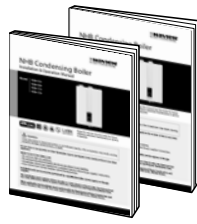


STEP 1 Before Installing

⚠ Read the Installation & Operation Manual before installing.

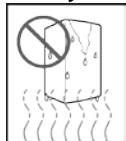
This product must be installed and serviced by a licensed plumber, a licensed gas fitter, or a professional service technician. Navien is not liable for any damages or defects resulting from improper installation.



⚠ WARNING

Follow all local codes and/or the most recent edition of the National Fuel Gas Code (ANSI Z223.1/NFPA 54) in the USA, or the Natural Gas and Propane Installation Code in Canada (CAN/CGA B149.1).

Safety

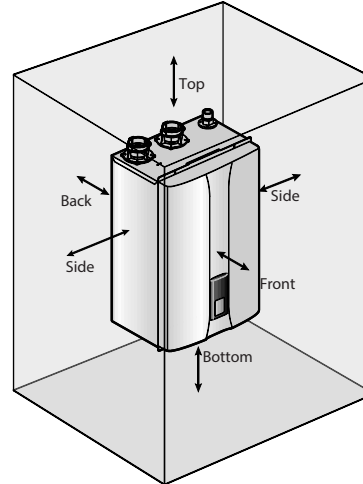


DO NOT install the boiler in areas with excessively high humidity.

Location Requirements

Select the best location on "Choosing an Installation" in the installation Manual.

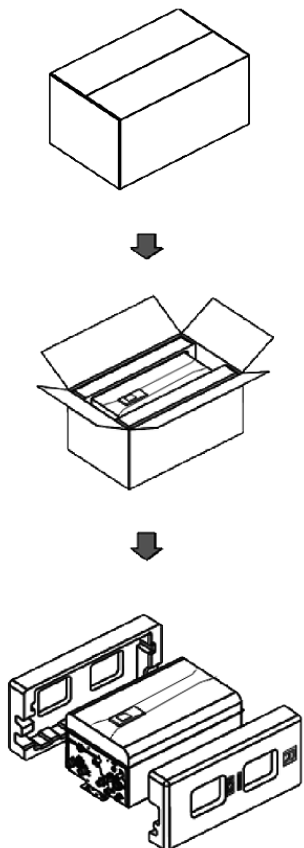
Allowable minimum clearances



Clearance	Indoor Installation
Top	9 in (229 mm) minimum
Back	0.5 in (13 mm) minimum
Front	4 in (100 mm) minimum
Sides	3 in (76 mm) minimum
Bottom	12 in (300 mm) minimum

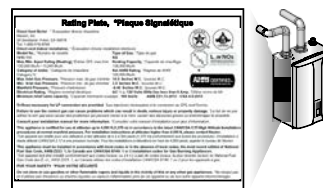
STEP 2 Installing

1 Unpacking



- Installation & Operation Manual
User's Information Manual
- Vent terminators
- Wall flanges
- Spare Parts
- Tapping screws and anchors
- Wall mounting bracket
- Air vent
- Conversion Kit
- Pressure Relief Valve (Heating)
- Outdoor Temperature Sensor and Cable
- Air Vent Bushing (3/4" to 1/2")

2 Checking the Rating Plate



This boiler is configured for Natural Gas from the factory. If conversion to Propane Gas is required, the conversion kit supplied with the boiler must be used.

⚠ WARNING

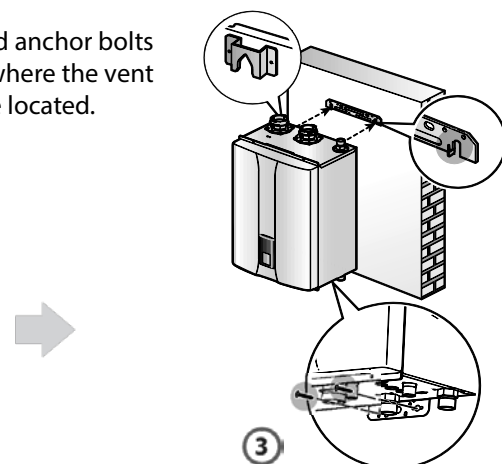
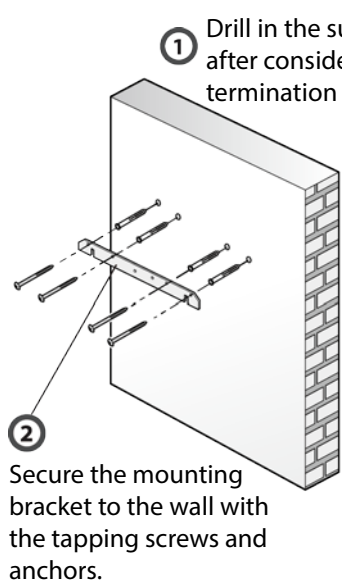
- Before connecting the gas supply, determine the gas type and pressure for the boiler by referring to the rating plate. Use only the same gas type indicated on the rating plate. Using a different gas type will result in abnormal combustion and malfunction of the boiler. Gas supplies should be connected by a licensed professional only.
- The appliance and its gas connection must be leak tested before placing the appliance in operation.
- This boiler cannot be converted from natural gas to propane or vice versa without a Navien gas conversion kit. Do not attempt a field conversion of this boiler without a Navien gas conversion kit. Doing so will result in dangerous operating conditions and will void the warranty.

