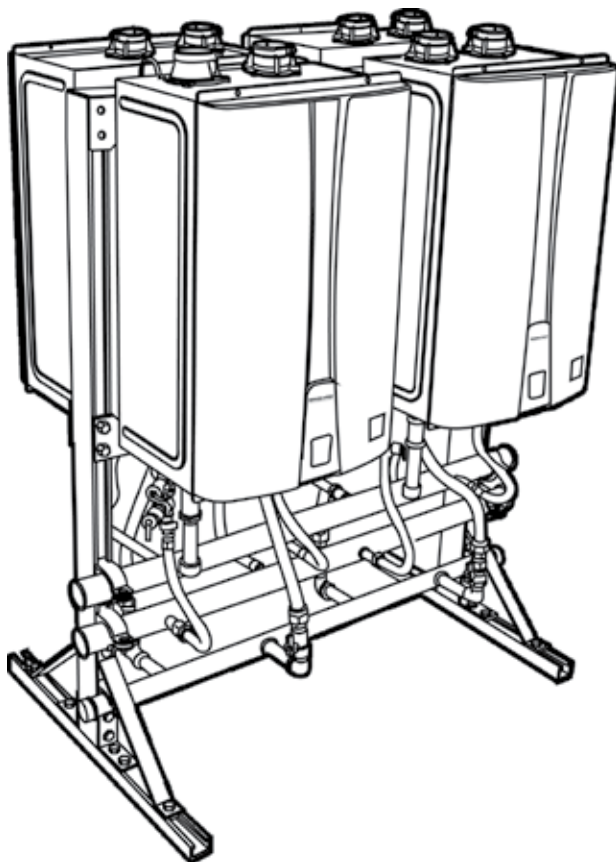


Tankless Rack Systems Installation Manual



WARNING

If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or death.

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electrical switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.

Installation and service must be performed by a licensed professional.

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SAFETY SYMBOLS



This is the safety alert symbol. This symbol alerts you to potential hazards that can kill or hurt you and others.



DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices.

Installation

A licensed professional must install the Tankless Rack System

The installer should have skills such as

- connecting gas lines, water lines, valves, and electricity
- knowledge of applicable national, state, and local codes

If you lack these skills, contact a licensed professional.



Description

Navien Tankless Rack Systems include wall mounted and free standing configurations. The wall mounted rack systems are available for 2 or 3 water heaters. Free standing rack systems are available for 2, 3, 4, 5, or 6 water heaters. Dual free-standing rack systems are available for 7, 8, 9, 10, 11 or 12 water heaters. Common manifolds for these systems are pre-sized for easy installations. Couplings are provided for assembly for these racks.

The can be ordered with Navien's Venting System, which consists of exhaust venting and PP or PVC intake venting. Up to twelve (12) tankless units can share the same CVent system.

Navien features design details that make installation simple and straightforward.

- Maneuverability: Fits, fully assembled, through standard 32-inch doorways and on elevators
- Flexibility: Available in both wall-mount or freestanding design for indoor and outdoor installations.
- Preassembled Gas and water manifolds are properly sized to maintain optimum performance.
- The racks are constructed of coated aluminum and stainless steel to stand up to the most demanding commercial environments, while minimizing weight.
- Optional electronic controls to obtain turn down ratios of up to 327:1 (Sold Separately).

NOTE: This Rack System is designed to be used with Navien tankless water heaters only. Do not mount non-Navien water heaters on this Rack System .

Venting Options	Exhaust Vent Material	Intake Vent Material	Diameter	Max Units	Max Vent Length	
					Natural Gas	Propane
Venting System	PPtI, PPs	PVC, PPtI, PPS	8"	8	100' (with 7 units) or 41' (with 8 units)	
Twin Pipe PVC/CPVC	PVC/CPVC	PVC, CPVC	4"	1	100'	65'
			3"	1	65'	41'
Dual Pipe	PPs	PPs or PVC	3"	1	41'	41'
This venting is produced by Centrotherm						

- Refer to the water heater installation and operation manual for specific details regarding vent installation option and installation.
- Venting components are packaged separately from the pre-assembled Rack for field assembly of the vent system by the contractor.



Navien Part Numbers and Main Components

TANKLESS RACK - Wall Hanging















Part Number	Rack Type	Configuration	Illustration

TANKLESS RACK - Inline Wall Mount

Part Number	Rack Type	Configuration	Illustration

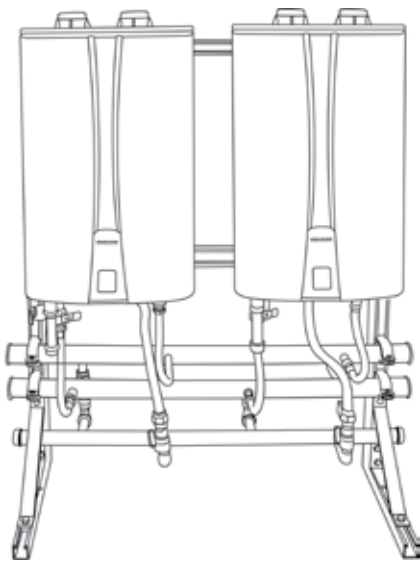
Navien Part Numbers and Main Components

TANKLESS RACK - Freestanding

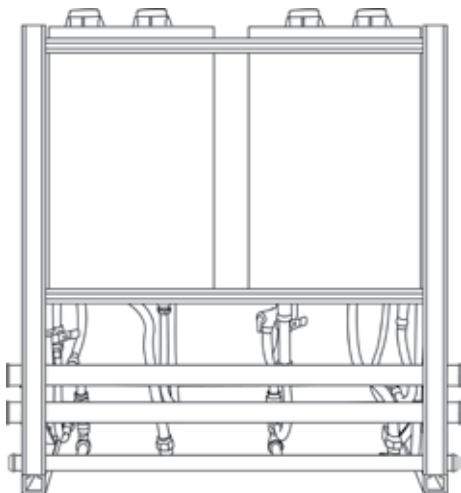
Part Number	Rack Type	Configuration	Illustration
			
			
			
			
			
			
			

2 UNIT WALL-HANGING FRAME

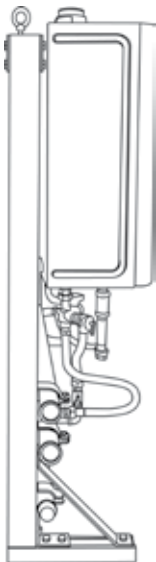
FRONT VIEW



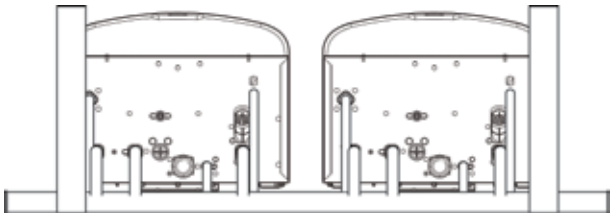
BACK VIEW



LEFT VIEW



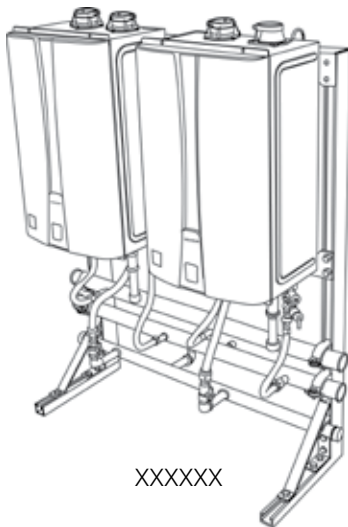
BOTTOM VIEW



Model	Configuration	Illustration
XXXXXX		

2 UNIT WALL-HANGING FRAME

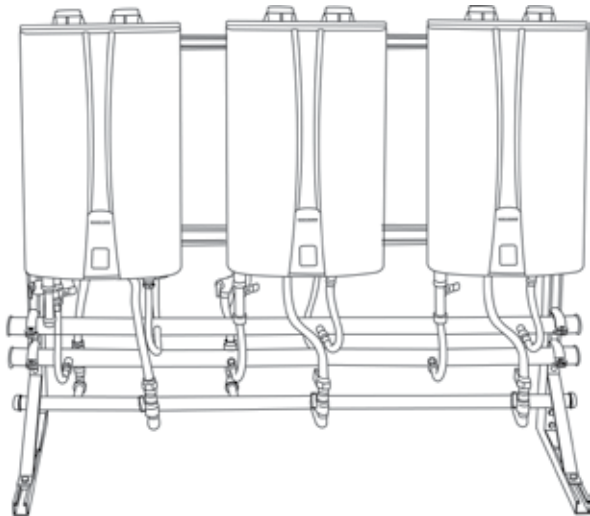
Model	XXXXX	XXXXX
Water Heater Model	XXXXXX (NG/LP)	XXXXXX (NG/LP)
Crate Dimensions (H"xL"xD")	XX" x XX" x XX"	
Weight -(Fully Assembled-lbs.)	XXX	XXX
Weight -(Shipping total-lbs.)	XXX	XXX
Rack Frame - Specifications		
Frame Material	14 Ga. Hot-Rolled Steel 1.5" Sq. Tube	16 Ga. Hot-Rolled Steel 1.5" Sq. Tube
Frame Finish	Powder Coat	Stainless
Color	Gray	Stainless
Water & Gas Connections		
Hot Water Trunk Line Dia.	2"	
Cold Water Trunk Line Dia.	2"	
Hot Water Trunk Line Material	Rigid Copper	
Cold Water Trunk Line Material	Rigid Copper	
Water Trunk Connection Type	2" Pipe	
Gas Trunk Line Dia.	1-1/4"	
Gas Trunk Connection Type	1-1/4" MNPT	
Gas Trunk Line Material	Sch 40 Steel	
Gas Branch Line Material	PVC over CSST	
Electric Requirements		
Voltage	AC 120 Volts	
Max Current (Amperes)	8	
BTU and Flow Rates for XXXXX, XXXX, XXXX, XXXX (NG/LP)		
No. of Tankless Water Heaters	2	
Flow Rate @ 70°F Rise (gpm)	10.8	
Flow Rate @ 100°F Rise (gpm)	7.6	
Minimum Input Rate (Btuh)	15,200	
Maximum Input Rate (Btuh)	398,000	



