Washing Machines

SELECTION AND USE

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Contents

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Washing Machines

selection and use

When the family laundry is done at home, a power-driven washing machine is a major labor saver. Therefore, the purchase of this piece of equipment is an investment that merits careful thought.

Washers are on the market in a wide range of prices. Although higher price tends to go with higher quality, price alone is not a reliable buying guide. A washer that costs three times as much as another may have features that make it worth the added money to some families; but these features may not make it three times as valuable as the other machine to you.

By looking carefully at what the market offers you can size up many qualities that will help you decide the washer to buy. This bulletin is planned to help you to be an observant shopper.

Before shopping, consider your own laundering habits—and your willingness to change them if necessary. Then, when you shop, observe the labor- and time-saving features of the various models and weigh their value against their cost. Consider the space requirement of the washer, the amount of water needed, and installation cost if one is involved.

You cannot tell for sure until you use a washing machine how clean it gets clothes. Demonstrations that show the action in the washer with a few small clean pieces in a full tub do not show the kind of washing job the machine will do. You can ask persons who have a model similar to one you are considering about the performance of theirs. But remember that standards differ; what one person considers adequate washing may be unsatisfactory to another. It is your clothes washed to your satisfaction that is important.

Satisfactory washing requires good management with even the best machine. Some suggestions for good washing procedures are given on page 19.

Types of washers on the market

Two general types of power-driven washers are on the market.

An *automatic washer* washes, rinses, and extracts water from the clothes without attention from the operator.

All other power-driven washers are the noncycling type, referred to in this publication as *nonautomatic washers*. This group includes washers with wringers or spinners and those with no means of extracting water from the clothes.

Which type for you?

Circumstances may decide the type of washer you select. Nonautomatics can be used in any household. Automatics need, for satisfactory operation, certain facilities that are not found in all homes. Also, automatics are more expensive to buy and somewhat more expensive to operate and maintain than are nonautomatics. See the outline on page 3 for the main considerations that may affect your choice.

Obviously, the automatic washer saves the operator more labor and makes it possible for her to spend her time elsewhere while the washing is going on.

In general, machines with spinner extractors—whether automatic or nonautomatic—leave less moisture in the clothes when they are ready for drying than do washers with wringers.

In soil removal, washing action in the automatic washers is generally equal or superior to that in nonautomatic washers.

Automatic washers

Automatic washers vary in design, and each design has its advantages and disadvantages. Designs differ chiefly in three ways—placement of the washer opening, type of washing mechanism, and the cycle of operation. These variations are discussed on the following pages.

Automatics may be used with a great deal less trouble than nonautomatic machines for such articles as rugs, blankets, pillows, stuffed toys—and for dyeing and starching. Consult the direction book of any washer

Items of cost and facilities needed for the two types of washers

Facility or cost	*Automatic washer*	*Nonautomatic washer*
Power	Electricity. A circuit on which no other appliance is used is desirable and sometimes necessary.	Electricity or gasoline.
Water supply	Hot and cold water piped to the machine under pressure (soft water preferable). In general, uses more water for complete laundering job than does the nonautomatic machine, unless clean water is used for each load in the latter. Most combination washer-dryers use additional water for the moisture condensation spray in the dryer exhaust.	Hot and cold water convenient to washer, for ease of operation.
Water disposal	Plumbing facilities for disposal of water drained from the machine. It may be best to by-pass a septic tank with this waste water because of the large volume from several consecutive loads.	Plumbing facilities for draining water desirable, but washer may be emptied by hand if necessary.
Faucets	Separate hot and cold water faucets necessary. Convenient to have both connections left undisturbed from washing to washing.	Mixer faucet connection most convenient.
Installation	Most are heavy, are relatively difficult to move, and are meant to stay in one place. Should be leveled each time washer position is changed.	No special installation.
Maintenance cost. [1]	May cost more to maintain than nonautomatic washers. More complicated mechanical parts to get out of order. Although machine may seldom get out of order, repairs are frequently more costly.	Fewer parts to get out of order. Repair, in general, is not likely to be as costly as for automatics.
Operating expense.	Slightly higher than for nonautomatics, since each load goes through a complete cycle of washing and water extraction in the machine.	Less than other type.

[1] When you consider purchasing any washer, be sure prompt, satisfactory repair service will be available.

you consider to see if the washer will help solve any laundering problems you may have.

Consider the value to you of special features such as a drop-down door that is a scale for weighing the load; dispensers for water conditioner, bleach, detergent, and fabric softener; a lint filter; a sediment ejector; and an immersion heater that keeps water hot during the washing cycle. The last feature adds to the cost of operation.

Front or top opening

The placement of the opening—at the front or top—divides automatic washers roughly into two groups. Each group has advantages and disadvantages to consider along with your own personal preference for the location of the door.

