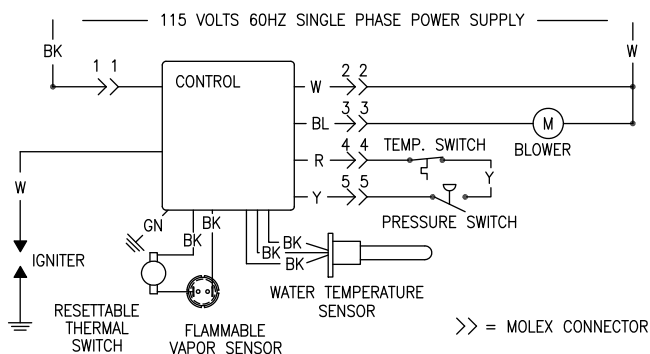
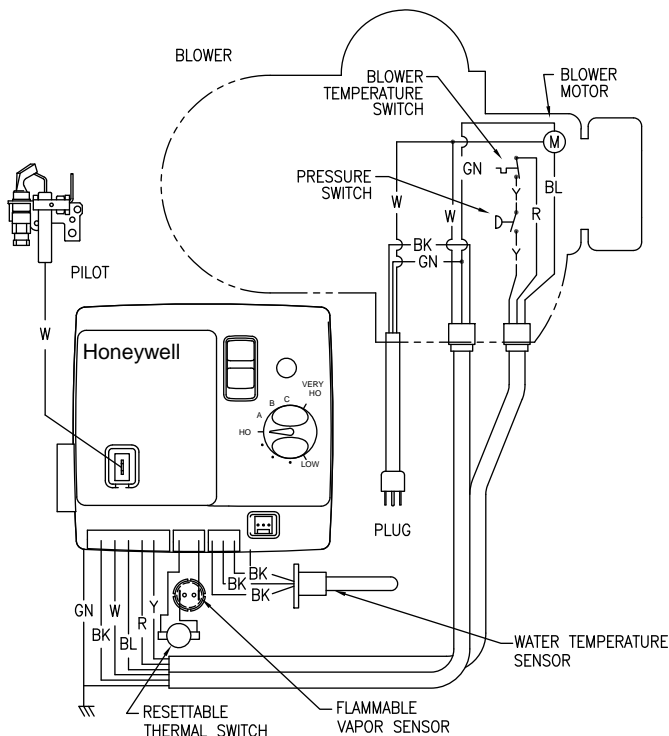


**SUPPLEMENT TO INSTRUCTION MANUAL**  
**P/N 238-45637-00 and 238-48933-00**  
**(Replaces pg. 32 (238-45637-00) or pg. 28 (238-48933-00) in**  
**instruction manual.)**

**Wiring Diagram**



ELECTRICAL RATING		
115 VOLTS	60HZ	LESS THAN 12 AMPS

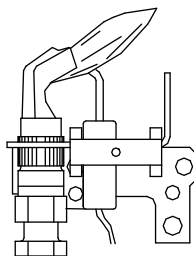
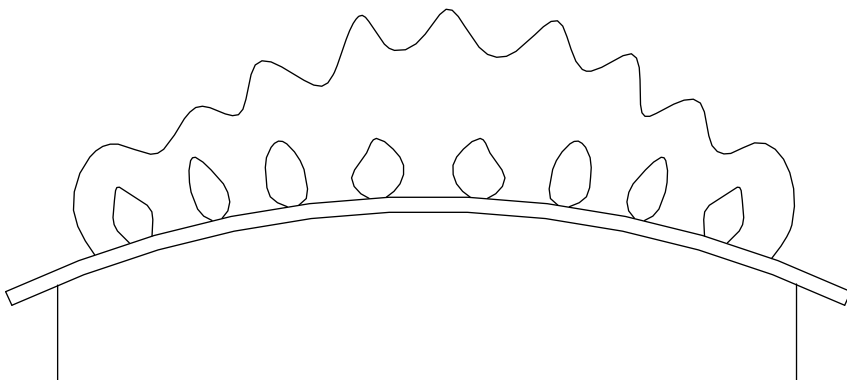
IF ANY OF THE ORIGINAL WIRES SUPPLIED WITH THE APPLIANCE MUST BE REPLACED, IT MUST BE REPLACED WITH APPLIANCE WIRE MATERIAL WITH A MINIMUM TEMPERATURE RATING OF 105°C AND A MINIMUM SIZE OF NO. 18 AWG.

