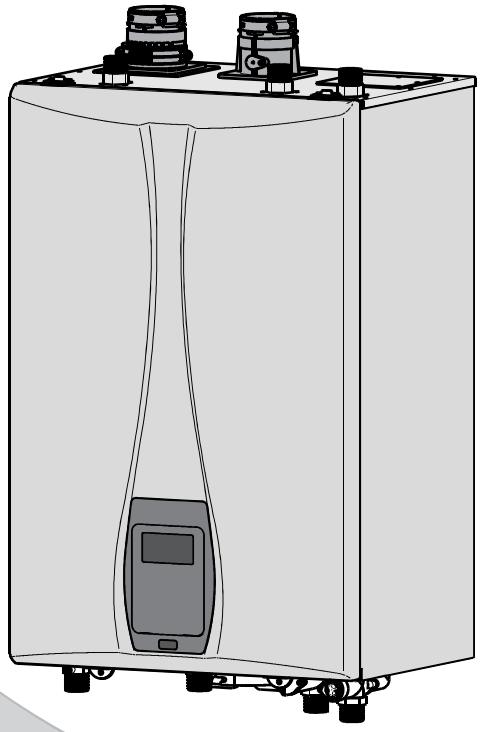


REVOLUTION WATER HEATER

Installation Manual

Model

- VX 9
- VXP 9

Keep this manual near the water heater for future reference whenever maintance or service is required.

Low NOx
Complies with the requirement of SCAQMD Rule 1146.2

ENERGY STAR

Certified to NSF/ANSI 372

AHRI CERTIFIED
www.ahridirectory.org

* Lead Free

* The wetted surface of this product contacted by consumable water contains less than one quarter of one percent (0.25%) of lead by weight.

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

- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- WHAT TO DO IF YOU SMELL GAS
  - Do not try to light any appliance.
  - Do not touch any electrical switch; do not use any phone in your building.
  - Immediately call your gas supplier from a neighborís 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.

- The installation must conform with local codes or, in the absence of local codes, the National Fuel Gas Code, ANSI Z223.1/NFPA 54 and/or CSA B149.1, Natural Gas and Propane Installation Code.
- When applicable, the installation must conform with the Manufactured Home Construction and Safety Standard, Title 24 CFR, Part 3280 and/or CAN/CSA Z240 MH Series, Mobile Homes.

Safety Information

The following safety symbols are used in this manual for user's safety. Read this manual carefully and follow all instructions to avoid property damage, fire, explosion, personal injury, or death.

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

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

Caution Indicates a potentially hazardous situation which, if not avoided, could result in property damage.

Danger

If you smell gas:

- Do not try to light any appliance.
- Do not touch any electrical switches or use landline phones.
- From a neighbor’s phone, call your gas provider and follow their instructions.
- If you cannot reach your gas provider, call the fire department.

Do not use or store flammable products, such as gasoline, solvents, or adhesives in the same room or area as the water heater.

- Vapors from flammable liquids can explode and/or catch fire causing death or severe burns.
- Keep flammable products far away from the water heater and store them in approved containers. Keep the containers tightly closed and out of the reach of children.
- The Water heater has a main burner flame that can come on at any time and will ignite flammable vapors.
- Vapors cannot be seen and are heavier than air. Vapors travel a long way on the floor and can be carried from other rooms to the main burner flame by air currents.

Avoid using hot water over 125°F.

- Water temperature over 125°F can cause severe burns or death from scalding.
- Children, the disabled and the elderly are at highest risk of being scalded.
- Test water before bathing or showering.

Temperature	Time to Produce Serious Burn	Temperature	Time to Produce Serious Burn
120 °F (48 °C)	More than 5 minutes	140 °F (60 °C)	Less than 5 seconds
125 °F (51 °C)	1.5 to 2 minutes	145 °F (62 °C)	Less than 3 seconds
130 °F (54 °C)	Approx. 30 seconds	150 °F (65 °C)	Approx. 1.5 seconds
135 °F (57 °C)	Approx. 10 seconds	155 °F (68 °C)	Approx. 1 second

Warning

- Do not store combustibles, such as papers or laundry, near the water heater or venting system.
  Failure to do so may result in fire or explosion.
- Do not store or use gasoline or other flammable liquids near this water heater.
  Failure to do so may result in fire or explosion.
- Do not store or use compressed gases, such as hair sprays or spray paints, near the water heater or venting system, including the vent termination.
  Failure to do so may result in fire or explosion.
- Do not remove the front cover unless the power to the water heater is turned offor disconnected.
  Failure to do so may result in electric shock.
- Do not touch the internal components of the water heater or the power cord with wet hands.
  Failure to do so may result in electric shock.
- Do not operate the water heater with the front cover opened.
  Failure to do so may result in fire or carbon monoxide (CO) poisoning, which may result in property damage, personal injury, or death.
- Do not operate the water heater without proper venting.
  Failure to do so may result in fire or carbon monoxide (CO) poisoning, which may result in property damage, personal injury, or death.

Caution

- Do not use the water heater for anything other than its intended purpose, as described in this manual.
  Failure to do so may result in property damage, personal injury, or death.
- Do not turn on the water heater unless the water and gas supplies are fully opened.
  Failure to do so may damage the water heater.
- Do not use unapproved replacement or accessory parts.
  Failure to do so may result in improper or dangerous operation and will void the manufacturer's warranty.
- Label all wires prior to disconnection when servicing controls.
  Wiring errors can cause improper and dangerous operation. Verify proper operation after servicing.
- Do not place anything in or around the vent terminals that could obstruct the air flow in or out of the water heater.
  Failure to do so may result in fire or carbon monoxide (CO) poisoning, which may result in property damage, personal injury, or death.
- This water heater has been approved for use in the USA and Canada only.
  Using the water heater in any other country will void the manufacturer's warranty.
- Should overheating occur or the gas supply fails to shut off, turn off the manual gas control valve to the appliance.

Operating Instructions

1) STOP! Read the safety information on the manual.
2) Set the thermostat to lowest setting.
3) Turn off all electric power to the appliance.
4) Do not attempt to light the burner by hand.
5) Turn the gas control manual valve (installed on the gas supply line external to the unit) clockwise to the position.
6) Wait five (5) minutes to clear out any gas. If you then smell gas, STOP! If you don't smell gas, go to the next step.
7) Turn the gas control manual valve(installed on the gas supply line external to the unit) counter clockwise to the full On position.
8) Turn on all electric power to the appliance.
9) Wait unit default temperature(120°F) is displayed. Set desired water temperature. Turn on hot water faucet.
10) Set the thermostat to desired setting.
11) If the appliance will not operate, follow the instructions “To Turn Off Gas To Appliance” and call your service technician or gas supplier.

To Turn Off Gas To Appliance

1) Set the thermostat to lowest setting.
2) Turn off all electric power to the appliance if service is to be performed.
3) Turn the gas control manual valve (installed on the gas supply line external to the unit) clockwise to the full OFF position.

Important Note for the State of Massachusetts

From Massachusetts Rules and Regulations 248 CMR 5.08:

(a) For all side wall horizontally vented gas fueled equipment installed in every dwelling, building or structure used in whole or in part for residential purposes, including those owned or operated by the Commonwealth and where the side wall exhaust vent termination is less than seven (7) feet above finished grade in the area of the venting, including but not limited to decks and porches, the following requirements shall be satisfied.

1. INSTALLATION OF CARBON MONOXIDE DETECTORS. At the time of installation of the side wall horizontal vented gas fuelled equipment, the installing plumber or gas fitter shall observe that a hard wired carbon monoxide detector with an alarm and battery back-up is installed on the floor level where the gas equipment is to be installed, in addition, the installing plumber or gas fitter shall observe that a battery operated or hard-wired carbon monoxide detector with an alarm is installed on each additional level of the dwelling, building or structure served by the side wall horizontal vented gas fueled equipment. It shall be the responsibility of the property owner to secure the services of qualified licensed professionals for the installation of hard-wired carbon monoxide detectors.
   a. In the event that the side wall horizontally vented gas fueled equipment is installed in a crawl space or an attic, the hard-wired carbon monoxide detector with alarm and battery back-up may be installed on the next adjacent floor level.
   b. In the event that the requirements of this subdivision cannot be met at the time of completion of installation, the owner shall have a period of thirty (30) days to comply with the above requirements; provided, however, that during said thirty (30) day period, a battery operated carbon monoxide detector with an alarm shall be installed.
2. APPROVED CARBON MONOXIDE DETECTORS. Each carbon monoxide detector as required in accordance with the above provisions shall comply with NFPA 720 and be ANSI/UL 2034 listed as IAS certified.
3. SIGNAGE. A metal or plastic identification plate shall be permanently mounted to the exterior of the building at a minimum height of eight (8) feet above grade directly in line with the exhaust vent terminal for the horizontally vented gas fuelled heating appliance or equipment. The sign shall read, in print size no less than one-half (1/2) inch in size, “GAS VENT DIRECTLY BELOW. KEEP CLEAR OF ALL OBSTRUCTIONS”.
4. INSPECTION. The state or local gas inspector of the side wall horizontally vented gas fueled equipment shall not approve the installation unless, upon inspection, the inspector observes carbon monoxide detectors and signage installed in accordance with the provisions of 248 CMR 5.089(2)(a) 1 through 4.

(b) EXEMPTIONS. The following equipment is exempt from 248 CMR 5.089(2)(a) 1 through 4.

1. The equipment listed in Chapter 10 entitled “Equipment Not Required To Be Vented” in the most current edition of NFPA 54 as adopted by the Board; and
2. Product Approved side wall horizontal vented gas fueled equipment installed in a room or structure separate from the dwelling, building or structure used in whole or in part for residential purposes.

(c) MANUFACTURER REQUIREMENTS – GAS EQUIPMENT VENTING SYSTEM PROVIDED. When the manufacturer of Product Approved side wall horizontally vented gas equipment provides a venting system design or venting system components with the equipment, the instructions provided by the manufacturer for installation of the equipment and the venting system shall include:

1. Detailed instructions for the installation of the venting system design or the venting system components; and
2. A complete parts list for the venting system design or venting system.

(d) MANUFACTURER REQUIREMENTS – GAS EQUIPMENT VENTING SYSTEM NOT PROVIDED. When the manufacturer of a Product Approved side wall horizontally vented gas fueled equipment does not provide the parts for venting the fuel gases, but identifies “special venting systems”, the following requirements shall be satisfied by the manufacturer.

1. The referenced “special venting system” instructions shall be included with the appliance or equipment installation instructions; and
2. The “special venting systems” shall be Product Approved by the Board, and the instructions for that system shall include a parts list and detailed installation instructions.

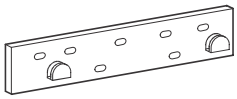
(e) A copy of all installation instructions for all Product Approved side wall horizontally vented gas fueled equipment, all venting instructions, all parts lists for venting instructions, and/or all venting design instructions shall remain with the appliance or equipment at the completion of the installation.

Table of Contents

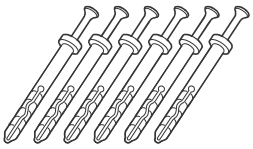
General Information

Included Items

The following items are included with the water heater. Check each of the following items before installation.



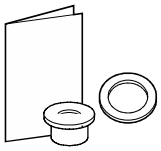
Wall mounting bracket



Ø5 x 46 Tapping Screw
Part No. 3100201

Tapping screws & anchors

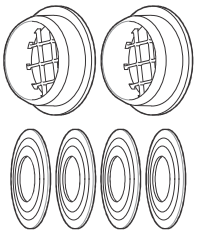
Installation and User manual



Gas conversion kit

Quick installation manual

Spare parts



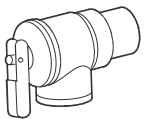
2" Vent termination cap & Wall flange

Notice

If there is a missing item, please contact Technical Support at 1-800-761-0053.

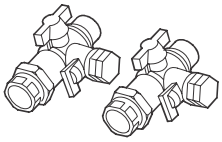
Optional Accessories

The following optional accessories are not included with the water heater, but may be necessary for the installation. Check the need for any of the following optional accessories before installation.



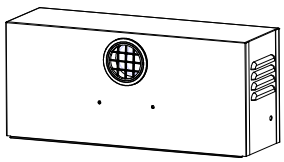
Pressure relief valve

Remote controller

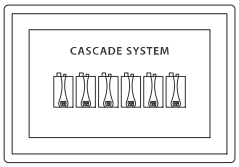


Isolation valve kits

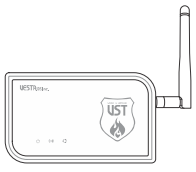
Cascade communication cable

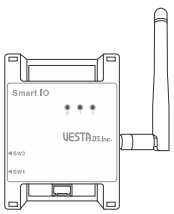


Outdoor Vent Kit



Cascade controller





VESTA Wi-Fi

Backflue damper kit

Notice

These items arent offered in the accesory price sheet.

Specifications

The following table shows the specifications for the water heater. Additional specifications about water, gas, electric, and air supplies (venting) appear in each installation section.

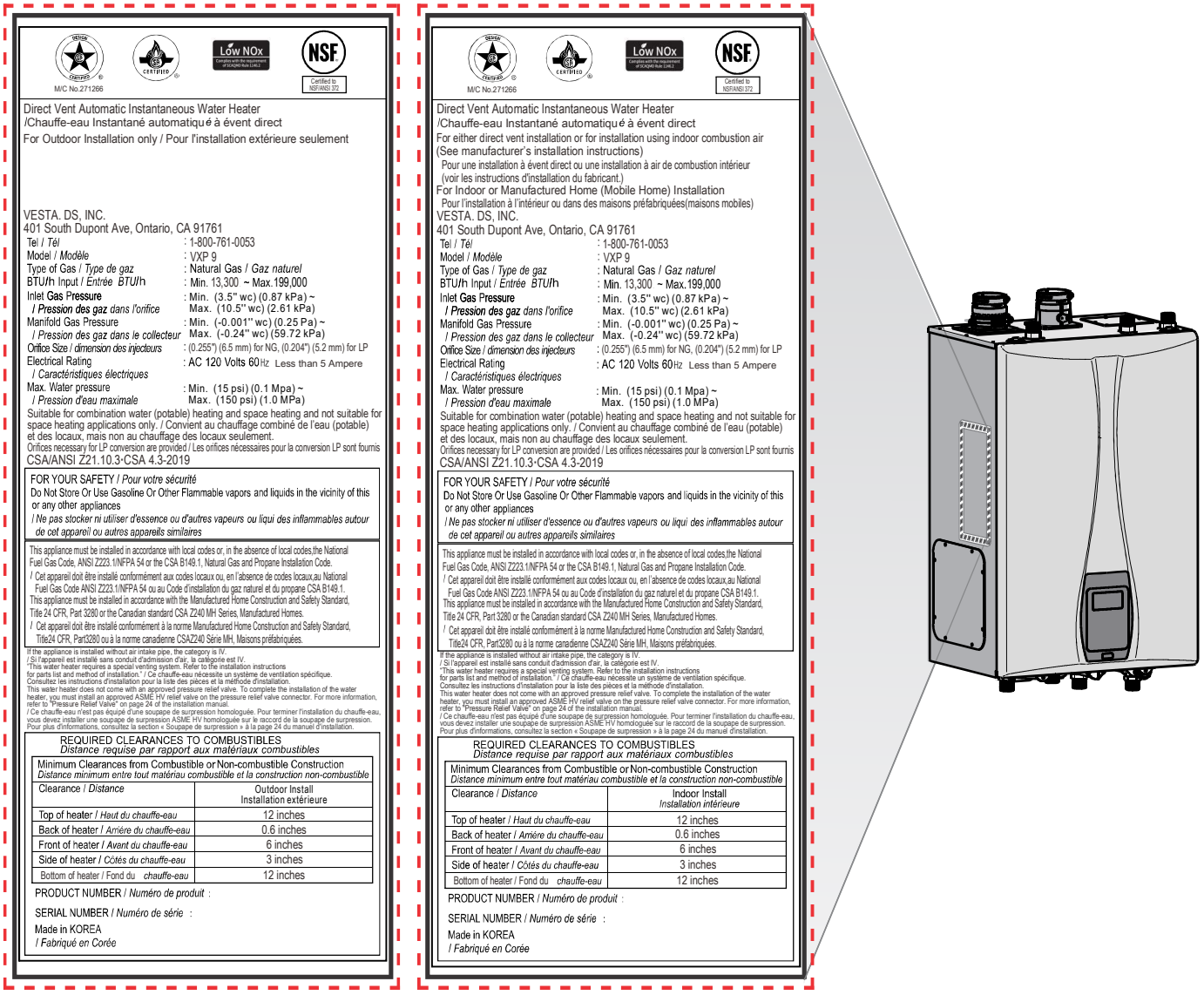
Item		VX 9	VXP 9
Heat Capacity (Input)	Natural Gas	13,300 – 199,000 BTU/H	
	Propane Gas	13,300 – 199,000 BTU/H	
Uniform Energy Factor	Natural Gas	0.96	
	Propane Gas	0.96	
Flow Rate (DHW)	35°F (19°C) Temp Rise	11.2 GPM (42 LPM)	
	45°F (25°C) Temp Rise	8.7 GPM (33 LPM)	
	77°F (43°C) Temp Rise	5.1 GPM (19 LPM)	
Dimensions (W x D x H)		18.1“ x 14.7” x 27.6“ (460 mm x 373 mm x 700 mm)	
Weight		95 lbs (43 kg)	100 lbs (45.5 kg)
Installation Type		Indoor or Outdoor wall-hung	
Venting Type		Forced draft direct vent (Category IV)	
Ignition		Electronic ignition	
Water Pressure		15 - 150 psi	
Natural Gas Supply Pressure		3.5" - 10.5" WC	
Propane Gas Supply Pressure		8" - 13" WC	
Natural Gas Manifold Pressure (Min. - Max.)		-0.24" - -0.001" WC	
Propane Gas Manifold Pressure (Min. - Max.)		-0.36" - -0.001" WC	
Minimum Flow Rate		0.5 GPM (2.0 LPM)	
Connection Sizes	Cold Water Inlet	3/4" NPT	
	Hot Water Outlet	3/4" NPT	
	Recirculation Water Inlet	3/4" NPT (Only VXP 9 model)	
	Gas Inlet	3/4" NPT	
Power Supply	Main Supply	120V AC, 60 Hz / use less than 5 AMP	
Materials	Heat Exchanger Coil	Stainless steel	
Venting	Exhaust	2" or 3" PVC, CPVC, Polypropylene 2" or 3" Special gas vent type BH (Class II, A/B/C)	
	Intake	2" or 3" PVC, CPVC, Polypropylene 2" or 3" Special gas vent type BH (Class II, A/B/C)	
	Vent Clearances	0" to combustibles	
Safety Devices		Flame rod, APS, Over heat preventer, Exhaust temperature high limit sensor, Leak detector, Power surge fuse	
Power Consumption		75 W	165 W

Rating Plate

Danger

The gas type and electricity voltage must match the rating plate. Using a different gas type and electricity voltage will cause the water heater to malfunction.

Before the installation, check the rating plate located on the side of the water heater to ensure that the water heater matches the gas type, gas pressure, water pressure, and electrical supply available in the installation location. If the water heater does not match each of these ratings, do not install the water heater. If the gas conversion is required, the included gas conversion kit must be used.



M/C No.271266

Direct Vent Automatic Instantaneous Water Heater
/Chauffe-eau Instantané automatiqué à évent direct
For Outdoor Installation only / Pour l'installation extérieure seulement

VESTA. DS, INC.
401 South Dupont Ave, Ontario, CA 91761

Tel / *Tél*	: 1-800-761-0053
Model / *Modèle*	: VXP 9
Type of Gas / *Type de gaz*	: Natural Gas / *Gaz naturel*
BTU/h Input / *Entrée BTU/h*	: Min. 13,300 ~ Max.199,000
Inlet Gas Pressure / *Pression des gaz dans l'orifice*	: Min. (3.5" wc) (0.87 kPa) ~ Max. (10.5" wc) (2.61 kPa)
Manifold Gas Pressure / *Pression des gaz dans le collecteur*	: Min. (-0.001" wc) (0.25 Pa) ~ Max. (-0.24" wc) (59.72 kPa)
Orifice Size / *dimension des injecteurs*	: (0.255") (6.5 mm) for NG, (0.204") (5.2 mm) for LP
Electrical Rating / *Caractéristiques électriques*	: AC 120 Volts 60Hz Less than 5 Ampere
Max. Water pressure / *Pression d'eau maximale*	: Min. (15 psi) (0.1 Mpa) ~ Max. (150 psi) (1.0 MPa)

Suitable for combination water (potable) heating and space heating and not suitable for space heating applications only. / Convient au chauffage combiné de l'eau (potable) et des locaux, mais non au chauffage des locaux seulement.
Orifices necessary for LP conversion are provided / Les orifices nécessaires pour la conversion LP sont fournis
CSA/ANSI Z21.10.3·CSA 4.3-2019

FOR YOUR SAFETY / *Pour votre sécurité*
Do Not Store Or Use Gasoline Or Other Flammable vapors and liquids in the vicinity of this or any other appliances
/ *Ne pas stocker ni utiliser d'essence ou d'autres vapeurs ou liqui des inflammables autour de cet appareil ou autres appareils similaires*

This appliance must be installed in accordance with local codes or, in the absence of local codes,the National Fuel Gas Code, ANSI Z223.1/NFPA 54 or the CSA B149.1, Natural Gas and Propane Installation Code.
/ Cet appareil doit être installé conformément aux codes locaux ou, en l'absence de codes locaux,au National Fuel Gas Code ANSI Z223.1/NFPA 54 ou au Code d'installation du gaz naturel et du propane CSA B149.1.
This appliance must be installed in accordance with the Manufactured Home Construction and Safety Standard, Title 24 CFR, Part 3280 or the Canadian standard CSA Z240 MH Series, Manufactured Homes.
/ Cet appareil doit être installé conformément à la norme Manufactured Home Construction and Safety Standard, Title24 CFR, Part3280 ou à la norme canadienne CSAZ240 Série MH, Maisons préfabriquées.

If the appliance is installed without air intake pipe, the category is IV.
/ Si l'appareil est installé sans conduit d'admission d'air, la catégorie est IV.
*This water heater requires a special venting system. Refer to the installation instructions for parts list and method of installation." / Ce chauffe-eau nécessite un système de ventilation spécifique. Consultez les instructions d'installation pour la liste des pièces et la méthode d'installation.
This water heater does not come with an approved pressure relief valve. To complete the installation of the water heater, you must install an approved ASME HV relief valve on the pressure relief valve connector. For more information, refer to "Pressure Relief Valve" on page 24 of the installation manual.
/ Ce chauffe-eau n'est pas équipé d'une soupape de surpression homologuée. Pour terminer l'installation du chauffe-eau, vous devez installer une soupape de surpression ASME HV homologuée sur le raccord de la soupape de surpression. Pour plus d'informations, consultez la section « Soupape de surpression » à la page 24 du manuel d'installation.

REQUIRED CLEARANCES TO COMBUSTIBLES
Distance requise par rapport aux matériaux combustibles

Minimum Clearances from Combustible or Non-combustible Construction
Distance minimum entre tout matériau combustible et la construction non-combustible

Clearance / *Distance*	Outdoor Install Installation extérieure
Top of heater / *Haut du chauffe-eau*	12 inches
Back of heater / *Arrière du chauffe-eau*	0.6 inches
Front of heater / *Avant du chauffe-eau*	6 inches
Side of heater / *Côtés du chauffe-eau*	3 inches
Bottom of heater / Fond du *chauffe-eau*	12 inches

PRODUCT NUMBER / *Numéro de produit* :
SERIAL NUMBER / *Numéro de série* :
Made in KOREA
/ *Fabriqué en Corée*

[Outdoor rating plate]

M/C No.271266

Direct Vent Automatic Instantaneous Water Heater
/Chauffe-eau Instantané automatiqué à évent direct
For either direct vent installation or for installation using indoor combustion air (See manufacturer's installation instructions)
Pour une installation à évent direct ou une installation à air de combustion intérieur (voir les instructions d'installation du fabricant.)
For Indoor or Manufactured Home (Mobile Home) Installation
Pour l'installation à l'intérieur ou dans des maisons préfabriquées(maisons mobiles)

VESTA. DS, INC.
401 South Dupont Ave, Ontario, CA 91761

Tel / *Tél*	: 1-800-761-0053
Model / *Modèle*	: VXP 9
Type of Gas / *Type de gaz*	: Natural Gas / *Gaz naturel*
BTU/h Input / *Entrée BTU/h*	: Min. 13,300 ~ Max.199,000
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Orifices necessary for LP conversion are provided / Les orifices nécessaires pour la conversion LP sont fournis
CSA/ANSI Z21.10.3·CSA 4.3-2019

FOR YOUR SAFETY / *Pour votre sécurité*
Do Not Store Or Use Gasoline Or Other Flammable vapors and liquids in the vicinity of this or any other appliances
/ *Ne pas stocker ni utiliser d'essence ou d'autres vapeurs ou liqui des inflammables autour de cet appareil ou autres appareils similaires*

This appliance must be installed in accordance with local codes or, in the absence of local codes,the National Fuel Gas Code, ANSI Z223.1/NFPA 54 or the CSA B149.1, Natural Gas and Propane Installation Code.
/ Cet appareil doit être installé conformément aux codes locaux ou, en l'absence de codes locaux,au National Fuel Gas Code ANSI Z223.1/NFPA 54 ou au Code d'installation du gaz naturel et du propane CSA B149.1.
This appliance must be installed in accordance with the Manufactured Home Construction and Safety Standard, Title 24 CFR, Part 3280 or the Canadian standard CSA Z240 MH Series, Manufactured Homes.
/ Cet appareil doit être installé conformément à la norme Manufactured Home Construction and Safety Standard, Title24 CFR, Part3280 ou à la norme canadienne CSAZ240 Série MH, Maisons préfabriquées.

If the appliance is installed without air intake pipe, the category is IV.
/ Si l'appareil est installé sans conduit d'admission d'air, la catégorie est IV.
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REQUIRED CLEARANCES TO COMBUSTIBLES
Distance requise par rapport aux matériaux combustibles

Minimum Clearances from Combustible or Non-combustible Construction
Distance minimum entre tout matériau combustible et la construction non-combustible

Clearance / *Distance*	Indoor Install *Installation intérieure*
Top of heater / *Haut du chauffe-eau*	12 inches
Back of heater / *Arrière du chauffe-eau*	0.6 inches
Front of heater / *Avant du chauffe-eau*	6 inches
Side of heater / *Côtés du chauffe-eau*	3 inches
Bottom of heater / Fond du *chauffe-eau*	12 inches

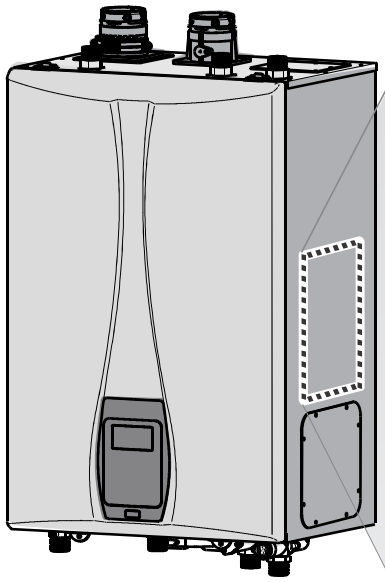
PRODUCT NUMBER / *Numéro de produit* :
SERIAL NUMBER / *Numéro de série* :
Made in KOREA
/ *Fabriqué en Corée*

[Indoor rating plate]

* When installing the outdoor model, attach the rating plate in the outdoor kit over the red marking.

Warning label

Before the operation, check the warning label located on the side of the water heater to ensure that check the operating precautions and operating procedures of the water heater.



DANGER

Keep flammable products: / Garder les produits inflammables:
1.Far away from heater. / Très loin du chauffe-eau
2.In approved containers. / Dans des récipients approuvés.
3.Tightly closed. / Dans des récipients fermés hermétiquement.
4.Out of children's reach. / Hors de la portée des enfants.

Vapors from flammable liquids explode and catch fire causing death or severe burns. Do not use or store flammable products such as gasoline, solvents or adhesives in the same room or area near the water heater.
/ Les vapeurs des liquides inflammables exploseront, s'enflammeront et entraineront la mort ou des brulures graves. Ne pas utiliser ni stocker des produits inflammables, comme de l'essence, des solvants ou des adhesifs, dans la même pièce que le chauffe-eau, ni près de celui-ci.
Vapors: / Les vapeurs:
1.Cannot be seen, / Sont invisibles.
2.Vapors are heavier than air. / Sont plus lourdes que l'air.
3.Go a long way on the floor. / Se propagent sur le plancher sur une grande distance.
4.Can be carried from other rooms to the main burner by air currents. / Peuvent être transportées à partir d'autres pièce, jusqu'à la flamme de veilleuse, par les courants d'air.

CAUTION

Hotter water increases the risk of scald injury. Befoer changing temperature setting, see instruction manual.
/ De l'eau plus chaude augmente le risque de brulure. Voir la notice d'instructions avant de modifier le réglage de la température.

WARNING : California proposition 65 lists chemical substances know to the state to cause cancer, birth defects, death, serious illness or other reproductive harm. This product may contain such substances, be their origin from fuel combustion (gas, oil) or components of the product it self.

A temperature and pressure relief valve listed as complying with the standard for Relief Valve and Automatic Gas Shutoff Devices for Hot Water Supply System, ANSI Z21.22, shall be installed at the time of installation of the heater in the location specified by the manufacturer, Local codes shall govern the installation of relief devices for safety operation of the water heater. The relief valve must not be removed or plugged.
/ Une vanne de décharge de pression et de température répertoriée, conformément aux normes relatives aux vannes de décharge et aux dispositifs d'arrêt automatique de gaz pour le système d'alimentation en eau ANSI Z21.22, doit être installée lors de l'installation du chauffe-eau, à un emplacement spécifié par le fabricant. l'installation des dispositifs de décharge doit respecter les règlements locaux afin de garantir un fonctionnement sécurisé du chauffe-eau. La vanne de décharge ne doit être ni déplacée ni bouchée.

FOR YOUR SAFETY READ BEFORE OPERATING
/ Pour votre sécuritélisez avant d'allumer

WARNING: If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or death. / AVERTISSEMENT : Si les informations contenues dans ces instructions ne sont pas suivies à la lettre, un incendie ou une explosion peut survenir, provoquant des dommages matériels, des blessures corporelles ou la mort.

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance. / Ne stockez pas et n'utilisez pas d'essence ou d'autres vapeurs et liquides inflammables à proximité de cet appareil ou de tout autre appareil.

WHAT TO DO IF YOU SMELL GAS / QUE FAIRE SI VOUS SENTEZ UNE ODEUR DE GAZ

1.DO not try to light any appliance./ Ne pas tenter d'allumer d'appareil.
2.DO not try touch any electric switch; do not use any phone in your building
/ Ne touchez aaucun interrupteur; ne pas vous servir des téléphones se trouvant dans le batiment.
3.Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
/ Appelez immediatement votre fournisseur de gaz depuis un voisin. Suivez les instructions du fournisseur.
4.If you cannot reach your gas supplier, call the fire department. / Si vous ne pouvez rejoindre le fournisseur, appelez le service des incendies.

Installation and service must be performed by qualified installer, service agency or the gas supplier. / L'installation et l'entretien doivent être effectués par un installateur qualifié, une agence de service ou le fournisseur de gaz.

A. This water heater does not have a pilot. It is equipped with and ignition device that automatically lights the burner. Do not try to light the burner by hand. /Ce chauffe-eau n'est pas équipé d'une veilleuse. Il est équipé d'un dispositif d'allumage automatique. N'essayez pas d'allumer le brûleur manuellement.
B. BEFORE OPERATING smell all around the water heater area for evidence of leaking gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor. / Avant toute utilisation, vérifiez l'odeur autour du chauffe-eau pour détecter toute fuite de gaz. N'oubliez pas de sentir le sol, car certains gaz sont plus lourds que l'air et se déposent sur le sol.
C.Use only your hand to turn the gas valve knob. Never use tools. If the knob will not turn bt hand, don't try to repair it. Call a qualified service technician. Force or attempted repair may result in a fire of explosion. / Ne poussez ou tournez la manette d'admission du gaz qu'ala main; ne jamais utiliser d'outil. Si la manetté reste coincee, nétentez pas de la reparer; appelez un technicien qualifie. Le fait de forcer la manette du de la reparer peut dedencher une explosion ou un incendie.
D.DO not use this water heater if any part has been under water. Immediately call a qualified service technician to inspect the water heater and to replace any damaged parts. / N"utilisez pas cet appareil s'il a eteplonge dans l'eau, meme partiellement. Faites inspecter l'appareil par un technicien qualifieet remplacez toute partie du systeme de controle et toute commande qui ont eteplonges dans l'eau.

OPERATING INSTRUCTIONS
/ Instructions d'allumage

1.STOP! Read the safety information above on the label. / ARRÊTEZ! Lisez les informations de sécurité ci-dessus sur l'étiquette
2.Set the thermostat to lowest setting. / Réglez le thermostat au plus bas.
3.Turn off all electric power to the appliance. / Coupez l'alimentation électrique de l'appareil.
4.Do not attempt to light the burner by hand. / Ne pas essayer d'allumer le brûleur manuellement.
5.Turn the gas control manual valve (installed on the gas supply line external to the unit) colackwise ↻ to the position. / Tournez la vanne de contrôl du gaz manuelle (installée sur la conduite d'alimentation en gaz externe de l'unité) dans le sens des aiguilles d'une montre jusqu'à la position.
6.Wait five (5)minutes to clear out any gas. If you then smell gas, STOP! Follow "B"in the safety information above on this label. If you don't smell gas, go to the next step. / Attendez cinq (5)minutes pour laisser échapper tout gaz. Si vous sentez une odeur de gaz, ARRÊTEZ! Suivez "B"dans les consignes de sécurité ci-dessus sur cette étiquette. Si vous ne sentez pas de gaz, passez à l'étape suivante.
7.Turn the gas control manual valve(installed on the gas supply line external to the unit) counterclockwise ↺ to the full ON position. / Tournez la soupape de contrôl du gaz manuelle (installée sur la conduite d'alimentation en gaz à l'extérieur de l'unité) dans le sens contraire des aiguilles d'une montre jusqu'à la position ON complète.
8.Turn on all electric power to the appliance. / Mettez l'alimentation électrique de l'appareil.
9.Wait unit default temperature(120°F)is displayed. Set desired water temperature. Turn on hot water faucet. / La température par défaut de l'unité de secours (120°F) est affichée. Réglez la température de l'eau désirée. Allumez le robinet d'eau chaude.
10.Set the thermostat to desired setting. / Réglez le thermostat à la position désirée.
11.If the apaliance will not operate, follow the instructions "To Turn Off Gas To Appliance" and cal your service technician or gas supplier. / Si l'appareil ne fonctionne pas, suivez les instructions <<Pour couper le gaz de l'appareil>> et appelez votre technicien d'entretien ou.