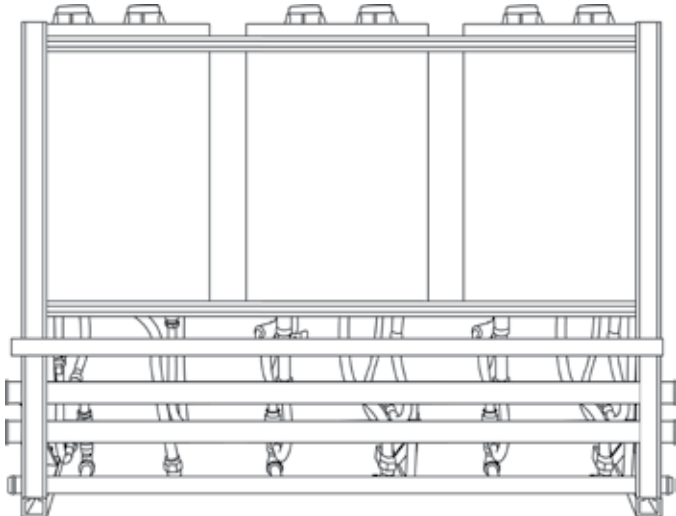
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3 UNIT WALL-HANGING FRAME

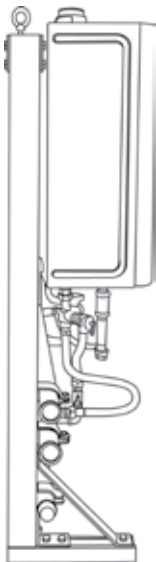
FRONT VIEW



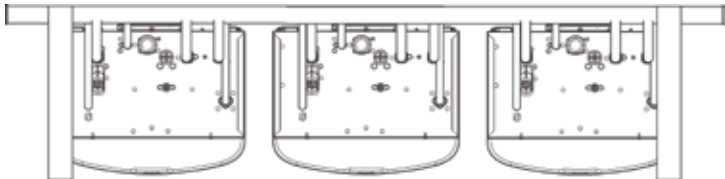
BACK VIEW





LEFT VIEW



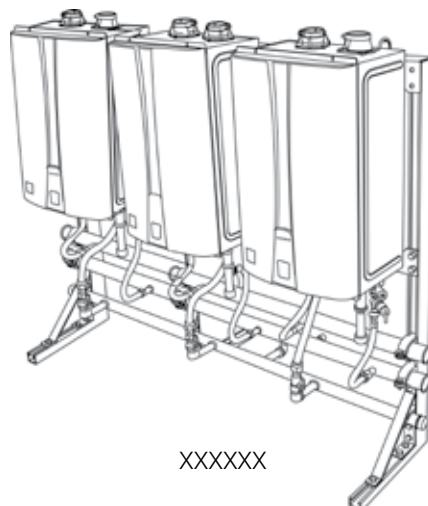
BOTTOM VIEW



Model	Configuration	Illustration
XXXXXX		

3 UNIT WALL-HANGING FRAME

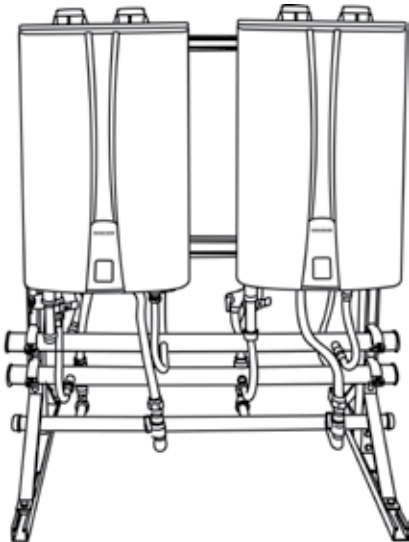
Model	XXXXX	XXXXX	XXXXX	
Water Heater Model	XXXXXX (NG/LP)	XXXXXX (NG/LP)		
Crate Dimensions (H"xL"xD")	XX" x XX" x XX"		XX" x XX" x XX"	
Weight -(Fully Assembled-lbs.)	XXX	XXX	XXX	XXX
Weight -(Shipping total-lbs.)	XXX	XXX	XXX	XXX
Rack Frame - Specifications				
Frame Material				
Frame Finish				
Color				
Water & Gas Connections				
Hot Water Trunk Line Dia.	2"			
Cold Water Trunk Line Dia.	2"			
Hot Water Trunk Line Material	Rigid Copper			
Cold Water Trunk Line Material	Rigid Copper			
Water Trunk Connection Type	2" Pipe			
Gas Trunk Line Dia.	1-1/4"			
Gas Trunk Connection Type	1-1/4" MNPT			
Gas Trunk Line Material	Sch 40 Steel			
Gas Branch Line Material	PVC over CSST			
Electric Requirements				
Voltage	AC 120 Volts - 60 Hz			
Max Current (Amperes)	12		8	
BTU and Flow Rates for XXXXX, XXXX, XXXX, XXXX (NG/LP)				
No. of Tankless Water Heaters	3		2	
Flow Rate @ 70°F Rise (gpm)	16.2		10.8	
Flow Rate @ 100°F Rise (gpm)	11.4		7.6	
Minimum Input Rate (Btuh)	15,200		15,200	
Maximum Input Rate (Btuh)	597,000		398,000	



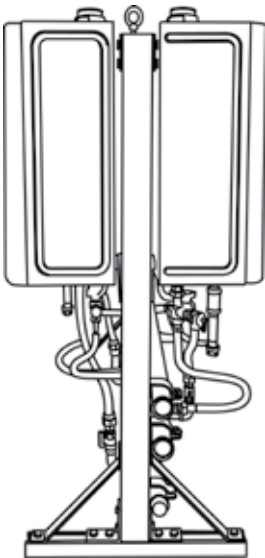
XXXXXX

4 UNIT FREE-STANDING UNIT

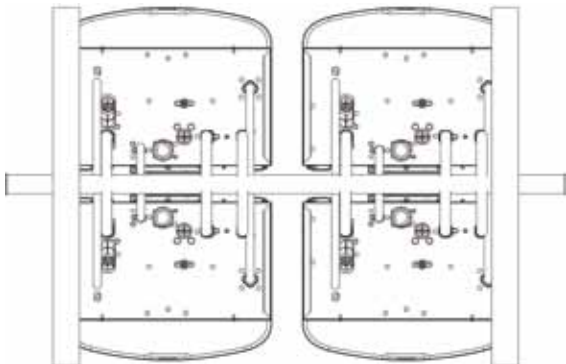
FRONT VIEW



RIGHT VIEW



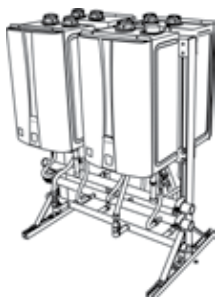
BOTTOM VIEW



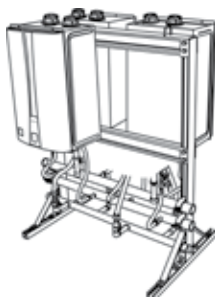
Model	Configuration	Illustration
XXXXXX		
XXXXXX		
XXXXXX		
XXXXXX		

4 UNIT FREE-STANDING UNIT

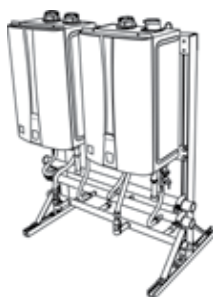
Model	XXXXX	
Water Heater Model	XXXXXX (NG/LP)	
Crate Dimensions (H"xL"xD")	XX" x XX" x XX"	
Weight -(Fully Assembled-lbs.)	XXX	XXX
Weight -(Shipping total-lbs.)	XXX	XXX
Rack Frame - Specifications		
Frame Rail type	Sheet Metal	
Frame Material	Aluminum (0.090 5052-H32)	
Frame Finish	Powder Coat	
Color	Gray	
Water & Gas Connections		
Hot Water Trunk Line Dia.	2"	
Cold Water Trunk Line Dia.	2"	
Hot Water Trunk Line Material	Rigid Copper	
Cold Water Trunk Line Material	Rigid Copper	
Water Trunk Connection Type	2" Pipe	
Gas Trunk Line Dia.	1-1/4"	
Gas Trunk Connection Type	1-1/4" MNPT	
Gas Trunk Line Material	Sch 40 Steel	
Gas Branch Line Material	PVC over CSST	
Electric Requirements		
Voltage	AC 120 Volts–60 Hz	
Max Current (Amperes)	12	
BTU and Flow Rates for XXXXX, XXXX, XXXX, XXXX (NG/LP)		
No. of Tankless Water Heaters	3	2
Flow Rate @ 70°F Rise (gpm)	16.2	10.8
Flow Rate @ 100°F Rise (gpm)	11.4	7.6
Minimum Input Rate (Btuh)	15,200	15,200
Maximum Input Rate (Btuh)	597,000	398,000



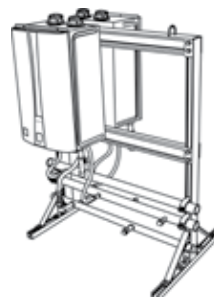
XXXXXX



XXXXXX



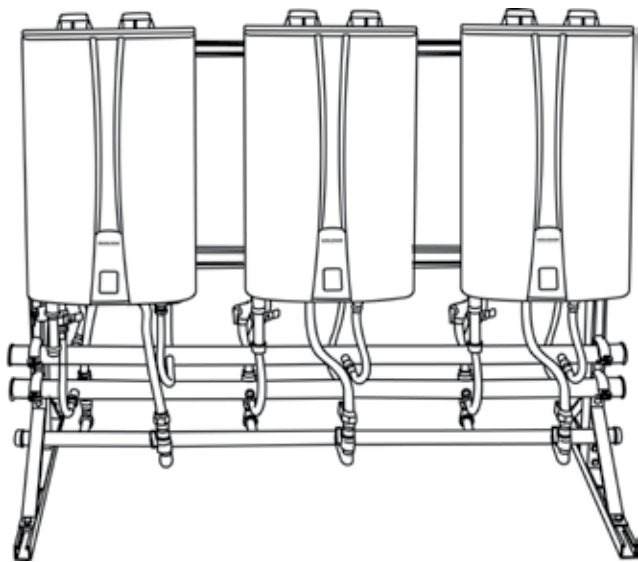
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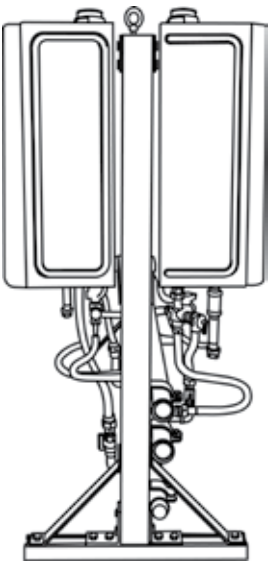
XXXXXX

