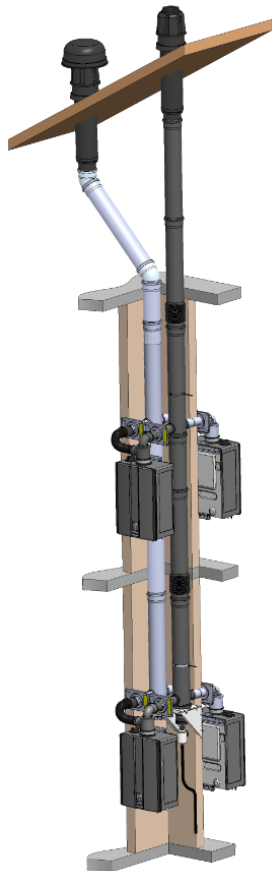




## INSTALLATION INSTRUCTIONS

# Vertical Common Venting System FOR RINNAI TANKLESS WATER HEATERS



### TANKLESS WATER HEATER MODELS

RU199i (REU-N3237FF-US)  
RU180i (REU-N2934FF-US)  
RU160i (REU-N2530FF-US)  
RU130i (REU-N2024FF-US)  
RUR199i (REU-NP3237FF-US)  
RUR160i (REU-NP2530FF-US)



Certified to ANSI Z21.10.3 - CSA 4.3  
For U.S. and Canadian Installations

Venting Components: ULC-S636 Certified

## DANGER

If these instructions are not followed exactly, carbon monoxide poisoning, a fire or explosion may result causing property damage, personal injury, or death.

## WARNING

- 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 qualified installer, service agency or the gas supplier.

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# 1. Welcome

Thank you for purchasing a Rinnai Vertical Common Venting System.

This manual provides instructions for installing the Vertical Common Venting System and is a supplement to the “Rinnai Tankless Water Heater Installation and Operation Manual” (supplied with each tankless water heater in the system).

Vertical common venting must satisfy all the requirements in the “Rinnai Tankless Water Heater Installation and Operation Manual,” as well as the requirements in this manual.

For detailed information on the Rinnai Tankless Water Heater, including water heater installation instructions, refer to the “Rinnai Tankless Water Heater Installation and Operation Manual,” or view an online version at [rinnai.us](http://rinnai.us).

Venting components are manufactured by Ubbink and certified to ULC-S636.

## To The Consumer

- Keep this manual for future reference.
- A trained and qualified professional who has attended a Rinnai installation training class must complete your installation.

## To The Installer

- This manual is intended for a qualified professional and is designed for licensed installers who should have skills such as gas sizing; connecting gas lines, water lines, valves, and electricity; knowledge of applicable national, state, and local codes; installing venting through a wall or roof; and training in installation of tankless water heaters. Training on Rinnai Tankless Water Heaters is accessible at [www.trainingevents.rinnai.us](http://www.trainingevents.rinnai.us).
- Read all instructions in this manual before installing the Vertical Common Venting System.
- The installation must conform to the “Rinnai Tankless Water Heater Installation and Operation Manual” that is shipped with the unit, local codes, or in the absence of local codes, with the National Fuel Gas Code, ANSI Z223.1/ NFPA 54.
- It is required that a qualified professional install the Vertical Common Venting System and confirm that all connections are sealed properly and do not contain leaks. The warranty may be voided due to improper installation.
- When installation is complete, give all manuals related to the Vertical Common Venting System (including this manual and the “Rinnai Tankless Water Heater Installation and Operation Manual”) directly to the consumer. The manuals should be stored in a readily accessible location for future reference.
- Proper installation is the responsibility of the installer.

# 2. Safety

## Safety Symbols

This manual contains the following important safety symbols. Always read and obey all safety messages.



Safety alert 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 personal injury or death.

### **WARNING**

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

### **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.

## Safety Precautions

The following precautions apply to the installer and consumer. Read and follow all instructions below.

### **WARNING**

- If the information in these instructions is not followed exactly, carbon monoxide poisoning, a fire, or explosion may result causing property damage, personal injury, or death.
- Installations must comply with local requirements and with the National Fuel Gas Code, ANSI Z223.1/NFPA 54 for U.S. installations.
- 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.
- It is required that a qualified professional install the Vertical Common Venting System and confirm that all connections are sealed properly and do not contain leaks. The warranty may be voided due to improper installation.

# 3. About

## Specifications

Installation Type	Indoor
Water Heater Type	Residential SENSEI™ Indoor Condensing Tankless Water Heater
Number of Water Heaters	Up to eight (8) Rinnai SENSEI™ Tankless Water Heaters on one vertically oriented vent system
Gas Type	Natural Gas and Propane
Chase Dimensions	Inside of chase must be at least 24 in. (610 mm) wide by 20 in. (508 mm) deep
Vent Components	Vent components are manufactured by Ubbink and certified to ULC-S636
Vent Material	Intake vent components utilize translucent PPTL venting material. Exhaust vent components utilize a gray-colored PPS venting material.
Vent Type	Direct Vent (Twin Pipe)
Vent Size	6 in. (160 mm) Diameter
Vent Length	Maximum Equivalent Vent Length: 100 Ft (30 m)
High Altitude	Certified up to 10,200 ft (3,109 m)
Certification	Certified to ANSI Z21.10.3 - CSA 4.3 for U.S. and Canadian Installations

## Transport and Storage

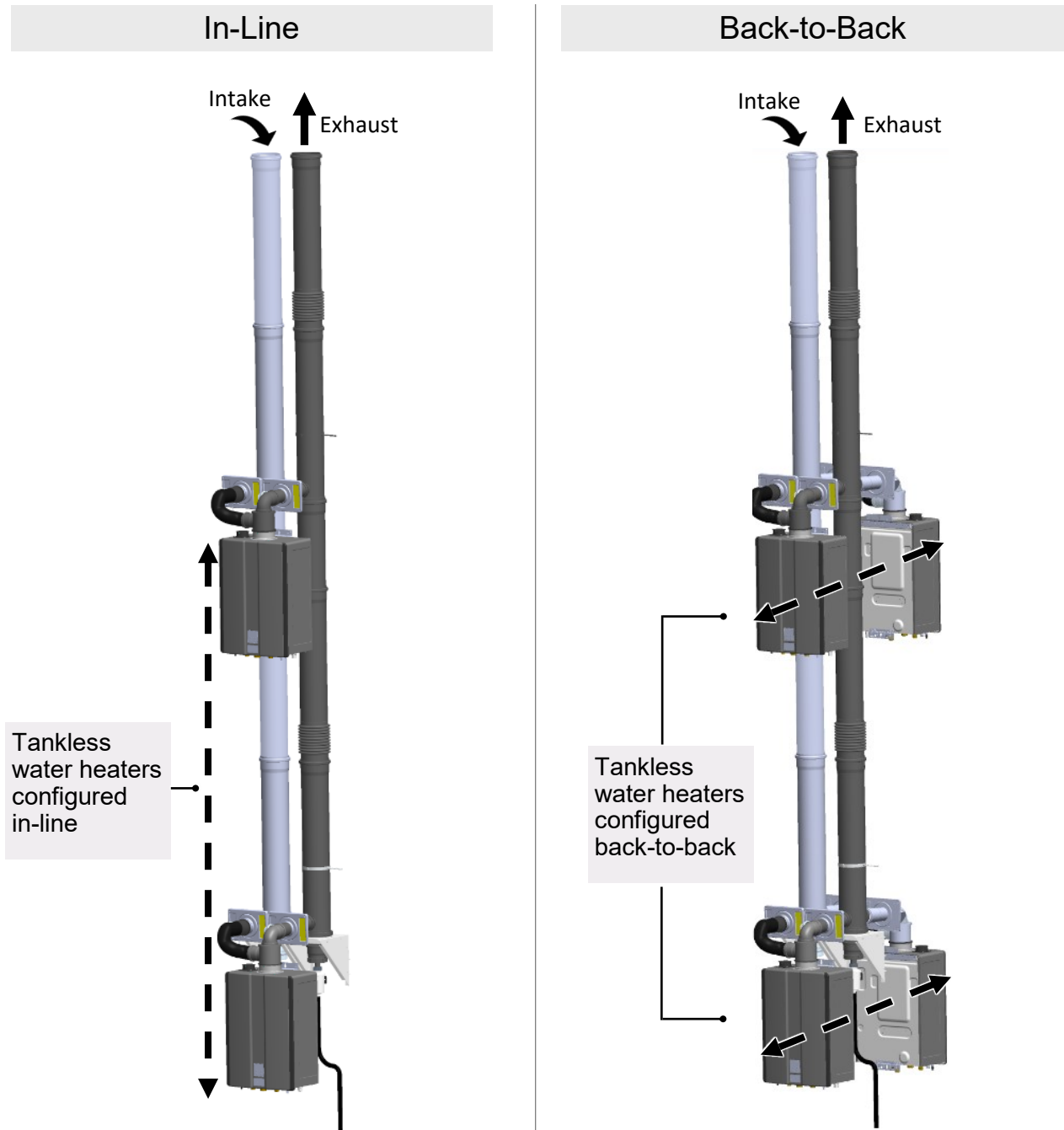
When transporting components of the Vertical Common Venting System, follow the guidelines below:

- Store system components in a clean, dry environment.
- Components must be protected from direct sunlight.
- Do not store components outdoors.
- If transported or stored at temperatures below 32°F (0°C), the components must be warmed up to 60°F (15°C) before the start of assembly.
- All components must be stored in the original packaging.

## System Configurations

The Vertical Common Venting System provides in-line and back-to-back tankless water heater configurations.

- In-Line: One tankless water heater per floor
- Back-to-Back: Two tankless water heaters per floor



# 4. Venting

## Venting Precautions

### **WARNING**

- Failure to correctly assemble the components of the Vertical Common Venting System according to these instructions and the “Rinnai Tankless Water Heater Installation and Operation Manual” may result in carbon monoxide poisoning, a fire or explosion causing property damage, personal injury, or death.
- Exhaust components must be PPS (a ULC-S636-certified and tested venting material from Ubbink) for U.S and Canada installations.
- Intake components must be PPTL (a CSA-certified and tested venting material from Ubbink) for U.S and Canada installations. Intake components must be in accordance with national and/or local codes having jurisdiction.
- You must use the vent components listed in this manual.
- The vent system must vent directly to the outside of the building and use outside air for combustion.
- If the vent system will be enclosed (inside a chase, for example), it is recommended that the design of the enclosure permit inspection of the vent system (such as an access door). The design of the enclosure should be deemed acceptable by the installer or local inspector.
- The chase is for the Vertical Common Venting System only. **DO NOT** vent other items, such as fireplaces or other high-temperature appliances, into the chase.
- Avoid dips or sags in horizontal vent runs by installing 3 in./80 mm mounting brackets.

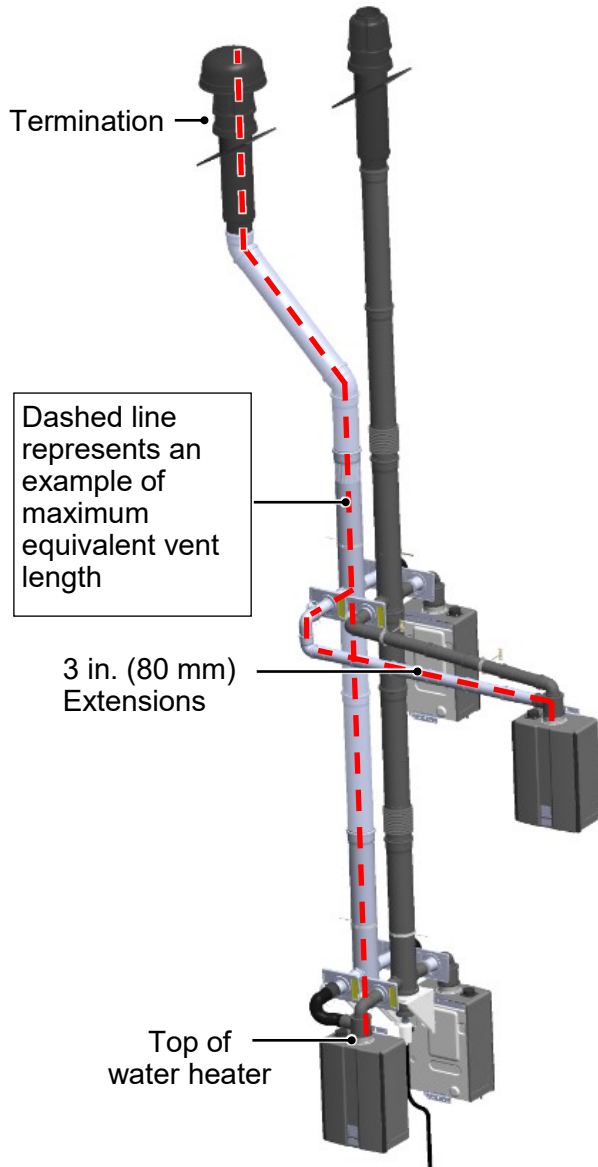
### **WARNING**

- Support vertical vent runs by installing the supplied mounting bracket on each tee connector.
- Vent connections must be firmly pressed together to form an air-tight seal.
- **DO NOT** apply PVC/CPVC glues, solvents, or cleaners to the tankless water heater’s intake or exhaust seal connections.
- **DO NOT** use cellular core PVC/CPVC, Radel, ABS or galvanized material for the intake or exhaust vents.
- **DO NOT** combine vent components from different manufacturers.
- **DO NOT** cover vent components with thermal insulation.
- **DO NOT** common vent with the vent pipe of any other type of water heater or appliance.
- **DO NOT** reduce vent diameter to less than 3 in. (80 mm).
- Venting should be as direct as possible with a minimum number of pipe fittings.
- Vent components connected to the water heater must be secured with one self-tapping screw (field-supplied). Do not use any glues or solvents to connect vent components to the water heater.
- **DO NOT** exceed the maximum number of Rinnai Tankless Water Heaters specified in this manual.
- **DO NOT** install the tankless water heaters in an area of negative pressure.
- **DO NOT** install the tankless water heaters, venting, and vent termination(s) in any area where the air may contain corrosive compounds.
- **DO NOT** connect the venting system with an existing vent or chimney.
- For roof or chimneys modifications, follow all valid industrial safety regulations.
- The condensate drain must either be neutralized or piped into sewer, as determined by local code requirements.