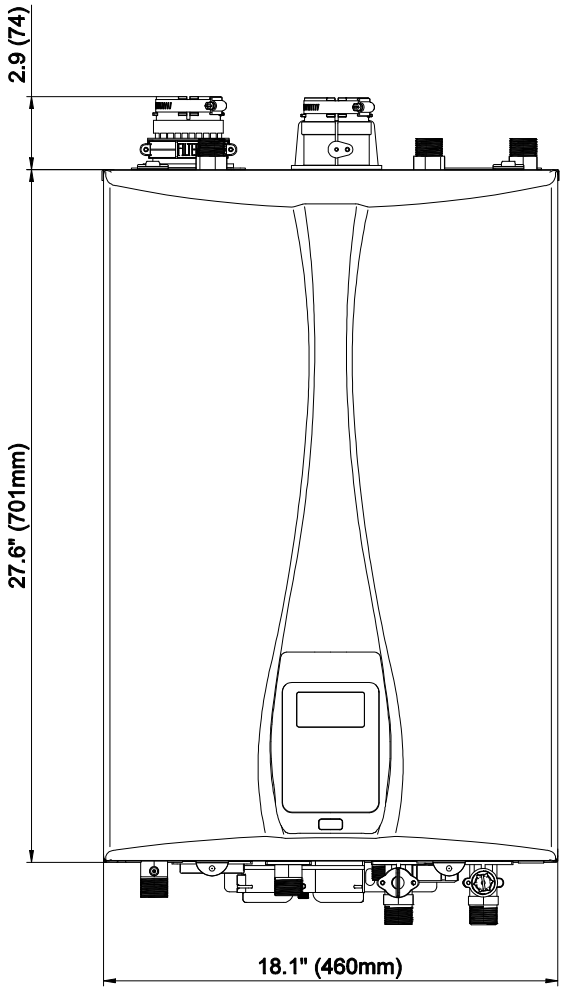
TO TURN OFF GAS TO APPLIANCE
/ Comment couper l'admission de gaz de l'appareil

1.Set the thermostat to lowest setting. / Réglez le thermostat au plus bas.
2.Turn off all electric power to the appliance if service is to be performed.
/ Coupez l'alimentation électrique de l'appareil si le service doit être exécuté.
3. Turn the gas control manual valve (installed on the gas supply line external to the unit) clockwise ↻ to the full OFF position.
/ Tourner la soupape de commande manuelle du gaz (installée sur la conduite d'alimentation en gaz externe de l'unité) dans le sens des aiguilles d'une montre jusqu'à la position OFF complète.

- This appliance must be installed in accordance with local codes or, in the absence of local codes, the National Fuel Gas code, ANSI Z223.1/NFPA 54 or the CSA B149.1, Natural Gas and Propane Installation Code.
  >> Cet appareil doit être installé selon les réglements locaux, ou en l'absence de tels réglements, selon le National Fuel Gas Code, ANSI Z223.1/NFPA 54, ou les, Code d'installation du gaz naturel et du propane, CSA-B149.1.
- The temperature and pressure relief valve provided by the manufacturer shall be installed at the time of installation of the heater in the location specified by the manufacturer. Local codes shall govern installation of relief devices. For safe operation of the water heater, the relief valve must not be removed or plugged. >> La soupape de sécurité de température et de pression fournie par le fabricant doit être installée lors de l'installation du chauffe-eau, à l'emplacement spécifié par le fabricant. Les réglementations locales régissent l'installation des dispositifs de sécurité. Pour un fonctionnement sécuritaire du chauffe-eau, la soupape de sécurité ne doit être ni retirée ni obturée.
- This water heater is provided with a combination temperature-pressure relief valve. For safe operation of te water heater, the relief valve(s) must not be removed from its designated point of installation or plugged. >> Ce chauffe-eau est équipé d'une soupape de sécurité combinée température-pression. Pour un fonctionnement sûr du chauffe-eau, la ou les soupapes de sécurité ne doivent pas être retirées de leur emplacement d'installation prévu ni bouchées.
- Be carefully to avoid contact with hot water coming out of the pressure relief valve and to prevent water damage when you operate the relief valve.
  >> Veillez à éviter tout contact avec l'eau chaude qui s'échappe de la soupape de surpression et à éviter d'endommager l'eau lorsque vous actionnez la soupape de surpression.
- The water heater shall not be connected to any heating system or component(s) previously used with a nonpotable water heating appliance.
  >> Le chauffe-eau ne doit jamais être relié à un système de chauffage ou à des composants précédemment utilisés sur un appareil de shauffage pour l'eau non potable.
- Toxic chemicals, such as used for boiler treatment, shall not be introduced into the potable water heater used for space heating.
  >> Les produits chimiques toxiques, utilisés pour le traitement des chaudières, ne doivent jamais être introduits dans le chauffe-eau pour l'eau potable, utilisé pour le chauffage d'espace.
- The manual gas shut off valve is not provided as an additional content of water heater. However, the manual gas shut off valve must be installed between the unit and the gas supply pipe by the installer.
  >> La soupape d'arrêt gaz manuelle n'est pas fournie avec les composants du chauffe-eau. Cependant, une soupape d'arrêt gaz manuelle doit être installée par un installateur agréé entre l'appareil et le tuyau d'alimentation gaz.
- When installed in a manufactured home (mobile home), the screen for openings specified shall be of metal with no less than 1/4 in (6.4mm) mesh.
  When using non-direct ventin for manufactured home (mobile home), provide two openings to allow for circulation of combustion air as specified by ANSI Z223.1 / CGA B-149.1 :
  *If outdoor make up air is provided, a minimum free area of 1 in2 per 4,000 BTU/H *If indoor make up air is provided, a minimum free area of 1 in2 per 1,000 BTU/H
  *Recommended vent materials : PVC schedule 40.
  >> Lorsqu'il est installé dans une maison préfabriquée (maison mobile), l'écran pour les ouvertures spécifiées doit être en métal avec un maillage d'au moins 6,4 mm (1/4 po).
  Fournissez deux ouvertures pour permettre la circulation de l'air de combustion, momme précisé par la norme ANSI Z223.1 / NFPA 54 ou CAN / CGA B-149.1 :
  *Si de l'air de compensation extérieur est fourni, une zone libre d'au moins 1po2 par 4,000 BTU/H *Si de l'air de compensation intérieur est fourni, une zone libre d'au moins 1po2, par 1,000 BTU/H
  *Matériaux de ventilation recommandés : PVC de diamètre 40.

Dimensions

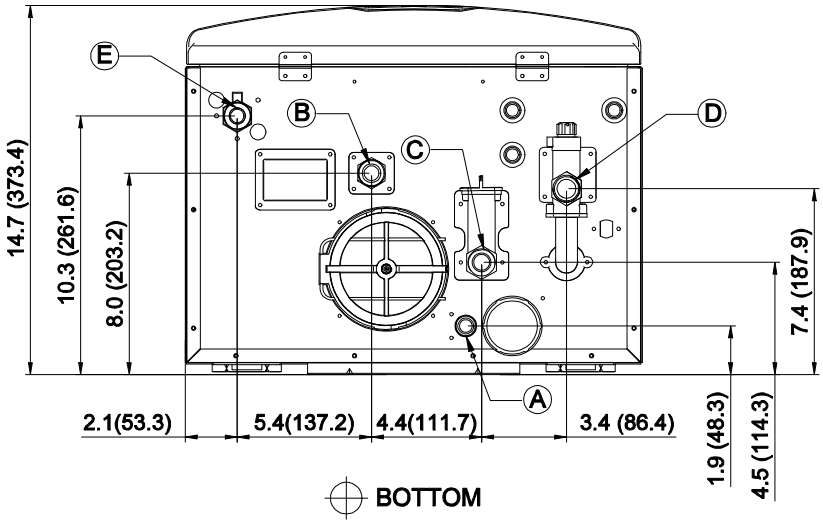
VXP 9 MODEL



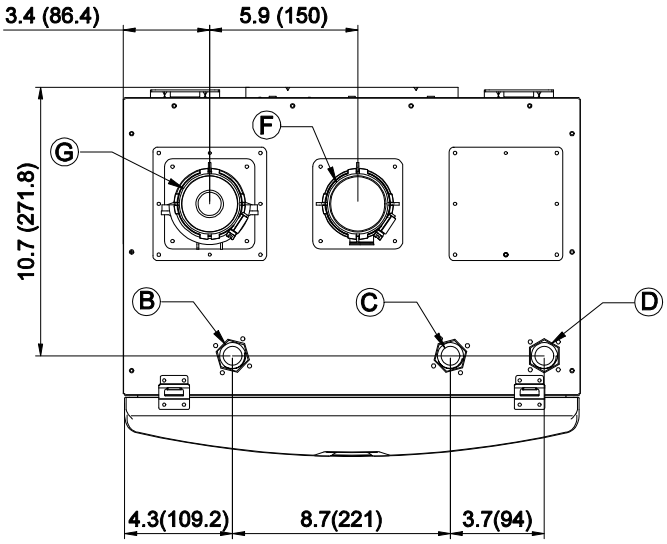
FRONT

[UNIT : Inch(mm)]

	Description	Diameter
Ⓐ	Condensate outlet	1/2"
Ⓑ	Hot water outlet	3/4"
Ⓒ	Recirculation inlet	3/4"
Ⓓ	Cold inlet	3/4"
Ⓔ	Gas inlet	3/4"
Ⓕ	Exhaust vent	2"
Ⓖ	Air inlet	2"

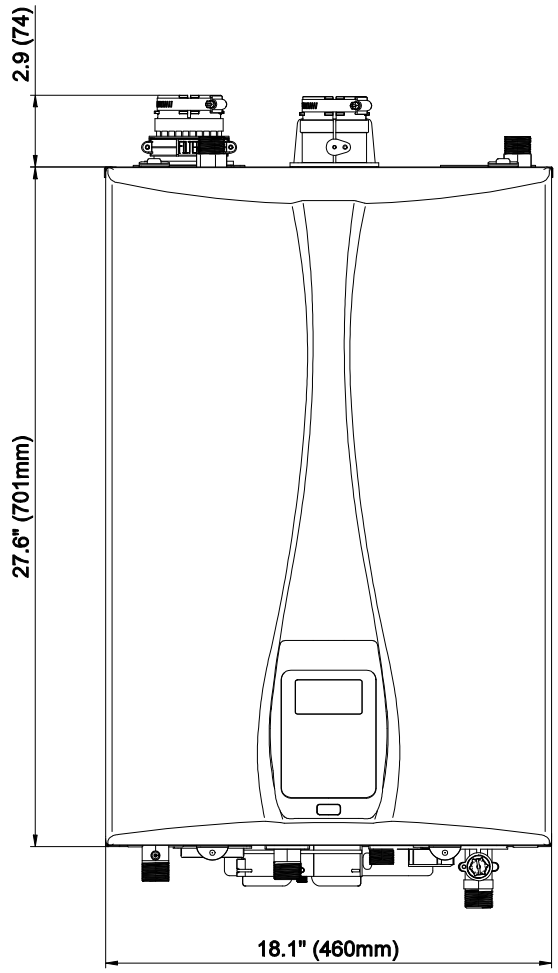


BOTTOM



TOP

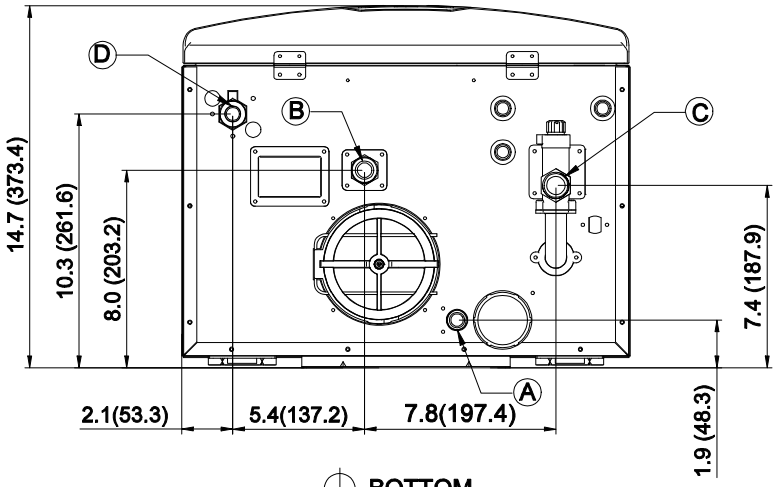
VX 9 MODEL



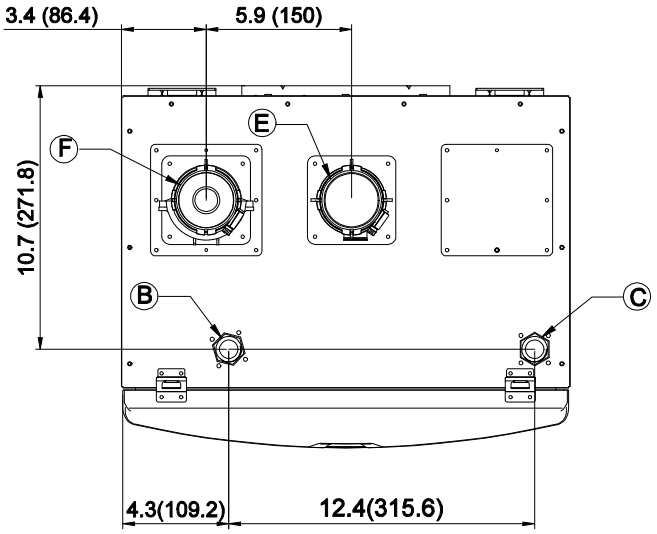
FRONT

[UNIT : Inch(mm)]

	Description	Diameter
Ⓐ	Condensate outlet	1/2"
Ⓑ	Hot water outlet	3/4"
Ⓒ	Cold inlet	3/4"
Ⓓ	Gas inlet	3/4"
Ⓔ	Exhaust vent	2"
Ⓕ	Air inlet	2"



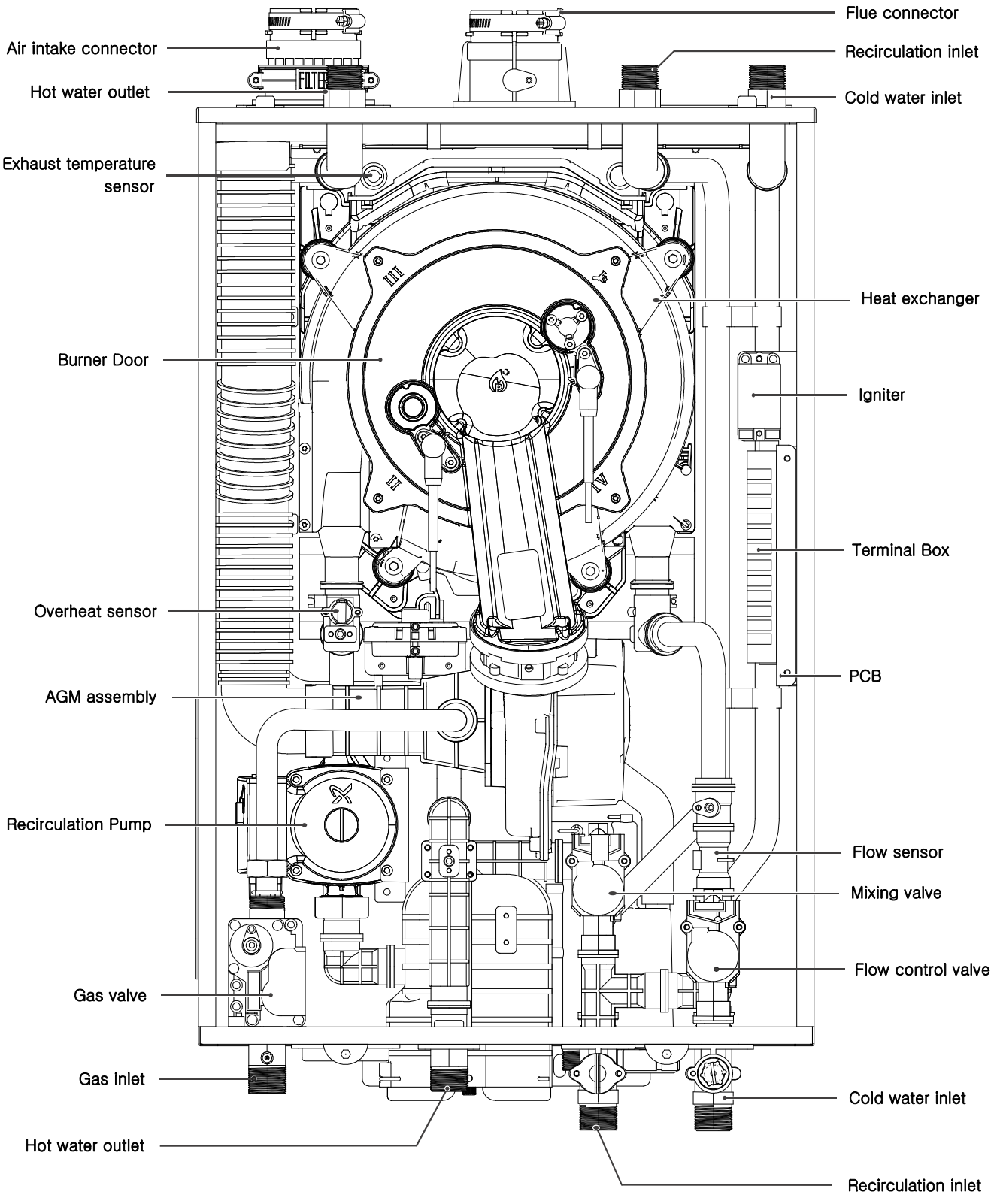
BOTTOM



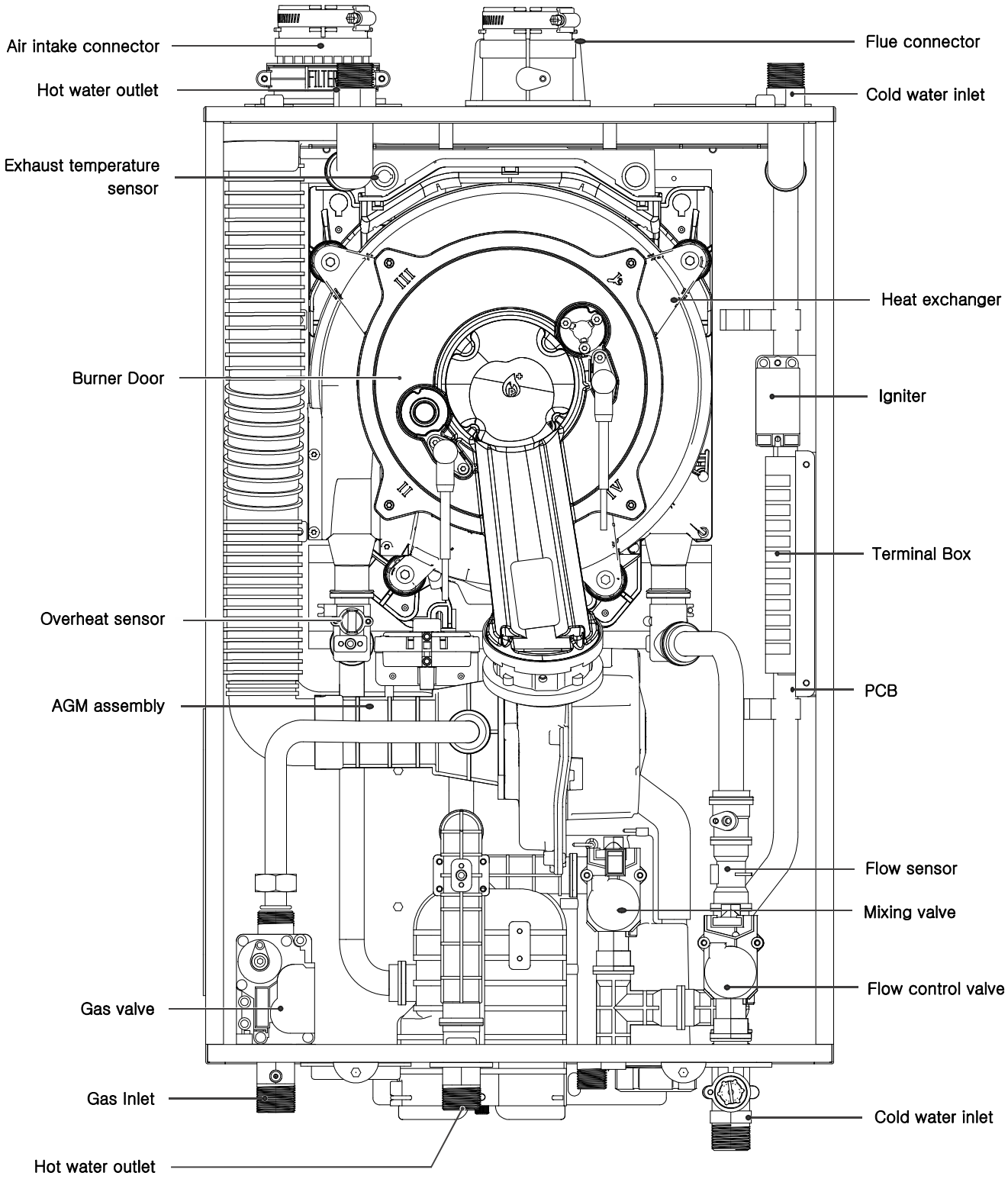
TOP

Components

VXP 9 MODEL



VX 9


Air intake connector
Hot water outlet
Exhaust temperature sensor
Burner Door
Overheat sensor
AGM assembly
Gas valve
Gas Inlet
Hot water outlet
Flue connector
Cold water inlet
Heat exchanger
Igniter
Terminal Box
PCB
Flow sensor
Mixing valve
Flow control valve
Cold water inlet

Installing the Water Heater

Installer Qualifications

A licensed professional must install and inspect the appliance. A licensed professional is a person who is licensed for the following:

- Connecting gas lines, water lines, valves, electricity
- Vent installation through walls and roofs
- Applicable of local, state, and national codes

Compliance Requirements

- National electrical code.
- National fuel gas code, ANSI Z223.1/NFPA 54 and/or CSA B149.1, natural gas and propane installation codes.
- Local, state, provincial, and national codes, laws, regulations, and ordinances.

Location

When considering a location for installation, the installer, must ensure the following:

- Access to utilities
- Humidity and contact with water
- Water quality
- Drainage
- Venting and ventilation
- Proximity to fixtures and appliances
- Clearances
- Clean, debris and chemical-free combustion air
- High elevation Installations

Access to utilities

- Electricity – Close to where the electrical supply enters the building
- Water – Close to where the domestic water supply enters the building
- Gas – Close to where the gas supply enters the building

Humidity and contact with water

Avoid places with excessive humidity. The water heater has electric gas ignition components. If water gets inside the water heater, the ignition system can be damaged. The water heater must be installed in such a way as to ensure that the gas ignition system components are protected from water (dripping, spraying, rain, etc.) during operation and service.

Water quality

Water quality can affect the durability of your appliances, and damage caused by poor water quality is not covered under warranty. To properly maintain your water heater, ensure that your water meets EPA quality standards. The table below shows the maximum allowable contaminant levels based on the EPA's National Secondary Drinking Water Regulations (40 CFR Part 143.3).If you suspect that your water may be contaminated, stop using the water heater immediately and contact an authorized technician or licensed professional.

Contaminant	Maximum Allowable Level
Total Hardness	200 mg/l (12 grains/gallon)
Aluminum	0.05 – 0.2 mg/l
Chloride	250 mg/l
Copper	1.0 mg/l
Iron	0.3 mg/l
Manganese	0.05 mg/l
pH	6.5 – 8.5
Sulfate	250 mg/l
Total Dissolved Solids (TDS)	500 mg/l
Zinc	5 mg/l
Chlorine	4 mg/l

If you have hard water in your area, be sure to follow the recommended treatment and flushing guidelines.

Hardness Level		Treatment Method	Flush* Frequency
Soft	0-4 grains/gal (0-60 mg/L)	None	None
Moderately Hard	4-7 grains/gal (61-120 mg/L)	A water softener or a filtration system equivalent to the Atlas Filter is recommended**	Once/Year
Hard	4-7 grains/gal (61-120 mg/L)		
Very Hard	4-7 grains/gal (61-120 mg/L)	A water softener or a filtration system equivalent to the Atlas Filter is highly recommended**	Residential : Once/Year Commercial : Twice/Year
Extremely Hard	4-7 grains/gal (61-120 mg/L)	A water softener or a filtration system equivalent to the Atlas Filter is required**	

* Flushing is recommended if a treatment device is not installed. See page 16 in the "User Manual" for more information on flushing the heat exchanger.

** Check local codes for any restrictions on use of water softeners.

Drainage

A significant amount of condensate is produced during the water heater operation. Install the water heater near a suitable drain and where damage from a possible leak will be minimal. Installing the water heater without a drain will void the warranty. For more information about condensate drainage, refer to "Condensate Drain" on page 24.

The water heater must be located in an area where leakage of the unit or connections will not result in damage to the area adjacent to the appliance or to lower floors of the structure. When such locations cannot be found, installation of an adequately-draining drain pan under the water heater is highly recommended. When installing the drain pan, ensure that the installation does not restrict combustion air flow.

Venting and ventilation

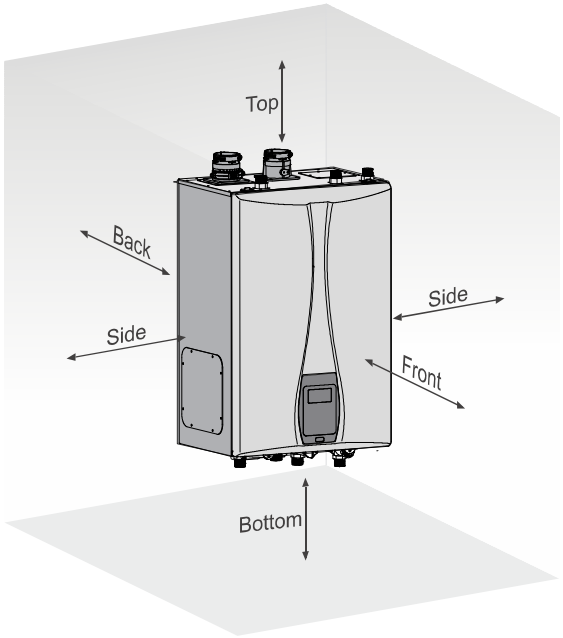
Consider venting restrictions caused by windows, doors, air intakes, gas meters, foliage and other buildings, and select a location that requires minimal venting.
When considering a adequate venting and ventilation, ensure the following:

- Maintain a minimum clearance of 4 feet (1.2 meters) from heating and cooling vents.
- Maintain proper clearances from any openings in the building.
- Install the water heater with a minimum clearance of 12 inches (300 mm) above an exterior grade or as required by local codes.
- Install the exhaust vent in an area that is free from obstructions and does not allow the exhaust to accumulate.
- Do not enclose the vent termination.
- Do not install the water heater where moisture from the exhaust may discolor or damage walls.
- Do not install the water heater in bathrooms, bedrooms, or any other occupied rooms that is normally kept closed or that is not adequately ventilated.

For more information about venting, refer to "Installing a Vent (For indoor installation only)" on page 26.

Clearances

The water heater should be installed in an area that allows for service and maintenance access to utility connections, piping, filters, and traps. Ensure the following clearances are maintained:



Clearance From	Wall Mounting
Top	12 inches (305 mm) min.
Back	0.6 inches (15 mm) min.
Front	6 inches (152 mm) min. Clearance for servicing is 24 in. (610mm) in front of water heater
Sides	3 inches (76 mm) min.
Bottom	12 inches (300 mm) min.

Clean, debris and chemical-free combustion air

- Do not install the water heater in areas where dust and debris may accumulate or where combustion air can be contaminated.
- Do not install the water heater in areas with greasy fumes or heavy amounts of steam, if necessary, take measures to prevent fumes and steam from entering the water heater.
- Chemicals that are corrosive in nature should not be stored or used near the water heater.

Callibration mode

The installation circumstances can be changed depending on the elevation and pipe length. To maintain constant heat capacity, run the Calibration Mode after installing the water heater. For more information about Calibration Mode, refer to "Self Calibration Mode" on page 56.

Position

Caution

Do not mount the water heater to unsubstantial flooring or unreinforced dry wall.

The water heater can be mounted to the wall. For easy installation, use the mounting bracket to mount the water heater to standard wall studs. If the strength of the wall is insufficient and or if the framing is non-standard or uneven, reinforce the area before installation. Avoid installation in unstable locations as the water heater will make some operational noises while it is running.

Notice

Consider vent length and surrounding circumstances when mounting the water heater.

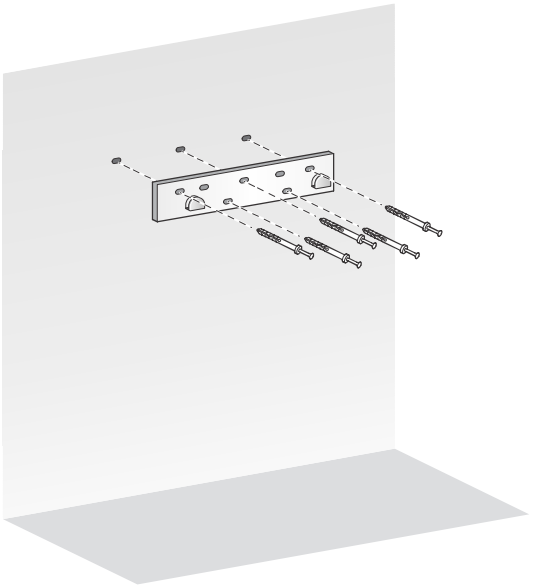
Caution

The appliance should be located in an area where leakage of the tank or connections will not result in damage to the area adjacent to the appliance or to lower floors of the structure. When such locations can not be avoided, it is recommended that a suitable drain pan, adequately drained, be installed under the appliance. The pan must not restrict combustion air flow.

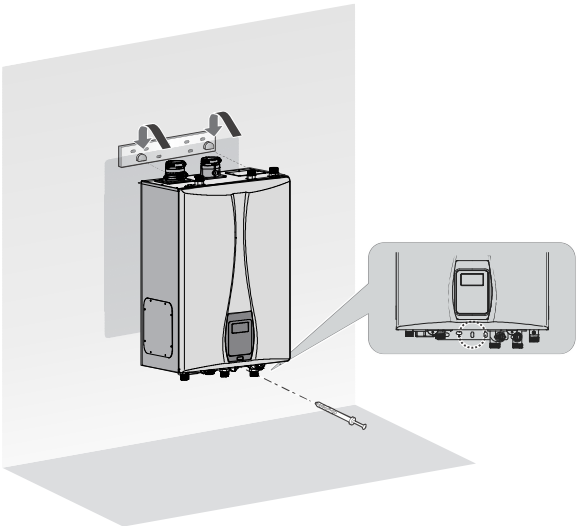
Mounting to the wall

To mount the water heater to the wall:

1. Check that the wall is level and can support the weight of the water heater.
2. Affix the mounting bracket securely to the wall.



3. Align the grooves on the back of the water heater with the tongues on the mounting bracket and hang the water heater from the bracket.



Connecting the Gas Supply

Gas Pipe Sizing Tables

Gas pipe sizing is based on the gas type, supplied gas pressure, pressure drop in the system, and gas line type. The tables below are for reference only (when the gas supply is piping straight to the water heater with no connections to any other gas appliances). For gas pipe sizing, refer to the latest National Fuel Gas code, NFPA 54 and consult the gas pipe manufacturer for actual gas pipe capacities.

Natural gas

Table 1. For less than 6" WC supply pressure.

Maximum Capacity of Natural Gas Based on a 0.60 specific gravity at a 0.5" WC pressure drop.

Pipe Size	kBTU/H of Natural Gas												
Length	10'	20'	30'	40'	50'	60'	70'	80'	90'	100'	125'	150'	200'
3/4"	360	247	199	170	151	137	126	117	110	104	92	83	71
1"	678	466	374	320	284	257	237	220	207	195	173	157	134
1 1/4"	1390	957	768	657	583	528	486	452	424	400	355	322	275
1 1/2"	2090	1430	1150	985	873	791	728	677	635	600	532	482	412
2"	4020	2760	2220	1900	1680	1520	1400	1300	1220	1160	1020	928	794
2 1/2"	6400	4400	3530	3020	2680	2430	2230	2080	1950	1840	1630	1480	1270
3"	11300	7780	6250	5350	4740	4290	3950	3670	3450	3260	2890	2610	2240
4"	23100	15900	12700	10900	9660	8760	8050	7490	7030	6640	5890	5330	4560

Table 2. For 6" WC or greater supply pressure.

Maximum Capacity of Natural Gas Based on a 0.60 specific gravity at a 3.0" WC pressure drop.

