

*Buy Your Electric Range
with Dollars and Sense*

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The following points should be considered in the selection of an electric range:

What's to be Learned First of All?

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

Guarantee and Service.—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 electric parts of the range for a period of one year against defects in material and workmanship for which they are responsible. Any part that should prove defective within this period will be replaced free of charge.

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

What Assurance of Safety?

In choosing an electric range, it is advisable to select one listed as having been approved by the National Board of Fire Underwriters. Products so listed are not necessarily the same in quality; such listing, however, indicates compliance with the Underwriters' Laboratories' requirements for safety.

How Much Will it Cost?

Initial Cost.—The initial cost of electric ranges varies from \$65 to \$350. Prices vary according to size and type of range, number, sizes and types of surface units, amount and kind of insulation, finish of exterior surface and lining, and other special features such as number of ovens, presence of deep well cooker, number and sizes of storage compartments, lights, and time clocks.

Electric ranges are frequently somewhat higher in initial cost than ranges which have comparatively the same general features but are used with other types of fuel. Some of the reasons for this difference in initial cost may be that in the electric range the construction of the heating elements requires more expensive materials and superior workmanship, that the oven must be more fully and heavily insulated and vapor tight, and that fuses and protective wiring are needed. Some of the differences in initial cost may be offset by the fact that the electric range offers cleanliness in cookery, provides a measured temperature that is constant at all times, and allows for a high heat retention without the continued use of the fuel.

*The Financing of the Purchase.*¹—The lead pencil is an important tool in household operation; the purchase of equipment is one of the places to use it. Equipment may be purchased in any one of several ways. The simplest and in many ways the most satisfactory method is to pay cash—if possible without borrowing. If one does pay cash, try to get “discount for cash.” If one does not have the cash:

1. The dealer may furnish the credit.
 - a. On open account. He may charge interest or may not. Oddly enough some dealers let one pay for the goods 3 months or 6 months later at no higher charge than if the deal were for cash.
 - b. On installments. One pays part in cash, the balance at so much a month. If paid in only three monthly installments, sometimes no interest charge is made.

The Federal Housing Administration in the spring of 1937 discontinued its loans on household equipment. In some cities, the buyer can still make a similar arrangement with the dealer, but usually at 6 per cent or 7 per cent. The borrower of \$100 at 6 per cent on this plan is paying \$6 per year interest on each \$100 in spite of the fact that each month he is cutting off one-twelfth of the debt.

2. To get the cash, one may have to borrow.
 - a. He may borrow from a commercial bank at 6 per cent or 7 per cent; the bank generally does not require monthly payments. Most banks follow the practice of subtracting each payment as made, thus reducing the amount on which the borrower is paying interest. An 8 per cent rate on this plan is lower than 6 per cent or even 5 per cent on the usual finance plan. Ask your dealer or banker which plan of figuring interest is offered.
 - b. The farmer may borrow of his Production Credit Association at 5 per cent per year, plus costs of placing the loan, on the security of a mortgage on livestock and machinery. This mortgage does not touch auto or household goods.
 - c. The private finance or chattel loan company lends on chattel mortgage security, often including household goods and auto, at rates from 12 per cent to 36 per cent per year. These loans are generally payable in monthly installments utterly unsuited to most farm incomes. Some companies lend without chattel mortgage security, but require two co-signers on the note.

Cost of Operation.—The cost of operation of electric ranges varies with the type; size and wattage of heating units; the type, thickness, and installation of the oven insulation; the management in the use of the range; the amount and type of cooking done; and the local rate for electric current. In general it may be stated that for a family of five persons the typical monthly consumption of electricity used for cooking purposes varies between 100 to 125 kilowatt hours.

¹ Prepared by B. A. Wallace, Extension Economist in Marketing, The Ohio State University.

If a family used 110 kilowatt hours per month for operating an electric range, and if the cost of electricity were 5 cents per kilowatt hour, the cost of operation for that month would be \$5.50. With an electric rate of 3 cents per kilowatt hour, the monthly bill for the use of 110 kilowatt hours would be \$3.30. It may well be assumed that with an electric rate above 3 cents per kilowatt hour, cooking with electricity is generally too high when compared to the cost of cooking with other fuels.

