



## Residential Energy Saver High Input Direct Vent Water Heater

### Features:

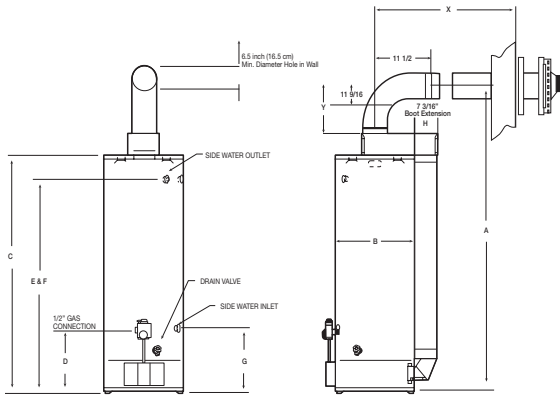


Bradford White is ISO registered to the 9001 standard.

- All residential storage models meet or exceed efficiency requirements of the Department of Energy. ASHRAE Standard 90.1 b (current standard) and the National Appliance Energy Conservation Act of 1987 recent amendment effective January 20, 2004 which supercedes all state and local efficiency requirements.
- **1" Non-CFC foam insulation**—surrounds the tank surface, saving energy by retarding loss of heat.
- **Closed combustion**—all air for combustion is taken directly from the outside. The co-axial vent pipe (pipe inside a pipe) draws combustion air in through the outer pipe, and exhausts the products of combustion through the inner pipe.
- **Co-axial**—rotational venting at top of unit.
- **Factory installed dielectric waterway fittings**—for longer water heater life. Easier installation.
- **No electrical power necessary.**
- **Piezo igniter**—for ease of lighting the pilot.
- **Vitraglas® lined tank**—Bradford White water heater tanks are protected from the corrosive effects of hot water by an exclusive ceramic porcelain-like coating. The Bradford White high silica Vitraglas® lining provides a tough interior surface for our water heater tanks.
- **Factory installed Hydrojet® Total Performance System**—cold inlet sediment reducing device. Helps prevent sediment build up in tank. Increases first hour delivery of hot water while minimizing temperature build up at top of tank.
- **Protective magnesium anode rod**—provides added protection against corrosion for long trouble-free service.
- **Brass drain valve.**
- **T&P relief valve**—factory included.
- **Side Tappings**—for space heating purposes.
- **Fully automatic controls**—automatic temperature selection at your fingertips. Built-in energy cut-off switch prevents abnormally high water temperature for extra safety. Built-in gas pressure regulation. Fast-acting thermostat starts heat recovery cycle sooner.
- **Optional vent kits**—allow for up to 8 foot (2.4 meters) extensions.
- **Six or ten year limited warranty on steel tank**—heavy gauge steel automatically formed, rolled and welded to assure a continuous seam for glass lining.
- **Six year limited warranty on parts.**
- **Design certified by CSA International. (formerly AGA and CGA)**

MANUFACTURED UNDER ONE OR MORE OF THE FOLLOWING U.S. PATENTS:  
5,954,492; 5,761,379; 5,943,984; 5,081,696; 5,988,117; 6,142,216; 5,199,385;  
5,574,822; 5,372,185; 5,485,879; 5,277,171; (B1)5,341,770; 5,660,165; 5,596,952;  
5,682,666; 4,904,428; 5,023,031; 5,000,893; 4,669,448; 4,829,983; 4,808,356;  
5,115,767; 5,092,519; 5,052,346; 4,416,222; 4,628,184; 4,861,968; 4,672,919;  
Re. 34,534. OTHER U.S. AND FOREIGN PATENT APPLICATIONS PENDING.  
CURRENT CANADIAN PATENTS: 1,272,914; 1,280,043; 1,289,832; 2,045,862;  
2,112,515; 2,108,186; 2,107,012.





## Horizontal Installation Only

### Optional Kits:

Part Number	Description
243-42516-00	Kit F – Telescopes from 4 <sup>3</sup> / <sub>16</sub> " to 5 <sup>1</sup> / <sub>16</sub> "
243-42517-00	Kit G – Telescopes from 6 <sup>1</sup> / <sub>2</sub> " to 9 <sup>3</sup> / <sub>16</sub> "
243-42514-00	Kit H – Telescopes from 13 <sup>3</sup> / <sub>16</sub> " to 23 <sup>1</sup> / <sub>16</sub> "
243-42512-00	Kit I – Telescopes from 49 <sup>13</sup> / <sub>16</sub> " to 95 <sup>13</sup> / <sub>16</sub> "

The water heater is shipped with a standard vent kit (p/n 24342514-00) and the components are as follows: 4" vent tube\*, 6" Air Intake Tube, Vent Terminal, Inner Wall Term Mounting Flange, Outer Wall Term. Mounting Flange, Vent Terminal Hardware, RTV Silicone Sealant, 4" Vent Elbow and a 6" Air Intake Elbow. \*The Vent Tube and Air Intake Tube provided with the heater telescopes from 13<sup>3</sup>/<sub>16</sub>" to 23<sup>1</sup>/<sub>16</sub>".