# Venting Guidelines

## Venting Information

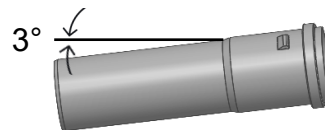
- Vent Type: Direct Vent (Twin Pipe)
- Maximum Equivalent Vent Length: 100 Ft (30 m)
  - Maximum vent length is from the top of the water heater to the termination, including additional 3 in. (80 mm) extensions and any other venting, fittings, and terminations (see illustration below).
  - 45° elbow is equivalent to 3 ft (1 m)
  - 90° elbow is equivalent to 6 ft (2 m)



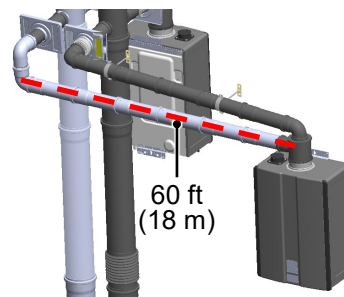
- Vent Material: Intake vent components utilize translucent PPTL venting material. Exhaust vent components utilize a gray-colored PPS venting material.
- Vent Header Size: 6 in. (160 mm) Diameter
- When cutting vent components, the cut must be straight. Cut edge shall be chamfered and all burrs removed before installation.
- **DO NOT** use cement or glue on venting sections.
- All vent joints must fully engage the male/female socket assembly.
- The installed vent system must be clean and free of any foreign debris before operation.
- The venting system must be rigidly supported as instructed in this manual and include the appropriate 3° slope.
- All components of the Vertical Common Venting System are manufactured and built in accordance with valid standards, regulations, and safety engineering rules. Venting components are manufactured by Ubbink and certified to ULC-S636.

## Pitch

The vent extensions and formed parts must be installed at an angle of 3° incline towards the tankless water heater to allow the condensate to dispose in accordance with regulations.



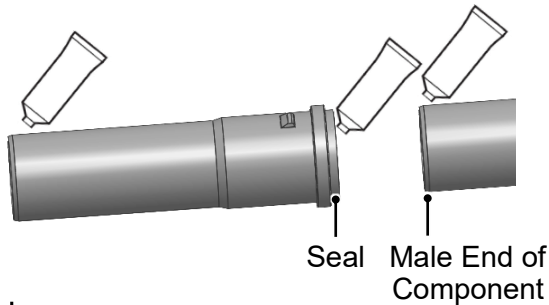
Due to the 3° pitch, the maximum distance the water heater can be installed away from the chase and still maintain the required clearances is 60 ft (18 m).





## Lubricant

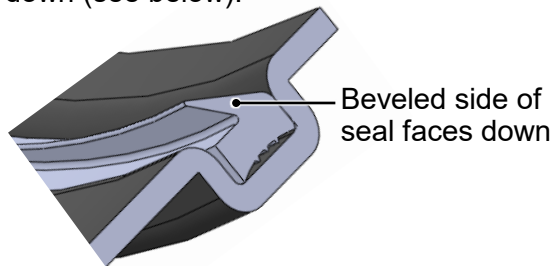
- The seals and male ends of all common vent components must be lubricated before assembly. **Use ONLY Centrocerin lubricant or water to aid in the assembly of the vent components.**
- Apply a thin layer of Centrocerin lubricant to each seal before assembly.
- A tube of Centrocerin lubricant is packaged with each exhaust end cap and Concentric to Two-Pipe Adapter and available for separate purchase.
- One tube of Centrocerin lubricant is sufficient for a 100 Ft (30 m) common header installation.



## Seals

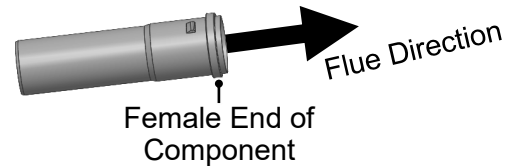
Seals are pre-assembled in the vent components. If a seal is missing or damaged, the component should not be used or an appropriate seal must be installed.

- Use **ONLY** original seals. Never use fabricated or non common vent seals.
- Use only the appropriate nominal width and diameter seals.
- Seal and seal chamfer must remain clean and free of foreign debris before assembly.
- Confirm seal is installed in the appropriate direction: beveled side facing down (see below).



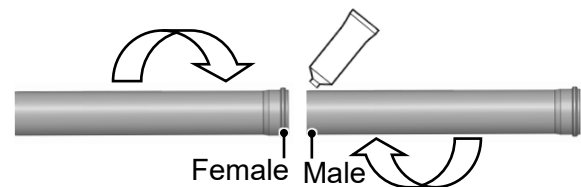
## Flue Direction

The female end of the components in contact with the flue gasses must always point in the direction of the termination. It is imperative to maintain this flow direction for proper condensate flow and integrity of the seal.

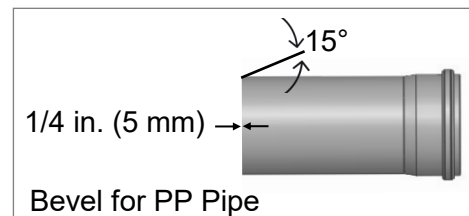


## Joining, Disconnecting, Shortening and Chamfering

- The seals can be removed from their chamber for measuring purposes. Always reassemble the seals in the correct direction, as indicated in the illustration below.
- Lubricate the seals and/or male ends of the components with Centrocerin lubricant or water and assemble the components using light rotational movements. Insert the male end entirely into the female end.



- Pipes are always shortened on the male end. Never cut or modify formed vent components, such as elbows or collectors.
- Cut straight, perpendicular to the tube and chamfer the edges approximately 15° at 1/4 in. (5 mm).

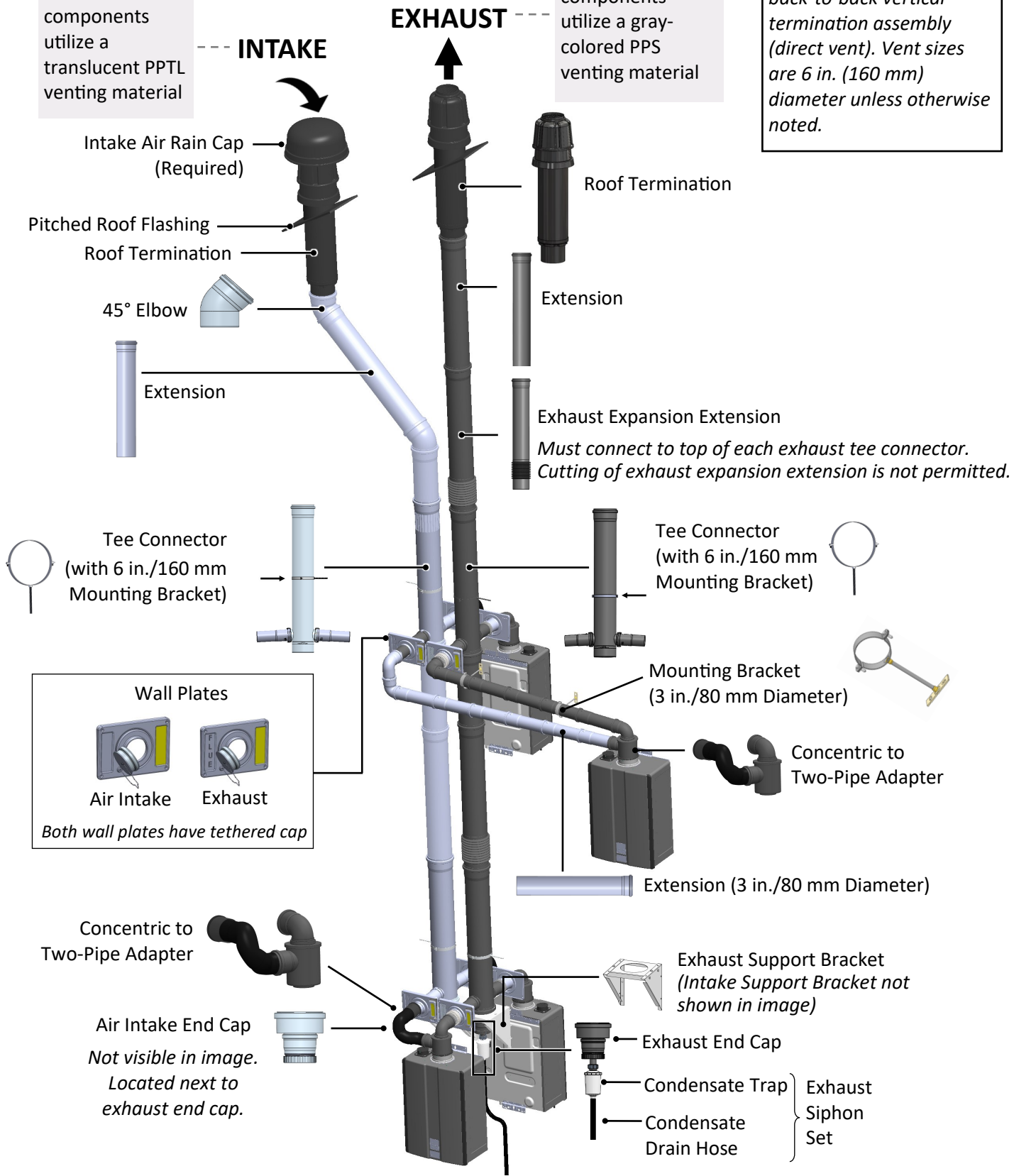


# Venting Components

Intake vent components utilize a translucent PPTL venting material

Exhaust vent components utilize a gray-colored PPS venting material

*Illustration is a sample back-to-back vertical termination assembly (direct vent). Vent sizes are 6 in. (160 mm) diameter unless otherwise noted.*



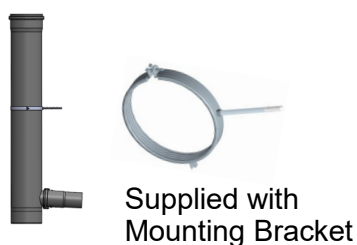
## Venting Accessories

### ➔ IMPORTANT

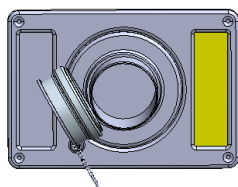
Images are for illustrative purposes only and will vary based on intake and exhaust (intake vent components are a translucent PPTL venting material. Exhaust vent components are a gray-colored PPS venting material).