Front opening. Machines with front openings generally use less water for the load washed than do top-opening machines.

The top of some front-opening washers may be used as counter work surface. But the user may have to bend and stretch to get clothes in or out of the washer.

After a high-sudsing detergent has been added and the washing action started it is difficult to open these machines to add or remove clothes without spillage. If trouble occurs so that water extraction does not take place, water spills on the floor when clothes are taken out of the machine.

Only a limited amount of high-sudsing detergent can be used infr ont-opening machines without suds overflowing onto the floor. If clothes are very soiled, it may be impossible to put in as much high-sudsing detergent as is needed. There is, of course, no such limit on the amount of a low-sudsing detergent that can be used.

Top opening. In top-opening machines, pieces may be put in or taken out at any time. If anything goes wrong while a load is washing, clothes may be removed without water overflowing onto the floor.

At these machines the operator may work in a standing position. If a clothes container is placed on a cart near the washer, clothes need not be lifted far to load or unload the machine.

The amount of detergent that can be used is not so limited as in front-opening washers. Top-opening machines, in general, use more water than front-opening machines. Also, the top usually cannot be used as a work

surface without an extra cover. This type washer has the advantage that no floor space is required for opening.

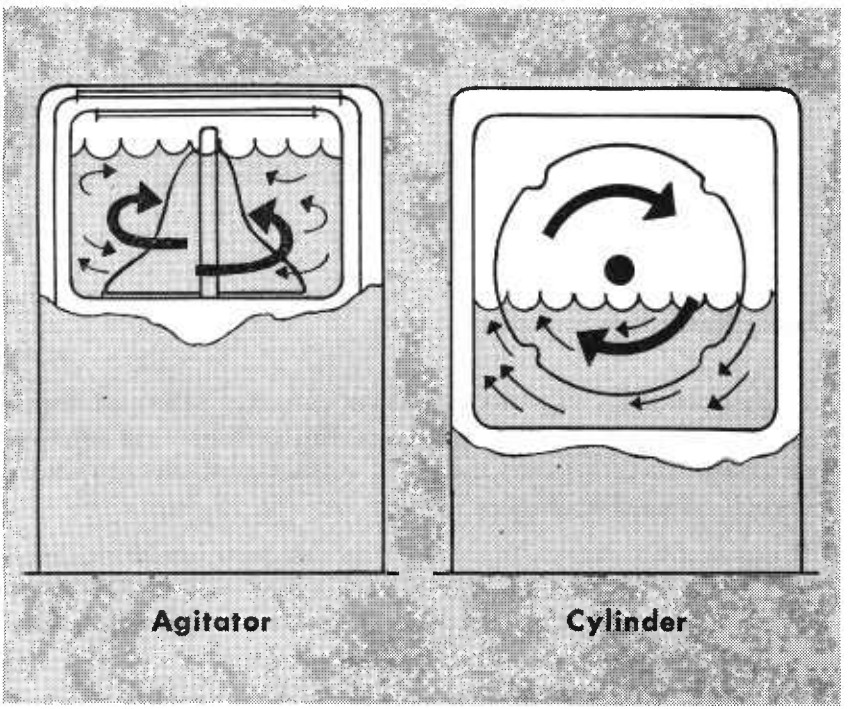
Washing mechanisms

The most common type of washing mechanism—the part of the washer that moves the clothes through the water and water through the clothes—is the agitator. The cylinder is next. Less common are the modified agitator, the blade-free agitator, and the filter-stream tumbler system.

No one type of washing action proved to be consistently better than another in ability to remove soil in work done in the Department's laboratories. For example, the agitator machines studied ranged from best to poorest in soil removal.

Agitator. Most agitators are made up of fins or blades on a cone that fits over a central shaft in the washer tub. As the agitator turns back and forth, the blades or fins catch the clothes and move them about. This movement also creates currents in the water, which contribute to the cleaning action.

There are almost as many agitator designs as there are different washers that use agitators. Agitators have fins or blades of various numbers,



designs, and sizes, which are arranged in a vertical or spiral position. Agitators may be of solid or perforated plastic or metal (usually aluminum).

The modified agitator has rubber-edged disks circling a central shaft. The mechanism moves rapidly up and down and sets up a circular action in the water from bottom to top. Clothes must be carefully loaded into the tub to prevent tangling. The manufacturer gives loading directions.

The blade-free agitator rocks and rolls, causing waves of water in all directions to pass through the clothes and causing the clothes to move around in the tub of water.

Cylinder. This mechanism is a perforated cylinder, usually of porcelain enameled steel, which holds the clothes; it revolves in a larger tub that holds the water. Within the cylinder are baffles, which are projections designed to carry the clothes along, through, and out of the water, until the position of the clothes causes them to fall downward again, and the process is repeated.

