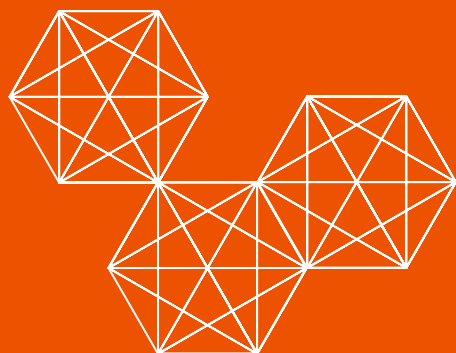




<p><b>WARNING</b></p> <p>If the information in these instructions is not followed exactly, a fire or explosion could result causing property damage, personal injury, or death.</p> <ul style="list-style-type: none"> <li>Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.</li> </ul> <p><b>WHAT TO DO IF YOU SMELL GAS</b></p> <ul style="list-style-type: none"> <li>Do not try to light any appliance.</li> <li>Do not touch any electrical switch; do not use any phone in your building.</li> <li>Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.</li> <li>If you cannot reach your gas supplier, call the fire department.</li> </ul> <p>— Installation and service must be performed by a qualified installer, service agency, or the gas supplier.</p>	<p><b>AVERTISSEMENT</b></p> <p>Assurez-vous de bien suivre les instructions données dans cette notice pour réduire au minimum le risque d'incendie ou d'explosion ou pour éviter tout dommage matériel, toute blessure ou la mort.</p> <ul style="list-style-type: none"> <li>Ne pas entreposer ni utiliser d'essence ou ni d'autres vapeurs ou liquides inflammables à proximité de cet appareil ou de tout autre appareil.</li> </ul> <p><b>QUE FAIRE SI VOUS SENTEZ UNE ODEUR DE GAZ</b></p> <ul style="list-style-type: none"> <li>Ne pas tenter d'allumer d'appareil.</li> <li>Ne touchez à aucun interrupteur; ne pas vous servir des téléphones se trouvant dans le bâtiment.</li> <li>Appelez immédiatement votre fournisseur de gaz depuis un voisin. Suivez les instructions du fournisseur.</li> <li>Si vous ne pouvez rejoindre le fournisseur, appelez le service des incendies.</li> </ul> <p>— L'installation et l'entretien doivent être assurés par un installateur ou un service d'entretien qualifié ou par le fournisseur de gaz.</p>
---	---

# Operation & Installation Manual

## iQ251D, Gen II



*Thank you for purchasing this Intellihot unit,*

*This unit is designed for years of trouble free operation, and I urge you to read and follow the instructions in this “Operation & Installation Manual.”*

*Our mission to create a better water heating system began back in the winter of 2005 when a tank-type water heater broke down and flooded our founder’s basement. By combining the principles of a diesel engine’s robustness, robotics intelligence, and marine environment durability, Intellihot set out to design a unit from the ground up that would outperform and outlast all others.*

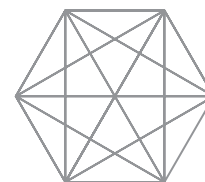
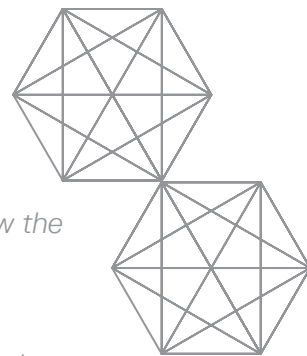
*Innovation is our hallmark and simplicity, efficiency, and durability are at the core of every Intellihot product. Our water heaters utilize the best attributes of tank and tankless – with intelligent logic and integrated recirculation. The result is a water heating system capable of handling the extreme loads of commercial applications with the preciseness needed for residential applications.*

*Our products are proudly engineered and built in Galesburg, Illinois making Intellihot the first and only US-based manufacturer of gas-fired condensing tankless water heating systems. For the past two decades, Intellihot has helped commercial customers throughout the nation save thousands of dollars while eliminating downtime. As we continue to expand our coverage across North America, we strive to provide you with the same unmatched performance advantages and savings. Our talented team of dedicated professionals is ready to assist you and help your business succeed.*

*I thank you for considering our Intellihot products.*

*Sincerely,*

*Shamus M. Hurley  
CEO, Intellihot Inc.*



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## WARNING

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

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

### WHAT TO DO IF YOU SMELL GAS

- Do not try to light any appliance.
- Do not touch any electrical switch; do not use any phone in your building.
- Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
- If you cannot reach your gas supplier, call the fire department.
- Installation and service must be performed by a qualified installer, service agency, or the gas supplier.



## AVERTISSEMENT

Assurez-vous de bien suivre les instructions données dans cette notice pour réduire au minimum le risque d'incendie ou d'explosion ou pour éviter tout dommage matériel, toute blessure ou la mort.

- Ne pas entreposer ni utiliser d'essence ou ni d'autres vapeurs ou liquides inflammables à proximité de cet appareil ou de tout autre appareil.

### QUE FAIRE SI VOUS SENTEZ UNE ODEUR DE GAZ

- Ne pas tenter d'allumer d'appareil.
- Ne touchez à aucun interrupteur; ne pas vous servir des téléphones se trouvant dans le bâtiment.
- Appelez immédiatement votre fournisseur de gaz depuis un voisin. Suivez les instructions du fournisseur.
- Si vous ne pouvez rejoindre le fournisseur, appelez le service des incendies.
- L'installation et l'entretien doivent être assurés par un installateur ou un service d'entretien qualifié ou par le fournisseur de gaz.

This product complies with ANSI Z21.10.3 (2011) / CSA 4.3 Gas Water Heater. For use as potable water heating.



## DANGER



**To avoid product damage, personal injury, or even possible death, carefully read, understand, and follow all the instructions in this Operation and Installation Manual before installing this product. Improper installation, adjustment, alteration, or maintenance can cause injury, loss of life, and/or property damage. This water heater should be installed and serviced by a qualified technician. The lack of proper service can result in a dangerous condition.**

Due to Intellihot's policy of continuous product improvement and technology, the design and/or technical specifications in this manual are subject to change without notice.

This manual contains safety information, installation instructions, and maintenance procedures. It must be left with the homeowner or placed near the water heater in a noncombustible location. **The customer should retain this manual for future reference.**



## 1. General Information

### 1.1 Items Shipped With Water Heater

The following items are shipped with the water heater.



## ! WARNING



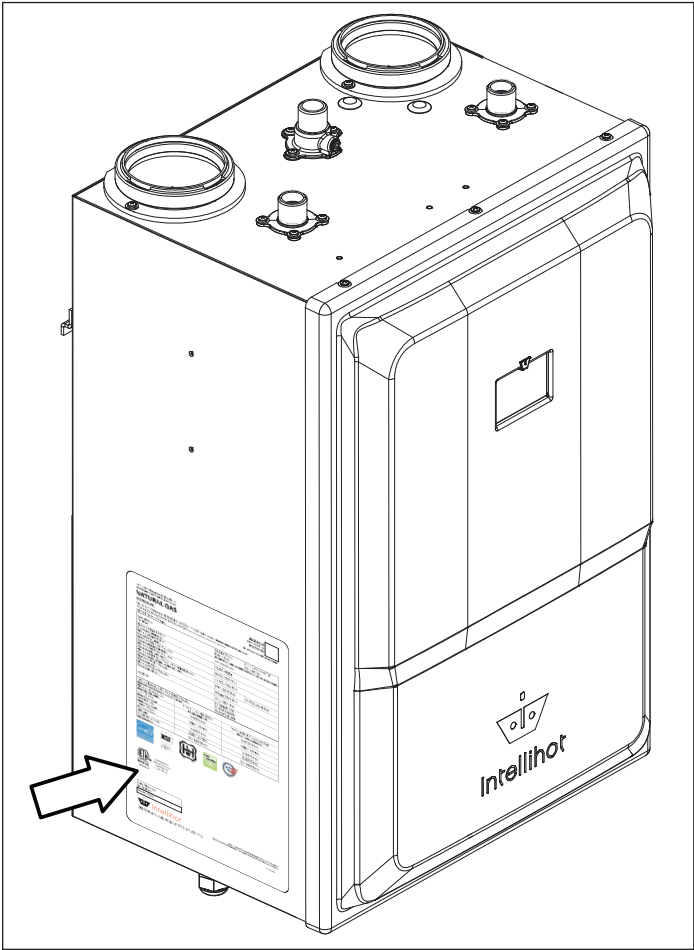
The condensate drain line is shipped from the factory with a loop held together with plastic ties. Do not remove the ties and/or straighten the loop. This loop forms an air block (trap) which prevents carbon monoxide from exiting the water heater through the drain line. Improper installation of the drain line can result in excessive levels of carbon monoxide, which can lead to severe personal injury or death.

## NOTICE

The unit does not include a temperature and pressure relief valve (T&P). The customer is responsible for supplying the T&P based on the application

1.2 Serial Number Plate Locations

The unit's serial number is located on the rating plate on the side panel of the unit. Please provide this serial number when inquiring about service or warranty solutions. Each heat engine also has a serial number located on its ASME certification tag.



Heat Engine (ASME) Serial Number: \_\_\_\_\_

Date of Installation: \_\_\_\_ / \_\_\_\_ / \_\_\_\_\_

Contact Information

Call us, your dealer, first if you have any questions about this product. We can help answer questions about installation, operation, or if there are damaged or missing parts when unpacking this unit from the shipping box.



Dealer Contact Information.

**Intellihot Support:** Please Call us at (877) 835-1705 or email us at [support@intellihot.com](mailto:support@intellihot.com).

## 2. Safety

### 2.1 Safety Signal Words

#### **DANGER**

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is limited to the most extreme situations.

#### **WARNING**

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

#### **CAUTION**

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

#### **NOTICE**

*Indicates that equipment or property damage can result if instructions are not followed.*

#### **SAFETY INSTRUCTIONS**

Safety instructions (or equivalent) signs indicate specific safety-related instructions or procedures.

**Note:** Contains additional information important to a procedure.

### 2.2 Installation Warnings

#### **WARNING**

**DO NOT use this water heater for any purpose other than water heating.**

Read, understand, and follow the Installation and Operation Manual, including all warnings and precautions, before operating this water heater. If you do not follow these instructions exactly, a fire or explosion may result, causing property damage, personal injury, or loss of life.

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

This water heater must be installed by a licensed plumber, gas fitter, and/or professional service technician. Installation by unqualified person(s) voids the warranty.

#### **DANGER**

A. This water heater does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do not try to light the burner manually.

B. BEFORE OPERATING, smell all around the water heater area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

**WHAT TO DO IF YOU SMELL GAS:**

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

C. Use only your hand to turn the manual gas shut-off valve. Never use tools. If manual gas shut-off valve will not turn by hand, don't try to repair it. Call a qualified service technician. Force or attempted repair may result in a fire or explosion.

#### **WARNING**

**DO NOT use or store flammable liquids around the water heater, including gasoline, oils, spray paints, etc.**

**DO NOT operate this water heater unless it is properly vented to the outside (the exhaust vent piping must be connected from the unit directly to the outside). Improper venting can cause a build-up of carbon monoxide, which can result in brain damage or death. Exhaust gases must be completely expelled out of the building.**

This water heater is factory preset for NATURAL GAS but may be field converted for use with propane. For propane conversion, refer to the Propane (LPG) Conversion section of this manual. Connecting the water heater to any other gas supply can result in property damage, serious injury, or even death.

This water heater is suitable for use in potable water heating applications. The cold and hot water fittings on the top of the water heater **MUST NOT** be connected to any heating system.

The water heater temperature is factory set to 120°F (49°C). Hot water temperatures above 125°F can cause severe burns instantly or death from scalds. If the proposed water heater outlet temperature is to be set above 125°F, installation of a thermostatically controlled (or temperature limiting) mixing valve is recommended for all hot water going to faucets to avoid the risk of scalding. Examples include commercial applications where 140°F (60°C) is often needed or if the space heating temperature required is higher than the domestic hot water. Always check the temperature of the hot water before bathing, showering, washing, etc.

Protect against snow and debris accumulation around the vent terminations. Regularly inspect the exhaust vent pipe and the air intake pipe to ensure they remain clear from obstructions at all times.

## **CAUTION**

Make sure you know the location of the gas shut-off valve and how to operate it. Immediately close the gas shut-off valve if the water heater is subjected to fire, overheating, flood, physical damage, or any other damaging condition that might affect the operation of the unit. Have the water heater checked by a qualified technician before resuming operation.

---

If the water quality is known to have high acidity and/or high hardness, water treatment is recommended. Consult the local water authority.

---

### **SAFETY INSTRUCTIONS**

**DO NOT** use this appliance if any part has been under water.

---

**DO NOT** reverse the cold water and gas connections as this will damage the gas valve.

---

**DO NOT** over-tighten fittings as damage may occur, causing internal leakage.

---

The appliance should be located in an area where leakage within the unit or at its connections will not result in damage to the surrounding area. The manufacturer will not be responsible for any damage resulting from leaking if adequate drainage is not provided.

---

### **SAFETY INSTRUCTIONS**

The manufacturer will not be responsible for any damages resulting from leaking due to freezing cold air intake.

---

### 3. Technical Specifications

#### 3.1 Specifications Chart

Technical Data	Specification
Type	Indoor/Outdoor, Wall Hung, Fully Condensing, On-demand Water Heater
Fuel	Preset for natural gas but convertible to propane
Minimum / Maximum Input (BTUs/hour)	30,000 / 251,000
Thermal Efficiency	96%
Dimensions H X W X D (inches)	26.4 X 17.8 X 15 (3.9 cu. ft)
Weight (lbs)	90
Water Inlet / Outlet Connection	3/4" NPT
Gas Inlet Connection	3/4" NPT
Maximum Condensate Flow Rate (GPH)	1.8
Minimum Flow Rate for Activation	0.6 GPM
Ignition	Electronic Spark Ignition
Installation Location Ambient Temperature	20°F – 130°F (refer to section 3.1.1)
Venting Type	Direct Vent (2 pipe – air intake and exhaust gas outlet), Power Vent (1 pipe – exhaust gas only)
Venting Material Options	Sch. 40 PVC, Sch. 40 CPVC, Polypropylene, Stainless Steel (AL29-4C)
Max 3" Air Inlet and Exhaust Gas Outlet Pipe Length – Single Pipe / Power Vent	130 ft; deduct 5 ft per 90° elbow and 2 ft per 45° elbow
Max 3" Air Inlet and Exhaust Gas Outlet Pipe Length – Two Pipe / Direct Vent	65 ft; deduct 5 ft per 90° elbow and 2 ft per 45° elbow
Common Venting for Multiple Units	Yes
Safety Features	Flame Rod, Thermal Fuse, Overheat Prevention Device, Fan Speed Monitor, Flue Temperature Monitor, Blocked Vent Detector, Water Shut-Off Valve, two 10A Fuses, Dual Flame Sensing, Flue Damper
Water Pressure Min / Max (PSI)	30/160 <sup>T</sup>
Natural Gas and Propane – Minimum Static Gas Pressure 1/2" Pipe	NG=6" WC (non-corrugated, black iron); LP=8" WC
Natural Gas and Propane – Minimum Static Gas Pressure 3/4" Pipe	NG=2.5" WC (non-corrugated, black iron); LP=8" WC
Natural Gas and Propane – Maximum Static Gas Pressure	14" WC
Gas Pressure for Adjustments	8" WC for natural gas and 11" WC for propane
Electrical Requirements	120V AC, 60 Hz, 15 Amp Circuit Breaker
Power Consumption	500W (Max 4.2 Amps), 8W (Standby)
External Recirculation	Requires constant external recirculation
Warranty (with recirculation, and unlimited thermal cycles)	Heat Engine Coil – 10 years, All Other Parts – 2 years

<sup>T</sup> = The unit does not include a temperature and pressure relief valve (T&P). The customer is responsible for supplying the T&P based on the application. Please refer to section 3.3

Note: Due to continuous product improvements, the design and technical specifications are subject to change without notice.