Navien America Inc. is not liable for any property damage and/or personal injury resulting from improper conversions.

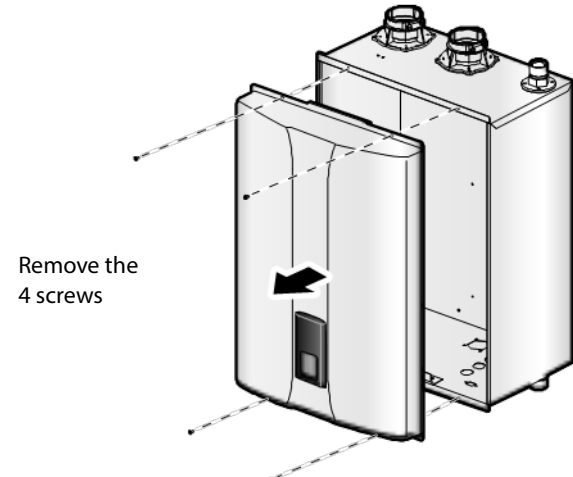
3 Mounting on the Wall

⚠ CAUTION

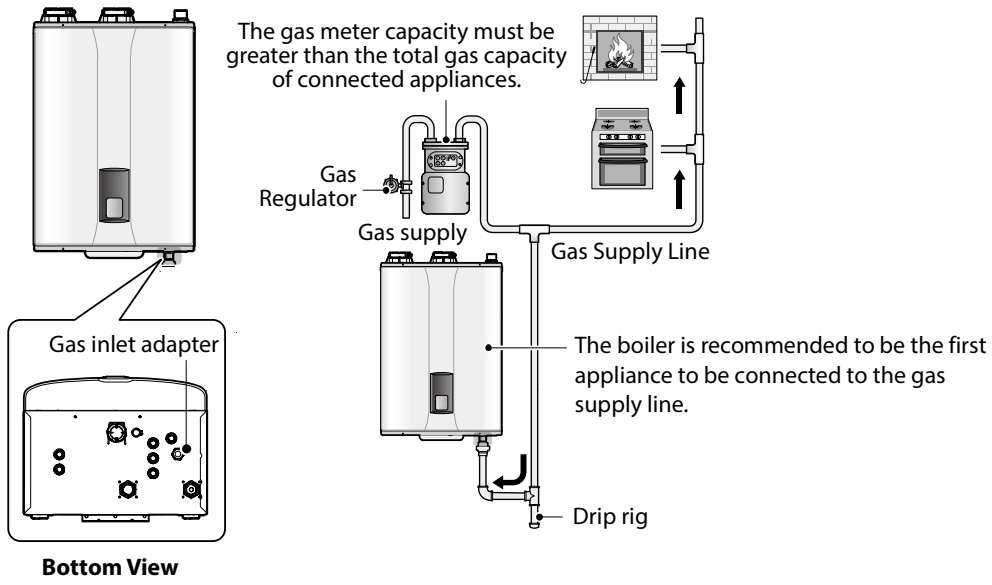
Do not install the boiler on dry walls without proper reinforcement.



4 Removing the Front Cover



5 Gas Piping Connections



Example:

$$\text{Gas meter} \geq \text{Boiler} + \text{Furnace} + \text{Domestic gas stove}$$

$$425 \text{ CFH} \geq 195 \text{ CFH} + 58.8 \text{ CFH} + 63.7 \text{ CFH}$$

* 1 CFH=1,020 Btuh

- 1/2 in rigid pipe can be used; refer to the sizing tables in the Installation Manual for limitations. Avoid using 1/2" corrugated connectors or tubing as noise may occur.