Some power companies reduce the rate for current when an electric range is installed in the home. In a few cases, this reduction is made on the electric current consumed by the range only, leaving the original rate for all other electricity used. In most cases the electric rate is based on a sliding scale. Usually a family will be using enough current with other appliances so that when an electric range is installed the rate per kilowatt hour for the electricity consumed by the range will be taken from the lower rates of the scale.

If the use of an electric range reduces the rate for all electricity consumed by the householder to such an extent that the total monthly bill is not more than \$2 or \$3 greater than it would be without the range, its use may be within the limit of the ordinary family income.

Cost of Installation.—In many localities the power company installs the range free of charge. In other localities there is a charge for this service which may vary from a few dollars to \$30, the variation depending upon the electric code in effect and whether the feed wires have been installed in the house wiring. The code set up by the Board of Fire Underwriters requires that the wiring for electric ranges be of such capacity that the full rated load of the range may be carried over the wires with safety. A wire no smaller than No. 6 should be used for range connections. If a range is to be installed in a house in which the entrance feeders are for lighting circuits only, a new circuit for the range must be installed from the service line outside the house to the house meter. Such wiring will increase considerably the cost of range installation. If, however, the wiring of the house is ample for the range, the cost is comparatively low, for just the wires from the meter to the range, have to be installed.

Cost of Upkeep.—Maintenance and replacement costs are likely to be higher for electric ranges than for ranges using other fuels. Due to inevitable deterioration and to carelessness in use, most electric range heating elements are subject to renewal after they have been in service for some time. Because of their exposed and unprotected heating elements, *open* units are subject to oxidation, which shortens their life. They are also more easily damaged mechanically than units of the *enclosed* or *encased* type. Manufacturers' directions should always be carried out regarding cleaning and use of all types of surface and oven units if upkeep costs are to be minimum. The heating elements in *open* units are less costly to replace than those in the other types. However, should the pottery disc become damaged the cost for replacement is comparatively on a par with the other type of units.

What Size Shall it Be?

Size and Shape.—To some prospective purchasers of electric ranges the size and shape may be more important than to others. The space available may greatly influence choice. There are three general types of the modern electric range.

1. The *console style* is one in which the oven is raised above the top cooking surface. In such a range the oven may be either at the right or the left. This console style occupies a space approximately 55 inches long and 32 inches deep. An advantage of the higher oven is that the user does not have to stoop as much and better light may be secured on the oven.

2. The *buffet style* range has the oven on the level with the surface units. This style is popular at present. This type of range fits into a space about 45 inches wide by 32 inches deep.

3. Ranges of the third style, having the oven directly below the top units, 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 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 with one oven may be obtained with the oven and broiler on one side and the top burners on the other, or the oven in the center and two surface units on each side of the oven. The design best suited to the food preparation units should be chosen.

In selecting a range there should be sufficient top unit and oven space to accommodate the utensils needed for the amount and type of cooking done. If cooking is done in large quantities, top units and surrounding space should be sufficiently large to accommodate large utensils. The size of the oven is also quite important, for in operating an electric range most efficiently the homemaker should plan many menus which may be cooked completely in the oven. Therefore, the oven must be large enough to care for such food preparation. Ranges equipped with two ovens may be secured if a range having only one oven will not take care of the present or future cooking needs of the family.

What About Over-all Construction?