In another cylinder type a filter-stream system constantly circulates a stream of water through the clothes as they are tumbled in a rotating cylinder.

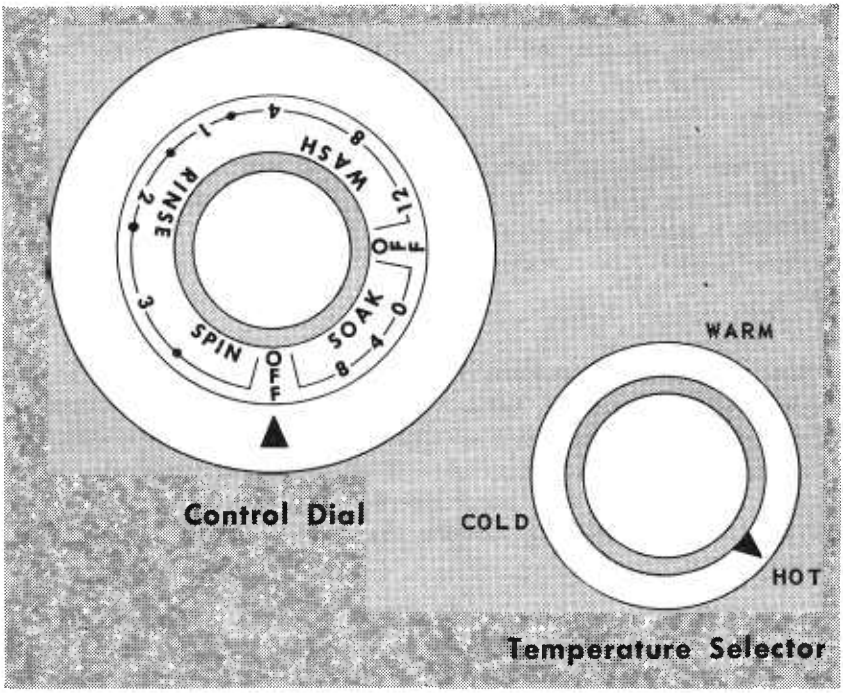
Water extraction

Automatic washers extract water from the clothes by spinning rapidly. The faster the spin is, the drier the clothes will be in a given length of time.

Operation of automatics

Automatic washers offer various cycles of operation. The kind of cycle the machine has may influence your choice, since cycles differ in provisions for soaking, rate of agitation, length of washing time, rate of spinning, and kind and number of rinses.

It is desirable to have a flexible cycle so that parts can be omitted or repeated by resetting the dial after a load has been started. This simplifies the washing of clothes that have varying degrees of soil, and the washing of delicate fabric and such articles as blankets that may need special treatment in laundering.



Soaking. In some machines a separate dial setting is provided for a soaking period. The clothes are moved about in warm water in the same manner as for washing. Water is extracted at the end of the soak period. The dial may have to be reset to start the regular washing cycle. If there is no dial setting for soaking, the "wash" setting can be used with warm water, and after the water has been extracted, the dial reset for the regular wash period.

Washing. On many washers the dial may be set for cold, warm, or hot wash water. On most washers, the cold setting uses cold water from the faucet or mixes the hot and cold to give about 60° F. water; the warm setting delivers water at about 100° F.; and the hot comes untempered from the water heater. On most machines settings for washing time vary from a few minutes up to 10 or even 20 minutes. If desired, the time can be lengthened for most washers by resetting the dial before the wash period is over.

There is more than one water level in some washers for wash loads of different sizes. In some machines the amount of water is automatically

controlled; in others, the first filling is a separate operation manually controlled so that you may fill the tub to any desired level. Regardless of the water level used, after the agitation starts for the washing, the cycle continues automatically.

On some washers provision is made for the reuse of the suds water. The water is drained into a tub close by and, with the auxiliary hose provided, is drawn back into the washer to be used for another load of clothes. This can be repeated as long as it seems desirable to reuse the water.

Rinsing, water extraction. Washers provide a choice of warm or cold rinsing and in some cases, hot as well. Often, the choice is determined when the wash temperature is selected. In many washers the cycle is a combination of spray and deep agitated rinses, with sprays during water extraction. In some, the water overflows during the agitated rinse, carrying away any floating particles that might otherwise be deposited on the fabrics.

Some washers have signals such as bells or lights to indicate the end of the final water extraction.

Washer-dryer combination

A washer-dryer combination is the newest home laundry appliance available. This is a front-opening, cylinder-type, automatic device in which the clothes are washed and dried in a continuous operation. Either washing or drying may be done separately.

Generally, the cylinder of the combination machine is larger in diameter than a usual washer cylinder, as extra space is needed for movement of the clothes and the air during drying. The larger cylinder and more numerous mechanical parts often require a larger cabinet than the washer alone, but the floor space needed is less than for the two separate appliances.

