state
WATER HEATERS

TANKLESS

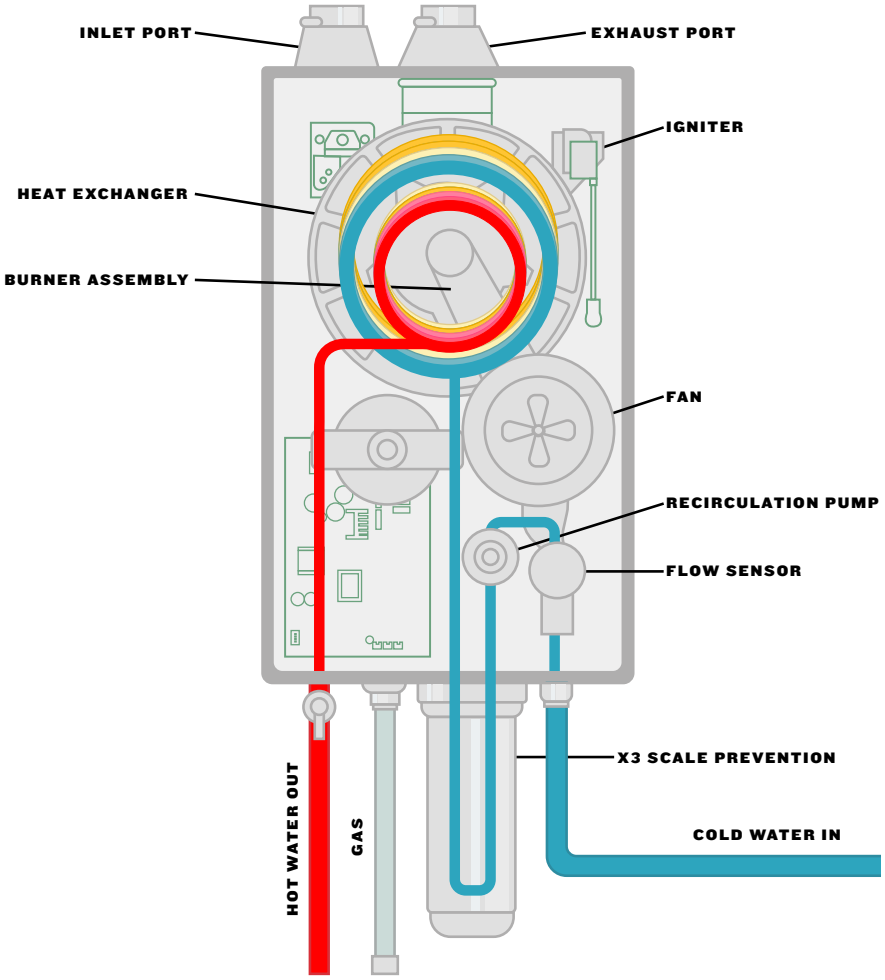
PRODUCT GUIDE

TABLE OF CONTENTS

TANKLESS ADVANTAGE

How It Works – The Process:

- A hot water tap is opened.
- The opened tap allows water to flow through the water heater. An internal water flow sensor detects this flow.
- Upon flow detection, the flow sensor sends the activation signal to the computer board.
- The computer automatically ignites the burner.
- As water flows through the heat exchanger, it absorbs heat from the burner.
- By the time the water exits the heater, it has reached the designated set temperature.
- When the hot water tap is closed, the water heater automatically turns off.



Endless Hot Water

Heating water only as it's being used means you will never run out of hot water again. After the few seconds it takes for the water to reach the designated set temperature, our water heaters will continually provide a steady flow of hot water for as long as your application needs it (when sized appropriately for your home).

Energy Conservation

Provides you with continuous hot water in one of the most energy-efficient ways possible. Conventional tank-type water heaters will heat and store a set volume of water, regardless of whether someone is using that hot water or not. Because our tankless water heaters only activate when hot water is being used, no standby energy losses are incurred, providing efficient heating while conserving energy.

Compact Size

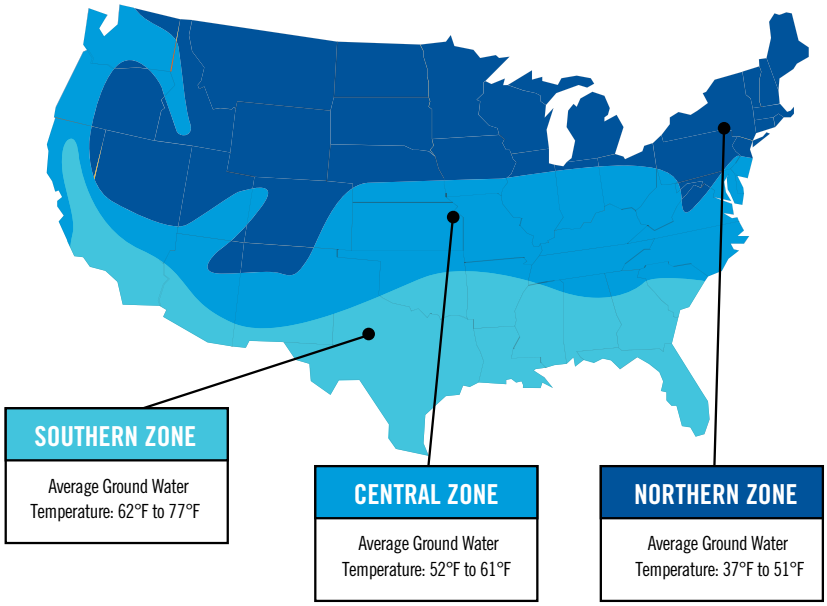
On top of all this, an State tankless water heater takes up much less space than your conventional tank-type water heater or boiler. State's wall-mount design offers flexible installations freeing up valuable storage space.

Technology

Choose from a variety of models each offering a range of features and value. From quality entry level noncondensing units with single heat exchangers to more energy efficient standard condensing models equipped with primary and secondary heat exchangers to State's latest ADAPT premium condensing series with a single, heavy duty stainless-steel heat exchanger and advanced features delivering the best in efficiency and owner satisfaction. Integrated recirculation pump, scale prevention technology, remote activation, and Wi-Fi functionality are among the many available options.

SIMPLE TANKLESS SIZING

Average Ground Water Temperature



Remember, these are general recommendations. Your State Water Heater Specialist can review your family's needs in even greater detail to make sure the model you choose will always provide enough hot water to meet the demand.

Tankless Models Ground Water Temperature Factor

The temperature of incoming ground water (cold water inlet temperature) varies greatly throughout the U.S. and also fluctuates with the changing of the seasons. The temperature of water as it enters the water heater will determine the amount of "temperature rise" required to achieve the desired hot water outlet temperature (120°F is recommended).The best way to measure incoming ground water temperature is to use a thermometer to measure cold water temperature during the coldest season of the year. To simplify the process, use this map to determine whether your installation location is in the Southern Zone, Central Zone or Northern Zone.

Peak Hot Water Demand

The next step is to determine how many gallons per minute of hot water will be required during the busiest usage period (peak demand). Consider all appliances and fixtures that use hot water, including lavatory faucets, kitchen faucets, washing machines, dishwashers, showers and bathtubs. Be sure to determine how many appliances and fixtures will be used at the same time (peak demand).

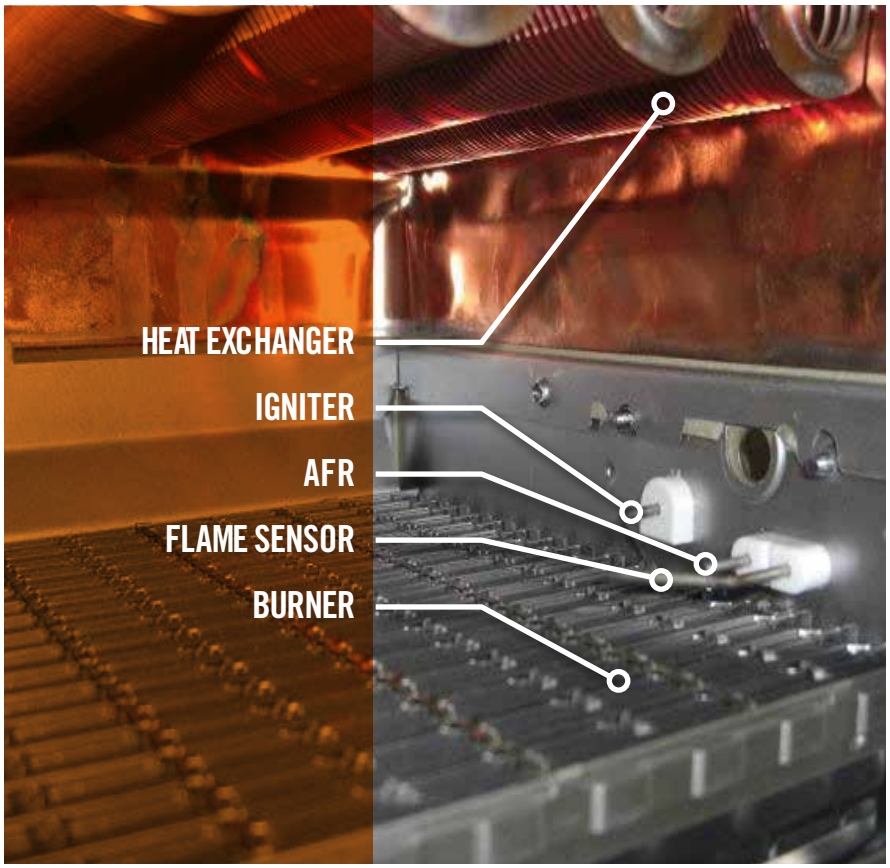
SAFETY FEATURES: STANDARD CONDENSING AND NON-CONDENSING

At State, we place the safety and reliability of our products above all else. By incorporating technologically advanced safety features into every model, we provide the assurance and peace of mind that can only come from a State quality product.

Air-Fuel Ratio (AFR) Sensor

State's unique AFR sensor monitors and maintains proper combustion at all times. Together with the onboard computer, this system will adjust the fan motor speed to ensure that air and fuel have a proper mixture ratio, minimizing emissions and maximizing efficiency.

Traditional Combustion Design



Additional Safety Features

Freeze Protection:
Every heater in State's tankless lineup has an internal freeze protection system, which is rated to protect the heaters when installed in sub-freezing conditions. This system works to keep water temperatures within the heat exchanger from falling below a certain level, preventing freeze damage.

PVC Venting:
Indoor condensing models have a thermistor and hi-limit switch that monitor the exhaust temperature. If the exhaust temperature nears an unsafe limit, these features regulate combustion and can shut the heater down to protect the integrity of the PVC vent material.

Overheat Cutoff Fuse:
Ensures that there are no breaches in the heat exchanger drum. In cases where enough physical damage might have been done to the water heater to lead to a breach in the heat exchanger drum, the overheat cutoff fuse reacts by shutting down the water heater if the surface of the heat exchanger retains too much heat.

Self Diagnostics:
All State gas tankless water heaters are programmed with self-diagnostic functions for safety and convenience when troubleshooting. If a problem arises, the unit will display an error code to alert and help lead to a resolution.

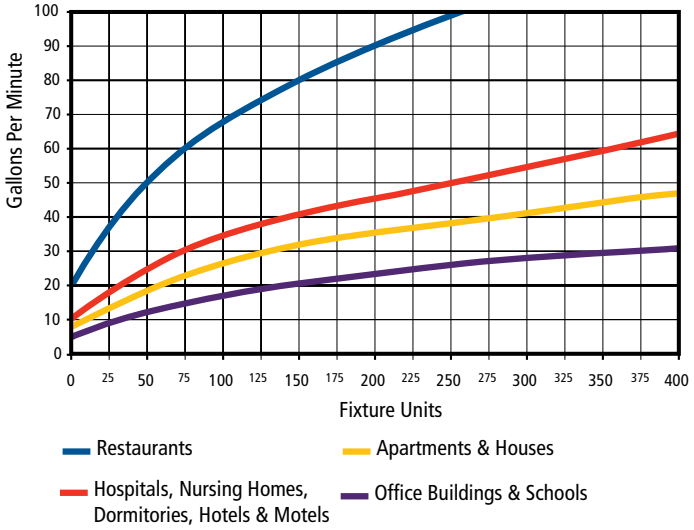
FLOW RATE GUIDE

Temperature Rise vs. Gallons per Minute

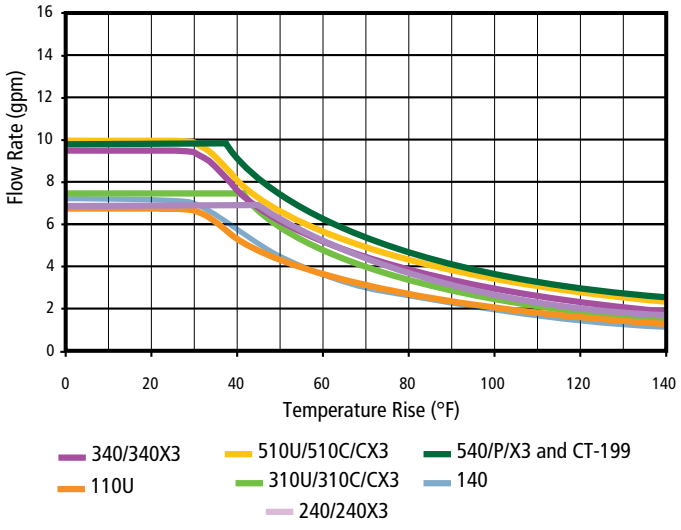
Temp Rise	110U	310U/C	510U/C	140	240/240X3	340/340X3	540/P/ 540X3	CT-199	540/P/ 540X3	160M 160X3	180M 180X3	199M 199X3
30°	6.6	8.0	10.0	6.6	6.6	8.0	10.0	10.0	10.0	10.1	10.5	10.5
35°	6.6	8.0	9.3	6.4	6.6	8.0	10.0	10.0	10.0	8.7	9.8	10.5
40°	5.7	7.8	8.1	5.6	6.6	8.0	9.5	9.5	9.5	7.6	8.6	9.5
45°	5.1	6.9	7.2	5.0	6.6	7.6	8.4	8.4	8.4	6.8	7.6	8.4
50°	4.6	6.2	6.5	4.5	6.1	6.8	7.6	7.6	7.6	6.1	6.8	7.6
55°	4.2	5.7	5.9	4.1	5.5	6.2	6.9	6.9	6.9	5.5	6.2	6.9
60°	3.8	5.2	5.4	3.7	5.1	5.7	6.3	6.3	6.3	5.1	5.7	6.3
65°	3.5	4.8	5.0	3.4	4.7	5.3	5.8	5.8	5.8	4.7	5.3	5.8
70°	3.3	4.4	4.7	3.2	4.3	4.9	5.4	5.4	5.4	4.3	4.9	5.4
75°	3.1	4.1	4.3	3.0	4.1	4.6	5.0	5.0	5.0	4.1	4.6	5.0
80°	2.9	3.9	4.1	2.8	3.8	4.3	4.7	4.7	4.7	3.8	4.3	4.7
85°	2.7	3.7	3.8	2.6	3.6	4.0	4.4	4.4	4.4	3.6	4.0	4.4
90°	2.5	3.5	3.6	2.5	3.4	3.8	4.2	4.2	4.2	3.4	3.8	4.2
95°	2.4	3.3	3.4	2.3	3.2	3.6	4.0	4.0	4.0	3.2	3.6	4.0
100°	2.3	3.1	3.3	2.2	3.0	3.4	3.8	3.8	3.8	3.0	3.4	3.8

Flow rate is determined by temperature rise. To determine your temperature rise, subtract the incoming water temperature from the set output temperature. All units are factory set to 120°F or 122°F but can be changed.

Example of Hunter Curves for Sizing Large Applications



Comparison of Flow Rates vs. Temperature Rise



BASIC SIZING GUIDELINES

The flow rate capacity of tankless water heaters depends on the temperature difference between the desired output and incoming water temperature.

State water heaters are sized according to the peak flow rate requirements, worst-case temperature-rise scenarios, and types of applications. Once these factors have been determined, refer to either the flow rate comparison here or the flow rate charts found in each model's specifications. Select the appropriate water heater as well as the amount of water heaters required.

Application designers/engineers can decide whether to size for full flow, expected flow, or utilize probability models such as the modified "Hunter Curve." For large scale applications such as hotels, apartment complexes and large restaurants, Hunter Curves are commonly used to estimate the peak flow rate demand when given the total amount of fixture units within an application.

Match the Unit to Your Needs

	Warmer Climates 70°F Incoming Groundwater Temperature	Cooler Climates 50°F Incoming Groundwater Temperature
	Capacity - Number of Shower Heads (Assuming the set point temperature is 120°F)	
Condensing Units		
540/P/X3 199M/199X3	4.5 Showers 	3 Showers 
340/340X3 180M/180X3	4 Showers 	2.5 Showers 
240/240X3 160M/160X3	3.5 Showers 	2.5 Showers 
140	2.5 Showers 	1.5 Showers 
Non-Condensing Units		
510U/C/CX3	3.5 Showers 	2.5 Showers 
310U/C/CX3	3.5 Showers 	2.5 Showers 
110U	2.5 Showers 	1.5 Showers 
Commercial Units		
CT-199	4.5 Showers 	3 Showers 

OVERCOMING HARD WATER SCALE

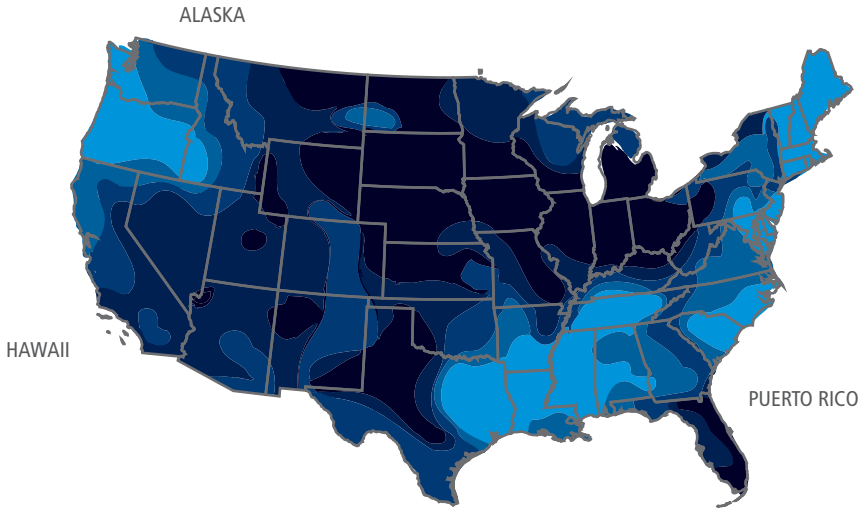
Hard water is everywhere. In fact, more than 85% of American homes have hard water which adversely affects plumbing systems, including water piping, water fixtures and the water heating system.

What is hard water and hard water scale?

Water is classified as “hard” when it has a high mineral content, specifically magnesium and calcium (Ca2+ and Mg2+ ions). Hard water is not considered a health risk and these minerals generally remain dissolved in the water. However, problems arise when the minerals precipitate out of the water and leave behind a solid mineral buildup. This buildup, called scale, reduces water flow through pipes and fixtures, reduces the energy efficiency of water heating equipment and causes damage to the heat exchangers within tankless water heaters. Scale formation is based on water hardness levels and the temperature, not on the material the scale is adhering to. For example, hard water scale would form equally on a copper surface as it would on a stainless steel surface, given the same hardness level and temperature of water.

What does hard water scale do to my water heater?

Scale is the number one threat to tankless water heaters where it reduces energy efficiency and damages the heater. When hard water scale forms a layer coating on the inside wall of a tankless heat exchanger fin pipe, it acts as a thermal insulator. This insulation effectively prevents a significant amount of heat from the burners to properly transfer into the water within the piping. Because the heat is not transferring into the water, the heat exchanger material retains this excess heat, eventually overheating and becoming damaged. Once scale forms, scale removal maintenance can be performed, but the heater will never return to peak efficiency. Without scale removal, the heat exchanger piping will eventually leak.



Classification	GPG (Grains Per Gallon)
Slightly Hard	Less than 3
Moderately hard	3 to 7
Hard	7 to 10
Very Hard	10 to 14
Extremely Hard	Over 14

The U.S. Department of Interior and the Water Quality Association

How is the hardness of water measured?

Water hardness is measured in either parts per million (ppm) or grains per gallon (gpg). Anything greater than 3 gpg is generally considered hard (United States Geological Survey).

OVERCOMING HARD WATER SCALE

How do I prevent hard water scale?

X3 Scale Prevention Technology

State has combined its expertise in water heating and treatment to create X3® Scale Prevention Technology. By preventing scale from ever forming, this feature extends the life of the unit three times longer than traditional tankless. This makes it the first tankless product that maintains “like-new” performance without requiring any scale-related maintenance.

State stands behind this revolutionary product with the industry’s first ever “Peace of Mind” limited warranty. Unlike competitive warranties, this 15-year limited warranty covers scale-related failures should they occur.

Tankless with X3 Technology

Still running after 19.7 simulated years and 460,000 gallons

Unprotected tankless:

Failed at 5.8 simulated years and 136,000 gallons

Product Preservers®

For applications when X3® Technology is not available, State Product Preservers anti-scale filters protect your tankless water heater from damage due to scale formation. This system does not add chemicals to the water or require electricity. As water flows through the filter, hard water minerals form inactive scale crystals which flow through the water heater without sticking to the heat exchanger.

Product Preservers are not needed for units with X3 Technology. Product Preservers filters are a minimal maintenance solution, which require replacement every two years.

Sizing Chart

Flow Rate Based Ground Water Temperature (assume 120°F Set point)

		Tankless Model	110U	310U/C	510U/C	140	240	340	540/P	910	CT-199
Ground Water Temperature (°F)	Warmer Climate	85°F	6.6	8	9.3	6.4	6.6	8.0	10.0	14.5	10.0
		80°F	5.7	7.8	8.2	5.6	6.6	8.0	9.5	14.5	9.5
		75°F	5.1	6.9	7.3	5.0	6.6	7.6	8.4	13.5	8.4
		70°F	4.6	6.2	6.5	4.5	6.1	6.8	7.6	12.2	7.6
		65°F	4.2	5.7	5.9	4.1	5.5	6.2	6.9	11.0	6.9
		60°F	3.8	5.2	5.4	3.7	5.1	5.7	6.3	10.1	6.3
		55°F	3.5	4.8	5.0	3.4	4.7	5.3	5.8	9.4	5.8
	Colder Climate	50°F	3.3	4.5	4.7	3.2	4.3	4.9	5.4	8.7	5.4
		45°F	3.1	4.2	4.4	3.0	4.1	4.6	5.0	8.1	5.0
		40°F	2.9	3.9	4.1	2.8	3.8	4.3	4.7	7.6	4.7
		35°F	2.7	3.7	3.8	2.6	3.6	4.0	4.5	7.2	4.5

100291509 Product Preservers® Anti-Scale System — Requires multiple units

DURABILITY - STANDARD CONDENSING

State tankless products are built with commercial-grade materials to ensure durability and reliability.

