

**1, EcoHome21®, 2020 Novel Solutions for Residential Water**

	Water Facts in USA and Canada, 2020
Hot water and energy	<p>It takes 30-45 seconds waiting time for hot water at the kitchen faucet.                  About 4L water is drained each time while waiting.                  Hot water accounts 10-15 times each day in a kitchen.</p> <p>----- Estimations: based on a family of three, 365 days.</p> <ol style="list-style-type: none"> <li>1, 46 hours' waiting time is wasted.</li> <li>2, 14,600L tap water goes to the drains.</li> <li>3, 548kWh heating energy is wasted in the hot water line.</li> </ol>
Legionella Infections	<p>About 10,000 to 18,000 people are infected with the Legionella bacteria in the United States and Canada each year.</p> <p>Legionella can be killed after water is heated up to 70 C.                  But water temperature over 49 C poses potential risks in scalds and burns.</p> <p>A water tank with 60 C or higher storage temperature and combined with a thermostatic mixing valve is one solution.</p>
Water Scalds & Burns	<p>Over 500,000 scalds and burns occur annually in Canada and USA.                  Most victims are children under age of 5 and adults over 65.</p> <p>The safe temperature at the point of use is 49 Celsius and below.                  But water storage under 60 C may pose risks in Legionella bacteria.</p> <p>In Canada, the latest building codes mandate a thermostatic mixing valve installed with any new water heater in order to prevent water scalds and burns.</p>
Drinking Water Safety	<p>Over 30 millions of Canadian and USA residents are drinking contaminated water. For example, Flint in Michigan and downtown Toronto in Ontario.</p> <p>Bottled water or additional drinking water treatment are solutions.                  Distilled water is the most reliable drinking water.</p> <p>Factors in choosing drinking water solutions:                  1, water quality. 2, installation cost. 3, operation / maintenance cost.</p> <p><b>EcoHome21</b> is the most cost effective all-in-one solution to these problems.</p>

All-in-one solution: **Hot water and Drinking water**

DHG series, from Instant Hot Water to Drinking Water Distillation and Combined Solution

model DHG530	Instant hot water Patented technology	Instant + continuous hot water + anti-scalding, + optimized water switch + energy saving control.
model DHG540	Hot water + drinking water Patented technology	All in one combined system: full function system. Instant hot water + continuous hot water + distilled water + energy recovery + water saving control.

**Comparison in functions: DHG500 series**

	Instant hot water	Legionella prevention	Anti-scalding	Unlimited hot water	Distilled drinking water
DHG530	YES	YES	YES	YES	NO
DHG540	YES	YES	YES	YES	YES