6 Water Piping Connections

Space Heating System

A pressure relief valve must be installed when installing pipings for a heating system.

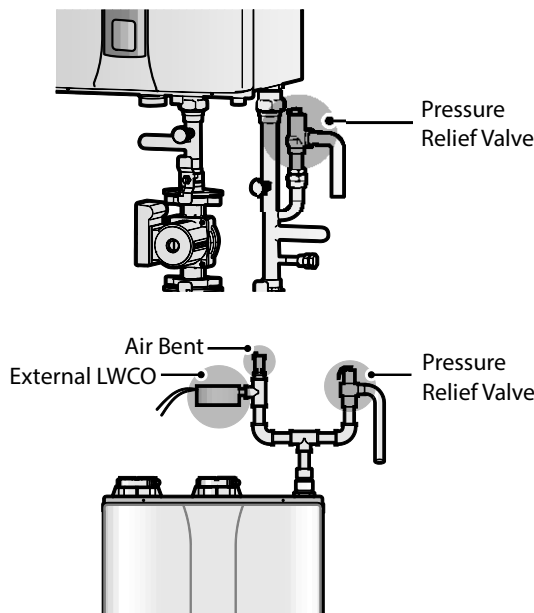
Install the included 3/4 in, maximum 30 psi pressure relief valve on the space heating supply.

An ASME approved HV pressure relief valve for space heating system is supplied with the boiler.

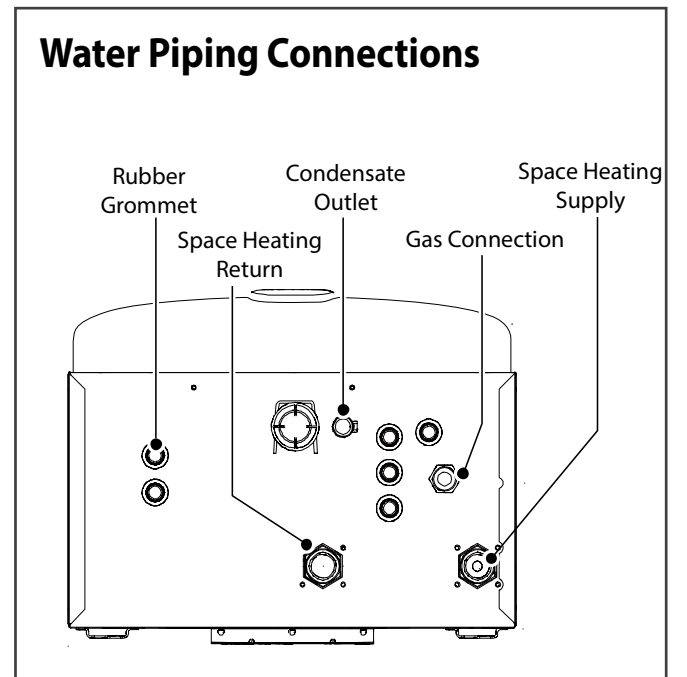
You may install the pressure relief valve on the space heating supply of the Navien Manifold System, or on the top connection along with the air vent (and an external LWCO, if required).

Caution

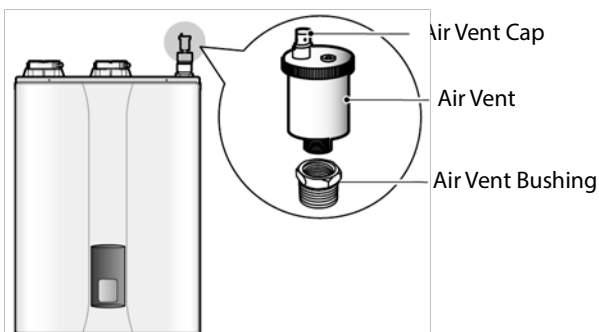
Do not solder piping directly onto the water connections, as the heat may cause damage to internal components. Use threaded water connections only.



