NO ONE BRINGS IT ALL TOGETHER LIKE LOCHINVAR
ALWAYS LEADING THE CHARGE

Lochinvar is the industry leader that other leading companies call upon for the most advanced and efficient water heating products in the world. For that reason, Lochinvar is trusted to go beyond the call of duty to find a solution for every project, no matter the size. You will not find a water heating company that works harder or cares more.

That’s why no one brings it all together quite like Lochinvar.

A HISTORY OF INNOVATION

For nearly 80 years, Lochinvar, an American company, has been a leader of innovation and high-efficiency water heating. Through Lochinvar’s pride in leadership and commitment to excellence, the company has continually improved year after year.

Today, Lochinvar touts the broadest line of high-efficiency water heating solutions, a world-class research & development department, comprehensive service with every sale and industry-leading training through Lochinvar University.
## The Innovator in Water Heating Technology

From the tiny 2-gallon Junior Electric to the innovative ARMOR X2, Lochinvar water heaters are noted for their range of features and application flexibility. Collectively, they represent the most complete product line in the industry, from a company with a long history of innovation and a reputation for excellence.

You'll find there's a Lochinvar product for any application imaginable—from standard residential units to the Armor Condensing Water Heater with the advanced SMART SYSTEM Control. And with selection, comes opportunity.

In fact, the diversity and performance of our product line is surpassed only by its quality—in design, construction, and training. Lochinvar quality is reinforced by our world class manufacturing plant, commitment to research and development and unparalleled industry training available at Lochinvar University and online at LochinvarU.com.

Quality, efficiency, features, service, and selection. For more than 77 years, these have been the hallmarks of Lochinvar products. Lochinvar... the innovator in water heating technology.

Lochinvar water heaters are compliant to the national “Safe Drinking Water Act” (42 USC 300g) for Low Lead Content. Per the requirement, all water heating product sold into commerce were compliant by January 4, 2014.

This logo represents that a product has a NOx rating which exceeds the requirements of the South Coast Air Quality Management District and Texas National Resource Conservation Commission.

This ingot means the Stack Frame is available for use with that product. See page 46 & 47 for details.
ARMOR® 1,250,000 to 4,000,000 Btu/hr Models

An Innovation in Commercial Water Heating

The ARMOR Commercial Condensing Water Heater features Stainless Steel heat exchanger technology to deliver 98% Thermal Efficiency. Lochinvar introduces five large input models with 1.25, 1.50, 2.0, 3.0 and 4.0 million BTU/hr input rates.

ARMOR innovation continues with the SMART TOUCH™ control system featuring touchscreen technology, Building Automation System interface, optional Modbus or BACnet communication and a Lochinvar exclusive, the CON·X·US® mobile communication platform.

Couple the ARMOR with a Lock-Temp Storage Tank for long system life and high performance. To optimize system footprint, deliver the best system appearance and reduce installation costs, consider allowing Lochinvar to create a custom water heater package for your application. Each package is custom built, factory assembled and tested to meet the requirements of the job. All packages include a welded channel iron skid for the water heater(s) and storage tank(s) which provide easy and fast installation.

Now more than ever, the ARMOR delivers a wide range of commercial sizes and features while offering “green” technology that building owners and facility managers desire.

Stainless Steel Condensing Heat Exchanger

The heart of the ARMOR is the advanced 316L Stainless Steel, condensing heat exchanger. Built to ASME Section IV requirements, the new large input models employ a new generation of heat exchanger. Constructed with superior grade 316L Stainless Steel, the heat exchanger’s condensing design will heat water at a high 98% Thermal Efficiency. The new design features a slide out door for improved accessibility and maintenance flexibility.

5:1 Turndown

The ARMOR employs an advanced NEG/REG combustion system achieving 5:1 turndown. The gas/air mixture is precisely controlled across the entire turndown range to produce ideal combustion and accurate heat transfer. The turndown ratio matches the heat demand to prevent short cycling or temperature overshoot.

Direct-Venting up to 150 Feet

ARMOR offers 6 venting options and tremendous flexibility for placement of units within the building, because it permits direct-vent air intake and exhaust runs up to 150 equivalent feet using either PVC, CPVC, Polypropylene or AL29-4C stainless steel vent pipe. Intake and exhaust runs can terminate horizontally through a sidewall or vertically through the roof. In addition, we offer two vent sizes for the AWH1250N and AWH1500N models depending upon total equivalent vent length. These models may be vented in 6” diameter vent up to 70 equivalent feet or in 8” diameter vent up to 150 equivalent feet. Note: AWH3000N is available up to 100 equivalent feet only.

6 Flexible Venting Options

- Direct Vent Sidewall
- Direct Vent Vertical
- Room Air Sidewall
- Room Air Vertical
- Vertical w/Sidewall Air
- Outdoor

Water Heater Control, From Anywhere.

ARMOR features the next generation of Lochinvar’s all-in-one SMART TOUCH™ operating control with the integration of the CON·X·US® advanced technology. SMART TOUCH provides outstanding functionality and can be integrated directly into a Building Automation System via Modbus or BACnet.

The CON·X·US mobile communication platform provides the ability to monitor and manage multiple ARMOR water heaters without ever stepping into the mechanical room. CON·X·US will send alerts via text or email notifying of changes in system status, and a user can check system status and re-program control functions anytime, anywhere. Once downloaded, the free CON·X·US mobile app connects using any internet capable device.

Outdoor Models for Warm Weather Climates

ARMOR Condensing Water Heaters are certified for outdoor installation in warm weather climates like California and Florida. Louvers on the side of the water heater replace the top air intake. The gas connection is routed through the side of the water heater and the touch screen receives a cover for UV protection. Models can be factory assembled for outdoor installations or indoor models may be field converted quickly for outdoor use with a conversion kit.
ARMOR® 1,250,000 to 4,000,000 Btu/hr Models

### Standard Features

- **98% Thermal Efficiency**
- CON·X·US Remote Connect
- Indoor or Outdoor Models
- Modulating Burner with 5:1 Turndown
  - Direct-Spark Ignition
  - Low NOx Operation
  - Sealed Combustion
- Low Gas Pressure Operation
- Vertical & Horizontal Vent Termination
  - Category IV Venting up to 150 Feet
  - PVC, CPVC, Polypropylene or AL29-4C Vent Material
- ASME Stainless Steel Heat Exchanger
  - Gasketless Design
  - 160 psi Working Pressure
  - On/Off Switch
  - Adjustable High Limit with Manual Reset
  - High and Low Gas Pressure Switches
  - Flow Switch
  - Inlet & Outlet Temperature Sensors
  - Temperature & Pressure ASME Relief Valve
  - Zero Clearance to Combustible Material
  - Approved for Combustible Floor Installation
  - 1 Year Warranty on Parts
  - 5 Year Limited Warranty (see warranties for details)

### Standard Pumps, All Bronze

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Change ‘N’ to ‘L’ for LP gas models. No deration on LP models. Performance data is based on manufacturer test results.

### Smart Touch™ Features

**SMART TOUCH™ Touchscreen Operating Control**
- Full-Color Touchscreen LCD Display
- Built-in Cascading Sequencer for up to 8 Water Heaters
- Building Automation System Integration with 0-10 VDC Input
- Password Security
- Low Water Flow Safety Control & Indication
- Inlet & Outlet Temperature Readout
- Freeze Protection
- Service Reminder
- Time Clock
- Data Logging
  - Hours Running
  - Ignition Attempts
  - Last 10 Lockouts
- Programmable System Efficiency Optimizers
  - Night setback
- Water Heater Pump Control
  - Building Recirculation Pump Control
  - 120 VAC / 60 Hertz / 1 Phase Power Supply (AWH1250-1500)
  - 208 VAC / 60 Hertz / 3 Phase Power Supply (AWH2000-3000)
  - 480 VAC / 60 Hertz / 3 Phase Power Supply (AWH4000-4000)
  - High Voltage Terminal Strip

**Low Voltage Terminal Strip**
- 24 VAC Auxiliary Device Relay
- Auxiliary Proving Switch Contacts
- Alarm on Any Failure Contacts
- Pump Contacts
- Runtime Contacts
- Tank Thermostat Contacts
- Tank Sensor Contacts
- Cascade Contacts

### Optional Equipment

- Alarm Bell
- Condensate Neutralization Kit
- SMART TOUCH PC Software
- Modbus or BACnet MSTP Communications
- BMS Gateway to LonWorks or BACnet IP

### Codes & Registrations

- ANSI Z21.10.3 compliant (AWH1250-2000)
- ASME certified, “HLW” stamp (AWH1250-2000)
- ANSI Z21.13 compliant (AWH3000-4000)
- ASME certified, “H” stamp (AWH3000-4000)
- California Code compliant
- Massachusetts Code compliant
- South Coast Air Quality Management District registered (AWH1250-2000)
ARMOR X2® 1,000,000 to 1,500,000 Btu/hr Models

Innovation for Commercial Water Heating
The ARMOR X2 Commercial Water Heater combines stainless steel heat exchanger technology with Modulating Condensing combustion to deliver efficiencies as high as 96%. With models at 1.0, 1.3 and 1.5 million BTU/hr inputs, ARMOR X2 will serve a large range of commercial applications and add the “green” touch that building owners and facility managers desire.

Fully Modulating with 10:1 Turndown
With unparalleled modulation capabilities the ARMOR X2 boasts a turndown ratio of 10:1. This means that at times when the hot water demand requires less than the full input capabilities of the water heater, ARMOR X2 will deliver the proper amount of heat to exactly match the demand with inputs as low as 10% of the maximum water heater input.

Fully Modulating Burner
SMART TOUCH allows fully modulating combustion with 10:1 turndown. The combustion system can fire as low as 10% of maximum input, and modulates the firing rate up to 100% as demand increases. The burner design incorporates a woven steel mesh sleeve over a stainless steel burner tube and fires in a 360° pattern along the entire length of the primary heat exchanger. These together allow ARMOR X2’s compact size to excel compared to units with larger multiple burners.

Two-in-One Stainless Steel Heat Exchanger
A primary heat exchanger combined with a secondary heat exchanger captures flue gas heat and eliminates low temperature protection requirements. The stainless steel, pH-tolerant design features a weld-sealed assembly with no O-rings or gaskets. The ARMOR X2 is ASME Section IV approved and stamped.

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Flexible Venting Options - Up to 100 feet of air intake and 100 feet of exhaust vent with PVC, CPVC, Polypropylene or Stainless Steel.
ARMOR X2® 1,000,000 to 1,500,000 Btu/hr Models

**Dimensions & Specifications**

**Model Number** | **Btu/hr Input** | **Thermal Efficiency** | **GPH @ 100° Rise** | **A** | **B** | **C** | **D** | **E** | **F** | **Gas Conn.** | **Inlet Water Conn.** | **Outlet Water Conn.** | **Air Inlet** | **Vent Size** | **Ship. Wt.**
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---
AWN1000PM  | 999,999  | 96.0%  | 1,164  | 58-3/4” | 31” | 48” | 35” | 4-1/2” | 15” | 1-1/2” | 2 x 2” | 3” | 6” | 6” | 910
AWN1300PM  | 1,300,000  | 96.0%  | 1,513  | 58-3/4” | 31” | 52-1/4” | 34-3/4” | 3-1/2” | 6-3/4” | 6-3/4” | 6-3/4” | 6” | 6” | 1049
AWN1500PM  | 1,500,000  | 96.0%  | 1,745  | 58-3/4” | 31” | 56-1/2” | 34-3/4” | 3-1/2” | 6-3/4” | 6-3/4” | 6-3/4” | 6” | 6” | 1185

Notes: Change “N” to “L” for L.P. Gas Model. No deration on L.P. models. Performance data based on manufacturer test results.
All dimensions shown in inches.

**Standard Features**

- 96% Thermal Efficiency (AHRI Certified)
- Modulating Burner with 10:1 Turndown
  - Direct-Spark Ignition
  - Low NOx Operation
  - Sealed Combustion
  - Low Gas Pressure Operation
- Vertical & Horizontal Venting
  - Category IV Venting up to 100 Feet
  - PVC, CPVC, Polypropylene or AL29-4C Vent Material
  - Sidewall Vent Termination Provided
- ASME Stainless Steel Heat Exchanger
  - Gasketless Design
  - 160 psi Working Pressure
  - (2) All Bronze Circulating Pumps
  - On/Off Switch
  - Adjustable High Limit with Manual Reset
  - Low Air Pressure Switch
  - Flow Switches
  - Inlet & Outlet Temperature Sensors
  - Two Easy Access Terminal Strips
  - ASME Temperature & Pressure Relief Valve
  - Zero Clearance to Combustible Material
  - Approved for Combustible Floor Installation
  - 1 Year Warranty on Parts
  - 5 Year Limited Warranty
  (see warranty for details)

**SMART TOUCH™ Features**

- SMART TOUCH™ Touchscreen Operating Control
- Full-Color Touchscreen LCD Display
- Built-In Cascading Sequencer for up to 8 Water Heaters
- Building Management System Integration with 0-10 VDC Input
- Password Security
- Low Water Flow Safety Control & Indication
- Inlet & Outlet Temperature Readout
- Freeze Protection
- Service Reminder
- Time Clock
- Data Logging
  - Hours Running
  - Ignition Attempts
  - Last 10 Lockouts
- Programmable System Efficiency Optimizers
  - Night Setback
  - Water Heater Pump Control
  - High Voltage Terminal Strip
  - 120 VAC / 60 Hertz / 1-Phase Power Supply
  - Pump Contacts
  - Low Voltage Terminal Strip
  - 24 VAC Auxiliary Device Relay
  - Auxiliary Proving Switch Contacts
  - Alarm on Any Failure Contacts
  - Runtime Contacts
  - Tank Thermostat Contacts
  - Tank Sensor Contacts
  - Cascade Contacts

**Optional Equipment**

- Modbus Communications
- BMS Gateway to LON or BACnet
- SMART TOUCH PC Software
- Condensate Neutralization Kit
- Alarm Bell
- Stainless Steel Vent Kits (1300 & 1500)

**Codes & Registrations**

- ANSI Z21.10.3 certified
- ASME certified, “HLW” stamp
- California Code compliant
- Massachusetts Code compliant
- South Coast Air Quality Management District registered

**Dimensions & Specifications**

- ASME Stainless Steel Heat Exchanger
- Gasketless Design
- 160 psi Working Pressure
- (2) All Bronze Circulating Pumps
- On/Off Switch
- Adjustable High Limit with Manual Reset
- Low Air Pressure Switch
- Flow Switches
- Inlet & Outlet Temperature Sensors
- Two Easy Access Terminal Strips
- ASME Temperature & Pressure Relief Valve
- Zero Clearance to Combustible Material
- Approved for Combustible Floor Installation
- 1 Year Warranty on Parts
- 5 Year Limited Warranty
  (see warranty for details)
The Intelligent Approach to Water Heating

There are several tank-type commercial water heaters on the market with 96% thermal efficiency. They all promise tremendous savings on operating costs compared to standard-efficiency units, but none of them truly measures up to the Lochinvar ARMOR™.

