

A close-up photograph of a hand holding a stream of water, with many bubbles and splashes. The entire image is overlaid with a solid blue color.

# Residential Product Guide

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# John Wood® Safety Systems

## Flammable Vapour Ignition Resistant (FVIR) technology you can trust.

John Wood residential water heaters use one of three unique Flammable Vapour Ignition Resistant (FVIR) Safety Systems that reduce the risk of accidental fires caused by the ignition of flammable vapours from products such as gasoline, paint thinner and solvents: the Flame Guard® and Flame Safe™ Safety Systems and the Power Vent Safety System.



### **Flame Guard® Safety System Used on John Wood Atmospheric Vent Water Heaters**

The Flame Guard® Safety System is a recognized and proven technology used on John Wood Atmospheric Vent water heaters. The award winning Flame Guard® Safety System protects the consumer by trapping burning vapours within the water heater combustion chamber through the patented "Flame-Trap." As long as the vapours are present and within the flammability range, they will continue to burn safely until they "burn themselves out."



### **Flame Safe™ Safety System Used on John Wood Direct Vent Water Heaters**

Flame Safe™ technology - designed to protect the consumer against the ignition of flammable vapours.

### **Power Vent Safety System**

The Safety System used on John Wood Power Vent water heaters features a flammable vapour sensor and air intake snorkel. This system not only shuts down the unit when flammable vapours are detected in the area of the water heater but elevates the air intake so that flammable vapours do not enter the combustion chamber and ignite before the sensor shuts down the water heater.

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## ProLine® & ProLine® Master Electric

### Features

#### Energy Savings

- Meets and exceeds NRCan energy efficiency standards
- Styropour™ base for added energy efficiency

#### Designed for Performance

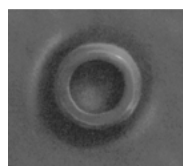
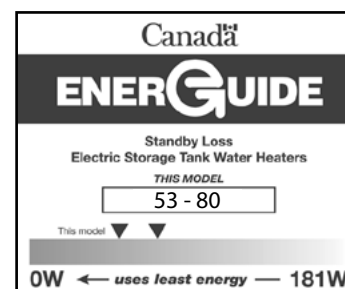
- ProLine® and ProLine® Master models are residential water heaters with commercial-grade quality
- Factory-installed plastic-lined heat trap nipples
- Exclusive TankSaver® design to prolong tank life
- Glass lining provides superior protection against tank corrosion
- Thermostatically controlled, long life elements
- Brass drain valve
- CFC-free foam insulation

#### Serviceability

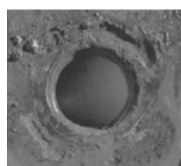
- Conveniently located T&P and drain valve for ease of installation and serviceability
- Top-mounted heavy duty anode rod for added tank protection

#### Exclusive Design

- The exclusive TankSaver® design aids the glass lining process to ensure optimum coverage, and guards tank openings for watertight connections



With  
TankSaver®



Without  
TankSaver®

### WARRANTY

6 year limited tank and parts on ProLine® models  
 8 year limited tank and parts on ProLine® Master models  
 2 or 4 year tank warranty extension kits are available  
 for 6 year models

## SPECIFICATIONS

| Model        | Series | Capacity |     |        | Elements<br>(Upper and Lower) |       | Standby<br>Loss | Energy<br>Factor | First Hour<br>Rating | Height to<br>Top of Tank<br>A | Diameter<br>B | Shipping<br>Weight | Warranty<br>Tank/<br>Parts | BC/ON/QC<br>Compliant |
|--------------|--------|----------|-----|--------|-------------------------------|-------|-----------------|------------------|----------------------|-------------------------------|---------------|--------------------|----------------------------|-----------------------|
|              |        | IG       | USG | LITRES | WATTS                         | VOLTS | WATTS           |                  | USG (L)              | IN (CM)                       | IN (CM)       | LB (KG)            | Years                      |                       |
| TOP ENTRY    |        |          |     |        |                               |       |                 |                  |                      |                               |               |                    |                            |                       |
| E50TE-30208  | 250    | 40       | 50  | 182    | 3000                          | 208   | 53              | 0.92             | 50 (188)             | 48 ¾ (124)                    | 22 (56)       | 125 (57)           | 6/6                        | ✓                     |
| E50TE-30240  | 250    | 40       | 50  | 182    | 3000 <sup>+</sup>             | 240   | 53              | 0.92             | 50 (188)             | 48 ¾ (124)                    | 22 (56)       | 125 (57)           | 6/6                        | ✓                     |
| E50TE-38240  | 250    | 40       | 50  | 182    | 3800 <sup>++</sup>            | 240   | 53              | 0.92             | 53 (202)             | 48 ¾ (124)                    | 22 (56)       | 125 (57)           | 6/6                        | ✓                     |
| E50TE-45208  | 250    | 40       | 50  | 182    | 4500                          | 208   | 53              | 0.92             | 57 (214)             | 48 ¾ (124)                    | 22 (56)       | 125 (57)           | 6/6                        | ✓                     |
| E50TE-45240  | 250    | 40       | 50  | 182    | 4500 <sup>+++</sup>           | 240   | 53              | 0.92             | 57 (214)             | 48 ¾ (124)                    | 22 (56)       | 125 (57)           | 6/6                        | ✓                     |
| E50TE-55208  | 250    | 40       | 50  | 182    | 5500                          | 208   | 53              | 0.92             | 61 (231)             | 48 ¾ (124)                    | 22 (56)       | 125 (57)           | 6/6                        | ✓                     |
| E50TE-60240  | 250    | 40       | 50  | 182    | 6000 <sup>++++</sup>          | 240   | 53              | 0.92             | 63 (240)             | 48 ¾ (124)                    | 22 (56)       | 125 (57)           | 6/6                        | ✓                     |
| E66TE-38240  | 275    | 50       | 66  | 250    | 3800 <sup>++</sup>            | 240   | 79              | 0.88             | 69 (261)             | 60 ¼ (153)                    | 22 (56)       | 146 (66)           | 6/6                        |                       |
| E66TE-45208  | 275    | 50       | 66  | 250    | 4500                          | 208   | 79              | 0.88             | 72 (273)             | 60 ¼ (153)                    | 22 (56)       | 146 (66)           | 6/6                        |                       |
| E66TE-45240  | 275    | 50       | 66  | 250    | 4500 <sup>+++</sup>           | 240   | 79              | 0.88             | 72 (273)             | 60 ¼ (153)                    | 22 (56)       | 146 (66)           | 6/6                        |                       |
| E80TE-30208  | 250    | 60       | 80  | 287    | 3000                          | 208   | 78              | 0.90             | 74 (279)             | 60 ½ (154)                    | 24 (61)       | 170 (77)           | 6/6                        | ✓                     |
| E80TE-30240  | 250    | 60       | 80  | 287    | 3000 <sup>+</sup>             | 240   | 78              | 0.90             | 74 (279)             | 60 ½ (154)                    | 24 (61)       | 170 (77)           | 6/6                        | ✓                     |
| E80TE-38240  | 250    | 60       | 80  | 287    | 3800 <sup>++</sup>            | 240   | 78              | 0.90             | 77 (293)             | 60 ½ (154)                    | 24 (61)       | 170 (77)           | 6/6                        | ✓                     |
| E80TE-45208  | 250    | 60       | 80  | 287    | 4500                          | 208   | 78              | 0.90             | 81 (305)             | 60 ½ (154)                    | 24 (61)       | 170 (77)           | 6/6                        | ✓                     |
| E80TE-45240  | 250    | 60       | 80  | 287    | 4500 <sup>+++</sup>           | 240   | 78              | 0.90             | 81 (305)             | 60 ½ (154)                    | 24 (61)       | 170 (77)           | 6/6                        | ✓                     |
| E80TE-55208  | 250    | 60       | 80  | 287    | 5500                          | 208   | 78              | 0.90             | 85 (322)             | 60 ½ (154)                    | 24 (61)       | 170 (77)           | 6/6                        | ✓                     |
| E80TE-60240  | 250    | 60       | 80  | 287    | 6000 <sup>++++</sup>          | 240   | 78              | 0.90             | 87 (331)             | 60 ½ (154)                    | 24 (61)       | 170 (77)           | 6/6                        | ✓                     |
| TOP ENTRY    |        |          |     |        |                               |       |                 |                  |                      |                               |               |                    |                            |                       |
| E50TEM-30240 | 250    | 40       | 50  | 182    | 3000 <sup>+</sup>             | 240   | 53              | 0.92             | 50 (188)             | 48 (122)                      | 22 (56)       | 122 (55)           | 8/8                        | ✓                     |
| E50TEM-38240 | 250    | 40       | 50  | 182    | 3800 <sup>++</sup>            | 240   | 53              | 0.92             | 53 (202)             | 48 (122)                      | 22 (56)       | 122 (55)           | 8/8                        | ✓                     |
| E80TEM-45240 | 250    | 60       | 80  | 287    | 4500 <sup>+++</sup>           | 240   | 78              | 0.90             | 81 (305)             | 60½ (154)                     | 24 (61)       | 170 (77)           | 8/8                        | ✓                     |
| BOTTOM ENTRY |        |          |     |        |                               |       |                 |                  |                      |                               |               |                    |                            |                       |
| E50BE-30208  | 250    | 40       | 50  | 182    | 3000                          | 208   | 65              | 0.91             | 50 (188)             | 48 (122)                      | 22 (56)       | 122 (55)           | 6/6                        | ✓                     |
| E50BE-30240  | 250    | 40       | 50  | 182    | 3000 <sup>+</sup>             | 240   | 65              | 0.91             | 50 (188)             | 48 (122)                      | 22 (56)       | 122 (55)           | 6/6                        | ✓                     |
| E50BE-45208  | 250    | 40       | 50  | 182    | 4500                          | 208   | 65              | 0.91             | 57 (214)             | 48 (122)                      | 22 (56)       | 122 (55)           | 6/6                        | ✓                     |
| E50BE-45240  | 250    | 40       | 50  | 182    | 4500 <sup>+++</sup>           | 240   | 65              | 0.91             | 57 (214)             | 48 (122)                      | 22 (56)       | 122 (55)           | 6/6                        | ✓                     |
| E80BE-30208  | 250    | 60       | 80  | 287    | 3000                          | 208   | 80              | 0.90             | 74 (279)             | 60½ (154)                     | 24 (61)       | 170 (77)           | 6/6                        | ✓                     |
| E80BE-30240  | 250    | 60       | 80  | 287    | 3000 <sup>+</sup>             | 240   | 80              | 0.90             | 74 (279)             | 60½ (154)                     | 24 (61)       | 170 (77)           | 6/6                        | ✓                     |
| E80BE-45208  | 250    | 60       | 80  | 287    | 4500                          | 208   | 80              | 0.90             | 81 (305)             | 60½ (154)                     | 24 (61)       | 170 (77)           | 6/6                        | ✓                     |
| E80BE-45240  | 250    | 60       | 80  | 287    | 4500 <sup>+++</sup>           | 240   | 80              | 0.90             | 81 (305)             | 60½ (154)                     | 24 (61)       | 170 (77)           | 6/6                        | ✓                     |

All models comply with national energy efficiency regulations.

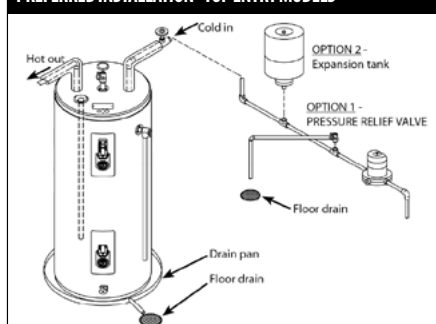
\*Model is dual-rated. At 208V wattage is 2253.

\*\*Model is dual-rated. At 208V wattage is 2854.

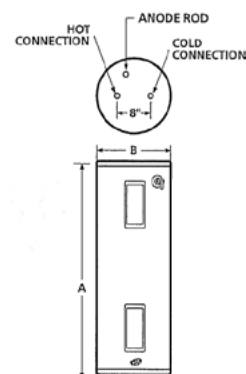
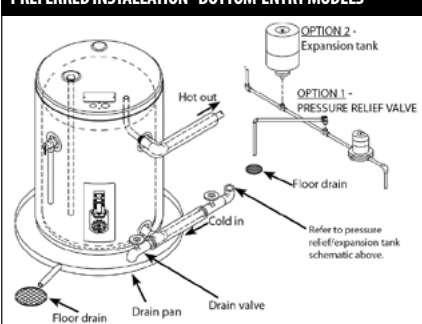
\*\*\*Model is dual-rated. At 208V wattage is 3380.

\*\*\*\*Model is dual-rated. At 208V wattage is 4507.

### PREFERRED INSTALLATION - TOP ENTRY MODELS



### PREFERRED INSTALLATION - BOTTOM ENTRY MODELS



All John Wood electric water heaters listed on this spec sheet have a maximum temperature setting of 150°F.

## ProLine® Master Connected Electric Water Heaters

Our ProLine® Master Connected Electric water heaters are designed with iCOMM™ Wi-Fi technology greater control, leak detection and protection to provide homeowners with peace of mind.

### Features

#### Energy Savings

- Meets the NRCan standby loss requirements

#### Designed for Performance

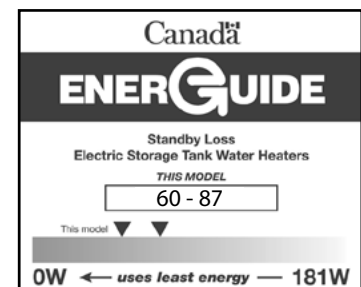
- Element dry-fire protection
- Leak detection sensor sounds alarm when water is detected
- Dual elements for fast recovery and reliable operation
- Self-cleaning diptube is made from long-lasting PEX cross-linked polymer and helps to reduce lime and sediment buildup and maximizes hot water output
- Anode rod with stainless steel core that extends the life of the rod, allowing superior tank protection far longer than standard anode rods
- Glass coating provides superior corrosion resistance compared to industry-standard glass lining
- CSA certified and ASME rated T&P relief valve

#### Serviceability

- Seven-segment electronic control display with diagnostic feedback and two operating modes
- Enhanced-flow solid brass, tamper-resistant ball type drain valve uses a standard female hose fitting that allows for fast and easy draining during maintenance. The drain valve includes an integral screwdriver slot that features a ¼ turn (open/close) radius, which permits full straight-through water flow and a quick and positive shut off
- Optional shut-off valve automatically shuts off incoming cold water when leak is detected

#### Exclusive Design

- Design-listed by Underwriters Laboratories, certified at 300 psi test pressure and 150 psi working pressure and listed according to UL 174 standards governing storage tank-type electric water heaters



#### WARRANTY

8 year limited warranty on tank and parts  
on ProLine® Master models

For complete information, consult written  
warranty or go to [johnwoodwaterheaters.com](http://johnwoodwaterheaters.com)

**SPECIFICATIONS**

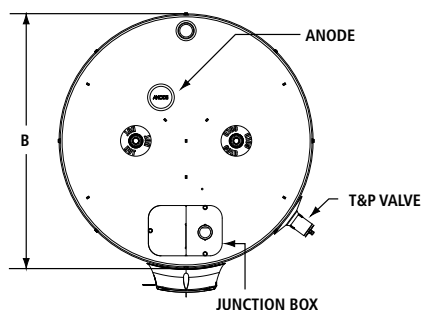
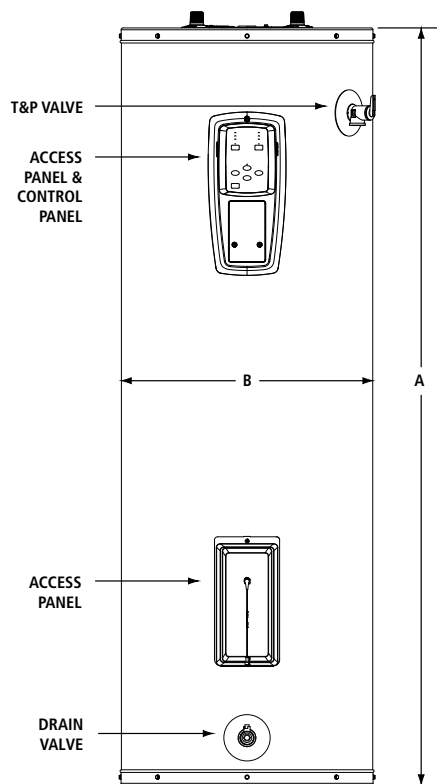
| Model      | Capacity |     |        | Input  |        | Standby Loss | First Hour Rating | Height to Top of Tank A | Diameter B | Approx. Shipping Weight | BC/ON/QC Compliant |
|------------|----------|-----|--------|--------|--------|--------------|-------------------|-------------------------|------------|-------------------------|--------------------|
|            | IG       | USG | LITRES | 240V   | 208V   |              |                   |                         |            |                         |                    |
| E50TEME-30 | 40       | 50  | 182    | 3,000W | 2,253W | 60           | 50 (188)          | 49 ¼ (125)              | 23 (59)    | 117 (53)                | ✓                  |
| E50TEME-38 | 40       | 50  | 182    | 3,800W | 3,000W | 60           | 53 (202)          | 49 ¼ (125)              | 23 (59)    | 117 (53)                | ✓                  |
| E80TEME-45 | 60       | 80  | 287    | 4,500W | 3,500W | 87           | 81 (305)          | 60 ½ (154)              | 24 (61)    | 174 (79)                | ✓                  |
| E80TEME-55 | 60       | 80  | 287    | 5,500W | 4,000W | 87           | 85 (322)          | 60 ½ (154)              | 24 (61)    | 174 (79)                | ✓                  |

3/4" water connections on 8" center.

Only available for 240V.

Equipped as dual element only, no single element configurations available.

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



**CONTROL PANEL**



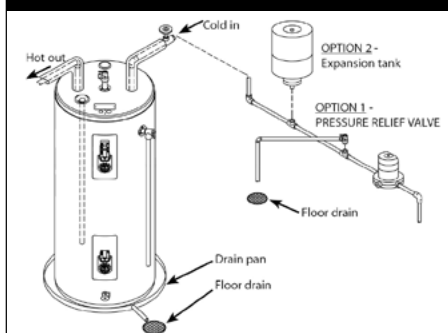
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**PREFERRED INSTALLATION - TOP ENTRY MODELS**





# Residential Electric Water Heaters

Featuring a variety of models designed for installations in cottages, offices, mobile homes or other applications where space is limited, the SpaceSaver® line of residential electric water heaters provides optimum reliability, performance and energy efficiency.

## DESIGNED FOR PERFORMANCE

- Exclusive TankSaver® design
- Glass-lined tanks for longer life
- Meets latest energy efficiency standards
- Factory-installed plastic-lined nipples
- Styropour™ base for added energy efficiency
- Thermostatically controlled long life elements
- CFC-free foam insulation
- Personnel protector covers elements and controls

## EASY TO INSTALL AND REPAIR

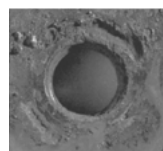
- Conveniently located T&P and drain valve
- Removable anodes

## WARRANTY

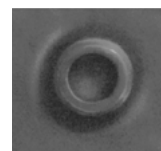
- 6 year limited tank warranty
- 1 year limited parts warranty

## EXCLUSIVE DESIGN

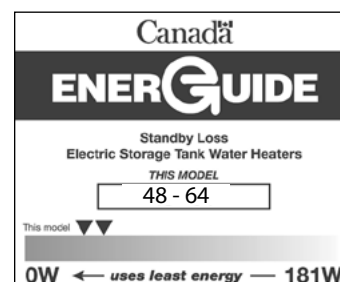
- The exclusive TankSaver design aids the glass lining process to ensure optimum coverage, and guards tank openings for watertight connections



Without  
TankSaver®



With  
TankSaver®



For Technical Information call 888-599-2837. A. O. Smith Enterprises Ltd. reserves the right to make product changes or improvements without prior notice.



# Residential Electric Water Heaters

## SPECIFICATIONS

| Model                                  | Series | Capacity |     |     | Input  |       | Standby Loss | Height     | Diameter     | Width     | Shipping Weight | BC/ON/QC Compliant |
|----------------------------------------|--------|----------|-----|-----|--------|-------|--------------|------------|--------------|-----------|-----------------|--------------------|
|                                        |        | IG       | USG | L   | WATTS  | VOLTS | WATTS        | A IN (CM)  | B IN (CM)    | C IN (CM) | LB (KG)         |                    |
| TOP ENTRY SINGLE ELEMENT MODELS        |        |          |     |     |        |       |              |            |              |           |                 |                    |
| SS025SE15                              | 100    | 2        | 2.5 | 9   | 1440   | 120*  | N/A          | 14 ½ (37)  | 10 ¾ (26)**  | 11 ¾ (30) | 17 (8)          | ✓                  |
| SS04SE15                               | 100    | 3        | 4   | 15  | 1440   | 120*  | N/A          | 19 ¼ (49)  | 10 ¾ (26)**  | 11 ¾ (30) | 20 (9)          | ✓                  |
| SS06SE15                               | 100    | 5        | 6   | 23  | 1440   | 120*  | N/A          | 18 (46)    | 15 ½ (39)*** | 11 ¾ (30) | 24 (11)         | ✓                  |
| BOTTOM ENTRY SINGLE ELEMENT MODELS     |        |          |     |     |        |       |              |            |              |           |                 |                    |
| SS06SEB15                              | N/A    | 5        | 6   | 23  | 1500   | 120   | N/A          | 15 ¼ (39)  | 14 ¼ (36)    | N/A       | 35 (16)         | ✓                  |
| SS06SEB30                              | N/A    | 5        | 6   | 23  | 3000+  | 240   | N/A          | 15 ¼ (39)  | 14 ¼ (36)    | N/A       | 35 (16)         | ✓                  |
| SS12SEB15                              | N/A    | 10       | 12  | 45  | 1500   | 120   | N/A          | 22 ¾ (58)  | 16 (41)      | N/A       | 55 (25)         | ✓                  |
| SS12SEB30                              | N/A    | 10       | 12  | 45  | 3000+  | 240   | N/A          | 22 ¾ (58)  | 16 (41)      | N/A       | 55 (25)         | ✓                  |
| SS620SSEB-15K                          | 100    | 14       | 17  | 65  | 1500   | 120   | 51           | 25 ½ (65)  | 20 (51)      | N/A       | 65 (30)         | ✓                  |
| SS620SSEB-30                           | 100    | 14       | 17  | 65  | 3000+  | 240   | 51           | 25 ½ (65)  | 20 (51)      | N/A       | 65 (30)         | ✓                  |
| SS630SSEBN-15K                         | 100    | 22       | 27  | 102 | 1500   | 120   | 48           | 30 (76)    | 22 (56)      | N/A       | 101 (46)        | ✓                  |
| SS630SSEBN-30                          | 100    | 22       | 27  | 102 | 3000+  | 240   | 48           | 30 (76)    | 22 (56)      | N/A       | 101 (46)        | ✓                  |
| TOP ENTRY DOUBLE ELEMENT MODELS        |        |          |     |     |        |       |              |            |              |           |                 |                    |
| SS640SDE3-15K                          | 100    | 32       | 38  | 144 | 1500   | 120   | 54           | 50 (127)   | 20 (51)      | N/A       | 103 (47)        | ✓                  |
| SS640SDE3-30X                          | 100    | 32       | 38  | 144 | 3000   | 208   | 54           | 50 (127)   | 20 (51)      | N/A       | 103 (47)        | ✓                  |
| SS640SDE3-30                           | 100    | 32       | 38  | 144 | 3000+  | 240   | 54           | 50 (127)   | 20 (51)      | N/A       | 103 (47)        | ✓                  |
| SS650SDE-30                            | 100    | 40       | 50  | 182 | 3000+  | 240   | 53           | 48 ¾ (124) | 22 (56)      | N/A       | 125 (57)        | ✓                  |
| SS680TDE-45                            | 100    | 60       | 80  | 287 | 4500++ | 240   | 78           | 60 ½ (154) | 24 (61)      | N/A       | 170 (77)        | ✓                  |
| LOWBOY TOP ENTRY DOUBLE ELEMENT MODELS |        |          |     |     |        |       |              |            |              |           |                 |                    |
| SS630LDE-45X                           | 250    | 22       | 27  | 102 | 4500   | 208   | 53           | 31 (79)    | 22 (56)      | N/A       | 96 (44)         | ON/QC only         |
| SS630LDE-45                            | 250    | 22       | 27  | 102 | 4500++ | 240   | 53           | 31 (79)    | 22 (56)      | N/A       | 96 (44)         | ON/QC only         |
| SS640LDE-45X                           | 250    | 30       | 36  | 137 | 4500   | 208   | 62           | 33 ½ (85)  | 24 (61)      | N/A       | 113 (51)        | ON/QC only         |
| SS640LDE-45                            | 250    | 30       | 36  | 137 | 4500++ | 240   | 62           | 33 ½ (85)  | 24 (61)      | N/A       | 113 (51)        | ON/QC only         |
| SS650LDEN-45                           | 280    | 40       | 48  | 181 | 4500   | 240   | 64           | 37 ¾ (96)  | 26 ½ (67)    | N/A       | 170 (77)        | -                  |

\*Plug-in model.

