

original post 2012-4/ updated 2020

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## Review GE Heat Pump water heater/ 2014

[See GE manuals available 2014](#)

**Update: GE heat pump was sold to Bradford White** who now supports the GE heat pump with parts and repair resources.

Bradford White sells an updated version of the GE heat pump called the AeroTherm, available with choice 6 or 10 year warranty. Bradford has both 50-80 gallon tanks using tried and tested GE heat pump design and updated contrls and status codes.

[Which is best heat pump: compares the 4 brands on market 2019](#)  
[Bradford White heat pump manuals 2019](#)



Clean air filter two times per year using water and soft rag  
 Installation requires 10' x 10' room with at least 7" space on back and sides of unit for maintenance.

Federal energy standard April 2015... residential electric water heaters over 55 gallon must be heat pump [Read .pdf](#) ... or can be 80 gallon standard 2-element tank if enrolled in 'demand response program' with local utility. [Read spec sheet](#)

Another option: install 2 heaters. [Read: install 2 water heaters](#)

Large bathtub, whirlpool tub, and walk-in-tub require at least 65+ gallon electric water heater.

Installing any brand heat pump requires 8x10 to 10x10 room, or louvered doors for adequate air supply. If filter is cleaned regularly, then the evaporator coil will not get dirty.

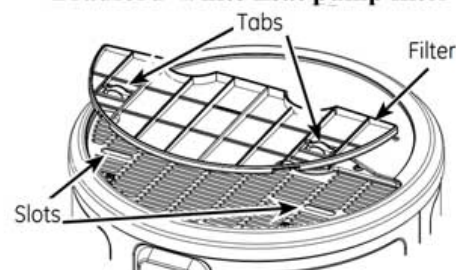
Running unit with dirty filter or without filter will damage equipment and lessen expected energy savings.

Must be clean environment. Must be 7" away from wall for service access. Requires floor drain for condensate.

There are some DIY repairs [Service manual](#)

Must be connected to 208-240 volts, cannot run on 120 volt, 277 volt, 480 volt etc. Electronics are susceptible to surge damage.

### Bradford White heat pump filter



**Floor drain required for condensate**



Gal	Floor to Top	Jacket Dia.	Weight	Filled Weight
<b>GE heat pump</b>				
50	59 3/16	21 3/4	195	607
<b>Bradford White</b>				
50	59 3/16	21 3/4	195	607
80	70 13/16	25	235	898

Water Heater Type	Efficiency (EF)		Installed Cost <sup>1</sup> 2014	DIY install	Yearly Energy Cost <sup>2</sup>	Life (years) <sup>3</sup>	Total Cost (Over 13 Years) <sup>4</sup>	Cost Month	DIY repair?	DIY maintenance	Generic parts?
	New	Old									
Conventional gas storage	.62	0.60	\$850	Y	\$350	13**	\$5,394	34.88	Yes	Yes	M
High-efficiency gas storage	.64	0.62	\$1,025	Y	\$323	13	\$5,220	33.46	Yes	Yes	N
Condensing gas storage	.80	0.80	\$2,000	N	\$244	13	\$5,170	33.14	No	No	N
Conventional oil-fired storage	.68	0.55	\$1,400	M	\$654	8	\$11,299	117.69	Maybe	Maybe	N
Minimum Efficiency electric storage	.94	0.92	\$750	Y	\$463	13**	\$6,769	43.39	Yes	Yes	Y
High-eff. electric storage	.94	0.93	\$820	Y	\$439	13**	\$6,528	41.84	Yes	Yes	Y
Demand gas (no pilot) 5	.82***	0.82	\$1,600	N	\$256	13	\$4,925	31.57	No	Maybe	N
Electric heat pump water heater	***2.20		\$1,660	M	\$190*	13	\$4,125	26.44	Maybe	Maybe	N
Solar with electric back-up		1.20	\$4,800	N	\$175	13	\$7,072	45.33	Maybe	Maybe	M
Passive DIY solar	*** new standards don't go up			Y	*assumes full hybrid only	*** can be maintained to last longer			Yes	Yes	Y
Passive DIY geothermal				Y					Yes	Yes	Y

### Features 50-80 gallon Bradford White AeroTherm heat pump/ same-similar to GE

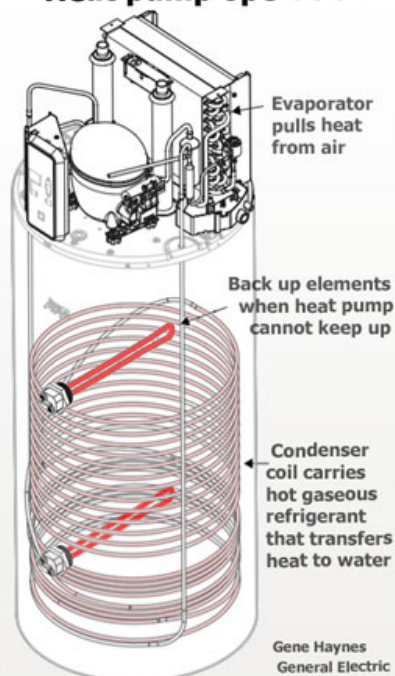
Model	Gallon rating of tank	Warranty: Tank and parts. Labor 1 year all	First hour delivery... 80 gal for oversized tubs	Temp set range	Anode... Prevents tank from rusting	Volt and amp	Elements... can be replaced with any wattage	Optional 8" Duct kit Raises cost of	Water connections	Digital interface... Install whole house surge protector in main panel to protect electronics	Air temp range for Heat pump operation	Sound level when new
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	models						buying						
<b>Bradford heat pump manuals</b>													
Bradford RE2H80 T10	80	10 year Tank and parts <a href="#">Read</a>	87 gal w elements	N/A	Magnesium Shorter life less odor <a href="#">Read</a>	208-240 30 amp 60 Hz	4000 lower & 4500 upper Generic	Yes 100\ expel and intake <a href="#">Read</a>	3/4" Top connection	Displays current status	Mode/ Error Messages	35-120°F best for zone 3 cold regions	55 DBA
Bradford RE2H80 T6	80	6 year Tank and parts	87 gal w elements	N/A	Magnesium DIY replacement	208-240 30 amp 60 Hz	4000 & 4500 Generic	Yes 415-52820 -00	3/4" Top connection	Displays current status	Mode/ Error Messages	35-120°F	55 DBA
RE2H50 T10	50 gal	6 and 10 year models	65 gallon w elements	N/A	Magnesium	208-240 30 amp 60 Hz	4000 & 4500 Generic	Yes	3/4" Top connection	Displays current status	Mode/ Error Messages	35-120°F	55 DBA
<a href="#">Spec sheet</a>			Optomistic numbers		Less reactive than aluminum	UL rated	Can be replaced DIY	8" incoming and outgoing	3/4" iron pipe is typical for water heater	Digital readout of temperature, push button temp control, diagnostic error codes <a href="#">Service brief</a>		Best for cold region	70 is loud

**Installation/ maintenance**

Brand	Minimum Room size without duct kit or louvered intake	Min intake space for air filter	Min repair space away from wall	Min exhaust space in front	Floor drain required for condensate and TP valve	Clean-wash Air intake filter each 6 months	Evaporator coil needs cleaning yearly	Maintenance cleaning steps show in manual	Service manual
Bradford White	700 ft <sup>3</sup> 10' x 10' x 7'	8" Intake and Air filter on top	7" <a href="#">See image</a>	7" ... "Free and clear" is best	Yes	Yes 8" headroom	Yes, if air filter not cleaned	Yes 2 pages <a href="#">Read</a>	Service brief <a href="#">Read</a>

**Heat pump operation**



**Review summary**

Power consumption:

The GE and Bradford White compressor consumes 600 watt ... 208-240Volt ... 2.5 amp. 10 gauge wire and 30 amp breaker are required.

Operation:

When the compressor cannot keep up with heating demand, the heat pump control board activates elements ... and the heat pump functions like ordinary non-simultaneous 4500 watt electric water heater where either the upper element is on, or lower element is on, or both elements are off. Both elements are never on at same time.

First hour delivery:

The older GE heat pump was available in 50 gallon and delivered (optomistically) 63 gallons usable hot. More realistic is 40-45 gallons.

Bradford White version has 50 gallon size and also 80 gallon. Once the 80 gallon tank is fully heated, it will deliver (with elements and compressor pushed to max) approximately 80 gallons usable hot in a single continuous draw. More realistic is 65-70 gallons.

