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Buy Your Gas Range with Dollars and Sense

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Buy Your Gas Range with Dollars and Sense

The following points should be considered in the selection of a gas range:

WHAT'S TO BE LEARNED FIRST OF ALL?

Reliability of Manufacturer and Dealer.—It is best to choose a gas range manufactured and sold by firms which are known to be reliable and which have been in business long enough to have established a reputation for quality merchandise and continued service. The retail dealer should be one who is able to give service and replace parts without delay.

Guarantee.—Upon the reliability of the dealer and the manufacturer depends the real worth of any guarantee. It is advisable to determine what service is really available in accordance with this guarantee. Most manufacturers guarantee the range for a period of one year against defects in materials and workmanship for which they are responsible. Any part which should prove defective within this period will be replaced free of charge.

Instruction Book.—Suitable instructions should be furnished with the gas range, fully explaining and giving directions for its operation and care.

WHAT ASSURANCE OF SAFETY?

The presence of the Blue Star Label on any gas range means that it has been tested and approved by the American Gas Association, and that it has met the minimum requirements set by the American Gas Association Testing Laboratory for safe and acceptable performance. Any range worth purchasing should carry this approval seal. The label is found on low-priced as well as high-priced merchandise, for it shows just minimum requirements.

In the case of so-called bottled gases used with gas ranges, the systems which introduce the fuel into the range as gas are less hazardous than systems which introduce the fuel in liquid form to be vaporized by the heat of the flame. Any compressed gas installation should be approved by the Board of Fire Underwriters and set in according to their specifications.

HOW MUCH WILL IT COST?

Initial Cost.—The initial cost of the average size modern gas range varies from \$25 to \$200. Prices vary according to sizes and types, amount of insulation, presence or absence of a thermostat, type of exterior finish and oven lining, and number and type of special features such as number of ovens, presence of cooker or grill, number and sizes of storage compartments, lights and time clock. The price of any appliance should be a guide rather than an inducement to buy.

Cost of Operation.—The cost of operation of gas ranges varies with the management in the use of the range, the type, amount, and installation of the

oven insulation, the amount and type of cooking done, the adjustment of gas and air supply, the presence or absence of a thermostat, the kind of gas, and the local rate for gas.

The heating value of a gas depends on the number of B.T.U. (heat units) it contains. Typical gases have the following approximate heat values per cubic foot; manufactured gas 530 B.T.U., natural gas 1000 B.T.U., mixed gas 850 B.T.U., bottled gas 2550 B.T.U. (Bottled gas is usually sold by the pound; $8\frac{1}{2}$ cubic feet make approximately a pound of liquid.) In general, it may be stated that for a family of five persons the typical monthly consumption of natural gas used for cooking purposes rarely exceeds 1500 cubic feet. If a gas has more heat units per cubic foot the consumption of this gas would be less in terms of cubic feet. If, however, the particular gas used has fewer heat units per cubic foot the consumption of gas must necessarily be greater. If a family uses 1500 cubic feet of gas per month for cooking purposes and the rate is 75 cents per 1000 cubic feet, the cost of the fuel will be \$1.14.

Cost of Installation.—In a few localities the dealer or gas company installs the range free of charge. In localities where this service is not given a plumber should be called to do the work. The charge for the service varies from \$1.50 to \$5.00, the variation depending upon the labor involved and the amount and size of new pipe needed. The cost of installing a gas line in a house for the first time is somewhat more. The difference is related to the distance from the main supply line, the amount of pipe necessary, and the house construction. In general, the difference in cost should not exceed \$15.00.

Cost of Upkeep.—The cost of maintaining the average gas range in correct working condition is usually very low. Generally, the only part requiring replacement is the oven lining, and this only in rare cases. If the oven racks and supports are not of strong enough material when new, they often warp and sag, thus resulting in need for replacement. Such replacements are not costly, however, nor are they difficult to accomplish.

WHAT SIZE AND SHAPE SHALL IT BE?