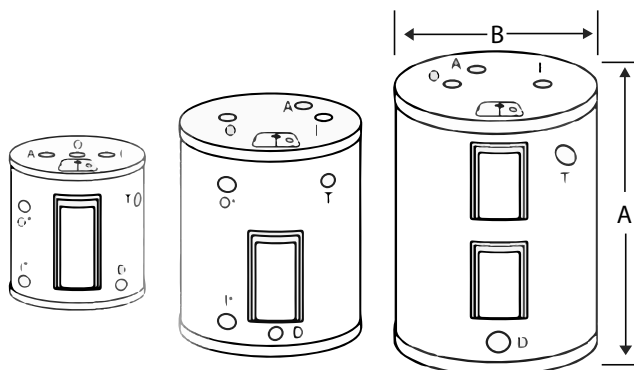
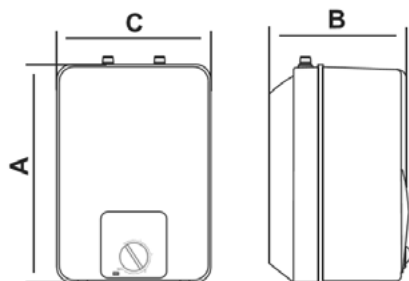
\*\*Depth. Width is 11 ¾ (30).

\*\*\*Depth. Width is 15 ¾ (40).

+Model is dual-rated. At 208V wattage is 2253.

++Model is dual-rated. At 208V wattage is 3380.

Top Entry Single Element Models



\*\*\*Note: 6, 12 and 19 USG models have side connections on left side.

For Technical Information call 888-599-2837. A. O. Smith Enterprises Ltd. reserves the right to make product changes or improvements without prior notice.

## VOLTEX® AL CONNECTED HEAT PUMP WATER HEATER WITH ANTI-LEAK TECHNOLOGY

The Voltex® AL Connected Electric heat pump water heater from A. O. Smith is the most cost-effective, energy-efficient option available for consumers who want to save money on their utility bills. Voltex® AL combines annual savings on utility bills with new leak protection features to support homeowner peace of mind like leak detection and optional automatic water shutoff.

### HOW DO THEY WORK?

Absorb ambient heat from the surrounding air to heat water using a compressor

- Self-contained heat pump unit is integrated into the top of the tank
- Backup electric elements can supplement the heat pump depending on operating mode, environmental conditions and hot water demand

### EXCEPTIONAL ENERGY EFFICIENCY

- Improved efficiency up to 3.88 Uniform Energy Factor (UEF) can reduce the cost of water heating by up to 75%\*
- Heat pump can work down to 2°C (37°F) ambient for more days of high efficiency operation
- ENERGY STAR® certified

### ICOMM™ SMART CONNECTIVITY

- Monitor and control your water heater through the free iCOMM™ app
- Connect through a local Wi-Fi network or directly to the water heater through Bluetooth®
- Receive alerts and notifications

### LEAK PROTECTION TECHNOLOGY

- Our COREGARD™ Anode Rod have a stainless steel core that extend the life of the anode rod allowing superior tank protection far longer than standard anode rods
- Smart sensor alerts user in the event a leak does occur for added peace of mind
- Automatic water shutoff compatible for enhanced protection
- Notifications through iCOMM™ function on the iCOMM™ app

### QUIET OPERATION

- Whisper-quiet operation at 45 dBA

### FLEXIBLE DESIGN

- Top and front water connections for easy installation
- Zero clearance required on sides and back to fit in tighter spaces
- Integrated ducting adapters for installations in confined spaces
- Ideal for basements, utility rooms or garage installations; the compressor transfers heat to the water while dehumidifying and cooling the ambient air

### ELECTRONIC CONTROLS

- User-friendly electronic interface allows easy control of temperature, operating mode and diagnostics

### 10-YEAR LIMITED WARRANTY

- For complete information, consult written warranty or go to [hotwatercanada.ca](http://hotwatercanada.ca)



\*Comparing 80-gallon Voltex AL heat pump against pre-2015 similarly-sized standard electric using DOE EF to UEF conversion rates and \$0.14 per kWh electricity cost. Savings may vary.

| Model   | Capacity |     | UEF  | Recovery Rate at 90°F Temperature Rise | First Hour Rating | Dimensions in (cm) |           |            |           |        |            |            | Approx. Shipping Weight |
|---------|----------|-----|------|----------------------------------------|-------------------|--------------------|-----------|------------|-----------|--------|------------|------------|-------------------------|
|         | USG      | L   |      |                                        |                   | A                  | B         | C          | D         | E      | F          | G          |                         |
| HPTS-50 | 50       | 189 | 3.80 | 20 (76)                                | 65 (246)          | 63 (160)           | 22 (56)   | 40 ½ (103) | 3 ¾ (9.5) | 8 (20) | 43 ½ (136) | 48 (122)   | 196 (89)                |
| HPTS-66 | 66       | 250 | 3.70 | 20 (76)                                | 82 (310)          | 61 ½ (156)         | 26 ½ (67) | 38 ¼ (97)  | 4 (10)    | 8 (20) | 41 ¼ (105) | 46 (115)   | 284 (129)               |
| HPTS-80 | 80       | 303 | 3.88 | 20 (76)                                | 95 (360)          | 69 (175)           | 26 ½ (67) | 46 ½ (118) | 4 (10)    | 8 (20) | 50 ½ (128) | 54 ½ (138) | 302 (137)               |

Requires 30 amp breaker.  
Top T&P option not available.

## MULTIPLE OPERATING MODES

Choose from multiple modes to match water heating needs and environmental conditions

- Hybrid (Default): Hot water delivery balanced with energy saving performance
- Efficiency: Maximum energy efficiency
- Electric: Uses only the electric heating elements
- Vacation: Reduce energy use while you are away

## ICOMM™ SMART CONNECTIVITY

Download the free iCOMM™ app to get started.

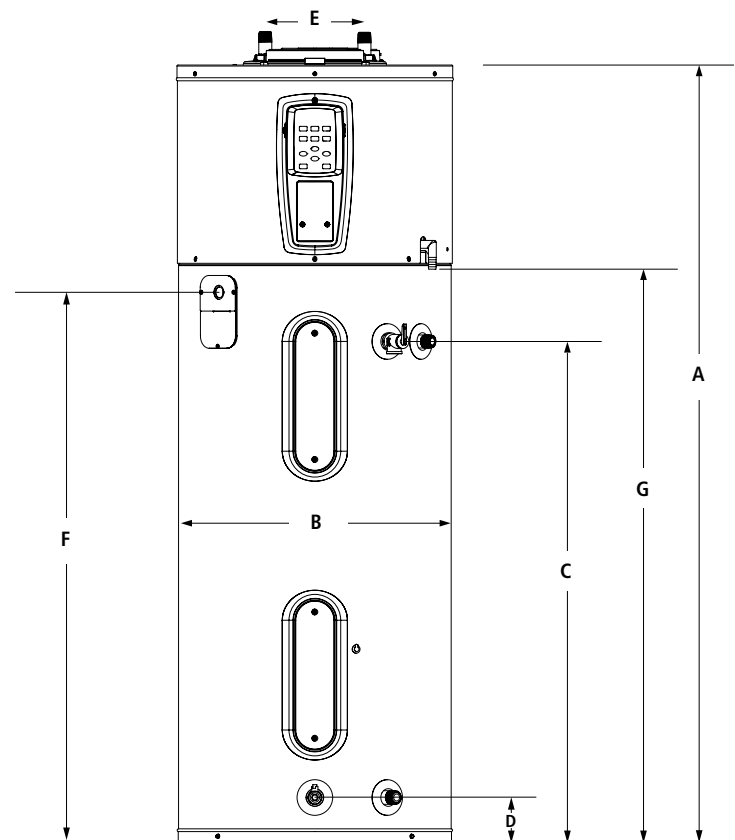


## OTHER FEATURES:

- Easily accessible front mounted junction box
- Environmentally-friendly, non-CFC foam insulation
- Durable, enhanced-flow brass drain valve
- CSA certified and ASME rated temperature & pressure relief valve

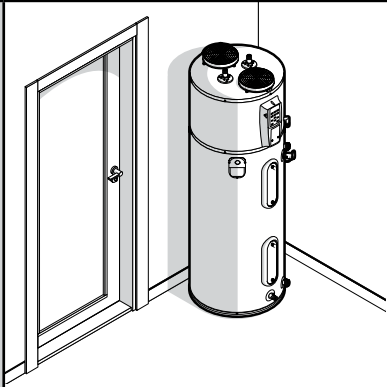
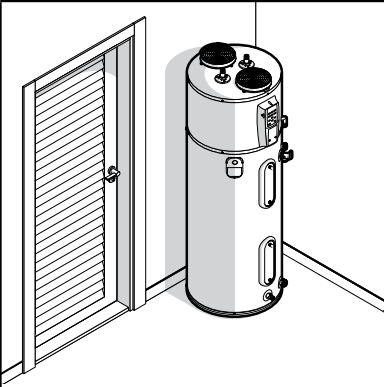
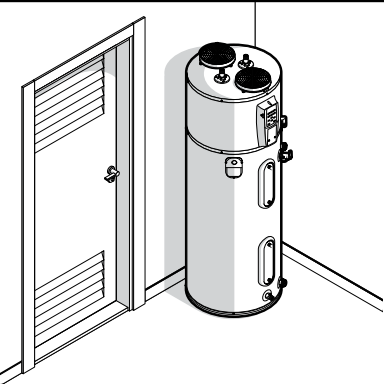
## OPERATING REQUIREMENTS:

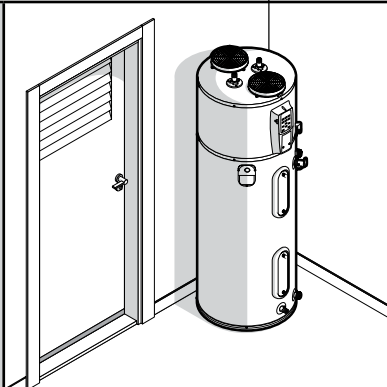
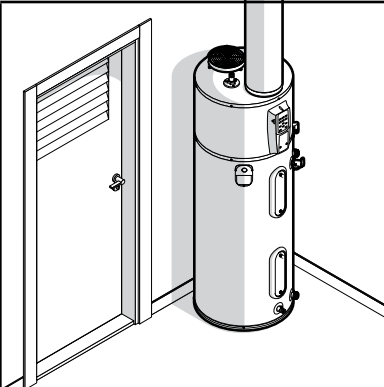
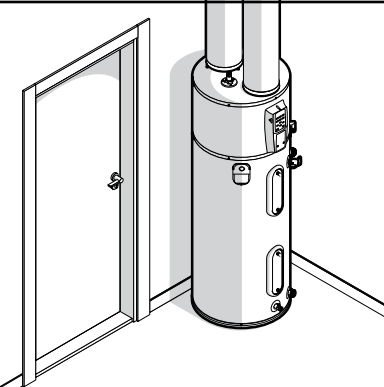
- Requires provision for non-acidic condensate draining; if a suitable drain is not available a condensate pump is required
- 208/240VAC 4500/3380W 50/60 Hz single phase 30 amp power supply



Apple logo and Apple App Store Logo are trademarks of Apple Inc.  
Google Play and the Google Play logo are trademarks of Google LLC.

**450 FT<sup>3</sup> ENCLOSED ROOM SIZE IS 35% SMALLER THAN OTHER MANUFACTURERS REQUIRE**

|                                         |                                                                                   |                                                                                    |                                                                                     |
|-----------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                         |  |  |  |
| <b>Configuration</b>                    | Enclosed Room                                                                     | Fully Louvered Door                                                                | Upper and Lower Louvers in Door <sup>1,2</sup>                                      |
| <b>Minimum Space (FT<sup>3</sup>)</b>   | 450                                                                               | 84                                                                                 | 84                                                                                  |
| <b>Space Example<br/>L x W x H (FT)</b> | 6 x 7.5 x 10                                                                      | 3 x 2.8 x 10                                                                       | 3 x 2.8 x 10                                                                        |

|                                         |                                                                                    |                                                                                               |                                                                                      |
|-----------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                                         |  |            |  |
| <b>Configuration</b>                    | Upper Louver and Undercut Door <sup>1,3,4</sup>                                    | Inlet <b>OR</b> Outlet Ducting and a Single Louver <b>OR</b> Undercut Door <sup>1,3,4,5</sup> | Inlet <b>AND</b> Outlet Ducting <sup>5</sup>                                         |
| <b>Minimum Space (FT<sup>3</sup>)</b>   | 84                                                                                 | No minimum space requirement                                                                  | No minimum space requirement                                                         |
| <b>Space Example<br/>L x W x H (FT)</b> | 6 x 7.5 x 10                                                                       |                                                                                               |                                                                                      |

<sup>1</sup>Minimum louver size is 130 in<sup>2</sup> free area each.

<sup>2</sup>When two louvers are installed, install one louver at the top of the heater and the other close to the floor.

<sup>3</sup>Undercut door should have a minimum of 0.75" clearance. (minimum 18 in<sup>2</sup> air gap)

<sup>4</sup>When one louver is installed, install the louver in a location close to the top of the heater.

<sup>5</sup>This heater supports multiple duct diameters as well as rigid and flex ducting options. See manual for more information.

# Commercial-Grade Residential Water Heaters

## ProLine® & ProLine® Master Atmospheric Vent

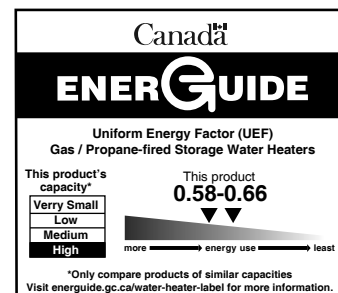
### Features

#### *Designed for Performance*

- ProLine® and ProLine® Master models are residential water heaters with commercial-grade quality
- Turbulator dip tube reduces sediment build-up at the bottom of the tank
- Thermopile design provides robust pilot to withstand down drafts and environmental conditions
- Easy temperature adjustments
- Robust 1/4" pilot tubing
- Glass lining provides superior protection against tank corrosion
- 3/4" side taps on 75 USG model for combination applications

#### *Serviceability*

- Easy-to-access combustion chamber
- Conveniently located T&P and drain valve for ease of installation and serviceability
- Piezoelectric ignitor allows for push-button pilot lighting
- Top mounted heavy duty anode rod for added tank protection
- LED indicator:
  - gives visual confirmation that pilot is on by flashing continuously
  - provides diagnostics and troubleshooting



### WARRANTY

6 year limited tank and parts on ProLine® models  
8 year limited tank and parts on ProLine® Master models  
2 or 4 year tank warranty extension kits are available for 6 year models (except 75G models)

## PERFORMANCE

| Model       | Series  | Capacity | Input † | Maximum Certified Altitude | Recovery Rate at 90°F Temperature Rise | First Hour Rating | UEF  | Warranty Tank/Parts |
|-------------|---------|----------|---------|----------------------------|----------------------------------------|-------------------|------|---------------------|
|             |         | USG (L)  | BTU/h   | FT (M)                     | GPH (LPH)                              | GPH (LPH)         |      | Years               |
| NATURAL GAS |         |          |         |                            |                                        |                   |      |                     |
| AV30NR      | 400/401 | 30 (114) | 32,000  | 10,100 (3,078)             | 32 (121)                               | 55 (208)          | 0.60 | 6/6                 |
| AV40N       | 400/401 | 40 (151) | 40,000  | 10,100 (3,078)             | 41 (155)                               | 67 (254)          | 0.58 | 6/6                 |
| AV40TN      | 400/401 | 40 (151) | 40,000  | 10,100 (3,078)             | 42 (159)                               | 70 (265)          | 0.66 | 6/6                 |
| AV50N       | 400/401 | 50 (189) | 40,000  | 10,100 (3,078)             | 43 (163)                               | 93 (352)          | 0.62 | 6/6                 |
| AV50TN      | 400/401 | 50 (189) | 40,000  | 10,100 (3,078)             | 42 (159)                               | 88 (333)          | 0.62 | 6/6                 |
| AV60N       | 400/401 | 60 (227) | 52,200  | 10,100 (3,078)             | 54 (204)                               | 104 (394)         | 0.59 | 6/6                 |
| AV75N*      | 400/401 | 75 (284) | 75,100  | 7,700 (2,347)              | 80 (303)                               | 125(473)          | 0.60 | 6/6                 |
| NATURAL GAS |         |          |         |                            |                                        |                   |      |                     |
| AV40NM      | 400/401 | 40 (151) | 40,000  | 10,100 (3,078)             | 41 (155)                               | 67 (254)          | 0.62 | 8/8                 |
| AV50NM      | 400/401 | 50 (189) | 40,000  | 10,100 (3,078)             | 43 (163)                               | 93 (352)          | 0.61 | 8/8                 |

Propane models sub N with P. Natural gas models are series 400. Propane models are series 401.

All models comply with national energy efficiency regulations.

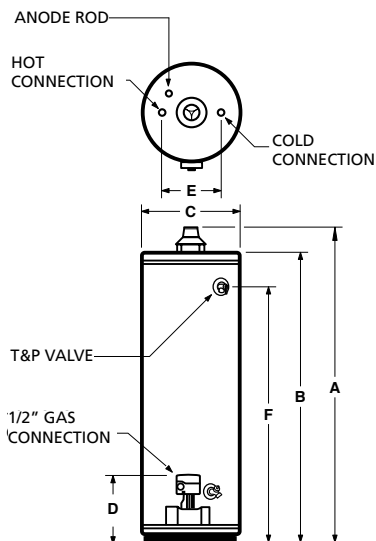
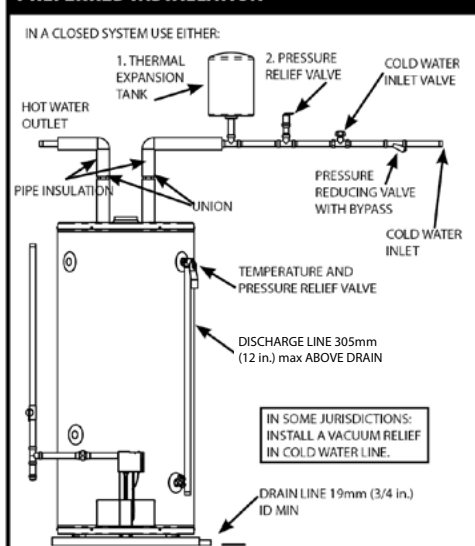
\*Model has side connections

† Propane Gas – 36,000 for the 50 gallon short, 37,000 for the 50 gallon tall, & 36,000 for 40 gallon models and 29,000 input for 30 gallon models.

## DIMENSIONS & SHIPPING WEIGHT

| Model          | Installation Height | Height to Top of Tank | Tank Diameter | Height to Gas Inlet | Cold Connection to Hot Connection | Height to T&P | Drafthood Connector Diameter | Shipping Weight |
|----------------|---------------------|-----------------------|---------------|---------------------|-----------------------------------|---------------|------------------------------|-----------------|
|                | A<br>IN (CM)        | B<br>IN (CM)          | C<br>IN (CM)  | D<br>IN (CM)        | E<br>IN (CM)                      | F<br>IN (CM)  | IN                           | LB (KG)         |
| AV30NR         | 50 ¼ (128)          | 46 ¾ (119)            | 20 (51)       | 14 (35)             | 8 (20)                            | 40 (102)      | 3 or 4                       | 108 (49)        |
| AV40N / AV40NM | 51 ½ (131)          | 47 ¾ (121)            | 22 (56)       | 13 (33)             | 8 (20)                            | 41 (104)      | 3 or 4                       | 135 (61)        |
| AV40TN         | 61 ¾ (157)          | 58 ¼ (148)            | 20 (51)       | 13 (33)             | 8 (20)                            | 51 ¾ (131)    | 3 or 4                       | 150 (68)        |
| AV50N / AV50NM | 53 ¼ (135)          | 49 ½ (126)            | 24 (61)       | 13 (33)             | 8 (20)                            | 42 ½ (108)    | 3 or 4                       | 175 (79)        |
| AV50TN         | 61 (155)            | 57 ¼ (145)            | 22 (56)       | 13 (33)             | 8 (20)                            | 50 ¼ (128)    | 4                            | 165 (75)        |
| AV60N          | 62 ¾ (159)          | 59 (150)              | 24 (61)       | 13 (33)             | 8 (20)                            | 51 ½ (131)    | 4                            | 205 (93)        |
| AV75N          | 61 (155)            | 57 ¼ (145)            | 26 ½ (67)     | 14 ¾ (37)           | 8 (20)                            | 50 ¼ (128)    | 4                            | 273 (124)       |

## PREFERRED INSTALLATION



## ProLine® XE Atmospheric Vent

### Features

#### Energy Savings

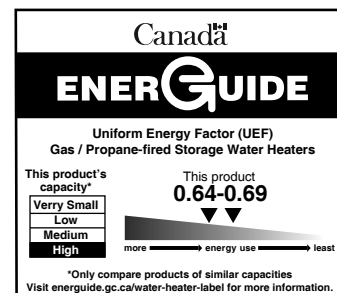
- Exceed NRCan energy efficiency standards
- Built-in heat traps on the water inlet and outlet reduce the amount of heat lost through piping

#### Designed for Performance

- ProLine® XE models are residential water heaters with commercial-grade quality
- Flue damper for increased energy efficiency and performance
- 24 Volt Gas Valve offers:
  - Diagnostic capabilities
  - Monitoring of damper to ensure proper operation and safety
  - Spark ignition eliminating the need for a standing pilot
- Robust 1/4" pilot tubing
- Durable brass drain valve
- Turbulator dip tube reduces sediment build-up at bottom of the tank
- Glass lining provides superior protection against tank corrosion
- Plugs into a standard 110/120V outlet (10 ft. power cord included)

#### Serviceability

- Easy-to-access Combustion chamber
- Conveniently located T&P and drain valve for ease of installation and serviceability
- Top mounted heavy duty anode rod for added tank protection



**WARRANTY**  
6 year limited tank and parts

## PERFORMANCE

| Model            | Series  | Capacity | Input* | Maximum<br>Certified Altitude | Recovery Rate at 90°F<br>Temperature Rise | First Hour Rating | UEF  | Warranty<br>Tank/Parts |
|------------------|---------|----------|--------|-------------------------------|-------------------------------------------|-------------------|------|------------------------|
|                  |         | USG (L)  | BTU/h  | FT (M)                        | GPH (LPH)                                 | GPH (LPH)         |      | Years                  |
| NATURAL GAS      |         |          |        |                               |                                           |                   |      |                        |
| JW640S40N-AV-ES2 | 100/101 | 40 (151) | 40,000 | 10,100 (3,078)                | 41 (155)                                  | 67 (254)          | 0.66 | 6/6                    |
| JW640T40N-AV-ES2 | 100/101 | 40 (151) | 40,000 | 10,100 (3,078)                | 41 (155)                                  | 67 (254)          | 0.64 | 6/6                    |
| JW650S40N-AV-ES2 | 100**   | 50 (189) | 40,000 | 10,100 (3,078)                | 41 (155)                                  | 81 (307)          | 0.69 | 6/6                    |
| JW650T40N-AV-ES2 | 100/101 | 50 (189) | 40,000 | 10,100 (3,078)                | 41 (155)                                  | 81 (307)          | 0.69 | 6/6                    |

Propane models sub N with P. Natural gas models are series 100. Propane models are series 101. All models comply with national energy efficiency regulations.

