



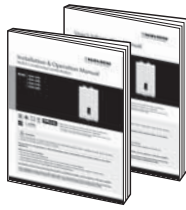
27227 049

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.

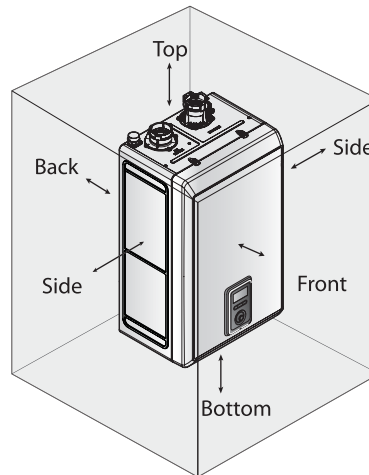
When applicable, the installation must conform with Manufactured Home Construction and Safety Standard, Title 24 CFR, Part 3280 and/or CAN/CSA Z240 MH Series, Mobile Homes.



Location Requirements

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

Allowable minimum clearances

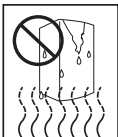


Clearance	Indoor Installation
Top	9 in (229 mm) minimum
Back	0.5 in (13 mm) minimum
Front	4 in (100 mm) minimum
Sides	3 in (76 mm) minimum
Bottom	12 in (300 mm) minimum

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).

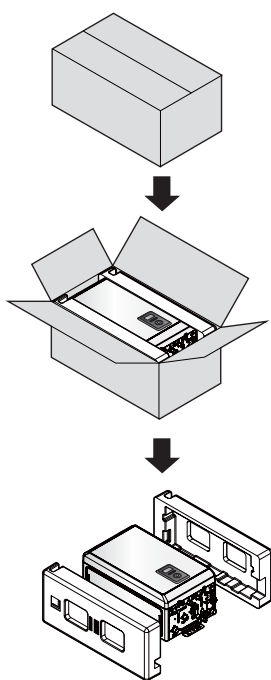
Safety



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

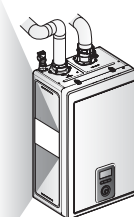
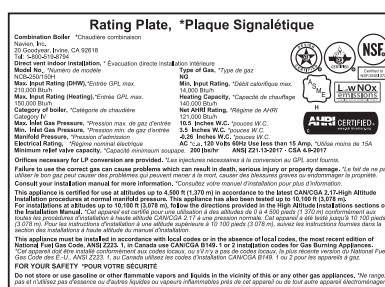
STEP 2 Installing

1 Unpacking



- Navien Combination Boiler
- User's Information Manual, Installation & Operation Manual
- Wall mounting bracket
- Tapping screws and anchors
- Vent Termination Caps
- Wall flanges
- Propane Conversion Kit
- High Altitude Conversion Kit (Natural Gas Only)
- Spare Parts
- Pressure Relief Valve (30PSI)
- Outdoor Temperature Sensor and Cable

2 Checking the Rating Plate



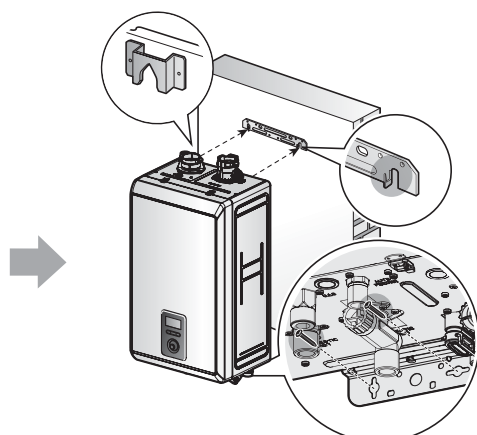
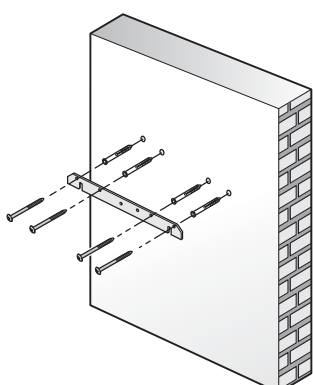
This boiler is configured for Natural Gas from the factory. If conversion to Propane Gas is required, the conversion kit supplied with the boiler must be used.