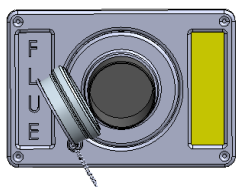
Tee Connector (Back-to-Back) with Mounting Bracket (39 in./1 m Length)	Part #
6 in. (160 mm) Diameter Exhaust (PPS)	791033PPs
6 in. (160 mm) Diameter Intake (PPTL)	790203



Tee Connector (In-Line) with Mounting Bracket (39 in./1 m Length)	Part #
6 in. (160 mm) Diameter Exhaust (PPS)	791032PPS
6 in. (160 mm) Diameter Intake (PPTL)	790202



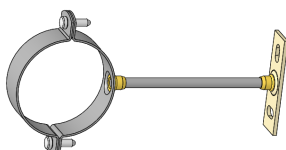
Wall Plate (Intake)	Part #
Intake Wall Plate with Tethered Cap	35791041



Wall Plate (Exhaust)	Part #
Exhaust Wall Plate with Tethered Cap	35791040



Mounting Bracket	Part #
6 in. (160 mm) Diameter <i>Supports vertical vent runs</i>	790092



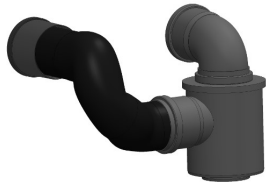
Mounting Bracket	Part #
3 in. (80 mm) Diameter <i>Supports horizontal vent runs</i>	790123



<b>Extension (39 in./1 m Length)</b>	<b>Part #</b>
3 in. (80 mm) Diameter Exhaust (PPS)	790122
3 in. (80 mm) Diameter Intake (PPTL)	123030
6 in. (160 mm) Diameter Exhaust (PPS)	791028PPs
6 in. (160 mm) Diameter Intake (PPTL)	790089



<b>Exhaust Expansion Extension (39 in./1 m Length)</b>	<b>Part #</b>
6 in. (160 mm) Diameter Exhaust (PPS) <i>Cutting of exhaust expansion extension is not permitted.</i>	791031PPs



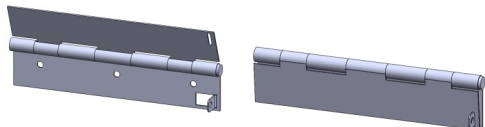
<b>Concentric to Two-Pipe Adapter</b>	<b>Part #</b>
3-5 in. Concentric to 3 in. Two-Pipe (PPS) (80-125 mm to 80-80 mm)	791036PPs



<b>90° Elbow</b>	<b>Part #</b>
3 in. (80 mm) Diameter Exhaust (PPS)	790121
3 in. (80 mm) Diameter Intake (PPTL)	123060
6 in. (160 mm) Diameter Exhaust (PPS)	791027PPs
6 in. (160 mm) Diameter Intake (PPTL)	790087



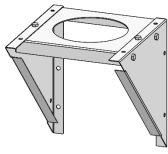
<b>45° Elbow (Set of Two)</b>	<b>Part #</b>
3 in. (80 mm) Diameter Exhaust (PPS)	790120
3 in. (80 mm) Diameter Intake (PPTL)	123050
6 in. (160 mm) Diameter Exhaust (PPS)	791026PPs
6 in. (160 mm) Diameter Intake (PPTL)	790086



<b>Bracket Lock</b>	<b>Part #</b>
Tankless Water Heater Bracket Lock	109000857



<b>Lubricant</b>	<b>Part #</b>
Centrocerin Lubricant	790025

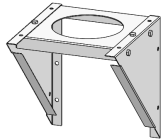


Support Bracket



Intake End Cap

Intake Items	Part #
Intake End Cap and Support Bracket	790201



Support Bracket



Exhaust End Cap

Condensate Trap

Condensate Drain Hose (with clamp)

Siphon Set



Centrocerin Lubricant

Exhaust Items	Part #
Exhaust End Cap, Siphon Set (Condensate Trap and Condensate Drain Hose), Support Bracket, and Centrocerin Lubricant Drain hose length: 4 Ft (1.2 m)	791035PPs



Roof Termination 39 in. (1 m) Length	Part #
6 in. (160 mm) Diameter Intake (PPTL)	790096
6 in. (160 mm) Diameter Exhaust (PPS)	791030PPS



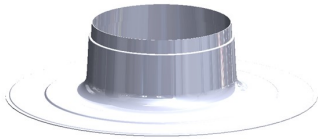
Roof Termination Cover 39 in. (1 m) Length	Part #
<ul style="list-style-type: none"> <li>Suitable for a 6 in. (160 mm) Diameter Termination</li> <li>Material: Stainless Steel</li> </ul>	790103



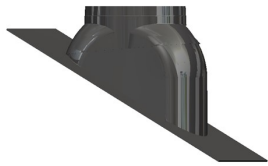
<b>Intake Air Rain Cap (REQUIRED)</b>	<b>Part #</b>
6 in. (160 mm) Diameter	780061



<b>Exhaust Flue Rain Cap (OPTIONAL)</b>	<b>Part #</b>
6 in. (160 mm) Diameter	790098



<b>Flat Roof Flashing</b>	<b>Part #</b>
Suitable for a 6 in. (160 mm) Diameter Termination	790101



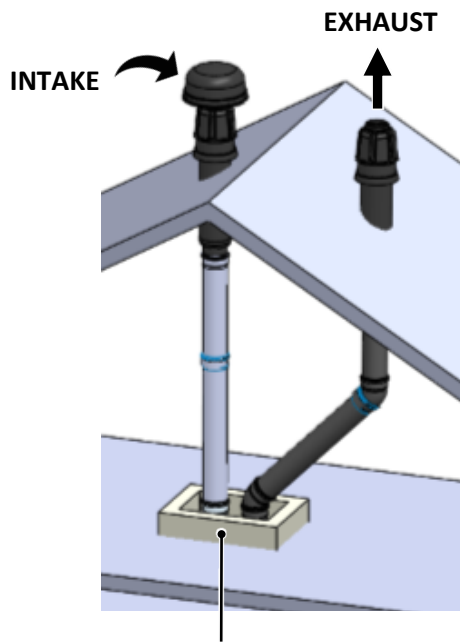
<b>Pitched Roof Moldable Flashing</b>	<b>Part #</b>
<ul style="list-style-type: none"><li>• 6/12 - 12/12 Pitch</li><li>• Suitable for a 6 in. (160 mm) Diameter Termination</li></ul>	790099

## Termination Options

Two termination options are available:

### Option 1

Intake and Exhaust Roof Line Termination

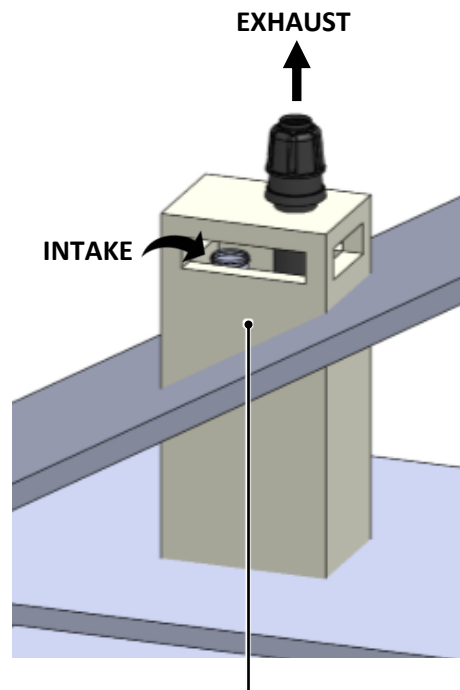


Chase ends at top of ceiling, before roof line

- Chase ends at the top of the ceiling, before the roof line.
- Exhaust and intake are separated through the roof.

### Option 2

Chimney Chase Cover



Chase extends through roof

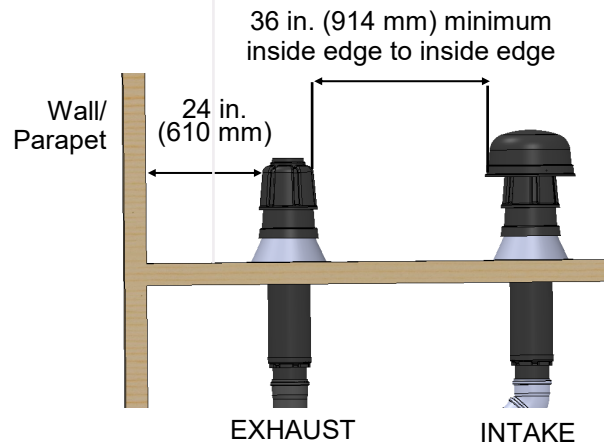
- Chase extends through the roof line and exhausts with a chimney chase cover.
- Exhaust penetrates through the top of the chase.
- Intake air is within the chase using the side vents for fresh intake air.
  - Minimum area of side vents in chase is 31.2 in.<sup>2</sup>.
  - Side vents must be protected from direct sunlight because the PPTL intake vent is not UV resistant.

## Venting Clearances

### ➔ IMPORTANT

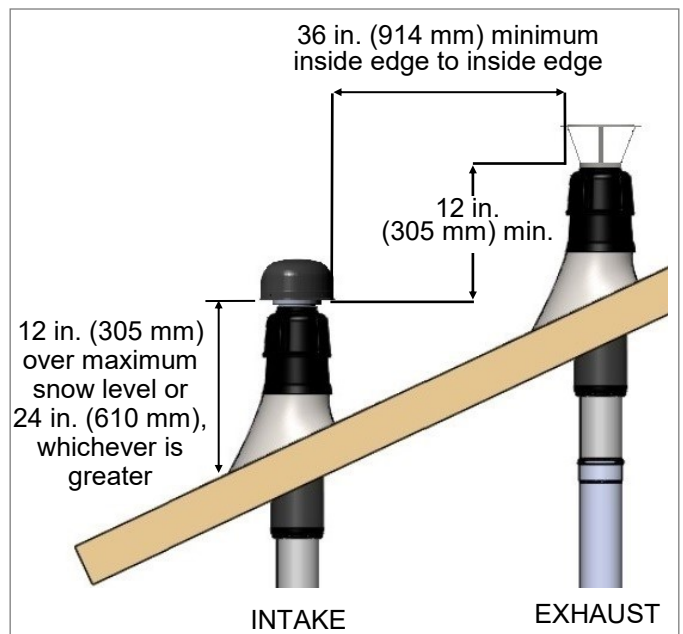
- Vent terminations per ANSI Z223.1/ NFPA 54. For clearances not specified in ANSI Z223.1/NFPA 54, clearances are in accordance with local installation codes and the requirements of the gas supplier.
- Check whether local codes supersede the following clearances: avoid termination locations near a dryer vent; avoid termination locations near commercial cooking exhaust; and you must install a vent termination at least 12 in. (305 mm) above grade or snow line.
- The vent for this appliance shall not terminate: over public walkways; near soffit vents, crawl space vents or other areas where condensate or vapor could create a nuisance, hazard or cause property damage; and where condensate or vapor could cause damage or could be detrimental to the operation of regulators, relief valves, or other equipment.
- Refer to the “Rinnai Tankless Water Heater Installation and Operation Manual” for minimum clearance requirements around the tankless water heater.

## Wall or Parapet



## Terminations

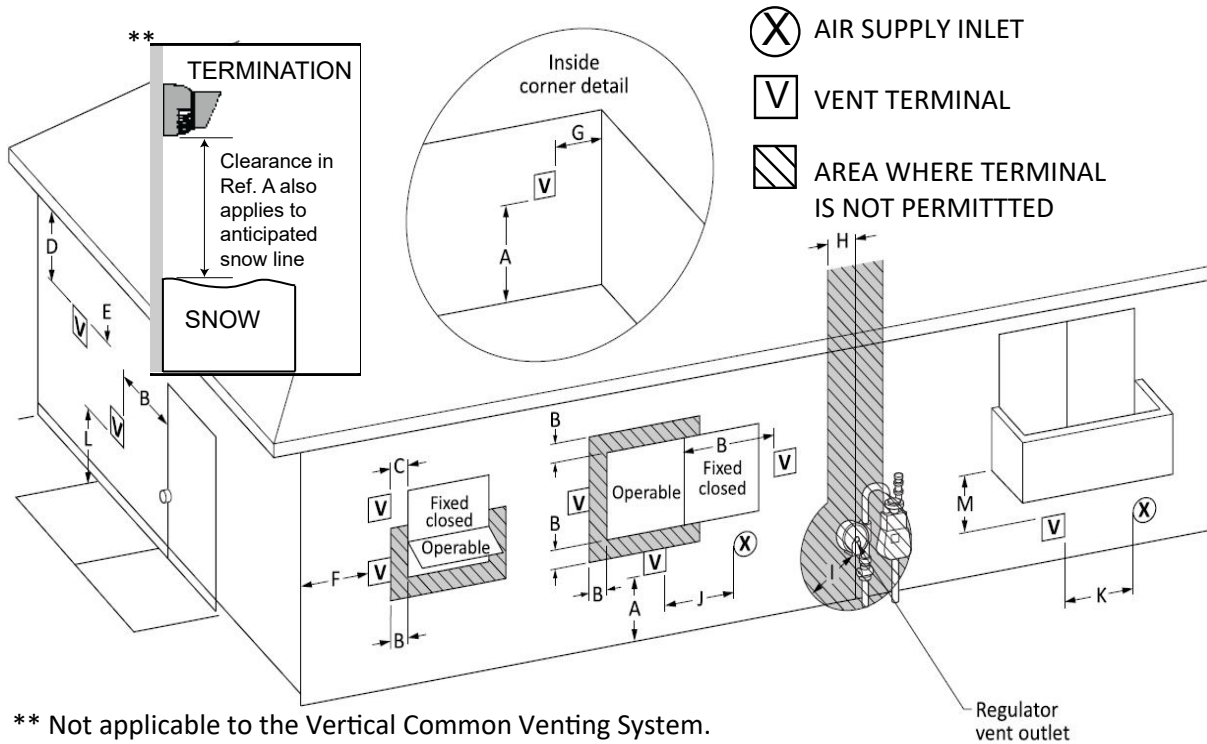
A minimum of 36 in. (914 mm) is required between the exhaust and intake terminations.





# Exhaust Vent Termination Clearances (Direct Vent)

For indoor models, you must install a vent termination to bring in combustion air and expel exhaust to the outside.



\*\* Not applicable to the Vertical Common Venting System.