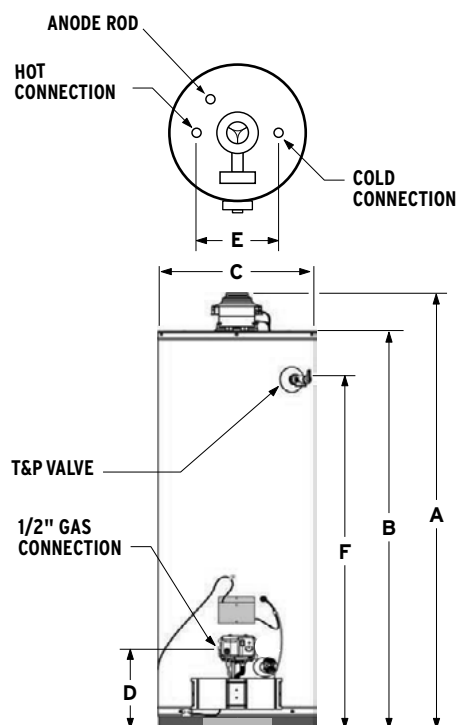
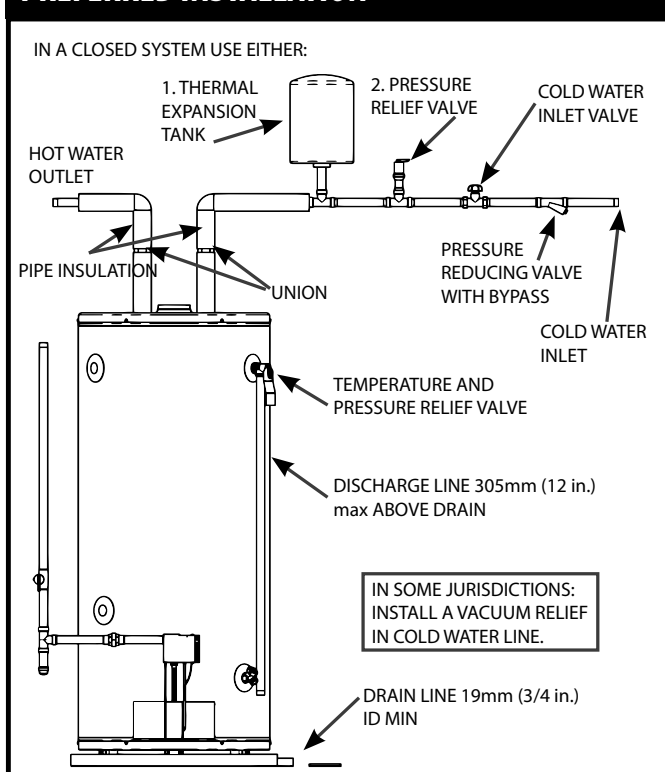
\*Propane Gas – 36,000 for the 40 gallon models and 37,000 for the 50 gallon tall models.

\*\*50 USG Short models are not available for Propane.

## DIMENSIONS & SHIPPING WEIGHT

| Model            | Installation Height | Height to Top of Tank | Tank Diameter | Height to Gas Inlet | Hot Connection to Cold Connection | Height to T&P | Drafthood Connector Diameter | Shipping Weight |
|------------------|---------------------|-----------------------|---------------|---------------------|-----------------------------------|---------------|------------------------------|-----------------|
|                  | A<br>IN (CM)        | B<br>IN (CM)          | C<br>IN (CM)  | D<br>IN (CM)        | E<br>IN (CM)                      | F<br>IN (CM)  | IN                           | LB (KG)         |
| JW640S40N-AV-ES2 | 54 (137)            | 47 ¾ (121)            | 22 (56)       | 13 (33)             | 8 (20)                            | 41 (104)      | 3 or 4                       | 149 (68)        |
| JW640T40N-AV-ES2 | 64 ¼ (163)          | 58 ¼ (148)            | 20 (51)       | 13 (33)             | 8 (20)                            | 51 ¾ (131)    | 3 or 4                       | 152 (69)        |
| JW650S40N-AV-ES2 | 55 ¾ (142)          | 49 ½ (126)            | 24 (61)       | 13 (33)             | 8 (20)                            | 42 ½ (108)    | 3 or 4                       | 183 (83)        |
| JW650T40N-AV-ES2 | 63 ½ (161)          | 57 ¼ (145)            | 22 (56)       | 13 (33)             | 8 (20)                            | 50 ¼ (128)    | 3 or 4                       | 167 (76)        |

## PREFERRED INSTALLATION



Maximum Hydrostatic Working Pressure: 150 PSI.

## ProLine® XE Power Vent

### Features

#### Energy Savings

- Industry-leading energy efficient power vent, with up to a 0.73 UEF
- 2" CFC-free foam insulation to improve energy efficiency
- Built-in heat traps on the water inlet and outlet reduce the amount of heat lost through piping
- Exceeds NRCan energy efficiency standards

#### Designed for Performance

- ProLine®XE models are residential water heaters with commercial-grade quality
- Easy to install with a 3-position rotatable blower
- Exclusive TankSaver® design to prolong tank life
- Convenient 3/4" side taps for combination applications on 50 USG high-input and 75 USG models
- Suitable for elevations up to 10,100 ft. (3,078 m)
- Available for both natural gas or propane
- Glass lining provides superior protection against tank corrosion

#### Safety Features

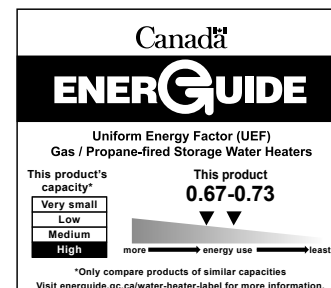
- Sensor detects the presence of flammable vapours and automatically disables the unit, preventing their ignition
- Robust air intake snorkel inhibits flammable vapours from entering the combustion chamber

#### Serviceability

- State-of-the-art electronic gas control features advanced self-diagnostic capability that makes troubleshooting easy
- Conveniently located T&P and drain valve for ease of installation and serviceability

#### The Ultimate in Venting Flexibility

- Can be vented with 2", 3" or 4" ULC S636 PVC, CPVC or polypropylene pipe
- Vertical or horizontal venting configurations



### WARRANTY

6 year limited tank and parts  
8 year limited tank and parts  
2 or 4 year tank warranty extension kits are available for 6 year models

# Commercial-Grade Residential Water Heaters

## PERFORMANCE

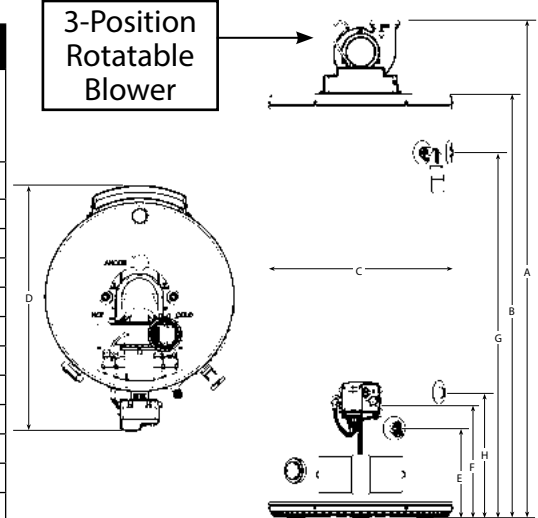
| Model       | Series  | Capacity | Input  | Maximum<br>Certified Altitude | Recovery<br>Rate at 90°F<br>Temperature<br>Rise | First Hour<br>Rating | UEF  | Warranty<br>Tank/Parts |
|-------------|---------|----------|--------|-------------------------------|-------------------------------------------------|----------------------|------|------------------------|
|             |         | USG (L)  | BTU/h  | FT (M)                        | GPH (LPH)                                       | USG (L)              |      | Years                  |
| NATURAL GAS |         |          |        |                               |                                                 |                      |      |                        |
| PV40N       | 200/201 | 40 (151) | 40,000 | 10,100 (3,078)                | 44 (167)                                        | 73 (276)             | 0.67 | 6/6                    |
| PV40TN      | 200/201 | 40 (151) | 50,000 | 10,100 (3,078)                | 50 (189)                                        | 90 (341)             | 0.70 | 6/6                    |
| PV50N       | 200/201 | 50 (189) | 40,000 | 10,100 (3,078)                | 44 (167)                                        | 90 (341)             | 0.72 | 6/6                    |
| PV50TN      | 200/201 | 50 (189) | 50,000 | 10,100 (3,078)                | 50 (189)                                        | 96 (363)             | 0.72 | 6/6                    |
| PV50HIN*    | 200/201 | 50 (189) | 62,000 | 10,100 (3,078)                | 69 (261)                                        | 110 (416)            | 0.73 | 6/6                    |
| PV60N       | 200/201 | 60 (227) | 42,000 | 10,100 (3,078)                | 46 (174)                                        | 106 (401)            | 0.69 | 6/6                    |
| PV75N*      | 300/301 | 75 (284) | 72,000 | 10,100 (3,078)                | 80 (303)                                        | 155 (587)            | 0.69 | 6/6                    |
| NATURAL GAS |         |          |        |                               |                                                 |                      |      |                        |
| PV50NM      | 200/201 | 50 (189) | 40,000 | 10,100 (3,078)                | 44 (167)                                        | 90 (341)             | 0.72 | 8/8                    |
| PV50HINM*   | 200/201 | 50 (189) | 62,000 | 10,100 (3,078)                | 69 (261)                                        | 110 (416)            | 0.73 | 8/8                    |

For propane models sub N with P. Natural gas models are series 200/300. Propane models are series 201/301.

All models comply with national energy efficiency regulations.

\* Model has side connections

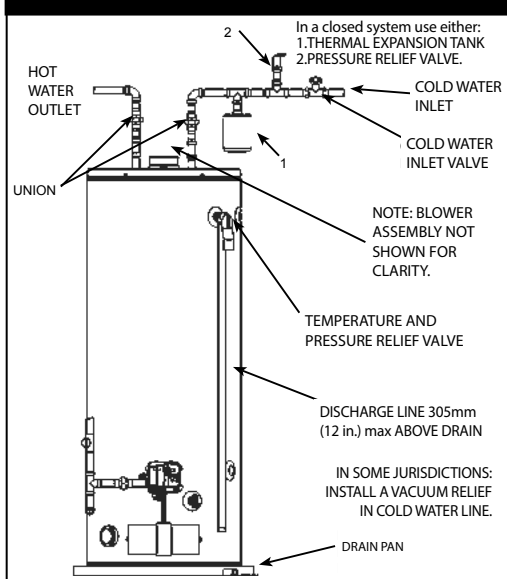
3-Position Rotatable Blower



## DIMENSIONS & SHIPPING WEIGHT

| Model              | Installation Height | Height to Top of Tank | Tank Diameter | Overall Depth | Height to Drain Valve | Height to Gas Inlet | Height to T&P | Height to Upper Side Connection | Height to Lower Side Connection | Shipping Weight |
|--------------------|---------------------|-----------------------|---------------|---------------|-----------------------|---------------------|---------------|---------------------------------|---------------------------------|-----------------|
|                    | A<br>IN (CM)        | B<br>IN (CM)          | C<br>IN (CM)  | D<br>IN (CM)  | E<br>IN (CM)          | F<br>IN (CM)        | G<br>IN (CM)  | G<br>IN (CM)                    | H<br>IN (CM)                    | LB (KG)         |
| <b>NATURAL GAS</b> |                     |                       |               |               |                       |                     |               |                                 |                                 |                 |
| PV40N              | 59 (150)            | 49 ½ (126)            | 22 (56)       | 29 ½ (74)     | 11 (28)               | 13 ¼ (34)           | 42 ½ (108)    | N/A                             | N/A                             | 174 (79)        |
| PV40TN             | 68 ½ (174)          | 59 ¼ (150)            | 20 (51)       | 27 ½ (69)     | 11 (28)               | 13 ¼ (34)           | 53 ½ (135)    | N/A                             | N/A                             | 176 (80)        |
| PV50N / PV50NM     | 60 ½ (153)          | 50 ¾ (129)            | 24 (61)       | 31 ½ (79)     | 11 (28)               | 13 ¼ (34)           | 43 ¾ (111)    | N/A                             | N/A                             | 198 (90)        |
| PV50TN             | 68 ½ (173)          | 58 ¾ (149)            | 22 (56)       | 29 ½ (74)     | 11 (28)               | 13 ¼ (34)           | 51 ¾ (131)    | N/A                             | N/A                             | 192 (87)        |
| PV50HIN / PV50HINM | 61 ½ (155)          | 52 (132)              | 24 (61)       | 31 ½ (79)     | 11 (28)               | 13 ¼ (34)           | 44 ½ (113)    | 44 ½ (113)                      | 15 ¼ (39)                       | 212 (96)        |
| PV60N              | 67 ¼ (171)          | 57 ¾ (147)            | 24 (61)       | 31 ½ (79)     | 11 (28)               | 13 ¼ (34)           | 50 ¾ (128)    | N/A                             | N/A                             | 216 (98)        |
| PV75N              | 70 ¾ (179)          | 61 ¼ (156)            | 26 (66)       | 33 ½ (84)     | 11 (28)               | 13 ¼ (34)           | 53 (135)      | 53 (135)                        | 15 ¼ (39)                       | 277 (126)       |

## PREFERRED INSTALLATION



## VENT PIPE LENGTHS

| Model              | Vent Pipe Diameter IN | Minimum Number of Elbows Required* | Maximum Vent Length with one 90° Elbow FT (M) | Minimum Vent Length with one 90° Elbow FT (M) |
|--------------------|-----------------------|------------------------------------|-----------------------------------------------|-----------------------------------------------|
| PV40N              | 2                     | 0                                  | 50 (15.2)                                     | 7 (2.1)                                       |
| PV40TN             | 3                     | 0                                  | 125 (38.1)                                    | 50 (15.2)                                     |
| PV50N / PV50NM     | 4                     | 0                                  | 180 (54.9)                                    | 125 (38.1)                                    |
| PV50TN             | 3                     | 0                                  | 50 (15.2)                                     | 7 (2.1)                                       |
| PV60               | 4                     | 0                                  | 125 (38.1)                                    | 50 (15.2)                                     |
| PV50HIN / PV50HINM | 3                     | 0                                  | 50 (15.2)                                     | 7 (2.1)                                       |
| PV75N              | 4                     | 0                                  | 125 (38.1)                                    | 50 (15.2)                                     |

\* Refer to installation manual for further details.

## VENT KITS

| Description                                                                | Part Number |
|----------------------------------------------------------------------------|-------------|
| 3" Vent Kit<br>Includes coupling for blower outlet and termination screens | 100112701   |
| 4" Vent Termination Kit<br>Includes termination screens                    | 100112700   |

For Technical Information/Warranty:  
Call 1-888-479-8324 or email [techsupport@johnwoodwaterheaters.com](mailto:techsupport@johnwoodwaterheaters.com)  
[www.johnwoodwaterheaters.com](http://www.johnwoodwaterheaters.com)

## ProLine® XE Power Direct Vent

### Features

#### Energy Savings

- Exceeds NRCan energy efficiency standards
- Factory installed heat trap nipples

#### Designed for Performance

- ProLine® XE models are residential water heaters with commercial-grade quality
- Compact design - ideal as a replacement water heater and for closet installations
- Exclusive TankSaver® design to prolong tank life
- Ultra-quiet blower
- Convenient 3/4" side water connections for combination applications on high input 50 USG and 75 USG units (plugs are factory installed)
- Factory installed T&P valve and drip tube
- Glass lining provides superior protection against tank corrosion

#### Safety Features

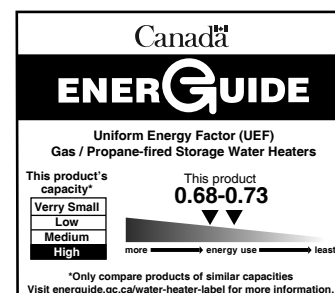
- Sealed combustion chamber design, eliminating the need for a flammable vapour sensor
- Zero clearance to combustibles

#### Serviceability

- State-of-the-art gas control features advanced self-diagnostic capability that makes troubleshooting easy
- Conveniently located T&P and drain valve for ease of serviceability
- Auto-reset temperature switch monitors vent temperature

#### The Ultimate in Venting Flexibility

- Can be vented with 2", 3" or 4" ULC S636 PVC, CPVC or polypropylene pipe up to 180 equivalent feet (see installation manual for full details)
- Can be installed using a concentric vent kit (see reverse or installation manual for details)



### WARRANTY

6 year limited tank and parts  
2 or 4 year tank warranty extension kits are available

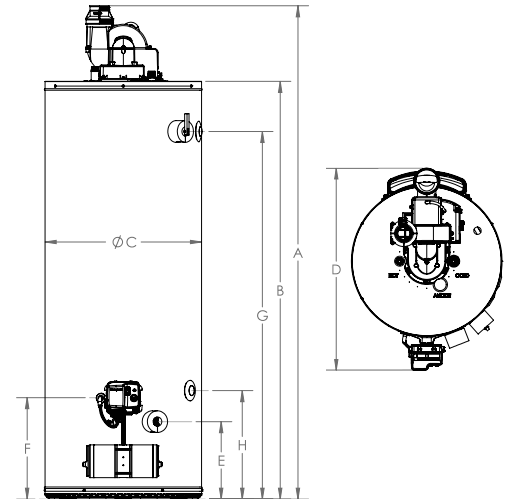
# Commercial-Grade Residential Water Heaters

## PERFORMANCE

| Model       | Series  | Capacity | Input  | Recovery Rate<br>at 90°F<br>Temperature<br>Rise | First Hour<br>Rating | UEF  | Warranty<br>Tank/Parts |
|-------------|---------|----------|--------|-------------------------------------------------|----------------------|------|------------------------|
|             |         | USG (L)  | BTU/h  | GPH (LPH)                                       | GPH (LPH)            |      | Years                  |
| NATURAL GAS |         |          |        |                                                 |                      |      |                        |
| PDV40N      | 300/301 | 40 (151) | 40,000 | 45 (170)                                        | 71 (269)             | 0.68 | 6/6                    |
| PDV50N      | 300/301 | 50 (189) | 45,000 | 50 (189)                                        | 93 (352)             | 0.72 | 6/6                    |
| PDV50HIN*   | 300/301 | 50 (189) | 62,000 | 73 (276)                                        | 100 (379)            | 0.73 | 6/6                    |
| PDV75N*     | 300/301 | 75 (284) | 72,000 | 82 (310)                                        | 154 (583)            | 0.68 | 6/6                    |

For propane models sub N for P. Natural gas models are series 300. Propane models are series 301.  
All models rated for installation at altitudes up to 10,100 ft (3,078 m).

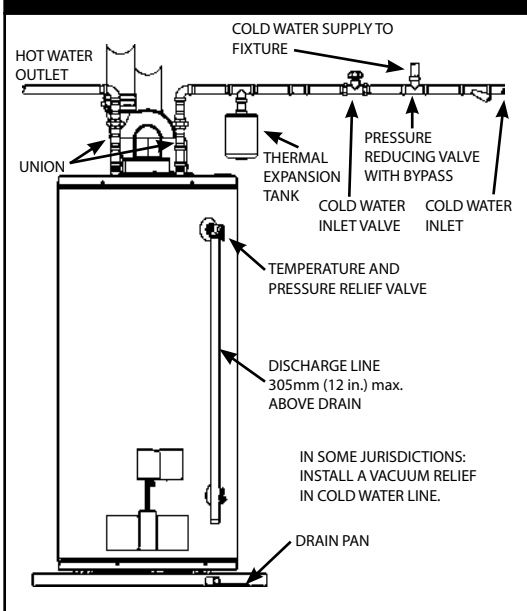
\*Side connections.



## DIMENSIONS & SHIPPING WEIGHT

| Model              | Installation Height | Height to Top of Tank | Tank Diameter | Overall Depth | Height to Drain Valve | Height to Gas Inlet | Height to T&P | Height to Upper Side Connection | Height to Lower Side Connection | Vent Diameter | Shipping Weight |
|--------------------|---------------------|-----------------------|---------------|---------------|-----------------------|---------------------|---------------|---------------------------------|---------------------------------|---------------|-----------------|
|                    | A<br>IN (CM)        | B<br>IN (CM)          | C<br>IN (CM)  | D<br>IN (CM)  | E<br>IN (CM)          | F<br>IN (CM)        | G<br>IN (CM)  | G<br>IN (CM)                    | H<br>IN (CM)                    | IN            | LB (KG)         |
| <b>NATURAL GAS</b> |                     |                       |               |               |                       |                     |               |                                 |                                 |               |                 |
| PDV40N             | 58 ¼ (148)          | 49 ½ (126)            | 22 (56)       | 29 ¾ (76)     | 11 (28)               | 13 ¼ (34)           | 42 ¾ (108)    | N/A                             | N/A                             | 2, 3 or 4     | 174 (79)        |
| PDV50N             | 67 ½ (171)          | 58 ¾ (150)            | 22 (56)       | 29 ¾ (76)     | 11 (28)               | 13 ¼ (34)           | 51 ¾ (131)    | N/A                             | N/A                             | 2, 3 or 4     | 192 (87)        |
| PDV50HIN           | 68 ¾ (175)          | 60 ¼ (153)            | 22 (56)       | 29 ¾ (76)     | 11 (28)               | 13 ¼ (34)           | 52 ¾ (134)    | 52 ¾ (134)                      | 15 ¼ (39)                       | 3 or 4        | 200 (91)        |
| PDV75N             | 70 ¾ (179)          | 60 ½ (154)            | 26 (66)       | 33 ¾ (86)     | 11 (28)               | 13 ¼ (34)           | 53 (135)      | 53 (135)                        | 15 ¼ (39)                       | 3 or 4        | 277 (126)       |

## PREFERRED INSTALLATION



For Technical Information/Warranty:  
Call 1-888-479-8324 or  
email [techsupport@johnwoodwaterheaters.com](mailto:techsupport@johnwoodwaterheaters.com)  
[www.johnwoodwaterheaters.com](http://www.johnwoodwaterheaters.com)

JWPDV100 (06-23)

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## VENT PIPE LENGTHS

| Model    | Vent Pipe Diameter<br>IN | Minimum Number of Elbows Required* | Minimum Vent Length with One Elbow<br>FT (M) |         | Maximum Equivalent Vent Length<br>FT (M) |          |
|----------|--------------------------|------------------------------------|----------------------------------------------|---------|------------------------------------------|----------|
|          |                          |                                    | Concentric                                   | 2 Pipe  | Concentric                               | 2 Pipe   |
| PDV40N   | 2                        | 1                                  | 7 (2)                                        | 7 (2)   | 50 (15)                                  | 50 (15)  |
|          | 3                        | 1                                  | 7 (2)                                        | 7 (2)   | 100 (30)                                 | 125 (38) |
|          | 4                        | 1                                  | N/A                                          | 50 (15) | N/A                                      | 180 (55) |
| PDV50N   | 2                        | 1                                  | 7 (2)                                        | 7 (2)   | 50 (15)                                  | 50 (15)  |
|          | 3                        | 1                                  | 7 (2)                                        | 7 (2)   | 100 (30)                                 | 125 (38) |
|          | 4                        | 1                                  | N/A                                          | 50 (15) | N/A                                      | 180 (55) |
| PDV50HIN | 3                        | 1                                  | 7 (2)                                        | 7 (2)   | 45 (14)                                  | 50 (15)  |
|          | 4                        | 1                                  | N/A                                          | 50 (15) | N/A                                      | 125 (38) |
| PDV75N   | 3                        | 1                                  | 7 (2)                                        | 7 (2)   | 30 (9)                                   | 50 (15)  |
|          | 4                        | 1                                  | N/A                                          | 50 (15) | N/A                                      | 125 (38) |

\* Refer to installation manual for further details.