After hot water is depleted, the tank is slow to reheat the water when used in most efficient heat pump mode.

This implies that back-up elements might be needed to keep up with demand of 5-6 person home. If home has fewer people, or less consumption, or staggered use, then saving would be higher. All homes save money by using less hot water.

If personal consumption patterns do not require 80 gallons usable hot per draw, then the expense of buying heat pump might be more than any savings ... why buy



large, heavy expensive water heater to ration water to yourself?

Savings:

Claims of energy-savings for heat pump ignore overall costs .... such as purchase price, repairability, replacement part cost, inconvenience of needing large space and floor drain, promotion, advertising, shipping, packaging, consumption of energy from HVAC. Nor considers inconvenience of cleaning air intake screen two times a year, and occasionally needing to clean condensate tray, and evaporator coil. This maintenance is in addition to typical maintenance suggested for all electric water heaters, such as flushing each 6 months and inspecting anode rod each 1-3 years.

Electronics, surge, repairs:

All digitally-controlled water heaters are susceptible to surge ... Most people don't think about repairing washing machine or refrigerator before purchase, but the heat pump water heater might require service personnel who know about water heaters, computers, air conditioning, plumbing, and electric systems. Before buying, ask if there are qualified service technicians in your area? How much do they charge?? In 2014, service calls average \$400+

Resources for DIY repair:

There is a 2012 service manual posted for GE heat pump, and a service brief for the more recent version Bradford White. The control system is different on the new BW models and service codes are different.

[GE Hybrid service manuals](#)  
[Bradford white service brief](#)

Compare with ordinary electric heater:

Ordinary residential electric water heaters can be maintained to last 'forever' assuming periodic maintenance [read maintenance](#), while the GE and other brands of heat pump generally cannot be maintained to last beyond expected life of 10-14 years. Ask how much a replacement heat pump will cost in 2022-4 etc?

Installation

Heat pumps must be installed plumb (straight up and down) and near a floor drain for condensate. The damper the air, the more condensation

Heat pumps suck in air from surrounding room and must be installed in chemical-free and dust-free 10' x 10' room.

Installed at least 7" away from wall. Must have adequate incoming air supply. Preferably warm air if you want to save money. This is not ordinary electric water heater that can be tucked in small closet with laundry piled on top. Heat pumps are noisy when running... similar to small window air conditioner. Heat pump water heaters use ambient room temperature to heat water, and release cool air into same room, so ambient room temperature is cooling each time heat pump turns on. Heat pump works against the furnace in winter by using furnace-heated air to heat the water. In summer the heat pump puts off cool air and helps the air conditioner, but cool room air works against the heat pump. Locating heat pump next to warm air source, such as refrigerator or freezer, will let heat pump use warm air produced by refrigerator.

Heat pump water heaters save money for specific applications, including 1) Homes in warm climate or with warm incoming water temperature, 2) Homes with 1-4 people who have low hot water consumption habits 3) Homes without whirlpool bath or large garden tub .... but Heat pumps only save money when 4) Heat pump computer water heater does not require repairs.



Bradford White AeroTherm

**Compare heat pump with ordinary electric water heater** You can install ordinary

electric water heater yourself... inside a small closet, in a dirty environment like a shop etc. [How to install electric water heater](#) You can troubleshoot and repair ordinary electric water heater yourself... [Troubleshoot electric water heater](#) Ordinary electric can be maintained to last forever, [How to maintain water heater](#)

Ordinary electric water heater has simple generic parts: 2 thermostats and 2 elements and dip tube and anode rod [How to replace elements](#) [How to replace thermostat](#) [Dip tube](#) [Anode rod](#) Ordinary electric can be set on a timer, [Compare timers](#) [Off peak water heater strategies](#)

Ordinary electric can be altered many ways to meet specific goals. [Wire water heater for 120V](#) [How to wire water heater thermostats](#) [Add another thermostat to water heater](#) [Convert AC water heater to DC](#) [Connect water heater to generator](#) [Use timer to toggle between temperatures](#) [Off peak thermostat wiring](#) [Operate 2 water heaters with one 30 amp circuit](#)

You can connect ordinary electric water heater to 120-208-240-277-480 volt \*\*\* can connect ordinary electric water heater to 120-208-240-277-480 volt \*\*\* changing only the elements to match voltage.

[Select various voltages for element](#)

**Money talks**

If you need 80 gallon first hour and don't want to install two 40 gallon electric heaters (total cost \$900 in 2020), then heat pump is only choice [Two water heaters](#)

1) Promotional literature says Heat Pump water heaters save \$200-\$300 per year net cost vrs ordinary electric water heater. And this might be TRUE for some applications depending on operating Mode, consumption, water temperature, ambient room temperature.

Except my 2-person home has 30 gallon electric heater that costs \$240 per year to operate, so heat pump cannot save money in this instance because the difference in purchase price and longevity of my maintained water heater vs 12-14 year max for expensive heat pump.

2) Research shows that heat pump water heaters save energy vrs ordinary tank-type electric water

Why Buy Heat Pump?



heater, except cost of buying, installing, and maintaining each type heater is not considered.  
 3) There might be government tax credits or tax rebates ... a ridiculous arrangement where you loan yourself money to buy something that you wouldn't buy otherwise because there is no cost benefit.

**Real world 2012-4:**

GE heat pump has EF2.35, but Reducing consumption is best way to save money [Read more](#)  
 Most people say their electric bill went down, a few report the electric bill did NOT go down. Nobody says electric bill went up.

Read Research

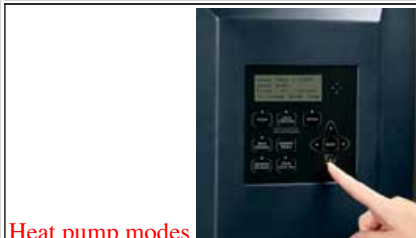
**Research:** pdf files

- [Heat pump water heater uses heat from refrigerator/ science you can use](#)
- [Laboratory evaluation of heat pump water heaters that appears to be comprehensive](#)
- [Scientific Testing that might not be paid-for by industry](#)
- [Department of energy that might not be paid-for by industry](#)

How come GE doesn't put small electric meter on each appliance >> forget the 'energy-star' and 'energy factor' baloney that gives giant homes and appliances outstanding ratings when the real measure should be 'Kwh per person,' or KwPP rating (copyright waterheatertimer.org 2012)

How about real-world side by side tests?/  
 Heat pump vrs ordinary electric water heater + average service cost  
 You can buy electric meter and hook it up the heater for \$50.  
[How to install meter on electric water heater](#)

When heat pump warranty is registered, the manufacturer gets the address. Why doesn't the manufacturer contact customers and ask for before-n-after electric bills and then post those bills on-line for all to see? Give us real-world facts instead of glossy brochures and rainbow promise of saving money.



Heat pump modes



2009 and 2012 control panels Choose operating mode, set water temperature using eye-level keypad and LCD readout

[GE Operating modes pre 2009-11 pdf](#) [GE heat pump operating modes 2012 pdf](#) [See product manuals](#)

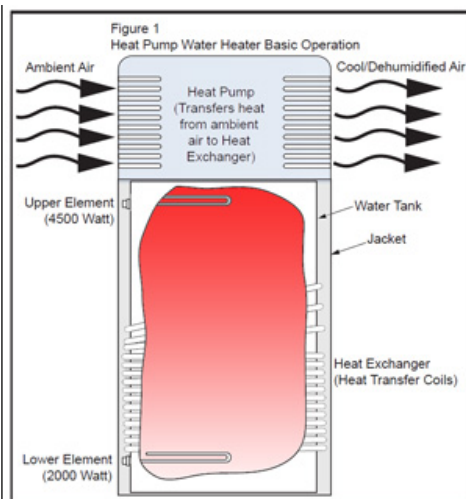
Unit is shipped in default hybrid mode. This mode uses back-up heat elements only when needed to maintain water temperature, for example when incoming water is cold, or when heat pump cannot keep up with peak demand, or if thermostat is set high, or ambient room temperature is low. eHeat is most efficient mode. eHeat mode does not use back-up heat elements, and heating recovery is slowed, but savings are maximized. Other modes can be selected.