ARMOR is a fully condensing commercial gas water heater. Available in eight models with inputs ranging from 150,000 to 800,000 Btu/hr, the ARMOR achieves 96% thermal efficiency.

ARMOR delivers long-lasting life-cycle efficiency surpassing any commercial unit in its class. When you look beyond the numbers you’ll discover the many ways that ARMOR technology is in a class by itself!

Fully Modulating with 5:1 Turndown

ARMOR is equipped with fully modulating combustion with 5:1 turndown. This means ARMOR can fire as low as 20% of maximum input when water heating demand is lowest, and increase the firing rate up to 100% as demand increases. The result is better overall efficiency and less cycling, compared to all other tank-type units which are “on-off,” which means they can only fire at 100% of maximum input.

ARMOR features advanced Negative Regulation (Neg/Reg) sealed combustion technology, permitting fan speed to constantly adjust the volume of fuel and air entering the burner. This ensures that ARMOR can safely and reliably operate with supply gas pressure as low as 4 inches water column.

Stainless Steel Condensing Heat Exchanger

The ARMOR’s stainless steel heat exchanger is built to ASME Section IV requirements. Its design provides superior resistance to corrosion caused by condensation from low entering water temperatures. Traditional commercial water heaters will fail early with low entering water temperatures; however, with the ARMOR the lower the supply water temperature the more efficiently it performs throughout the life of the heater.

The Ultimate Water Heater Operating Control

- Easy to use – makes setup and service a breeze
- Multi-color graphic LCD display of setup, system status and diagnostic data in words, not codes
- Water heater pump control:
  - Pump delay with freeze protection
  - Pump exercise
- High-voltage terminal strip:
  - 120 VAC input to water heater
  - Water heater pump contacts
  - Building recirculating pump contacts
- Low-voltage terminal strip with 28 points of connection
- Built-in cascading sequencer controls up to 8 ARMOR units without the added cost of a separate third-party sequencer
- Interface for optional Smart System PC software for advanced setup and diagnostics.

7 Venting Options - Easy, Flexible Installation and Service

**Optional Concentric Vent Kit Sold Separately  **Sidewall Termination Plate Factory Provided as Standard Equipment
# ARMOR® 150,000 to 800,000 Btu/hr Models

## Dimensions & Specifications

### Models 151 - 200

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<thead>
<tr>
<th>Model Number</th>
<th>Btu/hr Input</th>
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<th>C</th>
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<th>J</th>
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</table>

Notes: Change 'N' to 'L' for L.P. Gas Model. No deration on L.P. models. Field convertible to LP Gas. All dimensions shown in inches.

## STD. FEATURES

- 96% Thermal Efficiency (AHRI Certified)
- Modulating Burner with 5:1 Turndown
- Direct-Spark Ignition
- Low NOx Operation
- Sealed Combustion
- Low Gas Pressure Operation

### Vertical & Horizontal Direct-Vent

- PVC, CPVC, Polypropylene or SS up to 100 Feet
- PVC/CPVC Sidewall Vent Termination

### Stainless Steel Heat Exchanger

- All Welded Construction, Gasketless Design
- 160 psi Working Pressure
- ASME Construction (AW 286-801)
- Natural to L.P. Conversion Kit
- All Bronze Circulating Pump
- On/Off Switch
- Flow Switch
- ASME Temperature & Pressure Relief Valve (286-801)
- Temperature & Pressure Gauge (AW 501-801)
- Conventional Test Valves (AW 501-801)
- Adjustable Leveling Legs
- Tank Sensor
- Automatic Reset High Limit
- Condensate Trap
- Zero Clearances to Combustible Material
- 5 Year Limited Warranty (See Warranty for Details)
- 1 Year Parts Warranty (See Warranty for Details)

## SMART SYSTEM FEATURES

- **SMART SYSTEM Digital Operating Control**
- Multi Color Graphic LCD Display
- **Built in Cascading Sequencer for up to 8 Water Heaters**
- Multiple Size Water Heater Cascade
- Lead Lag
- Efficiency Optimization
- **Front-End Loading Capability with CopperFin II**

### Building Management System Integration

- Modbus Communication (Optional)
- BacNet MSTP Communication (Optional)
- Access to BMS Settings Through Graphic LCD Display
- Low Water Flow Safety Control & Indication
- Inlet & Outlet Temperature Sensors & Readout
- Flue Temperature Sensor
- Water Heater Pump Control
- Pump Delay with Freeze Protection
- Pump Exercise
- Night Setback
- Building Recirculation Loop Pump Control
- Night Setback of Building Recirculation Loop
- Time Clock
- Maintenance Reminder

**High Voltage Terminal Strip**
- 120 VAC / 60 Hertz / 1 Phase Power Supply
- Water Heater Pump Control Contacts
- Building Recirculation Pump Control Contacts

**Low Voltage Terminal Strip**
- 24 VAC Auxiliary Device Relay
- Auxiliary Proving Switch Contacts
- Flow Switch Contacts
- Alarm on Any Failure Contacts
- Runtime Contacts
- Tank Sensor Contacts
- Cascade Contacts
- 0-10 VDC BMS External Control Contact
- 0-10 VDC Boiler Rate Output Contacts

**M9 Standard Construction**
- Firing Control Systems
- M7 California Code (AW 286-801)

**OPTIONAL EQUIPMENT**
- CON-X-US® Remote Connect
- Alarm Bell
- Condensate Neutralization Kit
- High & Low Gas Pressure Switches (AW 501-801)
- Concentric Vent Kit (3" & 4" PVC/CPVC only)
- BMS Gateway to LON or BacNet IP
- ModBus Communications
- SMART SYSTEM PC Software
- Room Air Vent Kits
- Stack Frame

*Exclusive to Lochinvar*
A Wall Mounted Water Heater
Lochinvar has added to its successful stainless steel, condensing ARMOR water heater series with wall mounted models. The ARMOR Wall Mount is available in two sizes, 125,000 and 199,999 Btu/hr input. The lightweight but powerful water heaters hang on any wall to give you more free space in your mechanical room.

The “Better Idea” System and Instantaneous Water Heaters
The water heater and tank combination is the heart of Lochinvar’s “BETTER IDEA” water heating philosophy. The ARMOR water heater is always installed with a separate storage tank to provide an effective water heating package for commercial domestic water systems. The industry has made a few unsuccessful attempts at applying residential instantaneous water heating to commercial applications. Instantaneous products are outmatched by the faster, larger and variable hot water demands of a commercial application. Storage is essential to supply the water to a system at a variety of speeds and volumes. What’s more, the ARMOR “BETTER IDEA” system delivers lower equipment costs and lower installation costs than a comparable instantaneous package.

Fully Modulating with 5:1 Turndown
ARMOR features advanced Negative Regulation (Neg/Reg) sealed combustion technology, permitting fan speed to constantly adjust the volume of fuel and air entering the burner. This ensures that ARMOR can safely and reliably operate with supply gas pressure as low as 4 inches water column.

ARMOR is equipped with fully modulating combustion with 5:1 turndown. This means ARMOR can fire as low as 20% of maximum input when water heating demand is lowest, and increase the firing rate up to 100% as demand increases. The result is better overall efficiency and less cycling, compared to all other tank-type units which are “on-off,” which means they can only fire at 100% of maximum input.

The Ultimate Water Heater Operating Control
- Water heaters with different inputs can be cascaded together to maximize turndown capability
- Compatibility with Copper-Fin II® non-condensing water heater to create a front end loading system
- Night Setback Capabilities
  - Setback of Storage Tank Temperature
- Water heater pump control
  - Pump delay with freeze protection
  - Building Recirculation Pump Control*
  - Pump exercise
- High-voltage terminal strip
  - 120 Vac input to water heater
  - Dry Contacts for Water Heater Pump Control
  - Dry Contacts for Building Recirc. Pump Control *
- Low-voltage terminal strip with 28 points of connection
  - 0-10 VDC Water Heater Rate Output
  - 0-10 VDC Heat Demand Input
  - Modbus Contacts
- USB Connection Point for optional Smart System PC software with advanced setup and diagnostics
- Modbus Compatibility (Optional)

5 Flexible Venting Options - Up to 100 feet of air intake and 100 feet of exhaust vent with PVC, CPVC, Polypropylene or SS.
ARMOR® Wall Mount 125,000 and 199,999 Btu/hr Models

**Dimensions & Specifications**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Btu/hr Input</th>
<th>GPH @ 100° Rise</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>Gas Conn.</th>
<th>Water Conn.</th>
<th>Air Inlet</th>
<th>Vent Size</th>
<th>Ship Wt.</th>
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Notes: Change 'N' to 'L' for L.P. Gas Model. No deration on L.P. models. Field convertible to LP Gas.

**Standard Features**

- 96% Thermal Efficiency (AHRI Certified)
- Wall Mounted Models
- Modulating Burner with 5:1 Turndown
  - Direct-Spark Ignition
  - Low NOx Operation
  - Sealed Combustion
  - Low Gas Pressure Operation
- Vertical & Horizontal Direct-Vent
  - PVC/CPVC, Polypropylene or SS up to 100 Feet
  - PVC/CPVC, Polypropylene Sidewall Vent Termination
- Stainless Steel Heat Exchanger
  - All Welded Construction, Gasketless Design
  - 160 psi Working Pressure
  - Natural to L.P. Conversion Kit
  - All Bronze Circulating Pump
  - Flow Switch
  - Temperature & Pressure Relief Valve
  - Tank Sensor
  - Adjustable High Limit w/ Manual Reset
  - Automatic Reset High Limit
  - Condensate Trap
  - Zero Clearances to Combustible Material
  - 5 Year Limited Warranty (See Warranty for Details)
  - 1 Year Parts Warranty (See Warranty for Details)

**Smart System™ Features**

- SMART SYSTEM™ Digital Operating Control
  - Multi Color Graphic LCD Display
  - Built in Cascading Sequencer for up to 8 Water Heaters
  - Multiple Size Water Heater Cascade
  - Lead Lag
  - Efficiency Optimization
- Building Management System Integration
  - Modbus Communication (Optional)
  - BacNet MSTP Communication (Optional)
  - 0-10 VDC Input to Control Modulation or Set point
  - 0-10 VDC Modulation Rate Output
  - 0-10 VDC Input to Enable/Disable call for heat
- Access to BMS Settings Through Graphic LCD Display
  - Low Water Flow Safety Control & Indication
  - Inlet & Outlet Temperature Sensors & Readout
  - Flue Temperature Sensor
  - Water Heater Pump Control
  - Pump Delay with Freeze Protection
  - Pump Exercise
  - Night Setback
  - Building Recirculation Loop Pump Control
  - Time Clock
- Maintenance Reminder
  - Ability to program installer name and number into the product as service contact

**Firing Control Systems**

- M9 Standard Construction

**Optional Equipment**

- Alarm Bell
- Condensate Neutralization Kit
- Concentric Vent Kit (3" PVC/CPVC only)
- ModBus Communications
- BMS Gateway to LON or BacNet IP
- SMART SYSTEM PC Software

**High Voltage Terminal Strip**

- 120 VAC / 60 Hertz / 1 Phase Power Supply
- Pump Control Contacts
- Water Heater Pump Control Contacts
- Building Recirculation Pump Control Contacts

**Low Voltage Terminal Strip**

- 24 VAC Louver Relay
- Louver Proving Switch Contacts
- Flow Switch Contacts
- Alarm on Any Failure Contacts
- Runtime Contacts
- Tank Sensor Contacts
- Cascade Contacts
- 0-10 VDC BMS External Control Contacts
- 0-10 VDC Boiler Rate Output Contacts
SHIELD® 125,000 to 500,000 Btu/hr Models

SHIELD
The SHIELD water heater is a complete water heating system in one. The SHIELD features a condensing heat exchanger mounted on top of a storage tank. The efficient design is compact to reduce equipment room footprint and improve installation flexibility. Available in eight model sizes, the SHIELD comes in standard or ASME construction. An easily removable bezel, top panel connections and large pump access panel provide for easy installation and service.

Efficiency for Life
The SHIELD water heater operates at 96% thermal efficiency and provides defense against a water heater’s worst enemy – lime scale buildup on the tank and heating surfaces. Tank type water heaters suffer from one thing the SHIELD does not, lime scale buildup. Lime scale insulates the water from the heat source, decreasing thermal efficiency and increasing operating costs. Just a ¼” of lime scale will increase fuel consumption and raise operating costs as much as 25%.

SHIELD has no flue tubes inside the tank. The water is heated in a separate stainless steel heat exchanger mounted above the tank. By controlling and creating high water velocity through the heat exchanger, the heat surface areas are kept clean so thermal efficiency remains high, for life.

Efficiency Loss Due to Lime Scale Buildup

<table>
<thead>
<tr>
<th>SHIELD</th>
<th>% Efficiency over Heater Life</th>
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<tr>
<td>Standard Tank Types</td>
<td>100%</td>
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<tr>
<td></td>
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<td></td>
<td>10%</td>
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<td>0%</td>
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*NOTE: The chart is based on limescale build-up of 1/16 inch per year which reduces operating efficiency approximately 8-10% per year.

Fully Modulating with 5:1 Turndown
SHIELD can fire as low as 20% of maximum input when water heating demand is lowest, and increase to 100% for peak-demand periods. This results in better overall efficiency and less cycling compared to “on-off” tank-type units that can only fire at 100%.

Negative/Regulation
Fully Modulating with 5:1 Turndown
SHIELD utilizes an advanced combustion system which provides NOx ratings compatible with the most stringent air quality standards. Additionally, the NEG/REG sealed combustion technology allows the unit to operate with inlet gas pressure as low as 4 inches water column.

Advanced Electronic Control
SHIELD features the ultimate water heater control which makes system setup, service and operation a breeze. A backlit LCD display gives readouts of setup, system status and diagnostic information.