Ref	Description	Canadian Installations	US Installations
A	Clearance above grade, veranda, porch, deck, or balcony	12 inches (30 cm)	12 inches (30 cm)
B	Clearance to window or door that may be opened	36 inches (91 cm)	12 inches (30 cm)
C	Clearance to permanently closed window	*	*
D	Vertical clearance to ventilated soffit, located above the terminal within a horizontal distance of 2 feet (61 cm) from the center line of the terminal	*	*
E	Clearance to unventilated soffit	*	*
F	Clearance to outside corner	*	*
G	Clearance to inside corner	*	*
H	Clearance to each side of center line extended above meter/regulator assembly	*	*
I	Clearance to service regulator vent outlet	Above a regulator within 3 ft (91 cm) horizontally of the vertical center line of the regulator vent outlet to a maximum vertical distance of 15 ft (4.5 m)	*
J	Clearance to nonmechanical air supply inlet to building or the combustion air inlet to any other appliance	36 inches (91 cm)	12 inches (30 cm)
K	Clearance to a mechanical air supply inlet	6 ft (1.83 m)	3 ft (91 cm) above if within 10 ft (3 m) horizontally
L	Clearance above paved sidewalk or paved driveway located on public property	7 ft (2.13 m) [1]	*
M	Clearance under veranda, porch, deck, or balcony	12 inches (30 cm) [2]	*

[1] A vent shall not terminate directly above a sidewalk or paved driveway that is located between two single family dwellings and serves both dwellings.

[2] Permitted only if veranda, porch, deck, or balcony is fully open on a minimum of two sides beneath the floor.

\* For clearances not specified in *ANSI Z223.1/NFPA 54*, clearances are in accordance with local installation codes and the requirements of the gas supplier.

Clearance to opposite wall is 24 inches (60 cm).

# 5. Installation Preparation

## Installation Guidelines

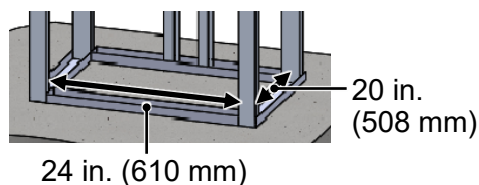
### **! WARNING**

- Improper installation of the venting system and components, or failure to follow all installation instructions, can result in property damage, personal injury, or death.
- Refer to the “Rinnai Tankless Water Heater Installation and Operation Manual” for minimum clearance requirements around the tankless water heater.
- Firestops must be installed per local code requirements.
- Deficiencies or damage to any system component must be addressed and repaired immediately.
- The vent seals must fit correctly. After installation is complete, a visual inspection of all seals must be completed.
- Installation must be carried out with an incline of at least 3° (3/4 inch per foot or 5.6 cm/m) so that the condensate produced can flow toward the water heater in accordance with regulations.
- Conversions or changes to the system components are not permissible without approval by Rinnai America Corporation.
- It is required that a qualified professional install the Vertical Common Venting System and confirm that all connections are sealed properly and do not contain leaks. The warranty may be voided due to improper installation.

## Chase Construction

Measure the installation area to make sure that adequate space is available to install the tankless water heaters and venting system.

The inside of the chase must be at least 24 in. (610 mm) wide by 20 in. (508 mm) deep.



Chase must be constructed and fire-rated to abide with local code requirements. Fire-stops must be installed on branches as required by local codes.

## High Altitude Installations

High altitude installations are certified up to 10,200 Ft (3,109 m). Ensure the tankless water heaters are properly installed and set up for the altitude at which they will be operating. For steps on adjusting altitude settings, refer to the “Rinnai Tankless Water Heater Installation and Operation Manual.”

## High Altitude Derate

Tankless water heaters using vertical common venting at altitudes over 2,000 Ft (610 m) will automatically derate according to the following tables. Use the tables for calculating the total BTU for multiple Rinnai Tankless Water Heaters.

PROPANE (LP GAS)			
Number of Water Heaters	2,001 - 5,200 Ft	5,201 - 7,700 Ft	7,701 - 10,200 Ft
1	168,000	151,000	120,000
2	332,640	298,980	237,600
3	493,920	443,940	352,800
4	651,840	585,880	465,600
5	806,400	724,800	576,000
6	957,600	860,700	684,000
7	1,105,440	993,580	789,600
8	1,249,920	1,123,440	892,800

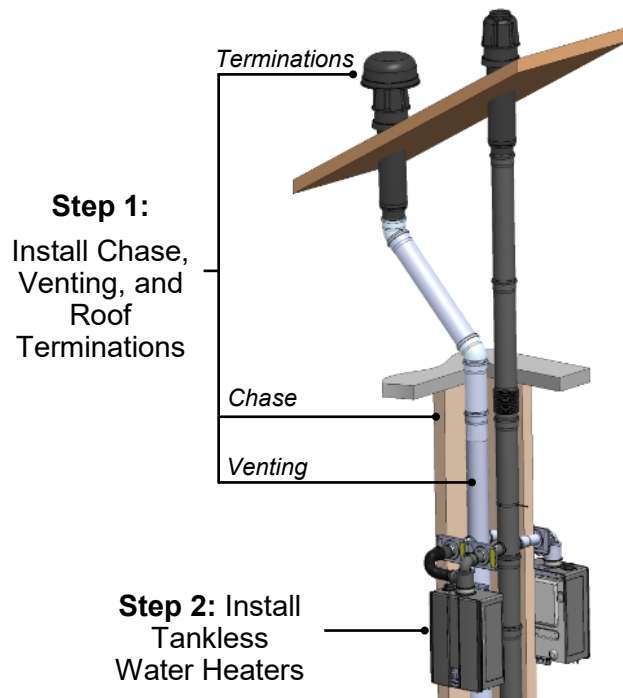
NATURAL GAS			
Number of Water Heaters	2,001 - 5,200 Ft	5,201 - 7,700 Ft	7,701 - 10,200 Ft
1	170,000	153,000	139,000
2	336,600	302,940	275,220
3	499,800	449,820	408,660
4	659,600	593,640	539,320
5	816,000	734,400	667,200
6	969,000	872,100	792,300
7	1,118,600	1,006,740	914,620
8	1,264,800	1,138,320	1,034,160

# 6. Installation

Installation of the Vertical Common Venting System is divided into two main steps:

**Step 1:** Install the Chase, Venting and Roof Terminations

**Step 2:** Install the Tankless Water Heaters



## Step 1: Install the Chase, Venting, and Roof Terminations

This section provides instructions for installing the Vertical Common Venting System chase, venting, and terminations.

**Note:** See the “Venting Components” section for component images.

### You Will Need

#### Venting Components:

- Extensions and Exhaust Expansion Extensions
- Tee Connectors with 3 in. (80 mm) extensions and mounting brackets

#### Venting Components (Con't):

- Wall Plates (intake and exhaust)
- Elbows (45°, 90°)
- Intake Support Bracket and End Cap
- Exhaust End Cap, Siphon Set (Condensate Trap and Condensate Drain Hose), Support Bracket, and Centrocerin Lubricant
- Any other venting components included in the Vertical Common Venting System

#### Roof Terminations:

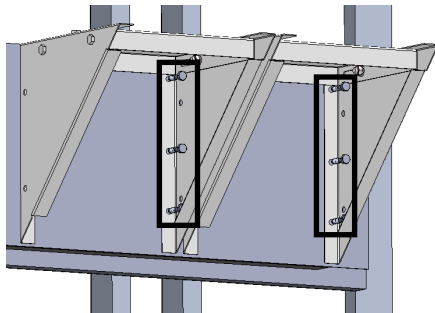
- Roof terminations (including covers)
- Intake air rain cap (required)
- Roof flashing (flat roof or pitched roof moldable flashing)
- Any other roof termination components

#### Components/Tools (Field-Supplied):

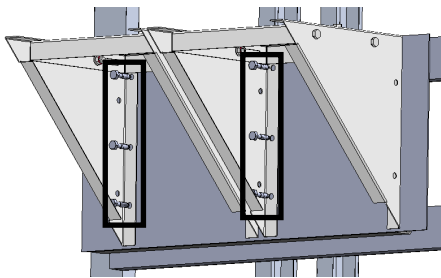
- Mounting brackets for tee connectors outside the chase (tee connectors outside the chase enclosure must be secured with mounting brackets every 6 Ft./2 m).
- Twelve (12) screws to secure intake and exhaust support brackets to chase. Use appropriate screws for type of chase construction.
- Eight (8) screws to secure intake and exhaust wall plates to the chase. Recommended screw size is #12 x 2 in. flat head screws; however, use the appropriate screws for the type of chase construction. Use wall anchors as necessary.
- Standard trade tools for cutting and assembly of chase, vent and roof components: level, safety glasses, screwdriver, file/sandpaper, gloves, fine tooth saw, weather proof sealant, and pallet jack (to safely move and handle the items included in shipment).

## Installation Steps

1. Secure the intake and exhaust support brackets to the chase (use 12 screws total: three screws on each side of the brackets).



*Right angled view of support bracket screws*

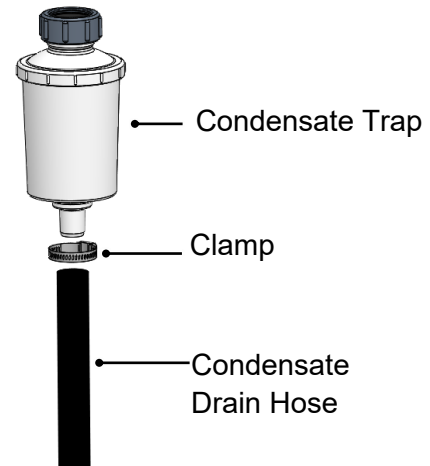


*Left angled view of support bracket screws*

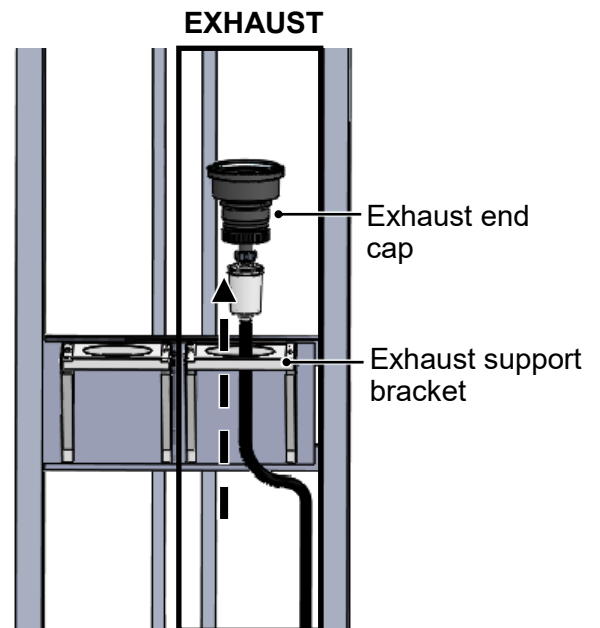
### NOTE

- The two support brackets are the same for intake and exhaust.
- The intake and exhaust support brackets can be installed on either side of each other. The illustrations in this section show intake components on the left side and exhaust components on the right side of the chase.
- Use appropriate screws for the type of chase construction.
- Use a level to make sure the support brackets are even.
- Make sure the location will allow the water heater to comply with the required clearances. Refer to the "Rinnai Tankless Water Heater Installation and Operation Manual" for minimum clearance requirements around the tankless water heater.

2. Insert the condensate trap into the condensate drain hose. Tighten with the supplied clamp.



3. Place the combined condensate trap/hose up through the exhaust support bracket and connect to the exhaust end cap (gray-colored).



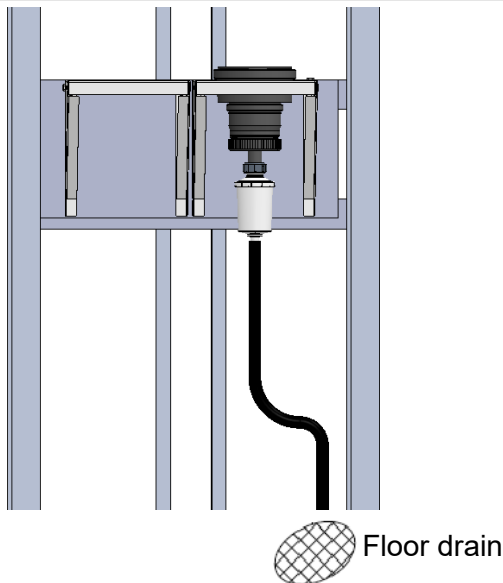
- Place the other end of the condensate drain hose to a floor drain. Hose length is 4 Ft (1/2 m).

**⚠ WARNING**

All condensate must drain and be disposed of according to local codes.

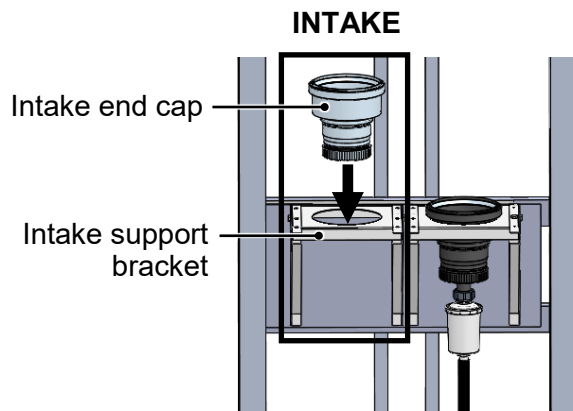
If a floor drain is not available or the drain is above the level of the condensate trap, a condensate pump must be installed.

Refer to "Appendix A: Condensate Guidelines" for complete condensate drain guidelines.

