TAKAGI

TANKLESS PRODUCT GUIDE

WWW.TAKAGI.COM

SAVE ENERGY.

Energy-efficient, plentiful, and endless supply of hot water.

SAVE SPACE.

Compact size and wall-mounted to free up valuable floor space.

SAVE MONEY.

The smart choice that will save you a substantial amount of energy.

Takagi has delivered innovative hot water solutions for more than 70 years, and is sold exclusively by plumbing wholesalers and contractors. Takagi's selection of residential and commercial tankless water heaters are unmatched for quality and diversity. Anywhere hot water is needed, Takagi provides an energy-efficient solution with long-lasting value for years after installation. Takagi stands behind its products and customers with world-class service, combining cutting-edge technology with committed people who take pride in being the very best.

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.

*Takagi tankless water heaters provide endless hot water when sized appropriately for your home's needs.

ENERGY CONSERVATION

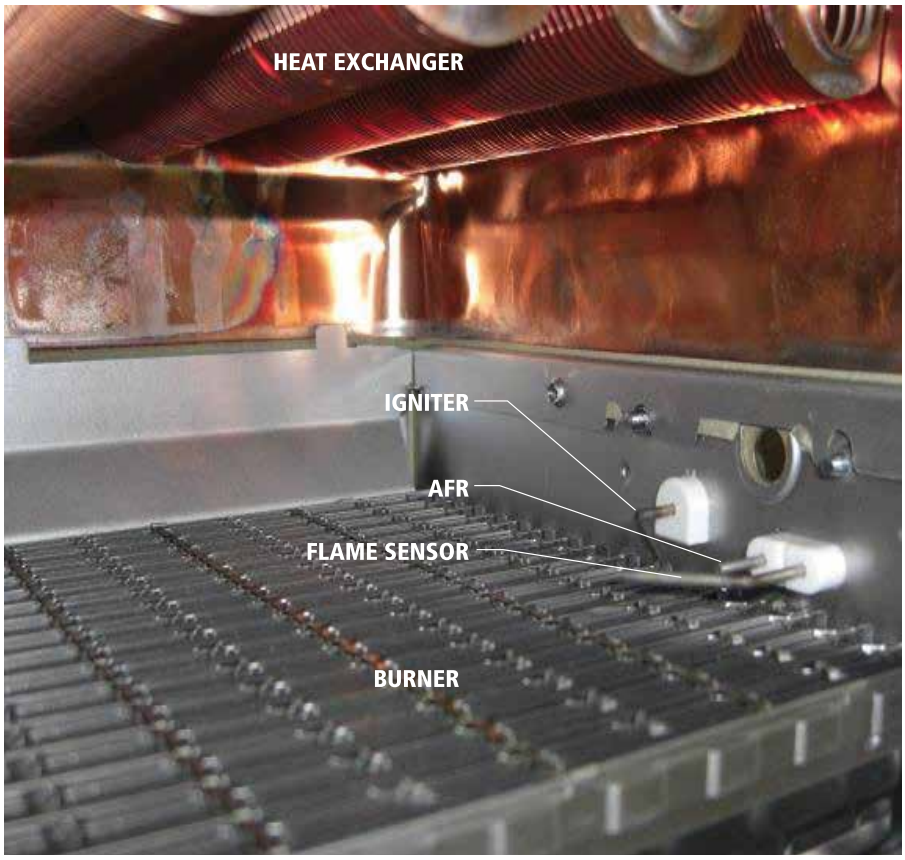
Provides you with continuous hot water... in one of the most energy-efficient ways possible. Conventional tank-type water heaters will heat and store a set volume of water, regardless of whether someone is using that hot water or not. Because our water heaters only activate when hot water is being used,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

COMPACT SIZE

On top of all this, a Takagi tankless water heater takes up much less space than your conventional tank-type water heater or boiler. With no tank or boiler to steal valuable storage space, Takagi's wall-mount design allows for additional storage and flexibility.

Safety

At Takagi, 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 Takagi quality product.



Air-Fuel Ratio (AFR) Sensor

Takagi'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.

Additional Safety Features

Freeze Protection:

Every heater in Takagi'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.

Hi-Limit Switch:

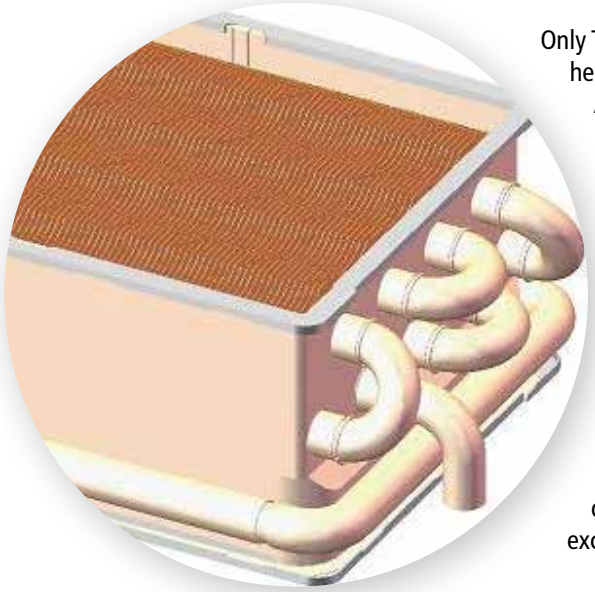
Ensures that water temperatures do not exceed safe levels. Before the water temperature can even reach these unsafe levels, the hi-limit switch activates by disengaging the gas valves, effectively shutting down the water heater.

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.

Durability

Heat Exchanger with Commercial-Grade Copper



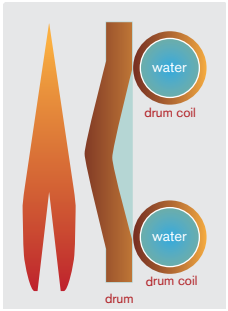
Only Takagi incorporates true commercial-grade heat exchangers in our tankless heaters. NOTE: D2 Series, D2U Series, H3 Series and M50 Series non-ASME models. All aspects of the heat exchanger are designed to add the durability and reliability that is vital to any successful commercial organization or business.

Commercial-Grade Copper Alloy

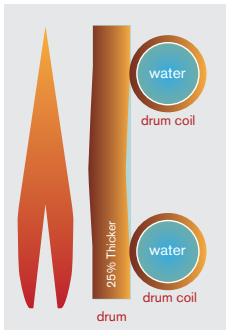
Our commercial-grade copper is a heat-resistant copper alloy, with additive elements that make it much stronger and harder than the standard C1220 copper used in most other heat exchangers. Our commercial-grade copper has 8 times the tensile strength of regular copper. Even at high temperatures, our 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.

Commercial-Grade Copper Tubing

A thinner drum strains more under heat stress



A thicker drum creates less strain on the heat exchanger



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.

Water Valves

Making true commercial-grade water heaters involves more than just redesigning our heat exchangers—every internal component has to measure up to Takagi'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 water heaters (D2/U, H3 & M50 series) 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.

Stepper Motor Water Valves

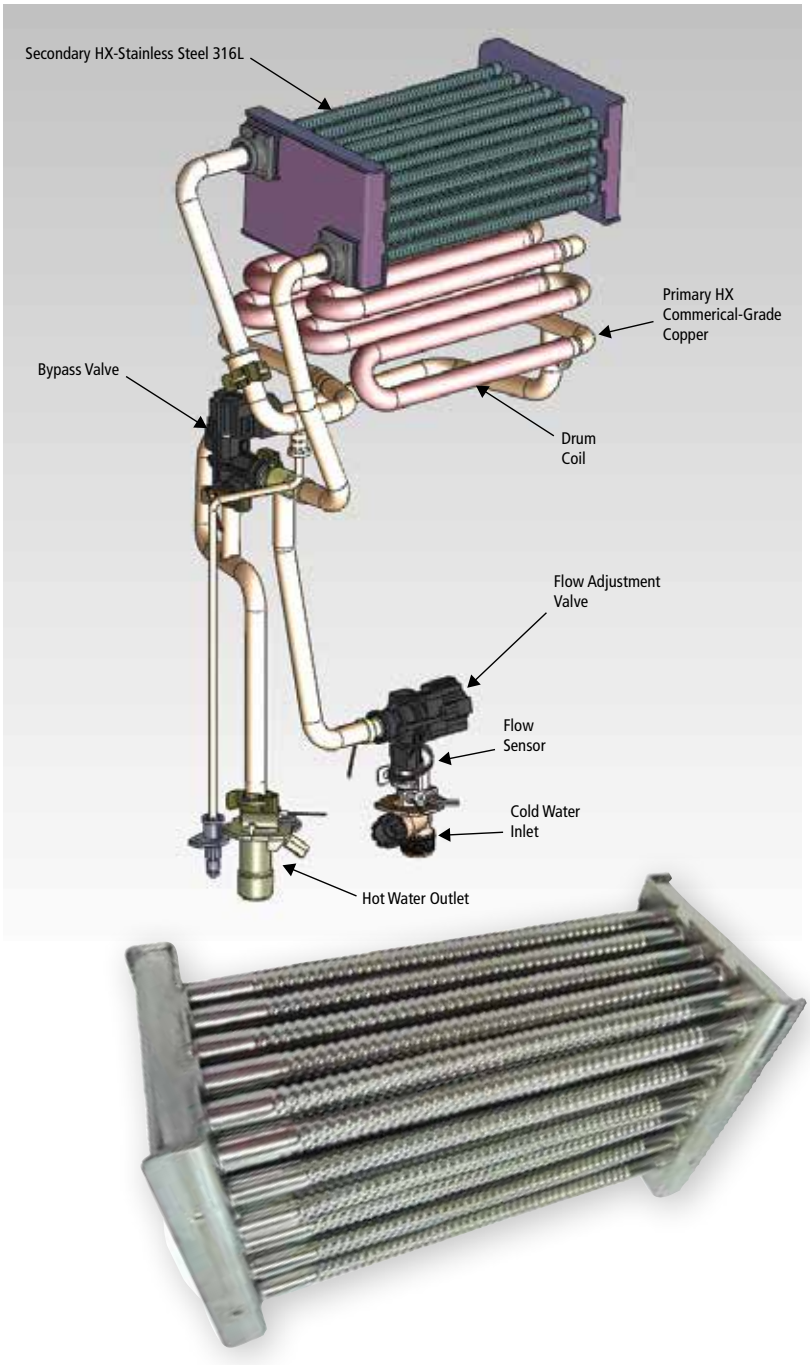
Bypass Valve - D2/U and H3 Models

Flow Adjustment - D2/U and H3 Models

Secondary Heat Exchanger 316L Stainless Steel (Condensing Models Only)

The secondary condensing heat exchanger is made of high-quality 316L stainless steel. This is where the rest of the heat transfer occurs. Due to the lower temperature acidic condensation occurs, and stainless steel is required in order to avoid corrosion.

For condensing heat exchangers, it is more suitable to use 316L stainless steel because of the extreme environment (heat, acidic condensation, chloride) that the material is subjected to.



Primary Heat Exchanger: Copper vs. Stainless Steel

- Heat transfers 25 times more readily through copper than stainless steel. Consequently, for the same amount of heat transfer, stainless steel heat exchangers need to be larger than copper heat exchangers, leading to a larger pressure loss.
- At higher temperatures, it is the nature of stainless steel to become prone to a number of problems not usually experienced at room temperature. It is vulnerable to pitting corrosion and stress corrosion cracking (SCC).
    - Stainless steel is **NOT** better for durability because it is harder. Hardness causes the material to become brittle. Stainless steel will crack after numerous cycles of thermal expansion/contraction, especially with chloride in the water. Copper heat exchangers are less brittle and better suited for expansion/contraction without cracking.
    - In a *dual* heat exchanger design, corrosion is not a big concern in the non-condensing primary heat exchanger because no condensation forms on the exterior of the pipes. Stainless steel is unnecessary for this stage.

Note: H3M, H3J and H3S condensing line units use C1220 copper and do not have a bypass valve

** Diagram represents H3*

Water Flow

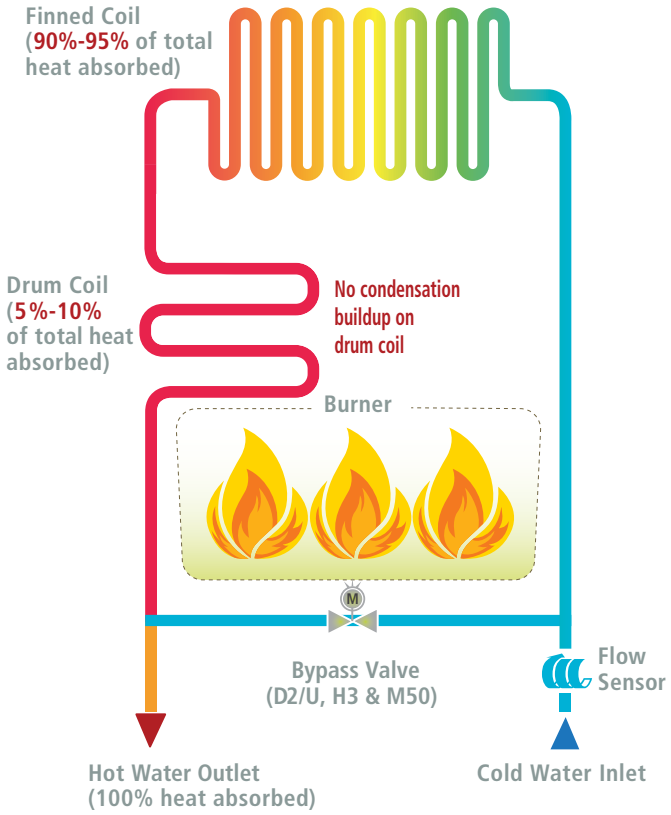
Condensation can build up over time in any heat exchanger, causing damage and premature leaks. Takagi's commercial models (M50 series) include condensation reduction features that safeguard against these types of damaging effects.

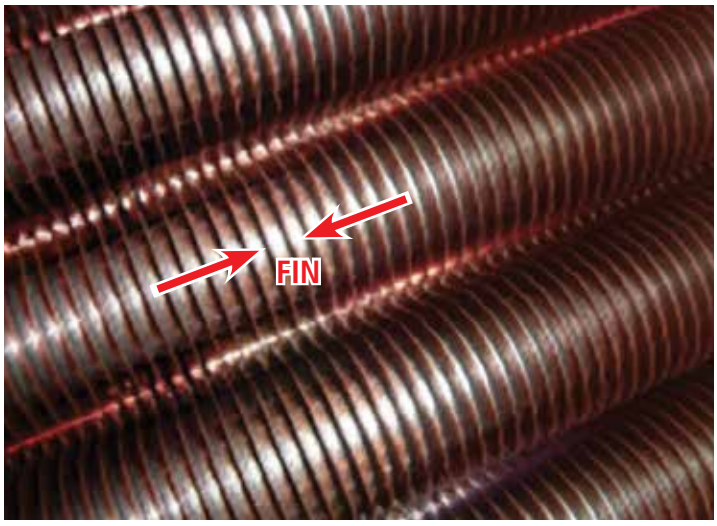
Better Water Pathway Design

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.





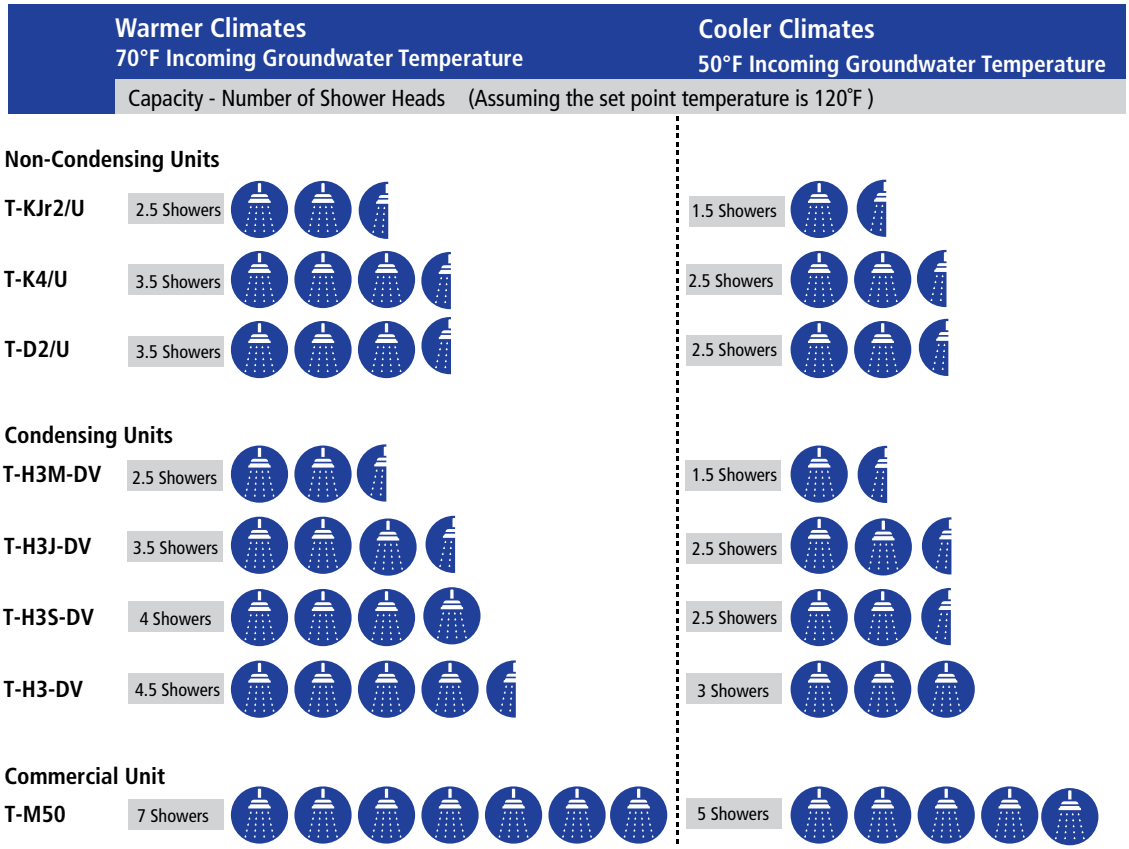
Basic Sizing Guidelines

The flow rate capacity of tankless water heaters depends on the temperature difference between the desired output and incoming water temperature. The flow rate comparison chart and table shown here summarize the flow rate charts found in the specifications of each model.

Takagi 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. It is up to the application designer/ engineer to determine the amount of fixture units within any given application.

Match the Unit to Your Needs



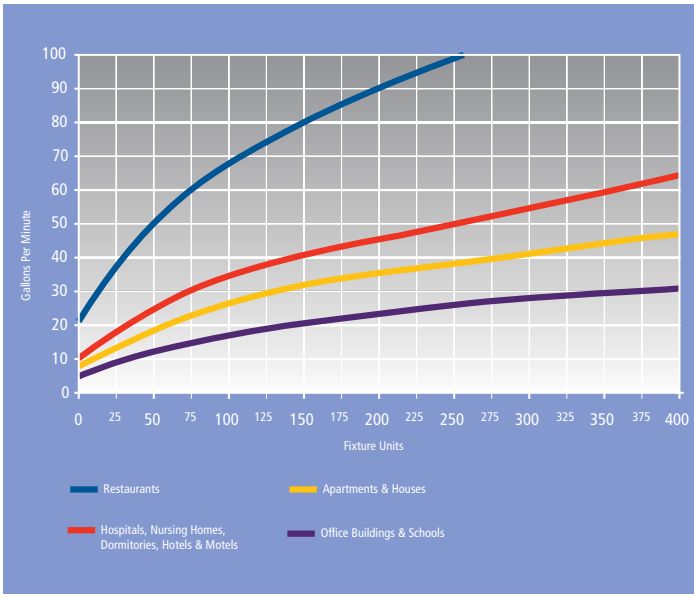
Flow Rate Guide

Temperature Rise vs. Gallons per Minute

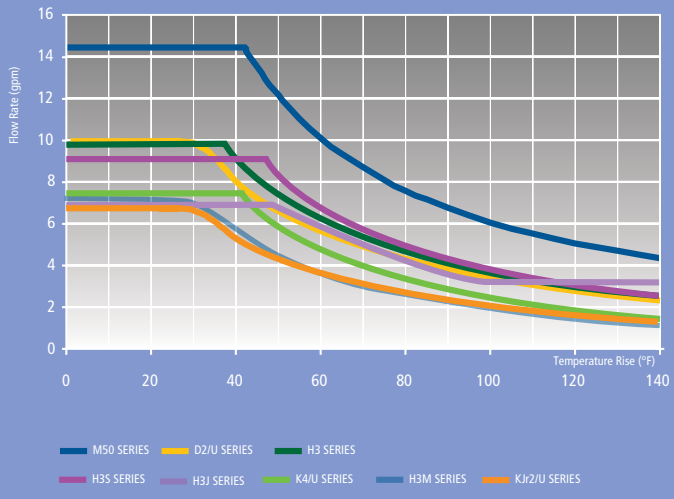
Temp Rise	KJr2/U Series	K4/U Series	D2/U Series	H3MH Series	H3JH Series	H3SH Series	H3H Series	M50 Series
30°	6.6	8.0	10.0	6.6	6.6	8.0	10.0	14.5
35°	6.6	8.0	9.3	6.4	6.6	8.0	10.0	14.5
40°	5.7	7.8	8.1	5.6	6.6	8.0	9.5	14.5
45°	5.1	6.9	7.2	5.0	6.6	7.6	8.4	13.5
50°	4.6	6.2	6.5	4.5	6.1	6.8	7.6	12.2
55°	4.2	5.7	5.9	4.1	5.5	6.2	6.9	11.1
60°	3.8	5.2	5.4	3.7	5.1	5.7	6.3	10.1
65°	3.5	4.8	5.0	3.4	4.7	5.3	5.8	9.4
70°	3.3	4.4	4.7	3.2	4.3	4.9	5.4	8.7
75°	3.1	4.1	4.3	3.0	4.1	4.6	5.0	8.1
80°	2.9	3.9	4.1	2.8	3.8	4.3	4.7	7.6
85°	2.7	3.7	3.8	2.6	3.6	4.0	4.4	7.2
90°	2.5	3.5	3.6	2.5	3.4	3.8	4.2	6.8
95°	2.4	3.3	3.4	2.3	3.2	3.6	4.0	6.4
100°	2.3	3.1	3.3	2.2	3.0	3.4	3.8	6.1

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



NON-CONDENSING

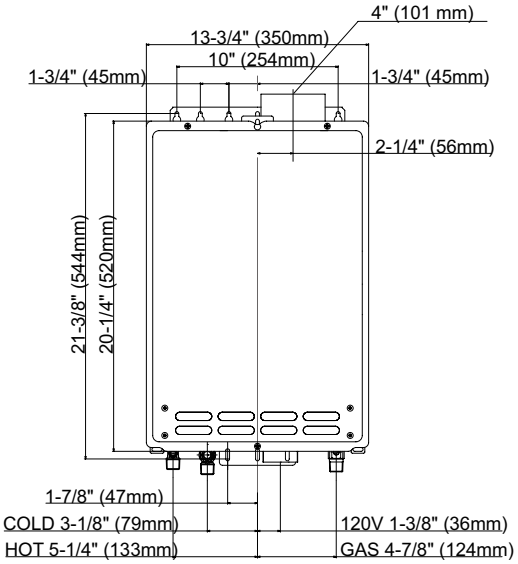
KJr2 Series

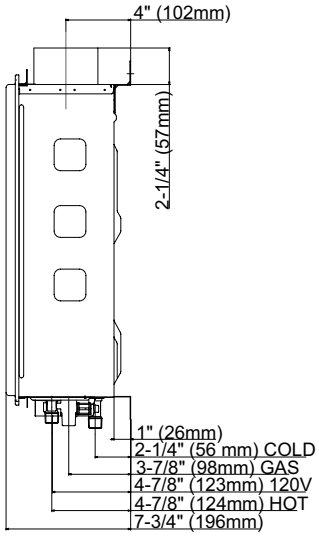
The KJr2 Series is great for apartments, one bath homes in cold climates, condos and summer cabins. Remote control included as a standard feature.

