

Extension Bulletin E-389
HOME AND FAMILY SERIES

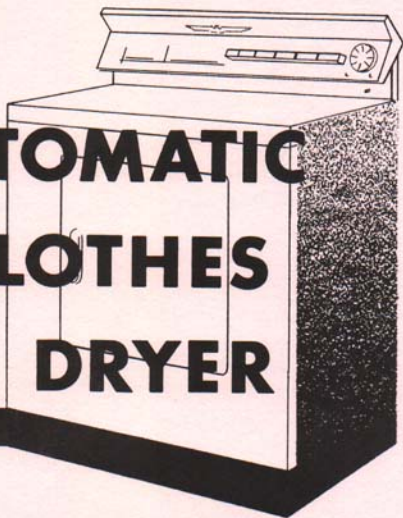


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Choosing and using

● **YOUR**

**AUTOMATIC
CLOTHES
DRYER**



Michigan State University
Cooperative Extension Service

WHERE TO FIND IT

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DID YOU KNOW ...

that a dryer saves you 12-1/2 minutes for every load of clothes you wash, compared with the time needed to hang and remove these clothes from a clothesline? Add to this the time needed to walk back and forth, and the energy you use in lifting and carrying the clothes. And don't forget the headaches of rainy days or occasional clothesline accidents. With all the convenience offered by a dryer available at your fingertips, it is little wonder that sales have sky-rocketed in recent years.

If you're in the market for a dryer, it will pay you to shop the field. A dryer should last you for 10 years or more. Start by deciding on a price range that will fit your budget, and remember to include installation costs. You can estimate operation costs by checking the rates for electricity and gas in your area.

ELECTRIC OR GAS?

Dryer drying time relates to airflow speed and (1) B.t.u. rating of the gas burner or (2) wattage of the electric element. A big difference among dryers today is the speed of air flow over the clothes. Electric dryers that dry clothes faster have faster air movement provided by a more powerful motor and blowing system. This same difference in gas dryers is provided by B.t.u. gas ratings.

ELECTRIC DRYERS

These dryers can operate on either the 120-volt circuit or the 240-volt circuit.

120 Volt — Every house has a number of 120-volt lines. A dryer which operates at this voltage uses 1650 watts, the full capacity of one line. Therefore it must have a circuit all its own. The 120-volt dryer is always the vented type (see page 2). Because of the low wattage, this dryer takes more than twice as long to dry a load of clothes as models operated at the higher voltage. The longer drying period results in more agitation of the clothes, more friction on buttons. However, research at the U.S. Department of Agriculture¹ indicated that there was little difference in efficiency due to voltage.

New 120-volt dryers, referred to as economy models, are being introduced at very low cost (about \$100). These have price appeal but limited dryness controls and few of the extra features. They cannot be converted to 240-volt models because of their

wiring. They come equipped with a 3-conductor cord and must be connected to a separate circuit and to a ground-type receptacle in the home. You can have a regular receptacle converted to a ground-type receptacle for a few dollars.

Examples — General Electric, Hotpoint.

240 Volt — 240-volt models generally can be wired for 120 volts. Low-voltage wiring is done more often when families are not situated permanently and do not currently have a 240 line installed. At a later date they can use this dryer on a 240 line. Most 240-volt models use 4400-5400 watts—some as low as 3900, others as high as 5600. The prime purpose of a dryer is to dry clothes; therefore, sufficient heat is necessary to do this within a reasonable length of time. A 240-volt dryer is preferred by many because it dries clothes faster. Also, since it has its own separate circuit, it is safer because nothing else can be put on the circuit.

GAS DRYERS

The dryer requires both gas and electricity. Most can be adapted for any type of gas—manufactured, natural, mixed or L.P. Electricity is needed for operating the drum and for controlling the automatic ignition system, the timer, and the light. Any existing 120-volt receptacle may be used provided it doesn't overload the circuit. Both gas and electric dryers do a good job. About the same features are available. Other pointers which follow will help you to decide which is the better choice for you.

¹ See reference

HOW DOES A DRYER WORK

Most dryers are of the tumbler type, front loading, although one manufacturer recently has introduced a top-loading model. Baffles on the inside of the dryer drum help to keep the clothes tumbling. As the wet clothes are tumbled, a fan blows heated air over them. If the clothes are to dry, the steam must be removed from the dryer.