Pipe Size	kBTU/H of Natural Gas												
Length	10'	20'	30'	40'	50'	60'	70'	80'	90'	100'	125'	150'	200'
1/2"	454	312	250	214	190	172	158	147	138	131	116	105	90
3/4"	949	652	524	448	397	360	331	308	289	273	242	219	188
1"	1790	1230	986	844	748	678	624	580	544	514	456	413	353
1 1/4"	3670	2520	2030	1730	1540	1390	1280	1190	1120	1060	936	848	726
1 1/2"	5500	3780	3030	2600	2300	2090	1920	1790	1670	1580	1400	1270	1090
2"	10600	7280	5840	5000	4430	4020	3690	3440	3230	3050	2700	2450	2090
2 1/2"	16900	11600	9310	7970	7060	6400	5890	5480	5140	4860	4300	3900	3340
3"	29800	20500	16500	14100	12500	11300	10400	9690	9090	8580	7610	6890	5900
4"	60800	41800	33600	28700	25500	23100	21200	19800	18500	17500	15500	14100	12000

Liquid propane gas

Maximum Capacity of propane (LP) Gas Based on 11" WC supply pressure at a 0.5" WC pressure drop.

Pipe Size	kBTU/H of Propane Gas												
Length	10'	20'	30'	40'	50'	60'	80'	100'	125'	150'	175'	200'	250'
1/2"	291	200	160	137	122	110	101	94	89	84	74	67	62
3/4"	608	418	336	287	255	231	212	197	185	175	155	140	129
1"	1150	787	632	541	480	434	400	372	349	330	292	265	243
1 1/4"	2350	1620	1300	1110	985	892	821	763	716	677	600	543	500
1 1/2"	3520	2420	1940	1660	1480	1340	1230	1140	1070	1010	899	814	749
2"	6790	4660	3750	3210	2840	2570	2370	2200	2070	1950	1730	1570	1440

Gas Piping

Danger

- Do not connect to an unregulated or high pressure propane line or to a high pressure commercial natural gas line.
- The water heater must be isolated from the gas supply piping system during any pressure testing of that system at test pressures equal to or more than 0.5 psig.

Warning

- Only a licensed professional should connect the gas supplies.
- Before connecting the gas supply, determine the gas type and pressure for the water heater by referring to the rating plate. Using a different gas type will result in abnormal combustion and malfunction of the water heater causing fire or explosion.
- Leak test the appliance and its gas connection before operating the water heater.
- Do not attempt a field conversion without a VST conversion kit. Use the VST conversion kit to convert from natural gas to propane or vice versa. Failure to do so may result in dangerous operating conditions and will void the warranty.

In the United States: The installation must conform with local codes or, in the absence of local codes, the National Fuel Gas Code ANSI Z223.1/NFPA 54.
In Canada: The Installation must conform to CGA B149 INSTALLATION CODES and/or local installation codes.

To ensure a sufficient gas supply, it is recommended that the water heater be the first appliance to be connected to the gas supply line.

To connect the gas supply:

1 Determine the gas type and pressure by referring to the rating plate.

2 Perform a pressure test on the main gas supply line.

3 Purge the gas line of any debris.

4 Determine the proper type and size for the gas line. Refer to the gas pipe sizing tables on page 17.

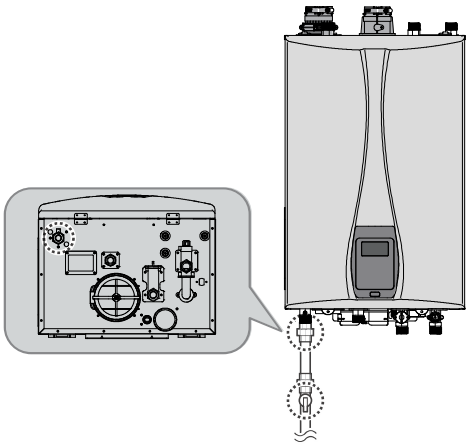
5 Install a union.

6 Install a manual gas shut off valve on the gas supply line within easy reach of the appliance.

Warning

- Improper installation of the manual gas shut-off valve may result in property damage, personal injury or death.
- Only a licensed professional, in accordance with the ANSI Z21.1/CSA 9.1, should install the manual gas shut-off valve.

7 Connect the gas supply line.

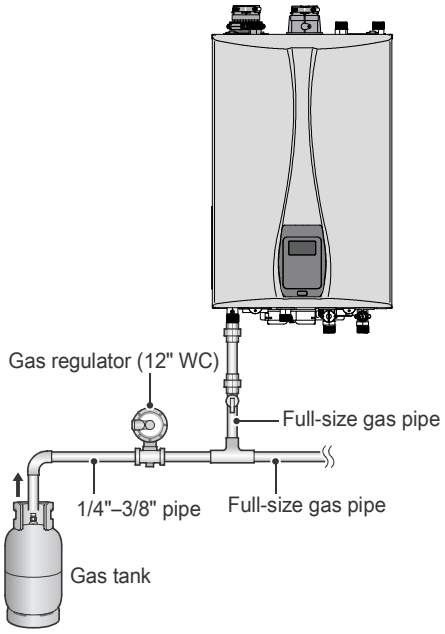


8 Check for gas leaks at all joints.

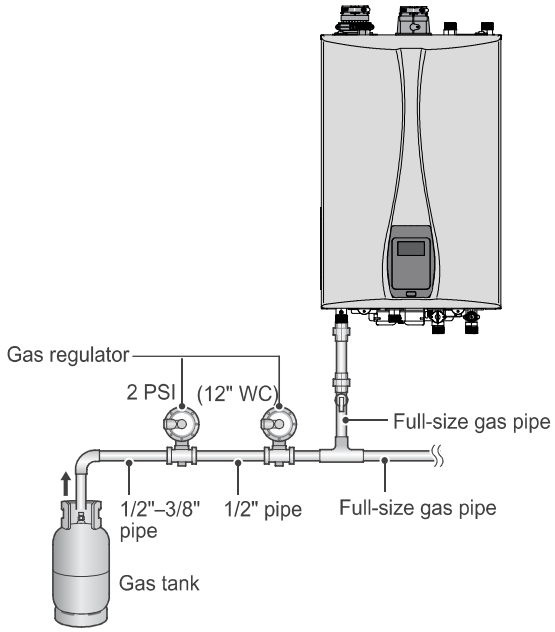
Notice

- Tighten the water heater connection valves with care to avoid damage.
- Apply gas leak detection solution to all gas fittings.
- The minimum internal diameter required for any appliance connector is ¾ ".
- When using flexible gas lines, ensure that the pipe's inner diameter and connector is sufficient to supply the required BTUs. Also, ensure that the flexible line has no crimps or tight bends in it, as this will restrict gas flow.
- To facilitate any future maintenance or service, the installation of a union on the gas supply line close to the water heater is recommended.

- The following is a LP gas piping example for the single regulator system



- The following is an LP gas piping example for the 2-lb. system with multiple regulators.



Inlet Gas Pressure

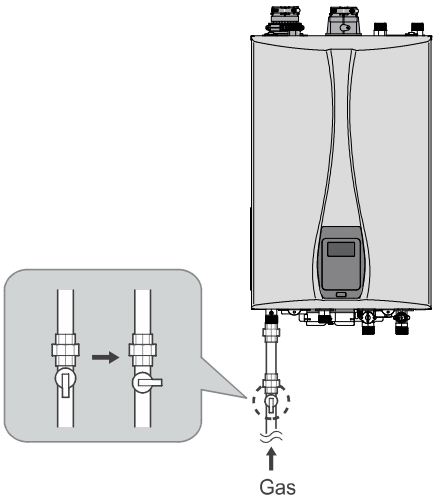
Warning

Inlet gas pressure should be measured by a licensed professional only. The water heater cannot function properly without sufficient inlet gas pressure.

- The appliance and its individual shut off valve must be disconnected from the gas supply piping system during any pressure testing of that system at test pressures in excess of ½psi(3.5kPa).
- The appliance must be isolated from the gas supply piping system by closing its individual manual shut off valve during any pressure testing of the gas supply piping system at test pressures equal to or less than ½psi(3.5kPa)
- The inlet gas pressure must be maintained between 3.5" and 10.5" WC for natural gas and between 8" and 13" WC for liquefied propane.

To measure the inlet gas pressure:

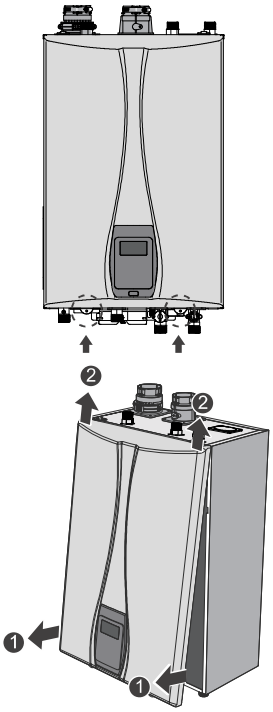
1 Shut off the manual gas valve on the gas supply line.



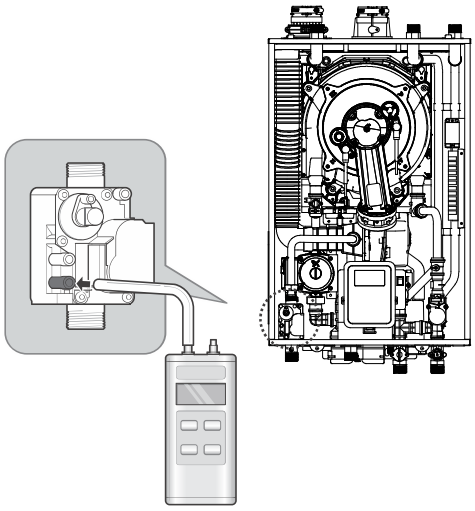
2 Open a hot water faucet. The water heater should turn on and the gas in the gas supply line will be purged.

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

4 Remove the water heater front cover by loosening the 2 Phillips screws securing it to the case.



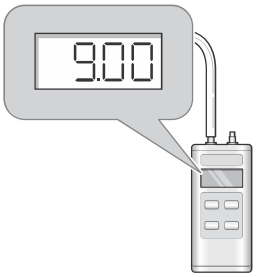
5 Loosen the screw indicated in the figure below and connect a manometer to the inlet pressure port. Reset the manometer to zero before use.



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

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

8 When the water heater reaches its maximum firing rate, check the inlet gas pressure reading on the manometer. The gas pressure must fall within the ranges specified in "Inlet Gas Pressure" on page 19.



9 Tighten the inlet gas pressure screw.

10 Replace the front cover and tighten the 2 Phillips screws to secure it to the case.

Connecting the Water Supply

Water Piping

Warning

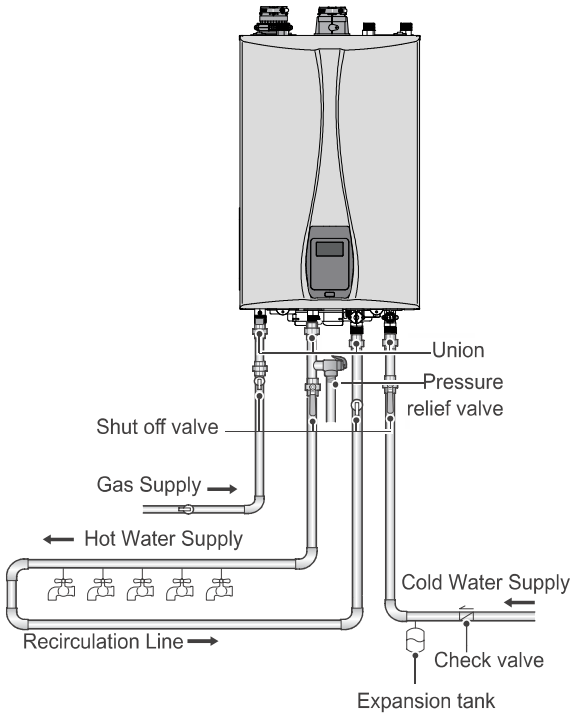
- Before installing the water heater, flush the water line to remove all debris, and after installation is complete, purge the air from the line. Failure to do so may cause damage to the water heater.
- Do not use lead, PVC, iron or any piping which has been treated with chromates or other chemicals.
- Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.
- Do not reverse the hot outlet and cold inlet connections to the water heater. This will cause the water heater to not operate properly.
- Make sure to install a mixing/tempering valve in your water system in order to protect against injury. When it is required by your local plumbing code or regulation, you must install a mixing/tempering valve accordingly.

The water fittings on the water heater are 3/4". If the installation site has only 1/2" plumbing throughout, it is not necessary to upsize the water lines to 3/4", if you are installing a single water heater. When installing multiple water heaters, the number of water heaters and pipe sizing required will depend on the total hot water demand. For information about pipe sizing for multiple water heaters, refer to "Piping sizes" on page 64.

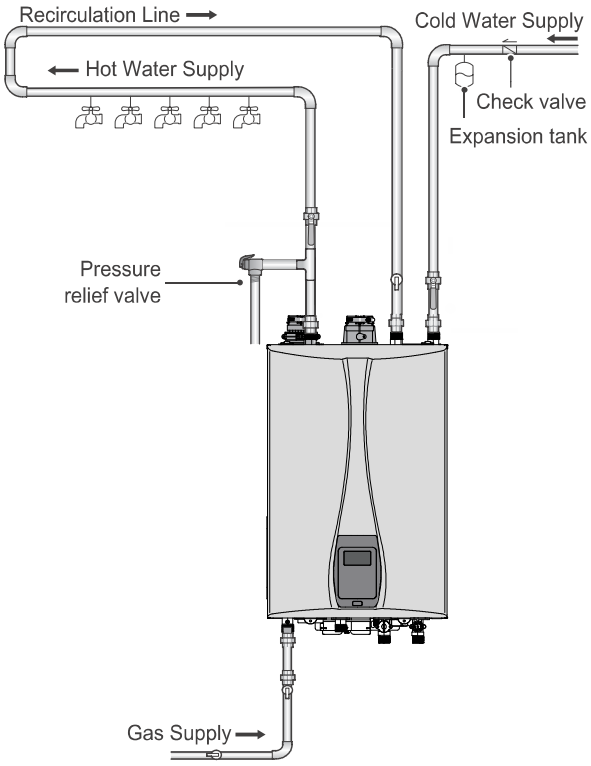
When connecting the water supply, follow these guidelines:

- Do not remove the factory installed recirculation inlet cap unless a return line is connected to this fitting. Water leakage will occur if this cap is loose or missing (VXP model only).
- Use only pipes, fittings, valves, and other components (such as solder), that are approved for use in potable water systems.
- Tighten the water heater connection valves with care to avoid damage.
- Use unions and manual shut-off valves on the cold water inlet, DHW outlet, and recirculation water inlet.
- Strive to make the hot water piping system as short as possible, so as to deliver hot water to the fixtures more quickly and reduce heat loss.
- To conserve water and energy, insulate all water piping—especially the hot and recirculation water lines. Never cover the drain or pressure relief valve. If the water heater is installed in a closed water supply system, such as one having a backflow preventer in the cold water supply line, means shall be provided to control thermal expansion. Contact the water supplier or local plumbing inspector for information about how to control this situation.
- After installing the water heater, clean the inlet water filter that is located inside the cold water inlet, and then test the water heater for proper flow and inspect for leaks. Instruct the water heater owner that the filter must be cleaned periodically to maintain proper water flow.
- When all plumbing work is completed, check for leaks and take corrective action before proceeding.

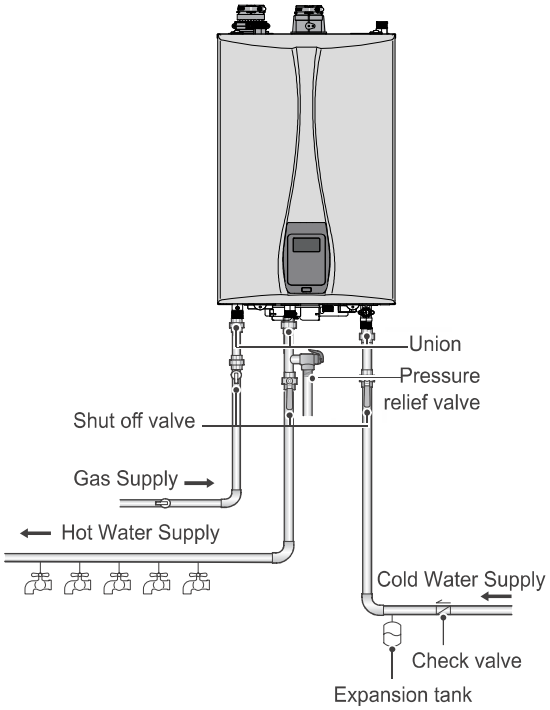
- The following is a water piping example for the water heater:



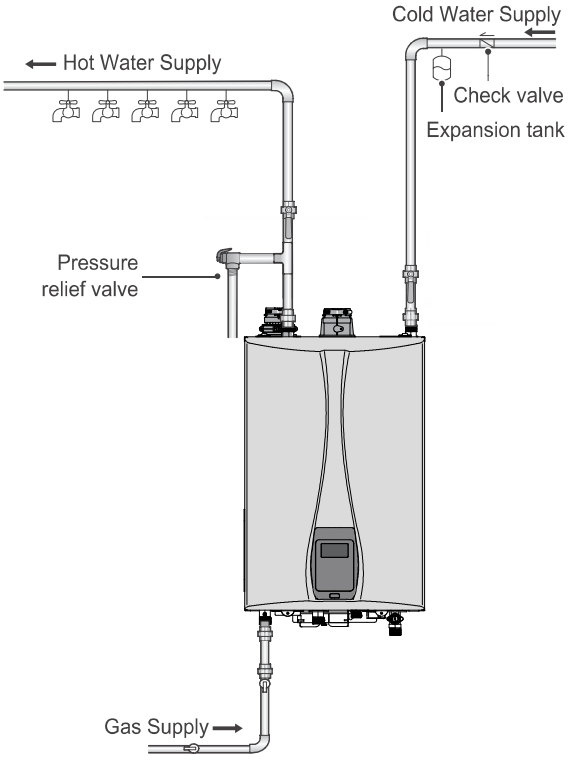
[VXP 9 MODEL - Downward water line]



[VXP 9 MODEL - Upward water line]



[VX 9 MODEL - Downward water line]

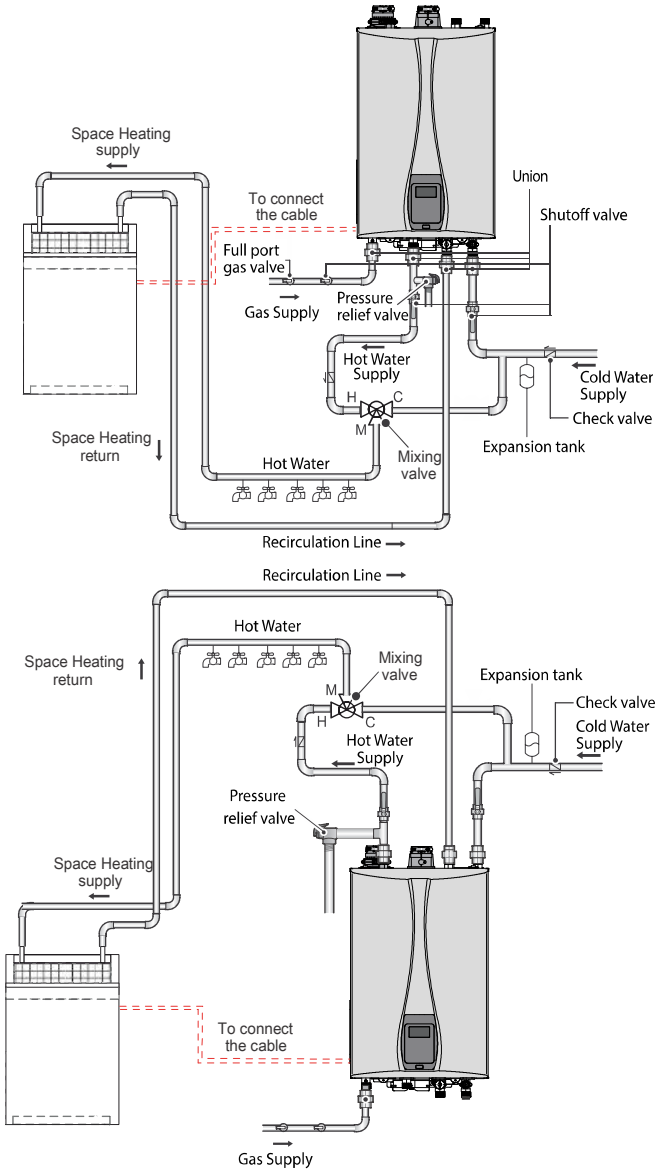


[VX 9 MODEL - Upward water line]

Using the water heater for combination water heating and space heating (VXP model Only)

When using the water heater for both water(potable) heating and space heating, follow these guidelines:

- Ensure that all piping and components connected the water heater are suitable water applications.
- Do not introduce toxic chemicals, such as water heater treatments, into the potable water.
- On Combi applications, circulators suitable for DHW applications must be used.
- Do not connect the water heater to any heating systems or components that have been previously used with non-potable water heaters.
- If the system requires varying temperatures for water - for example, hotter water for space heatingthan for other uses- a mixing valve is required to temper the water and reduce the potential for scalding.
- Do not use the water heater for space heating only.
- The following is a space heating pipe example for water heater:



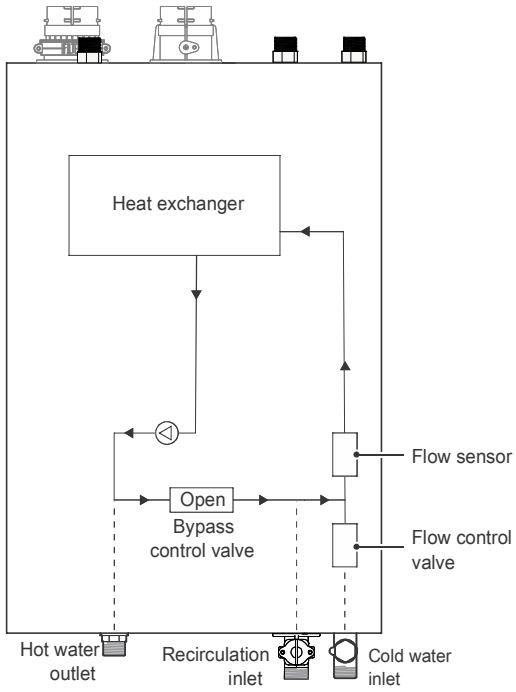
Internal recirculation mode ("VXP" model only)

Notice

For more information about setting the recirculation mode, refer to "Re-circulation Settings" on page 51.

Caution Do not remove recirculation cap.

- The following diagram shows the internal recirculation flow:

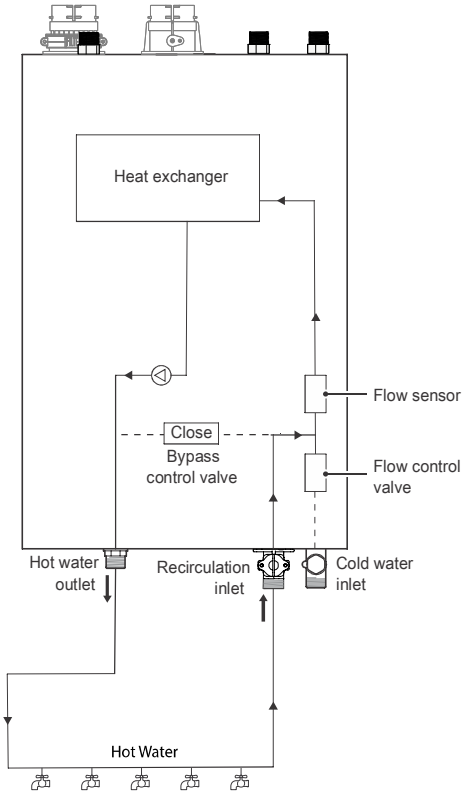


External recirculation mode ("VXP" model only)

Notice

For more information about setting the recirculation mode, refer to "Re-circulation Settings" on page 51.

- The following diagram shows the external recirculation flow:



Notice

When using a recirculation mode, by keeping the water in the hot water supply pipe hot, you can get instant hot water when you turn the tap on. On the other hand, there will be some minor efficiency loss, as a result of the water heater maintaining a steady temperature within the circulation loop, although in many cases, higher gas usage will be compensated for by lower water usage.

Pressure Relief Valve

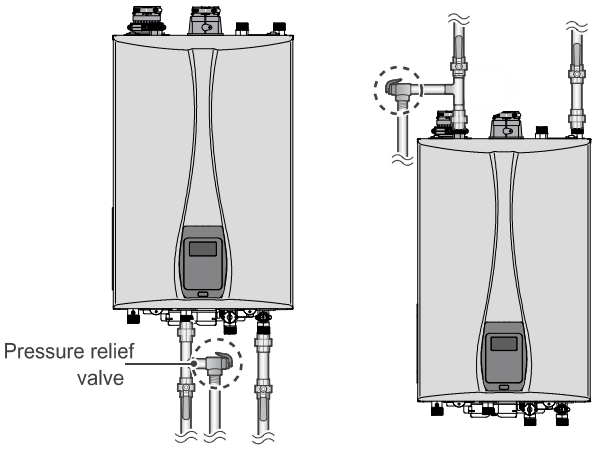
Warning

Improper installation of the pressure relief valve may result in property damage, personal injury, or death. Follow all instructions and guidelines when installing the pressure relief valve. Only a licensed professional should install the valve.

Caution

The pressure relief valve must conform to the current edition of ANSI Z21.22 or CAN 1-4.4 and installation must follow local codes.

This water heater does not come with an approved pressure relief valve. To complete the installation of the water heater, you must install an approved ASME HV relief valve on the pressure relief valve connector.(Size 3/4", maximum 150 PSI)



Notice

The pressure relief valve should be placed as close to the water heater outlet as possible. No other valve should be placed between the pressure relief valve and the water heater.

When installing the valve, follow these guidelines:

- Ensure that the discharge capacity of the pressure relief valve is equal to or greater than the maximum pressure rating of the water heater.
- Ensure that the maximum BTU/H rating on the pressure relief valve is equal to or greater than the maximum input BTU/H rating of the water heater.
- Direct the discharge piping of the pressure relief valve so that hot water will not splash on any person or equipment near by.
- Attach the discharge line to the pressure relief valve and run the end of the line to within 6-12" (150-300mm) of the floor.
- Ensure that the discharge line will allow free and complete drainage with no restriction. Do not install a reducing coupling or other restriction on the discharge line.
- If the relief valve discharges periodically, this may be due to thermal expansion in a closed water supply system. Contact the water supplier or local plumbing inspector on how to correct this situation. Do not plug the relief valve.
- The pressure relief valve must be manually operated periodically to check for correct operation.
- Be carefully to avoid contact with hot water coming out of the pressure relief valve and to prevent water damage when you operate the relief valve.

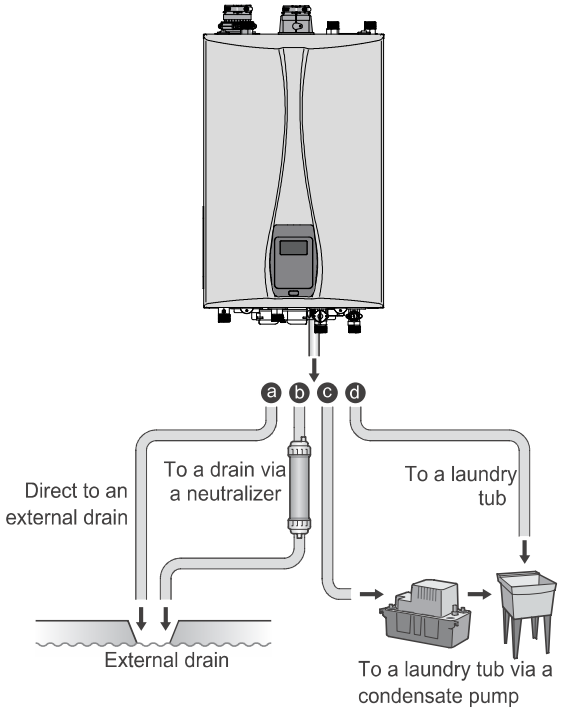
Condensate Drain

Caution

- All condensate must drain and be disposed of according to local codes.
- Do not cap or plug the integrated condensate line. If prevented from draining, condensate can damage the water heater.
- The condensate line must have a negative slope to drain properly.
- Do not run drain outdoors. Freezing of condensate can cause property damage.
- Do not connect the condensate drain line directly to the rain sewer.
- Do not connect the condensate drain line with an air conditioning evaporator coil drain.
- Use only corrosion resistant materials for the condensate drain lines such as PVC pipe or plastic hose.
- The end of the condensate drain pipe should be open to the atmosphere. The end should not be under water or other substances.

The VST water heater creates condensation when it operates. This condensation has an acidic pH of 3-5. Follow all local codes and regulations when disposing of condensate from the water heater. We recommend draining the condensate into a laundry tub, as the alkali in laundry detergent will neutralize the acid in the condensate. However, other suitable waste drain locations may be used according to local codes.

Before connecting the condensate drain, choose one of the following disposal options:



(a) From the water heater directly into an external drain.

(b) From the water heater, through a neutralizing agent, and then into an external drain.

Notice

- If you choose this option, the neutralizing agent must be replaced periodically. Depletion of the neutralizing agent will vary, based on the usage rate of the water heater. During the first year of operation, the neutralizer should be checked every few months for depletion and replaced as needed.

(c) From the water heater into a condensate pump, and then into a laundry tub.

Notice

A pump can be used when there is a long distance between the water heater and the laundry tub or when the bottom of the water heater is lower than the top of the laundry tub.

(d) From the water heater into a laundry tub.

Notice

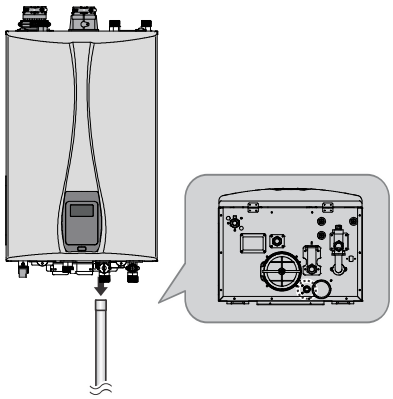
The bottom of the water heater must be higher than the top of the laundry tub to use this option.
The condensate line must have a negative slope to drain properly.

To connect the condensate drain:

1 Connect a drain line to the water heater.

Notice

Use only corrosion-resistant material for the drain line, such as PVC or CPVC. Do not reduce the size of this fitting or the drain line to less than 1/2".

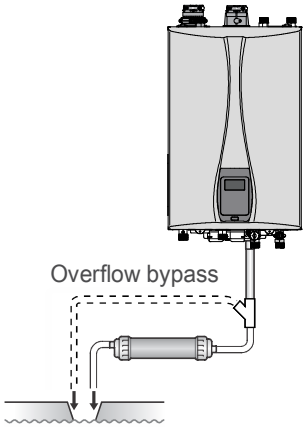


2 Place the free end of the drain line into an appropriate drain.

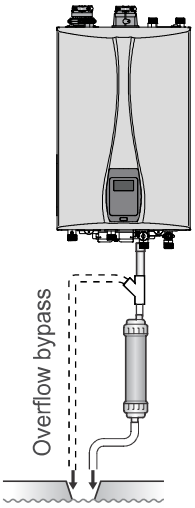
Notice

- If you are using a condensate pump, ensure that the pump allows for up to 2 GPH of drainage for each water heater in the system.
- If you are not using a condensate pump, ensure that the drain line is pitched downward at a minimum slope of 1/4" per foot.

Horizontal position

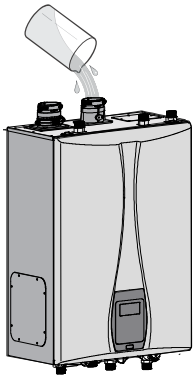


Vertical position



Condensate Trap

Before operating the water heater, fill the condensate trap with water through the flue connector. The water heater may be severely damaged unless filled with water prior to operation. Pour more than 13 ounce (400 ml) of water into the exhaust duct. Deflate air sufficiently or equip the air vent with an outlet pipe prior to filling the condensate trap with water (there must be no air inside the heat exchanger).



Installing a Vent (For indoor installation only)

* If the exhaust temperature exceed 149°F (65°C), it must be vented schedule 40 or 80 CPVC or approved polypropylene.
* For outdoor installation, please see the outdoor manual in the outdoor vent kit.
* Adequate combustion and ventilation air shall be provided in accordance with one of the following:
  A) the National Fuel Gas Code, ANSI Z223.1/NFPA 54;
  B) CSA B149.1, Natural Gas and Propane Installation Code; or
  C) applicable provisons of the local building code.

Warning

- Improper venting of the water heater can result in excessive levels of carbon monoxide, which can lead to severe personal injury or death. This water heater must be vented in accordance with the “Venting of Equipment“ section of the latest edition of the ANSI Z223.1/NFPA 54 Natural Fuel Gas Code in the USA and/or the “Venting systems and air supply for water heaters“ section of the latest version of the CAN/CGA B149.1 Natural Gas and Propane Installation Code in Canada, as well as all applicable local building codes and regulations. Follow all instructions and guidelines when venting the water heater. Venting should be performed only by a licensed professional.
- A water heater shall not be connected to a chimney flue serving a separate appliance, designed to burn solid fuel. When installed in a manufactured home(mobile home), all combustion air shall not be supplied from occupied spaces.