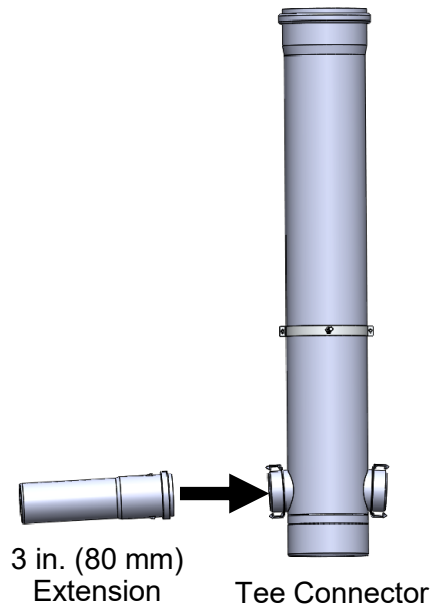


- Insert the intake end cap into the intake support bracket.

The bottom portion of the end cap fits easily into the support bracket.

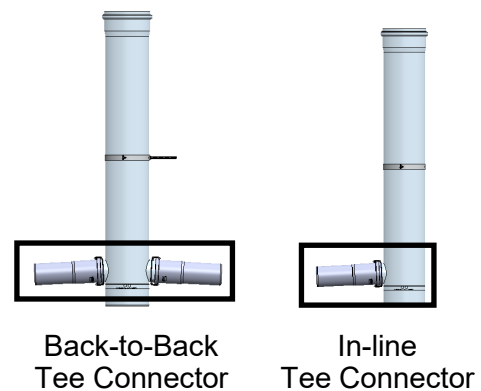


- Connect the 3 in. (80 mm) extension to the tee connector.



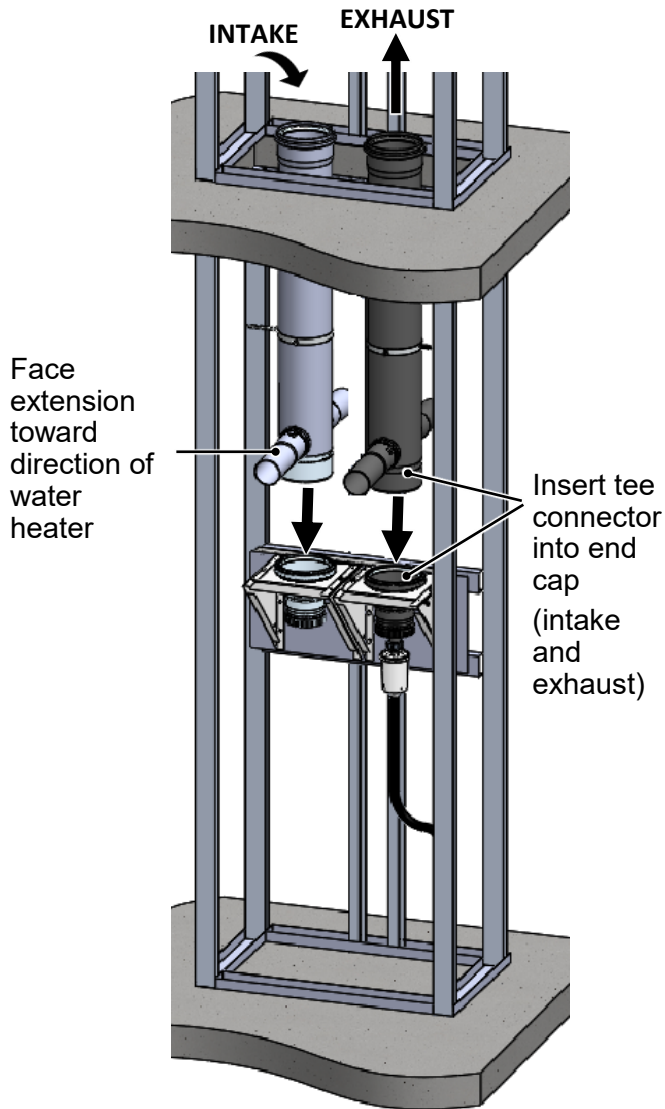
**➔ NOTE**

Connect to both sides if using a back-to-back tee connector.



7. Insert the tee connectors into the end caps:
  - Insert the intake tee connector into the intake end cap
  - Insert the exhaust tee connector into the exhaust end cap

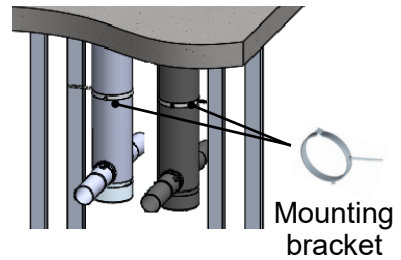
The 3 in. extension must face toward the direction of the water heater.



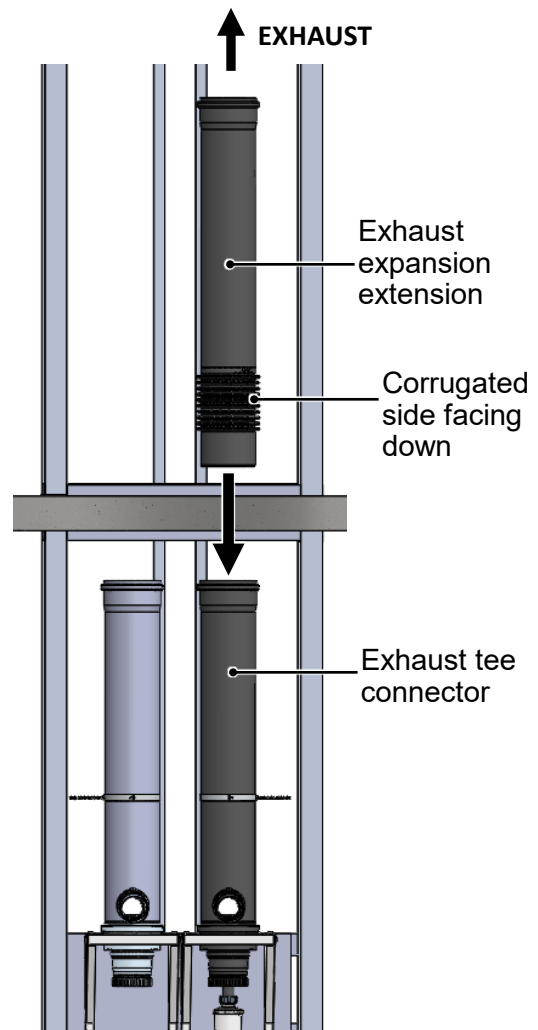
*Image shows back-to-back system configuration*

8. Use the supplied mounting bracket to secure both tee connectors (intake and exhaust) to the chase wall.

A mounting bracket must be installed on each tee connector.

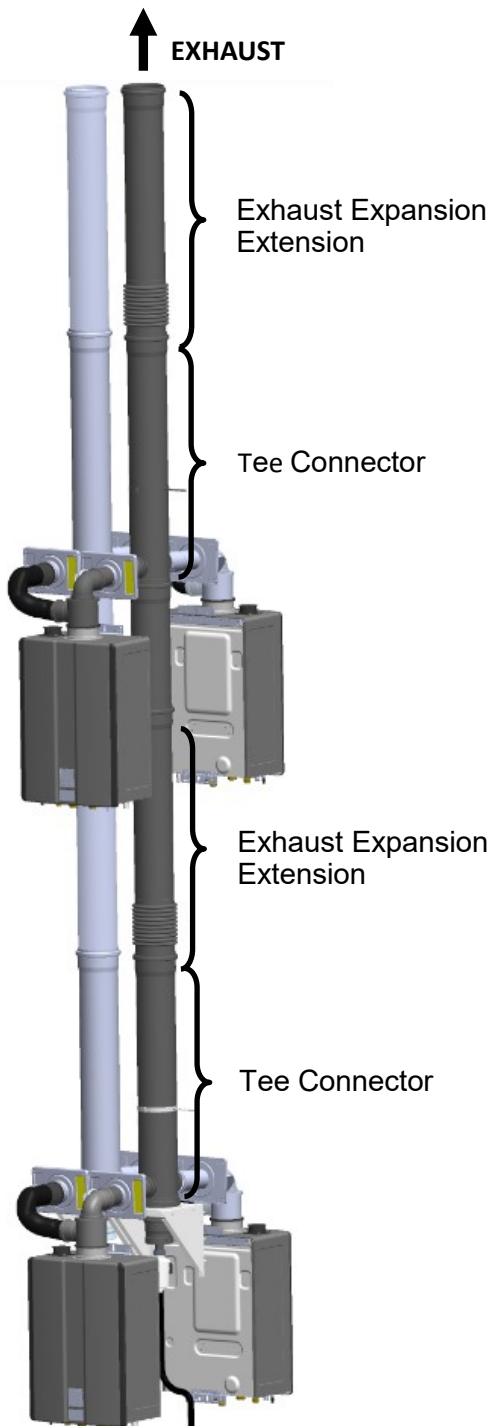


9. Insert the exhaust expansion extension (corrugated side facing down) into the top of the exhaust tee connector.

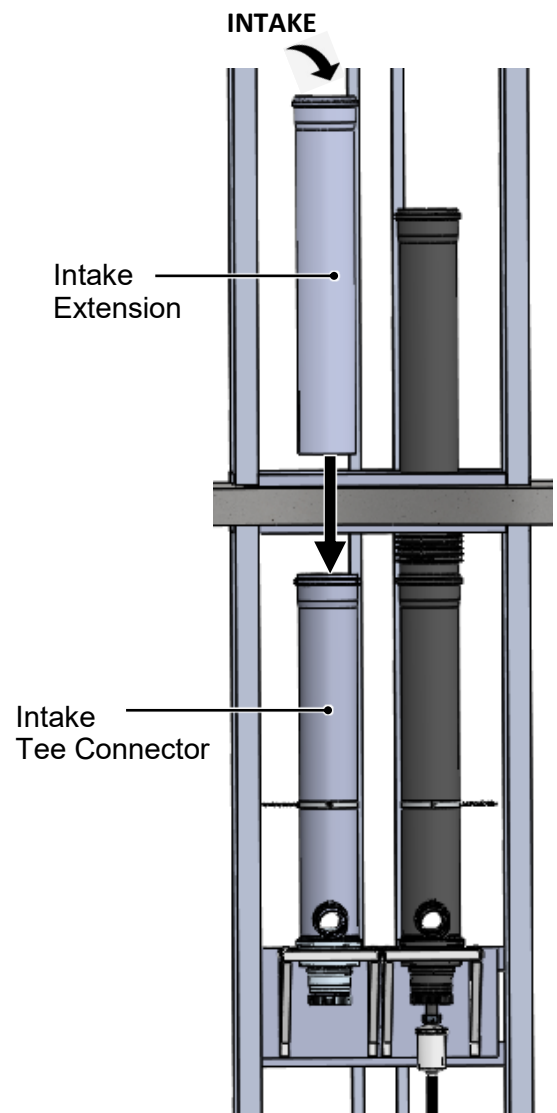


**⚠ WARNING**

- An exhaust expansion extension must be inserted into the top of each exhaust tee connector in the venting system. See example below.
- Cutting of exhaust expansion extension is not permitted.



10. Insert the intake extension into the intake tee connector.

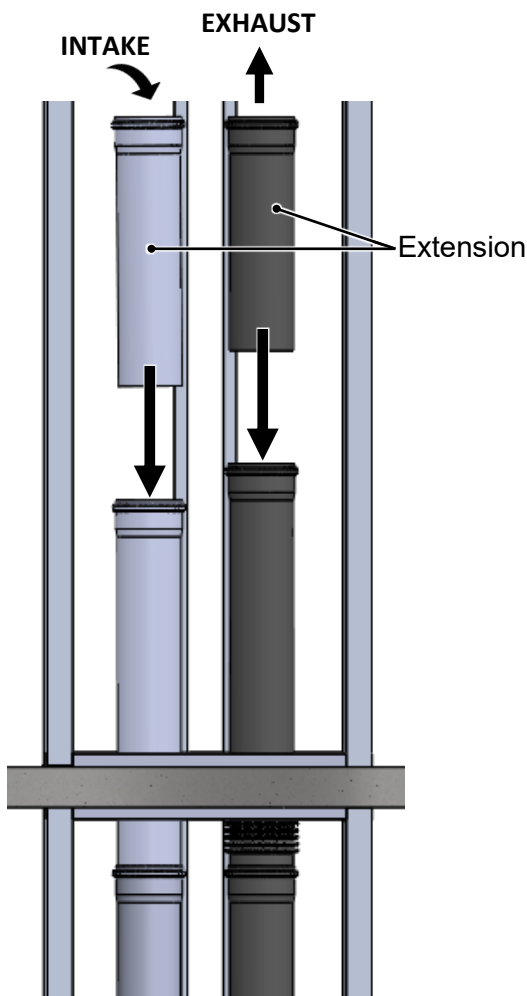


- Add extensions to the intake and exhaust headers until the desired height is reached.

Extensions may need to be cut depending on the distance between floors in the building.