## OPTIONAL KITS

| Description            | Part Number |
|------------------------|-------------|
| 2" concentric vent kit | 100112869   |
| 3" concentric vent kit | 100111100   |
| High ambient kit       | 100308923   |

# Commercial-Grade Residential Water Heaters

## ProLine® Direct Vent

### Features

#### *Designed for Performance*

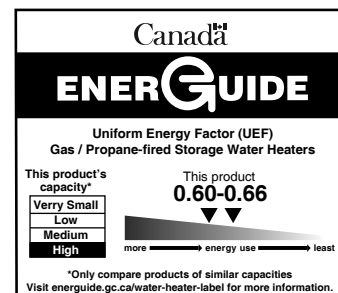
- ProLine® models are residential water heaters with commercial-grade quality
- Thermopile design provides robust pilot to withstand down drafts and environmental conditions
- Easy temperature adjustments
- 90" coaxial vent supplied with water heater
- Glass lining provides superior protection against tank corrosion
- Factory-installed plastic-lined nipples with heat traps
- Automatic gas control
- CFC-free foam insulation
- 50 USG high input model available for combination applications
- Suitable for closet installations
- 3/4" side taps available on 50 USG high input model for combination applications

#### *Safety Features*

- Sealed combustion system, eliminates the need for a Flammable Vapour sensor

#### *Serviceability*

- Easy-to-access combustion chamber
- Conveniently located T&P and drain valve for ease of installation and serviceability
- LED indicator:
  - Gives visual confirmation that pilot is on by flashing continuously
  - Provides diagnostics and troubleshooting
- Piezoelectric ignitor allows for push-button pilot lighting
- Top mounted heavy duty anode rod for added tank protection



### WARRANTY

6 year limited tank and parts  
2 or 4 year tank warranty extension kits are available

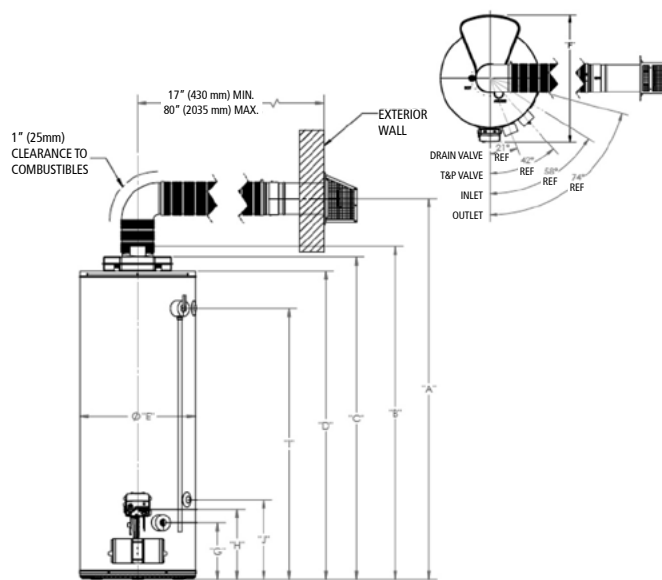
**PERFORMANCE**

| Model    | Series  | Capacity | Input  | Maximum Certified Altitude | Recovery Rate at 90° F Temperature Rise | First Hour Rating | UEF  | Warranty Tank/Parts |
|----------|---------|----------|--------|----------------------------|-----------------------------------------|-------------------|------|---------------------|
|          |         | USG (L)  | BTU/h  | FT (M)                     | GPH (LPH)                               | GPH (LPH)         |      | Years               |
| DV40N    | 300/301 | 40 (151) | 38,000 | 7,700 (2,347)              | 42 (159)                                | 72 (273)          | 0.60 | 6/6                 |
| DV50N    | 300/301 | 50 (189) | 40,000 | 7,700 (2,347)              | 43 (163)                                | 91 (344)          | 0.66 | 6/6                 |
| DV50HIN* | 300/301 | 50 (189) | 47,000 | 7,700 (2,347)              | 51 (193)                                | 92 (348)          | 0.65 | 6/6                 |

For propane models sub N with P. Natural gas models are series 300. Propane models are series 301.

All models comply with national energy efficiency regulations.

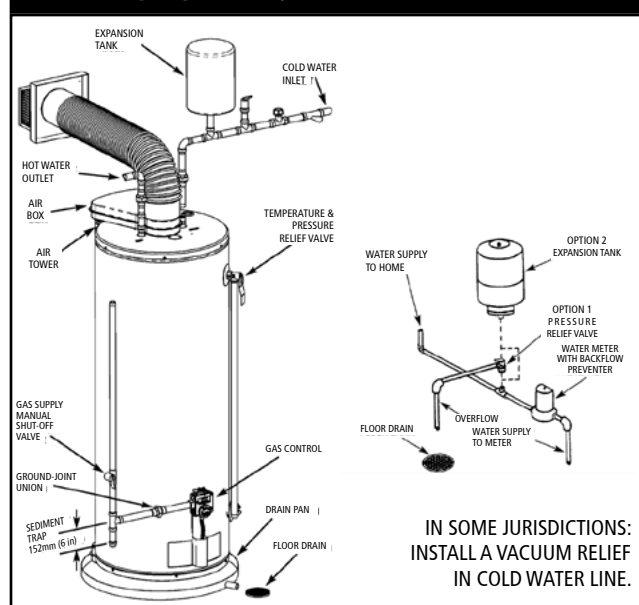
\*Model has side connections.



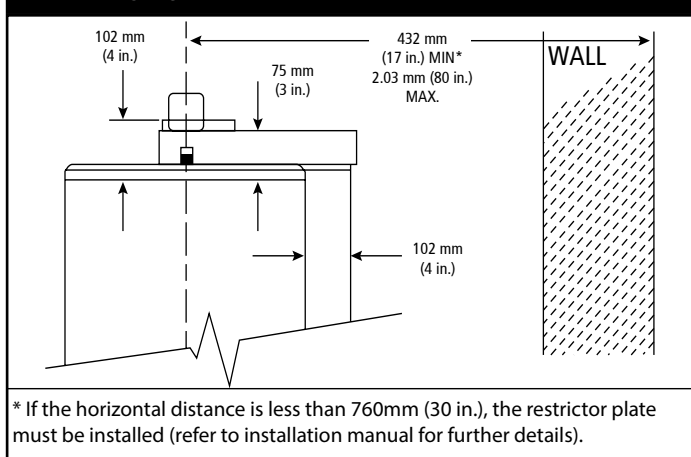
**DIMENSIONS & SHIPPING WEIGHT**

| Model    | Height to Center of Vent | Height to Top of Flue Outlet | Height to Top of Air Box | Height to Top of Heater | Diameter  | Overall Depth | Height to Drain | Height to Gas Inlet | Height to T&P | Height to Side Tap (Hot Out) | Height to Side Tap (Cold In) | Shipping Weight |
|----------|--------------------------|------------------------------|--------------------------|-------------------------|-----------|---------------|-----------------|---------------------|---------------|------------------------------|------------------------------|-----------------|
|          | A IN (CM)                | B IN (CM)                    | C IN (CM)                | D IN (CM)               | E IN (CM) | F IN (CM)     | G IN (CM)       | H IN (CM)           | I IN (CM)     | I IN (CM)                    | J IN (CM)                    | LB (KG)         |
| DV40N    | 64 (163)                 | 54 3/8 (138)                 | 52 1/2 (133)             | 49 3/8 (126)            | 22 (56)   | 29 (74)       | 10 3/4 (27)     | 13 1/4 (34)         | 42 3/8 (108)  | N/A                          | N/A                          | 178 (81)        |
| DV50N    | 73 (185)                 | 63 3/8 (162)                 | 61 3/4 (157)             | 58 7/8 (150)            | 22 (56)   | 29 (74)       | 10 3/4 (27)     | 13 1/4 (34)         | 51 3/8 (131)  | N/A                          | N/A                          | 200 (91)        |
| DV50HIM* | 74 (188)                 | 64 3/8 (164)                 | 62 7/8 (160)             | 60 (152)                | 22 (56)   | 29 (74)       | 10 3/4 (27)     | 13 1/4 (34)         | 52 3/8 (134)  | 52 3/8 (134)                 | 15 1/4 (39)                  | 215 (98)        |

**PREFERRED INSTALLATION**



**VENT LENGTHS**



Refer to the installation manual for complete installation and venting requirements.



# Envirosense® Power Vent

## 94% Condensing Gas Water Heater

The Envirosense® Power Vent is an ENERGY STAR® qualified, 50-gallon, 76,000 BTU gas water heater, equipped with a fully submerged, spiral-shaped condensing heat exchanger. This design provides much greater heat transfer surface than a standard straight flue tube, resulting in 94% thermal efficiency and higher hot water output than standard 78% efficient water heaters. With a 22" diameter, the Envirosense Power Vent can be installed in less space than a 75-gallon unit and delivers greater recovery and lower operating costs. The Envirosense Power Vent is so advanced, it delivers hot water shower after shower... at a continuous flow of over 3 gallons per minute.\*

### POWER VENT DESIGN FOR INSTALLATION VERSATILITY

- Modular blower, with 120V, 60Hz electrical system (5 amps or less), 6-foot cord with standard 3-prong connector
- Combined horizontal and vertical vent runs terminating through outside wall, using ULC S636 PVC, CPVC or polypropylene pipe as follows:
  - 2" pipe allows vent runs up to 25 equivalent feet
  - 3" pipe allows vent runs up to 65 equivalent feet
  - 4" pipe allows vent runs up to 125 equivalent feet
- Supplied with PVC pipe and elbows to connect heat exchanger outlet to blower, including condensate elbow and drain, and ULC S636 PVC Vent Attenuation Assembly (VAA)

### SIDE-MOUNTED TAPS FOR RECIRCULATING SYSTEMS

- Hot and cold side taps allow for combination systems for water heating plus space heating, radiant floor heating or other applications requiring a recirculating hot water loop
- Plugs for recirculating taps are shipped with water heater

### Intelli-Vent™ GAS CONTROL WITH SILICON NITRIDE HOT SURFACE IGNITER

- Premium-grade hot surface igniter eliminates standing pilot
- Electronic circuitry provides superior system diagnostic capabilities plus extremely precise temperature control

### COMMERCIAL-GRADE GLASS LINING WITH TWO MAGNESIUM ANODE RODS

- Superior protection against tank corrosion
- Glass lining protects all water side tank surfaces plus inside of internal heat exchanger exposed to condensate

### WARRANTY\*\*

- 6 year limited tank warranty
- 6 year limited parts warranty

### AVAILABLE IN NATURAL GAS ONLY

\* 3.21 GPM continuous flow, based on 65°F/18°C inlet water temperature and 110°F/43°C outlet water temperature. \*\*In residential applications. Reduced warranty in commercial applications.



For Technical Information call 888-599-2837. A. O. Smith Enterprises Ltd. reserves the right to make product changes or improvements without prior notice.

ENVPV100 (03-23)



# Envirosense® Power Vent

## 94% Condensing Gas Water Heater

### PERFORMANCE

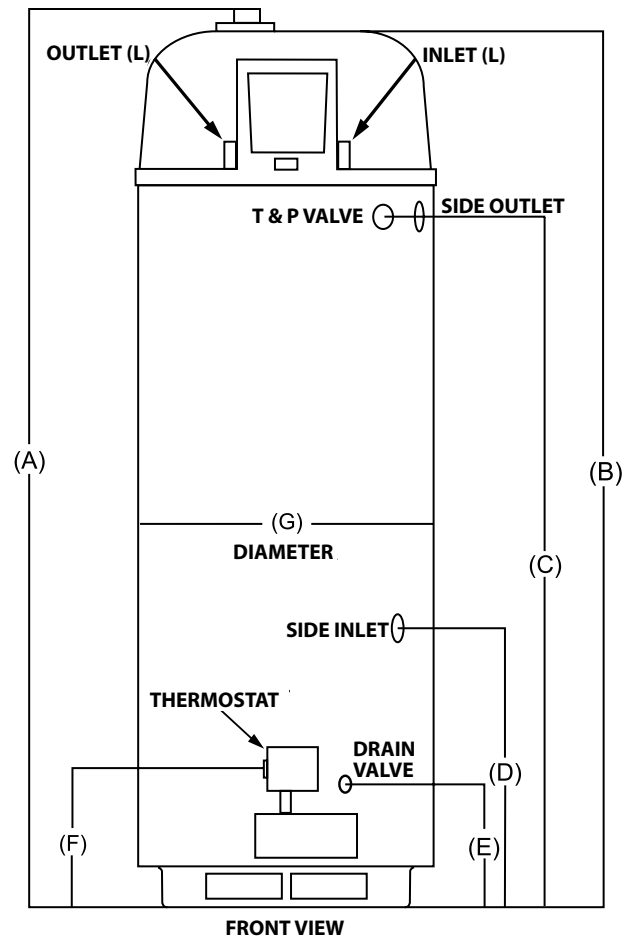
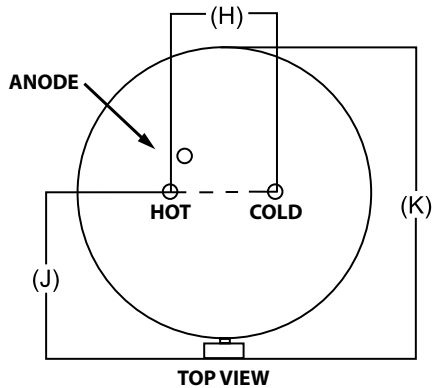
| Model        | Series | Capacity |     | Maximum<br>Certified Altitude | Input  | Recovery Rate at<br>90°F<br>Temperature Rise | Thermal<br>Efficiency | UEF  | BC Compliant |
|--------------|--------|----------|-----|-------------------------------|--------|----------------------------------------------|-----------------------|------|--------------|
|              |        | USG      | L   | FT (M)                        | BTU/h  | GPH (LPH)                                    |                       |      |              |
| NATURAL GAS  |        |          |     |                               |        |                                              |                       |      |              |
| 6G5076NVC02* | 130    | 50       | 189 | 5,300 (1,615)                 | 76,000 | 96 (364)                                     | 94%                   | 0.88 | √            |

### DIMENSIONS & SHIPPING WEIGHT

| Model        | Installation Height | Height to Top of Tank | Height to T&P | Height to Upper Side Connection | Height to Lower Side Connection | Height to Drain Valve | Height to Thermostat | Tank Diameter | Hot Connection to Cold Connection | Water Connection Depth From Front of Tank | Overall Depth | Top Water Connections | Side Water Connections | Shipping Weight |
|--------------|---------------------|-----------------------|---------------|---------------------------------|---------------------------------|-----------------------|----------------------|---------------|-----------------------------------|-------------------------------------------|---------------|-----------------------|------------------------|-----------------|
|              | A<br>IN (CM)        | B<br>IN (CM)          | C<br>IN (CM)  | C<br>IN (CM)                    | D<br>IN (CM)                    | E<br>IN (CM)          | F<br>IN (CM)         | G<br>IN (CM)  | H<br>IN (CM)                      | J<br>IN (CM)                              | K<br>IN (CM)  | IN<br>NPT             | IN<br>NPT              | LB (KG)         |
| NATURAL GAS  |                     |                       |               |                                 |                                 |                       |                      |               |                                   |                                           |               |                       |                        |                 |
| 6G5076NVC02* | 71 (180)            | 68 3/8 (174)          | 52 (132)      | 52 (132)                        | 21 (53)                         | 9 1/8 (23)            | 12 (30)              | 22 (56)       | 8 (20)                            | 15 3/4 (40)                               | 27 (69)       | 3/4                   | 3/4                    | 225 (102)       |

Natural gas only.

\*Model has side connections.



For Technical Information call 888-599-2837. A. O. Smith Enterprises Ltd. reserves the right to make product changes or improvements without prior notice.

ENVPV100 (03-23)



# Envirosense® Power Direct Vent

## 96% Efficient Gas Water Heater

The 100,000 BTU ENERGY STAR® qualified Envirosense® Power Direct Vent gas water heater is equipped with a fully submerged, spiral-shaped condensing heat exchanger and 50 or 75 gallons of storage capacity. This design provides much greater heat transfer surface than a standard straight flue tube, resulting in 96% thermal efficiency and higher hot water output\* than comparable 80% efficient water heaters.

### AIQ™ ADAPTIVE GAS CONTROL

- Smart Combustion system includes gas valve with servo motor and electronic controller
- Improves combustion and light off
- Adjusts to fuel qualities or abnormalities
- Can run on natural gas or liquid propane, gas type selected via touch screen upon installation

### POWER DIRECT VENT DESIGN

- Top fired burner
- Combined horizontal and vertical vent runs terminating through outside wall or roof, using ULC S636 PVC, CPVC or polypropylene pipe as follows:
  - 2" pipe allows vent runs up to 65 equivalent feet
  - 3" pipe allows vent runs up to 135 equivalent feet

### INTELLIGENT CONTROL SYSTEM WITH TOUCH SCREEN DISPLAY

- Exclusive touch display control system
- Precise temperature control
- Advanced diagnostics

### LEAK DETECTION MODULE

### SIDE-MOUNTED TAPS FOR RECIRCULATING SYSTEMS

- Hot and cold side taps allow for combination systems for water heating plus space heating, radiant floor heating or other applications requiring a recirculating hot water loop
- Plugs for recirculating taps are factory installed

### GLASS LINED TANK WITH TWO MAGNESIUM ANODE RODS

- Provides superior protection against corrosion
- Commercial-grade glass lining protects all water side tank surfaces plus inside of internal heat exchanger exposed to condensate

### WARRANTY\*\*

- 8 year limited tank warranty
- 8 year limited parts warranty

\* 4.3 GPM continuous flow, based on 65°F/18°C inlet water temperature and 110°F/43°C outlet water temperature.

\*\*In residential applications. Reduced warranty in commercial applications.



50 Gallon Model Shown





# Envirosense® Power Direct Vent

## 96% Efficient Gas Water Heater

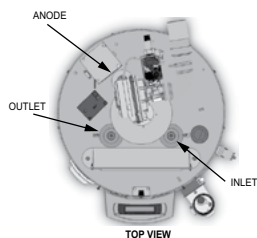
### PERFORMANCE

| Model Number   | Nominal Capacity USG (L) | Rated Storage Volume | First Hour Rating USG (L) | UEF  | Thermal Efficiency | Recovery @ 90° Rise GPH (LPH) | BTU Input Per Hour | Vent Size inches | Dimensions in Inches    |          | Approx. Shipping Weight (lb) |
|----------------|--------------------------|----------------------|---------------------------|------|--------------------|-------------------------------|--------------------|------------------|-------------------------|----------|------------------------------|
|                |                          |                      |                           |      |                    |                               |                    |                  | Height to Top of Heater | Diameter |                              |
| 8G50100MPDVH06 | 50 (189)                 | 49                   | 118 (447)                 | 0.88 | 96%                | 129 (488)                     | 100,000            | 2 or 3           | 66-3/4                  | 22       | 256                          |
| 8G75100HPDVH06 | 75 (284)                 | 74                   | 150 (568)                 | 0.86 | 96%                | 129 (488)                     | 100,000            | 2 or 3           | 65-1/4                  | 27-3/4   | 388                          |

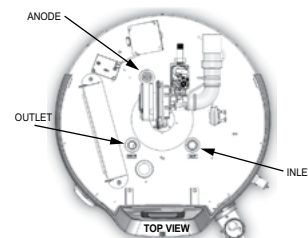
### DIMENSIONS & SHIPPING WEIGHT

| Models         | Units | A      | B      | C      | D      | E     | F     | G      | H     |
|----------------|-------|--------|--------|--------|--------|-------|-------|--------|-------|
| 8G50100MPDVH06 | in    | 66-3/4 | 49 1/4 | 22     | 15 3/4 | 3     | 8     | 62     | 65    |
|                | cm    | 169.5  | 125.09 | 55.88  | 40.00  | 7.62  | 20.32 | 157.48 | 165.1 |
| 8G75100HPDVH06 | in    | 65 1/4 | 45 5/8 | 27 3/4 | 16     | 3 3/4 | 8     | 59     | 60    |
|                | cm    | 165.7  | 115.9  | 70.5   | 40.6   | 9.4   | 20.1  | 145.7  | 149.8 |

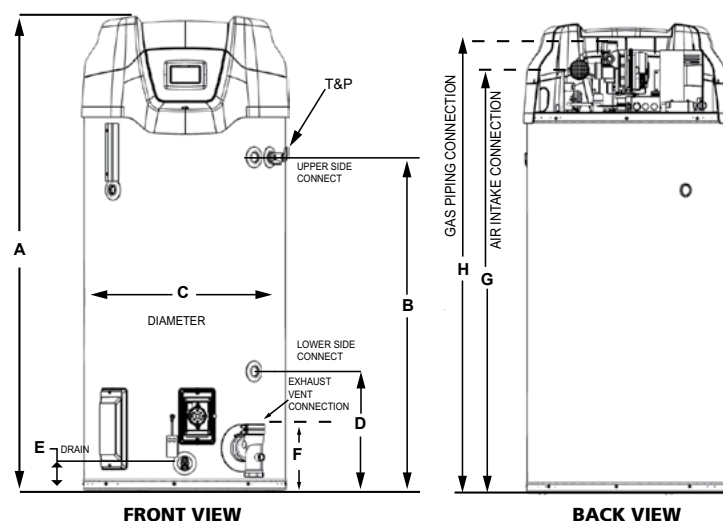
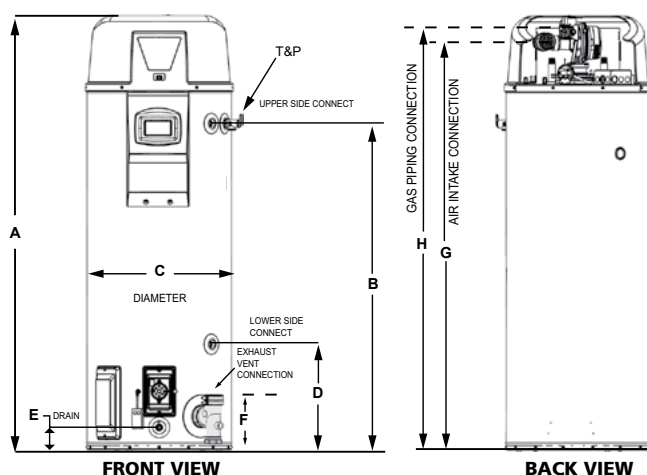
Models certified for sea level to 10,100 ft. elevation.  
 Optional Condensate Neutralizer Kit available (Part Number 100289339).  
 Top Inlet and Outlet: 50G - 3/4" NPT; 75G - 1" NPT  
 Side Inlet and Outlet: 3/4" NPT  
 Gas Inlet: 1/2" NPT  
 Condensate drain outlet: 1/2" NPT



\*INSTALL IN ACCORDANCE WITH LOCAL CODES



\*INSTALL IN ACCORDANCE WITH LOCAL CODES



For Technical Information call 888-599-2837. A. O. Smith Enterprises Ltd. reserves the right to make product changes or improvements without prior notice.



# Envirosense SF<sup>®</sup>

## HIGH-EFFICIENCY RESIDENTIAL GAS WATER HEATERS

### Flexible, Powerful & Highly Efficient Gas Water Heater for the Everyday Home.

Commercial-grade hot water delivery is now more attainable than ever. The Vertex<sup>®</sup> HV provides flexible, powerful and highly efficient performance to the everyday home. The fully condensing Vertex design is so advanced, it can deliver “continuous hot water for shower after shower” at a constant flow of over 2.5 gallons per minute.\*

#### ENERGY STAR<sup>®</sup> QUALIFIED

#### ADVANCED ELECTRONIC CONTROL

- Precise temperature control
- Built-in diagnostics and operational information

#### CONDENSING DESIGN

- High efficiency operation with up to 0.90 Uniform Energy Factor to save money on operating costs

#### HELICAL INTERNAL HEAT EXCHANGER

- Spiral heat exchanger keeps hot combustion gases in the tank longer to lengthen the heat transfer cycle
- Positioned in the center of the tank for more even heat distribution
- Spiral design reduces lime scale formation on the heat exchanger to maintain high efficiency operation over time

#### POWER VENT AND POWER DIRECT VENT WITH A SINGLE DESIGN

- Combined vertical and horizontal runs terminating through an outside wall. Vents using PVC, CPVC, or polypropylene pipe.
- 2" pipe, vents up to 60 equivalent feet
- 3" pipe, vents up to 150 equivalent feet

#### SIDE-MOUNTED HOT AND COLD RECIRCULATING TAPS

- Allows Envirosense SF<sup>®</sup> to be installed as part of combination space heating/water heating applications

#### AVAILABLE IN NATURAL GAS AND PROPANE

#### SIDE FIRED GAS BURNER

- Unique side fire design allows for optimal burner placement

#### GLASS COATING

- Provides superior corrosion resistance compared to industry standard lining.

#### LEAK PROTECTION TECHNOLOGY

- Comes standard with dual sacrificial anodes to protect the tank
- Optional Powered Anode available for enhanced tank protection in all water conditions
- Includes Leak Detection smart sensor that alerts audibly and visually if a leak occurs

#### CSA CERTIFIED AND ASME RATED T&P RELIEF VALVE

#### MAXIMUM HYDROSTATIC WORKING PRESSURE: 150 PSI

#### CODE COMPLIANCE

- Meets NRCAN and provincial thermal efficiency and standby loss requirements.