SMART CONTROL™ also includes:
- Night Setback
- Time Clock
- Alarm Contacts
- Runtime Contacts
- Last 10 Lock-Outs
- Security Protection
- Adjustable Pump Delay
- Enable/Disable Contacts
- Contacts for Louvers

7 Venting Options - Easy, Flexible Installation and Service

- Room Air Vertical
- Room Air Sidewall
- Direct Vent Vertical
- Vertical w/ Sidewall Air
- Direct Vent Vertical*
- Direct Vent Sidewall*
- Direct Vent Sidewall

*Optional Concentric Vent Kit Sold Separately  ** Sidewall Termination Plate Factory Provided as Standard Equipment
**SHIELD® 125,000 to 500,000 Btu/hr Models**

**DIMENSIONS & SPECIFICATIONS**

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<th>Model Number</th>
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<th>B</th>
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<th>E</th>
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<th>Air Inlet</th>
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</table>

*Change N to L for LP gas. Field convertible to LP Gas

**STANDARD FEATURES**

- 96% Thermal Efficiency (AHRI Certified)
- Modulating Burner with 5:1 Turndown
- Operates at Temperatures up to 180°F for Sanitizing Applications
- Stainless Steel Heat Exchanger
- Glass-Lined Steel Tank
- Magnesium Anode Rods
- 150 PSI Working Pressure
- ASME Construction (SNA151–501)
- ASME Temperature and Pressure Relief Valve
- Zero Clearances to Combustible Material
- Certified for Installation on Combustible Floors
- PVC, CPVC, Polypropylene and Stainless Steel Venting up to 100 Equivalent Feet

**Optional Equipment**

- Direct-Vent Sealed Combustion
- Rooftop and Sidewall Venting
- Sidewall Vent Termination
- Advanced SMART CONTROL, with:
  - LCD Display
  - Time Clock
  - Night Setback
  - Alarm Contacts
  - Runtime Contacts
  - Manual Reset High Limit
  - 3 Water Temperature Sensors
  - Flue Temperature Sensor
  - Contacts for Louvers
  - Adjustable Pump Delay
  - Security Protection

- Enable/Disable Contacts
- Low-NOx Operation
- Low Gas Pressure Operation
- Direct-Spark Ignition
- Full Port Brass Drain Valve
- 8-Foot Power Cord
- 3-Year Limited Warranty
- 1-Year Parts Warranty

- CON·X·US® Remote Connect
- Alarm Bell
- Concentric Vent Kit
- Condensate Neutralization Kit
- Low Water Cutoff
- Tank Side Tappings for Alternate Heat Source

**Dimensions & Specifications**

- **Direct-Vent Sealed Combustion**
- **Rooftop and Sidewall Venting**
- **Sidewall Vent Termination**
- **Advanced SMART CONTROL**, with:
  - **LCD Display**
  - **Time Clock**
  - **Night Setback**
  - **Alarm Contacts**
  - **Runtime Contacts**
  - **Manual Reset High Limit**
  - **3 Water Temperature Sensors**
  - **Flue Temperature Sensor**
  - **Contacts for Louvers**
  - **Adjustable Pump Delay**
  - **Security Protection**

- **Enable/Disable Contacts**
- **Low-NOx Operation**
- **Low Gas Pressure Operation**
- **Direct-Spark Ignition**
- **Full Port Brass Drain Valve**
- **8-Foot Power Cord**
- **3-Year Limited Warranty**
- **1-Year Parts Warranty**

- **CON·X·US® Remote Connect**
- **Alarm Bell**
- **Concentric Vent Kit**
- **Condensate Neutralization Kit**
- **Low Water Cutoff**
- **Tank Side Tappings for Alternate Heat Source**
The Next Generation
The latest generation of Power-Fin, with new “Built-in Advantages” from Lochinvar®. These include expanded burner modulation and the advanced SMART SYSTEM™ operating control, including a built-in cascading sequencer for up to eight water heaters. Power-Fin water heaters can be installed with Lochinvar’s advanced Lock-Temp® storage tanks, in a wide variety of combinations to meet system sizing requirements. “Factory packaged” water heater/storage tank systems can be built to your specifications, with all piping installed, and shipped on channel iron skids.

SMART TOUCH
- Built-in cascading sequencer controls up to 8 water heaters
- 2-line 16-character LCD readout of setup, system status and diagnostic data in words, not codes.
- Password security
- Pump control for operation of water heater pump
- Pump delay w/freeze protection
- Low NOx operation
- 0-10 Vdc BMS input for easy integration into Building Management Systems
- Optional smart system PC software for advanced setup and diagnostics
- Modbus Communication - Optional
- BacNet MSTP Communication (Optional)

Infinite Modulation
With thermal efficiencies up to 85%, Power-Fin water heaters feature infinitely modulating burner firing rates (turndown), precisely matching the firing rate to domestic water load requirements. The result is better overall efficiency and less cycling. Power-Fin water heaters may be specified as either 5:1 turndown (502 - 2001), or ON/OFF (502 - 2001). With 5:1 turndown the burner fires as low as 20% of maximum input when demand is lowest and increases the firing rate up to 100% as demand increases.

Gasketless Heat Exchanger
The Power-Fin heat exchanger features an array of 20 or 24 copper-finned tubes surrounding the burner for maximum heat transfer. Lochinvar also pioneered the “gasketless” heat exchanger, which eliminates the use of O-rings and gaskets. Because of the time-proven reliability of this design, the Power-Fin heat exchanger is backed by a 5 year limited warranty.

Venting Options

- **DirectAire Horizontal**
  - Vents horizontally up to 50 equivalent feet using Category IV vent materials. Draws combustion air up to 50 ft. from a different pressure zone.

- **DirectVenting**
  - Horizontal or vertical venting up to 50 equivalent feet using Category IV vent materials. Draws combustion air from the same pressure zone. This option only available with 5:1 (M) firing code models.

- **Sidewall Venting**
  - Horizontal venting up to 50 equivalent feet using Category IV vent materials. Draws combustion air from the room.

- **DirectAire Vertical**
  - Vertical venting up to 50 equivalent feet using Category I or IV vent materials. Draws combustion air up to 50 ft. from a different pressure zone.

- **Common Venting**
  - Vents multiple units vertically through one vent termination with Category II vent materials and draws combustion air from the room, roof or sidewall. Vent kit and Category IV to II conversion kit required.

- **Vertical Vent**
  - Vertical venting using Category I or Category IV vent materials. Draws combustion air from the room.

*Requires factory supplied vent kit with “M” firing code models.
### Dimensions & Specifications

#### Power-Fin® 500,000 to 2,000,000 Btu/hr Models

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Btu/hr Input</th>
<th>GPH @ 100°F Rise</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E (F)</th>
<th>E (M)</th>
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#### Notes:
- Change 'N' to 'L' for LP Gas Model.
- No deration on LP models.
- Temperature rise calculations based on firing rate of 100%.
- All water connections are 2-1/2".
Copper-Fin II® 399,999 to 2,070,000 Btu/hr Models

Nine models from 399,999 to 2,070,000 Btu/hr input provide an exceptional product with some refined features in addition to the established features that redefined the industry.

Refined Design Puts More Control and Information at your Fingertips
The most exciting addition to the Copper-Fin II is the SMART SYSTEM™ control. The SMART SYSTEM is an advanced, state of the art integrated operating control. The control provides the installer, owners and operators with precise temperature control and diagnostic information.

Advanced features include:
- 2-Line, 16 Character LCD display of Setup, System Status and Diagnostic Data in words, not codes
- Built-in Cascade sequencer controlling up to 8 water heaters
- 0-10 VDC BMS Input to control water heater operation
- Modbus communications - optional

Gasketless Heat Exchanger
In 1989, Lochinvar was the first water heater manufacturer to offer gasketless cast iron and copper-finned tube heat exchangers. Our unique gasketless design enhances reliability by eliminating o-rings and gaskets found on other brands. The heat exchanger features glass lined headers and copper-finned tubes with extruded integral fins spaced 7-fins per inch for exceptional heat transfer. The heat exchanger is built to ASME construction standards for 160 psi working pressure and is backed by a five year limited warranty.

Proportional Firing
Proportional firing divides a single manifold of multiple burners into smaller, independent stages. With up to four stages of individual operation, the Smart System control can reduce the firing input rate down to approximately 25% Btu/hr input. This simple but effective design matches the water heater’s firing capacity to the constantly changing system demand on the water heating system. Stage firing delivers the Btu’s required in smoother and longer burn cycles which will improve operation and reduce component fatigue.

Meets The Toughest Air Quality Standards
Because of our unique fan-assisted combustion process, the Copper-Fin II exceeds today’s toughest NOx emissions requirements. An independent certification laboratory test gave us a rating of less than 20 ppm — corrected to 3% O2. And less NOx means a cleaner environment.

Compact Design - For Installation Ease
The Copper-Fin II is compact enough to fit through standard 36” doorways with ease. Even our 2 million Btu/hr model is only 33-1/2” wide. This space-saving design frees up more space in the mechanical room. And our optional Stack Frame lets you put two units in the footprint of just one.

Venting Options

Conventional
Vents into conventional flue or vent breaching using Type B double wall vent.

Sidewall (CF 402-752)
Draws fresh air from inside the room. Vents up to 50 equivalent feet directly through the outside wall without the need for a powered sidewall cap.

Direct-Aire Vertical w/ Sidewall Inlet
Draws fresh air from outside and vents through conventional vertical flue.

Direct-Aire Vertical
Draws fresh air from outside and vents through conventional vertical flue.

Power Direct-Aire Horizontal
Draws fresh air from outside and vents through sidewall using optional powered vent cap.

Aire-Lock Direct Vent
Draws fresh air directly through the outside wall using an optional powered sidewall cap. Ideal when a vent stack is not practical.

Requires optional outdoor vent cap. Use when indoor space is a problem or if outdoor location gives better access.
Copper-Fin II® 399,999 to 2,070,000 Btu/hr Models

### Dimensions & Specifications

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Btu/Hr Input</th>
<th>GPH @ 100°F Rise</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
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**Notes:** Change ‘N’ to ‘L’ for LP gas models. No deration on LP models. Water connections for models CF 0402-0752 are 2" NPT on 6-1/2" centers. Header increases “B” dimension 3-1/2" for models CF 0402-0752 and 6-1/4" for models CF 0992-2072. Water connections for models CF 0992-2072 are 2-1/2" NPT on 11-1/4" centers. Performance data is based on manufacturer test results.

**Standard Features**
- 85% Thermal Efficiency
- Proportional Firing up to 4:1 Turndown
- Hot Surface Ignition
- Low NOx Operation
- Sealed Combustion
- Low Gas Pressure Operation
- Vertical & Horizontal Venting
- Category I Venting
- Double Wall “B” Vent Material
- Category IV Venting
- AL29-4C Stainless Steel Vent Material
- ASME Copper Finned Tube Heat Exchanger
- ASME Certified, “H” Stamped
- Gasketless design
- 160 psi working pressure
- On/Off Switch
- Combustible Floor Rated (0992-2072)
- Adjustable High Limit w/ Manual Reset
- All Bronze Circulating Pump
- Flow Switch
- Low Air Pressure Switch
- Inlet & Outlet Temperature Sensors
- Easy Access Terminal Strips
- Downstream Test Cocks
- ASME Temperature and Pressure Relief Valve
- 1 Year Warranty on Parts (See Warranty for Details)
- 5 Year Limited Warranty (See Warranty for Details)

**Smart System™ Features**
- SMART SYSTEM™ Operating Control
- 2 Line/16 Character LCD Display
- Multiple Size Water Heater Cascade
- Compatibility with ARMOR (AW 151-801) for Front End Loading
- Built in Cascading Sequencer for up to 8 heaters
- Building Management System Integration with 0-10 VDC Input
- 0-10 VDC Rate Output
- Password Security
- Low Water Flow Control & Indication
- Inlet & Outlet Temperature Readout
- Freeze Protection
- Condensing Protection
- Service Reminder
- Time Clock
- Data Logging
- Hours Running
- Ignition Attempts
- Last 10 Lockouts
- Programmable System Efficiency Optimizers
- Night Setback
- Pump Control
- Water Heater Pump
- Recirculation Pump
- High Voltage Terminal Strip
- 120 VAC / 60 Hz / 1 Phase Power Supply
- Pump Contacts with Pump Relay
- Low Voltage Terminal Strip
- 24 VAC Auxiliary Device Relay Output - Louvers
- Auxiliary Proving Switch Contacts - Louvers
- Alarm on Any Failure Contacts
- Runtime Contacts
- Unit Enable/Disable Contacts
- Tank Sensor Contacts
- Contacts for Air Louvers
- Contacts on Any Failure
- Cascade Contacts
- 0-10 VDC BMS External Control Contact
- 0-10 VDC Rate Output Contacts

**Optional Equipment**
- Alarm
- High & Low Gas Pressure Switches w/ Manual Reset
- Cupro-Nickel Heat Exchanger
- Low Water Cut Off, Probe Type w/ Manual Reset & Test
- Modbus Communications
- BMS Gateway to LON or BACnet
- Combustible Floor Kit (0402-0752)
- Stack Frame

**Firing Codes**
- M7 Firing Code - California Code
- M9 Firing Code - Hot Surface Ignition with Electronic Supervision

**Codes and Registrations**
- ANSI Z21.13/CSA 4.9 certified
- South Coast Air Quality Management District registered
- Texas Commission on Environmental Quality
**Copper-Fin® 495,000 to 2,065,000 Btu/hr Models**

**Installation Flexibility and Cost-Savings**
With compact sizes that use less floor space, all Copper-Fin units are narrow enough to fit through a standard 36” doorway – an advantage most commercial boilers can’t provide. Plus, thanks to special insulating materials, Copper-Fin units require only 3” clearance from combustible walls. What’s more, our Stack Frame allows you to install two units in the area normally required for one. This makes it easier to fit multiple Copper-Fin water heaters into cramped mechanical rooms. And you can even use a smaller diameter vent stack - up to 8” smaller than typically required for comparable atmospheric boilers - so it saves money as well as valuable mechanical room space.

**Unique Copper-Fin Heat Exchanger**
The Lochinvar Copper-Fin water heater design uses a two-pass heat exchanger. Water is circulated through a row of highly-efficient, finned copper tubes. The high rate of water flow creates a scouring action that prevents sediment and lime-scale buildup so common in conventional water heaters, and the finned copper tubes allow maximum heat transfer efficiency.

To create this special heat capability, Lochinvar extrudes the fins from thick wall copper tubing to precise specifications - exactly 7 fins per inch. The result is an integrally-finned tube with a heat transfer ratio 9 times greater than a plain copper tube.

**Heavy-Duty Gasketless Design**
What’s more, advanced casting processes allowed Lochinvar to develop a unique one-piece header system. This gasketless design provides enhanced reliability, improved durability and optimizes performance - but without the problems or failures so common to O-rings and gaskets.

**Meets The Toughest Air Quality Standards**
Because of our unique fan-assisted combustion process, the Copper-Fin exceeds today’s toughest NOx emissions requirements. An independent certification laboratory test gave us a rating of less than 20 ppm — corrected to 3% O2. And less NOx means a cleaner environment.

**Enhanced to Provide Performance and Serviceability**
Our Copper-Fin models offer reliable operation and feature a service friendly design. The referenced gas valves are in the upper deck for easy access, and the electrical and EMS connections have all been repositioned toward the front of the unit for easier service access.

The gas valves are referenced to the sealed combustion chamber to improve operational performance by monitoring the pressure in the sealed combustion chamber and adjusting gas flow to maintain the optimum air/fuel mixture. And the built-in air inlet filter reduces maintenance and improves performance by trapping dust and airborne particulates that can foul the burners and blowers. With dual sight glasses (one on each end), you can easily monitor burner performance and flame characteristics throughout the entire combustion chamber.

The operator interface panel provides electronic temperature control and comprehensive diagnostic status, without opening the control panel. Its user friendly design simplifies service while providing additional diagnostic information through a series of LEDs.
**Copper-Fin® 495,000 to 2,065,000 Btu/hr Models**

**DIMENSIONS & SPECIFICATIONS**

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**Notes**: Change ‘N’ to ‘L’ for LP gas models. Performance data is based on manufacturer test results. Water connections for models (CW 0497-0747) are 2” NPT on 6-1/2” centers. Water connections for models (CW 0987-2067) are 2-1/2” NPT on 11-1/4” centers.