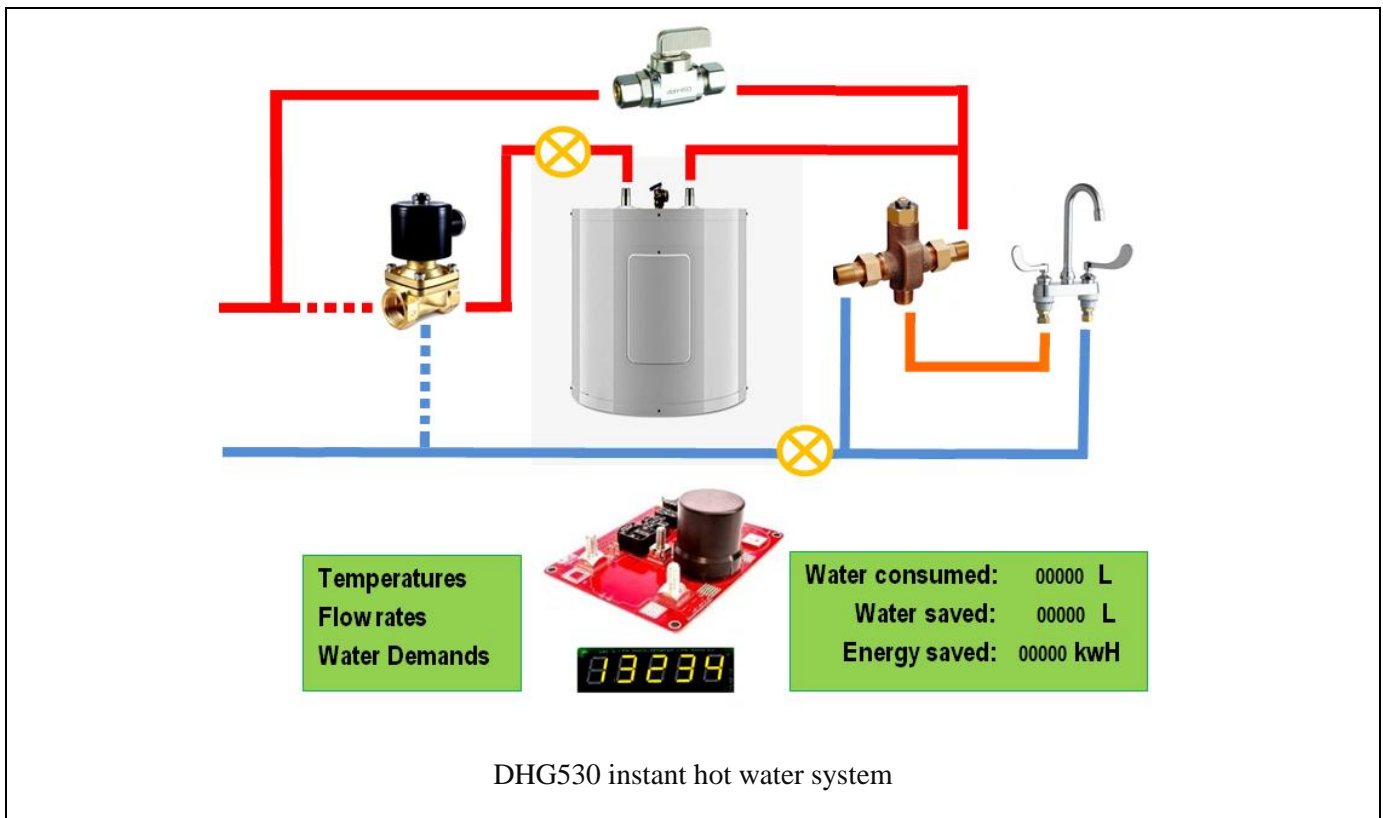
**Comparison 2: Cost**

	Equipment Cost	Installation Cost	Operation Cost
DHG530 hot water	Moderate	<b>Very low</b>	<b>Very low</b>
Competitors' Mini Tank Heater	Moderate	Moderate	High
Competitors' Instant Water Heater	Moderate	High	Low
	Equipment Cost	Installation Cost	Operation Cost
DHG540 drinking water combined	Moderate	<b>Very low</b>	<b>Very low</b>
Competitors' Table Top Distiller	Low	Low	High
Competitors' Water Treatment	High	Very high	Very high

**Comparison 3:** Cost recovery from **direct water saving and energy saving**

	Estimatd cost recovery period
DHG530 hot water	< 4 years
DHG540 combined	< 3 years
Competitors' Mini tank heater	>8 years
Competitors' Instant water heater	6-8 years
Competitors' Table top distiller	Never
Competitors' Water treatment	Never

**DHG530, Instant Hot Water System**



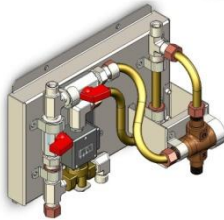
## DHG530 general information

### DHG530

#### Full function

#### Instant+ Continuous

#### Hot Water On-demand



Instant Hot Water + Anti-scalding + Water Saving + Heating Energy Saving  
Patented in Canada and USA.