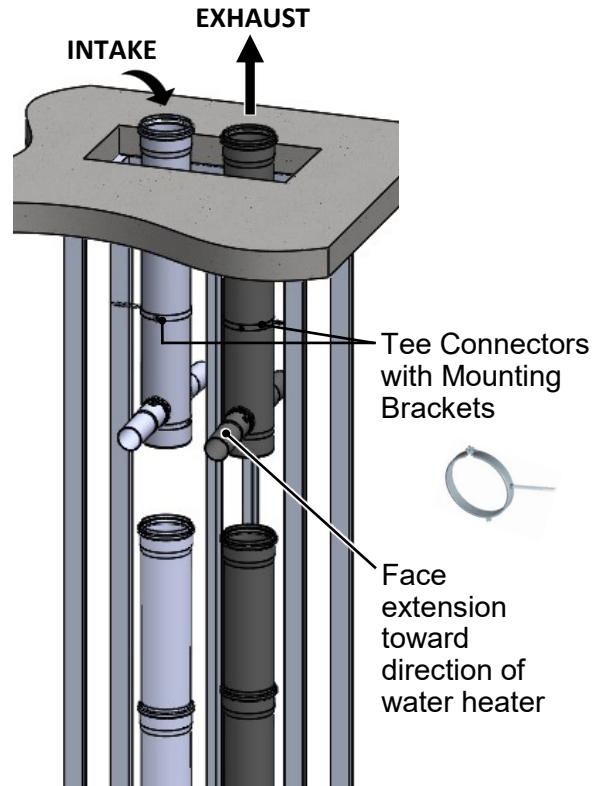
**⚠ WARNING**

Cutting of exhaust expansion extension is not permitted.



- Insert the second set of tee connectors into the intake and exhaust extensions. Make sure the 3 in. extension faces toward the direction of the water heater.

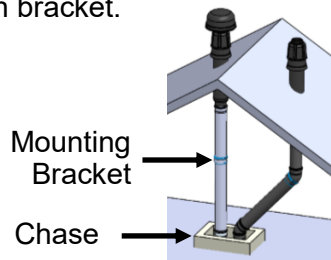
Secure each tee connector to the chase with the supplied mounting bracket.



- Continue adding intake and exhaust tee connectors, extensions, and mounting brackets until the desired height is reached.

**➡ IMPORTANT**

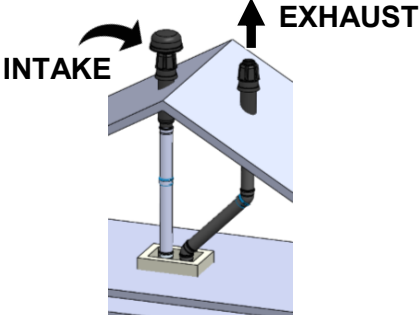
Tee connectors outside the chase enclosure must be secured with mounting brackets (field-supplied) every 6 Ft. (2 m) between each bracket.





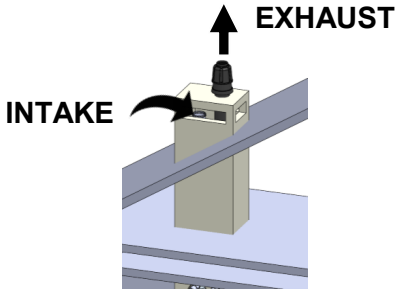
14. Terminate the intake and exhaust using one of the following two termination options:

**Option 1: Dual-Pipe Roof Line**



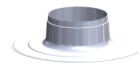
- The chase ends at the top of the ceiling, before the roof line.
- Separate the exhaust and intake through the roof, making sure you have the correct clearance between the terminations.

**Option 2: Chimney Chase Cover**



- Chase extends through the roof line and exhausts with a chimney chase cover.
- Exhaust penetrates through the top of the chase.
- Intake air is within the chase using the side vents for fresh intake air.
  - Minimum area of side vents in chase is 31.2 in.<sup>2</sup>.
  - Protect side vents from direct sunlight because the PPTL intake vent material is not UV resistant.

15. Put the roof flashing in place.

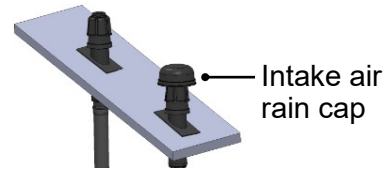


Flat Roof Flashing



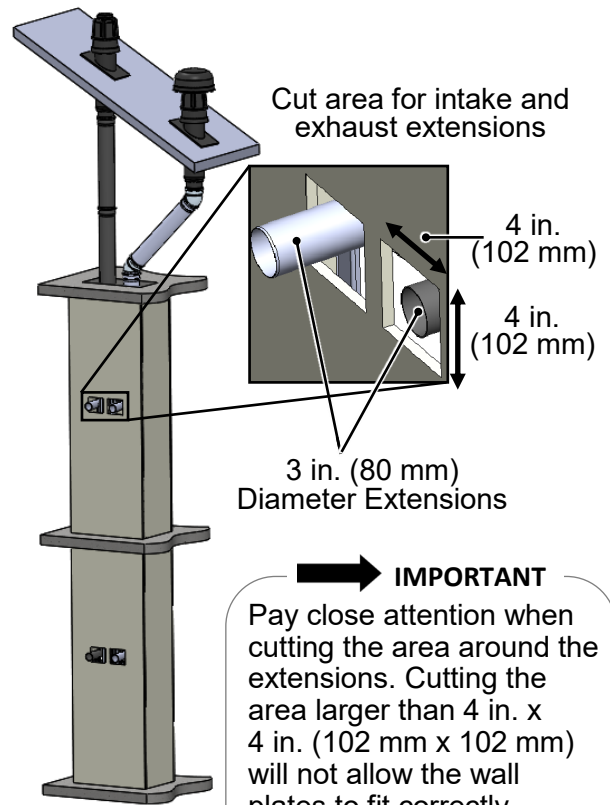
Pitched Roof Moldable Flashing (6/12 - 12/12 Pitch)

16. Fit the required intake air rain cap to the top of the intake roof termination.



17. When venting installation is complete, enclose the remaining sides of the chase.

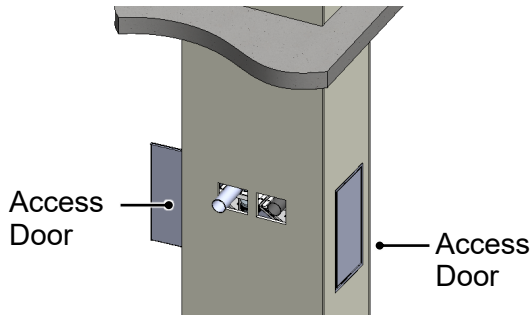
Cut an area no larger than 4 in. X 4 in. (102 mm x 102 mm) around the 3 in. (80 mm) diameter intake and exhaust extensions protruding through the wall.



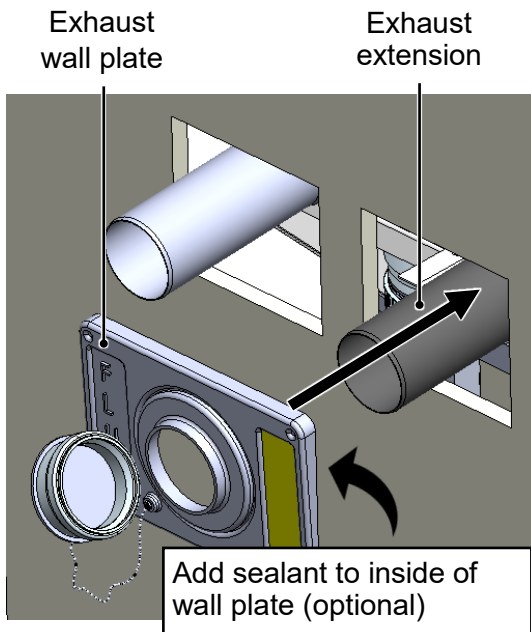
**IMPORTANT**

Pay close attention when cutting the area around the extensions. Cutting the area larger than 4 in. x 4 in. (102 mm x 102 mm) will not allow the wall plates to fit correctly (detailed in later step).

18. Install an access door(s) into the chase so that the venting can be accessed for inspection, maintenance, or troubleshooting.

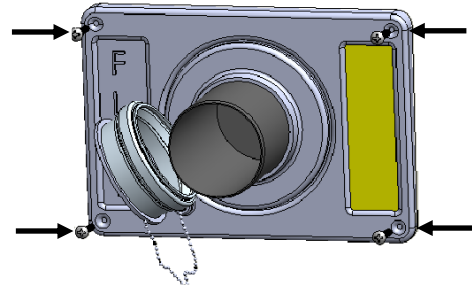


19. Gently push the exhaust wall plate onto the 3 in. (80 mm) exhaust extension.
- The wall plate must sit flush against the chase.
  - (Optional): If desired, add sealant (such as caulk, silicone, etc.) to the inside wall plate panel before pushing onto the exhaust extension.
  - The tethered cap will hang from the wall plate and must remain attached for the life of the system.

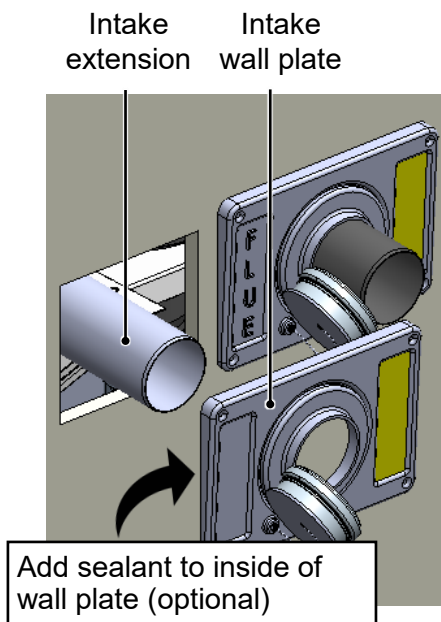


20. Use four screws (field-supplied) to secure the exhaust wall plate to the chase.

The recommended screw size is #12 x 2 in. flat head screws; however, use the appropriate screws for the type of chase construction. Use wall anchors as necessary.

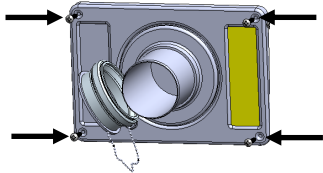


21. Insert the intake wall plate over the 3 in. (80 mm) intake extension.
- The wall plate must sit flush against the chase.
  - (Optional): If desired, add sealant (such as caulk, silicone, etc.) to the inside wall plate panel before pushing onto the intake extension.
  - The tethered cap will hang from the wall plate and must remain attached for the life of the system.

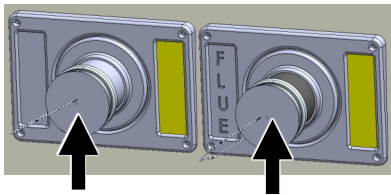


22. Use four screws (field-supplied) to secure the intake wall plate to the chase.

The recommended screw size is #12 x 2 in. flat head screws; however, use the appropriate screws for the type of chase construction. Use wall anchors as necessary.



23. Place the tethered caps over the intake and exhaust extensions. The caps must be installed on all extensions without a water heater installed.



**! DANGER** If a water heater is not installed or needs to be removed, the tethered caps must be placed over the 3 in. (80 mm) intake and exhaust extensions. If the tethered cap is not placed over the extensions, carbon monoxide poisoning may result, causing personal injury or death. The tethered cap must remain attached to the intake and exhaust wall plates for the life of the system.

### Post-Installation Checklist (Chase, Venting and Roofing)

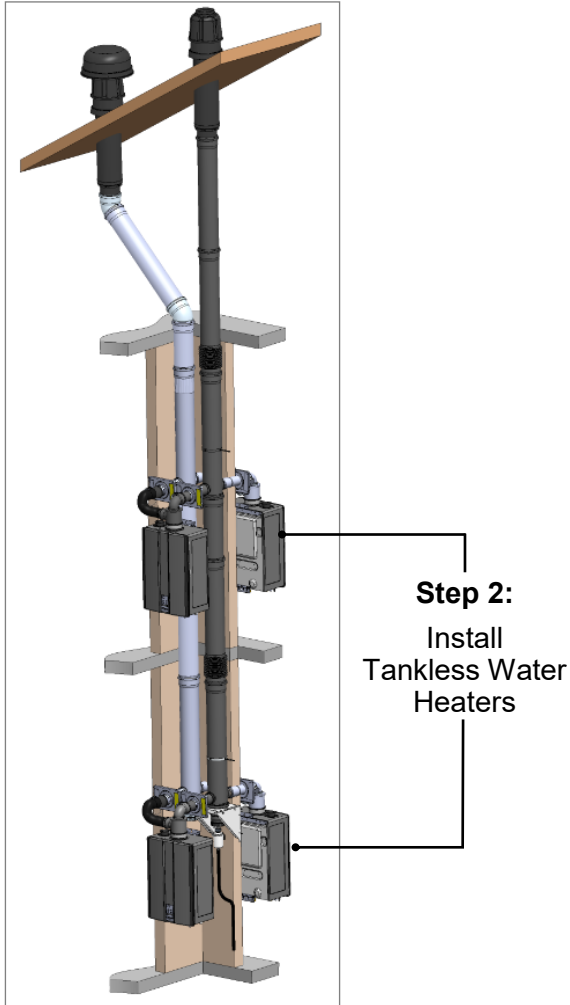
Complete the following checklist when installation is complete. You should be able to answer YES to each question. If you answer NO, installation is not complete.