T-KJr2-IN

T-KJr2-OS

Dimensions





Specifications

Provides a variety of installation options: indoor, outdoor, and direct vent.

Warranty Information**

Residential Use:
15 Years limited heat exchanger,
5 Years limited parts

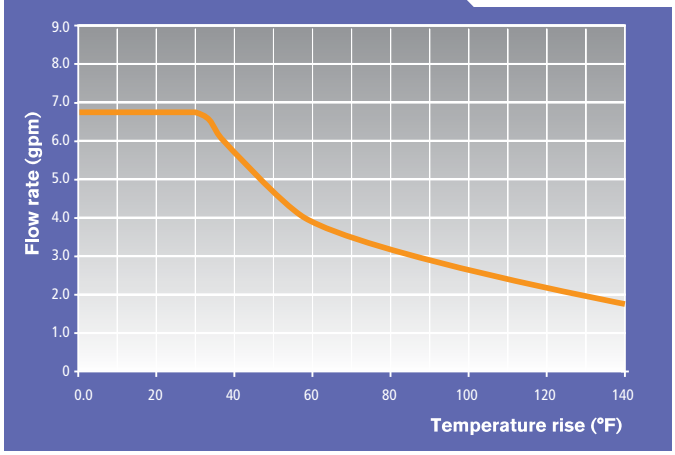
Low NOx emissions

**Refer to www.takagi.com for further warranty details.

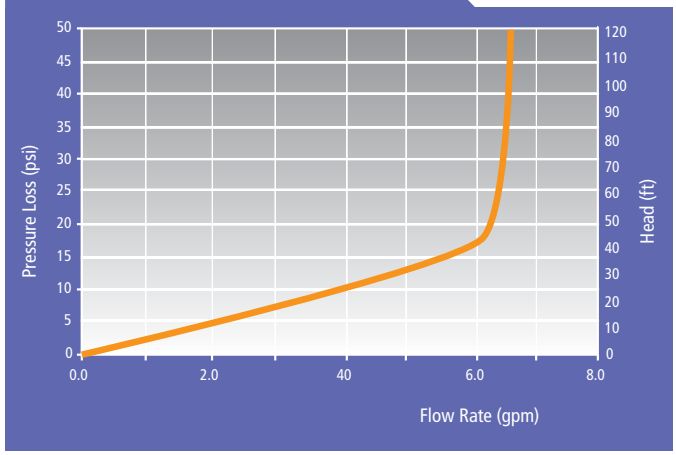
T-KJr2/U-IN includes both a remote control and power cord as standard features.

Installation Type	Indoor, Outdoor, Direct Vent			
Dimension	20-1/4" (H) X 13-3/4" (W) X 7-3/4" (D) , Weight:33 lbs			
Electric	120 V	73 W / 0.73 A (Operation)	6 W / 0.05 A (Standby)	111 W / 0.93 A (Freeze-Protection)
Ignition	Electronic Ignition			
Noise Level	53 dB at Max output			
Fuel		NG	LP	
Gas Consumption	Min. Input	19,500 BTU/h	19,500 BTU/h	
	Max. Input	140,000 BTU/h	140,000 BTU/h	
Energy Factor		0.82	0.82	
Gas Pressure		Min 5.0" W.C.	Min 8.0" W.C.	
		Max 10.5" W.C.	Max 14.0" W.C.	
Flow Rate	6.6 GPM	Values based on factory testing. 0.4 GPM required for continuous fire after initial ignition		
Hot/Cold/Gas Connection	3/4" NPT			
Coil Capacity	≈0.2 Gallons			
Water Pressure	15-150 PSI	Pressure Only Relief Valve Requires (Min 140,000 btu/h, 150 PSI). 40 psi or above recommended for max. flow		
Multiple Unit Installation	Easy-Link System	N/A	N/A	
	Multi-Unit System	N/A	N/A	
KJr2 Temperature Settings	Dipswitches	113°F 122°F (default) 131°F 140°F		
	With 9007666005 remote (max. distance 150' from heater, non-polarized 20 gauge wiring.)			
	99°F to 167°F (16 options), 122°F Default Factory Setting			

KJr2: Flow Rate vs. Temperature Rise



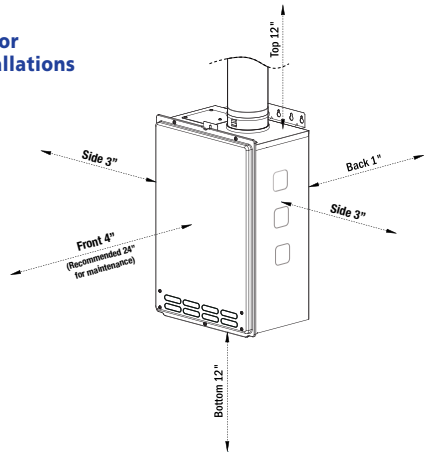
KJr2: Pressure Loss



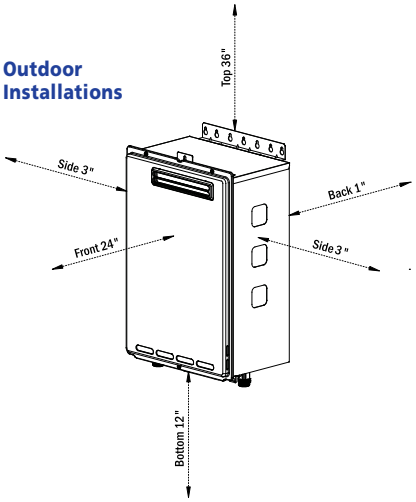
Clearance

Clearances to Combustible and Non-Combustible Surfaces

Indoor Installations



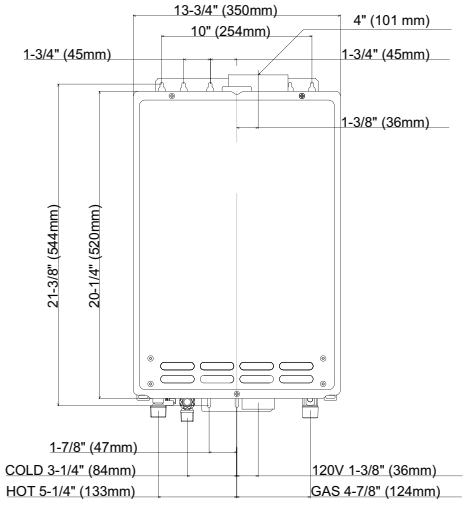
Outdoor Installations

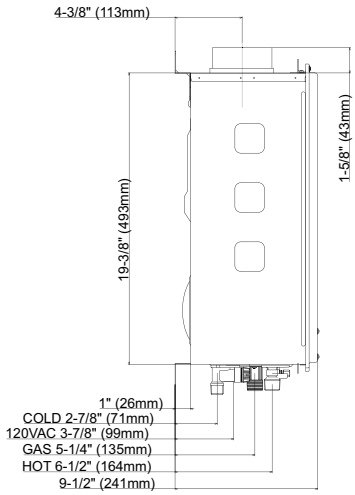


K4 Series

The K4 features a max flow rate of 8.0 gpm, providing enough hot water to run three showers at the same time. Remote control included as a standard feature.

Dimensions





Specifications

Provides a variety of installation options: indoor, outdoor, and direct vent.

Warranty Information**

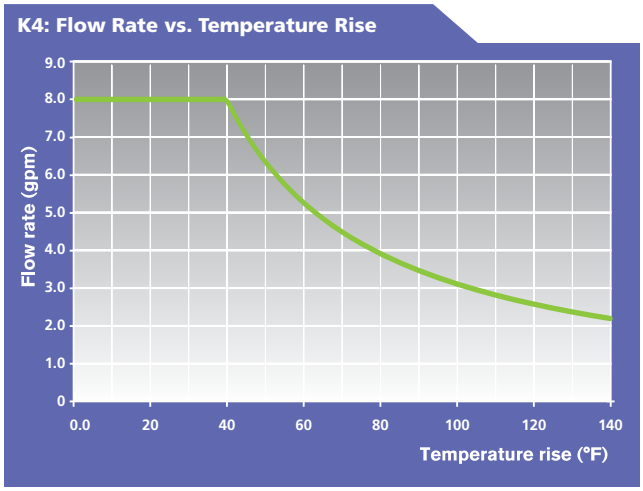
Residential Use:
15 Years limited heat exchanger,
5 Years limited parts

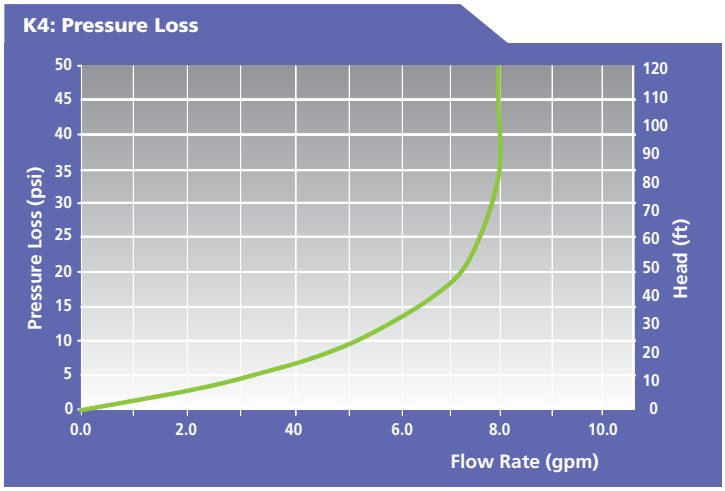
Low NOx emissions

**Refer to www.takagi.com for further warranty details.

T-K4-IN includes both a remote control and power cord as standard features.

Installation Type	Indoor, Outdoor, Direct Vent			
Dimension	20-1/4" (H) X 13-3/4" (W) X 9-1/2" (D) , Weight:38 lbs			
Electric	120 V	88 W / 0.73 A (Operation)	6 W / 0.05 A (Standby)	111 W / 0.93 A (Freeze-Protection)
Ignition	Electronic Ignition			
Noise Level	53 dB at Max output			
Fuel		NG	LP	
Gas Consumption	Min. Input	11,000 BTU/h	11,000 BTU/h	
	Max. Input	190,000 BTU/h	190,000 BTU/h	
Energy Factor		0.82	0.82	
Gas Pressure		Min 5.0" W.C.	Min 8.0" W.C.	
		Max 10.5" W.C.	Max 14.0" W.C.	
Flow Rate	8.0 GPM	Values based on factory testing. 0.4 GPM required for continuous fire after initial ignition		
Hot/Cold/Gas Connection	3/4" NPT			
Coil Capacity	≈0.2 Gallons			
Water Pressure	15-150 PSI	Pressure Only Relief Valve Requires (Min 190,000 btu/h, 150 PSI).		
		40 psi or above recommended for max. flow		
Multiple Unit Installation	Easy-Link System	N/A	N/A	
	Multi-Unit System	N/A	N/A	
K4 Temperature Settings	Dipswitches	113°F 122°F (default) 131°F 140°F		
	With 9007666005 remote (max. distance 150' from heater, non-polarized 20 gauge wiring.)			
	99°F to 167°F (16 options), 122°F Default Factory Setting			

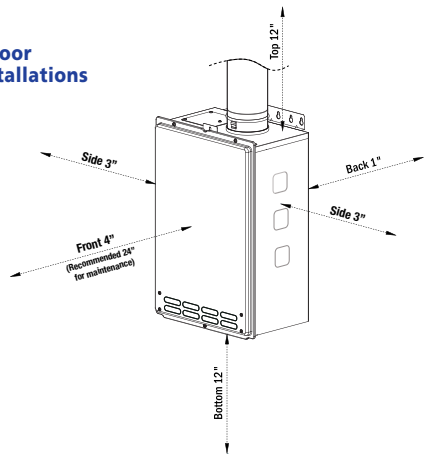




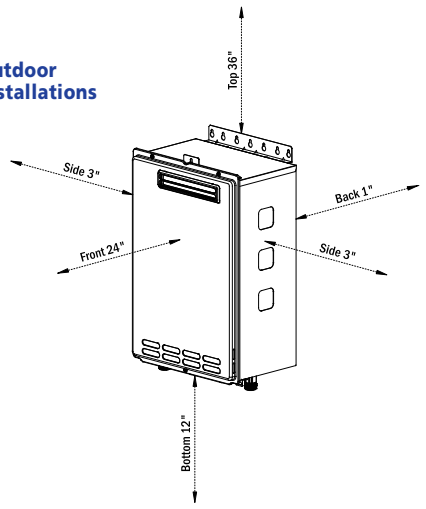
Clearance

Clearances to Combustible and Non-Combustible Surfaces

Indoor Installations



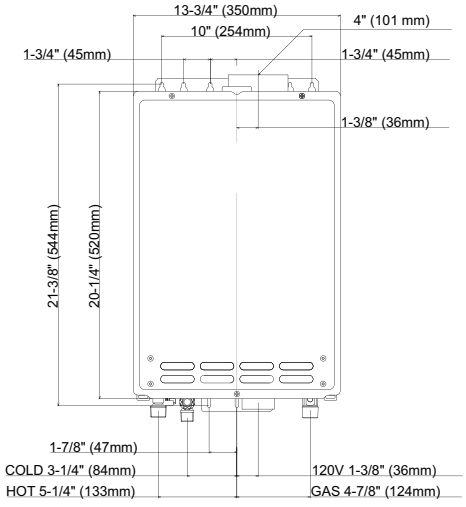
Outdoor Installations

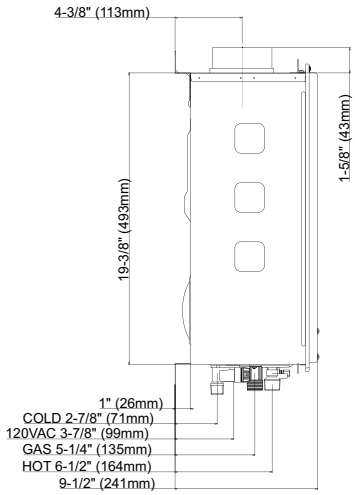


D2 Series

The D2 series is well suited for residential/commercial applications such as small restaurants and beauty salons. Utilizing commercial-grade copper alloy for the heat exchanger tubing, the D2 series is also suitable for heavier residential usages such as combination space heating and domestic recirculation systems. Remote control included as a standard feature.

Dimensions





Specifications

Thicker heat exchanger drum and utilizes commercial-grade copper (heat-resistant) copper for the heat exchanger tubing. Provides a variety of installation options: indoor, outdoor, and direct vent. Includes a pump control port, ensuring efficient operation of all circulation pumps. Easy-Link System capable up to 4 units.

Warranty Information**

Residential Use:
15 Years limited heat exchanger,
5 Years limited parts

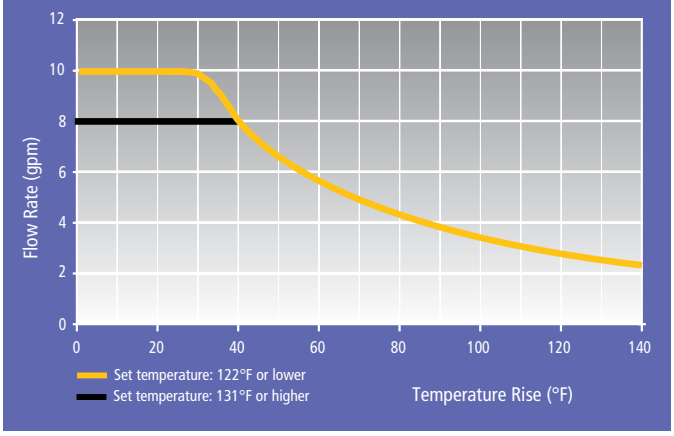
Commercial Use:
10 Years limited heat exchanger,
5 Years limited parts

**Refer to www.takagi.com for further warranty details.

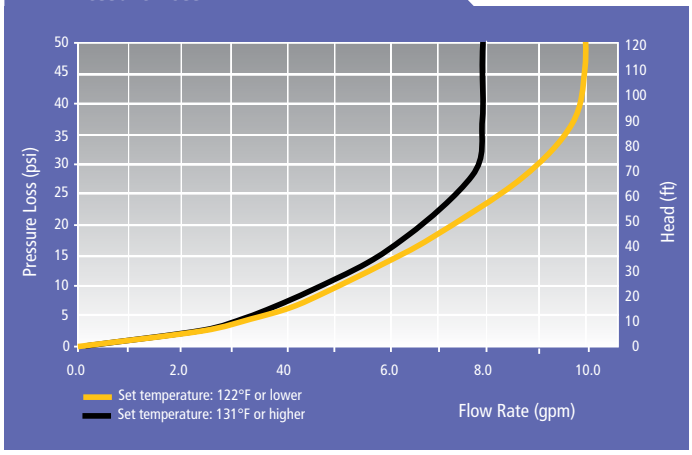
T-D2-IN includes both a remote control and power cord as standard features.