- 1, Instant and non-interrupted hot water, 24/7/365.
- 2, Save on waiting time, water and heating energy.
- 3, Anti-scalding, kids safe and seniors safe, never burns.
- 4, Best for frequent hot water demands.
- 5, 100% Legionella free @70 degrees Celsius disinfection.
- 6, Plug and play, no additional wiring work needed.
- 7, Stand-by power less than 20w, high energy efficiency.
- 8, Capacity: A: unlimited (when with basement water tank).  
B: 14L@47 Celsius when in stand-alone use.
- 9, Certified for US and Canada.
- 10, Made of lead-free SS 314 material.

DHG530 is an innovative hot water system

#### Best results:

Save more than \$993 in 6 years\* (water+ hydro)

- 1, Save more than 131,400L in water bills. (>\$657)
- 2, Save up to 4,926kWh in hydro or gas. (>\$493)
- 3, Standby <20W. cost only \$105 in 6 years.

Net saving= \$657+\$493-\$105=\$1045 in 6 years

#### Average results:

- 1, Save more than 87,600L in water bills. (>\$438)
- 2, Save up to 3,285kWh in hydro or gas. (>\$329)
- 3, Standby <20W. cost \$105 in 6 years.


Net saving= \$438+\$329-\$105=\$662 in 6 years

\* Calculation/ estimation are based on a family of three, in real Ottawa conditions.

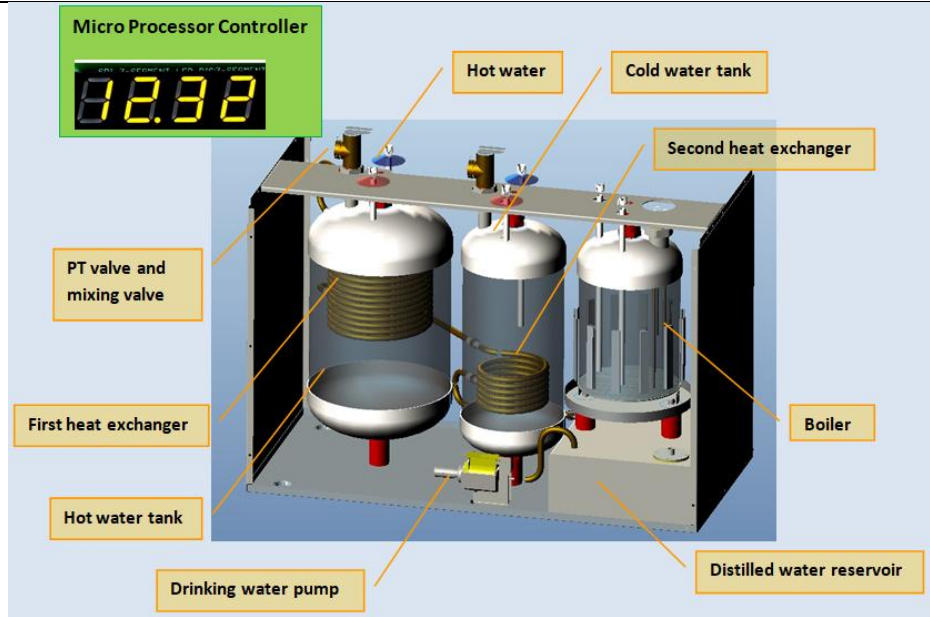
\*\* 30 feet from kitchen to the basement water heater with 3/4" PEX hot water line.

\*\*\* Kitchen hot water demands: 15 counts and 10 counts per day.