6 UNIT FREE-STANDING UNIT

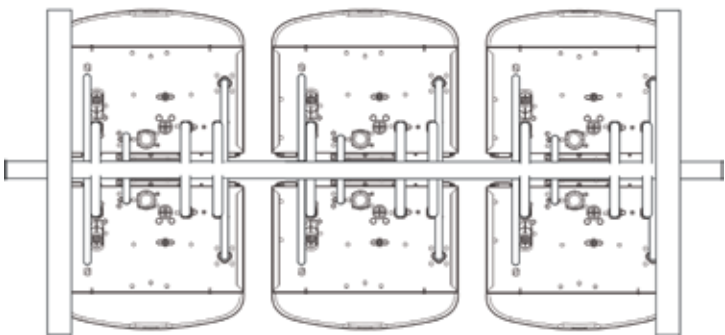
FRONT VIEW



RIGHT VIEW



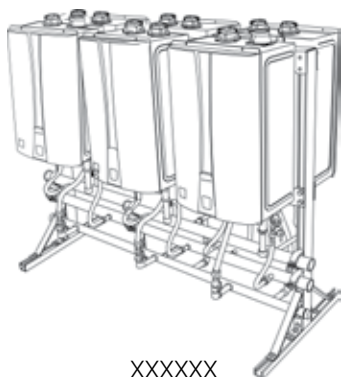
BOTTOM VIEW



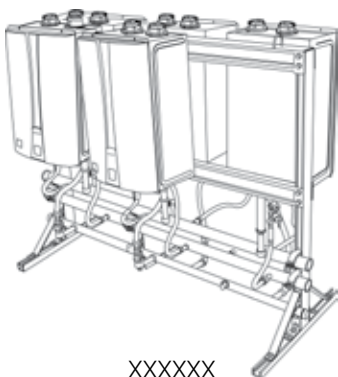
Model	Configuration	Illustration
XXXXXX		
XXXXXX		
XXXXXX		

6 UNIT FREE-STANDING UNIT

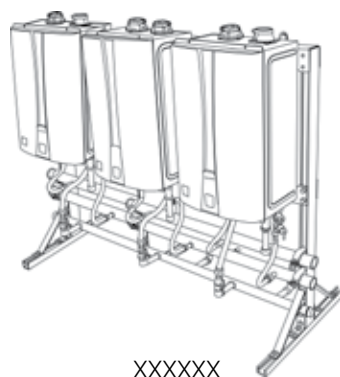
Model	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX	XXXXX
Water Heater Model	XXXXXX (NG/LP)					
Crate Dimensions (H"xL"xD")	XX" x XX" x XX"					
Weight -(Fully Assembled-lbs.)	XXX	XXX	XXX	XXX	XXX	XXX
Weight -(Shipping total-lbs.)	XXX	XXX	XXX	XXX	XXX	XXX
Rack Frame - Specifications						
Frame Rail type	Sheet Metal					
Frame Material	Aluminum (0.090 5052-H32)					
Frame Finish	Powder Coat					
Color	Gray					
Water & Gas Connections						
Hot Water Trunk Line Dia.	2-1/2"			2"		
Cold Water Trunk Line Dia.	2-1/2"			2"		
Hot Water Trunk Line Material	Rigid Copper					
Cold Water Trunk Line Material	Rigid Copper					
Water Trunk Connection Type	2-1/2" Pipe			2" Pipe		
Gas Trunk Line Dia.	1-1/2"			1-1/4"		
Gas Trunk Connection Type	1-1/2" MNPT			1-1/4" MNPT		
Gas Trunk Line Material	Sch 40 Steel					
Gas Branch Line Material	PVC over CSST					
Electric Requirements						
Voltage	AC 120 Volts-60 Hz					
Max Current (Amperes)	24	20	16	12	12	8
BTU and Flow Rates for XXXXX, XXXX, XXXX, XXXX (NG/LP)						
No. of Tankless Water Heaters	6	5	3	4	2	
Flow Rate @ 70°F Rise (gpm)	32.4	27.0	16.2	21.6	10.8	
Flow Rate @ 100°F Rise (gpm)	22.8	19.0	11.4	15.1	7.6	
Minimum Input Rate (Btuh)	15,200					
Maximum Input Rate (Btuh)	1,194,000	995,000	597,000	796,000	398,000	



XXXXXX



XXXXXX

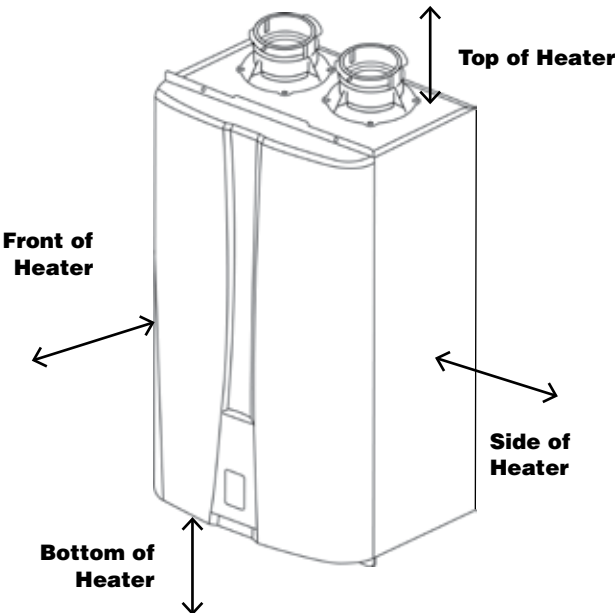
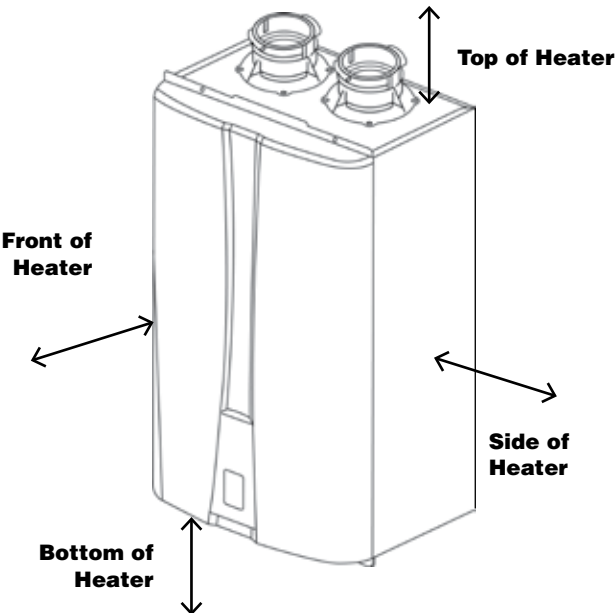


XXXXXX



Clearances

Install the rack system so that the clearances shown below (specified for the water heater in the XXXX and XXX installation manual) are followed.



Indoor Models: XXX,XXX,XXX

	to Combustibles inches (mm)	to Non Combustibles inches (mm)
Top of Heater	6 * (152)	2 * (51)
Back of Heater	0 (zero)	0 (zero)
Front of Heater	6 (152)	6 (152)
Sides of Heater	2 (51)	1/2 (13)
Ground/Bottom	12 (305)	12 (305)
Vent	0 (zero)	0 (zero)

* 0 inches from vent components and condensate drain line. The clearance for servicing is 24 inches in front of the water heater.
For closet installation, clearance is 6 inches (152 mm from the front.

Outdoor Models: XXX,XXX,XXX

	to Combustibles inches (mm)	to Non Combustibles inches (mm)
Top of Heater	12 (305)	2 (51)
Back of Heater	0 (zero)	0 (zero)
Front (panel)	24 (610)	0 (zero)
Front (exhaust)	24 (610)	24 (610)
Sides of Heater	6 (152)	1/8 (3.2)
Ground/Bottom	12 (305)	2 (51)