3 Mounting on the Wall

CAUTION

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

1 Drill in the supplied anchor bolts after considering where the vent termination will be located.



4 Removing the Front Cover

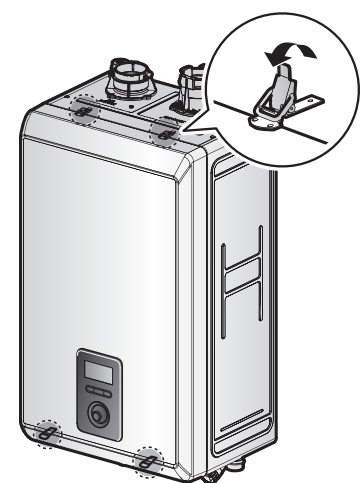
2 Secure the mounting bracket to the wall with the tapping screws and anchors.

Lift up the boiler, rest the unit on the hooks provided on the wall bracket on the wall.

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.

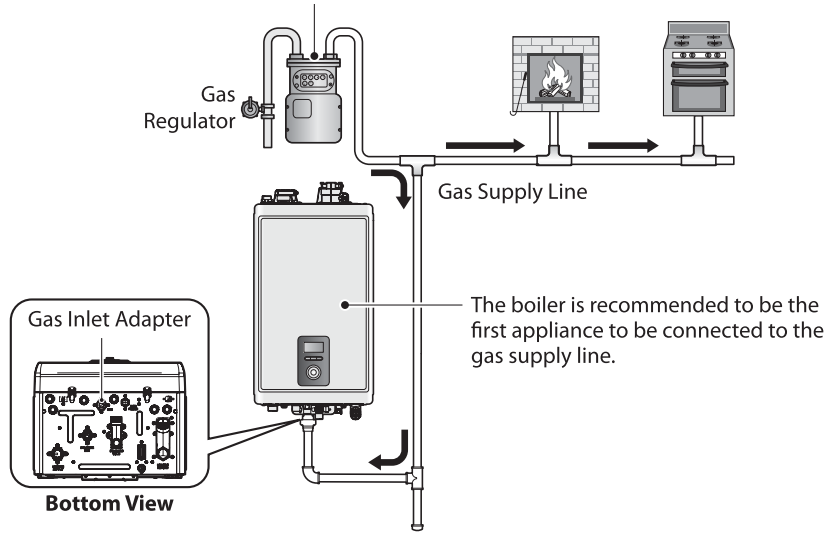
Navien Inc. is not liable for any property damage and/or personal injury resulting from improper conversions.



Unfasten the 4 latches (2 at the top and 2 at the bottom) to remove the front cover and gain access to the internal components.

5 Gas Piping Connections

Gas meter's capacity \geq Total gas capacity of connected appliances



Example:

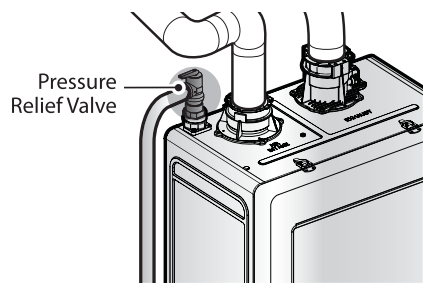
Gas meter	\geq	Boiler	+	Furnace	+	Domestic gas stove
425 CFH		195 CFH		58.8 CFH		63.7CFH

* 1 CFH=1,020 Btuh

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

6 Water Piping Connections

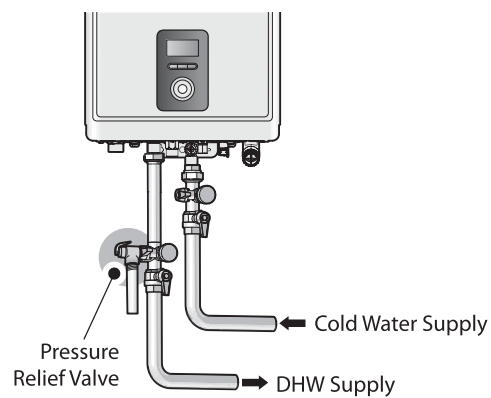
Space Heating System



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.