Installation Type	Indoor, Outdoor, Direct Vent			
Dimension	20-1/4" (H) X 13-3/4" (W) X 9-1/2" (D) , Weight:39 lbs			
Electric	120 V	90 W / 0.75 A	6 W / 0.05 A	111 W / 0.93 A (Freeze-Protection)
Ignition	Electronic Ignition			
Noise Level	55 dB at Max output			
Fuel		NG	LP	
Gas Consumption	Min. Input	11,000 BTU/h	11,000 BTU/h	
	Max. Input	199,000 BTU/h	199,000 BTU/h	
Energy Factor		0.82	0.82	
Gas Pressure		Min 5.0" W.C.	Min 8.0" W.C.	
		Max 10.5" W.C.	Max 14.0" W.C.	
Flow Rate	10.0 GPM	Values based on factory testing. 0.4 GPM required for continuous fire after initial ignition		
Hot/Cold/Gas Connection	3/4" NPT			
Coil Capacity	≈0.2 Gallons			
Water Pressure	15-150 PSI	Pressure Only Relief Valve Requires (Min 200,000 btu/h, 150 PSI).		
		40 psi or above recommended for max. flow		
Multiple Unit Installation	Easy-Link System	Up to 4 units	With no need for a system controller	
	Multi-Unit System	N/A	N/A	
D2 Temperature Settings	Dipswitches	104°F 113°F 122°F (default) 140°F		
	With 9007603005 remote (max. distance 400' from heater, non-polarized 20 gauge wiring.)			
	100°F to 176°F (15 options), 122°F Default Factory Setting			

D2: Flow Rate vs. Temperature Rise



D2: Pressure Loss



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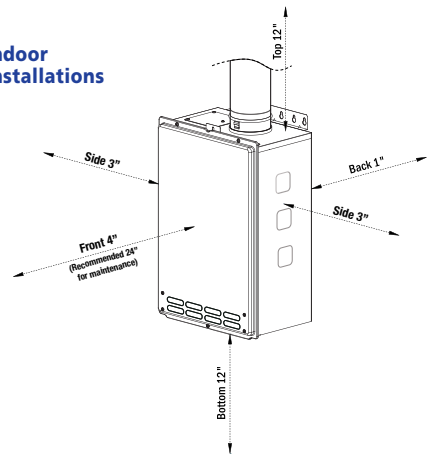
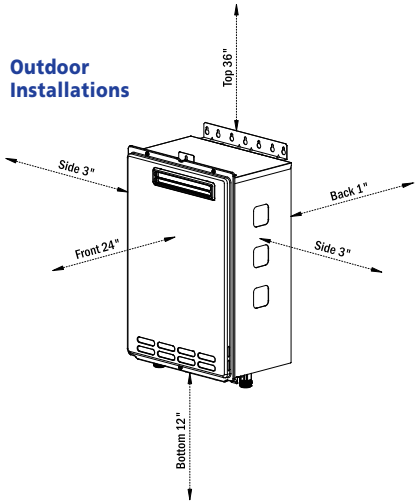
Clearances to Combustible and Non-Combustible Surfaces

Indoor Installations



Outdoor Installations



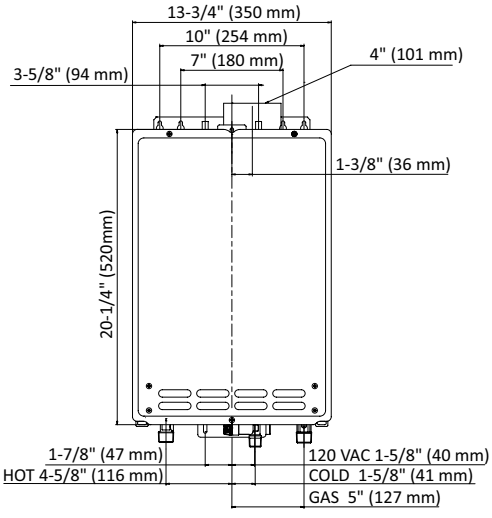
KJr2U Series

The KJr2U Series is great for apartments, one bath homes in cold climates, condos and summer cabins. Remote control included as a standard feature. Complies with SCAQMD Rule 1146.2 and other air quality management districts with similar NOx Emission requirements of 14 ng/J or 20 PPM.

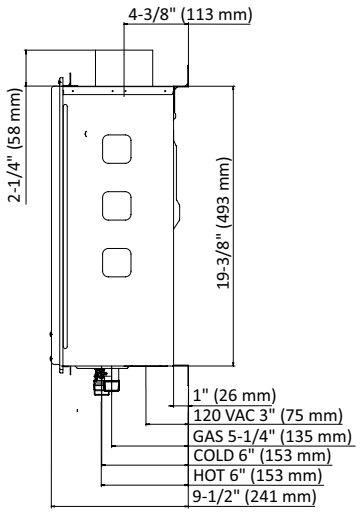
ULTRA-LOW NOx

Dimensions

Front view



Side view



Specifications

Provides a variety of installation options: indoor, outdoor, and direct vent. Complies with Ultra-Low NOx regulations.

Warranty Information**

Residential Use:
15 Years limited heat exchanger,
5 Years limited parts

**Refer to www.takagi.com for further warranty details.

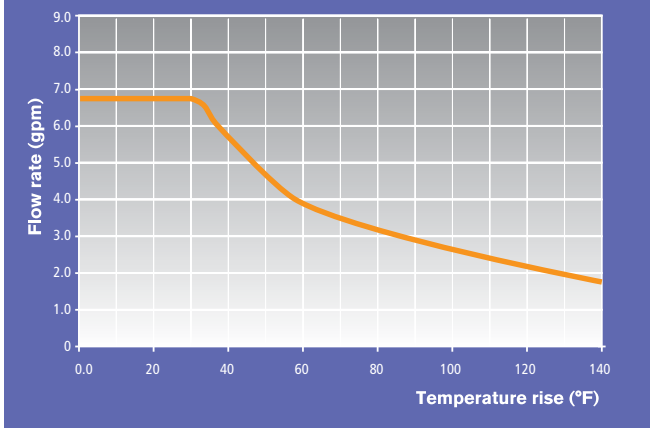
Indoor models include both a remote control and power cord as standard features.

Outdoor models include remote control as a standard feature.

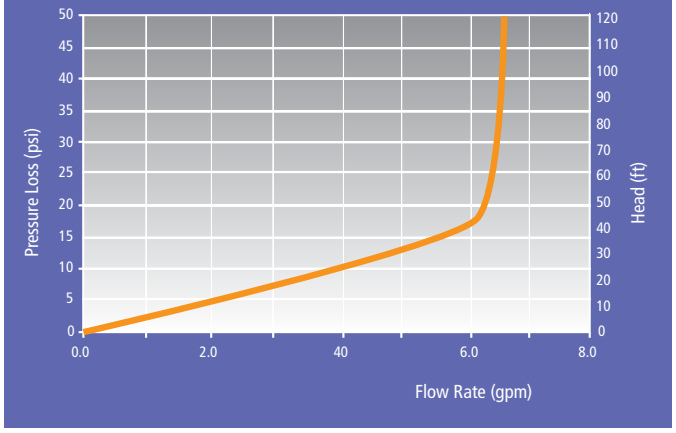
Installation Type	Indoor, Outdoor, Direct Vent			
Dimension	20-1/4" (H) X 13-3/4" (W) X 9-1/2" (D) , Weight:37 lbs			
Electric	120 V	52 W / 0.54 A (Operation)	5.4 W / 0.08 A (Standby)	131 W / 1.1 A (Freeze-Protection)
Ignition	Electronic Ignition			
Noise Level	IN: 54 dB OS: 58 dB at Max output			
Fuel		NG		
Gas Consumption	Min. Input	15,000 BTU/h		
	Max. Input	140,000 BTU/h		
Energy Factor		0.82		
Gas Pressure		Min 5.0" W.C.		
		Max 10.5" W.C.		
Flow Rate	6.6 GPM	Values based on factory testing. 0.4 GPM required for continuous fire after initial ignition		
Hot/Cold/Gas Connection	3/4" NPT			
Coil Capacity	≈0.2 Gallons			
Water Pressure	15-150 PSI	Pressure Only Relief Valve Requires (Min 140,000 btu/h, 150 PSI).		
		40 psi or above recommended for max. flow		
Multiple Unit Installation	Easy-Link System	N/A	N/A	
	Multi-Unit System	N/A	N/A	

KJr2U Temperature Settings	Dipswitches	120°F (default) 140°F
	With 9009069005 remote (max. distance 400' from heater, non-polarized 20 gauge wiring.)	
	100°F to 140°F (9 options), 120°F Default Factory Setting	

KJr2U: Flow Rate vs. Temperature Rise



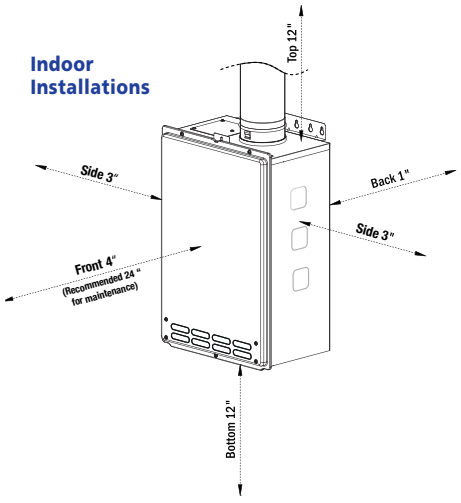
KJr2U: Pressure Loss



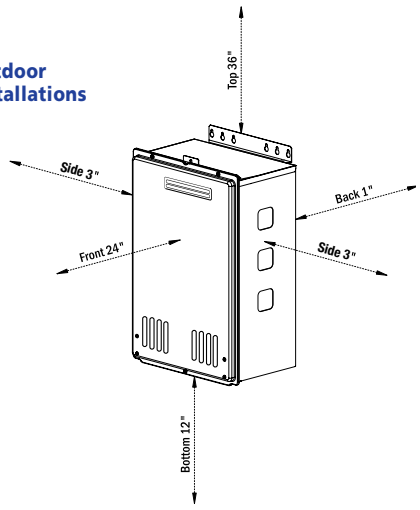
Clearance

Clearances to Combustible and Non-Combustible Surfaces

Indoor Installations



Outdoor Installations

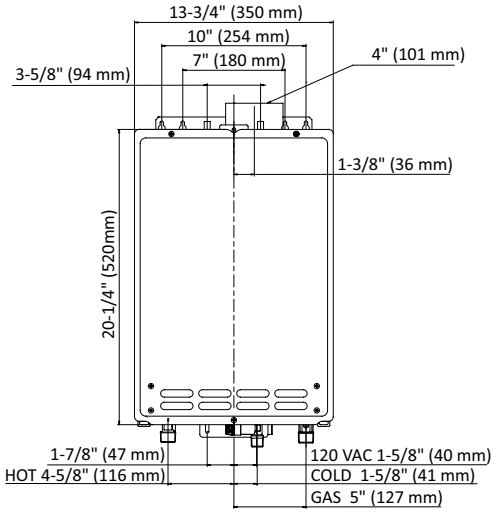


K4U Series

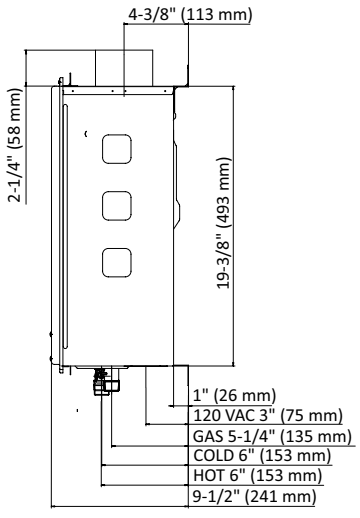
The K4U features a max flow rate of 8.0 gpm providing enough hot water to run three showers at the same time. Remote control included as a standard feature. Complies with SCAQMD Rule 1146.2 and other air quality management districts with similar NOx Emission requirements of 14 ng/J or 20 PPM.

Dimensions

Front view



Side view



Specifications

Provides a variety of installation options: indoor, outdoor, and direct vent. Complies with Ultra-Low NOx regulations.

Warranty Information**

Residential Use:
15 Years limited heat exchanger,
5 Years limited parts

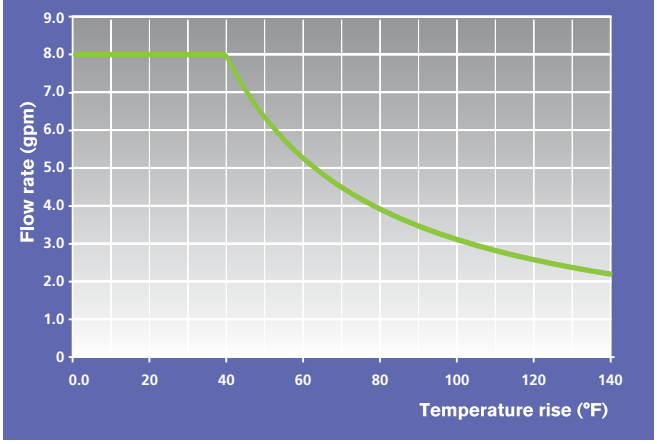
**Refer to www.takagi.com for further warranty details.

Indoor models include both a remote control and power cord as standard features.

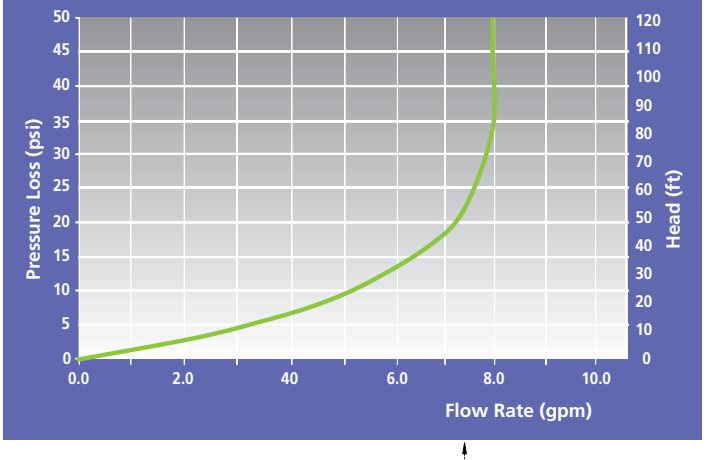
Outdoor models include remote control as a standard feature.

Installation Type	Indoor, Outdoor, Direct Vent			
Dimension	20-1/4" (H) X 13-3/4" (W) X 9-1/2" (D) , Weight: 37 lbs			
Electric	120 V	76 W / 0.8 A (Operation)	6 W / 0.08 A (Standby)	131 W / 1.1 A (Freeze-Protection)
Ignition	Electronic Ignition			
Noise Level	IN: 54 dB OS: 58 dB at Max output			
Fuel		NG		
Gas Consumption	Min. Input	15,000 BTU/h		
	Max. Input	190,000 BTU/h		
Energy Factor		0.82		
Gas Pressure		Min 5.0" W.C.		
		Max 10.5" W.C.		
Flow Rate	8.0 GPM	Values based on factory testing. 0.4 GPM required for continuous fire after initial ignition		
Hot/Cold/Gas Connection	3/4" NPT			
Coil Capacity	≈0.2 Gallons			
Water Pressure	15-150 PSI	Pressure Only Relief Valve Requires (Min 190,000 btu/h, 150 PSI).		
		40 psi or above recommended for max. flow		
Multiple Unit Installation	Easy-Link System	N/A	N/A	
	Multi-Unit System	N/A	N/A	
K4U Temperature Settings	Dipswitches	120°F (default) 140°F		
	With 9009069005 remote (max. distance 400' from heater, non-polarized 20 gauge wiring.)			
	120°F to 140°F (9 options), 120°F Default Factory Setting			

K4U: Flow Rate vs. Temperature Rise



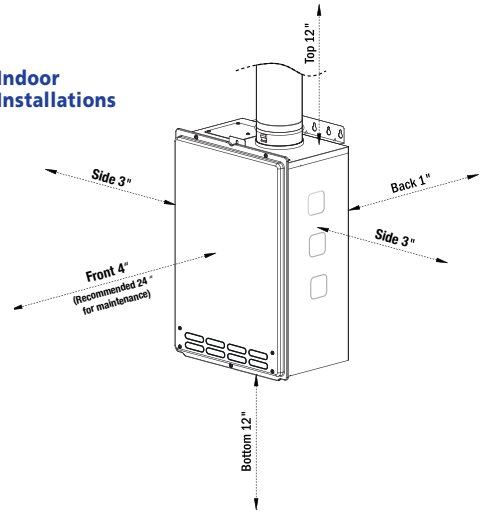
K4U: Pressure Loss



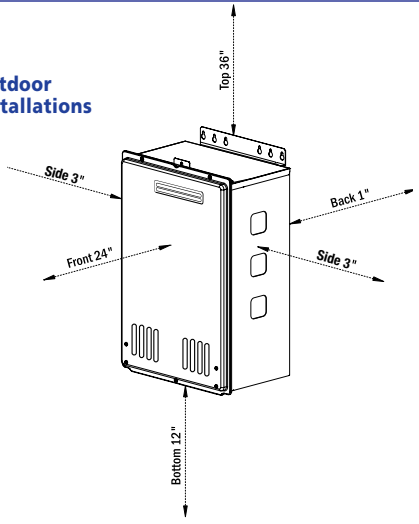
Clearance

Clearances to Combustible and Non-Combustible Surfaces

Indoor Installations



Outdoor Installations

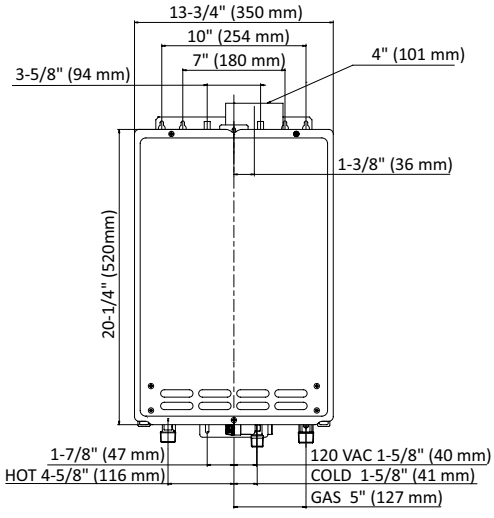


D2U Series

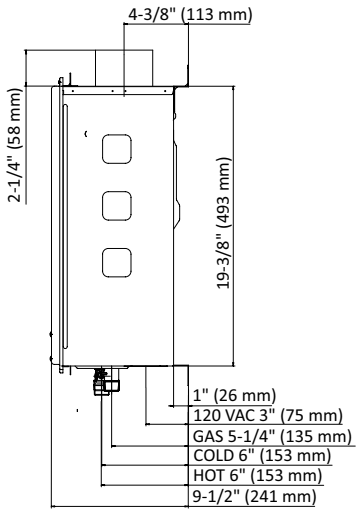
The D2U series is well suited for residential/commercial applications such as small restaurants and beauty salons. Utilizing commercial-grade copper alloy for the heat exchanger tubing, the D2U series is also suitable for heavier-residential usages such as combination space heating and domestic recirculation systems. Remote control included as a standard feature.

Dimensions

Front view



Side view



Specifications

Thicker heat exchanger drum and utilizes commercial-grade copper (heat-resistant) copper for the heat exchanger tubing. Provides a variety of installation options: indoor, outdoor, and direct vent. Complies with SCAQMD Rule 1146.2 and other air quality management districts with similar NOx Emission requirements of 14 ng/J or 20 PPM. Easy-Link System capable up to 4 units. Multi-Link system capable up to 20 units.

Warranty Information**

Residential Use:
15 Years limited heat exchanger,
5 Years limited parts

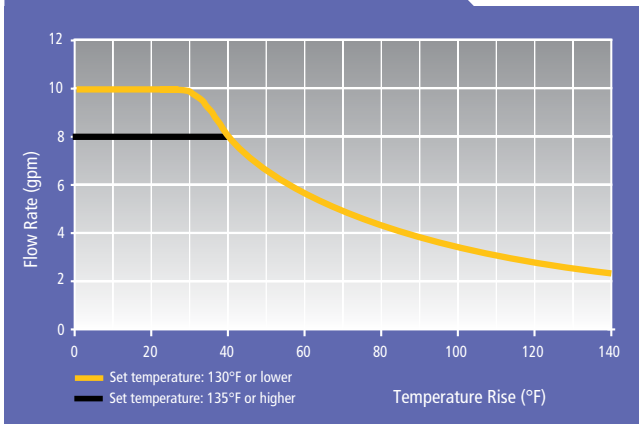
Commercial Use:
10 Years limited heat exchanger,
5 Years limited parts

**Refer to www.takagi.com for further warranty details.

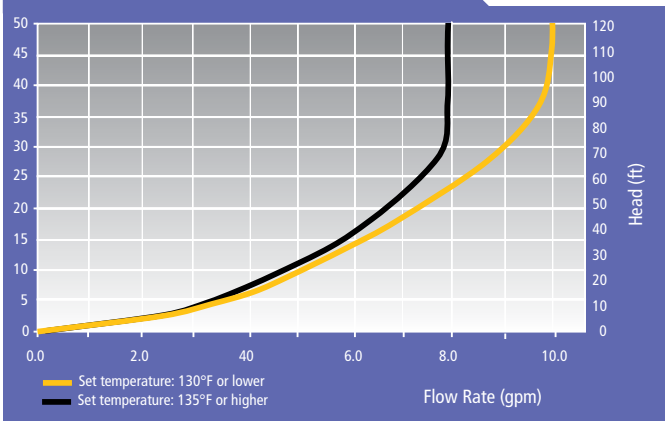
Indoor models include both a remote control and power cord as standard features.
Outdoor models include remote control as a standard feature.