To some prospective purchasers of gas ranges, the size and shape may be more important than to others. The space available may greatly influence choice. There are three general styles of modern gas ranges.

The *console style* is one in which the oven is raised above the surface of the grid. In such a range the oven may be at the right or at the left. A range of this style occupies a space approximately 55 inches long and 32 inches deep.

The *buffet style* range has the oven top on the level with the burner top. This style is popular at present. It fits into a space about 45 inches long and 32 inches deep.

Ranges of the third style have the oven directly below the burners, and are adapted to smaller spaces. Such a range can be placed in a space approximately 32 inches square.

In the purchase of the console style range, the position of the oven is very important. Direct light should fall upon the top cooking surface. For

this reason ranges are to be had with the oven either at the right or left as may be convenient. Buffet style ranges may be obtained with the oven and the broiler on one side and the top burners on the other, or the oven in the center and top burners on each side of the oven, or the broiler directly underneath the burners on one side and the oven on the other. This third type of construction brings the broiler up to a more convenient working height.

The design best suited to the food preparation unit should be chosen. The disadvantage of the buffet style range is that considerable stooping is necessary when the oven and/or broiler is used. When the broiler is *below* the oven in the buffet style range, the use of the broiler is often abandoned after the first few trials.

A gas range should have sufficient top burner and oven space to accommodate the utensils needed for particular cooking needs. If cooking is done in large quantities, top burners and surrounding space should be sufficiently large to accommodate large utensils. The oven must be large enough to care for the cooking needs of the family.

WHAT ABOUT OVER-ALL CONSTRUCTION?

It is desirable that the *frame* of the range be made of a strong material such as malleable iron, cast iron, or welded steel. The legs are usually firmly attached to the frame by lock washers which prevent loosening of the leg screws and help maintain rigidity of the frame. As far as possible, screw heads should be eliminated on the outside of the frame. If there are no legs there should be "toe space" along the front part of the range.

The *exterior finish* may be of porcelain enamel, synthetic enamel, or Japan lacquer. Because porcelain enamel is non-soluble, will not scratch or discolor, is rust-resistant, is easy to clean and more durable, it is to be preferred over other finishes for the range. Black porcelain enamel is more durable than white or colored porcelain enamels, for it has more of the properties of the base metal in regard to contraction and expansion.

The top surfaces of the range should be finished with a stain resisting porcelain enamel. Such an enamel is resistant to staining by the normal household acids and alkalis.

Synthetic finishes (baked on lacquers and enamels) may be used on some parts of the range. They do not, however, give good service as a finish for the cooking tops or the oven surfaces because they do not withstand high temperatures.

Many ranges today are being made with porcelain enamel surfaces on the cooking top, interior and exterior of the oven and synthetic (baked enamel) finishes on the remaining parts. It is very difficult sometimes to recognize that this construction is present. With such construction the initial price should be lower than if all porcelain enamel surfaces were used. The care and cleaning problem is usually increased when synthetic finishes are used, because grease, soap, and moisture affect the permanency of the finish.

Present day *trimmings* for most ranges are made of monel metal, composition materials or steel finished with chromium plate. Because chromium

plate steel and monel metal do not scratch or tarnish, and are extremely easy to keep bright and clean, they are to be preferred to other metals. Composition material may break if given a hard knock.

Smooth *rounded edges* are to be desired. Inserts, screws, and screw indentations, and ridges in doors and framework are to be avoided. As near one-piece construction as is possible is desirable.

WHAT KIND OF BURNERS AND COOKING TOPS?

Gas Cocks.—Gas cocks should be readily accessible and capable of removal for cleaning purposes. Their position when the gas is turned off should be downward to prevent or lessen accidental turning on of the gas by contact with the body or the clothing of the worker. Gas cocks which lock automatically when the cock is turned off, or those which are guarded by covers, are safety features which are to be desired, especially if young children are likely to be in the kitchen.