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**STANDARD FEATURES**
- 81% Thermal Efficiency
- Electronic Temperature Control
- Fan Assisted Combustion
- Sealed Combustion Chamber
- Stainless Steel Burners
- Low NOx Operation Exceeds the most Stringent Air Quality Requirements
- ASME Copper Finned Tube Heat Exchanger
- 160 psi Working Pressure
- Gasketless Heat Exchanger Design
- All Bronze Circulating Pump
- Pump Delay w/ Freeze Protection
- Remote Tank Thermostat
- Glass-Lined Water Surfaces
- Referenced Gas Valves
- Loch-Heat Ceramic Tile Combustion Chamber
- Hot Surface Ignition
- ASME Temperature & Pressure Relief Valve
- Adjustable High Limit w/ Manual Reset
- Flow Switch
- 24 Volt Control System
- BMS Terminal Strip
- Combustion Air Filter
- 5 Year Limited Warranty on Heat Exchanger
  (See warranty for details)

**OPTIONAL EQUIPMENT**
- Alarm Bell
- Contacts on any Failure
- Contacts for Air Louvers
- Cupro-Nickel Heat Exchanger
- High and Low Gas Pressure Switch w/ Manual Reset
- Low Water Cut-Off
- Stack Frame
- MP2 Sequencer

**AVAILABLE FIRING SYSTEMS**
- M7 Firing Code - California Code
- M9 Firing Code - Hot Surface Ignition with Electronic Supervision

**VENTING**
- Outdoor Vent Cap and Pump Cover
High efficiency Copper-Fin water heaters combine the benefits of a copper finned tube heat exchanger with the simplicity of atmospheric combustion to provide a durable, trouble-free design with quick and easy component removal for service simplicity.

And with the Lochinvar “Better Idea” system, you combine the highly efficient Copper-Fin water heater with a separate Lock-Temp storage tank and manifold piping. By separating the water heater and storage tank, stand-by losses are virtually eliminated and operating efficiency is enhanced.

Copper-Fin® 90,000 to 500,000 Btu/hr Models

82% Thermal Efficiency
Built-In Draft Diverter
Stainless Steel Burners
ASME Copper Finned Tube Heat Exchanger
160 psi Working Pressure
Gasketless Heat Exchanger Design
All Bronze Circulating Pump
Pump Delay/Freeze Protection
Remote Tank Thermostat
Glass-Lined Water Surfaces
Loch-Heat Ceramic Tile Combustion Chamber
ASME Temperature & Pressure Relief Valve
Automatic Reset High Limit
Manual Reset High Limit
Self Diagnostic Indicator Lights
Terminal Strip
24 Volt Control System
CSA Design Certified for Installation on Combustible Floors
3 Year Limited Warranty on Heat Exchanger

Firing Controls
F1 - Standing Pilot (Standard CW (90-270)
F9 - Intermittent Spark Ignition
(Standard CW 315-500)
F13 - GE GAP/FM/CSD 1
F7 - California Code (CW 225-500)

Optional Equipment
Adjustable High Limit/ Manual Reset
Contacts on any Failure (CW 315-500)
Contacts for Air Louvers (CW 315-500)
Cupro-Nickel Heat Exchanger
Flow Switch
Low Water Cut-Off
Stack Frame
PVC Venting Kit (CW 90-135)
Multi-Flue Charger Gas Models

**Dimensions & Specifications**

- **1-1/2" Top Water Connections**
- **1" NPT Relief Valve Opening**
- **Induced Draft Motor**

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**A = ASME construction**

See the installation manual for dimensional information on Top and Back Tappings

---

**Standard Features**
- 80% Thermal Efficiency
- Multi-Flue Design
- Glass Lined Tank
- 150 PSI Working Pressure
- Tank Saver Anode
- ASME Temperature & Pressure Relief Valve
- Automatic Reset High Limit
- Spark Ignition
- 180°F Operation Approved
- Combustible Floor Approved
- Steel Jacket with Foam Insulation
- Hand Hole Cleanout
- Slide Out Burner Tray
- 3 Year Limited Warranty on Tank
- 1 Year Limited Warranty on Parts

**Optional Equipment**
- UL Sanitation
- High Altitude (2,000 to 8,000 feet)
# Ultra Low NOx Charger Gas Models

## Models CLN120 080 - CLN199 100

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<th>GPH @ 100°F Rise</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
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<th>Water Conn</th>
<th>Ship. Wt.</th>
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A = ASME Construction  See the installation manual for dimensional information on Top and Back Tappings

---

## Optional Equipment

- UL Sanitation

---

## Standard Features

- 82% Thermal Efficiency
- Meets SCAQMD Rule 1146.2
- Multi-Flue Design
- Glass Lined Tank
- 150 PSI Working Pressure
- Tank Saver Anode
- ASME Temperature & Pressure Relief Valve
- Automatic Reset High Limit
- Spark Ignition
- 180°F Operation Approved
- Combustible Floor Approved
- Steel Jacket with Foam Insulation
- Hand Hole Cleanout
- Slide Out Burner Tray
- 3 Year Limited Warranty on Tank
- 1 Year Limited Warranty on Parts
**Light Duty Charger Gas Models**

### Dimensions & Specifications

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Btu/hr Input</th>
<th>Gal Cap.</th>
<th>Btu/hr</th>
<th>GPH @ 100°F Rise</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>Gas Conn</th>
<th>Water Conn</th>
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<th>Ship Wt.</th>
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* Propane model rated at 55,000 Btu/hr

**Standard Features**

- 80% Thermal Efficiency
- Low NOx operation
- Single Flue Design
- Glass Lined Tank
- 150 PSI Working Pressure
- Tank Saver Anode
- ASME Temperature & Pressure Relief Valve
- Automatic Reset High Limit
- Standing Pilot
- 180°F Operation Approved
- Combustible Floor Approved

- Steel Jacket with Foam Insulation
- Automatic Flue Damper
- Hand Hole Cleanout
- Rated up to 7,700 Feet Altitude
- 3 Year Limited Warranty on Tank
- 1 Year Limited Warranty on Parts
Custom Hi-Power® Vertical And Horizontal Models

Voltage Schedule

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<td>K</td>
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<td>K — 208V 3ø</td>
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<tr>
<td>A</td>
<td>240V 1ø</td>
<td>A — 240V 1ø</td>
</tr>
<tr>
<td>B</td>
<td>240V 3ø</td>
<td>B — 240V 3ø</td>
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<td>277V 1ø</td>
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<td>Y</td>
<td>380V 3ø</td>
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<td>415V 3ø</td>
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<td>480V 3ø</td>
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<td>600V 3ø</td>
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* = Voltage
kW = Kilowatt

Vertical Round 150 - 1000

Vertical Square 1250 - 2500

Horizontal Square 150 - 2500

ELEVATION FROM FINISHED FLOOR

END VIEW

EXTRA PANEL BOX MAY BE NECESSARY FOR INPUTS
**Dimensions & Specifications**

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**NOTES:**
- Vertical Round models above 90 kW at 208V, 240V or 380V, and 162 kW at 415V, 480V, or 600V exceed the capacity of a single control box and may require multiple control panels.
- Consult the factory for specific details and optional construction.
- Vertical Square construction is available as an option for models that exceed the listed kW limits.
- Control panel height on Vertical Round models may exceed tank height – consult factory for specific heights on models with inputs above 72 kW.

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**Standard Features**
- Glass Lined Steel Tank
- Incoloy Heating Elements
- Internal Fusing (above 120 amps)
- Enamel Finished Galvanized Steel Jacket
- Magnesium Tank Saver Anodes
- Immersion Thermostat
- Advanced Electronic Control
- Low Water Cut-Off
- BMS Enable/Disable Contacts
- High Limit w/Manual Reset
- Full Length Hinged Doors with Key Lock
- Terminal Block Connections
- ASME Temperature and Pressure Relief Valve (Supplied but not installed)
- Channel Iron Skid Base (Except 150 & 200 gallon round)
- Approved for 180°F Temperature Operation
- ASME Construction and National Board Listed
- All models meet or exceed ASHRAE energy efficiency standards
- 125 psi Working Pressure
- Handhole/Cleanout
- UL Listed (U.S. and Canada)
- Safety Drain Pan (Square Models)
- 3 Year Limited Tank Warranty
- Control Voltage On/Off Switch w/ Pilot Light

**Optional Equipment**
- Pilot Lights and Switches
- Manual Limiting Switches
- Alarm Bell
- Shunt Trip Disconnect (Field Installed)
- Lifting Lugs
- Safety Door Interlock
- Temperature and Pressure Gauges
- Manway (250 Gallon and Larger Only)
- 150 psi or 160 psi Working Pressure
- Seismic Attachment Points (250 Gallon and Larger Only)
- Customer must provide seismic zone or city and state of install.
**Standard Hi-Power® Surface Thermostat and Immersion Electric**

**Standard Features**

**Immersion Controls (HC Models)** - LCD readout displays operational and diagnostic information in words, not codes. Standard features include: Low Water Cutoff, Element Sensing and Night Setback.

**Surface Controls (HS Models)** - Surface mounted thermostats on each heating element.

**Glass-Lined Steel Tank** – The durable glass lining is fused to the tank at 1600°F to assure lasting protection against rust and corrosion while providing clean, clear hot water. 300 psi test pressure provides 150 psi working pressure.

**Tank Saver Anode** – A large diameter, high capacity anode inhibits corrosion of the tank interior for long, trouble-free service.

**Heating Elements** – Plated, incoloy immersion type heating elements provide long life and resistance to lime scale build-up. The low watt density elements have lower surface temperatures and more surface area.

**Standard Voltages** – 208, 240 and 480 are wired from the factory for three phase. The three phase wiring can be field converted to single phase. (277 is configured as single phase only.)

**Energy Cut-Off** – Shuts off electrical power to the elements should the water temperature in the tank exceeds 200°F.

**Overcurrent Protection Fuses** – All elements and controls are fused in accordance with U.L. requirements when current exceeds 48 amps.

**ASME Temperature and Pressure Relief Valve** - Factory provided.

**Non-CFC Foam Insulation** – Superior material formulation provides uniform tank coverage with a thick blanket of insulating foam. This non-CFC polyurethane closed cell foam minimizes standby losses and maximizes heat retention.

**Hinged Access Door** – Provides easy access from front of heater to electrical controls.

**3 Year Limited Tank Warranty, 1-Year Limited Parts Warranty** – See warranty for details

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### Voltage Schedule

- **T** - 208V / 1 or 3 PH
- **W** - 277V / 1 PH
- **P** - 240V / 1 or 3 PH
- **X** - 480V / 1 or 3 PH
### Standard Hi-Power® Surface Thermostat and Immersion Electric

#### Dimensions & Specifications

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<th>Immersion Thermostat Models</th>
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<td>194</td>
<td>9</td>
<td>62-1/4&quot;</td>
<td>29-1/2&quot;</td>
<td>35&quot;</td>
<td>390</td>
</tr>
<tr>
<td>HS(X)54 119</td>
<td>HC(X)54 119</td>
<td>54</td>
<td>120</td>
<td>221</td>
<td>9</td>
<td>62-1/4&quot;</td>
<td>29-1/2&quot;</td>
<td>35&quot;</td>
<td>390</td>
</tr>
</tbody>
</table>

Immersion thermostat model numbers shown above. Change “C” to “S” for surface thermostat models. 1-1/4” NPT Water Connections

* 208V models equipped with 6 elements. ** 208V models equipped with 9 elements.
## Compact ASME Hi-Power Electric Models

### Standard Features
- Advanced Electronic Controls
- Glass-Lined Steel Tank
- Powered Anode
- Heating Element
- Energy Cut-Off
- ASME Temperature and Pressure Relief Valve
- Non-CFC Foam Insulation
- Hinged Access Door
- Immersion Thermostats with Contactors
- 3 Year Limited Tank Warranty
- 1-Year Limited Parts Warranty
  - See warranty for details

### Optional Equipment
- 150 PSI Working Pressure
  - (65-120 Models)
  - High and/or Low Water Pressure
  - Limit Switches
  - Alarm Horn
  - Temperature & Pressure Gauge
  - 4” x 6” Handhole Cleanout
  - Pilot Lights & Switches
  - Modulating Control

### Amperage Table

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Gal. Cap. (A)</th>
<th>Max. kW (B)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>Water Conn. (W)</th>
<th>Ship. Wt. (Lb)</th>
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<tbody>
<tr>
<td>CH(X) kW 005A</td>
<td>5</td>
<td>3</td>
<td>20-1/2”</td>
<td>16-1/4”</td>
<td>22-1/2”</td>
<td>5-1/4”</td>
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<td>100</td>
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<td>6</td>
<td>27-1/4”</td>
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<td>CH(X) kW 040A</td>
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<td>CH(X) kW 100A</td>
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### GPH Recovery Rate

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<th>50°F</th>
<th>60°F</th>
<th>70°F</th>
<th>80°F</th>
<th>90°F</th>
<th>100°F</th>
<th>110°F</th>
<th>120°F</th>
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<td>650,938</td>
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<td>651,594</td>
<td>651,922</td>
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### Voltage Schedule

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<tr>
<th>Type</th>
<th>Single Phase</th>
<th>Three Phase</th>
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<tbody>
<tr>
<td>3</td>
<td>120 V</td>
<td>120 V</td>
</tr>
<tr>
<td>6</td>
<td>200 V</td>
<td>200 V</td>
</tr>
<tr>
<td>9</td>
<td>300 V</td>
<td>300 V</td>
</tr>
<tr>
<td>12</td>
<td>400 V</td>
<td>400 V</td>
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<td>500 V</td>
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<td>18</td>
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<td>800 V</td>
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<tr>
<td>30</td>
<td>1,000 V</td>
<td>1,000 V</td>
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<tr>
<td>45</td>
<td>1,500 V</td>
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</tr>
<tr>
<td>60</td>
<td>2,000 V</td>
<td>2,000 V</td>
</tr>
</tbody>
</table>

### Note:
- Allow 24" clearance from front access panel for service and maintenance.
- Outlet connection for 5 thru 50 models 3/4” NPT.
- Outlet connection for 65 thru 120 models 1-1/4” NPT.
- All ASME models with an amp draw in excess of 120 amps receive factory installed internal fusing.
**Light Duty Commercial Electric Models**

**Standard Features**
- Non-Simultaneous or Simultaneous Wiring
- Glass–Lined Steel Tank
- Non-CFC Foam Insulation
- Adjustable Thermostats
- Automatic Overheat Protection
- Tank Saver Anode
- Single or Three Phase Wiring
- ASME Temperature & Pressure Relief Valve
- 3-Year Limited Tank Warranty
- 1-Year Limited Parts Warranty – See warranty for details.