238-48220-00A

**Figure 10 or Figure 6**

## **Burner Flame Check** **(Replaces pg. 36 (238-45637-00) or pg. 32 (238-48933-00) in** **instruction manual.)**

These models are equipped with self adjusting air mixture and do not have an adjustable air shutter (See *Figure 12*). At periodic intervals a visual check of the main burner and pilot flames should be made to determine if they are burning properly. The main burner flame should light smoothly from the pilot.



PILOT IN OPERATION  
**Figure 12 or Figure 8**

**(Replaces pg. 42 (238-45637-00) or pg. 38 (238-48933-00) in instruction manual.)**

***Troubleshooting continued-***

<b><u>LED Status</u></b>	<b><u>Control Status</u></b>	<b><u>Probable Cause</u></b>
Six flashes-three flashes, three second pause (Soft lockout)	Pilot flame extinguished. System resets after 5 minutes.	<ol style="list-style-type: none"> <li>1. Unstable pilot.</li> <li>2. Pilot tube blocked or restricted.</li> <li>3. Oxidation build up on pilot electrode.</li> <li>4. Wire damage to pilot assembly or bad connection at gas valve.</li> <li>5. Insufficient combustion air.</li> </ol>
Six flashes-four flashes, three second pause	Undesired-false pilot flame sensed. System auto resets.	Pilot valve stuck in open position.
Seven flashes, three second pause	Flammable vapor sensor fault detected, see warning label	<ol style="list-style-type: none"> <li>1. Flammable vapor present</li> <li>2. Flammable vapor sensor exposed to excessive moisture</li> <li>3. Flammable vapor sensor exposed to extreme ambient temp</li> <li>4. Resettable thermal switch open.</li> </ol>
Eight flashes-one flash, three second pause	Flammable vapor sensor out of specification. Possible short.	<ol style="list-style-type: none"> <li>1. Flammable vapor sensor out of specification</li> <li>2. Possible short in flammable vapor sensor or resettable thermal switch wiring.</li> </ol>
Eight flashes-three flashes, three second pause	T'stat well & sensor damaged or unplugged or Gas valve electronics fault detected	<ol style="list-style-type: none"> <li>1. Damage to thermowell wire.</li> <li>2. Thermowell sensor resistance out of range.</li> <li>3. Replace thermowell.</li> <li>4. Verify control is not wet or physically damaged</li> <li>5. Reset control on/off switch.</li> <li>6. Replace electronic module if 8-3 error persists</li> </ol>
Eight flashes-four flashes, three second pause	Gas valve fault detected.	<ol style="list-style-type: none"> <li>1. Verify control is not wet or physically damaged</li> <li>2. Reset control on/off switch.</li> <li>3. Replace gas control if 8-4 error persists</li> </ol>

<b><u>Fault</u></b>	<b><u>Probable Cause</u></b>
Resettable thermal switch tripped (open)	<ol style="list-style-type: none"> <li>1. Burner failure.</li> <li>2. Flammable vapor present.</li> </ol>