	YES	NO
Did you verify the clearances from the exhaust termination(s) and the combustion air termination(s) are met?	<input type="checkbox"/>	<input type="checkbox"/>
Have you used the correct venting products, and have you completely followed the venting instructions in this document?	<input type="checkbox"/>	<input type="checkbox"/>

	YES	NO
Did you verify that all exhaust vent components utilize gray PPS venting and is connected to the exhaust (Flue) wall plate?	<input type="checkbox"/>	<input type="checkbox"/>
Did you verify that all intake vent components utilize translucent PPTL venting and is connected to the intake wall plate?	<input type="checkbox"/>	<input type="checkbox"/>
Did you verify that the vent system does not exceed the maximum equivalent vent length?	<input type="checkbox"/>	<input type="checkbox"/>
Have you verified that the appropriate amount of combustion air has been provided?	<input type="checkbox"/>	<input type="checkbox"/>
Are all vent components secure and fully engaged?	<input type="checkbox"/>	<input type="checkbox"/>
Are the tethered caps securely placed over the intake and exhaust extensions?	<input type="checkbox"/>	<input type="checkbox"/>
Are all seals correctly positioned and included at every joint?	<input type="checkbox"/>	<input type="checkbox"/>
Do all exhaust vent runs include a minimum a 3° incline (3/4 in. per Ft or 5.6 cm/m)?	<input type="checkbox"/>	<input type="checkbox"/>
Did you confirm that there are no obstructions in the combustion air or exhaust vent runs?	<input type="checkbox"/>	<input type="checkbox"/>
Are all condensate drain hoses connected to a drain and comply with local codes?	<input type="checkbox"/>	<input type="checkbox"/>
Are the intake and exhaust terminations appropriately positioned and comply with the installation instructions in this document and local codes?	<input type="checkbox"/>	<input type="checkbox"/>
Have you used only the materials listed in this manual for venting and roof terminations?	<input type="checkbox"/>	<input type="checkbox"/>
Did you install the required intake air rain cap?	<input type="checkbox"/>	<input type="checkbox"/>
If installing a chimney chase cover, are the intake air side vents the minimum size?	<input type="checkbox"/>	<input type="checkbox"/>
If installing a chimney chase cover, is the intake air vent protected from direct sunlight?	<input type="checkbox"/>	<input type="checkbox"/>

## Step 2: Install the Tankless Water Heaters

This section provides instructions for installing the tankless water heaters onto the Vertical Common Venting System.



## You Will Need

### Items Inside Tankless Water Heater Shipping Boxes:

- Rinnai Tankless Water Heaters
- Wall Mounting Bracket (one for each tankless water heater)
- “Rinnai Tankless Water Heater Installation and Operation Manual”

### Items Inside Vertical Common Venting Shipping Boxes:

- Concentric to Two-Pipe Adapter with Intake Air Flex Hose
- Centrocerin Lubricant
- Water Heater Bracket Lock

### Field-Supplied:

- Level
- Four (4) screws for mounting bracket installation (use appropriate screws for type of wall construction)
- One (1) self-tapping screw
- Padlock (to lock bracket lock)
- Standard tankless water heater installation tools and equipment

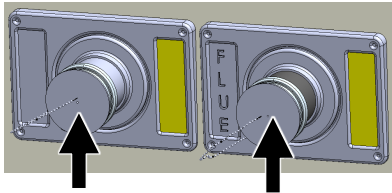
## Installation Steps

### NOTE

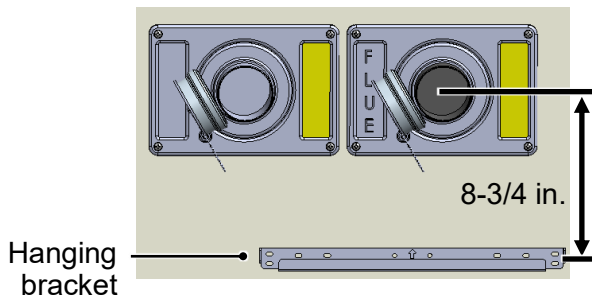
Set aside the “Rinnai Tankless Water Heater Installation and Operation Manual.” You will need it to:

- Reference the clearances around the water heater (minimum clearance from bottom of water heater to floor is 12 in./305 mm).
- Complete the remainder of the water heater installation steps when this section is complete.

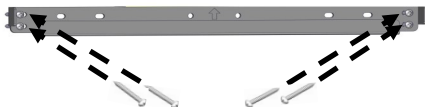
1. Remove the caps from the intake and exhaust extensions. The caps will hang freely from the tethered chain.



2. Install the water heater hanging bracket on the wall 8-3/4 in. from the center of the intake and exhaust vent pipes.

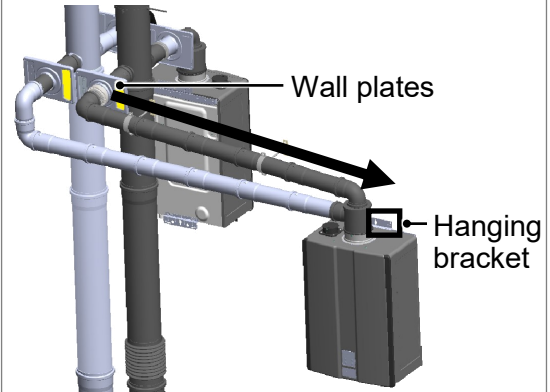


- Use a level to make sure the bracket is even. Proper operation requires the water heater to be level.
- Use four (4) screws to secure the wall mounting bracket to the wall (2 screws on far left side and 2 screws on far right side). Use appropriate screws for the type of wall construction.

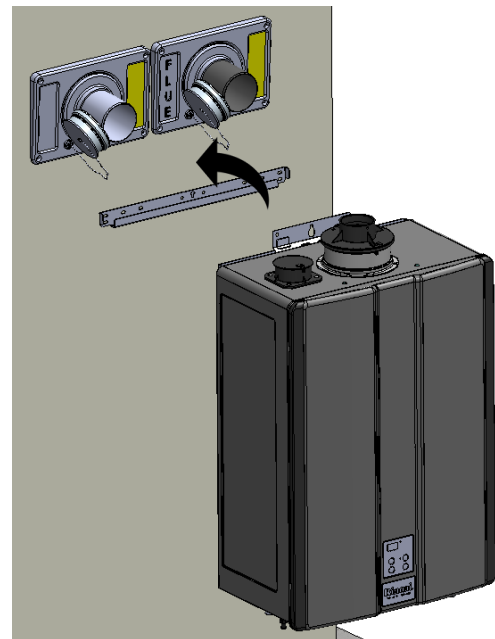


### IMPORTANT

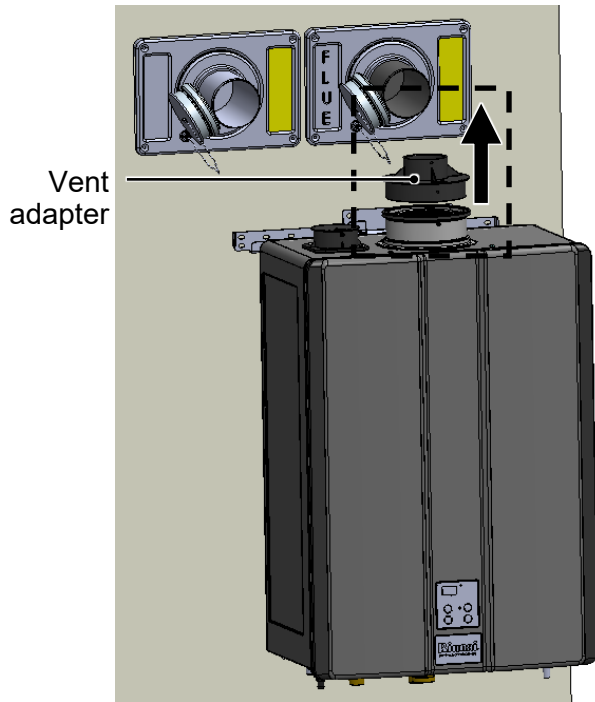
For installations where the water heater is not located directly on the chase, the hanging bracket must be mounted an extra 1/4 in. per foot below the wall plates to properly slope the vent pipe.



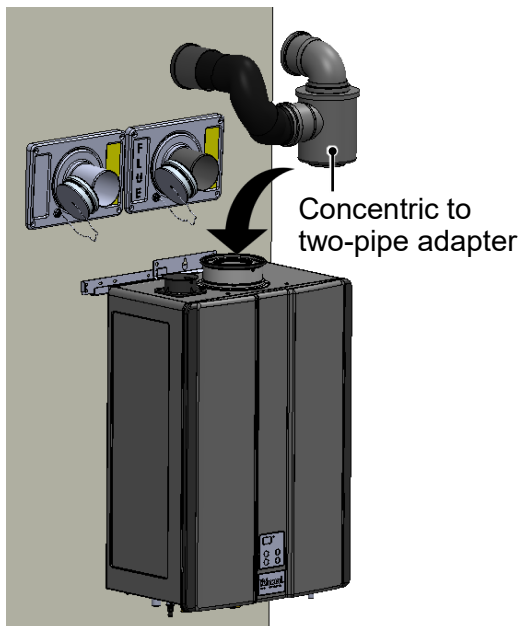
3. Hang the tankless water heater onto the hanging bracket.



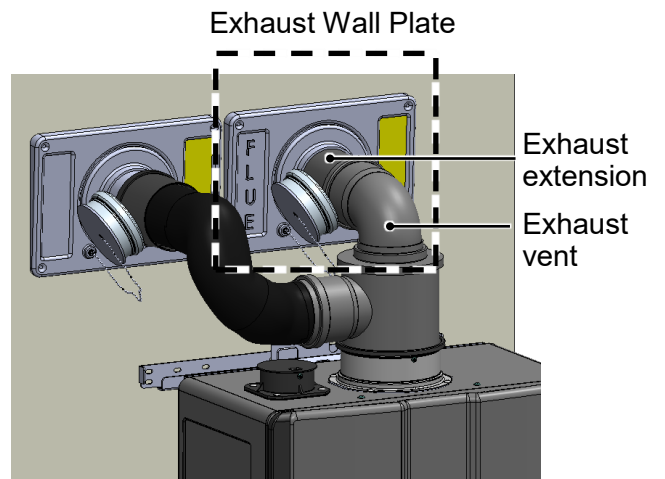
- Remove the vent adapter from the top of the tankless water heater and set aside.



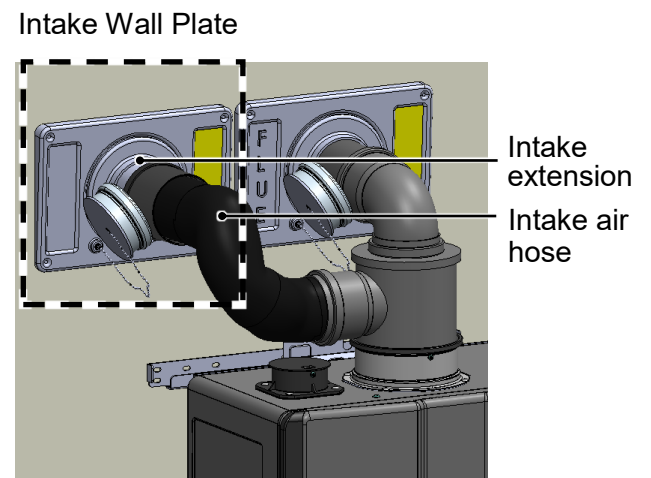
- Insert the concentric to two-pipe adapter into the top of the tankless water heater.



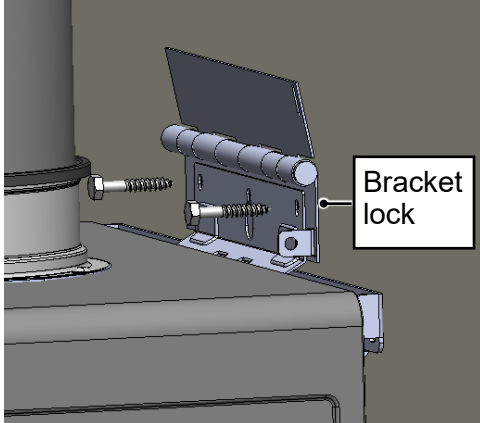
- Connect the exhaust vent to the exhaust extension penetrating through the exhaust wall plate.



- Connect the intake air hose to the intake extension penetrating through the intake wall plate.



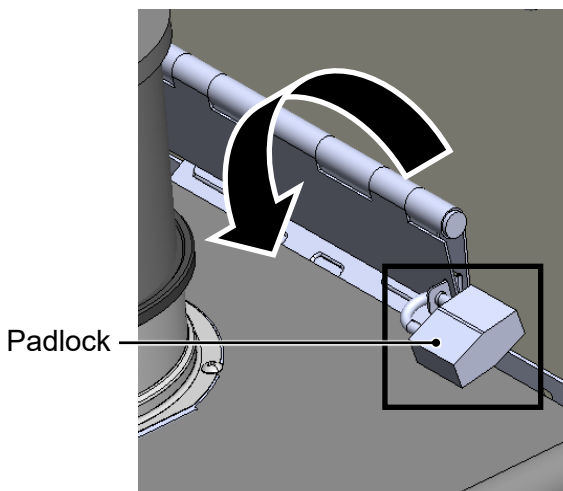
- Place the bracket lock behind the water heater mounting bracket and fasten it to the wall using the proper hardware (field-supplied).