Length Height <sup>4</sup> / <sub>8</sub> " X	16 <sup>1</sup> / <sub>16</sub> " 17 <sup>3</sup> / <sub>16</sub> "	18" 21 <sup>1</sup> / <sub>2</sub> "	25 <sup>1</sup> / <sub>16</sub> " 35 <sup>1</sup> / <sub>16</sub> "	35 <sup>3</sup> / <sub>16</sub> " 59 <sup>1</sup> / <sub>16</sub> "	59 <sup>3</sup> / <sub>16</sub> " 107 <sup>1</sup> / <sub>2</sub> "
11 <sup>3</sup> / <sub>16</sub> "	ORDER KIT F	ORDER KIT G	<b>NO ADD'L KIT REQUIRED</b>	ORDER KIT H	ORDER KIT I
16 <sup>5</sup> / <sub>16</sub> "	ORDER KIT F (2)	ORDER KIT G & F	ORDER KIT F	ORDER KIT H & F	ORDER KIT F & I
18 <sup>1</sup> / <sub>16</sub> "	ORDER KIT F & G	ORDER KIT G (2)	ORDER KIT G	ORDER KIT G & H	ORDER KIT G & I
25 <sup>1</sup> / <sub>16</sub> "	<b>ORDER KIT F</b>	<b>ORDER KIT G</b>	<b>ORDER KIT H</b>	<b>ORDER KIT H (2)</b>	<b>ORDER KIT I</b>
35 <sup>3</sup> / <sub>16</sub> "	<b>ORDER KIT H &amp; F</b>	<b>ORDER KIT H &amp; G</b>	<b>ORDER KIT H (2)</b>	<b>ORDER KIT H (3)</b>	<b>ORDER KIT H</b>
59 <sup>3</sup> / <sub>16</sub> "	ORDER KIT I & F	ORDER KIT I & G	ORDER KIT I	ORDER KIT I & H	ORDER KIT I (2)

The kits found in the bold frame are what is needed in addition to the vent and air intake tube provided with the water heater. (utilizes the vent tube provided)

The kits found outside the bold frame are at a distance that does not utilize the vent tube provided with the standard vent kit.

For vent distances not found in the selection chart above, please contact the Product Management Department for sizing recommendations.

## Energy Saver Direct Vent Models

CEC listed.

77% Recovery efficiency (65 gallon model is 76%).

NATURAL GAS					A B C D E F G																				
Model Number	Imp. Gal. Cap.	U.S. Gal. Cap.	Liters	Input BTU	KW	GPH Rec. 50°C/90°F Rise			Ht. to Center Line of Vent		Jacket Dia. in. mm.	Ht. to Top of Heater in. mm.	Ht. to Gas Conn. in. mm.	Ht. to T&P Conn. in. mm.	Space Htg. Outlet in. mm.	Space Htg. Inlet in. mm.	Vent Dia. in. mm.	Approx. Shpg. Wt. Lbs. Kg.							
						Imp. Gal.	US GPH	LPH	in.	mm.															
DH1-504T6BN <sup>(LP)</sup>	40	48	182	50,000	14.7	43	52	197	75 <sup>3</sup> / <sub>4</sub>	1911	20	508	58 <sup>3</sup> / <sub>4</sub>	1492	15 <sup>3</sup> / <sub>4</sub>	387	52 <sup>1</sup> / <sub>4</sub>	1327	52 <sup>1</sup> / <sub>4</sub>	1327	15 <sup>3</sup> / <sub>4</sub>	400	4/6	102/152	197/89.4
DH1-65T6BN	54	65	246	55,000	16.1	47	56	212	78 <sup>3</sup> / <sub>4</sub>	1988	22	559	62	1557	15 <sup>3</sup> / <sub>4</sub>	387	56	1422	56	1422	15 <sup>3</sup> / <sub>4</sub>	400	4/6	102/152	243/110
DH1-75S6BN <sup>(LP)</sup>	62	75	284	60,000	17.6	51	61	231	78 <sup>3</sup> / <sub>4</sub>	1918	24 <sup>1</sup> / <sub>2</sub>	622	59	1499	15 <sup>3</sup> / <sub>4</sub>	387	52	1321	52	1321	16 <sup>1</sup> / <sub>2</sub>	419	4/6	102/152	281/127

Note: 50 gallon model comes equipped with two factory installed heat traps.