The water heater must be properly vented to ensure a constant supply of clean intake air and to ensure that exhaust air is properly removed from living areas. When venting the water heater, follow these guidelines:

- Do not install the water heater in areas with contaminated air (containing a high level of dust, sawdust, sand, flour aerosols, or any other such airborne contaminants), as contaminants can cause operational problems. The warranty does not cover damage caused by contaminants in the installation area. If you must install the water heater in an area with contaminated air, use direct venting to supply air from outside the building. We recommend regular filter cleaning and maintenance in these areas.
- For best results, keep the venting system as short and straight as possible.
- Locate the water heater as close as possible to the vent termination.
- Do not connect the water heater vent to a vent for any other gas water heater or vent stack.
- For horizontal runs, slope the horizontal section upward toward the vent termination at a rate of 1/4" per foot (2% slope).
- Create an airtight seal at each joint in the exhaust and intake air pipes from the water heater collar to the vent termination.
- To avoid moisture and frost build-up and to maintain clearances to openings on adjacent homes, 45° elbows, 90° elbows, or tees may be attached to the end of the termination vent pipe to direct the exhaust fumes away from buildings, as long as the restrictions on total allowable vent lengths, maximum number of elbows, and distances to air intake are observed.
- Do not store hazardous or flammable substances near the vent termination.
- If this water heater is to be installed in an area where snow is known to accumulate, protect the vent termination from blockage.
- Ensure that the vent termination is at least 12" (305mm) above ground, or as required by local codes.
- Support the vent pipe with hangers at regular intervals or as required by local codes.
- Exhaust and intake air pipes must be supported at least every 4 feet (1.2m).
- The vent for this appliance shall not terminate over public walkways; or near soffit vents or crawl space vents or where condensate or vapor could create a nuisance or hazard or cause property damage; or where condensate or vapor could cause damage or could be detrimental to the operation of regulators, relief valves, or other equipment.

Notice

The minimum thickness of the wall for venting penetration is 1 1/4" (31mm) and the maximum thickness for venting is 14" (355mm)

Vent Type

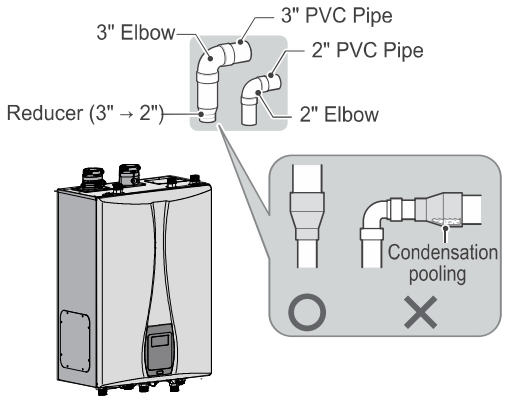
All water heaters are prepared at the factory to be direct vent (sealed combustion) water heaters that draw all of their required combustion air directly from outside the building. VST recommends direct air vent installations whenever possible to avoid back drafting cold air through the water heater. VST recommends direct air vent installations when installing the water heater in your attic to get fresh air into the water heater. If you cannot use a direct vent, ensure that an ample supply of make-up air is available in the installation location. VST also recommends installing a new vent system with this appliance. If reusing an existing vent system, thoroughly inspect it for punctures, cracks, or blockages prior to connecting it to the water heater. When using non-direct venting, must provide two openings as specified in the table on page 29.

Direct

The water heater uses 2" or 3" diameter exhaust and 2" or 3" diameter intake air ducts. To ensure the draw of air directly from and exhaust of air directly to the outside of the building, create an airtight seal from the water heater collar to the vent termination. Intake materials can be made of ABS, PVC, CPVC, PP, galvanized steel, corrugated aluminum or any other similar materials. If you use a corrugated material, ensure that there is not inadvertent crimping of, or damage to, the intake air pipe.
When using direct venting, maintain the following venting clearances, as required by ANSI Z21.10.3 and the National Fuel Gas Code, ANSI Z223.1/NFPA 54, and CAN/CGA B149.1 Natural Gas and Propane Installation Code.
VX/VXP water heater have back flue damper in the appliance. Then, Common venting is only US permitted. Common venting systems shall be in accordance with the National Fuel Gas Code, ANSI Z223.1/NFPA 54 and/or the CSA B149.1, Natural Gas and Propane Installation Code(Current Editions), local codes, and this instructions.

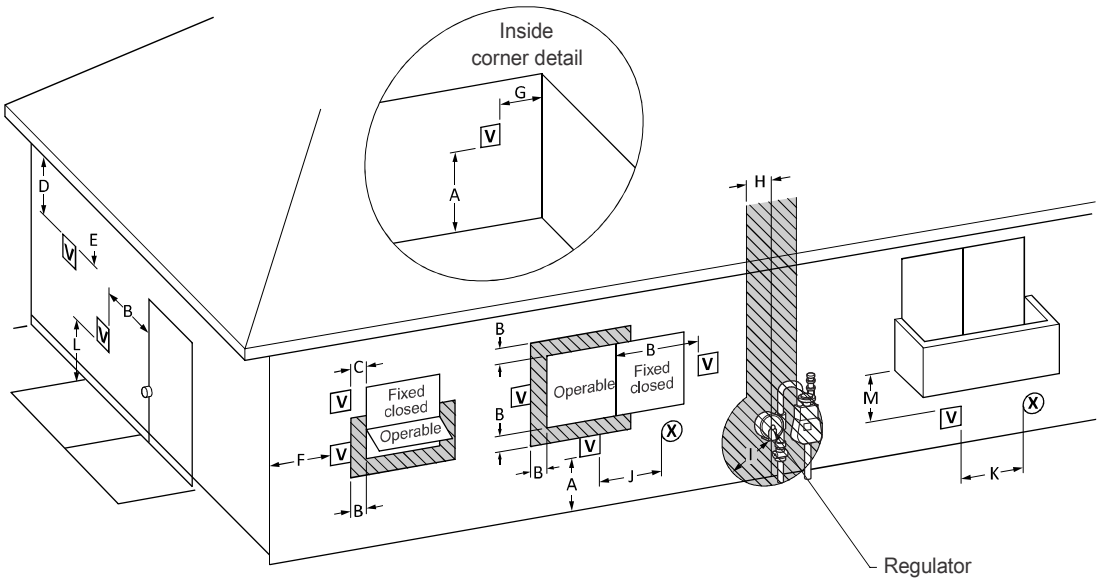
To use direct venting for the water heater:

- Install the 2" vent directly. Ensure the vent is properly seated.
- To install the 3" vent, reducer (3" to 2") must be used.
- Install the reducer (3" to 2") vertically. If installed horizontally, water may stagnate.



Caution

- DO NOT USE 2" straight 90 or 45



Legend:

V = Vent terminal

X = Air supply inlet

= Area where terminal is not permitted

		Canadian Direct Vent Installation [1]	U.S. Direct Vent Installation[2]
A	Clearance above grade, veranda, porch, deck or balcony	12 in. (30 cm)	12 in. (30 cm)
B	Clearance to window or door that may be opened	36 in. (91 cm)	12 in. (30 cm)
C	Clearance to permanently closed window	*	*
D	Vertical clearance to ventilated soffit located above the vent termination within a horizontal distance of 2 feet (61cm) from the center line of the termination	*	*
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	36 in. (91 cm) within a height of 15 ft(4.6m)	*
I	Clearance to service regulator vent outlet	36 in. (91 cm)	*
J	Clearance to non-mechanical air supply inlet to building or the combustion air inlet to any other application	36 in. (91 cm)	12 in. (30 cm)
K	Clearance to mechanical air supply inlet	72 in. (183 cm)	36 in. (91 cm) above if within 10 ft(3m) horizontally
L	Clearance above paved sidewalk or paved driveway located on public property	84 in. (213 cm) †	Vents for Category II and IV appliances cannot be located above public walkways or other areas where condensate or vapor can cause a nuisance or hazard*
M	Clearance under veranda, porch deck or balcony	12 in. (30 cm) ‡	*

[*] The minimum distance from adjacent public walkways, adjacent buildings, openable windows, and building openings shall not be less than those values specified in the National Fuel Gas Code, ANSI Z223.1/NFPA 54, and/or the Natural Gas and Propane Installation Code, CSA B149.1;

a) Clearance in accordance with local installation codes and the requirements of the gas supplier.

b) The minimum height from the ground shall not be lower than the snowfall to prevent blockage by snow. And there shall be sufficient clearance from the building material to protect from degradation by flue gases.

NOTE

1) In accordance with the current CSA B149.1, Natural Gas and Propane Installation Code.

2) In accordance with the current ANSI Z223.1 / NFPA 54, National Fuel Gas Code.

3) If locally adopted installation codes specify clearances different than those illustrated, then the most string ent clearance shall prevail.

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

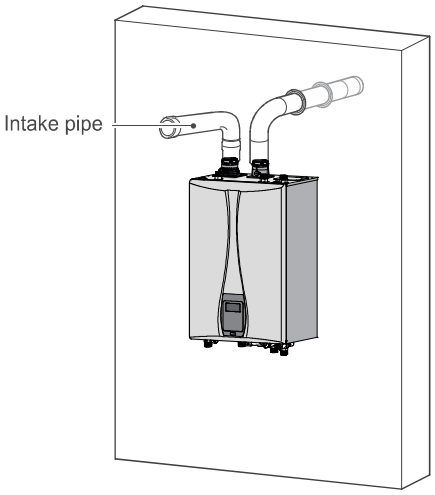
‡ Permitted only if veranda, porch, deck, or balcony is fully open on a minimum of two sides beneath the floor.

Non-direct

If, at any time, the installation location could experience negative pressure, there is a possibility of back-drafting cold air through the water heater's heat exchanger. This situation could lead to the freezing of the heat exchanger and malfunction of the water heater. However, building codes in most jurisdictions disallow negative pressures in residences. In a home with a well-balanced air supply, the heat exchanger should not be in danger of freezing. Because the cause of back-drafting is not considered a manufacturing problem, any freezing damage which occurs from back-drafting will not be covered by the VST warranty. If there is any question about the possibility of back-drafting in the installation location, use a direct venting system for the water heater. When installed in a manufactured home (mobile home), all combustion air must be supplied from the outdoors as described on page 27. When using non-direct venting, maintain non-direct vent clearances shown on page 30 as required by ANSI Z21.10.3 and the National Fuel Gas Code, ANSI Z223.1/NFPA 54, and CAN/CSA B149.1 Natural Gas and Propane Installation Code.
For other than a direct vent appliance, the appliance must be located as close as practicable to a chimney or gas vent.
If the appliance is installed without air intake pipe, the category is IV. "This water heater requires a special venting system. Refer to the installation instructions for parts list and method of installation."
When installed in a manufactured home (mobile home), the screen for openings specified shall be of metal with no less than ¼ in (6.4 mm) mesh.

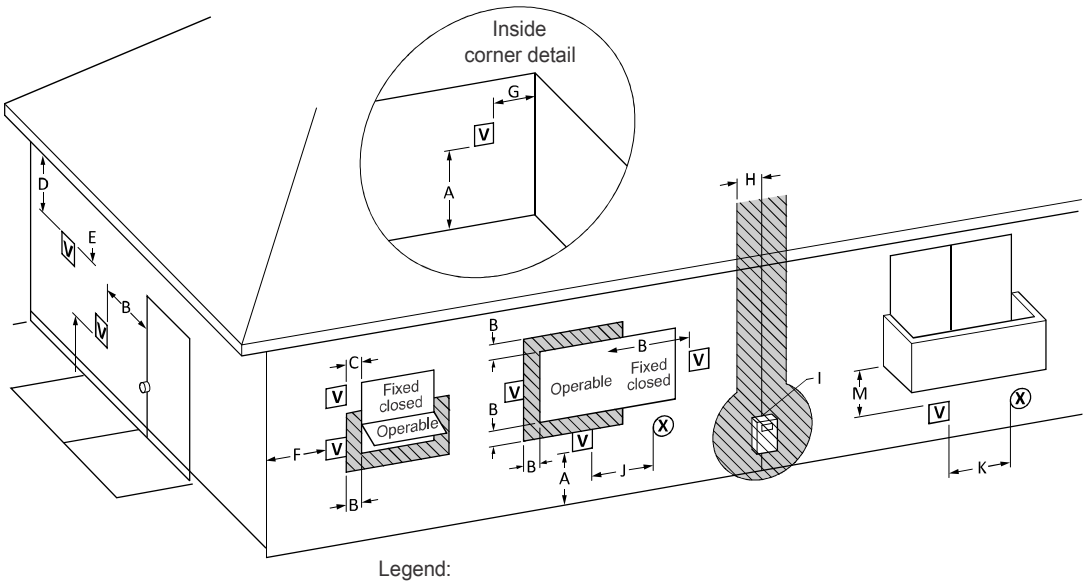
To use non-direct venting for the water heater:

- Insert the elbow into the intake air duct.



- Provide two openings to allow for circulation of combustion air as specified by ANSI Z223.1/NFPA 54 or CAN/CGA B-149.1:

	VXP 9 / VX 9
Maximum Input (BTU/H)	199,000
If outdoor make up air is provided, a minimum free area of 1 in ^{2} per 4,000 BTU/H	50 in^2 10" (W) x 5" (H) or 8" round
If indoor make up air is provided, a minimum free area of 1 in^2 per 1,000 BTU/H	199 in^2 14 1/4" (W) x 14 1/4" (H)



Legend:

V = Vent terminal

X = Air supply inlet

= Area where terminal is not permitted

		Canadian Non-Direct Vent Installation [1]	U.S. Non-Direct Vent Installation [2]
A	Clearance above grade, veranda, porch, deck or balcony	12 in. (30 cm)	12 in. (30 cm)
B	Clearance to window or door that may be opened	36 in. (91 cm)	4 ft (1.2m) below or to side of opening; 1ft (300mm) above opening
C	Clearance to permanently closed window	*	*
D	Vertical clearance to ventilated soffit located above the vent termination within a horizontal distance of 2 feet (61cm) from the center line of the termination	*	*
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	36 in (91 cm) within a height 15 ft(4.6m)	*
I	Clearance to service regulator vent outlet	36 in. (91 cm)	*
J	Clearance to non-mechanical air supply inlet to building or the combustion air inlet to any other application	36 in. (91 cm)	4 ft (1.2m) below or to side of opening; 1ft (300mm) above opening
K	Clearance to mechanical air supply inlet	72 in. (183 cm)	36 in. (91 cm) above if within 10 ft(3m) horizontally
L	Clearance above paved sidewalk or paved driveway located on public property	84 in. (213 cm)†	Vents for Category II and IV appliances cannot be located above public walkways or other areas where condensate or vapor can cause a nuisance or hazard
M	Clearance under veranda, porch deck or balcony	12 in. (30 cm)‡	*

[*] The minimum distance from adjacent public walkways, adjacent buildings, openable windows, and building openings shall not be less than those values specified in the National Fuel Gas Code, ANSI Z223.1/NFPA 54, and/or the Natural Gas and Propane Installation Code, CSA B149.1;

a) Clearance in accordance with local installation codes and the requirements of the gas supplier.

b) The minimum height from the ground shall not be lower than the snowfall to prevent blockage by snow. And there shall be sufficient clearance from the building material to protect from degradation by flue gases.

NOTE

1) In accordance with the current CSA B149.1, Natural Gas and Propane Installation Code.

2) In accordance with the current ANSI Z223.1 / NFPA 54, National Fuel Gas Code.

3) If locally adopted installation codes specify clearances different than those illustrated, then the most string ent clearance shall prevail.

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

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

Vent Pipe Materials

Caution

Venting requirements differ in the US and Canada. Consult the following chart or the most recent edition of ANSI Z223.1/ NFPA 54 or CAN/CGA B149.1, as well as all applicable local codes and regulations when selecting vent pipe materials. Do not use cellular core PVC (ASTM F891), cellular core CPVC, Radel® (polyphenolsulfone) for the exhaust vent.

Locale	Recommended Vent Materials
USA	• PVC Schedule 40 (solid core) • CPVC Schedule 40 or 80 (solid core) • Approved Polypropylene*
Canada*	• Type BH Special Gas Vent Class IIA (PVC) • Type BH Special Gas Vent Class IIB (CPVC) • Thpe BH Special Gas Vent Class IIC (Polypropylene)

* Approved polypropylene systems include:
Duravent Polypro (Single Wall): 2PPS-xxx (2 in), 3PPS-xxx (3 in)
Centrotherm Innoflue SW: ISxx02xx (2 in), ISxx03xx (3 in)
Centrotherm InnoFlue Flex: IFVL02XXX (2 in)
Refer to the manufacturer's literature for detailed information.

* 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 water heater.

Caution

- This water heater has a built-in control to limit the exhaust temperature to 149°F (65°C). As a result, the VST water heater can be vented with Schedule 40 PVC.
- However, if you set the water heater at a temperature above 150°F (66°C) for commercial use and you are also incorporating either an external recirculation loop or a combination heating system, the exhaust temperature can exceed 149°F (65°C). In that case, you must use Schedule 40 or 80 CPVC or Approved Polypropylene in the USA or Type BH Special Gas Vent Class IIB (CPCV) or Class IIC (Polypropylene) that conforms to ULC-S636 in Canada.

Vent Length

The maximum vent length when using 2" exhaust ducts is 60'. The maximum vent length when using 3" vent ducts is 150'. The intake duct length can be of equal length to the exhaust duct length. Both maximum lengths are reduced by the number of elbows used, as shown in the following table:

Vent Size	Maximum Length	Maximum # of Elbows	Equivalent Lengths
2"	75' (23 m)	7	Reduce the maximum vent length accordingly for each elbow used: • Each 90° elbow equates to 8 linear feet (2.4 m) of vent • Each 45° elbow equates to 4 linear feet (1.2 m) of vent
3"	150' (45 m)	8	Reduce the maximum vent length accordingly for each elbow used: • Each 90° elbow equates to 5 linear feet (1.5 m) of vent • Each 45° elbow equates to 3 linear feet (0.9 m) of vent

Notice

- The maximum length does not include any elbows.
- If using a concentric termination as shown on pages 34, count this as 8 linear feet (2.4 m) of vent.

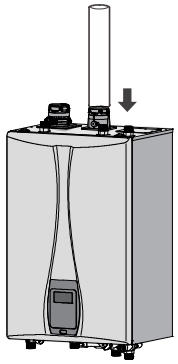
Connecting the Vent Clip

Caution

To connect the exhaust vent firmly, must use the vent clip included with water heater.

To connect the vent clip:

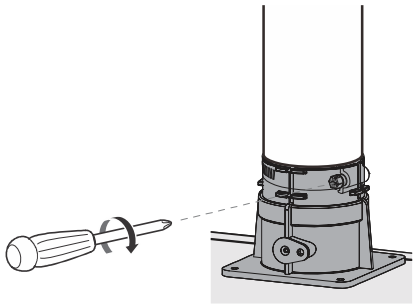
1 Connect the exhaust vent and the vent clip to the flue connector.



Caution

- DO NOT USE 2" straight 90 or 45

2 Tighten the screws and fix the vent clip.



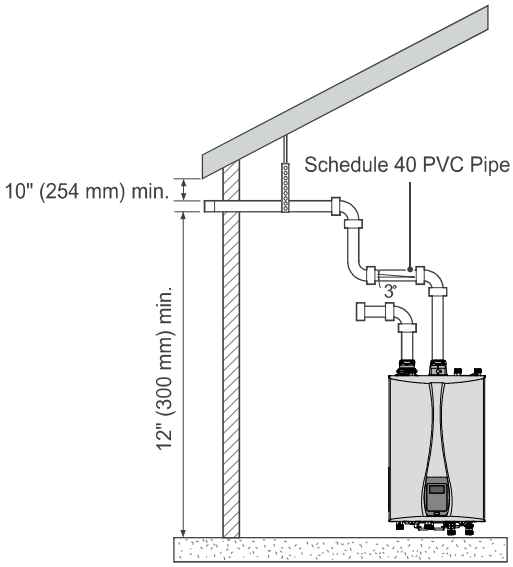
Vent Termination

Caution

- Air intake must be protected from any debris.
- When connecting to the air intake connector and exhaust flue connector, all connecting parts must be installed properly.
- Maintain 12" (300 mm) min. (18" (450 mm) min. for Canada) clearance above highest-anticipated snow level. Maximum of 24" (600 mm) above roof.
- Install a bird screen at the end of the intake air pipe and exhaust pipe.

Determine what type of vent termination is appropriate for the installation location and situation before installing the water heater. The following subsections describe some venting configurations, but do not include all possible options.

Single-pipe sidewall venting



Caution

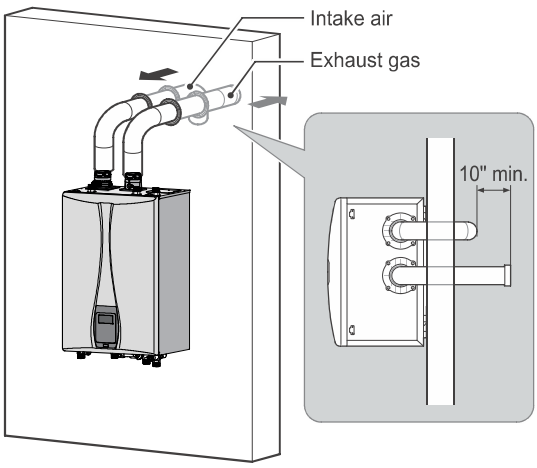
- Maintain 12" (300 mm) min. (18" (450 mm) min. for Canada) clearance above highest-anticipated snow level. Maximum of 24" (600 mm) above roof.
- Install a bird screen at the end of the intake air pipe and exhaust pipe.
- DO NOT USE 2" straight 90 or 45

Notice

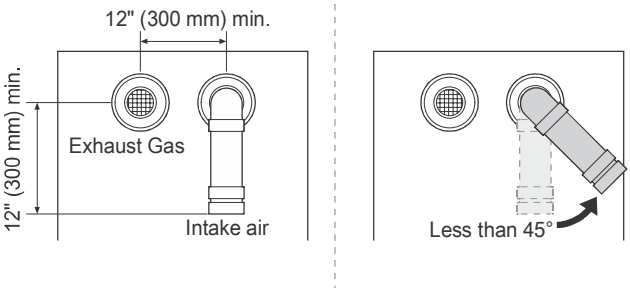
Single-pipe venting requires that adequate combustion air be provided in end-use installations per NFPA 54 C.9.3.2.

Two-pipe sidewall venting

Internal view



External view



Caution

- Maintain 12" (300 mm) min. (18" (450 mm) min. for Canada) clearance above highest-anticipated snow level. Maximum of 24" (600 mm) above roof.
- Install a bird screen at the end of the intake air pipe and exhaust pipe.

Notice

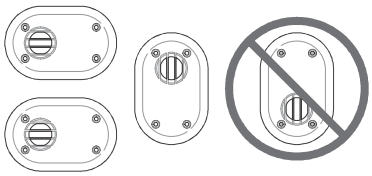
It is recommended to install the intake air vent terminal as far from the exhaust gas vent terminal as possible.

Caution

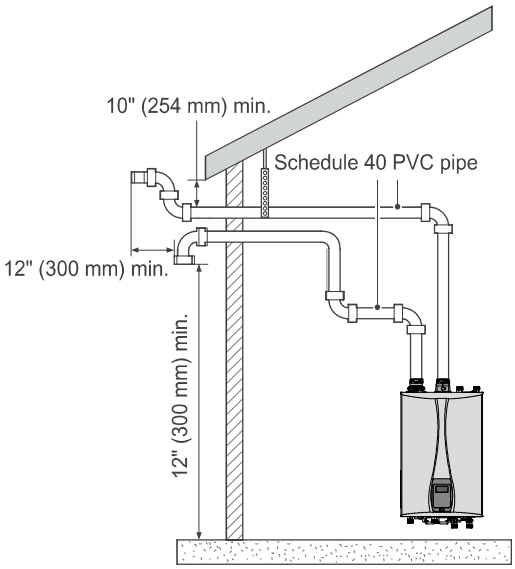
If the side wall vent termination kit is used, refer to the figure below for the orientation of the vent.

The following terminations can also be used:
IPEX Low Profile Termination Kits:

- 2 in Low Profile Vent Kit #196984
- 3 in Low Profile Vent Kit #196985



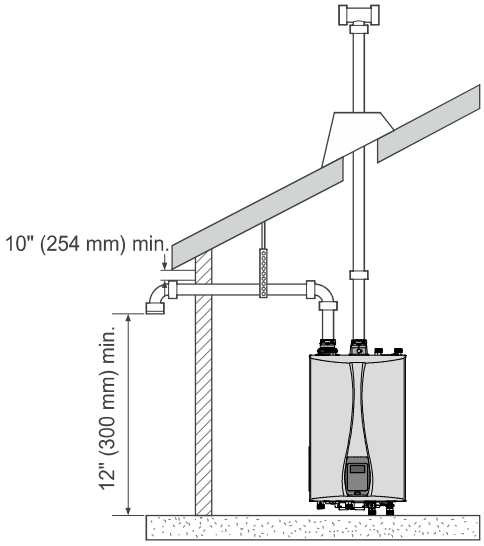
Snorkel flue



Caution

- Maintain 12" (300 mm) min. (18" (450 mm) min. for Canada) clearance above highest-anticipated snow level. Maximum of 24" (600 mm) above roof.
- Install a bird screen at the end of the intake air pipe and exhaust pipe.

Non-concentric sidewall venting



Caution

- Maintain 12" (300 mm) min. (18" (450 mm) min. for Canada) clearance above highest-anticipated snow level. Maximum of 24" (600 mm) above roof.
- Install a bird screen at the end of the intake air pipe and exhaust pipe.

Notice

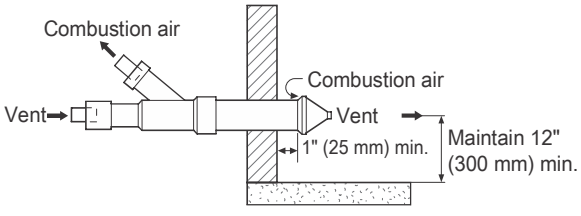
Air is drawn from a different location at a minimum of 12" (300mm) from the exhaust termination. Try to minimize the length of the intake air pipe with this venting.

Concentric sidewall venting

The following terminations can also be used:

Duravent PolyPro Horizontal Concentric Termination Kit.

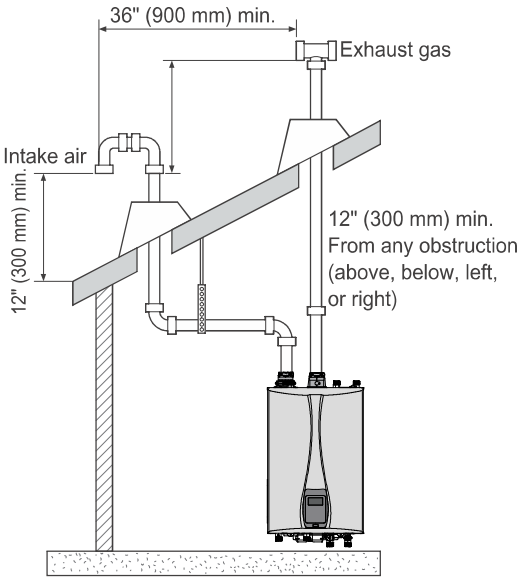
- 2 in x 4 in Concentric Vent Kit #2PPS-HK
- 3 in x 5 in Concentric Vent Kit #3PPS-HK



Caution

Maintain 12" (300 mm) min. (18" (450 mm) min. for Canada) clearance above highest-anticipated snow level. Maximum of 24" (600 mm) above roof.

Two-pipe vertical venting



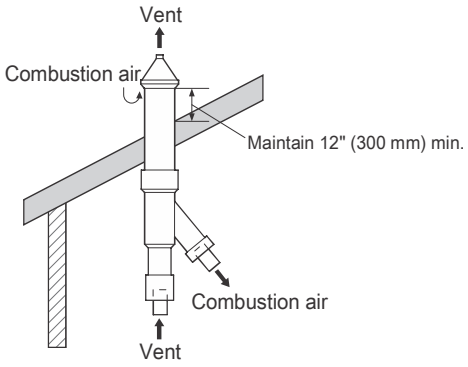
Caution

- Maintain 12" (300 mm) min. (18" (450 mm) min. for Canada) clearance above highest-anticipated snow level. Maximum of 24" (600 mm) above roof.
- Install a bird screen at the end of the intake air pipe and exhaust pipe.

Notice

Intake and exhaust pipes do not have to terminate in the same area.

Concentric roof venting

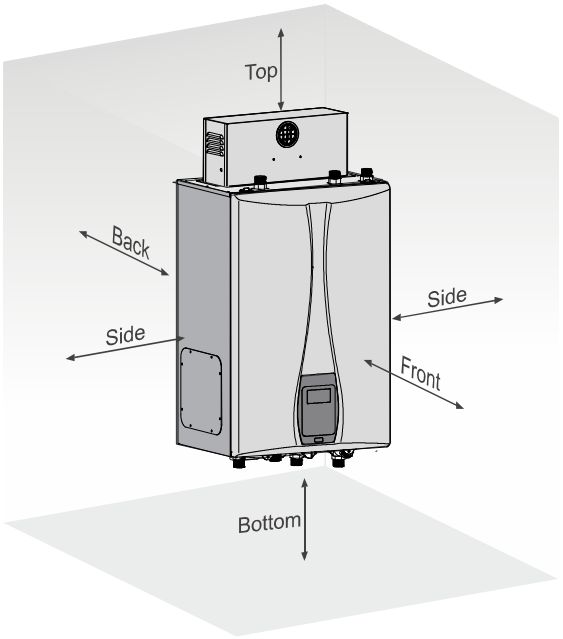


Caution

Maintain 12" (300 mm) min. (18" (450 mm) min. for Canada) clearance above highest-anticipated snow level. Maximum of 24" (600 mm) above roof.

Outdoor Installation

Outdoor installation should only be considered in mild climates. Freezing temperatures or contaminated air can be damage the water heater. When installing the water heater outdoor, maintain clearance from building openings, as described in the "Non-Direct" section on page 29. Outdoor installation areas should be in an open, unroofed area and should allow for the following minimum clearances from the water.



Clearance From	Wall Mounting
Top	36 inches (900 mm) min.
Back	0.6 inches (15 mm) min.
Front	24 inches (600 mm) min.
Sides	60 inches (1524 mm) min.
Bottom	12 inches (300 mm) min.

When installing a water heater outdoors, follow these guidelines;

- The VST's outdoor Vent Kit must be used to ensure proper operation of the water heater.
- Ensure that there is plenty of clearance around the air intake and that it is adequately protected to prevent any debris, liquids, or flammable gases from entering the air intake.
- Please refer to page 8 for the rating plate enclosed with the outdoor kit.

Common Vent System Information (Optional)

About the Common Vent System

Common Vent System allows multiple VST water heaters to share the same vent system, which means fewer wall or roof cuts, less labor, and longer vent lengths than with single-unit water heater venting.

- VXP 9
- VX 9

Danger

- Category IV appliances require a special venting system. The vent system will operate with a positive pressure in the pipe.
- Exhaust gases must be piped directly outdoors using the vent materials and rules outlined in these instructions. Do not connect vent connectors serving appliances vented by natural draft into any portion of mechanical draft systems operating under positive pressure. Follow the venting instructions carefully. Failure to do so will result in substantial property damage, severe personal injury or death.

Warning

- Improper venting of the water heater units can result in excessive levels of carbon monoxide, which can lead to severe personal injury or death. The water heaters units must be vented in accordance be vented in accordance with the "Venting of Equipment" section of the latest edition of the ANSI Z223.1/NFPA 54 Natural Fuel Gas Code in the USA, as well as all applicable local building codes and regulations. Follow all instructions and guidelines when venting the water heater units.
  Venting should be performed only by a licensed professional.
- Venting system must be sealed gastight to prevent flue gas spillage and carbon monoxide emissions, which will result in severe personal injury or death.
- The building owner is responsible for keeping the exhaust and intake terminations free of snow, ice, or other potential blockages, as well as scheduling routing maintenance. Blocked or obstructed vent piping terminations could result in property damage, severe personal injury, or death.

Guideline for a Common Vent System

Caution

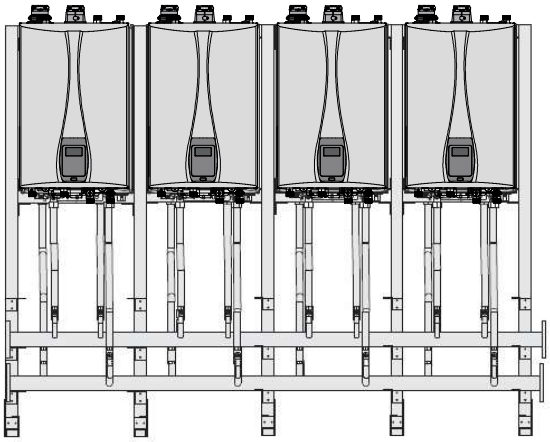
- To ensure the correct operation of the common vent system,
  - A cascade communication cable must be installed between all units in the common vent system by the installer.
  - Backflow dampers must be installed in the exhaust duct of each water heater unit.
- This manual covers the installaion of a common vent system for VR water heaters only.

To ensure the safe and correct installation of the common vent system, carefully follow the instructions and guidelines.

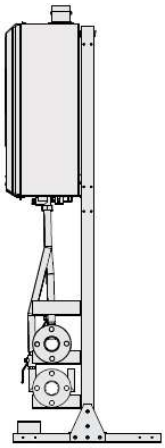
- A maximum of 8 VR water heaters may be connected to one common vent system. In a system that has more than 8 VR water heaters, use 2 common vent systems or consult VST.
- Position the water heaters units as close as possible to the vent termination.
- Do not use cellular core PVC (ASTM F891),cellular core CPVC, Radel® (polyphenolsulfone), ABS, or galvanized material for the exhaust vent.
- Support horizontal vent runs a minimum of every four feet and all vertical vent runs a minimum of every six feet..
- Venting should be as direct as possible with a minimum number of pipe fittings.
- Vent connections must be attached together so that they form an air tight seal.
- If the water heater units will be installed in areas where snow is known to accumulate, protect the vent termination from blockage. Provide a minimum of 1 foot (30 cm) clearance from the bottom of the exhaust of the expected snow accumulation level. Snow removal may be necessary to maintain clearance.
- Set the temperature setting on all water heaters being common vented to the same temperature.