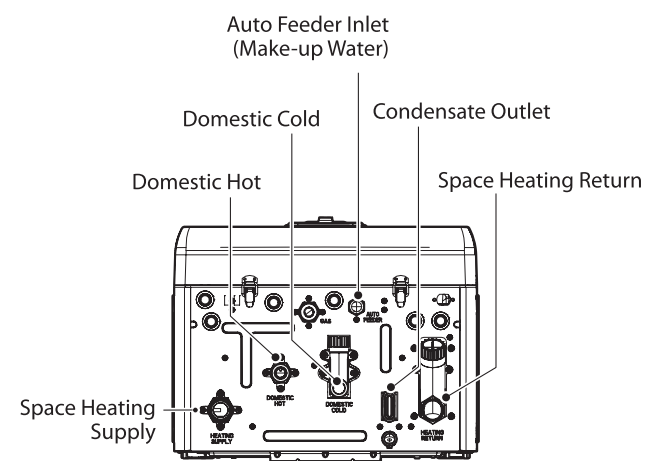
DHW System



The DHW pressure relief valve is not supplied, but is required.

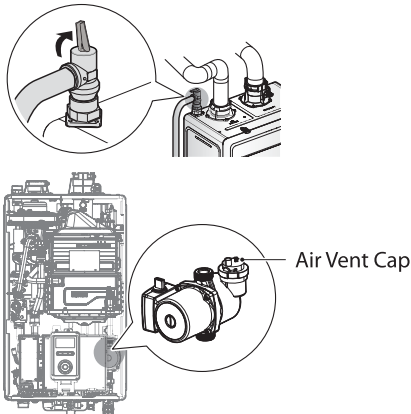
Install an approved 3/4 in, maximum 150 psi pressure relief valve on the domestic hot.

Water Piping Connections



Filling the System

Before filling the boiler, open the pressure relief valve by lifting the lever on top, and loosen the air vent cap to allow the system to fill properly. Close the pressure relief valve when the system is full.

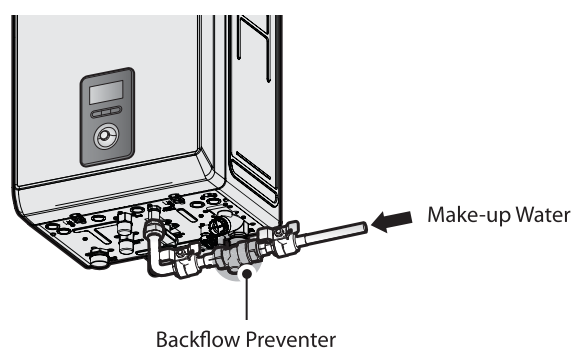


CAUTION

Ensure that the pressure relief valve is closed before testing or operating the system.

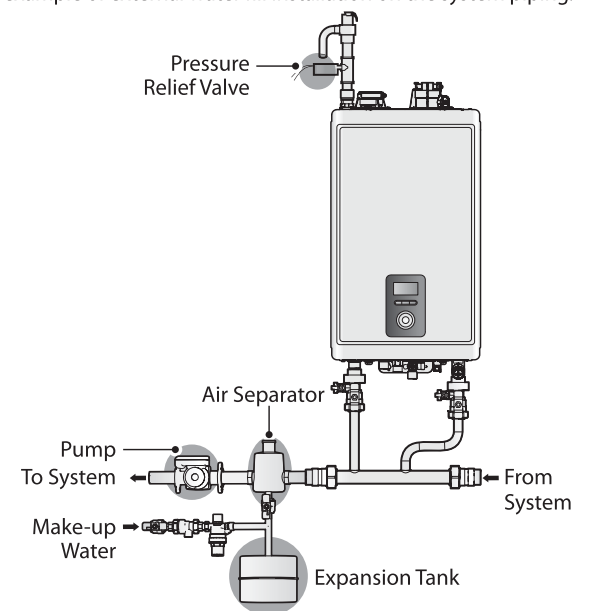
Built-in Water Fill Connection

The Navien NCB-H boiler is equipped with an auto-feeding water connection and motorized feeding valve. Therefore, installation of additional system water fill connection is not necessary in most cases. See the following figure for an example of a water fill installation using the built-in connection.