**Light Duty Commercial Models**

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<tbody>
<tr>
<td><strong>Point-of-Use Models</strong></td>
<td></td>
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<td></td>
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<tr>
<td>EJW010FS</td>
<td>6</td>
<td>15-1/2&quot;</td>
<td>14-1/4&quot;</td>
<td>11&quot;</td>
<td>-</td>
<td>35</td>
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<tr>
<td>EJW015FS</td>
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<td>18-1/4&quot;</td>
<td>18&quot;</td>
<td>12-1/2&quot;</td>
<td>-</td>
<td>54</td>
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<td>EJW020FS</td>
<td>15</td>
<td>26&quot;</td>
<td>18&quot;</td>
<td>20-1/2&quot;</td>
<td>-</td>
<td>58</td>
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<td>15-1/2&quot;</td>
<td>-</td>
<td>73</td>
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<td><strong>Short Models</strong></td>
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<td>ESX030KD</td>
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<td>21-3/4&quot;</td>
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<td>8&quot;</td>
<td>100</td>
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<td>26-1/2&quot;</td>
<td>25-1/4&quot;</td>
<td>8&quot;</td>
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<td><strong>Tall Models</strong></td>
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**Voltage Schedule**

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<thead>
<tr>
<th>Voltage Schedule (EJ Models)</th>
<th>Wattage Limits w/ Simultaneous Operation</th>
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<tbody>
<tr>
<td>C</td>
<td>120V</td>
</tr>
<tr>
<td>J</td>
<td>208V</td>
</tr>
<tr>
<td>A</td>
<td>240V</td>
</tr>
<tr>
<td>W</td>
<td>277V</td>
</tr>
<tr>
<td>V</td>
<td>480V</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>T</td>
<td>208V</td>
</tr>
<tr>
<td>P</td>
<td>240V</td>
</tr>
<tr>
<td>W</td>
<td>277V</td>
</tr>
<tr>
<td>X</td>
<td>480V</td>
</tr>
</tbody>
</table>

**Notes:**
- Point of Use models are non-simultaneous circuit only.
- P.O.U. models available in single phase only. 6 gallon P.O.U. not available above 2500 watts or in 480 V.
- Short & Tall models are factory wired for three phase service and are field converted to single phase.

**Element Availability Schedule**

<table>
<thead>
<tr>
<th>Wattage</th>
<th>120V</th>
<th>208V</th>
<th>240V</th>
<th>277V</th>
<th>480V</th>
<th>Recovery Rate (GPH @ °F RISE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C - 1500</td>
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<td>Yes</td>
<td>Yes</td>
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<td>G - 3000</td>
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<td>K - 4500</td>
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<td>M - 5000</td>
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**Notes:**
- Max Wattage for EJ-006 is 3000W * Indicates Not Available for EJ-010 and EJ-015
**Hot Water Generators** *Water to Water & Steam to Water*

**Vertical Tanks**

- T&P Gauge Connectors (Optional)
- 1 1/4" Standard Temperature Sensor Openings
- 3/4" Aquastat
- 3" NPT

*Manway (Optional)*

*Manway standard on cement and required on tanks with bundles 48" and larger

**Horizontal Tanks**

- Lifting Lugs (Optional)
- 1 1/4" T&P Relief Valve Opening
- 2" NPT Hot Water Outlet
- 3/4" Aquastat
- 3" NPT

*Manway (Optional)*

*Manway standard on cement, and required on tanks with bundles 48" and longer

**Steam to Water Optional Control Package**

- Inlet Wye Strainer
- Temperature Sensor
- Temperature Control Valve
- Steam Trap
- Condensate Return
- Outlet Wye Strainer

**Water to Water Optional Control Package**

- Temperature Sensor
- Return
- Temperature Control Valve
- Inlet Wye Strainer

*Left hand or right hand configurations available.*
## Vertical Tanks Round Jacketed

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<td>GV0200JR</td>
<td>200</td>
<td>77&quot;/1/4&quot;</td>
<td>32&quot;</td>
<td>11-1/4&quot;</td>
<td>17-1/4&quot;</td>
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* Indicates Tank Lining – G=Glass  C=Cement

** Add 4" to Length (Height) for Vertical Configuration

## Horizontal Tanks Round Jacketed

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NOTE: Manway required on tanks with tube bundles 48" and longer.

* Indicates Tank Lining – G=Glass  C=Cement

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Note: Change “V” to “H” for Horizontal Configuration

* Indicates Tank Lining – G=Glass  C=Cement

** Add 4" to Length (Height) for Vertical Configuration
The Squire Stainless Steel Indirect Water Heater - with 12 models to choose from in capacities from 30-119 gallons, we are sure to have the right size indirect water heater to fit your application. Squire features important enhancements that our customers will recognize and benefit from such as a welded and passivated stainless steel tank and heat exchanger, two-inch thick, high-density insulating foam, and best of all an American made product built in Lebanon, Tennessee.

**Standard Features**
- 12 Squire Models to Choose From
  - 6 Standard Models from 30 to 119 Gallons
  - 6 Solar Models from 65 to 119 Gallons
- 316L Passivated Stainless Steel Tank
- 316L High Capacity Stainless Steel Coil
- Fully Welded Construction

**SIT Models**

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<th>Model Number</th>
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<th>D</th>
<th>G</th>
<th>H</th>
<th>I</th>
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<th>Coil Connection Size</th>
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<th>Heat Source Water Volume (Gallons)</th>
<th>Standby Loss (°F/Hr)</th>
<th>First Draw Gals.</th>
<th>Continuous Delivery (GPH)</th>
<th>1st Hour Delivery (Gallons)</th>
<th>Min. Coil Load (Btu/Hr)</th>
<th>Flow Rate (GPM)</th>
<th>Friction Loss (Ft. Hld.)</th>
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Performance data is based on IWH-TS1. All ratings are based on 180°F boiler water temperature with incoming cold water at 58°F and a Delta T of 77°F. Includes tank sensor for use with KNIGHT or CADET Heating Boiler. Optional thermostat available for use with other boiler models.
Solar Stainless Steel Indirect Water Heater Models

Solar Stainless Steel Indirect Dimensions and Specifications

![Diagram of SDT Models](image1.png)

![Diagram of SET Models](image2.png)

### SDT Models

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<th>Model Number</th>
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<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>Domestic Water Conn.</th>
<th>Coil Connection Size</th>
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<th>Min. Coil Load (Btu/Hr)</th>
<th>Flow Rate (GPM)</th>
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<td>0.6</td>
<td>175</td>
<td>208</td>
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<td>14.0</td>
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<tr>
<td>SDT119</td>
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<td>3.2</td>
<td>2.6</td>
<td>0.5</td>
<td>251</td>
<td>301</td>
<td>181,000</td>
<td>14.0</td>
<td>4.9</td>
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Performance data based on incoming cold water at 50°F and a Delta T of 77°F. Delivery ratings for boiler coil only. Includes tank sensor for use w/ KNIGHT Heating Boiler.

### SET Models

<table>
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<tr>
<th>Model Number</th>
<th>A</th>
<th>B</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>H</th>
<th>I</th>
<th>Domestic Water Conn.</th>
<th>Coil Connection Size</th>
<th>Ship. Wt.</th>
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<td>1-1/2&quot;</td>
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<td>SET080</td>
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<table>
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<tr>
<th>Model Number</th>
<th>Gal Cap.</th>
<th>Heat Source Water (Gallons)</th>
<th>Standby Loss (°F/Hr)</th>
<th>Electric Continuous Delivery (GPH)</th>
<th>Electric 1st Hour Delivery (Gallons)</th>
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<td>0.5</td>
<td>24</td>
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All SET models: 4500w 240v 1 phase.
**Lock-Temp® Round Jacketed Storage Tanks**

**STANDARD FEATURES**

- **Energy Saving Performance** - meet the requirements of the latest ASHRAE Energy Efficiency Standards.
- **Five-Year Limited Warranty** - against tank failure resulting from defects in materials or workmanship.
- **Lock-Temp Baffle** - creates nearly perfect stratification.
- **Magnesium Anode** - provide additional protection against corrosion.
- **ASME Construction** - in accordance with ASME standards and labeled for 125 psi working pressure (standard) or 150 psi working pressure (optional). (RJS080 & RJS120 are non-ASME construction)
- **Galvanized Jacket** - Heavy gauge jacket is and finished in durable acrylic enamel combining attractive appearance with maximum protection.

**VERTICAL ROUND JACKETED GLASS LINED TANKS**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Gal. Cap.</th>
<th>A</th>
<th>B</th>
<th>D</th>
<th>E</th>
<th>125 psi</th>
<th>150 psi</th>
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<td>RJS080M</td>
<td>80</td>
<td>63&quot;</td>
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<td>RJS085M</td>
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<td>14-1/2&quot;</td>
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<td>352</td>
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<td>RJA120*</td>
<td>119</td>
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<td>14-1/2&quot;</td>
<td></td>
<td>365</td>
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<td>578</td>
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<td>RJA200*</td>
<td>200</td>
<td>77-1/4&quot;</td>
<td>32&quot;</td>
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<td>634</td>
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Glass Lined only
*A = ASME Construction / S = Standard Construction

**VERTICAL ROUND JACKETED ASME TANKS**

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<th>Model Number</th>
<th>Gal. Cap.</th>
<th>A</th>
<th>B</th>
<th>D</th>
<th>E</th>
<th>125 psi</th>
<th>150 psi</th>
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<td>R'A0257</td>
<td>257</td>
<td>91&quot;</td>
<td>34&quot;</td>
<td>18&quot;</td>
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<td>904</td>
<td>904</td>
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<td>R'A0318</td>
<td>318</td>
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<td>40&quot;</td>
<td>19-1/2&quot;</td>
<td>27-1/2&quot;</td>
<td>987</td>
<td>987</td>
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<td>R'A0432</td>
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<td>46&quot;</td>
<td>21&quot;</td>
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<tr>
<td>R'A0504</td>
<td>504</td>
<td>92&quot;</td>
<td>46&quot;</td>
<td>21&quot;</td>
<td>29&quot;</td>
<td>1,329</td>
<td>1,329</td>
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<tr>
<td>R'A0650</td>
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<td>31-1/2&quot;</td>
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<td>R'A0752</td>
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<tr>
<td>R'A0940</td>
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<td>31-1/2&quot;</td>
<td>2,710</td>
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</table>

* Indicates tank lining.  G=Glass Lined  C=Cement lined
* The manway is optional on 257 and 318 gallon glass-lined tanks. The manway is standard on 432 gallon glass lined tanks and larger. The manway is standard on all cement lined tanks.

**HORIZONTAL ROUND JACKETED ASME TANKS**

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<th>Model Number</th>
<th>Gal. Cap.</th>
<th>A</th>
<th>B</th>
<th>Diameter</th>
<th>125 psi</th>
<th>150 psi</th>
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<tr>
<td>R'A0250H</td>
<td>250</td>
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<td>1,157</td>
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<td>R'A0300H</td>
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<td>47&quot;</td>
<td>76&quot;</td>
<td>40&quot;</td>
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<td>1,355</td>
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<tr>
<td>R'A0400H</td>
<td>400</td>
<td>53&quot;</td>
<td>76&quot;</td>
<td>46&quot;</td>
<td>1,587</td>
<td>1,701</td>
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<tr>
<td>R'A0500H</td>
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<td>53&quot;</td>
<td>88&quot;</td>
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<td>1,711</td>
<td>1,853</td>
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<td>3,114</td>
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</table>

* Indicates Tank Linings  G=Glass lined  C=Cement lined
* The manway is optional on 250 and 300 gallon glass-lined tanks. The manway is standard on 432 gallon glass lined tanks and larger. The manway is standard on all cement lined tanks.
**Lock-Temp® Square Jacketed Storage Tanks**

**Standard Features**

- **Energy Saving Performance** - meet the requirements of the latest ASHRAE Energy Efficiency Standards.
- **Five-Year Limited Warranty** - against tank failure resulting from defects in materials or workmanship.
- **Lock-Temp Baffle** - creates nearly perfect stratification.
- **Magnesium Anode** - provide additional protection against corrosion.
- **ASME Construction** - in accordance with ASME standards and labeled for 125 psi working pressure (standard) or 150 psi working pressure (optional).
- **Galvanized Jacket** - Heavy gauge jacket is and finished in durable acrylic enamel combining attractive appearance with maximum protection.
- **Built-In Safety Drain Pan System** - Sealed base assembly with ¾” drain connection to protect against water damage from gasket or component leakage.
- **Channel Iron Skid** - Square jacket models furnished with skid for easy handling and installation.

**Vertical Square Jacketed ASME Tanks**

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<td>64-1/2”</td>
<td>29-1/4”</td>
<td>21-1/4”</td>
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<td>5,000</td>
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<td>TV*1500J</td>
<td>1,500</td>
<td>128-1/2”</td>
<td>70-1/2”</td>
<td>31-3/4”</td>
<td>25-3/4”</td>
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<td>6,637</td>
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<tr>
<td>TV*2000J</td>
<td>2,000</td>
<td>139”</td>
<td>76-1/2”</td>
<td>33-1/2”</td>
<td>25-1/2”</td>
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<td>7,910</td>
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<tr>
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<td>146-1/2”</td>
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<td>35-1/4”</td>
<td>28”</td>
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</table>

* Indicates tank lining.
G=Glass Lined   C=Cement line
◆ The manway is standard on these models.

**Horizontal Square Jacketed ASME Tanks**

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</thead>
<tbody>
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<td>1,250</td>
<td>68-1/2”</td>
<td>130-1/4”</td>
<td>60-1/4”</td>
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<td>5,466</td>
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<td>TH*1500J</td>
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<td>66-1/4”</td>
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<td>72-1/4”</td>
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<td>144-1/4”</td>
<td>78-1/4”</td>
<td>9,900</td>
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*Indicates Tank Linings G=Glass lined C=Cement lined
◆ The manway is standard on these models.
## Lock-Temp® Bare Storage Tanks

### Dimensions & Specifications

<table>
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<tr>
<th>Gal. Cap.</th>
<th>Dimensions</th>
<th>Weights</th>
<th>Tappings</th>
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<td>Glass-Lined</td>
<td>Cement</td>
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<td>4,575 5,350</td>
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<td>72&quot; 196&quot; 192&quot;</td>
<td>5,154 6,073</td>
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<td>3,807</td>
<td>72&quot; 220&quot; 216&quot;</td>
<td>5,733 6,795</td>
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---

**24” & 28” Diameter Tanks**

**30” Diameter and Larger Tanks**
Lock-Temp® Stainless Steel Storage Tanks

**Dimensions & Specifications**

![Diagram of the storage tank](image)

<table>
<thead>
<tr>
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<td>80</td>
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<td>9&quot;</td>
<td>2&quot;</td>
<td>198</td>
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**Standard Features**
- Light-weight 316L stainless steel tank construction
- Diffuser tube to eliminate turbulence
- 150 PSI working pressure
- Exceeds ASHRAE Energy Efficiency Standards
- Textured, impact resistant polypropylene jacket
- Bulbwell for control sensor
- 3/4" brass drain valve
- 10 year limited tank warranty
Light Service Electric Models

**Dimensions & Specifications**

![Diagram of water heater components]

- **T&P Valve**
- **Access Panel**
- **DRAIN Valve**
- **ANODE**
- **JUNCTION BOX**

### Model Number Table

<table>
<thead>
<tr>
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<td>66</td>
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**Notes:** 3/4" water connections on 8" center

### Voltage Schedule

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<th>Letter</th>
<th>Voltage</th>
<th>Phase</th>
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<tbody>
<tr>
<td>J</td>
<td>208V</td>
<td>1 PH</td>
</tr>
<tr>
<td>A</td>
<td>240V</td>
<td>1 PH</td>
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<tr>
<td>T</td>
<td>208V</td>
<td>1 PH</td>
</tr>
<tr>
<td>P</td>
<td>240V</td>
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### Element Schedule

<table>
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<tr>
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<th>208V</th>
<th>240V</th>
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<tr>
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<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>E-</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>F-</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>G-</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>H-</td>
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<tr>
<td>J-</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>K-</td>
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<td>Yes</td>
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<tr>
<td>M-</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>N-</td>
<td>N/A</td>
<td>Yes</td>
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</table>

### Standard Features

- Non-Simultaneous or Simultaneous Wiring
- Glass-Lined Steel Tank
- Non-CFC Foam Insulation
- Adjustable Thermostats
- Automatic Overheat Protection
- Tank Saver Anode
- ASME Temperature & Pressure Relief Valve
- 3 Year Limited Warranty on Tank
- 1 Year Limited Warranty on Parts
35-50 Series **Gas Models**

**Standard Features**

- **Stainless Steel Construction** – The tank and helical heat exchanger are made from 444 Stainless Steel for excellent corrosion resistance without need of anode rods.