**Control Sequence of Operation**

**Start up Sequence**

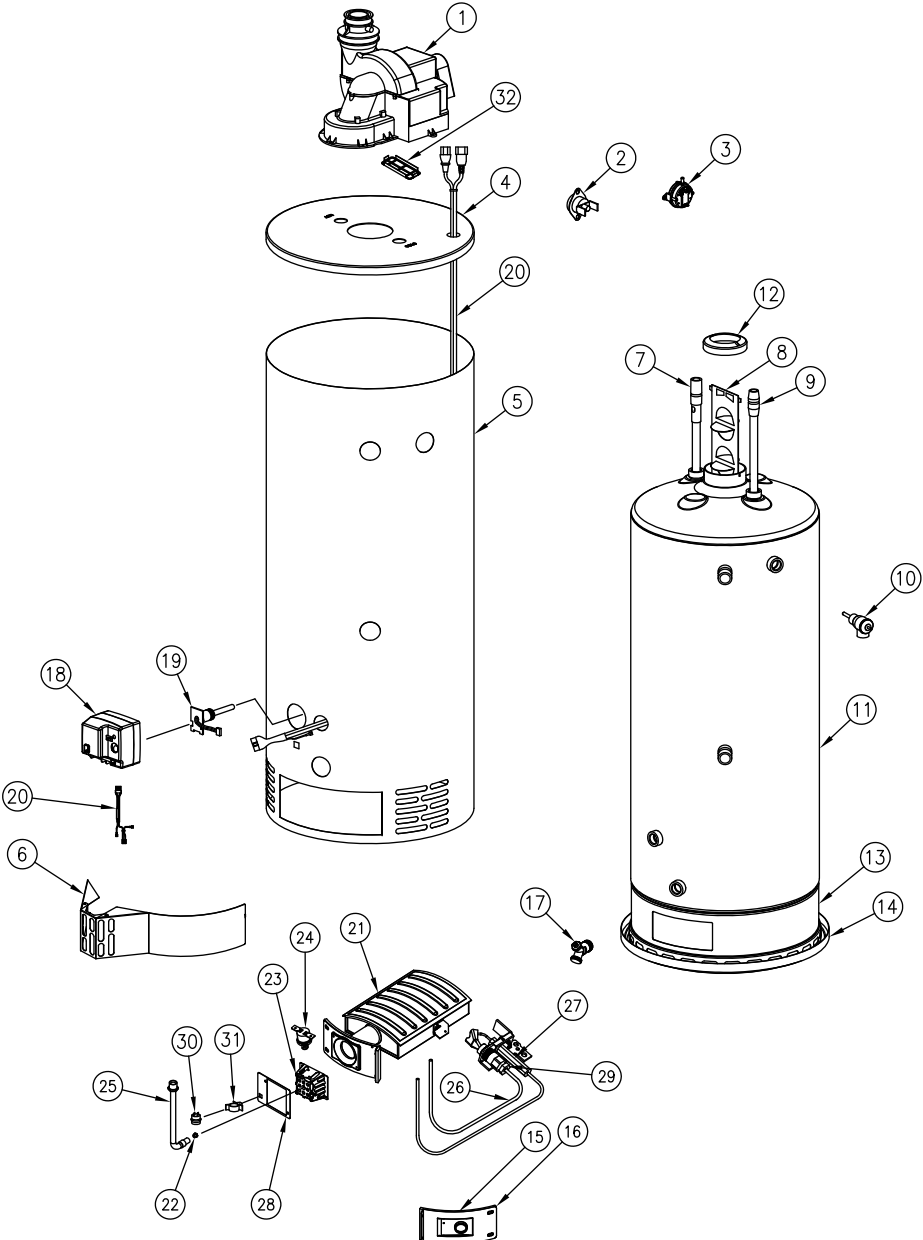
Upon powering up, the control checks for the presence of the vapor sensor, if the resistance is in the expected range the control will begin normal operation after 5 to 8 seconds.

**Normal Heating Sequence**

1. The thermostat senses a need for heat.
2. The control checks the pressure switch condition.

(Replaces pg. 43 (238-45637-00) or pg. 39 (238-48933-00) in instruction manual.)

**PARTS LIST DRAWING**



## PARTS LIST *(Continued)*

PART NAME AND DESCRIPTION	
1. Blower Assembly	17. Drain Valve
2. Temperature Switch	18. Gas Valve
3. Pressure Switch	19. Thermal Well
4. Jacket Head Pan	20. Wire Harness
5. Jacket	21. Radiant Burner
6. Outer Door	22. Orifice
7. Mag. Anode- Hot Water Outlet	23. Manifold Mount
8. Flue Baffle Assembly	24. High Temp. Limit Switch
9. Dip Tube-Cold Water Inlet	25. Gas Feedline to Burner
10. Temp. & Pressure Relief Valve	26. Gas Feedline to Pilot
11. Glass Lined Tank	27. Spark Igniter
12. Flue Reducer	28. Mounting Plate
13. Combustion Chamber Assembly	29. Pilot Assembly
14. Jacket Base Pan	30. Flammable Vapor Sensor
15. Inner Door Gasket	31. Flam. Vapor Sensor Clip
16. Inner Door Assembly	32. Dilution Air Clip