Water Piping Connections



System Fill Connection



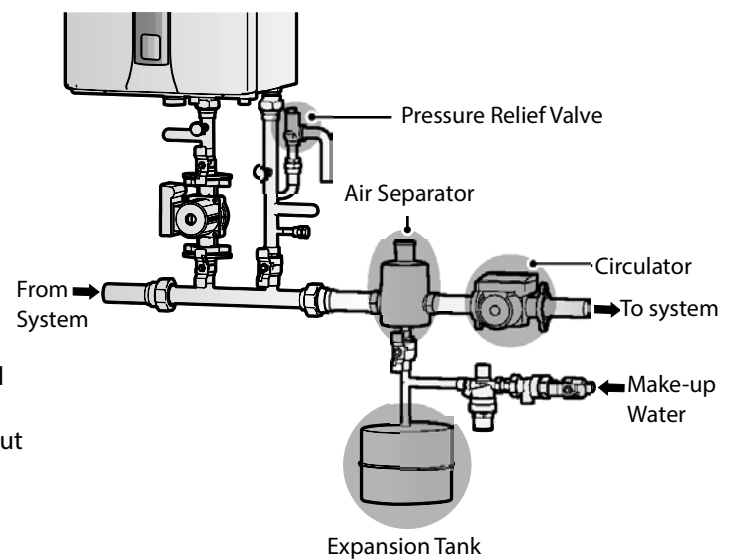
Before filling the boiler, remove the air vent cap to allow the system to fill properly. Replace the cap when the system is full.

Warning

Ensure that the Air Vent Cap is removed before filling the system. System will not be properly filled without the air vent cap removed. Air in the system may cause malfunctions and system overheating.

The Navien NHB boilers have a top connection for an air vent. An air vent must be installed to purge air from the boiler system.

When installing the air vent, install the air vent bushing between the air vent and the top connection.



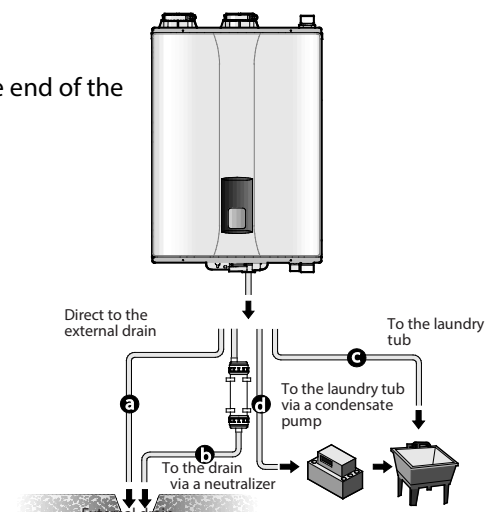
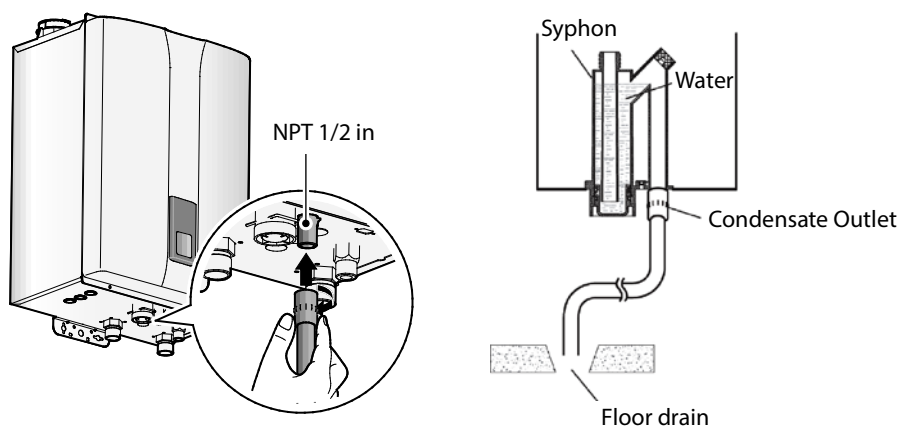
7 Condensate Drain Connection

A condensate drain pipe must be connected to the 1/2 in condensate outlet fitting at the bottom of the unit and water must be poured into the exhaust connection to fill the condensate trap.

The end of the 1/2 in (NPT) plastic piping should drain into a laundry tub or into a floor drain.

Note

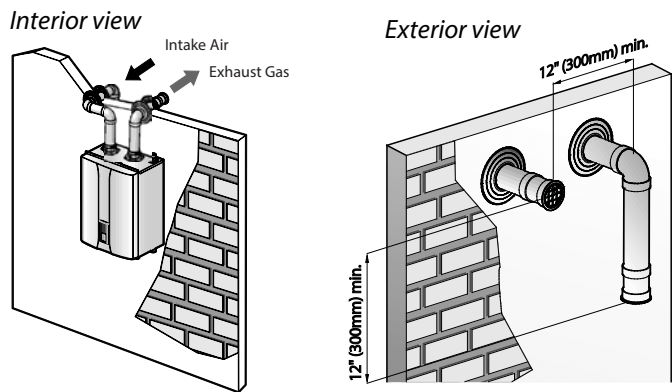
Do not submerge the end of the pipe in water.