[Adjusting water temperature before 2012 pdf](#) [Adjusting temperature 2012 pdf](#) Unit is shipped with default temperature set at 120°F. Temperature setting 120°F is economical. Setting temperature higher costs more money to operate. Heat pumps are for moderate consuming homes with 1-4 people that do not require very hot temperatures. [Which temperature is best for water heater?](#) Standby loss vrs consumption. There is no single best answer for all situations. Reducing temperature and reducing consumption are best way to save money.

[Stop cold air function](#) Heat pump water heaters blow cold air. If you turn it off, then water is heated by elements. Using elements is same as ordinary electric water heater, so why buy a more expensive heat pump?

**Heat pump works like a refrigerator, except in reverse**

Note that heat pump water heater will run much more than typical refrigerator. And put out more cool air than refrigerator puts out warm air. Refrigerator uses refrigeration cycle to make the refrigerator cold, and then the compressor releases warm air into the room Heat pump water heater uses refrigeration cycle to make water hot, and then compressor releases cool air into room Both appliances work for-or-against the HVAC system depending on season. Both appliances require periodic cleaning to keep unit efficient. Except Heat pump air filter must be cleaned once per year. Both appliances are installed in dry locations. Neither are made for wet locations. Refrigerator is 120 volts. Heat pump is 240 volts. Must have at least 208V-240V or unit will not operate. Both refrigerator and heat pump



[See Larger image](#)

appliances are reliable. However heat pump has added problems from storing water inside metal tank that is under pressure, while connected to household water system that can clog tank and cause tank to rust, etc. GE Heat pump has ordinary anode rod to protect against rusting

**There is no guarantee that you will save money** Most people say their electric bill went down, a few report the electric bill did NOT go down. Nobody says electric bill went up Average service call to repair heat pump is \$400 (year 2012) Buy cheaper tank: You can repair ordinary tank-type water heater yourself same-day using generic off-the-shelf parts for \$50 [How to troubleshoot electric water heater](#) Ordinary electric water heater can cost \$500 per year to operate x 10 years = \$5000. Ordinary heater is cheaper to buy up front, and cheaper to fix and maintain. But operation cost is typically higher than heat pump water heater, while maintenance cost is less.

**Warranty** **Warranty appears in each product manual:**

[Read geo-spring limited 10 year warranty](#)

[See product manuals](#)

**Heat pump has 10-year limited warranty, for original-owner single-family residential installation ... for defects in workmanship** when unit is installed and maintained according to product manual. Most water heater warranties are same. Homeowner can install product. Warranty is NOT void if homeowner installs unit when installed correctly as shown in manual. [See product manuals](#) Warranty does not appear to be transferable to another homeowner if home is sold, or transferable if unit moved to another location. Warranty covers defects in workmanship. First year is parts and labor, *assuming* correct installation. After first year, the warranty is basically free replacement parts without labor, and you have to wait for parts to arrive. Average service call for technician is \$400. Warranty does not guarantee that unit will work flawlessly, or that unit will not need service and maintenance. [Read geo-spring limited 10 year warranty](#) Call GE 888-443-4394

**Warranty** **Is the 10 year warranty a good value? Not necessarily** 10% vrs 16% Call GE 888-443-4394 for warranty and basic troubleshoot and to find GE-certified local technician

**Expected lifespan of GE heat pump is 10 years.** First year warranty is full coverage parts and labor. So 10% of expected lifespan has full coverage. [Read geo-spring limited 10 year warranty](#) Contrast 10 year-warranty with cheaper tank that has 6 year warranty. Expected lifespan of cheaper tank is 6 years. First year warranty is full coverage parts and labor for cheaper 6 year tank and for heat pump. So regular tank has full warranty coverage for 16% of expected lifespan while heat pump has full coverage for 10% of expected lifespan.



Use safety grab bar on bathtub

[Safety grab bar at Amazon](#) [Bathtub safety grab bars](#)

**GE heat pump is for modest-consumption household** Regular bath uses 12-15 gallons hot water; Shower uses 5-9 gallons hot water. Save 10 gallons hot water each time by taking shower instead of bath. First hour delivery: GE 50 gallon heat pump delivers 63 gallon first hour and will supply maximum 4 baths in quick succession before water is cold. Recovery: When using most efficient eHeat mode, the recovery time is slow, for example 10 gallons per hour or less (vrs 21 gallons per hour in full heat mode) depending on incoming water temperature, ambient room temperature and water heater thermostat setting. Recovery means how long it takes tank to reheat water after Hot is consumed. First-hour rating is how much hot water is available for peak-usage times when tank is fully heated. Electric water heaters that use elements to heat water, recover about 21 gallons per hour. Heat pump modes offer choice to use elements and recovery is same as ordinary electric water heater, and cost of operation is same as ordinary water heater -or- choose not to use elements for more efficiency, but slower heating. Utilizing most efficient modes, Heat pump mode and eHeat mode, means slower recovery rate, but maximum savings. If you set the thermostat higher, recovery takes longer. But first hour delivery is higher. When water is hotter, more cold water is mixed with the hot, and so available hot water lasts longer. Keeping tank hotter costs more money. Reducing water temperature, and reducing consumption are best ways to save money. [How to increase amount of hot water](#)

**Save 10 gallons hot water each time by taking shower instead of bath**

Residential Water Heater Sizing Guide		
Family Size	Demand *	Gallon Capacity
		Electric or GeoSpring™
5+	High	100 (378.5 L)
	Avg or Low	80 (302.8 L)
3 to 4	High	80 (302.8 L)
	Avg or Low	50 (189.3 L)
2 to 3	High	50 (189.3 L)
	Avg or Low	40 (151.4 L)
1 to 2	High	40-50 (151.4-189.3 L)
	Avg or Low	30 (113.6 L)

[Larger image](#)

[Household water use information](#)

**GE Heat pump not recommended for homes that use very hot water** Factory setting is 120°F. Temperature range for GE heat pump is 100°-140°F. All estimated savings from using heat pump are based on 120°F degrees. Higher temperatures require heat elements. 135°F recommended for killing bacteria when washing clothes.

**Select correct size 2012 heater for household consumption using chart on left**

Call GE 888-443-4394 for warranty and basic troubleshoot and to find GE-certified local technician

FAMILY SIZE	FIRST HOUR RATING
2 People	45 – 55 Gallons
3 People	55 – 65 Gallons
<b>4 People</b>	<b>65 - 75 Gallons</b>
5 People	75 – 85 Gallons
6 People	85 – 100 Gallons
7 or More People	100 or More Gallons

**50 gallon GE heat pump has first-hour-rating 63 gallons** First-hour rating chart is based on expected peak usage at certain times of day, beginning with fully heated tank set to 120 degrees. Homes with less consumption per person, or consumption does not peak at certain times, or when water heater temperature is set higher, then home can have more occupants than chart. For example if 5 people live in home, and each takes a shower in quick succession, then GE heat pump will meet peak demand. If 5 people expect long hot bath in succession, the last folks may be disappointed with amount of available hot water Remember, as hot water is consumed, new cold water enters tank at bottom and will slowly mix with hot, causing temperature inside tank to decline until unit turns ON again. [How electric water heaters work](#)  
**50 gallon GE heat pump NOT recommended for home with large bathtub** / install 80-100 gallon size Rule of thumb for whirlpool bathtub, and large garden bathtub = minimum 80 gallons first-hour-delivery

### Installing GE Heat pump

**3/4" Hot and cold pipes** must be connected to Hot and Cold sides, or water heater will not work as expected. [See product manuals Location & Space requirement Clearance specifications](#) Do NOT choose laundry room or beauty shop or craft-work area because trace chemicals and dust WILL damage heat pump. Chemicals can damage heat pump and damage any gas water heater parts, and damage any gas appliance. [Read](#) Dust will clog Heat Pump air filter more frequently. Choose dry, clean and naturally warm location Air flow is critical: Efficiency is reduced if incoming air flow is restricted. Room size minimum 10' x 10' x 8' Smaller room can be used when louvered door is added. Minimum 7" service clearance from back wall and 7" from front wall for work access and air space pre-2012 Minimum 14" headroom for removal/cleaning air filter/ overall clearance height needed 75" (Redesigned heat pump 2012 requires 6" instead of 14" for air filter)

**Drain valve:** Leave space so garden hose can be attached to drain valve Older models, drain valve on back of unit and only 2-1/2" above floor. Newer model, drain on front. **GE Heat pump Anode rod** is sacrificial, and is located on left side of tank [see anode](#). Work space must be available on left side of water heater to access anode using socket wrench and long cheater bar. Product manuals say anode will last 10 years. But water softeners can shorten life of anode rod. [Read about anodes](#) Homes with anode-related odor problems can avoid GE heat pump, and buy State heat pump with power anode rod that does not cause odor reaction .