Clearances Between Multiple Units

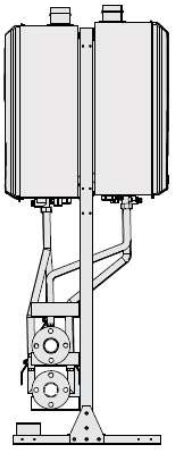
- Ensure that the installed water heaters satisfy all installation clearances provided in the manual. It is essential that there is sufficient clearance space for the common vent system to work properly.
- The water heater units can be mounted either IN-LINE or BACK TO BACK.



VST Modular Configuration with Rack System



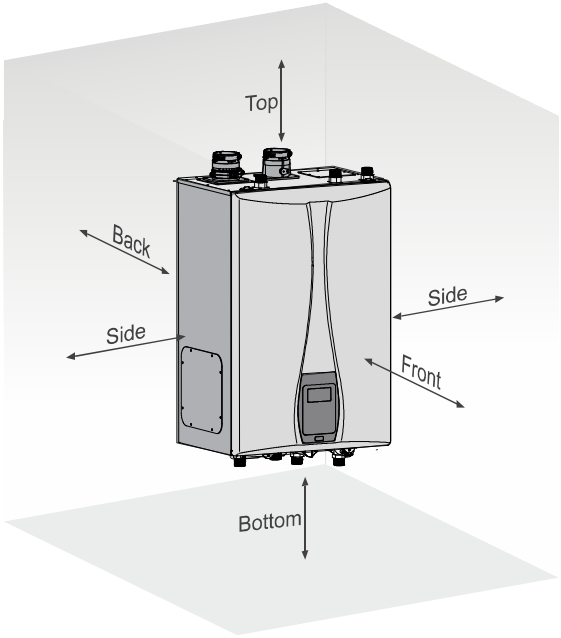
IN-line Setup



Back to Back Setup

Clearances Chart for Common Vent Application

- The water heaters should be installed in an area that allows for service and maintenance access to utility connections, piping, filters, and traps. Ensure the following clearances are maintained:



Clearance From	Wall Mounting
Top	36 inches (914 mm) min.
Back	0.6 inches (15 mm) min.
Front	24 inches (609 mm) min.
Sides	3 inches (76 mm) min.
Bottom	12 inches (300 mm) min.

Caution

Do not install the water heaters on carpeting.

Local	Recommended Vent Materials
Bottom	12 inches (300 mm) min.

Selecting Vent Pipe Materials

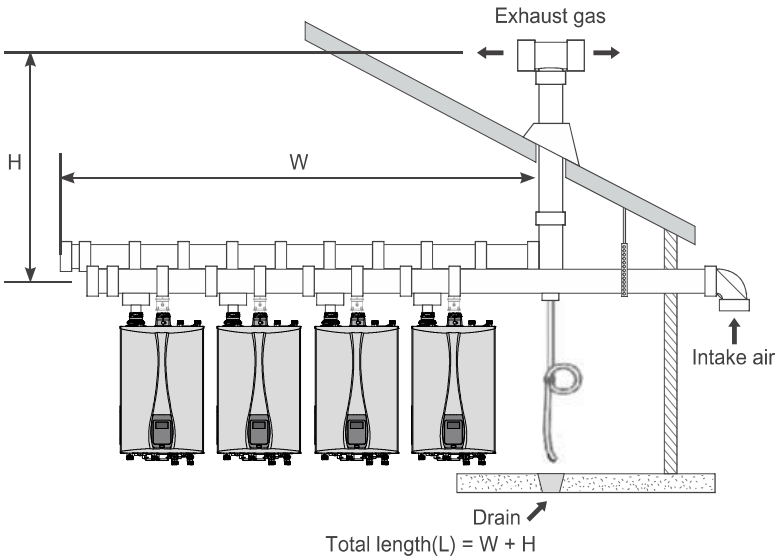
- Consult the following chart or the most recent edition of ANSI Z223.1/NFPA 54, as well as all applicable local codes and regulations when selecting vent pipe materials. This appliance should be vented with materials approved for category IV gas appliances.

Determining the Length of Common Vent System

When selecting an installation location, you must ensure that clearances will be met and the vent length will be within required limits.

Requirements

- Intake and exhaust terminations must vent outside the building.
  Add the BTU/H input ratings for each unit in the common vent system to determine the total BTU/H rating.



Vent Length for VXP/VX Water Heater

Qty	Required Load (BTU/H)	Total Length (ft)							
		D=3"		D=4"		D=6"		D=8"	
		Min	Max	Min	Max	Min	Max	Min	Max
2	398,000	13.1	43	13.1	70				
3	597,000	20	28	20	50	20	112		
4	796,000	20	21	20	38	20	84		
5	995,000					21.7	67	21.7	120
6	1,194,000					21.7	56	21.7	100
7	1,393,000					23.5	48	23.5	85
8	1,592,000					25.2	42	25.2	75

Notice

- Every 90° elbow used is equivalent to 8 linear feet (2.4 m) of vent length.

Installing a Vent (For common vent installation only)

Install the Venting

Venting installation Sequence

- Listed below is the sequence for installing PVC/CPVC common venting.

1 Choose the Installation Location.

2 Install the Backflow damper

3 Assemble the Header

4 Connect the Venting

5 Terminate the Venting

6 Connect the Cables

7 Post Installation Checklist

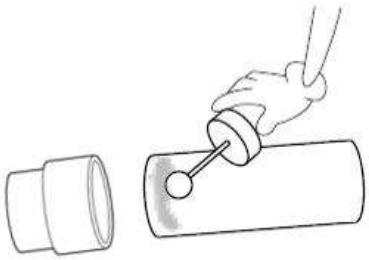
Connecting Pipes with Cement

Warning Do not mix components from different systems. The vent system may fail and harmful flue products may leak into the living space. Mixing of venting materials will void the warranty and certification of the appliance.

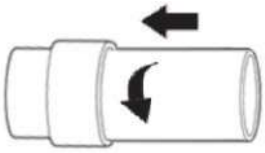
Caution The vapors from primers and solvent cements can make you dizzy and are dangerous to your health. Ensure that the work area is well ventilated, or wear an approved organic vapour respirator when working with primers and solvent cements.

- Listed below is the sequence for installing PVC/CPVC common venting.

1 Spread an even layer of solvent cement on the inside of the pipe fitting and the outside of the pipe.



2 Align the pipe with the pipe fitting and twist the pipe a quarter turn as you insert it into the fitting. Twisting the pipe spreads the solvent cement evenly to ensure a solid joint.



3 Hold the pipe and pipe fitting together for about 15 seconds until the cement sets.

Notice

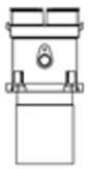
- Use approved solvent type cement for the proper vent materials.
- Use solvent type cement only.
- Check the date of manufacture before using the cement. Ensure that cement was not manufactured more than 2 years prior to using it.
- Ensure that the inside of the pipe fitting and the outside of the pipe, where cement will be applied, is clean.
- Apply an even layer of cement over all mating surfaces.
- Use solvent cement in room temperatures higher than 32°F.
- Installing vent pipe with cement in cold ambient temperatures can result in longer cure times.

Danger Be careful not to apply force or impact to pipes after making connections. An may break the bond and harmful gas might leak inside the room.

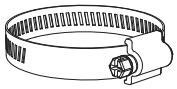
Install the Venting

Open the package and verify the following contents are included.

Kit Name	Backflow Damper Kit (VX)
Kit No.	2116033



Backflow Damper



Vent clip

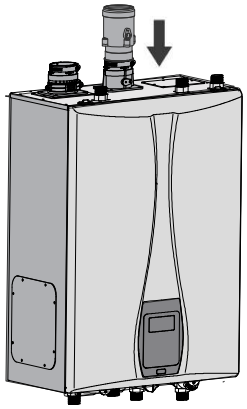
Notice

If there is a missing item, please contact Technical Support at 1-800-761-0053.

Backflow Damper Assemply

- Follow the instructions below to assemble the backflow damper on the VX water heater units:

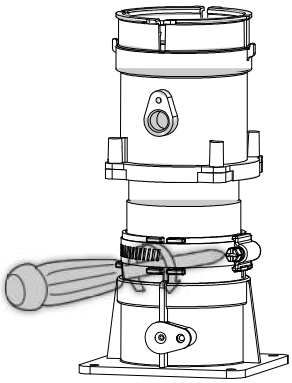
1 Connect the Backflow Damper with the vent clip to the exhaust collar connection, check diagram for proper position



Caution

To connect the exhaust vent fimly onto unit use the provided Vent Clip Connection.
Check vent clip size and adjust accordingly before installation.

2 Tighten the screws and fix the vent clip.

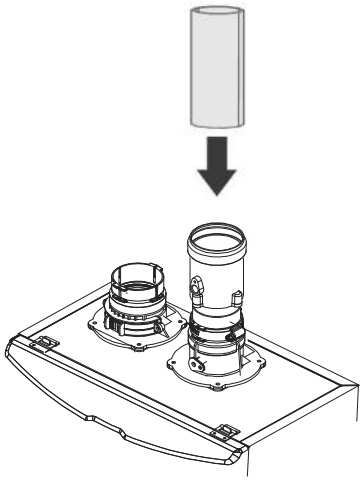


Notice

- VX series Exhaust vent is on the Center side.

Connecting the Pipe to the Damper

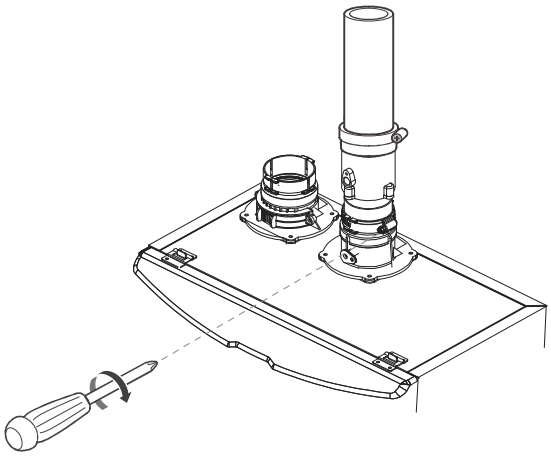
1 Insert vent pipe to the backflow damper to start the vent run.



Caution

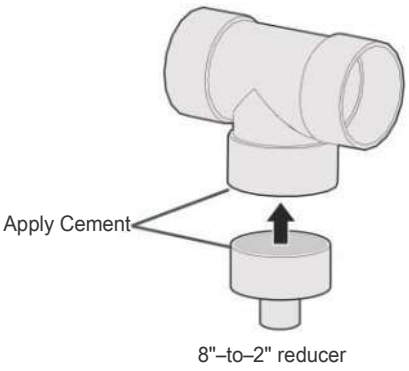
- DO NOT USE 2" straight 90 or 45

2 Completely slide the vent pipe ends into the transition fitting. Tighten the clamp with a screwdriver to properly seal the joint.



Assembling the T joint

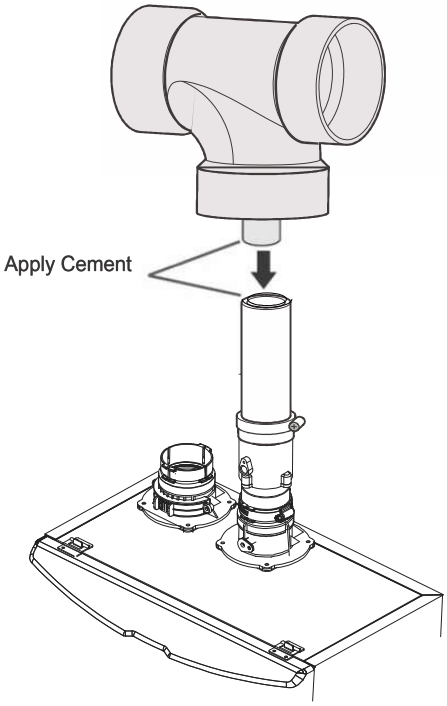
1 Connect an 8"–to–2" reducer to the T. Apply solvent cement to the mating surfaces.



Notice

Multiple reducers can be used to allow proper connection of 2" vent pipe to the common vent system.

2 Assemble the T joint assembly to the vent pipe. Apply solvent cement to the mating surfaces.

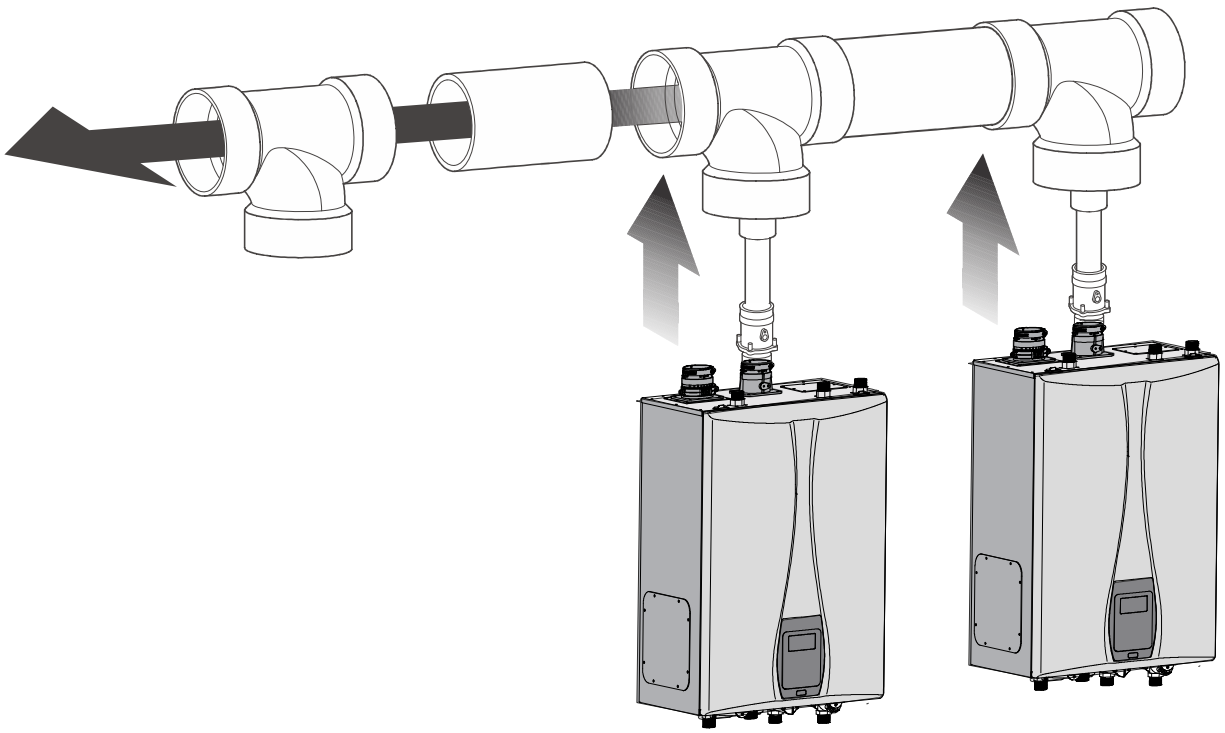


Connecting and Terminating the Vent Pipe

Refer to the following example to install the common vent system. The installation area should be measured to ensure that sufficient space is avaliable to install the water heater units and the common vent system. Ensure that the common vent system is installed near the water heater units while satisfying all clearance requirements that are specified in this manual as well as the installation Manuals supplied with the water heater units.

Connecting the Main Pipe Runs to T joint

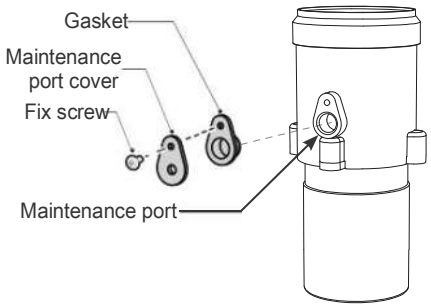
After connecting the T joint to the 8"-to-2" reducer, connect the main trunk pipe to each side of the T. Each trunk pipe is connected to the other T joint. Refer to "Connecting Pipes with Cement" on page 38 for more information.



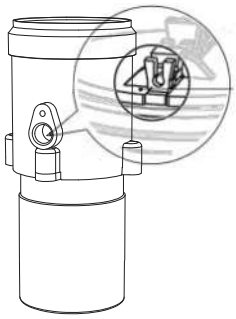
Maintenance

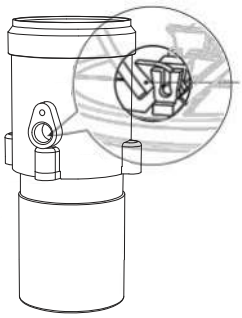
Periodically check the damper condition inside the backflow damper through the maintenance port to ensure optimal performance of the system. Follow the instructions to check the damper condition and replace the backflow damper if necessary.

1 Remove the screw that fixes the maintenance port cover to the backflow damper, and then remove the gasket and the maintenance port cover.

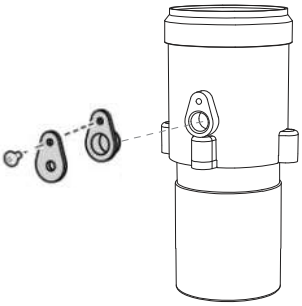


2 Through the maintenance port, check the operating condition of the damper plate inside the backflow damper.


Damper pad is CLOSED.


Damper pad is OPEN.

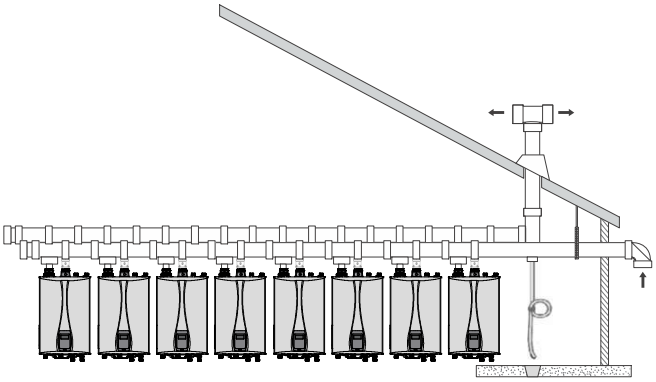
3 Reinstall the gasket and maintenance port cover, and then fix them with a set screw.



4 Visually inspect the maintenance port to ensure that the gasket is properly installed between the maintenance port and the maintenance port cover.

Example of a Typical Installation

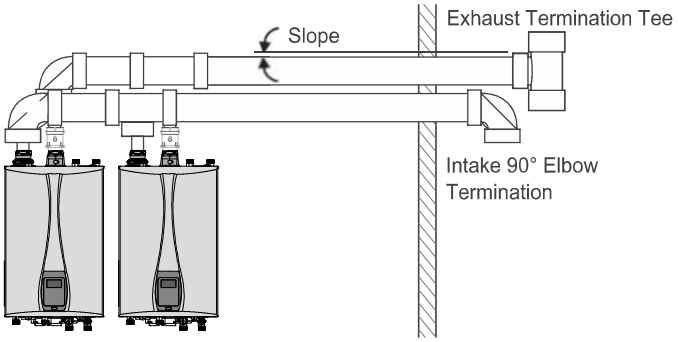
The following illustration depicts an example of a common vent system installed for a cascade system of 8 VX Water heater units.



Notice

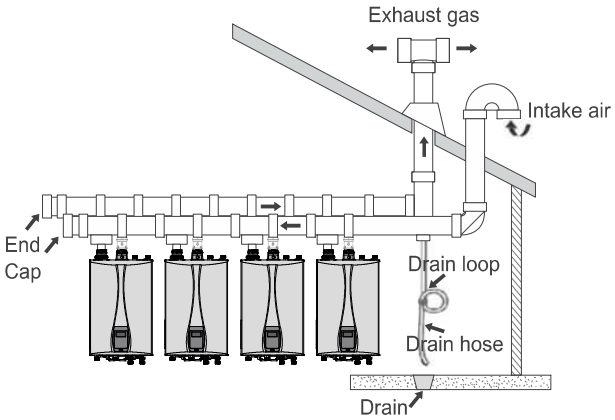
The illustration is intended for reference purpose only.

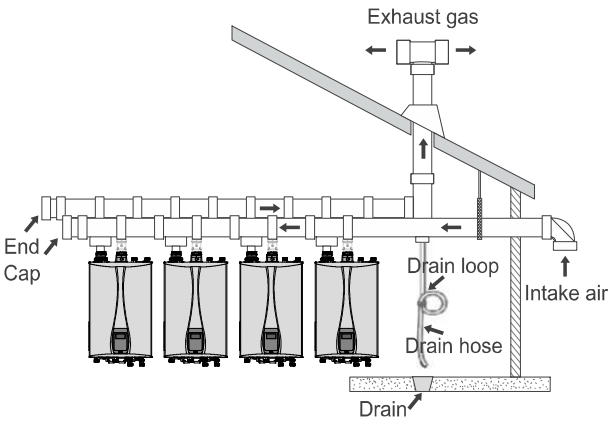
Drain hose installation is not required if there is slope in the horizontal exhaust.



Installing a Condensate Drain

Refer to the following examples to install a condensate drain hose (field supplied) to the common vent system. The condensate drain hose prevents condensate or rain from entering the exhaust system and gatering above the backflow damper.





To install a condensate drain to the cascade system:

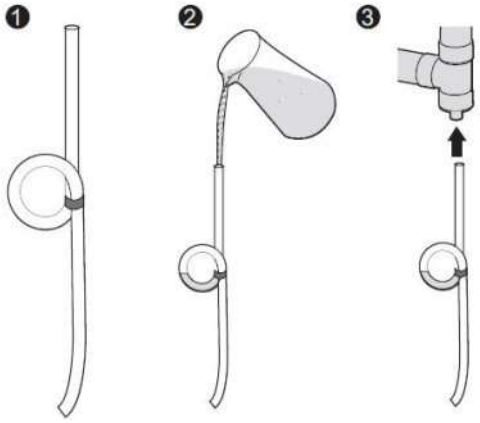
1 Form a loop with a drain hose and fix it with a tie.

Notice

- While shaping the hose, do not bend the hose excessively. The hose will be deformed and the flow will be restricted if the hose is bent in sharp angles.
- Do not fix the hose too tight when tying the hose to form the loop. The hose will be deformed and the flow will be restricted if the tie is too tight.

2 Prime the loop using tap water.

3 Install the hose to the cascade system and direct the end of the hose to a drain.

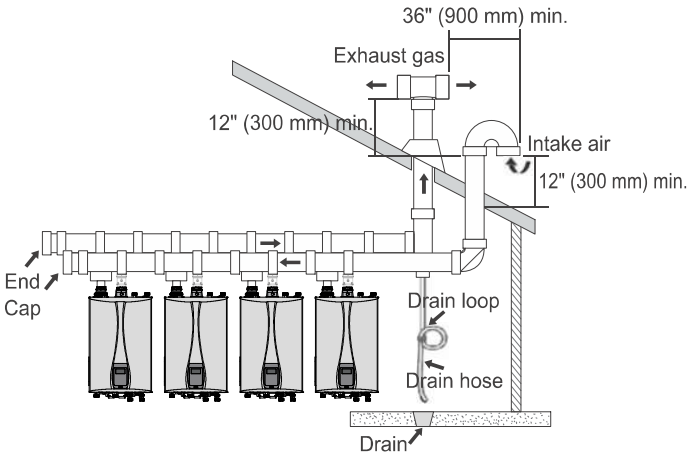


Warning

After installing the condensate drain hose, check the loop again to ensure that the prime water is not spilled. The loop (siphon) must be primed with water before running the system to prevent toxic exhaust gas from leaking into the installation site.

Common Vent Clearances

Direct Vent Application – Vertical Installation



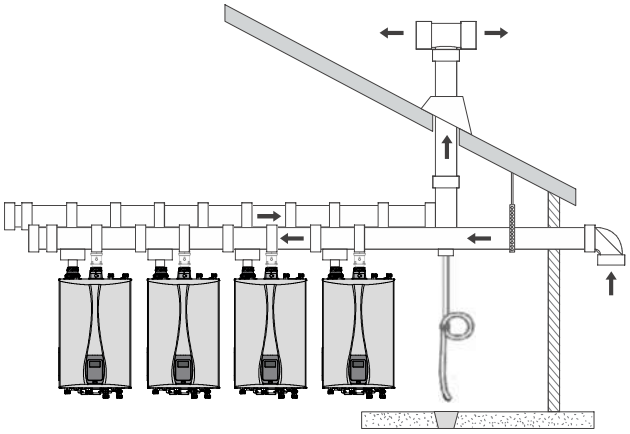
Caution

- Maintain 12" (300 mm) min. clearance above highest anticipated snow level. Maximum of 24" (600 mm) above roof.
- Install a bird screen at the end of the intake air pipe and exhaust pipe.

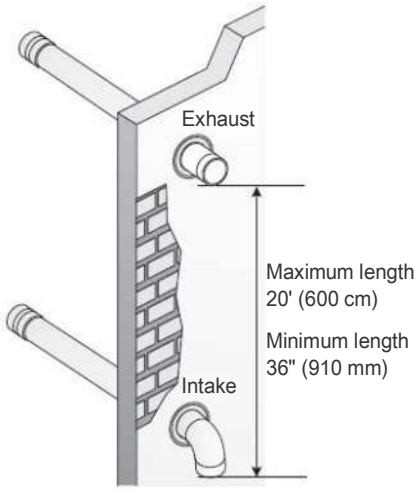
Notice

- Intake and exhaust pipes do not have to terminate in the same area.

Venting Intake and Exhaust to Different Locations



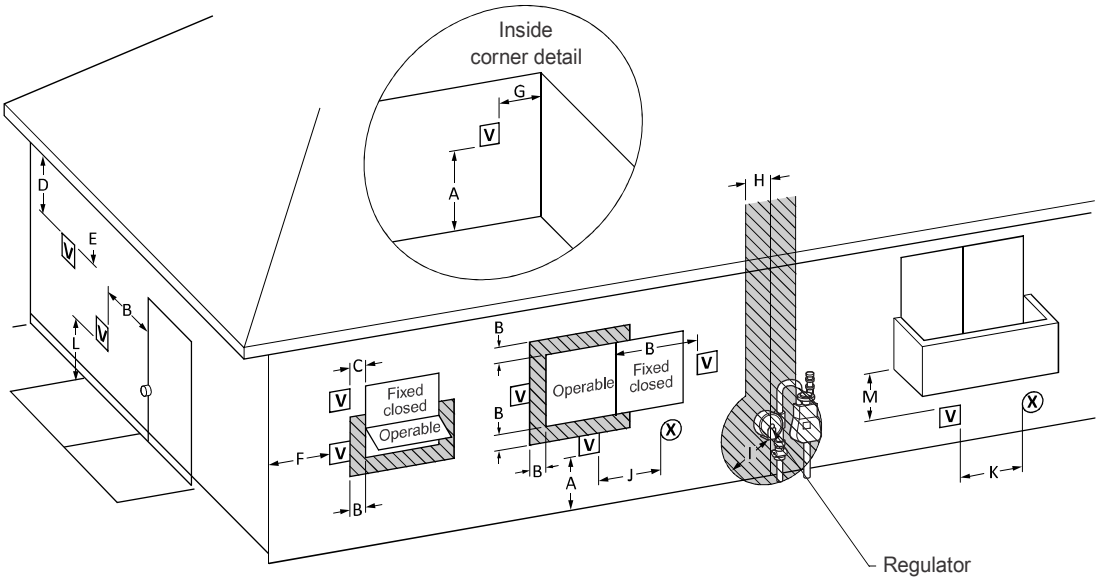
Direct Vent Application – Horizontal Installation



Notice

- The illustration is intended for reference purposes only.
- Direct the exhaust away from any building openings.
- During cold weather situations, the temperature of the exhaust will be much warmer than the ambient air. Therefore, you will see water vapor being produced at the termination.

Exhaust Vent Termination Clearances



Legend:

V = Vent terminal

X = Air supply inlet

= Area where terminal is not permitted

		Canadian Direct Vent Installation [1]	U.S. Direct Vent Installation [2]
A	Clearance above grade, veranda, porch, deck or balcony	12 in. (30 cm)	12 in. (30 cm)
B	Clearance to window or door that may be opened	36 in. (91 cm)	12 in. (30 cm)
C	Clearance to permanently closed window	*	*
D	Vertical clearance to ventilated soffit located above the vent termination within a horizontal distance of 2 feet (61cm) from the center line of the termination	*	*
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	36 in. (91 cm) within a height of 15 ft(4.6m)	*
I	Clearance to service regulator vent outlet	36 in. (91 cm)	*
J	Clearance to non-mechanical air supply inlet to building or the combustion air inlet to any other application	36 in. (91 cm)	12 in. (30 cm)
K	Clearance to mechanical air supply inlet	72 in. (183 cm)	36 in. (91 cm) above if within 10 ft(3m) horizontally
L	Clearance above paved sidewalk or paved driveway located on public property	84 in. (213 cm)†	Vents for Category II and IV appliances cannot be located above public walkways or other areas where condensate or vapor can cause a nuisance or hazard*
M	Clearance under veranda, porch deck or balcony	12 in. (30 cm)‡	*

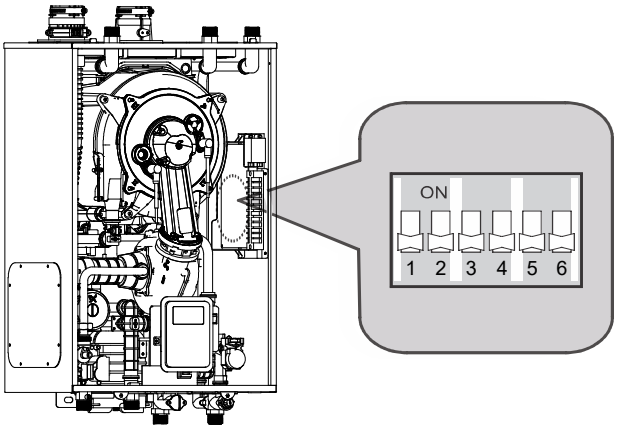
[*] The minimum distance from adjacent public walkways, adjacent buildings, openable windows, and building openings shall not be less than those values specified in the National Fuel Gas Code, ANSI Z223.1/NFPA 54, and/or the Natural Gas and Propane Installation Code, CSA B149.1;
a) Clearance in accordance with local installation codes and the requirements of the gas supplier.
b) The minimum height from the ground shall not be lower than the snowfall to prevent blockage by snow. And there shall be sufficient clearance from the building material to protect from degradation by flue gases.

NOTE

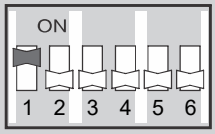
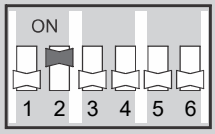
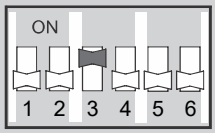
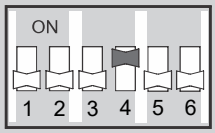
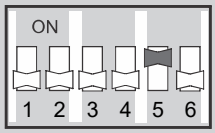
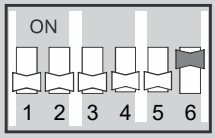
1) In accordance with the current CSA B149.1, Natural Gas and Propane Installation Code.
2) In accordance with the current ANSI Z223.1 / NFPA 54, National Fuel Gas Code.
3) If locally adopted installation codes specify clearances different than those illustrated, then the most string ent clearance shall prevail.
† A vent shall not terminate directly above a sidewalk or paved driveway that is located between two single family dwellings and serves both dwellings.
‡ Permitted only if veranda, porch, deck, or balcony is fully open on a minimum of two sides beneath the floor.

Setting the DIP Switches

The water heater has a DIP switch on the main circuit board (PCB). Set the DIP switches appropriately, depending on the installation environment.



6-switch panel (SW1)

Switch	Function
	Minimum heat capacity operation.
	Maximum heat capacity operation
	Reserved
	Reserved
	Reserved
	Reserved

Connecting the Power Supply

Warning

Improperly connecting the power supply can result in electrical shock and electrocution. Follow all applicable electrical codes of the local authority having jurisdiction. In the absence of such requirements, follow the latest edition of the National Electrical Code (NFPA 70) in the USA or the latest edition of CSA C22.1 Canadian Electrical Code Part 1 in Canada. Connecting the power supply should be performed only by a licensed professional.

When connecting the power supply, follow these guidelines:

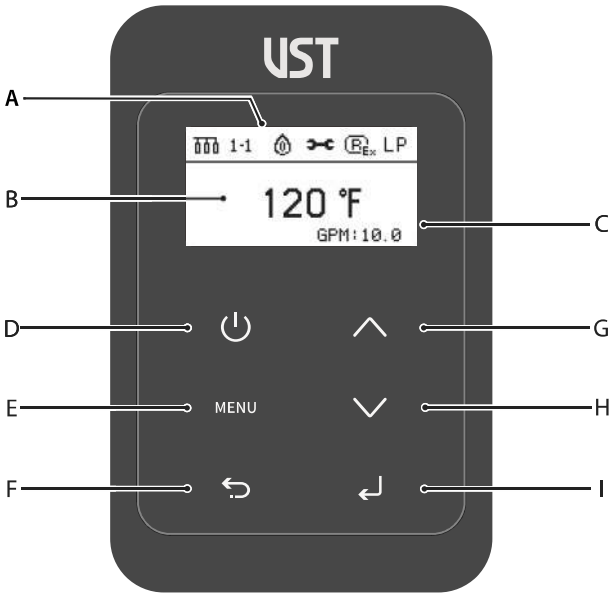
- Do not connect the electric supply until all plumbing and gas piping is complete and the water heater has been filled with water.
- Do not connect the water heater to a 220-240V AC power supply. Doing so will damage the water heater and void the warranty.
- All water heaters come with a factory-installed, 3-pronged (grounded) plug. The water heater can be plugged into any grounded electrical outlet nearby, as it requires only 5A. It is not necessary to run a dedicated electrical line to the water heater.
- If local codes require the water heater to be wired directly, remove and discard the factory- installed plug. Install a power switch between the breaker and the water heater to facilitate end-user maintenance and servicing. Connect the water heater to a 110-120V AC at 60 Hz with a maximum of 5A rating electrical supply.
- The water heater must be electrically grounded. If using the power plug, ensure that the electrical outlet you connect the water heater to is properly grounded. If wiring the water heater directly to a power supply, do not attach the ground wire to either the gas or the water piping as plastic pipe or dielectric unions may prevent proper grounding.
- We recommend using a surge protector to protect the water heater from power surges.
- If there is a power failure in cold weather areas, the freeze prevention system in the water heater will not operate and may result in freezing of the heat exchanger. In cold weather areas where power failures are common, you must completely drain the water heater to prevent damage if the power is expected to be o fffor any extended period of time. A battery back-up (available at most computer retailers) may be used to supply hot water during periods of power outages. Damage caused by freezing is not covered under warranty.