Both gas-fired and electrically heated models are available; the latter needs 240-volt installation. Some washer-dryers are designed for installing under a counter.

If either the washing or the drying unit in a washer-dryer combination becomes permanently inoperable and the whole unit must be replaced,

the cost will be more than had a separate washer and a separate dryer been in use and one of them needed replacement.

In most washer-dryer combinations the moist hot air from the drying load of clothes passes through a cold water spray which condenses the moisture. This condensation with the lint is carried down the drain. The water used in the spray (in most cases 15 or more gallons per load) not only adds to the cost of the operation of the machine but deserves particular consideration if the water supply is limited.

Nonautomatic washers

Water extracton

Nonautomatic machines differ chiefly in the way in which water is extracted from the clothes. The two main types are those with spinners and those with wringers.

Spinner washers. The spinner, a metal basket, usually perforated, has its own tub separate from the washer tub; the water is extracted from one load of clothes while another is being washed. As the spinner whirls at high speed, the water is forced from a whole load of clothes at one time. The water goes back into the washer or is drained out of the machine. Most spinner baskets can be used for rinsing. For rinsing in the spinner, the clean rinse water from the faucet is forced through the clothes and out through the drain.

Advantages.—The spinner can extract water from anything that can be washed in the washer.

Spinner leaves napped surfaces, such as those on blankets and bath towels, soft and fluffy.

Disadvantages.—Needs careful loading to equalize load in spinner basket to minimize vibration during the spin.

Weight of wet clothes must be lifted into the spinner.

Usually more expensive than wringer type.

Takes up more space than wringer type, a disadvantage if storage space is limited.

Wringer washers. With wringer machines, the clothes must be handled piece by piece after each washing and rinsing.

Following are listed the main advantages and disadvantages of wringer washers.

Advantages.—Helps lift clothes out of water after they are started through the wringer.

Usually less expensive than spinner type.

Smaller in overall dimensions than spinner-type machine, an advantage if storage space is limited.

Disadvantages.—Large buttons are likely to break and some buttons pull off if they are put through the wringer; heavy buckles and zippers may leave marks on the wringer.

Wringer may be dangerous if not used properly.

Pieces must be handled individually or a few at a time when they are put through the wringer.

Wringer leaves considerable amount of water in clothes.

Some fabrics are left with undesirable wrinkles after wringing, especially if they are not put through carefully.

Clothes can wrap around the wringer and be torn.

Some bulky washable articles cannot be put through the wringer.

Washing mechanisms

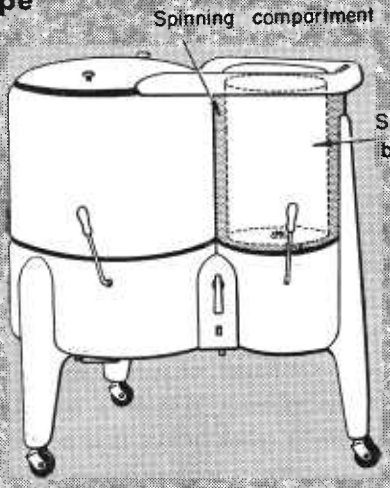
Most nonautomatic washers have agitators similar to the one that is illustrated on page 11.

Some machines can be operated at more than one speed of agitation. This allows a slow, gentle handling of fine fabrics, and a more vigorous action for sturdier clothes.

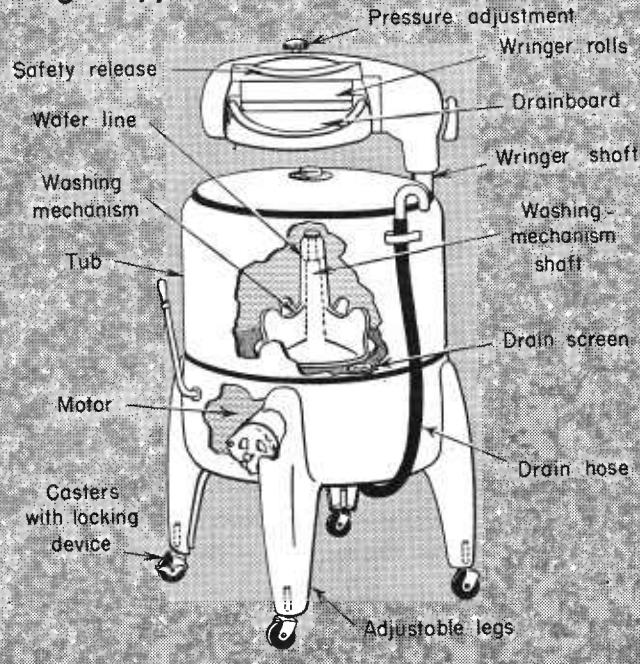
Points to check when buying

Spinner machines. Because the spinner basket is designed to be used for rinsing, be sure you can make the proper connections with your water system. A mixer faucet with a threaded fitting to which the hose from

Spinner Type



Wringer Type



Main parts of nonautomatic washers. Parts on all wringer or spinner washers are like or similar to those shown on drawings.

the washer may be screwed is the simplest connection. If there is no mixer faucet, a Y hose may be used, with each of the two arms of the Y fastened to one of the faucets and the stem leading into the washer.