Commercial-Grade Copper Alloy

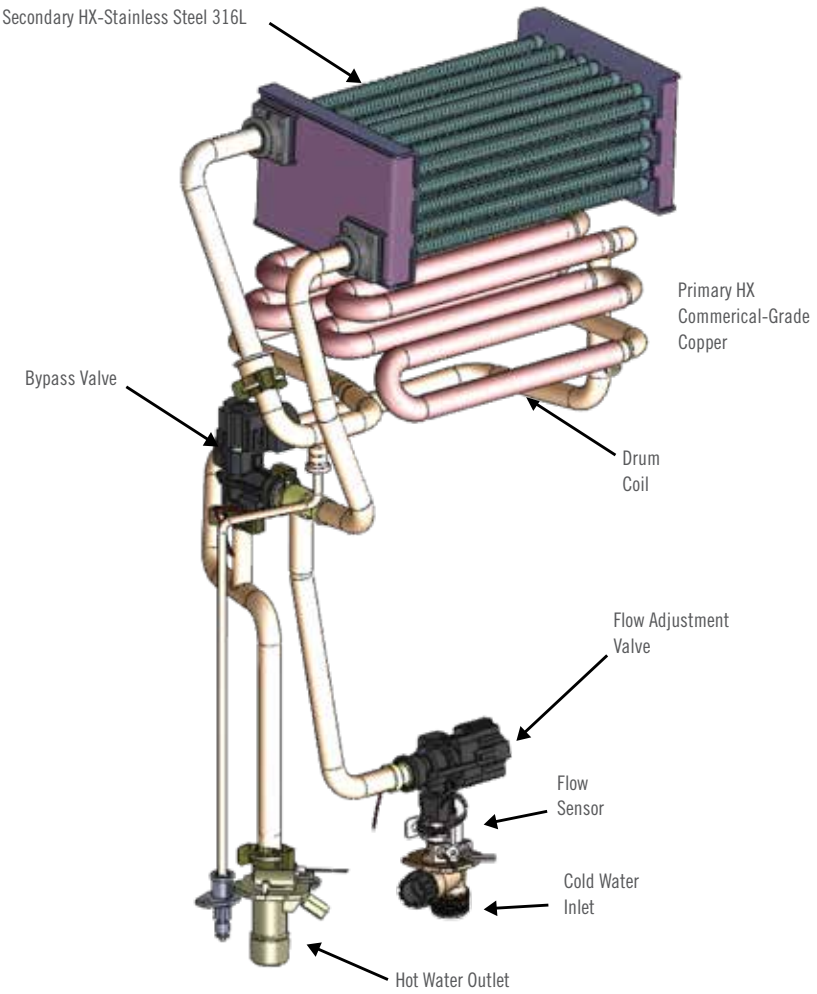
Our commercial-grade copper is a heat-resistant copper alloy, with additive elements that give it eight times the tensile strength of regular copper. Even at high temperatures, our commercial-grade copper maintains a fine grain and high strength. Commercial-grade copper provides resistance to the damaging effects of erosion that can cause heat exchangers to leak.

316L Stainless Steel

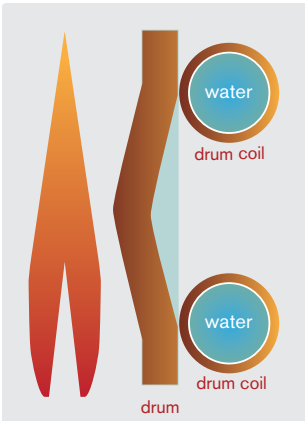
State condensing models utilize 316L stainless steel in the secondary heat exchanger. Stainless steel performs well in extreme environments including heat, acidic condensation and chloride.

Drum Thickness

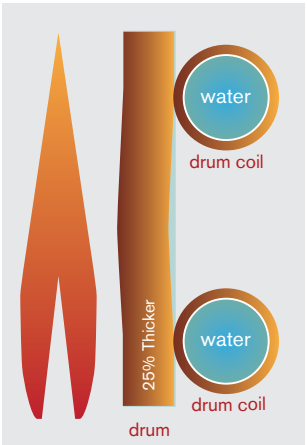
During every ignition cycle, thermal expansion causes all heat exchangers to undergo heat stress. After the thousands of ON/OFF cycles typically seen in a commercial application, this heat stress can prove damaging. This is why the heat exchangers in our commercial and light commercial products utilize drums that are 25% thicker, ensuring the longevity of our products. A thicker drum creates less strain on the heat exchanger.



A thinner drum strains more under heat stress



A thicker drum creates less strain on the heat exchanger



DURABILITY - ADAPT ™ PREMIUM CONDENSING

HD Stainless Steel Construction

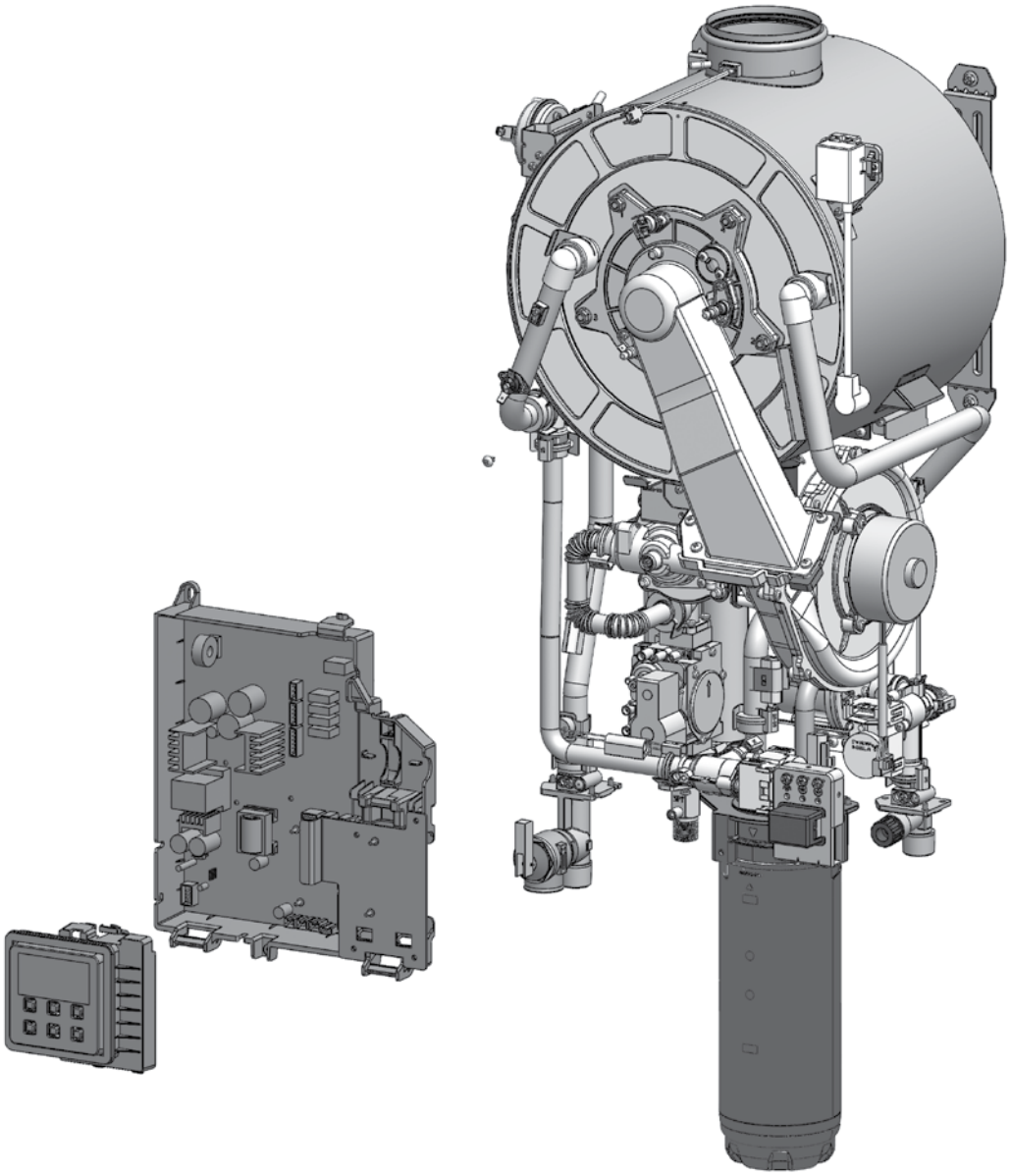
State's ADAPT Premium series incorporates a unique single, heavy duty heat exchanger reminiscent of the barrel-type found in high-tech boiler systems.

Single Tube / Reduced Welds

Inside the heat exchanger is a double coiled single stainless steel tube with only two internal welds points at the inlet and outlet. Water first circulates along the outer coil as it begins to heat before returning along the inner coil where most of the heat input occurs. This single coil design is highly efficient and durable.

Resistent to Scale & Corrosion

Stainless steel tubing, coiled flow pattern, and minimal weld points greatly enhance the ADAPT heat exchanger's resilience against both scale buildup and corrosion.



VALVES AND WATER FLOW

Making true commercial-grade water heaters involves more than just redesigning our heat exchangers—every internal component has to measure up to State's commercial standards. Just like our advanced heat exchangers, the longevity and functionality of components such as our water valves and flow sensors are also of great importance.

Our commercial-grade water heaters (510C/510CX3, 540 and 540P/X3), as well as our commercial water heaters (CT-199) feature a bypass and flow adjustment valve, which not only provide the optimal control and precision essential for commercial usage, but also offer the durability needed to handle tough, high-volume conditions.

Bypass Valve - 510U/C,
CT-199 and 540H Models

Flow Adjustment - 510U/C,
CT-199 and 540H Models

Water Flow

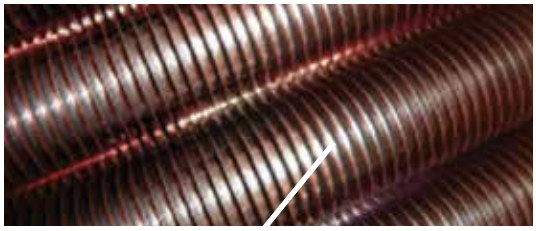
Condensation can build up over time in any heat exchanger, causing damage and premature leaks. State's commercial models (model includes) include condensation reduction features that safeguard against these types of damaging effects.

Better Water Pathway Design

By redesigning and redirecting the flow of water, the temperature of the heat exchanger drum and finned coils stay elevated above dew point, making it much more difficult for condensation to build.

Fin Pitch

By widening the pitch of the heat exchanger fins, not only do we improve durability by reducing occurrences of blockage, we also maintain higher temperatures on the upper finned coils. Keeping these coils at elevated temperatures reduces the likelihood of condensation buildup.



ADAPT™ PREMIUM CONDENSING

Indoor and Outdoor X3 Model Configurations, Outdoor Vent Cap Kit sold separately.

Features

X3® Scale Prevention Technology: Integrated into all X3 models; optional accessory for Bypass (M) models

No annual descaling for X3 models

No scale buildup means the heater maintains like-new performance longer

Integrated Recirc Pump: Means hot water faster to fixtures throughout the home; set multiple schedules and with optional remote activation accessories

Universal indoor or outdoor installation; Outdoor Vent Cap Kit sold separately

Field convertible from Natural Gas to Liquid Propane, kit included

½"Gas Line or larger

Exhaust venting, 2" PVC up to 75' (23 m); 3" PVC up to 150' (45.7 m)

Warranty

- *No hardwater exclusions for X3 models - the industry's first "peace of mind" limited warranty
- 15-year limited warranty on heat exchanger in residential applications
- 5-year limited warranty on all parts in residential applications
- 1-year limited warranty on heat exchanger and parts in commercial applications
- Refer to statewaterheaters.com for further warranty details

Specifications

Model Number	Type	Gas Consumption Input		Inlet Gas Pressure	
		Minimum (BTU/H)	Maximum (BTU/H)	Minimum (in. W.C.)	Maximum (in. W.C.)
STHR-160X3	Indoor / Outdoor	9,000	160,000	3.5	10.5
STHR-180X3	Indoor / Outdoor	9,000	180,000	3.5	10.5
STHR-199X3	Indoor / Outdoor	9,000	199,000	3.5	10.5
STHR-160M	Indoor / Outdoor	9,000	160,000	3.5	10.5
STHR-180M	Indoor / Outdoor	9,000	180,000	3.5	10.5
STHR-199M	Indoor / Outdoor	9,000	199,000	3.5	10.5

Model Number	Maximum GPM	Hot/Cold Connections	Gas Connection	Approx Shipping Weight (lbs)
STHR-160X3	10.5	3/4" NPT	3/4" NPT	125
STHR-180X3	10.5	3/4" NPT	3/4" NPT	125
STHR-199X3	10.5	3/4" NPT	3/4" NPT	125
STHR-160M	10.5	3/4" NPT	3/4" NPT	125
STHR-180M	10.5	3/4" NPT	3/4" NPT	125
STHR-199M	10.5	3/4" NPT	3/4" NPT	125

Temperature Settings	120°F (Default Setting)		
	100-140°F (5°F Increments)		
Electric	120 V	60 Hz	1.63 Amps

*Exclusions apply to M models.

AHRI CERTIFIED® www.ahridirectory.org

Meets: SCAQMD Rule 1146.2 California and Texas

ENERGY STAR

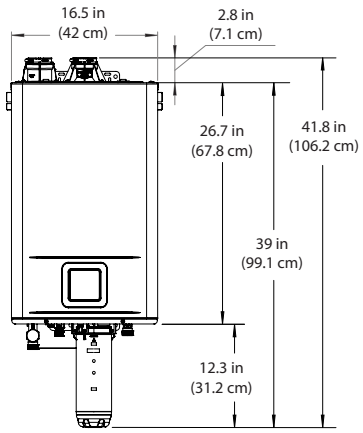
DESIGN CERTIFIED

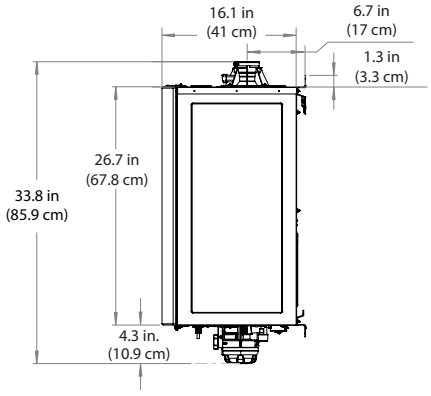
C SP US LLC

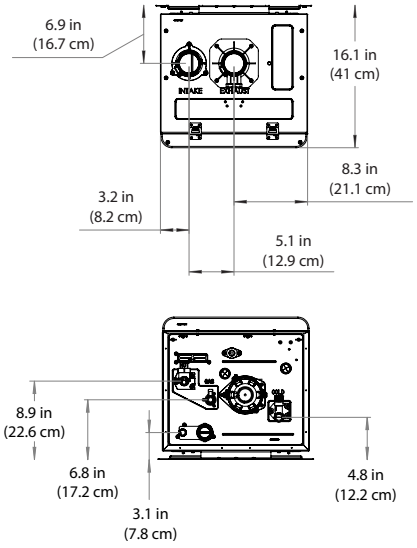
ANSI Z21.10.3 • CSA 4.3

Dimensions

Model Number	Clearances (inches)			
	Top	Bottom	Side	Front
STHR-160X3	12	18	3	4
STHR-180X3	12	18	3	4
STHR-199X3	12	18	3	4
STHR-160M	12	18	3	4
STHR-180M	12	18	3	4
STHR-199M	12	18	3	4







Accessories

Pipe Cover
(100374697)

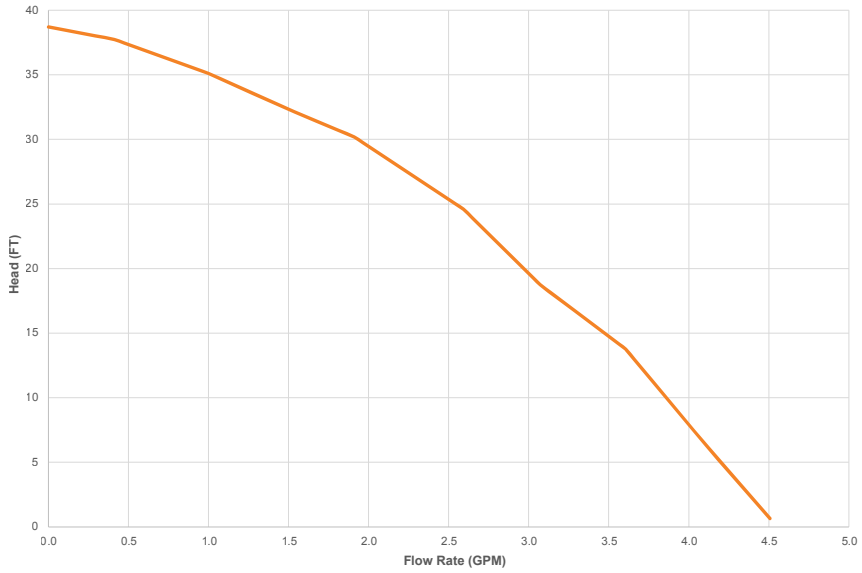
X3 Cartridge
(100368986)

Outdoor Vent Cap
(100769060)

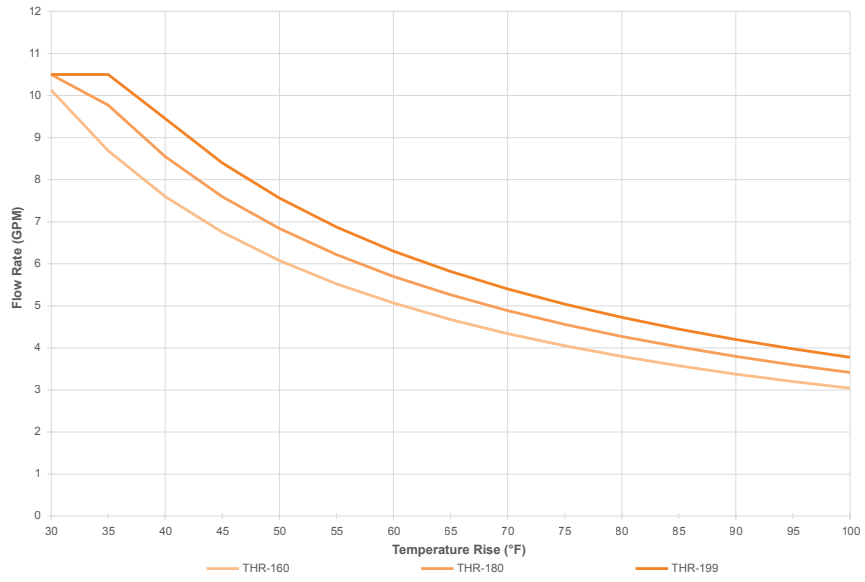
Wi-Fi Module Kit
(100371922)

Cross Over
Valve Kit
(100327167)

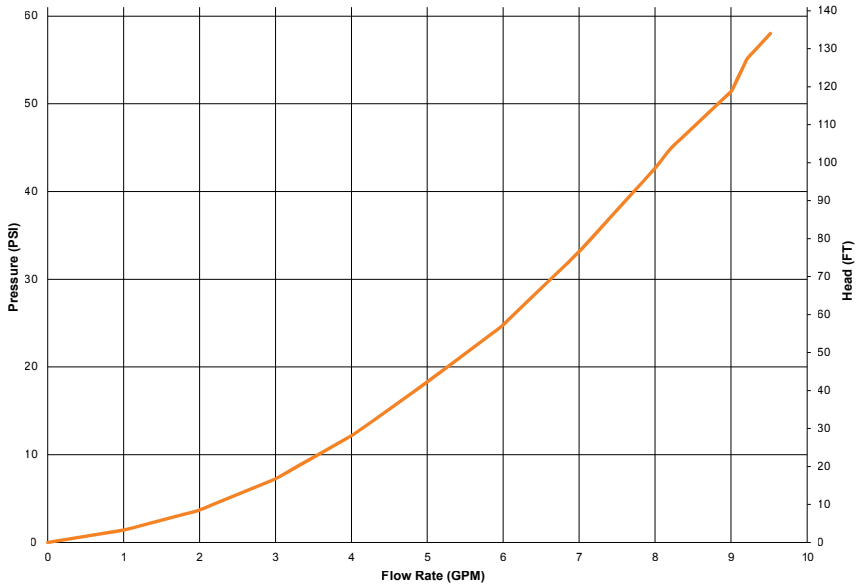
Pump Performance



THR Flow Rate Capacity



Pressure Loss



RESIDENTIAL STANDARD CONDENSING

Features

X3® Scale Prevention Technology: No annual descaling required

No scale buildup means the heater maintains like-new performance longer

3" venting up to 70 equivalent feet

Recirc Capable

- Tankless water heaters with X3 Technology are approved to work with an external recirculation pump and cross-over valve. See manual for full details.

Warranty

- No hardwater exclusions in the industry's first "peace of mind" limited warranty
- 15-year limited warranty on heat exchanger in residential applications
- 5-year limited warranty on all parts in residential applications
- 1-year limited warranty on heat exchanger and parts in commercial applications
- Refer to statewaterheaters.com for further warranty details

Specifications

Model Number*	Type	Gas Consumption Input **		Inlet Gas Pressure**		UEF
		Minimum (BTU/H)	Maximum (BTU/H)	Minimum (in. W.C.)	Maximum (in. W.C.)	
GTS-540X3-NIH	Natural	15,000	199,000	4.0	10.5	0.93
GTS-540X3-NEH+	Natural	15,000	199,000	4.0	10.5	0.95
GTS-340X3-NIH+	Natural	15,000	180,000	4.0	10.5	0.95
GTS-340X3-NEH	Natural	15,000	180,000	4.0	10.5	0.94
GTS-240X3-NIH	Natural	15,000	160,000	4.0	10.5	0.94
GTS-240X3-NEH+	Natural	15,000	160,000	4.0	10.5	0.95

Model Number*	Maximum GPM	Hot/Cold Connections	Gas Connection	Approx Shipping Weight (lbs)
GTS-540X3-NIH	10	3/4" NPT	3/4" NPT	73
GTS-540X3-NEH	10	3/4" NPT	3/4" NPT	73
GTS-340X3-NIH	8	3/4" NPT	3/4" NPT	72
GTS-340X3-NEH	8	3/4" NPT	3/4" NPT	71
GTS-240X3-NIH	6.6	3/4" NPT	3/4" NPT	72
GTS-240X3-NEH	6.6	3/4" NPT	3/4" NPT	71

*For propane models, change "N" to "P"
**For propane models, minimum fire is 13,000 BTU/H, minimum inlet gas pressure is 8.0 in. W.C. and maximum inlet gas pressure is 14.0 in. W.C.
†ENERGY STAR® Qualified

Temperature Settings	120°F (Default Setting)		
	100-140°F (5°F Increments)		
Electric	120 V	60 Hz	1.63 Amps

AHRI CERTIFIED® www.ahridirectory.org

Meets: SCAQMD Rule 1146.2 California and Texas

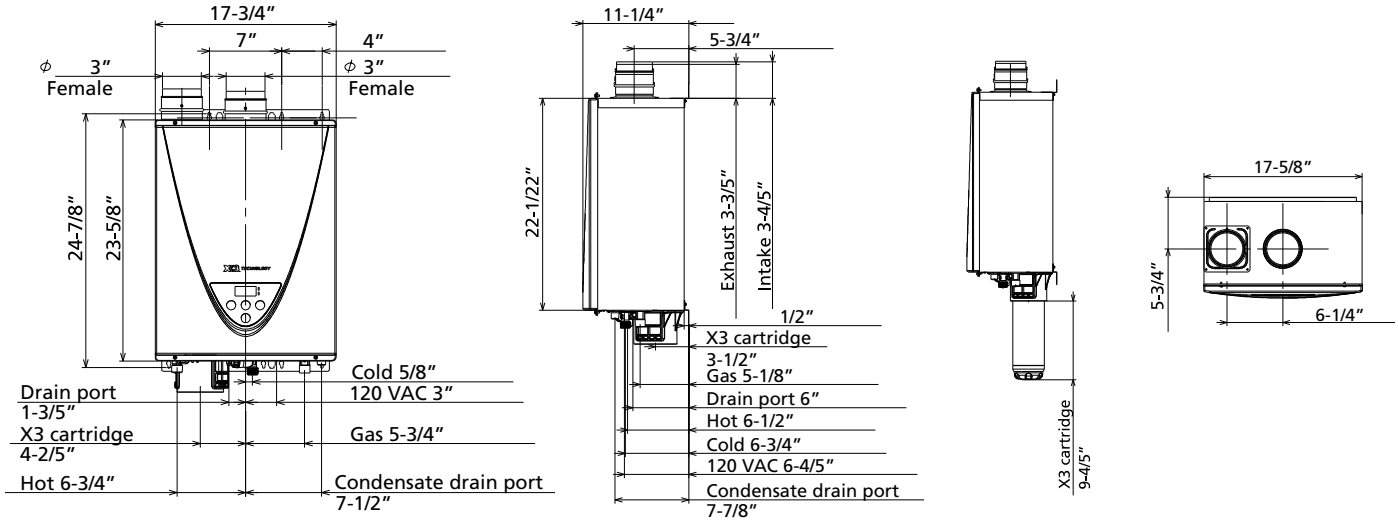
ENERGY STAR Select models

LOW-LEAD IAPMO R&T

ANSI Z21.10.3 • CSA 4.3

Dimensions

Model Number	Clearances (inches)			
	Top	Bottom	Side	Front
GTS-540X3-NIH	12	12	3	4
GTS-540X3-NEH	36	12	3	24
GTS-340X3-NIH	12	12	3	4
GTS-340X3-NEH	36	12	3	24
GTS-240X3-NIH	12	12	3	4
GTS-240X3-NEH	36	12	3	24