Installation Type	Indoor, Outdoor, Direct Vent			
Dimension	20-1/4" (H) X 13-3/4" (W) X 9-1/2" (D) , Weight:39 lbs			
Electric	120 V	82 W / 0.86 A (Operation)	7 W / 0.09 A (Standby)	132 W / 1.1 A (Freeze-Protection)
Ignition	Electronic Ignition			
Noise Level	IN: 54 dB OS: 58 dB at Max output			
Fuel		NG		
Gas Consumption	Min. Input	15,000 BTU/h		
	Max. Input	199,000 BTU/h		
Energy Factor		0.82		
Gas Pressure		Min 5.0" W.C.		
		Max 10.5" W.C.		
Flow Rate	10.0 GPM	Values based on factory testing. 0.4 GPM required for continuous fire after initial ignition		
Hot/Cold/Gas Connection	3/4" NPT			
Coil Capacity	≈0.2 Gallons			
Water Pressure	15-150 PSI	Pressure Only Relief Valve Requires (Min 200,000 BTUs. 150 PSI).		
		40 psi or above recommended for max. flow		
Multiple Unit Installation	Easy-Link System	Up to 4 units	With no need for a system controller	
	Multi-Unit System	Up to 20 units	Multi-Controller (9008300005)	
D2U Temperature Settings	Dipswitches	120°F (default) 140°F		
	With 9009069005 remote (max. distance 400' from heater, non-polarized 120 gauge wiring.)			
	100°F to 160°F (13 options), 120°F Default Factory Setting			

D2U: Flow Rate vs. Temperature Rise

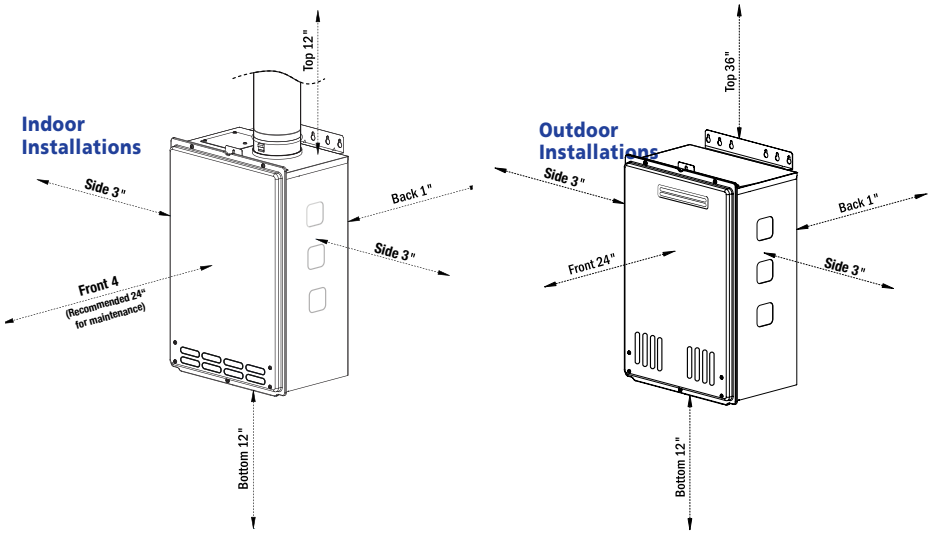


D2U: Pressure Loss



Clearance

Clearances to Combustible and Non-Combustible Surfaces

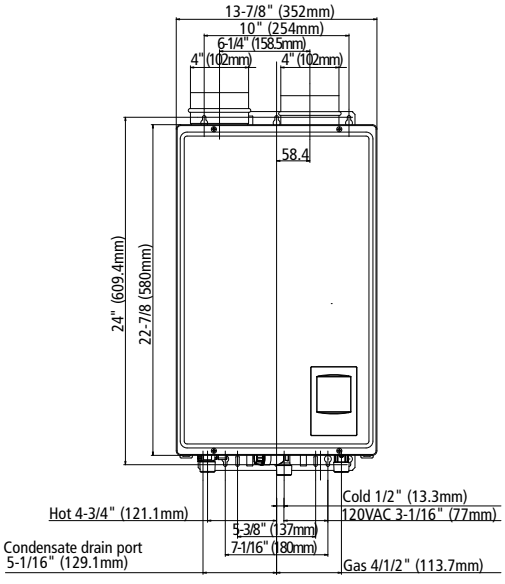


H3M Series

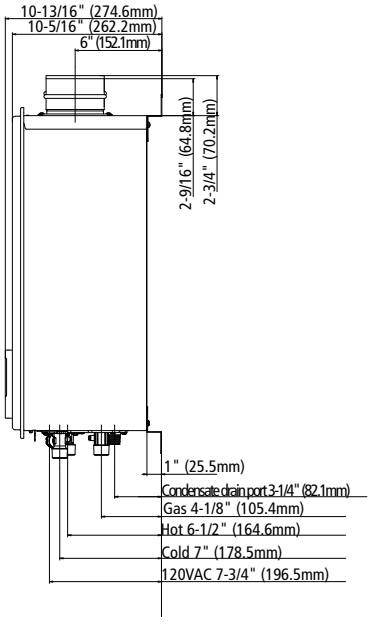
The H3M Series is a high efficiency, Ultra-Low NOx condensing model with a .93 Energy Factor, allowing for the use of 3" or 4" PVC venting or Category IV stainless steel.

Dimensions

Front view



Side view



Specifications

Provides a variety of installation options: indoor, outdoor and power direct vent design. Complies with SCAQMD Rule 1146.2 and other air quality management districts with similar NOx Emission requirements of 14 ng/J or 20 PPM.

Warranty Information**

Residential Use:
15 Years limited heat exchanger,
5 Years limited parts

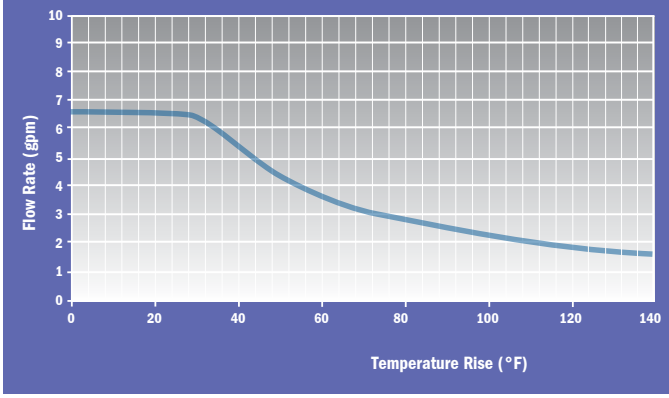
**Refer to www.takagi.com for further warranty details.

Indoor model includes a built-in temperature controller and advanced diagnostics to simplify troubleshooting.

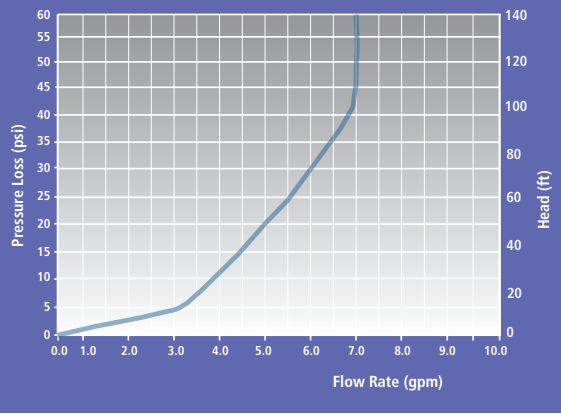
Outdoor model includes a wall mount temperature remote controller and advanced diagnostics for troubleshooting.

Installation Type	Indoor, Outdoor, SCH 40 PVC Direct Vent or Category IV Stainless Steel		
Dimension	22-7/8" (H) X 13-7/8" (W) X 10-3/4" (D) , Weight 44 lbs		
Electric	120 V	54 W / 0.7 A (Operation)	3 W / 0.05 A (Standby) 224 W / 2 A (Freeze-Protection)
Ignition	Electronic Ignition		
Noise Level	IN: 47 dB OS: 52 dB at Max output		
Fuel		NG	LP
Gas Consumption	Min. Input	15,000 BTU/h	15,000 BTU/h
	Max. Input	120,000 BTU/h	120,000 BTU/h
Energy Factor		0.93	0.93
Gas Pressure		Min 5.0" W.C.	Min 8.0" W.C.
		Max 10.5" W.C.	Max 14.0" W.C.
Flow Rate	6.6 GPM	Values based on factory testing. 0.4 GPM required for continuous fire after initial ignition	
Hot/Cold/Gas Connection	3/4" NPT / 1/2" NPT		
Coil Capacity	≈0.5 Gallons		
Water Pressure	15-150 PSI	Pressure Only Relief Valve Requires (Min 120,000 btu/h, 150 PSI).	
		40 psi or above recommended for max. flow	
Multiple Unit Installation	Easy-Link System	N/A	N/A
	Multi-Unit System	N/A	N/A
H3M Temperature Settings	Built In / without remote	120°F (Default) 140°F	
	With 9009069005 remote (max. distance 400' from heater, non-polarized 20 gauge wiring.)		
	100°F to 140°F with 5°F intervals (9 options), 120°F Default Factory Setting		

H3M: Flow Rate vs. Temperature Rise



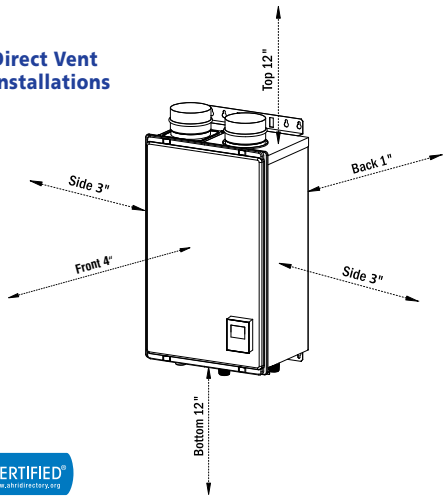
H3M: Pressure Loss



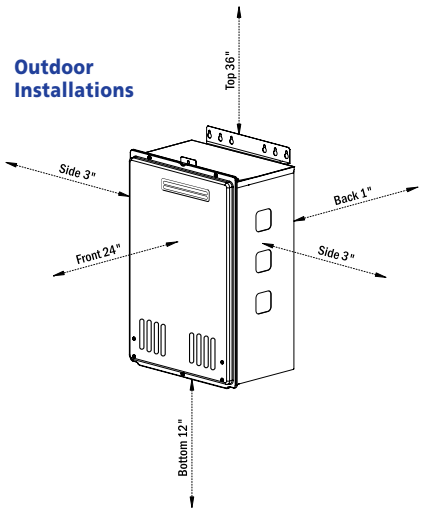
Clearance

Clearances to Combustible and Non-Combustible Surfaces

Direct Vent Installations



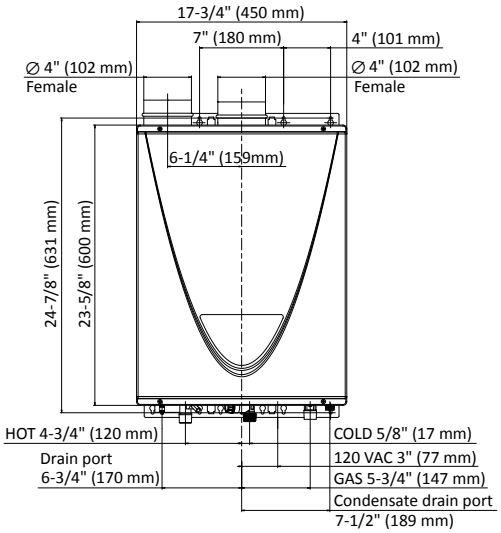
Outdoor Installations

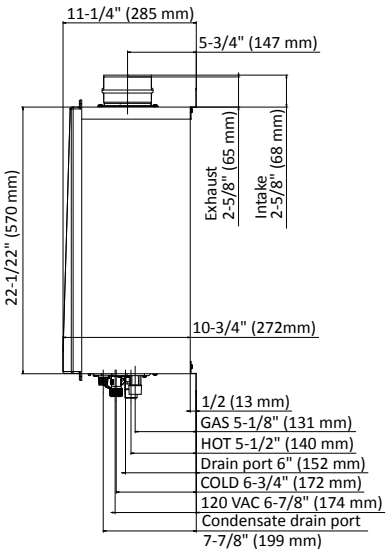


H3J Series

The H3J series offers high efficiency Ultra-Low NOx condensing technology allowing for the use of 3" PVC venting and has 0" clearance to combustibles. Indoor models are certified up to 10,100 ft. altitude.

Dimensions





Specifications

Provides a variety of installation options: indoor, outdoor, and direct vent. Complies with SCAQMD Rule 1146.2 and other air quality management districts with similar NOx Emission requirements of 14 ng/J or 20 PPM.

Warranty Information**

Residential Use:
15 years limited heat exchanger,
5 Years limited parts

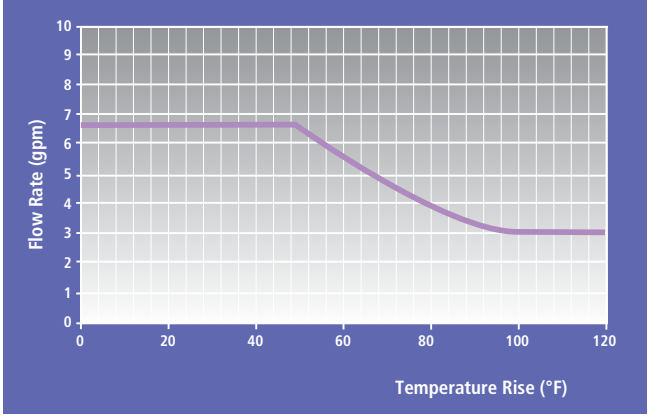
**Refer to www.takagi.com for further warranty details.

Indoor model includes a built-in temperature controller and advanced diagnostics to simplify troubleshooting.

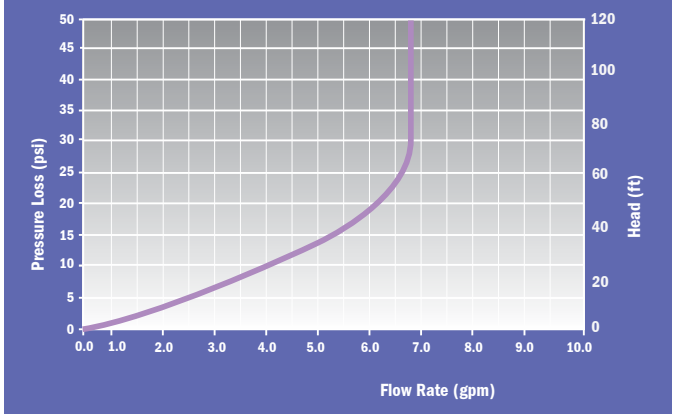
Outdoor model includes a wall mount temperature remote controller and advanced diagnostics to simplify troubleshooting.

Installation Type	Indoor, Outdoor, SCH 40 PVC Direct Vent, Category IV Stainless Steel			
Dimension	23-5/8" (H) X 17-3/4" (W) X 11-1/4" (D) , Weight: 58 lbs			
Electric	120 V	73 W / 0.61 A (Operation)	3 W / 0.03 A (Standby)	174 W / 1.5 A (Freeze-Protection)
Ignition	Electronic Ignition			
Noise Level	IN: 50 dB OS: 53 dB at Max output			
Fuel		NG	LP	
Gas Consumption	Min. Input	15,000 BTU/h	13,000 BTU/h	
	Max. Input	160,000 BTU/h	160,000 BTU/h	
Energy Factor		0.95	0.95	
Gas Pressure		Min 5.0" W.C.	Min 8.0" W.C.	
		Max 10.5" W.C.	Max 14.0" W.C.	
Flow Rate	6.6 GPM	Values based on factory testing. 0.4 GPM required for continuous fire after initial ignition		
Hot/Cold/Gas Connection	3/4" NPT			
Coil Capacity	≈0.5 Gallons			
Water Pressure	15-150 PSI	Pressure Only Relief Valve Requires (Min 160,000 btu/h, 150 PSI). 40 psi or above recommended for max. flow		
Multiple Unit Installation	Easy-Link System	N/A	N/A	
	Multi-Unit System	N/A	N/A	
H3J Temperature Settings	Built In / without remote	120°F (Default) 140°F		
	With 9009069005 remote (max. distance 400' from heater, non-polarized 20 gauge wiring.)			
	100°F to 140°F with 5°F intervals (9 options), 120°F Default Factory Setting			

H3J: Flow Rate vs. Temperature Rise



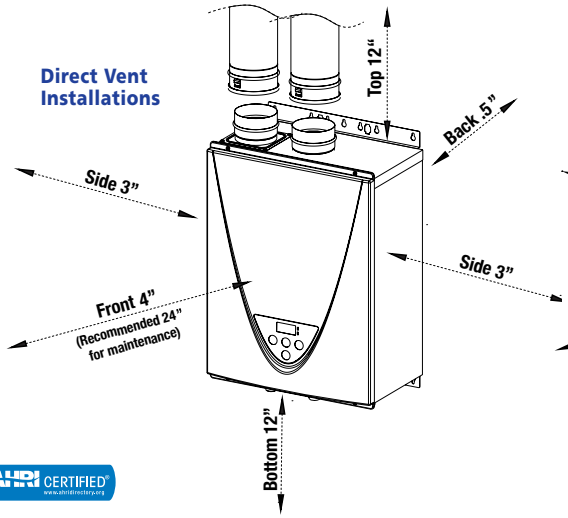
H3J: Pressure Loss



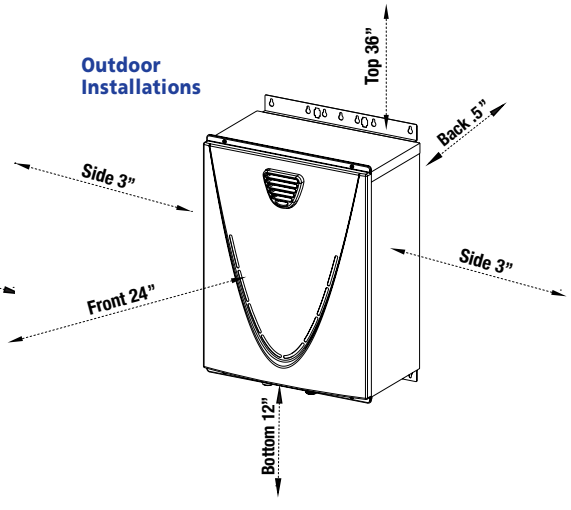
Clearance

Clearances to Combustible and Non-Combustible Surfaces

Direct Vent Installations



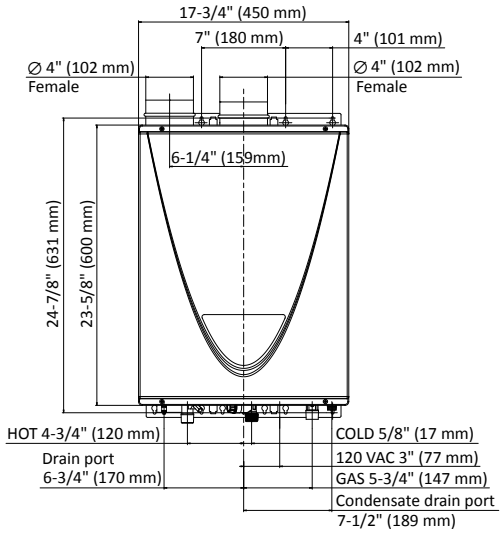
Outdoor Installations

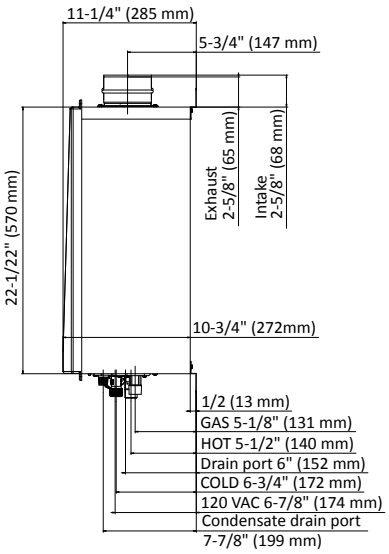


H3S Series

The H3S series offers high efficiency Ultra-Low NOx condensing technology allowing for the use of 3" PVC venting and has 0" clearance to combustibles. Indoor models are certified up to 10,100 ft. altitude.

Dimensions





Specifications

Provides a variety of installation options: indoor, outdoor, and direct vent. Complies with SCAQMD Rule 1146.2 and other air quality management districts with similar NOx Emission requirements of 14 ng/J or 20 PPM.

Warranty Information**

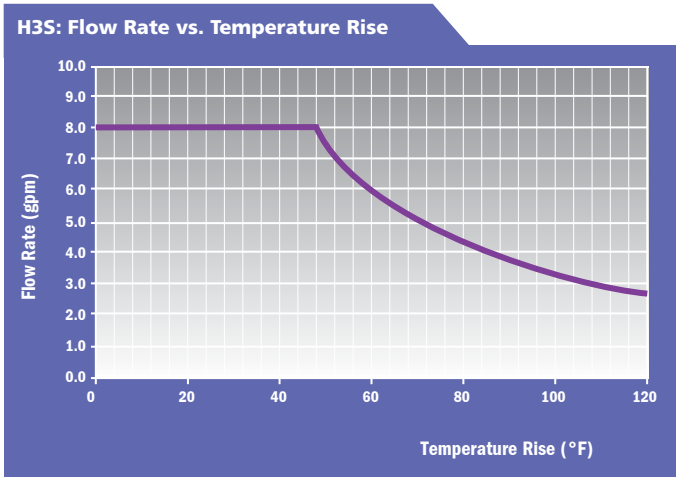
Residential Use:
15 Years limited heat exchanger,
5 Years limited parts

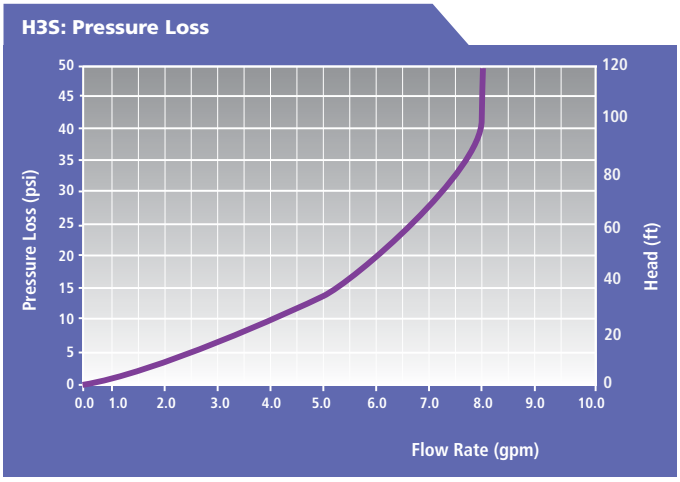
**Refer to www.takagi.com for further warranty details.

Indoor model includes a built-in temperature controller and advanced diagnostics to simplify troubleshooting.