## Specifications Chart

Technical Data	Specification
Features	Specification
Certification Organizations	ETL (Z21.10.3 / CSA 4.3), ASME HLW
Cascading	Masterless, up to 10 units
Heat Engine	Expandable, Stainless 316L
Performance	Specification
Hot Water Output (35°F Rise)	13.8 GPM (for installations above 2,000 feet see section 3.2)
Hot Water Output (45°F Rise)	10.7 GPM (for installations above 2,000 feet see section 3.2)
Hot Water Output (77°F Rise)	6.3 GPM (for installations above 2,000 feet see section 3.2)
Domestic Mode Water Temperature Settings	100 – 140°F <sup>T</sup>
Commercial Mode Water Temperature Settings	100 – 190°F <sup>T</sup>
Warranty (with recirculation, and unlimited thermal cycles)	Heat Engine Coil – 10 years, All Other Parts – 2 years
<p><sup>T</sup> = The unit does not include a temperature and pressure relief valve (T&amp;P). The customer is responsible for supplying the T&amp;P based on the application. Please refer to section 3.3</p> <p><b>Note:</b> Due to continuous product improvements, the design and technical specifications are subject to change without notice.</p>	

### 3.1.1 Installation Ambient Temperature

To achieve an ambient temperature of 20 °F, the unit must be installed according to the manual. In addition, the software version must be 480-6 or higher.

### 3.2 High Elevation Installations

For operation at elevations above 2,000 feet, the hot water delivery output should be reduced by 4% for each 1,000 feet above sea level.

### 3.3 T&P requirements

The unit does not ship with a T&P (temperature and pressure relief valve). The customer selects and supplies a suitable T&P based on their specific application. Please consider the following while choosing an appropriate T&P..

1. T&P should be made of a suitable grade of stainless steel according to the specific application.
2. A Brass T&P is not recommended as it may contaminate and/or degrade when it interacts with deionized or pool water..
3. Follow the manufacturer's guidelines and inspect the T&P regularly to ensure proper operation (please refer to section 14.3)

### 3.4 External Recirculation Flow Requirements

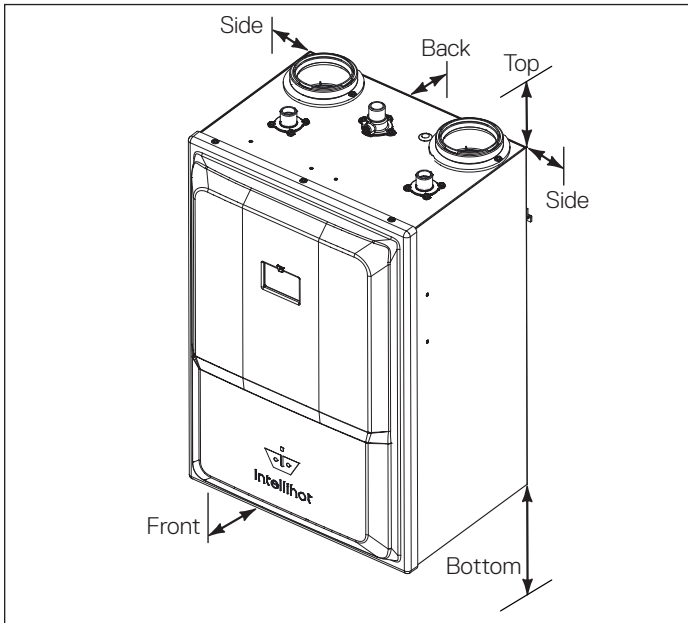
The external recirculation pump head must be 12 ft or higher. The recirculation pump must be installed as per the manufacturer's recommendations.

No. of units	Minimum External Recirculation Flow (GPM)
1	2.4
2	3.9
3	4.5
4	5.1
5	5.6
6	6.2
7	6.6
8	6.8
9	7.1
10	7.5



### 3.5 Clearance Requirements

In order for the water heater to operate properly and efficiently, the clearances specified in the table are required.



Location	Required		Recommended
	From Combustibles	From Non-Combustibles	Service Clearance <sup>1</sup>
Top	6" (15.2 cm)	2" (50.8 cm)	12" (30.4 cm)
Back <sup>2</sup>	5/8" (15.8 mm)	5/8" (15.8 mm)	5/8" (15.8 mm)
Sides	1" (25.4 mm)	1/2" (12.7 mm)	1" (25.4 mm)
Front	2" (5.1 cm)	2" (5.1 cm)	30" (76.2 cm)
Bottom	12" (30.4 cm)	12" (30.4 cm)	12" (30.4 cm)

<sup>1</sup> Service clearances are suggested to allow for normal service.

<sup>2</sup> Mounting bracket automatically sets this distance.

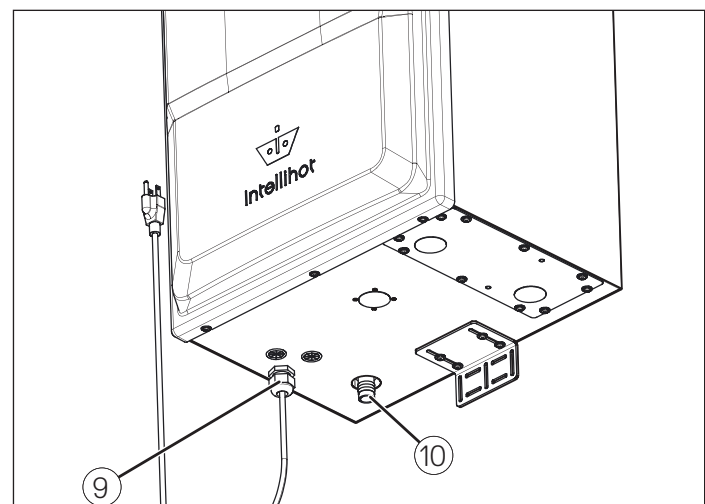
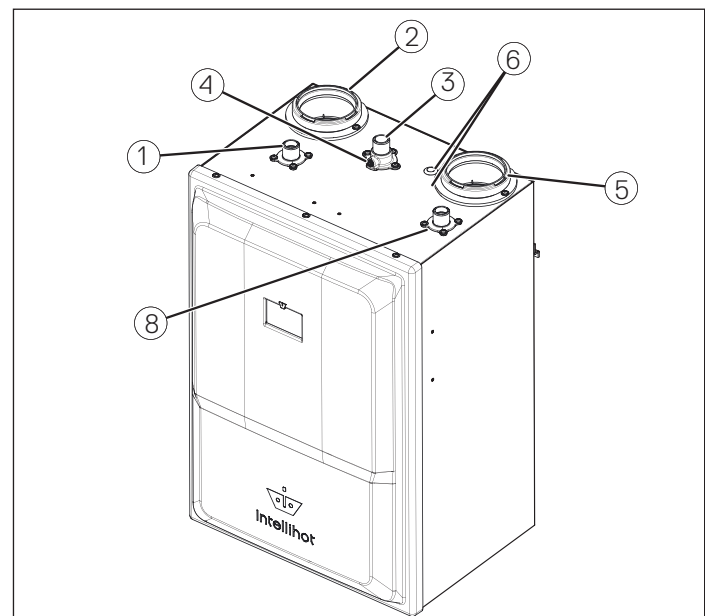
### 3.6 Exhaust Gas Standards

CO <sub>2</sub> and CO Standards		
Description	CO <sub>2</sub> Range (%)	Max. CO Level (ppm)
<b>Natural Gas</b>		
High Fire	9.1% to 9.3%	< 200 ppm
Low Fire	9.1% to 9.3%	< 60 ppm
<b>Propane Gas</b>		
High Fire	10.1% to 10.5%	< 200 ppm
Low Fire	10.1% to 10.5%	< 60 ppm

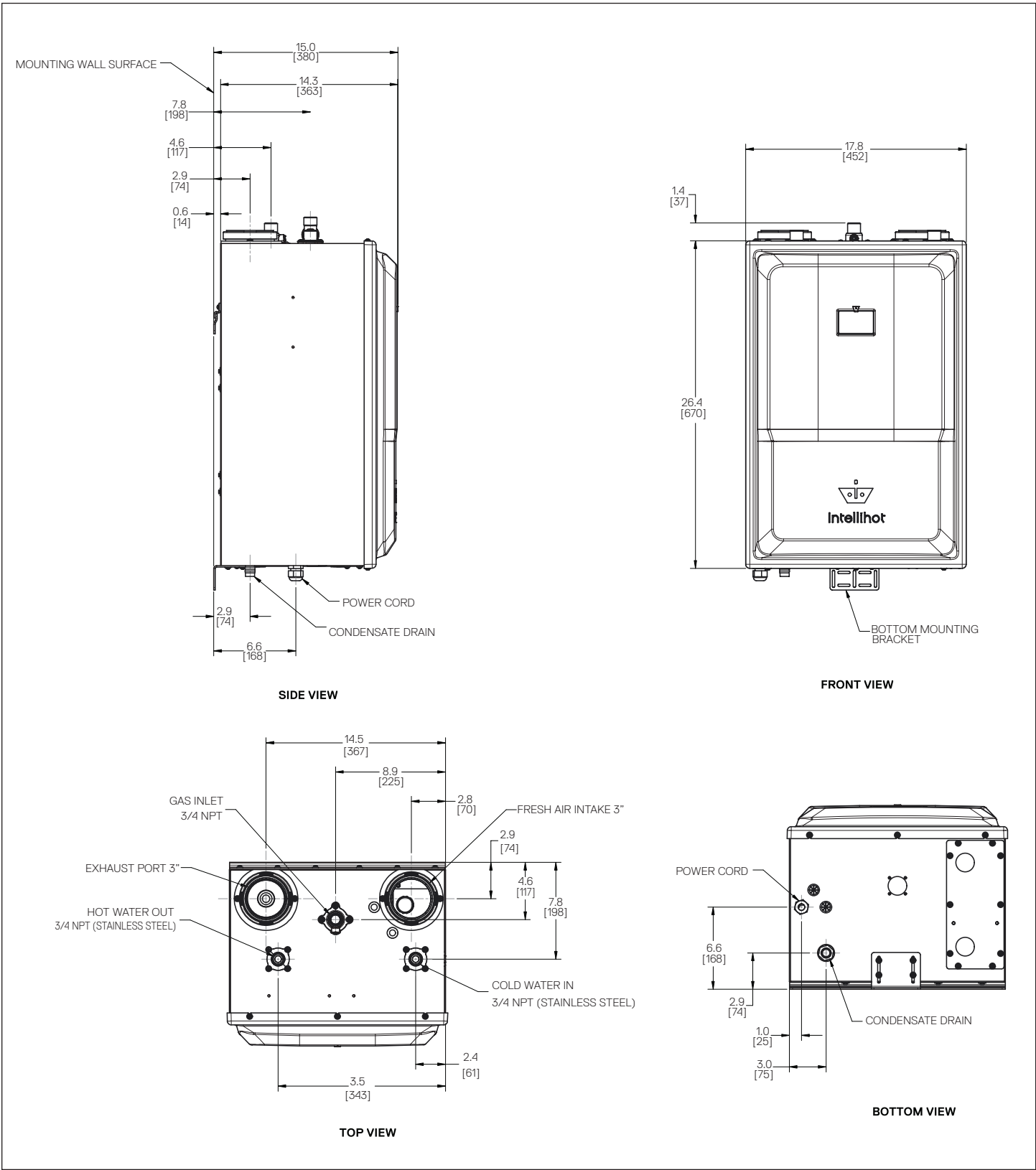
### 3.7 Connections

Connections		
Item	Description	Specification <sup>1</sup>
1	Hot Water Outlet Connection	3/4" Female NPT
2	Exhaust Gas Vent	3" O.D.
3	Gas Supply Inlet Connection	3/4" Female NPT
4	Gas Pressure Analyzer Port	1/8" Female NPT
5	Fresh Air Intake	3" O.D.
6	Access Ports for Blower Mounting Screws	—
7	—	—
8	Cold Water Inlet Connection	3/4" Male NPT
9	Power Supply Cord and Plug	120V AC Power
10	Condensate Drain Connection	3/4" Nipple (3/4" flex hose)

<sup>1</sup> Using sizes other than specified can cause damage to the water heater and will void the warranty.



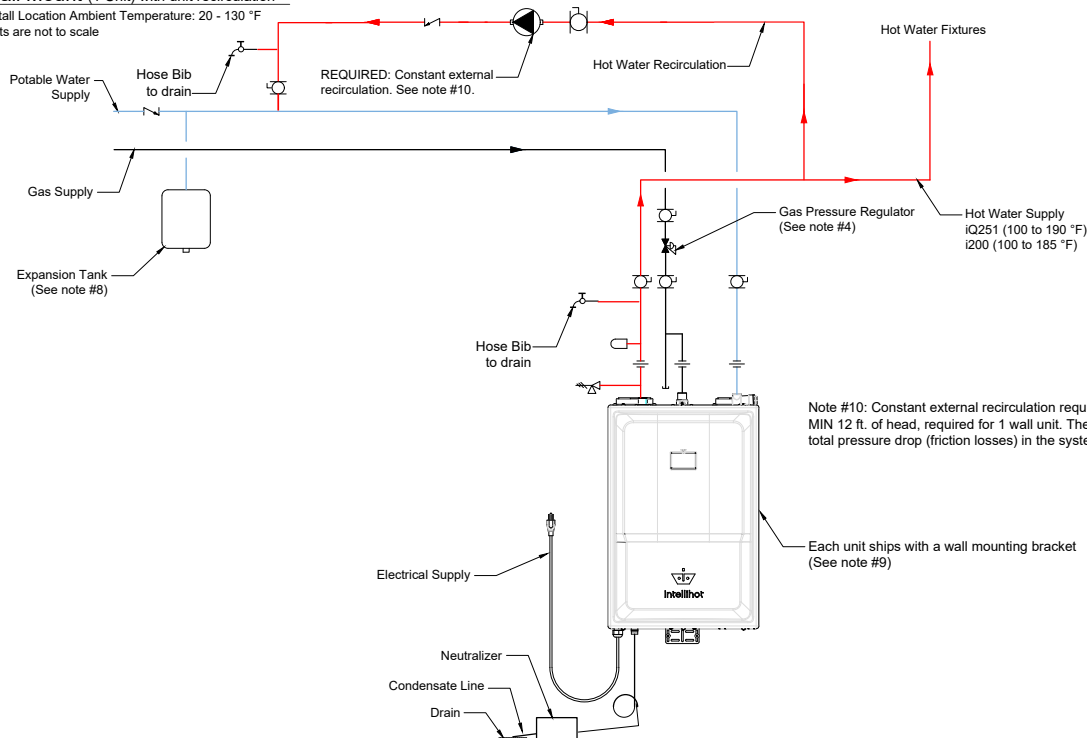
3.8 Dimensional Specifications



### 3.9 Configuration Options

#### Wall Mount (1 Unit) with unit recirculation

Install Location Ambient Temperature: 20 - 130 °F  
Units are not to scale



LEGEND	
	T&P Relief Valve
	Isolation Valve
	Check Valve
	Pipe Coupling
	Sediment Trap
	Recirculation Pump
	Water Hammer Arrestor
	Gas Pressure Regulator

Note #10: Constant external recirculation required. MIN 2.4 GPM flow rate, with MIN 12 ft. of head, required for 1 wall unit. The 12 ft. of head must be added to the total pressure drop (friction losses) in the system (piping, fittings, equipment, etc.).