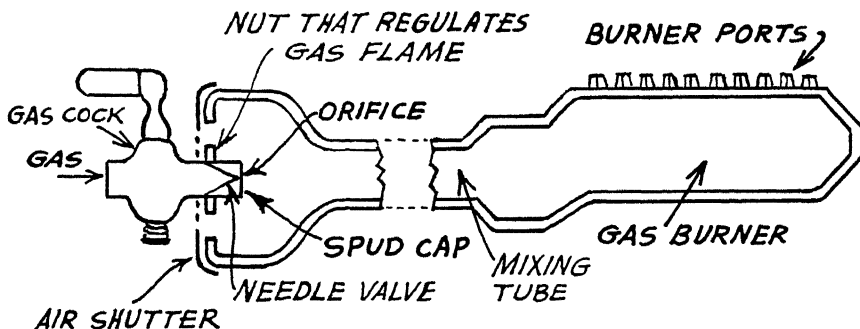


FIG. 1.—Parts of gas burner showing provision for flame adjustment.

It would be desirable to have the controlling devices marked in such a way that the user would know which one to turn on for increasing or lowering the flame. Oven gas cocks on most ranges today have lock arrangements which necessitate the pushing in or pulling out of the control before the gas can be turned on to the oven burner. On the other end of the part to which each gas cock is attached is the spud cap and orifice and needle point valve. These parts help to control and regulate the amount of gas being admitted to the burner. They should be easily accessible without removing bolts, nuts, and too many stove parts.

Burners.—The burners on most gas ranges are similar in that they have the air storage chamber, mixing tube, and the burner proper cast in one piece (Fig. 1). The burner may be cast in any one of many shapes (Fig. 2). Some are made so that various parts are removable to facilitate cleaning. Most ranges today have four (or more) surface burners of the same size. A few have three medium sized burners and one giant burner. Simmer burners are usually incorporated in one or more of the large burners, being a totally separate unit from the main burner, having individual controls and adjusting parts. When the

gas is turned off from the main burner the simmer burner may remain on at full heat. It is often more economical to use a simmer burner turned on at full heat than the larger main burner turned down. When there is a simmer burner incorporated in a larger burner there will always be *two* controlling air shutters and *two* controlling spud caps leading to each mixing tube. The same gas cock is usually used to make changes from one heat to the other.

Among the most common of the burner constructions is the round burner with its ports at the side. When the ports are at the side the flames curve and for this reason are more easily adjusted for various sized utensils than with those burners whose ports are vertical. Most of the round burners are more economical to operate, since the right amount of gas can be admitted so that the flames will touch the bottom of the smallest or largest utensil, in just the right place with little loss of heat around the sides of the utensil.

The flames from the burners with vertical ports come out of the burners vertically while those from most round burners come out at an angle and spread when a utensil is placed in position. For this reason the round burner is made much smaller than the larger older-type burners.

The burners with the ports at the side require less cleaning than others, because such construction helps to keep spilled food from the ports.

The burner should be sufficiently close to the grate so that maximum heating efficiency can be obtained, with small or large utensils, without having to change spud cap and air shutter regulations. The burner should be as near the center of the grate as possible. It is true that the utensil is placed over the center of the burner and not the center of the grate, but if the grate is off-center small utensils often cannot be used with safety and with larger utensils a large amount of cold air will be admitted around the grate which will cool the flame considerably.

Mixer Head.—The mixer head for top and oven burners should have a flat, smooth, and permanent surface finish to provide for easy cleaning. The air shutter should be equipped with a cap which is close fitting, rust-resistant, easily accessible, and adjustable.

Surface Burner Adjustment.—In the use of any type of gas the most essential thing is to have such a supply of gas and air that the resulting flames from each port are clean, distinct, and well defined. It is not practical to state that the most efficient flame has any definite height. Burner and grid construction vary on most ranges to such an extent that the correct burner adjustments would be entirely different.

Burner adjustment is made by having the gas cock turned on fully and then regulating the air shutter and the spud cap, until the inner cone of each flame is about $\frac{1}{2}$ inch and the outer cone just touches the bottom of the utensil.