**EcoHome21®, DHG530, Specifications**

	<p><b>DHG530</b></p> <p>Instant water on demands, Anti-scalding water mixing valve, Automatic water saving and energy saving control,</p>
Anti-scalding	Max. 47 Celsius hot water output, temperature pre-set
Static capacity	7.6L (2gallon) @ 70 degrees Celsius 14L (3.7gallon) @ 47 degrees Celsius
Hot water supply capacity	Un-limited (with basement water heater) Automatic Controlled,
Inner tank	Stainless Steel 314
Temp. recovery time	N/A, Designed for continues automatic operation.
Legionella prevention	Yes. >70 degrees Celsius in storage tank
USA, Canada certifications	ANSI/UL 174, CAN/CSA c22.2 No110, ASSE1070/CSA, B125
Lead-Free	Yes, NSF/ANSI 372 (optional)
Voltage	120V +/- 20%, 50/60HZ
Max. heating power	Peak 400w @ 20 degrees Celsius, 20w @ 70 degrees Celsius
Heating element	Long life PTC, (thermistor ceramics)
Display	1, water consumed 2, Water saved 3, Heating energy saves 4, Working statues
Dimensions	W45cm xD31cm xH40cm
Weight	12.7kg
In Package	1 hot water heater system, 1 pre-assembled automatic kit, 4 stainless flex pipes with 3/8 OD comp. connectors
Installation	Under sink, flexible
Notes	Complied Codes: a built-in thermostatic mixing valve installed in each DHG530 system.

**DHG540, Instant hot water and distilled drinking water combined system**



DHG540 system

**DHG540,**  
**A Combination of**  
**Distilled water /Hot water**  
**Fully automatic**



Instant hot water + Free Distilled Drinking Water, 24/7/365  
 Patents Pending in Canada and US


- 1, Produce up to 12L of cooled distilled drinking water in each 24 hrs.
- 2, Instant and non-interrupted hot water ready at any moment.  
 With anti-scalding hot water regulating mixing.
- 3, Fully automatic operation. Standby power <40w.
- 4, Save more than \$4,206 in drinking water in 6 years \*\*.
- 5, High energy efficiency design.
- 6, Save additional \$557 on water and energy.

Total saved= \$557 in energy bills + \$4206 in drinking water=\$4763

- 7, Certified for US and Canada.
- 8, Made of lead-free SS 314 material.

\* Distilled water produced is in proportion to hot water consumed.  
 A: about 1L distilled water produced for each 10L hot water consumed.  
 B: max. 12L /24 hours in distilled water.  
 \*\* Drinking water cost based on a family of three,  
 \$ 1.2 per gallon, 2L per person per day, in 6 years.  
 \*\*\* Estimations based on Ottawa residential kitchen conditions.

**EcoHome21®, DHG540, Specifications**

	<p><b>DHG540</b>                  Free Distilled Drinking Water                  Unlimited Instant Hot Water                  Anti-scalding, kids and seniors safe                  Cooled drinking water ready 24/7</p>
<p>Distilled Water</p>	<p>Proportion to hot water consumed, max 12L per day.                  ** 1L distilled water produced for each 10L hot water consumed.</p>
<p>Distilled Water Reservoir</p>	<p>6L, automatically re-circulated (boiled) to keep fresh.</p>
<p>Anti-Scalding</p>	<p>Built-in temperature regulating mixing valve.                  Max. 47 degrees Celsius hot water output.</p>
<p>Static Capacity</p>	<p>12L/3.2 gallon inner hot water tank                  + 6L distilled water reservoir</p>
<p>Hot Water Capacity</p>	<p>Automatic controlled,                  un-limited, un-interrupted (with basement hot water)</p>
<p>Inner Parts</p>	<p>Stainless Steel 314</p>
<p>Temp. Recovery time</p>	<p>N/A. Continuous, non-interrupted</p>
<p>Legionella Prevention</p>	<p>Yes. &gt;70 degrees Celsius in hot storage tank</p>
<p>USA, Canada certifications</p>	<p>ANSI/UL 174, CAN/CSA c22.2, ASSE1070/CSA, B125.</p>
<p>Lead-Free</p>	<p>Yes, NSF/ANSI 372, (Optional)</p>
<p>Voltage</p>	<p>120V +/- 20%, 50/60HZ</p>
<p>Max. heating power</p>	<p>Peak 650w at 20 Celsius</p>
<p>Heating element</p>	<p>Long life PTC, (thermistor ceramics).</p>
<p>Dimensions</p>	<p>W50cm xD31cm xH50cm</p>
<p>Weight</p>	<p>31.5kg</p>
<p>In the Package</p>	<p>All-in-one package, one SS touch-sensor drinking water faucet.                  4 stainless flex pipes with 3/8 OD comp. connectors.</p>
<p>Installation</p>	<p>Under sink, flexible</p>
<p>Notes</p>	<p>Fully functional solutions for hot water and distilled water.                  Complies with building codes and drinking water standards</p>