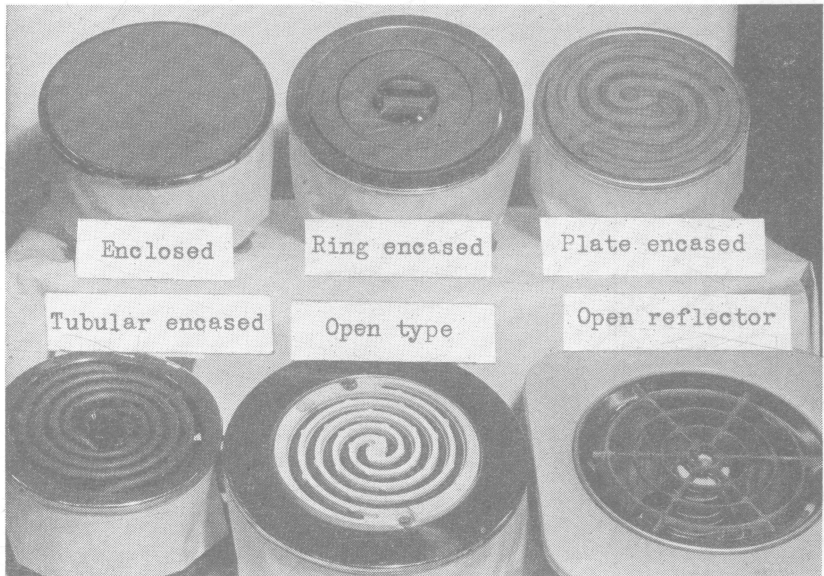
It is desirable that the *frame* of the range be made of strong material such as malleable iron or welded steel. The *legs* are usually firmly attached to the frame by lock washers which prevent loosening of the leg screws and help maintain rigidity of the frame. If there are no legs on the range there should be sufficient "toe room" along the front part of the range.

The *exterior finish* of the range is usually porcelain enamel. Monel metal exterior surfaces are satisfactory but costly. If porcelain enamel is used on the top surface of the range it should be finished with acid resisting porcelain enamel. Such a finish is resistant to staining by the normal household acids which would be used around the range. Synthetic finishes (lacquers,

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

Present day *trimmings* for ranges are made of monel metal, composition material, or steel finished with chromium plate. Because they do not tarnish or scratch and are extremely easy to clean and keep bright, chromium plate steel and monel metal are to be preferred over nickel or other metals. Composition materials may break if given a hard knock.

Smooth rounded *edges* are to be desired. Inserts, screw indentations, and ridges in doors and framework are to be avoided.



Six types of heating units found in electric ranges (Courtesy University of Maine)

What Kind of Surface Units?

There are a number of different types of surface units for electric ranges, but the general principle of construction is approximately the same in each, that of two sets of coiled resistance wires which are braced in some way for protection and through which an electric current is passed. These coils may be either exposed or enclosed. In general the electric range surface units may be classified as *open*, *enclosed*, or *encased*.

1. An *open unit* is usually composed of the coiled resistance wire laid in molded discs of unglazed pottery with an insulator below the disc to prevent downward radiation of the heat. The whole is set in a metal pan. A variation of this type has the heating coil attached to a cone shaped frame of unglazed pottery set in a cone shaped metal plate. The surface of the plate has a highly polished finish (usually of chromium plate) to reflect the heat up to the unit surface.

2. An *enclosed unit* may be one of several different constructions. The most common one perhaps is that which is essentially an open unit with a heavy gauge metal plate covering the unit. Recently there have come on the market units of practically the same construction except a light gauge plate is used instead of the heavier one. (This type, although of similar appearance to the encased type explained below, should not be confused with it.)

3. Units of the *encased* type consist of the heating coils encased in stainless steel tubes or between stainless steel plates or in cast iron rings. Thin gauged metal is used in encased unit construction. In each case the wires are insulated from the metal casing by magnesium oxide which is firmly packed around the coils. Each of these units is set in a pan.

Encased units and open units are quicker to heat up and are more efficient for short cooking processes than are the enclosed type units. Some units may be advertised and sold on the basis of being able to heat up very rapidly. Often this ability is due mainly to the fact that the unit has a very high wattage which will greatly increase the cost of operation of the range unless the use of the units is carefully managed. The prospective purchaser should find out if it is the wattage of the unit or its construction which makes for the increased rapidity of heating.

Electric ranges of the standard type may be purchased with either three or four surface units. The number, size, and wattage are usually matters of choice based on the amount and type of cooking to be done. There should be at least one large unit of 1800 to 2200 watts capacity to care for rapid cooking processes and large quantity cooking. At least one small unit should be near the front of the range as such a unit will no doubt be used more frequently than the larger units.