In adapting a range to the use of manufactured gas or to the use of bottled gas, burners and gas supply connections of somewhat different construction must be installed. Most manufactured gases produce about one-half the number of heat units per cubic foot as natural gas. In order to obtain approximately the same heating rate, the orifice or opening by which the gas supply is regulated and admitted to the burner must be about twice as large for manufactured gas

as for natural gas. The amount of air admitted must also be somewhat greater in using manufactured gas than in using natural gas. For the use of bottled gases, the orifice is usually made smaller than when natural gas is to be used, because most bottled gases have a higher heat value per cubic foot.

Cooking Top.—Gas ranges are made with three types of cooking tops: the open, enclosed, and solid. The distance between burners and grate surface must be different for each of these types of cooking tops. Therefore, *one type should not be purchased with the thought that later it may be changed to the other type, for if a change is attempted the range will be neither efficient nor safe.*

Some cooking tops will absorb more heat than others, and for this reason it is advisable to choose a range whose cooking top will absorb as little heat as possible and yet deliver maximum heat to the cooking utensil. Solid cooking tops are rarely used on household gas ranges. The *open type* of construction



FIG. 2.—Various types of gas range burners.

is that in which the grate covers two burners and is entirely open. In this open type there may be a burner tray (or trays) which more or less encloses each burner. In the *enclosed type*, burner bowls are cut through an otherwise solid cooking top so that the burners are exposed. In this type a separate grate fits in the well over each burner. All grates on open or enclosed type of cooking tops should be easy to remove, light in weight and yet sturdy, easy to clean, and make as little contact with the cooking top as possible. The grate should support without letting it tip, a utensil as small as $3\frac{1}{2}$ inches in diameter. When the grates are in correct position they should not move out of place so easily that when removing a heavy utensil from the burner there is danger of hazard from tipping or spillover.

Burner Lighter.—The lighter is a permanent flame designed to carry a lighting flame to the burners, thus eliminating the use of matches. It is desirable for lighting the burners of the cooking top, and may be automatic in ignition or may be operated by a push button. With the automatic lighter, tubes run from

the small central flame to each burner. When the burner is turned on, the mixture of gas and air from the burner flows into the tube and is lighted by the pilot flame. The flame then flashes back into the burner because of the presence of too much air, and ignites the gas coming into the burner. Automatic lighters are safer than those which are operated by hand because there is not much likelihood that the gas will escape should the gas cock be turned on accidentally.

The ease of making adjustments of the pilot light should be determined. In some cases should the pilot flame go off one would have to remove several parts of the range before being able to reignite the flame. If the control device is a screw see that it is easy to reach with a screw driver. Notice, too, if the lighting tubes are easy to clean, and if removable, easy to replace. Not all automatic lighting systems function satisfactorily.

IS THERE A TRAY FOR SPILLOVERS?

There should be a drip tray under the burners to catch all spillage that may pass through them. The tray should be large enough and deep enough for the purpose, easy to remove and replace, and should have no sharp edges. Trays finished in porcelain enamel are rust-resistant, durable, and easy to clean.

HOW DOES THE OVEN CHECK ON THESE POINTS?

Oven and Broiler Burner.—The oven and broiler burner should be easily removable, convenient to adjust and to insert. The burner supports should be so rigid that they will hold the burner in a horizontal position without tilting.

Temperature Control.—All gas ranges should have thermostats to control oven temperature and make possible the maximum conservation of gas. In addition to the thermostat it is convenient but not necessary to have a heat indicator. The thermostat should have the temperatures marked in degrees rather than in such terms as hot, medium, and warm, or by adjustments for different foods. Temperature controls represent \$15 to \$25 of the initial cost of the range. Experiments have shown that their efficient use lowers the cost of operation approximately 25 per cent, and their presence adds materially to the convenient use of the oven.