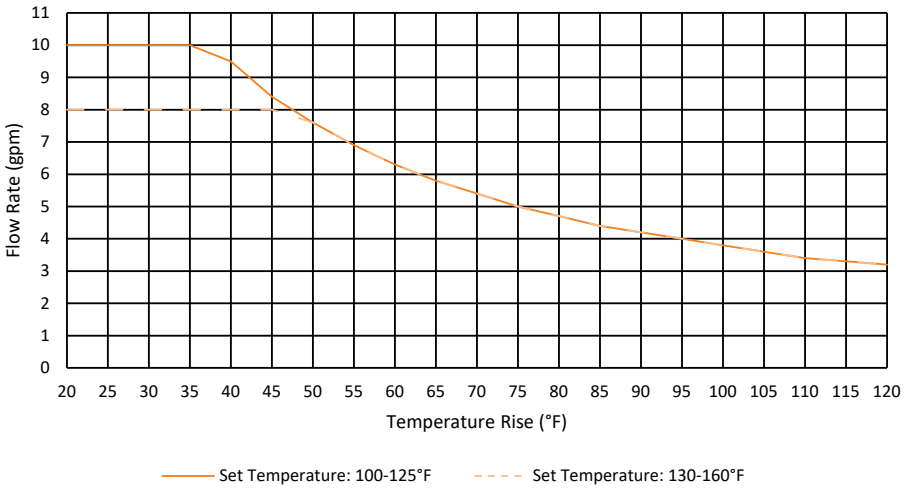
Accessories

Recess Box Retrofit: (100298009)
New Construction: (100306285)

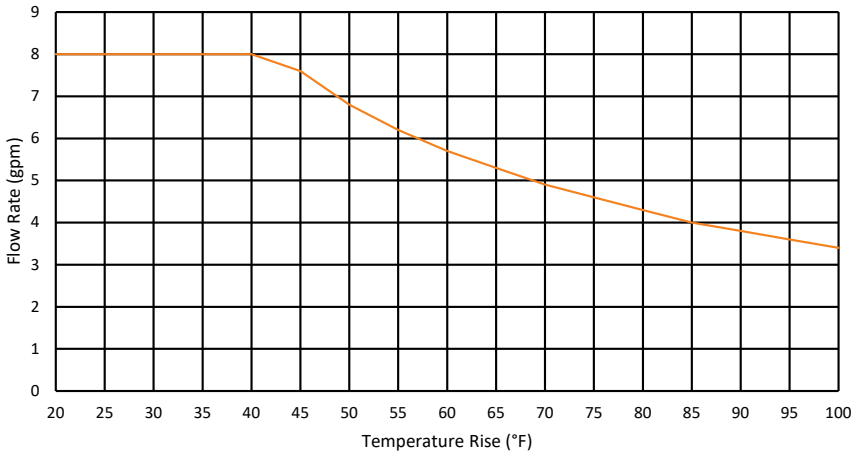
Pipe Cover (100112718)

Remote Temperature Controller (100276687)

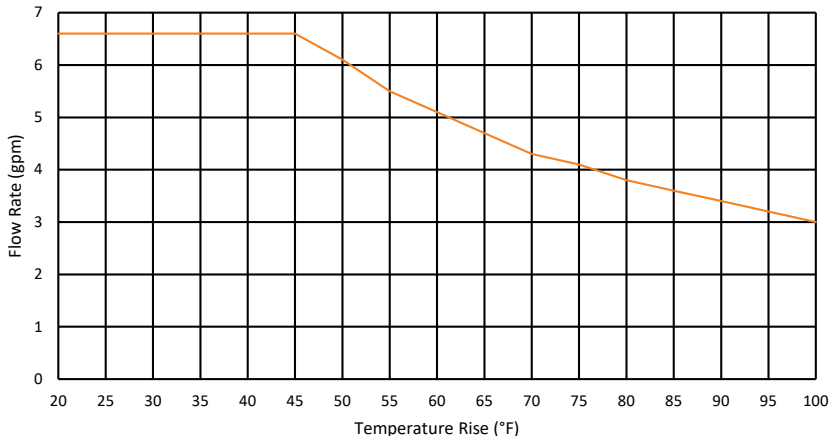
540X3 Output Temp vs. GPM



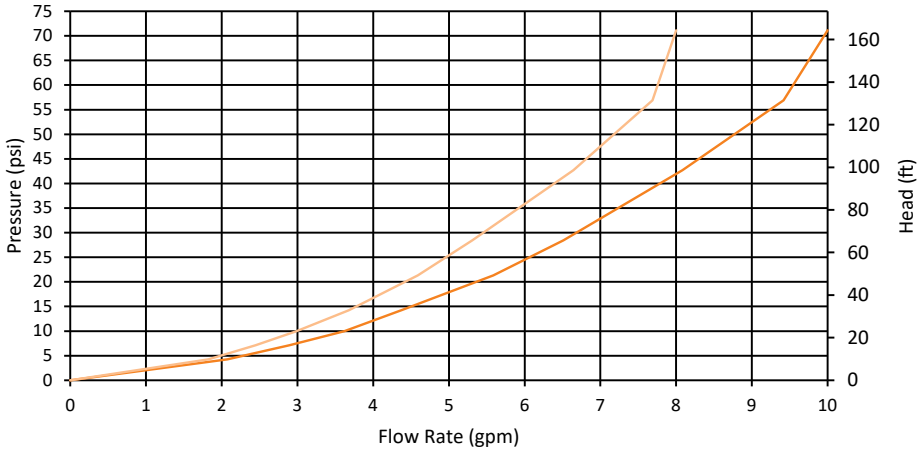
340X3 Output Temp vs. GPM



240X3 Output Temp vs. GPM

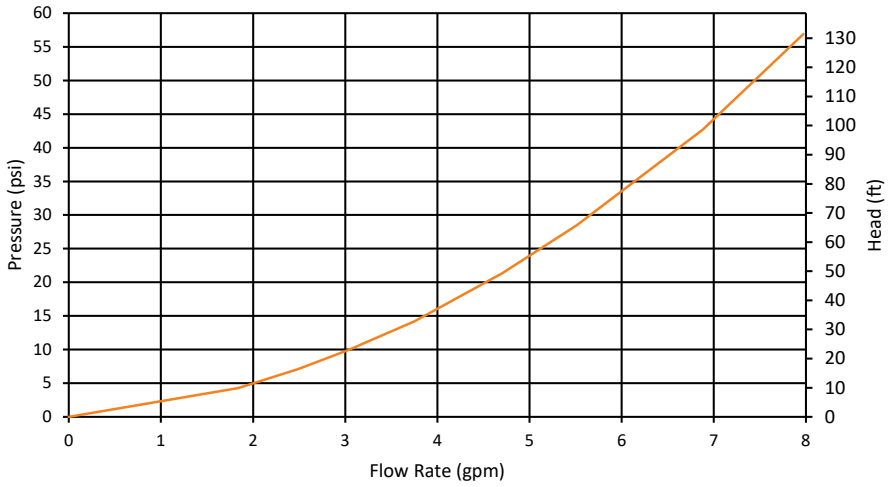


540X3 Pressure Loss

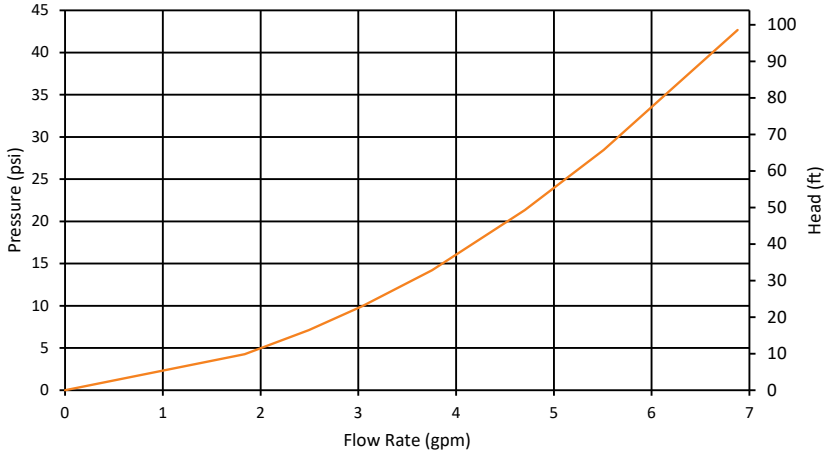


Max flow is 8 gpm when set temp above 125

340X3 Pressure Loss



240X3 Pressure Loss



RESIDENTIAL STANDARD CONDENSING

Features

Integrated recirculation pump for instant hot water

EASY-LINK™ with up to 3 other 540 heaters

3" venting up to 70 equivalent feet

Warranty

- 15-year limited warranty on heat exchanger in residential applications
- 5-year limited warranty on heat exchanger in commercial applications
- 5-year warranty on all parts
- Refer to statewaterheaters.com for further warranty details

Specifications

Model Number*	Type	Gas Consumption Input**		Inlet Gas Pressure**		UEF
		Minimum (BTU/H)	Maximum (BTU/H)	Minimum (in. W.C.)	Maximum (in. W.C.)	
GTS-540P-NI	Natural	15,000	199,000	4.0	10.5	0.93
GTS-540P-NE+	Natural	15,000	199,000	4.0	10.5	0.95

Model Number	Maximum GPM	Hot/Cold Connections	Gas Connection	Approx Shipping Weight (lbs)*
GTS-540P-NI	10	3/4" NPT	3/4" NPT	71
GTS-540P-NE	10	3/4" NPT	3/4" NPT	69

*For propane models, change “N” to “P”
**For propane models, minimum fire is 13,000 BTU/H, minimum inlet gas pressure is 8.0 in. W.C. and maximum inlet gas pressure is 14.0 in. W.C.
+GTS-540P-NE and GTS-540P-PE are ENERGY STAR® Qualified

540P Temperature Settings	120°F (Default Setting)		
	100-140°F (5°F Increments)		
Electric	120 V	60 Hz	1.63 Amps

AHRI CERTIFIED® www.ahridirectory.org

Meets: SCAQMD Rule 1146.2 California and Texas

ENERGY STAR

Select models

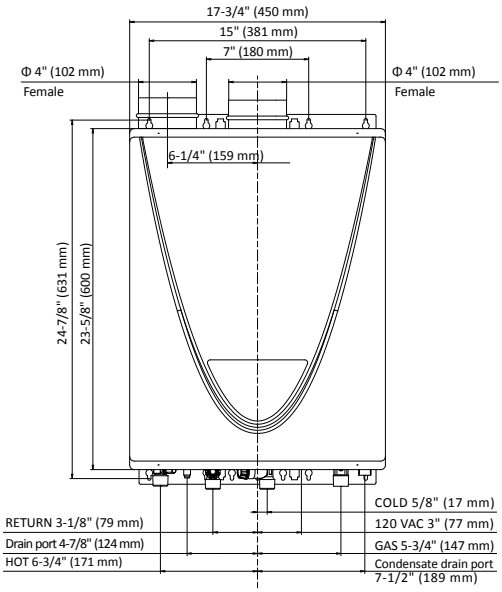
DESIGN CERTIFIED®

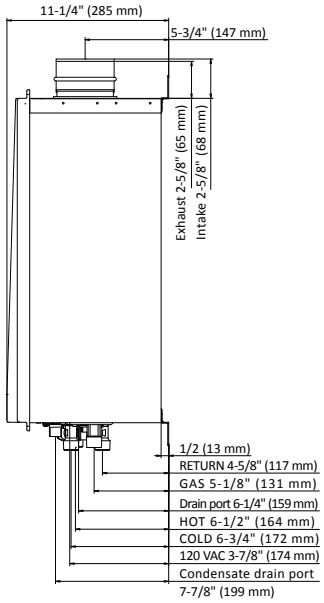
LOW-LEAD IAPMO R&T

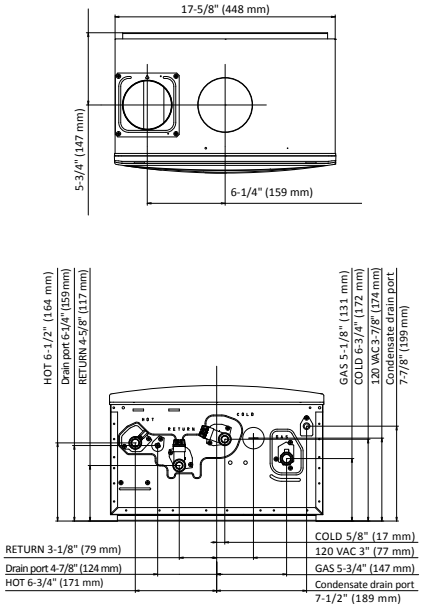
ANSI Z21.10.3 • CSA 4.3

Dimensions

Model Number	Clearances (inches)			
	Top	Bottom	Side	Front
GTS-540P-NI	12	12	3	4
GTS-540P-NE	36	12	3	24







Accessories

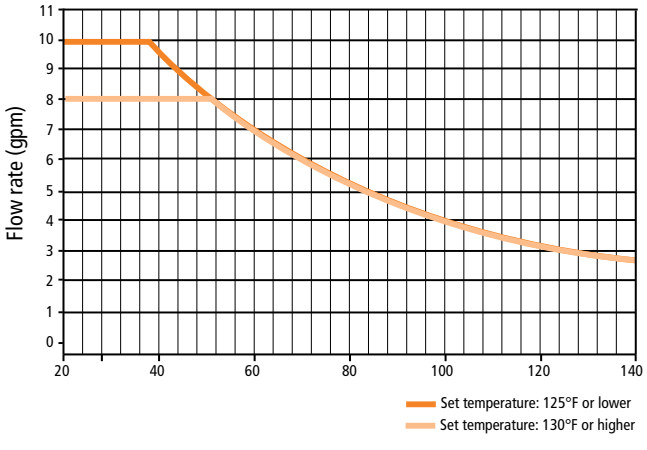
Recess Box Retrofit: (100298009) New Construction: (100306285)

Pipe Cover (100112718)

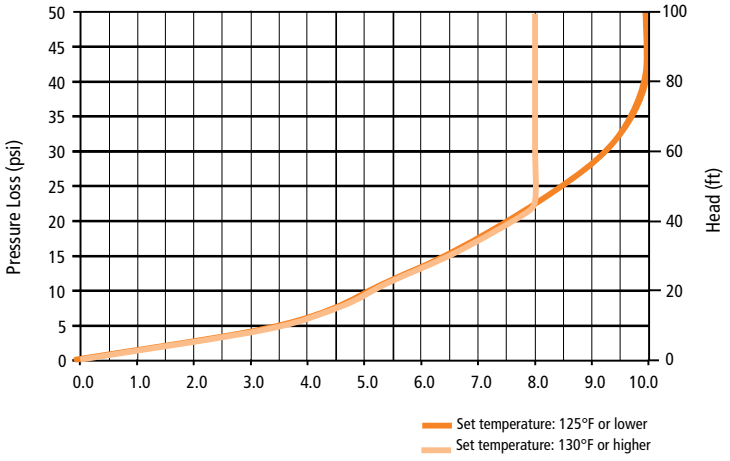
Remote Temperature Controller (100276687)

Isolation Valves (100112255)

540P Output Temp vs. GPM



540P Pressure Loss



RESIDENTIAL STANDARD CONDENSING

Features

Continuous maximum flow rates up to 10.0 GPM

Ultra-Low NOx gas tankless water heaters

540 models can be used in residential and commercial applications

EASY-LINK™ up to four 540 heaters or up to twenty 540 heaters with multi-unit controller

Warranty

- 15-year limited warranty on heat exchanger in residential applications
- 5-year limited warranty on heat exchanger in commercial applications
- 5-year warranty on all parts
- Refer to statewaterheaters.com for further warranty details

Specifications

Model Number*	Type	Gas Consumption Input**		Inlet Gas Pressure**		UEF
		Minimum (BTU/H)	Maximum (BTU/H)	Minimum (in. W.C.)	Maximum (in. W.C.)	
GTS-540-NIH	Natural	15,000	199,000	4.0	10.5	0.93
GTS-540-NEH+	Natural	15,000	199,000	4.0	10.5	0.95
GTS-340-NIH+	Natural	15,000	180,000	4.0	10.5	0.95
GTS-340-NEH	Natural	15,000	180,000	4.0	10.5	0.94
GTS-240-NIH	Natural	15,000	160,000	4.0	10.5	0.94
GTS-240-NEH+	Natural	15,000	160,000	4.0	10.5	0.95

Model Number*	Maximum GPM	Hot/Cold Connections	Gas Connection	Approx Shipping Weight (lbs)
GTS-540-NIH	10	3/4" NPT	3/4" NPT	71
GTS-540-NEH	10	3/4" NPT	3/4" NPT	69
GTS-340-NIH	8	3/4" NPT	3/4" NPT	71
GTS-340-NEH	8	3/4" NPT	3/4" NPT	69
GTS-240-NIH	6.6	3/4" NPT	3/4" NPT	71
GTS-240-NEH	6.6	3/4" NPT	3/4" NPT	69

*For propane models, change "N" to "P"
**For propane models, minimum fire rate is 13,000 BTU/H, minimum inlet gas pressure is 8.0 in. W.C. and maximum inlet gas pressure is 14.0 in. W.C.
+ENERGY STAR® Qualified.

Temperature Settings	120°F (Default Setting)		
	240/340: 100-140°F (5°F Increments)		
	540: 100-160°F (5°F Increments)		
Electric	120 V	60 Hz	1.5 Amps

AHRI CERTIFIED® www.ahridirectory.org

Meets: SCAQMD Rule 1146.2 California and Texas

ENERGY STAR Select models

DESIGN CERTIFIED

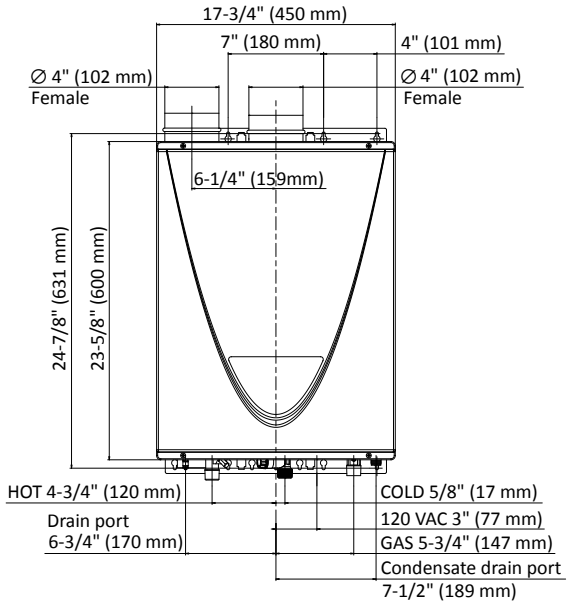
NSF 540 only

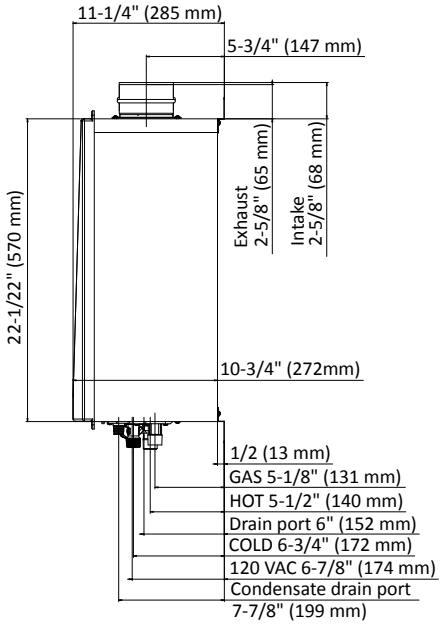
LOW-LEAD IAPMO R&T

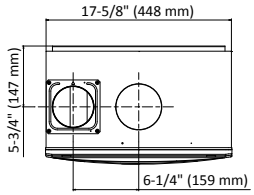
ANSI Z21.10.3 • CSA 4.3

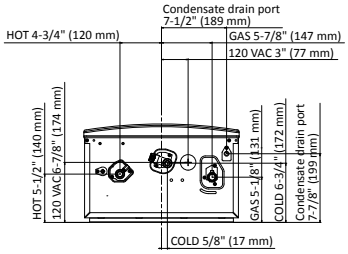
Dimensions

Model Number	Clearances (inches)			
	Top	Bottom	Side	Front
GTS-540-NIH	12	12	3	4
GTS-540-NEH	36	12	3	24
GTS-340-NIH	12	12	3	4
GTS-340-NEH	36	12	3	24
GTS-240-NIH	12	12	3	4
GTS-240-NEH	36	12	3	24









Accessories

Recess Box Retrofit: (100298009)
New Construction: (100306285)

Pipe Cover (100112718)

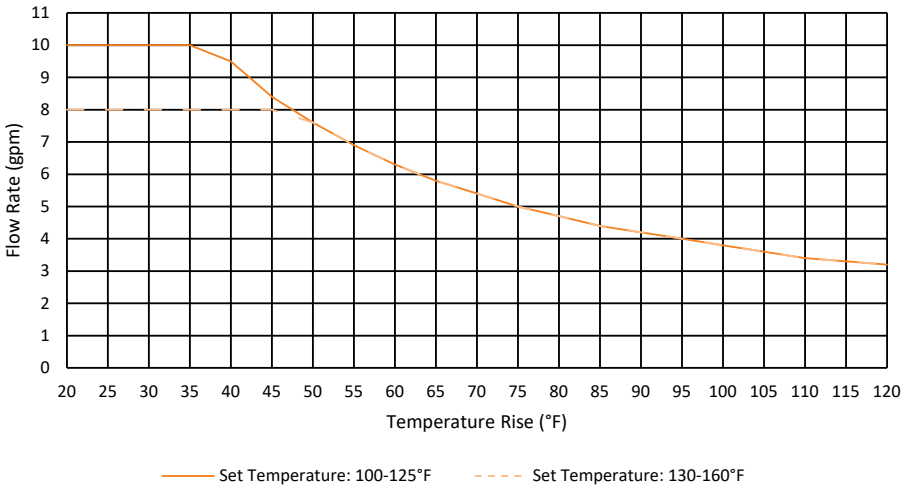
Remote Temperature Controller (100209924)