- **96% Thermal Efficiency** – Operating up to 96% Thermal Efficiency, the 35-50 Series employs an internal helical heat exchanger which keeps the flue products in the appliance longer for maximum heat transfer.

- **Whisper Quiet Operation** – Ultra quiet blower and burner to minimize noise.

- **Advanced Electronic Controls** – Large touchscreen display with precise temperature control and advance diagnostics.

- **Power Direct Vent Design** – Vent in PVC, CPVC or Polypropylene for low cost installations, sidewall or roof-top. Vent 2” up to 52 equivalent feet and vent 3” up to 130 equivalent feet.

- **Ultra Low NOx Modulating Gas Burner** – Complies with SCAQMD Rule 1146.2 and other Air Quality Management Districts with NOx emissions less than 14ng/j.


- **Temperature and Pressure Relief Valve** – Factory installed.

- **Residential Warranty** - 10-year limited tank and 1-year limited parts.

- **Commercial Warranty** - 3-year limited tank and 1-year limited parts. See warranty for details.

---

### Model Number Specifications

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Btu/hr Input</th>
<th>Gallon Capacity</th>
<th>GPH @ 90°F Rise</th>
<th>Thermal Efficiency</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>Gas Conn</th>
<th>Water Conn</th>
<th>Vent Diameter</th>
<th>Ship Wt.</th>
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<td>35-50 Series, Residential</td>
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</tr>
<tr>
<td>SWN100-035</td>
<td>100,000</td>
<td>34</td>
<td>129</td>
<td>96%</td>
<td>48-1/2”</td>
<td>22”</td>
<td>15-3/4”</td>
<td>40-1/2”</td>
<td>41”</td>
<td>6-1/2”</td>
<td>1/2”</td>
<td>1”</td>
<td>2” or 3”</td>
<td>150</td>
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<tr>
<td>SWN130-035</td>
<td>130,000</td>
<td>34</td>
<td>165</td>
<td>96%</td>
<td>48-1/2”</td>
<td>22”</td>
<td>15-3/4”</td>
<td>40-1/2”</td>
<td>41”</td>
<td>6-1/2”</td>
<td>1/2”</td>
<td>1”</td>
<td>2” or 3”</td>
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<td>SWN150-035</td>
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<td>190</td>
<td>94%</td>
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<td>41”</td>
<td>6-1/2”</td>
<td>1/2”</td>
<td>1”</td>
<td>2” or 3”</td>
<td>150</td>
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<td>165</td>
<td>96%</td>
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<td>22”</td>
<td>15-3/4”</td>
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<td>55”</td>
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<td>1/2”</td>
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<td>2” or 3”</td>
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<td>SWN150-050</td>
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<td>190</td>
<td>95%</td>
<td>62-3/4”</td>
<td>22”</td>
<td>15-3/4”</td>
<td>55-3/4”</td>
<td>56-1/4”</td>
<td>6-1/2”</td>
<td>1/2”</td>
<td>1”</td>
<td>2” or 3”</td>
<td>180</td>
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<tr>
<td>SWN175-050</td>
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<td>222</td>
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<td>15-3/4”</td>
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<td>56-1/4”</td>
<td>6-1/2”</td>
<td>1/2”</td>
<td>1”</td>
<td>3”</td>
<td>180</td>
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<td>SWN199-050</td>
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<td>253</td>
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<td>15-3/4”</td>
<td>55-3/4”</td>
<td>56-1/4”</td>
<td>6-1/2”</td>
<td>1/2”</td>
<td>1”</td>
<td>3”</td>
<td>180</td>
</tr>
</tbody>
</table>

| 35-50 Series, Commercial |
| SCN130-035  | 130,000       | 34              | 165             | 96%               | 48-1/2” | 22” | 15-3/4” | 40-1/2” | 41” | 6-1/2” | 1/2” | 1”     | 2” or 3” | 150        |
| SCN150-035  | 150,000       | 34              | 190             | 94%               | 48-1/2” | 22” | 15-3/4” | 40-1/2” | 41” | 6-1/2” | 1/2” | 1”     | 2” or 3” | 150        |
| SCN130-050  | 130,000       | 50              | 165             | 96%               | 62-1/2” | 22” | 15-3/4” | 54-1/2” | 55” | 6-1/2” | 1/2” | 1”     | 2” or 3” | 176        |
| SCN150-050  | 150,000       | 50              | 190             | 95%               | 62-3/4” | 22” | 15-3/4” | 55-3/4” | 56-1/4” | 6-1/2” | 1/2” | 1”     | 2” or 3” | 180        |
| SCN175-050  | 175,000       | 50              | 222             | 96%               | 62-3/4” | 22” | 15-3/4” | 55-3/4” | 56-1/4” | 6-1/2” | 1/2” | 1”     | 3”     | 180        |
| SCN199-050  | 199,000       | 50              | 253             | 96%               | 62-3/4” | 22” | 15-3/4” | 55-3/4” | 56-1/4” | 6-1/2” | 1/2” | 1”     | 3”     | 180        |

*In the model number, ‘N’ indicates natural gas; replace ‘N’ with ‘L’ to indicate LP gas models.*
Energy Saver Residential Gas Models

Dimensions & Specifications

![Diagram of a residential gas model with a depiction of the T&P valve and 1/2" gas connection]

Standard Features
- NAECA III Code Compliance
- Flammable Vapor Ignition Resistant
- Electronic Gas Control
- Low NOx Burner
- Glass-Lined Steel Tank
- Non-CFC Foam Insulation
- Tank Saver Anode
- Heat Trap
- Temperature & Pressure Relief Valve
- Brass Drain Valve
- 6-Year Limited Tank & Parts Warranty* (available only for residential applications)
- 10-Year Extended Warranty Available
- *1-year limited tank & parts warranty when installed in a commercial application.

Energy Saver Residential Gas Models

|--------------|------------------|--------------------|-----------------------|--------------------|-----|----------------|-----------------|---|---|---|---|---|---|-----------|-------------|-----------|----------|
| Energy Saver with Insulation Blanket - Short Models

GSN030 35B 30 28 35,500 32,000 0.58 68 37 50 18 46-1/2 40 12 8 1/2 3/4 3 or 4 110
GSN040 40B 40 38 40,000 36,000 0.57 68 41 51-1/2 20 48 41-1/4 12 8 1/2 3/4 3 or 4 134

Energy Saver - Short Models

GSN030 35 30 28 35,500 32,000 0.59 66 36 50 20 46-1/2 40 12 8 1/2 3/4 3 or 4 118
GSN040 40 40 38 40,000 36,000 0.59 67 41 51-1/2 22 48 41-1/4 12 8 1/2 3/4 3 or 4 135
GSN050 40 50 40 40,000 40,000 0.62 81 43 53-1/4 24 49-3/4 41-1/2 13-1/4 8 1/2 3/4 3 or 4 177

Energy Saver with Insulation Blanket - Tall Models

GTN030 35B 30 29 35,500 32,000 0.61 69 37 61-1/2 16 58 51-3/4 12-1/4 8 1/2 3/4 3 or 4 123
GTN040 40B 40 38 40,000 36,000 0.65 78 42 61-3/4 18 58-1/4 52 12-1/4 8 1/2 3/4 3 or 4 130
GTN050 60B* 50 49 60,000 54,000 0.61 99 65 65-1/2 22 61 54-1/4 13-1/2 8 1/2 3/4 4 182

Energy Saver - Tall Models

GTN030 35 30 29 35,500 32,000 0.60 69 37 61-1/2 18 58 51-3/4 12-1/4 8 1/2 3/4 3 or 4 132
GTN040 35 40 38 35,500 N/A 0.61 65 38 61-3/4 20 58-1/4 52 12-1/4 8 1/2 3/4 3 or 4 138
GTN040 40* 40 38 35,500 36,000 0.66 80 42 61-3/4 20 58-1/4 52 12-1/4 8 1/2 3/4 3 or 4 138
GTN050 40* 50 48 40,000 37,000 0.62 81 41 60-3/4 21 57-1/4 50-1/2 12-1/4 8 1/2 3/4 3 or 4 148
GTN050 50* 50 48 50,000 45,000 0.61 89 54 60-3/4 22 57-1/4 50-1/2 12-1/4 8 1/2 3/4 4 165
GTN055 60* 55 55 60,000 54,000 0.62 83 65 59-3/4 24 55-1/4 48 13-1/2 8 1/2 3/4 4 185

Notes:
- In the model number, “N” indicates Natural gas; replace “N” with “L” to indicate L.P. gas models
- * Optional Side Tappings are available on these models. Add “ST” to the end of the model number (Ex: GTN04040ST).
**Specialty Residential Gas Models**

**Dimensions & Specifications**

- **1/2" Gas Connection**
- **T&P Valve**
- **Cold Connection**
- **Hot Connection**
- **Anode Rod**

---

### High Efficiency Model Shown

---

### High Efficiency - Short Model

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Nominal Storage Capacity</th>
<th>Nat. Gas Input</th>
<th>LP Gas Input</th>
<th>1st Hour Rating</th>
<th>GPH @ 90°F Rise</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>Gas Conn.</th>
<th>Water Conn.</th>
<th>Vent Size</th>
<th>Ship. Wt.</th>
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<td>LSN040 40ES</td>
<td>40</td>
<td>38</td>
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<td>54&quot;</td>
<td>22&quot;</td>
<td>47.3/4&quot;</td>
<td>41&quot;</td>
<td>13&quot;</td>
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<td>1/2&quot;</td>
<td>3/4&quot;</td>
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### High Efficiency - Tall Models

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<th>Model Number</th>
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<th>Nat. Gas Input</th>
<th>LP Gas Input</th>
<th>1st Hour Rating</th>
<th>GPH @ 90°F Rise</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>Gas Conn.</th>
<th>Water Conn.</th>
<th>Vent Size</th>
<th>Ship. Wt.</th>
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<td>38</td>
<td>40,000</td>
<td>36,000</td>
<td>0.64</td>
<td>70</td>
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<td>58-1/4&quot;</td>
<td>20&quot;</td>
<td>51-3/4&quot;</td>
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<td>8&quot;</td>
<td>1/2&quot;</td>
<td>3/4&quot;</td>
<td>3&quot; or 4&quot;</td>
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<tr>
<td>LTN050 40ES</td>
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<td>48</td>
<td>40,000</td>
<td>37,000</td>
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<td>84</td>
<td>42</td>
<td>63-1/2&quot;</td>
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<td>57-1/4&quot;</td>
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<td>13&quot;</td>
<td>8&quot;</td>
<td>1/2&quot;</td>
<td>3/4&quot;</td>
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</table>

**Notes:**
- **N** indicates Natural gas, replace "N" with "L" to indicate LP gas model.

---

### Large Capacity Models

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<tr>
<th>Model Number</th>
<th>Nominal Storage Capacity</th>
<th>Nat. Gas Input</th>
<th>LP Gas Input</th>
<th>1st Hour Rating</th>
<th>GPH @ 90°F Rise</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>Gas Conn.</th>
<th>Water Conn.</th>
<th>Vent Size</th>
<th>Ship. Wt.</th>
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</thead>
<tbody>
<tr>
<td>LTN075 75</td>
<td>74</td>
<td>71</td>
<td>75,100</td>
<td>75,100</td>
<td>0.60</td>
<td>125</td>
<td>81</td>
<td>61&quot;</td>
<td>26-1/2&quot;</td>
<td>58-1/2&quot;</td>
<td>15-1/4&quot;</td>
<td>16&quot;</td>
<td>1/2&quot;</td>
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<td>LTN100 75</td>
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<td>95</td>
<td>75,100</td>
<td>75,100</td>
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<td>170</td>
<td>81</td>
<td>68-1/2&quot;</td>
<td>27-3/4&quot;</td>
<td>66-1/2&quot;</td>
<td>57-1/2&quot;</td>
<td>15-1/4&quot;</td>
<td>16&quot;</td>
<td>1/2&quot;</td>
<td>1-1/4&quot;</td>
</tr>
</tbody>
</table>

**Notes:**
- In the model number, "N" indicates Natural gas, replace "N" with "L" to indicate LP gas models.
- In the model number, change "L" to "X" for 10-year tank and 6-year parts warranty.
- Optional Side Tappings are available on the LTN07575 models only. Add "ST" to the end of the model number (Ex: LTN07575ST).

---

### Standard Features

- Flammable Vapor Ignition Resistant Compliant
- Electronic Gas Control
- Sight Glass
- Low NOx Burner
- Non-CFC Foam Insulation
- Glass-Lined Steel Tank
- Tank Saver Anode
- Heat Trap
- Temperature & Pressure Relief Valve - (Factory installed)
- Brass Drain Valve
- 6-Year Limited Tank & Parts Warranty* – See warranty for details.
- 10-Year Extended Warranty Available – Residential applications only.

**Notes:**
- *1-year limited tank & parts warranty when installed in a commercial application.

---
Manufactured Home Gas Models

**Standard Features**
- Flammable Vapor Ignition Resistant
- NAECA III Code Compliance
- Electronic Gas Control
- Low NOx Burner
- Glass-Lined Steel Tank
- Non-CFC Foam Insulation
- Tank Saver Anode
- Heat Trap
- Sight Glass
- Temperature & Pressure Relief Valve
- Brass Drain Valve
- 6 Year Limited Tank & Parts Warranty*
- 10 Year Extended Warranty
  - See warranty sheet for details.
  - Available for residential applications only.
  - * 1-year limited tank & parts warranty when installed in a commercial application.

**Optional Equipment**

**Roof Jack Kit** – Manufactured Home water heaters must be installed with one of the approved Roof Jack Kits listed on the table. This kit is ordered separately and must be installed per the installation instructions.

**Specify roof jack kit size when ordering.**

<table>
<thead>
<tr>
<th>Kit Number</th>
<th>Roof Jack Kits</th>
<th>Min.</th>
<th>Max.</th>
<th>Ship. Wt.</th>
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<tbody>
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<td>12&quot;</td>
<td></td>
<td>10</td>
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<tr>
<td>9002965005</td>
<td>17&quot;</td>
<td>32&quot;</td>
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<td>9002967005</td>
<td>49&quot;</td>
<td>96&quot;</td>
<td></td>
<td>22</td>
</tr>
</tbody>
</table>

**Air Inlet Kit** – An optional Air Inlet kit is available for Direct Vent models installed over open subfloor spaces. The kit allows for horizontal air intake piping up to 30 feet with Schedule 40 PVC pipe.