If the spinner basket must be removed for oiling, be sure it is easy to remove.

Wringer machines. Look first for safety features on the wringer. Check the emergency release that loosens the wringer pressure. This release should be easy to reach from any position at the machine and should respond to light pressure. On some wringers the emergency release completely stops the wringer action; this is an excellent feature. The release should not be so large, of such a shape, or in such a position that it hides either of the rollers. If it does, an article of the wash may wrap several times around a roller before it is noticed; unwinding such a piece is often difficult, sometimes impossible without removing a roller.

Some wringers stop with either a slight pull on the clothes as they go through the rollers, or with a push on the wringer itself. This push or pull changes the position of the wringer on the shaft so that it is thrown out of gear.

Make sure the controls for both forward and reverse wringer action are easy to reach and operate.

Rollers may be hard or soft rubber; sometimes the lower one is hard and the upper one soft. Large, soft rollers are easier on buttons and fasteners, adjust readily to different thicknesses of material, and do not make deep creases in fabrics.

On some wringers the pressure adjusts automatically to the thickness of the material being wrung. Others have a hand screw on top of the wringer to regulate the pressure; some of these have an indicator that shows the setting for different fabrics.

With the washer empty, check the different positions in which the wringer will swing. If the machine is poorly balanced, the wringer swung directly away from the tub may upset the machine.

Drainboards that adjust automatically to drain water from the wringer are now standard on wringer machines. The drainboard should have rounded edges and corners, and smooth surfaces to prevent catching or snagging of fabrics.

All nonautomatics. Check the following features on a nonautomatic machine before you buy.

Motor switch.—A switch that turns the motor on and off is convenient. Without such a switch the motor starts as soon as the cord is plugged into the outlet.

Tub drains.—Washer tubs may be emptied by a gravity drain or by a motor-driven pump.

A gravity drain empties from an outlet in the bottom of the tub. If the tub empties into a floor drain it is convenient to have the tub outlet threaded for a hose connection, so that a hose can carry water directly into the drain.

A motor-driven pump adds to the cost of the machine, but saves energy and time. It also keeps water off the floor. A wet floor is hazardous to work on; it may be slippery, and it increases the danger of electric shock to the worker.

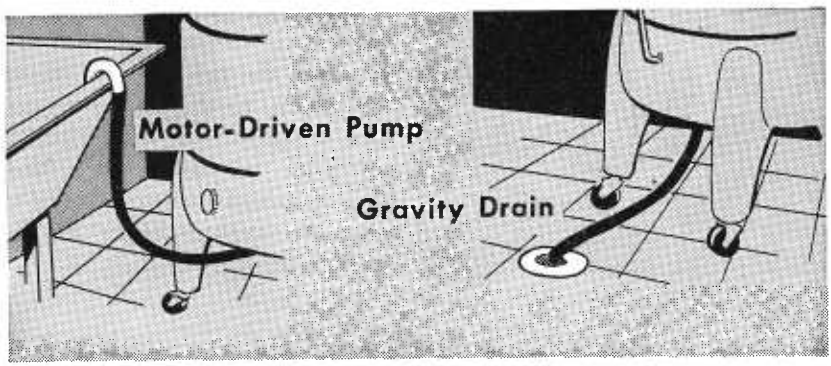
Have your dealer give you a demonstraton of how well the tub drains. If it does not drain completely, extra care will be needed to get the suds and water out and the tub clean.