If the thermostatic control is placed on the side of the oven nearest the top burners of the console style range, it is desirable to notice whether or not the control will interfere with the placement of large or even small utensils on the adjacent burners. In many styles of ranges the thermostat and oven controls are placed inside a storage compartment. The purchaser should determine if the oven can be lighted (when a match is used) conveniently and safely with this arrangement.

When a thermostatically controlled oven is in use there should be a minimum flow of gas to the oven burner in addition to the gas supplied through the thermostat. This minimum flow goes through the precautionary flame channel and the by-pass flame channel. The *precautionary pilot* carries an individual flame to

the oven burner by means of a small copper tube not connected to the burner. Such a flame is for the purpose of re-lighting the oven burner should the gas supply to this burner be completely shut off and then be cut on again by the thermostat. If the precautionary flame be extinguished, under these conditions, serious damage from fire or explosion might result. This flame is regulated by a screw or some other control device somewhere on the range. The purchaser should know where and how to make any necessary adjustment. The precautionary flame is usually yellow and about $\frac{3}{4}$ inch high when in correct adjustment.

The *by-pass* provides a steady minimum flame from *each* port of the oven burner by carrying a separate gas supply around the thermostat directly to the oven burner. The supply of gas through the by-pass is always being admitted to the burner even though the supply through the thermostat has been cut off or on by its automatic action.

The by-pass is regulated similarly to the precautionary pilot, but this regulation should be made by a competent service man, since its adjustment would have a decided effect upon oven temperatures. The gas going to the precautionary pilot flame, by-pass, and thermostat are all first controlled by the oven gas cock.

If there is a lighter to the oven burner which lights the oven without use of a match, the gas supply for it comes directly off the *mainfold* (main gas supply line through range).

It should be possible for the user to see if the lighter flame is on. In ranges with separate broiler burners, the oven burner is not always accessible from outside the range. With this construction, the oven bottom should be easy to remove and replace, or some provision made whereby the oven lighter may be easily re-ignited should it happen to go out. Should the oven lighter flame be extinguished in this type of construction, gas will continue to flow into the oven, with a probable explosion resulting. On many of the new gas ranges, an automatic safety oven lighter is being installed. Such a device prevents gas from flowing into the oven burner should the lighter flame be out even though the oven gas cock has been turned on.

Vent.—All gas ranges should be connected to an outside ventilation flue in order that unburned fuel gases, and gases and moisture formed in cooking and baking, will be carried off safely and not allowed to accumulate in the oven or kitchen. Ranges with closed cooking tops should have a direct and sufficiently large opening from the space under the cooking top to the flue as well as from the oven, so that gases developed from the use of the cooking top and oven will be carried off.

Substitutes for vent pipe connections installed on gas range oven vents do not take care of gases formed in baking processes or of unburned gas which may be escaping from the oven burner. A complete flue connection between the range and the air outside the kitchen should be provided in order that the range may be used with safety.

Rack Supports.—The supports which hold the racks in the oven should be sturdy in construction and should have no exposed sharp edges with which the hands might come in contact during cleaning and use. If the rack supports

are removable the location of the heat regulator should not interfere with their ease of removal.

There should be a sufficient number of rack supports and these should be so spaced that they provide for all the baking needs of the purchaser. It is a common fault with many ranges that there are not enough rack spacers in the oven for loading the oven to near capacity.

Racks.—Racks should be made of rust-resisting materials and rigid enough that they will not warp or sag. The spaces between the bars of the rack should be close enough together that even small utensils will not tip. They should be easy running and free from sharp corners. When the racks are partially withdrawn, the supports should be so constructed that tilting of the racks is made impossible. Racks which lock when the racks are partially removed are great conveniences and reduce likelihood of burns and food spillage. Many lock arrangements are very ineffective. The prospective purchaser should check to see if the lock arrangement really functions, and whether or not they will continue to function after some use.

Oven Insulation.—From 1 to 2 inches of good insulating material should be used between the inside lining of the oven and the exterior wall. This insulation will conserve the heat, distribute it evenly throughout the oven, and provide for a cooler kitchen. Rock wool and asbestos are effective as insulators for ovens.

