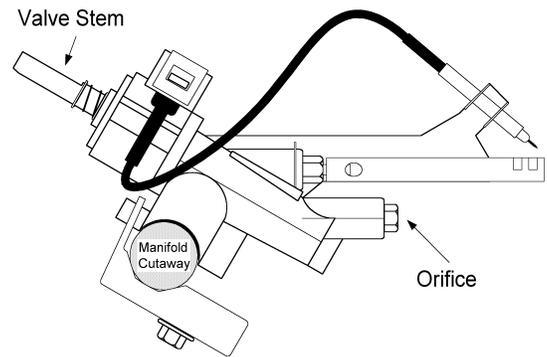
The natural gas valve orifice is being used when the barbecue equipment is burning LP (propane) gas. The table on the left gives the drill size of the holes in the orifices. If you do not have a drill set to test your orifices, try comparing all of the orifices that came with your equipment. The hole in the natural gas orifices is larger than the hole in the LP orifices. If your barbecue equipment is burning LP (propane) gas, the orifices with the smaller holes should be installed in the gas control valves.

### 2.3.2 There is a whistling noise.

There is a restriction in your gas supply lines. A common problem is to use a pipe or flexible connector with a smaller diameter than recommended when installing the gas connections. Review the gas connection instructions in the Installation section.

### 2.3.3 Flames around the gas control knob panel.

This is known as a flashback fire. There is an obstruction in the venturi and/or the burner. This obstruction causes gas to back up and escape out the venturi air shutter where it ignites when you light the unit. Follow the maintenance procedure on cleaning the burner(s) and venturis.



Model	Natural	L.P.
5454	#49	#54
5458	#43	#51

Orifice Hole/Drill Size Table

## 3 Maintenance

Periodic inspection and cleaning of your barbecue equipment will ensure its proper operation. The following checklist is recommended.

- Clean the cooking grills, broillettes and briquet grate.
- Clean the burner(s), venturis and valves.
- Clean the grill interior.
- Check the ignitor.
- Reassemble and test.

If you live in an area where inclement weather prevents you from using your barbecue equipment during certain times of the year, it is a good idea to remove and store the unit. This practice will extend the life of your equipment and its components. If you cannot remove the unit, try to cover it completely from the elements.

### 3.1 Preparation

---

Always shut off the gas supply at the source before doing any maintenance or repairs.

Many parts will have a greasy film or rusty residue. Wear protective clothing and protect the area around the barbecue equipment.

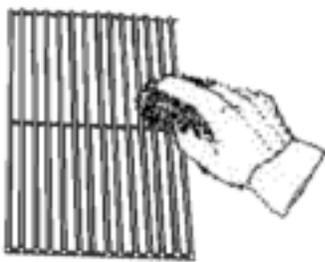
Before removing any components, have a notebook handy to keep notes on the order and placement of the parts.

You will need:

- Bucket or small tub
- Wire brush
- Steel wool or nylon pad
- Fine sandpaper or emery cloth
- Toothpick or small piece of wire
- Philips screwdriver
- 1/4 inch wrench
- Putty knife or scraper
- Strong detergent or degreaser
- Rubbing Alcohol
- Vegetable oil
- WD40 or similar lubricant
- Venturi spider brush (optional)

### 3.2 Clean the Cooking Grills, Broillettes and Briquet Grate

---



Cooking grills are most efficiently and easily cleaned on an ongoing basis by simply pre-heating the grill on high for a few minutes before each use. After heating, scrubbing with a brass bristle brush to remove the loose residue, and then carefully wipe down with a wet paper towel.

**Tip** - Coating the cooking grills with vegetable oil before cooking helps prevent the food from sticking and makes cleaning easier.

For a thorough cleaning, remove and inspect the cooking grills. If you find broken welds or excessive rust, you may opt to replace the grills. If the cooking grills are not too badly deteriorated, soak in a hot soapy water solution to loosen accumulated grease (a degreaser may also be used), then scrub with a steel

wool pad or a stiff nylon pad. Rinse thoroughly and lightly coat with vegetable oil before use.

Next, remove and inspect the stainless steel Broillettes. Any badly deteriorated ones should be replaced. A light coating of rust is okay. Knock off any loose rust or deposits with a wire brush. You may wash them if you desire.

