

Quick Facts

Three major types of water treatment devices are available—filters, distillers and softeners. Distillers can almost purify water and eliminate the need to purchase bottled water. If home drinking water quality needs improvement, the advantages of distillers and filters should be compared before making a purchase decision. Distillers vary from small, round units that distill less than one quart of water per hour to rectangular carts that distill about one-half gallon of water per hour.

Three major types of water treatment devices are available—filters, distillers and softeners. Distillers are discussed in this fact sheet. More information on filters can be obtained in Service in Action sheet no. 9.728.

Distillers can almost purify water and eliminate the need to purchase bottled water. When the distiller is operating, tap water in a tank (often made of stainless steel) is heated to boiling to kill bacteria and viruses. (See Figures 1 and 2.) Steam is produced, rises and leaves impurities behind. The steam then enters condensing coils where the steam is cooled by air or water and is converted back to water. Distilled water then goes into outside storage or is dispensed from an interior storage tank through a faucet.

Designs and Weight

Distillers vary from small, round units (Figure 1) that distill less than one quart (1 liter) of water per hour to rectangular carts (Figure 2) 34 inches (86 centimeters) high, connected to an electrical circuit but with no plumbing, which distill about one-half gallon (2 liters) of water per hour.

Weight varies from five pounds (2 kilograms) for counter-top units to 70 pounds (32 kg) or more for the carts.

Wall-mount brackets are available for some lightweight units.

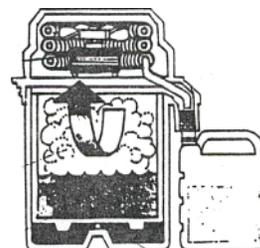


Figure 1: Small distiller.

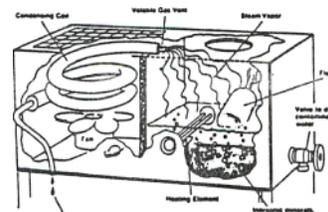


Figure 2: Rectangular cart distiller.

Features

Reservoirs: number and capacity. Most distillers have one water reservoir. A few have two connected to the unit. The capacity of the reservoirs varies from 1½ to 15 gallons (6-57 liters). The reservoir usually is made of stainless steel.

Storage containers. Glass jars are attached to the unit on some models. Other units have a metal tank into which the condensed steam drips. A third type of container is a plastic bottle. The containers hold from 1½ to 3 gallons of water (6-11 liters). Each type of storage container is satisfactory when cared for as the manufacturer directs.

Automatic features. Reset switches and timers make automatic operation possible on some installed models. These features may be desirable when distilled water is used continuously.

Other. All distillers should be Underwriters Laboratories (UL) listed. The warranty may be limited or full.

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Location. Freestanding distillers can be placed on a counter or on the floor near an electric outlet. Some models can be located in a basement, utility or other room remote from the discharge pipe if a faucet is placed at a sink with a demand pump (forces water to faucet when tap is opened).

Installation. A unit with an electrical rating of 1500 watts should be connected to and used alone on a 20-amp circuit. Wattage ratings vary from 650 to 1500 or higher. The models with the higher-wattage ratings are capable of distilling more water per hour than the lower-wattage units.

Distillers are filled in one of two ways manually or by a connection to a water supply line. A discharge line from the units can be connected to a refrigerator, water cooler or fountain with a demand pump option.

Permanently installed water distillers should have a drain opening to remove contaminated water. Two types of drains are available—a faucet or a pipe to a drain. Faucets facilitate draining counter-top units.

Cleaning and Maintenance

Frequency of cleaning the distiller varies with the quantity of impurities in the water. Some manufacturers recommend cleaning the machine after every third distillation. White vinegar may be used by leaving it in the boiling tank overnight, or a special cleaner made by the appliance manufacturer may be used.

Cost

Initial. Cost to purchase a distiller is much higher than that for a filtering device. Small units (capacity: 1½ gallons, 6 liters) cost \$250 or more. Large units (capacity: 15 gallons, 57 liters) vary from \$450 to \$1,450 in purchase price.

Operating. The wattage rating of the appliance and the local electrical rate determine the cost to distill one gallon (4 liters) of water.

The following formula may be used to determine the approximate cost of distilling one gallon (4 liters) of water using different wattage units.

Wattage rating X gallon (hours) X rate (kWh) = Cost per gallon
Examples are:

<u>Wattage rating</u>		time to distill one	electric	Cost
1000	X	gallon (hours)	X	rate (kWh) = per gallon

$$1) \frac{700 \text{ w}}{1000} \times 4 \text{ hours} \times \$0.068 = .7 \times 4 \times .068 = \$0.19 \text{ per gallon}$$

$$2) \frac{1500 \text{ W}}{1000} \times 1.7 \text{ hours} \times \$0.068 = 1.5 \times 1.7 \times .068 = \$0.173 \text{ per gallon}$$

In order to compare the cost of distilling water at home with the cost and convenience of buying bottled water, the following data are necessary:

Distiller	Bottled water
Purchase price	Cost per gallon
Number of gallons of	Number of gallons of
	water used
Cost of electricity	Transportation or delivery
	charge
Number of years	Containers for
to be used	to be used
Maintenance cost	Miscellaneous items

If the quality of drinking water used in the home needs improvement because it has disagreeable odors and/or tastes or contains minerals (other than calcium and magnesium) at an unsatisfactory level, the advantages of distillers and filters should be compared before making a purchase decision.

Comparison of Treatment Devices

Advantages of Distillers	Advantages of filtering devices
Almost pure water	Lower purchase price
Sodium-free water for those requiring it	Variety of designs, sizes
High quality water for wet batteries and other uses	Some units can retain distinctive flavor associated with minerals in water
No filters to replace	Less maintenance may be required

References

- ¹Environmental Protection Agency, Criteria and Standards Division, Office of Drinking Water (WH-550). "Third Phase/Update, Home Drinking Water Treatment Units Contract." March 1982.
- ²"Home Filters to 'Purify' Water." Changing Times. 35:44-47, February 1981.
- ³Ingersoll, John H. "Water Filters-Should You Install One?" Popular Mechanics. 156:73-81, July 1981.
- ⁴Roberts, Racquel, "Make Your Water Safe to Drink." The FamilyHandyman. 32:30-34, November 1982.
- ⁵"Water Filters." Consumer Reports. 48:68-73, 102, February 1983.