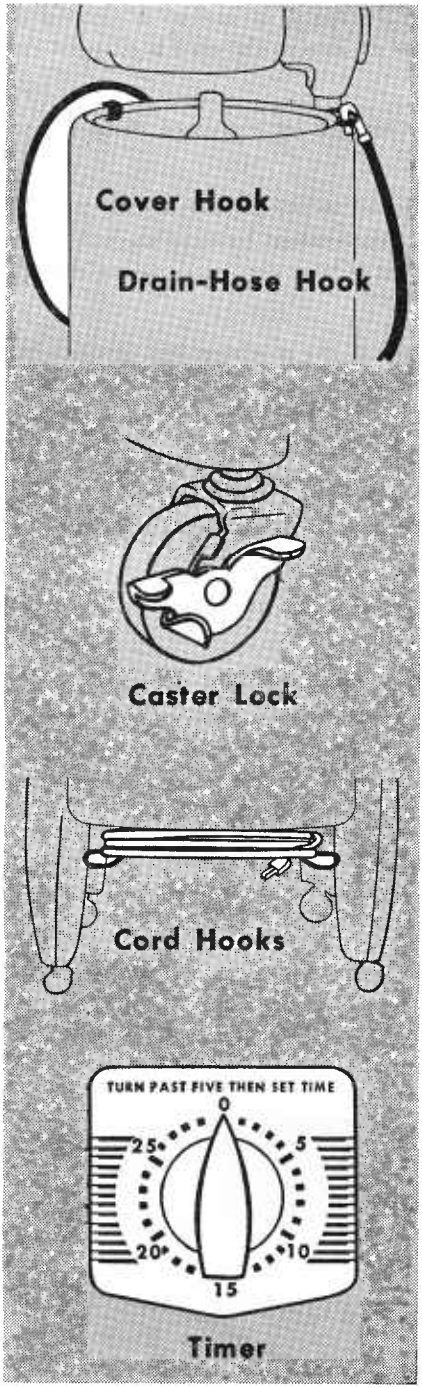
Most drain openings have a screen or strainer to prevent lint, buttons, and small articles from entering the drain.

Cover.—A rubber gasket on the lid protects its rim and makes the lid fit snugly in place to help keep water from splashing out of the machine. A removable cover should have a hook for hanging on the side of the machine. Some hinged-on lids can be used as stationary clothes trays.

Legs.—Adjustable legs, which allow for raising or lowering the tub to suit the person using the machine, are desirable—especially for very tall or very short persons. Adjustable legs also provide a way to level the machine if legs are not equipped with self-leveling casters.

For a washer that is moved each time it is used, large rubber-covered, swivel casters make rolling simple, cause less marking of the





floors than small casters. A locking device on two casters will help keep the machine stationary during use.

On a spinner machine, caster locks will keep the machine from moving across the floor as the extractor spins. If there is no locking device, you may want to use caster cups under the legs.

Cord holder.—Look for hooks under the edge or on the side of the machine to hold the cord so that it will not be sharply bent or become kinked when not in use.

Waterline.—It is helpful to have the waterline of the machine clearly marked and in a position so that it can be seen from any place one might stand to fill the tub.

Timer.—A device that stops the washing action or signals at the end of a preset time may be helpful, especially if you wish to leave the washer while it is in operation.

Portable washers

Portable machines on the market hold 2- or 3-pound loads, and are handy for baby's washing, lingerie, or other light laundry. In some, the tub spins to extract the water; some have hand-operated wringers; and some have no provision for water extraction. These washers are not intended to wash the average heavy load of family washing.

Points to check on all washers

Whatever type of washer you are buying, check the following items.

Water needed. If water is scarce, expensive, or difficult to pump, or if heating water is inconvenient or expensive—the amount of water the machine uses will be important. Ask your dealer how much water it takes to fill the tub of a nonautomatic machine—how much an automatic washer uses in its complete cycle.

The amount of water required for one filling of the tub in different washing machines ranges from 3 to 20 gallons. Laboratory tests show no definite relationship between effectiveness of washing and the amount of water the washers use.

Capacity. Most family-size washers are rated by the manufacturers as having a capacity of 8, 9, 10, or 12 pounds of dry clothes. Laboratory studies have shown that most machines give better washing results with a 6-pound load than when the washer is operated with the manufacturer's rated load.

One manufacturer makes a double-capacity nonautomatic machine with two washer tubs and a wringer between the tubs. In this machine two loads can be agitating at the same time. This arrangement eliminates some handling of clothes during laundering and can shorten the total time the task requires.

General workmanship. A well-built washer, whatever the type, is made from sturdy materials that are well-braced and welded. It is free from sharp edges and rough screw and rivet heads that might tear clothes. Parts that come in contact with clothes are rustproof. Gears are enclosed so that nothing can get caught in them. Tub and motor are mounted on rubber or hung on springs to lessen vibration and noise.

Placement of controls. All controls on a washer should be easy to reach and operate—and the purpose of each one should be clearly indicated.

Tub materials. For the tub that holds the clothes, porcelain enameled steel is the most commonly used material. It is easy to clean, moderate in cost, attractive, and fairly durable. It is usually white, although some automatic washers have dark blue or black enameled tubs.

White enamel has no special advantage over dark blue or black other than appearance. Porcelain enamel is glass fused on a metal base; it may crack or chip from sharp blows. Such damage cannot be repaired satisfactorily.

Aluminum, stainless steel, and nickel-copper are sometimes used for the tub. These materials are long-wearing, sturdy, and more expensive than porcelain enameled steel. Aluminum, if not processed by the manufacturer to resist discoloring, may become gradually dark from soapy water. This will not affect washing results in any way. Stainless steel and nickel-copper are easy to clean and keep their luster even with long use.