Methods of removing steam and lint vary:

VENT-TYPE DRYERS

These generally are the least expensive type to buy, since no provision needs to be built into the dryer for condensing the steam. However, ductwork to the outdoors can be costly too. As the moist air is forced out of this dryer, it passes through a lint trap. It then flows directly into the room or is vented through a pipe to the outdoors. A competent service representative will install the appliance to an outside venting system according to specifications for length and size of pipe. He will make adjustment for prevailing wind conditions. The lint trap needs to be cleaned after each use.

Example - All manufacturers make one or more vented models.

WATER-CONDENSER TYPE

It isn't always possible to have an outside vent to a dryer. An inside vent adds moisture and heat to the room. Some manufacturers have solved this problem with models that condense the moisture.

In water-condenser models, a steady stream of cold water is used during the drying cycle to condense the steam. The sealed-in air is used over and over. This type is always operated by electricity rather than gas, since gas requires a continuous flow of fresh air for combustion. This type of dryer must be connected to a source of cold water and a drain, since 20 or more gallons of cold water are used per load to condense the steam. Most of the lint is carried down the drain, although some models may have lint traps also. Some lint may cling to the lining of the drum and must be removed at intervals. Because of the moist condition inside this dryer, there is more chance of rusting as the dryer gets older. This type of dryer costs more to operate because of the water used. The water may also create a disposal problem in some locations. Purchase price of this type may be as much as \$100 more than vented models. Logically, you would be more apt

to buy this type only if you couldn't use one of the other types.

Examples - Kenmore, Norge, Hotpoint, Philco, Maytag.

AIR-CONDENSER TYPE

This is similar to the water-condenser type except that no water is needed to condense the steam. A series of tubes, called the filtrator, provides enough cooling surface to change most of the steam to water before the air is reused. There is some escape of steam with this method, but little compared with the vented type. The water that collects in a drip pan must be emptied if it is not connected to a drain. Lint collects on the sides of the tubes and also in a trap which should be cleaned after each use. Purchase price of this dryer averages \$50-\$60 more than vented models.

Example - Frigidaire.



Filtrator.

DRYING CONTROLS

Most dryer loads are made up of a mixture of fabrics and textures. These absorb water in varying amounts and release it at different rates during drying. Turkish towels may hold as much as a pint of water each, whereas synthetic fabrics may hold only an ounce or two. Therefore, for a given drying time, the same load may contain some items that are underdried and some which are overdried.

It is well to remember that all fabrics contain a certain amount of natural moisture. Overdrying may cause wrinkling, yellowing, or scorching because there is no longer moisture present to absorb the heat. Manufacturers are constantly searching for more accurate means to control overdrying. Three methods are currently being used.

TIMERS

Hand-operated timers of the dial type can be set for any length of drying time up to one hour or more. The dryer stops at the end of the selected period. Follow the manufacturer's instructions as a guide to type of fabric and size of load. Your own experience will help you to judge the proper length of drying periods necessary to avoid overdrying.

ELECTRONIC CONTROLS

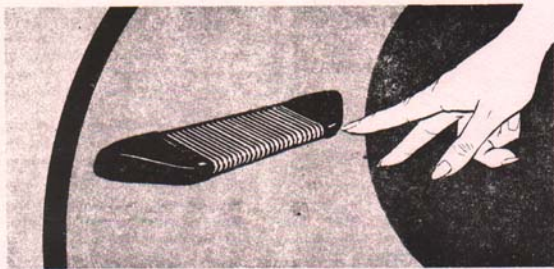
These operate on the basis of the amount of moisture left in the clothes. "Electronic fingers sense" the humidity in the fabrics. As long as there is moisture present in the tumbling clothes, the heat will remain on and the dryer will operate. When drying mixed loads, the faster drying articles are kept moist by the slower drying items. There is less chance of overdrying with this type; the clothes may even feel slightly damp when removed from the dryer.

Example — Maytag, Hamilton

AUTOMATIC DRYNESS CONTROLS

These are designed to measure the temperature of the exhaust air. As long as there is moisture in this air, the temperature remains low. As the clothes dry, there is less moisture in the exhaust air and the temperature rises until the thermostat reaches the predetermined shut-off point.