**Water consumption and energy cost calculation**

\*\* data based on Ottawa average residential kitchens

1	<p>Tap Water Wasted while waiting without instant water supply</p>	<p>4 L water drained while waiting for hot water each time. 10-15 accounts hot water usage daily at kitchen faucet.</p> <p>Water drained: @ Per day .....= 4Lx10 @ Per year.....= 4Lx10x365=14,600L @ 6 Years.....= 87,600L</p> <p>The drained water cost in Ottawa: \$2 water charge/1000L+ \$3 sewer charge/1000L=\$5/1000L @ Per day.....= \$0.2 @ Per year.....= \$73 @ 6 Years.....= \$438 <u>* based on average usage, 10 counts, family of three, year around</u></p>
2	<p>Heating Energy Wasted without instant water supply</p>	<p>Each time after using, hot water in the water lines between basement water heater and the point of use cools down. Heating energy in the hot water is dissipated.</p> <p>Wasted heating energy: @ Per day ....= 4Lx10-----&gt;1.5kWh @ Per year....= 4Lx10x365=14,600L-----&gt;548kWh @ 6 Years.....= 87,600L-----&gt;3285kWh * Based on 34kwh@1000L water heat up 30 C <u>** Based on average usage, 10 counts, family of three, year around</u></p>
3	<p>Drinking Water Costs from commercial suppliers</p>	<p>2L drinking water is recommended for each person per day. That is 730L per year, 4,380L in 6 years, each person.</p> <p>Drinking water consumption for a family of three : @ per year.....=2,190L @ per 6 years.....=13,140L</p> <p>Bottled distilled / bottled drinking water, @\$1.2 per gallon /\$0.32 per liter. @ per year.....=2,190L-----&gt;\$701 @ per 6 years.....=13,140L-----&gt;\$4206</p> <p>Save on drinking water: \$4204</p>
4	<p>DHG Standby power consumption</p>	<p>Standby power consumption:</p> <p>DHG 530, 20w, 175kWh/year, ( 1051kWh/6 year ) DHG 540, 40w, 350kWh/year, ( 2102kWh/6 year )</p>