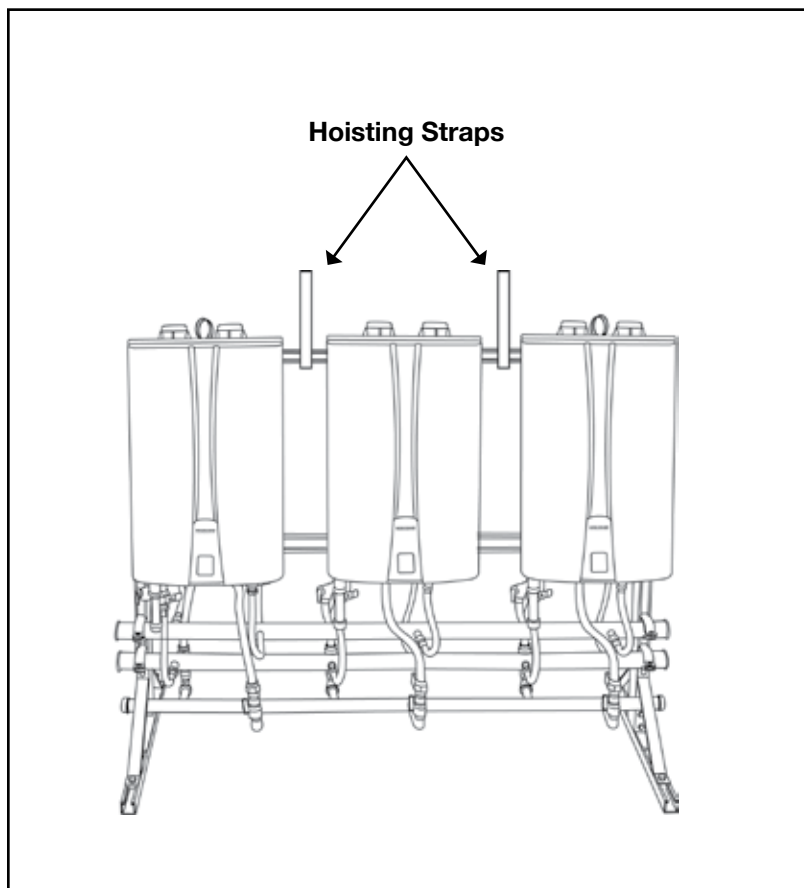
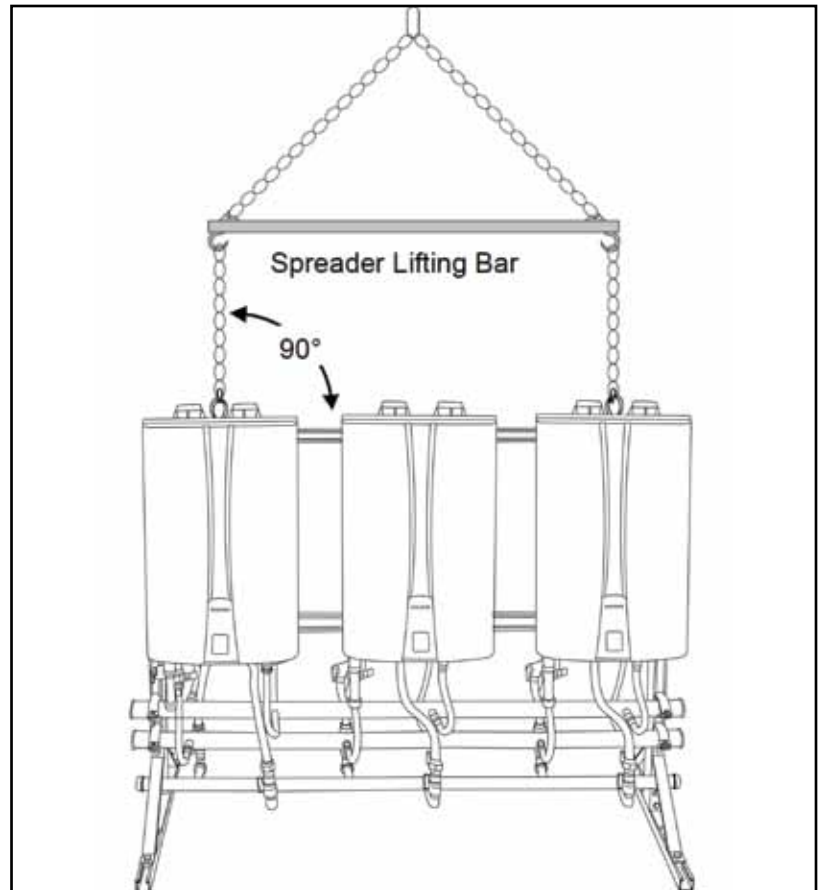
The clearance for servicing is 24 inches in front of the water heater.

Hoisting (Lifting Lugs)

Lugs are installed on the top side of the following racks for hoisting and moving. The lines or cables to the lugs should be at a 90° angle. Use a spreader lifting bar to hoist these racks. Weights of the complete assemblies are available in the Specifications section of this manual.

NOTE: DO NOT hoist the crate or palette.

Models Available with Lifting Lugs



Hoisting (Straps)

For the TRW02 and TRW03 wall mounted racks, use hoisting straps looped around the top frame. Weights of the complete assemblies are available in the Specifications section of this manual.

NOTE: DO NOT hoist the crate or palette.

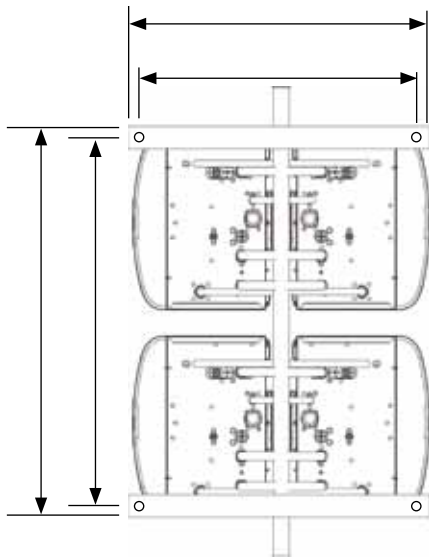
Models Available with Lifting Lugs



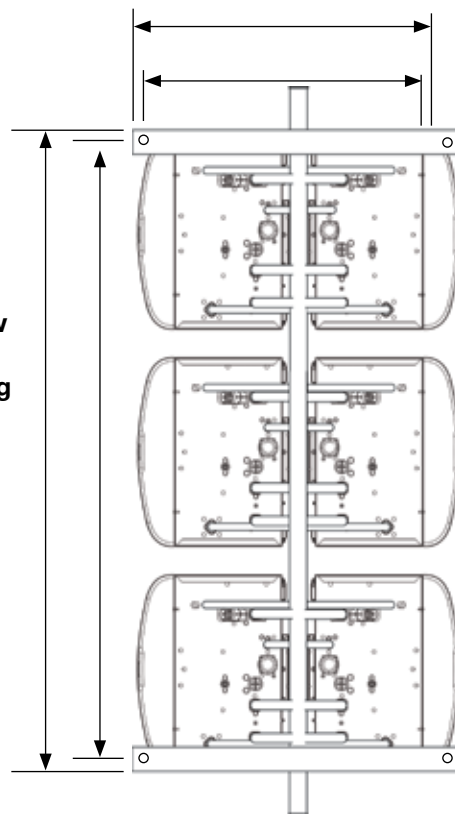
Securing Free-Standing Racks

All mechanical components shall be anchored and installed in accordance with national and/or local codes having jurisdiction . Base holes to secure all free standing RACKS are 0.563 inches in diameter. Reference local codes regarding minimum concrete thickness and use appropriate expansion anchors that is capable of supporting the TRS weight or where installation is outdoor, anchors should be capable supporting the TRS weight and wind shear. Reference and follow anchor manufacturer's use and installation requirements.

Free-Standing Models Available



Bottom view
of
free standing
racks.



Securing Wall-Mount Racks

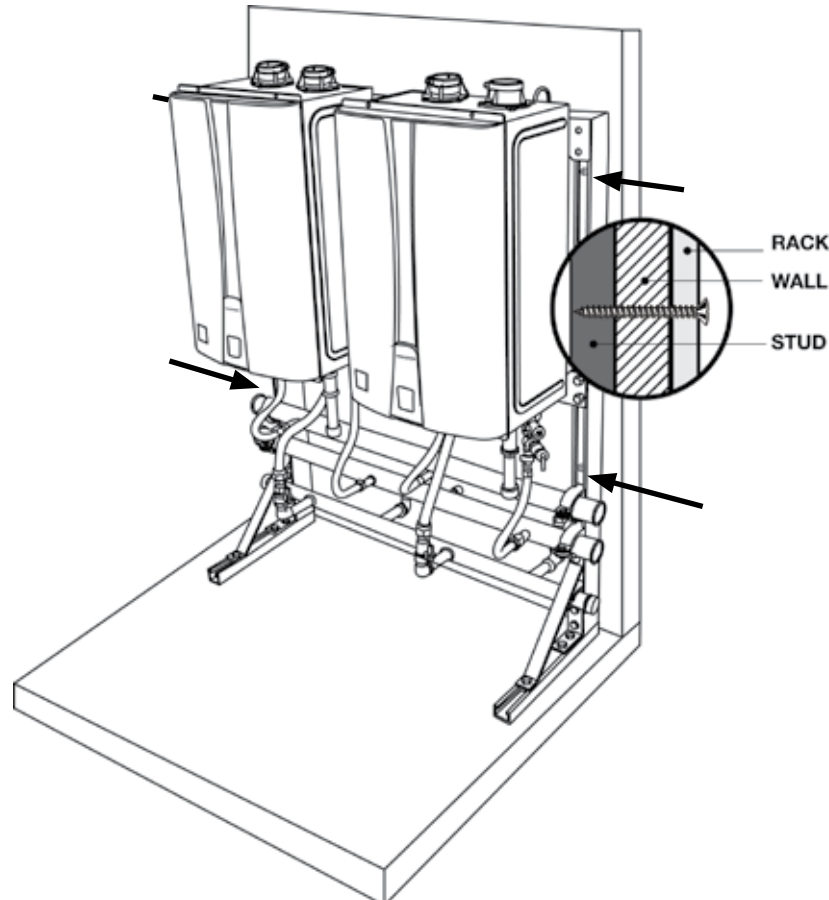
⚠ WARNING THE WALL MUST BE CAPABLE OF CARRYING THE OPERATING WEIGHT OF THE INSTALLED RACK SYSTEM. CONSULT A STRUCTURAL ENGINEER FOR STRUCTURAL ANALYSIS OF THE WALL AND APPROPRIATE HANGING METHODS BEFORE ATTEMPTING TO HANG THE TRS SYSTEM. FAILURE TO COMPLY WITH THE ABOVE REQUIREMENT COULD RESULT IN SUBSTANTIAL PROPERTY DAMAGE, SEVERE PERSONAL INJURY OR DEATH.

- Identify the installation location and confirm that the installation will meet all required clearances.
- The size and embedment specified are for anchors installed in stone or aggregate concrete only, for other anchorage details the contractor or engineer on record for the building shall consult with a licensed structural engineer for all anchorage of equipment not called out in this manual.
- In the event of a conflict or inconsistency between items indicated in this manual with code requirements, the more stringent standard shall prevail.