#### DESIGN-CERTIFIED BY CSA

- Certified at 300 psi test pressure and 150 psi working pressure. Listed according to ANSI Z21.10.1- CSA 4.1 standards governing storage tank-type water heaters.

#### WARRANTY

- 8-year limited tank and parts warranty

\*Continuous hot water based on 65,000 BTU unit, 2.8 GPM continuous flow with a 65°F inlet water temperature, 110°F outlet temperature, and installed per the manufacturer's instructions.



MODEL SHOWN ENV-50N





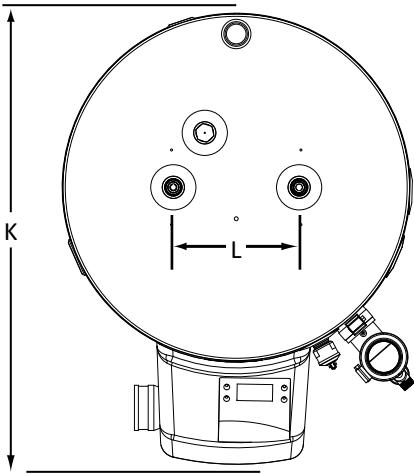
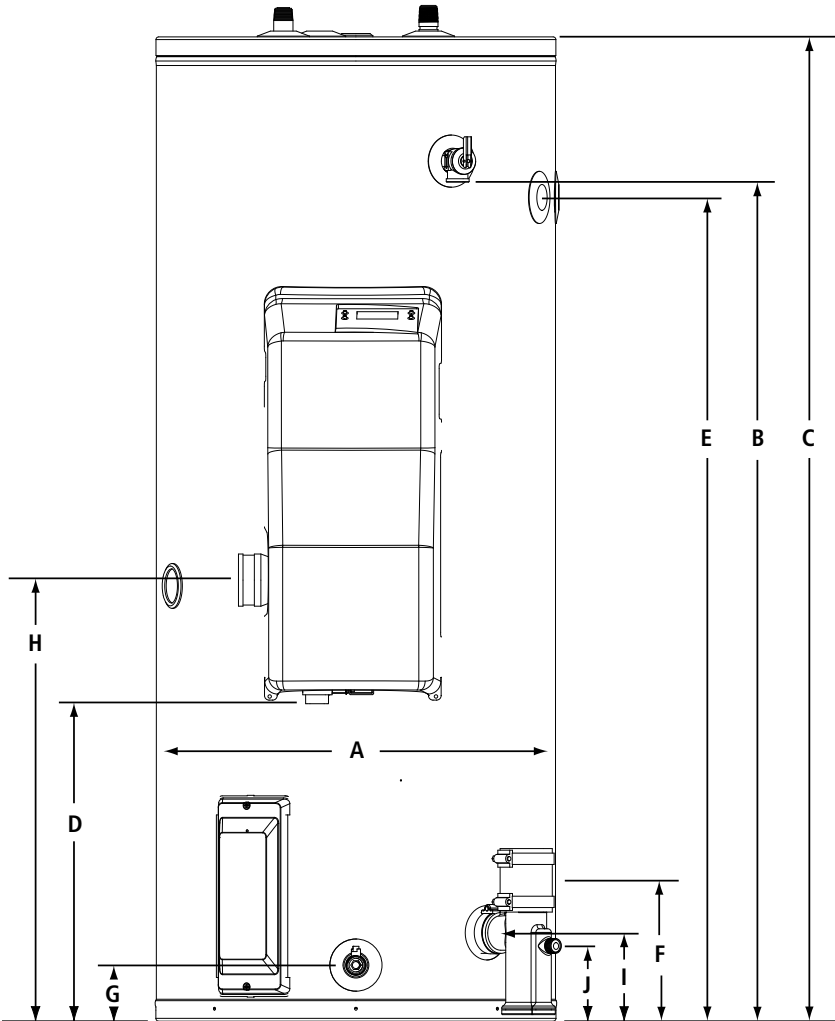
Envirosense SF<sup>®</sup>

HIGH-EFFICIENCY RESIDENTIAL GAS WATER HEATERS

| Model Number | Nominal Capacity | Rated Storage Volume | First Hour Rating (Gallons) | UEF  | Thermal Efficiency | Recovery @ 90° Rise Gallon Per Hour | BTU Input Per Hour | Approx. Shipping Weight (lbs) |
|--------------|------------------|----------------------|-----------------------------|------|--------------------|-------------------------------------|--------------------|-------------------------------|
|              | USG (L)          | USG (L)              | USG (L)                     |      |                    | GPH (LPH)                           | BTU/h              | LB (KG)                       |
| ENV-40N      | 40 (151)         | 39 (147)             | 86 (325)                    | 0,90 | 93%                | 62 (234)                            | 50,000             | 216 (98,2)                    |
| ENV-50N      | 50 (189)         | 48 (181)             | 118 (446)                   | 0,90 | 93%                | 81 (306)                            | 65,000             | 246 (111,8)                   |

Top Inlet and outlet connections: 3/4" male NPT. Circulation loop connections: 3/4" female NPT  
 Models certified for sea level to 10,100 ft. elevation.  
 Optional Condensate Neutralizer Kit available (Part Number 100112380).  
 Optional Powered Anode Kit available (Part Number 100305721).

|   | Description:                    | Dimensions in (cm) |              |
|---|---------------------------------|--------------------|--------------|
|   |                                 | 40 GAL             | 50 GAL       |
| A | Diameter                        | 22 (56)            | 22 (56)      |
| B | Height to T&P                   | 38-3/8 (97)        | 47-3/8 (120) |
| C | Heght to top                    | 44-7/8 (114)       | 54-1/4 (138) |
| D | Height to gas connection        | 16-1/2 (42)        | 17-1/2 (44)  |
| E | Height to Upper Side Connect    | 36-3/8 (92)        | 45-3/8 (115) |
| F | Height to Lower Side Connect    | 8-5/8 (22)         | 7-7/8 (20)   |
| G | Height to Drain Valve           | 3-7/8 (10)         | 3 (8)        |
| H | Height to Air Intake            | 22-1/8 (56)        | 24-1/4 (62)  |
| I | Height to Exhaust               | 5-3/8 (14)         | 4-7/8 (12)   |
| J | Height to Condensate Connection | 5-1/2 (14)         | 4 (10)       |
| K | Overall Depth                   | 28-1/2 (72)        | 28-1/2 (72)  |
| L | Water Connections               | 8 (20)             | 8 (20)       |





# Polaris™ High-Efficiency Residential Gas Water Heater

The Polaris high efficiency gas water heater is the high performance answer for today's hot water needs. It can provide endless hot water\* and can be used for a combination of domestic hot water and space heating.

## CONDENSING DESIGN

- Operates at up to 96% thermal efficiency which saves money on operating costs compared to a standard 80% efficient gas water heater
- Helical internal heat exchanger keeps hot combustion gases in the tank longer to transfer more heat into the water

## STAINLESS STEEL CONSTRUCTION

- Tank and helical heat exchanger are constructed from 444 stainless steel for excellent corrosion resistance without the need for an anode

## WHISPER QUIET OPERATION

- Ultra quiet blower and burner to minimize noise

## POWER DIRECT VENT DESIGN

- Direct vent using ULC S636, PVC, CPVC or Polypropylene (solid core only) through a sidewall or roof
- Optional concentric vent kit
- 2" pipe vents up to 52 equivalent feet (100-150k BTU/h inputs)
- 3" pipe vents up to 130 equivalent feet

## ADVANCED ELECTRONIC CONTROL

- Large touchscreen display
- Precise temperature control
- Advanced water heater status and diagnostics

## MODULATING GAS BURNER

- Modulating burner maintains high efficiency operation at lower input rates

## SIDE-MOUNTED HOT AND COLD RECIRCULATING TAPS

- Polaris can be easily installed with a recirculation system or as part of a combined domestic & space heating system

## FULLY SERVICEABLE FROM THE FRONT

- Two front access panels expose all serviceable components. Modular components are all easily removed

## AVAILABLE IN NATURAL GAS OR PROPANE

## CSA CERTIFIED AND ASME RATED T&P RELIEF VALVE

## 10-YEAR LIMITED TANK AND 1-YEAR PARTS WARRANTY

\*When sized appropriately. Model PR50-199 can deliver 6.95 GPM continuous flow, based on 65°F inlet water temperature, 120°F outlet temperature.



# POLARIS

## Polaris™ High-Efficiency Residential Gas Water Heater

### PERFORMANCE

| Model              | Series | Capacity |     | Maximum Certified Altitude | Input   | Recovery Rate at 90°F Temperature Rise | Thermal Efficiency | Warranty Tank/Parts |
|--------------------|--------|----------|-----|----------------------------|---------|----------------------------------------|--------------------|---------------------|
|                    |        | USG      | L   |                            |         |                                        |                    |                     |
|                    |        |          |     | FT (M)                     | BTU/h   | GPH (LPH)                              |                    | Years               |
| <b>NATURAL GAS</b> |        |          |     |                            |         |                                        |                    |                     |
| PR 34-100 N        | 200    | 34       | 129 | 7,700 (2,437)              | 100,000 | 129 (488)                              | 96%                | 10/1                |
| PR 34-130 N        | 200    | 34       | 129 | 7,700 (2,437)              | 130,000 | 168 (636)                              | 96%                | 10/1                |
| PR 34-150 N        | 200    | 34       | 129 | 7,700 (2,437)              | 150,000 | 190 (719)                              | 94%                | 10/1                |
| PR 50-130 N        | 200    | 50       | 189 | 7,700 (2,437)              | 130,000 | 165 (625)                              | 95%                | 10/1                |
| PR 50-150 N        | 200    | 50       | 189 | 7,700 (2,437)              | 150,000 | 190 (719)                              | 95%                | 10/1                |
| PR 50-175 N        | 200    | 50       | 189 | 7,700 (2,437)              | 175,000 | 222 (840)                              | 96%                | 10/1                |
| PR 50-199 N        | 200    | 50       | 189 | 7,700 (2,437)              | 199,000 | 253 (958)                              | 96%                | 10/1                |

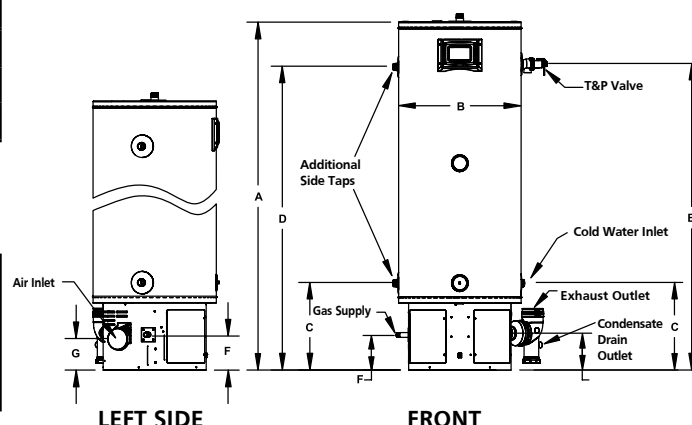
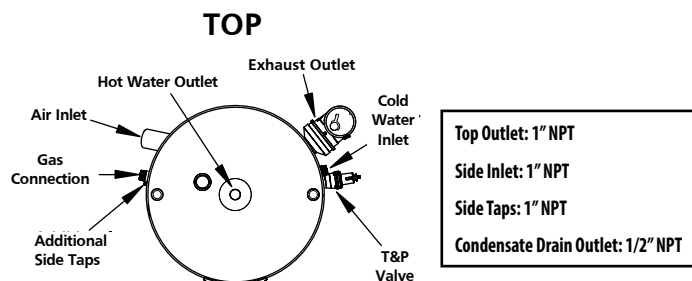
For propane models sub N with P. Natural gas models are series 200. Propane models are series 201. All models comply with national energy efficiency regulations. Input, output and recovery may vary depending upon air inlet and exhaust outlet installations, consult manual for details.

### DIMENSIONS & SHIPPING WEIGHT

| Model              | Height to Top of Tank | Tank Diameter | Height to Heating System Return | Height to Cold Water Inlet | Height to Heating System Outlet | Height to T&P | Height to Gas Supply | Height to Air Inlet | Water Connections | Gas Connections | Vent Diameter | Shipping Weight |
|--------------------|-----------------------|---------------|---------------------------------|----------------------------|---------------------------------|---------------|----------------------|---------------------|-------------------|-----------------|---------------|-----------------|
|                    | A<br>IN (CM)          | B<br>IN (CM)  | C<br>IN (CM)                    | C<br>IN (CM)               | D<br>IN (CM)                    | E<br>IN (CM)  | F<br>IN (CM)         | G<br>IN (CM)        | IN<br>NPT         | IN<br>NPT       | IN            | LB (KG)         |
| <b>NATURAL GAS</b> |                       |               |                                 |                            |                                 |               |                      |                     |                   |                 |               |                 |
| PR 34-100 N        | 48 ½ (123)            | 22 (56)       | 15 ¾ (40)                       | 15 ¾ (40)                  | 40 ½ (103)                      | 41 (104)      | 6 ¾ (16)             | 6 ¾ (16)            | 1                 | ½               | 2 or 3        | 150 (68)        |
| PR 34-130 N        | 48 ½ (123)            | 22 (56)       | 15 ¾ (40)                       | 15 ¾ (40)                  | 40 ½ (103)                      | 41 (104)      | 6 ¾ (16)             | 6 ¾ (16)            | 1                 | ½               | 2 or 3        | 150 (68)        |
| PR 34-150 N        | 48 ½ (123)            | 22 (56)       | 15 ¾ (40)                       | 15 ¾ (40)                  | 40 ½ (103)                      | 41 (104)      | 6 ¾ (16)             | 6 ¾ (16)            | 1                 | ½               | 2 or 3        | 150 (68)        |
| PR 50-130 N        | 62 ¾ (158)            | 22 (56)       | 15 ¾ (40)                       | 15 ¾ (40)                  | 54 ½ (138)                      | 55 (140)      | 6 ¾ (16)             | 6 ¾ (16)            | 1                 | ½               | 2 or 3        | 176 (80)        |
| PR 50-150 N        | 63 ¾ (162)            | 22 (56)       | 15 ¾ (40)                       | 15 ¾ (40)                  | 55 ¾ (142)                      | 56 ¼ (143)    | 6 ¾ (16)             | 6 ¾ (16)            | 1                 | ½               | 2 or 3        | 180 (82)        |
| PR 50-175 N        | 63 ¾ (162)            | 22 (56)       | 15 ¾ (40)                       | 15 ¾ (40)                  | 55 ¾ (142)                      | 56 ¼ (143)    | 6 ¾ (16)             | 6 ¾ (16)            | 1                 | ½               | 3             | 180 (82)        |
| PR 50-199 N        | 63 ¾ (162)            | 22 (56)       | 15 ¾ (40)                       | 15 ¾ (40)                  | 55 ¾ (142)                      | 56 ¼ (143)    | 6 ¾ (16)             | 6 ¾ (16)            | 1                 | ½               | 3             | 180 (82)        |

### OPTIONAL KITS

| Description            | Part Number |
|------------------------|-------------|
| 2" Concentric vent kit | 100093946   |
| 3" Concentric vent kit | 100093947   |



For Technical Information call 888-599-2837. A. O. Smith Enterprises Ltd. reserves the right to make product changes or improvements without prior notice.

POLR100 (01-23)

## Powered by **TAKAGI**

The John Wood powered by Takagi condensing tankless water heaters provide endless hot water.\* The durable primary heat exchanger is made of commercial-grade copper while the secondary heat exchanger is made of Type 316L stainless steel, preventing corrosion and prolonging the life of the heater. These direct vent models combine durability and versatility in an easy-to-install space-saving design.



### **Features of Condensing Tankless Models:**

- Integrated temperature and error display
- Advanced safety features
- ULC S636 PVC, CPVC, polypropylene pipe or Cat. III/IV stainless steel venting
- Internal freeze protection system
- New 540P model with integrated recirculation pump

\*When sized appropriately



# Point-of-Use Electric Tankless Water Heaters

## EASY TO INSTALL

- Compact size for installations with space constraints
- Wall mount vertically or horizontally
- ¾" NPT water connections (1/2" NPT reducers included)

## DRY-FIRE PROTECTION

- Prevents element failure due to dry-fire
- Internal air bypass
- Temporary shutoff with excess air in chamber

## SCALE-REDUCTION TECHNOLOGY

- Reduces failures and service requirements due to scale build-up
- Power-sharing technology reduces scale deposits on elements
- Dupont™ Zytel® chambers resist scale buildup

## DIGITAL USER INTERFACE (2-CHAMBER MODEL)

- Easy temperature adjustment
- Error codes are clearly displayed

## WARRANTY

- 6-year limited chamber warranty
- 1-year limited parts warranty



## SPECIFICATIONS

| Model                                 | Series | Input  |       | Amp Load | Recommended Breaker Size | Recommended Wire Gauge | Activation GPM | Flow Rate at 70°F Rise | Height      | Depth      | Width     | Shipping Weight |
|---------------------------------------|--------|--------|-------|----------|--------------------------|------------------------|----------------|------------------------|-------------|------------|-----------|-----------------|
|                                       |        | WATTS  | VOLTS | AMP      |                          |                        |                | GPM (LPM)              | A IN (CM)   | B IN (CM)  | C IN (CM) | LB (KG)         |
| SINGLE CHAMBER, SINGLE ELEMENT MODELS |        |        |       |          |                          |                        |                |                        |             |            |           |                 |
| SSET-70E                              | 100    | 7,000  | 240*  | 29       | 40 Amp                   | 8                      | 0.25           | 0.7 (2.6)              | 15 ½ (39)   | 6 ½ (17)   | 7 (18)    | 9 (4)           |
| TWO CHAMBER, TWO ELEMENT MODEL        |        |        |       |          |                          |                        |                |                        |             |            |           |                 |
| SSET-180E                             | 100    | 18,000 | 240   | 75       | 50 Amp x 2               | 8                      | 0.25           | 1.8 (6.8)              | 16 5⁄8 (42) | 6 1⁄8 (16) | 11 ½ (29) | 20 (9)          |

\*Model is dual-rated. At 208V, wattage is 5258.

For Technical Information call 888-599-2837. A. O. Smith Enterprises Ltd. reserves the right to make product changes or improvements without prior notice.



# POINT-OF-USE ELECTRIC TANKLESS

## COMMERCIAL/RESIDENTIAL

### EASY INSTALLATION

- Compact size perfect for point-of-use applications close to fixtures
- Mounts easily to the wall
- No venting required
- ½" NPT water connection
- No T&P valve required (check local codes)

### WIDE ARRAY OF MODELS AND MODES OF OPERATION

- 1.75kW – 3.5kW, 120V
- 3.5kW – 11kW, 240V (208V)
- Single Phase, 50/60 Hz
- Two mode options, easy switching
- Lavatory mode, default 105°F; temp range 80°F – 149°F
- Emergency eye wash mode, 85°F

### ONBOARD SELF-DIAGNOSTICS & TROUBLESHOOTING

- Onboard self-diagnostics to monitor performance and protect the unit
- Bright LED display for status updates and making system selections and adjustments
- Error codes for troubleshooting and faster resolution

### HIGHLY EFFICIENT & RELIABLE THERMOSTATIC DESIGN

- On-demand water heater capable of supplying endless hot water when appropriately sized
- Ultra-low activation of 0.17 GPM min.
- Energy efficiency 0.91 UEF or higher
- Dry-fire protection to prevent premature element failures
- Secondary temperature regulation to limit hot water output appropriate for use with hand or eye washing applications
- Scale detection (Patent Pending) and easy maintenance for extended service life of the heater

### CONSTRUCTION

- Housing – Bayblend® FR3010 plastic, dark gray
- Chamber Material – Entec Nylon, glass-filled
- Sheathed copper elements for longer life

### WARRANTY

- 6-Year limited warranty on chambers
- 1-Year limited warranty on all parts
- For complete information, consult the written warranty





# POINT-OF-USE ELECTRIC TANKLESS

## COMMERCIAL/RESIDENTIAL

### PRODUCT SPECIFICATIONS

| Model Number | Voltage (V) | Number of Elements | Total Input Wattage (kW) | Wattage per Element | Total Current Draw (Amps) | Recommended Canada Circuit Breaker Size (Amps) | Conductor Size (AWG) | Activation GPM |
|--------------|-------------|--------------------|--------------------------|---------------------|---------------------------|------------------------------------------------|----------------------|----------------|
| SSETU-18K    | 120         | 2                  | 1.75                     | 0.88                | 14.58                     | 20                                             | 14                   | 0.17           |
| SSETU-24K    | 120         | 2                  | 2.40                     | 1.20                | 20.00                     | 25                                             | 12                   | 0.17           |
| SSETU-30K    | 120         | 2                  | 3.00                     | 1.50                | 25.00                     | 35                                             | 10                   | 0.17           |
| SSETU-35K    | 120         | 2                  | 3.50                     | 1.75                | 29.17                     | 40                                             | 10                   | 0.17           |
| SSETU-35E    | 240+        | 2                  | 3.50                     | 1.75                | 14.58                     | 20                                             | 14                   | 0.17           |
| SSETU-45E    | 240+        | 2                  | 4.50                     | 2.25                | 18.75                     | 25                                             | 12                   | 0.17           |
| SSETU-55E    | 240+        | 2                  | 5.50                     | 2.75                | 22.92                     | 30                                             | 10                   | 0.17           |
| SSETU-70E    | 240+        | 4                  | 7.00                     | 1.75                | 29.17                     | 40                                             | 10                   | 0.17           |
| SSETU-90E    | 240+        | 4                  | 9.00                     | 2.25                | 37.50                     | 50                                             | 8                    | 0.17           |
| SSETU-110E   | 240+        | 4                  | 11.00                    | 2.75                | 45.83                     | 60                                             | 8                    | 0.17           |

Copper conductors only. All wiring/conductors must be rated for 90°C or greater.

+ This model may be connected to a 208 VAC supply with reduced power output. Connection to 208 VAC may require different breaker and/or wire size than shown in the table.