Each unit ships with a wall mounting bracket (See note #9)

#### Notes:

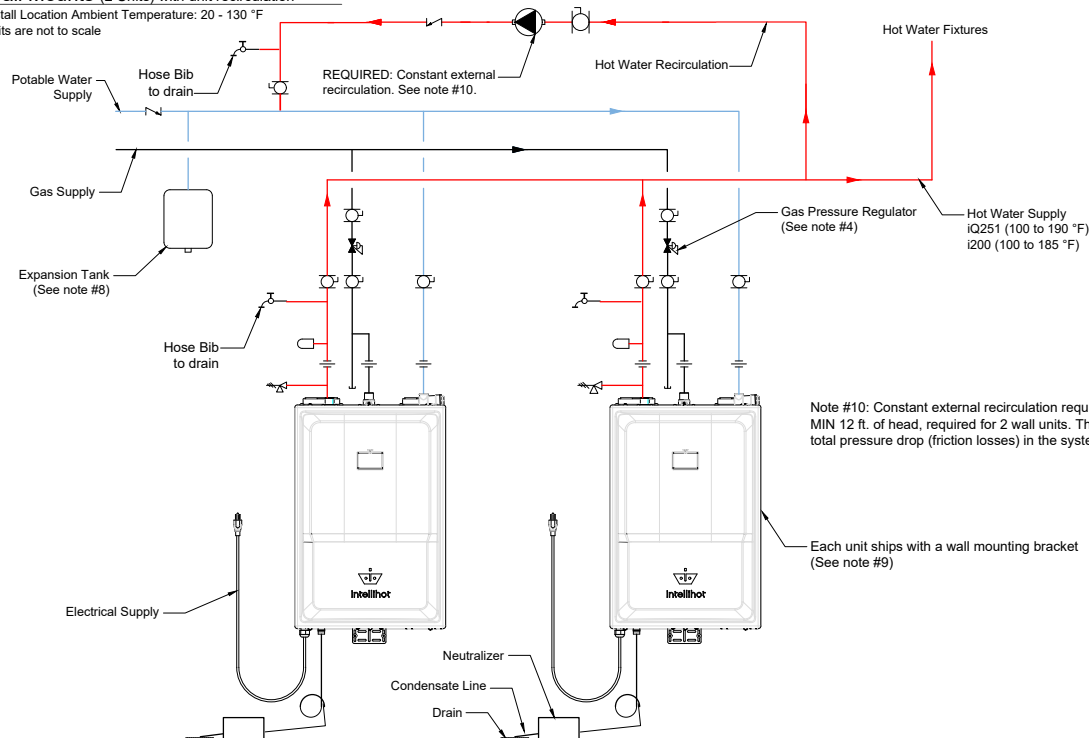
1. This schematic is a suggested piping diagram. Any additional requirements from local codes and ordinances shall supersede this diagram.
2. Intellihot models are Category IV potable tankless water heaters not to be installed in closed loops. Refer to manuals for certifications.
3. For water piping, gas supply, and venting requirements, please refer to the operation and installation manual.
4. Gas pressure regulator required to be installed if incoming gas pressure > 14" W.C.
5. Water hammer arrestor (ships with unit) to be installed within 20 ft. of the unit on the hot water supply.
6. Y-strainer is built into the unit and accessible for service from the outside.
7. Temperature and pressure relief valve (shipped with the unit) to be installed on the hot water supply.
8. Expansion tank to be sized based on the gallons of water in the plumbing system including the recirculation piping.
9. Refer to the manuals for operating weight of the wall mounts and installation instructions.

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## Configuration Options

### Wall Mounts (2 Units) with unit recirculation

Install Location Ambient Temperature: 20 - 130 °F  
Units are not to scale



#### LEGEND

- T&P Relief Valve
- Isolation Valve
- Check Valve
- Pipe Coupling
- Sediment Trap
- Recirculation Pump
- Water Hammer Arrestor
- Gas Pressure Regulator

Note #10: Constant external recirculation required. MIN 3.9 GPM flow rate, with MIN 12 ft. of head, required for 2 wall units. The 12 ft. of head must be added to the total pressure drop (friction losses) in the system (piping, fittings, equipment, etc.).

Each unit ships with a wall mounting bracket (See note #9)

#### Notes:

1. This schematic is a suggested piping diagram. Any additional requirements from local codes and ordinances shall supersede this diagram.
2. Intellihot models are Category IV potable tankless water heaters not to be installed in closed loops. Refer to manuals for certifications.
3. For water piping, gas supply, and venting requirements, please refer to the operation and installation manual.
4. Gas pressure regulator required to be installed if incoming gas pressure > 14" W.C.
5. Water hammer arrestor (ships with unit) to be installed within 20 ft. of the unit on the hot water supply.
6. Y-strainer is built into the unit and accessible for service from the outside.
7. Temperature and pressure relief valve (shipped with the unit) to be installed on the hot water supply.
8. Expansion tank to be sized based on the gallons of water in the plumbing system including the recirculation piping.
9. Refer to the manuals for operating weight of the wall mounts and installation instructions.

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## 4. Preparation Before Installation

### 4.1 Selecting an Indoor Installation Site

**Note:** When installing the water heater, follow all local building codes and the current edition of the National Fuel Gas Code (ANSI Z223.1/NFPA 54) in the USA, or National Gas and Propane Installation Code (CAN/CGA B149.1) in Canada when installing this product.

**Note:** For water heater installations in Massachusetts, refer to section “17. Requirements for State of Massachusetts” on page 62.

1. Select an interior location for the installation. Each installation is unique; therefore, take the time to find the best location for the water heater.
  - a. Install the water heater near locations that use hot water, such as bathroom, kitchen, or laundry room faucets.
  - b. Select a location that minimizes the length of the water pipe.
  - c. If the distances are long or if the faucet or appliance requires “instant” hot water, we recommend running a recirculation pipe back to the water heater from the farthest fixture.
  - d. Insulate the hot water supply and recirculation pipes.
  - e. Select a location away from foot traffic and away from areas where dust, debris, chemical agents, or other combustible materials could accumulate.
  - f. Allow sufficient space for service and maintenance access to all gas, water, and drain connections. Refer to “3.3 Clearance Requirements” on page <?>.
  - g. Make sure the location meets all building code requirements.
2. Minimize the distance that the exhaust gas outlet and air intake inlet must travel to an exterior wall.
  - a. The exhaust gas outlet must not be located next to a walkway, near soffit vents, crawl space vents, or other areas where condensate (water vapor) could cause damage or create a hazard. Refer to “7.7 Venting Clearance Specifications” for additional information.
  - b. The air intake inlet vent must be separated from the exhaust gas outlet per guidelines in section “7. Air Intake Inlet and Exhaust Gas Outlet Pipe Connections”
  - c. Contaminated or dirty air drawn into the intake pipe can damage the water heater. The warranty does not cover damage caused by airborne contaminants.

3. Locate the unit close to a drain and near gas and water connections.

The water heater produces a significant amount of condensate during normal operation and should be located near a suitable drain where damage from a possible leak will be minimal. Installing the water heater in a location, without a drain, will void the warranty and the manufacturer will not be responsible for any resulting water damages that may occur. For additional information, refer to “8.4 Condensate Drain Line”

### NOTICE

*In cold climates, if there is a power failure, the unit might freeze. To prevent damage to the water heater, turn OFF the gas supply and inlet water valve. Drain the unit completely as per “14.3 Draining the Water Heater”. Damage caused by freezing water is not covered by the warranty.*

4. Select an appropriate location for the intake air inlet and exhaust gas outlet pipes to exit the building, as shown in “7.7 Venting Clearance Specifications”
5. Check the water quality.
  - a. Proper operation of the water heater requires that the water meets EPA quality standards. The table in section “18. Warranty” on page 63 shows the maximum contaminant levels allowed, based on the EPA National Secondary Drinking Water Regulations (40 CFR Part 143.3).
  - b. If contaminated water is suspected, discontinue use of the water heater and contact an authorized technician or licensed professional.
  - c. If the incoming water is known to have a high mineral content or “hardness” (see “18. Warranty” on page 63), treatment is recommended upstream from the water heater.
  - d.

## 4.2 Selecting an Outdoor Installation Site

**Note:** When installing the water heater, follow all local building codes and the current edition of the National Fuel Gas Code (ANSI Z223.1/NFPA 54) in the USA, or National Gas and Propane Installation Code (CAN/CGA B149.1) in Canada when installing this product.

**Note:** For water heater installations in Massachusetts, refer to section “17. Requirements for State of Massachusetts” on page 62.

### 1. Installation requirements

- a. Ambient temperature range must be 20°F – 130°F.
- b. If the water heater will be installed where the ambient temperature could fall below freezing, it is required to insulate all the piping connections to protect the water inlet, water outlet, condensate, and all other water connections. Install heat trace to protect the pipes from freezing
- c. The water heater is designed for continuous use. If the unit is Powered Off and the ambient temperature drops below 40°F, electronic components may fail, and water lines can freeze if water is left inside the unit. This is not covered under warranty.
- d. Allow sufficient clearances for the service and maintenance access to the water heater
- e. Wireless repeaters may be necessary for teliCare connection (subject to location)
- f. Install an emergency electrical shut-off breaker near the water heater for maintenance and emergency
- g. Door and door seal should be checked for damage during regularly scheduled maintenance
- h. Exhaust and intake terminations require bird screens. We recommend 1/4” or larger mesh bird screens.
- i. If possible have the unit installed away from the direct Sun light (such as facing the east)
- j. Outdoor door is required. Please order IGT-SPR0122.

**2. Select a location** for the installation. Each installation is unique; therefore, take the time to find the best location for the water heater.

- a. Select a location that minimizes the length of the water pipe
- b. If the distances are long or if the faucet or appliance requires “instant” hot water, we recommend running a recirculation line back to the water heater from the farthest fixture.
- c. Select a location away from foot traffic and away from areas where dust, debris, chemical agents, or other combustible materials could accumulate.
- d. Make sure the location meets all building code requirements.
- e. Contaminated or dirty air drawn into the intake pipe can damage the water heater. The warranty does not cover damage caused by airborne contaminants.

- f. Ensure that the air intake is free (and remains free) from grass clippings, wood, landscaping and other debris. It must be higher than the code defined snow line.
- g. Locate the unit close to a drain and near gas and water connections.

The water heater produces a significant amount of condensate during normal operation and should be located near a suitable drain where damage from a possible leak will be minimal. If installing on a roof, installing the water heater in a location, without a drain, will void the warranty and the manufacturer will not be responsible for any resulting water damages that may occur. For additional information, refer to “8.4 Condensate Drain Line”

3. When the water heater is connected to an electrical power supply and the water heater is functioning properly, it will automatically prevent the water from freezing inside the unit.

## NOTICE

*In cold climates, if there is a power failure, the unit might freeze. To prevent damage to the water heater, turn OFF the gas supply and inlet water valve. Drain the unit completely as per “14.3 Draining the Water Heater”. Damage caused by freezing water is not covered by the warranty.*

4. Select an appropriate location for the intake air inlet and exhaust gas outlet pipes to exit the building, as shown in “7.7 Venting Clearance Specifications” on page 31.
5. Check the water quality.
  - a. Proper operation of the water heater requires that the water meets EPA quality standards. The table in section “18. Warranty” on page 63 shows the maximum contaminant levels allowed, based on the EPA National Secondary Drinking Water Regulations (40 CFR Part 143.3).
  - b. If contaminated water is suspected, discontinue use of the water heater and contact an authorized technician or licensed professional.
  - c. If the incoming water is known to have a high mineral content or “hardness” (see “18. Warranty” on page 63), treatment is recommended upstream from the water heater.



## 5. Wall Mounting

### 5.1 Mounting the Unit to the Wall

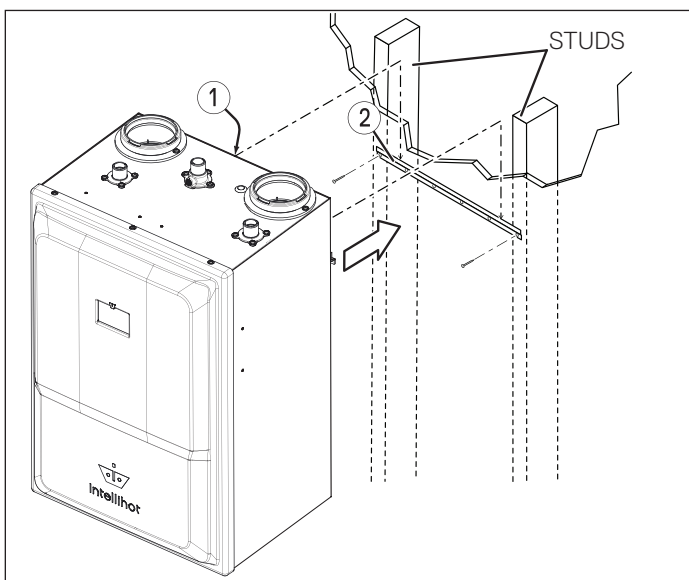
All water heaters come with an upper mounting bracket with predrilled holes spaced on 16 inch centers to facilitate easy installation on standard wall studs.

If the strength of the wall is insufficient or if the framing is nonstandard or uneven, reinforce the area using a sheet of plywood before installing the water heater.

Avoid installation on inside walls that can transmit operational noises to occupants while the unit is operating.

To mount the water heater to the wall:

1. Place the upper mounting bracket on the wall and ensure that it is level. Use two appropriately sized wood screws to mount the bracket securely to the studs. Ensure that it is affixed securely and can support the weight of the 90 pound unit.



#### SAFETY INSTRUCTIONS

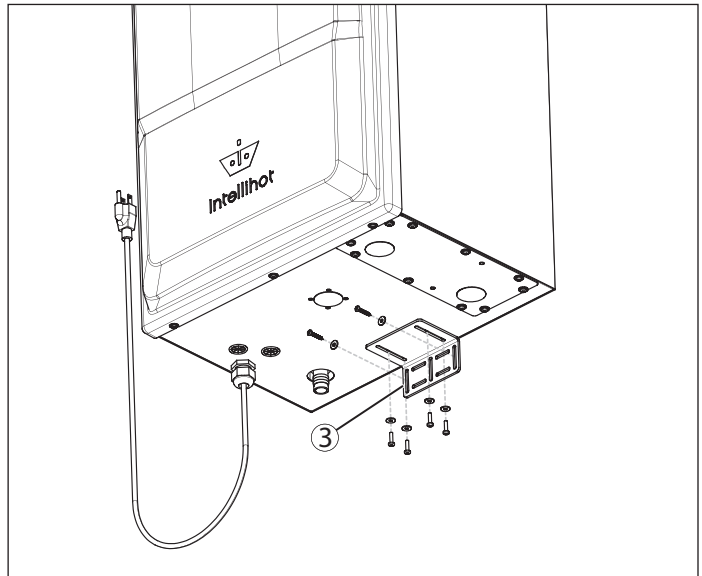
Only the brackets included with the water heater should be used to mount the unit. Water heaters weigh approximately 90 lbs. and must be securely attached to the wall.