**GE heat pump installation**

10 gauge wire in conduit

16" space above unit for air filter cleaning

7" space from front and back wall

Dry & heated location  
10' x 10 x 8' room, -or-  
add louvered door  
for air supply

TP overflow termination  
6" above drain

Condensate line

Floor drain for TP overflow  
and condensate line

This installation does NOT have enough space on left side to inspect and replace anode rod [Read about GE heat pump anode](#) Homes with anode-related odor problems should avoid GE heat pump. State heat pump has power anode rod, that will prevent odor problems. [Larger image](#)

Must be full of water before applying power Must have 208-240Volts [How 240V and 208V power comes from 3-phase electric](#)

**Wiring:** Dedicated 10 gauge wire and 30 amp breaker. USE whole house surge protector to protect all appliances. Use proper grounding. Use conduit if required by local code. 240Volt only: Connecting to 120V AC may damage compressor and/or other electrical components. Read spec sheet to see if your model can use 208 VAC service. Other brands cannot be connected to 208V.

**TP overflow tube** cannot be downsized into smaller pipe, tube must travel downward at all times, and cannot terminate closer than 6" above drain or pool of water, maximum 30 feet length, maximum 4 elbow joints, overflow can be directed through outside wall, end of overflow tube cannot be threaded. 2009-2011 TP valve located on backside of tank. 2012 TP valve has been re-located to front of water heater. TP and condensate drain cannot be combined **Condensate line** attaches on back of unit or side of unit depending on model, and is not shown in illustration. 6' condensate line supplied with unit. Must run downward into drain or bucket. Heat pump can produce up to 1 gallon condensate per day, depending on location, humidity etc



**Heat pump water heater integrated with refrigerator**

Real science at work that you can apply. Heat from refrigerator re-used in water heater Modest home has 88 cent energy bill [Water heater uses refrigerator heat](#) [Low-energy home uses heat pump integrated with heat from kitchen refrigerator pg9](#)

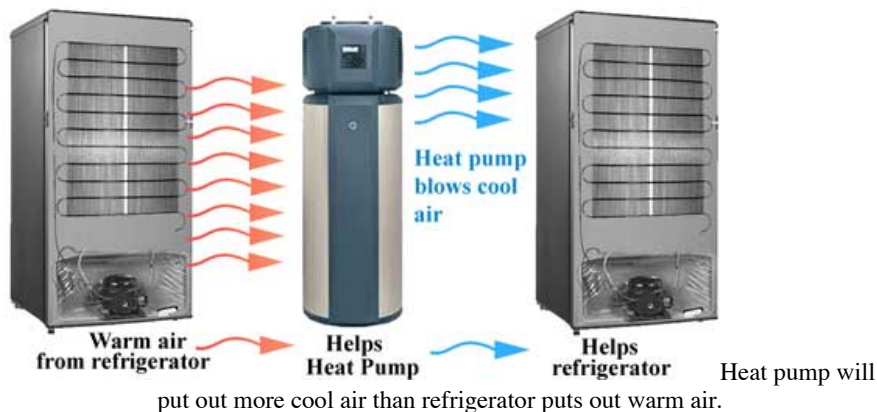
**Locating heat pump in naturally warm location is best plan**

1) **Same room as Freezer or refrigerator:** For example refrigerators and freezers give off warm air. This warm air can be used by heat pump to heat water. In return, the heat pump gives off cool air that assists efficiency of refrigeration unit. This type installation does not work against household HVAC

2) **Warm garage in Florida:** Locating heat pump water heater in unheated-uncooled garage in Florida will not work against HVAC unit. Heat pump uses ambient Florida temperature to assist heat pump efficiency, and releases cool air to help moderate garage temperatures.

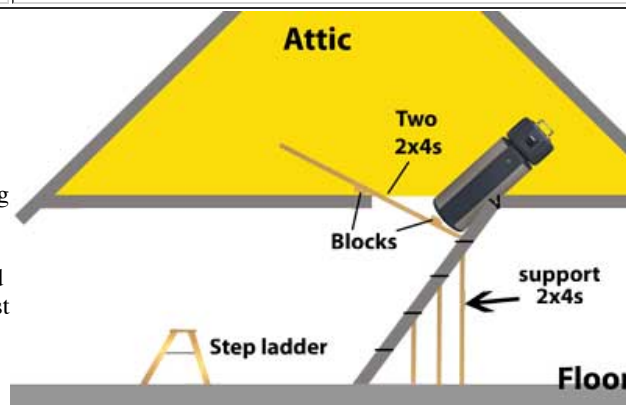
**Use warm air inside home** Note that heat pump water heater will run much more than typical refrigerator. And heat pump will put out more cool air than refrigerator puts out warm air. GE heat pump draws ambient room air across evaporator and blows cold air from vent located on back of unit This action works against furnace in cold climates, and means furnace is





heating hot water. The heat pump condenser unit works in reverse of typical refrigerator. Heat pump blows cold air. Refrigerator blows warm air Using warm air from refrigerator and freezer in conjunction with heat pump water heater is good way to recycle air byproduct from each appliance [Water heater uses refrigerator heat Low-energy home uses heat pump integrated with heat from kitchen refrigerator pg9](#)

**Heat pump in attic** Ambient room temperatures up to 120°F degrees are acceptable, but exposure to direct sun and high temperatures over 109°F will shorten life of compressor and wiring. Compressor will generally be too hot to touch, but very hot temperatures will damage any electrical device. Many water heaters in Texas, Fla etc are located in attic. Heat pump needs space for air filter and anode rod, plus condensate drain. Always protect water heater from freezing, and flood. Water heater must be installed in Vertical position. If water heater was laying down, then stand water heater upright position for 12-24 hours to allow refrigerant and lubricating oils to properly distribute themselves. Unit weight 200 lbs, Total weight 470 lbs filled with water. Locate water heater over load-bearing wall. Use 3/4" plywood over 16" OC joist. Use minimum 2x8 joist. Heavy weight in middle of 2x6 and 2x8 joist will cause ceiling to sag over time if joist span is too long. [How to lift heavy water heater into attic](#)




**Zone 1:** Heat pump will be used most of the year (90-100%)  
**Zone 2:** Combination heat pump (60%) and electric heating elements (40%)  
**Zone 3:** Combination heat pump (50%) and electric heating elements (50%)  
 Estimated: heat pump regional map 2012 Obviously mid-Illinois is not same regional temperature as South Texas [Larger image](#)

**Cold temperatures mean less efficiency** Heat pump water heaters are most useful in hot-or-warm climates. In cold climates, heat pump efficiency drops when back-up heat elements are used to heat water During winter, the furnace is heating the air that heat pump uses to heat water. So you are heating water using the furnace, which is not efficient, and cancels estimated savings predicted by GE and other heat pump companies.

**Ambient air temperature must be above 45°F** If ambient air temperature falls below the limit, then electrical elements will activate to meet the hot water demand. This reduces expected savings.

**Attic/ High heat:** avoid exposing water heater to temperatures over 120 degrees F



**Also consider earthquakes**  
 Use earthquake straps to protect property from damage  
[Earthquake straps at Amazon](#)  
[Larger image](#)




Drip pan saves damage [See drip pan installation Water heater drip pans at Amazon](#) Drip pan saves damage from water leaks

**Install GE Heat pump water heater in drip pan** to prevent water damage from condensate or leak. Prevent leaking tank by checking and replacing anode rod [see GE heat pump anode](#)  
 Make sure hose can still attach to water heater drain valve. Drain valve located on front or water heater 2012 [See drip pan installation Leaking water heater](#)




<p><b>Installation Notes:</b> Drain valve is only 2-1/2" from bottom of heater. Can be difficult to attach hose</p>	<p>Water heater must be installed in Vertical position Ambient room temperature must not fall below 45 degrees F. Remember: In winter, your furnace is being used to heat the water</p>
<p>Add expansion tank to extend service life of water heater and plumbing fixtures Add pressure reducing valve if water pressure exceeds 80 psi Check pressure using BTG100 pressure gauge attached to water heater drain valve</p>	<p>Flooring and weight 200 lbs + 5.4 lbs x 50 gallons = total weight 470 lbs = about same as 3 people</p>
<p>Water Temperature setting range 100 to 140 degrees F Factory default 120 degrees</p>	<p>Do not duct air from a garage or other space where potentially harmful fumes from solvents, chemicals or exhaust from automobiles are present. Install Gas and carbon monoxide detector.</p>
<p>Standby power consumption 2 watts.</p>	<p><a href="#">How to maintain typical water heaters</a></p>



**Heat pump makes noise** People are aware of the noise. Most people can hear it from other room. Some say it sounds like clothes dryer. Others report less noise. Do not buy heat pump if noise bothers you, or if you expect to play tunes in same room. At least the thing doesn't put off bad odor.