Multi-Unit Controller* (100112691)
*Only available for 540

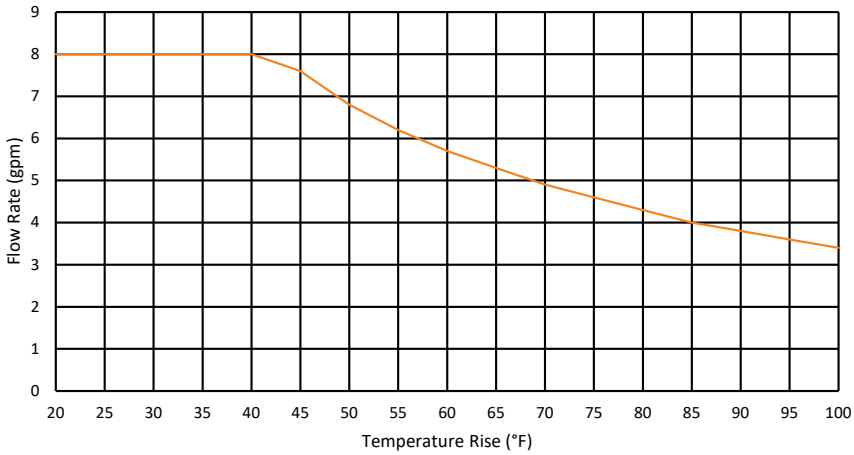
3" Concentric Termination (100112163)

Isolation Valves (100112255)

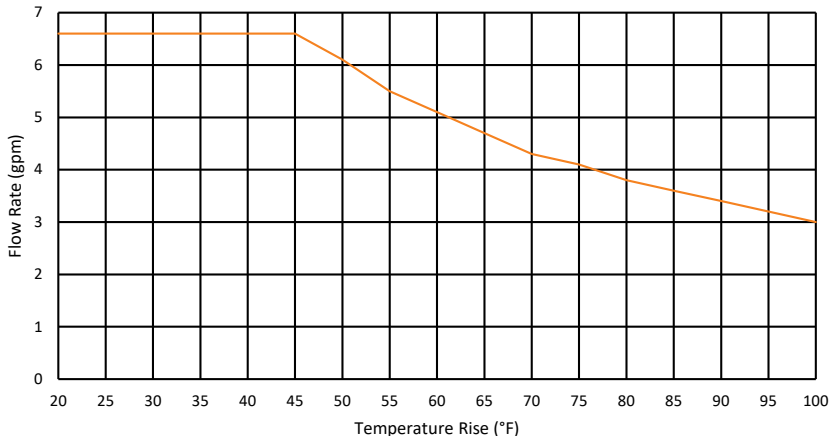
540 Output Temp vs. GPM



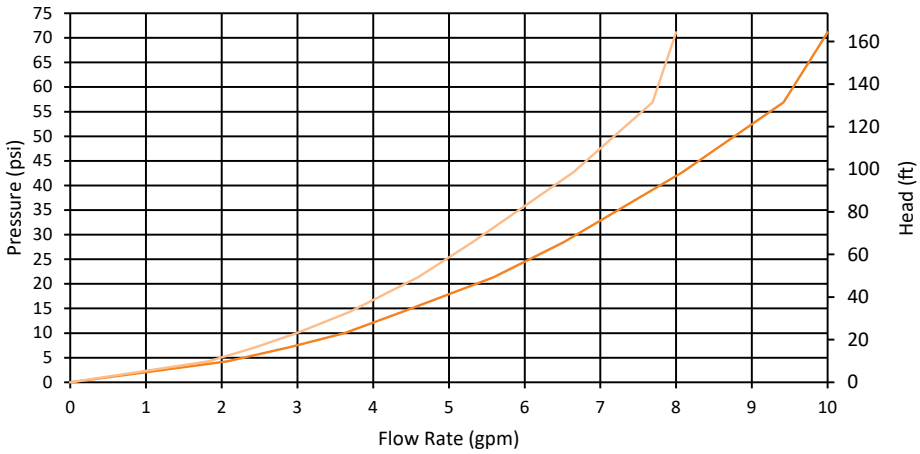
340 Output Temp vs. GPM



240 Output Temp vs. GPM



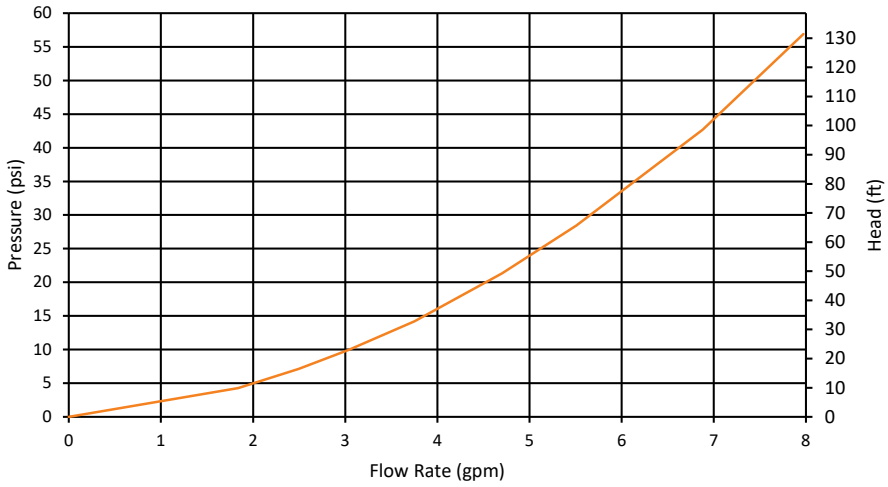
540 Pressure Loss



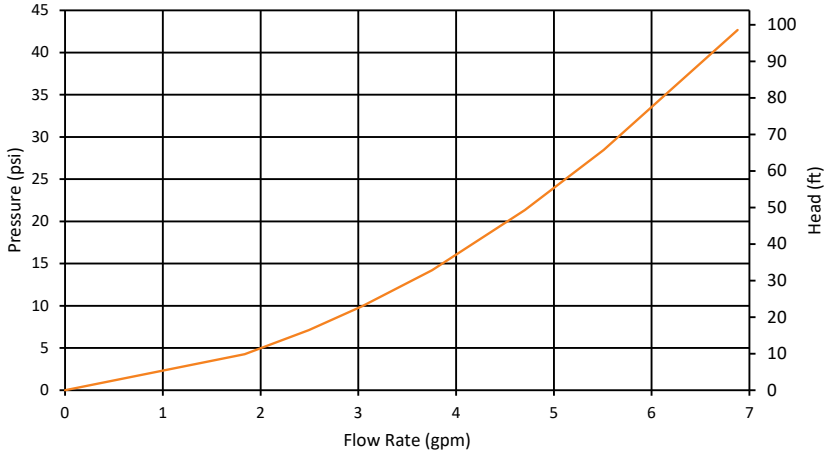
Set Temp: 100-125°F Set Temp: 130-160°F

Max flow is 8 gpm when set temp above 125

340 Pressure Loss



240 Pressure Loss



RESIDENTIAL STANDARD CONDENSING

Features

Operates with 1/2" gas line

Designed to fit between standard framing construction

3" venting up to 70 equivalent feet

Warranty

- 15-year limited warranty on heat exchanger in residential applications
- 5-year limited warranty on heat exchanger in commercial applications
- 5-year warranty on all parts
- Refer to statewaterheaters.com for further warranty details

Specifications

Model Number*	Type	Gas Consumption Input		Inlet Gas Pressure**		UEF
		Minimum (BTU/H)	Maximum (BTU/H)	Minimum (in. W.C.)	Maximum (in. W.C.)	
GTS-140-NIH	Natural	15,000	120,000	4.0	10.5	0.90
GTS-140-NEH	Natural	15,000	120,000	4.0	10.5	0.91

Model Number*	Maximum GPM	Hot/Cold Connections	Gas Connection	Approx Shipping Weight (lbs)
GTS-140-NIH	6.6	3/4" NPT	1/2" NPT	54
GTS-140-NEH	6.6	3/4" NPT	1/2" NPT	52

*For propane models, change “N” to “P”
**For propane models, minimum fire is 13,000 BTU/H, minimum inlet gas pressure is 8.0 in. W.C. and maximum inlet gas pressure is 14.0 in. W.C.

140 Temperature Settings	120°F (Default Setting)		
	100-140°F (5°F Increments)		
Electric	120 V	60 Hz	1.94 Amps

AHRI CERTIFIED® www.ahridirectory.org

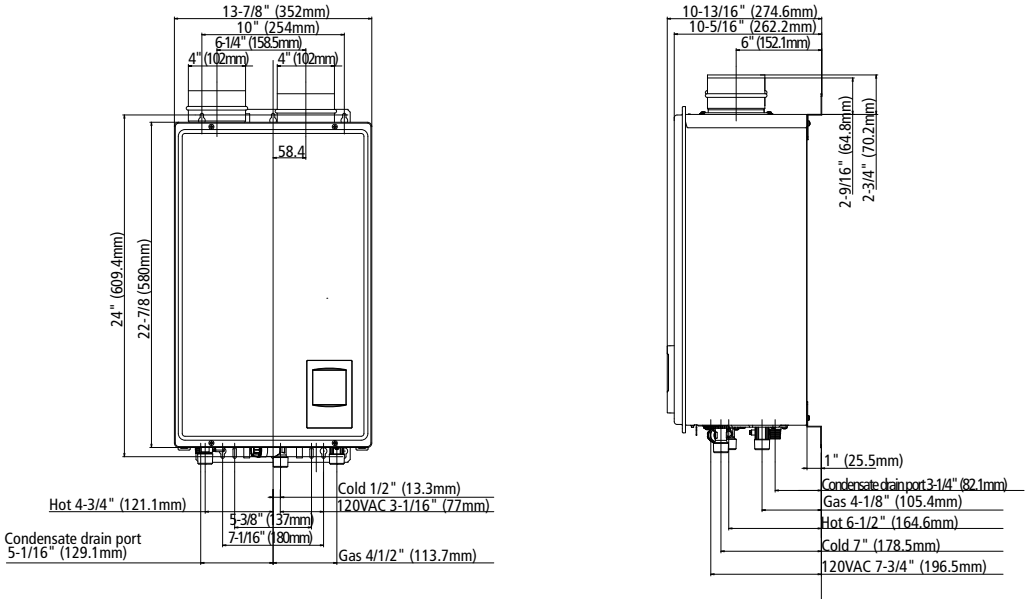
Meets: SCAQMD Rule 1146.2 California and Texas

LOW-LEAD IAPMO R&T

ANSI Z21.10.3 • CSA 4.3

Dimensions

Model Number	Clearances (inches)			
	Top	Bottom	Side	Front
GTS-140-NIH	12	12	3	4
GTS-140-NEH	36	12	3	24



Accessories

Recess Box Std Retrofit (100266729)
Recess Box Flange (100266730)

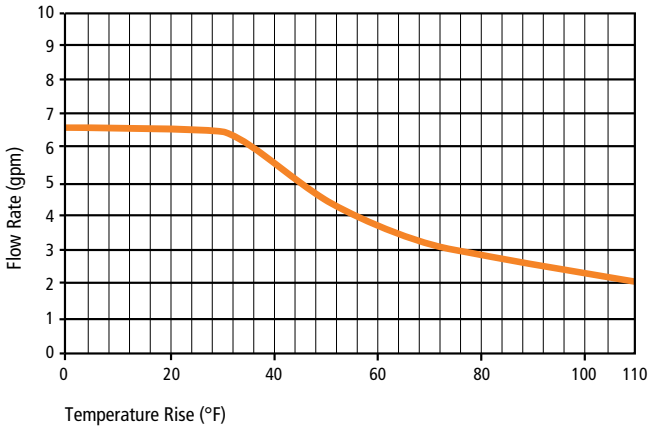
Pipe Cover (100187904)

Remote Temperature Controller (100209924)

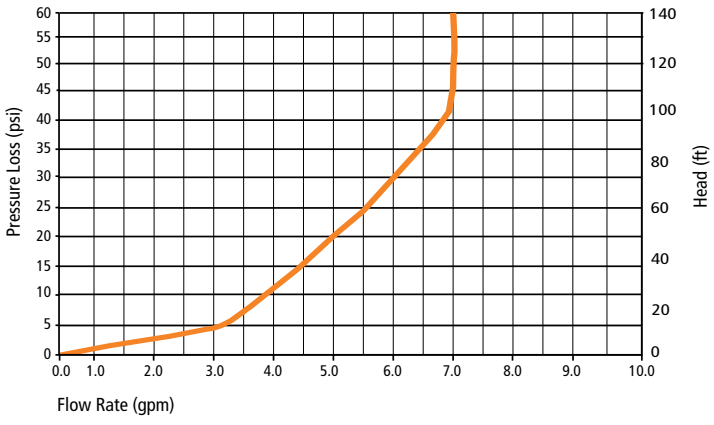
3" Concentric Termination (100112163)

Isolation Valves (100112255)

140 Output Temp vs. GPM



140 Pressure Loss



RESIDENTIAL NON-CONDENSING ULTRA-LOW NOX

Features

Gas convertible from natural gas to propane using the included conversion kit

4” category III vent up to 60 equivalent feet

EASY-LINK™ up to four 510U heaters or up to twenty 510U heaters with multi-unit controller

Warranty

- 15-year limited warranty on heat exchanger in residential applications
- 5-year limited warranty on heat exchanger in commercial applications
- 5-year warranty on all parts
- Refer to statewaterheaters.com for further warranty details

Specifications

Model Number*	Type	Gas Consumption Input		Inlet Gas Pressure**		UEF
		Minimum (BTU/H)	Maximum (BTU/H)	Minimum (in. W.C.)	Maximum (in. W.C.)	
GTS-510U-I	Natural	15,000	199,000	4.0	10.5	0.81
GTS-510U-E	Natural	15,000	199,000	4.0	10.5	0.81
GTS-310U-I	Natural	15,000	199,000	4.0	10.5	0.81
GTS-310U-E	Natural	15,000	199,000	4.0	10.5	0.81
GTS-110U-I	Natural	15,000	199,000	4.0	10.5	0.81
GTS-110U-E	Natural	15,000	199,000	4.0	10.5	0.81

Model Number*	Maximum GPM	Hot/Cold Connections	Gas Connection	Approx Shipping Weight (lbs)
GTS-510U-I	10	3/4" NPT	3/4” NPT	40
GTS-510U-E	10	3/4" NPT	3/4” NPT	40
GTS-310U-I	8	3/4" NPT	3/4” NPT	39
GTS-310U-E	8	3/4" NPT	3/4” NPT	39
GTS-110U-I	6.6	3/4" NPT	3/4” NPT	39
GTS-110U-E	6.6	3/4" NPT	3/4” NPT	39

*Units are field convertible from natural gas to propane with supplied conversion kit.
**For propane, minimum inlet gas pressure is 8.0 in. W.C. and maximum inlet gas pressure is 14.0 in. W.C.

Temperature Settings	120°F (Default Setting)		
	110U/310U: 100-140°F (5°F Increments)		
	510U: 100-160°F (5°F Increments)		
Electric	120 V	60 Hz	1.02 Amps

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Meets: SCAQMD Rule 1146.2 California and Texas

NSF 510U only

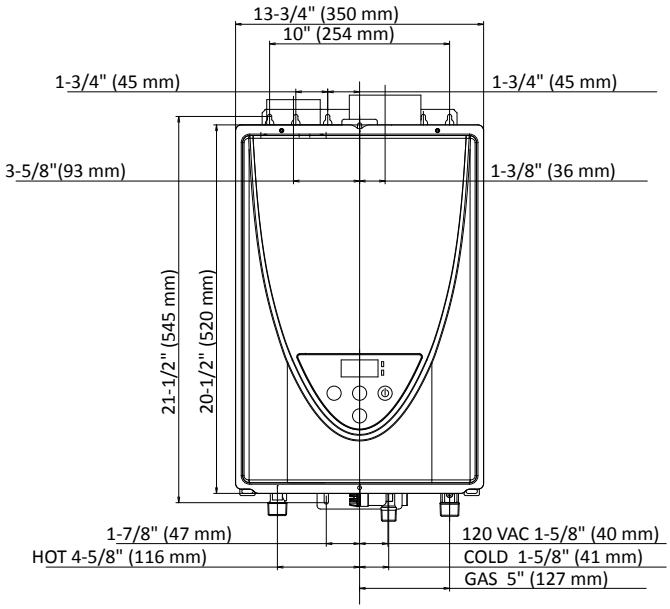
DESIGN CERTIFIED

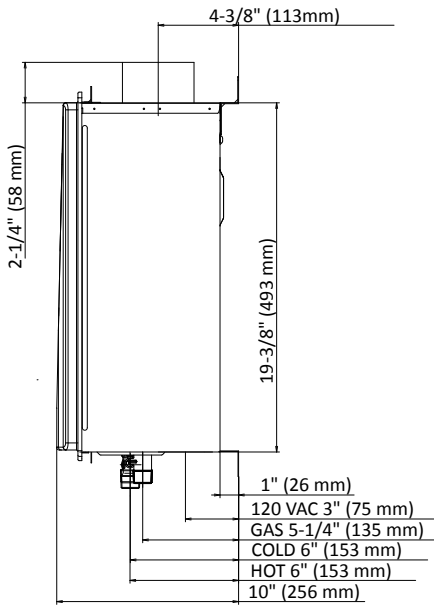
LOW-LEAD IAPMO R&T

ANSI Z21.10.3 • CSA 4.3

Dimensions

Model Number	Clearances (inches)			
	Top	Bottom	Side	Front
GTS-510U-I	12	12	3	4
GTS-510U-E	36	12	3	24
GTS-310U-I	12	12	3	4
GTS-310U-E	36	12	3	24
GTS-110U-I	12	12	3	4
GTS-110U-E	36	12	3	24





Accessories

Recess Box Std Retrofit (100266729)
Recess Box Flange (100266730)

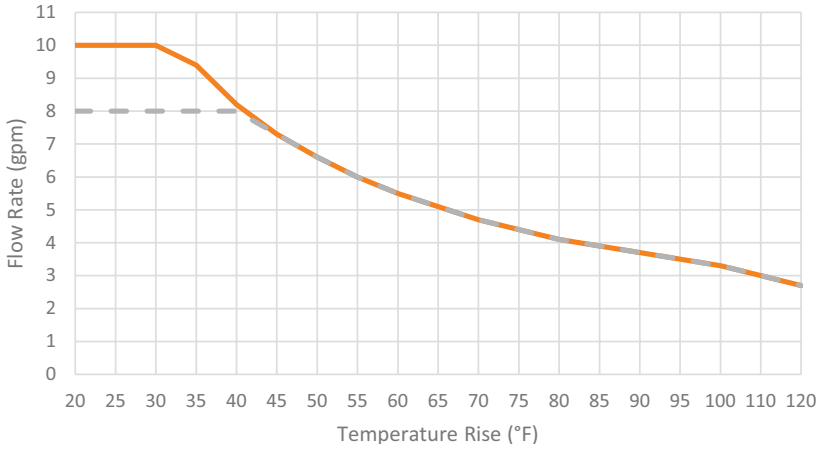
Pipe Cover (100324434)

Remote Temperature Controller (100209924)

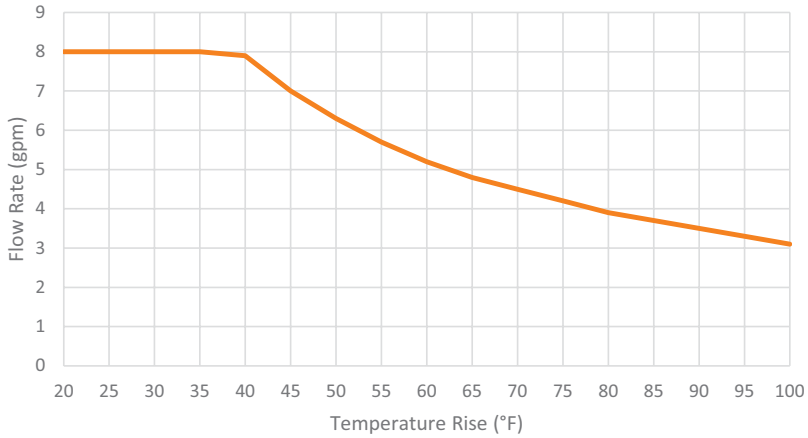
Multi-Unit Controller* (100112691)
*Only available for 510U

Isolation Valves (100112255)

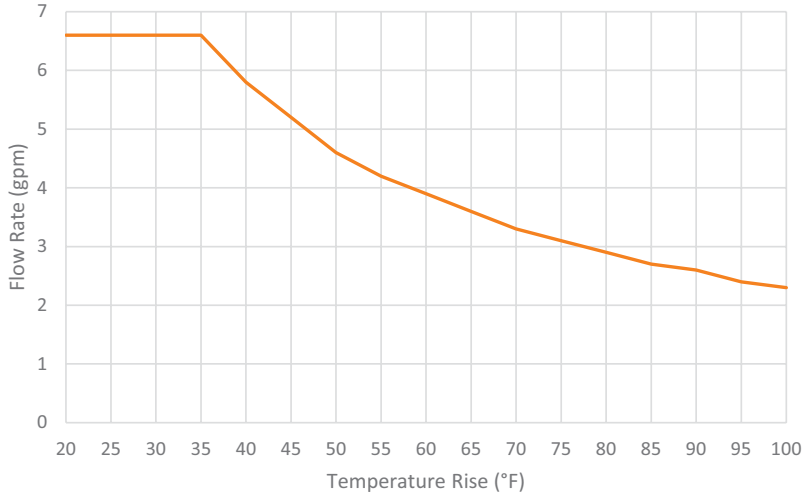
510U Output Temp vs. GPM



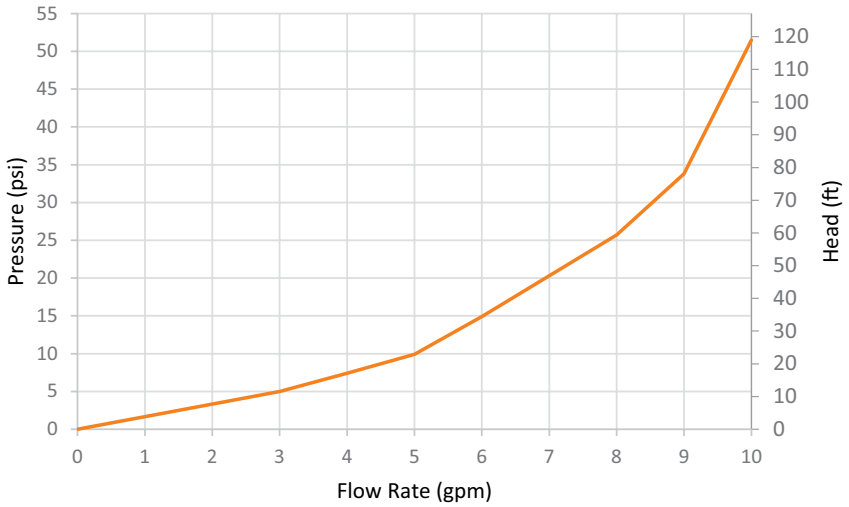
310U Output Temp vs. GPM



110U Output Temp vs. GPM

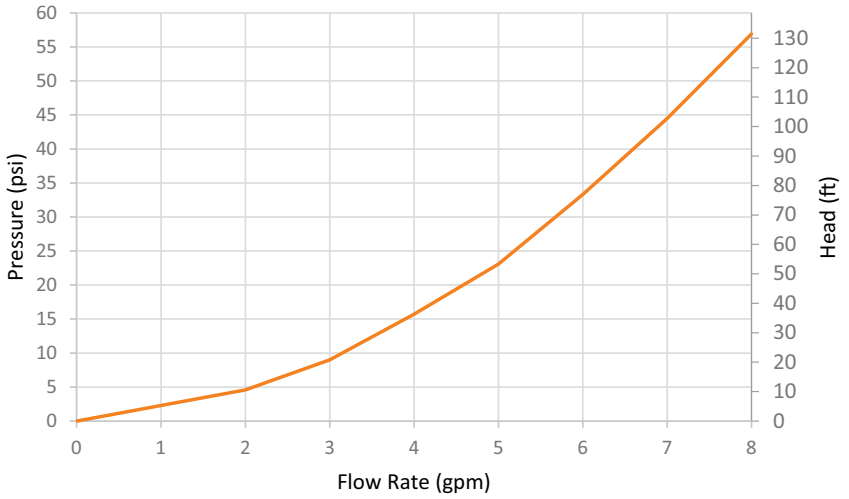


510U Pressure Loss



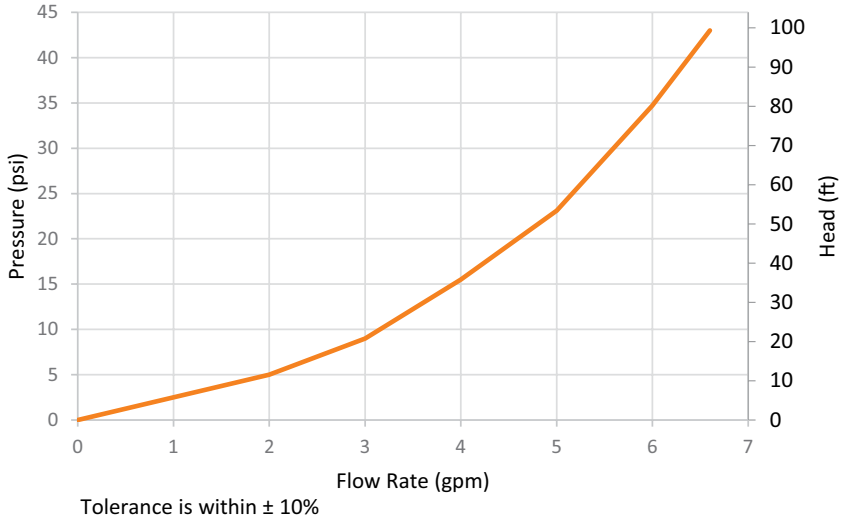
Tolerance is within ± 10%

310U Pressure Loss



Tolerance is within ± 10%

110U Pressure Loss



Tolerance is within ± 10%

RESIDENTIAL NON-CONDENSING CONCENTRIC VENT

Features

Installations are simple and flexible with contractor preferred concentric venting