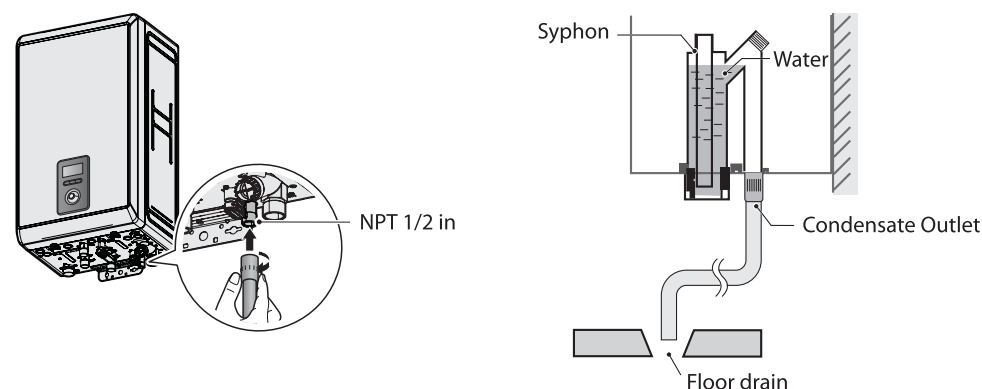
External Water Fill Connection

External water fill connection may be installed on the system piping if it is required for specific applications. See the following figure for an example of external water fill installation on the system piping.



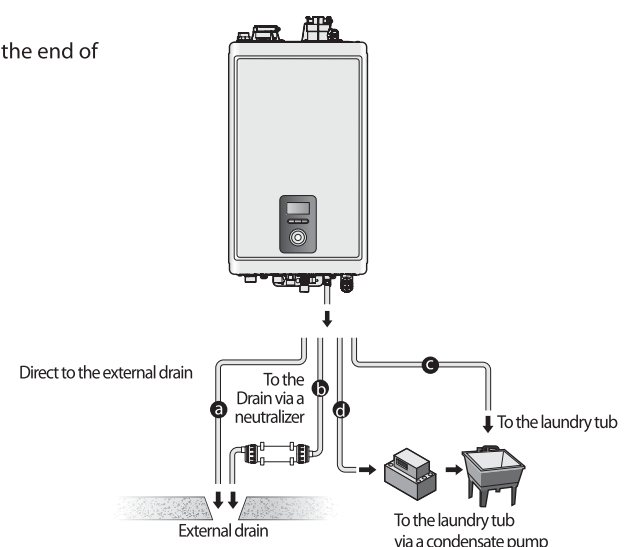
7 Condensate Drain Connection

A condensate drain pipe must be connected to the 1/2" 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" (NPT) plastic piping should drain into a laundry tub or into a floor drain.

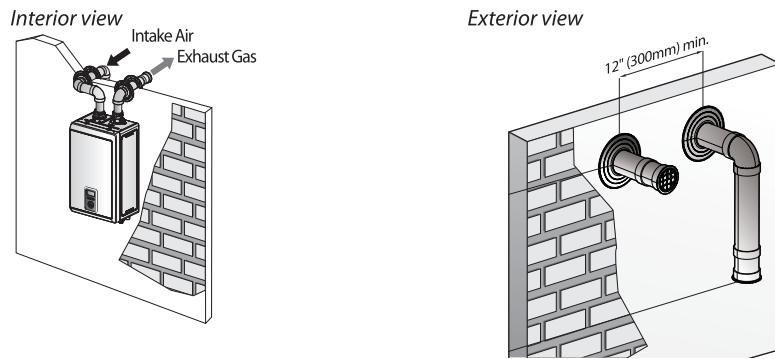
Note Do not submerge the end of the pipe in water.