Outdoor model includes a wall mount temperature remote controller and advanced diagnostics to simplify troubleshooting.

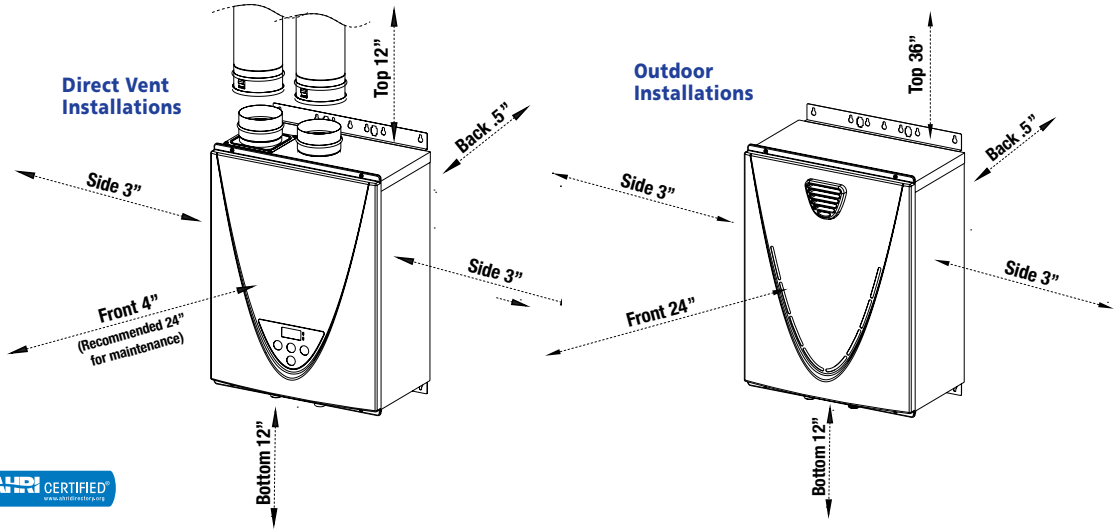
Installation Type	Indoor, Outdoor, SCH 40 PVC Direct Vent , Category IV Stainless Steel			
Dimension	23-5/8" (H) X 17-3/4" (W) X 11-1/4" (D) , Weight: 58 lbs			
Electric	120 V	78 W / 0.65 A (Operation)	3 W / 0.03 A (Standby)	174 W / 1.5 A (Freeze-Protection)
Ignition	Electronic Ignition			
Noise Level	55 dB at Max output			
Fuel		NG	LP	
Gas Consumption	Min. Input	15,000 BTU/h	13,000 BTU/h	
	Max. Input	180,000 BTU/h	180,000 BTU/h	
Energy Factor		0.95	0.95	
Gas Pressure		Min 5.0" W.C.	Min 8.0" W.C.	
		Max 10.5" W.C.	Max 14.0" W.C.	
Flow Rate	8.0 GPM	Values based on factory testing. 0.4 GPM required for continuous fire after initial ignition		
Hot/Cold/Gas Connection	3/4" NPT			
Coil Capacity	≈0.5 Gallons			
Water Pressure	15-150 PSI	Pressure Only Relief Valve Requires (Min 180,000 btu/h, 150 PSI).		
		40 psi or above recommended for max. flow		
Multiple Unit Installation	Easy-Link System	N/A	N/A	
	Multi-Unit System	N/A	N/A	
H3S Temperature Settings	Built In / without remote	120°F (Default) 140°F		
	With 9009069005 remote (max. distance 400' from heater, non-polarized 20 gauge wiring.)			
	100°F to 140°F with 5°F intervals (9 options), 120°F Default Factory Setting			





Clearance

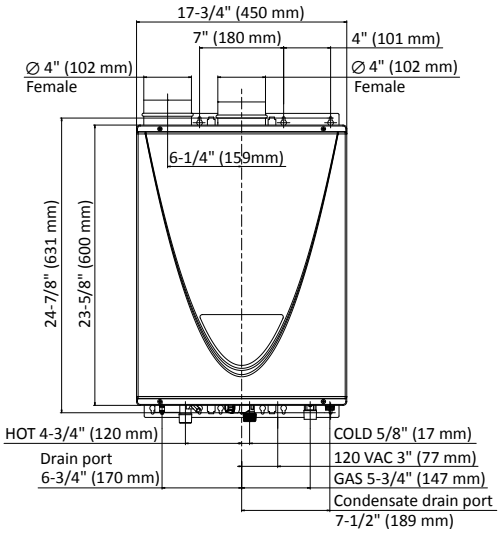
Clearances to Combustible and Non-Combustible Surfaces

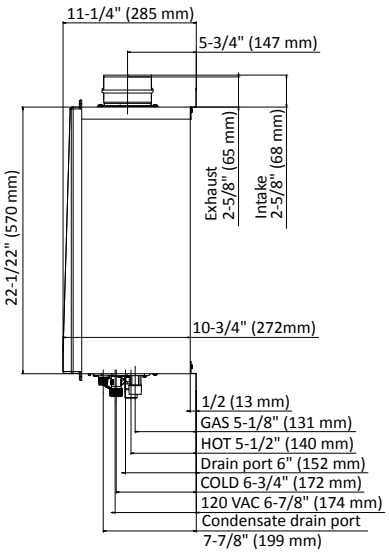


H3 Series

The H3 is well suited for residential/ commercial applications such as small restaurants and beauty salons. Complies with Ultra-Low NOx regulations. Utilizing commercial-grade copper alloy for the heat exchanger tubing, the H3 is also suitable for heavier residential usages such as combination space heating and domestic recirculation systems. Remote control included as a standard feature. Indoor models are certified up to 10,100 ft. altitude.

Dimensions





Specifications

Thicker heat exchanger drum and utilizes commercial grade-copper for the heat exchanger tubing. Provides a variety of installation options: outdoor, and direct vent. Complies with SCAQMD Rule 1146.2 and other air quality management districts with similar NOx Emission requirements of 14 ng/J or 20 PPM. Easy-Link System capable up to 4 units. Multi-Link System capable up to 20 units.

Warranty Information**

Residential Use:
15 Years limited heat exchanger,
5 Years limited parts

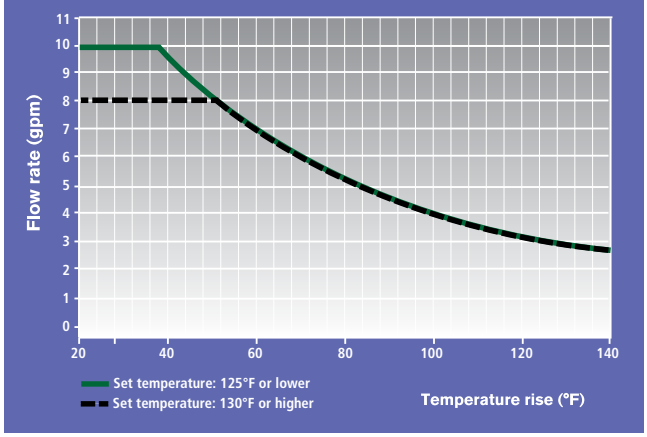
Commercial Use:
10 Years limited heat exchanger,
5 Years limited parts

**Refer to www.takagi.com for further warranty details.

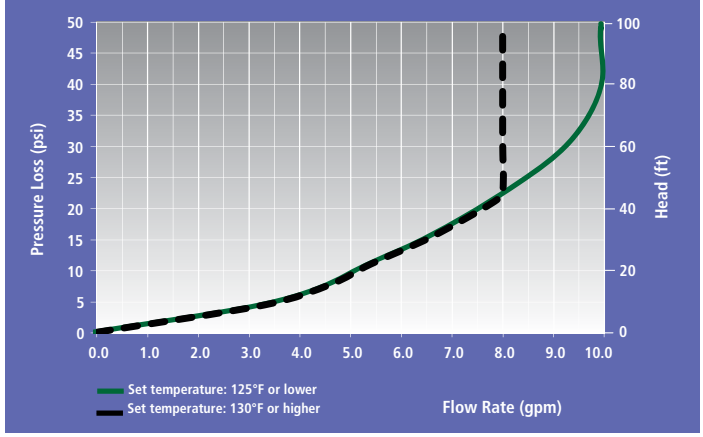
Indoor model includes a built-in temperature controller and advanced diagnostics to simplify troubleshooting. Outdoor models includes a wall mount temperature remote controller and advanced diagnostics to simplify troubleshooting.

Installation Type	Indoor, Outdoor, SCH 40 PVC Direct Ven , Category IV Stainless Steel		
Dimension	23-5/8" (H) X 17-3/4" (W) X 11-1/4" (D) , Weight: 59 lbs		
Electric	120 V	89 W / 0.74 A (Operation)	4 W / 0.04 A (Standby) 175 W / 1.5 A (Freeze-Protection)
Ignition	Electronic Ignition		
Noise Level	IN: 51 dB OS: 56 dB at Max output		
Fuel		NG	LP
Gas Consumption	Min. Input	15,000 BTU/h	13,000 BTU/h
	Max. Input	199,000 BTU/h	199,000 BTU/h
Energy Factor		0.95	0.95
Gas Pressure		Min 5.0" W.C.	Min 8.0" W.C.
		Max 10.5" W.C.	Max 14.0" W.C.
Flow Rate	10.0 GPM	Values based on factory testing. 0.4 GPM required for continuous fire after initial ignition	
Hot/Cold/Gas Connection	3/4" NPT		
Coil Capacity	≈0.5 Gallons		
Water Pressure	15-150 PSI	Pressure Only Relief Valve Requires (Min 200,000 btu/h, 150 PSI).	
		40 psi or above recommended for max. flow	
Multiple Unit Installation	Easy-Link System	Up to 4 units	With no need for a system controller
	Multi-Unit System	Up to 20 units	Multiple-Unit Controller 9008300005
H3 Temperature Settings	Built In / without remote	120°F (Default) 140°F	
	With 9009069005 remote (max. distance 400' from heater, non-polarized 160 gauge wiring.)		
	100°F to 160°F with 5°F intervals (13 options), 120°F Default Factory Setting		

H3: Flow Rate vs. Temperature Rise



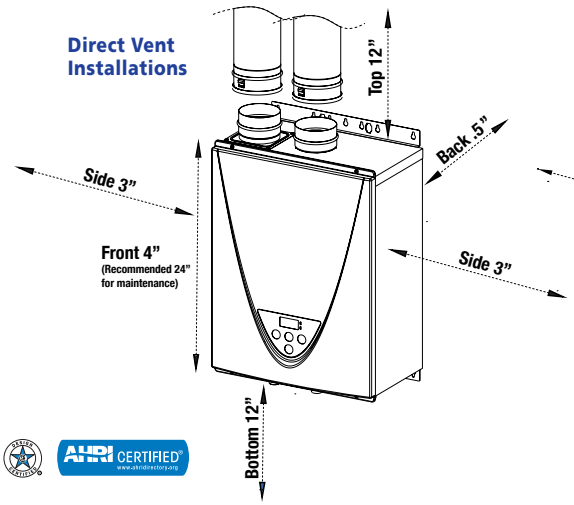
H3: Pressure Loss



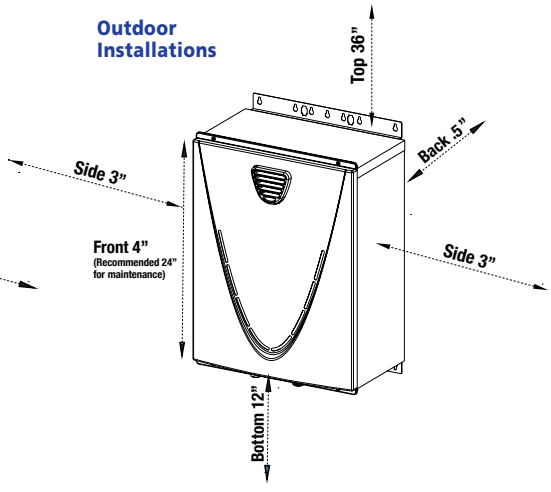
Clearance

Clearances to Combustible and Non-Combustible Surfaces

Direct Vent Installations



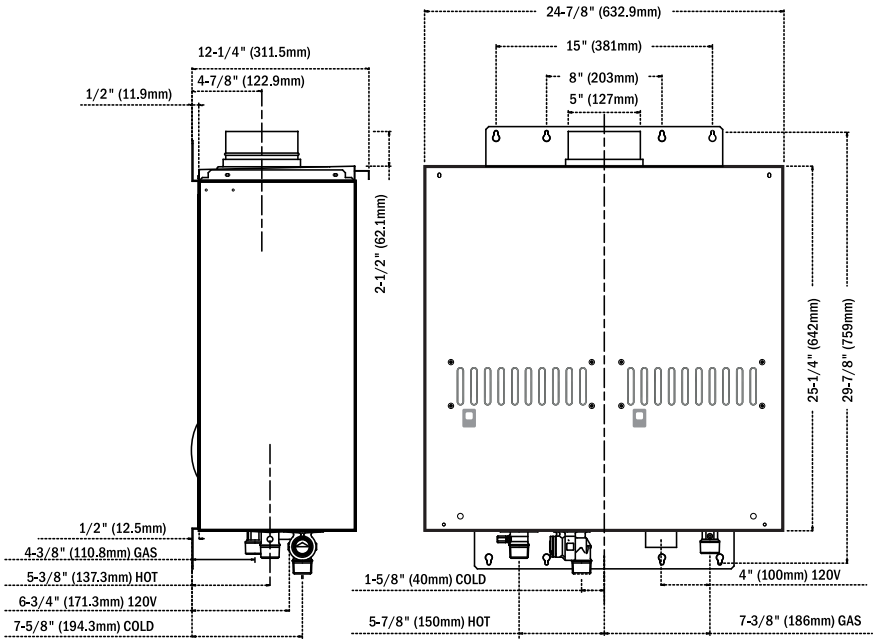
Outdoor Installations



M50 Series

The M50 Series, specifically designed for heavy-duty applications, is the largest Takagi tankless heater yet and the most powerful (14.5 GPM max) in the tankless industry. The M50 Series is suitable for commercial applications (hotels, restaurants, government, convalescent homes, etc.) that require high demand and the most durable of heaters. Along with commercial-grade copper alloy, the M50 Series is the only commercial unit in the industry that offers a "dual-combustion system," providing redundancy for added reliability.

Dimensions



Specifications

Thicker heat exchanger drum and utilizes commercial-grade copper for the heat exchanger tubing. Incorporates a dual system for redundancy, providing added assurance that the M50 Series will remain operational. Includes an internal pump control port. Easy-Link System capable up to 4 units. Multi-Unit System capable up to 10 units. An ASME version of the M50 Series is also available.*

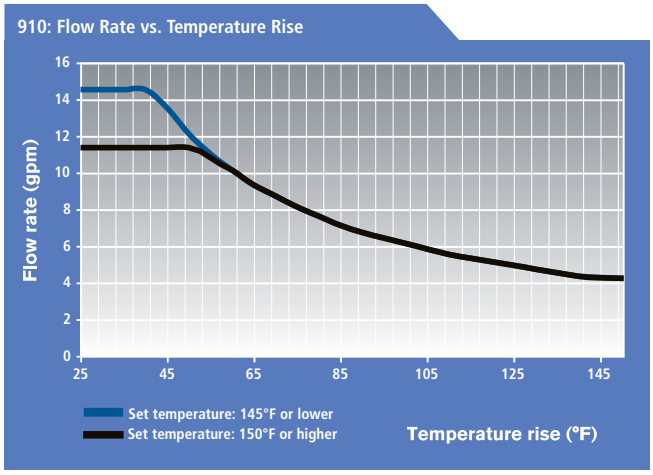
Warranty Information**

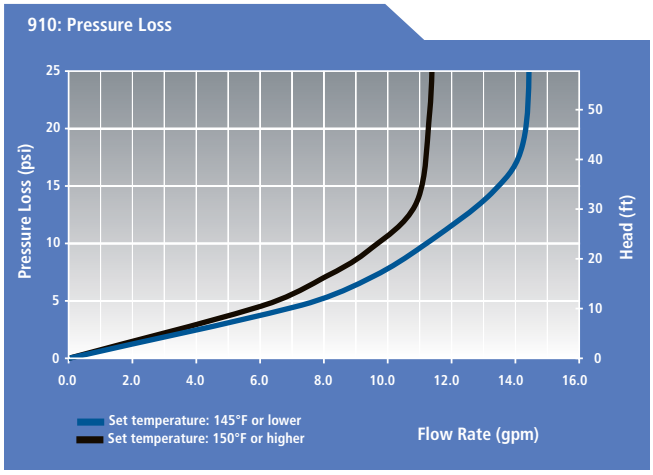
Residential Use:
15 Years limited heat exchanger,
5 Years limited parts

Commercial Use:
10 Years limited heat exchanger,
5 Years limited parts

* ASME models do not utilize commercial-grade copper alloy.
**Refer to www.takagi.com for further warranty details.

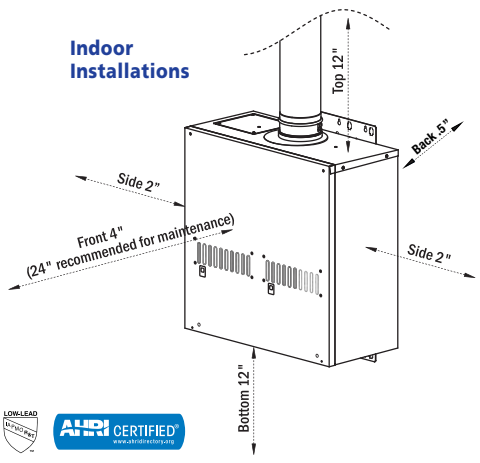
Installation Type	Indoor, Outdoor, Direct Vent		
Dimension	25-1/4" (W) X 24-7/8" (H) X 12-1/4" (D), Weight: 112 lbs		
Electric	120 VAC	178 W / 1.48 A (Operation)	16 W / 0.13 A (Standby) 271 W / 2.26 A (Freeze-Protection)
Ignition	Electronic Ignition		
Noise Level	61 dB at Max output		
Fuel		NG	LP
Gas Consumption	Min. Input	15,000 BTU/h	15,000 BTU/h
	Max. Input	380,000 BTU/h	380,000 BTU/h
Thermal Efficiency		80.2%	82.4%
Gas Pressure		Min 5.0" W.C.	Min 8.0" W.C.
		Max 10.5" W.C.	Max 14.0" W.C.
Flow Rate	14.5 GPM	Values based on factory testing. 0.4 GPM required for continuous fire after initial ignition.	
Hot/Cold/Gas Connection	1" NPT		
Coil Capacity	≈0.32 Gallons		
Water Pressure	15-150 PSI	Pressure Only Relief Valve Requires (Min 380,000 btu/h, 150 PSI).	
		40 psi or above recommended for max. flow	
Multiple Unit Installation	Easy-Link System	Up to 4 units	With no need for a system controller
	Multi-Unit System	Up to 10 units	With 9007675005 (Multiple Unit System Controller)
T-M50 Temperature Settings	Dipswitches	100°F 115°F 120°F (default) 135°F 145°F 155°F 165°F 185°F	
	With 9007603005 remote (max. distance 400' from heater, non-polarized 20 gauge wiring)		
	Default Mode	100°F 105°F 110°F 115°F 120°F (default) 125°F 130°F 135°F 140°F 145°F 150°F 155°F 160°F 165°F 170°F 175°F	
	High Temp. Mode	110°F 115°F 120°F (default) 125°F 130°F 135°F 140°F 145°F 150°F 155°F 160°F 165°F 170°F 175°F 180°F 185°F	

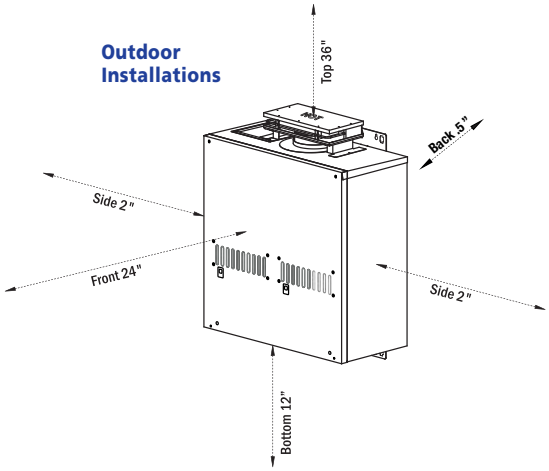




Clearance

Clearances to Combustible and Non-Combustible Surfaces





EASY-LINK SYSTEM

For larger applications that require multiple water heaters to work in conjunction, the T-D2, T-D2U, T-H3, and TM50 series feature the Easy-Link system. This allows installers to easily manifold up to 4 units without the need for a system controller. The controls are already built into each model's internal computer. The Easy-Link system ensures proper modulation, using only the amount of energy required so that there is never any waste. Refer to each model's installation instructions for details.

MULTI-UNIT SYSTEM

For even larger applications, the D2U, H3 and M50 Series models also feature the Multi-Unit system, allowing a greater number of units to manifold together. The Multi-Unit System Controller is necessary to enable the Multi-Unit system. The Multi-Unit System can control up to twenty D2Us, H3s, and ten M50s.