### ⚠ CAUTION



According to the National Institute for Occupational Safety and Health, the recommended maximum safe lifting weight is 51 lbs., with all lifting conditions perfect; minimal forward reach, steady load close to the body, straight back, load between knees and shoulders, and good grips. To avoid personal injury, always use these proper lifting techniques and use two people to move the water heater, which weighs 90 lbs.

2. With assistance, hang the unit's interlocking bracket (1) onto wall bracket (2).
3. Loosen the four mounting screws in the lower bracket, and slide it against the wall to create a 5/8" air space.



4. Retighten the four mounting screws and install two appropriately sized wood screws in lower bracket (3) to secure the unit to the wall.
5. Make sure the unit is plumb and level, and tighten the four sheet metal screws on bottom bracket (3). When properly installed, there should be a 5/8" air space between the back of the water heater and the wall.

## 6. Gas Connection

### **WARNING**

#### **FIRE AND/OR EXPLOSION HAZARD**

To avoid serious injury or even death, the gas pipe installation and the gas pipe inlet pressure test must be done by a licensed professional.

Always match the water heater with the type of gas supplied to the unit (natural gas or propane). The water heater is factory preset for natural gas.

Make sure the gas pipe pressures are within normal limits. Pressures outside normal limits can result in poor performance and hazardous operating conditions.

### 6.1 Quick Reference Installation Instructions

1. Determine fuel source; natural gas or propane, as shown in “6.2 Fuel Source” on page 15.
2. Measure gas pressure, as shown in “6.3 Gas Pressure Requirements” on page 15.
3. Install a gas pressure regulator and vent pipe if gas pressure is above maximum recommendations, as shown in “6.4 Gas Pressure Regulator” on page 15.
4. Measure the length of the supply pipe, as shown in “6.5 Length of Gas Supply Pipe” on page 15”.
5. Select the proper gas piping material, as shown in “6.5 Length of Gas Supply Pipe” on page 15.
6. Select the proper gas piping diameter, as shown in “6.7 Determine Correct Gas Pipe Diameter” on page 16.
7. Install a drip leg on the gas pipe, as shown in “6.8 Gas Pipe Drip Leg and Shut-off Valve” on page 16.
8. Install a manual shut-off valve, as shown in “6.8 Gas Pipe Drip Leg and Shut-off Valve” on page 16.
9. Test all gas pipe connections for leaks.

### **NOTICE**

*Do not fire (operate) the water heater until all connections have been completed and the heat engine is filled with water.*

### 6.2 Fuel Source

1. Natural gas is the factory preset.
2. To convert the unit to propane, refer to “11. Natural Gas to Propane Conversion” on page 38.

### 6.3 Gas Pressure Requirements

iQ series water heaters are designed to operate at gas pressures as low as 2.5” W.C. (at maximum firing rate). Gas inlet pressures to the unit should not exceed 14” W.C. under any condition (when unit is firing or not firing).

Natural Gas Static Gas Pressure	
Parameters	Specifications
Minimum Static Gas Pressure 1/2” (black iron pipe)	6” W.C.
Minimum Static Gas Pressure 3/4” (black iron pipe)	2.5” W.C.
Recommended Gas Pressure	8” W.C.
Maximum Static Gas Pressure	14” W.C.

### 6.4 Gas Pressure Regulator

1. If the gas inlet pressure is higher than recommended, install a gas pressure regulator to lower gas pressure to an acceptable level.
2. The gas pressure regulator must have the same or higher minimum to maximum modulation range as the iQ model it is regulating. For example, an iQ251D gas pressure regulator should have a modulation range of 30,000 BTU/h to 251,000 BTU/h.
3. When multiple units are connected, use a dedicated gas pressure regulator for each unit.
4. Regulators should be mounted with a minimum of 12” of straight length pipe on either side.

#### 6.4.1 Venting of Gas Supply Regulators

Make sure the gas supply regulator is properly vented by following all local codes and the gas regulator manufacturer’s recommendations.

1. The vent pipe must be at least the same size as the regulator vent.
2. When multiple units are connected, each regulator must have a separate vent pipe.
3. Vent pipes must not be connected together or connected with any other appliance requiring external venting.
4. When selecting the size, the pipe diameter must be increased by one size for every 20 feet of pipe.
  - a. Each 90° elbow is equivalent to approximately:  
4.5 feet for nominal pipe sizes of up to 1-1/2”  
10.5 feet for nominal pipe sizes of up to 4”.
  - b. Each 45° elbow is equivalent to approximately:  
2 feet for nominal pipe sizes of up to 1-1/2”  
5 feet for nominal pipe sizes of up to 4”.

### 6.5 Length of Gas Supply Pipe

1. Make sure the length of the supply pipe does not exceed the maximum recommended length as per “6.9 Gas Pipe Sizing Tables” on page 16.
  - a. Measure the straight length of the gas supply pipe from the gas meter to the water heater or other appliances requiring gas. Include the additional length for any elbows into the calculation. The diameter of the pipe must be in relation to the length.

- The total straight length of gas pipe, as well as the additional length for any elbows, must be considered when sizing the gas pipe. Total equivalent length should be calculated from the meter or source location to the last connected water heater.
- Gas pipe size should be selected on the total equivalent length. The gas volume for cubic feet per hour (CFH) flow will be the input divided by the calorific value of the fuel to be supplied.
- Use "6.9 Gas Pipe Sizing Tables" on page 16 or refer to the gas pipe manufacturers sizing information to determine the correct diameter for the supply pipe.
- The diameter of the gas pipe will vary according to the specific installation requirements.

## 6.6 Gas Piping Material

- All gas pipe and components must comply with NFPA local codes and utility requirements minimum. Only gas approved fittings, valves, or pipe should be used.
- Standard industry practice for gas pipe is Schedule 40 iron pipe and fittings. All high and low gas pressure piping systems must comply with local utility and building codes.
- Assembled pipe should be clean of all scale, debris, metal particles, or foreign material.
- The piping must be supported from the floor, ceiling, or walls and not by the water heater itself.

## 6.7 Determine Correct Gas Pipe Diameter

**Note:** The water heater should be the first appliance to be connected to the gas supply pipe.

- Determine the gas requirement of the water heater(s) and other appliances requiring gas.
- Size the pipe diameter according to the COMBINED total maximum BTUH volume for all the appliances as if they were all operating at the same time. Use "6.9 Gas Pipe Sizing Tables" on page 16.
- Select the proper header pipe according to the number of units being connected together, as shown in the chart.

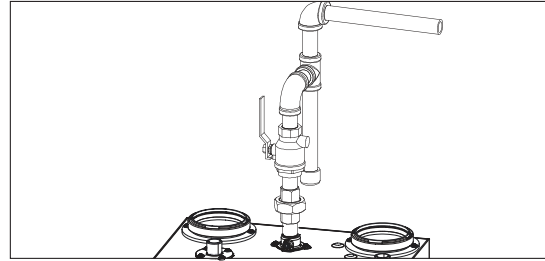
Header Sizing for Multiple iQ Units				
Number of Heaters	1	2	3	4
Sch 40 Iron Pipe	2"	2"	3"	3"

- The maximum pressure drop from the source to the final water heater must not exceed 0.3" W.C.
- The maximum gas flow rate required is the sum of the maximum inputs of each unit divided by the heat of combustion of the fuel supplied at the location, (approximately 1,030 BTU per cubic foot for natural gas or 2,520 BTU per cubic foot for propane).

**Note:** The fuel supplier or utility should be consulted to confirm that sufficient volume and normal pressure is provided to the building at the discharge side of the gas meter or supply pipe.

## 6.8 Gas Pipe Drip Leg and Shut-off Valve

- Install a shut-off valve. Local codes may require multiple units to have a shut-off valve on the main gas supply pipe and one on each unit.
- Install a gas pipe drip leg on each water heater to prevent dirt, condensation, or debris from entering the gas inlet.

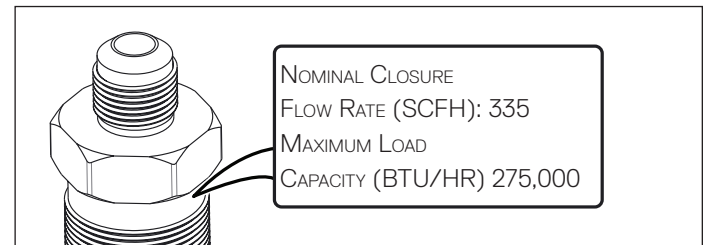


- Local codes may require multiple units to have a full size drip leg on the main gas supply pipe and one on each unit.
- The drip leg should have a removable clean-out cap.
- The gas pipe must not be supported by the water heater or the drip leg.

## ⚠ DANGER

The drip leg is required to protect the gas valve from debris and metal shavings. If the local plumbing code does not allow drip leg, an alternative mechanism such as filter shall be installed to protect the gas valve. The warranty does not cover if the gas valve is stuck open due to missing drip leg (or not including alternative method).

- If an excess flow valve (EFV) is installed in the gas pipe, check the manufacturer's minimum and maximum flow capacity rating. An improperly sized EFV will not allow the full flow of gas to the water heater and will cause the unit to malfunction.



- Continue installing pipe to reach the main gas supply connection.
- Test all gas pipe connections.
  - All the gas pipe connections should be tested as prescribed in NFPA 54.
  - In multiple unit applications, each unit should be isolated before testing any piping system that may exceed the allowable pressure of 14.0" W.C.

## NOTICE

*Do not fire (operate) the water heater until all connections have been completed and the heat engine is filled with water.*

## 6.9 Gas Pipe Sizing Tables

This information is for reference only. Refer to gas pipe manufacturer specifications for actual delivery capacity. Contact the local gas supplier for actual BTU/ft<sup>3</sup> rating. This data has been copied from the National Fire Protection Association Article 54 (NFPA 54).

Pipe Sizes and BTU/h Capacity (NATURAL GAS). Use this table for static gas pressure LESS THAN 5" W.C.								
Length including fittings (feet)	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
10	360,000	678,000	1,390,000	2,090,000	4,020,000	6,400,000	11,300,000	23,100,000
20	247,000	466,000	957,000	1,430,000	2,760,000	4,400,000	7,780,000	15,900,000
30	199,000	374,000	768,000	1,150,000	2,220,000	3,530,000	6,250,000	12,700,000
40	-	320,000	657,000	985,000	1,900,000	3,020,000	5,350,000	10,900,000
50	-	284,000	583,000	873,000	1,680,000	2,680,000	4,740,000	9,660,000
60	-	257,000	528,000	791,000	1,520,000	2,430,000	4,290,000	8,760,000
70	-	237,000	486,000	728,000	1,400,000	2,230,000	3,950,000	8,050,000
80	-	220,000	452,000	677,000	1,300,000	2,080,000	3,670,000	7,490,000
90	-	207,000	424,000	635,000	1,220,000	1,950,000	3,450,000	7,030,000
100	-	-	400,000	600,000	1,160,000	1,840,000	3,260,000	6,640,000
125	-	-	355,000	532,000	1,020,000	1,630,000	2,890,000	5,890,000
150	-	-	322,000	482,000	928,000	1,480,000	2,610,000	5,330,000
175	-	-	296,000	443,000	854,000	1,360,000	2,410,000	4,910,000
200	-	-	275,000	412,000	794,000	1,270,000	2,240,000	4,560,000
Note: BTU/h capacities are based on specific gravity of 0.6, pressure drop of 0.5" W.C.								

Pipe Sizes and BTU/h Capacity (NATURAL GAS). Use this table for static gas pressure GREATER THAN 5" W.C.									
Length including fittings (feet)	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
10	404,000	949,000	1,787,000	3,669,000	5,497,000	10,588,000	16,875,000	29,832,000	43,678,000
20	286,000	652,000	1,228,000	2,522,000	3,778,000	7,277,000	11,598,000	20,503,000	30,020,000
30	233,000	524,000	986,000	2,025,000	3,034,000	5,844,000	9,314,000	16,465,000	24,107,000
40	202,000	448,000	844,000	1,733,000	2,597,000	5,001,000	7,971,000	14,092,000	20,632,000
50	-	397,000	748,000	1,536,000	2,302,000	4,433,000	7,065,000	12,489,000	18,286,000
60	-	360,000	678,000	1,392,000	2,085,000	4,016,000	6,401,000	11,316,000	16,569,000
70	-	331,000	624,000	1,280,000	1,919,000	3,695,000	5,889,000	10,411,000	15,243,000
80	-	308,000	580,000	1,191,000	1,785,000	3,437,000	5,479,000	9,685,000	14,181,000
90	-	289,000	544,000	1,118,000	1,675,000	3,225,000	5,140,000	9,087,000	13,305,000
100	-	273,000	514,000	1,056,000	1,582,000	3,046,000	4,856,000	8,584,000	12,568,000
125	-	242,000	456,000	936,000	1,402,000	2,700,000	4,303,000	7,608,000	11,139,000
150	-	219,000	413,000	848,000	1,270,000	2,446,000	3,899,000	6,893,000	10,093,000
175	-	202,000	380,000	780,000	1,169,000	2,251,000	3,587,000	6,342,000	9,285,000
200	-	-	353,000	726,000	1,087,000	2,094,000	3,337,000	5,900,000	8,638,000
Note: For 1/2" pipe BTU/h capacities are based on specific gravity of 0.6, pressure drop of 4.6" W.C. For all other pipe sizes, capacities are based on specific gravity of 0.6, pressure drop of 3.0" W.C.									

Pipe sizes and BTU/h capacity (PROPANE). Use this table for static gas pressure GREATER THAN 5" W.C.									
Length including fittings (feet)	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
10	409,000	608,000	1,150,000	2,350,000	3,520,000	6,790,000	10,800,000	19,100,000	39,000,000
20	289,000	418,000	787,000	1,620,000	2,420,000	4,660,000	7,430,000	13,100,000	26,800,000
30	236,000	336,000	632,000	1,300,000	1,940,000	3,750,000	5,970,000	10,600,000	21,500,000
40	204,000	287,000	541,000	1,110,000	1,660,000	3,210,000	5,110,000	9,030,000	18,400,000
50	-	255,000	480,000	985,000	1,480,000	2,840,000	4,530,000	8,000,000	16,300,000
60	-	231,000	434,000	892,000	1,340,000	2,570,000	4,100,000	7,250,000	14,800,000
80	-	212,000	400,000	821,000	1,230,000	2,370,000	3,770,000	6,670,000	13,600,000
100	-	-	372,000	763,000	1,140,000	2,200,000	3,510,000	6,210,000	12,700,000
125	-	-	349,000	716,000	1,070,000	2,070,000	3,290,000	5,820,000	11,900,000
150	-	-	330,000	677,000	1,010,000	1,950,000	3,110,000	5,500,000	11,200,000
175	-	-	292,000	600,000	899,000	1,730,000	2,760,000	4,880,000	9,950,000
200	-	-	265,000	543,000	814,000	1,570,000	2,500,000	4,420,000	9,010,000
Note: The pipe BTU/h capacities are based on specific gravity of 1.5, pressure drop of 0.5" W.C.									