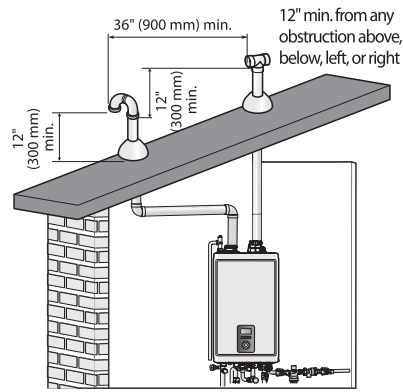
8 Venting

Vent Termination Options

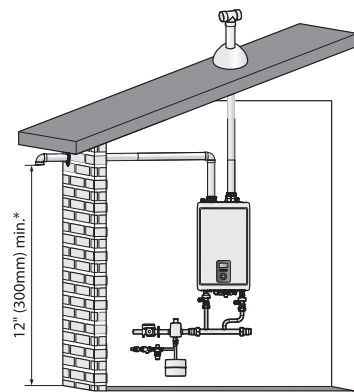
Horizontal vent termination



Vertical vent termination

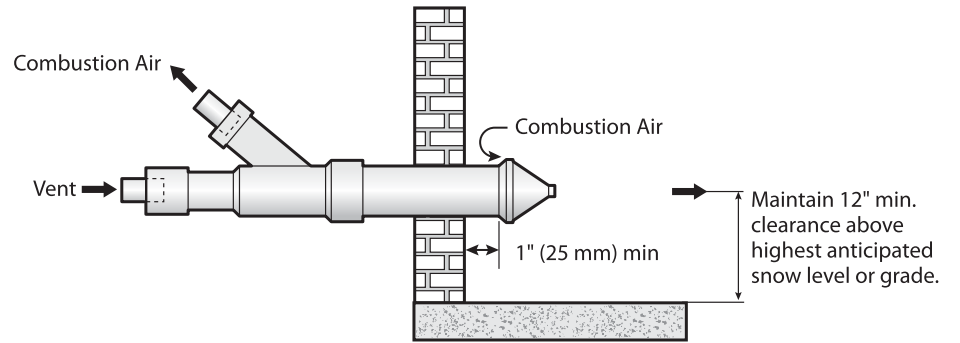


Sidewall vent termination

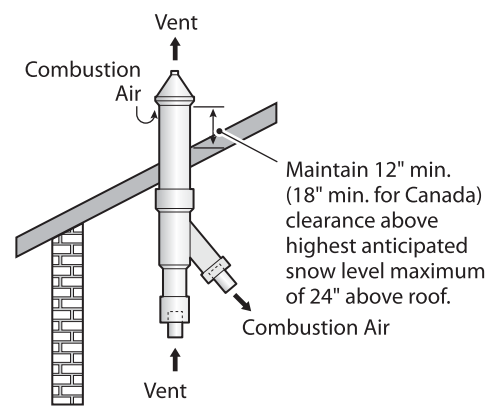


Concentric Vent Termination

Sidewall installation

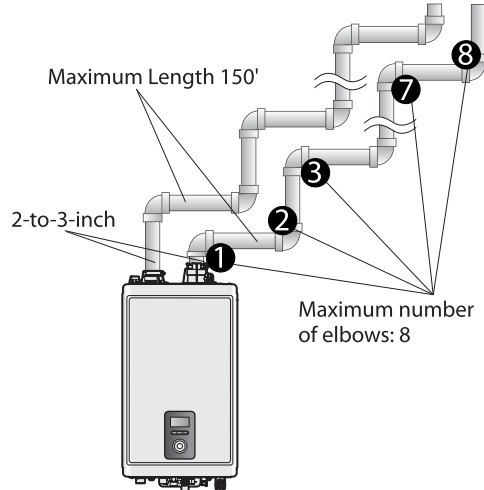


Roof installation



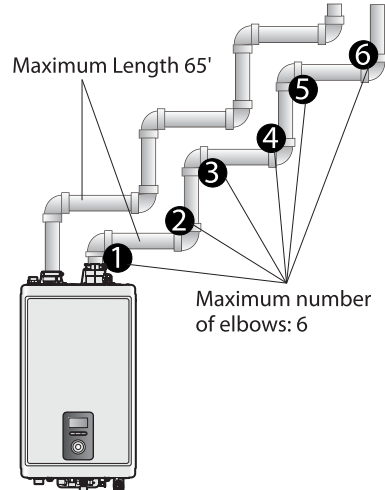
Venting Length

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).

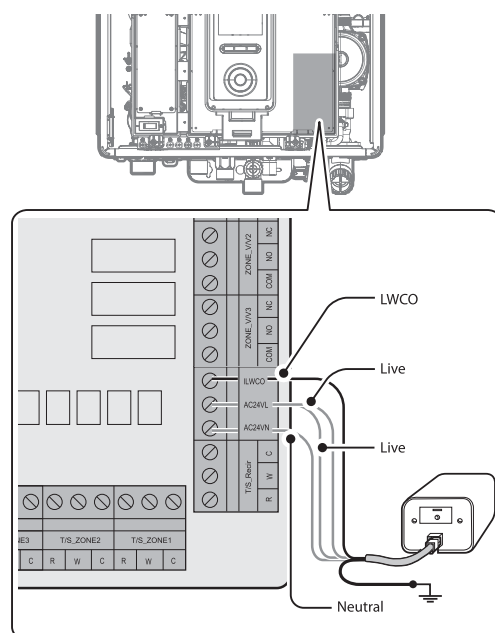
Navien recommended venting materials

Locale	Recommended Vent Materials
USA	<ul style="list-style-type: none"> • PVC/CPVC Schedule 40 or 80 (Solid Core) • UL1738 Certified PVC or CPVC • Approved Polypropylene (PP) • Approved Stainless Steel (SS)
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 Vent Class IIC (Polypropylene/Stainless Steel)

* 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.