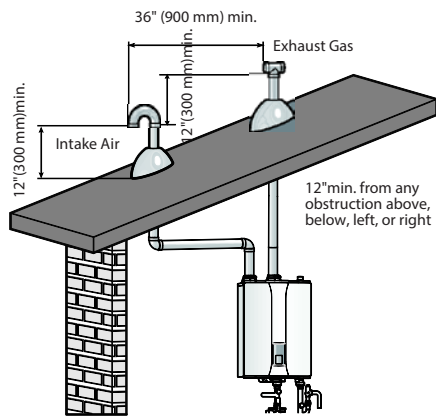
8 Venting

Vent Termination Options

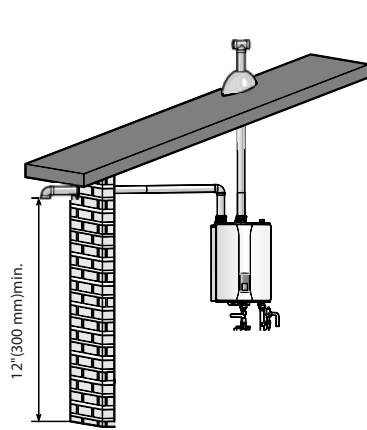
Horizontal Vent Termination



Vertical Vent Termination

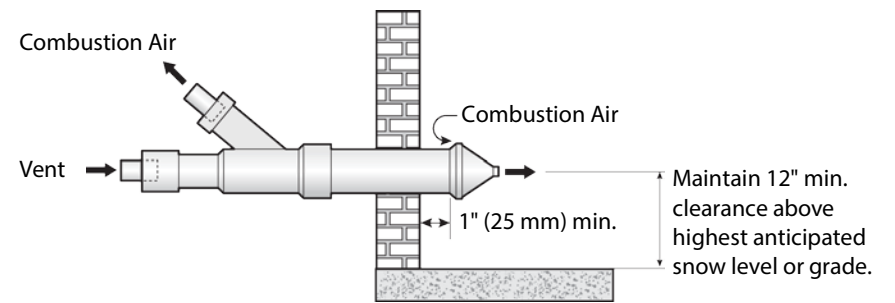


Sidewall Vent Termination

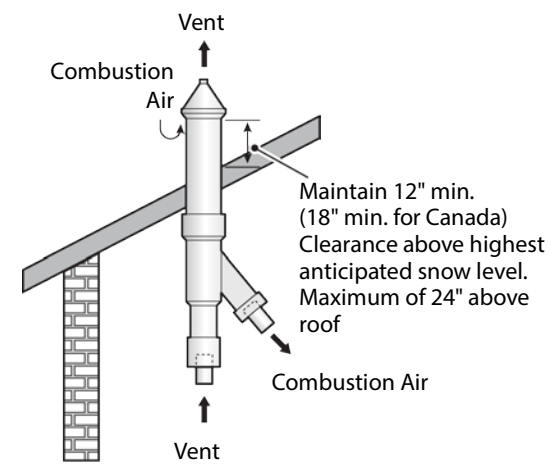


Concentric Vent Termination

Sidewall installation

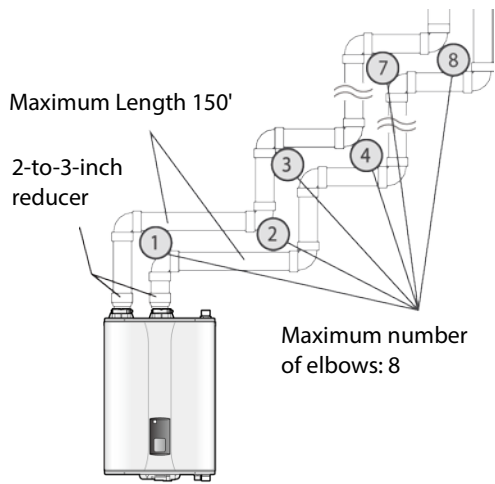


Roof installation



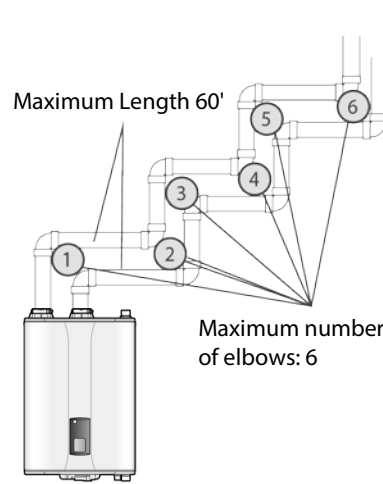
Venting Length

3" pipe venting



- 90° elbow = 5 linear feet of venting
- 45° elbow = 3 linear feet of venting

2" pipe venting



- 90° elbow = 8 linear feet of venting
- 45° elbow = 4 linear feet of venting

Exhaust Vent Piping Materials

- All Navien boilers are Category IV appliances.
- The venting system should be approved for use with Category IV appliances (typically Type BH Special Gas Vent approved by UL 1738-S636).
- Venting requirements in the USA and Canada are different (see below).

Navien recommended venting materials

Locale	Recommended Vent Materials
USA	<ul style="list-style-type: none"> • PVC Schedule 40(Solid core) • CPVC Schedule 40 or 80(Solid core) • Approved Polypropylene
Canada*	<ul style="list-style-type: none"> • Type BH Special Gas Vent Class IIA (PVC) • Type BH Special Gas Vent Class IIB (CPVC) • Type BH Special Gas Class IIC (Polypropylene)

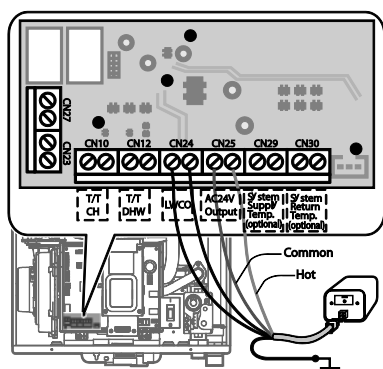