Venting runs up to 43 equivalent feet

Gas convertible from natural gas to propane using the included conversion kit

Easy-Link™ up to four 510C/510CX3 heaters or up to twenty 510C/510CX3 heaters with multi-unit controller

Warranty

- 15-year limited warranty on heat exchanger in residential applications
- 5-year limited warranty on heat exchanger in commercial applications
- 5-year warranty on all parts
- Refer to statewaterheaters.com for further warranty details

Specifications

Model Number*	Type	Gas Consumption Input		Inlet Gas Pressure**		UEF
		Minimum (BTU/H)	Maximum (BTU/H)	Minimum (in. W.C.)	Maximum (in. W.C.)	
GTS-510C/510CX3-NI	Natural	15,000	199,000	4.0	10.5	0.81
GTS-310C/310CX3-NI	Natural	15,000	199,000	4.0	10.5	0.81

Model Number*	Maximum GPM	Hot/Cold Connections	Gas Connection	Approx Shipping Weight (lbs)
GTS-510C/510CX3-NI	10	3/4" NPT	3/4" NPT	55
GTS-310C/310CX3-NI	8	3/4" NPT	3/4" NPT	55

*Indoor models only. Units are field convertible from natural gas to propane with supplied conversion kit.
**For propane, minimum inlet gas pressure is 8.0 in. W.C. and maximum inlet gas pressure is 14.0 in. W.C.

Temperature Settings	120°F (Default Setting)		
	310C/310CX3: 100-140°F (5°F Increments)		
	510C/510CX3: 100-160°F (5°F Increments)		
Electric	120 V	60 Hz	0.85 Amps

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NSF 510C only

Meets: SCAQMD Rule 1146.2 California and Texas

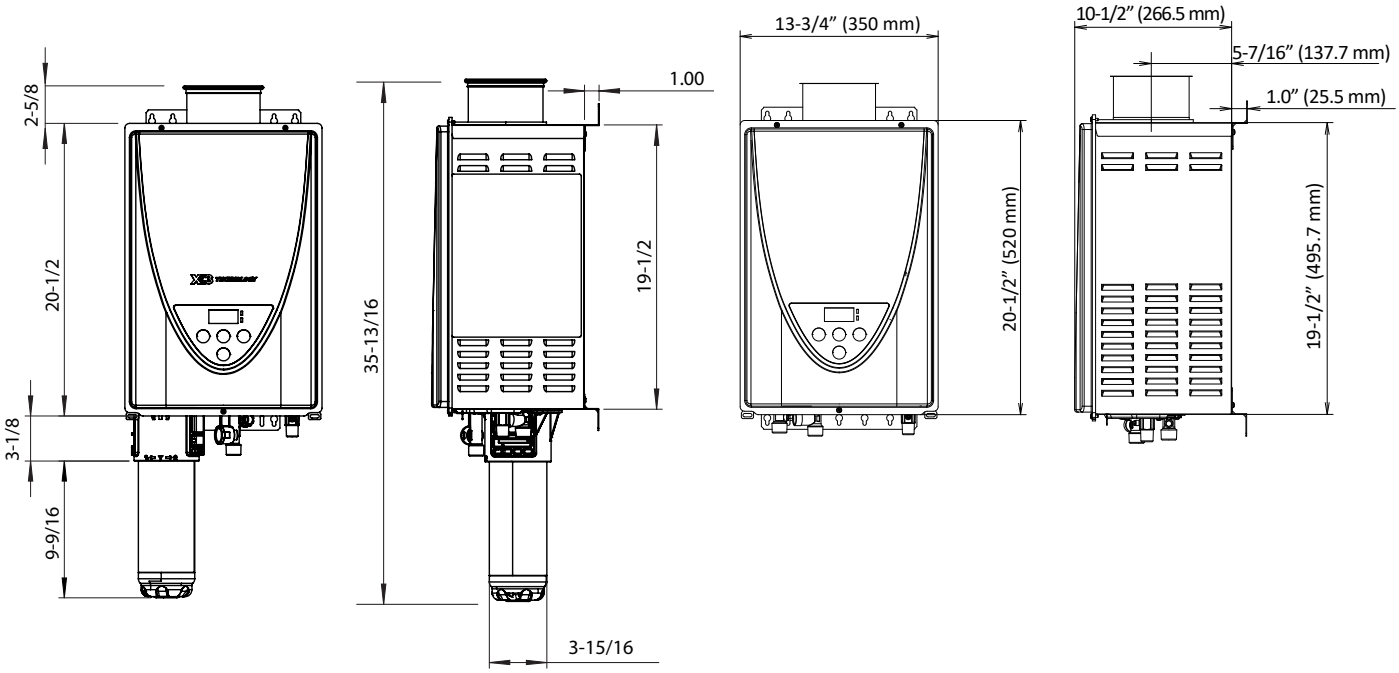
DESIGN CERTIFIED

LOW-LEAD IAPMO R&T

ANSI Z21.10.3 • CSA 4.3

Dimensions

Model Number	Clearances (inches)			
	Top	Bottom	Side	Front
GTS-510C/510CX3-NI	12	12	3	4
GTS-310C/310CX3-NI	12	12	3	4



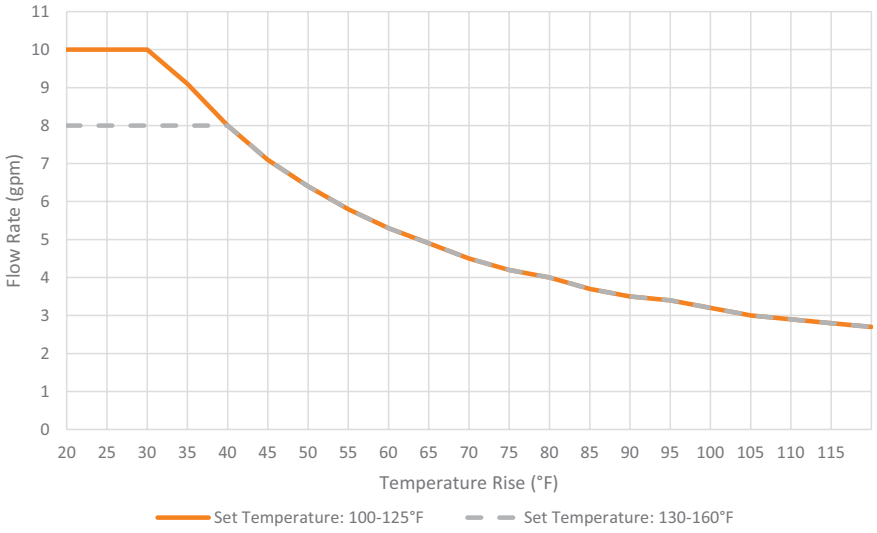
Accessories

Remote Temperature Controller (100209924)

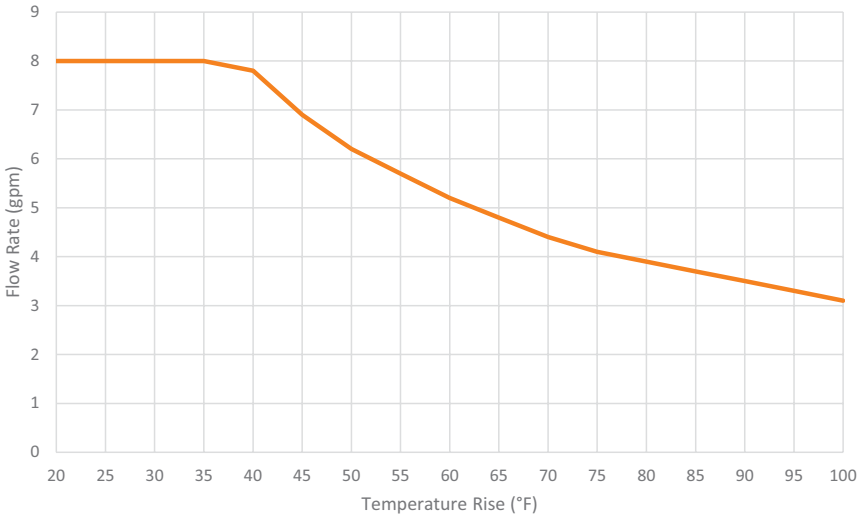
Multi-Unit Controller* (100112691)
*Only available for 510C/510CX3

Isolation Valves (100112255)

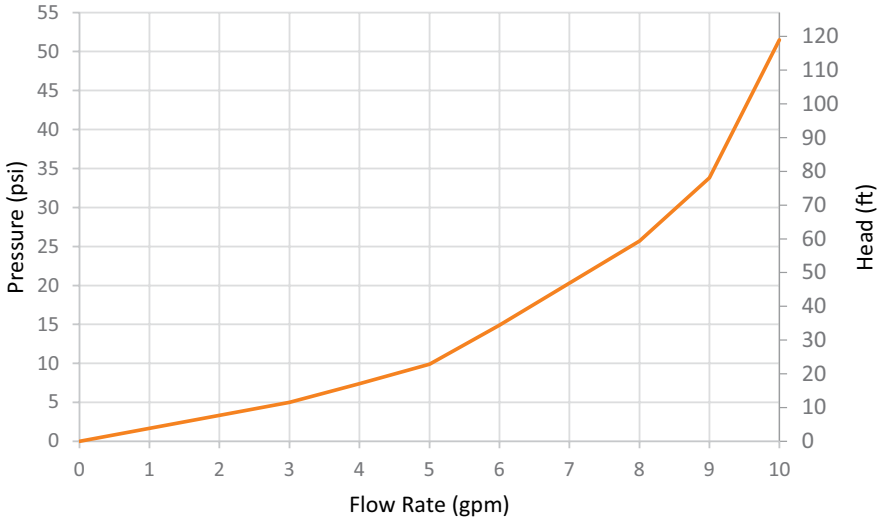
510C/510CX3 Output Temp vs. GPM



310C/310CX3 Output Temp vs. GPM

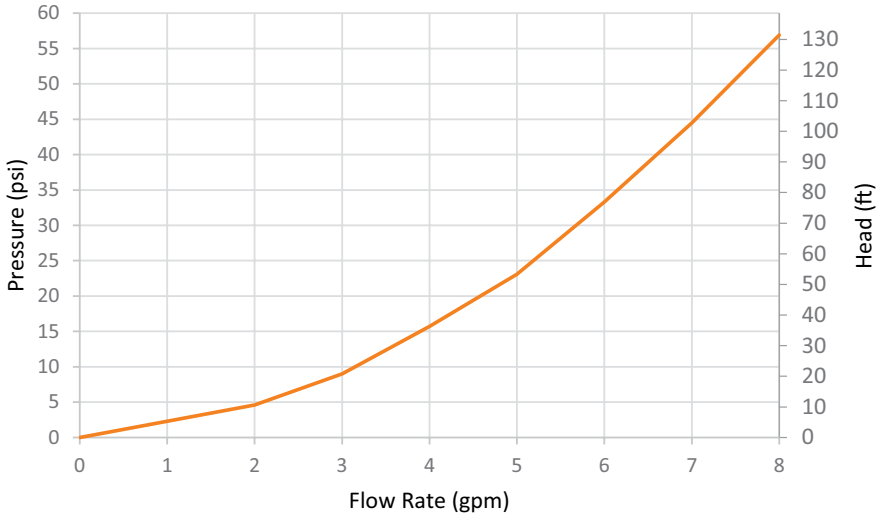


510C/510CX3 Pressure Loss



Tolerance is within ± 10%. Max flow is 8 gpm when set temp above 125 F

310C/310CX3 Pressure Loss

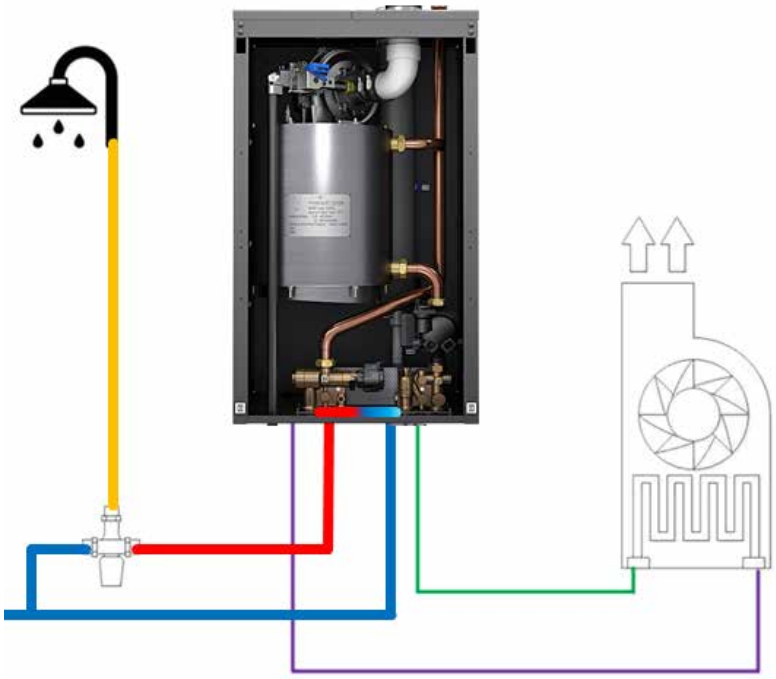


Tolerance is within ± 10%

RESIDENTIAL COMBI BOILERS

Domestic Hot Water and Space Heating How it Works:

- A hot water tap is opened causing incoming potable water to flow through the flat plate heat exchanger.
- Heated boiler water, supplied from the fire tube heat exchanger, flows through a diverter valve and into the flat plate heat exchanger where it prioritizes heating the incoming domestic water to the designated set point temperature.
- The integrated boiler pump circulates boiler water through the fire tube heat exchanger to keep it at set point temperature.
- When there is a call for space heating, the diverter valve directs the heated boiler water into the external space heating loop.



More Hot Water

ProLine® XE combi boiler provides up to 74% more heating capacity than other combi boilers. For domestic hot water (DHW), it is also sized large enough to provide 2.6 gpm (110 model) to 4.8 gpm (199 model) at a 77°F temperature rise.

Energy Conservation

With a 10:1 turndown ratio, the ProLine® XE combi boiler has the ability to modulate combustion to maximize efficiency and prevent short cycling when there are small heating demands.

Compact Size

The ProLine® XE combi boiler combines space heating and domestic hot water (DHW) in one appliance, providing a space saving choice for builders and specifying engineers.

COMBI BOILER FLOW RATE GUIDE

Temperature Rise vs. Gallons per Minute

	Temperature Rise												
	40°F	45°F	50°F	55°F	60°F	65°F	70°F	75°F	80°F	85°F	90°F	95°F	100°F
SCB-110S-N	5.1	4.5	4.0	3.7	3.4	3.1	2.9	2.7	2.5	2.4	2.2	2.1	2.0
SCB-150S-N	6.9	6.1	5.5	5.0	4.6	4.2	3.9	3.7	3.5	3.2	3.1	2.9	2.8
SCB-199S-N	9.2	8.2	7.4	6.7	6.1	5.7	5.3	4.9	4.6	4.3	4.1	3.9	3.7

Innovative Design

Fire tube heat exchanger with a higher rated MAWP of 50 psi reduces unit pressure drop. The easy access front panel can be removed without tools to simplify service.

Easy Installation and Serviceability

The LCD display is simple to navigate, providing diagnostic and system information in real words, not codes. The first time you turn on the combi boiler, you'll be lead through our Set Up Wizard for quick and easy programing.

Compact Size

The Preheat Function uses an integrated recirculation pump to ensure that the domestic hot water reaches its target temperature faster. The Air Handler Interlock prevents cool air delivery while the boiler is in domestic hot water mode to increase user comfort.

PROLINE® XE RESIDENTIAL COMBI BOILER

Features

Indoor installation only

Modulating burner with 10:1 turndown ratio

DHW flow rate up to 4.8 gpm at 77°F temperature rise

50 PSI max pressure (boiler); 150 PSI max pressure (DHW)

Warranty

- 10-year limited warranty on heat exchanger in residential applications
- 5-year warranty on all parts
- Refer to statewaterheaters.com for further warranty details

Specifications

Model Number*	Gas Consumption Input		Minimum in. W.C.†	Maximum in. W.C.	AFUE%	Heating Capacity BTU/H	Net AHRI Rating BTU/H
	Minimum BTU/H	Maximum BTU/H					
SCB-110S-N	11,000	110,000	4.0	14.0	95.0	102,000	89,000
SCB-150S-N	15,000	150,000	4.0	14.0	95.0	139,000	121,000
SCB-199S-N	19,900	199,000	4.0	14.0	95.0	185,000	161,000

Model Number*	GPM at 77°F Rise	Water Connections		Gas Connection	Approx. Shipping Weight (lbs)
		Space Heating	DHW		
SCB-110S-N	2.6	1" NPT	3/4" NPT	1/2" NPT	139
SCB-150S-N	3.6	1" NPT	3/4" NPT	1/2" NPT	142
SCB-199S-N	4.8	1" NPT	3/4" NPT	1/2" NPT	159

*S Models can operate up to 4,500'. For high altitude (3,000' - 9,600'), change S to H. For liquid propane (LP), change N to P.
†For LP, minimum supply pressure is 8.0 in. W.C.
Indoor installation only.

Temperature Settings	Space Heating: 60°F – 190°F, Default 185°F		
	DHW: 60°F – 190°F, Default 150°F		
Electric	120 V	24V controls	2.2 Amps

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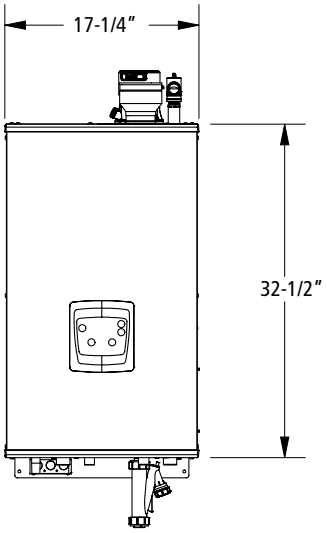
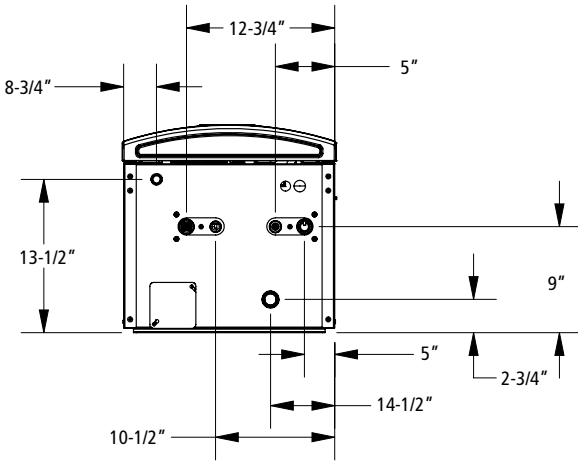
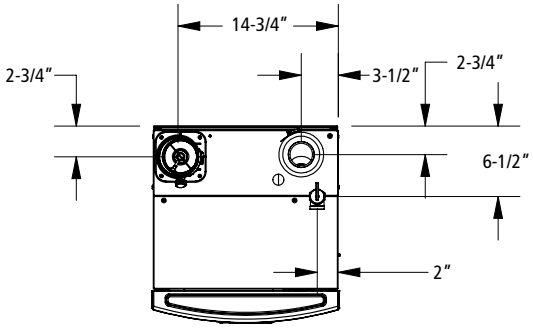
Dimensions



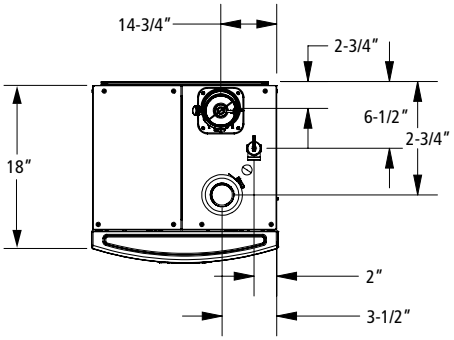
FRONT



BOTTOM

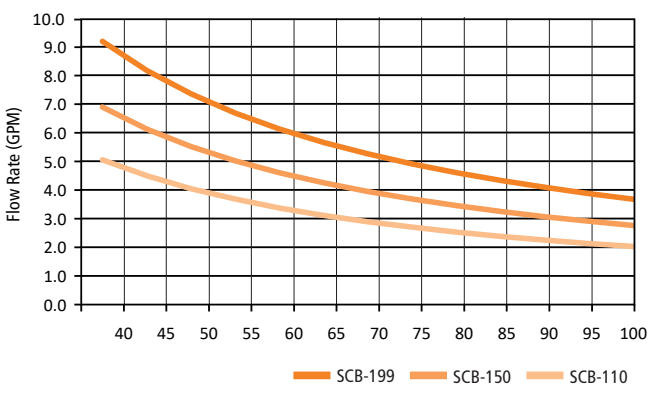


TOP
110 MODELS

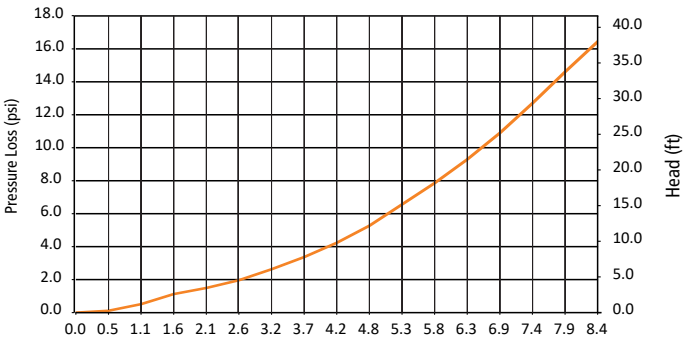


TOP
150-199 MODELS

Combi Boiler Output Temp vs. GPM



Combi Boiler Pressure Loss



COMMERCIAL CONDENSING

Features

EASY-LINK™ up to 4 heaters or connect up to 20 heaters with a multi-unit controller