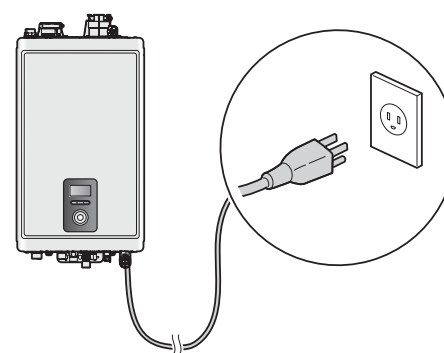
9 Electrical Connections

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.

Power Connection



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

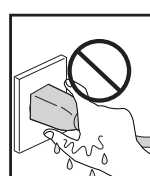
CAUTION

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

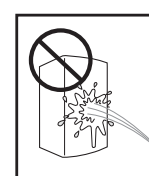
CAUTION

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

Safety



DO NOT touch the power cord with wet hands.

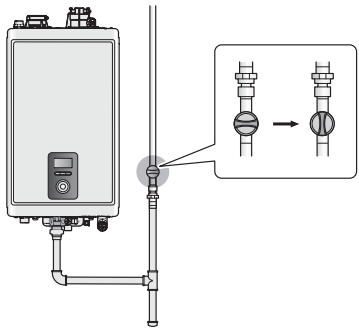


DO NOT allow the boiler to be exposed to excessive amounts of water.

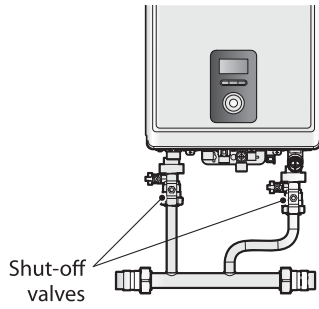
STEP 3 After Installing

1 Opening All the Valves

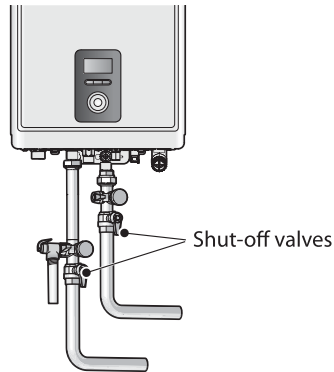
Gas Valve



Space Heating System Valves



DHW System Valves

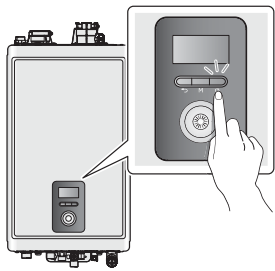


Navien

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www.NavienInc.com

2 Operating the Boiler

Power ON

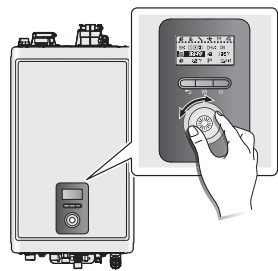


To turn the boiler on, press the Power button (⏻).

When the power is on, the boiler automatically enters normal operation mode, and the boiler's operating conditions are displayed on the screen.

Adjust Temperatures

Space Heating Temperature



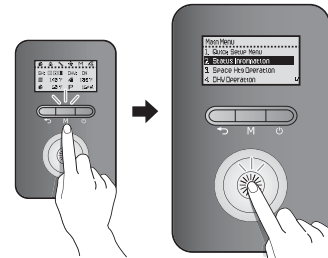
- In normal operation mode, rotate the Command dial (⊙). The space heating temperature (III) is highlighted on the screen.
- Press the Command dial (⊙) to select the space heating temperature. The highlighted section will flash.
- Rotate the Command dial (⊙) to the right or left to increase or decrease the temperature.
- Press the Command dial (⊙) to confirm the new temperature.
- Press the Back button (←) to return to normal operation mode, or rotate the Command dial (⊙) to adjust other operation conditions.