- Swing the front of the bracket lock down to cover the mounting bracket. Place a padlock (field-supplied) on the bracket.

**⚠ CAUTION**

Only qualified professionals who are trained on the Rinnai Vertical Common Venting System should have access to the padlock key or code.



## Post-Installation Checklist (Tankless Water Heaters)

Complete the following checklist when installation is complete. You should be able to answer YES to each question. If you answer NO, installation is not complete.

CHECKLIST	YES	NO
Did you refer to the “Rinnai Tankless Water Heater Installation and Operation Manual” for proper installation of the tankless water heaters?	<input type="checkbox"/>	<input type="checkbox"/>
Have you verified the tankless water heaters meet the clearance requirements as stated in the “Rinnai Tankless Water Heater Installation and Operation Manual?”	<input type="checkbox"/>	<input type="checkbox"/>
Have you verified the installation conforms with local codes or, in the absence of local codes, with the <i>National Fuel Gas Code, ANSI Z223.1/NFPA 54</i> or the <i>Natural Gas and Propane Installation Code, CSA B149.1</i> ?	<input type="checkbox"/>	<input type="checkbox"/>
CUSTOMER COMMUNICATION		
Did you explain how to operate the tankless water heater, safety guidelines, maintenance, and the warranty to the customer?	<input type="checkbox"/>	<input type="checkbox"/>
Have you explained the importance of not blocking the vent termination or air intake to the customer?	<input type="checkbox"/>	<input type="checkbox"/>
Did you inform the customer if isolation valves or a water softening system is not installed?	<input type="checkbox"/>	<input type="checkbox"/>
Did you leave this manual taped to one of the tankless water heaters or give the manual directly to the customer?	<input type="checkbox"/>	<input type="checkbox"/>

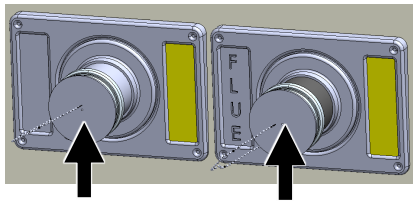
### ➔ IMPORTANT

Installation of the tankless water heaters onto the Vertical Common Venting System is complete. Refer to the “Rinnai Tankless Water Heater Installation and Operation Manual” for additional water heater installation steps.

# 7. Servicing

## DANGER

If a water heater has not been installed or needs to be removed, the tethered caps (attached to the wall plates) must be placed over the 3 in. (80 mm) intake and exhaust extensions; the cap blocks and prevents exhaust leakage. If the tethered cap is not placed over the extensions, carbon monoxide poisoning may result, causing personal injury or death. The tethered cap must remain attached to the intake and exhaust wall plates for the life of the system.



Tethered caps attached to wall plates

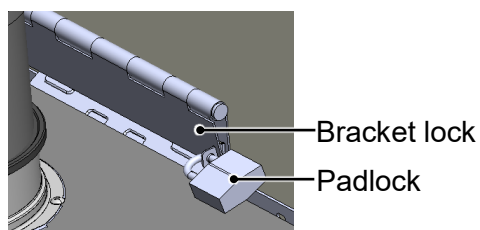
## WARNING

- Only professionals trained on the Rinnai Vertical Common Venting System should service the tankless water heaters connected to the system.
- If a tankless water heater needs to be replaced, it must be replaced with a Rinnai SENSEI™ Condensing Tankless Water Heater.

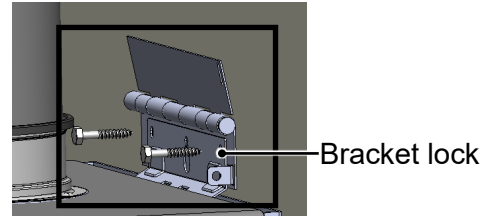
## Instructions

If a tankless water heater needs to be serviced or removed from the wall, follow the steps below.

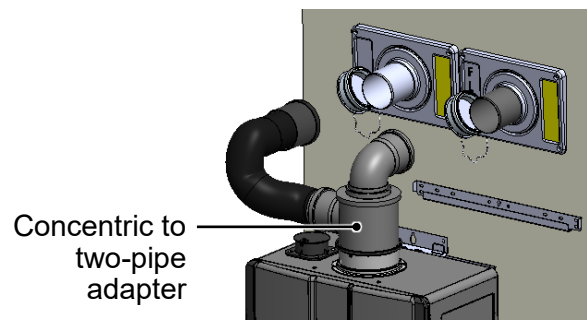
1. Unlock the padlock on the bracket lock.



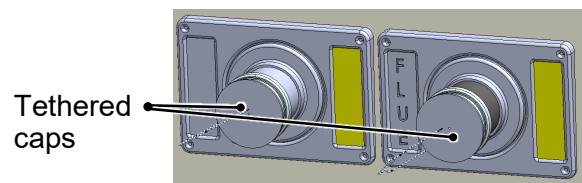
2. Unscrew the bracket lock from the wall.



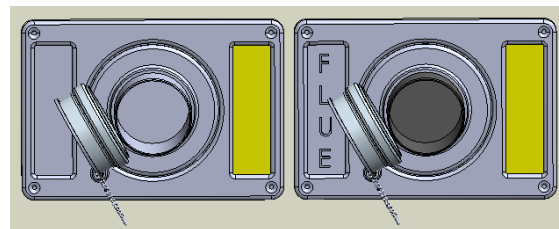
3. Remove the water heater and concentric to two-pipe adapter (joined together) from the wall.



4. Place the tethered cap over the intake and exhaust vent pipe.

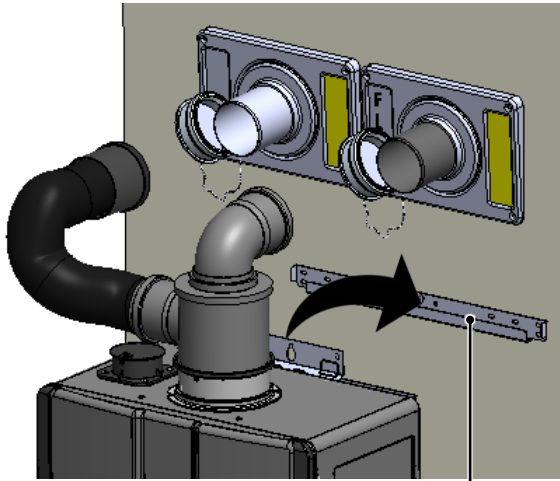


5. After the tethered cap is securely placed over the vent pipes, service or maintenance to the system may be performed.
6. To reconnect the tankless water heater, remove the tethered caps over the intake and exhaust vent pipes.





7. Hang the tankless water heater onto the hanging bracket.

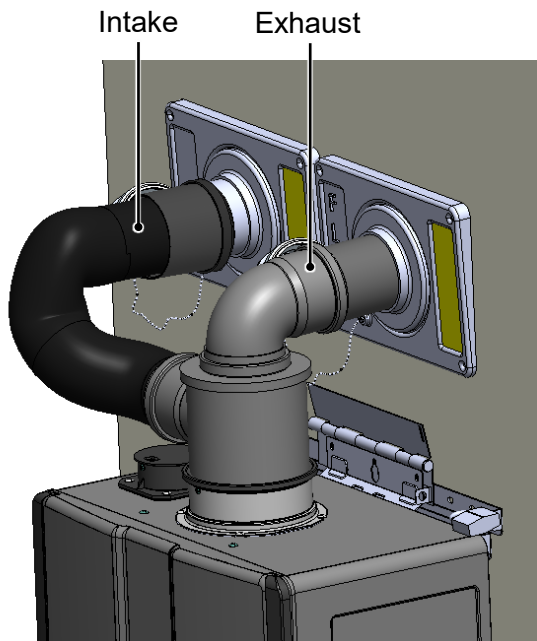


Hanging bracket

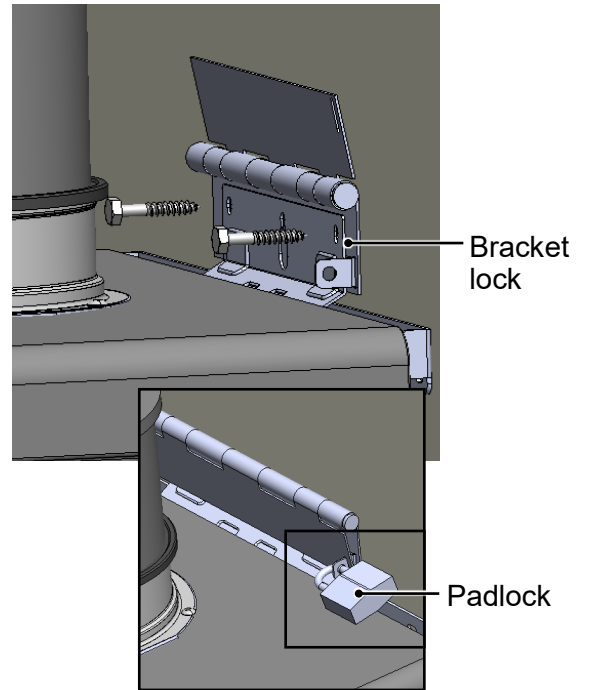
8. Reconnect the intake hose to the intake vent pipe.

Reconnect the exhaust vent to the exhaust vent pipe.

Make sure the intake and exhaust pipes are firmly pushed into place.



9. Reattach the bracket lock and padlock to the wall.



# 8. Maintenance

The Vertical Common Venting System must be inspected, maintained, and repaired by a qualified professional. The qualified professional must verify proper operation after servicing.

## ▶ IMPORTANT

For tankless water heater maintenance, refer to the “Rinnai Tankless Water Heater Installation and Operation Manual” supplied with each tankless water heater in the Vertical Common Venting System.

## Inspection

### Annual Inspection:

Conduct an annual inspection of the venting system focusing on the areas below:

<input type="checkbox"/>	Check the vent system connection joints for condensate leakage. Loose joints or damaged seals must be replaced immediately.
<input type="checkbox"/>	Check the vent terminations for obstructions, such as insects, nests, or any other foreign material.
<input type="checkbox"/>	Check the condensate drain hose for obstructions or blockages.
<input type="checkbox"/>	Inspect the support brackets to ensure rigidity.
<input type="checkbox"/>	Inspect and clean the condensate trap (instructions in next section).

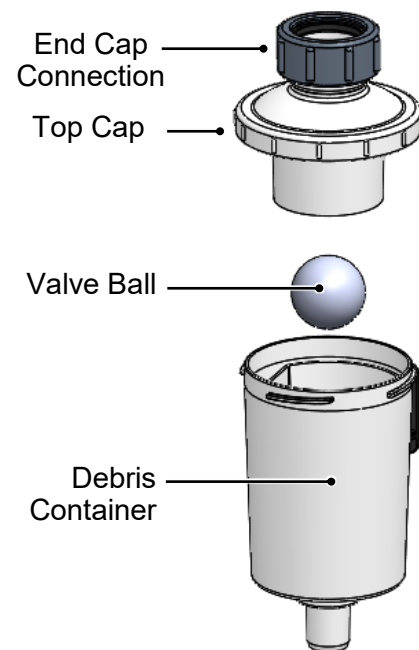
## Condensate Trap

To inspect and clean the condensate trap, follow the steps below.

## ▶ IMPORTANT

If any component is damaged, the entire trap must be replaced.

1. Remove the top cap (gently twist to the left and pull up).
2. Carefully remove the valve ball from the debris container and clean out debris from the container.
3. Clean the condensate trap components with water only. DO NOT use detergents or solvents.
4. Reassemble the components as shown in the diagram below.



# Appendix A: Condensate Guidelines

- Condensate is produced in the Vertical Common Venting System when the Tankless Water Heaters are operating. Condensate must be drained to prevent malfunction, equipment failure, or property damage. Condensate should be disposed according to local codes. Refer to the *National Fuel Gas Code, ANSI Z223.1/NFPA 54*, or the *Natural Gas and Propane Installation Code, CSA B149.1* for condensate disposal.
- Condensate can be disposed of by the tankless water heaters and/or separate condensate outlets in the Vertical Common Venting System.
- A condensate trap must be installed at any drain point to prevent exhaust flue gasses from exiting.
- The condensate trap supplied with this system has an integrated valve that temporarily blocks condensate flow if high (wind) pressures cause a pressure rise in the vent system. The condensate trap integrated valve will also prevent the trap from drying out if the system is off for a long period of time.
- The condensate trap provided with this system does not require priming.
- Third party condensate valves (or a hose loop) do need priming to be effective. Do not fire the appliances before the condensate traps are inspected and/or primed; otherwise, flue gasses can escape from the system.
- All subsequent drains must have a minimum diameter of 1/2 in. (12 mm) and be protected (if applicable) from freezing.
- Ensure that the condensate drain does not freeze.
- Rinnai recommends installing a condensate neutralizer which allows condensate to flow through. The neutralizer also neutralizes media to raise the pH of the condensate to a level that will help prevent corrosion of the drain and public sewer system.

## Creating a Healthier Way of Living

Learn more about Rinnai high-performance Tankless Water Heaters, Hybrid Water Heating Systems, Boilers, Vent-Free Fan Convectors and EnergySaver® Direct Vent Wall Furnaces at:

**[rinnai.us](http://rinnai.us) | [rinnai.ca](http://rinnai.ca)**

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