For 10 year models, change suffix from "6" to "10".

All propane gas heaters are equipped with Cast Iron Burner. Change suffix "BN" to "CX".

### Suitable for Water (Potable) Heating and Space Heating

Toxic chemicals, such as those used for boiler treatment, shall NEVER be introduced into this system. This unit may NEVER be connected to any existing heating system or component(s) previously used with a non-potable water heating appliance.

### General

All gas water heaters are certified at 300 PSI (2068 kPa) test pressure and 150 PSI (1034 kPa) working pressure. All water connections are 3/4" (19mm) NPT on 11" (703mm) centers on top of unit, all gas connections 1/2" (13mm). All models design certified by CSA International (formerly AGA and CGA). Recovery based on rated efficiency.

### Meets SCAQMD Requirements

Dimensions and specifications subject to change without notice in accordance with our policy of continuous product improvement.

### 6-Year Limited Warranty on Component Parts

BRADFORD WHITE CORPORATION has a 6-year warranty on replaceable parts—thermostat, burner, dip tube, drain valve and piezo igniter. These quality components are manufactured for us by industry leaders and will be replaced in the event of failure during the parts warranty period (exclusive of shipping and re-installation cost).§

§ Some states do not allow limitations on warranties. See complete copy of the warranty included with this product. Indicated warranties apply to USA, Canada and Puerto Rico installations.

### 6 or 10-Year Limited Tank Warranties

BRADFORD WHITE CORPORATION LIMITED WARRANTY: Protects your investment in a quality glass-lined heater. If the tank leaks for reasons of faulty materials, workmanship, or corrosion within the warranty period, the heater will be replaced with a comparable heater of our manufacture (exclusive of shipping and re-installation cost).§

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	Recovery at 50°C Rise and 90°F Rise		
	Imp. GPH	U.S. GPH	Liters/Hr.
DH1-504T6CX <sup>(LP)</sup> Propane Gas Inputs	48,000 BTU/H	14.1 KW	41
DH1-75T6CX	57,000 BTU/H	16.7 KW	48

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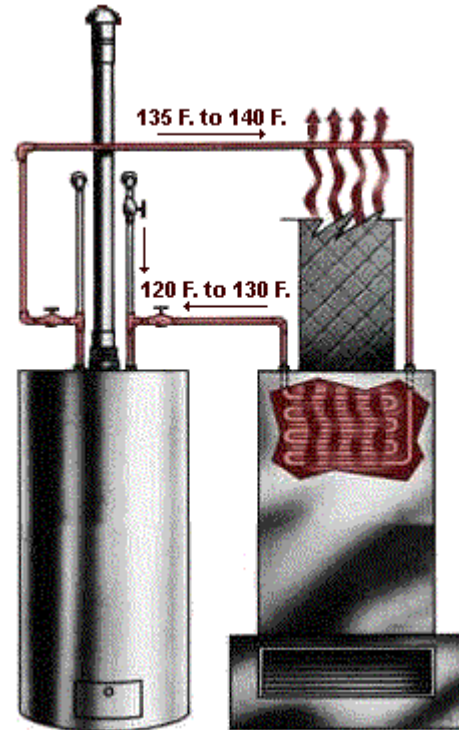
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for Internet Explorer  
version 5.5 or higher

## Aqua Therm® Combo Heating System

When a First Co. Aqua Therm® "Combo Heater" (air handler) is connected to an adequately sized natural gas, LP, or oil fired water heater, the water heater becomes a dual function appliance that can provide comfortable, efficient space heating as well as hot water for domestic use.

First installed in California in 1974, there are now over a million Combo systems in operation from Canada to Florida and in both single and multi-family applications. [Contact First Operations LP](#) for a list of Aqua Therm® installations in your area.



**Problem:** Gas heat costs more to install than electric systems.

**Solution:** Combo Heaters can reduce gas installation costs by more than \$250 (see note 1).

**Problem:** In multi-family applications, gas furnaces take up more valuable floor space than electric systems.

**Solution:** First Co. Aqua Therm® Combo Heaters can be used in any floor plan...and some models don't take up any floor space!

**Problem:** Gas furnaces require flue venting and combustion air.

**Solution:** Combo Heaters don't require furnace flue venting, combustion air, OR gas piping.

## Water Heater Requirement

Any water heater sized large enough to accomplish both functions (space and water heating) will work...no special water heater is needed! Water heaters used for space heating will generally require extra gallon capacity and higher BTUH input. (See "Equipment Sizing")

## Benefits

### High Efficiency

The recovery efficiency of today's natural gas water heaters ranges from 76 to 94%. As a general rule of thumb, the space heating efficiency of any water heater can be approximated by adding several percentage points to the water heater's recovery efficiency. The efficiency gained by these systems comes

from the fact that:

1. Eliminating the gas furnace saves the energy that would normally be lost due to the furnace vent, gas pilot, and furnace cabinet.
2. Laboratory and field tests have proven that water heater standby losses are reduced when the water heater is operated more frequently.