Order kit number 9002986005 for 30 and 40 gallon models.
Order kit number 9002987005 for 50 gallon models.
Ultra Low NOx Residential Gas Models

**Dimensions & Specifications**

![Diagram of water heater with dimensions labeled A, B, C, D, E, F.]

**Ultra Low NOx - Short Models**
- Model: USN040 40
- Gal. Cap.: 40
- Storage Cap.: 40,000
- Btu/HR Input: 40,000
- 1st Hr. Rating: 0.57
- UEF Rating: 72
- Nominal GPH at 90°F Rise: 47-3/4" 41-1/4" 12"
- Connection: 8" 1/2" 3/4" 3" or 4"
- Weight: 138

**Ultra Low NOx - Tall Models**
- Model: UTN030 30
- Gal. Cap.: 30
- Storage Cap.: 30,000
- Btu/HR Input: 30,000
- 1st Hr. Rating: 0.58
- UEF Rating: 67
- Nominal GPH at 90°F Rise: 17-3/4" 6-1/2" 4-1/4" 11-1/4"
- Connection: 8" 1/2" 3/4" 3" or 4"
- Weight: 126

**Ultra Low NOx Power Vented Models**
- Model: UPN040 40ES
- Gal. Cap.: 40
- Storage Cap.: 42,000
- Btu/HR Input: 42,000
- 1st Hr. Rating: 0.70
- UEF Rating: 76
- Nominal GPH at 90°F Rise: 58-3/4" 51-1/2" 12-1/4"
- Connection: 8" 1/2" 3/4" 2" or 3"
- Weight: 170

**Notes:** Ultra Low NOx Power Vented models are available in Natural gas ONLY. Ultra Low NOx models available in Natural Gas ONLY.

**Standard Features**
- South Coast Approved
- NAECA III Code Compliance
- Flammable Vapor Ignition Resistant
- Electronic Gas Control
- Glass-Lined Steel Tank
- Non-CFC Foam Insulation
- Tank Saver Anode
- Heat Trap
- Sight Glass
- Temperature & Pressure Relief Valve
- Brass Drain Valve

6 Year Limited Tank & Parts Warranty* – See warranty sheet for details.
10 Year Extended Warranty – Available for residential applications only.

* 1-year limited tank & parts warranty when installed in a commercial application.
Power Vented Residential Gas Models

Standard Features

- ENERGY STAR® Qualified
- Flammable Vapor Ignition resistant compliant
- Power Vented Exhaust System w/ PVC/CPVC or Polypropylene
- Side Wall or Vertical Venting w/ PVC/CPVC or Polypropylene
- Non-CFC Foam Insulation
- Glass-Lined Steel Tank
- Tank Saver Anode
- Electronic Gas Control
- Heat Trap
- Temperature & Pressure Relief Valve - Factory installed.
- Brass Drain Valve - Factory installed.
- 6 - Year Limited Tank & Parts Warranty* – See warranty for details.
- 10 - Year Extended Warranty Available – Residential applications only

* 1-year limited tank & parts warranty when installed in a commercial application.

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### Dimensions & Specifications

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<td>45</td>
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<td>50,000</td>
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<td>56</td>
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<td>3/4&quot;, 2&quot;, 3&quot; or 4&quot;</td>
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<td>PVN0605 65ST</td>
<td>65ST*</td>
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<td>69</td>
<td>24&quot;, 51 3/4&quot;</td>
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<td>3/4&quot;, 2&quot;, 3&quot; or 4&quot;</td>
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<tr>
<td>PVN0757 ST</td>
<td>75</td>
<td>72</td>
<td>76,000</td>
<td>0.69</td>
<td>116</td>
<td>80</td>
<td>26&quot;, 61 1/4&quot;</td>
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<td>3/4&quot;, 2&quot;, 3&quot; or 4&quot;</td>
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</tbody>
</table>

Notes: In the model number, "N" indicates Natural gas; replace "N" with "L" to indicate L.P. gas models.
For the 50,000 Btu models, add "ST" to the model number for optional Side Tappings. (Ex: PVN04050ST)
Side Tappings are standard on 62,000 and 76,000 Btu models and not available on 40,000 Btu/hr models.
*PVN075 75ST is not Energy Star qualified.
### Standard Features

- **ENERGY STAR®**
- NAEC III Code Compliance
- Power Direct Vent System
- Electronic Gas Control
- Glass-Lined Steel Tank
- Non-CFC Foam Insulation
- Tank Saver Anode
- Heat Trap
- Sight Glass
- Temperature & Pressure Relief Valve
- Brass Drain Valve

- **6 Year Limited Tank & Parts Warranty***
  - See warranty sheet for details.
- **10 Year Extended Warranty**
  - Available for residential applications only.

* 1-year limited tank & parts warranty when installed in a commercial application.

### Dimensions & Specifications

---

### Vent Kits

<table>
<thead>
<tr>
<th>Vent Kits</th>
<th>Part Number</th>
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</thead>
<tbody>
<tr>
<td>2&quot; Concentric Vent Kit</td>
<td>9000586005</td>
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<tr>
<td>3&quot; Concentric Vent Kit</td>
<td>9006328005</td>
</tr>
<tr>
<td>2&quot; Vent Kit *</td>
<td>330828-000</td>
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<tr>
<td>3&quot; Vent Kit *</td>
<td>330851-000</td>
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<tr>
<td>High Ambient Air Kit **</td>
<td>9009024015</td>
</tr>
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</table>

* Vent Kit includes: Coupling, Termination elbows and Sound Suppressor

** High Ambient Air Kit must be installed with CPVC vent material only

---

### Notes

- In the model number, "N" indicates Natural gas; replace "N" with "L" to indicate L.P. gas models.
- For PRN04040ES & PRN05045ES, add "ST" to the model number for optional Side Tappings. (Ex: PRN04040ESST)
- Propane model rated for 58,000 Btu/hr

---

### Table

<table>
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<td>2&quot;, 3&quot; or 4&quot;</td>
<td>49-1/2&quot;</td>
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<td>PRN050 50ES</td>
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<td>50</td>
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<td>2&quot;, 3&quot; or 4&quot;</td>
<td>2&quot;, 3&quot; or 4&quot;</td>
<td>58-3/4&quot;</td>
<td>192</td>
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<td>PRN050 65ESST</td>
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<td>3/4&quot;</td>
<td>3&quot; or 4&quot;</td>
<td>3&quot; or 4&quot;</td>
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- For PRN04040ES & PRN05045ES, add "ST" to the model number for optional Side Tappings. (Ex: PRN04040ESST)
- Propane model rated for 58,000 Btu/hr
Residential Electric Models

Dimensions & Specifications

Voltage Schedule
- C – 120V 1ø
- J – 208V 1ø
- A – 240V 1ø

Element Availability Schedule

<table>
<thead>
<tr>
<th>Wattage</th>
<th>C - 120V</th>
<th>J - 208V</th>
<th>A - 240V</th>
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<tbody>
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<td>Yes</td>
<td>N/A</td>
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<tr>
<td>D-1650</td>
<td>Yes</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>E-2000</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>F-2500</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>G-3000</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>H-3500</td>
<td>N/A</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>J-4000</td>
<td>N/A</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>K-4500</td>
<td>N/A</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>M-5000</td>
<td>N/A</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>N-5500</td>
<td>N/A</td>
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<td>Yes</td>
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<tr>
<td>P-6000</td>
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Recovery Rate (Gph @ °F)

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<thead>
<tr>
<th>Recovery Rate (Gph @ °F)</th>
<th>40°F</th>
<th>70°F</th>
<th>100°F</th>
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<td>16</td>
<td>9</td>
<td>6</td>
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<tr>
<td>D-1650</td>
<td>17</td>
<td>10</td>
<td>7</td>
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<tr>
<td>E-2000</td>
<td>21</td>
<td>12</td>
<td>8</td>
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<tr>
<td>F-2500</td>
<td>26</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>G-3000</td>
<td>31</td>
<td>18</td>
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<td>H-3500</td>
<td>36</td>
<td>21</td>
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<tr>
<td>J-4000</td>
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<td>24</td>
<td>17</td>
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<tr>
<td>K-4500</td>
<td>47</td>
<td>27</td>
<td>19</td>
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<tr>
<td>M-5000</td>
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<td>30</td>
<td>21</td>
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<tr>
<td>N-5500</td>
<td>57</td>
<td>32</td>
<td>23</td>
</tr>
<tr>
<td>P-6000</td>
<td>62</td>
<td>35</td>
<td>25</td>
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Standard Features

- NAECA III Code Compliance
- Approved for Manufactured Home
- Adjustable Electric Thermostat Control
- Immersion Heating Elements
- Glass-Lined Steel Tank
- Non-CFC Foam Insulation
- Tank Saver Anode
- Heat Trap
- Temperature & Pressure Relief Valve
- Brass Drain Valve

6-Year Limited Tank & Parts Warranty*
- See warranty sheet for details.
10-Year Extended Warranty Available
- Available for residential applications only.

* 1-year limited tank & parts warranty when installed in a commercial application.
Junior Electric Models

Dimensions & Specifications

2.5 Gallon Model

6 - 40 gallon models

Point-Of-Use Models

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<tr>
<td>JEC02BS 2.5</td>
<td>2.6</td>
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<td>1440</td>
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<td>1440</td>
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<td>19-1/4&quot;</td>
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Junior Electric Models with Insulation Blanket

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<td>4500</td>
<td>1650</td>
<td>6000</td>
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<td>4000</td>
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<td>24&quot;</td>
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<td>4500</td>
<td>4500</td>
<td>6000</td>
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<td>21</td>
<td>24&quot;</td>
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Junior Electric Models

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<td>1650</td>
<td>3000</td>
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<td>JRC010DS 10</td>
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<td>21</td>
<td>24&quot;</td>
<td>118</td>
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Note: The Point-Of-Use models are available in 120 volt, 1440 watts only. Water connections are 3/4" NPT.

Standard Features

NAECA III Code Compliance
Approved for Manufactured Home
Adjustable Electric Thermostat Control
Immersion Heating Elements
Glass-Lined Steel Tank
Non-CFC Foam Insulation
Tank Saver Anode
Heat Trap
Temperature & Pressure Relief Valve
Brass Drain Valve

6 Year Limited Tank & Parts Warranty – See warranty sheet for details.
10 Year Extended Warranty – Available for residential applications only.

Optional Equipment

Adjustable Water Heater Shelf - Heavy gauge steel shelves assemble six different ways for convenient wall mounting.

Element Availability Schedule

<table>
<thead>
<tr>
<th>Wattage</th>
<th>C - 120V</th>
<th>J - 208V</th>
<th>A - 240V</th>
</tr>
</thead>
<tbody>
<tr>
<td>1500</td>
<td>N/A</td>
<td>Yes</td>
<td>Yes</td>
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<td>1650</td>
<td>Yes</td>
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<tr>
<td>6000</td>
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Recovery Rate (Gph @°F)

<table>
<thead>
<tr>
<th>Voltage</th>
<th>40°F</th>
<th>70°F</th>
<th>100°F</th>
</tr>
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<tbody>
<tr>
<td>1500</td>
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Residential Heat Pump Electric Models

Dimensions & Specifications

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Available Air Kits
- **Inlet & Outlet Outdoor Air Kit** – The Inlet & Outlet Air Kit adapts the Heat Pump water heater to work with outdoor air. This allows the Heat Pump to be installed in confined spaces and spaces with conditioned air. The kit works with standard 8" flexible duct (field supplied) up to 10 total feet.
- **Booster Fan Kit** – By adding the Booster Fan Kit to the Inlet & Outlet Air Kit, the flexible duct can extend to 25 total feet.

Standard Features

- ENERGY STAR®
- NAEC III Code Compliance
- Electronic Control
- Immersion Heating Elements
- Glass-Lined Steel Tank
- Non-CFC Foam Insulation
- Tank Saver Anode
- Heat Trap
- Temperature & Pressure Relief Valve
- Brass Drain Valve
- 10 Year Limited Tank & Parts Warranty* – See warranty sheet for details.

*1-year limited tank & parts warranty when installed in a commercial application.
**Sun Saver Solar Models**

**Dimensions & Specifications**

**Model Number** | **Gal Cap.** | **Element Wattage** | **GPH@ 90°F Rise** | **A** | **B** | **C** | **D** | **Ship. Wt.**
--- | --- | --- | --- | --- | --- | --- | --- | ---
FTA066KS | 65 | 4500 | 21 | 60-1/4” | 22” | 20-1/2” | 7-1/2” | 152
FTA080KS | 80 | 4500 | 21 | 60-1/4” | 24” | 20-1/2” | 7-1/2” | 191
FTA119KS | 119 | 4500 | 21 | 62” | 28” | 20-1/2” | 7-1/2” | 278

*Notes: Voltage and wattage: 240V 1Ø - 4500W.*

**Standard Features**

- Non-CFC Foam Insulation
- Glass-Lined Tank
- Tank Saver Anode
- Water Connections
- Temperature & Pressure Relief Valve – (Factory Installed)
- Tank Sensor
- Heating Element
- Brass Drain Valve – Factory installed.
- 6-Year Limited Tank & Parts Warranty* – See warranty for details.
- 10-Year Extended Warranty Available – Residential applications only.