96% thermal efficiency

Warranty

- 6-year limited warranty on heat exchanger in commercial applications
- 5-year warranty on all parts
- Refer to statewaterheaters.com for further warranty details

Specifications

Model Number*	Type	Gas Consumption Input		Inlet Gas Pressure**		Thermal Efficiency	UEF
		Minimum (BTU/H)	Maximum (BTU/H)	Minimum (in. W.C.)	Maximum (in. W.C.)		
SCT-199I-N	Natural	15,000	199,000	4.0	10.5	96%	0.93
SCT-199O-N+	Natural	15,000	199,000	4.0	10.5	96%	0.95

Model Number*	Maximum GPM	Hot/Cold Connections	Gas Connection	Approx Shipping Weight (lbs)
SCT-199I-N	10	3/4" NPT	3/4" NPT	71
SCT-199O-N	10	3/4" NPT	3/4" NPT	69

*For propane models, change "N" to "P"
**For propane models, minimum fire rate is 13,000 BTU/H, minimum inlet gas pressure is 8.0 in. W.C. and maximum inlet gas pressure is 14.0 in. W.C.
+SCT-199O-N and SCT-199O-P are ENERGY STAR® Qualified

Temperature Settings	120°F (Default Setting)		
	100-185°F (5°F Increments)		
Electric	120 V	60 Hz	1.5 Amps

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Meets SCAQMD Rule 1146.2 California and Texas

ENERGY STAR

Select models

NSF

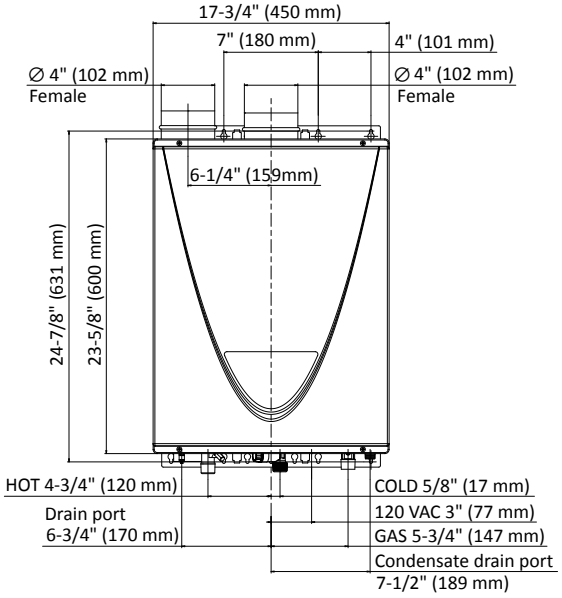
DESIGN CERTIFIED

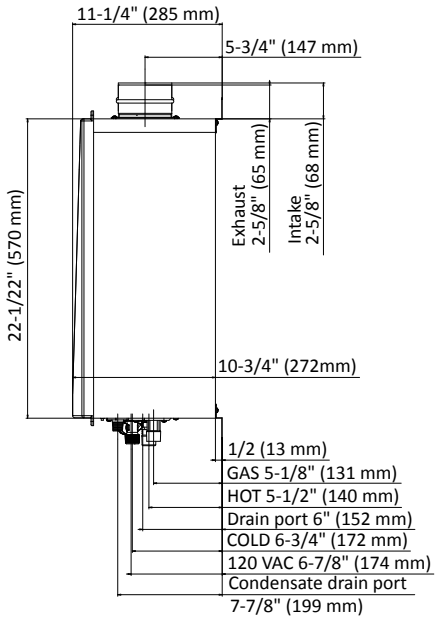
LOW-LEAD IAPMO R&T

ANSI Z21.10.3 • CSA 4.3

Dimensions

Model Number	Clearances (inches)			
	Top	Bottom	Side	Front
SCT-199I-N	12	12	3	4
SCT-199O-N	36	12	3	24





Accessories

Recess Box Retrofit: (100298009)
New Construction: (100306285)

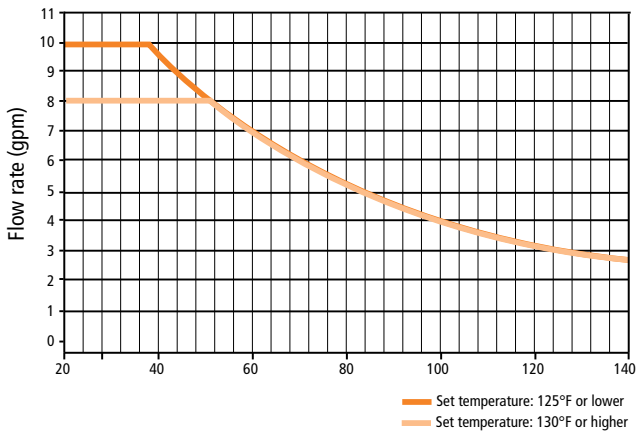
Pipe Cover (100112718)

Multi-Unit Controller (100112691)

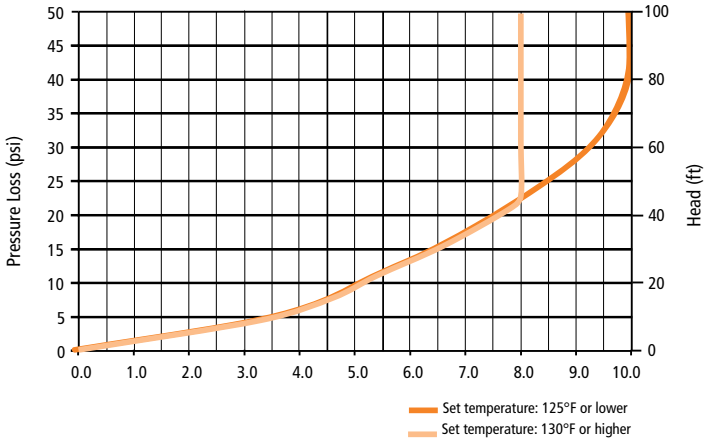
3" Concentric Termination (100112163)

Isolation Valves (100112255)

CT-199 Output Temp vs. GPM



CT-199 Pressure Loss



COMMERCIAL TANKLESS RACK SYSTEM

Commercial tankless rack systems, coupled with commercial CT-199 water heaters, allow the power of tankless technology to be customized with unprecedented flexibility. State offers wall mount, free standing and back-to-back configurations with easy options to integrate storage when needed. For jobs that require more than six units, custom solutions are available.

Installation is easier than ever as the rack systems are constructed from a light weight frame and just three connections for hot water, cold water and gas.

Commercial rack systems are expandable with up to 1,194,000 BTU on a single system. The rack system is designed so that individual units can be isolated for maintenance without shutting down the entire rack to provide non-stop operation.

Free Standing

Back-to-Back

Wall-Mount

MULTI-UNITS SYSTEMS

State tankless water heaters have the capability to link multiple heaters together to act as a system. The primary heater is rotated to ensure even operation of all heaters. The 510U/C, 540, CT-199 models can EASY-LINK™ up to four units using included communication cables. With ADAPT™ Premium heaters, 160M/X3, 180M/X3, and 199M/X3, up to 12 like heaters can be linked using the included communication cables supplied with each heater.

For even larger applications the 510U, 510C, 540, CT-199 models also feature the Multi-Unit System, allowing a greater number of units to work together as an integrated system using a Multi-Unit System Controller. The Multi-Unit System can control up to twenty 510U, 510C, 540, and CT-199.

Unit Comparison

	510U/C Series	540/CT-199 Series	199M/199X3 Series
EASY-LINK™ (No Controller Necessary)	Up to 4 units	Up to 4 units	Up to 12 units
Maximum input (BTU/h)	796,000	796,000	2,388,000
Multi-UNIT*	Up to 20 units	Up to 20 units	N/A
Maximum input (BTU/h)	3,980,000	3,980,000	N/A

*Requires Multi-Unit Controller: 100112691

Common Venting

The State common venting system utilizes fewer unique components so you can design your venting based on project requirements.

- More design flexibility
- Fewer wall penetrations
- Able to use schedule 40 PVC on intake and exhaust
- Heaters don't de-rate when common vented
- Design doesn't override redundancy benefits
- Does not apply to ADAPT Premium, which does not support common venting.

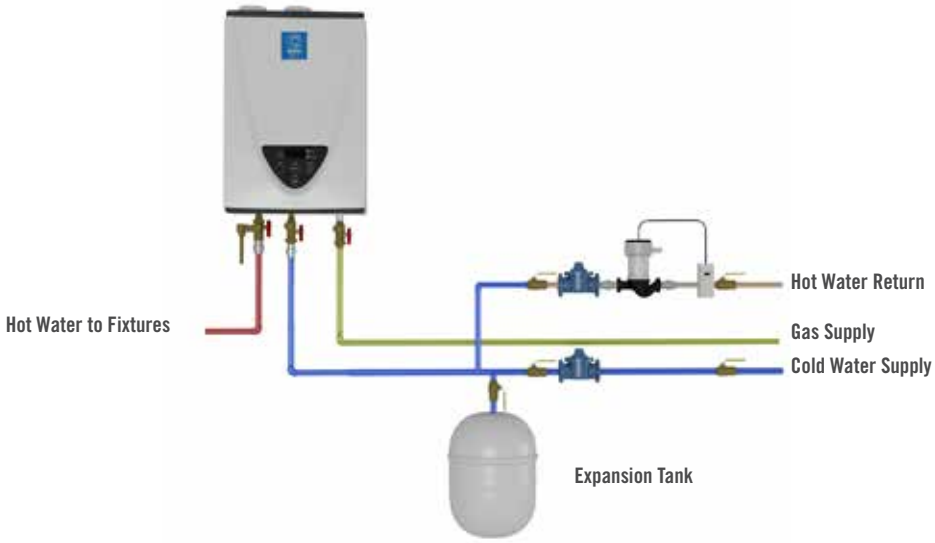
TANKLESS APPLICATION DIAGRAMS

State tankless water heaters can be used in a wide variety of applications. Whether used in recirculation systems, in conjunction with storage tanks or with heating applications, our commercial units are built to provide continuous hot water when sized appropriately for your home's needs.

Local codes dictate proper compliance.

Basic Installation - Standard Condensing

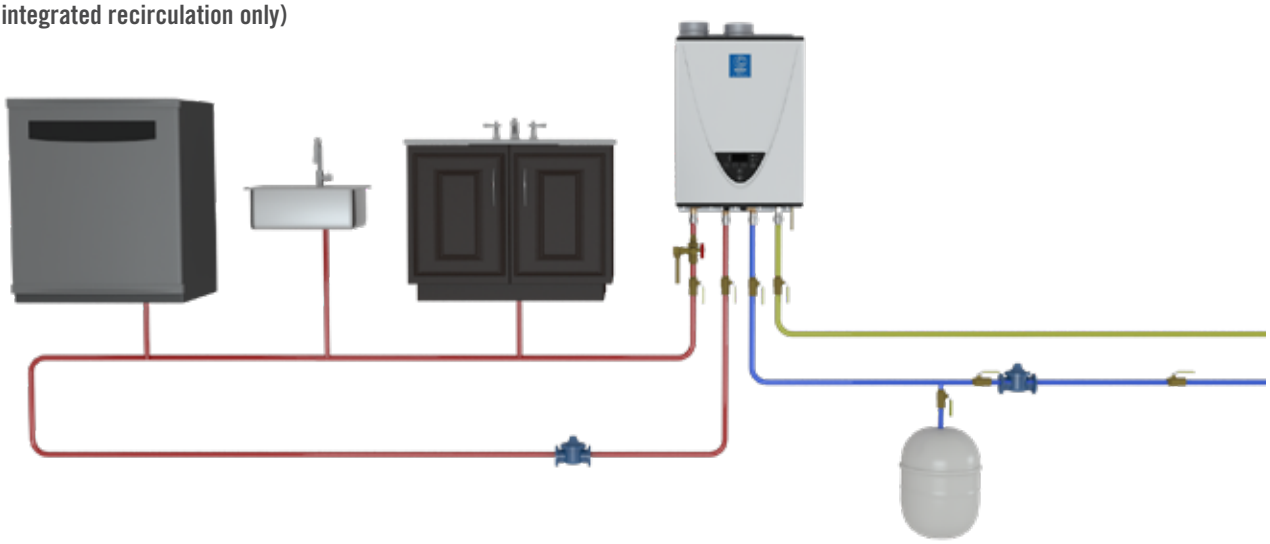
(excluding 540P)



1. Recirculation pump shall be sized for 2-4 gpm per activated heater (4-8 gpm for 910)
2. Recirculation pump shall be controlled by an aquastat. The minimum suggested differential should be 10°F
3. For installations without recirculation, remove the check valves, pump, and aquastat.

540P Basic Installation

(Models with integrated recirculation only)



Legend

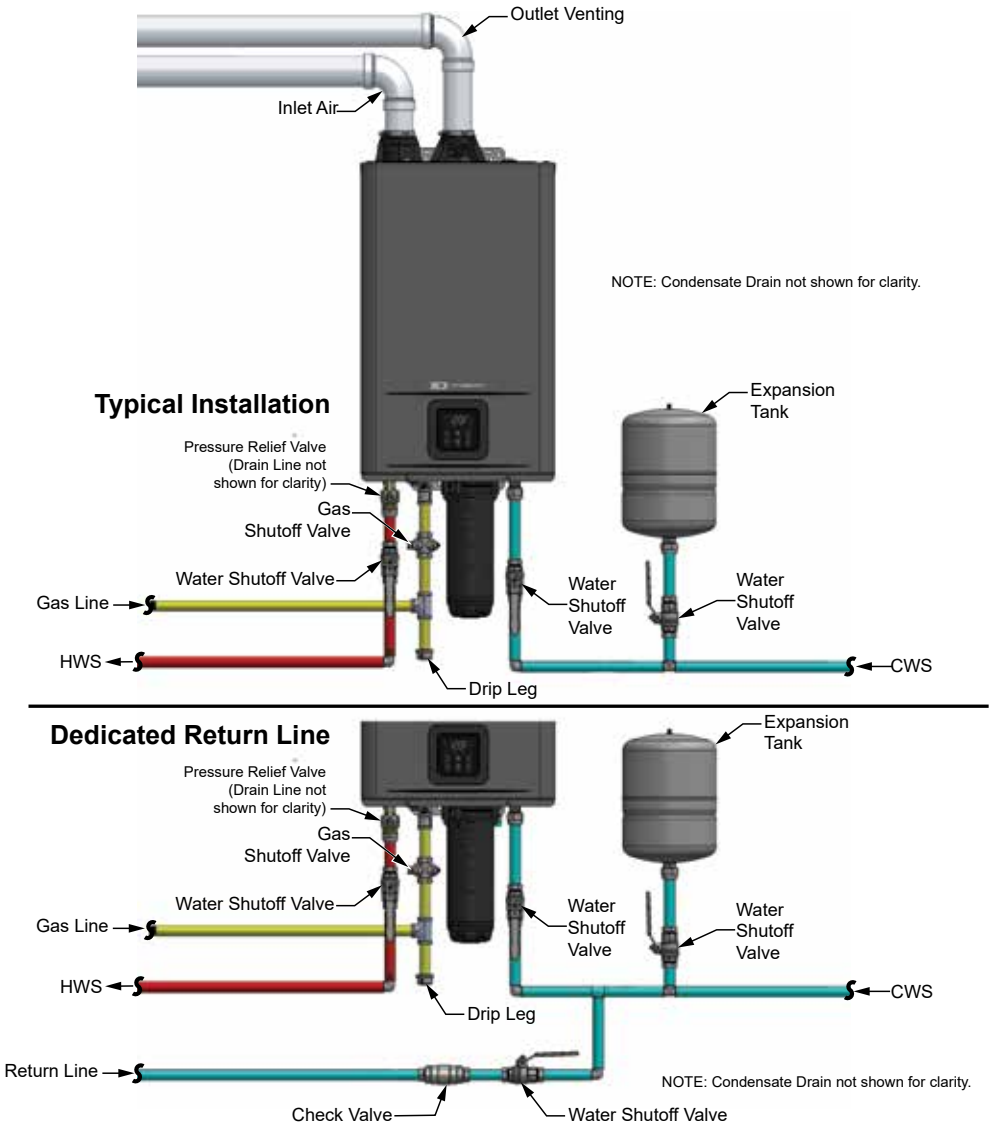
Pump | Shut Off / Isolation Valves | Pressure Relief Valve | Air Vent | Aquastat | Check Valve | Full Port Ball Valve

All application diagrams shown are concept drawings only. These diagrams are only to be used as basic guides. It is up to the application designer to properly design the plumbing layout and correctly size all components within an application (pumps, piping, storage tanks, water heaters, etc.). All national and local codes must be followed and will dictate proper compliance.

TANKLESS APPLICATION DIAGRAMS

Basic Installation - Standard Condensing

(excluding 540P)



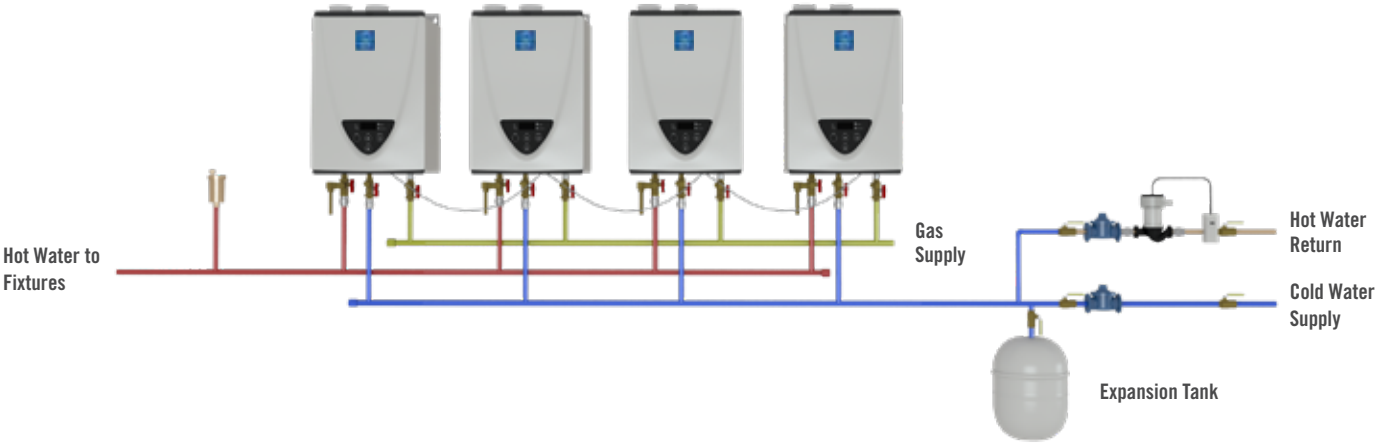
1.Integrated recirculation pump can be used with a dedicated return line or crossover valve installed at the farthest fixture.

2. Pump controlled by heater software and can be programmed with up to two schedules to co-inside with peak demand periods during the day.

3. For installations without recirculation, the integrated pump is "off" by default.

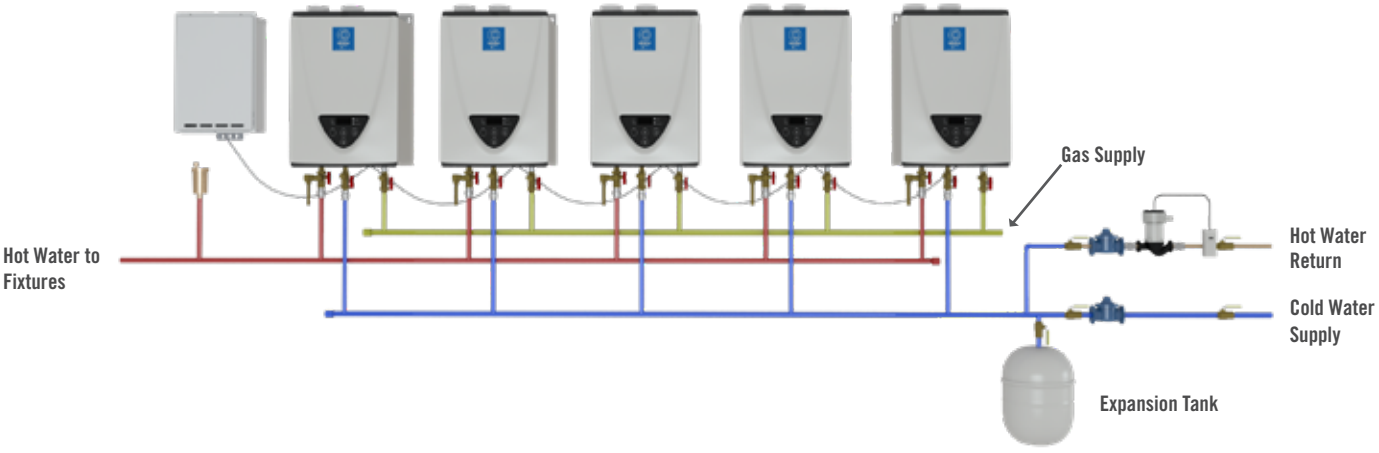
MULTIPLE UNITS

Multiple Units with EASY-LINK™



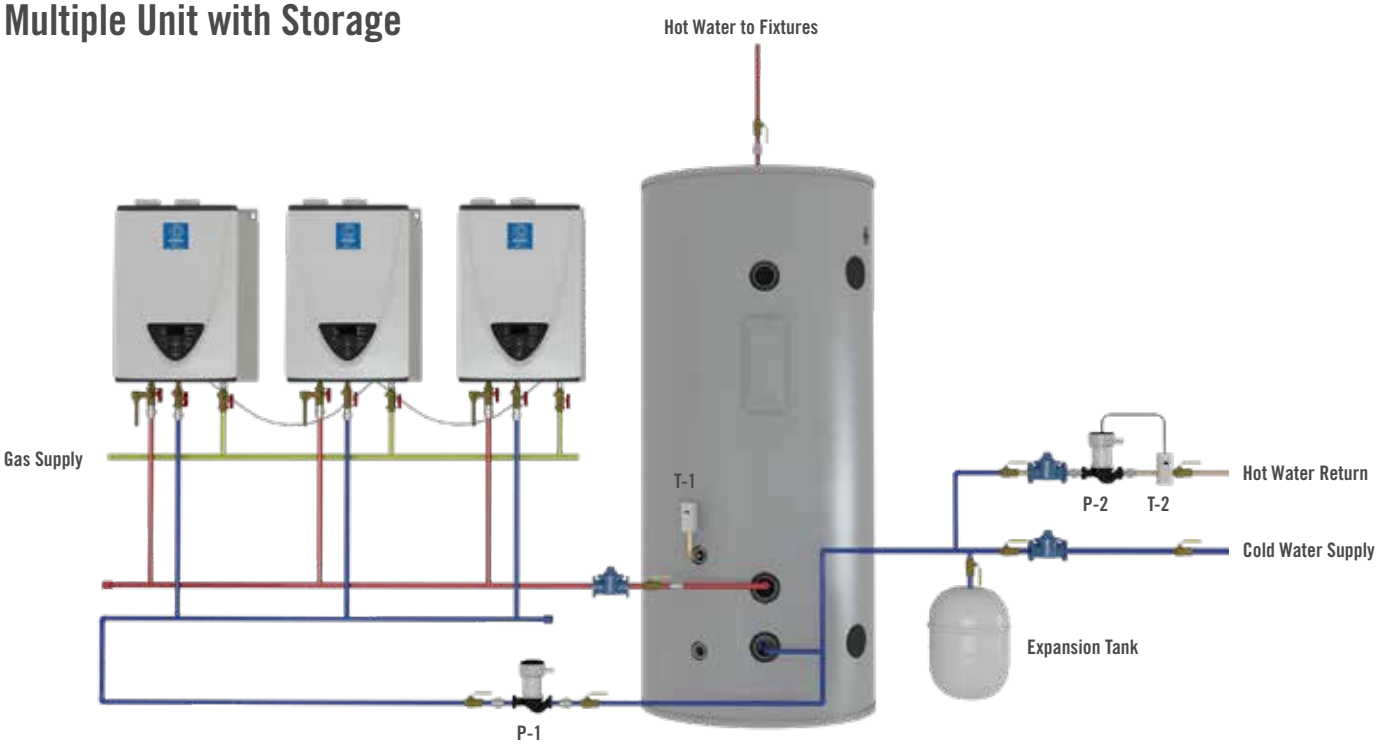
1. Recirculation pump shall be sized for 2-4 gpm per activated heater
2. Recirculation pump shall be controlled by an aquastat. The minimum suggested differential should be 10°F
3. The automatic air should be installed at the highest location of the system in accordance with the manufacturer's instructions.