Deep-well cooker units may be had on most present day electric ranges if desired. Such a unit does not always come as standard equipment on the range. Therefore a range so equipped may be higher in initial cost than one which does not include the cooker. If a deep-well cooker is being considered on a particular range it is advisable to note whether or not the utensil part of the unit fits tightly into the base, and if the well itself is thoroughly insulated so that heat loss from the unit will be at a minimum. The cover to the cooking utensil should be well insulated, tight fitting, and should have an opening to permit the escape of steam during cookery. The efficient use of a deep-well cooker will not only be of advantage in saving time and energy but will likewise conserve electricity.

What Kind of Control for Surface Units?

Switch controls on the electric range should be conveniently placed and adequately marked so that a glance at the range will show whether the current to any one unit is on or off. Switch controls for the surface units should be so shaped as to be grasped easily, and designed to be set for three different heats—high, medium, and low. Switch controls which may be turned in

either direction are to be desired as they simplify regulation of the heat during cooking, and if used correctly will lower operating costs.

Switch controls made of composition materials are poor heat conductors (hence do not burn the hand), are good electrical insulators, are easy to clean, and are not easily injured.

Is There a Tray for Spillovers?

There should be a drip tray under the surface units to catch all spillage which 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 with porcelain enamel are rust and stain resistant, durable, and easy to clean.

How Does the Oven Check on These Units?

Oven Units.—The oven of an electric range is usually equipped with two heating elements, one at the top and one at the bottom. Less expensive models are available which have only one unit in the oven. For cleaning purposes the oven units should be easy to remove and to replace. It would be desirable to have the heating units interchangeable, so that if one fails to heat or is otherwise in need of repair, the other will be available for either broiling or baking. The heating coils in the skeleton type oven unit should be well protected with insulating material, and securely bound to the insulating posts so that the wires will not sag or touch the metal frame of the unit. The frame on which the heating coils are mounted should be sufficiently rigid to prevent warping.

Many of the present models which have two heating units are designed so that part of the heating coils of the upper unit are turned on in conjunction with the lower heating unit. Such construction is considered to make for a more evenly balanced heat distribution throughout the whole oven.

In the two-unit electric range the upper unit alone is used for broiling. Usually there is no temperature control for the broiler unit. The heat for broiling is regulated by raising or lowering the broiler pan in the oven.

The space below the unit in the one-unit oven is the broiler compartment. There should be sufficient space below the unit so that the amount and type of broiling that is desired can be done.

Baffle Plate.—There should be a baffle plate over the lower oven unit to deflect the heat radiated to it from the heating unit and to distribute this heat evenly throughout the oven. In some ranges the baffle plate is a part of the lower oven unit, and with such construction it is impossible to remove the plate without removal of the unit. For some baking processes, it may be desirable to remove the baffle, leaving the lower unit in place.

In other ranges the baffle is removable. Such a baffle plate should be labeled to show which is the front, which is the back, which is the top, and which is the bottom. If the baffle should be replaced incorrectly, uneven distribution of heat would likely result.

In one range the lower heating element is placed underneath the oven floor. The oven floor serves not only as a floor but as a baffle for the heat radiating from the unit. Such a floor should be removable, making it possible to clean both it and the heating unit.

Oven Lining.—The lining of the oven should be of rust-resistant material, smooth in finish and if possible seamless in construction. If there must be a seam in the oven lining, it is better to have it at the top rather than at the bottom. The lining in such a case should be so constructed at the seam that the oven is almost vapor tight. If it is possible for moisture to be admitted between the inner and the outer linings of the oven, the insulation would not only be damaged but the metal part would be likely to rust. Openings in the lining for the thermostat and terminals should be fitted with airtight bushings to prevent heat leakage.

Some ovens are lined with sheet steel or cast iron finished with porcelain enamel, chromium plate, or aluminum paint. Porcelain enamel is used as the lining for most present day electric 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, thus making it less likely to craze or chip.

Chromium plate steel is expensive, while aluminum paint is reasonable in cost but not as durable. Aluminum paint will in time wear off, thus exposing the metal parts of the range to air and moisture which in turn may cause the surfaces to rust.

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 alkalies, but on account of their high cost they are generally not purchased.