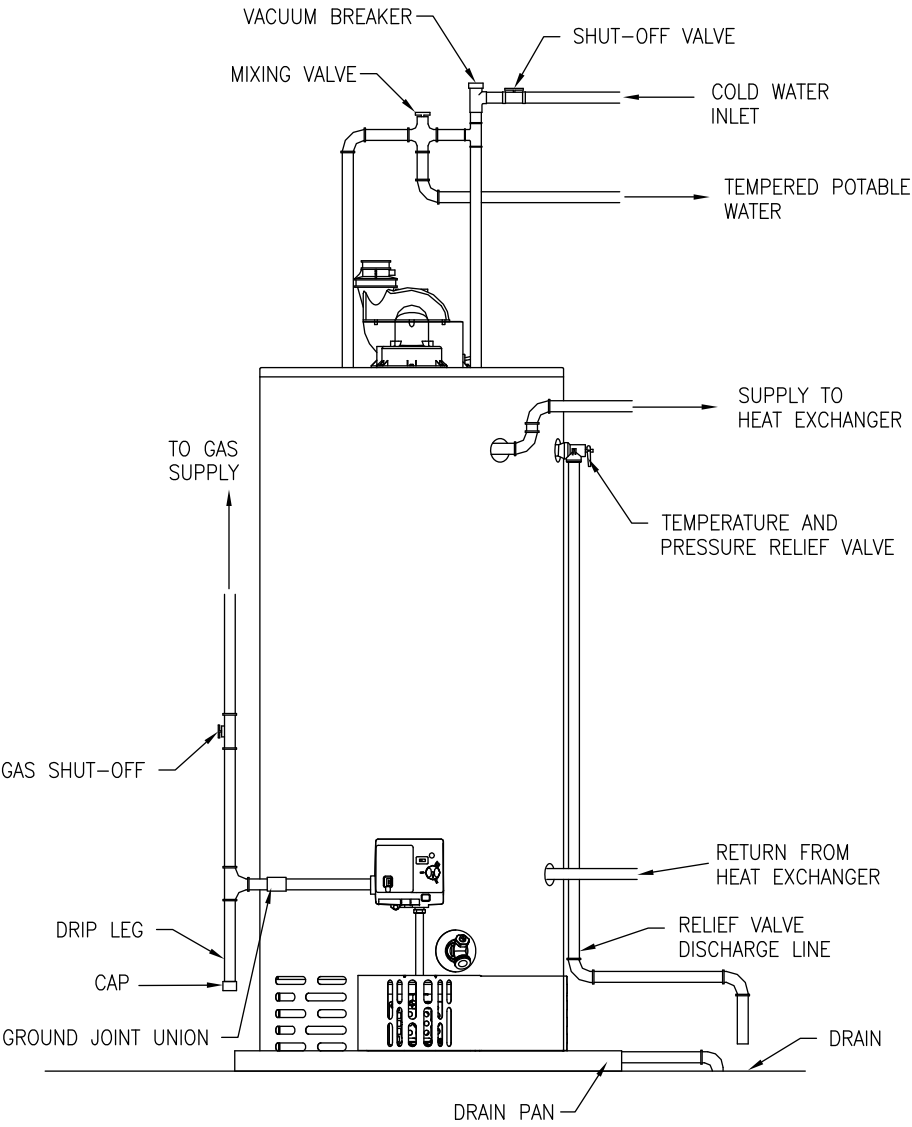
**(Replaces pg. 44 (238-45637-00) or pg. 40 (238-48933-00) in instruction manual.)**

### **THE FOLLOWING INSTRUCTIONS ARE FOR INSTALLATION OF: GAS WATER HEATERS SUITABLE FOR WATER (POTABLE) HEATING AND SPACE HEATING**