UNIT COMPARISON

	D2 Series	D2U* Series	H3* Series	M50 Series**
EASY-LINK (No Controller Necessary)	Up to 4 units	Up to 4 units	Up to 4 units	Up to 4 units
Maximum input (BTU/h)	796,000	796,000	796,000	1,520,000
MULTI-UNIT	N/A	Up to 20 units	Up to 20 units	Up to 10 units
Maximum input (BTU/h)	N/A	3,980,000	3,980,000	3,800,000

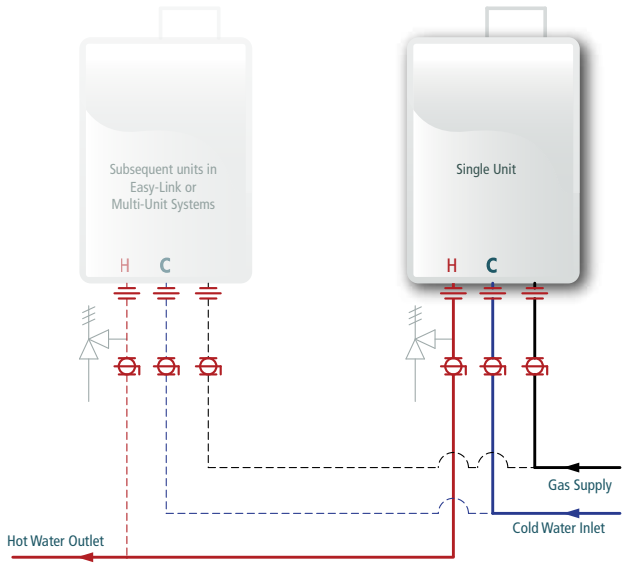
*D2U and H3 models use 9008300005 controller for multi-link capabilities **With 9007675005 controller

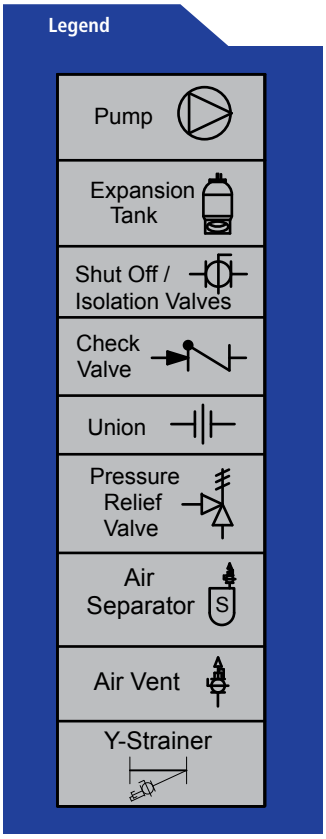
Application Diagrams

Takagi 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 endless, continuous hot water.*

*Local codes dictate proper compliance

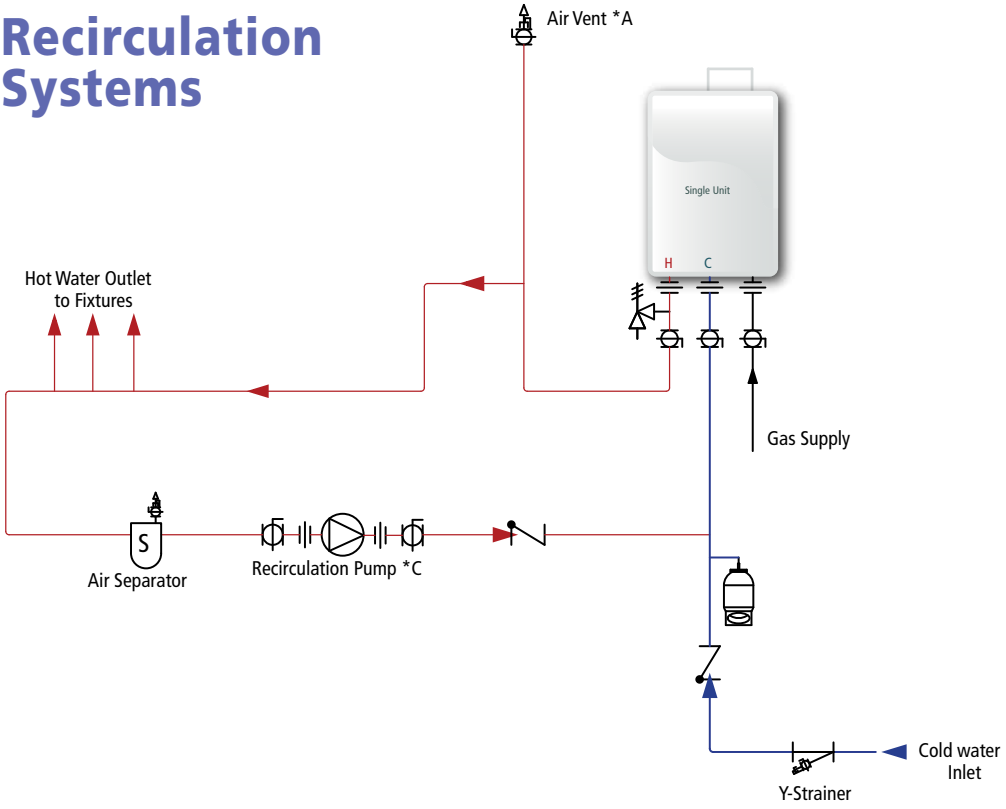
Basic Installation



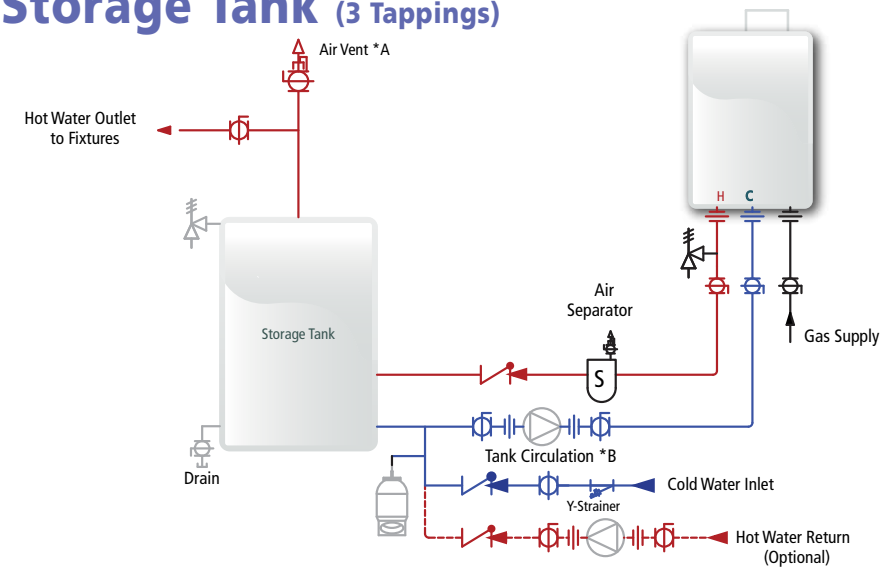


*Takagi tankless water heaters provide endless hot water when sized appropriately for your home's needs.

Recirculation Systems



Storage Tank (3 Tappings)



***A** The air vent is to be installed at the highest location of the system. The diameter of the pipe leading up the air vent is to be no smaller than the piping throughout the system.

***B**
1. The tank circulation pump is to be controlled by:
   - Dual-set aquastat (recommended w/ timer)

   OR
   - Takagi's Pump Control set to "Storage Tank Mode" (if the Takagi's model or controller has this function)
2. The tank circulation pump is to provide no less than 2 gpm through each activated Takagi's unit in the system. (Exception: no less than 4 gpm through each M50 series)

***C**
1. The recirculation pump is to be controlled by:
   - Dual-set aquastat (recommended w/ timer)

   OR
   - Takagi's Pump Control set to "Recirculation Mode" (if the Takagi model or controller has this function)
2. The recirculation pump is to provide no less than 2 gpm and no more than 4 gpm through each activated Takagi's unit in the system. (Exception: between 4 gpm and 8 gpm through each M50 series)

***D**
1. The recirculation pump is to be controlled by:
   - Dual-set aquastat (recommended w/ timer)

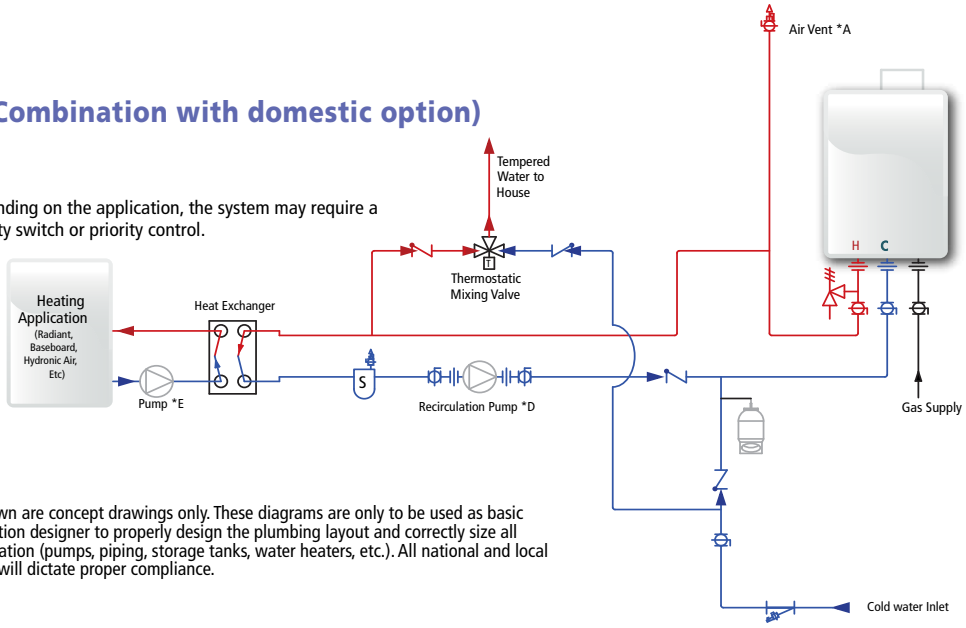
   OR
   - Takagi's Pump Control set to "Recirculation Mode" (if the Takagi's model or controller has this function)

   OR
   - Thermostat controlling the heating application
2. The recirculation pump is to provide no less than 2 gpm through each activated Takagi's unit in the system. (Exception: no less than 4 gpm through each M50 series model)

***E** The pump size and control are dependant on the requirements of the heating application.

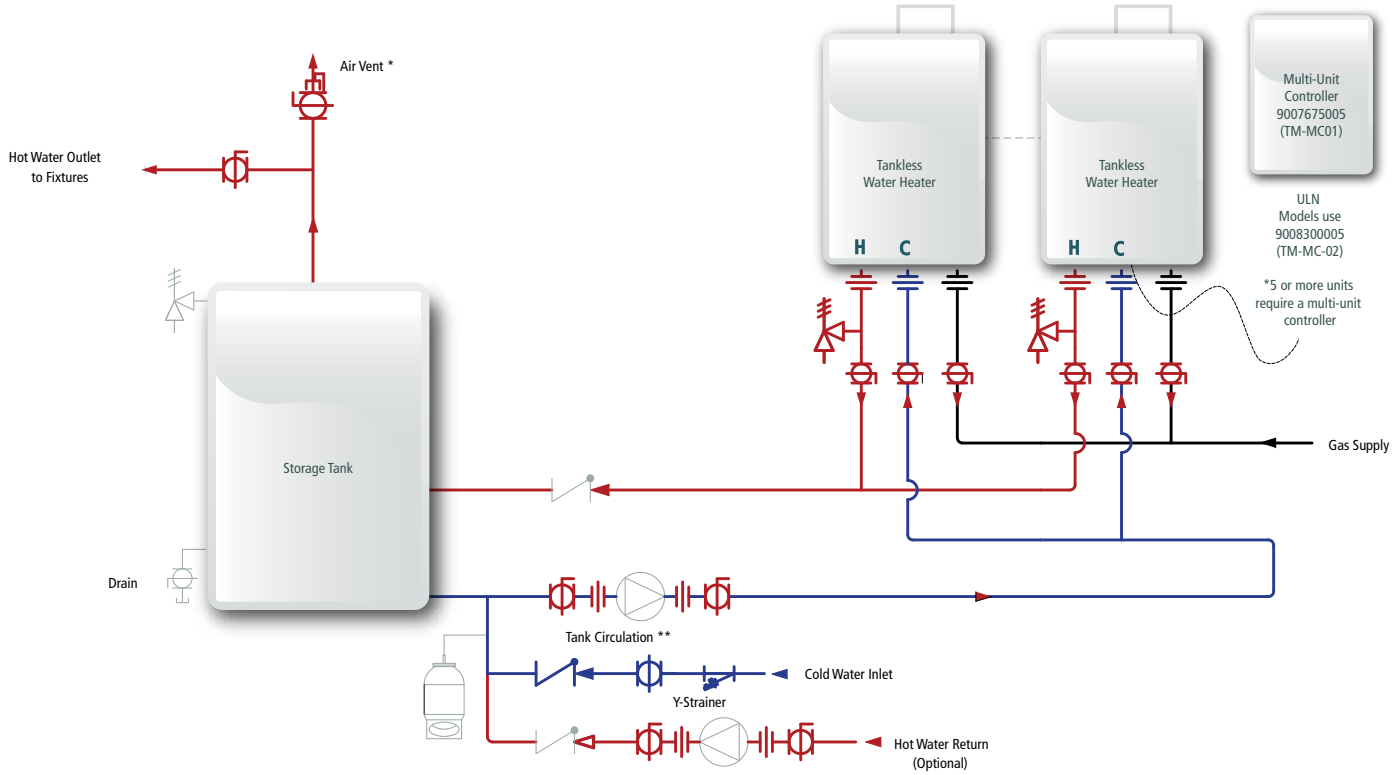
Heating (Combination with domestic option)

Depending on the application, the system may require a priority switch or priority control.



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.

Multi-Unit With Storage

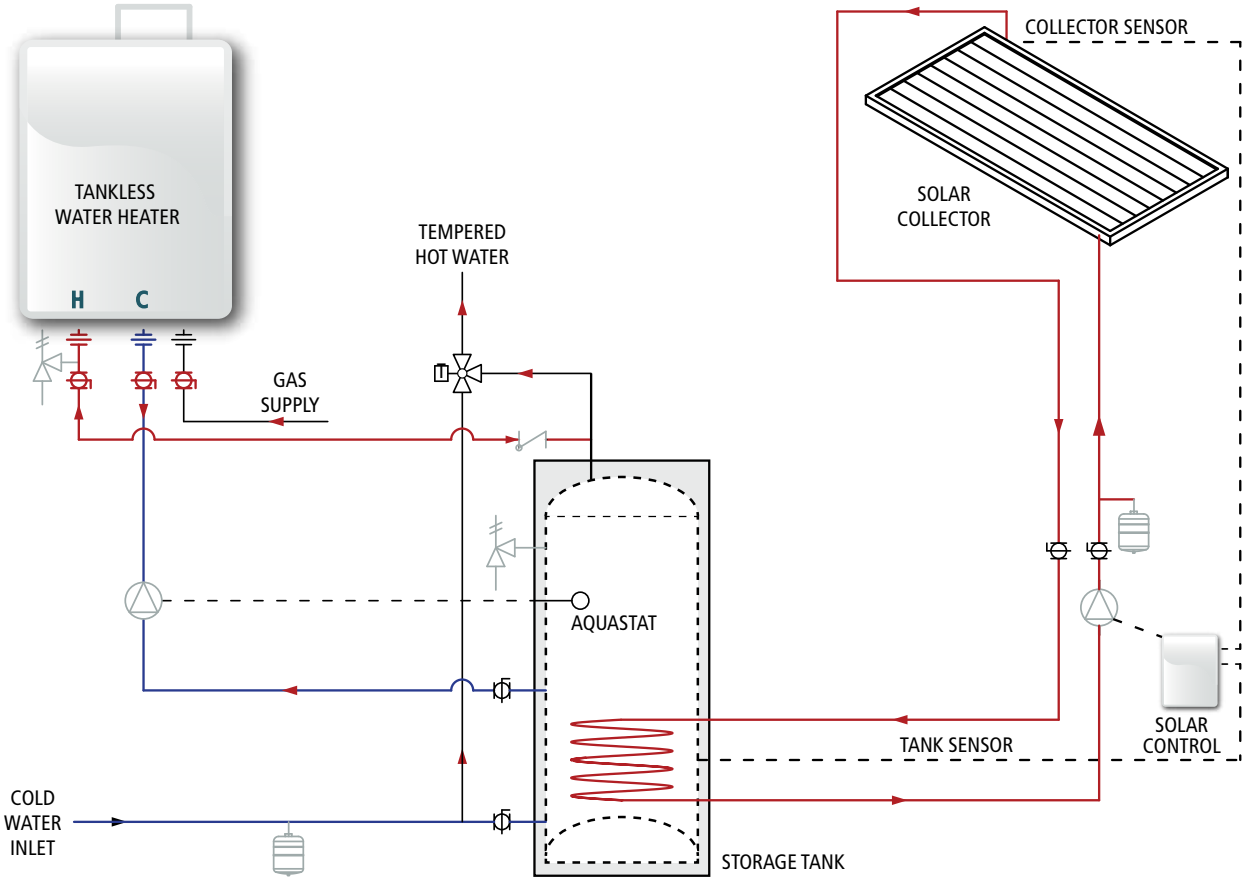


* The air vent is to be installed at the highest location of the system. The diameter of the pipe leading up the air vent is to be no smaller than the piping throughout the system.

** 1. The tank circulation pump is to be controlled by: Dual-set aquastat (recommended w/ timer) OR Unit Pump Control set to "Storage Tank Mode" (if the unit model or controller has this function)

** 2. The tank circulation pump is to provide no less than 2 gpm through each activated unit in the system. (Exception: no less than 4 gpm through each 910 series)

Solar Tankless Back Up



* The air vent is to be installed at the highest location of the system. The diameter of the pipe leading up the air vent is to be no smaller than the piping throughout the system.

** 1. Control of the primary loop pump is dependent on the requirement of the heating application.

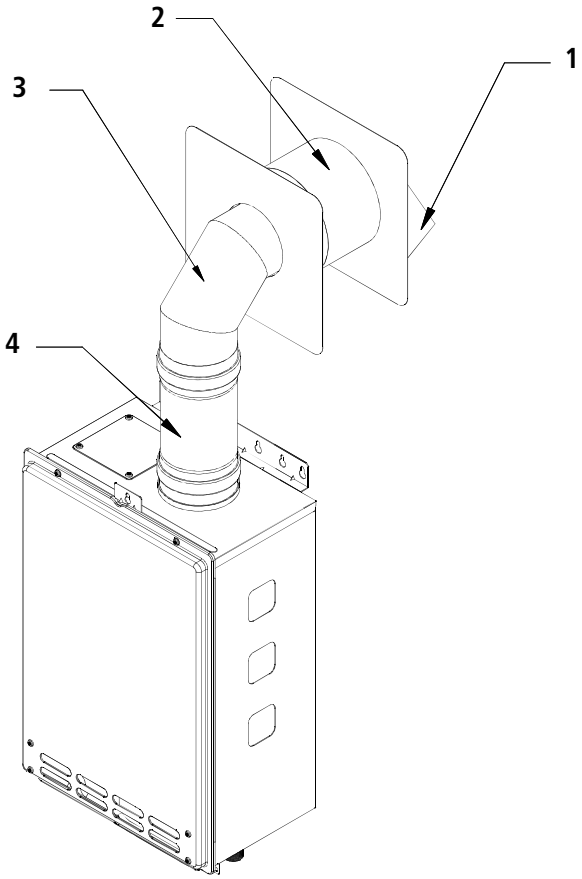
** 2. The primary loop pump is to provide no less than 2 gpm through each activated Takagi unit in the system. (Exception: no less than 4 gpm through each 910 series)

*** Size of zone pumps and method of control are dependent on the requirements of the heating application.

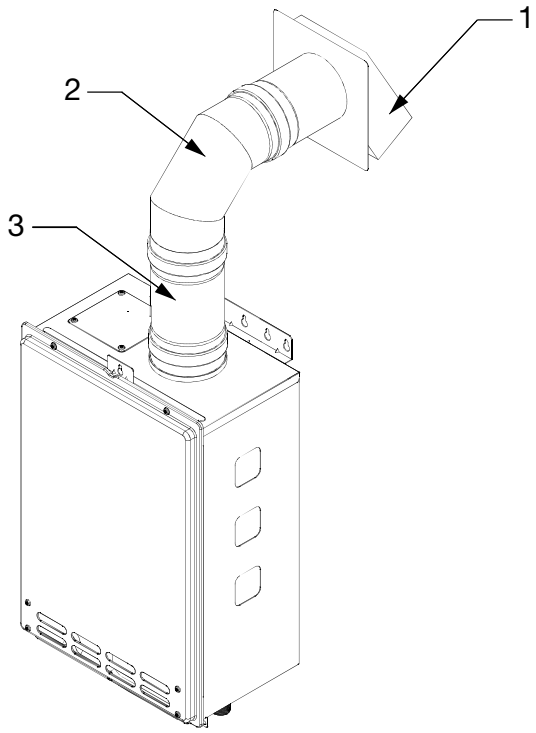
Venting Diagrams (Examples)

4” Sidewall Termination

(Please check the wall thickness
for proper installation)



