

[Home](#) » Tankless or Demand-Type Water Heaters

Tankless or Demand-Type Water Heaters

May 2, 2012 - 6:47pm

4 2

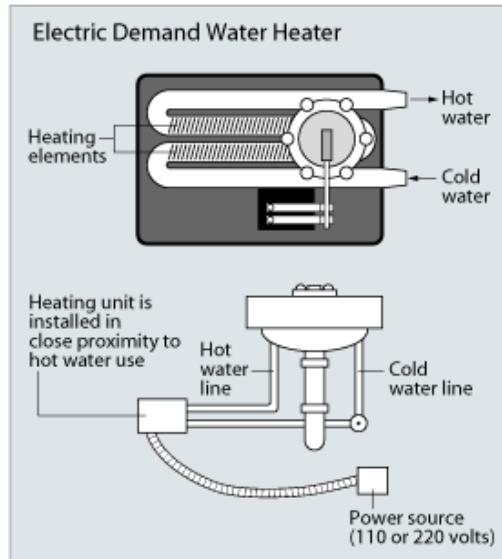


Diagram of a tankless water heater.

HOW DOES IT WORK?

- Tankless water heaters deliver hot water as it is needed, eliminating the need for storage tanks.

Tankless water heaters, also known as demand-type or instantaneous water heaters, provide hot water only as it is needed. They don't produce the standby energy losses associated with storage water heaters, which can save you money. Here you'll find basic information about how they work, whether a tankless water heater might be right for your home, and what criteria to use when selecting the right model.

HOW THEY WORK

Tankless water heaters heat water directly without the use of a storage tank. When a hot water tap is turned on, cold water travels through a pipe into the unit. Either a gas burner or an electric element heats the water. As a result, tankless water heaters deliver a constant supply of hot

RELATED ARTICLES



[Sizing a New Water Heater](#)



[Selecting a New Water Heater](#)



[Tips: Water Heating](#)

water. You don't need to wait for a storage tank to fill up with enough hot water. However, a tankless water heater's output limits the flow rate.

Typically, tankless water heaters provide hot water at a rate of 2–5 gallons (7.6–15.2 liters) per minute. Gas-fired tankless water heaters produce higher flow rates than electric ones. Sometimes, however, even the largest, gas-fired model cannot supply enough hot water for simultaneous, multiple uses in large households. For example, taking a shower and running the dishwasher at the same time can stretch a tankless water heater to its limit. To overcome this problem, you can install two or more tankless water heaters, connected in parallel for simultaneous demands of hot water. You can also install separate tankless water heaters for appliances -- such as a clothes washer or dishwasher -- that use a lot of hot water in your home.

Other applications for demand water heaters include the following:

- Remote bathrooms or hot tubs
- Booster for appliances, such as dishwashers or clothes washers
- Booster for a [solar water heating](#) system.

ADVANTAGES AND DISADVANTAGES

For homes that use 41 gallons or less of hot water daily, demand water heaters can be 24%–34% more energy efficient than conventional storage tank water heaters. They can be 8%–14% more energy efficient for homes that use a lot of hot water -- around 86 gallons per day. You can achieve even greater energy savings of 27%–50% if you install a demand water heater at each hot water outlet. ENERGY STAR® estimates that a typical family can save \$100 or more per year with an ENERGY STAR qualified tankless water heater.

The initial cost of a tankless water heater is greater than that of a conventional storage water heater, but tankless water heaters will typically last longer and have lower operating and energy costs, which could offset its higher purchase price. Most tankless water heaters have a life expectancy of more than 20 years. They also have easily replaceable parts that extend their life by many more years. In contrast, storage water heaters last 10–15 years.

Tankless water heaters can avoid the standby heat losses associated with [storage water heaters](#). However, although gas-fired tankless water heaters tend to have higher flow rates than electric ones, they can waste energy if they have a constantly burning pilot light. This can sometimes offset the elimination of standby energy losses when compared to a storage water heater. In a gas-fired storage water heater, the pilot light heats the water in the tank so the energy isn't wasted.

The cost of operating a pilot light in a tankless water heater varies from model to model. Ask the

manufacturer how much gas the pilot light uses for the model you're considering. If you purchase a model that uses a standing pilot light, you can always turn it off when it's not in use to save energy. Also consider models that have an intermittent ignition device (IID) instead of a standing pilot light. This device resembles the spark ignition device on some gas kitchen ranges and ovens.

SELECTING A DEMAND WATER HEATER

Before buying a demand water heater, you also need to consider the following:

- **Size**
- **Fuel type and availability**
- **Energy efficiency** (energy factor)
- **Costs**

INSTALLATION AND MAINTENANCE

Proper installation and maintenance of your demand water heater can optimize its energy efficiency.

Proper installation depends on many factors. These factors include fuel type, climate, local building code requirements, and safety issues, especially concerning the combustion of gas-fired water heaters. Therefore, it's best to have a qualified plumbing and heating contractor install your demand water heater. Do the following when selecting a contractor:

- Request cost estimates in writing
- Ask for references
- Check the company with your local Better Business Bureau
- See if the company will obtain a local permit if necessary and understands local building codes.

If you're determined to install your water heater yourself, first consult the manufacturer. Manufacturers usually have the necessary installation and instruction manuals. Also, contact your city or town for information about obtaining a permit, if necessary, and about local water heater installation codes.

Periodic water heater maintenance can significantly extend your water heater's life and minimize loss of efficiency. Read your owner's manual for specific maintenance recommendations.

IMPROVING ENERGY EFFICIENCY

After your demand water heater is properly installed and maintained, try some additional **energy-saving strategies** to help lower your water heating bills. Some energy-saving devices and systems are more cost-effective to install with the water heater.

LEARN MORE

- [Selecting a New Water Heater](#)
- [Sizing a New Water Heater](#)
- [Estimating Costs and Efficiency of Storage, Demand, and Heat Pump Water Heaters](#)
- [Reduce Hot Water Use for Energy Savings](#)
- [Water Heating Products and Services](#)

EXTERNAL RESOURCES

[Energy Cost Calculator for Electric and Gas Water Heaters](#)

[Find ENERGY STAR Gas Tankless Water Heaters](#)

[Find a Plumbing, Heating, and Cooling Contractor](#)

[Tankless Water Heaters](#)



Like

4



Tweet

2



U.S. DEPARTMENT OF
ENERGY

[Careers & Internships](#)

[Contact Us](#)

[Email Updates](#)

1000 Independence Ave. SW
Washington DC 20585
202-586-5000

POPULAR TOPICS

Savings
Heating & Cooling
Industrial Heating &
Cooling
Solar
Home Weatherization
Appliances &
Electronics

ABOUT THIS SITE

Web Policies
Privacy
No Fear Act
Information Quality
Open Gov

ENERGY DEPARTMENT

Budget &
Performance
Directives,
Delegations &
Requirements
FOIA
Inspector General
Privacy Program
Small Business

FEDERAL GOVERNMENT

The White House
USA.gov