In regard to heat distribution and fuel economy, experiments indicate that the shiny, bright metals are more efficient for oven linings than porcelain enamel. However, porcelain enamel linings are to be preferred because the greater ease in cleaning outweighs the slight difference in fuel economy.

Insulation of Range Oven.—With the exception of electricity, all fuels need to be burned in the presence of oxygen in order to produce combustion. For this reason, and because air is not used so much as a carrier of heat, the electric range oven may be approximately airtight except for a small opening which will allow for the escape of moisture and gases produced in the cooking process. This opening is known as the *vent*, and should be partially if not wholly open at all times.

It is important to see that the oven is fully insulated with a suitable material of sufficient thickness to insure good heat retention. Any range that is insulated for long-period heat retention has its oven lined with at least 1 inch of mineral wool, asbestos, or some equally effective insulating material. Some ranges achieve even a higher degree of heat retention by incorporating heavier and thicker layers of insulating material between the oven lining and the outside surface. If an electric range oven is suitably insulated, one should be

able to place the hand anywhere on the outside of the oven any time it is in operation without discomfort. The use of a well insulated electric range oven has but little effect on the temperature of the kitchen.

It is desirable that the insulation used in the oven be in sturdily braced sheets rather than in bulk form, so that only 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 top, sides, and door of the oven with the knuckles. A hollow sound on any part indicates little or no insulation in that part.

Vent.—The vent is for the purpose of removing excess gases and steam developed in the use of the oven. It should be so located on the oven that hot vapors from it will not flow against the kitchen wall.

Thermostatic Control.—All electric range ovens should have thermostats to control oven temperatures and make possible the maximum conservation of electricity. In general, thermostats operate by turning the current off and on as necessary to keep the oven at the desired temperature set by the regulator.

Automatic temperature controls should be accurate and highly sensitive to temperature changes. 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.

The location of the thermostat inside the oven should not interfere with food being placed in the oven or with the easy removal of the top heating unit.

Oven Door.—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 from 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 so built 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 the sides. The handle on the door should fit well into the hand, have no sharp edges and be made of a material that will not warp, crack, or become hot.

Racks.—Racks should be of rust resistant material of sufficient rigidity that they will not warp or sag, and the wires sufficiently close together that small pans will not tip when placed on racks. They should be easy running and free from sharp edges. Racks which lock when they are partially removed are great conveniences.

Rack Supports.—The supports which hold the racks in the oven should be sturdy in construction and should have no exposed sharp edges likely to be brought in contact with the hand during cleaning and use. When the racks

are partially withdrawn, the supports should be so constructed that tilting of the racks is made impossible.

It is possible to have a one-piece oven lining with rack supports which are a part of the oven lining. With such construction there will be no hooks or rivets which are hard to clean, and there will be no place through which heat and moisture are likely to leak into the oven insulation.

If the rack supports are removable they should be easy to remove and the location of the thermostat should not interfere with their removal.

Broiler Pan.—The broiler pan should be constructed of a sturdy material not easily affected by heat. Sheet steel finished with porcelain enamel has proved satisfactory, provided care is exercised in use. The broiler pan should be free from sharp edges, 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.

Are Special Features Worth the Price?

Pilot Light.—A pilot light in conjunction with the oven switch is a convenience and safety device which shows when the lower oven element has been turned on. Most pilot lights are so constructed that during the time the oven is heating the light will remain on. As soon as the temperature reaches that as set by the heat regulator the light goes off. This indicates that the oven has sufficiently preheated and the food can now be placed in the oven.

Time Control Clocks.—Time control clocks which turn the current on at a given time and again turn it off at a given time, are available for most electric ranges at additional cost. The use of a time control clock is limited and whether or not, in the purchase of an electric range, it is worth while to purchase one depends upon the conditions under which the range will be used.

Special Features.—Before final selection is made the prospective purchaser should weigh the special features of each range being considered. An electric 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 safety, efficiency and convenience in operation.

Convenience Outlets.—One or two convenience outlets are desirable on an electric range. Each unit should be conveniently located and supplied with a separate fuse. The fuse receptacles should be conveniently and readily accessible without the removal of units or other parts.

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