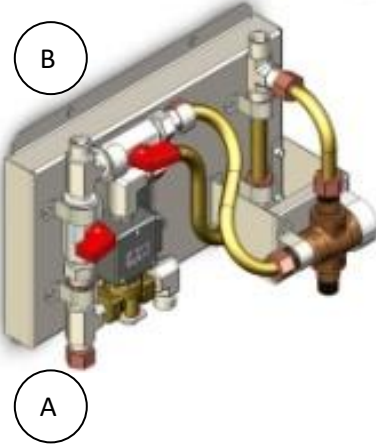
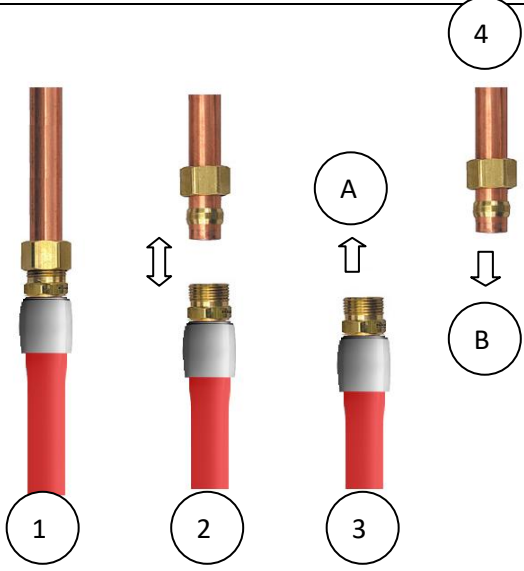
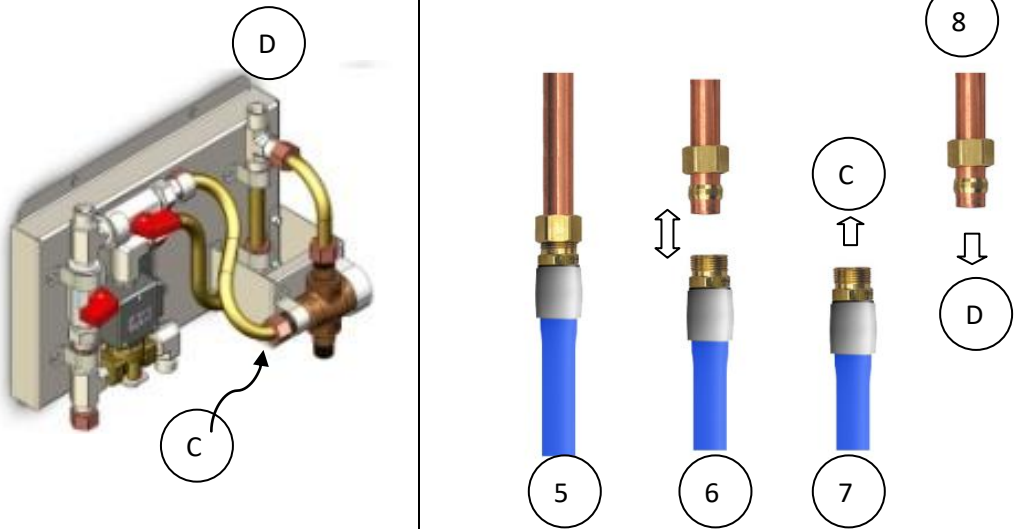
**Water Heater: cost comparison**

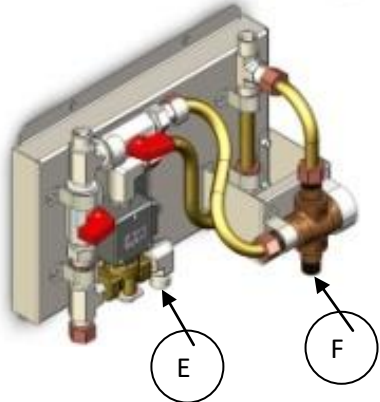
5	Competitors	Equipment cost	2-6 Gallons Small tank	<u>\$250-400</u> Electric only
			40-60 Gallons tank	<u>\$500-800</u> Standard primary water heater
			Tank less Water Heater	<u>\$200-1000</u> Both Electric and Gas models.
		Installation cost	2-6 Gallons Small tank	<u>\$300-500</u> Plumbing fittings, hard wiring needed.
			40-60 Gallons tank	<u>\$900</u> Standard service
			Tank less Water Heater	<b><u>\$2000-3000</u></b> Hard Wiring (240V) work or Gas piping work needed
		Operation cost \$/per gallons	2-10 Gallons Small tank	<u>150-300%</u> Small size tanks cost more energy in standby.
			40-60 Gallons tank	<b><u>100%</u></b> Standard energy cost, per gallon
			Tank less Water Heater	Save <u>20- 30%</u> in heating Energy, Take 10-20 years to recover the cost.
		Mixing Valve Equipment and Installation cost		
6	DHG530 DHG540	Equipment cost	DHG530, moderate DHG540, moderate	
		Installation cost	DHG530, <b>10 minutes</b> installation work. DHG540, <b>30 minutes</b> installation work  1, Pre-engineered kits, easy to install. 2, NO wiring work needed, plug and play at any receptacle.	
		Operation cost	Positive cash flow by water and energy reduction.  1, Saving on water and heating energy. 2, DHG530, 540 recovers the initial cost in <u>3-4 years</u> .	