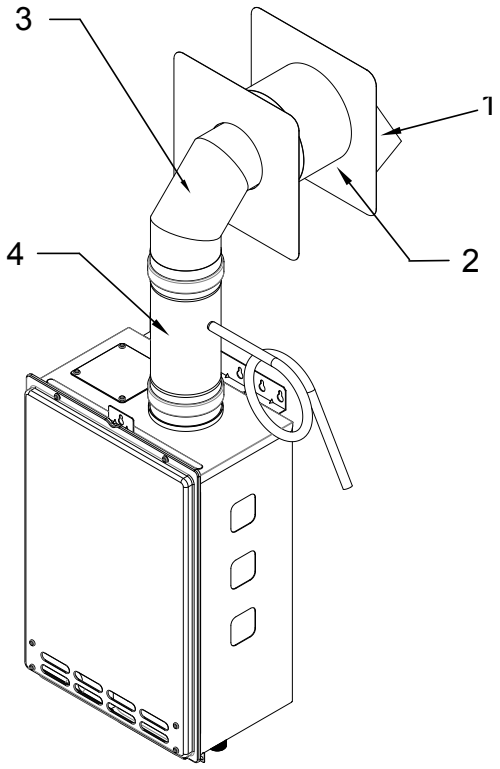
Models KJr2/U, K4/U, D2/U,				
4” Combustible Sidewall Termination				Qty.
Kit Part Number: 9008339005	1	9007999005	4" Sidewall Hood Terminator	1
	2	9008345005	4" Wall Thimble (4.0"-7.0")	1
	3	9007980005	4" 90 degree Elbow	1
	4	9007979005	4" Female-Female Adaptor	1



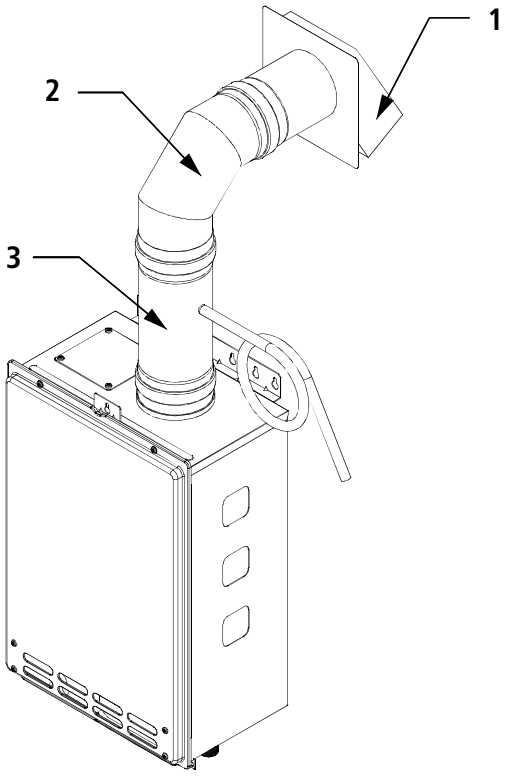
Models KJr2/U, K4/U, D2/U				
4" Non-Combustible Sidewall Termination				Qty.
Kit Part Number: 9008481005	1	9007999005	4" Sidewall Hood Terminator	1
	2	9007980005	4" 90 degree Elbow	1
	3	9007979005	4" Female-Female Adaptor	1

4” Sidewall Termination
(With Condensate Trap)

(Please check the wall thickness for proper installation)



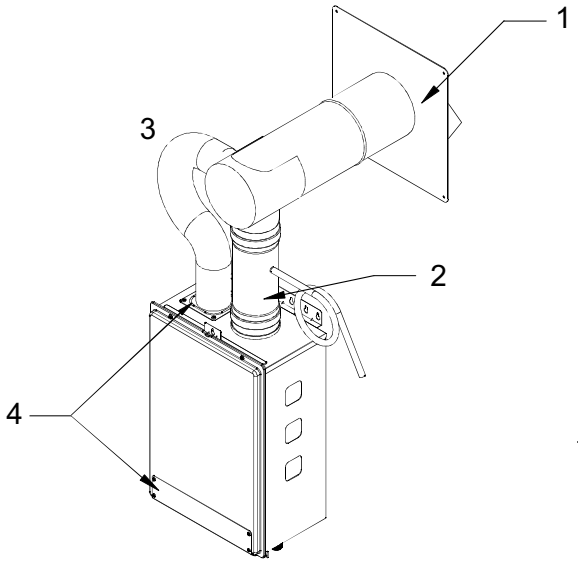
Models KJr2/U, K4/U, D2/U				
4" Combustible Sidewall Termination (With Condensate Trap)				Qty.
Kit Part Number: 9008489005	1	9007999005	4" Sidewall Hood Terminator	1
	2	9008345005	4" Wall Thimble (4.0"-7.0")	1
	3	9007980005	4" 90 degree Elbow	1
	4	9008146005	4" Universal Appliance Adaptor	1



Models KJr2/U, K4/U, D2/U				
4" Non-Combustible Sidewall Termination (With Condensate Trap)				Qty.
Kit 4 Part Number: 9008490005	1	9007999005	4" Sidewall Hood Terminator	1
	2	9007980005	4" 90 degree Elbow	1
	3	9008146005	4" Universal Appliance Adaptor	1

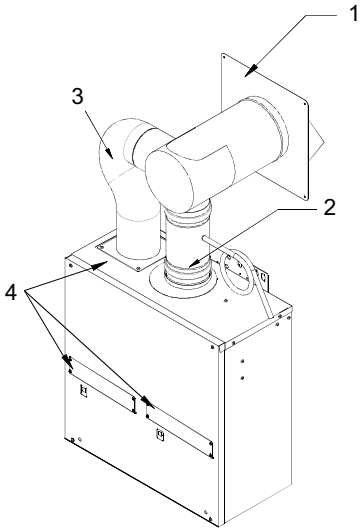
Direct Vent, Concentric Sidewall Termination

KJr2/U, K4/U, D2/U Models



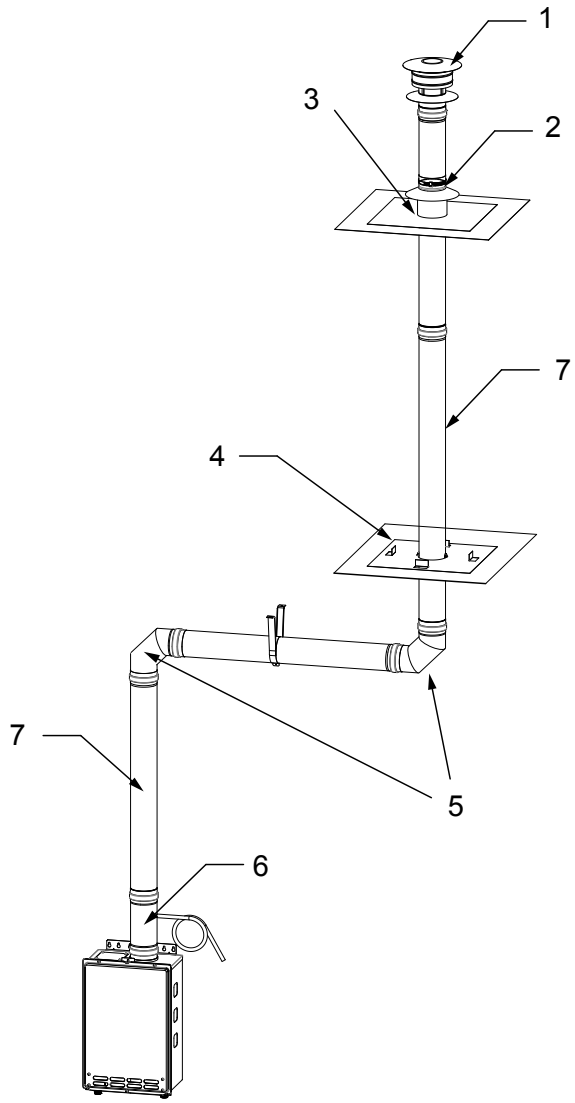
Models KJr2/U, K4/U, D2/U				
5-10" Sidewall Thickness Direct Vent, Concentric Termination				Qty.
Kit Part Number: 9008001005	1	9008147005	Concentric Intake/Exhaust Kit	1
	2	9008146005	Universal Appliance Adaptor	1
	3	N/A	3" Aluminum Flex	1
	4	9007667005	Direct Vent Conversion Kit	1
12-18" Sidewall Thickness Direct Vent, Concentric Termination				Qty.
Kit Part Number: 9008000005	1	9008147005	Concentric Intake/Exhaust Kit	1
	2	9008146005	Universal Appliance Adaptor	1
	3	N/A	3" Aluminum Flex	1
	4	9007667005	Direct Vent Conversion Kit	1

M50 Model

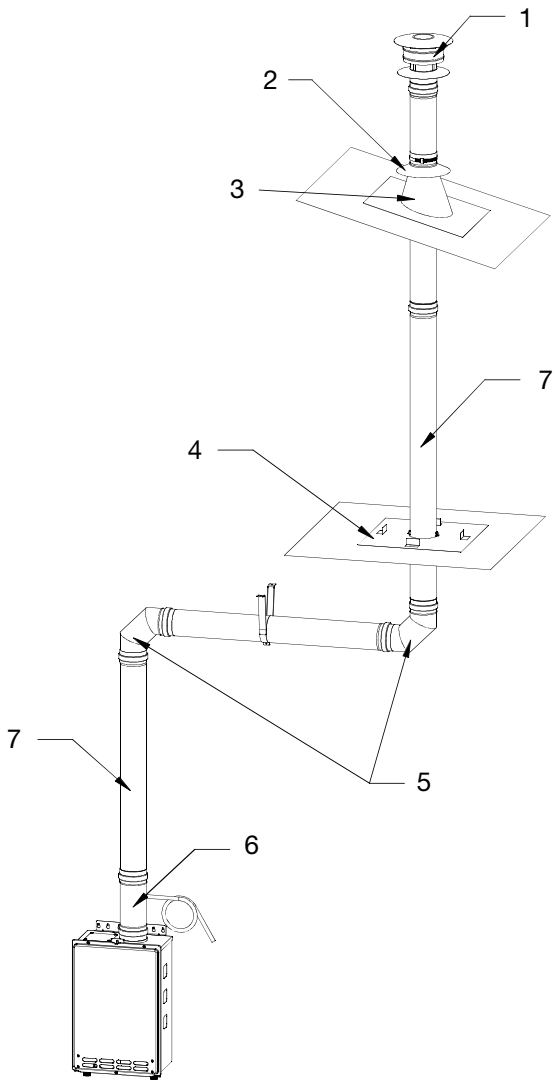


Model M50				
5-10" Sidewall Thickness Direct Vent, Concentric Termination				Qty.
Kit Part Number: 9008210005	1	9008208005	Concentric Intake/Exhaust Kit	1
	2	9008201005	Universal Appliance Adaptor	1
	3	N/A	5" Aluminum Flex	1
	4	9007669005	Direct Vent Conversion Kit	1
12-18" Sidewall Thickness Direct Vent, Concentric Termination				Qty.
Kit Part Number: 9008205005	1	9008209005	Concentric Intake/Exhaust Kit	1
	2	9008201005	Universal Appliance Adaptor	1
	3	N/A	5" Aluminum Flex	1
	4	9007669005	Direct Vent Conversion Kit	1

4” Rooftop Termination

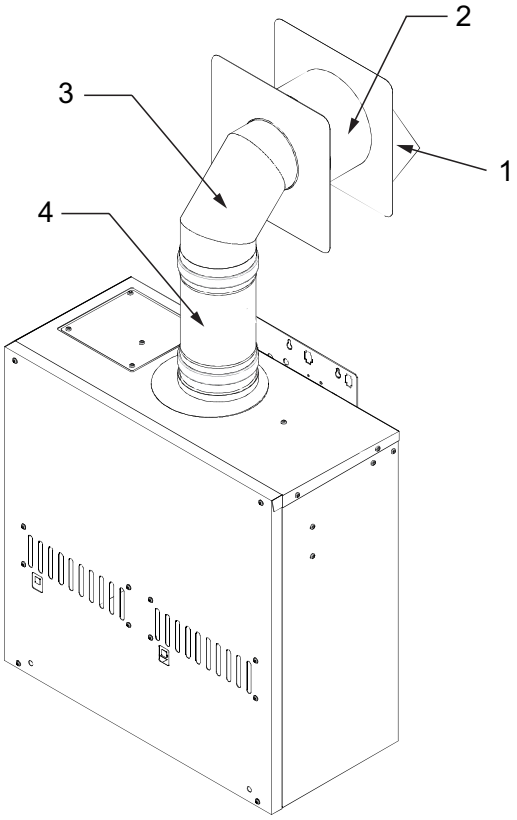


Models KJr2/U, K4/U, D2/U				
4” Flat Roof Termination				Qty.
Kit Part Number: 9008340005	1	9008145005	4” Extreme Weather Rain Cap	1
	2	9007990005	4” Storm Collar	1
	3	9007992005	4” Flat Roof Flashing	1
	4	9007988005	4” Vertical Firestop	1
	5	9007980005	4” 90 degree Elbow	2
	6	9008146005	4” Universal Appliance Adaptor	1
	7	Refer to page 47	Straight Pipe	TBD

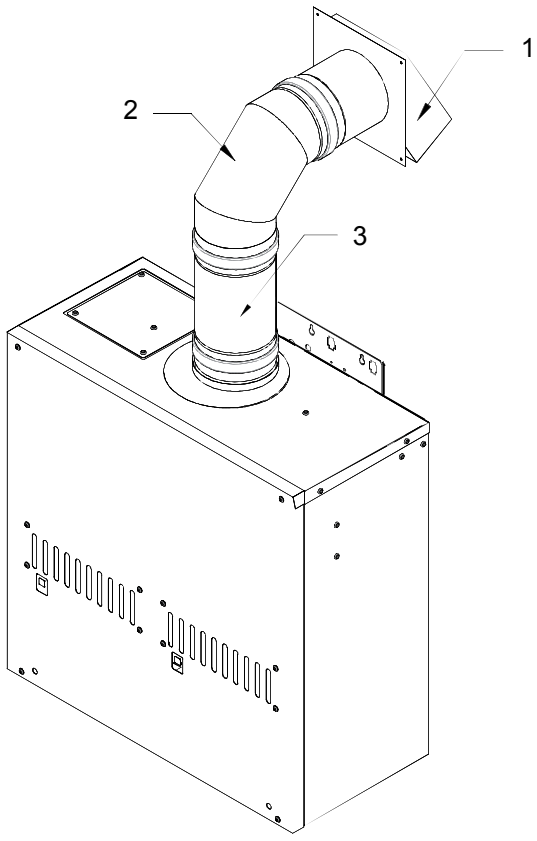


Models KJr2/U, K4/U, D2/U				
4” Angled Roof Termination				Qty.
Kit Part Number: 9008341005	1	9008145005	4” Extreme Weather Rain Cap	1
	2	9007990005	4” Storm Collar	1
	3	9007991005	4” Angeled Roof Flashing	1
	4	9007988005	4” Vertical Firestop	1
	5	9007980005	4” 90 degree Elbow	2
	6	9008146005	4” Universal Appliance Adaptor	1
	7	Refer to page 47	Straight Pipe	TBD

5” Sidewall Termination

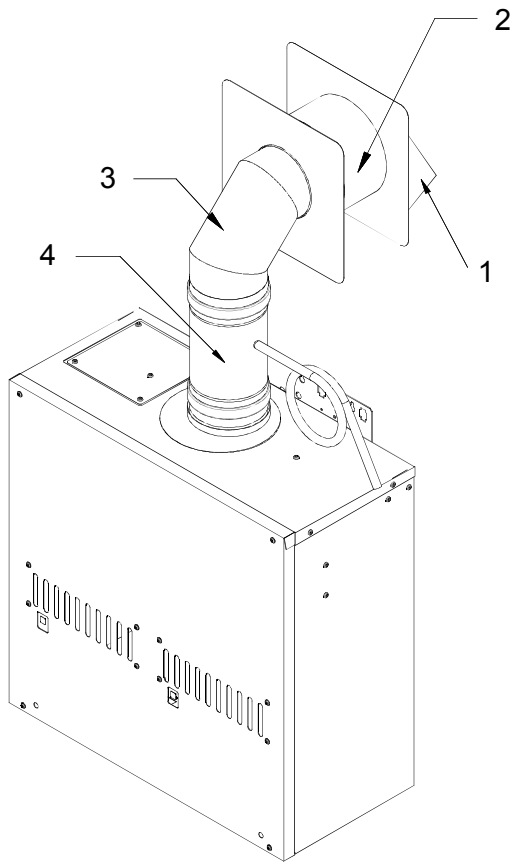


Model M50				
5" Combustible Sidewall Termination				Qty.
Kit Part Number: 9008342005	1	9008197005	5" Sidewall Hood Terminator	1
	2	9008347005	5" Wall Thimble (4.0"-7.0")	1
	3	9008188005	5" 90 degree Elbow	1
	4	9008203005	5" Female-Female Adaptor	1

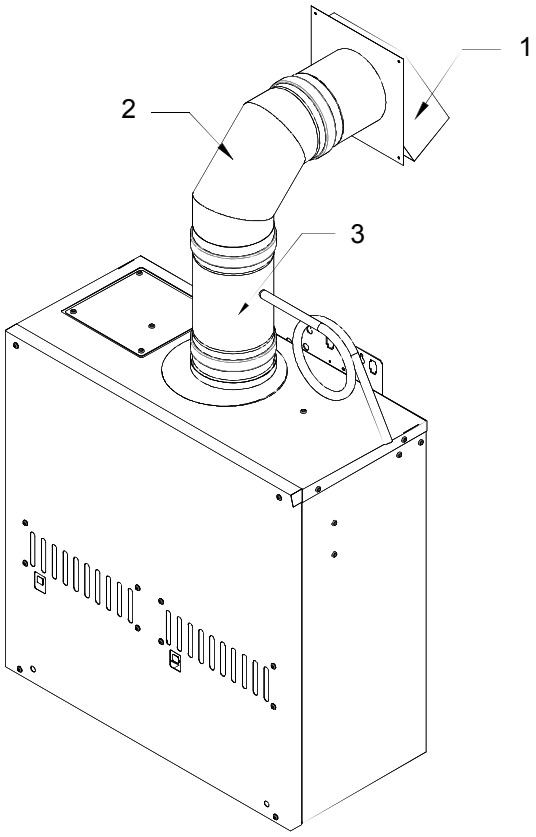


Model M50				
5" Non-Combustible Sidewall Termination				Qty.
Kit 8 Part Number: 9008482005	1	9008197005	5" Sidewall Hood Terminator	1
	2	9008188005	5" 90 degree Elbow	1
	3	9008203005	5" Female-Female Adaptor	1

5” Sidewall Termination
(With Condensate Traps)

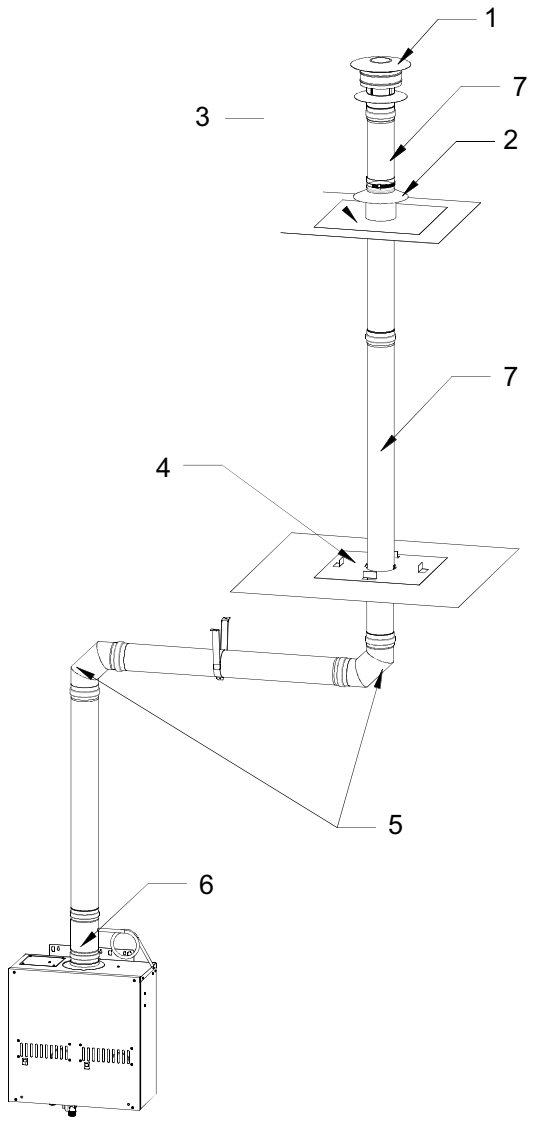


Model M50				
5" Combustible Sidewall Termination (With Condensate Trap)				Qty.
Kit 9 Part Number: 9008491005	1	9008197005	5" Sidewall Hood Terminator	1
	2	9008347005	5" Wall Thimble (4.0"-7.0")	1
	3	9008188005	5" 90 degree Elbow	1
	4	9008201005	5" Universal Appliance Adaptor	1