Dryers on the market have a variety of temperatures available. The number of choices usually increases with the more deluxe models. Settings are usually identified by fabric rather than by temperature. A dryer with only one temperature setting may get too hot for some fabrics. Look for at least two possible choices, low (100°-120° F.) and higher (160° F. +). Some have as many as four settings.



Electronic fingers.

FEATURES

If you can afford extra features on your dryer, select those which will pay their own way. Some features are a "must" for safety or convenience. Others are added attractions, may increase sales appeal, and often add considerably to purchase price.

LINT TRAP

Lint is present on clothes when they are washed. If clothes are hung to dry on a clothesline, the lint blows away. When clothes are dried in a dryer, there must be some method of collecting and disposing of the lint. We know of no research that shows that more lint is created by dryer-drying than by line-drying.

One of the important features on most dryers is the lint trap. This should be easy to reach, empty, and replace. Occasionally lint collects also in other parts of the dryer. If it builds up anywhere it may become a fire hazard. Follow your instruction book for removing accumulated lint or check with your serviceman. If you have a water-condenser-type dryer, lint sometimes clogs the drain and will need to be removed periodically.



Lint trap.

SPECIAL CYCLES

Special cycles are available on many models. These include settings for wash-wear, damp-dry, and others. Most wash-wear cycles provide a cooling period at the end of the drying period to lessen the degree of wrinkling. Many dryers can be operated without heat (often called a fluffing cycle). This is a convenience for drying such items as plastics, for dusting articles such as draperies, or for fluffing pillows or comforters.

SAFETY FEATURES

Whether operated by gas or electricity, a dryer should offer certain protection to the user. All dryer doors have arrangements to switch off the motor and heater in case of malfunctioning parts or when the door is opened during operation. Both gas and electric dryers must be properly grounded to avoid accident in case of electrical shorts.

Look for a gas dryer that is lighted automatically rather than one which must be lighted by a match. Automatic lighting may be done in one of two ways.

- (1) An automatic pilot operates continuously, just as the pilot on a gas range. Cost of operating this pilot may run as high as 30 to 40 cents a month.
- (2) A glow coil is used—this operates electrically. Cost of this latter feature will add to purchase price, however.

Check your gas dryer to be sure there is a safety device to prevent the escape of gas in case the pilot fails to work. If there is any indication that safety features are not working properly on either gas or electric dryer, be sure the fault is corrected before using the dryer again.

MISCELLANEOUS FEATURES

Control panels may be simple or complex. Some top-of-the-line models have fewer control knobs or pushbuttons than less deluxe models. This is due to an added service referred to as "programming" by some manufacturers. By pushing one button, the proper timing and temperature are automatically provided for the whole cycle.

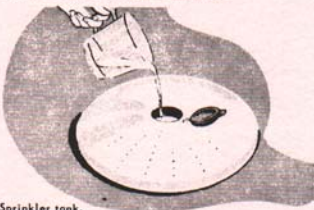
Lights — some control panels are lighted, others not. Some models have interior lights which make it easier to locate small articles.

Finish Signals—bells or buzzers or lights. These are especially helpful at the end of the drying cycle when (a) your dryer is located some distance away and (b) you wish to remove some articles as soon as they are dry. Example: wash and wear items that might have wrinkles set in them by the weight of other clothes on top of them.

Two-speed Drying — provides a choice of two combinations of air-flow speed and air temperature. This design may be especially helpful if you have many large, bulky, highly absorbent loads to dry. **Example — Whirlpool.**

Germicidal Lamps and Fragrant Sprays - examples of the special features which are found on some of the more costly models. These are of questionable effectiveness.

Built-in Sprinkler — found on some of the more deluxe models. Water sprays out from a hand-filled tank onto the dry clothes as they tumble about in the drum. It requires up to 20 minutes of operation for the clothes to become "seasoned."

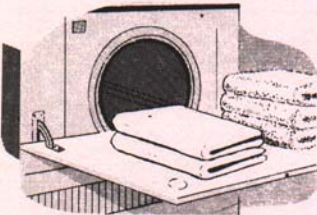


Sprinkler tank.

Models with the damp-dry setting do not require the sprinkler if the dryer is properly loaded and controlled.

Foot Pedal — a help when you approach the dryer with a load of wet clothes in your hands.