Wall Rack Models Available

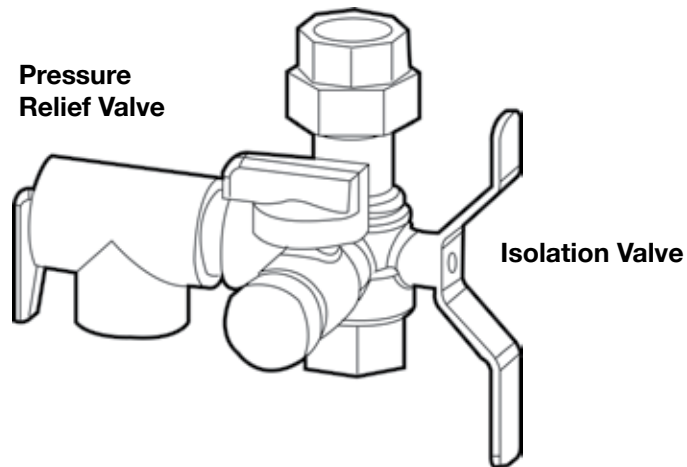
XXXXXX, XXXXXXXX, XXXXXX

1. Using the holes in the wall bracket, Securely attach the rack to the wall. Ensure that the attachment strength is sufficient.
2. For floor anchors, use 4-1/2" HILTI KB-TZ expansion anchors or approved equivalent. Minimum embedment (hef) = 3.25". Minimum concrete thickness to be 6".



Relief Valve Piping

Each Navien tankless water heater on Rack System comes installed with Isolation valves and a pressure relief valve. Refer to the installation and operation manual for more information on proper piping for the relief valve drain.



Relief Valve Piping

Multiple rack systems should be installed in parallel using a secondary manifold from the building cold and hot water supply. Reference the drawing on the following page for guidance on plumbing multiple racks in a parallel piping system.

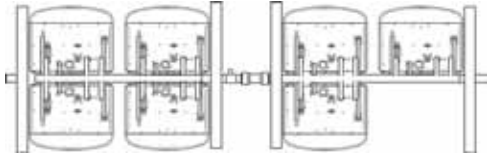
A low pressure gas regulator must be installed prior to the rack system. Note the maximum cumulative input for the system when sizing the gas regulator.

Use common plumbing practice and reference all applicable codes when sizing the secondary manifolds and gas regulator.

Dual Rack Models

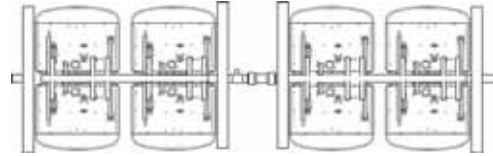
Each dual rack model has hot and cold water line manifolds sized for the complete dual rack model as well as the correct gas manifold sizing. Models come preset as master and slave configurations preset at the factory.

7-UNIT



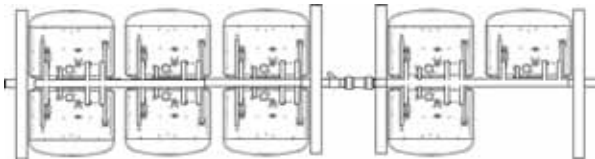
Model	Venting	Overall Length	Overall Depth	Water Manifold Size	Gas Manifold Size	Weight
F7-N1400	Indoor	87"	37"	2"	2"	482 (l)/376 (r)
	Exterior	87"	37"	2"	2"	482 (l)/376 (r)

8-UNIT



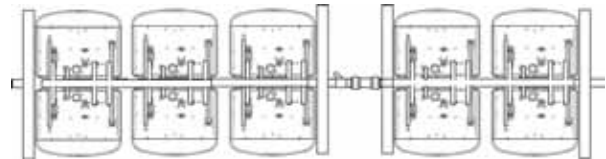
Model	Venting	Overall Length	Overall Depth	Water Manifold Size	Gas Manifold Size	Weight
F7-N1400	Indoor	87"	37"	2"	2"	482 (l)/376 (r)
	Exterior	87"	37"	2"	2"	482 (l)/376 (r)

9-UNIT



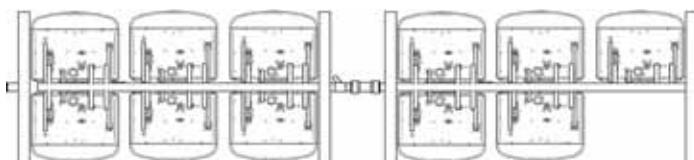
Model	Venting	Overall Length	Overall Depth	Water Manifold Size	Gas Manifold Size	Weight
F7-N1400	Indoor	87"	37"	2"	2"	482 (l)/376 (r)
	Exterior	87"	37"	2"	2"	482 (l)/376 (r)

10-UNIT



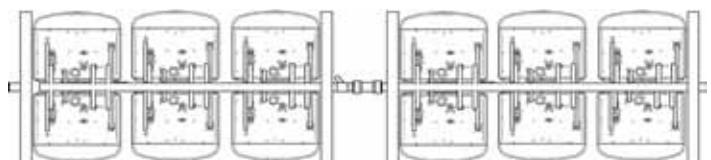
Model	Venting	Overall Length	Overall Depth	Water Manifold Size	Gas Manifold Size	Weight
F7-N1400	Indoor	87"	37"	2"	2"	482 (l)/376 (r)
	Exterior	87"	37"	2"	2"	482 (l)/376 (r)

11-UNIT



Model	Venting	Overall Length	Overall Depth	Water Manifold Size	Gas Manifold Size	Weight
F7-N1400	Indoor	87"	37"	2"	2"	482 (l)/376 (r)
	Exterior	87"	37"	2"	2"	482 (l)/376 (r)

12-UNIT

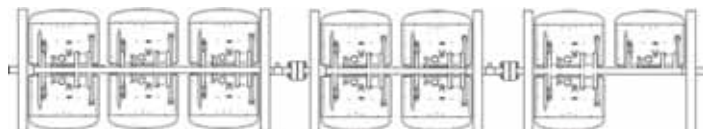


Model	Venting	Overall Length	Overall Depth	Water Manifold Size	Gas Manifold Size	Weight
F7-N1400	Indoor	87"	37"	2"	2"	482 (l)/376 (r)
	Exterior	87"	37"	2"	2"	482 (l)/376 (r)

Triple Rack Models

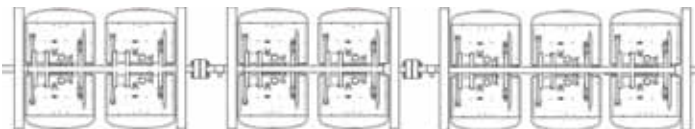
Each dual rack model has hot and cold water line manifolds sized for the complete dual rack model as well as the correct gas manifold sizing. Models come preset as master and slave configurations preset at the factory.

13-UNIT



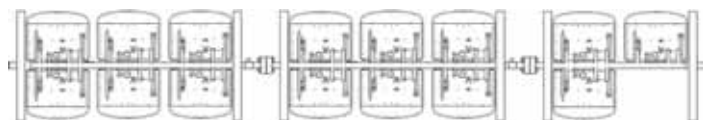
Model	Venting	Overall Length	Overall Depth	Water Manifold Size	Gas Manifold Size	Weight
F7-N1400	Indoor	87"	37"	2"	2"	482 (l)/376 (r)
	Exterior	87"	37"	2"	2"	482 (l)/376 (r)

14-UNIT



Model	Venting	Overall Length	Overall Depth	Water Manifold Size	Gas Manifold Size	Weight
F7-N1400	Indoor	87"	37"	2"	2"	482 (l)/376 (r)
	Exterior	87"	37"	2"	2"	482 (l)/376 (r)

15-UNIT



Model	Venting	Overall Length	Overall Depth	Water Manifold Size	Gas Manifold Size	Weight
F7-N1400	Indoor	87"	37"	2"	2"	482 (l)/376 (r)
	Exterior	87"	37"	2"	2"	482 (l)/376 (r)

16-UNIT



Model	Venting	Overall Length	Overall Depth	Water Manifold Size	Gas Manifold Size	Weight
F7-N1400	Indoor	87"	37"	2"	2"	482 (l)/376 (r)
	Exterior	87"	37"	2"	2"	482 (l)/376 (r)

17-UNIT



Model	Venting	Overall Length	Overall Depth	Water Manifold Size	Gas Manifold Size	Weight
F7-N1400	Indoor	87"	37"	2"	2"	482 (l)/376 (r)
	Exterior	87"	37"	2"	2"	482 (l)/376 (r)

18-UNIT



Model	Venting	Overall Length	Overall Depth	Water Manifold Size	Gas Manifold Size	Weight
F7-N1400	Indoor	87"	37"	2"	2"	482 (l)/376 (r)
	Exterior	87"	37"	2"	2"	482 (l)/376 (r)

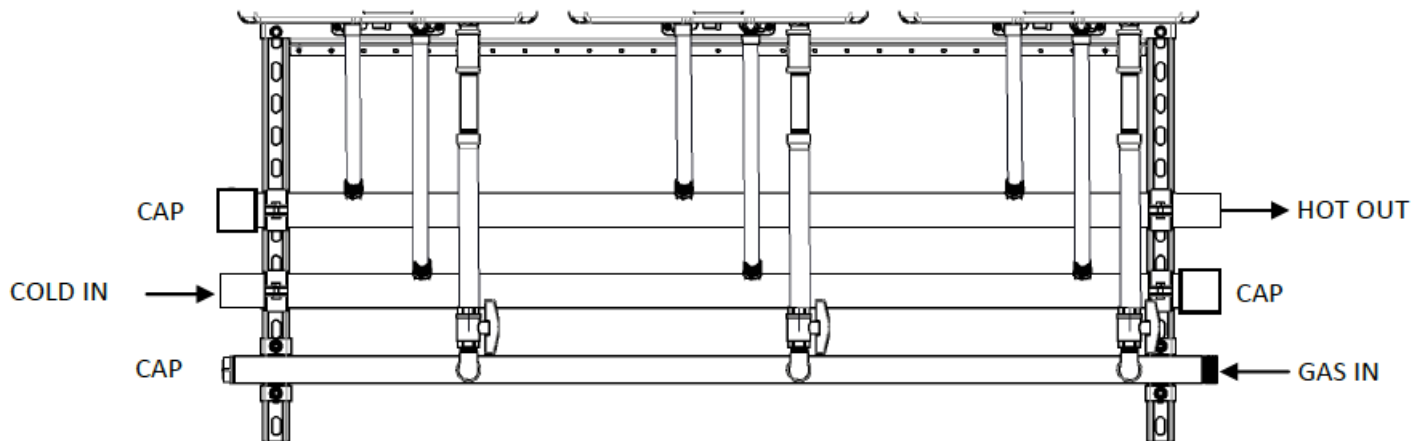
End Caps / Connections

End caps are to be field supplied and to be of the following materials:

- Cold water cap - Brass or Copper
- Hot water cap - Brass or Copper
- Gas cap - black iron

Once flow direction and gas supply side is determined the other (opposite) side of the manifold must be capped. See the example below.