**Promo brochure says: Operating Sound Level 58 DBA Average** 58 DBA is from glossy promotion brochure, and will likely underestimate annoyance for some people. Locate heater where noise will not interfere with daily routine

**Promo brochure says:** "Most electrical appliances, even when new, make some sound when in operation. If the hissing or singing sound level increases excessively, the electric heating element may require cleaning." Remove element and clean with white vinegar, but don't expect to see illustrated instructions in product manual, and Do not count on this solution to fix noise problem.




**Avoid dusty environments such as laundry room and shop**  
Excessive dust and lint affect operation of unit and require more frequent cleaning See maintenance section in product manual and maintenance section below. Lift and clean filter once per year using water and soft rag. Let filter dry before re-installation.

**If filter is clogged**, unit will give error code, and switch from hybrid mode to using heat elements



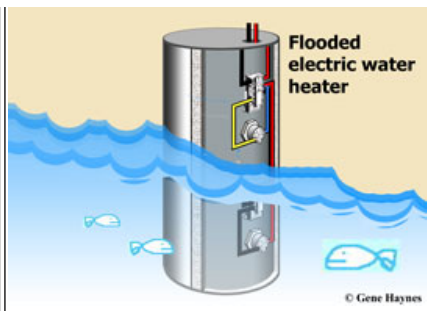
**Site location must be free from corrosive chemicals** in the atmosphere such as sulfur, fluorine, and chlorine. These elements are found in aerosol sprays, detergents, bleaches, cleaning solvents, air fresheners, paint, and varnish removers, refrigerants, and many other commercial and household products. Same is true for all gas-burning appliances, such as gas water heater

**Heat pump can ignite flammable vapors**, just like open fireplace or toaster oven. Turn unit off when using gasoline, shellac, varnish, flammable paints, solvents, thinners, contact cement etc. Same is true for all gas-burning appliances, such as gas water heater



**Heat pump water heaters are not protected from surge** Most appliances today have electronics. Few of these appliances are protected from surge Homeowner insurance might have appliance exclusion. Read policy Water heater warranty does not cover surge event. Protect 120V and 240V circuits with whole house surge protector [How to wire whole house surge protector Intermatic IG1240RC3 whole house surge protector/ pdf/a>](#)

**Set water heater high enough to avoid flood** Do NOT touch Flooded water heater or water heater that is wet or was wet/ electrocution danger.  
When water heater gets wet, the parts can short. Water heater must be dry before put back into

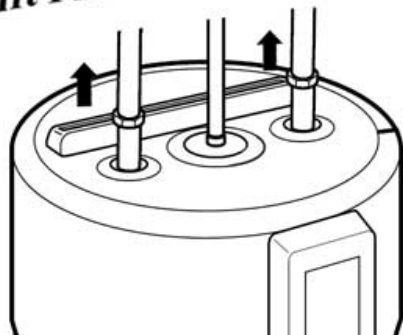


operation. If whole water heater went under water, then replace water heater  
[Flooded water heater](#) [Emergency steps to turn off water heater](#) [Leaking water heater](#)  
**Do not install Heat pump in damp or wet location**

**⚡** Electronics are not suited to wetness Do NOT touch water heater that is wet or was wet/  
 electrocution danger.

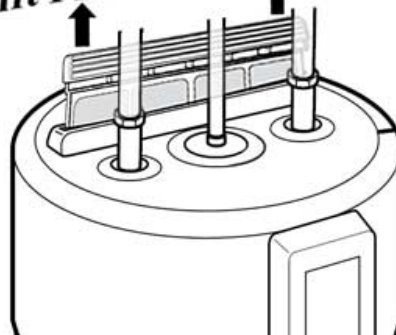
### GE Heat pump Maintenance

**Lift Filter using both hands**



How-to-clean-GE-heat-pump-air-filter.pdf

**Lift Filter using both hands**



Lift filter evenly with both hands

#### Air Filter

Do not locate Heat pump water heater in dusty location: for example laundry room or shop. Condenser fan pulls cubic feet of air from surrounding room. Room temperature air enters front of unit, and cold air exits back of unit. Dust and particulate is trapped by filter that protects evaporator from getting clogged.

**Clean air filter at least once per year.** Unit has error code to remind that filter needs cleaning. If filter is dirty, the efficiency of unit will drop. If filter becomes clogged, the unit will automatically switch heat elements ON to compensate for loss of heat pump efficiency. Do not run heat pump without filter, or the evaporator will clog with debris and efficiency will drop

**How to clean Heat pump air filter:** Leave power ON. Switch unit to vacation mode so unit will not operate while filter is out. Lift filter evenly with both hands. Wash filter outdoors gently using water and soft rag. Do not use brushes or scraper.

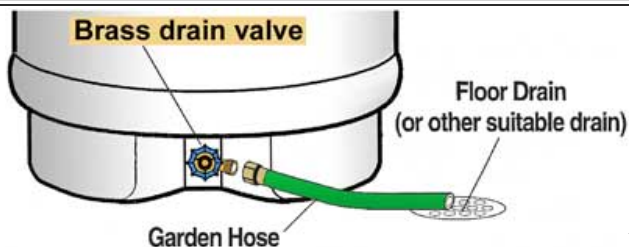


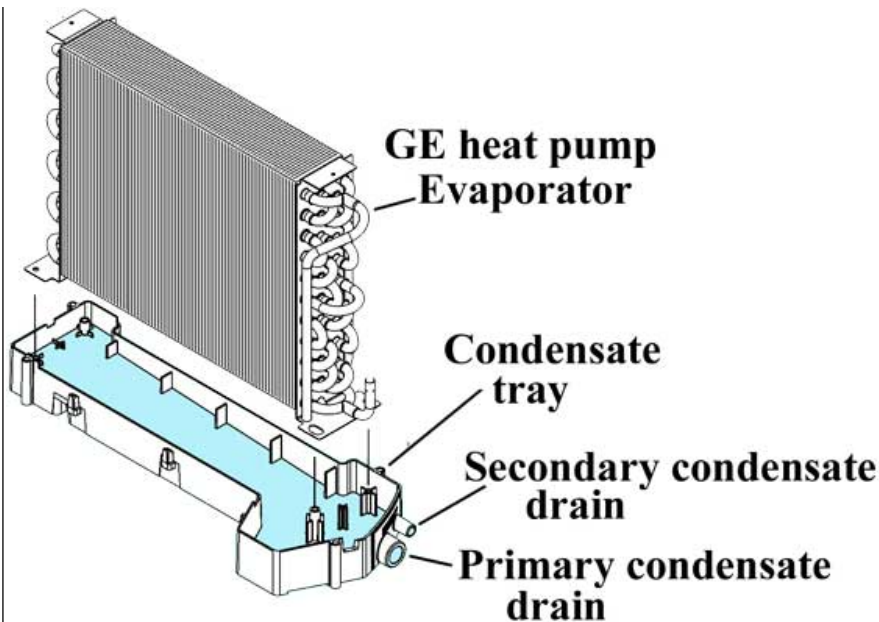
Illustration shows concept GE heat pump has brass drain valve. Brass is preferred by plumbers since it will not break when removed. Dripping drain valve can be repaired with garden hose cap.

#### Flush water heater

Flush water heater once each 6 months Recommended for all water heaters, gas and electric [How to flush water heater](#)  
 Older GE models, drain valve on back of unit. Newer model, drain located on front. Drain valve located 2-1/2" above floor. Drain located close to floor, it is more difficult to attach garden hose. Remember, the water heater has to be drained some day. Leave room when installing water heater.