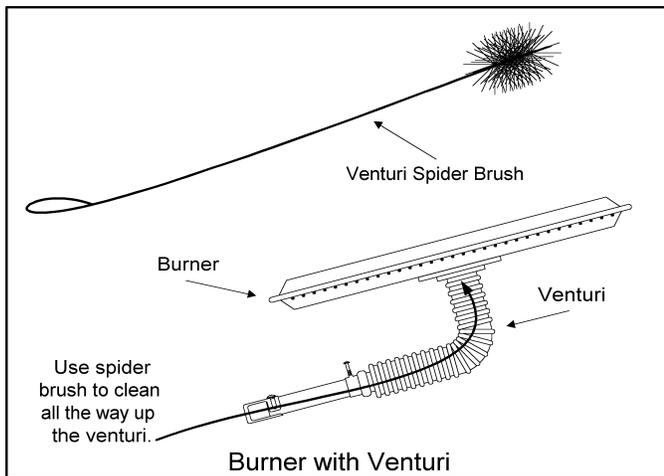
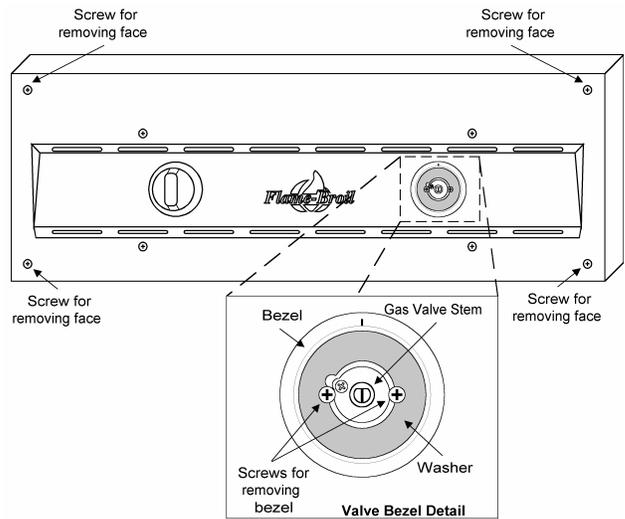
Finally, inspect the briquet grate. This component is subject to very high temperatures and will weaken and deteriorate over time. If the grate is very thin, or sags excessively, replace it with a new grate. Otherwise, knock off any loose rust and scale with a wire brush.



### 3.3 Clean the Burner(s) and Venturis

At this point, you should remove the face of the unit for easier access. Remove the knobs by pulling them straight out from the valve bezel. The knobs fit tight on the valve stems. You may need to carefully lever the knobs from their stems with a screwdriver. Now, you need to remove the bezels. Remove the two screws that hold each bezel to the face with a large washer. Then, remove the four screws retaining the face to the frame. Carefully lift the face away from the frame. (Occasionally, we need to add spacers between the face and the frame to ensure that the cooking grills will fit correctly. Be sure to save any spacers you may find there.)

Carefully remove the burner(s) from the inner lining area. With the model #5458, you may need to pry back the clips that hold the burners to the liner. Lightly brush the burner with a wire brush to remove loose rust and scale. Inspect the burner for holes or split seams, and replace if necessary. If the burner passes inspection, next inspect the venturi.



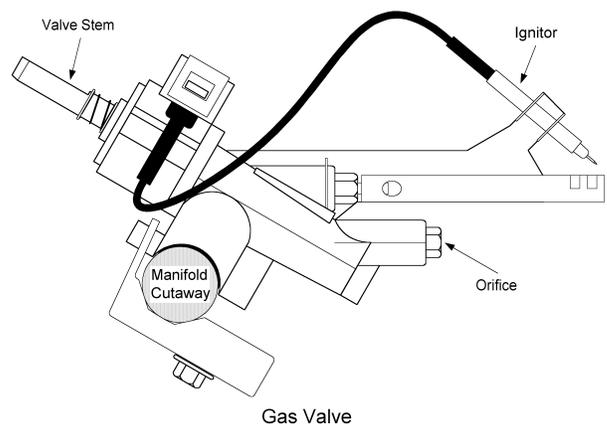
**IT IS EXTREMELY IMPORTANT** to clean the venturi tubes of any obstructions, such as spider or insect webs, etc. A small web can block the gas flow and cause poor burner performance or a flashback fire. A flexible spider brush is the best tool for cleaning the venturi tubes. Special care should be taken to make sure the brush passes through the entire venturi tube, all the way to the burner.

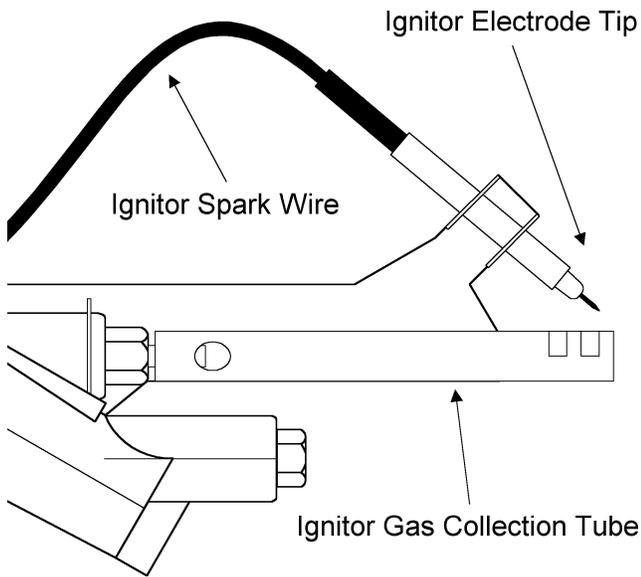
If a spider brush is not available, you may flush out the venturi with a strong flow of water from a garden hose. Pay special attention to how the water exits the burner port holes, as clogged holes are easily spotted. Clogged holes can be opened with an awl or piece of wire. Clogged holes can cause a grill to have hot and cold spots because of uneven flame characteristics.