NOTICE: Incoming line voltage variations may result in nuisance breaker trips. Contact Technical Support if there are multiple breaker trips when the recommended breaker size is in use.

| Volts          | kW     | GPM AT TEMPERATURE RISE |      |      |      |      |      |      |      |      |      |      |      |      |
|----------------|--------|-------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
|                |        | 25°F                    | 30°F | 35°F | 40°F | 45°F | 50°F | 55°F | 60°F | 65°F | 70°F | 75°F | 80°F | 85°F |
| 120V           | 1.75kW | 0.47                    | 0.39 | 0.33 | 0.29 | 0.26 | 0.23 | 0.21 | 0.20 | 0.18 | 0.17 | -    | -    | -    |
|                | 2.4kW  | 0.64                    | 0.54 | 0.46 | 0.40 | 0.36 | 0.32 | 0.29 | 0.27 | 0.25 | 0.23 | 0.21 | 0.20 | 0.19 |
|                | 3kW    | 0.80                    | 0.67 | 0.57 | 0.50 | 0.45 | 0.40 | 0.36 | 0.33 | 0.31 | 0.29 | 0.27 | 0.25 | 0.24 |
|                | 3.5kW  | 0.94                    | 0.78 | 0.67 | 0.59 | 0.52 | 0.47 | 0.43 | 0.39 | 0.36 | 0.33 | 0.31 | 0.29 | 0.28 |
| 240V<br>(208V) | 3.5kW  | 0.94                    | 0.78 | 0.67 | 0.59 | 0.52 | 0.47 | 0.43 | 0.39 | 0.36 | 0.33 | 0.31 | 0.29 | 0.28 |
|                | 4.5kW  | 1.20                    | 1.00 | 0.86 | 0.75 | 0.67 | 0.60 | 0.55 | 0.50 | 0.46 | 0.43 | 0.40 | 0.38 | 0.35 |
|                | 5.5kW  | 1.47                    | 1.23 | 1.05 | 0.92 | 0.82 | 0.74 | 0.67 | 0.61 | 0.57 | 0.53 | 0.49 | 0.46 | 0.43 |
|                | 7kW    | 1.87                    | 1.56 | 1.34 | 1.17 | 1.04 | 0.94 | 0.85 | 0.78 | 0.72 | 0.67 | 0.62 | 0.59 | 0.55 |
|                | 9kW    | 2.41                    | 2.01 | 1.72 | 1.50 | 1.34 | 1.20 | 1.09 | 1.00 | 0.93 | 0.86 | 0.80 | 0.75 | 0.71 |
|                | 11kW   | 2.94                    | 2.45 | 2.10 | 1.84 | 1.63 | 1.47 | 1.34 | 1.23 | 1.13 | 1.05 | 0.98 | 0.92 | 0.87 |

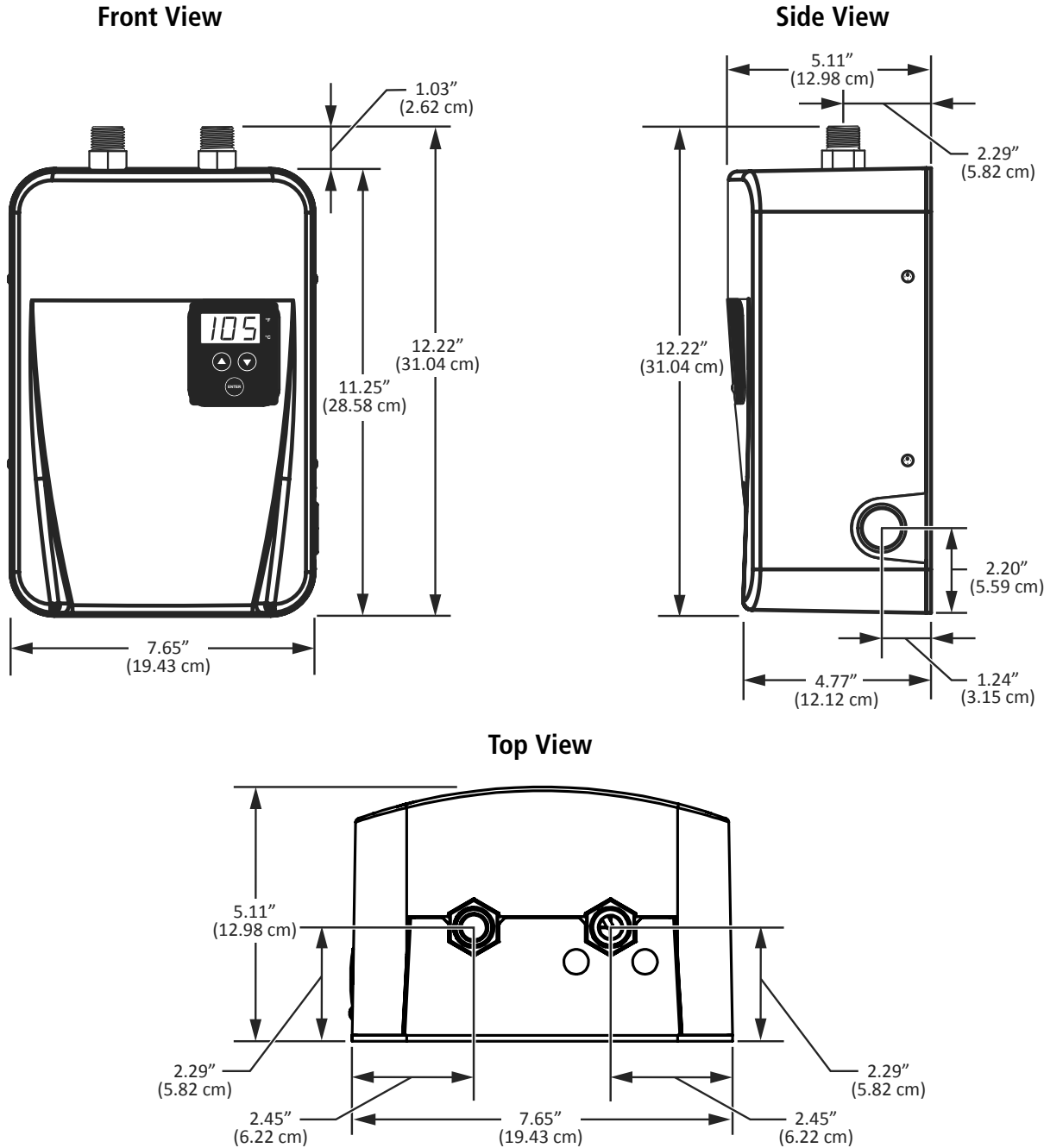
Cold water inlet temperatures raised to 105°F setpoint.



# POINT-OF-USE ELECTRIC TANKLESS

## COMMERCIAL/RESIDENTIAL

### DIMENSIONS



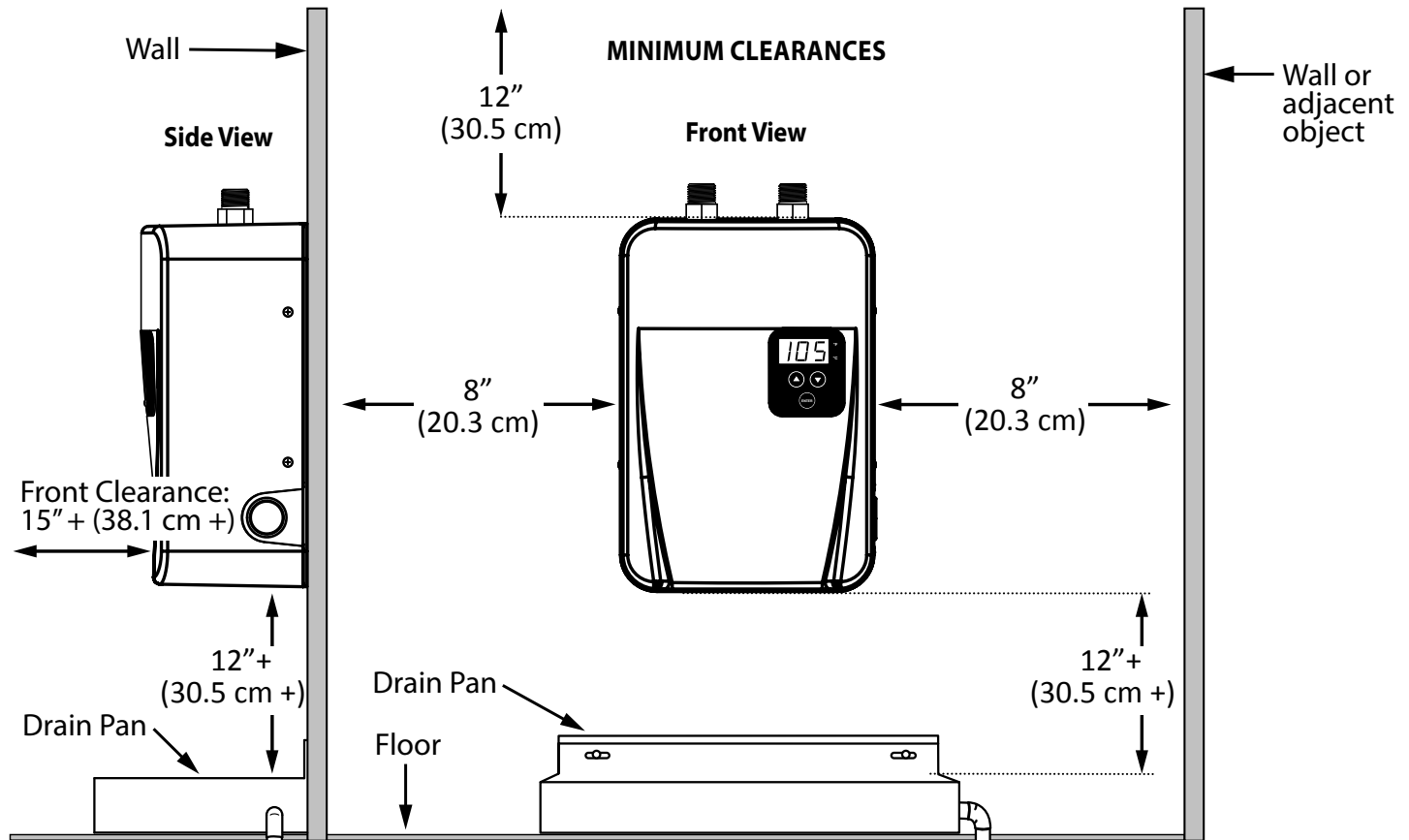
| DIMENSIONS – SHIPPING |                  |                   |                  |                   |
|-----------------------|------------------|-------------------|------------------|-------------------|
| Models                | Width<br>in (cm) | Height<br>in (cm) | Depth<br>in (cm) | Weight<br>lb (kg) |
| 1.75kW - 5.5kW        | 11.25 (28)       | 15.5 (38)         | 8 (20)           | 6.0 (2.7)         |
| 7.0kW - 11kW          | 11.25 (28)       | 15.5 (38)         | 8 (20)           | 8.0 (3.6)         |



# POINT-OF-USE ELECTRIC TANKLESS

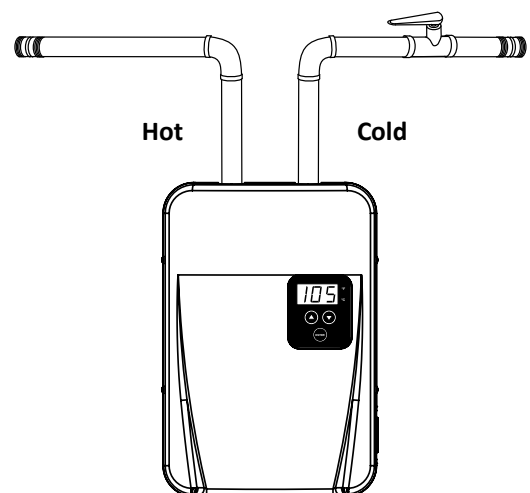
## COMMERCIAL/RESIDENTIAL

### INSTALLATION



### ORIENTATION & CLEARANCE

- All models must be oriented with the inlet and outlet facing upward.
- Top clearance – a minimum of 12 inches (30.5 cm) to provide access for plumbing connections.
- Side clearance – a minimum of 8 inches (20.3 cm) to remove the screws and protective cover and to provide access for electrical wires to enter through the side of the unit.
- Bottom clearance – a minimum of 12 inches (30.5 cm) for access to and maintenance of heating elements. Do not store any items beneath the water heater.
- Front clearance – a minimum of 8 inches (20.3 cm). In the absence of a door or removable access panel in front of the heater, allow a minimum of 15 inches (38.1 cm) for cover removal and ease of service.



For Technical Information call 1-888-599-2837. A. O. Smith Enterprises Ltd. reserves the right to make product changes or improvements without prior notice.

## ADAPT®+ PREMIUM CONDENSING TANKLESS WITH X3™ SCALE PREVENTION TECHNOLOGY & INTEGRATED RECIRC PUMP

Introducing A. O. Smith's Adapt®+ premium condensing gas tankless water heaters, delivering robust, on-demand performance and the flexibility to install in practically any residential setting.

### FEATURES:

#### X3™ SCALE PREVENTION TECHNOLOGY (PATENTED DESIGN)

- Units maintain like-new performance longer and life extended by up to 3x versus unprotected units
- Eliminates need for annual descaling
- Included with all X3™ models, optional accessory for M (bypass) models

#### HEAVY-DUTY STAINLESS STEEL HEAT EXCHANGER DESIGN

- Single heavy-duty stainless steel heat exchanger design minimizes internal welds and improves overall reliability
- More resilient to scale buildup and corrosion

#### INTEGRATED RECIRCULATION PUMP & DISPLAY

- Integrated recirculation pump
- Built-in Control Display to set and review recirc schedules, status, and error codes

#### PERFORMANCE & EFFICIENCY

- 160,000, 180,000, 199,000 BTU/h models
- 9,000 BTU/h min. input
- 22:1 turndown ratio on 199,000 BTU/h models
- 10.5 GPM maximum flow rate
- 0.4 GPM activation flow rate
- 0.95 UEF, ENERGY STAR® certified
- Ultra Low NOx: NOx emissions less than 14 ng/J or 20 ppm for natural gas and less than 77 ppm for propane

#### ULTIMATE FLEXIBILITY EASE OF INSTALLATION

- Field convertible from natural gas to LP (kit included with unit)
- Vent up to 75' (23 m) with 2" pipe or up to 150' (46 m) with 3" pipe
- Cat. IV venting may be used
- Vent with ULC S636 certified PVC, CPVC, or polypropylene pipe
- X3™ models include pressure relief valve
- Outdoor rated power cord standard on every unit
- Cascade up to 12 units (cable included with unit)

#### LIMITED WARRANTY

- No hard water exclusions on X3™ models (exclusions apply to M models even with the addition of the optional X3™ cartridge)
- 15-year limited warranty on heat exchanger in residential applications
- 5-year limited warranty on all parts in residential applications
- 1-year limited warranty on heat exchanger and parts in commercial applications



**ATHR-160X3, ATHR-180X3, ATHR-199X3**  
X3™ Scale Prevention Technology included



**ATHR-160M, ATHR-180M, ATHR-199M**  
X3 Scale Prevention Technology can be added at any time (optional accessory)



CSA/ANSI Z21.10.3 • CSA 4.3

|                                  |                    | ATHR-160M                                                       | ATHR-160X3       | ATHR-180M          | ATHR-180X3       | ATHR-199M          | ATHR-199X3       |
|----------------------------------|--------------------|-----------------------------------------------------------------|------------------|--------------------|------------------|--------------------|------------------|
| Installation Type                |                    | Indoor / Outdoor*                                               |                  | Indoor / Outdoor*  |                  | Indoor / Outdoor*  |                  |
| X3™ Scale Prevention Technology  |                    | Optional Accessory                                              | Included         | Optional Accessory | Included         | Optional Accessory | Integrated       |
| Recirculation Pump               |                    | Integrated                                                      |                  |                    |                  |                    |                  |
| Input Rate                       | Minimum            | 9,000 BTU/h                                                     |                  |                    |                  |                    |                  |
|                                  | Maximum            | 160,000 BTU/h                                                   |                  | 180,000 BTU/h      |                  | 199,000 BTU/h      |                  |
| Fuel Type                        |                    | Natural Gas (Field Convertible to Liquid Propane, Kit Included) |                  |                    |                  |                    |                  |
| Heat Exchanger                   |                    | Stainless Steel                                                 |                  |                    |                  |                    |                  |
| Uniform Energy Factor (UEF)      |                    | 0.95                                                            |                  |                    |                  |                    |                  |
| Maximum Flow Rate**              |                    | 10.5 GPM                                                        |                  |                    |                  |                    |                  |
| Activation Flow Rate             |                    | 0.4 GPM                                                         |                  |                    |                  |                    |                  |
| Continuous Fire Flow Rate        |                    | 0.26 GPM                                                        |                  |                    |                  |                    |                  |
| Water Pressure Min. - Max.       |                    | 15 - 150 PSI (40 PSI Recommended for Maximum Flow)              |                  |                    |                  |                    |                  |
| Supply Gas Pressure (NG)         | Min. in W.C. (kPa) | 3.5 (0.9)                                                       |                  |                    |                  |                    |                  |
|                                  | Max. in W.C. (kPa) | 10.5 (2.6)                                                      |                  |                    |                  |                    |                  |
| Supply Gas Pressure (LP)         | Min. in W.C. (kPa) | 8.0 (2)                                                         |                  |                    |                  |                    |                  |
|                                  | Max. in W.C. (kPa) | 13.0 (3.2)                                                      |                  |                    |                  |                    |                  |
| Hot/Cold Connections             |                    | 3/4" NPT                                                        |                  |                    |                  |                    |                  |
| Gas Connection                   |                    | 1/2" NPT                                                        |                  |                    |                  |                    |                  |
| Temperature Settings Min. - Max. |                    | 100°F (38°C) - 140°F (60°C); Default 120°F (49°C)               |                  |                    |                  |                    |                  |
| Ignition System                  |                    | Electronic Ignition                                             |                  |                    |                  |                    |                  |
| Power Supply                     |                    | 120V, 50Hz/60Hz, <5A                                            |                  |                    |                  |                    |                  |
| Sound Level                      |                    | 50.3 dB**                                                       |                  |                    |                  |                    |                  |
| Elevation                        |                    | Certified from Sea Level to 10,100' (3,078.5 m)                 |                  |                    |                  |                    |                  |
| Freeze Protection*               |                    | - 5°F (-21°C)                                                   |                  |                    |                  |                    |                  |
| Venting - Exhaust, Intake        | Type               | Power Direct Vent                                               |                  |                    |                  |                    |                  |
|                                  | Size, Max Run      | 2", 75' (5 cm, 22.9 m); 3", 150' (8 cm, 45.7 m)                 |                  |                    |                  |                    |                  |
|                                  | Material           | ULC S636 certified PVC, CPVC, or polypropylene                  |                  |                    |                  |                    |                  |
| Unit Dimensions                  | Height***          | 33.8" (86 cm)                                                   | 41.8" (106.2 cm) | 33.8" (86 cm)      | 41.8" (106.2 cm) | 33.8" (86 cm)      | 41.8" (106.2 cm) |
|                                  | Width              | 16.5" (42 cm)                                                   |                  |                    |                  |                    |                  |
|                                  | Depth              | 16.1" (41 cm)                                                   |                  |                    |                  |                    |                  |
|                                  | Weight             | 104 lb. (47 kg)                                                 |                  |                    |                  |                    |                  |
| Shipping Dimensions****          | Height             | 20.8" (53 cm)                                                   |                  |                    |                  |                    |                  |
|                                  | Width              | 22.3" (57 cm)                                                   |                  |                    |                  |                    |                  |
|                                  | Depth              | 40" (102 cm)                                                    |                  |                    |                  |                    |                  |
|                                  | Weight             | 125 lb (57 kg)                                                  |                  |                    |                  |                    |                  |

All models are ENERGY STAR® certified.

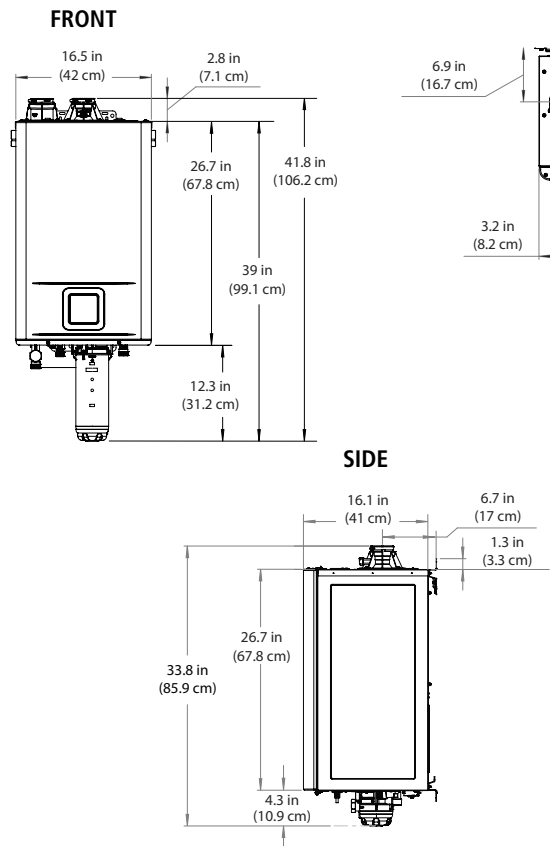
\* Outdoor installations require outdoor vent cap kit (100369060) sold separately.

\*\* Based on factory settings.

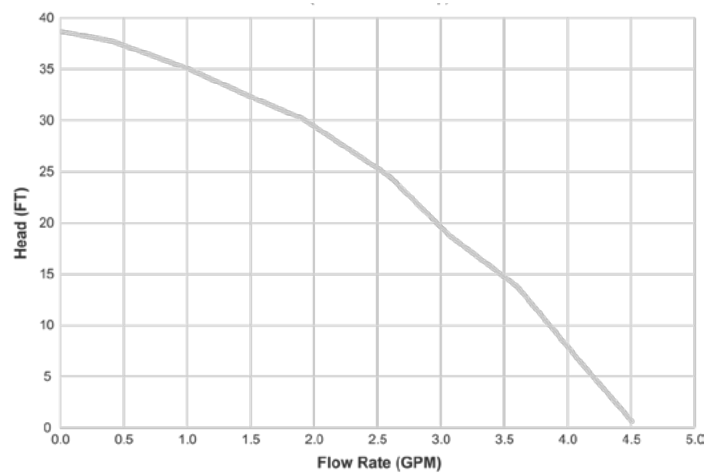
\*\*\* Height from flue collar to top of X3™ scale control media cartridge on X3™ models and to top of manifold cartridge on M models.

\*\*\*\* Packaged and shipped on unit back.

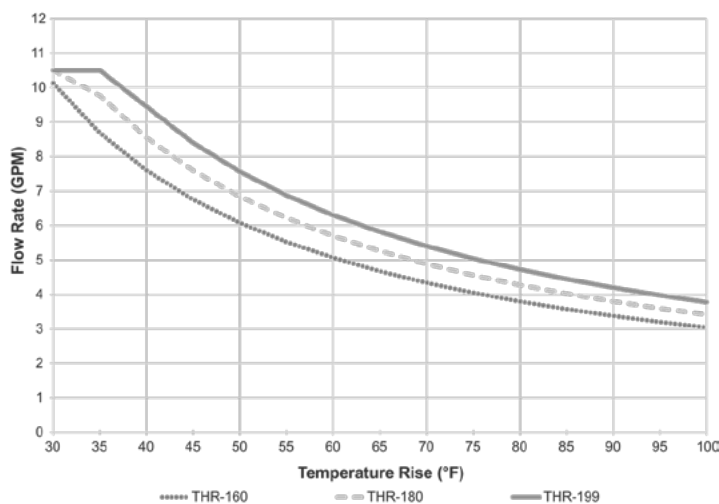
\*Internal freeze protection for heater only; Freeze protection for the X3™ and bypass cartridges (kits sold separately) is recommended for outdoor installations.



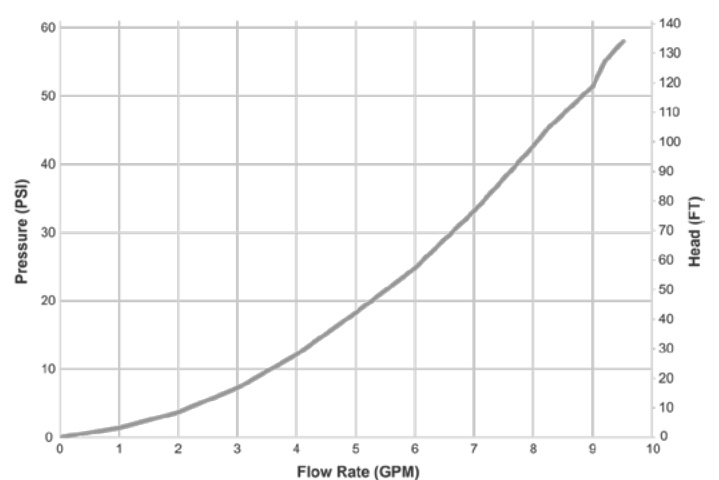
**PUMP PERFORMANCE**

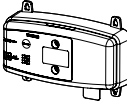
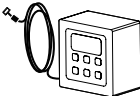
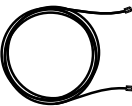
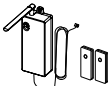
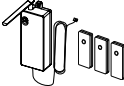
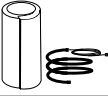
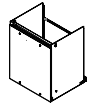
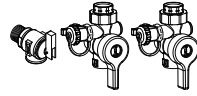


**FLOW RATE**



**PRESSURE LOSS**



| Item                                           | Material Number |                                                                                     | Description                                                                                                                                                                                                                              |
|------------------------------------------------|-----------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| X3™ Cartridge                                  | 100368986       |    | Add to an M model heater to prevent scale buildup and eliminate the need for annual descaling.                                                                                                                                           |
| Wi-Fi Module Kit                               | 100371922       |    | Wi-Fi Module for electronically connecting tankless water heaters to the internet and adapter to connect to the water heater.<br>Kit contains: Module (1x), Cable (1x), Adapter (1x)                                                     |
| Remote Temperature Controller                  | 100377310       |    | Remote Temperature Controller with 10' (3 m) cable.                                                                                                                                                                                      |
| Communication Cable - 10' (3 m)                | 100377341       |    | Replacement 10' (3 m) Communication Cable for Remote Temperature Controller, WiFi Module, or On-Demand Receiver.                                                                                                                         |
| Communication Cable - 32' (10 m)               | 100377342       |                                                                                     | Extended 32' (10 m) Communication Cable for Remote Temperature Controller, WiFi Module, or On-Demand Receiver.                                                                                                                           |
| Remote Recirculation Kit - Two Buttons         | 100371920       |    | Remote Recirculation Kit activates the water heater and recirculation at a touch of a button for on-demand hot water.<br>Kit contains: Receiver (1x), Buttons (x2)                                                                       |
| Remote Recirculation Kit - Three Buttons       | 100371921       |   | Remote Recirculation Kit activates the water heater and recirculation at a touch of a button for on-demand hot water.<br>Kit contains: Receiver (1x), Buttons (X3™)                                                                      |
| Individual Spare Button                        | 100377309       |  | Add Remote Recirculation Buttons to a system to a maximum of 30.                                                                                                                                                                         |
| X3™ Freeze Protection (X3™ Models)             | 100325654       |  | Freeze Protection for the X3™ cartridge for outdoor installations. Cartridge is not protected by the water heater's internal freeze protection.                                                                                          |
| Bypass Freeze Protection (M Models)            | 100371918       |  | Freeze Protection for the bypass cartridge for outdoor installations. Cartridge is not protected by the water heater's internal freeze protection.                                                                                       |
| Pipe Cover                                     | 100374697       |  | Pipe Cover protects plumbing connections to the heater while improving the appearance of the installation.<br>Affixes to bottom of heater.                                                                                               |
| Neutralizer Assembly Kit                       | 100112159       |  | Neutralizer Assembly neutralizes the condensate (acidic water) that forms in the heat exchanger of the water heater. It connects to the condensate drain port of the water heater by using connectors included with the neutralizer kit. |
| Outdoor Vent Cap Kit                           | 100369060       |  | Vent cap kit and accessories for installing the tankless heater outdoors. Kit contains: Vent Cap (1x), User Interface Overlay (1x)                                                                                                       |
| Isolation Valve Kit with Pressure Relief Valve | 100112156       |  | Isolation Valves help control water flow during routine maintenance. Pressure Relief Valve limits pressure in the water heater. X3™ models include a pressure relief valve.                                                              |
| Cross Over Valve Kit                           | 100327167       |  | For systems without a dedicated return line necessary. Install at the faucet furthest from the hot water heater.                                                                                                                         |

## ADAPT® SC STANDARD CONDENSING TANKLESS WITH X3™ SCALE PREVENTION TECHNOLOGY

Introducing A. O. Smith's ADAPT® SC standard condensing gas tankless water heaters, delivering robust, on-demand performance and the flexibility to install in practically any residential setting.