Outside finishes. The outside of most washers is a special housing or cabinet that encloses the washing tub or tubs. This housing usually is synthetic enamel on sheet metal. The enamel scratches and nicks rather easily but it can be touched up at home to keep a satisfactory appearance and protect the base metal from rusting. Some cabinets are made of porcelain enameled steel.

Motors. The motor in most electric household washers is ⅓-horsepower; in a few it is ¼-horsepower. The motor is placed where it is shielded from water, grounded, and insulated from the metal of the machine. A sealed-in lubricant that permanently oils the machine is especially desirable.

For homes without electricity, some manufacturers of nonautomatic washers make a model exactly like their electric machine, except it is powered by a gasoline engine.

The warranty. Buy the product of a reliable manufacturer. Most manufacturers furnish with the washer a warranty of the materials and workmanship in the machine for a specified time—usually for 1 year from purchase and only to the original purchaser. Certain machine parts may have a longer coverage. Also, some manufacturers have a kind of insurance on some washer parts, for which the buyer pays a fee and receives certain repair and replacement services within a set time without further cost.

Read carefully and understand the warranty on the machine you buy, so that you know what to expect in the way of repairs or replacement at the manufacturer's expense. Since servicing is usually supplied by a local dealer it is wise to buy from a dealer with a dependable service department that can take care of repairs promptly.

Underwriters' approval. Look for the seal of the Underwriters' Laboratories on any washer you buy. This assures you that the washer

has fulfilled the Laboratories' specifications for electrical safety. It means the washer is made of suitable materials assembled with satisfactory workmanship. If the washer has a wringer, the seal also assures you that the wringer is provided with safety features that reduce the likelihood of accidents.

Care and use of your washer

Study the booklet and any other literature that comes with your washer. It may be helpful to keep a list of the important steps in the use and care of the washer near the machine.

Following are some general care pointers that apply to most washers. The manufacturer of your machine may give others.

- Tighten bolts and screws in the washer frame from time to time.
- If the machine needs to be oiled, follow the manufacturer's directions. Keep a tag on the washer showing where and how often to oil and the kind and amount of oil to use. Note on this tag the date of the last oiling.
- If the washer gets tipped or damaged so that oil may have spilled from around the gears, have the machine checked by a reliable serviceman.
- Casters need to be oiled often because they get wet frequently. Oil only metal parts of the caster. If oil spills on rubber, wash it off with warm water and soap, then rinse and dry the rubber.
- Don't put off needed repairs; they may become more serious. Have repairs made by a reliable serviceman.
- Frequent waxing helps preserve the appearance of the outside of the washer.

When you wash

Safety first. When you connect or disconnect the washer cord, stand on a dry floor and be sure your hands are dry. If the floor is damp, stand on a dry rubber floormat. Connect the plug to an appliance outlet or to a porcelain lamp socket or other approved nonmetallic socket—never to an ordinary metal light socket. Grasp the plug, not the cord, when you make or break connections.

If the floor is wet wear rubbers or stand on a dry floormat when you work around an electric washer.

Keep the cord off the floor; it may be damaged if the washer is rolled over it. Keep the cord clean and away from heat, direct sunlight, and oil. Maintain cord and plug in good condition at all times.

If operation of the washer should cause a fuse to blow, replace the fuse with the size required by the wiring in the circuit. Do not use a fuse of higher ampere-rating than required; this might allow too much current to be drawn by the motor and thus damage it before the circuit is broken.

Automatic washers. Your instruction book is your guide; follow any special instructions for use of your particular machine.

Nonautomatics. Follow your instruction book. If machine is stored in a cold place let it stand for some time in a warm room before washing to give grease and oil time to soften. Then there will be less chance of blowing out a fuse or burning out the motor when the machine is started.

See that the washer tub is level and the casters locked or fixed in caster cups to keep the machine stationary.

After washing

For *automatic machines*, turn off water supply to machine as soon as washing is finished. Continuous water pressure may weaken the valves and cause leaking. Most automatic machines are self-cleaning. If a machine has a trap for catching lint and sediment, clean the trap frequently. If washer is ever subjected to freezing temperatures, be sure all water is out of valves and hoses.

A *nonautomatic washer* should be cleaned thoroughly after the last load has been taken out. Unless the manufacturer specifies not to do so, take out the washing mechanism and wash it inside and out. Dry thoroughly. If there is a hard-water deposit on the tub, try to remove it with soap and water. If that doesn't work, use a cloth dipped in a strong solution of water softener. Never scour with an abrasive. Remove any lint or other material from the drain screen or trap. See that the tub is clean and dry inside and out. Lower the hose to drain all water from it.

Disconnect the electrical cord. Place the washing mechanism in the dry tub, leaving it off the shaft if possible.