Leak check the capped ends of the manifolds.

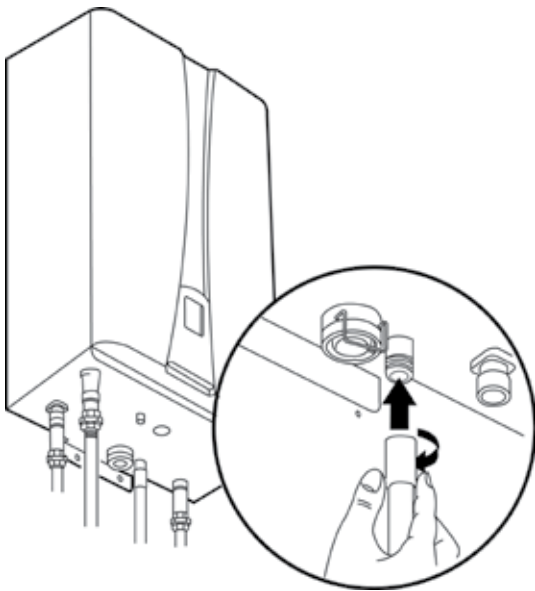


Condensate Drain Connection

Each Navien tankless water heater has a condensate drain outlet on the bottom of the unit. A drain line must be connected to each water heater.

1. Connect a drain line to the 1/2 in fitting at the bottom of the water heater.
Use only corrosion-resistant material for the drain line, such as PVC or CPVC. Do not reduce the size of this fitting or the drain line to less than 1/2 in.
2. Place the free end of the drain line into an appropriate drain.
3. If you are using a condensate pump, ensure that the pump allows for up to 2 GPH of drainage for each water heater in the system.
If you are not using a condensate pump, ensure that the drain line is pitched downward at a minimum slope of 1/4 in per foot.

Piping Diagram for Basic Installation



The condensate drain pipe (along its entire length) must be at least the same diameter as the drain line.

Checklist for Plumbing

- Purge the water line of all debris and air by closing the hot isolation valve and opening the cold isolation valve and its drain. Debris will damage the water heater. Use a bucket or hose if necessary.
- Ensure that hot and cold water lines are not crossed to the unit and are leak free.
- Ensure that a pressure relief valve is installed with a rating that exceeds the BTU input of the water heater model. Refer to the rating plate on the side of the water heater for BTU input.
- Clean the inlet water filter by closing the cold and hot water inlet isolation (shut-off) valves. Put a bucket under the filter at the bottom of the water heater to catch any water that is contained inside the unit. Unscrew the water filter. Rinse the filter to remove any debris. Install the filter and open the isolation valves.
- Check for proper water pressure to the water heater. Minimum water pressure is 50 psi. Navien recommends 60-80 psi for maximum performance.
- Ensure any issues regarding water quality have been properly addressed.

Installation of Gas Supply

⚠ WARNING

1. A licensed professional must install the gas supply.
2. Turn off 120v power supply.
3. Turn off the gas.
4. Gas is flammable. Do not smoke or provide other ignition sources while working with gas.
5. Do not turn on the water heater or gas until all fumes are gone.

MUST DO!

- Check the type of gas and the gas inlet pressure before connecting the water heater. If the water heater is not of the gas type that the building is supplied with, DO NOT connect the water heater. Contact the dealer for the proper unit to match the gas type.
- Check the gas supply pressure immediately upstream at a location provided by the gas company. Supplied gas pressure must be within the limits shown in the Specifications section of this manual with all gas appliances operating.
- Before placing the appliance in operation, all joints including the heater must be checked for gas tightness by means of leak detector solution, soap and water, or an equivalent nonflammable solution, as applicable. (Since some leak test solutions, including soap and water, may cause corrosion or stress cracking, the piping shall be rinsed with water after testing, unless it has been determined that the leak test solution is noncorrosive.)
- Use approved connectors to connect the unit to the gas line. Purge the gas line of any debris before connection to the water heater.
- Any compound used on the threaded joint of the gas piping shall be a type that resists the action of liquefied petroleum gas (propane / LPG).
- The gas supply line shall be gas tight, sized, and so installed as to provide a supply of gas sufficient to meet the maximum demand of the heater and all other gas consuming appliances at the location without loss of pressure.

INFORMATION

- If in doubt about the size of the gas line, refer to an approved pipe sizing chart

Connect Electricity

⚠ WARNING

Do not use an extension cord or an adapter plug with this appliance.

The water heater must be electrically grounded in accordance with local codes and ordinances or, in the absence of local codes, in accordance with the National Electrical Code, ANSI/NFPA No. 70. Indoor water heaters are equipped with a three prong (grounding) plug for your protection against shock hazard and should be plugged directly into a properly grounded three-prong receptacle.

Do not cut or remove the grounding terminal from this plug.

Do not rely on the gas or water piping to ground the water heater. A screw is provided in the junction box for the grounding connection.

The water heater requires 120 VAC, 60 Hz power from a properly grounded circuit.

If using the 5 foot long power cord, plug it into a standard 3 prong 120 VAC, 60 Hz properly grounded wall outlet.

On outdoor models, a disconnect switch must be provided and installed for the incoming 120 VAC power. It should be a type that is suitable for outdoor use. Check the National Electrical Code, ANSI/NFPA 70 and your local codes for a proper switch type to use in your area.

The wiring diagram is located on the Technical Sheet attached to the inside of the front cover.

Piping Sizes and Considerations

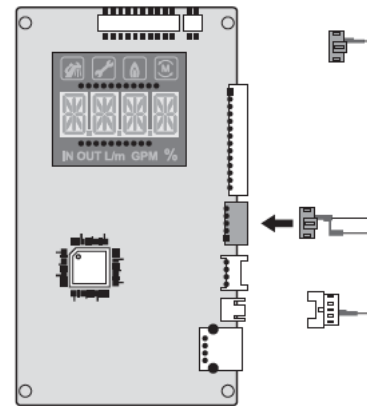
When plumbing a cascading system, consider the following pipe diameters and flow rates. Note that flow rates above 6.6 ft/s may cause pipe erosion. These specifications may vary depending on installation conditions.

QTY	$\Delta T=54^{\circ}\text{F}$ Flow rate (GPM)	Water Velocity (ft/s)	Pipe Diameter (mm/in)	
1	7.19	4.78	20A	.75 in.
2	14.38	5.61	25A	1 in.
3	21.57	5.54	30A	1.25 in.
4	28.78	5.21	40A	1.50 in.
5	35.96	6.53	40A	1.50 in.
6	43.15	4.49	50A	2 in.
7	50.34	5.24	50A	2 in.
8	57.5	6.00	50A	2 in.
9	64.72	4.39	65A	2.50 in.
10	71.92	5.34	65A	2.50 in.
11	79.11	5.34	65A	2.50 in.
12	86.30	5.84	65A	2.50 in.
13	93.49	6.33	65A	2.50 in.
14	100.68	6.79	65A	2.50 in.
15	107.87	5.11	80A	3 in.
16	115.07	5.44	80A	3 in.
17	122.26	5.81	80A	3 in.
18	129.45	6.14	80A	3 in.
19	136.64	6.46	80A	3 in.
20	143.83	6.83	80A	3 in.
21	151.02	4.06	100A	4 in.
22	158.21	4.25	100A	4 in.
23	165.41	4.45	100A	4 in.
24	172.60	4.65	100A	4 in.
25	179.79	4.85	100A	4 in.
26	186.98	5.05	100A	4 in.
27	194.17	5.24	100A	4 in.
28	201.36	5.44	100A	4 in.
29	208.56	5.61	100A	4 in.
30	215.75	5.81	100A	4 in.

Connecting the Communication Cables

Up to 16 water heaters can be connected with Navien Ready-Link communication cables. Select one of the water heaters in the cascading system as the master water heater, and then connect the other water heaters to it as slaves. Before making any connections, ensure that the power is turned off to all water heaters.

Connect the Ready-Link cables to the J6 ports on the right side of the front panel:

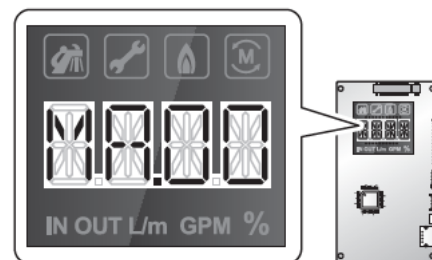


Configuring the Communication Settings

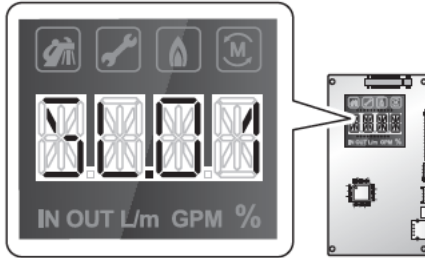
After connecting the Ready-Link communication cables, restore power to the water heater and turn on all water heaters using the Power button.

To configure the communication settings:

1. On the master water heater, press and hold the Diagnostic and Up(+) buttons for more than 5 seconds. "MA.00" will appear on the display to confirm that this water heater is set as the master.



2. On the slave water heater, press and hold the Diagnostic and Down(-) buttons for more than 2 seconds. "SL.01" will appear on the display to confirm that this water heater is set as a slave.



3. Repeat step 2 to configure the rest of the slave water heaters in the system.

4. On the master water heater, press and hold the Diagnostic and Up(+) buttons for more than 5 seconds. All the display screens on the configured water heaters will return to the temperature display.