Condensate lines need to be kept clean to prevent damage to home

**How it works:** Air filter sits directly in front of Evaporator. Fan pulls air from room into evaporator. Warm moist air passing through evaporator can cause water to condensate on the coils and drip down into condensate tray. Water empties



2012 Condensate lines located on right side of tank 2009-2011 condensate lines on back of unit. Remove back cover to reach tray. Blue color added for illustrative purpose

out of tray into primary condensate drain line and flows to bottom of water heater.

**If primary drain is clogged, water will flow out secondary** If both primary and secondary are clogged, water will drip down side of water heater. Different brands of heat pump have different diameter condensate line. GE has a smaller line. Other brands use 3/4" condensate line. Condensate line should drop down side of tank and terminate 3-6" above a floor drain. Some people use a bucket and then dump bucket periodically. Don't let water in bucket get higher than drain line. Other people use a pump to evacuate condensate water into household drain.

**Check and clean condensate drain lines periodically**



**How to clean condensate line:**

- 1) Remove condensate line, take outdoors, use wire to make sure ends are open, swing line around over head to clean tubing, and then rinse outdoors. Water inside tube is not clean and contains bacteria.
  - 2) Use turkey baster to squirt clorox or hydrogen peroxide into primary or secondary drain openings to help remove algae or debris
- Gallo gun and CO2 cartridge [Buy a tool, and blow out the clog all over room](#)



**Clean evaporator with soft brush and water**

[See another image](#)

**Clean evaporator fins** All water heaters need periodic maintenance. Heat pump water heater requires more maintenance than ordinary electric water heater. Ordinary electric water heater needs less maintenance than heat pump. Evaporator may not be easy to access because of compressor, fan blade and housing. [Typical Water heater maintenance](#)  
**Maintaining full output might require occasional professional cleaning of evaporator.** Undo screws and remove water heater cover. Remove air filter as needed. Carefully clean evaporator fins. Only use water and a soft brush. Tape a soft-bristle toothbrush to a stick. Never use acidic or alkaline cleaning agents  
 If evaporator has not been wet, then use compressed air to blow out dust. Do not expect detailed instructions or illustrations in product manual.

**Water heater electronics**

GE electronics are not protected from surge. Damage from surge is not covered under warranty. All household electronics are susceptible to surge New washing machine, kitchen appliances etc are not protected

Heat pump is NOT protected from power surge



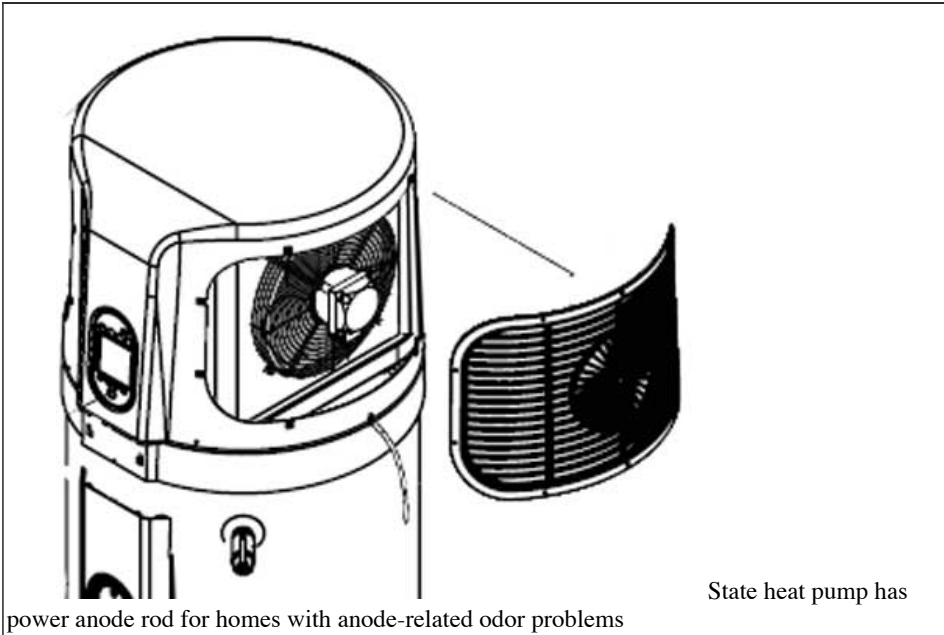
**Whole house surge** [Larger](#)





Homes today should have whole-house surge protection Do not expect surge advisory in GE product manual Ordinary tank-type electric water heater is not susceptible to surge, and if lightning strike disables ordinary heater, it can generally be fixed same day using generic off-the-shelf parts for less than \$50

[image](#) Connect surge protector to 20 amp double-pole circuit breaker [Intermatic IG1240RC3 whole house surge protector/pdf](#) [How to wire whole house surge protector](#)



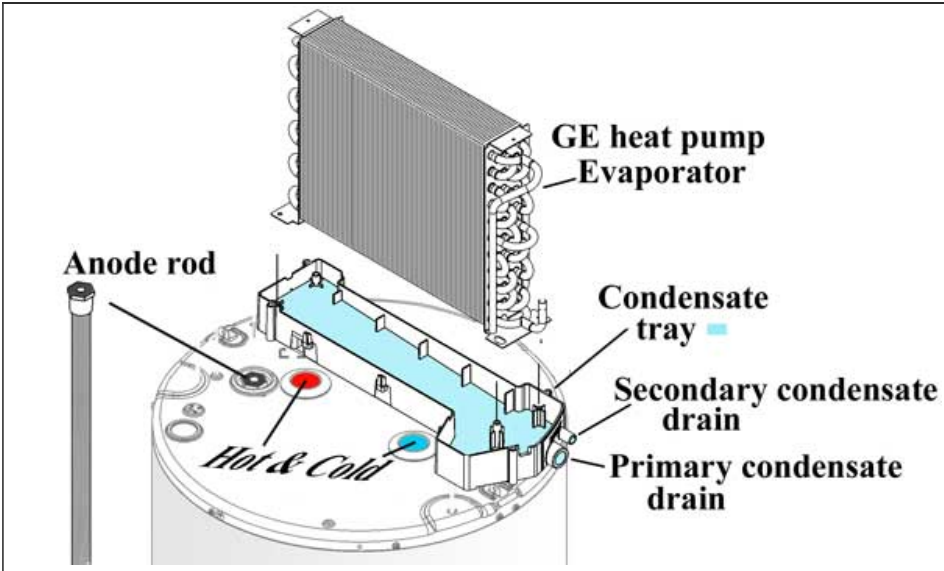
\*\*\*\*\*DOES NOT FIT GE\*\*\*\*\*Made for American and State hybrids



[Duct kit for State heat pump water heaters](#)

**State heat pump has kit to bring air from different room**

[Duct kit for State heat pump water heaters](#) [State heat pump manual](#) Confined space installation page 5 Diagnostic codes page 18



**Anode rod GE heat pump has sacrificial anode rod**

**GE heat pump anode rod is located on top of tank**

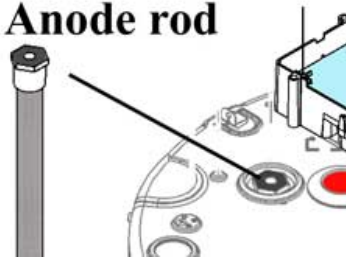
Anode should be inspected within 12 months of installation. Remove front hood to access anode rod Should be able to remove anode rod without moving compressor or evaporator.

Remove and inspect anode rod each 1-3 years Be careful not to damage evaporator coil or air filter housing; set piece of masonite in front of other parts if needed. Cut new anode rod to 42" length. Replace with standard 1-1/6" hex head magnesium rod Anode rod keeps tank from rusting. Once anode depletes, the steel tank will rust. [Anode rods](#)

Do not expect anode illustration in product manual GE has sacrificial magnesium anode rod that needs to be inspected each 1-3 years. Water softener will cause anode rod to deplete sooner. GE manuals says anode

2012 parts: color added for illustration State hybrid has non-sacrificial powered anode rod [Larger image](#) [Large Image from 2009](#)

### Anode rod



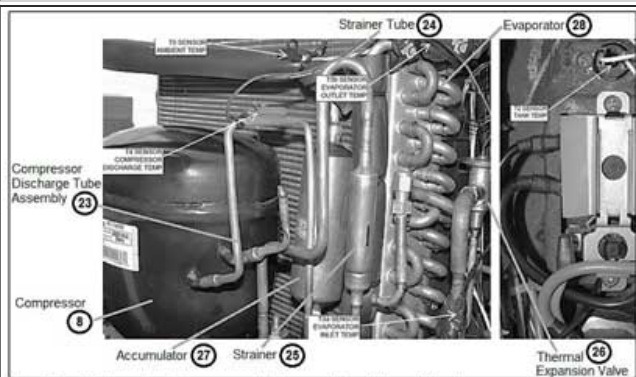
will last 10 years.