Front Panel

Caution | After installing the water heater, you must proceed to Calibration mode before using the water heater. (Please refer to the installation manual.)

Digital Display and Icons

The digital display and icons on the front panel provide important information required for the operation of the water heater. Refer to the table below for detailed information.



	Icon	Description
A		Cascade Indicates the cascade operation.
	1-1	Cascade Group & ID Indicates the cascade group and ID.
		IoT Indicates the use of the IoT mode.
		Combustion Indicates the gas burner operation.
		Error Indicates error.
		Freeze and burst prevention Indicates freeze and burst prevention operation.
		Internal re-circulation type. Indicates the internal re-circulation type.
		External re-circulation type. Indicates the external re-circulation type.
	LP	LP Gas Displayed when LP Gas is set to use.
B	120 °F	Digital display Displays the water temperature, error codes, etc.
C	GPM	Water Flow Rate Displays the current product flow.

Buttons

Using the buttons on the front panel, you can turn the water heater on or off, adjust the water temperature, and change modes to monitor the operation status. Refer to the table below for detailed information.

	Button	Description
D		Power Turns the water heater on or off.
E	MENU	Menu Opens the Main Menu.
F		Return Returns to the previous item.
G		UP Increases the temperature and/or parameter settings.
H		Down Decreases the temperature and/or parameter settings.
I		Enter Enters the selects item.

Colors

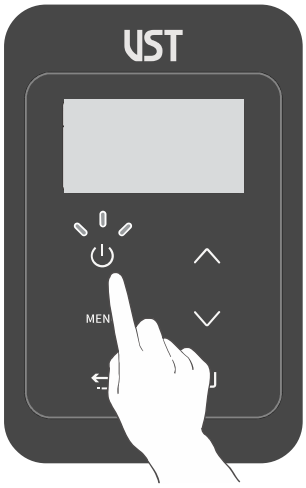
The front panel displays different colors for each mode or situation. Refer to the table below for detailed information.

	Color	Description
J	Green	Normal Operation Displays green screen when operating normally.
K	Blue	Setup Displays blue screen in setup mode.
L	Red	Error Displays red screen when error occurs.

Operating the Water Heater

Turning the Water Heater On

To turn the water heater on or off, press the ⏻ button.



When the water heater is on, the water temperature set most recently will appear on the digital display.

Setting the Water Temperature

Danger If your family includes a child, an elderly or disabled individual, consider using a lower temperature setting.

Caution Test the water temperature before use.

To set the water temperature, press the ∧ (Up) or ∨ (Down) buttons until the desired temperature appears on the digital display.

Temperature range (for household use)

°F	98	100	102	104	106	108	110	112
°C	37	38	39	40	41	42	43	44
°F	114	116	118	120	122	124	126	128
°C	45	47	48	50	51	52	53	54
°F	130	132	134	136	138	140		
°C	55	56	57	58	59	60		

Temperature range (for commercial use)

°F	98	100	102	104	106	108	110	112		
°C	37	38	39	40	41	42	43	44		
°F	114	116	118	120	122	124	126	128		
°C	45	47	48	50	51	52	53	54		
°F	130	132	134	136	138	140	150	160	170	180
°C	55	56	57	58	59	60	65	70	75	80

Notice

- Between 98°F (37°C) to 140°F (60°C), the temperature can be set in 2°F increments.
- Between 140°F (60°C) to 180°F (80°C), the temperature can be set in 10°F increments.
- To prevent burns whilst hot water is being used, the hot water temperature cannot be set above 120°F (50°C)

Viewing Basic Information

To view information about the water heater, press the MENU button.

MainMenu	1.StatusInformation
1.StatusInformation	1)DHWStatus
2.ErrorCheck	2)TimeInformation
3.Configuration	3)AccumulatedData
4.AdvancedMenu	4)FirmwareInfo.

Notice

You can check information related the water heater operation including status, temperature, flow rate, accumulated data, etc., from the Main Menu.

DHW Status

Indicates the DHW related status.

1)DHWStatus
<Temperature/Flow>
DHWTemp. 112.1℉
InletTemp. 98.6℉
InletFlow 3.22GPM
<Temperature/Flow>
ExhaustTemp.102.2℉
HEXFlow 2.50GPM
<OperationStatus>
DHWOperation RUN
HeatLoad 65%

1)DHWStatus
<FanStatus>
RPM 4,500
APS 2.5V
<ValveStatus>
FlowV/V Close20%
MixingV/VClose85%
<DHWInformation>
Model VXP9
Capacity 199,000
(BTU/h)

Time Information

Indicates the current date and time.

2)TimeInformation
01/01/2025Wed
12:00:00am

Accumulated Data

Indicates the accumulated data of the DHW, Operation, Pump, and Recirculation. (Pump and Recirculation items are only displayed in the VXP model)

3)AccumulatedData
DHWData
OperationData
PumpData
RecirculationData

DHWData
<DHWOperation>
14,600Cycles
4,380Hours
<WaterAccumulated>
15,000Gallons
<MaximumUsage>
3.22GPM
<MinimumUsage>
0.31 GPM

3)AccumulatedData
DHWData
OperationData
PumpData
RecirculationData

OperationData
<PowerSupply>
4,380Hours
<GasValveOn>
4,380Hours
<DualVenturiOn>
4,380Hours
<IgnitionTrials>
14,600Cycles
<IgnitionFailure>
23Cycles
<FlameLoss>
11Cycles

3)AccumulatedData
DHWData
OperationData
PumpData
RecirculationData

PumpData
<PumpOn>
14,600Cycles
4,380Hours

3)AccumulatedData
DHWData
OperationData
PumpData
RecirculationData

RecirculationData
<Recirc.On>
14,600Cycles
4,380Hours

Firmware Information

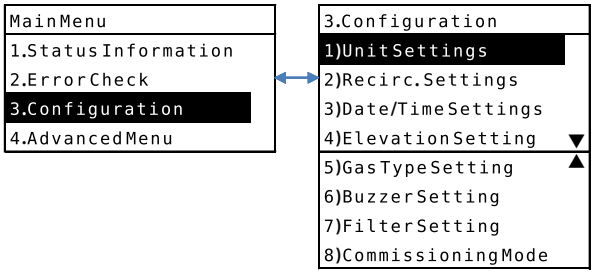
Indicates the firmware version for the main PCB and front panel.

1.StatusInformation
1)DHWStatus
2)TimeInformation
3)AccumulatedData
4)FirmwareInfo.

4)FirmwareInfo.
MainPCB V01.00
FrontPanel V02.10

Setting Basic Information

To set information about the water heater, press the MENU button.



Notice

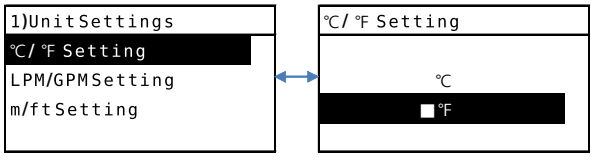
From the Main Menu, you can set the temperature unit, flow rate unit, length unit, Re-circulation, gas type, elevation, filter, buzzer and time.

Temperature Unit

You can set the temperature display unit.

1) Enter the 3.Configuration - 1)Unit Settings - °C/°F Setting Menu.

2) Set either °C or °F as the temperature display unit.



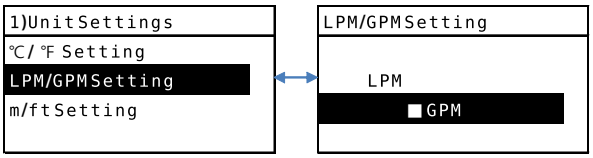
3) Press the ↵ button to complete the setting.

Flow Rate Unit

You can set the flow rate display unit.

1) Enter the 3.Configuration - 1)Unit Settings - LPM/GPM setting Menu.

2) Set either LPM(liter per minute) or GPM(gallon per minute) as the flow rate display unit.



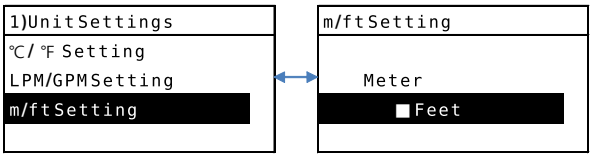
3) Press the ↵ button to complete the setting.

Length Unit

You can set the length display unit.

1) Enter the 3.Configuration - 1)Unit Settings - m/ft setting Menu.

2) Set either m(meter) or ft(feet) as the length display unit.



3) Press the ↵ button to complete the setting.

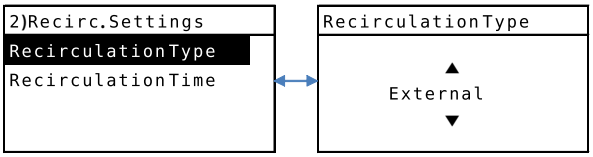
Re-circulation Settings (VXP Only)

You can set the Re-circulation mode and operation time.

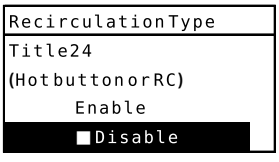
1) Enter the 3.Configuration - 2)Recirc. Settings - Recirculation Type Menu.

2) Set the Recirculation mode.

None ↔ Internal ↔ External ↔ T-valve ↔ Air Handler



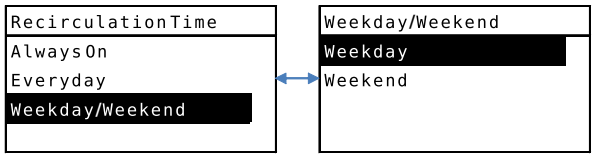
3) If you set External or T-valve mode, you can additionally set whether Title24 should be used.



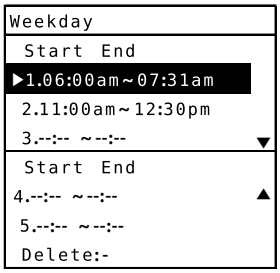
4) Press the ↵ button to complete the setting.

5) Enter the 3.Configuration - 2)Recirc. Settings - Recirculation Time Menu.

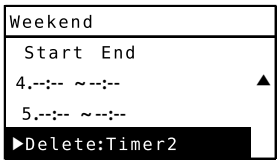
6) Select the setting method to use recirculation.
(Always On , Every Day, Weekday/Weekend)



7) If Every Day, Weekday, or Weekend is selected, set the time to use recirculation.
Set up to 5 timers. Recirculation operation is carried out for the all timer times that you set.
(You can set the timer using the ↵ and ↩ buttons.)



8) Delete the recirculation use time.
First, press the ↵ button on line Delete. And select the ∧ and ∨ buttons for the timer number you want to delete, and the press ↵ button to delete it.

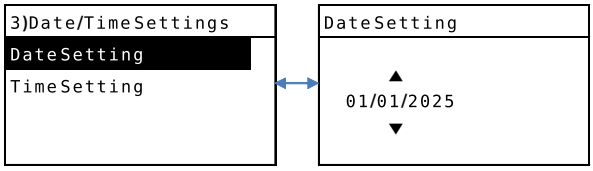


Date/Time Settings

You can set the current time and date.

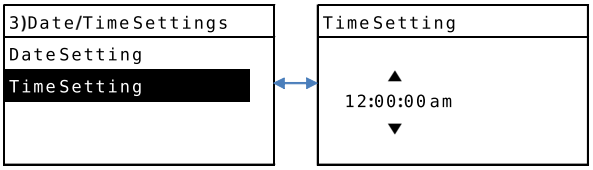
1) Enter the 3.Configuration - 3)Date/Time Settings Menu.

2) Set the date from the Date Setting Menu.
(The date is displayed in the order of month / day / year. Press the ↵ button to set the related items.)



3) Press the ↵ button to complete the setting.

4) Set the time from the Time Setting Menu.
(The time is displayed in the order of hour : minute : sec. Press the ↵ button to set the related items.)



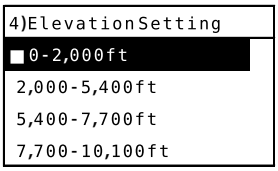
5) Press the ↵ button to complete the setting.

Elevation Setting

You can set the elevation of the installation location of the product.

1) Enter the 3.Configuration - 5)Elevation Setting

2) Set the elevation of the installation location of the product.
(You can change the unit from 3.Configuration - 1)Unit Settings - m/ft Setting menu)



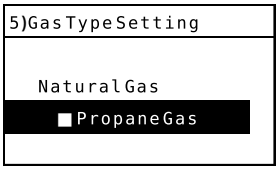
3) Press the ↵ button to complete the setting.

Gas Type Setting

You can set the type of gas used in the product.

1) Enter the 3.Configuration - 6)Gas Type Setting Menu.

2) Set the type of gas being used in the product.



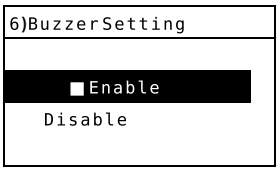
3) Press the ↵ button to complete the setting.

Buzzer Setting

You can select whether or not to use the buzzer.

1) Enter the 3.Configuration - 7)Buzzer Setting Menu.

2) Select whether or not to use the buzzer.



3) Press the ↵ button to complete the setting.

> Notice
> - Sets whether buzzer sounds occur when a button is touched.
> - The default setting is enable.

Filter Setting (Optional)

You can select whether or not to install the optional descale filter.

1) Enter the 3.Configuration - 8)Filter Setting Menu.

2) Select whether or not to install the descale filter.

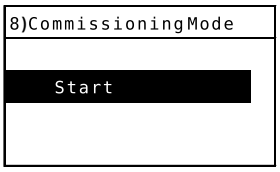
3) Press the ↵ button to complete the setting.

Commissioning Mode (VXP Only)

It provides a function to operate the pump to remove air from the pipe after installing the product.

1) Enter the 3.Configuration - 9)Commissioning Mode Menu.
(Press the ↵ button to skip the message screen)

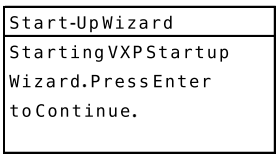
2) Press the ↵ button on the Start screen to start the pump operation.



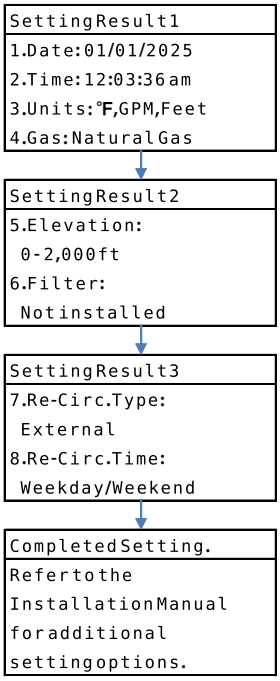
3) Press the ↵ button on the Stop screen to end the pump operation.

Start-Up Wizard

When the power is applied for the first time after installing the water heater, the basic setting necessary for operation is performed.



1. Date Setting.
2. Time Setting.
3. Units Setting.(Temperature, Flow Rate, Length)
4. Gas Type Setting.
5. Elevation Setting.
6. Filter Setting.
7. Re-circulation Settings.(Type, Time) (VXP Only)
8. After completing the setting, check the setting result. (Subsequent setting changes can be set in Main Menu - 3.Configuration.)

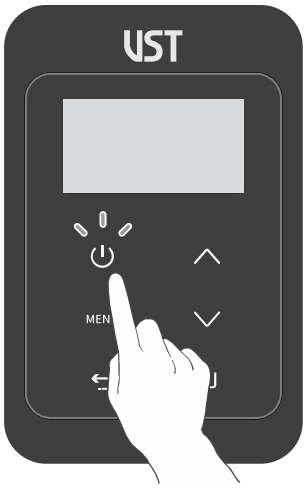


Setting the Program data

To change the program data.

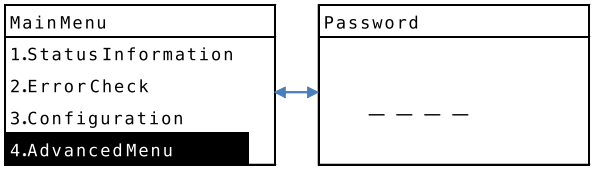
1 Connect the power supply.

2 To turn the water heater on, press the ⏻ button.

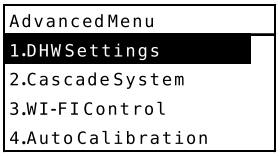


3 Press the Menu button.

4 Enter the 4.Advanced Menu. And then, press the ∧ , ∨ and ↵ button to enter the password 1234.



5 You can set Descaling Reminder, Commercial Mode, Storage Tank, WI-FI Control, etc., from the Advanced Menu.

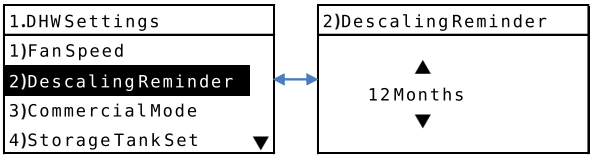


Descaling Reminder

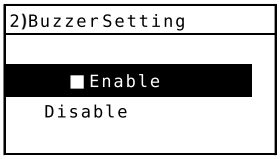
You can select the use of the Descaling Alarm function and alert period.

1)Enter the 1.DHW Settings - 2)Descaling Reminder Menu.

2)Set the use of the Descaling Alarm function and period. (Disable ↔ 6 Months ↔ 12 Months ↔ 24 Months)



3)If you use the Descaling Alarm function, you can additionally set whether or not to use buzzer alarms.



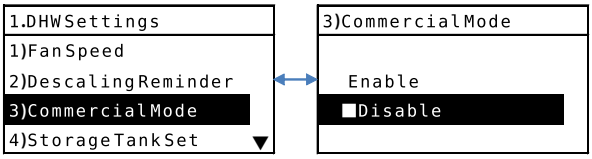
4)Press the ↵ button to complete the setting.

Commercial Mode

You can set the commercial set temperature use mode.

1)Enter the 1.DHW Settings - 3)Commercial Mode Menu.

2)Select whether or not to use the Commercial mode.



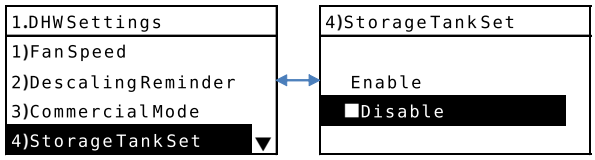
3)Press the ↵ button to complete the setting.

Storage Tank

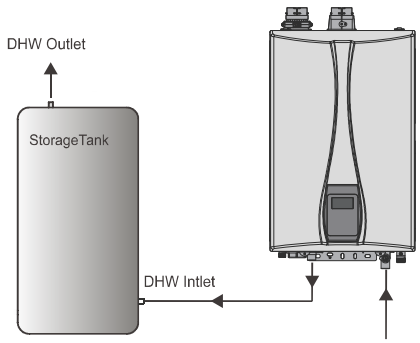
You can select whether or not to use the storage tank.

1) Enter the 1.DHW Settings - 4)Storage Tank Set Menu.

2) Select whether or not to use the storage tank.



3) Press the ↵ button to complete the setting.



Notice

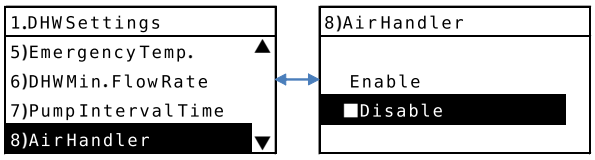
- The illustration is intended for reference purpose only.
- This function is used to quickly heat the water in storage tank when using a separate storage tank.

Air Handler

You can select whether or not to use the air handler.

1) Enter the 1.DHW Settings - 8)Air Handler Menu.

2) Select whether or not to use the Air Handler.



3) Press the ↵ button to complete the setting.

Notice

- Set this function if you are using the water heater for both hot water(portable) and space heating.

Danger Do not introduce toxic chemicals such as those used for boiler water treatment to the potable water used for space heating.

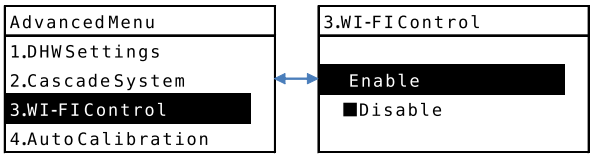
Caution When using hot water, the Air handler unit stops operating.

WI-FI Control

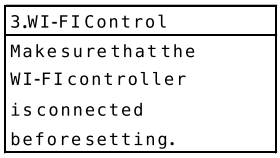
You can select whether or not to use the WI-FI control system.

1) Enter the 3.WI-FI Control Menu.

2) Select whether or not to use the WI-FI control system.



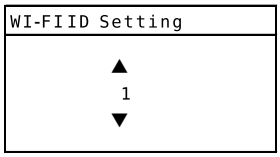
3) Press the ↵ button when a warning message is displayed.



Notice

- If you enable the WI-FI Control function, the Cascade function is set to disabled.

4) Select the ID number for the product.



Notice

- If you configure multiple water heaters on the same network, you must set them to different ID.
- Allowed ID are 1 to 4.

5) Press the ↵ button to complete the setting.

Self Calibration Mode

Caution

After installing the water heater, you must proceed to the Calibration Mode before using the water heater.

In Calibration mode, the water heater calculates the load according to the installation circumstances and adjust the heat capacity by itself.
If you haven't run the calibration that follows the Start-Up Wizard, you can reset it in the Advanced Menu.

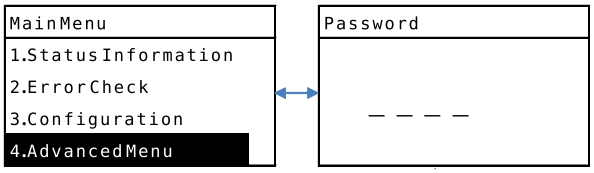
To use the Calibration mode:

1 Connect the power supply.

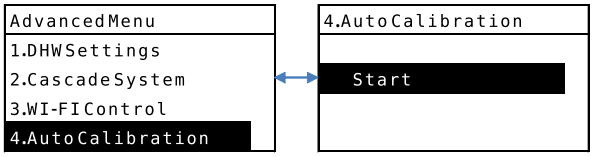
2 Press the ⏻ button.

3 Press the MENU button.

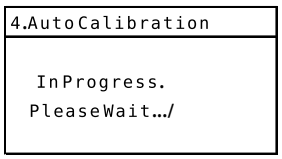
4 Enter the 4.Advanced Menu. And then, press the ∧ , ∨ and ↵ button to enter the password 1234.



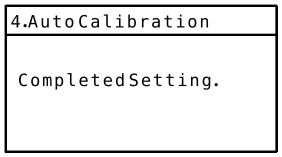
5 Enter the 4.Auto Calibration menu, And then Press the Start to activate.



6 Calibration mode operates up to 6 minutes.



7 When the mode is complete, a completion message appears and press the Enter key to exit.



Installation Checklist

After the water heater installation, examine the following checklist. If you are not able to answer "Yes" to all of the items in the checklist, review the appropriate sections. To troubleshoot any operational problems, refer to "Troubleshooting" in the User's Manual.

If there are additional questions or if you need assistance, contact technical support at 1-800-761-0053.

Location	Check
Is the make-up air supply free from corrosive elements and flammable vapors?	☐
Is the water heater clear of combustible materials?	☐
Is the gas control valve accessible for servicing?	☐
Have you maintained the proper service and maintenance clearances?	☐

Gas connection	Check
Have you tested all the fittings for leaks?	☐
Does the gas supply match the gas type specified on the water heater's rating plate?	☐
Is the gas supply pressure adequate as the gas supply pressure specified in the water heater's rating plate?	☐
Does the installation conform with local codes or, in the absence of local codes, the National Fuel Gas Code ANSI Z223.1/NFPA 54?	☐
Does the gas line have an inner diameter of at least 1/2"?	☐

Water connection	Check
Is the water supply pressure sufficient (greater than 40 PSI)?	☐
Have you verified that the cold water line and the hot water line do not intersect and have you tested for leaks?	☐
Is the approved pressure relief valve installed properly?	☐
Have you verified that there are no products installed which exceeds the maximum pressure specified in the water heater's rating plate?	☐

Venting	Check
Is the distance between the exhaust vent terminal and the intake air vent terminal far enough, and more than the distance specified in the manual?	☐
Are the air intake and exhaust connections on the flue and vent lines correctly sealed?	☐
Have you checked venting for leaks?	☐
Are all vent runs properly supported?	☐
Is the vent termination properly supported?	☐
Have you explained to the owner importance that vent termination not be blocked?	☐
Have you run the "Calibration Mode"?	☐

Others	Check
Is the front panel working properly?	☐
Have you filled the condensate trap with fresh water?	☐
Have you explained how to operate the water heater, safety guidelines, maintenance, and warranty to the owner?	☐
Have you delivered the manuals directly?	☐

Appendix

Gas Conversion

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

Danger

Inspect the packing between the gas valve and gas pipe whenever they are disassembled. The packing must be installed and must be in good condition. Failure to comply will cause a gas leak, resulting in severe personal injury or death.

Warning

This conversion kit shall be installed by a qualified service agency in accordance with VST instructions and all applicable codes and requirements of the authority having jurisdiction. The information in these instructions must be followed to minimize the risk of fire or explosion and/or to prevent property damage, personal injury or death. The qualified service agency is responsible for the proper installation of this kit. The installation is not proper and complete until the operation of the converted appliance is checked as specified in the manufacturer's instructions supplied with the kit.

* A qualified service agency is any individual, firm, corporation or company which either in person or through a representative is engaged in and is responsible for the connection, utilization, repair or servicing of gas utilization equipment or accessories; who is experienced in such work, familiar with all precautions required, and has complied with all of the requirements of the authority having jurisdiction.

In Canada : THE CONVERSION SHALL BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF THE PROVINCIAL AUTHORITIES HAVING JURISDICTION AND IN ACCORDANCE WITH THE REQUIREMENTS OF CSA B149.1, NATURAL GAS AND PROPANE INSTALLATION CODE.

Included Items

- Orifice
- Gas Packing
- 3/4" Packing
- Conversion Manual
- Rating Plate(Conversion sticker)

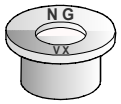
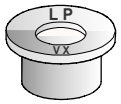
Gas input rate and manifold pressure

Model			VXP 9 & VX 9
Input rate (Btu/h)		Min.	13,300
		Max.	199,000
Manifold Pressure (in W.C)	Natural Gas	Min.	-0.001
		Max.	-0.24
	Propane Gas	Min.	-0.001
		Max.	-0.36

Notice

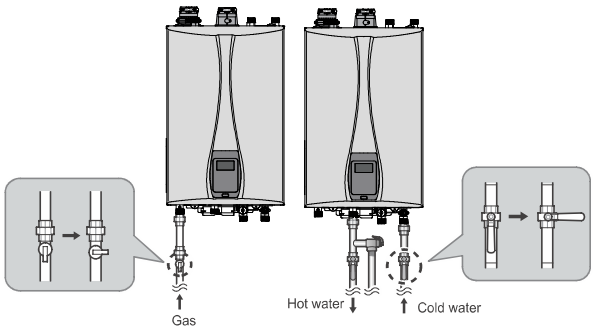
water heater input ratings are based on sea level operation and need not be changed for operation up to 2000 ft (610 m) elevation. If operating at altitudes above 2,000 feet (610 m), you will need to change the input rating by changing the altitude in the product settings. (Related information: Installation Manual p.52 "Elevation Setting")

Orifice Size

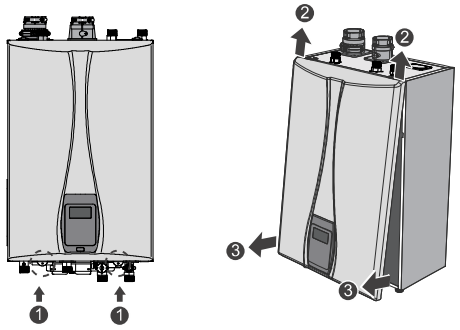
Gas Type	Natural Gas	Propane Gas
Orifice		
Size	0.255" (6.5mm)	0.204" (5.2mm)

To convert the gas:

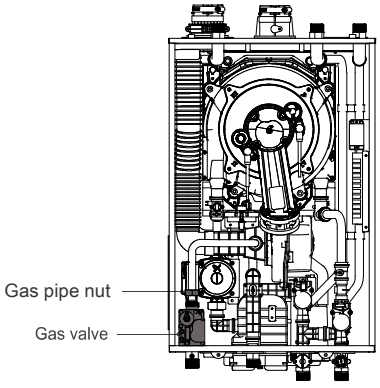
1 Disconnect the electrical power.
Turn off the manual gas shut off valve and the water supply to the water heater.



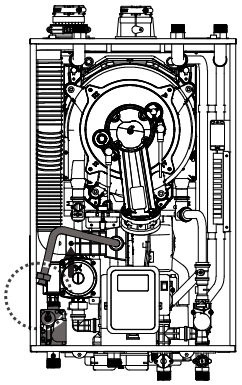
2 Remove the water heater front cover by loosening the 2 Phillips screws securing it to the case.



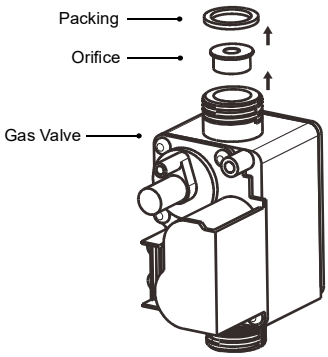
3 Once the front cover is removed, place it in a safe location to prevent accidental damage. With the internal components exposed, locate the gas connector and the gas valve.



4 Loosen the nut connecting the gas outlet pipe and the gas valve. Carefully separate the pipe.



5 Once the gas orifice is exposed, remove the gas orifice from gas valve.



6 Replace the old orifice piece and the packing with new part for use with Propane gas. Ensure that the orifice is properly seated inside the gas valve.

Danger

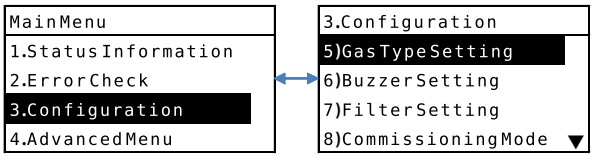
Inspect the packing whenever they are disassembled. The packing must be in good condition and must be installed. Failure to comply will cause a gas leak, resulting in severe injury or death.

7 Restore the gas valve and gas outlet pipe to their original position and secure all connections.

8 Check the gas leakage before operating the water heater.

9 Connect the power and set the Propane Gas mode on the front panel .

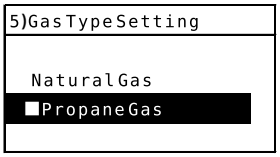
To set information about the water heater, press the MENU button.



You can set the type of gas used in the product.

1) Enter the 3.Configuration - 5)Gas Type Setting Menu.

2) Set the type of gas being used in the product.



3) Press the ↵ button to complete the setting.

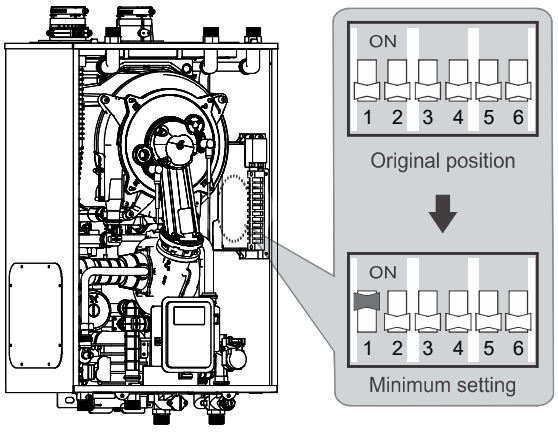
10 Set the DIP switch to minimum heat capacity operation.

Danger

Be sure to turn off the power before changing the DIP switch setting.

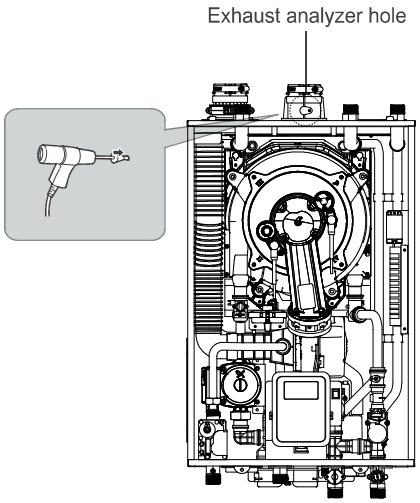
Notice

For more information about setting the DIP switches, refer to "Setting the DIP Switches" on page 46 of the installation manual.



11 Turn on the gas and water supply to the water heater.

12 Loosen the screw, remove the bracket and the cap to access the exhaust analyzer hole.

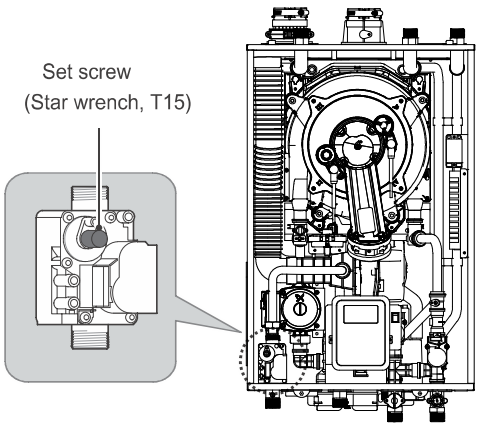


13 Insert analyzer into the exhaust analyzer hole and measure the gas/air ratio (using combustion analyzer is recommended).

