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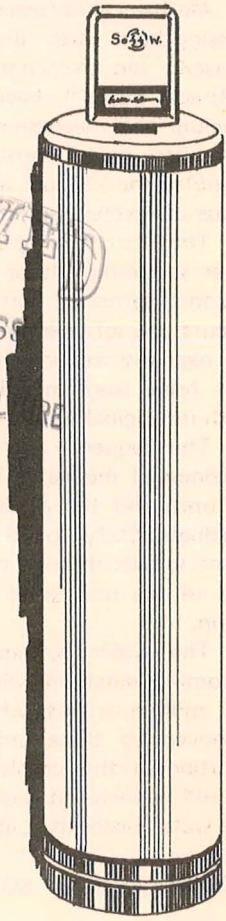
Shopping for a Mechanical water Softener



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SHOPPING FOR A Mechanical Water Softener

By Mrs. Clara N. Leopold
Extension Home Management Specialist

The most practical solution for treating hard water is a mechanical water softener connected at the main water line to remove minerals that cause hardness. Such equipment can be bought outright or rented from a local water softener dealer.

Mechanical softeners operate on the principle of passing hard water through a tank containing high capacity ion exchange resins (often referred to as "Miracle Beads"), having properties to remove the calcium and magnesium ions that harden water. As the water passes through the bed of tiny, beadlike granules the calcium and magnesium ions from the water are exchanged for sodium ions.

The life of ion-exchange beads is limitless but after softening a large quantity of water, the beads become saturated with hardness ions. When this occurs, the softener must be regenerated. This is done by regularly treating the resin tank with an ordinary salt brine (sodium chloride) to replenish the resin with its original supply of sodium ions.

The frequency of regeneration depends upon the hardness of the water, the amount of water used, size of unit, and the capacity of the resins to remove hardness. Sixty to 75 minutes are required for the brine to pass through the unit and to flush the brine out of the unit, after which soft water is available again.

The water softener tank is installed on the incoming water line. Small amounts of iron (2 parts per million or less) which cause "redwater" can be removed by these units but for a more effective solution of this problem and for corrosion, a filter should be installed ahead of the softener unit before the water passes through the softener.

ADVANTAGES OF SOFT WATER

For housework—no bathtub ring, no spotted fixtures, no hard water stained sink, no streaking and clouding of glass and silver. Less cost for cleaning

materials.

Personal grooming—really clean hair, without special creme rinse; comfortable skin after bath; and easy shaving.

Household equipment protected—hard water scale reduced to a minimum in furnace boilers, water heaters, water pipes, bathroom fixtures, automatic washers, dishwashers and dryers. Efficiency increased and life lengthened; smaller plumbing, repair and fuel bills.

In the laundry—soft water eliminates insoluble soap curd which makes clothes grey, stiff and harsh. Reduces amount of cleaning agent and laundry aids needed, saving money, time, energy and fabrics.

TYPES OF SOFTENERS

For the home, two basic types of softening units are available today—the single tank unit and the two-tank brine model.

With *the single tank unit* it is necessary to put the salt required for each regeneration directly into the tank and to flush it through the softener by operating the valves by hand. This usually takes about 30 minutes of the operator's time.

To regenerate with *a semi-automatic unit,* water is turned off, salt is poured in and a timing device is set. The water is again turned on. It isn't necessary for the operator to return to do anything further.

The *two-tank model* is made up of a main tank containing the ion-exchange resin plus a brine tank. Salt for several months' use is stored in the brine tank.

With a two-tank model a fully automatic clock timer is set at the time of installation for a given day and hour, according to family needs. The unit operates automatically to regenerate before the resin bed is completely exhausted, turning the proper valves at the right time. This is usually during the night when no water is being used. The householder has nothing to do about it except to keep the brine tank filled with salt. If more water than usual is used the period between regenerations can be changed by adjusting the timer.

Some companies offer an automatic model that operates with a sensor rather than a clock timer. With a sensor the unit regenerates when the ion beads reach a certain density of "hardness" regardless of time—in other words, the resin bed has been exhausted. There is one disadvantage to this:

regeneration can come during a peak use of water, filling water line with hard water.

DETERMINING SIZE

Do you really need a water softener? Is your water hard enough to justify the investment? Most of the state of Nebraska has hard or very hard water, and some areas are also plagued with iron in the water.

Degrees of Hardness				
Relatively Soft	Moderately Soft	Hard	Very Hard	Extremely Hard
1-3 grains per gallon	4-7 grains per gallon	8-12 grains per gallon	13-20 grains per gallon	21 and over grains per gallon

Water containing more than three grains of hardness when used with soap will result in the formation of objectionable insoluble soap deposits.

The capacity of the softening unit is determined by the hardness of the water and the amount of water used. The first step in selecting a softening unit is to obtain a water analysis to determine the kind and amount of minerals in your water supply. The local dealer in water conditioning equipment will test your water for hardness. It has been estimated that for most families the water requirement is 50 gallons of water *per person* per day, or 350 gallons per week. If the water is 20 grains hard and there are 4 persons in the family, the capacity would be calculated as follows:

Gallons per person (average use per week) . .	.350
(Add 10% for each appliance that uses large quantities of water)	*
Total water per person	.350
Persons in the family	X4
Gallons of water for one week	1400
Grains of hardness	X20
Grains softening capacity indicated . . .	28,000

*Laundry is already included in the 350 gallons per person per week.

For the above calculation, at least a 30,000-grain or more capacity should be selected to assure an adequate soft water supply, requiring regeneration once a week. A smaller unit, say 20,000-grain capacity, could be used if you plan to regenerate twice a week. Actually a wise buy would include future needs, and the difference in initial cost is relatively small. Thus a unit 50% larger than calculation might be a better buy.

For the ultimate in soft water both hot and cold lines should be softened. It is advisable, however, to omit it on the cold water line in the kitchen because:

(1) There may be someone who is on a restricted sodium intake.

(2) Household plants and fish cannot tolerate sodium.

Of course outside outlets for sprinklers, etc. should by-pass the softener because of sodium content.

COSTS INVOLVED

Initial purchase cost depends upon type and size of softener selected. A good quality unit can usually be purchased at a price ranging from approximately $250 to $450.

Rental and service systems range from $5.00 to $7.00* per month, based on quantity and hardness of water to be softened.

Continuing cost is the nominal expense of salt for regeneration.

WHICHEVER TYPE YOU CHOOSE

1. Buy a recognized brand.
2. Buy from a dealer you know and trust.
3. Send the warranty card to the manufacturer—note exactly what the warranty covers.
4. Check on the availability of a qualified serviceman for repairs when needed.
5. Make sure whether price includes delivery and installation.
6. Read the instruction book; keep it handy; refer to it often—and follow the instructions.

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*There may be some variation from area to area.