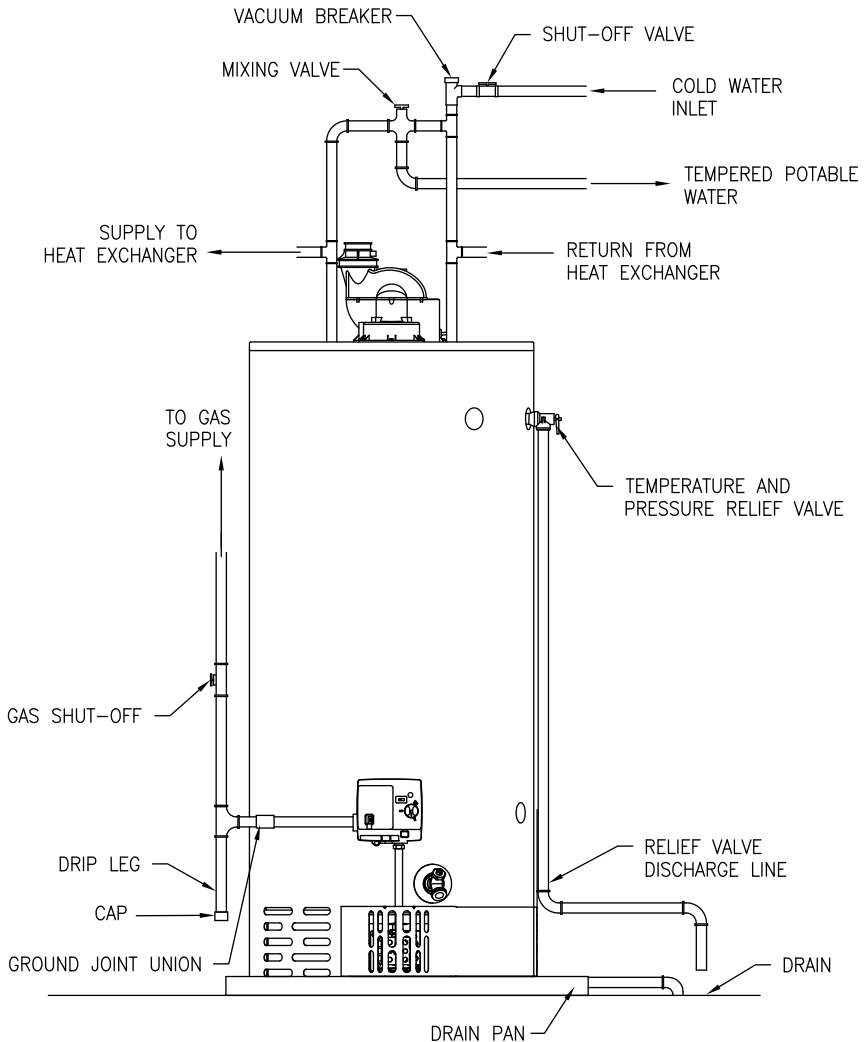
1. All piping components connected to this water heater for space heating applications must be suitable for use with potable water. In Massachusetts, space heating piping length **must not** exceed 50 feet (15.24 meters).
2. Toxic chemicals, such as those used for boiler treatment, **must not** be introduced into potable water used for space heating.
3. This water heater **must not** be connected to an existing heating system or component(s) previously used with a non-potable water heating appliance.
4. When the system requires water for space heating at temperatures higher than required for other means, such as an ASSE approved mixing valve must be installed to temper the water for those uses in order to reduce the scald hazard potential.

Please refer to the illustrations on the following pages for the suggested piping arrangements.

**Suggested piping arrangement (Continued)**



## Suggested piping arrangement (Continued)



**Notes:**



## Residential Ultra Low NOx Power Vent High EF Energy Saver Gas Water Heater



Photo is of  
**U-4-TW-40T6FRN**

### Identical Dimensions

Same diameter, height and connections as standard units for ease of installation.