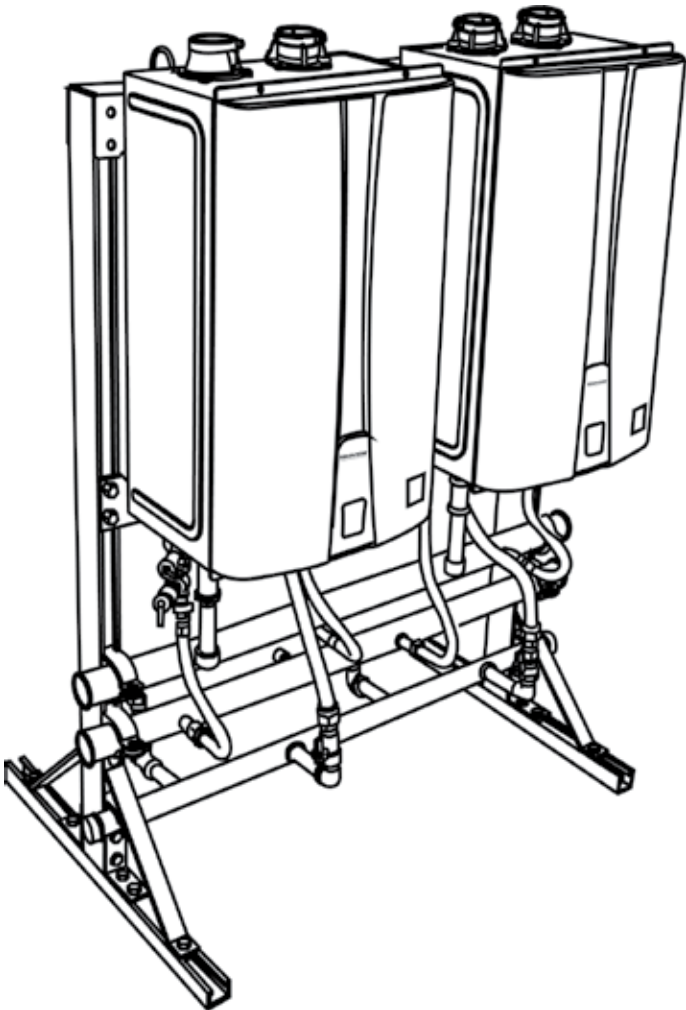
Note:

- To add additional slaves at a later time, repeat step 2.
- To cancel the cascading communication setup, on the master water heater, press and hold the Diagnostic and Reset buttons for more than 5 seconds. The water heaters will revert to independent operation. Repeat steps 1-4 to reassign the master water heater.

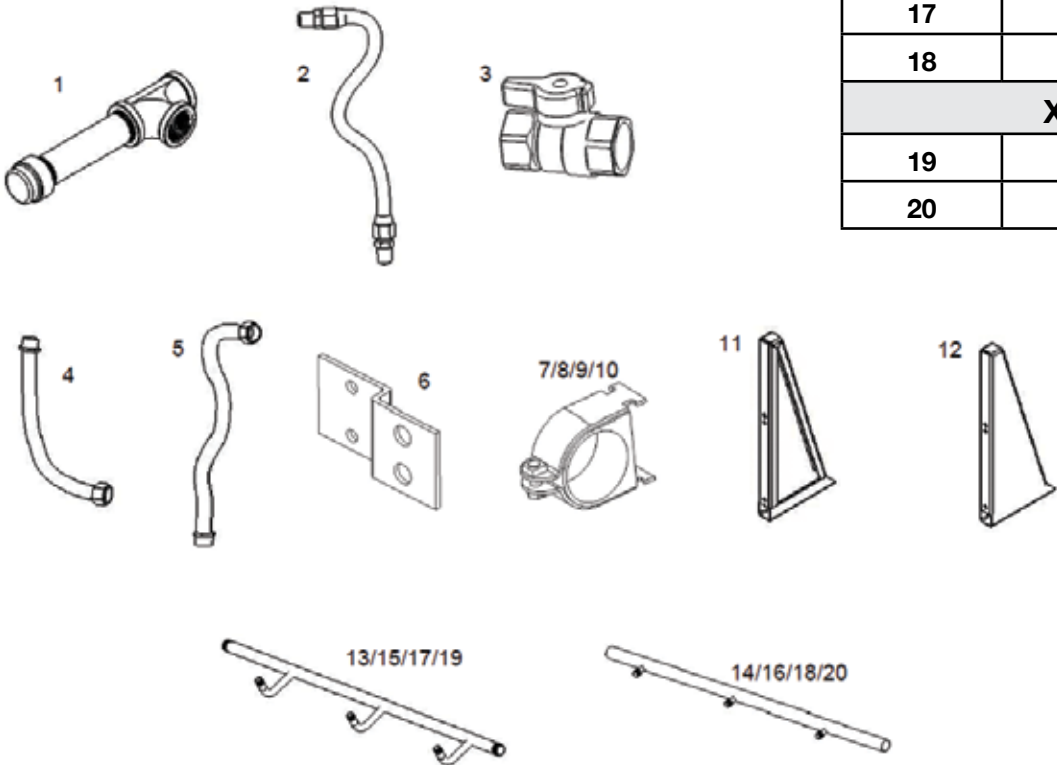
Final Checklist

- ☐ The water heater is not subject to corrosive compounds in the air.
- ☐ The water supply does not contain chemicals or exceed total hardness that will damage the heat exchanger.
- ☐ Clearances from the water heater unit are met.
- ☐ Clearances from the vent termination / air intake are met.
- ☐ For indoor models, ensure you have used the correct venting products for the model installed and that you have completely followed the venting manufacturer's installation instructions and these installation instructions.
- ☐ For indoor models, verify that the vent system does not exceed the maximum length for the number of elbows used.
- ☐ For indoor models, verify that SW 1 in DIPSW 1 has been adjusted for vent length if necessary. Refer to the section on Maximum Vent Length.
- ☐ Purge the water line of all debris and air by closing the hot isolation valve and opening the cold isolation valve and its drain. Debris will damage the water heater. Use a bucket or hose if necessary.
- ☐ Ensure that hot and cold water lines are not crossed to the unit and are leak free.
- ☐ A manual gas control valve has been placed in the gas line to the water heater.
- ☐ Ensure that a pressure relief valve is installed with a rating that exceeds the BTU input of the water heater model. Refer to the rating plate on the side of the water heater for BTU input.
- ☐ Clean the inlet water filter by closing the cold and hot water inlet isolation (shut-off) valves. Put a bucket under the filter at the bottom of the water heater to catch any water that is contained inside the unit. Unscrew the water filter. Rinse the filter to remove any debris. Install the filter and open the isolation valves.
- ☐ Check the gas lines and connections for leaks.
- ☐ Confirm that the gas inlet pressure is within limits.
- ☐ Confirm that the water heater is rated for the gas type supplied.
- ☐ Confirm that the electricity is supplied from a 120 VAC, 60 Hz power source, is in a properly grounded circuit, and turned on.
- ☐ Verify the temperature controller is functioning properly.
- ☐ Verify that SW 2 and SW 3 in DIPSW 1 is set correctly for your altitude.
- ☐ Verify the system is functioning correctly by connecting your manometer to the gas pressure test port on the water heater. Operate all gas appliances in the home or facility at high fire. The inlet gas pressure at the water heater must not drop below that listed on the rating plate.
- ☐ DO NOT introduce toxic chemicals such as those used for boiler water treatment to the potable water used for space heating.
- ☐ If the water heater is not needed for immediate use, then drain the water from the heat exchanger.
- ☐ Install the front panel.
- ☐ Explain to the customer the importance of not blocking the vent termination or air intake.
- ☐ Explain to the customer the operation of the water heater, safety guidelines, maintenance, and warranty.
- ☐ The installation must conform with local codes or, in the absence of local codes, with the National Fuel Gas Code, ANSI Z223.1/NFPA 54, or the Natural Gas and Propane Installation Code, CSA B149.1. If installed in a manufactured home, the installation must conform with the Manufactured Home Construction and Safety Standard, Title 24 CFR, Part 3280 and/or CAN/SCA Z240 MH Series, Mobile Homes.
- ☐ Inform the consumer if the isolation valves are not installed or if a water softening system is not installed.
- ☐ **Leave the entire manual taped to the water heater (indoor models), temperature controller (outdoor models), or give the entire manual directly to the consumer.**

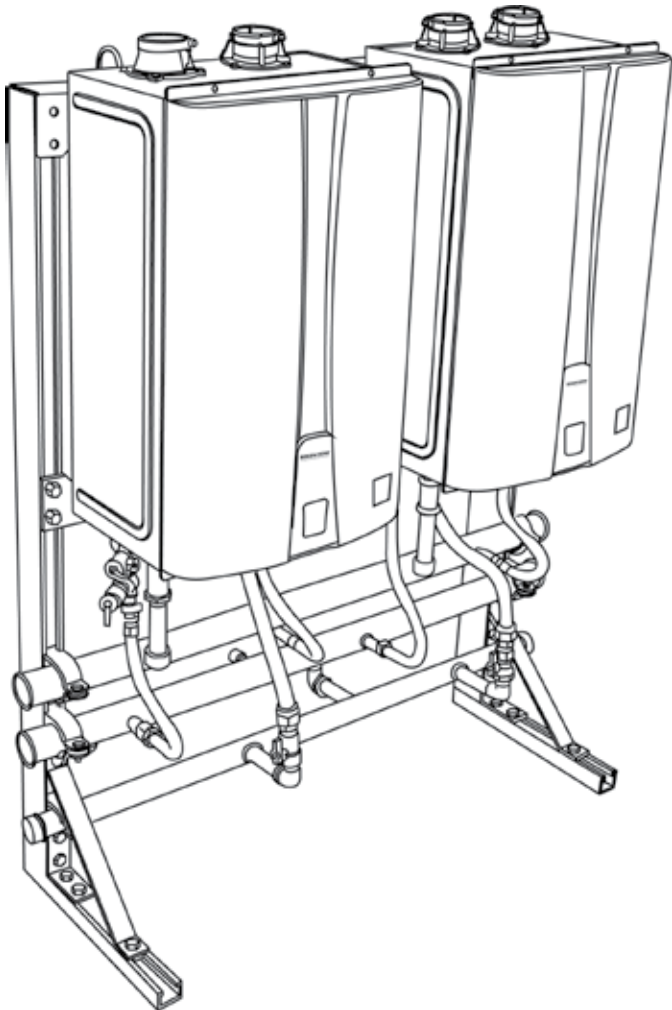
Rack System Replacement Parts Reference Numbers