DHW Temperature

- In normal operation mode, rotate the Command dial (⊙). The space heating temperature (III) is highlighted on the screen.
- Rotate the Command dial (⊙) to the right to select the DHW temperature.
- Press the Command dial (⊙) to select the indirect DHW temperature (IV). The highlighted section will flash.
- Rotate the Command dial (⊙) to the right or left to increase or decrease the temperature.
- Press the Command dial (⊙) to confirm the new temperature.
- Press the Back button (←) to return to normal operation mode, or rotate the Command dial (⊙) to adjust other operation conditions.

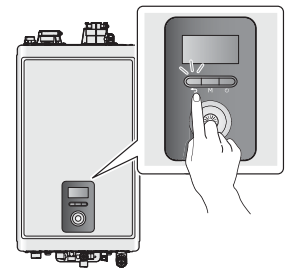
Note DHW temperature higher than 180°F can cause scalding.

View Basic Information



- Press the Menu button (M), and then select "2. Status Information".
- Rotate the Command dial (⊙) to switch between the information items.

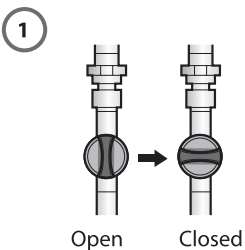
Resetting the Boiler



If an error message appears during boiler operation, reset the boiler to resolve the problem. Press the Back button (←) on the front panel to reset the boiler.

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

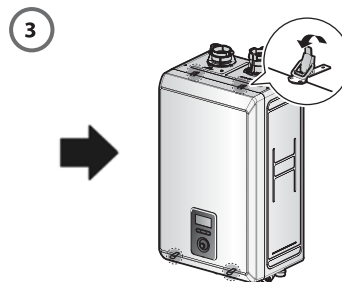
3 Measuring the Inlet Gas Pressure



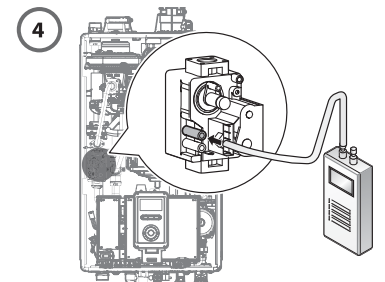
Shut off the manual gas valve.



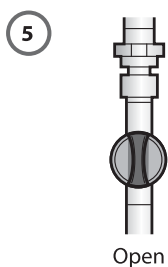
Leave the faucet on until the boiler shuts down due to a lack of gas supply, and then turn off the hot water faucet.



Unfasten the 4 latches (2 at the top and 2 at the bottom) to remove the front cover and gain access to the internal components.

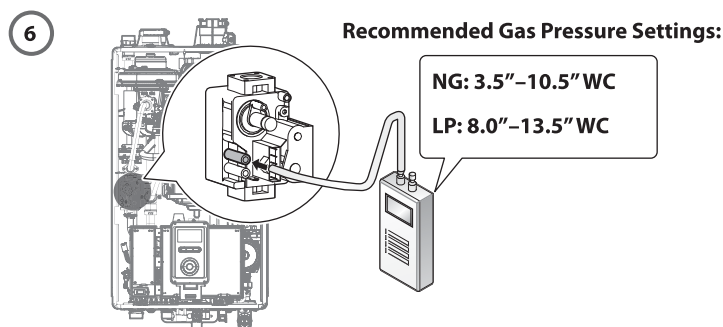


Loosen the screw indicated in the figure and connect a manometer to the pressure port. Reset the manometer to zero before use.



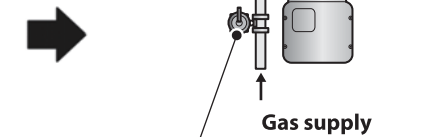
Re-open the manual gas valve and check for leaks.

Open multiple fixtures that have high flow rates, such as bathtub and shower faucets, to ramp the boiler up to its maximum firing rate.



Check the inlet gas pressure reading on the manometer.

If not,

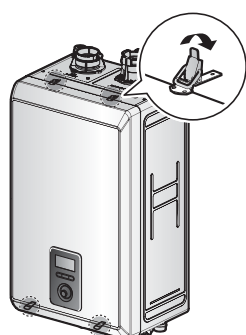


Adjust the inlet gas pressure with gas regulator.

CAUTION

The boiler cannot function properly without sufficient inlet gas pressure. **Measuring the inlet gas pressure should be performed by a licensed professional only.**

4 Installing the Front Cover



5 Ensure Maximum Water Flow

After running the boiler for the first 10 minutes, turn it off and clean the cold water filter and the space heating return strainer to remove any trapped debris.

6 Final Check

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