* For installation in Canada, field-supplied plastic vent piping must comply with CAN/CGA B149.1 (latest edition) and be certified to the Standard For Type BH Gas Venting Systems, ULC-S636. Components of this listed system must not be interchanged with other vent systems or unlisted pipes or fittings. All plastic components and specified primers and glues of the certified vent system must be from a single system manufacturer and must not be intermixed with another system manufacturer's parts. The supplied vent connector and vent termination are certified as part of the boiler.

Caution

In systems with 2 in. vents, if the exhaust temperature exceeds 149°F (65°C), CPVC pipe (field supplied) must be used for the first 3 feet of equivalent pipe length. For systems with 3 in. vents, if the exhaust temperature exceeds 149°F (65°C), CPVC pipe (field supplied) must be used for the first 5 in. of equivalent pipe length.

9 Electrical Connections

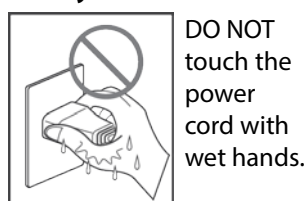
External LWCO Connection (if required by local codes)



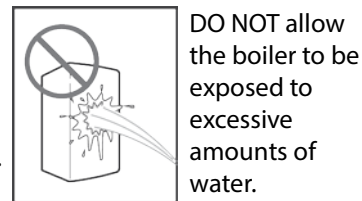
Refer to your local codes to determine if an LWCO device is required for your system and ensure that the built-in device meets the requirements.

Safety

CAUTION
Disconnect the power to the boiler before installing any wire connections on the main PCB.

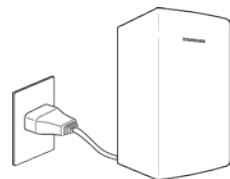


DO NOT touch the power cord with wet hands.



DO NOT allow the boiler to be exposed to excessive amounts of water.

Power Connection



120 VAC 60 Hz
Min. 2 Amp current with proper grounding

CAUTION
Using abnormally high or low AC voltage may cause abnormal operation, thereby causing fire which reduces the life expectancy of this product.