### FEATURES:

#### X3™ SCALE PREVENTION TECHNOLOGY (PATENTED DESIGN)

- Units maintain like-new performance longer and life extended by up to 3x versus unprotected units
- Eliminates need for annual descaling
- Additional X3™ cartridges available for purchase with accessory parts

#### PERFORMANCE & EFFICIENCY

- 160,000, 180,000, 199,000 BTU/h
- 10,000 BTU/h min. input
- Max Flow Rate 10.5 GPM; 0.4 GPM activation; 0.26 GPM for continuous fire
- 0.95 UEF, ENERGY STAR® certified
- Ultra Low NOx

#### ULTIMATE FLEXIBILITY EASE OF INSTALLATION

- Vent with ULC S636 certified PVC, CPVC, or polypropylene pipe
- Exhaust venting, 2" PVC up to 50' (15.3 m); 3" PVC up to 150' (45.7 m)
- Flexible venting with PVC, CPVC or Polypropylene
- Pressure relief valve included
- Cascade up to 12 units with single cable per heater, cable included
- Approved for installation in manufactured homes

### WARRANTY

- No hardwater exclusions
- 15-year limited warranty on heat exchanger in residential applications
- 5-year limited warranty on all parts in residential applications
- 1-year limited warranty on heat exchanger and parts in commercial applications



**ATM-160X3, ATM-180X3, ATM-199X3**  
with Integrated X3™ Scale Prevention Technology



CSA/ANSI Z21.10.3 • CSA 4.3

### ADAPT® SC STANDARD CONDENSING TANKLESS WITH X3™ SCALE PREVENTION TECHNOLOGY SPECIFICATIONS

|                                  |                    | ATM-160X3-N                                          | ATM-180X3-N | ATM-199X3-N |
|----------------------------------|--------------------|------------------------------------------------------|-------------|-------------|
| Installation Type                |                    | Indoor                                               |             |             |
| X3™ Scale Prevention Technology  |                    | Integrated                                           |             |             |
| Gas Consumption Input            | Min. BTU/H         | 10,000                                               |             |             |
|                                  | Max. BTU/H         | 160,000                                              | 180,000     | 199,000     |
| Fuel Type                        |                    | Natural Gas                                          |             |             |
| Heat Exchangers                  |                    | Primary Copper, Secondary Stainless Steel            |             |             |
| Uniform Energy Factor (UEF)      |                    | 0.95                                                 |             |             |
| Maximum GPM*                     |                    | 10.5 GPM                                             |             |             |
| Activation GPM                   |                    | 0.4 GPM                                              |             |             |
| Continuous Fire GPM              |                    | 0.26 GPM                                             |             |             |
| Water Pressure Min. - Max.       |                    | 15 - 150 PSI (40 PSI Recommended for Maximum Flow)   |             |             |
| Supply Gas Pressure (NG)         | Min. in W.C. (kPa) | 4.0 (1.0)                                            |             |             |
|                                  | Max. in W.C. (kPa) | 10.5 (2.6)                                           |             |             |
| Hot/Cold Connections             |                    | 3/4" NPT                                             |             |             |
| Gas Connection                   |                    | 3/4" NPT                                             |             |             |
| Temperature Settings Min. - Max. |                    | 100°F (38°C) - 140°F (60°C); Default 120°F (49°C)    |             |             |
| Ignition System                  |                    | Electronic Ignition                                  |             |             |
| Power Supply                     |                    | 120V, 50Hz/60Hz, <5A                                 |             |             |
| Sound Level                      |                    | 51 dB**                                              |             |             |
| Elevation                        |                    | Certified from Sea Level to 7,800' (2,377.4 m)       |             |             |
| Freeze Protection†               |                    | - 5°F (-21°C)                                        |             |             |
| Venting - Exhaust, Intake        | Type               | Power Direct Vent                                    |             |             |
|                                  | Size, Max Run      | 2", 50' (5.08 cm, 15.3 m); 3", 150' (7.6 cm, 45.7 m) |             |             |
|                                  | Material           | PVC, CPVC or Polypropylene                           |             |             |
| Dimensions - Unit                | Height***          | 40.4" (102.6 cm)                                     |             |             |
|                                  | Width              | 17.1" (43.5 cm)                                      |             |             |
|                                  | Depth              | 11.9" (30.1 cm)                                      |             |             |
|                                  | Weight             | 83 lb (37.7 kg)                                      |             |             |
| Dimensions - Shipping†           | Height             | 17.4" (44.2 cm)                                      |             |             |
|                                  | Width              | 22.1" (56.2 cm)                                      |             |             |
|                                  | Depth              | 39.25" (99.7 cm)                                     |             |             |
|                                  | Weight             | 93 lb (42.2 kg)                                      |             |             |

All models are ENERGY STAR® certified.

\*Current numbers based on factory settings.

\*\*Measured in an anechoic chamber.

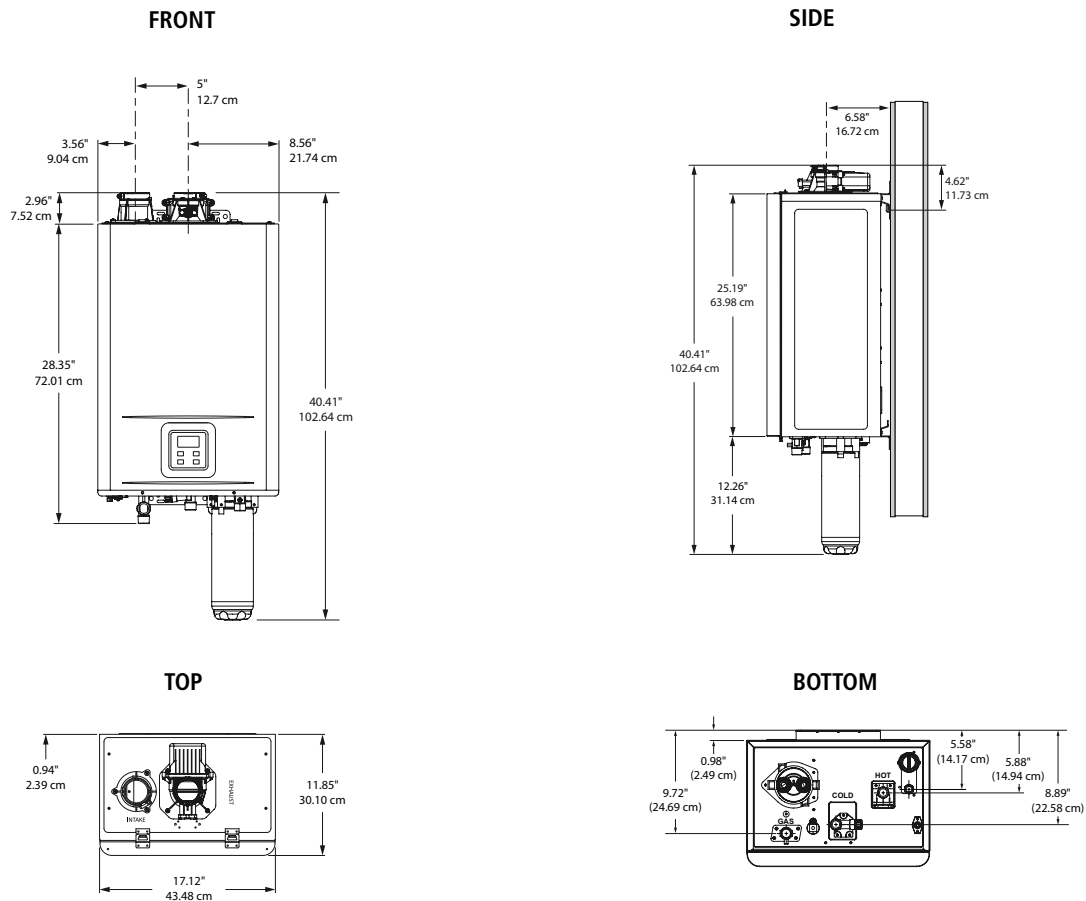
\*\*\*Height with required cartridge installed. From flue collar to tip of cartridge.

†Packaged and shipped on unit back.

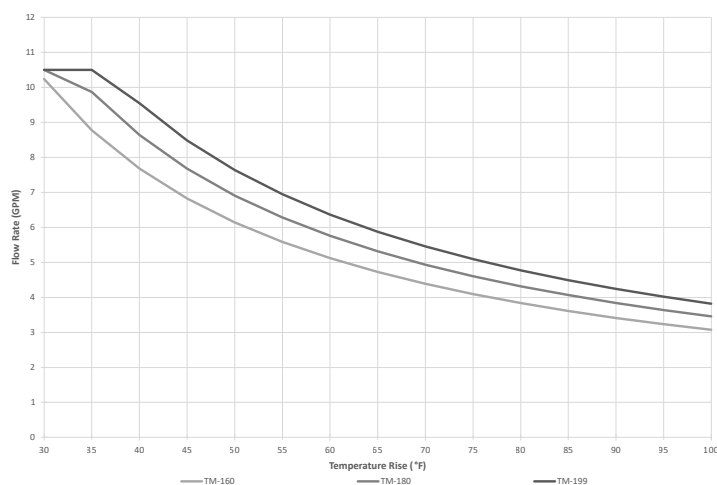
+Internal freeze protection for heater only; X3™ cartridge requires anti-freeze kit sold separately

Included with Heater: Manual, Pressure Relief Valve, Wall Mounting Bracket and Hardware, Vent Port Screws, Cascading Cable, Bird Screens

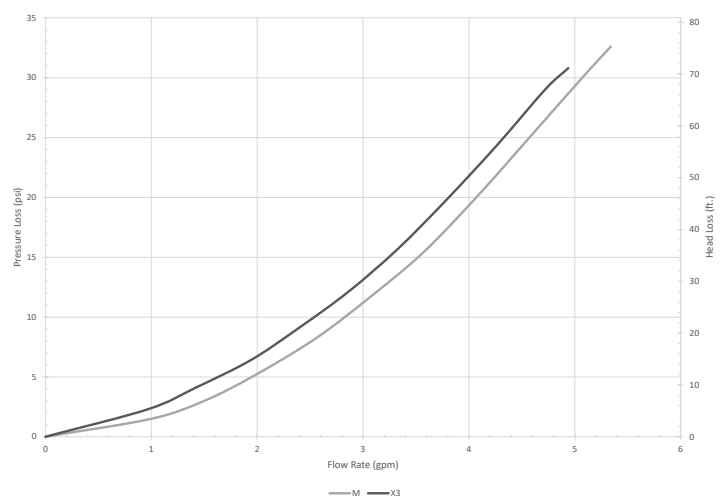
**ADAPT® SC STANDARD CONDENSING TANKLESS WITH X3™ SCALE PREVENTION TECHNOLOGY DIMENSIONS**



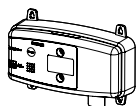
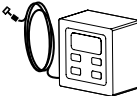
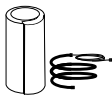
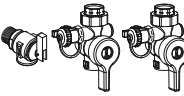
**TM FLOW RATE CAPACITY**



**PRESSURE LOSS**



### ADAPT® SC STANDARD CONDENSING TANKLESS WITH X3™ SCALE PREVENTION TECHNOLOGY OPTIONAL ACCESSORIES

| Item                                           | Material Number |                                                                                     | Description                                                                                                                                                                                                                                     |
|------------------------------------------------|-----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wi-Fi Module Kit                               | 100371922       |    | Wi-Fi Module for electronically connecting tankless water heaters to the internet and adapter to connect to the water heater.<br><ul style="list-style-type: none"> <li>• Module (1x)</li> <li>• Cable (1x)</li> <li>• Adapter (1x)</li> </ul>  |
| Remote Temperature Controller                  | 100383909       |    | Remote Temperature Controller with 10' (3 m) cable.                                                                                                                                                                                             |
| Communication Cable - 10' (3 m)                | 100377341       |    | Replacement Communication Cable for Remote Temperature Controller or Wi-Fi Module, or On-Demand Receiver, 10' (3 m).                                                                                                                            |
| Communication Cable - 32' (10 m)               | 100377342       |                                                                                     | Extended Communication Cable for Remote Temperature Controller or Wi-Fi Module, or On-Demand Receiver, 32' (10 m).                                                                                                                              |
| X3™ Freeze Protection                          | 100325654       |    | X3™ Cartridge Freeze Protection can add an extra layer of freeze protection to external SCM cartridge. Cartridge not protected by heater's internal freeze protection.                                                                          |
| Pipe Cover                                     | 100383908       |   | Pipe Cover protects plumbing connections to the heater while improving the appearance of the installation.<br>Affixes to bottom of heater.                                                                                                      |
| Neutralizer Assembly Kit                       | 100112159       |  | Neutralizer Assembly neutralizes the condensate (acidic water) that forms in the heat exchanger of the water heater. It connects to the condensate drain port of the water heater by using connectors included with the neutralizer kit.        |
| Isolation Valve Kit with Pressure Relief Valve | 100112156       |  | Isolation Valve supports routine maintenance and allows for draining and flushing the heater; whereas, the Pressure Relief Valve, as the name implies, serves to limit internal pressure in the system.<br>Check local codes for applicability. |

## Tankless High Efficiency Condensing Models

### Features

#### *Designed for Performance*

- Condensing technology provides up to a 0.94 UEF
- Primary heat exchanger is constructed of commercial-grade copper which is more resilient against erosion
- Secondary heat exchanger is made of Type 316L Stainless Steel to protect against corrosion
- Continuous maximum flow rates up to 10.0 GPM
- Available in natural gas (NG) or propane (LP)
- JWT 540H can be used in both residential and commercial applications
- Electronic ignition - no pilot light
- Includes a built-in temperature controller and advanced diagnostics for easy troubleshooting
- Factory-installed power cord
- New 540P model with integrated recirculation pump
- Easy-Link up to 4 units with no additional parts or accessories needed using built-in Easy-Link System (540 models only)
- Multi-link up to 20 units (540 models only) with a multi-unit controller (TM-MC02)
- Internal freeze protection system

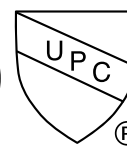
#### *Safety features*

- Air-Fuel Ratio (AFR) sensor
- Exhaust & water temperature safety control
- Overheat cut-off fuse

#### *Power direct vent design*

- Exhaust, 3" venting up to 70 equivalent feet or 4" venting up to 100 equivalent feet
- Provides flexible venting with ULC S636 approved PVC, CPVC or polypropylene pipe for intake and exhaust (solid core only) or Category III/IV Stainless Steel


**JWT-240H**
**JWT-340H**
**JWT-540H**

**JWT-540P**


540H model only

**ANSI Z21.10.3 CSA 4.3**

### **WARRANTY**

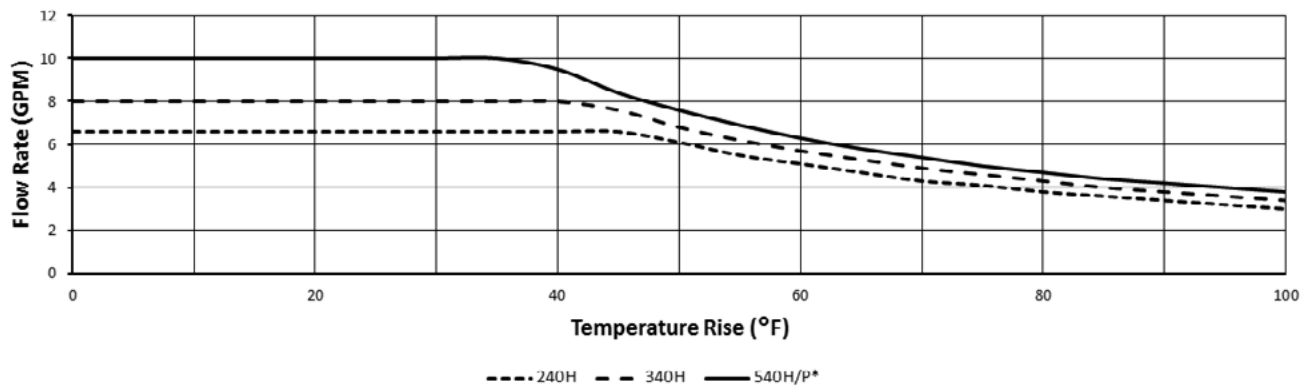
*15-year limited warranty on heat exchanger in residential applications*

*6-year limited warranty on heat exchanger in commercial applications*

*5-year limited warranty on all parts*

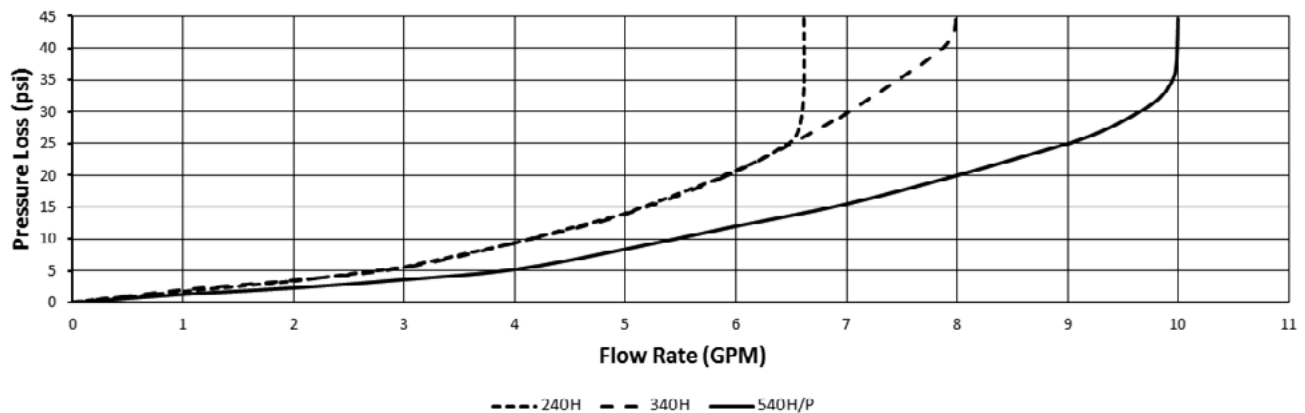
Consult installation manual for terms and conditions or visit [www.johnwoodwaterheaters.com](http://www.johnwoodwaterheaters.com) for more information.

### FLOW RATE vs TEMPERATURE RISE



\*Maximum flow rate with set temperature above 130°F (55°C) is 8.0 GPM.

### PRESSURE LOSS vs FLOW RATE



### Optional Accessories

| PART NUMBER | DESCRIPTION                                                                   |
|-------------|-------------------------------------------------------------------------------|
| 100112163   | Concentric termination kit                                                    |
| 100112159   | Condensate neutralizer kit                                                    |
| 100209924   | Remote temperature controller for temperatures up to 167°F                    |
| 100112572   | Remote temperature controller for temperatures up to 185°F (540H models only) |
| 100112691   | Multi-unit controller (540H/P models only)                                    |
| 100112156   | Isolation valve kit (with Pressure Relief Valve)                              |
| 100112190   | Pipe cover                                                                    |
| 100113154   | Product Preservers® Anti-Scale System                                         |
| 100113130   | Non-return valve for Common Vent Systems                                      |

### SAMPLE SPECIFICATION

Water heater(s) shall be John Wood tankless water heater model \_\_\_\_\_, having a maximum input rating of \_\_\_\_\_ BTU/h. The heater shall have ¾" male NPT water and gas connections. The inlet gas supply pressures shall be \_\_\_\_\_ in. WC (minimum) up to \_\_\_\_\_ in. WC (maximum) for \_\_\_\_\_ fuel. The heater(s) shall incorporate an integrated temperature controller that will provide heater set temperature, diagnostic, and fault history information.

The water heater(s) shall be vented with 3" or 4" ULc S636 approved Schedule 40 PVC or CPVC, polypropylene, or Category IV vent pipe with a length not to exceed 70' (equivalent) for 3" vent or 100' (equivalent) for 4" vent, terminating horizontally or vertically. The intake air pipe may be of such material as PVC or CPVC, ABS, polypropylene, aluminum, or Category IV pipe and cannot exceed 70' (equivalent) for 3" pipe or 100' for 4" pipe.

The water heater(s) shall use a commercial grade copper alloy, fin tube primary heat exchanger with quick release brass or bronze waterways, and a 316L stainless steel secondary heat exchanger. The heater(s) shall be controlled by an onboard solid-state printed circuit board using thermistors to monitor inlet and outlet water temperature and exhaust temperature, a flow sensor to measure flow rate, a flame sensor to monitor combustion, and an air-fuel ratio rod to measure and adjust operation in order to maintain optimal combustion efficiency. The heater(s) shall also consist of inline fusing and surge absorbers for electrical surge protection, an electronic spark igniter, aluminized stainless steel burners, hi-limit temperature switch to monitor water temperature, modulating gas valve, and an overheat cutoff fuse. The heater(s) shall include an exhaust temperature monitoring system using an exhaust thermistor and automatic hi-limit switch to maintain safe exhaust temperatures for Schedule 40 PVC and incorporate ceramic heating blocks and an auto-fire system for freeze protection of the heat exchanger and water piping.

The water heater(s) shall be design certified by CSA according to ANSI Z21.10.3 · CSA 4.3 and meet the energy efficiency requirements of NRCAN and the current edition of ASHRAE 90.1.