Multiple Unit with the Multi-Unit Controller



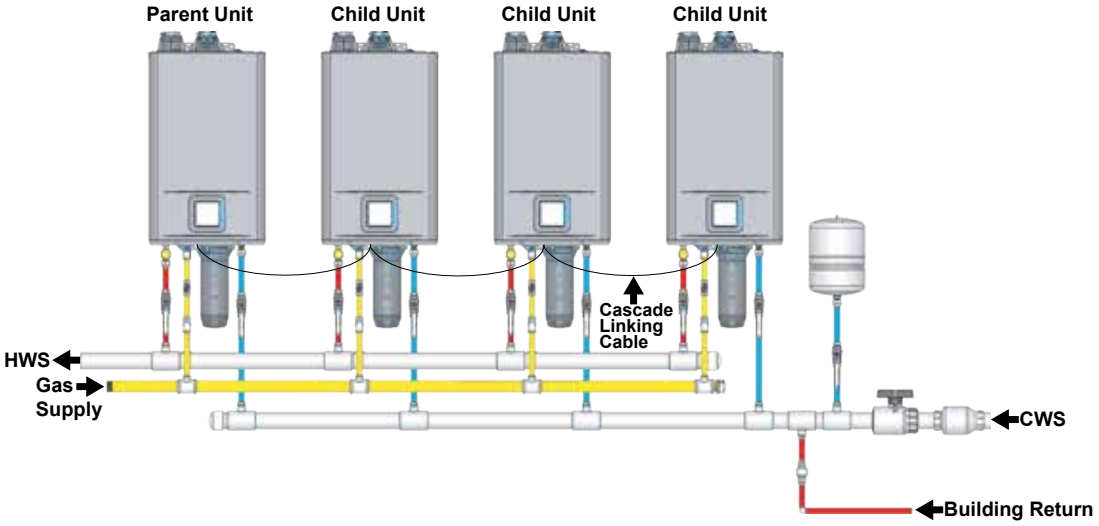
1. Recirculation pump shall be sized for 2-4 gpm per activated heater
2. Recirculation pump shall be controlled by an aquastat. The minimum suggested differential should be 10°F
3. The automatic air should be installed at the highest location of the system in accordance with the manufacturer's instructions.

Multiple Unit with Storage



1. Tank circulation pump, P-1, should be controlled by tank aquastat, T-1.
2. Tank aquastat, T-1, should be set 20°F below water heater set temperature.
3. Pump P-1 should be sized to provide flow necessary to heat the storage tank. Refer to the water heater's spec sheet for pressure drop curves.

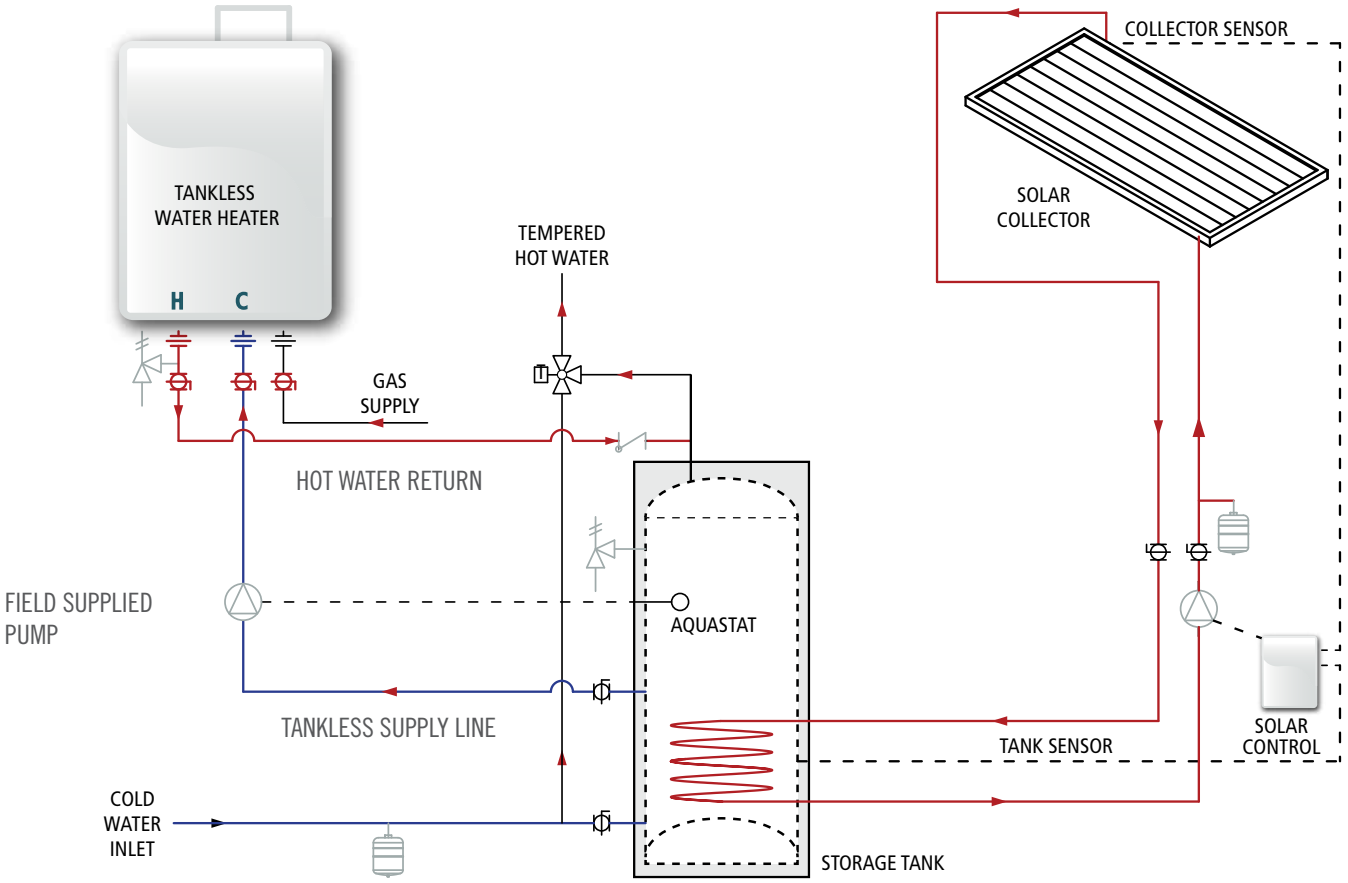
Multiple Units with ADAPT™ Premium Condensing



1. Recirculation pump shall be sized for 2-4 gpm per activated heater.
2. Recirculation pump shall be controlled by an aquastat. The minimum suggested differential should be 10°F
3. The automatic air should be installed at the highest location of the system in accordance with the manufacturer's instructions.

All application diagrams shown are concept drawings only. These diagrams are only to be used as basic guides. It is up to the application designer to properly design the plumbing layout and correctly size all components within an application (pumps, piping, storage tanks, water heaters, etc.). All national and local codes must be followed and will dictate proper compliance.

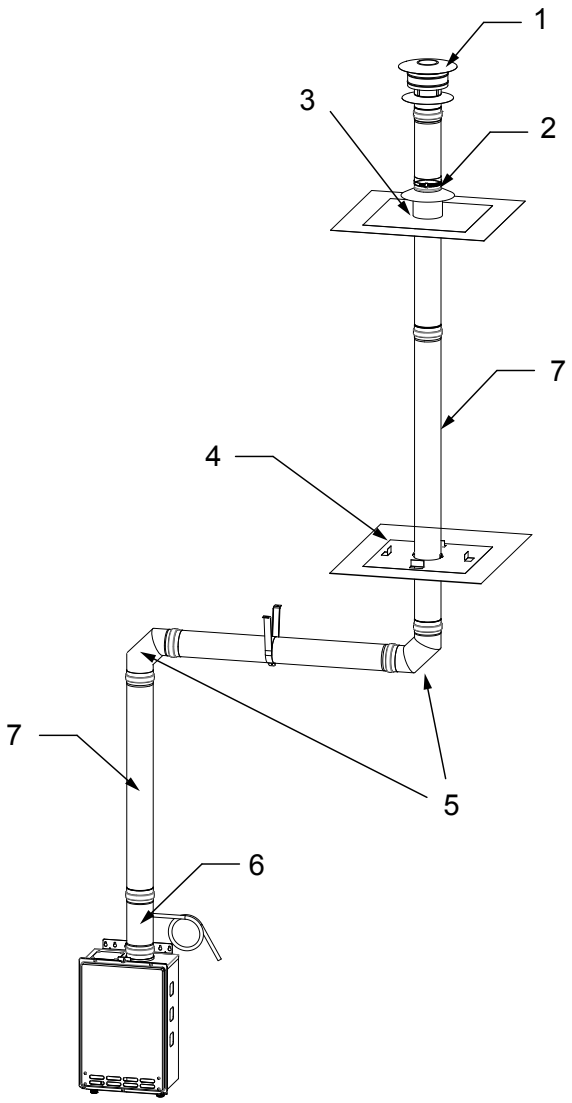
SOLAR TANKLESS BACK UP



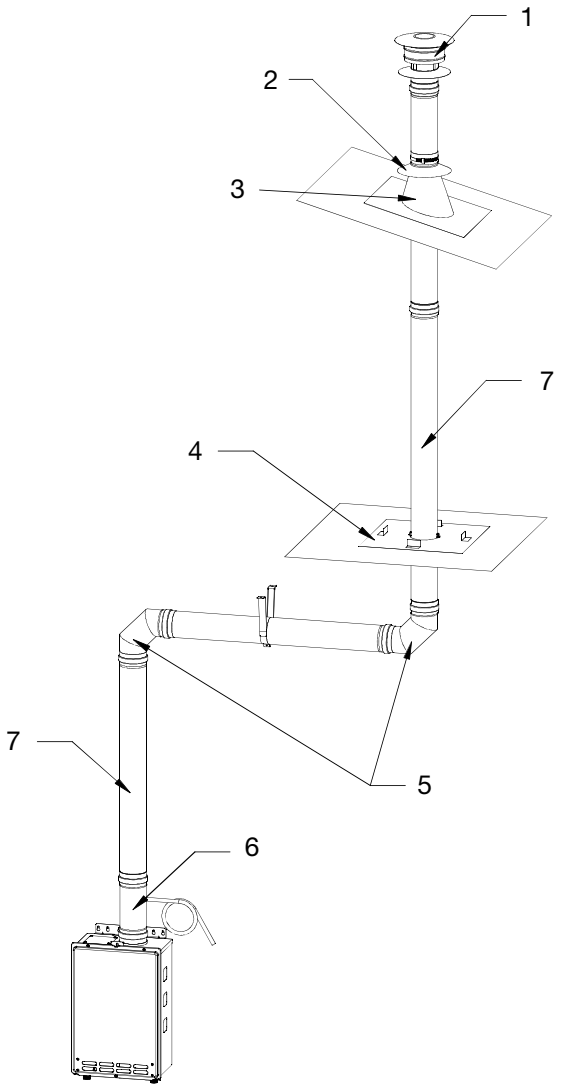
NOTES:

1. Ensure field supplied tank aquastat is in top 1/3 section of the tank.
2. Set tank aquastat 10°F lower than tankless unit set point.
3. Ensure the hot water return from the tankless unit is connected to the hot water outlet from the solar tank as shown in the drawing.
4. The supply line to the tankless unit may be made at the element fitting (after element is removed) with a 1”-11 1/2 NPSH fitting and gasket.
5. Field supplied pump must provide > 3 GPM flow through tankless backup loop - contact pump manufacturer for sizing assistance.

Solar Tankless Back Up Diagrams
4” Rooftop Termination



Models 110U, 310U, 510U				Qty.
4” Flat Roof Termination				
Kit Part Number: 100112727	1	100112548	4” Extreme Weather Rain Cap	1
	2	100112410	4” Storm Collar	1
	3	100112412	4” Flat Roof Flashing	1
	4	100112408	4” Vertical Firestop	1
	5	100112400	4” 90 degree Elbow	2
	6	100112549	4” Universal Appliance Adaptor	1
	7	Refer to Accessories Chart	Straight Pipe	TBD

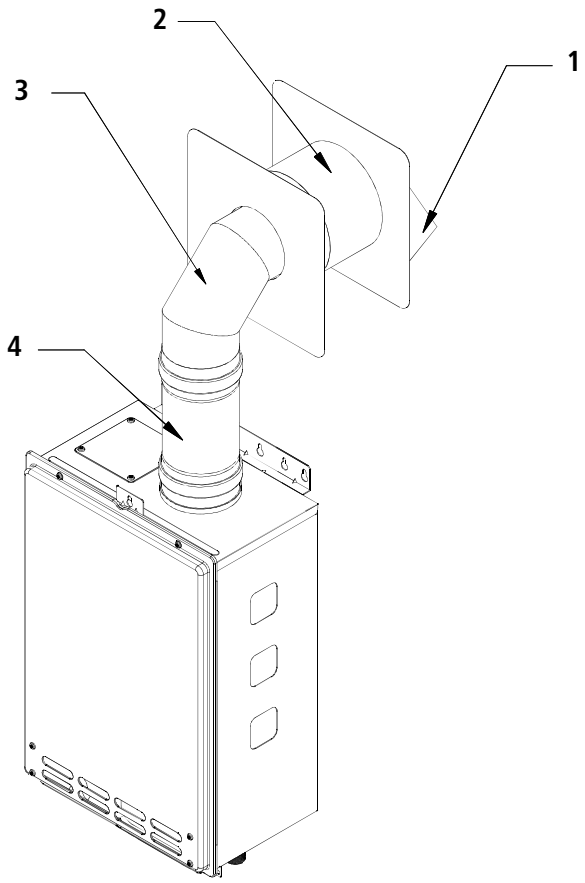


Models 110U, 310U, 510U				Qty.
4” Angled Roof Termination				
Kit Part Number: 100112728	1	100112548	4” Extreme Weather Rain Cap	1
	2	100112410	4” Storm Collar	1
	3	100112411	4” Angeled Roof Flashing	1
	4	100112408	4” Vertical Firestop	1
	5	100112400	4” 90 degree Elbow	2
	6	100112549	4” Universal Appliance Adaptor	1
	7	Refer to Accessories Chart	Straight Pipe	TBD

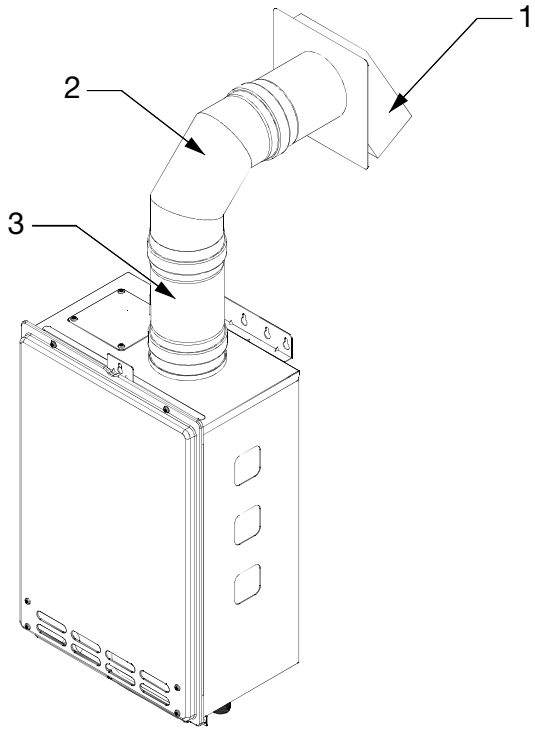
VENTING DIAGRAMS

4” Sidewall Termination

(Please check the wall thickness
for proper installation)



Models 110U, 310U, 510U				Qty.
4” Combustible Sidewall Termination				
Kit Part Number: 100112726	1	100112419	4" Sidewall Hood Terminator	1
	2	100112732	4" Wall Thimble (4.0"-7.0")	1
	3	100112400	4" 90 degree Elbow	1
	4	100112399	4" Female-Female Adaptor	1

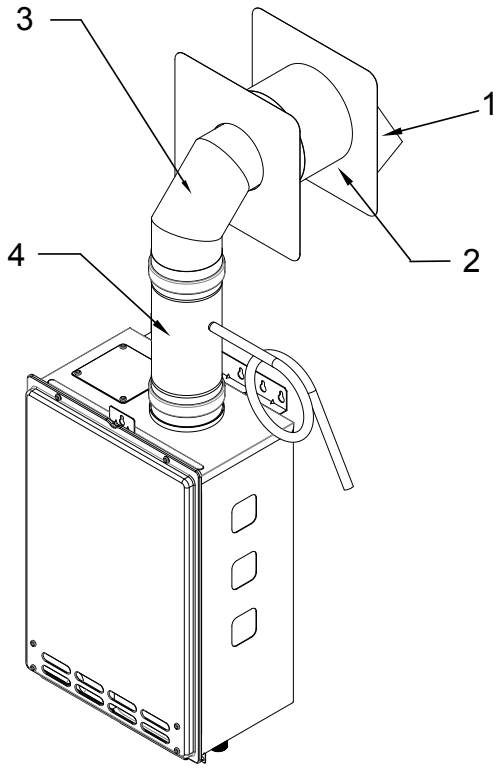


Models 110U, 310U, 510U				Qty.
4" Non-Combustible Sidewall Termination				
Kit Part Number: 100112767	1	100112419	4" Sidewall Hood Terminator	1
	2	100112400	4" 90 degree Elbow	1
	3	100112399	4" Female-Female Adaptor	1

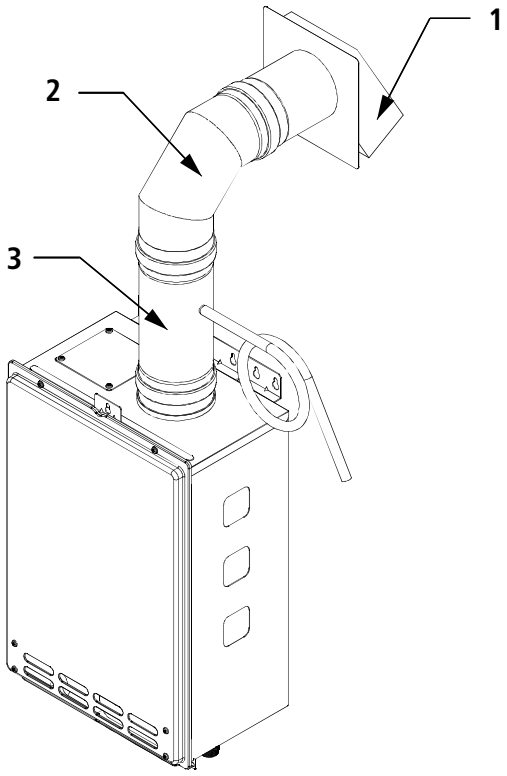
VENTING DIAGRAMS

4” Sidewall Termination (With Condensate Trap)

(Please check the wall thickness
for proper installation)

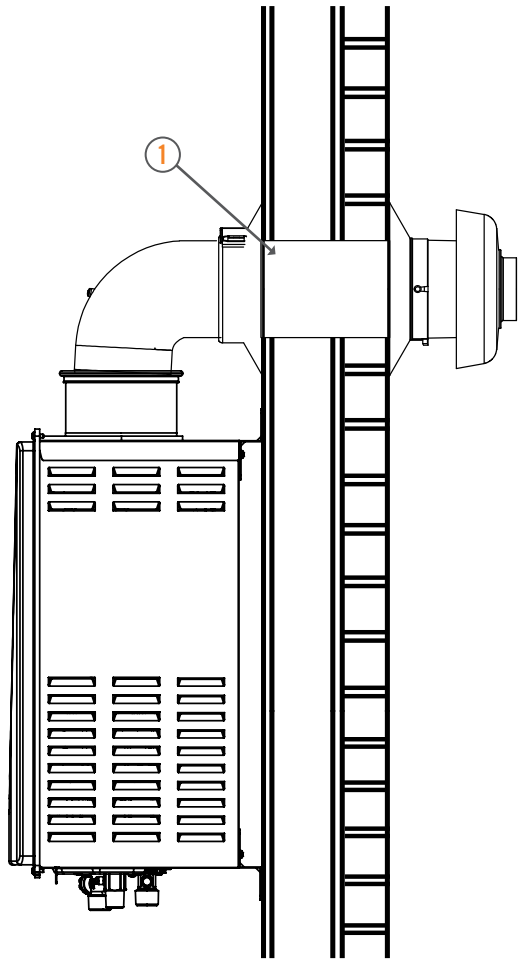


Models 110U, 310U, 510U				Qty.
4” Combustible Sidewall Termination (With Condensate Trap)				
Kit Part Number: 100112775	1	100112419	4" Sidewall Hood Terminator	1
	2	100112732	4” Wall Thimble (4.0”-7.0”)	1
	3	100112400	4” 90 Degree Elbow	1
	4	100112549	4” Universal Appliance Adaptor	1



Models 110U, 310U, 510U				Qty.
4" Non-Combustible Sidewall Termination (With Condensate Trap)				
Kit Part Number: 100112776	1	100112419	4" Sidewall Hood Terminator	1
	2	100112400	4" 90 degree Elbow	1
	3	100112549	4" Universal Appliance Adaptor	1

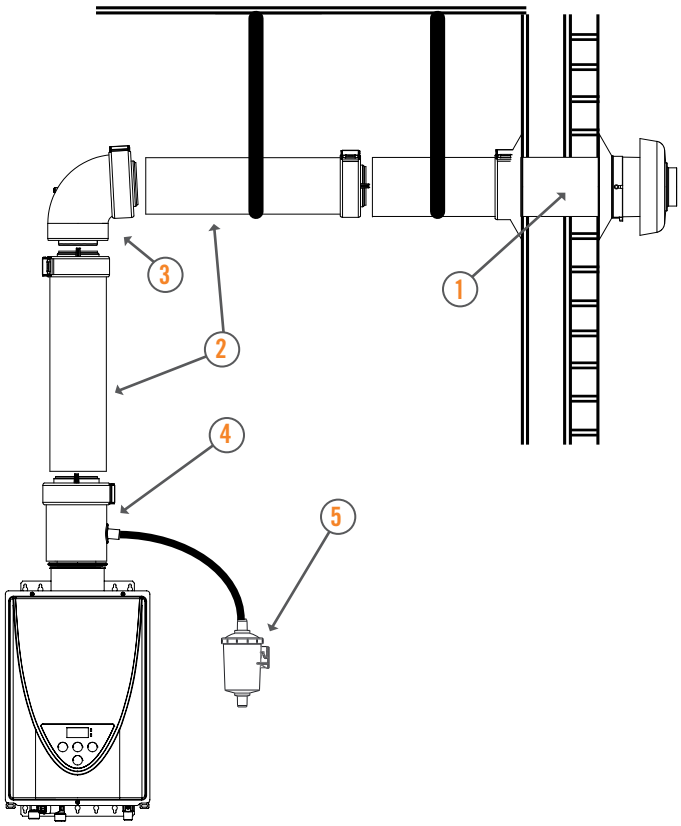
Horizontal Installation



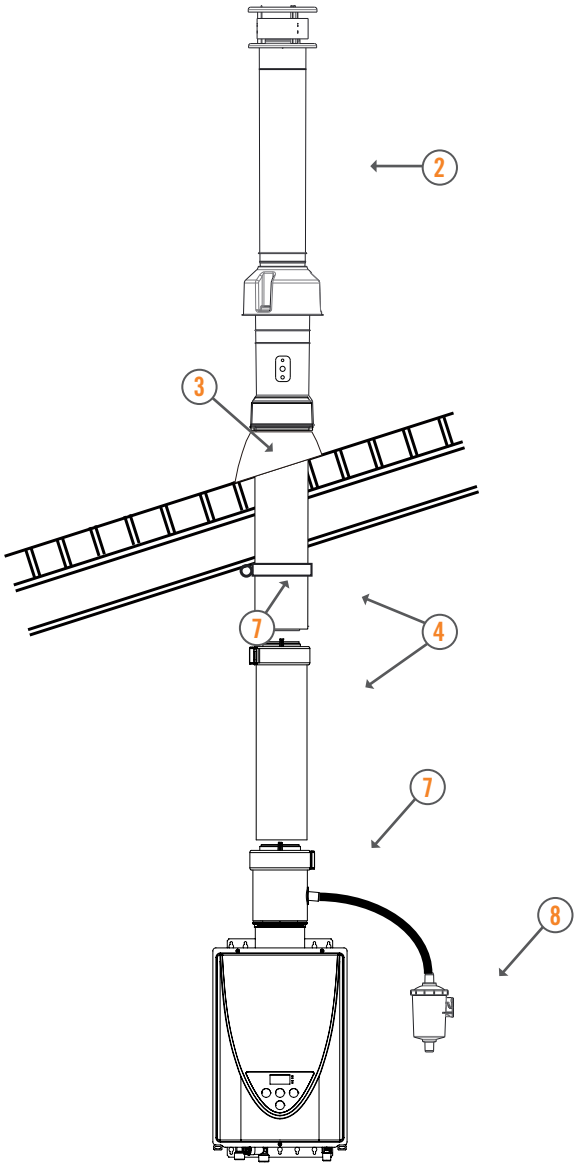
Models 310C/310CX3, 510C/510CX3		
1	Standard Sidewall Kits*	100322374 (11.5")
		100322375 (21")
2	Straight Pipe	100266133 (10")
		100266134 (19.5")
		100266135 (39")
3	Elbow	100266119 (45°) 100266132 (87°)
4	Condensate Collector	100266139
5	Condensate Trap	100266140
6	Flue Adapter	100322379

*This kit includes one 87° elbow and Flue Adapter.