## 7. Air Intake Inlet and Exhaust Gas Outlet Pipe Connections

### **DANGER**



**Improper venting of the water heater will 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, or in Canada refer to the “Venting Systems and Air Supply for Appliances” section in the latest version of CAN/CGA B149.1 (Natural Gas and Propane Installation Code), and all applicable local building codes. The installation of the exhaust gas outlet pipe should be performed only by a licensed professional.**

### **WARNING**



#### **BREATHING HAZARD CARBON MONOXIDE GAS**

- Do not operate flood damaged water heaters.
- Install venting system according to the required codes and material manufacturers specifications.
- Do not obstruct fresh air intakes or exhaust outlets. Adequately support all vent system piping.
- Do not place vapor emitting products near water heater or air intake.
- Place working carbon monoxide detectors outside each sleeping area.
- Do not operate the water heater before properly installing the exhaust outlet.
- Visually inspect the vent system and eliminate any possible area where condensation could create a blockage of intake or exhaust air.

Breathing concentrated levels of carbon monoxide, even for a short period of time, will cause brain damage and can even lead to death.

**Note:** This water heater falls into the Category IV appliance.

### 7.1 Quick Reference Installation Guide

1. Select the desired type of venting system: Two Pipe Vent System (Direct) or Single Pipe Vent System (Power).

“7.3 Two Pipe Vent System (Direct Vent)” on page 20.

“7.4 Single Pipe Venting System (Power Vent)” on page 22.

2. Select the desired termination of the air intake inlet and exhaust gas outlet pipe; outside wall or roof.

“7.3.3 Side Wall Air Intake Inlet and Exhaust Gas Outlet Pipe Termination” on page 21.

“7.3.4 Roof Air Intake Inlet and Exhaust Gas Outlet Pipe Termination” on page 22.

3. Determine the straight pipe distance and the number of elbows required to route the air intake inlet and exhaust gas outlet pipes to their termination point.  
“7.6 Intake Air Inlet and Exhaust Gas Outlet Pipe Diameter and Length” on page 25.
4. Determine the diameter of pipe required to properly bring in intake air and vent exhaust gas.  
“7.6 Intake Air Inlet and Exhaust Gas Outlet Pipe Diameter and Length” on page 25.
5. Verify the location of the air intake inlet and exhaust gas outlet terminations are within state and local codes.  
“7.7 Venting Clearance Specifications” on page 26.
6. Select an approved material for the air intake inlet pipe as per “7.9 Air Intake Inlet Pipe Vent Materials” on page 27.
7. Select an approved material for the exhaust gas outlet pipe as per “7.8 Exhaust Gas Outlet Pipe Materials” on page 27.

### 7.2 Typical Single Unit Air Intake Inlet and Exhaust Gas Outlet Pipe Installation

1. Select one of the two venting configurations: two pipes (direct vent) configuration or with one pipe (power vent) configuration.
2. Select the desired termination location and make sure each pipe terminates within all local and state codes.
3. Select the desired material for the air intake inlet and exhaust gas outlet pipes.

### **CAUTION**



This water heater has a factory preset control to limit the exhaust gas temperature to 149°F (65°C) when PVC is selected in the “Flue Type” programming section. As a result, the water heater can be vented with Schedule 40 PVC. If the incoming (or recirculation return) water temperature does not exceed 150°F (66°C), the exhaust gas temperature will not exceed 149°F (65°C).

### **WARNING**

**When the unit is set for CPVC (polypropylene pipe), flue temperatures can reach 190°F (88°C). PVC pipe will melt at temperatures above 149°F (65°C) and could, therefore, result in a fire. Make sure the setting and the type of material (“7.8 Exhaust Gas Outlet Pipe Materials” on page 27) being used for the flue are compatible.**

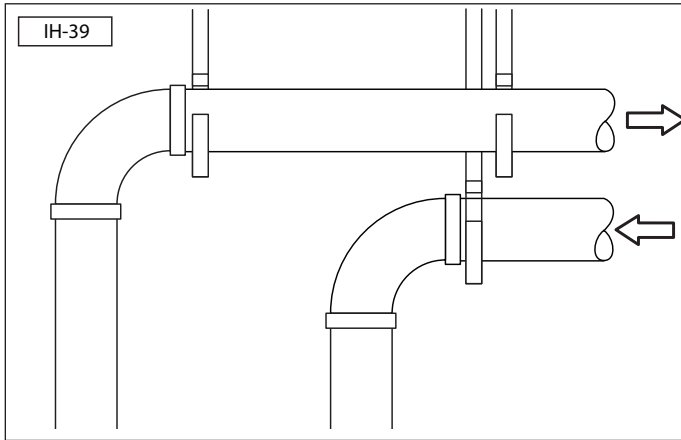
**For this application use Schedule 80 CPVC or Approved Polypropylene in the USA or Type BH Special Gas Vent Class IIB (CPCV) or Class IC (Polypropylene) that conforms to ULC-S636 in Canada. Also refer to “7.8 Exhaust Gas Outlet Pipe Materials” on page 27.**



## SAFETY INSTRUCTIONS

**On multiple unit installations, the air intake inlet and exhaust gas outlet pipe from each water heater must be connected into the properly-sized common piping. Use the table in “7.6 Intake Air Inlet and Exhaust Gas Outlet Pipe Diameter and Length” on page 25 to determine the diameter of the common connecting piping between each individual water heater.**

1. Determine the length and corresponding diameter for the air inlet pipe and route the pipe to the desired termination location.
  - a. For termination of the pipe to the outside, continue installing the required pipe to a suitable outside location. Glue all connections, making sure the joints are sealed airtight.
  - b. Install suitable pipe support hangers every four to five feet, or as local building codes require.



2. Determine the length and corresponding diameter for the exhaust gas outlet pipe and route it to a suitable outside location.
  - a. Glue all connections, making sure the joints are sealed airtight.
  - b. Install all horizontal exhaust gas outlet pipe with a minimum two degree ( $1/4$ " per foot) slope back toward the water heater. This allows any condensate that accumulates in the exhaust gas outlet pipe to properly drain back into the unit.
  - c. Install suitable pipe support hangers every four to five feet, or as local building codes require.

## SAFETY INSTRUCTIONS

**Do not connect any other appliance vents to the water heater inlet or outlet pipes.**

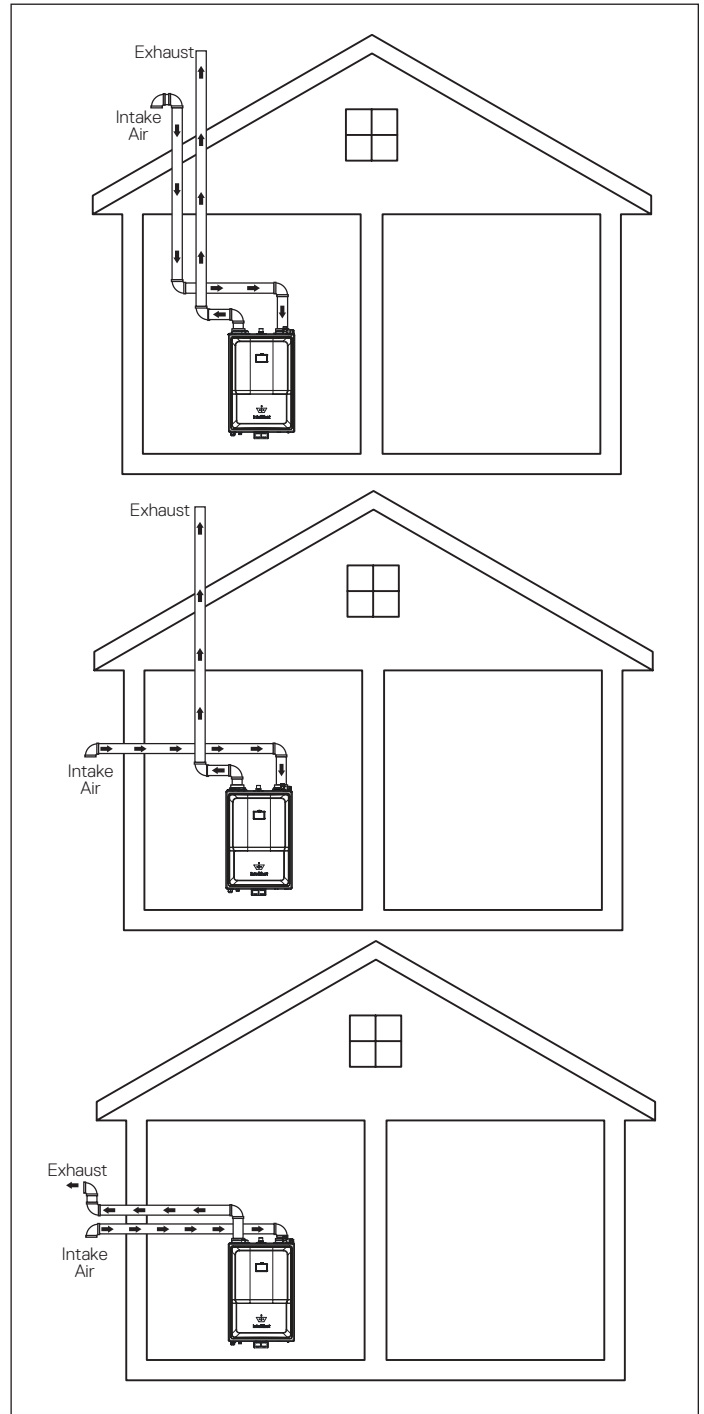
3. If multiple units are installed, make sure the diameter of the connecting exhaust gas outlet pipe is properly sized for the number of units being installed.

## 7.3 Two Pipe Vent System (Direct Vent)

### 7.3.1 Single Unit Configurations

The water heater can be directly vented without any modification using a three inch diameter pipe.

The following diagrams represent some typical direct venting configurations and are included to assist in designing the vent system. Possible configurations are not limited to the following diagrams.

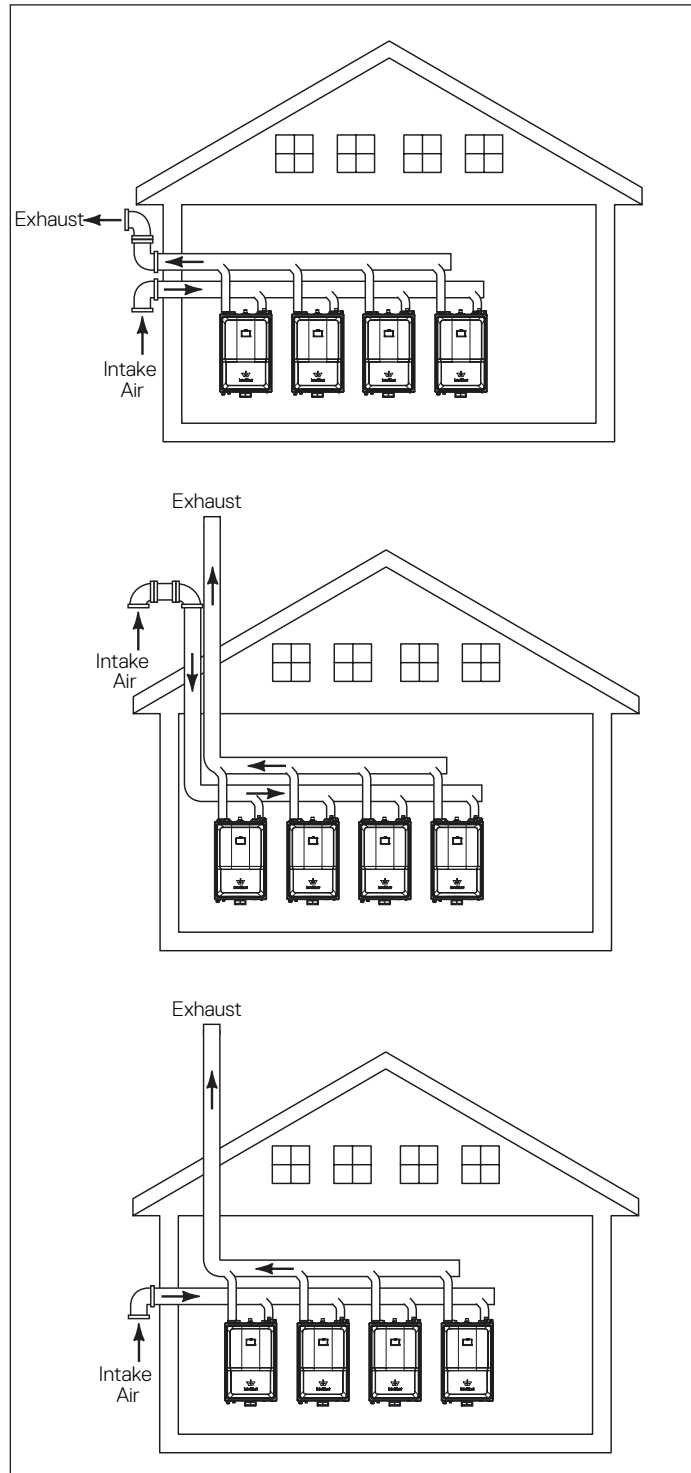


### 7.3.2 Multiple Units Configurations

When more than one unit is installed, refer to “7.6 Intake Air Inlet and Exhaust Gas Outlet Pipe Diameter and Length” on page 25.

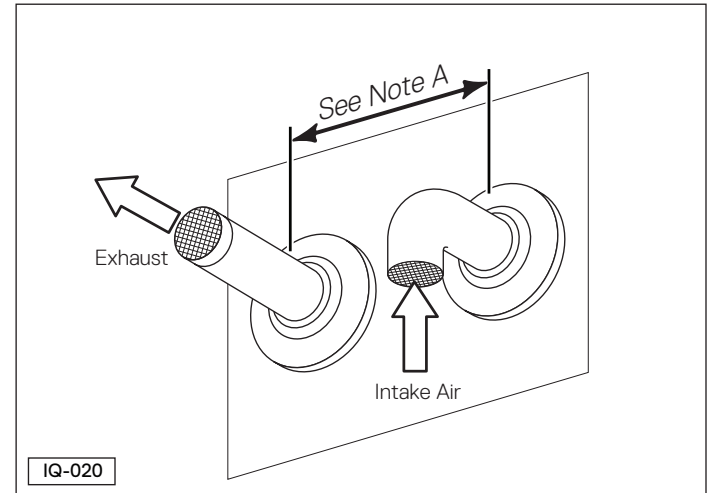
Connecting multiple units together requires proper sizing of the air intake inlet and exhaust gas outlet pipes. Up to ten water heaters can be connected (cascading) together. Units common vented must be cascaded together, refer to “13. Connecting Multiple Units”

The following diagrams represent some typical direct venting configurations and are included to assist in designing the vent system. Possible configurations are not limited to the following diagrams.