### FEATURING:



### The TTW® High EF FVIR Eco-Defender Safety System® Models Feature:

- **ENERGY STAR® Qualified**—These models qualify for the September 1st, 2010 minimum ENERGY STAR® EF requirement, as well as most utility rebate programs.
- **Ultra Low NOx Burner with Primary and Secondary Air Distribution Devices**—Ensures proper air to gas ratio for reduction of NOx generated by the combustion process.
- **Honeywell Self Diagnostic Electronic Gas Control**—Intelligent gas control with spark to pilot ignition system eliminates the constant burning pilot. This results in savings of pilot gas during stand by periods (120 V.A.C.).
  - **Enhanced Performance**—Proprietary algorithms provide enhanced First Hour Delivery ratings and tighter temperature differentials.
  - **Advanced Temperature Control System**—Microprocessor constantly monitors and controls burner operation to maintain accurate and consistent water temperature levels.
  - **Intelligent Diagnostics**—An exclusive green LED light prompts the installer during start-up and provides fifteen different diagnostic codes to assist in troubleshooting.
  - **Pilot On Indication**—Flashing green LED provides positive indication that pilot is on.
- **Compatible With Optional Accessory Packages**—Performance Package, Protection Package and Inlet Shut-off Valve.
- **Defender Combustion Chamber**—Incorporates the Advanced ScreenLok® Technology Flame Arrestor and large split-door design to prevent ignition of flammable vapors outside the water heater.
- **Flammable Vapor Sensor and Resettable Thermal Switch**—Coordinates with control to prevent burner operation if flammable vapors are detected. The sensor will also prevent operation if there is ongoing flammable vapor burn inside the combustion chamber.
- **Maintenance Free**—No regular cleaning of air inlet openings or flame arrestor is required under normal conditions.
- **Sight Window**—Offers a view into the combustion chamber to observe the operation of the pilot and burner.
- **Powerful Blower Motor**—Our significantly quiet design has greater resistance to outside winds and the power to vent in many difficult venting situations.
- **Horizontal and Vertical Venting**—With 2" or 3" PVC, ABS or CPVC (Maximum equivalent vent length on reverse side).
- **Factory installed Hydrojet® Total Performance System**—Cold water inlet sediment reducing device helps prevent sediment build up in tank. This increases first hour delivery, while minimizing temperature build up at top of tank.
- **Vitrage® Lining**—Bradford White tanks are lined with an exclusively engineered enamel formula that provides superior tank protection from the highly corrosive effects of hot water. This formula (Vitrage®) is fused to the steel surface by firing at a temperature of over 1600°F (871°C).
- **2" Non-CFC Foam Insulation**—Covers the sides and top, reducing the amount of heat loss. This results in less energy consumption, improved operation efficiencies and jacket rigidity.
- **Water Connections**—3/4" NPT factory installed true dielectric fittings.
- **Factory installed Heat Traps**—Design incorporates a flexible disk that reduces heat loss in piping and eliminates the potential for noise generation.
- **Protective Magnesium Anode Rod.**
- **Pedestal Base.**
- **T&P Relief Valve**—Included.
- **Low Restriction Brass Drain Valve**—Durable tamper proof design.
- **Meets SCAQMD Rule 1121 (10ng/J).**

### 6 or 10-Year Limited Tank Warranties / 6 or 10-Year Limited Warranty on Component Parts.

For more information on warranty, please visit [www.bradfordwhite.com](http://www.bradfordwhite.com)

For products installed in USA, Canada and Puerto Rico. Some states do not allow limitations on warranties. See complete copy of the warranty included with the heater.

# Residential Power Vent Gas Water Heater

## TTW® High EF Ultra Low NOx Energy Saver Models

NATURAL GAS

Meet or exceed ASHRAE 90.1b (current standard) C.E.C. Listed  
80% Recovery Efficiency

Model Number	Capacity		Nat. BTU/Hr. Input	Recovery 90°F Rise*		A Floor to Vent Conn.  in.	B Jacket Dia.  in.	C Vent Size  in.	D Floor to T&P Conn.  in.	E Floor to Gas Conn. in.	F Floor to Top of Heater in.	G Floor to Water Conn. in.	H Depth  in.	Approx. Shipping Weight  lbs.
	U.S. Gal.	Imp. Gal.		Nat. U.S. GPH	Nat. Imp. GPH									
U-4-TW-40T6FRN	40	33	40,000	43	36	67	20	2	50	11¾	56¾	57¾	247/8	152
U-4-TW-50T6FRN	50	42	40,000	43	36	67	22	2	50	11¾	57	58	26¾	175
U-4-TW-60T6FRN	60	51	40,000	43	36	68	24	2	50½	11¾	57¾	58¾	28¾	210