### **Low Maintenance**

Combo Heaters are simple and uncomplicated compared to heat pumps and high efficiency gas furnaces. The heating system has only five moving parts!

### **Compatible Cooling Coils**

Cooling coils installed in First Co. Combo Heaters are completely compatible with major brands of condensing units. Two models ([MBQB](#) and [MBXB-HW Series](#)) obtain efficiencies up to 14 SEER, depending on the outdoor unit.

To insure compatibility and to obtain efficiency information, contact your local distributor or First Co.

### **Consistent, Comfortable Heat**

As long as hot water is available, Combo Heaters will provide warm air no matter what the temperature is outside. Homeowners report being much more comfortable with hydronic heat than with other space heating systems, such as heat pumps.

### **Longer Water Heater Tank Life**

By circulating water through the water heater more frequently, sediment build-up is reduced, corrosion is minimized, and the life of the water heater tank is extended.

### **Flexibility**

First Co. products include fifteen models of Aqua Therm® Combo Heaters. Models are available to recess in a wall, install above the ceiling, in a closet, or in an attic. You can choose models for heating only or with cooling coils up to five tons. There's even a heating coil to add to your existing air handling unit.

## **Technical Considerations**

### **Equipment Sizing**

#### **Air Handler Selection:**

Select an air handler with a heating output that exceeds the space heating loss of the structure and that has a cooling coil sized to match the outdoor condensing unit. Special note...the heating output of the air handler or hot water coil will not be greater than the output of the selected hot water heater.

Therefore, if the water heater is undersized, the heating BTUH of the air handler will be LESS than it's rated output.

#### **Water Heater Selection:**

The following sizing information should only be used as a basic guide to adequate water heater sizing because of variations in each family's domestic hot water requirements. For additional assistance in water heater sizing contact a qualified professional engineer.

Proper water heater sizing should consider both the gallon capacity AND the BTU input of the water heater.

#### **1. To determine water heater GALLON CAPACITY:**

A minimum 40 gallon high recovery and/or high efficiency gas or oil-fired water heater is recommended. The following volume sizing guide is satisfactory in most areas of the country:

<b>600-800 CFM air handlers</b>	Minimum 40 gallon water heater
<b>1000-1200 CFM air handlers</b>	Minimum 50 gallon water heater
<b>1400-1600 CFM air handlers</b>	Either two 40 gallon water heaters piped together, one high input 50 gallon (63,000 to 75,000 BTU input), or one 72 to 75 gallon
<b>2000 CFM air handlers</b>	Any combination of water heaters having at least 105,000 BTU OUTPUT.

#### **2. To determine water heater BTU INPUT:**

(Assumes a water heater recovery efficiency of 76%). For mild climates...BTU INPUT = structure's heat loss x 1.51. For colder climates...BTU INPUT = structure's heat loss x 1.58.

#### **Condensing Unit:**

Selection of the condensing unit size should be determined by the "Manual J" method or other approved heat loss/heat gain calculation procedure. Certified cooling capacities and efficiency information are available upon request.

#### **Air Handlers**

All "Q" type air handlers come with factory installed circulating pump, hot water check valve, and purge valve.

#### **Water Piping**

Water piping between the water heater and air handler should be 3/4" (1" on 60) nominal copper or other code approved material.

When installed in an area subjected to freezing temperatures, the water piping should be completely insulated and a "freeze protector" should be installed on the hot water coil (contact factory).

To prevent air lock of the circulating pump, the piping connections to and from the air handler MUST come from the horizontal connections of the "T" fittings in the vertical hot and cold water supply lines at the water heater (see diagram above).

Maximum distance between the water heater and air handler should not exceed 100 feet (one way).

### Thermostats

All "Q" type air handlers (except [HBC-HWQ](#)) are compatible with any standard 24 volt thermostat. All other air handlers (including [HBC-HWQ](#)) will ONLY operate properly with a 24 volt thermostat having positive heat and cool fan cycle control. This is commonly called an "electric heat" type thermostat.

### Aqua Therm® Product Brochures

**Catalog #ATSS** - Feature and cost-of-operation comparison with other systems.

**Catalog #AQPRES** - Aqua Therm® presentation booklet.

**Catalog #IAM** - Installation manual.

### Notes:

(1) "Why Build with Gas Heat in Multi-Family Construction" - Gas Research Institute (GRI)

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