State heat pump has powered anode rod that will not deplete and will not cause odor.

**Homes with hot-water odor problems** should avoid GE heat pump Consider buying State heat pump with power anode rod Or buy ordinary tank-type water heater and install power anode rod [Anode rods State heat pump manual](#) [State heat pump parts](#) Powered anode rod page 15 manual



**Understanding the Parts** Do not expect parts list or parts information in GE product manual If you buy window air conditioner or refrigerator, most people are not concerned about the parts. Some people are. 2009 design showing GE air intake on front of unit. Blower moved behind evaporator in recent models. Air intake duct line can be run to outside wall. Do not put air intake duct line inside garage where CO fumes can enter home. [HTP heat pump manual with parts diagram](#) [Stiebel Eltron manuals with parts diagram](#) [Sanyo Heat Pump service manual](#) [Rheem heat pump parts](#)



1	Inlet Dip Tube	7200P-001
2	Magnesium Anode Rod (not shown)	7200P-002
3	Outlet Dip Tube	7200P-003
4	Electric Heating Element	7200P-004
5	Display	7200P-005
6	Display Panel	7200P-006
7	Fan Motor Cover	7200P-007
8	Compressor	7200P-008
9	Fan Wheel (not shown)	7200P-009
10	Front Shroud	7200P-010
11	Junction Box	7200P-011
12	Junction Box Cover	7200P-012
13	Left Rail (not shown)	7200P-013
14	Evaporator Motor	7200P-014
15	Fan Motor Cover	7200P-015
16	Top Cover	7200P-016
17	Right Rail (not shown)	7200P-017
18	Mesh Screen	7200P-018
19	Filter	7200P-019
20	Rear Shroud	7200P-020
21	Electronic Control Box Cover	7200P-021
22	Electronic Control Box Assembly	7200P-022
23	Compressor Discharge Tube Assembly	7200P-023
24	Strainer Tube	7200P-024
25	Strainer	7200P-025
26	Thermal Expansion Valve Assembly	7200P-026
27	Liquid Storage Tank Assembly	7200P-027
28	Evaporator	7200P-028
29	Front Decorative Cover	7200P-029
30	Upper Element Cover	7200P-030
31	Lower Element Cover	7200P-031

[Larger image of HTP parts sheet](#)

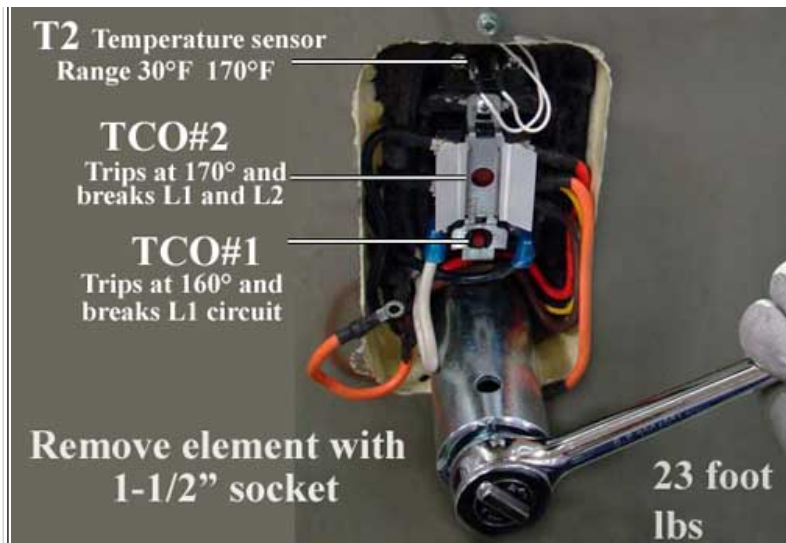
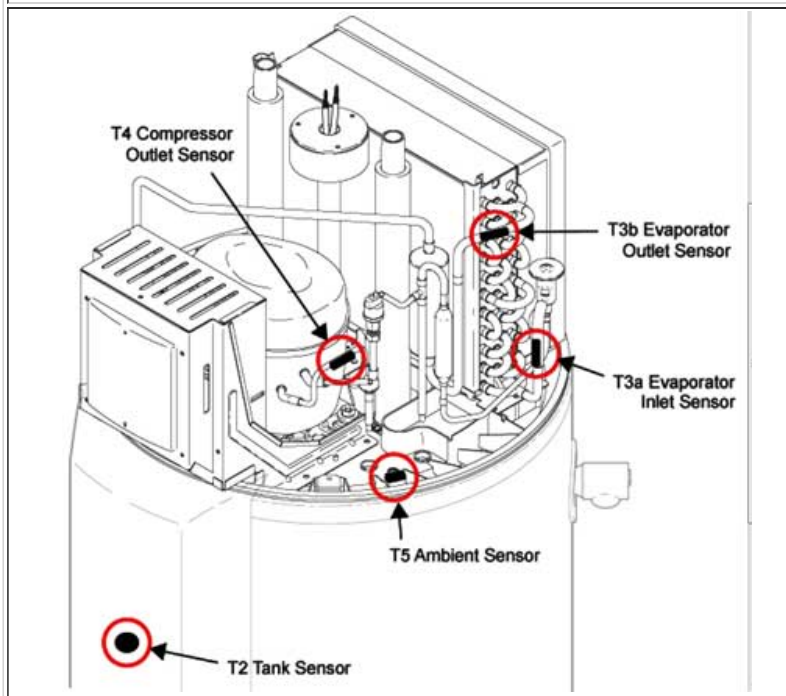


Image from 2009 GE heat pump F9 and F10 code means element failure. [How to replace GE heat pump elements from 2009 manual](#)

**T2 temperature sensor** Temperature range detects freezing temperatures and overheating event  
**GE heat pump has 2 reset buttons** Reset button or TCO or Thermal cut off trips in event of overheating. Both thermal cutouts require manual reset Over heating can be caused by failed TCO, cracked element shorted to ground, bad T2 tank-temperature-sensor located just above TCO reset buttons, loose wire near the TCO, or any high heat event. [Read more about sensors page-30 in 2009 pdf GE heat pump Troubleshoot and fault codes 2012](#)  
**GE elements are replaceable using generic elements from hardware** The control will record a heating element fault if the current is less than 10 amps when the element relay on the board is energized. [How to test water heater elements](#)  
**L1 and L2 refer to the power lines from circuit breaker** 240Volt power has two hot lines, and they are called L1 and L2 When L1 and L2 are both cut off, the unit has NO power. When L1 is cut, then all 240Volt circuits are inoperable, but unit has live electricity. [Read about 120Volts vrs 240Volts](#)



**GE heat pump sensors 2009**  
 T2 Tank sensor also shown in photo above [Heat pump sensors 2009](#)  
[Read more about sensors page-30 in 2009 pdf All GE Heat pump .pdf manuals](#)  
 Each heat pump unit has several sensors that track performance. Each time a sensor detects performance outside typical operating parameters, an error is registered. When enough errors accumulate, or a specific group of errors accumulate, an error code message is issued.