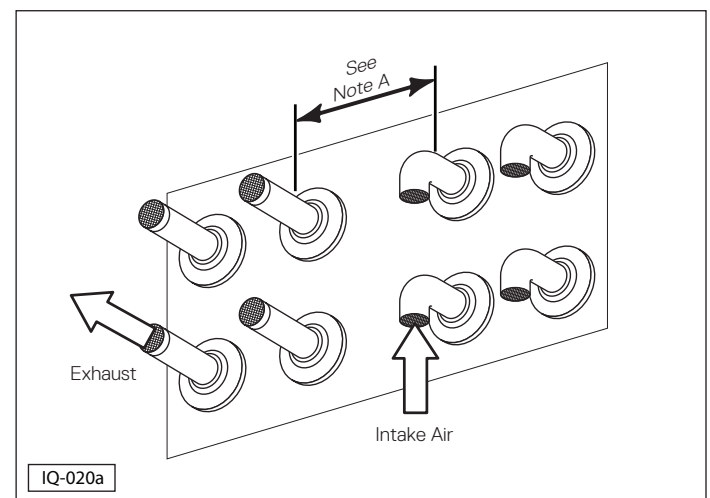


### 7.3.3 Side Wall Air Intake Inlet and Exhaust Gas Outlet Pipe Termination

1. Terminate the air intake inlet pipe with a 90° elbow (angled down). Use a flange and PVC screen (not supplied).
2. Terminate the exhaust gas outlet pipe on the exterior wall at least 12” above ground and at least 18” away from the air intake inlet pipe, or as required by local building codes. In areas of high snow fall, protect the vent terminations from blockage. Use a flange and PVC guard to seal the opening against weather infiltration.



Single unit.



Multiple units.

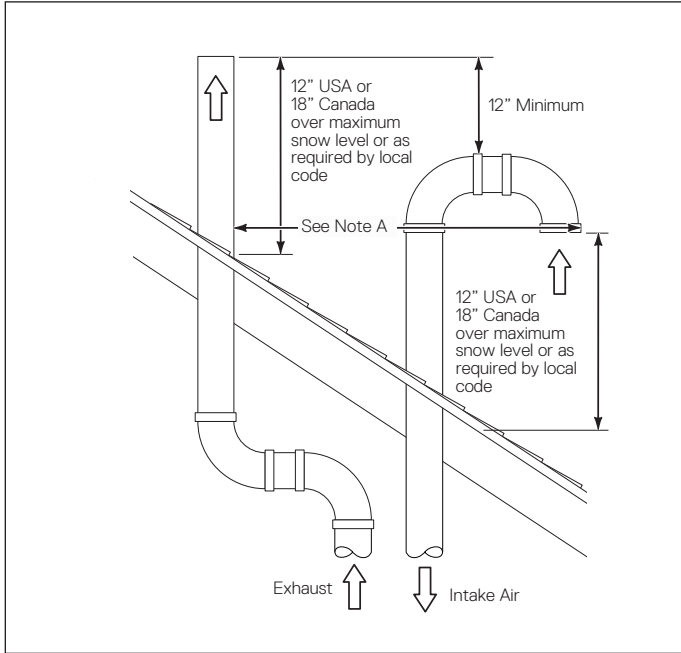
**Note A:** The distance between any exhaust gas outlet and air intake inlet pipe should be between 18 and 36 inches apart. If this minimum specification cannot be met, the air intake inlet and exhaust gas outlet pipes should be spaced 72 inches apart or farther.

3. To avoid moisture and frost build-up to openings on adjacent homes, use 45° elbows, 90° elbows, or tees for the exhaust gas outlet termination to direct the exhaust gas fumes away from the building.

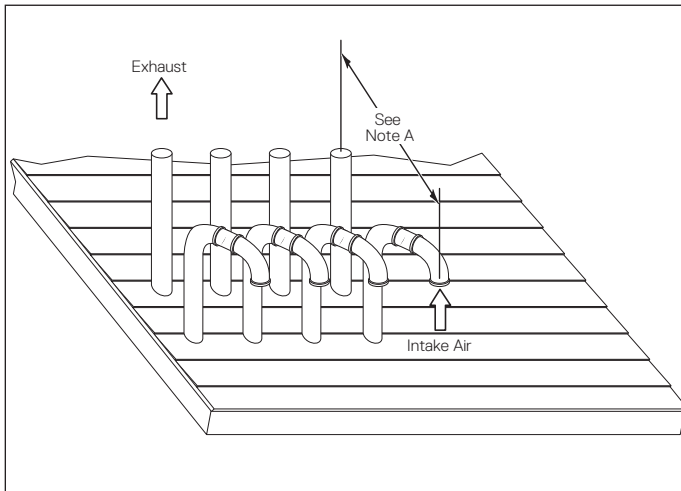
### 7.3.4 Roof Air Intake Inlet and Exhaust Gas Outlet Pipe Termination

Venting the unit through the roof is also an option. With this installation method, the terminations must extend at least 12" over maximum potential snow levels, or as required by local building codes. In areas of high snow fall, protect the vent terminations from blockage.

Terminate the air intake inlet pipe with two 90° elbows (angled down). A suitable roof flashing and vent cap (not supplied) should be installed.



Single unit.



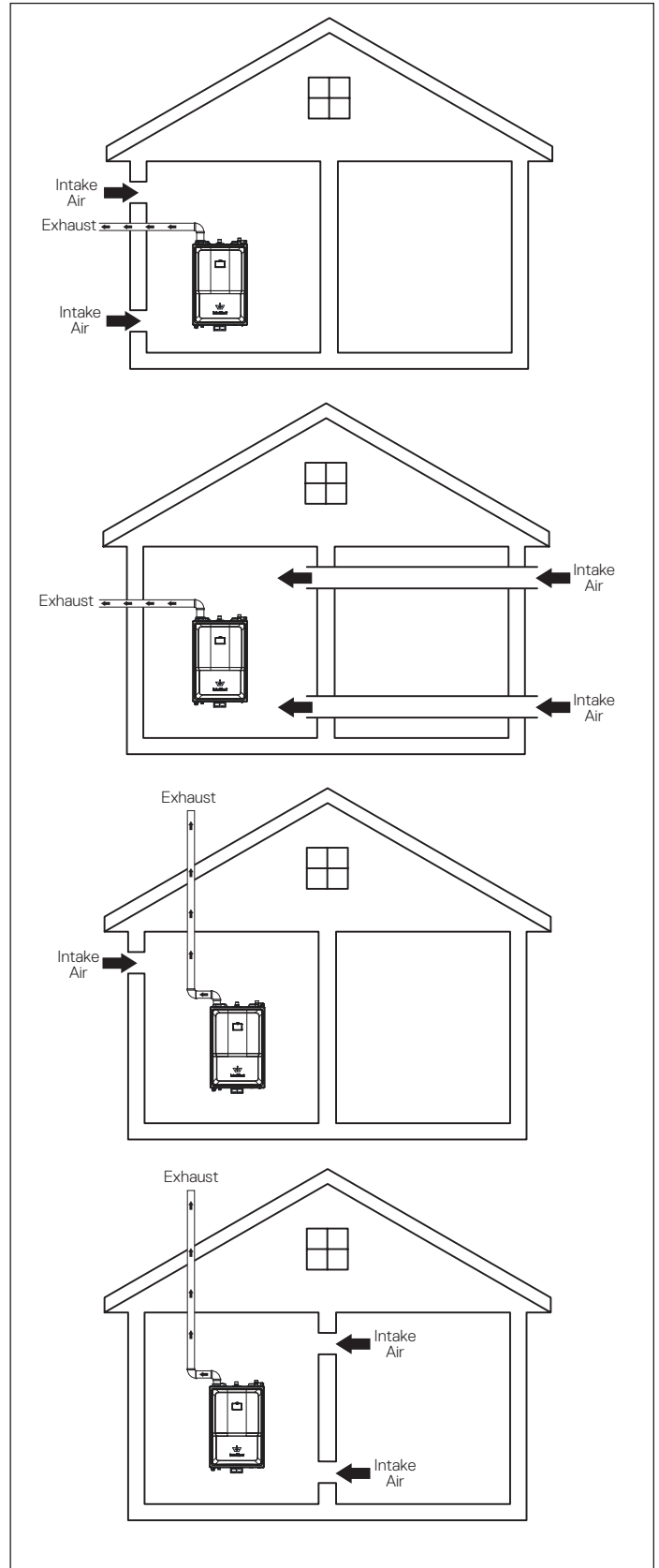
Multiple units.

**Note A:** The distance between any exhaust gas outlet and air intake inlet pipe should be between 18 and 36 inches apart. If this minimum specification cannot be met, the air intake inlet and exhaust gas outlet pipes should be spaced 72 inches apart or farther.

### 7.4 Single Pipe Venting System (Power Vent)

#### 7.4.1 Single Unit

The following illustrations represent some typical power venting configurations and are included to assist in designing the vent system. Possible configurations are not limited to these designs.



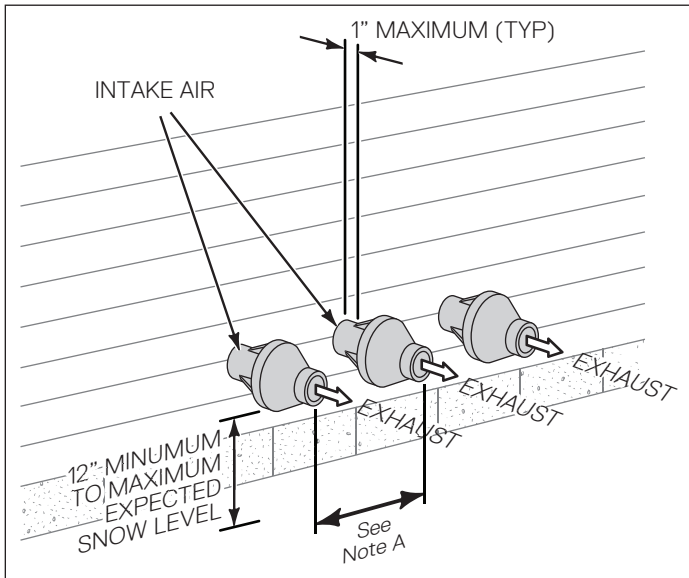
When installing multiple units, refer to “7.6 Intake Air Inlet and Exhaust Gas Outlet Pipe Diameter and Length” on page 25.

Connecting multiple units together requires proper sizing of the air intake inlet and exhaust gas outlet pipes. Up to ten water heaters can be connected (cascaded) together. Units common vented must be cascaded together, refer to “13. Connecting Multiple Units”

#### 7.4.4 Concentric Venting Termination (Multiple Units)

In order to conform to some national codes, when two or more water heaters are installed they must be individually vented. When two or more units are vented near each other, each vent termination must be installed, as shown, to avoid recirculation of flue gases. A minimum distance of 18 inches must be maintained between each vent termination.

Follow all installation instructions included with the concentric vent kit when installing this type of vent system.



Multiple Concentric Units.

**Note A:** The distance between any exhaust gas outlet and air intake inlet pipe should be between 18 and 36 inches apart. If this minimum specification cannot be met, the air intake inlet and exhaust gas outlet pipes should be 72 inches apart or more.

To avoid moisture and frost build-up to openings on adjacent homes, use a 45° elbow, a 90° elbow, or a tee for the vent termination to direct the exhaust gas fumes away from the building.

## 7.5 Intake Air Requirements

When using the single exhaust gas outlet pipe or power vent method, the following table outlines the required opening sizes for the intake air coming into the room and the required CFM requirements per water heater.

### SAFETY INSTRUCTIONS

**Do not operate the unit in an area that will draw in outside air contaminated with high levels of dust, sawdust, aerosols, such as paint, or other airborne contaminants.**

**If necessary, purchase and install appropriate air filters and follow a regular cleaning program to ensure an adequate supply of clean, outside intake air.**

Required Combustion and Ventilation Air Opening Sizes (sq. in) Per Heater Per Room					
Input BTU/hr	Air Type	Air is drawn directly from outside into the room			Example #4 Air is drawn from another interior space inside the building
		Example #1 through two openings*, direct or vertical	Example #2 through one opening**	Example #3 through two horizontal ducts	
251,000	Combustion Air	63	84	125	84
	Ventilation Air	63		125	84
*Where two openings are used, one must be within 12" of the floor and the other opening must be within 12" of the ceiling.					
**Where one opening is used, it must be located within 12" of the ceiling.					

## 7.6 Intake Air Inlet and Exhaust Gas Outlet Pipe Diameter and Length

The iQ251D comes factory installed with three inch polypropylene (PP) venting. The following chart outlines the maximum length of venting allowable for each model.

A vent system's length is calculated by adding the length of all straight runs used (both horizontal and vertical) and then adding the equivalent lengths of each turn (90° or 45° elbow) used in the system.

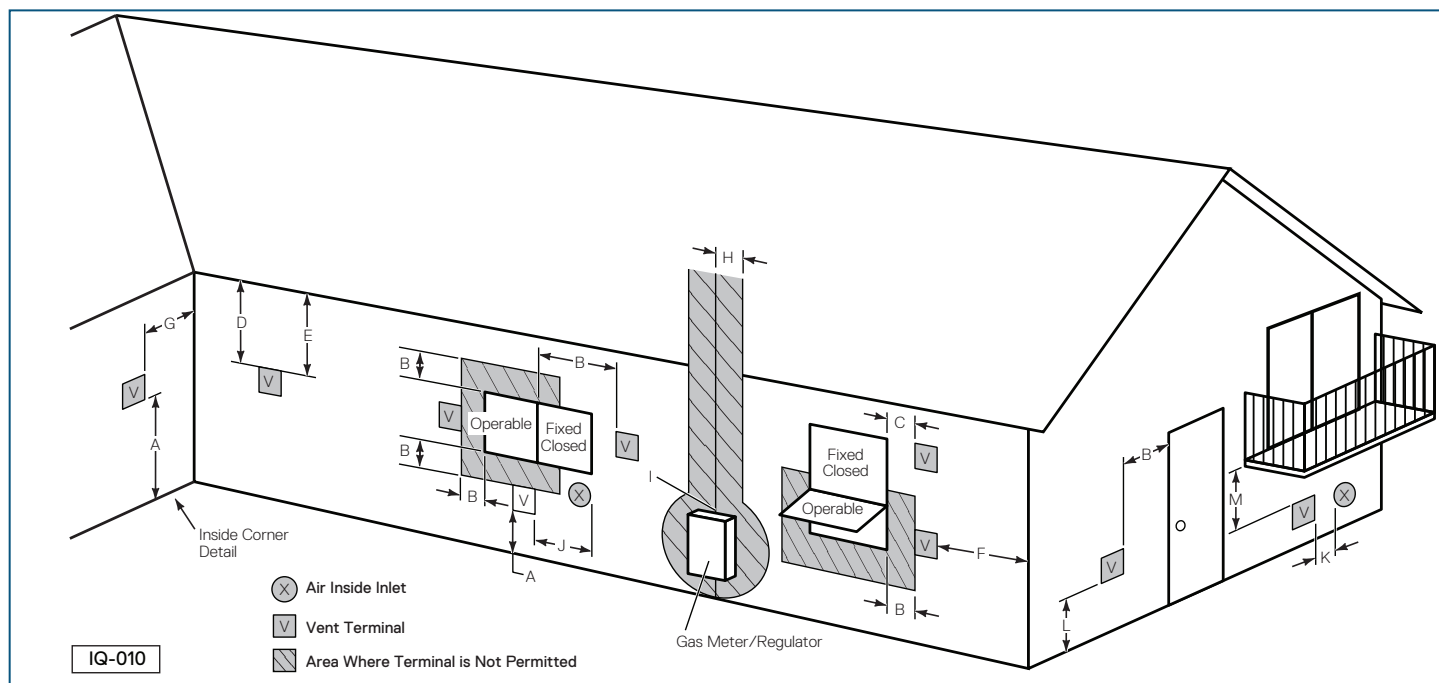
### SAFETY INSTRUCTIONS

**A vent system's length must not exceed the maximum length outlined in the chart below.**

Maximum Pipe Length in Feet					
Number of Units	Venting Type	Diameter, Model, and Length in Feet			
		3" Diameter	4" Diameter	6" Diameter	8" Diameter
		iQ251D	iQ251D	iQ251D	iQ251D
1	1 Pipe	130	200	200	200
	2 Pipes	65	100	100	100
2	1 Pipe		150	200	200
	2 Pipes		75	100	100
3	1 Pipe		70	200	200
	2 Pipes		35	100	100
4	1 Pipe			200	200
	2 Pipes			100	100
5	1 Pipe			200	200
	2 Pipes			100	100
6	1 Pipe			140	200
	2 Pipes			70	100
7	1 Pipe			100	200
	2 Pipes			50	100
8	1 Pipe			80	200
	2 Pipes			40	100
9	1 Pipe				200
	2 Pipes				100
10	1 Pipe				200
	2 Pipes				100
<b>PV</b> = Power Vent <b>DV</b> = Direct Vent <b>Note:</b> 1. Reduce the maximum equivalent length above by 5 feet per 90° elbow used and by 2 feet per 45° elbow used. Do not exceed the above set limits. 2. For Direct Vent (DV), the above table shows the maximum length for both the air intake and exhaust.					