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*WATER TAPINGS ARE 3/4” NPT*
Non-Condensing Tankless Models

**LTI-110 INDOOR DIMENSIONS**
CLEARANCES: TOP 12”, BOTTOM 12”, FRONT 4”, BACK 1”, SIDES 3”

**LTI-310 AND LTI-510 INDOOR DIMENSIONS**
CLEARANCES: TOP 12”, BOTTOM 12”, FRONT 4”, BACK 1”, SIDES 3”

**LTI-310 AND LTI-510 INDOOR DIMENSIONS**
CLEARANCES: TOP 12”, BOTTOM 12”, FRONT 4”, BACK 1”, SIDES 3”

**LTO-310 AND LTO-510 OUTDOOR DIMENSIONS**
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<td>20-1/4</td>
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**Standard Features**
- Maximum Flow Rates Up to 10.0 GPM
- Natural Gas or Propane (LP)
- Remote Control
- Power Cord (Indoor Models)
- Low NOx Emissions
- Lead-Free
- Commercial-Grade Copper HEX (510 Model)
- Built-in Freeze Protection
- Manual Reset Hi-Limit
- Overheat Cutoff Fuse

**Optional Accessories**
- Complete Line of Category III Venting
- Recess Box (Outdoor Models)
- Pipe Cover
- Direct-Vent Conversion Kits (Indoor Models)
- Isolation Valve Kits
- Backflow Preventer
- Concentric Termination Kits
Non-Condensing Ultra Low NOx Tankless Models

**Standard Features**
- Field Covertible from Natural Gas to Propane (LP)
- SCAQMD Rule 1146.2 Compliant
- Maximum Flow Rate up to 10.0 GPM
- Remote Control
- Power Cord (Indoor Models)
- Lead-Free
- Copper HEX
- Built-in Freeze Protection
- Manual Reset Hi-Limit
- Overheat Cutoff Fuse
- Inlet and Outlet Thermistors for Constant Temperature Monitoring
- Flame Sensor

**Optional Accessories**
- Complete Line of Stainless Steel Venting
- Recess Box (Outdoor Models)
- Pipe Cover
- Isolation Valve Kits
- Backflow Preventer
- Concentric Termination Kits

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**Outdoor Models**

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Non-Condensing Concentric Vent Tankless Models

**INDOOR MODEL DIMENSIONS**

CLEARANCES: TOP 12”, BOTTOM 12”, FRONT 4”, BACK .5”, SIDES 3”

- **Top view**
- **Front view**
- **Side view**
- **Bottom view**

**Model Numbers**:
- LTI-110C-N Natural 15,000 140,000 4.0 10.5 0.82 6.6 3/4” NPT 3/4” NPT 20-1/2 13-3/4 10-1/2 51
- LTI-310C-N Natural 15,000 190,000 4.0 10.5 0.82 8 3/4” NPT 3/4” NPT 20-1/2 13-3/4 10-1/2 51
- LTI-510C-N Natural 15,000 199,000 4.0 10.5 0.82 10 3/4” NPT 3/4” NPT 20-1/2 13-3/4 10-1/2 51

**Additional Information**:
- **Gas Consumption**
- **Inlet Gas Input**
- **Max. BTU/H**
- **Min. BTU/H**
- **Max. GPM***
- **Hot/Cold Conn.**
- **Gas Conn.**
- **Dimensions in Inches**
- **Height**
- **Width**
- **Depth**
- **Unit Weight**

15-150 psi water pressure. 40 psi or above recommended for maximum flow.

*Field gas convertible from natural gas to propane. Conversion kit is included with the heater.

**For Propane, minimum inlet gas pressure is 8.0 in. W.C. and maximum inlet gas pressure is 14.0 in. W.C.

***Current numbers based on factory testing; 0.5 gpm required for activation; 0.4 gpm required for continuous fire after initial ignition. Certified from sea level to 10,100 ft. elevations.

**Standard Features**
- Concentric Vent Design
- Field Covertible from Natural Gas to Propane (LP)
- SCAQMD Rule 1146.2 Compliant
- Maximum Flow Rate up to 10.0 GPM
- LTI-510C Can be Used in Both Residential and Commercial Applications
- Easy-Link Up to 4 Units
- Multi-Link up to 20 Units
- Lead-Free
- Copper HEX
- Built-in Freeze Protection
- Manual Reset Hi-Limit
- Overheat Cutoff Fuse
- Inlet and Outlet Thermistors for Constant Temperature Monitoring
- Flame Sensor
- Air Fuel Ratio Rod

**Optional Accessories**
- Complete Line of Stainless Steel Venting
- Recess Box (Outdoor Models)
- Pipe Cover
- Isolation Valve Kits
- Backflow Preventer
- Concentric Termination Kits
Condensing High Efficiency w/Pump Tankless Models

**INTEGRATED RECIRCULATION PUMP**
**ENERGY STAR® QUALIFIED**
**AVAILABLE IN NATURAL GAS OR PROPANE (LP)**

**INDOOR MODEL**
- Includes integrated temperature controls and advanced diagnostics to simplify troubleshooting
- Factory-installed power cord

**OUTDOOR MODEL**
- Includes a wall mount temperature remote controller and advanced diagnostics to simplify troubleshooting

**DURABLE HEAT EXCHANGER:**
- Primary heat exchanger is constructed of a commercial-grade copper that is more resilient to erosion. Secondary Heat Exchanger is made of Type 316L Stainless Steel to protect against corrosion.

**COMMON VENT UP TO 8 UNITS**
**COMPLIES WITH LEAD FREE STANDARDS**

**SAFETY FEATURES:**
- Air-Fuel Ratio (AFR) Sensor
- Exhaust & Water Temperature Safety Control
- Overheat Cut-Off Fuse

**INTERNAL FREEZE PROTECTION SYSTEM**
**POWER DIRECT VENT DESIGN**
- Category IV venting can be used
- Exhaust, 3” PVC Venting up to 70 Feet or 4” PVC Venting up to 100 Feet
- Provides flexible venting with PVC, CPVC, or ABS Pipe for Intake and Exhaust (solid core only). Canadian Installations Require ULCS636 Listed PVC or CPVC Pipe for Venting.

**ACCESSORIES**
- Pipe Cover
- Neutralizer Kit
- Isolation Valve Kits
- Concentric Termination
- Product Preservers® Anti-Scale System

**WARRANTY**
- 15-year limited warranty on heat exchanger in residential applications
- 6-year limited warranty on heat exchanger in commercial applications
- 5-year warranty on all parts

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**Gas Consumption Input**

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<th>Type</th>
<th>Min. BTU/H</th>
<th>Max. BTU/H</th>
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Condensing High Efficiency **Tankless Models**

### Dimensions & Specifications

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<td>13-7/8</td>
</tr>
<tr>
<td>Lt-140H-P</td>
<td>Propane</td>
<td>13,000</td>
<td>120,000</td>
<td>8.0</td>
<td>14.0</td>
<td>0.91</td>
<td>6.6</td>
<td>3/4&quot; NPT</td>
<td>13-7/8</td>
</tr>
</tbody>
</table>

All dimensions are in inches.

*Current numbers based on factory testing; 0.5 gpm required for activation; 0.4 gpm required for continuous fire after initial ignition.

Indoor models are certified from sea level to 10,100 ft. elevations.

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

### Standard Features

- Ultra-Low NOx Condensing Technology Provides 0.93 Energy Factor
- Energy Star® Qualified
- SC AQMD Rule 1146.2 Compliant
- Operates on 1/2” Gas Line with Standard Gas Pressure
- Maximum Flow Rate up to 6.6 GPM
- Durable HEX
- Available in Natural Gas or Propane (LP)
- Indoor Models Include Built-In Temperature Controller & Advance Diagnostics
- Indoor Models Include Factory Installed Power Cord
- Outdoor Models Include Wall Mount Temperature Remote Controller & Advanced Diagnostics
- Lead-Free
- Overheat Cutoff Fuse
- Air-Fuel Ratio Sensor

15-Yr Limited Warranty HEX
6-Yr Limited Warranty on HEX
(Commercial Applications)
5-Yr Parts Warranty

### Optional Accessories

- Recess Box
- Pipe Cover
- Isolation Valve Kit
- Neutralizer Kit
- Concentric Termination Kits
Condensing High Efficiency Tankless Models

### Dimensions & Specifications

#### Indoor Models
- **LTI-240H-N**
  - Natural
  - Input: 15,000 - 160,000
  - Max. BTU/H: 4 - 10.5
  - Min. BTU/H: 10.5
  - UEF: 0.94
  - Max. GPM*: 6.6
  - Hot/Cold Conn.: 3/4" NPT / 3/4" NPT
  - Dimensions: 23-5/8" (600 mm) x 17-3/4" (450 mm) x 11-1/4" (285 mm)
  - Weight: 71 lbs

- **LTI-240H-P**
  - Propane
  - Input: 13,000 - 180,000
  - Max. BTU/H: 8 - 14
  - Min. BTU/H: 14
  - UEF: 0.95
  - Max. GPM*: 8
  - Hot/Cold Conn.: 3/4" NPT / 3/4" NPT
  - Dimensions: 23-5/8" (600 mm) x 17-3/4" (450 mm) x 11-1/4" (285 mm)
  - Weight: 71 lbs

- **LTI-340H-N**
  - Natural
  - Input: 15,000 - 199,000
  - Max. BTU/H: 4 - 10.5
  - Min. BTU/H: 10.5
  - UEF: 0.93
  - Max. GPM*: 10
  - Hot/Cold Conn.: 3/4" NPT / 3/4" NPT
  - Dimensions: 23-5/8" (600 mm) x 17-3/4" (450 mm) x 11-1/4" (285 mm)
  - Weight: 71 lbs

- **LTI-340H-P**
  - Propane
  - Input: 13,000 - 199,000
  - Max. BTU/H: 8 - 14
  - Min. BTU/H: 14
  - UEF: 0.93
  - Max. GPM*: 10
  - Hot/Cold Conn.: 3/4" NPT / 3/4" NPT
  - Dimensions: 23-5/8" (600 mm) x 17-3/4" (450 mm) x 11-1/4" (285 mm)
  - Weight: 71 lbs

#### Outdoor Models
- **LTO-240H-N**
  - Natural
  - Input: 15,000 - 160,000
  - Max. BTU/H: 4 - 10.5
  - Min. BTU/H: 10.5
  - UEF: 0.94
  - Max. GPM*: 6.6
  - Hot/Cold Conn.: 3/4" NPT / 3/4" NPT
  - Dimensions: 23-5/8" (600 mm) x 17-3/4" (450 mm) x 11-1/4" (285 mm)
  - Weight: 69 lbs

- **LTO-240H-P**
  - Propane
  - Input: 13,000 - 160,000
  - Max. BTU/H: 8 - 14
  - Min. BTU/H: 14
  - UEF: 0.95
  - Max. GPM*: 8
  - Hot/Cold Conn.: 3/4" NPT / 3/4" NPT
  - Dimensions: 23-5/8" (600 mm) x 17-3/4" (450 mm) x 11-1/4" (285 mm)
  - Weight: 69 lbs

- **LTO-340H-N**
  - Natural
  - Input: 15,000 - 199,000
  - Max. BTU/H: 4 - 10.5
  - Min. BTU/H: 10.5
  - UEF: 0.95
  - Max. GPM*: 10
  - Hot/Cold Conn.: 3/4" NPT / 3/4" NPT
  - Dimensions: 23-5/8" (600 mm) x 17-3/4" (450 mm) x 11-1/4" (285 mm)
  - Weight: 69 lbs

- **LTO-340H-P**
  - Propane
  - Input: 13,000 - 199,000
  - Max. BTU/H: 8 - 14
  - Min. BTU/H: 14
  - UEF: 0.95
  - Max. GPM*: 10
  - Hot/Cold Conn.: 3/4" NPT / 3/4" NPT
  - Dimensions: 23-5/8" (600 mm) x 17-3/4" (450 mm) x 11-1/4" (285 mm)
  - Weight: 69 lbs

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

*Current numbers based on factory testing; 0.5 GPM for activation; 0.4 GPM required for continuous fire after initial ignition.

Indoor models are certified from sea level to 1,000 ft. elevations. Outdoor models are certified from sea level to 6,000 ft. elevation.

#### Standard Features
- Ultra-Low NOx Condensing Technology
- Provides 0.95 Energy Factor
- Energy Star® Qualified
- Maximum Flow Rate up to 10.0 GPM
- LED Display
- Available in Natural Gas or Propane (LP)
- Lead-Free
- Air-Fuel Ratio Sensor
- 15-Yr Limited Warranty HEX
- 6-Yr Limited Warranty on HEX
- (Commercial Applications)
- 5-Yr Parts Warranty

#### Optional Accessories
- Recess Box
- Pipe Cover
- Isolation Valve Kit & Neutralizer Kit
- Concentric Termination Kits
- Product Preservers® Anti-Scale System

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*Images of tankless water heaters and specifications diagrams.*
Another Innovation from Lochinvar

Lochinvar’s Copper-Fin technology not only makes our water heaters and boilers more efficient, it means they also have a smaller footprint. So they save space as well as operating costs.

And now there is a way to get greater flexibility and reliability, save even more space, and get a system that is perfectly matched to a facility — thanks to the use of a Stack Frame from Lochinvar.

Match Load and Capacity

With this versatile stand, you can stack almost any combination of our Copper-Fin, Copper-Fin II, and Efficiency+ water heaters and boilers. So you can achieve the perfect Btu/hr capacity for each application.

For example, a facility needs a Copper-Fin II boiler with a total capacity of 1.6 million Btu/hr. Instead of installing an oversized CHN1802 unit or a smaller CHN1442 model, now you can combine two units – CHN992 and CHN652 models– to exactly match the facility’s needs.

Plus, the total footprint of this combined system is just over 10 inches wider than the 652 unit alone, making it smaller than either the 1802 or 1442 model. All thanks to the Lochinvar Stack Frame.

Added System Benefits

This modular design provides two other important benefits. First, it allows for system turndown for greater efficiency when demand is lower. And second, it ensures against system failure by utilizing two independent but complementary units.

For indoor residential and light commercial needs or commercial applications up to 4 million Btu/hr, the Stack Frame gives greater flexibility without a significant increase in stack size or overall system dimensions.

Once you have determined a facility’s requirements and the exact models needed, utilize the charts provided to calculate total system dimensions.
Copper-Fin® Water Heaters (Models 497-747)

<table>
<thead>
<tr>
<th>Model #</th>
<th>Part #</th>
<th>A**</th>
<th>B**</th>
<th>C</th>
<th>Wt. (Lbs)</th>
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<tbody>
<tr>
<td>CW 497</td>
<td>MSF3002</td>
<td>81-1/2&quot;</td>
<td>51&quot;</td>
<td>24-1/2&quot;</td>
<td>70</td>
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<td>CW 647</td>
<td>MSF3003</td>
<td>84-1/2&quot;</td>
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<td>26&quot;</td>
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<td>CW 747</td>
<td>MSF3003</td>
<td>84-1/2&quot;</td>
<td>70&quot;</td>
<td>26&quot;</td>
<td>128</td>
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</table>

Note: Heater height is 33-1/4" (497-747)

Copper-Fin® Water Heaters (Models 987-2067)

<table>
<thead>
<tr>
<th>Model #</th>
<th>Part #</th>
<th>A**</th>
<th>B**</th>
<th>C</th>
<th>Wt. (Lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CF 402</td>
<td>MSF3002</td>
<td>67-1/2&quot;</td>
<td>59&quot;</td>
<td>24-1/2&quot;</td>
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<tr>
<td>CF 502</td>
<td>MSF3002</td>
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</tr>
<tr>
<td>CF 652</td>
<td>MSF3003</td>
<td>67-1/2&quot;</td>
<td>80&quot;</td>
<td>24-1/2&quot;</td>
<td>132</td>
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<tr>
<td>CF 752</td>
<td>MSF3003</td>
<td>67-1/2&quot;</td>
<td>80&quot;</td>
<td>24-1/2&quot;</td>
<td>132</td>
</tr>
<tr>
<td>CF/CF 987/992</td>
<td>MSF3007</td>
<td>80&quot;</td>
<td>68&quot;</td>
<td>36&quot;</td>
<td>170</td>
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<tr>
<td>CF/CF 1257/1262</td>
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<td>CF/CF 1437/1442</td>
<td>MSF3008</td>
<td>80&quot;</td>
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<tr>
<td>CF/CF 1797/1802</td>
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<td>80&quot;</td>
<td>114&quot;</td>
<td>36&quot;</td>
<td>251</td>
</tr>
</tbody>
</table>

Note: Heater height is 31-1/2" (402-2072) & 36" (987-2072)

* To vent connection
** Allow space for plumbing connections