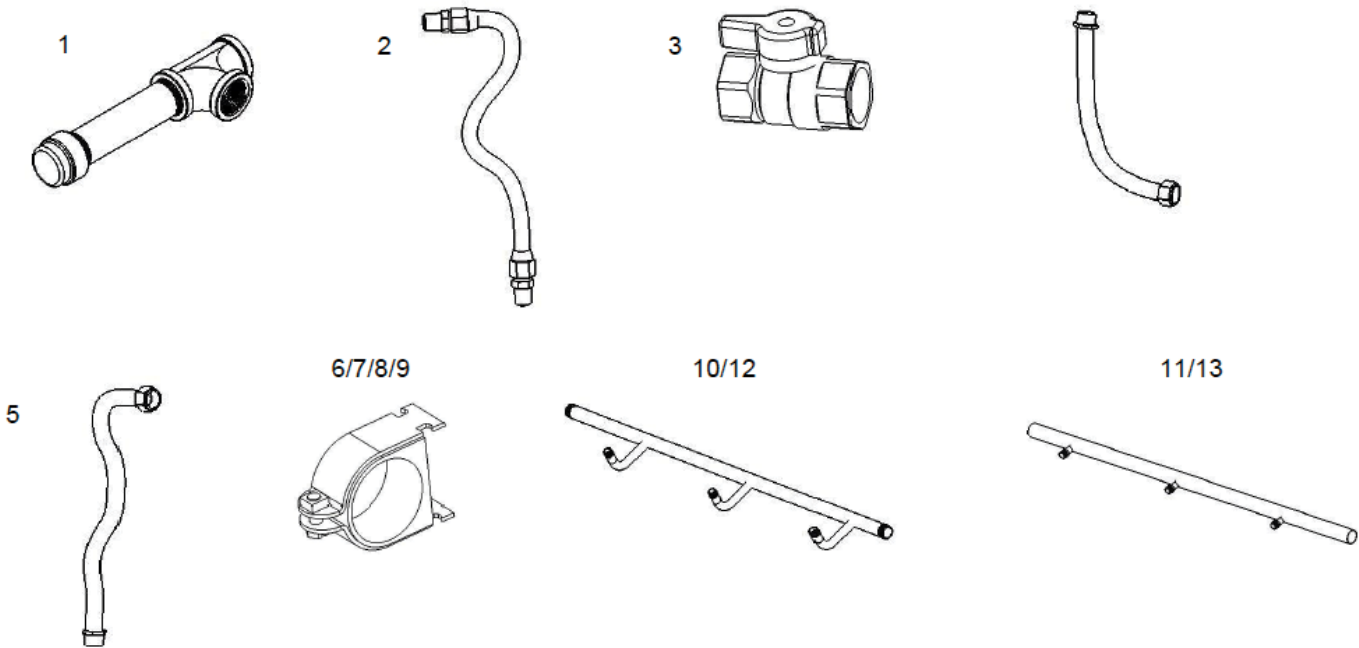
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Rack System Replacement Parts Reference Numbers



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Extended Limited Labor Warranty (Registration Required)

Navien is providing the opportunity to extend your Navien Standard Limited Warranty for labor only on the tankless water heater product installed as part of the Tankless Rack System and used in a commercial application. You must register the product within 30 days of purchase of the system to qualify.

The limited warranty period on the Labor coverage for Tankless Water Heaters installed on the Tankless Rack System is extended for an additional 12 months (a total of 24 months labor coverage from date of purchase), when registered. *Products not registered will still be covered under the Navien standard product limited warranty as provided in the Operating Instruction manual which comes with the Tankless water heater.* Warranty information is also available on Navien’s web site at www.us.navien.com. You can register at www.Navienregistration.com or by calling 1-800-519-8794.

What is covered?

This Limited Warranty covers any defects in materials or workmanship when the product is installed and operated according to Navien written installation instructions, subject to the terms within this Limited Warranty document. This Limited Warranty applies only to products that are installed correctly. Improper installation may void this Limited Warranty. In order for this warranty to apply, it is required that you use a licensed professional who has attended a Navien installation training class before installing this water heater. This Limited Warranty extends to the original purchaser and subsequent owners, but only while the product remains at the site of the original installation. This Limited Warranty only extends through the first installation of the product and terminates if the product is moved or reinstalled at a new location.

How long does coverage last?

Item	Period of Coverage (from date of purchase)		
	Labor	Parts	Heat Exchanger
Tankless Water Heaters			
Rack System / Components			

Only applicable if product is registered within 30 days of purchase and the other conditions are met. Note to California and Quebec Residents, and residents of other jurisdictions that prohibit warranty benefits conditioned on registration, registration is not required to obtain longer warranty periods and failure to register does not diminish your warranty rights. www.navien.us/warranty

[1] The warranty period is reduced to 3 years from date of purchase when the water heater is used as a circulating water heater within a hot water circulation loop, where the water heater is in series with a circulation system and all circulating water flows through the water heater, and where an on-demand recirculation system is not incorporated.

On-demand recirculation is defined as a hot water recirculating loop or system that utilizes existing hot and cold lines or a dedicated return line, and only activates when hot water is used. It can be activated by a push button, motion sensor, or voice activation but not by a temperature sensor. A timer added to a standard recirculating pump is not considered as on-demand.

[2] Labor coverage is extended to 5 years in residential applications and to 2 years in commercial applications if the product is registered within 30 days (except registration is not required in California and Quebec) and/or if the other conditions above in the Residential Applications and Commercial Applications sections are satisfied.

What will Navien do?

Navien will repair or replace the covered product or any part or component that is defective in materials or workmanship as set forth. Navien will pay reasonable labor charges associated with the repair or replacement of any part or component of the tankless water heater. All repair parts must be genuine Navien parts. All repairs or replacements must be performed by a licensed professional that is properly trained, state qualified or licensed to do the type of repair.

Replacement of the product may be authorized by Navien only. Navien does not authorize any person or company to assume for it any obligation or liability in connection with the replacement of the product. If Navien determines that repair of a product is not possible, Navien will replace the product with a comparable product at Navien’s discretion. The warranty claim for product parts and labor may be denied if a component or product returned to Navien is found to be free of defects in material or workmanship; damaged by improper installation, use or operation; or damaged during return shipping.

How do I get service?

You must contact a licensed professional for the repair of a product under this Limited Warranty. For the name of a licensed professional please contact your place of purchase, visit the Navien website (www.us.navien.com), call Navien at 1-800-621-9419 or write to Navien at 103 International Drive, Peachtree City, Georgia 30269.

Proof of purchase is required to obtain warranty service. You may show proof of purchase with a dated sales receipt, or by registering within 30 days of purchasing the product. To register your tankless water heater, please visit www.Navien.us. For those without internet access, please call 1-866-Navien1 (746-6241). Receipt of Registration by Navien will constitute proof-of-purchase for this product. However, Registration is not necessary in order to validate this Limited Warranty.

What is not covered?

This Limited Warranty does not cover any failures or operating difficulties due to the following:

- accident, abuse, or misuse
- alteration of the product or any component part
- misapplication of this product
- improper installation (such as but not limited to)
 - Product being installed in a corrosive environment
 - condensate damage
 - improper venting
 - incorrect gas type
 - incorrect gas or water pressure
 - absence of a drain pan under the appliance
- water quality
- improper maintenance (such as but not limited to scale build-up, freeze damage, or vent blockage)
- incorrect sizing
- any other cause not due to defects in materials or workmanship
- Problems or damage due to fires, flooding, electrical surges, freezing or any acts of God.
- force majeure

There is no warranty coverage on product installed in a closed loop application, commonly associated with space heating only applications.

The integrated controller on indoor models has a 1 year warranty on parts.

This Limited Warranty does not apply to any product whose serial number or manufacture date has been defaced. This Limited Warranty does not cover any product used in an application that uses chemically treated water such as a pool or spa heater. This appliance is suitable for filling large or whirlpool bath tubs with potable water.

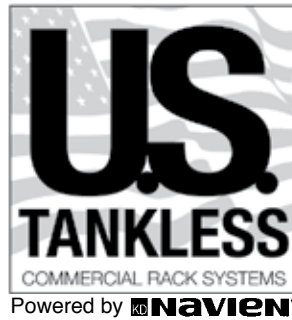
Limitation on warranties

No one is authorized to make any other warranties on behalf of Navien America Corporation. Except as expressly provided herein, there are no other warranties, expressed or implied, including, but not limited to warranties of merchantability or fitness for a particular purpose, which extend beyond the description of the warranty herein and further Navien shall not be liable for indirect, incidental, special, consequential or other similar damages that may arise, including lost profits, damage to person or property, loss of use, inconvenience, or liability arising from improper installation, service or use. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you.

Any implied warranties of merchantability and fitness arising under state law are limited in duration to the period of coverage provided by this Limited Warranty, unless the period provided by state law is less. Some states do not allow limitations on how long an implied Limited Warranty lasts, so the above limitation may not apply to you.

This Limited Warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

www.Navien.us/warranty



In 2006, Navien, Inc. was established to open new markets in the United States and Canada for parent company KD Navien. Navien has since become one of the fastest growing companies in the home comfort sector in North America, providing condensing tankless gas water heaters and condensing combi boilers. Navien's products possess state-of-the-art technology, high efficiency and reliable quality, making it the leader in the marketplace for tankless technology.

Navien has achieved international recognition for its sophisticated engineering and robust designs. Backed by more than thirty years of experience with advanced water heating technology, Navien will continue its mission to provide high quality products that are beneficial to both customers and the environment.

Commercial Water Heating Solutions

Our integrated rack systems offer a full spectrum of commercial applications. Because the system configures to your needs and to every kind of space, every usage demand is the perfect Navien fit - and that makes it easy to do business.