It is desirable that the insulation used in the oven be in sturdily braced sheets rather than in bulk form, so that a minimum settling and shifting will take place. If the insulation settles or shifts greater heat loss will result, which in turn will decrease efficiency and increase operating costs. One method by which the prospective purchaser may test for the presence or absence of insulation is to knock the part being tested with the knuckles. A hollow sound on any part indicates little or no insulation in that part.

Oven Doors.—The door should be of sturdy construction and as heavily insulated as other parts of the oven. The door to the oven should be equipped with strong spring hinges and fastener, and so tight fitting that heat leakage will be as low as possible. The door should have a spring counterbalance to prevent it from dropping when partially opened, or snapping shut. The dropping of a door sometimes results in breaking the hinge or in pulling the door frame from its foundation. It is desirable that the tension spring be of such construction that the door will stay in any position to which it is opened.

The door should be of such construction and so well mounted that it will withstand any reasonable strain to which it is subjected. It is more convenient to have the door hinged at the bottom than at sides. The handle on the door should fit well into the hand and be made of a material that will not warp, crack, or become hot.

Many range manufacturers are putting glass windows in the door of the oven. This glass should be heat resistant and so installed that there will be little loss of heat around it.

Oven and Broiler Lining.—The lining of the gas oven should be of rust-resistant material, smooth in finish without rough edges, and if removable should

be easy to take out and replace. Such a lining should be held in place without bolts, and the location of the heat regulator should not interfere with its easy removal. Provision should be made for ample flue ventilation. Rounded corners facilitate care of the oven.

Some ovens are lined with sheet steel finished with porcelain enamel, chromium plate, or aluminum paint. Porcelain enamel is used as the lining for most present-day gas range ovens. Dark rather than light porcelain enamels are to be preferred, because the coating is thinner than that of the lighter colored enamels. For this reason the finish expands and contracts with changes in temperature more nearly at the same rate as the metal base and thus will not chip or craze as easily. Chromium plating is expensive, while aluminum paint is reasonable but not durable. Aluminum paint will in time wear off, thus exposing the metal parts of the range to air and moisture which results in rusting.

Other ovens are lined with metal such as monel metal, stainless steel, or sheet aluminum without additional finishes. Monel metal and stainless steel are durable, rust resistant, and are not affected by acids or alkalis, but on account of their high cost, they are generally not purchased. In regard to heat distribution and fuel economy, experiments indicate that shiny, bright metals are more efficient linings than porcelain enamel. However, porcelain enamel linings are preferred because the greater ease in cleaning outweighs the slight difference in fuel economy.

Oven Bottom.—The oven bottom should be removable, of sturdy construction, and made of material which will withstand considerable heat. If the range is to be used as a means of heating the kitchen during the winter, a range with a cast iron or heavy steel bottom should be used. An oven with a bottom finished with porcelain enamel may warp and craze when subjected to high and continuous heat. If the oven is used for cooking and baking only, a bottom with a porcelain enamel finish may be satisfactory, as porcelain enamel requires less care in cleaning, is rust-resistant, and sufficiently durable.

Broiler Compartment.—The drawer type with a door which drops down is considered one of the most convenient constructions. There should be a sufficient number of glides to provide for foods of varying thicknesses.

Broiler Pan.—The broiler pan should be constructed of a sturdy material not easily affected by heat. Sheet steel finished with porcelain enamel or chromium plate is satisfactory, provided care is exercised in use. The broiler pan should be free from sharp edges, be deep enough for convenient use, and should have some provision for carrying away the fat so that it will not be likely to catch fire.

SPECIAL FEATURES

Before final selection is made the prospective purchaser should weigh the special features of each range being considered. A gas range should be chosen for its well constructed frame and individual parts and its appropriateness for the work that is expected of it, rather than for any novelty in design or color or additional features which are unimportant to its efficiency, safety, and convenience in operation.