**SPECIFICATIONS**

| Model      | Fuel Type | Gas Consumption Input |            | Inlet Gas Pressure |           | Energy Factor | Max GPM* | Hot and Cold Gas Connection | Dimensions IN (CM) |           |           | Unit Weight LB (KG) |
|------------|-----------|-----------------------|------------|--------------------|-----------|---------------|----------|-----------------------------|--------------------|-----------|-----------|---------------------|
|            |           | Min. BTU/h            | Max. BTU/h | Min. W.C.          | Max. W.C. |               |          |                             | Height A           | Width B   | Depth C   |                     |
| JWT-240H-N | Natural   | 15,000                | 160,000    | 5.0                | 10.5      | 0.94          | 6.6      | ¾" NPT                      | 22 ½ (57)          | 17 ¾ (45) | 10 ¾ (27) | 58 (26)             |
| JWT-240H-P | Propane   | 13,000                | 160,000    | 8.0                | 14.0      | 0.94          | 6.6      | ¾" NPT                      | 22 ½ (57)          | 17 ¾ (45) | 10 ¾ (27) | 58 (26)             |
| JWT-340H-N | Natural   | 15,000                | 180,000    | 5.0                | 10.5      | 0.94          | 8.0      | ¾" NPT                      | 22 ½ (57)          | 17 ¾ (45) | 10 ¾ (27) | 58 (26)             |
| JWT-340H-P | Propane   | 13,000                | 180,000    | 8.0                | 14.0      | 0.94          | 8.0      | ¾" NPT                      | 22 ½ (57)          | 17 ¾ (45) | 10 ¾ (27) | 58 (26)             |
| JWT-540H-N | Natural   | 15,000                | 199,000    | 5.0                | 10.5      | 0.93          | 10.0     | ¾" NPT                      | 22 ½ (57)          | 17 ¾ (45) | 10 ¾ (27) | 59 (27)             |
| JWT-540H-P | Propane   | 13,000                | 199,000    | 8.0                | 14.0      | 0.93          | 10.0     | ¾" NPT                      | 22 ½ (57)          | 17 ¾ (45) | 10 ¾ (27) | 59 (27)             |
| JWT-540P-N | Natural   | 15,000                | 199,000    | 4.0                | 10.5      | 0.93          | 10.0     | ¾" NPT                      | 23 ⅝ (60)          | 17 ¾ (45) | 11 ¼ (29) | 61 (28)             |
| JWT-540P-P | Propane   | 13,000                | 199,000    | 8.0                | 14.0      | 0.93          | 10.0     | ¾" NPT                      | 23 ⅝ (60)          | 17 ¾ (45) | 11 ¼ (29) | 61 (28)             |

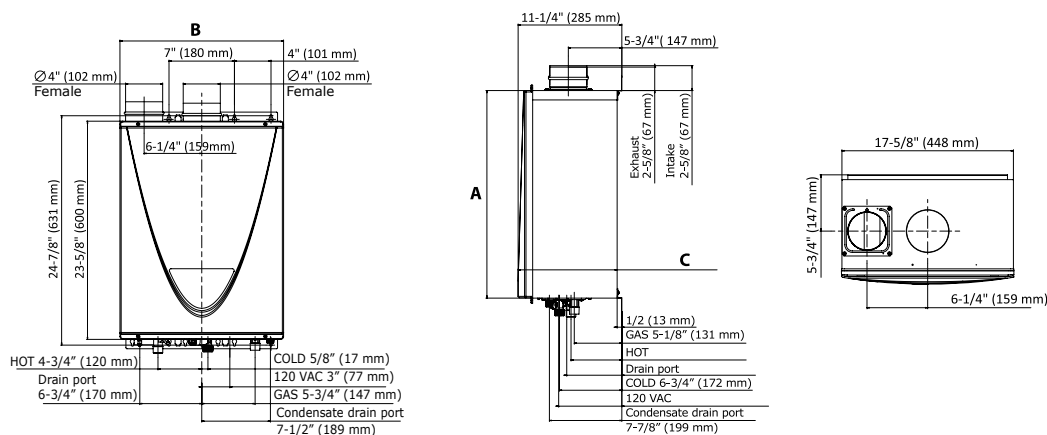
15-150 psi Water Pressure. 40 psi or above is recommended for maximum flow.

\*Current numbers based on factory testing; 0.4 GPM required for continuous fire after initial ignition.

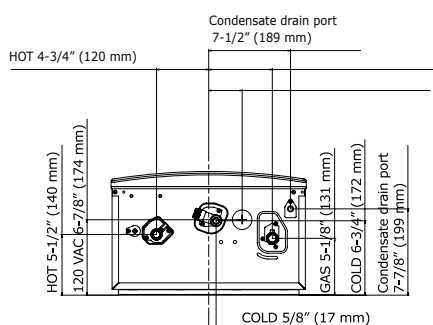
Models are certified from sea level to 10,100 ft. (3,078 m) elevations.

The manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligation.

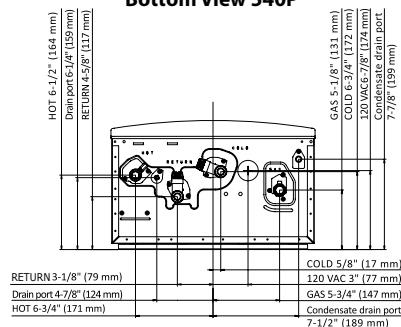
**JWT-240H, JWT-340H and JWT-540 H/P DIMENSIONS**  
**MINIMUM CLEARANCES: TOP 12", BOTTOM 12", FRONT\* 4", BACK 1", SIDES 3"**  
 \*Recommended 24" clearance from front of unit for maintenance



**Bottom View 240H, 340H, and 540H**



**Bottom View 540P**



John Wood Storage Booster Tanks provide the hot water storage capacity that is required to support high-demand applications including combination hot water and space heating applications.

## Features

- Available in 40, 50, and 80 gallon capacities to meet the hot water requirements of modern households
- Meets and exceeds NRCan energy efficiency standards
- Glass-lined inner tanks for long life
- Automatic temperature control through adjustable thermostat



Low Lead Content

## WARRANTY

**5 Year Limited Tank Warranty\***

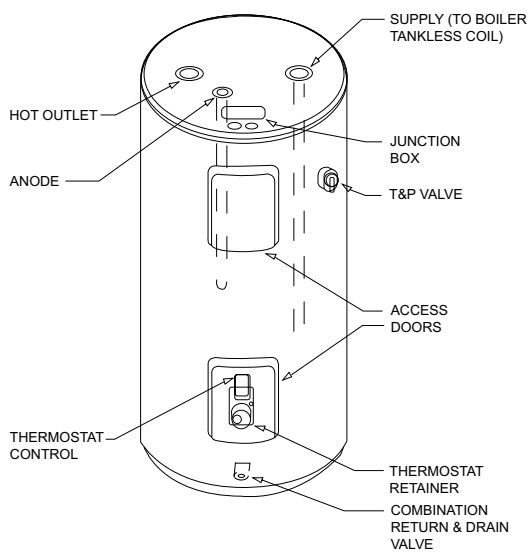
**1 Year Limited Parts Warranty**

Consult installation manual for terms and conditions or visit [www.johnwoodwaterheaters.com](http://www.johnwoodwaterheaters.com) for more information.

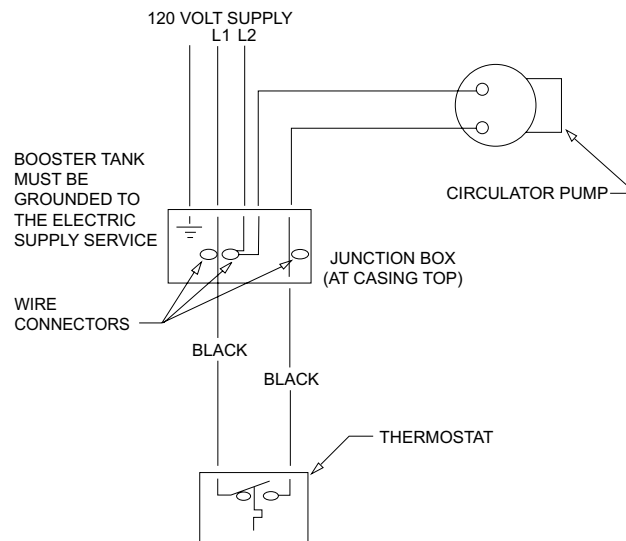
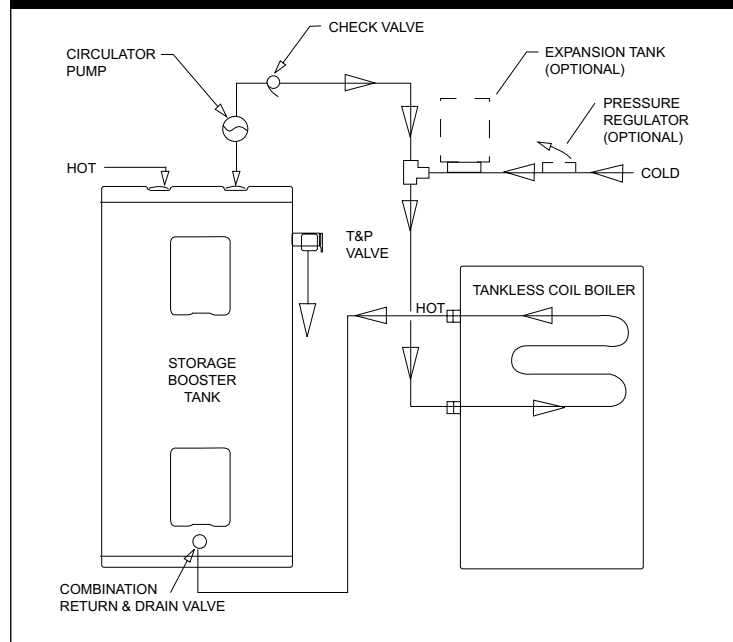
\*1 Year Limited Tank Warranty on Commercial Installations

**DIMENSIONS & SHIPPING WEIGHT**

| Model    | Capacity | Water Connections | Height to Top of Tank | Tank Diameter | Height to T&P | Approximate Shipping Weight |
|----------|----------|-------------------|-----------------------|---------------|---------------|-----------------------------|
|          | USG (L)  | IN                | IN (CM)               | IN (CM)       | IN (CM)       | LB (KG)                     |
| JWSB-40C | 40 (151) | 3/4" NPT          | 50 (127)              | 20½ (52)      | 41 (104)      | 98 (45)                     |
| JWSB-50C | 50 (189) | 3/4" NPT          | 49 (124)              | 23 (58)       | 40½ (103)     | 142 (65)                    |
| JWSB-80C | 80 (287) | 3/4" NPT          | 60½ (154)             | 24 (61)       | 52 (132)      | 174 (79)                    |



**PREFERRED INSTALLATION**



IF WIRE HAS TO BE REPLACED IN THE FIELD, USE ONLY TYPE TEW 105°C WIRE

Flow

THRU®

Flow THRU® Series Storage Tanks

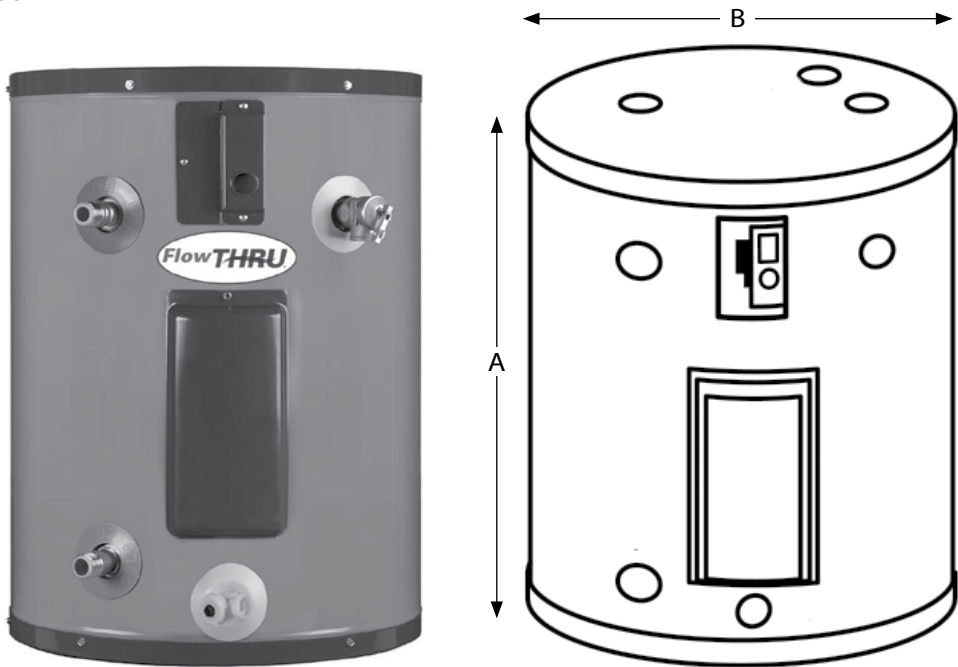
The line of Flow THRU® hot water storage tanks are available in 19 and 30 US gallon models. The units were specifically designed to complement our tankless series of water heaters enhancing their performance to meet the needs of our customers.

FEATURES

- Exclusive, patented TankSaver® design works to prolong tank life
- Factory installed dielectric nipples for ease of installation
- T&P valve conveniently located on the side
- Front access junction box for convenient electrical hook-up
- Equipped with an adjustable thermostat, pre-wired and ready for connection to a circulator pump

WARRANTY\*

- 6 year limited tank warranty
- 1 year limited parts warranty



| SPECIFICATIONS |        |          |     |              |              |                   |                 |
|----------------|--------|----------|-----|--------------|--------------|-------------------|-----------------|
| Model          | Series | Capacity |     | Height       | Diameter     | Water Connections | Shipping Weight |
|                |        | USG      | L   | A<br>IN (CM) | B<br>IN (CM) | IN<br>NPT         | LB (KG)         |
| GST 20         | 200    | 19       | 67  | 25 ½ (65)    | 19 (48)      | ¾                 | 65 (29)         |
| GST 30         | 200    | 30       | 108 | 31 ½ (80)    | 22 (56)      | ¾                 | 94 (43)         |

\*In residential applications. Reduced warranty in commercial applications.

## Reference Calculations and Conversions for Electricity

### Ohm's Law

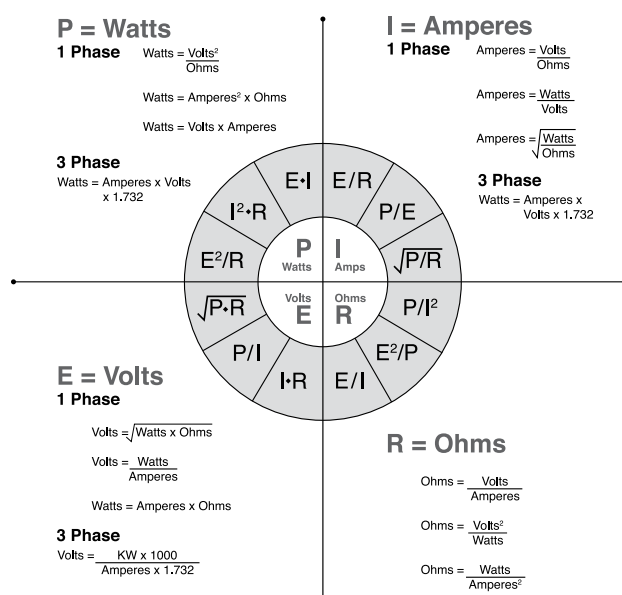
Ohm's Law defines the relationships between (P) power, (E) voltage, (I) current, and (R) resistance. One ohm is the resistance value through which one volt will maintain a current of one ampere.

(I) Current is what flows on a wire or conductor like water flowing down a river. Current flows from points of high voltage to points of low voltage on the surface of a conductor. Current is measured in (A) amperes or amps.

(E) Voltage is the difference in electrical potential between two points in a circuit. It's the push or pressure behind current flow through a circuit, and is measured in (V) volts.

(R) Resistance determines how much current will flow through a component. Resistors are used to control voltage and current levels. A very high resistance allows a small amount of current to flow. A very low resistance allows a large amount of current to flow. Resistance is measured in ohms.

(P) Power is the amount of current times the voltage level at a given point measured in wattage or watts.



## Reference Guide for Water Heating

One US gallon of fresh water weighs 8.333 lb.

Water expands 4.34% heated from 40° to 212° F.

1 BTU = Amount of heat required to raise the temperature of 1 lb. of water 1° F.

$$\text{Recovery GPH (Electric)} = \frac{\text{KW} \times 3412}{8.33 \times \Delta T}$$

$$\text{Recovery GPH (Gas)} = \frac{\text{Input} \times \text{Efficiency}}{8.33 \times \Delta T}$$

$$\text{Req. BTU Input} = \frac{\text{Water Heater Capacity} \times 8.33 \times \Delta T}{\% \text{ Efficiency}}$$

First Hour Draw (FHD)

$$\text{FHD} = (\text{Storage} \times \% \text{ Efficiency}) + \text{Recovery}$$

% of hot and cold water needed to be mixed to obtain a desired temperature

$$\text{Hot water percentage} = \frac{M - C}{H - C}$$

$$\text{Cold water percentage} = \frac{H - M}{H - C}$$

Water C = Cold Water Temperature  
H = Hot Water Temperature  
M = Mixed Water Temperature

$$\% \text{ Efficiency} = \frac{\text{GPH} \times 8.33 \times \text{Temp. Rise}}{\text{BTU/Hr. Input}}$$

# Appendices

## Reference Guide for Water Heating

BTU/Output = GPH x 8.33 lbs./Gal. x Temp. Rise

BTU/Input =  $\frac{\text{GPH} \times 8.33 \times \text{Temp. Rise}}{\% \text{ Efficiency}}$

KW =  $\frac{\text{GPH} \times 8.33 \times \text{Temp. Rise}}{3413}$

### Temperatures

To convert from degrees Centigrade (C) to degrees Fahrenheit (F) multiply the number of degrees C by 9/5 (or 1.8) and add 32.

To convert from degrees Fahrenheit (F) to degrees Centigrade (C) first subtract 32 from the number of degrees F then multiply the remainder by 5/9 (or 0.556).

### Gas

| Gas                       |   | BTU     |
|---------------------------|---|---------|
| 1 lb. of Butane           | = | 21,300  |
| 1 Gal. of Butane          | = | 102,600 |
| 1 Cu. Ft. of Butane       | = | 3,260   |
| 1 Cu. Ft. of Manufactured | = | 530     |
| 1 Cu. Ft. of Mixed        | = | 850     |
| 1 Cu. Ft. of Natural      | = | 1,075   |
| 1 lb. of Propane          | = | 21,600  |
| 1 Gal. of Propane         | = | 91,700  |
| 1 Cu. Ft. of Propane      | = | 2,570   |

### Oil vs. Electric vs. Propane vs. Natural Gas

Oil 1 litre = 36,515 BTUs\*  
Example Price = 60.0¢/litre

Electric 1 Kilowatt Hour = 3,413 BTUs\*  
Example Price = 10.1¢/KW (kilowatt)

Propane 1 litre = 24,197 BTUs\*  
Example Price = 63.0¢/litre

Natural Gas 1 M<sup>3</sup> 35,310 BTUs\*  
Example Price = 44.0¢/M<sup>3</sup> (cubic metre)\*\*

Formula  $\frac{\text{BTUs per Unit} \times \text{Efficiency}}{\text{Cost per Unit}}$

Example: Propane =  $\frac{24,197 \times 92\%}{0.63} = 35335 \text{ BTUs per } \$1.00$

GST is extra on all prices.

\* Information supplied by The Ontario Ministry of Energy.

\*\* This price reflects delivery charge and monthly administration charge to service your account.

### Formulas and Facts

- 1 gallon of water weighs 8.33 lbs.
- 1 gallon of water has a volume of 231 cubic inches
- 1 cubic foot of water weighs 62.38 lbs. and contains 7.48 gallons of water
- 100 feet of 3/4" copper pipe contains 2.5 gallons of water; 1" pipe contains 4.3 gallons
- 8.33 BTU will raise 1 gallon of water 1° F at 100% efficiency (electricity)

# Appendices

## Reference Guide for Water Heating

- 11 BTUs are required to raise 1 gallon of water 1° F at 70% efficiency (gas)
- 3,412 BTUs equal 1 kilowatt hour (KW)
- 1 KW will raise 410 gallons of water 1° F at 100% efficiency
- 1 BTU x 0.293 = watts
- 1 KW = 1000 watts
- 2.42 watts are required to raise 1 gallon of water 1° F
  - 1 KW will raise 10.25 gallons of water 40° F at 100% efficiency
  - 1 KW will raise 6.8 gallons of water 60° F at 100% efficiency
  - 1 KW will raise 5.1 gallons of water 80° F at 100% efficiency
  - 1 KW will raise 4.1 gallons of water 100° F at 100% efficiency

### Formula for mixing hot water

$\frac{M-C}{H-C}$  = Percent of hot water required to produce desired mixed temperature

Where:

M = mixed water temperature;

C = cold water temperature;

H = hot water temperature

For example: How much of a shower is hot water and how much is cold water?

My shower temperature is 105° F, my water heater thermostat is set on 120° F and the cold water inlet temperature is 50° F.

$$\frac{105 - 50}{120 - 50} = \frac{55}{70} = 79\% \text{ of the shower is } 120^\circ \text{ hot water}$$

This formula for mixing hot water is important when explaining a NOT ENOUGH HOT WATER trouble call and the water heater is functioning properly.

| ELECTRIC                                                                                                                                                                                                                                            | GAS                                                                                                                                                                                                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ENERGY COSTS:</b>                                                                                                                                                                                                                                | <b>ENERGY COSTS:</b>                                                                                                                                                                                                 |
| KW x fuel costs = energy costs                                                                                                                                                                                                                      | Cubic feet x fuel costs = energy costs                                                                                                                                                                               |
| 100 x 0.05 = \$5.00                                                                                                                                                                                                                                 | 100 x 0.75 = \$7.50                                                                                                                                                                                                  |
| To obtain gallons per hour (GPH) recovery<br><br>WATTS<br>$\frac{2.42 \times (\text{temp rise } ^\circ \text{F})}{}$                                                                                                                                | To obtain gallons per hour (GPH) recovery<br><br>HOURLY INPUT (BTUs)<br>$\frac{11.0 \times (\text{temp rise } ^\circ \text{F})}{}$                                                                                   |
| I have a 30-gallon electric heater, non-simultaneous operation, 4,500 watt elements. What is the recovery GPH if my cold water is 40° F and my thermostat is set to 120° F?<br><br>$\frac{4,500}{2.42 \times 80} = 23 \text{ gallons per hour}$     | I have a 30-gallon gas heater, rated at 40,000 BTUs. What is the recovery GPH if my cold water is 40° F and my thermostat is set to 120° F?<br><br>$\frac{40,000}{11.0 \times 80} = 45 \text{ gallons per hour}$     |
| Temperature Rise (° F)<br><br>WATTS<br>$\frac{2.42 \times \text{GPH}}{}$                                                                                                                                                                            | Temperature Rise (° F)<br><br>HOURLY INPUT (BTUs)<br>$\frac{11.0 \times \text{GPH}}{}$                                                                                                                               |
| I have a 30-gallon electric heater, non-simultaneous operation, 4,500 watt elements. What is the maximum temperature rise if the heater can recover 23 gallons per hour?<br><br>$\frac{4,500}{2.42 \times 23 \text{ rise}} = 80^\circ \text{ temp}$ | I have a 30-gallon gas heater, rated at 40,000 BTUs. What is the maximum temperature rise if the heater can recover 45 gallons per hour?<br><br>$\frac{40,000}{11.0 \times 45 \text{ rise}} = 80^\circ \text{ temp}$ |

## Reference Guide for Water Heating

| Oil            | BTU       |
|----------------|-----------|
| 1 Gal. #1 Fuel | = 136,000 |
| 1 Gal. #2 Fuel | = 138,500 |
| 1 Gal. #3 Fuel | = 141,000 |
| 1 Gal. #5 Fuel | = 148,500 |
| 1 Gal. #6 Fuel | = 152,000 |

1 lb. of Gas = 28" Water Column

1 lb. of Gas = 16 oz.

100 Cu. Ft. = 1 therm.

### Conversions

| Multiply                           | By      | To Obtain      |
|------------------------------------|---------|----------------|
| BTU/HR                             | 0.293   | W              |
| Ft.                                | 0.3048  | m              |
| Ft./min., fpm                      | 0.00508 | m/s            |
| Ft. <sup>2</sup>                   | 0.0929  | m <sup>2</sup> |
| Ft. <sup>3</sup>                   | 0.0283  | m <sup>3</sup> |
| Gallon (U.S. 231 in <sup>3</sup> ) | 3.79    | L              |
| Gallon                             | 0.00379 | m <sup>3</sup> |
| Horsepower (boiler)                | 9.81    | KW             |
| Inch                               | 25.4    | mm             |
| Mile                               | 1.61    | km             |
| Pound lb. (mass)                   | 0.454   | kg             |
| Psi                                | 6.89    | kPa            |