**Distilled Water: cost comparison**

1	Competitors' Distillers	Equipment	\$150-300 (small size table top distiller)
		Operation cost	<p>1, Theoretically 0.62kWh /per litre. Actually 0.8--1.1kWh / per litre.</p> <p>2, Heat dissipated from distiller costs additional cooling energy in summer.</p> <p>For a family of three, 2L per person each day. <u>13,140L</u> in 6 years. <u>14,454kWh</u> hydro bills in 6 years. = \$1445 (@10cents/ kWh)</p>
		Maintenance	Regular de-scaling.
2	DHG 540	Equipment	Moderate. Under sink installation. 6 years warranty.
		Operation cost	<p>DHG 540 produces distilled water at NO extra cost.</p> <p>** Distilled water is the by-product of the hot water.</p> <p>1, Distilled water 24/7/365. 2, <u>Plus</u> instant hot water supply. 3, Save more on water and heating energy:</p> <p>Distilled water \$42,06+ water and energy bill savings \$556. Net saving =<u>\$4,762.</u></p> <p><u>Save up to \$4,762 in 6 years.</u></p> <p>** Based on \$1.2 per gallon commercial distilled water</p>
		Maintenance	Regular de-scaling. One simple maintenance for every 1000L distilled water produced. No professional services will be applied.

Installation

<p>7</p>	<p>Hot line connection:</p> <ol style="list-style-type: none"> <li>1, Shut off the supply valve. Open the kitchen faucet until no water comes out.</li> <li>2, Locate the hot water line under the sink. As shown in 1.</li> <li>3, Un-lock the pipe connection with two wrenches. As shown in 2.</li> <li>4, Connect the hot water line 3 to the water kit inlet port A.</li> <li>5, Connect the water kit outlet port B to the faucet hot inlet 4.</li> </ol>	
<p>DHG530</p>	 <p>A detailed view of the DHG530 water kit. Port A is the inlet for the hot water line, and port B is the outlet for the faucet hot inlet. The kit is mounted on a wall and includes various valves and connections.</p>	 <p>A sequence of five diagrams illustrating the hot line connection process. 1. A red hot water line with a brass fitting. 2. The brass fitting being unlocked from the copper pipe. 3. The red line being inserted into port A of the water kit. 4. The water kit outlet port B being inserted into the faucet hot inlet. 5. The final assembled hot line connection.</p>
<p>Cold line connection</p>		
<ol style="list-style-type: none"> <li>7, Locate the cold water line under the sink. As shown in 5.</li> <li>8, Un-lock the pipe connection with two wrenches. As shown in 6.</li> <li>9, Connect the cold water line 7 to the water kit inlet port C.</li> <li>10, Connect the water kit outlet port D to the faucet cold inlet 8.</li> </ol>		
 <p>A sequence of four diagrams illustrating the cold line connection process. 7. A blue cold water line with a brass fitting. 8. The brass fitting being unlocked from the copper pipe. 9. The blue line being inserted into port C of the water kit. 10. The water kit outlet port D being inserted into the faucet cold inlet. The final assembled cold line connection is shown.</p>		

	 <p>The diagram shows a side view of the EcoHome21 water heater tank. Two yellow flexible hoses are connected to the tank. Port E is the inlet flex and port F is the outlet flex. Both ports are circled in black with arrows pointing to them. The tank is mounted on a wall, and various pipes and valves are visible.</p>	<p>Tank connection</p> <ol style="list-style-type: none"><li>11, Connect the kit port E to tank inlet flex,</li><li>12, Connect the kit port F to tank outlet flex,</li></ol> <p>Test and initial set up:</p> <ol style="list-style-type: none"><li>14, Open the supply valve, test leakage.</li><li>15, Plug the power to a 120V source.</li><li>16, Open the faucet and purge after first power on, Keep water running until the hot water reaches.</li><li>17, Close the faucet. It is ready for stand-by.</li></ol> <p>***Apply sealing compounds on the male threads 7 or the <u>O ring</u> if necessary.</p> <p>If leaks, cut the copper pipe and replace with a new <u>O ring</u> and connect again.</p>
--	--	---