Drop-down Door — a convenience when loading or unloading the dryer. The door serves as a shelf.



Drop-down door.

DECIDING WHAT DRYER TO BUY

STANDARD OR DELUXE?

Standard models give you everything you really need in a dryer. From these to the top-of-the-line you are paying for more convenience, more choices, more style. It is worth remembering that the more automatic features there are, the more likelihood there is of service calls, since there are more things to go wrong.

PURCHASE PRICE

You may pay from \$25 to \$60 more for a gas dryer than for a comparable electric model. The average cost of electric dryers in 1962 was \$185. Average cost of gas dryers in 1962 was \$212.² Remember that gas dryers are usually less costly to operate, so within 2-5 years you may be able to offset the higher purchase price.

COST OF OPERATION

Electric and gas rates vary widely in different sections of the country, and often within a state.

Check the residential rates in your community. If you are now using large quantities of either electricity or gas, your dryer might be operated on lower sliding-scale rates.

For example, in case you are using 100 kilowatt-hours of electricity per month, the average U.S. rate for this is 4¢/kwh.³ On the other hand, in case you are using 250kwh. per month, the average U.S. rate is 3¢/kwh. It takes about 2.7 kwh. to dry a standard 8-pound load of cottons. At the 3-cent rate your cost for this would be about 8 cents. A gas dryer uses about 13 cubic feet of natural gas and 1/5 kwh. of electricity, averaging 2 cents per load to operate.

Your monthly operating costs will reflect the number of loads you dry, as well as local utility rates.

20 loads @ 8¢ (for electric dryer) = \$1.60/month
or
20 loads @ 2¢ (for gas dryer) = \$.40/month

^{2 3} See references

COST OF INSTALLATION

Little expense need be added for installing either dryer if gas and electric circuits of the correct voltage are already available at the desired location. If not, you will need to figure an additional costs. Don't forget to count the costs of plumbing also, if necessary.

EFFECT OF A DRYER ON COLORS

Research on dryers by the U.S. Department of Agriculture¹ showed that dyed fabrics, washed in detergent solution and rinsed, were lighter in color when dried outdoors than when dried by other methods (dryer or indoor rack). Color changes in greens and reds were greatest when sun dried. Blues appeared to be most affected by gas drying.

EFFECT OF A DRYER ON FABRICS

This same USDA research¹ showed that:

- Outdoor drying resulted in considerably more chemical damage on cotton, linen, viscose, and acetate than dryer drying. With nylon, outdoor drying and gas drying caused about the same amount of damage, while there was little damage with electric dryers or on indoor racks.
- No one method of drying stood out as causing more or less weakening of fibers.
- Shrinkage appeared to be a little greater with tumbler dryers than outdoor drying. Jersey, however, stretched in all methods.

IT'S UP TO YOU

Your first question really shouldn't be "What kind of dryer should we buy?" but rather "Should we buy a dryer at all?"

Only you can answer this, because you know whether or not you can afford the cost of buying, operating and occasional repairs on a dryer. We think that if you can afford it, you should have one — otherwise not. A dryer will save you time and energy, and it is a convenience. It will do an even better job on some articles than line drying.

R E F E R E N C E S

1. **Automatic Clothes Dryers**, Home Economics Research Report No. 6, 1958 Agricultural Research Service, U.S. Department of Agriculture
2. **Electrical Merchandising Week, 1963 Annual Statistical and Marketing Section**, January 21, 1963
3. **Typical Electric Bills**—FPC-R60, 1961, Federal Power Commission
4. **Consumer Reports**, August, 1961

Other Leaflets in this Series Include:

Choosing and Using Your Automatic Dishwasher, E-388
Choosing and Using Your Refrigerator, E-390
Choosing and Using Your Food Freezer, E-391
Choosing and Using Your Automatic Washer, E-392
Choosing and Using Your Household Range, E-393

For additional information, see the following Michigan State University Cooperative Extension Service Bulletins:
Using Modern Laundry Aids, E-400
Problems in Textile Care, E-401
Easy Care—Do I Select It at the Store, E-402
Shop Labels as Well as Looks, E-403

To simplify information, trade names of products have been used. No endorsement of named products is intended, nor is criticism implied of similar products which are not mentioned.

¹ See reference