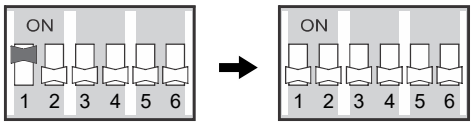
Type	High fire	Low fire
	CO_2 (%)	CO_2 (%)
Natural Gas	9.0 ± 0.5	8.5 ± 0.5
Propane Gas	10.5 ± 0.5	10.0 ± 0.5

14 Fully open several hot water fixtures and if the CO_2 value at low fire is not within 0.5% of the value listed in the table above, the gas valve set screw will need to be adjusted. If adjustment is necessary, locate the set screw. Using a 5/32" or 4mm Allen wrench, turn the set screw no more than 1/4 turn clockwise to raise or counterclockwise to lower the CO_2 value.

Danger Improper gas valve settings can cause severe injury, death or property damage.

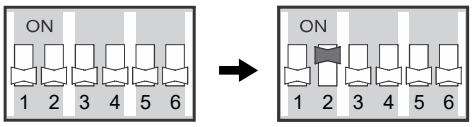


15 Put the DIP switch back to the original postion.



16 Set the DIP switch to maximum heat capacity operation.

Danger Be sure to turn off the power before changing the DIP switch setting



Notice

For more information about setting the DIP switches, refer to "Setting the DIP Switches" on page 46 of the installation manual.

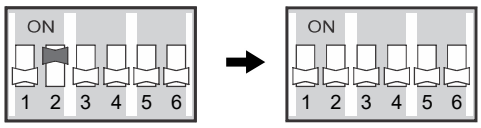
17 Fully open several hot water fixtures and if the CO2 value at high fire is not within 0.5% of the value listed in the table above, do not adjust the gas valve set screw and check if the gas orifice is properly installed.

Danger Improper gas valve settings can cause severe injury, death or property damage.

Notice

While measuring the gas/air ratio in maximum heat capacity operation, do not adjust the gas valve set screw.

18 Put the DIP switch back to the original postion.



19 When the gas conversion is completed, attach the conversion sticker and conversion rating plate to the top of the "Rating plate".

This appliance was converted on
_____ /_____ /_____ / (day/month/year)
to _____ gas
with Kit No._____
by _____
(name and address of organization making this conversion), that accepts the responsibility for the correctness of this conversion.

Conversion Sticker

This appliance has been converted to
Propane fuel /
Cet appareil a été converti au propane
Orifice Size / injecteur
0.204" (5.2 mm)
Inlet Gas Pressure / Pression d'entree du gaz
Min. 8.0 to Max. 13.0" WC
Manifold Pressure /
Pression à la tubule d'alimention
Min. -0.001 to Max. -0.36 " WC
Input (Btu/hr) / Débit calorifique
Min.13,300 to Max.199,000
Conversion Kit No. 2116040

Conversion Rating Plate

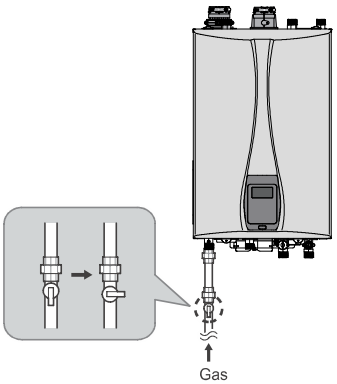
Notice

The inlet gas pressure must be maintained between 3.5" and 10.5" WC for natural gas and between 8" and 13" WC for liquefied propane.
Refer to the installation manual page 19, for measuring the inlet pressure.
Keep this manual near the water heater for future reference whenever maintance or service is required.

20 Put the front cover back on the unit.

To measure the inlet &manifold gas pressure:

1 Shut off the manual gas valve on the gas supply line.

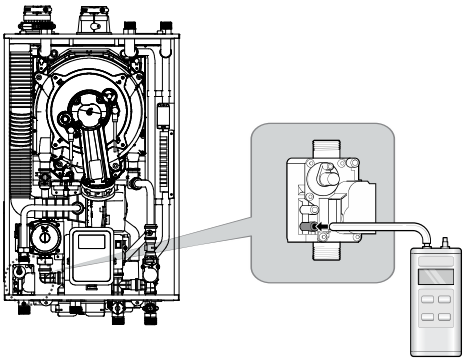


2 Run water heating. The water heater should turn on and the gas in the gas supply line will be purged.

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

4 Remove the water heater front cover by loosening the 2 Phillips screws securing it to the case.

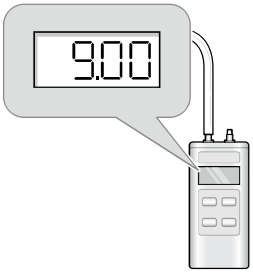
5 Loosen the screw indicated in the figure below and connect a manometer to the inlet pressure port. Reset the manometer to zero before use.



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

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

8 When the water heater reaches its maximum firing rate, check the inlet gas pressure reading on the manometer. The gas pressure must fall within the ranges specified in *"Specifications"* on page 7.



9 Tighten the inlet gas pressure screw.

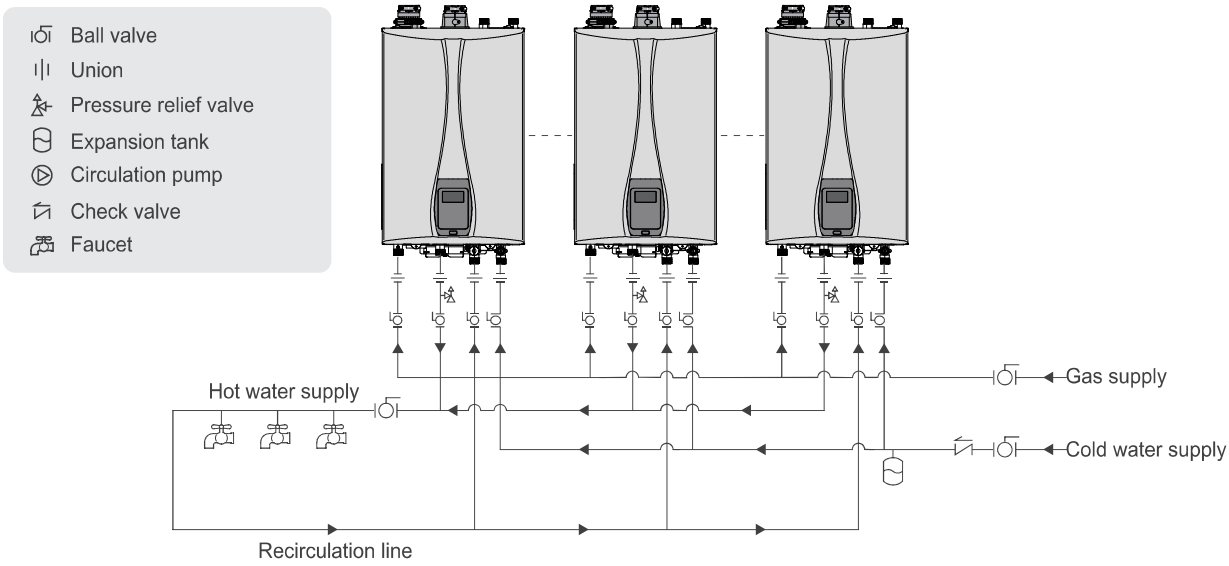
10 Replace the front cover and tighten the 2 Phillips screws to secure it to the case.

Cascade System

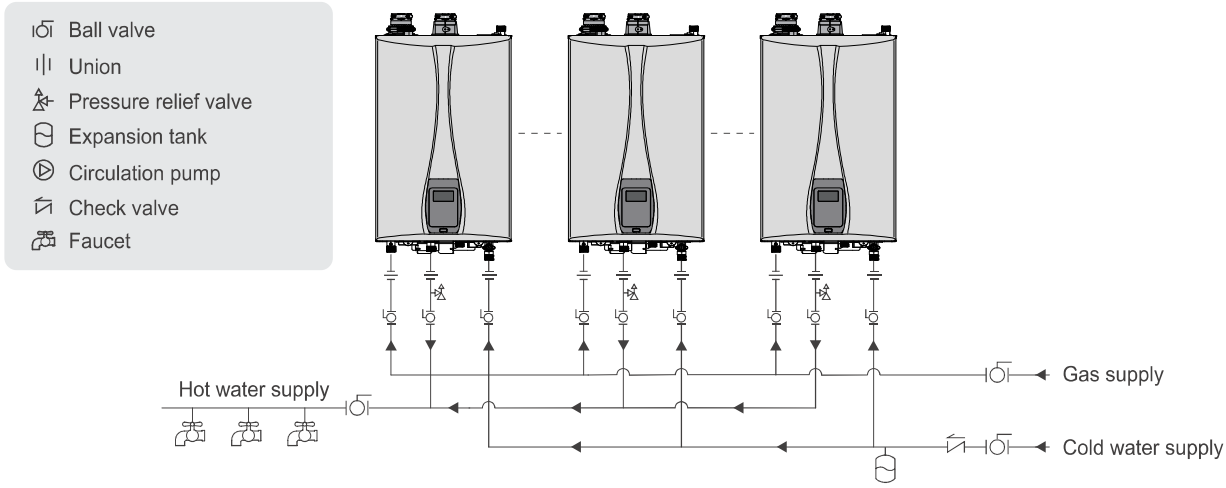
When installing a cascade system, carefully consider the design of the system and the features of the installation location. Follow all local codes and regulations, as well as all guidelines for installing the water heater. The following sections describe additional considerations that are specific to installing a cascade system. Read the following sections carefully before designing or installing the system.

Water supply

Several options are available for plumbing a cascading system of water heaters. The options shown here are examples only. The setup you choose will vary depending on the installation location, local building codes, and other factors. Follow all applicable regulations when installing a cascade system.



[VXP 9]



[VX 9]

Notice

- The recommended minimum recirculation flow rate for each water heater is 2 GPM.

Piping sizes

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

Qty	ΔT=54ºF Flow Rate (GPM)	Water Velocity (ft/s)	Pipe Diameter (mm/in)	
1	7.07	4.71	20A	3/4"
2	14.13	5.52	25A	1"
3	21.20	5.44	32A	1 1/4"
4	28.26	5.12	40A	1 1/2"
5	35.33	6.40	40A	1 1/2"
6	42.39	4.42	50A	2"
7	49.46	5.15	50A	2"
8	56.52	5.89	50A	2"
9	63.59	4.30	65A	2 1/2"
10	70.65	4.77	65A	2 1/2"
11	77.72	5.25	65A	2 1/2"
12	84.78	5.73	65A	2 1/2"
13	91.85	6.20	65A	2 1/2"
14	98.91	6.68	65A	2 1/2"
15	105.98	5.02	80A	3"
16	113.04	5.35	80A	3"
17	120.11	5.69	80A	3"
18	127.18	6.02	80A	3"
19	134.24	6.36	80A	3"
20	141.31	6.69	80A	3"
21	148.37	3.99	100A	4"
22	155.44	4.18	100A	4"
23	162.50	4.37	100A	4"
24	169.57	4.56	100A	4"

Notice

- The table above is based on model VXP 9.
- When installing more than twenty four water heaters for a cascade system, please call 1-800-761-0053.

Communication cables

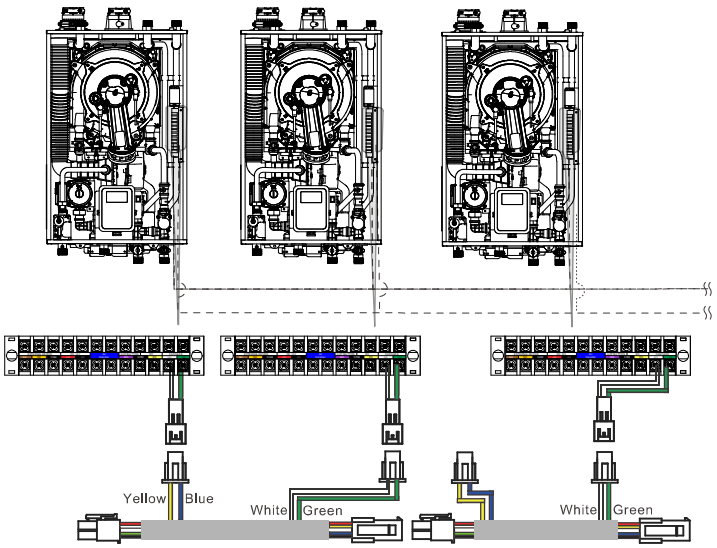
Caution

To avoid electric shock, turn off the water heater while connecting the wires.

Up to 15 water heaters can be connected with cascade communication cables.

To connect the cascade communication cables:

1 Connect the cascade communication cable to the cascade connection terminal of the terminal block.



2 Connect the communication cable(Yellow, Blue) of ID #1 to the terminal block(White, Green).

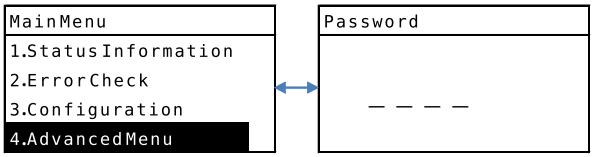
3 Connect the communication cable(White, Green) of ID #2~15 to the terminal block(White, Green).

4 Connect the communication cable(White-Red, Green-Black) to the following communication cable (Red-Yellow, Black-Blue) continuously.

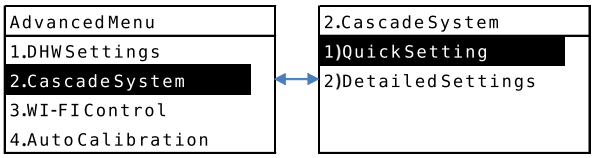
Cascade system settings

Settings necessary for using the cascade system may be set.

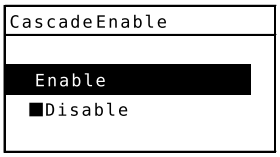
1 Enter the Main Menu - 4.Advanced Menu. And then, press the , and button to enter the password 1234.



2 Enter the 2.Cascade System - 1)Quick Setting.



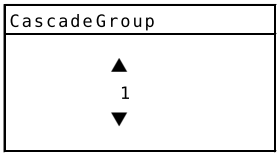
3 Select whether to enable the cascade system.



Notice

- If you enable the cascade function, the WI-FI Control function is set to disabled.

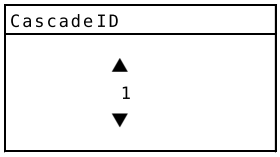
4 Select the group number for the product.



Notice

- Set the groups according to the installation environment because one group is controlled equally.
- Maximum configurable quantity per Cascade Group is 15.

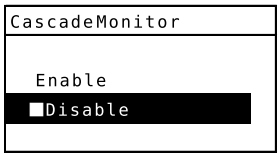
5 Select the ID number for the product.



Notice

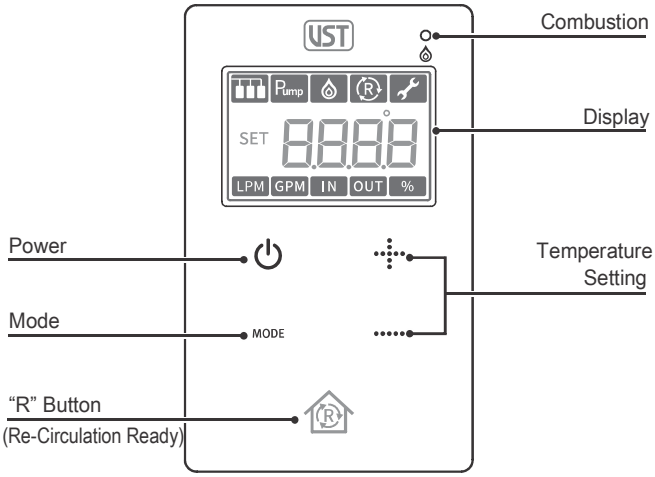
- All water heaters configured in the same group must be set to a different ID.
- Water heaters in a cascaded group operate in a sequential alternating manner to ensure equal rotation and longevity.

6 Select whether the cascade monitor is enabled.



7 Press the button to complete the setting.

Remote Controller - VD-100+ (Optional)



Icon	Purpose	Icon	Purpose
	Cascade	LPM	Liter per Minute
Pump	Pump operation	GPM	Gallon per Minute
	Combustion	IN	Cold water Temperature
	Re-Circulation	OUT	Hot water Temperature
	Maintenance	%	Load Capacity

Operation Instruction

- **Turning the Water Heater On or Off**
  - To turn the water heater on or off, press the ⏻ button.
  - When the water heater is on, the most recent temperature setting is displayed.

- **Setting the Water Temperature**
  - To set the water temperature, press the ⋰ (Up) or ⋱ (Down) button for the desired temperature setting.
  - 98 °F(37 °C)–140 °F (60 °C), Temperature can be set in increments of 2 °F.
  - 140 °F(60 °C)–180 °F (80 °C), Temperature can be set in increments of 10 °F.
    (For additional temperature setting refer to the operation/installation manual.)
  - Temperature range (Residential)

°F	98	100	102	104	106	108	110	112	114	116	118	120	122	124	126	128
°C	37	38	39	40	41	42	43	44	45	47	48	50	51	52	53	54

°F	130	132	134	136	138	140	150	160
°C	55	56	57	58	59	60	65	70

  - Temperature range (Commercial)

°F	98	100	102	104	106	108	110	112	114	116	118	120	122	124	126	128
°C	37	38	39	40	41	42	43	44	45	47	48	50	51	52	53	54

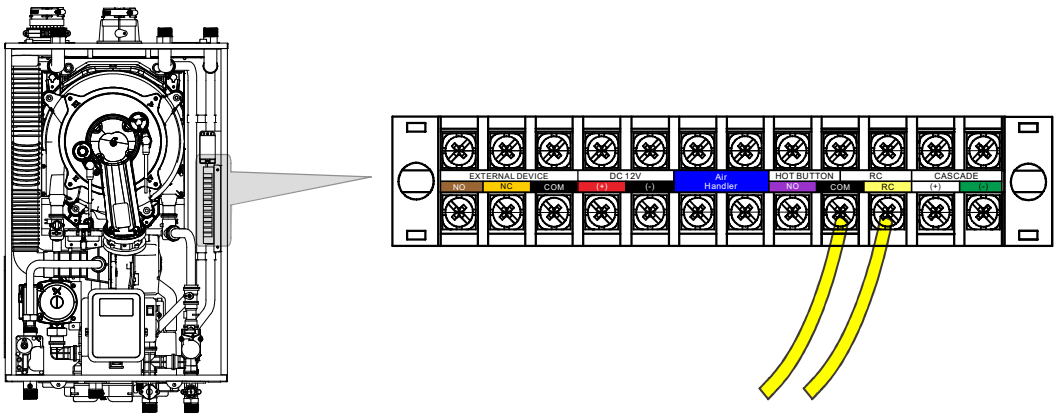
°F	130	132	134	136	138	140	150	160	170	180
°C	55	56	57	58	59	60	65	70	75	80

- **"R" Button (VXP only)**
  - To initiate re-circulation mode, Press Ⓡ Button.
  - During operation of re-circulation, Pump can be manually stopped by pressing Ⓡ Button.

- Mode
  - To view information press the MODE button.
  - To scroll through additional information, press the MODE button.

LPM (Liter Per Minute)		OUT (Out temperature)	
	Indicates flow rate (LPM)		Indicates Hot water temperature.
GPM (Gallon Per Minute)		**% (Combustion load)**	
	Indicates flow rate (GPM)		Indicate combustion load percent.
IN (In temperature)			
	Indicates cold water temperature.		

Connection cables



Air Handler System

Connection cables

Danger

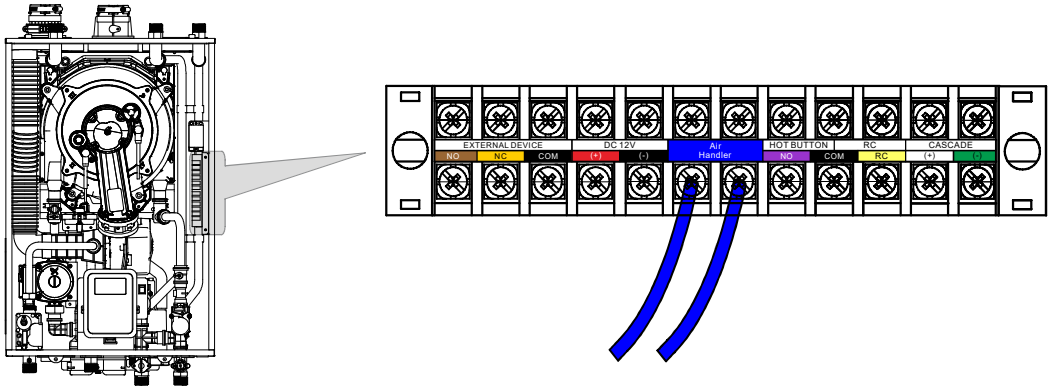
Do not introduce toxic chemicals such as those used for boiler water treatment to the potable water used for space heating.

Caution

To avoid electric shock, turn off the water heater while connecting the wires.
When using hot water, the Air Handler Unit stops operating.

To connect the Air Handler Unit:

1. Connect to the Air Handler System and the Air Handler connection terminal of the terminal block.
2. When installing the Air Handler System, set the Air Handler "Enable" in the Advanced Menu - 1.DHW Settings - 8)Air Handler menu. (pp.54~55)



Hot Button System (VXP Only)

Hot Buttom piping must be installed in hot water Recirculation Line or T-valve Line pipe.

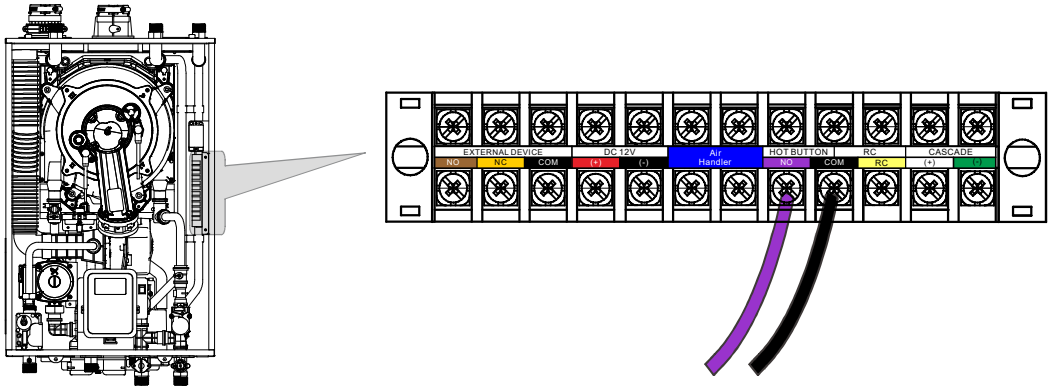
Connection cables

Caution

To avoid electric shock, turn off the water heater while connecting the wires.

To connect the Hot Button Controller:

1. Connect to the Hot Button Controller and the Hot Button connection terminal of the terminal block.
2. When installing the Hot Button, set the re-circulation setting to Title24(Hot button or optional RC) "Enable" in the Start-Up Wizard(p.53) or Main Menu - 3.Configuration setup.(p.51)
3. However, it is available when the re-circulation mode is set to "External" or "T-valve".

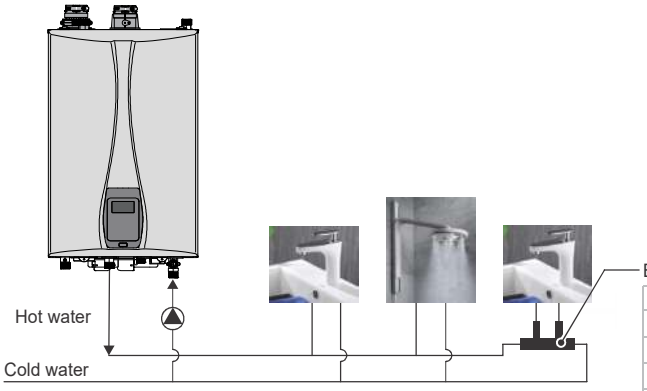


Bypass Recirculation System

Valve should be installed at a faucet with the longest piping distance from the hot water heater.

VX (No Pump inside of unit)

- Bypass System (With external pump installation)

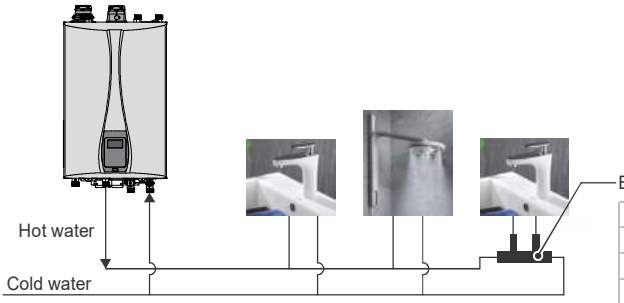


No setup required
(Normal Mode)

System installation type	Open-residential potable
Max. ambient storage temp	76 ℃ (170 ℉)
Max. working pressure	145 psi (10 bar)
Max. liquid temperature	150 ℉ (66 ℃)
Min. liquid temperature	36 ℉ (2 ℃)
Connections	1/2" NPSM

VXP (Pump included unit)

- Bypass System (Without external pump installation)



T-valve mode Setting:
Refer to “Re-circulation settings” on page 51. (T-valve mode)

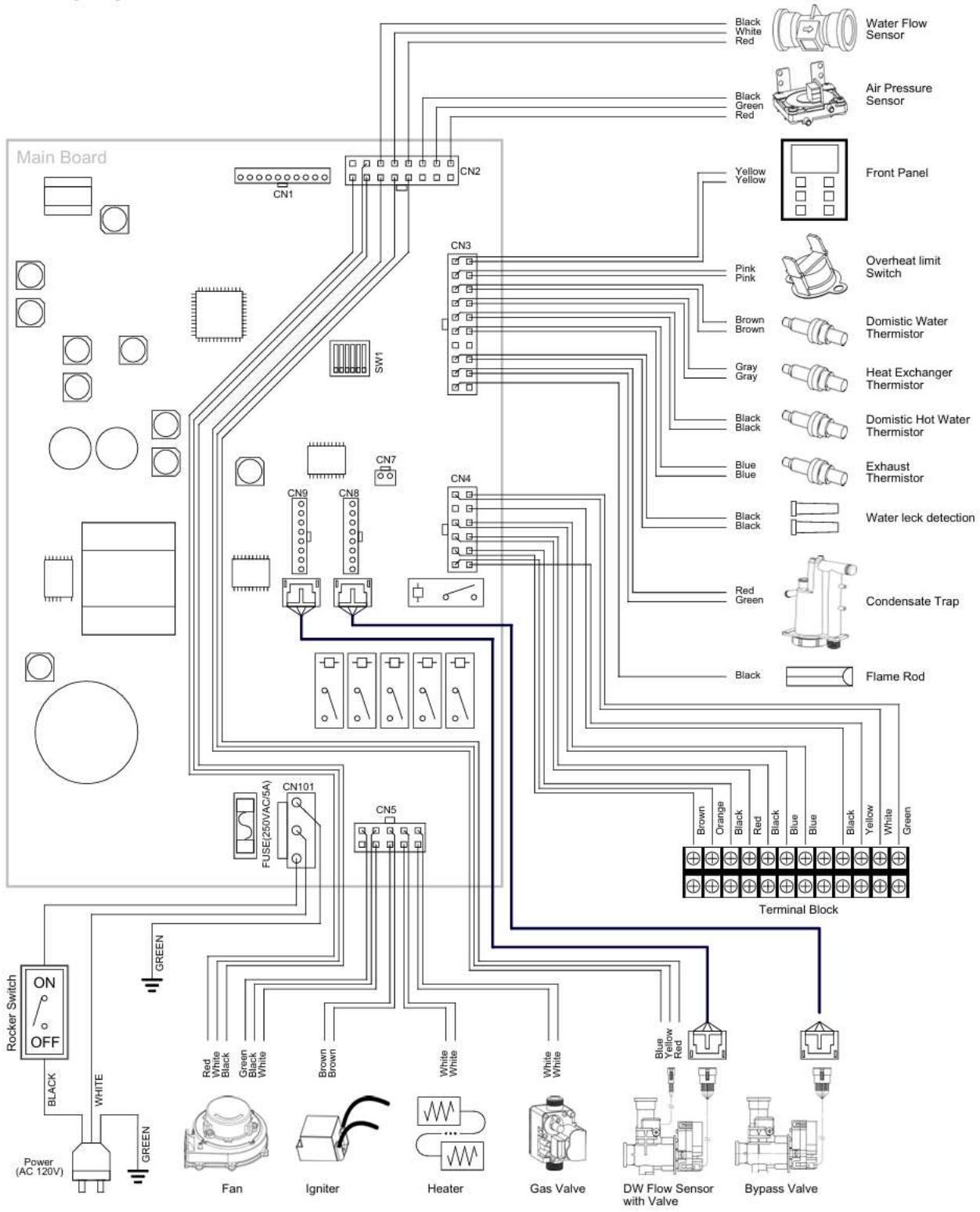
System installation type	Open-residential potable
Max. ambient storage temp	76 ℃ (170 ℉)
Max. working pressure	145 psi (10 bar)
Max. liquid temperature	150 ℉ (66 ℃)
Min. liquid temperature	36 ℉ (2 ℃)
Connections	1/2" NPSM

Warning

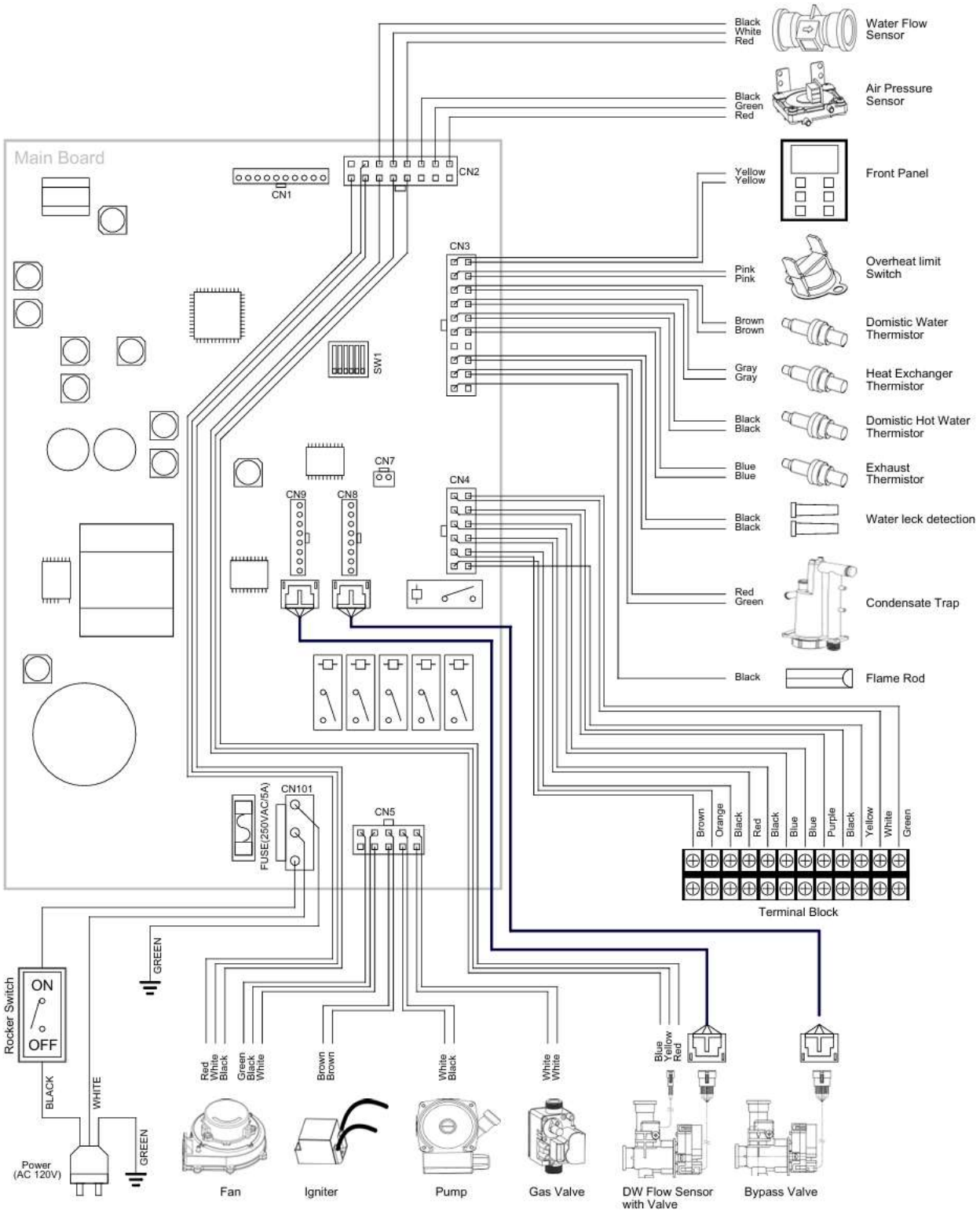
You may find some warm water in the cold water line at the sink where the valve is installed.
Once the cold water line is opened, the water water will dissipate in a very short time.