## 7.7 Venting Clearance Specifications



Venting Clearance Specifications			
Item	Description	Clearance Distance	
		USA <sup>1</sup>	Canada <sup>2</sup>
A	Clearances above grade, veranda, porch, deck, or balcony	1 foot	1 foot
B	Clearances to window or door that may be opened	1 foot**	3 feet
C	Clearances to permanently closed window	*	*
D	Vertical clearance to a ventilated soffit, eaves, or overhang	*	*
E	Clearances to unventilated soffit, eaves, or overhang	*	*
F	Clearances to outside corner	*	*
G	Clearances to inside corner	*	*
H	Clearances to each side of centerline extended from meter/regulator	*	3 feet within a height 15 feet above meter or regulator assembly
I	Clearances to gas meter regulator vent outlet	*	3 feet
J	Clearances to nonmechanical air intake inlet to any other appliance	1 foot**	3 feet
K	Clearances to mechanical air supply inlet	3 feet above if within 10 feet horizontally	6 feet
L	Clearances above paved sidewalk or paved driveway on public property	*	7 feet
M	Clearances under veranda, porch, deck, or balcony	*	1 foot

\*Per local/gas supplier codes. Use clearances in accordance with local building codes and local gas supplier.  
 \*\* For single vent pipe (power vent) allow four feet (1.2 m) below or to the side of opening and one foot above opening.  
<sup>1</sup> In accordance with Z223.1  
<sup>2</sup> In accordance with CSA B149.1

**Note:** The vent for this appliance shall not terminate:  
 Over public walkways; or  
 Near soffit vents or crawl space vents or other areas where condensate or vapor could create a nuisance or hazard or cause property damage; or  
 Where condensate vapor could cause damage or could be detrimental to the operation of regulators, relief valves, or other equipment.

7.8 Exhaust Gas Outlet Pipe Materials

SAFETY INSTRUCTIONS

For Canadian installations, plastic exhaust gas outlet piping must comply with CAN/CGA B149.1 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 must be from a single system manufacturer and must not be intermixed with another system manufacturer’s products.

All units come factory installed with 3 inch polypropylene (PP) venting. The maximum allowable venting distances are the same regardless of vent material selected.

The materials listed in the tables below outline the acceptable exhaust gas outlet pipe materials:

United States Exhaust Gas Outlet Pipe Standards	
Material	Description*
Exhaust Gas Outlet Pipe	PVC Schedule 40 (ASTM D1785)
	CPVC Schedule 40, 80
	Approved Polypropylene
	AL29-4C Stainless Steel
Canadian Exhaust Gas Outlet Pipe Standards	
Material	Description (approved to ULC-S636)**
Exhaust Gas Outlet Pipe	Type BH Special Gas Vent Class IIA (PVC)
	Type BH Special Gas Vent Class IIB (CPVC)
	Type BH Special Gas Vent Class IIC (Polypropylene)
	Type BH Special Gas Vent Class I (AL29-4C Stainless Steel)
*Note: Use of cellular core PVC (ASTM F891), cellular core CPVC, or Radel (PPSU - polyphenylsulfone) in nonmetallic venting systems is prohibited. Covering nonmetallic vent pipe and fittings with thermal insulation is prohibited.	
**Note: The components (pipe, fittings, primers, and glues) must be from a single manufacturer; do not interchange. Follow the pipe manufacturer’s certified instructions.	

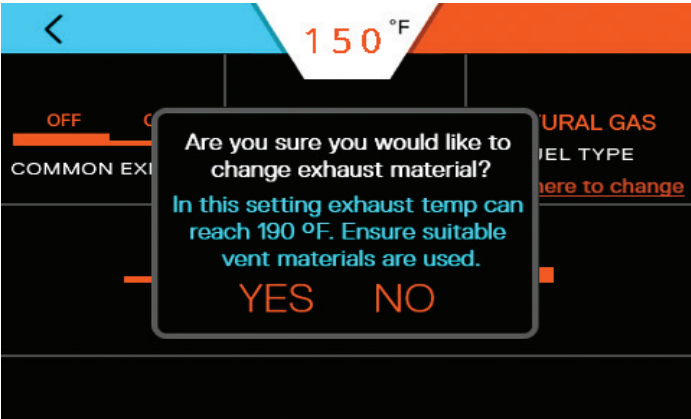
SAFETY INSTRUCTIONS

Do not use cellular foam core pipe to vent exhaust gases.

This water heater has a built-in exhaust gas outlet temperature control that limits the exhaust gas temperature to a maximum of 149°F (65°C) for PVC pipe. In commercial applications, which require higher water temperatures, exhaust gas temperature can reach 190°F (88°C) and require materials, such as polypropylene (PP), stainless steel (SS), or CPVC.

If the temperature approaches the upper limit, the burner will turn off automatically to protect the vent pipe. Once the exhaust gas temperature has dropped to a normal operating level, the unit will automatically restart.

If the inlet/return water temperature will exceed 150°F (66°C), do not use PVC pipe. Follow the display prompts to set the maximum water temperature for the exhaust gas outlet pipe material being used.



7.9 Air Intake Inlet Pipe Vent Materials

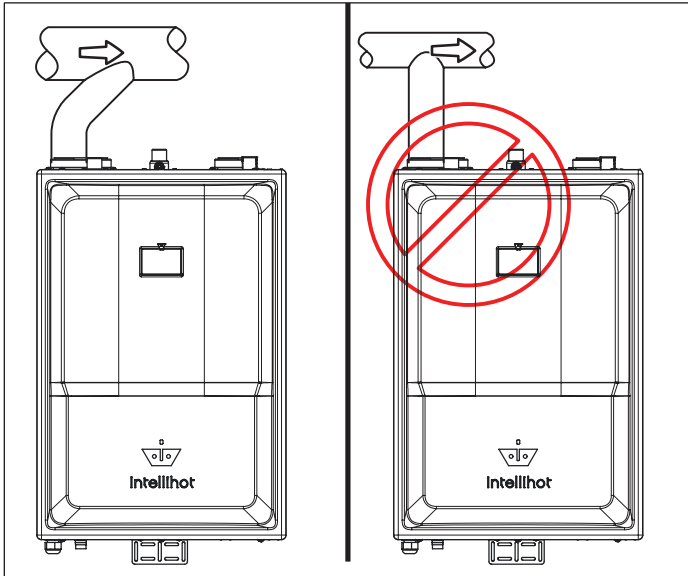
The air intake inlet pipe can be made of any approved plastic or metal vent material. ABS, PVC, polypropylene, galvanized steel, and/or flexible corrugated ducting are all examples. When using a corrugated material, ensure there is no inadvertent crimping or blockage to the air intake inlet pipe. Refer to the table below for a list of approved materials.

United States Vent Pipe Standards	
Material	Description
Air Intake Inlet Pipe	PVC Schedule 40
	CPVC Schedule 80
	Approved Polypropylene

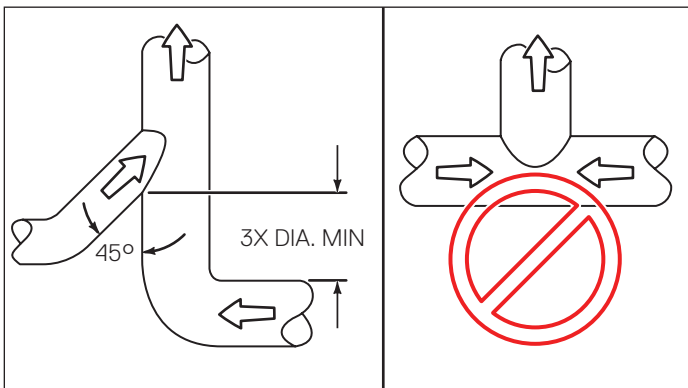
Canadian Vent Pipe Standards	
Material	Description
Air Intake Inlet Pipe	Type BH Special Gas Vent Class IIA (PVC)
	Type BH Special Gas Vent Class IIB (CPVC)
	Type BH Special Gas Vent Class IIC (Polypropylene)

**Note:** In addition to these charts, it is recommended to consult 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 air intake inlet pipe materials.

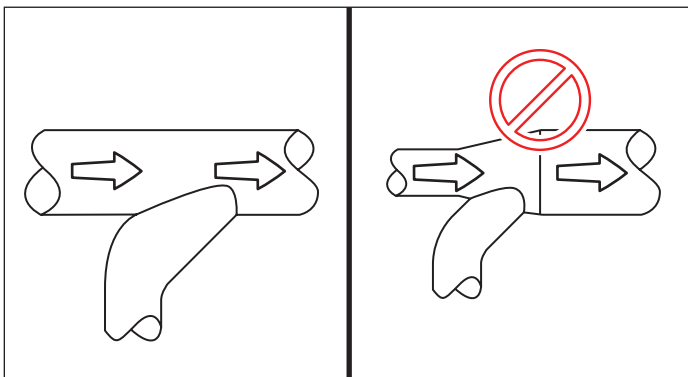
## 7.10 Recommended Exhaust Gas Outlet Pipe Transitions



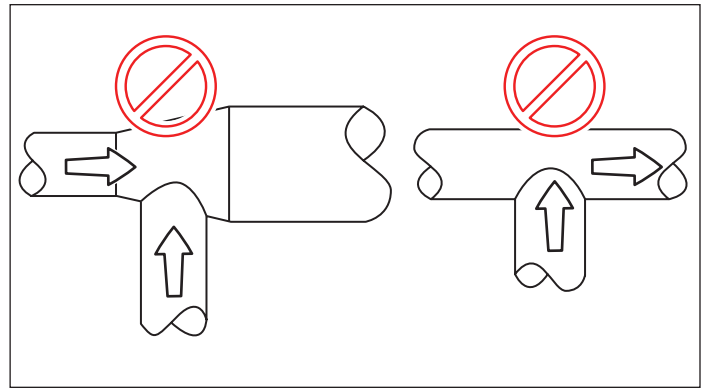
Do not use 90 degree t-fitting for exhaust gas outlet.



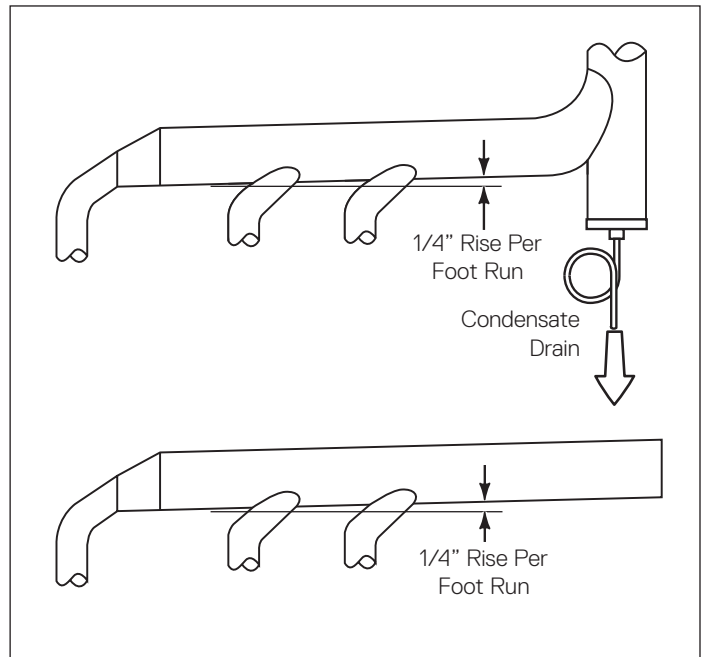
Do not direct exhaust gas from opposite directions. Use a 45 degree transition, as shown.



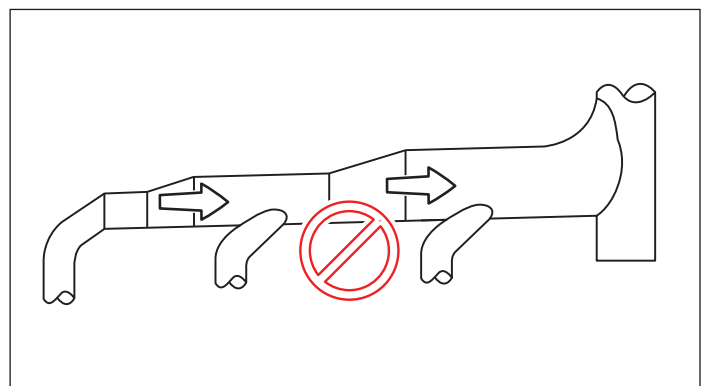
Do not transition into a reducer. Transitions should always be directed into a straight run of pipe.



Do not use 90 degree transition into a reducer or a straight pipe.



Horizontal transitions should be equipped with a condensate drain.



Do not use reducers in a straight run of pipe.

## 8. Water Connections

**Note:** If the flow rate changes faster than ten GPM in one second, an error message will appear and a water hammer arrester must be installed to prevent damage to the water heater.

### 8.1 Quick Reference Installation Instructions

1. Install the hot water pipe and the pressure relief valve (not furnished with the water heater, customer supply their own) as per “8.2 Hot Water Connection” on page 29.

### NOTICE

*When tightening any fittings to the connections on the water heater, care should be exercised not to overtighten these joints and damage the unit.*

2. Install the cold water pipe as per “8.3 Cold Water Connection” on page 30.
3. Install a condensate drain line with the back flow preventer loop as per “8.4 Condensate Drain Line” on page 30.
4. After installation has been completed, fill and test the water heater for proper flow and inspect for leaks as per “14.2 Filling the Water Heater” on page 50.