Confirmation of Panel DIP Switch Settings

PCB Dip Switch 1 (6 switch unit)

SW	Function	Setting	
1&2	Operation Status	Normal Operation	1-OFF 2-OFF
		2-stage MAX	1-ON 2-OFF
		1-stage MIN	1-OFF 2-ON
		1-stage MAX	1-ON 2-ON

Front Panel Dip Switch 1 (10 switch unit)

SW	Function	Setting	
2	Temperature Unit	°C (Celsius)	2-ON
		°F (Fahrenheit)	2-OFF
4&5	High Altitude	0-1,999 ft (0-609 m)	4-OFF 5-OFF
		2,000-5,399 ft (610-1,645 m)	4-ON 5-OFF
		5,400-7,699 ft (1,646-2,346 m)	4-OFF 5-ON
		7,700-10,100 ft (2,347-3,078 m)	4-ON 5-ON

Front Panel Dip Switch 2 (2 switch unit)

SW	Function	Setting	
2	Gas Type	Natural Gas	2-OFF
		Propane Gas	2-ON

PCB Dip Switch 2 (8 switch unit)

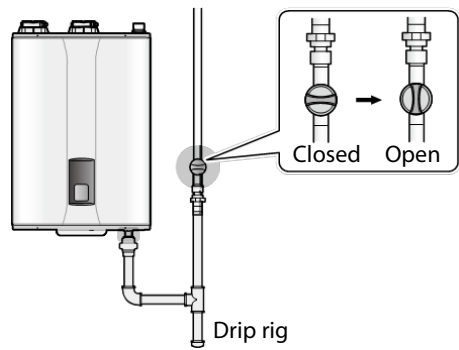
SW	Function	Setting	
1&2	Space Heating Temperature Control	Supply Temperature	1-OFF 2-OFF
		Return Temperature	1-ON 2-OFF
		System Supply Temperature (with optional sensor)	1-OFF 2-ON
		System Return Temperature (with optional sensor)	1-ON 2-ON
3	DHW Tank Temperature Control	DHW Supply Temperature	3-OFF
		DHW System Supply Temperature	3-ON
7	Space Heating Thermostat	Used	7-OFF
		Unused	7-ON
8	Exhaust Temperature Control	Used	8-OFF
		Unused	8-ON

* Above 2,000 ft (610 m), the boiler will derate by 4% for each 1,000 ft (305 m) of altitude gain.

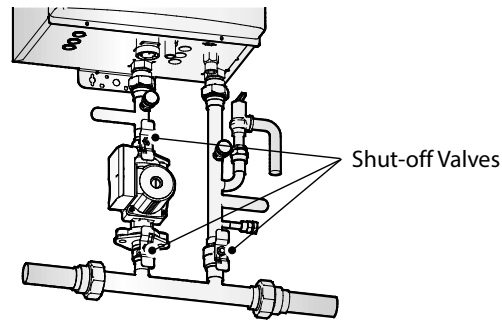
STEP 3 After Installing

1 Opening All the Valves

Gas Valve



Space Heating System Valves

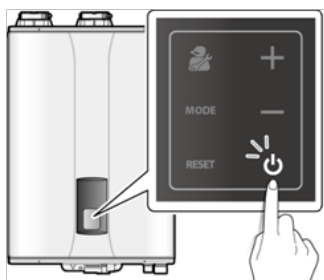


Navien

Navien, Inc.
20 Goodyear, Irvine, CA 92618
Tel: (949) 420-0420, Fax: (949) 420-0430
www.navien.com

2 Operating the Boiler

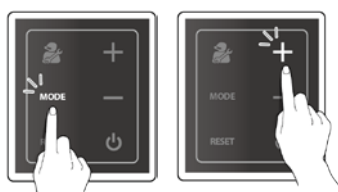
Power ON



When the power is on, the boiler supply water temperature will appear with the water pressure on the front panel display at 5 second intervals.

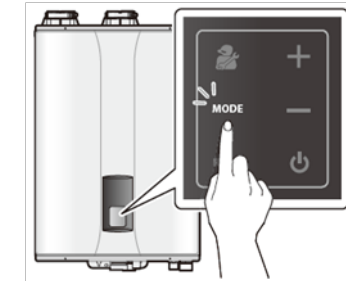
Adjust Temperatures

Space Heating Temperature



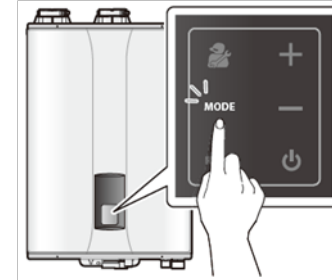
1. Press the Mode button once. The space heating icon turns on.
2. Press the + (Up) or - (Down) buttons until the desired temperature appears on the display.