Horizontal Installation

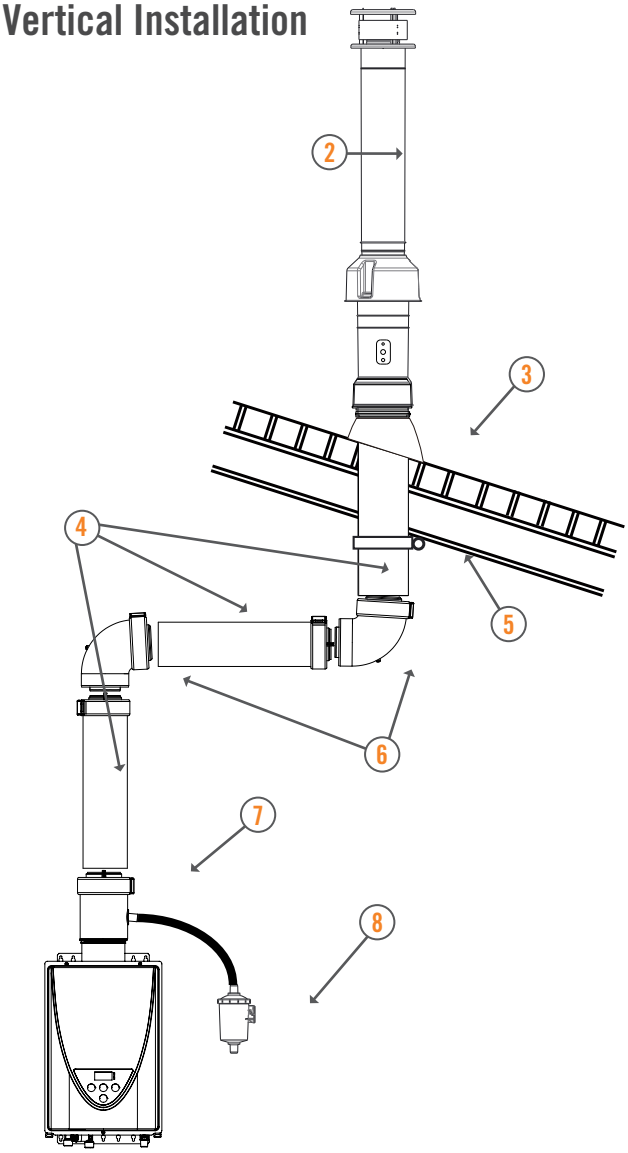


Vertical Installation



Vertical Installation		
Models 310C/310CX3, 510C/510CX3		
	Roof Termination (38")	100305170
2	Roof Termination (38")	100266118
3	Tile/Shingle Roof Flashing	100266136 (1/12 to 6/12 pitch)
		100266137 (8/12 to 16/12 pitch)
		100266138 (6/12 to 12/12 pitch)
		100266187 (Flat Roof)
4	Straight Pipe	100266133 (10")
		100266134 (19.5")
		100266135 (39")
5	Pipe Hangers	100266141
6	Elbow	100266119 (45°) 100266132 (87°)
7	Condensate Collector	100266139
8	Condensate Trap	100266140

Vertical Installation



VENTING COMPONENTS

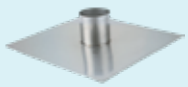
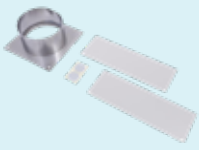
Simple Leak-Proof Gasketed Connections – No Sealant Required. High Quality – Category III / IV Stainless Steel.
Versatile – Vertical and Horizontal Terminations. Convenient – Vent Kits Available.
UL Listed. All Connections have Heat-Resistant Rubber Gaskets.

Nova Vent Part #	Description	
Straight Vent Pipe		
100112407	4" Straight pipe - 6" Length	
100112406	4" Straight pipe - 12" Length	
100112404	4" Straight pipe - 24" Length	
100112403	4" Straight pipe - 36" Length	
100112402	4" Straight pipe - 48" Length	
100112580	5" Straight pipe - 6" Length	
100112581	5" Straight pipe - 12" Length	
100112582	5" Straight pipe - 24" length	
100112583	5" Straight pipe - 36" Length	
100112584	5" Straight pipe - 48" Length	
Adjustable Vent Pipe		
100112405	4" Adjustable Pipe (7"- 9.9")	
100112585	5" Adjustable Pipe (7"- 9.9")	
Elbow		
100112401	4" 45 Degree Elbow	
100112586	5" 45 Degree Elbow	
100112400	4" 90 Degree Elbow	
100112587	5" 90 Degree Elbow	
Adaptor		
100112399	4" Female-Female Adaptor	
100112599	5" Female-Female Adaptor	
100112549	4" Universal Appliance Adaptor 3-in-1 (F-F adaptor,condensate drain, & back-flow preventer)	
100112597	5" Universal Appliance Adaptor 3-in-1 (F-F adaptor, condensate drain, & back-flow preventer)	

Nova Vent Part #	Description	
Backflow Preventer		
100112416	4" Backflow Preventer & F-F Adaptor	
100112598	5" Back-flow Preventer & F-F Adaptor	
Condensation Drain		
100112414	4" Horizontal Drain Tee	
100112588	5" Horizontal Drain Tee	
100112413	4" Vertical Drain Tee	
100112589	5" Vertical Drain Tee	
Support		
100112409	4" Support Strap (1")	
100112600	5" Support Strap (1")	
Wall Thimble		
100112732	4" Wall Thimble (4"-7")	
100112733	4" Wall Thimble (5"-10")	
100112734	5" Wall thimble (4"-7")	
100112735	5" Wall thimble (5"-10")	
4" Sidewall Termination & Thimble Kit		
100112424	Sidewall Vent Terminator (Hood) and Wall Thimble (4"-7")	
100112425	Sidewall Vent Terminator (Hood) and Wall Thimble (5"-10")	

Note: 110U, 140, 310U, 510U, 240/X3, 340/X3, 540/P/X3 series are compatible with 4" components. 910 series is compatible with 5" components.

VENTING COMPONENTS

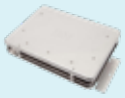
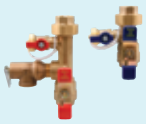
Nova Vent Part #	Description	
Termination		
100112547	4” Termination Tee	
100112595	5” Termination Tee	
100112419	4”Exhaust Sidewall Vent Terminator (Hood)	
100112594	5”Exhaust Sidewall Vent Terminator (Hood)	
100112415	4” Rain Cap	
100112548	4” Extreme Weather Rain Cap	
100112596	5” Extreme Weather Rain Cap	
100112163	3” Concentric PVC Termination	
Firestop		
100112408	4” Firestop	
100112591	5” Firestop	
Roof Flashing		
100112412	4” Flat Roof Flashing	
100112592	5” Flat Roof Flashing	
100112411	4” Angled Roof Flashing	
100112593	5” Angled Roof Flashing	
Storm Collar		
100112410	4” Storm Collar	
100112590	5” Storm Collar	
Direct Vent Conversion Kit		
100112186	Direct Vent Conversion Kit for Model 910	

Nova Vent Part #	Description	
Intake Hood (Galvanized)		
100112545	3”	
100112546	4”	
100112547	5”	

Direct Vent, Concentric Sidewall Termination Kit		
100112421	5.0” to 10.0” 3” Intake, 4” Exhaust	
100112420	12.0” to 18.0” 3” Intake, 4” Exhaust	
100112602	5.0” to 10.0” 4” Intake, 4” Exhaust	
100112603	12.0” to 18.0” 4” Intake, 4” Exhaust	
100112606	5.0” to 10.0” 5” Intake, 5” Exhaust	
100112601	12.0” to 18.0” 5” Intake, 5” Exhaust	

Note: 110U, 140, 310U, 510U, 240/X3, 340/X3, 540/P/X3 series are compatible with 4” components. 910 series is compatible with 5” components.

ACCESSORIES - NON-CONDENSING & STANDARD CONDENSING

	Description		ATHR-X3	ATHR-M	GTS-110U-I	GTS-110U-E	GTS-310C-NI	GTS-310U-I	GTS-310U-E	GTS-510C	GTS-510U-I	GTS-510U-E	GTS-140-NIH	GTS-140-NEH	GTS-240-NIH/X3	GTS-240-NEH/X3	GTS-340-NIH/X3	GTS-340-NEH/X3	GTS-540-NIH//X3	GTS-540-NEH//X3	SCT-1991/O	GTS-540P-NIH	GTS-540P-NEH
100112194	Outdoor Vent Cap																						
100266729, 100266730	Recess Box Retrofit New Construction					x			x			x		x									
100112188	Pipe Cover				x	x																	
100324434					x	x		x	x		x	x											
100112190																							
100112718															x	x	x	x	x	x	x	x	x
100187904													x	x									
100112691	Multiple Unit Controller									x	x*	x*							x**	x**	x		
100112183	Remote Temperature Controller				x	x		x	x														
100112155											x	x											
100209924					x*	x*	x	x*	x*	x	x*	x*	x	x	x	x	x	x	x	x			
100276687																						x	x
100112572																					x		
100112156	Isolation Valves (Lead Free)				x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
100112159	Neutralizer												x	x	x	x	x	x	x	x	x	x	x
100113129	PVC Adapter for Common Venting														x		x		x		x	x	
100113130	Non-Return Valve for Common Venting														x		x		x		x	x	
100291509	Product Preservers® Anti-Scale System				x	x	x	x	x	x	x	x	x	x	x**	x**	x**	x**	x**	x**	x	x	x
100291510	Product Preservers Replacement Cartridge				x	x	x	x	x	x	x	x	x	x	x**	x**	x**	x**	x**	x**	x	x	x

*Compatible with Ultra-Low NOx models only
**Non-X3 models

ACCESSORIES - ADAPT™ PREMIUM

Part Number	Description	Image	ATHR-X3	ATHR-M
100368986	X3 Cartridge			
100371922	Wi-Fi Module Kit			
100377310	Remote Temp Controller			
100377342	Communication Cable – 10', 32'			
100371920	Remote Recirculation Kit – Two Buttons			
100371921	Remote Recirculation Kit – Three Buttons			
10377309	Individual Spare Button			
100325654	X3 Freeze Protection (X3 Models)			
100371918	Bypass Freeze Protection (M Models)			
100374697	Pipe Cover			
100112159	Neutralizer Assembly Kit			
100369060	Outdoor Vent Cap Kit			
100112156	Isolation Valve Kit with Pressure Relief Valve			
100327167	Cross Over Valve Kit			

PRODUCT OVERVIEW - NON-CONDENSING

	I = Indoor O= Outdoor		Connection: Gas/Water Power	Venting Intake Exhaust	Easy-LinkTM (EL) Multi-Unit (MU)	Temperature	GPM (Max) Per Unit	Uniform Energy Factor	Max BTU/h	Dimension/ Weight
Residential Non-Condensing	310C Series  GTS-310C-NI  GTS-310C-NI	Ideal for 2 to 3 bath homes	3/4" Gas/Water 120 VAC	3" / 5" Concentric, 43' Max	N/A	100 - 140 °F	8.0	0.81	190,000	H= 20-1/2" W= 13-3/4" D= 11-1/2" 51 lbs
	510C Series NSF  GTS-510C-NI  GTS-510C-NI	Well suited for light commercial applications. Commerical-grade copper	3/4" Gas/Water 120 VAC	3" / 5" Concentric, 43' Max	(EL) 4 units (MU) 20 unit	100 - 160 °F	10.0	0.81	199,000	H= 20-1/2" W= 13-3/4" D= 11-1/2" 51 lbs
	110U Series  GTS-110U-I  GTS-110U-E	Great for apartments, condos and summer cabins.	3/4" Gas/Water 120 VAC	I Model: 3" Intake, 60' Max 4" Exhaust, 60' Max	N/A	100 - 140 °F	6.6	I: 0.81 O: 0.81	140,000	H= 20-1/2" W= 13-3/4" D= 10" 38 lbs
	310U Series  GTS-310U-I  GTS-310U-E	Ideal for 2 to 3 bath homes	3/4" Gas/Water 120 VAC	I Model: 3" Intake, 60' Max 4" Exhaust, 60' Max	N/A	100 - 140 °F	8.0	I: 0.81 O: 0.81	190,000	H= 20-1/2" W= 13-3/4" D= 10" 38 lbs
	510U Series NSF  GTS-510U-I  GTS-510U-E	Well suited for light commercial applications. Commerical-grade copper	3/4" Gas/Water 120 VAC	I Model: 3" Intake, 60' Max 4" Exhaust, 60' Max	(EL) 4 units (MU) 20 units	100 - 160 °F	10.0	I: 0.81 O: 0.81	199,000	H= 20-1/2" W= 13-3/4" D= 10" 40 lbs
	CT-199 Series NSF  SCT-199I-N  SCT-199O-N	High efficiency ultra-low NOx condensing tankless. 3" PVC venting. 0" clearance to combustible.	3/4" Gas/Water 120 VAC	Intake & Exhaust 3", 70' Max, 5 elbow Max OR 4", 100' Max, 5 elbow Max	(EL) 4 units (MU) 20 units	100 - 185 °F	10.0 (Up to 200 GPM max with 20 unit system)	Thermal Efficiency 96% I: 0.93 O: 0.95	199,000	H = 23-5/8" W = 17-3/4" D = 11-1/4" 59 lbs

PRODUCT OVERVIEW - STANDARD CONDENSING

Residential Standard Condensing

I = Indoor O= Outdoor			Connection: Gas/Water Power	Venting Intake Exhaust	EASY-LINK™ (EL) Multi-Unit (MU)	Temperature	GPM (Max) Per Unit	Uniform Energy Factor	Max BTU/h	Dimension/ Weight
140 Series  GTS-140-NIH  GTS-140-NEH	High efficiency ultra-low NOx condensing tankless. 3" PVC venting. 0" clearance to combustible.	1/2" Gas 3/4" Water 120 VAC	Intake & Exhaust 3", 70' Max, 5 elbow Max OR 4", 100' Max, 5 elbow Max	N/A	100 - 140 °F	7.0	I: 0.90 O: 0.91	120,000	H = 22-7/8" W = 13-7/8" D = 10-3/4" 50 lbs
240 Series  GTS-240-NIH  GTS-240-NEH	High efficiency ultra-low NOx condensing tankless. 3" PVC venting. 0" clearance to combustible.	3/4" Gas/Water 120 VAC	Intake & Exhaust 3", 70' Max, 5 elbow Max OR 4", 100' Max, 5 elbow Max	N/A	100 - 140 °F	6.6	I: 0.94 O: 0.95	160,000	H = 23-5/8" W = 17-3/4" D = 11-1/4" 58 lbs
340 Series  GTS-340-NIH  GTS-340-NEH	High efficiency ultra-low NOx condensing tankless. 3" PVC venting. 0" clearance to combustible.	3/4" Gas/Water 120 VAC	Intake & Exhaust 3", 70' Max, 5 elbow Max OR 4", 100' Max, 5 elbow Max	N/A	100 - 140 °F	8.0	I: 0.95 O: 0.94	180,000	H = 23-5/8" W = 17-3/4" D = 11-1/4" 58 lbs
540 Series NSF  GTS-540-NIH  GTS-540-NEH	High efficiency ultra-low NOx condensing tankless. 3" PVC venting. 0" clearance to combustible.	3/4" Gas/Water 120 VAC	Intake & Exhaust 3", 70' Max, 5 elbow Max OR 4", 100' Max, 5 elbow Max	(EL) 4 units (MU) 20 units	100 - 160 °F	10.0	I: 0.93 O: 0.95	199,000	H = 23-5/8" W = 17-3/4" D = 11-1/4" 59 lbs
540P Series  GTS-540P-NI  GTS-540P-NE	High efficiency ultra-low NOx condensing tankless with integrated recirculation pump.	3/4" Gas/Water 120 VAC	Intake & Exhaust 3", 70' Max, 5 elbow Max OR 4", 100' Max, 5 elbow Max	(EL) 4 units	100 - 140 °F	10.0	I: 0.93 O: 0.95	199,000	H = 23-5/8" W = 17-3/4" D = 11-1/4" 61 lbs
240HX3 Series  GTS-240X3-NIH  GTS-240X3-NEH	High efficiency ultra-low NOx condensing tankless. 3" PVC venting. 0" clearance to combustible.	3/4" Gas/Water 120 VAC	Intake & Exhaust 3", 70' Max, 5 elbow Max OR 4", 100' Max, 5 elbow Max	N/A	100 - 140 °F	6.6	I: 0.94 O: 0.95	160,000	H = 23-5/8" W = 17-3/4" D = 11-1/4" 58 lbs *cabinet only
340HX3 Series  GTS-340X3-NIH  GTS-340X3-NEH	High efficiency ultra-low NOx condensing tankless. 3" PVC venting. 0" clearance to combustible.	3/4" Gas/Water 120 VAC	Intake & Exhaust 3", 70' Max, 5 elbow Max OR 4", 100' Max, 5 elbow Max	N/A	100 - 140 °F	8.0	I: 0.95 O: 0.94	180,000	H = 23-5/8" W = 17-3/4" D = 11-1/4" 58 lbs *cabinet only
540HX3 Series  GTS-540X3-NIH  GTS-540X3-NEH	High efficiency ultra-low NOx condensing tankless. 3" PVC venting. 0" clearance to combustible.	3/4" Gas/Water 120 VAC	Intake & Exhaust 3", 70' Max, 5 elbow Max OR 4", 100' Max, 5 elbow Max	N/A	100 - 160 °F	10.0	I: 0.93 O: 0.95	199,000	H = 23-5/8"* W = 17-3/4" D = 11-1/4" 59 lbs *cabinet only

PRODUCT OVERVIEW - PREMIUM CONDENSING

Indoor/Outdoor			Connection: Gas/Water Power	Venting Intake Exhaust	CASCADE	Temperature	GPM (Max) Per Unit	Uniform Energy Factor	Max BTU/h	Dimension/ Weight
Premium Condensing	199X3 Series  STHR-199X3  With Outdoor Vent Cap (sold separately)	High efficiency ultra-low NOx condensing tankless. 3" PVC venting. 0" clearance to combustible.	1/2" Gas 3/4" Water 120 VAC	Intake & Exhaust 3", 70' Max, 5 elbow Max OR 4", 100' Max, 5 elbow Max	12 Units	100 - 140 °F	10.5	0.95	199,000	H = 41.8" W = 16.5" D = 16.1" 104 lb.
	180X3 Series  STHR-180X3  With Outdoor Vent Cap (sold separately)	Premium efficiency ultra-low NOx condensing tankless, 2" (75'); 3" (150') PVC, CPVC, Polypropylene (Solid Core Only)	1/2" Gas 3/4" Water 120 VAC	Intake & Exhaust 2", 75'; 3", 150', 5 elbow max.	12 Units	100 - 140 °F	10.5	0.95	180,000	H = 41.8" W = 16.5" D = 16.1" 104 lb.
	160X3 Series  STHR-160X3  With Outdoor Vent Cap (sold separately)	Premium efficiency ultra-low NOx condensing tankless, 2" (75'); 3" (150') PVC, CPVC, Polypropylene Polypropylene (Solid Core Only)	1/2" Gas 3/4" Water 120 VAC	Intake & Exhaust 2", 75'; 3", 150', 5 elbow max.	12 Units	100 - 140 °F	10.5	0.95	160,000	H = 41.8" W = 16.5" D = 16.1" 104 lb.
	199M Series  STHR-199M  With Outdoor Vent Cap (sold separately)	Premium efficiency ultra-low NOx condensing tankless, 2" (75'); 3" (150') PVC, CPVC, Polypropylene (Solid Core Only)	1/2" Gas 3/4" Water 120 VAC	Intake & Exhaust 2", 75'; 3", 150', 5 elbow max.	12 Units	100 - 140 °F	10.5	0.95	199,000	H = 33.8" W = 16.5" D = 16.1" 104 lb.
	180M Series  STHR-180M  With Outdoor Vent Cap (sold separately)	Premium efficiency ultra-low NOx condensing tankless, 2" (75'); 3" (150') PVC, CPVC, Polypropylene (Solid Core Only)	1/2" Gas 3/4" Water 120 VAC	Intake & Exhaust 2", 75'; 3", 150', 5 elbow max.	12 Units	100 - 140 °F	10.5	0.95	180,000	H = 33.8 W = 16.5" D = 16.1" 104 lb.
	160M Series  STHR-160M  With Outdoor Vent Cap (sold separately)	Premium efficiency ultra-low NOx condensing tankless, 2" (75'); 3" (150') PVC, CPVC, Polypropylene (Solid Core Only)	1/2" Gas 3/4" Water 120 VAC	Intake & Exhaust 2", 75'; 3", 150', 5 elbow max.	12 Units	100 - 140 °F	10.5	0.95	160,000	H = 33.8" W = 16.5" D = 16.1" 104 lb.

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