GE Heat pump product manuals  
 Manuals installation, maintenance and troubleshooting steps, but no repair information or parts sheet

**Product manuals by date** [See all manuals by date](#) Read product manuals for troubleshoot steps. [GE Heat pump Product manual 10-2009](#) [GE Heat pump Product manual 5-2011](#) [GE Heat pump Product manual 2-2012](#)

**Spec sheets by date**  
[GE heat pump features 2009](#) [Spec sheet 2009](#)  
[Specification sheet 3-2010](#) [Specification sheet 2-2012](#)

GE heat pump Service manual? GE does not post current service manuals for heat pump water heaters

There is 1 GE heat pump service manual brief from 2009 when product was first introduced [GE heat pump service manual brief from 2009](#) Shows sensors, 2009 error codes, ohm readings, and basic part replacement. The 2010 and 2012 product are different, and no service manual is posted for later models

No current service manual Average

What does it mean to the customer? You cannot fix it yourself. Delay, expense, and possibly less-than-successful service. When GE heat pump stops working, product manual has basic troubleshooting, but manual says to call



<p>service call to repair GE heat pump is \$400 GE wants a service technician sitting in front of unit</p> <p>This is a problem for many folks. You can't fix the GE heat pump yourself. You have to pay for service. It means you shouldn't buy the product.</p>	<p>GE. GE representatives will NOT connect customers to tech support. Only 'qualified' service technicians get information from GE tech support. Rheem/GE refuse to post service manuals for any water heater. This is bad for customer confidence and independence. Think about this for a moment: Customers are most familiar with environmental and usage habits that affect heat pump operation. Yet customers cannot read a service manual to better avoid unique problems. Nor can customers exchange information with GE tech support to better understand product specifics. Nor can a young person read the inner workings of a heat pump and spark un-invented innovation. Service technician that visits home [for \$400] cannot read the service manual either, or exchange information with other service technicians based on technical reading. All innovation and thinking is done at GE. There is no exchange of repair information via the internet. Maybe this action protects livelihood of local technicians, or protects GE from patent lawsuit, but this is also why you should not buy the GE heat pump.</p>
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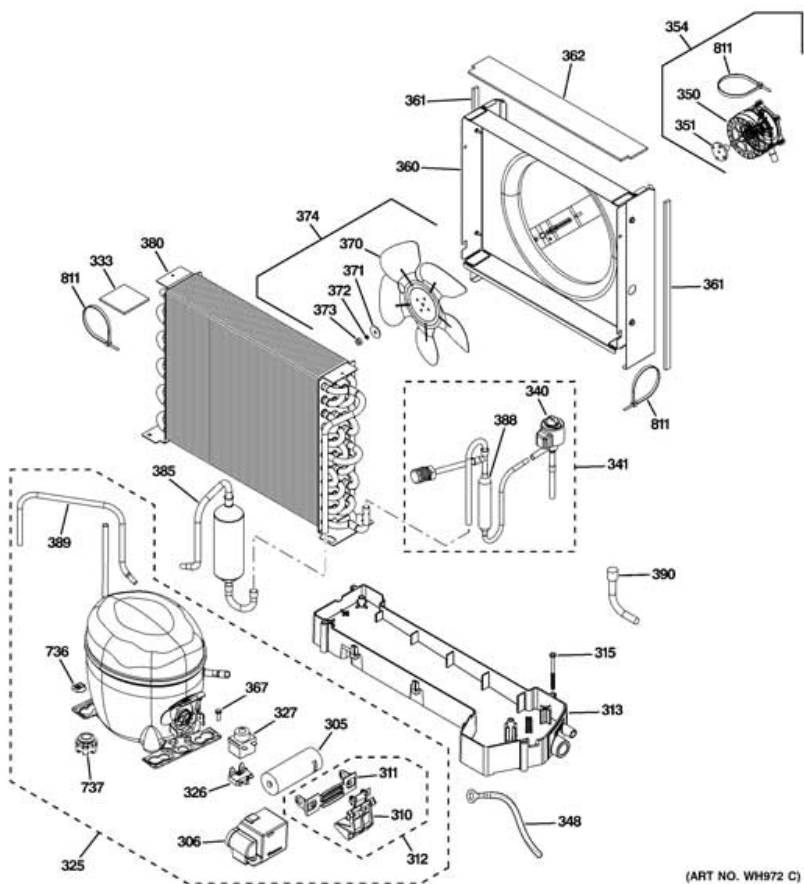
<p>Service manual, Troubleshoot, error codes from different companies</p>	<p><a href="#">GE heat pump service manual brief from 2009</a> <a href="#">GE heat pump wiring diagram 2009</a> <a href="#">Sanyo Heat Pump service manual</a> <a href="#">State Heat pump troubleshooting guide</a> <a href="#">Bosch heat pump error codes</a> <a href="#">HTP heat pump troubleshoot and error codes</a></p>
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<p>GE Heat pump Error Codes From various sources Might not be current</p> <p><a href="#">GE heat pump Troubleshoot and fault codes 2012</a> <a href="#">GE heat pump Fault codes 2009</a> <a href="#">GE hybrid warranty 2012</a> Call GE 888-443-43954</p>	<p>Information about error codes and diagnostics is not guaranteed 100% accurate /</p> <p>F-10 Is check upper element and wiring F-9 is check lower element and wiring F-D is check filter sensor and wiring F-B Is check sensor wiring resistance, check expansion valve and check charge pressure F-C service code stands for "Failed Compressor"] F3 Compressor failure F4 through F8 heat pump failure F9 water system failure lower element fault F10 water system failure upper heating element fault SF system failure F2 means T2 tank sensor fault SF System failure F1 means TCO tripped GE heat pump service manual from 2009 All GE Heat pump .pdf manuals Run Cond C fault code</p> <p>Each heat pump unit has several sensors that track performance. Each time a sensor detects performance outside typical operating parameters, an error is registered. When enough errors accumulate, or a specific group of errors accumulate, an error code message is issued.</p>
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<p>Access to GE heat pump diagnostics menu requires access code</p>	<p>How to access GE heat pump diagnostics pre 2012: Several selections within the diagnostics menu require an access code Scroll to the diagnostic mode and select it. The access code is FILTER, LOCK, and VACATION pads pressed sequentially within 3 seconds of each other Use arrow code to scroll through selections 2009 Heat pump: Each sensor will will show with range and ohm reading in real time, Each component will show status Some people report this does not work. This product is evolving. Heat pump water heaters are changing. Technology does not wait. Don't buy expensive complicated water heaters that cannot be repaired by consumer, and no service manuals are available.</p>
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<p>How to reset GE heat pump error codes</p>	<p>With the heater powered up, scroll diagnostics mode. and select it. The unit will ask you for a code Press FILTER, LOCK, and VACATION pads pressed sequentially within 3 seconds of each other This should bring up a screen that shows the fault codes. Scroll to the "clear all fault codes" with the arrow keys. When thats highlighted, repeat the code Filter, Lock, Vacation</p>
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	<p><b>Photos of repair 2012 Parts:</b> <a href="#">Condenser and fan Top cover and control</a> <a href="#">Body parts</a> <a href="#">Condensate drain</a> <a href="#">Anode</a></p>
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[rod location](#) [Anode rod location](#) [Heat pump sensors](#) [2009](#)

Fan pulls air through filter and then through evaporator coil, and then cool air exits back of unit  
 811 wire tie 737 grommet 736 clip compressor mount  
 390 Comp process tube 5/16 389 Tube discharge formed  
 388 Filter dryer asm 385 Accumulator asm 380 Evaporator kit  
 374 Fan blade asm 373 Nut: fan blade to motor 372 Washer  
 371 Spring washer 370 Fan blade 367 8-32 screw  
 362 Seal foam evaporator 361 Seal foam barrier 360 Fan shroud asm  
 354 Fan motor asm 351 Flange fan 350 Motor fan  
 348 Wire grd compressor 341 Drier & eev valve asm  
 340 Eev coil 333 Mastic thermal sensor 327 Relay start compressor  
 326 Overload, compressor 325 Compressor kit 315 10-32 screw  
 313 Condensate drain 312 Cap mounting bracket 310 Bkt capacitor mounting  
 311 clip capacitor mount 306 Cover electric comp 305 Capacitor start

[Larger image](#)



**Support the economy:**  
**Buy water heaters from my associate links:**

- [50 gallon Gas water heaters at Amazon](#)
- [40 gallon gas water heaters at Amazon](#)
- [50 gallon Electric water heaters at Amazon](#)
- [40 gallon electric water heaters at Amazon](#)
- [Hybrid / heat pump/ water heaters at Amazon](#)

- Resources:**
- [How to install gas water heater](#)
  - [How to install electric water heater](#)
  - [Troubleshoot gas water heater](#)
  - [Troubleshoot electric water heater](#)
  - [Point of use water heaters](#)



- Resource:**
- [Compare box timers](#)
  - [DPDT timers](#)
  - [Intermatic](#)
  - [Control water heater w/ Z-wave](#)



**Resource:**  
[Intermatic control centers: and parts](#)  
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**Resource:**  
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[Countdown timers](#)  
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