Release all pressure on wringer rolls and leave them clean and dry. Rollers left together under pressure may develop flat spots where they touch and the rubber may stick and tear.

Some spinner baskets should be removed and the shaft oiled each week.

Store the machine with the cover slightly ajar so that air can circulate. If it must be stored in a dusty location, cover it with a dustproof cover after it is dry. Store the machine where it will be out of the way and protected from extreme cold.

Good washing procedures

Whether your machine washes clothes to your satisfaction or not depends in part on the way washing is managed. With poor management, the best machine may turn out a dingy wash.

No matter what type of washer the operator uses, she must still give special attention to prewashing tasks. The operator must pretreat stains and areas of concentrated soil, sort the clothes into loads, and select water temperature, amount of detergent, and washing time to suit the load and the machine. In some cases the operator must turn the control when the desired amount of water is in the machine; sometimes, also, she must reset the control after clothes are soaked.

Following are the steps for effective washing in any machine.

Sort clothes. Sort according to suitable wash water temperature, color of fabrics, amount of soil, and treatment to be given. Some resin-treated wash and wear fabrics should not be chlorine bleached. Many fabrics of white or light colors, especially of man-made fibers, pick up color easily, so should not be mixed in a load of colored fabrics, even though the washing procedure is the same. Some small, delicate, and stringy items are handled safely in the machine if enclosed in a mesh bag.

Group clothes of each sort into washer loads. Do not wash a larger load than recommended for your machine. In most cases a 6-pound load will wash better than a heavier load.

Three sample 6-pound loads:

1 sheet	2 sheets	3 sheets
4 bath towels	4 bath towels	4 bath towels
2 pillowcases	2 shirts	
1 wash cloth	2 pairs pajamas	
1 shirt		
1 pair pajamas		
1 slip		
1 laundry bag		
1 potholder		
2 handkerchiefs		

Remove stains. Stains are best removed when they are fresh, and always before the clothes are washed. Water and detergent may set the stains so they can never be removed.

Soak. For best results, soak clothes that are heavily soiled or that have hard-to-remove soil. The soaking method and length of soak depend on the condition of the clothes. Soak in the machine, in a pail, or in the laundry tubs. Use clear water or slightly soapy water—either cold or lukewarm.

One of the methods found effective in the laboratory was a 10- to 15-minute agitated soak in the washing machine, with lukewarm (100° F.) water and about half as much detergent as is needed for washing.

Start the washing. In the order recommended by the manufacturer fill the machine with water, add detergent, and load clothes in the washer.

Use a measured amount of soap or synthetic detergent. If water is hard, it is less expensive to add a water softener before the soap is put in—or to use a synthetic detergent made for use in hard water—than it is to try to soften the water with soap.

The amount of detergent needed depends upon the amount of water, quantity of clothes being washed, amount of dirt in the clothes, hardness of the water, and type of detergent. Try first using the amounts and kinds of detergents recommended by your washer manufacturer. If no special detergent is recommended, write the manufacturer for advice and adjust the amount to your own needs. Or experiment with different detergents in different amounts. Some washers give much better results with low-sudsing than with high-sudsing detergents.

Time the wash period. Use the timer if your machine has one—or use a clock. A load of family laundry is usually clean after a 10-minute wash. However, some lightly soiled loads may wash acceptably in less than 10 minutes; heavily soiled loads may take longer. If clothes are very dirty, a second wash in clean suds is more effective than prolonged washing in dirty water. Performance varies from washer to washer, so experiment with yours to find the time it takes for various degrees of soil.

Extract water, rinse. A good job of extracting water after washing is a good start for the rinsing of clothes.

Rinsing is done to remove the detergent and dirty water; the more thorough the rinse, the cleaner the clothes. A poor rinse often results in the yellowing of white fabrics.

One good way to rinse with a nonautomatic washer is to fill the washer tub with cool or lukewarm water, add the clothes, and agitate them for at least 3 minutes. All automatic washers provide at least one deep agitated rinse. If rinsing is done by hand in laundry tubs, make it a real rinse by moving the clothes about in an abundance of water long enough to insure removal of the detergent.

A second rinse is good practice, especially if clothes are hand-rinsed and if the rinsing water is used for more than one washer load of clothes.

Extract as much water as possible after each rinse.

More Information

Listed below are other publications of the U.S. Department of Agriculture that may help you with various laundry problems. The publications listed are available from the Office of Information, U.S. Department of Agriculture, Washington 25, D.C.

Detergents for Home Laundering, G–49.

How to Prevent and Remove Mildew: Home Methods, G–68.

Removing Stains From Fabrics: Home Methods, G–62.

Your Farmhouse: Planning the Kitchen and Workroom, G–12.

Growth Through Agricultural Progress

U.S. GOVERNMENT PRINTING OFFICE: 1961