### 3.4 Clean the Valves and Ignitors

The valves can now be checked. Temporarily slide the valve knobs back onto the valve stems. The knobs should depress, turn and release (pop up) freely. If they are sluggish, carefully spray a small amount of WD40 or similar lubricant onto the valve stem area. Work knobs a few times to distribute the lubricant. Valves that bind severely should be replaced.

Small insects can also block the valve orifice, which will restrict gas flow. Debris in the gas supply lines may also clog these tiny holes. So, remove the hex head orifice with a 1/4 inch wrench, and make sure the hole is completely clean. Also, check the inner portion of the valve from where the orifice was removed. Debris can be removed with a small piece of wire or toothpick. Re-install orifices and tighten.





Each valve is equipped with an ignitor. As the valve knob is turned from “OFF” towards “HIGH”, gas is released into the collection tube. When the knob reaches “HIGH”, a high voltage sent along the spark wire to the electrode tip. A spark from the electrode tip lights the gas in the collection tube.

Grease, dirt and/or rust on the electrode tip or the collector tube can prevent the sparking. Clean any dirt and grease with alcohol. Remove any rust by lightly sanding with emery cloth or fine sandpaper.

Check that the electrode insulation isn’t cracked or broken. Check the spark wire for abrasions, cuts or burns in the insulation. The valve will need to be replaced to correct these problems.

Test the sparking by turning the knob from “OFF” to “HIGH” while watching the electrode tip. The spark should jump from the electrode tip to the end of the collection tube. It may be necessary to use a small hand mirror to watch the spark.

### 3.5 Clean the Grill Interior

First, protect the ignitor electrode tip where it protrudes in the grill interior by covering it with a protective cloth or plastic, or aluminum foil.

Secondly, scrape off heavy grease or cooking debris accumulation with a putty knife or scraper. You can vacuum this debris with a shop vacuum cleaner, or brush it through the holes in the burner tray, at the bottom of the liner, onto the drip tray. When you are done, you should remove and dump the contents of the drip tray.

Lastly, scrub the interior with a strong detergent solution (a degreaser may also be used). Rinse, and let dry. Remove protective covers installed earlier.

### 3.6 Reassemble and Test

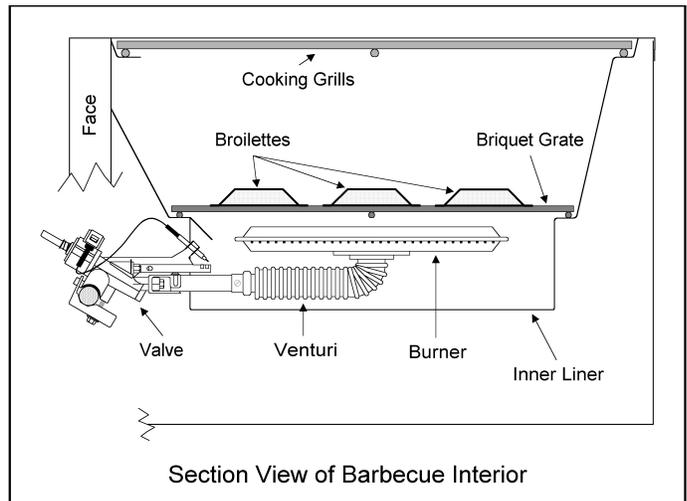
Reinstall the burner(s). Slide the venturi air shutter back over the orifice end of the valves.

Turn on the gas supply, and test light the burner(s). Review the section on adjusting the fuel mixture, and check your flame.

Now you can replace the face. (Do not forget any spacers you may have found between face and frame.)

Replace the briquet grate and the broillettes. Distribute the broillettes evenly in the areas on the briquet grate surface above the flames from the burners. This will help the grill cook at an overall even temperature.

Finally, you can replace the cooking grills. If you purchased the oven accessory, place the oven in the top shelf, and the two cooking grills inside the oven.



## 4 Replacement Parts Lists

### Model 5454

Part #	Description	Qty
5450-129	Briquet Grate	1
5423	Broilettes, 12 Pack	3
5453-008	Burner Assembly	1
5450-007	Drip Tray	1
5454-127	Knob, Gas	2
5454-131	Orifice, L.P. Gas	2
5454-132	Orifice, Nat. Gas	2
5454-133	Valve, L.P. Gas	2
5454-130	Valve, Nat. Gas	2
5520	Grill, Chrome 16x11.5	2

### Model 5458

Part #	Description	Qty
5455-129	Briquet Grate	1
5423	Broilettes, 12 Pack	4
5455-008	Burner Assembly	2
5455-007	Drip Tray	1
5454-127	Knob, Gas	2
5458-131	Orifice, L.P.	2
5458-132	Orifice, Nat.	2
5458-133	Valve, L.P. Gas	2
5458-130	Valve, Nat. Gas	2
5521	Grill, Chrome 18x15	2