DHW Indirect Supply Temperature



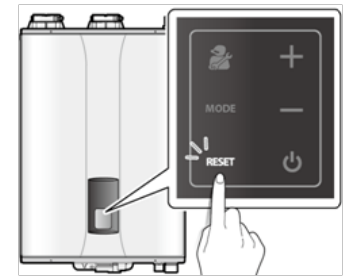
3. Press the Mode button twice. The DHW heating icon turns on.
4. Press the + (Up) or - (Down) buttons until the desired temperature appears on the display.

View Basic Information



1. Press the Mode button three times. "INFO" will appear on the display.
2. Press the + (Up) or - (Down) buttons to switch between the information types.

Resetting the Boiler

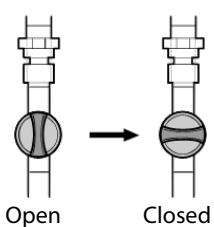


If an error message appears, you can try resetting the boiler to resolve the problem.

Note If resetting does not solve the problem, refer to the troubleshooting section of the User's Information Manual or contact the service center.

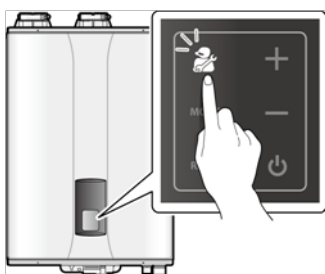
3 Measuring the Inlet Gas Pressure

1



Shut off the manual gas valve.

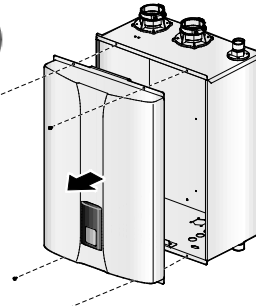
2



1. Turn on the boiler. On the Front Panel press the Diagnostics button for over 5 seconds until "1.PAR" is displayed.
2. Press the + (Up) button two times to change the display to "3.OPR".
3. Press the + (Up) button until "MAX2" is displayed.

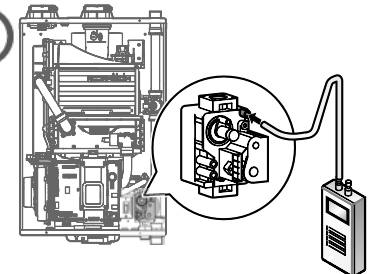
4. Press the Reset button twice to return to normal operation mode.
5. Run space heating. The gas in the gas supply line will be purged.
6. Leave the boiler on until the boiler shuts down due to a lack of gas supply, and then turn off the boiler.

3



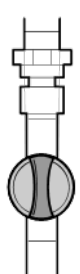
Remove the front cover by loosening the 4 screws.

4



Loosen the screw indicated in the figure and connect a manometer to the pressure port. Reset the manometer to zero before use.

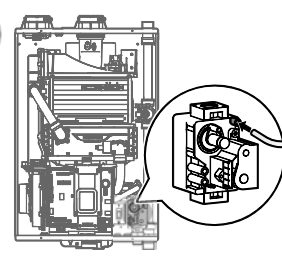
6



Re-open the manual gas valve and check for leaks.

Operate multiple zones that to ramp the boiler up to its maximum firing rate.

7

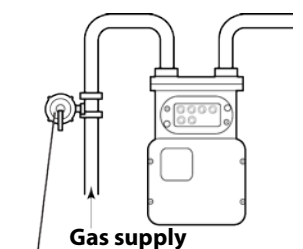


Check the inlet gas pressure reading on the manometer.

Recommended Gas Pressure Settings:

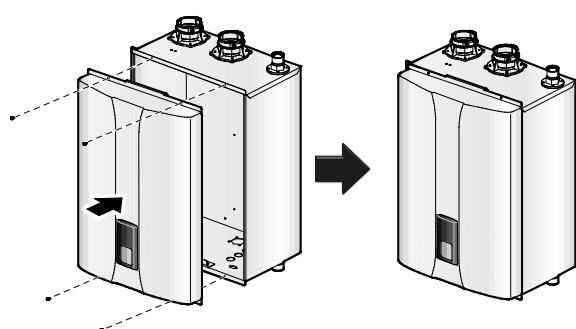
NG: 3.5" ~ 10.5" WC
LP: 8.0" ~ 13.5" WC

If it is out of the range,



Adjust the inlet gas pressure with gas regulator.

4 Installing the Front Cover



5 Final Check

A trial run should be performed in accordance with the Installation checklist listed in the boiler's Installation & Operation Manual.