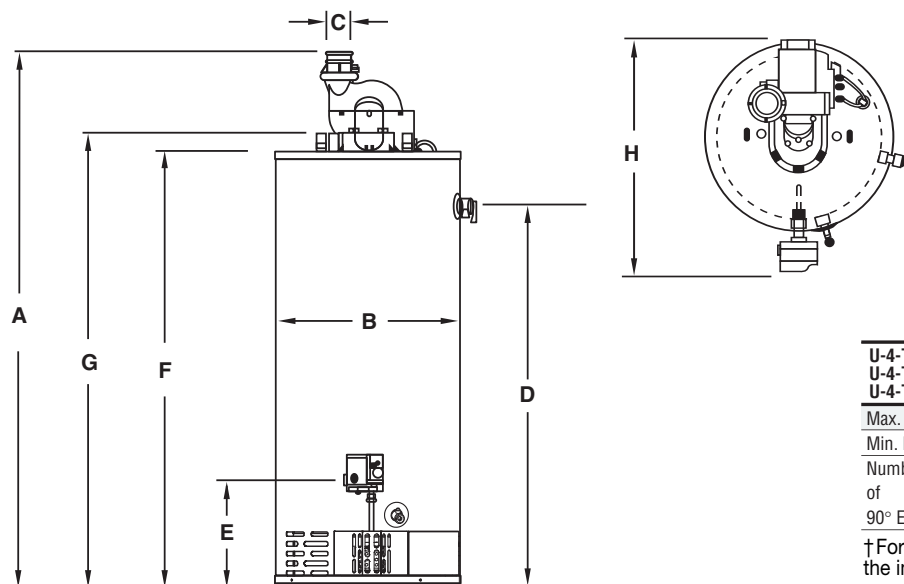
Model Number	Capacity		Nat. kW Input	Recovery 50°C Rise*		A Floor to Vent Conn.  mm.	B Jacket Dia.  mm.	C Vent Size  mm.	D Floor to T&P Conn.  mm.	E Floor to Gas Conn. mm.	F Floor to Top of Heater mm.	G Floor to Water Conn. mm.	H Depth  mm.	Approx. Shipping Weight  kg.
	Liters			Nat. Liters/Hour										
U-4-TW-40T6FRN	151		11.7	163		1702	508	51	1270	298	1441	1220	632	69
U-4-TW-50T6FRN	190		11.7	163		1702	559	51	1270	298	1448	1251	679	80
U-4-TW-60T6FRN	227		11.7	163		1727	610	51	1283	298	1467	1486	730	96

Available in Natural Gas only.

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

\*Based on manufacturer's rated recovery efficiency.

110 V.A.C. Required for Power Venting / 110 V.A.C., 60HZ, 3.1 Amperes.



U-4-TW-40 U-4-TW-50 U-4-TW-60	2" Vent Pipe	3" Vent Pipe
Max. Equivalent Length	†50 ft.	†120 ft.
Min. Equivalent Length	7 ft.	15 ft.
Number of 90° Elbows	1 45 ft. 2 40 ft. 3 35 ft.	115 ft. 110 ft. 105 ft.

†For high altitude installations, consult the installation instructions.

All models meet SCAQMD rule 1121 requirement of 10ng/J, or less, NOx emissions.

### 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" NPT (19mm) on 8" (203mm) centers, all gas connections are 1/2" (13mm).

All models design certified by CSA International (formerly AGA/CGA), ANSI Z-21.10.1 and peak performance rated.

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

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.



For U.S. and Canada field service, contact your professional installer or local Bradford White sales representative.

Sales 800-523-2931 • Fax 215-641-1670 / Technical Support 800-334-3393 • Fax 269-795-1089 • Warranty 800-531-2111 • Fax 269-795-1089

International: Telephone 215-641-9400 • Telefax 215-641-9750 / [www.bradfordwhite.com](http://www.bradfordwhite.com)

**BRADFORD WHITE-CANADA® INC.** Sales / Technical Support 866-690-0961 / 905-238-0100 • Fax 905-238-0105 / [www.bradfordwhite.com](http://www.bradfordwhite.com)

## Built to be the Best™

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