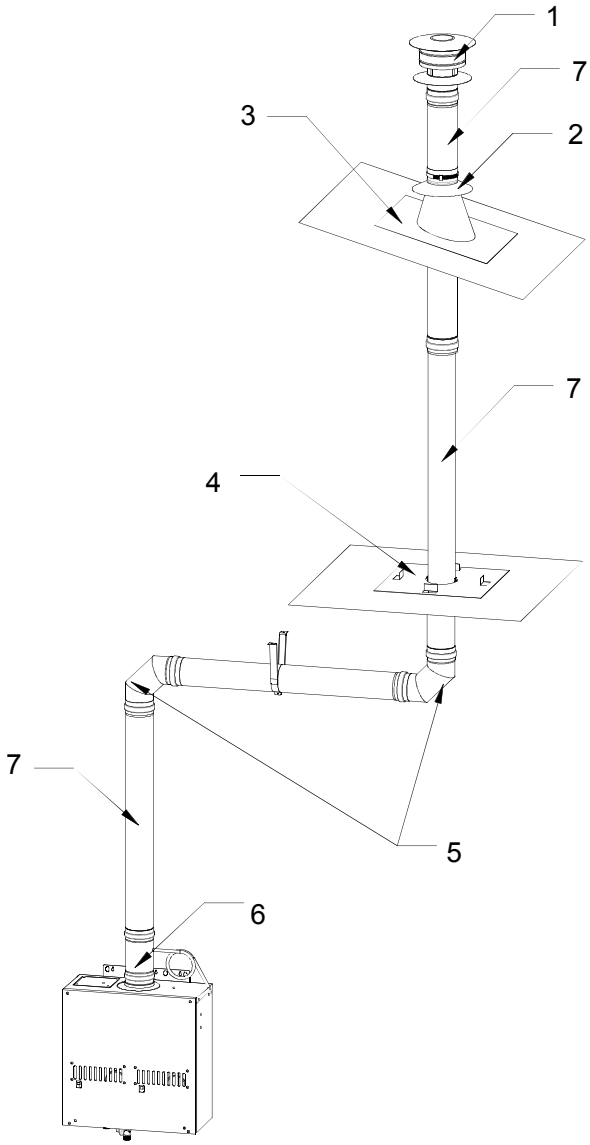


Model M50				
5" Non-Combustible Sidewall Termination (With Condensate Trap)				Qty.
Kit 10 Part Number: 9008492005	1	9008197005	5" Sidewall Hood Terminator	1
	2	9008188005	5" 90 degree Elbow	1
	3	9008201005	5" Universal Appliance Adaptor	1

5” Rooftop Termination



Model M50				
5” Flat Roof Termination				Qty.
Kit Part Number: 9008343005	1	9008200005	5” Extreme Weather Rain Cap	1
	2	9008193005	5” Storm Collar	1
	3	9008195005	5” Flat Roof Flashing	1
	4	9008194005	5” Vertical Firestop	1
	5	9008188005	5” 90 degree Elbow	2
	6	9008201005	5” Universal Appliance Adaptor	1
	7	Refer to page 49	Straight Pipe	TBD

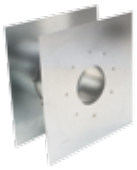


Model M50				
5” Angled Roof Termination				Qty.
Kit Part Number: 9008344005	1	9008200005	5” Extreme Weather Rain Cap	1
	2	9008193005	5” Storm Collar	1
	3	9008196005	5” Angled Roof Flashing	1
	4	9008194005	5” Vertical Firestop	1
	5	9008188005	5” 90 degree Elbow	2
	6	9008201005	5” Universal Appliance Adaptor	1
	7	Refer to page 49	Straight Pipe	TBD

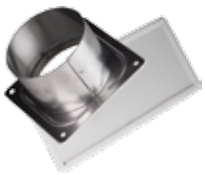
Venting Components

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		
9007987005	4" Straight pipe - 6" Length	
9007986005	4" Straight pipe - 12" Length	
9007984005	4" Straight pipe - 24" Length	
9007983005	4" Straight pipe - 36" Length	
9007982005	4" Straight pipe - 48" Length	
9008181005	5" Straight pipe - 6" Length	
9008182005	5" Straight pipe - 12" Length	
9008183005	5" Straight pipe - 24" length	
9008184005	5" Straight pipe - 36" Length	
9008185005	5" Straight pipe - 48" Length	
ADJUSTABLE VENT PIPE		
9007985005	4" Adjustable Pipe (7"- 9.9")	
9008186005	5" Adjustable Pipe (7"- 9.9")	
ELBOW		
9007981005	4" 45 Degree Elbow	
9008187005	5" 45 Degree Elbow	
9007980005	4" 90 Degree Elbow	
9008188005	5" 90 Degree Elbow	
ADAPTOR		
9007979005	4" Female-Female Adaptor	
9008203005	5" Female-Female Adaptor	
9008146005	4" Universal Appliance Adaptor 3-in-1 (F-F adaptor, condensate drain, & back-flow preventer)	
9008201005	5" Universal Appliance Adaptor 3-in-1 (F-F adaptor, condensate drain, & back-flow preventer)	

Nova Vent Part #	DESCRIPTION	
BACKFLOW PREVENTER		
9007996005	4" Backflow Preventer & F-F Adaptor	
9008202005	5" Back-flow Preventer & F-F Adaptor	
CONDENSATION DRAIN		
9007994005	4" Horizontal Drain Tee	
9008191005	5" Horizontal Drain Tee	
9007993005 (M-F)	4" Vertical Drain Tee	
9008192005	5" Vertical Drain Tee	
SUPPORT		
9007989005	4" Support Strap (1")	
9008204005	5" Support Strap (1")	
WALL THIMBLE		
9008345005 (4"-7")	4" Wall Thimble	
9008346005 (5"-10")	4" Wall Thimble	
9008347005 (4"-7")	5" Wall thimble	
9008348005 (5"-10")	5" Wall thimble	
4" SIDEWALL TERMINATION & THIMBLE KIT		
9008004005 (4"-7")	Sidewall Vent Terminator (Hood) and Wall Thimble	
9008005005 (5"-10")	Sidewall Vent Terminator (Hood) and Wall Thimble	

Note: KJr2/U, H3M, K4/U, D2/U, H3J, H3S, H3 series are compatible with 4" components. M50 series is compatible with 5" components.

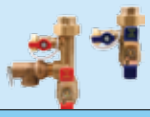
Nova Vent Part #	DESCRIPTION	
TERMINATION		
9008144005	4" Termination Tee	
9008198005	5" Termination Tee	
9007999005	4"Exhaust Sidewall Vent Terminator (Hood)	
9008197005	5"Exhaust Sidewall Vent Terminator (Hood)	
9007995005	4" Rain Cap	
9008145005	4" Extreme Weather Rain Cap	
9008200005	5" Extreme Weather Rain Cap	
9007611005	3" Concentric PVC Termination	
FIRESTOP		
9007988005	Vertical Firestop	
9008194005	5" Firestop	
ROOF FLASHING		
9007992005	4" Flat Roof Flashing	
9008195005	5" Flat Roof Flashing	
9007991005	4" Angled Roof Flashing	
9008196005	5" Angled Roof Flashing	
STORM COLLAR		
9007990005	4" Storm Collar	
9008193005	5" Storm Collar	
DIRECT VENT CONVERSION KIT		
9007667005	Direct Vent Conversion Kit for NIE models KJr2 (U) / K4 (U) / D2 (U)	
9007669005	Direct Vent Conversion Kit for NIEA Model M50	

Nova Vent Part #	DESCRIPTION	
INTAKE HOOD (GALVANIZED)		
9008142005	3"	
9008143005	4"	
9008180005	5"	

DIRECT VENT, CONCENTRIC SIDEWALL TERMINATION KIT Includes : DV Conversion Kit, Concentric Termination, Universal Adaptor 3-in-1, Aluminum Flex and Gear Clamp		
9008001005	5.0" to 10.0" 3" Intake, 4" Exhaust	
9008000005	12.0" to 18.0" 3" Intake, 4" Exhaust	
9008206005	5.0" to 10.0" 4" Intake, 4" Exhaust	
9008207005	12.0" to 18.0" 4" Intake, 4" Exhaust	
9008210005	5.0" to 10.0" 5" Intake, 5" Exhaust	
9008205005	12.0" to 18.0" 5" Intake, 5" Exhaust	

Note: KJr2/U, H3M, K4/U, D2/U, H3J, H3S, H3 series are compatible with 4" components. M50 series is compatible with 5" components.

Accessories

ACCESSORIES			T-KJr2/U-IN	T-KJr2/U-OS	T-K4/U-IN	T-K4/U-OS	T-D2/U-IN	T-D2/U-OS	T-H3M-DV	T-H3M-OS	T-H3J-DV	T-H3J-OS	T-H3S-DV	T-H3S-OS	T-H3-DV	T-H3-OS	T-M50
9007677005	Outdoor Vent Cap																**x**
9007674005	Recess Box			x		x		x									
9007671005	Pipe Cover		x	x													
9007670005			x*	x*	x	x	x	x									
9007673005																	**x**
9008331005											x	x	x	x	x	x	
9008953005									x	x							
9007675005	Multiple Unit Controller																**x**
9008300005							x*	x*							x	x	
9007666005	Remote Temperature Controller (Not compatible with the Ultra-Low NOx models)		x	x	x	x											
9007603005							x	x									**x**
9008172005	Commercial Remote Temperature Controller						x*	x*							x	x	
9009069005	Residential Remote Temperature Controller		x*	x*	x*	x*	x*	x*	x	x	x	x	x	x	x	x	
9007604005	Isolation Valves (Lead Free) Isolation Valves (Lead Free)		x	x	x	x	x	x	x	x	x	x	x	x	x	x	
9007780005																	**x**
9007607005	Neutralizer								x	x	x	x	x	x	x	x	
9008846005	PVC Adapter for Common Venting									x		x		x			
9008847005	Non-Return Valve for Common Venting									x		x		x			
9008871005	Product Preservers® LG1.5L						w	w				w	w	w	w	**c/w**	
9008876005	LG1.5L Replacement Cartridge																
9008877005	Product Preservers® SM1.0L Anti-Scale System		c/w	c/w	c/w	c/w	c	c	c/w	c/w	c/w	c/w	c	c	c	c	
9008878005	SM1.0L Replacement Cartridge																

X = Standard Models **X*** = Ultra-Low NOx Models **C** = Cooler Climate **W** = Warmer Climate

Hard Water and Tankless Heaters

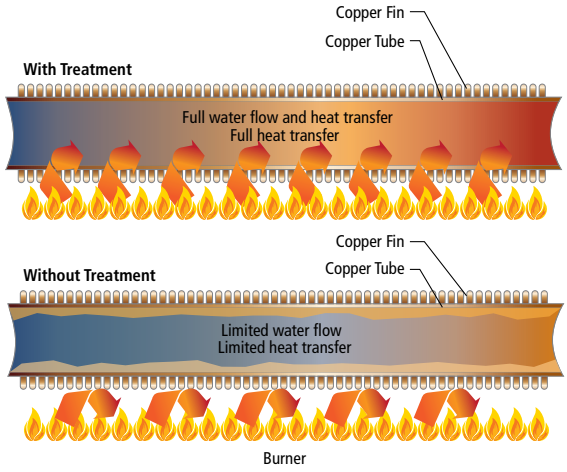
Hard water can adversely affect plumbing systems, from water piping to water fixtures and even down to the water heating system. For piping and fixtures, hard water can create more pressure loss and reduce water flow. For water heaters, it can even reduce energy efficiency and damage the heater. This is especially true for tankless water heaters and it is important to understand what hard water is, what hard water does, and how to protect your tankless water heater from possible damage caused by hard water.

What is hard water and hard water scale?

Very simply, hard water is defined as water that has a high mineral content, specifically in magnesium and calcium (Ca^{2+} and Mg^{2+} ions). Hard water is not considered a health risk and these minerals generally remain dissolved in the water. However, the problems arise when the minerals precipitate out of the water and leave behind a solid mineral buildup. This buildup is called hard water scale, and it is this scale that reduces water flow through pipes and fixtures, reduces the energy efficiency of water heating equipment and, at worst, causes irreversible damage to the heat exchangers within tankless water heaters. It is important to note that the likelihood of scale formation is only based on the hardness levels of the water and the temperature of the water, 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?

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 is forced to retain this excess heat, eventually overheating and becoming damaged. Once the material has degraded enough, the heat exchanger piping eventually gives way and water leakage occurs.



Picture shows a clean HX with treatment.

Scale buildup from untreated water.

Product Preservers® protects your tankless heat exchanger from scale formation. Refer to the chart to the right to properly size for your application.

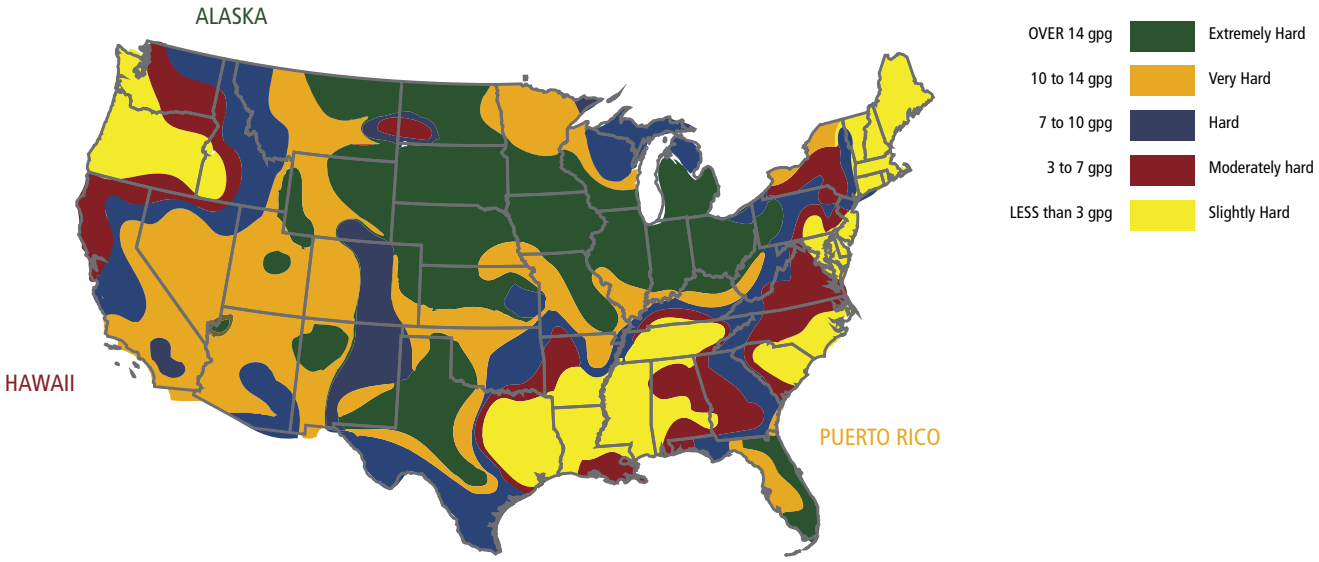
Flow Rate Based Ground Water Temperature (assume 120°F set point)

		Tankless Model	H3M	KJr2/U	H3J	K4/U	D2/U	H3S	H3	M50
		Input (BTU/h)	120000	140000	160000	190000	199000	180000	199000	380000
		Output (BTU/h)	111600	114800	152000	155800	163180	171000	189050	304000
Ground Water Temperature (°F)	Warmer Climate	85	6.40	6.56	6.60	8.00	9.32	8.00	10.00	14.50
		80	5.60	5.74	6.60	7.79	8.16	8.00	9.45	14.50
		75	5.00	5.10	6.60	6.92	7.25	7.60	8.40	13.51
		70	4.50	4.59	6.08	6.23	6.53	6.84	7.56	12.16
		65	4.10	4.17	5.53	5.67	5.93	6.22	6.87	11.05
		60	3.70	3.83	5.07	5.19	5.44	5.70	6.30	10.13
		55	3.40	3.53	4.68	4.79	5.02	5.26	5.82	9.35
	Colder Climate	50	3.20	3.28	4.34	4.45	4.66	4.89	5.40	8.69
		45	3.00	3.06	4.05	4.15	4.35	4.56	5.04	8.11
		40	2.80	2.87	3.80	3.90	4.08	4.28	4.73	7.60
		35	2.60	2.70	3.58	3.67	3.84	4.02	4.45	7.15

	9008877005 Product Preservers® SM1.0L Anti-Scale System
	9008871005 Product Preservers® LG1.5L Anti-Scale System
	Requires multiple units

Where is hard water found?

Hard water is everywhere. In fact, more than 85% of American homes have hard water.



How is the hardness of water measured?

Water hardness is measured in either parts per million (ppm) or grains per gallon (gpg). Anything that measures above 3 gpg is generally considered hard (Unites Americans Geological Survey) and it is advised at this point to look into water treatment. The U.S. Department of Interior and the Water Quality Association have classified water hardness under several levels:

CLASSIFICATION	mg/L OR PPM (PARTS PER MILLION)	GPG (GRAINS PER GALLON)
Soft	0 - 17	0 - 1
Slightly Hard	17 - 60	1 - 3.5
Moderately Hard	61 - 120	3.5 - 7.0
Hard	121 - 180	7.0 - 10.5
Very Hard	180 and above	10.5 and above

How do I prevent hard water scale?

Fortunately, there are quite a few great options to choose from when looking to protect water heating equipment from scale buildup. These solutions range in cost, maintenance and application, so it is always best to consult with water treatment professionals before making the final decision on a water treatment solution.

- Ion exchanger water softeners: Water softeners are probably the most common solution used today for eliminating hard water. Calcium and magnesium ions are removed from the water and replaced with sodium ions. Without the calcium and magnesium, hard water scale cannot form.
- Product Preservers®: Prevents scale by transforming dissolved hardness minerals into harmless, inactive microscopic crystal particles. These crystals stay suspended in the water and are passed to drain.
- Siliphos: Interferes with the ability of (calcium and magnesium) scale to crystallize. The suspended scale stays in the water and goes down the drain.

Models

I = Inside E = Outside

			Connection: Gas/Water Power	Venting Intake Exhaust (Cat. III Stainless)	Easy-Link (EL) Multi-Unit (MU)	Temperature (with remote)	GPM (Max) Per Unit	Energy Factor NG, LP	NG Max (BTU/h), LP Max (BTU/h)	Dimension/ Weight
Condensing	H3M Series 	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 (PVC venting capable) E = no venting required	N/A	100 to 140 (100 to 140)	6.6	Energy Factor NG: 0.93 LP: 0.93	NG: 120,000 LP: 120,000	H = 22-7/8" W = 13-7/8" D = 10-3/4" DV = 44 lbs E = 44 lbs
	H3J Series 	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 (PVC venting capable) E = no venting required	N/A	100 to 140 (100 to 140)	6.6	Energy Factor NG: 0.95 LP: 0.95	NG: 160,000 LP: 160,000	H = 23-5/8" W = 17-3/4" D = 11-3/4" DV = 58 lbs E = 58 lbs
	H3S Series 	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 (PVC venting capable) E = no venting required	N/A	100 to 140 (100 to 140)	8.0	Energy Factor NG: 0.95 LP: 0.95	NG: 180,000 LP: 180,000	H = 23-5/8" W = 17-3/4" D = 11-3/4" DV = 58 lbs E = 58 lbs
	H3 Series 	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 (PVC venting capable) E = no venting required	(EL) 4 units (MU) 20 units	100 to 160 (100 to 160)	10.0 (4 units generate 40 GPM Max; 20 units generate 200 GPM Max)	Energy Factor NG: 0.95 LP: 0.95	NG: 199,000 LP: 199,000	H = 23-5/8" W = 17-3/4" D = 11-3/4" DV = 59 lbs E = 59 lbs
Non-Condensing Low NOx	KJr2 Series 	Great for apartments, condos and summer cabins.	3/4" Gas/Water 120 VAC	I Model: 3" Intake, 50' Max 4" Intake, 50' Max	N/A	113 to 140 (99 to 167)	6.6	Energy Factor NG: 0.82 LP: 0.82	NG: 140,000 LP: 140,000	H= 20-1/4" W= 13-3/4" D= 7-3/4" 33 lbs
	K4 Series 	Adds 1 more shower over the 110 at minimal increase in cost.	3/4" Gas/Water 120 VAC	I Model: 3" Intake, 50' Max 4" Exhaust, 50' Max	N/A	113 to 140 (99 to 167)	8.0	Energy Factor NG: 0.82 LP: 0.82	NG: 190,000 LP: 190,000	H= 20-1/4" W= 13-3/4" D= 9-1/2" 38 lbs
	D2 Series 	Well suited for light commercial applications. Commercial-grade copper	3/4" Gas/Water 120 VAC	I Model: 3" Intake, 50' Max 4" Exhaust, 50' Max	(EL) 4 units (MU) 20 units for D2U only	104 to 185 (100 to 176)	10.0 (4 units generate 40 GPM Max; D2U generates up to 200 GPM Max)	Energy Factor NG: 0.82 LP: 0.82	NG: 199,000 LP: 199,000	H= 20-1/4" W= 13-3/4" D= 9-1/2" 39 lbs
Non-Condensing	M50 Series ASME model available 	Generates Most GPM in tankless industry. 14.5 GPM (Max). Commercial-grade copper alloy. LED display	1" Gas/Water 120 VAC	5" Intake, 50' Max 5" Exhaust, 50' Max	(EL) 4 units (MU) 10 units	100 to 185 (100 to 185)	14.5 (4 units generate 58 GPM Max; 10 units generate 145 GPM Max)	Thermal Efficiency NG: 80.2% LP: 82.4%	NG: 380,000 LP: 380,000	H= 25-1/4" W= 24-3/4" D= 11-3/4" 112 lbs

T-KJr2, TK4 & T-D2 are available in Ultra-Low NOx. Please see pages 15-20.

Takagi Tankless Water Heaters | 500 Wald, Irvine,CA 92618 | Toll Free: (888) 882-5244 | Fax: (949) 770-3171