Wiring Diagram

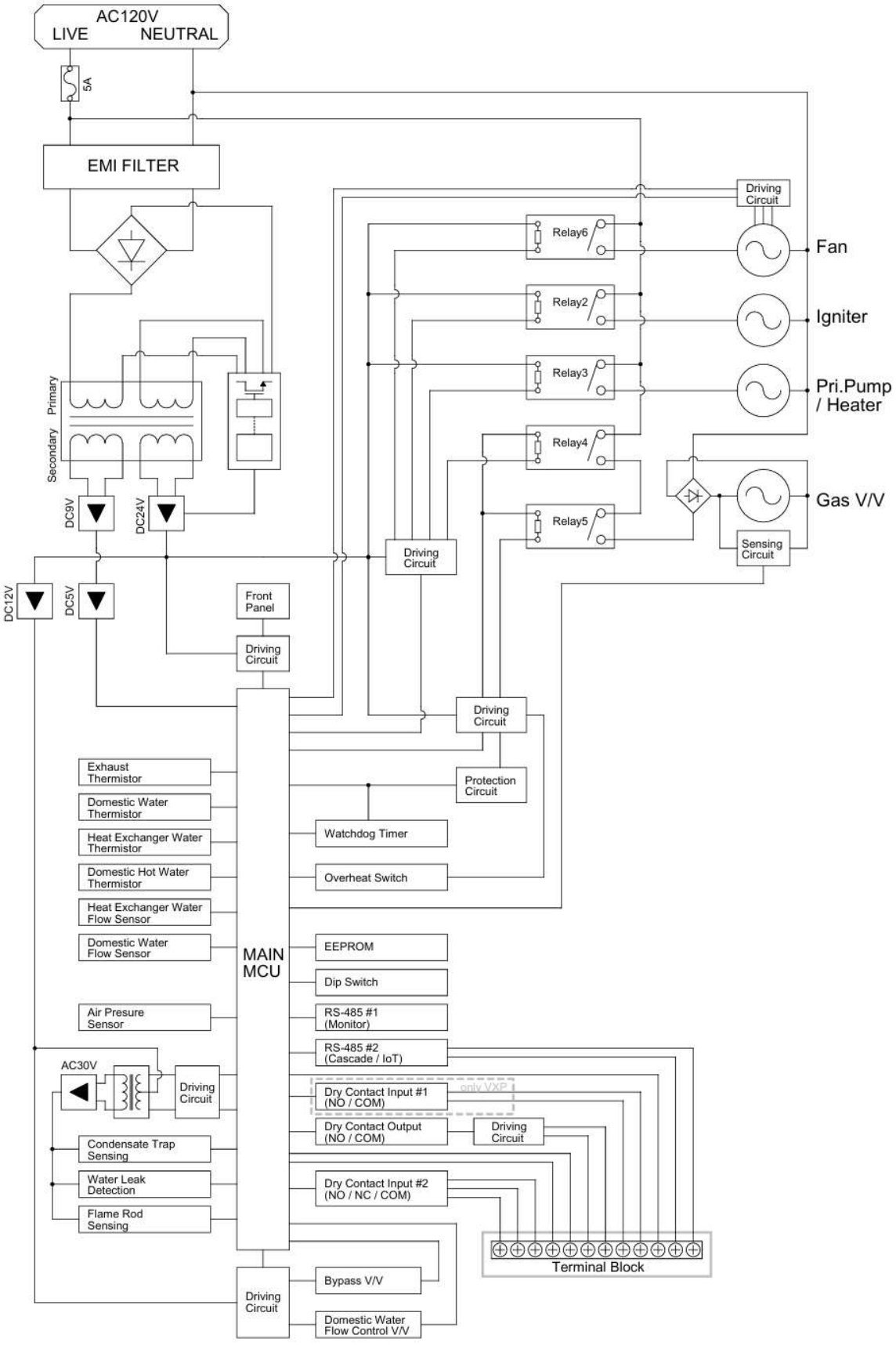
- VX model



VXP model

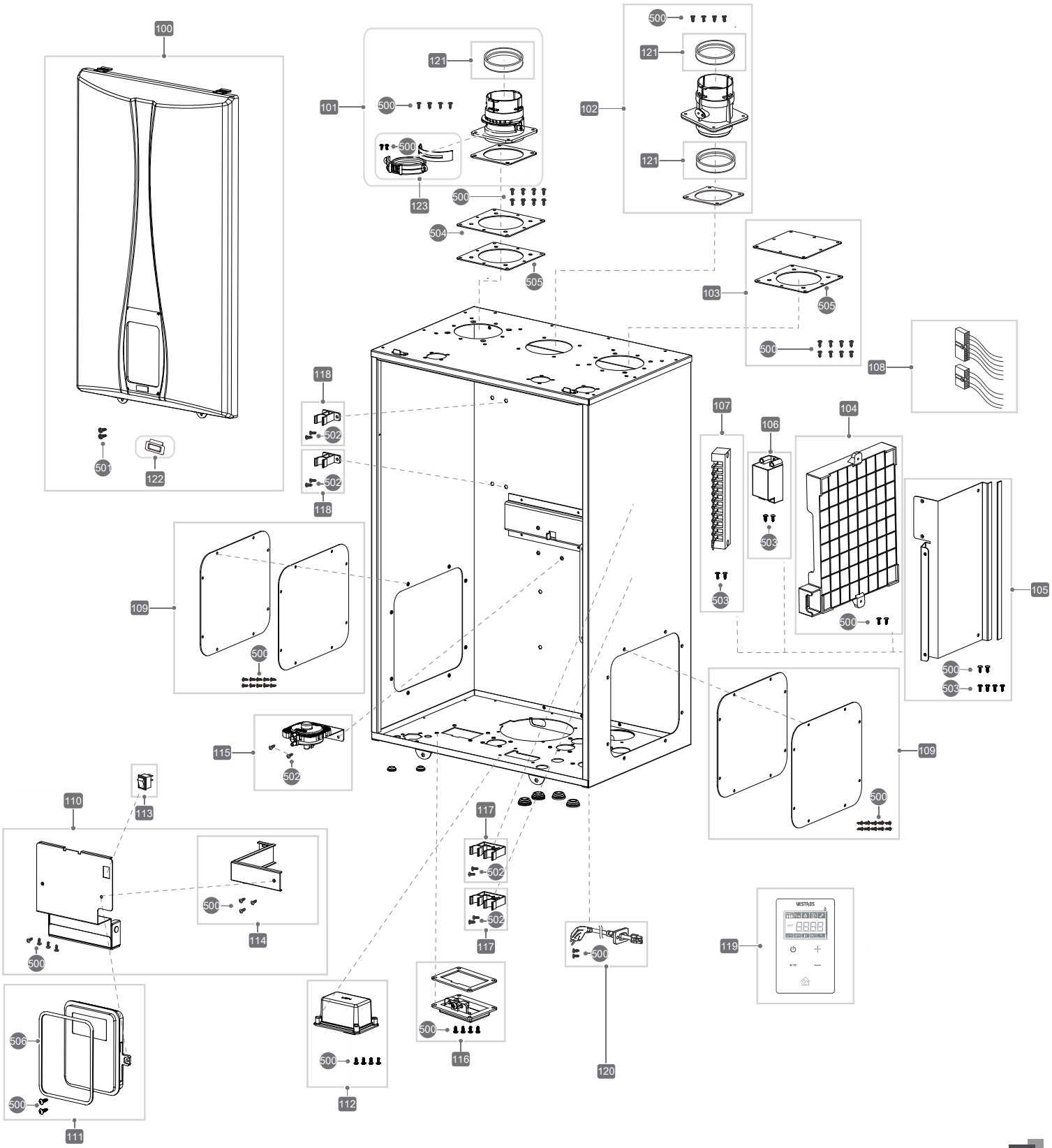

Main Board
CN1
CN2
CN3
CN4
CN5
CN7
CN8
CN9
CN101
SW1
FUSE(250VAC/5A)
Black White Red
Water Flow Sensor
Black Green Red
Air Pressure Sensor
Yellow Yellow
Front Panel
Pink Pink
Overheat limit Switch
Brown Brown
Domistic Water Thermistor
Gray Gray
Heat Exchanger Thermistor
Black Black
Domistic Hot Water Thermistor
Blue Blue
Exhaust Thermistor
Black Black
Water leck detection
Red Green
Condensate Trap
Black
Flame Rod
Brown Orange Black Red Black Blue Blue Purple Black Yellow White Green
Terminal Block
Rocker Switch
ON
OFF
GREEN
BLACK
WHITE
GREEN
Power (AC 120V)
Red White Black
Green Black White
Brown Brown
White Black
White White
Blue Yellow Red
Fan
Igniter
Pump
Gas Valve
DW Flow Sensor with Valve
Bypass Valve

Ladder Diagram



Component Assembly Diagrams and Parts Lists

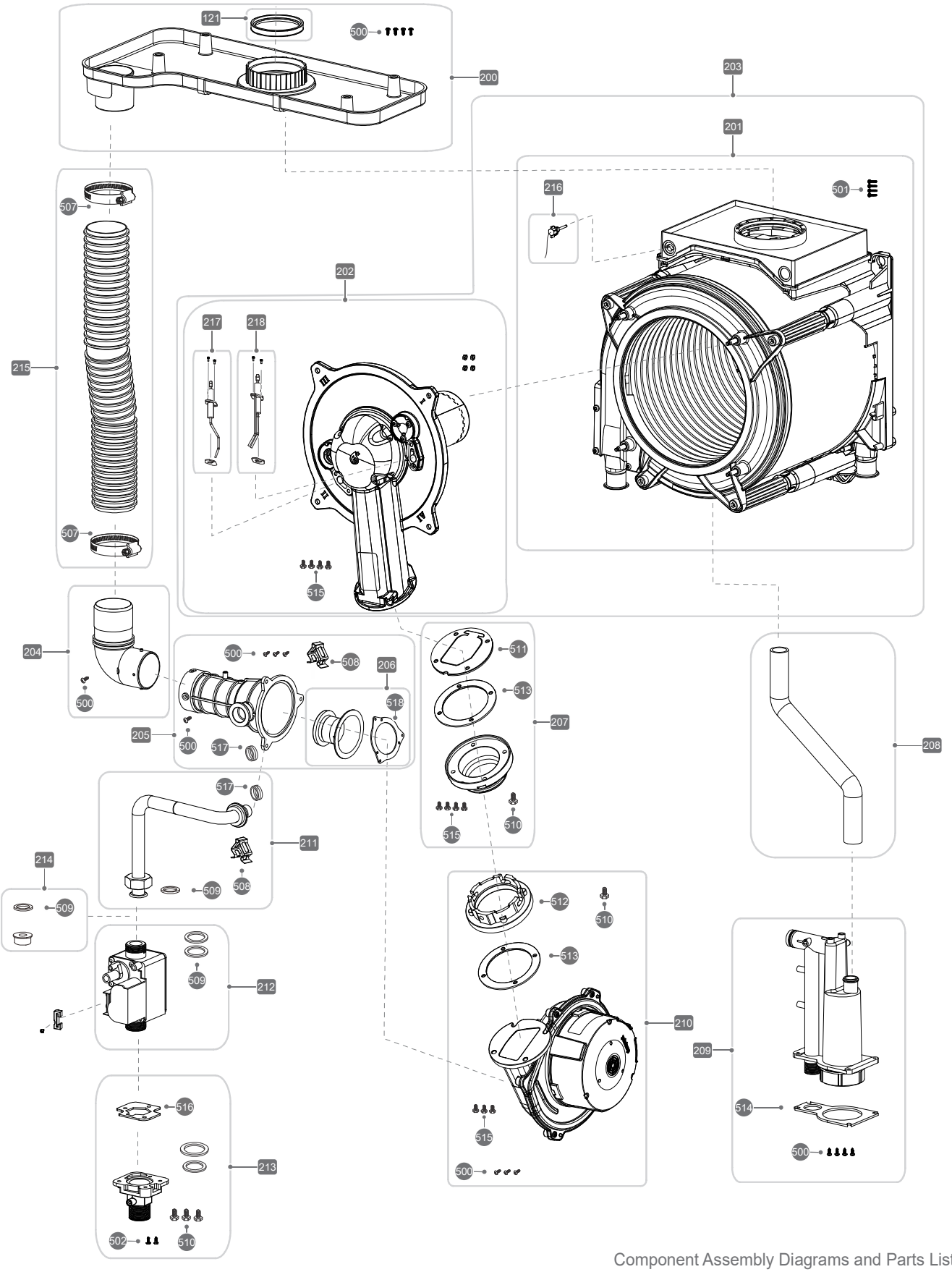
Case Parts (VXP 9 & VX 9)



NO	Part NO	Part Name
100	2016087S	Front cover (VX)
101	2110524S	Intake adapter (VR PLUS, VT, VHP, VX)
102	3045154S	Exhaust adapter (VR Plus, VT, VX)
103	3016050S	Intake connector cover (VX)
104	2086142S	PCB (VXP 9)
	2086143S	PCB (VX 9)
105	3016051S	Bracket, PCB (VX)
106	2086105S	Ignition Transformer (VX)
107	3136048S	Terminal Box (VXP 9)
	3136035S	Terminal Box (VX 9)
108	3136047S	Wire Harness (VXP 9)
	3136033S	Wire Harness (VX 9)
109	3016036S	A/S Panel (VX)
110	2076118S	Bracket, Front panel (VX)
111	2086131S	Front panel (VX)
112	2086117S	Writing port assembly (VX)
113	2080736S	Switch, Main power supply (VR & Plus, VT, VHP, VX)
114	3016093S	Bracket, Front panel Fix (VX)
115	2106034S	Sensor, Air pressure (VX)
116	2060802S	Leak detector assembly (VHP, VX)
117	3041196S	Pipe saddle double (VHP, VX)
118	3041195S	Pipe saddle single (VHP, VX)
119	2085937S	Remote Control (VR Plus, VT, VX)
120	3130838S	Cord, Power (VR & Plus, VT, VX)
121	3080235S	O-ring, Flue sealing (VR & Plus, VT, VX)
122	3080592S	Deco Cover Hole Cap (VR Plus, VT, VX)
123	3045152S	Filter, Air intake (VR PLUS, VHP, VT, VX)

NO	Part NO	Part Name (Individual order not available)
500	3106079	Ø4X12 Tapping screw (STS)
501	3100353	M4X12 Screw
502	3100193	M4X8 Screw
503	3100325	Ø4X14 Tapping screw (STS)
504	3016049	Intake connector bracket
505	3096067	Gasket, Intake connector bracket
506	3090502	Gasket, Front panel cover

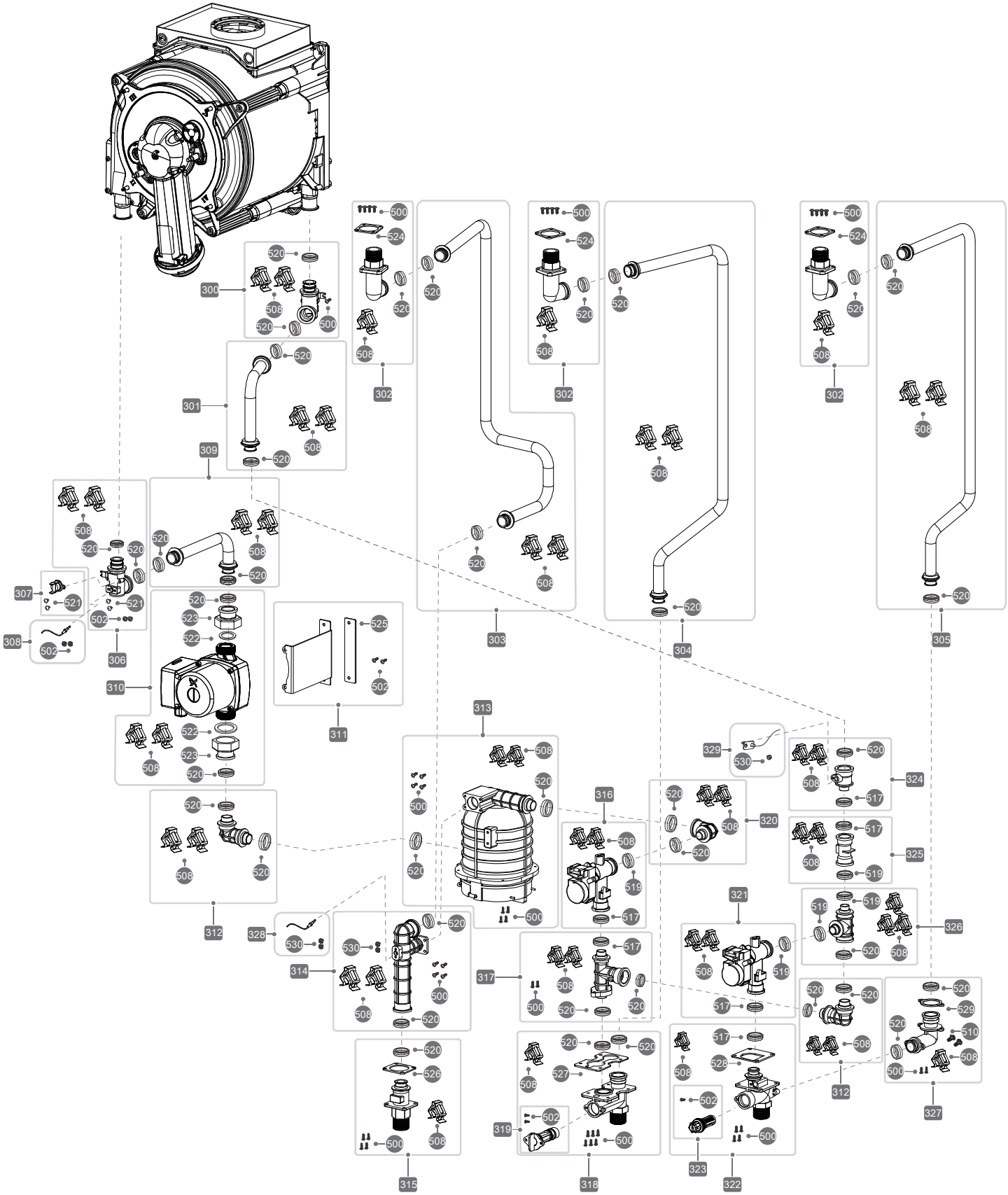
Flue Parts (VXP 9 & VX 9)



NO	Part NO	Part Name
200	3046034S	Flue connector reducer (VX)
201	2136063S	Heat exchanger (VX)
202	2026033S	Burner Assy' (VX)
203	2070990S	Heat exchanger & Burner Assy' (VX)
204	3046086S	Air intake elbow (VX)
205	3046033S	AGM Cover (VX)
206	3046087S	Venturi (VX)
207	3054014S	Burner door connector (VX)
208	3086056S	Hose, Condensate (VX)
209	2066106S	Trap, Condensate (VX)
210	2106033S	Fan Assy' (VX)
211	2096063S	Pipe, Gas outlet (VX)
212	2030291S	Valve, Gas (ALL)
213	3054016S	Connector, Gas (VX)
214	3056034S	Orifice (Natural Gas, VX)
	3011588S	Orifice (Propane Gas, VR, VX)
215	3086072S	Air Intake Hose (VX)
216	3131237S	Thermistor, Exhaust gas (VX)
217	2026044S	Flame rod (VX)
218	2026043S	Spark plug (VX)

NO	Part NO	Part Name (Individual order not available)
507	3106075	SUS band (40-70mm)
508	3011010	Clip, Joint (16A)
509	3080176	Packing (Gas 3/4")
510	3100150	M5x10 Screw
511	3096072	Damper
512	3054015	Fan connector
513	3090373	Gasket, Fan connector
514	3090384	Condensate trap gasket
515	3106076	M5xp0.8x12 Allen screw
516	3096065	Gasket, Gas connector
517	3080142	P16 Back Up ring
518	3090329	Gasket, Fan

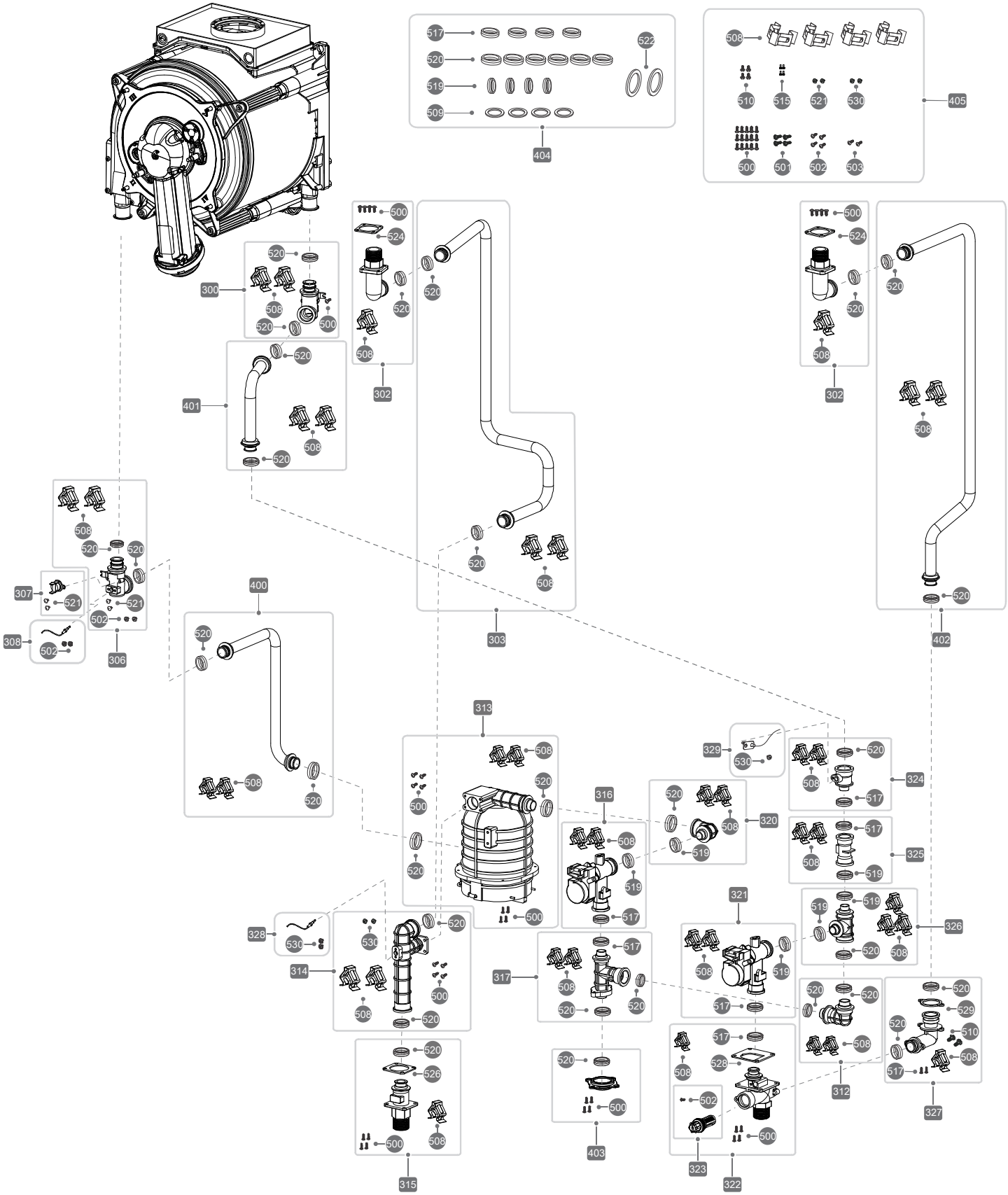
Water Parts (VXP 9)



NO	Part NO	Part Name
300	3036016S	Connector, Hex inlet (VX)
301	2096093S	Pipe, Hex inlet (VXP 9)
302	3036020S	Connector, Top water line (VX)
303	2096095S	Pipe, Hot water top (VX)
304	2096096S	Pipe, Recirculation top (VXP 9)
305	2096092S	Pipe, Cold water top (VXP 9)
306	3036017S	Connector, Hex outlet (VX)
307	2080538S	High limit switch (VX)
308	2086120S	Thermistor, Hex (gray/VX)
309	2096094S	Pipe, Hex outlet (VXP 9)
310	2056075S	Recirculation Pump (VXP 9)
311	3016052S	Bracket, Pump (VXP 9)
312	3040662S	Elbow, Air vent (VR & Plus, VT, VX)
313	2066101S	Buffer & Scale trap (VX)
314	3046035S	Connector, Buffer & Scale trap (VX)
315	3036018S	Connector, Hot water (VX)
316	2040159S	By Pass Valve (VRP & Plus, VTP, VXP 9)
317	3046085S	Connector, Recirc elbow (VX)
318	3036019S	Connector, Recirculation (VXP 9)
319	2060807S	Valve, Check (VFC, VXP 9)
320	3046036S	Elbow, Bypass (VX)
321	2040156S	Flow Control Valve (VRP & Plus, VTP, VX)
322	3036014S	Connector, Cold water (VX)
323	3040671S	Filter, Recirculation, Cold water (VR & Plus, VT, VX)
324	3040670S	Connector, Flow sensor (VR & Plus, VT, VX)
325	2060364S	Sensor, Flow (VRP & PLUS, VHP, VTP, VX)
326	3040669S	T- socket (VR & Plus, VT, VX)
327	3036015S	Connector, Cold water elbow (VX)
328	2086121S	Thermistor, Hot water outlet (black/VX)
329	2086119S	Thermistor, Cold water inlet (brown/VX)

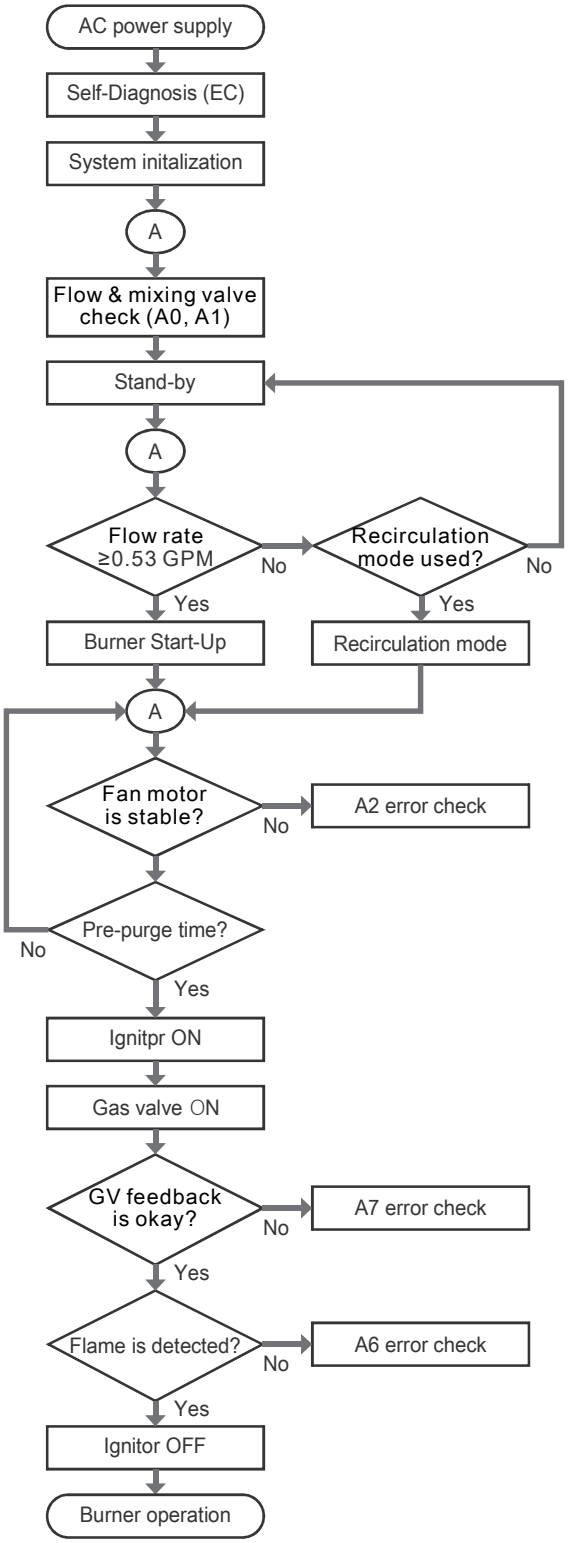
NO	Part NO	Part Name (Individual order not available)
519	3080157	P15 Back Up ring
520	3080140	P18 Back Up ring
521	3100207	M3X6 screw (STS)
522	3080286	Packing (Pump, 1")
523	3040659	Connector, Pump inlet
524	3096073	Gasket, Top water line connector
525	3096069	Gasket, Pump
526	3096066	Gasket, Hot water connector
527	3096070	Gasket, Recirculation connector
528	3096085	Gasket, Cold water connector
529	3096062	Gasket, Cold water elbow connector
530	3100215	Ø4X7 Tapping screw (STS)

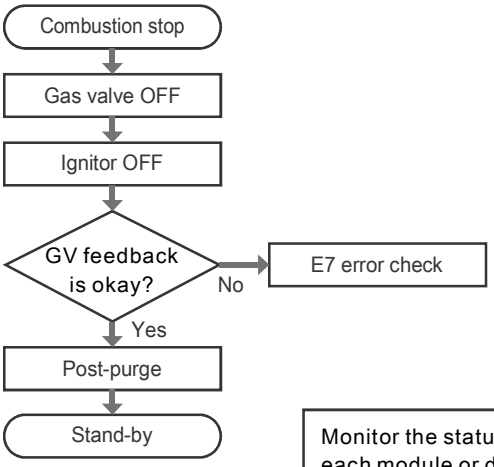
Water Parts (VX 9)

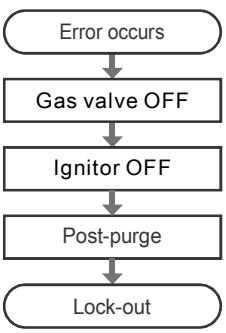


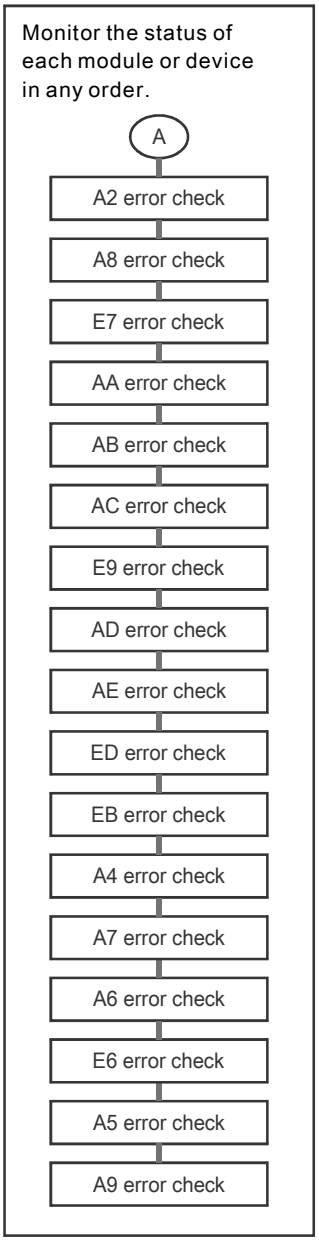
NO	Part NO	Part Name
400	2096097S	Pipe, Hex outlet (VX 9)
401	2096113S	Pipe, Hex inlet (VX 9)
402	2096114S	Pipe, Cold water top (VX 9)
403	3036076S	Cap, Recirculation (VX 9)
404	3166044S	Kit, O-ring (VX)
405	3166045S	Kit, Screw/Clip (VX)

Normal Operating Sequence









OPERATING INSTRUCTIONS
/ Instructions d'allumage

1. STOP! Read the safety information above on the label. / ARRÊTEZ! Lisez les informations de sécurité ci-dessus sur l'étiquette.
2. Set the thermostat to lowest setting. / Réglez le thermostat au plus bas.
3. Turn off all electric power to the appliance. / Coupez l'alimentation électrique de l'appareil.
4. Do not attempt to light the burner by hand. / Ne pas essayer d'allumer le brûleur manuellement.
5. Turn the gas control manual valve(installed on the gas supply line external to the unit) clockwise to the position.
   / Tournez la vanne de contrôle du gaz manuelle (installée sur la conduite d'alimentation en gaz externe de l'unité) dans le sens des aiguilles d'une montre jusqu'à la position.
6. Wait five (5) minutes to clear out any gas. If you then smell gas, STOP! Follow "B" in the safety information above on warning label. If you don't smell gas, go to the next step.
   / Attendez cinq (5) minutes pour laisser échapper tout gaz. Si vous sentez une odeur de gaz, ARRÊTEZ! Suivez «B» dans les consignes de sécurité ci-dessus sur cette étiquette. Si vous ne sentez pas de gaz, passez à l'étape suivante.
7. Turn the gas control manual valve(installed on the gas supply line external to the unit) counterclockwise to the full ON position.
   / Tournez la soupape de contrôle du gaz manuelle (installée sur la conduite d'alimentation en gaz à l'extérieur de l'unité) dans le sens contraire des aiguilles d'une montre jusqu'à la position ON complète.
8. Turn on all electric power to the appliance. / Mettez l'alimentation électrique de l'appareil.
9. Wait unit default temperature (98 °F) is displayed. Set desired water temperature. Turn on hot water faucet.
   / La température par défaut de l'unité de secours (98 °F) est affichée. Réglez la température de l'eau désirée. Allumez le robinet d'eau chaude.
10. Set the thermostat to desired setting. / Réglez le thermostat à la position désirée.
11. If the appliance will not operate, follow the instructions "To Turn O ffGas To Appliance" and call your service technician or gas supplier.
    / Si l'appareil ne fonctionne pas, suivez les instructions «Pour couper le gaz de l'appareil» et appelez votre technicien d'entretien ou fournisseur de gaz.

TO TURN OFF GAS TO APPLIANCE
/ Comment couper l'admission de gaz de l'appareil

1. Set the thermostat to lowest setting. / Réglez le thermostat au plus bas.
2. Turn off all electric power to the appliance if service is to be performed.
   / Coupez l'alimentation électrique de l'appareil si le service doit être exécuté.
3. Turn the gas control manual valve(installed on the gas supply line external to the unit) clockwise to the full OFF position.
   / Tourner la soupape de commande manuelle du gaz (installée sur la conduite d'alimentation en gaz externe de l'unité) dans le sens des aiguilles d'une montre jusqu'à la position OFF complète.

Memo

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401 South Dupont Ave, Ontario, CA 91761

For Technical Support
1-800-761-0053

www.vestahws.com

Ver. 1.1