### 8.2 Hot Water Connection

Install and connect the hot water pipes. Keep the hot water pipes as short as possible to deliver hot water to the fixtures quickly. If an optional hot water storage tank is required, connect the hot water pipes to this tank also.

Since each installation is different, it is up to the installer to route the water pipes using the most efficient routing. The drawings shown here are only suggestions indicating the items needed for the installation.

### CAUTION

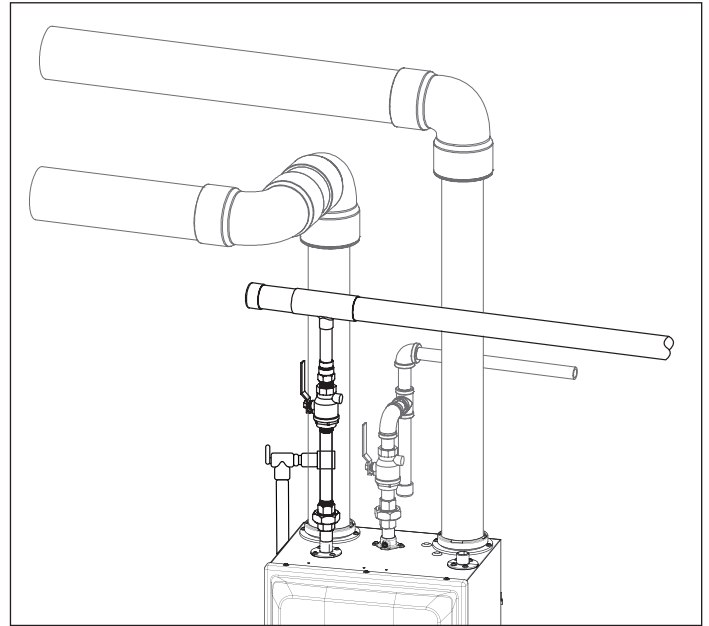
**To prevent adverse health issues, only materials (pipes, fittings, valves, solder, etc.) that are approved for use in potable water systems should be used.**

### NOTICE

**The unit does not include a temperature and pressure relief valve (T&P). The customer is responsible for supplying the T&P based on the application.**

1. Connect a 3/4" NPT coupler to the water heater's hot water connection.
2. Install a 3/4" union connection.
3. Install a customer supplied 3/4" 150 psi maximum pressure relief valve, as required by your local code.

4. Following local building codes, install a 3/4" manual shut-off valve with 3/4" NPT fittings.



### WARNING

**To prevent serious personal injury, do not install any shut-off device between the water heater and the pressure relief valve. This valve is designed to release abnormally high pressure within the water heater in the event of a system problem.**

### NOTICE

*The pressure relief valve must be rated at 150 psi, the maximum btu/h output of the unit (251,000), and comply with all local building codes and standards. Do not install any restrictions or other valves prior to the pressure relief valve.*

5. Install and route a discharge pipe from pressure relief valve to within six inches of the floor and directed away from walkways or other appliances.
  - a. Route the relief valve to within six inches of the floor to prevent injury in the event of a discharge.
  - b. The diameter of the pipe from the relief valve must be equal to the outlet size of the relief valve.
  - c. Do not use reducers in the outlet pipe.
  - d. Do not install any valves, restrictions, elbows, or other blockages in the outlet pipe.
  - e. For multiple unit installations, the outlet piping must not be connected together. Each pipe must be separately routed to a suitable drain.
6. Connect the unit to the building's hot water pipes. If multiple water heaters are being installed, the diameter of both the main cold water pipes and the main hot water pipes need to be sized by an engineering professional.

1. To conserve energy, insulate all hot water pipes and recirculation pipes.

#### SAFETY INSTRUCTIONS

#### **Do not insulate the pressure relief valve.**

2. With the unit OFF, open a nearby hot water faucet and allow the water to flow through the unit until all the trapped air is exhausted from the water pipes and from the water heater.
3. Leak test the water piping. Repair any leaks immediately.

### **8.3 Cold Water Connection**

Install and connect the cold water pipes.

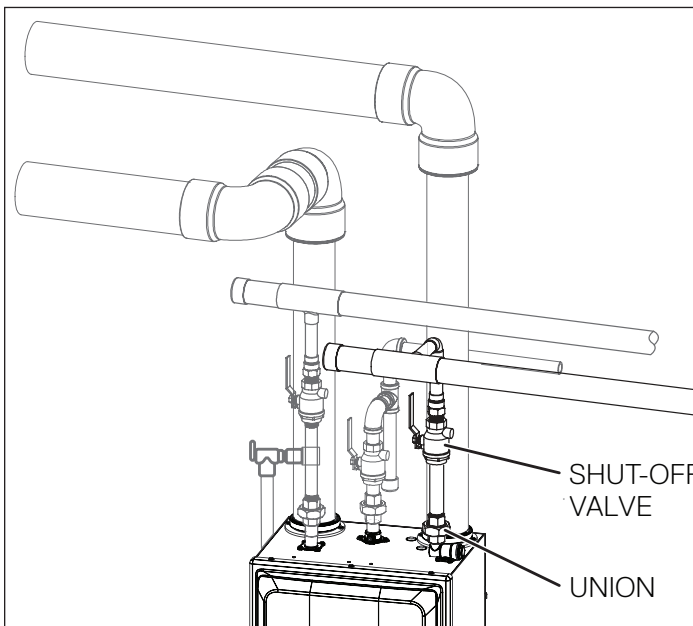
**Note 1:** If the incoming water is known to have a high mineral content or “hardness” (see “18. Warranty” on page 63), treatment is recommended upstream from the water heater.

When the water heater is installed in a closed loop recirculation system, and if the cold water supply pipe has a back flow preventer, then an expansion tank should be installed to allow for water expansion as per the diagrams in “8.5 External Recirculation” on page 32.

#### **⚠ CAUTION**

**To prevent adverse health issues, only materials (pipes, fittings, valves, solder, etc.) that are approved for use in potable water systems should be used.**

1. Connect a 3/4" NPT coupler to the water heater's cold water connection.
2. Install a 3/4" union connection.



3. Following local building codes, install a 3/4" manual shut-off valve with 3/4" NPT fittings.

4. Connect the unit to the existing cold water pipes. If the existing plumbing is 1/2" pipe, adapters may be used to transition from the 3/4" pipe.
  5. Connect the unit to the building's cold water pipes. If multiple water heaters are being installed, the diameter of the main cold water pipe needs to be sized by an engineering professional.
- Note:** Isolation valve kits can be used if incoming water treatment is anticipated (such as a water softener) due to hardness levels or heavy usage of the unit.
6. With the unit OFF, open a nearby cold water faucet and allow the water to flow through the unit until all the trapped air is exhausted from the water pipes and from the water heater.
  7. Leak test the water pipes. Repair any leaks immediately.

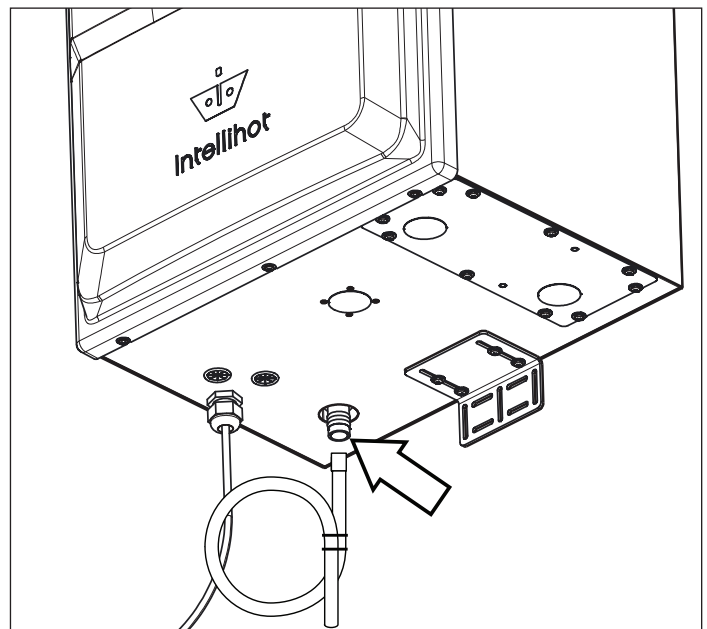
### **8.4 Condensate Drain Line**

Due to its efficient design, the water heater produces condensate (water) as a normal by-product of heating the water.

This condensate is acidic, with a pH level between 3 and 4. Local building codes may require an in-line neutralizer, such as the iB301, to be installed (not included) to treat this water.

The maximum condensate flow rate is 1.8 GPH.

1. Attach and tighten the flex hose with the loop to the barb fitting located on the bottom of the unit.



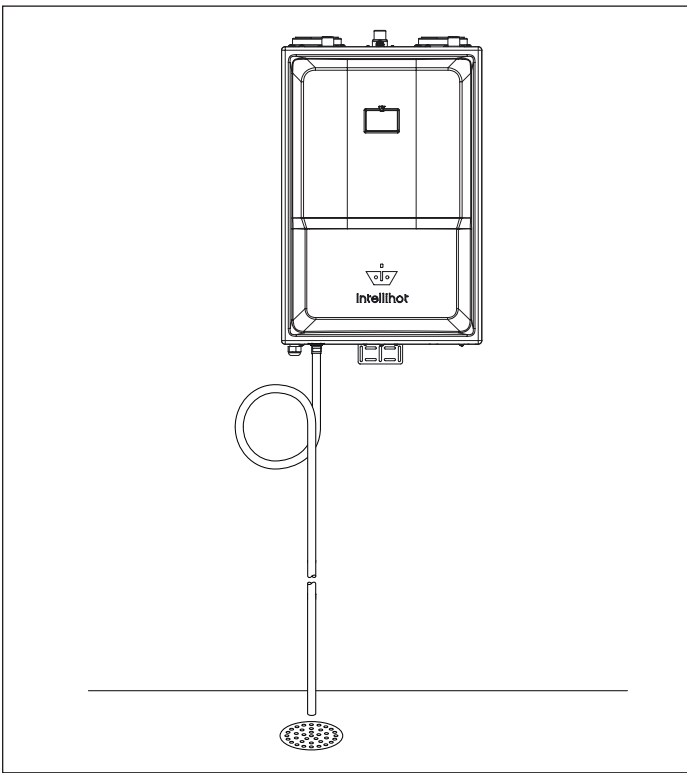
2. Follow applicable local codes and if required, install in-line neutralizer (iB301) to treat the acidic condensate. Follow all the installation instructions included with the neutralizer.

**Note:** Ensure that the flex tube is not pinched or kinked. The tube should freely drain. The tube termination should not be immersed in water.

3. Route the drain line to nearby floor drain, neutralizer, or condensate pump.
  - a. If a floor drain is used to remove the discharge, route the drain hose over or into the drain.
  - b. Long drain lines should contain a union to facilitate servicing the unit or cleaning the drain line.

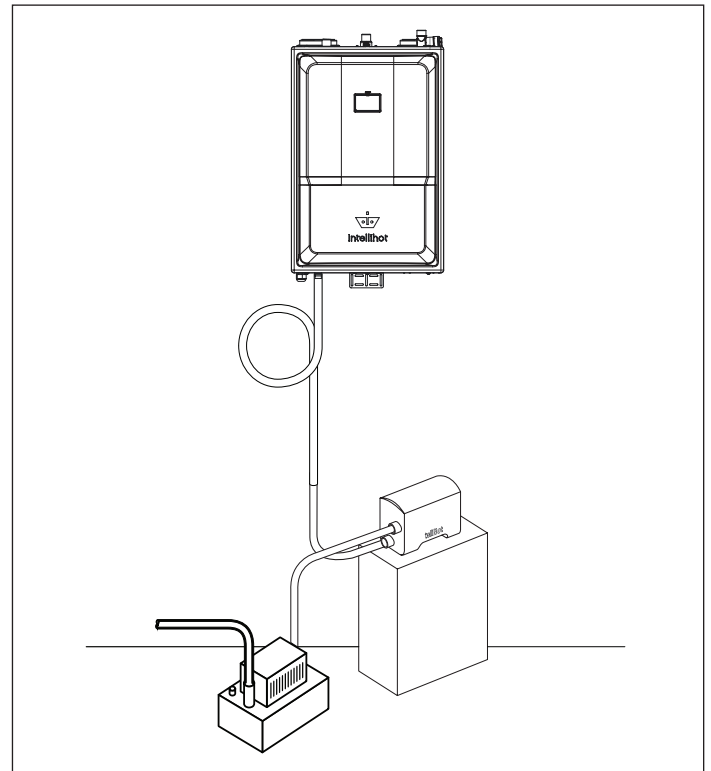
## **! WARNING**

The drain line is shipped from the factory with a loop held together with plastic ties. Do not remove the ties and/or straighten the loop. This loop forms an air block (trap) which prevents carbon monoxide from exiting the water heater through the drain line. Improper installation of the drain line can result in carbon monoxide build, which can lead to severe personal injury or death.



If required, install an in-line neutralizer to treat the acidic condensate. Follow all the installation instructions included with the neutralizer.

4. If a floor drain is not closely available, a condensate pump can be used to pump the condensate to a remote drain.



- a. Route the hose from the condensate pump to a nearby floor drain or drain pipe.
- b. The condensate pump must be supported by the floor or other means; it cannot be supported by the connecting pipes.

## **SAFETY INSTRUCTIONS**

The appliance should be located in an area where leakage within the unit or at its connections will not result in damage to the surrounding area. The manufacturer will not be responsible for any damage resulting from leaking if adequate drainage is not provided.

## 9. Electrical

### **WARNING**

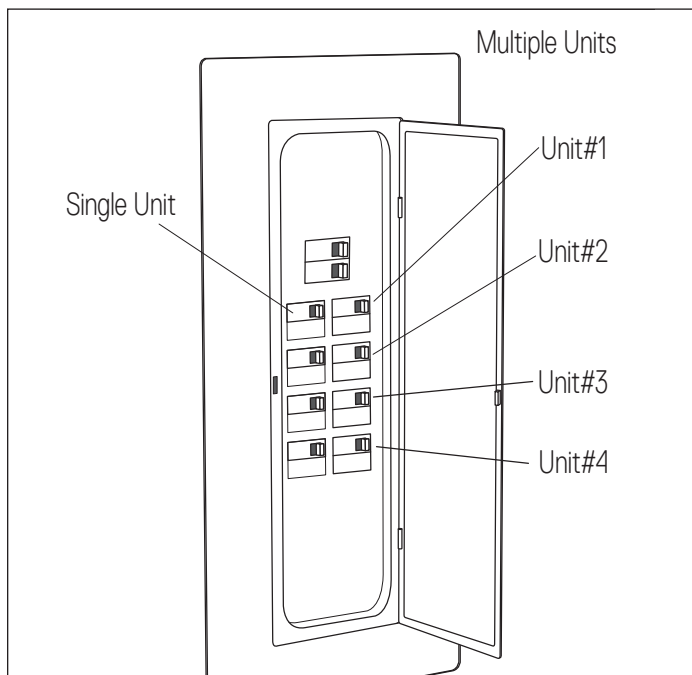


**To avoid serious injury or even death, follow all applicable local, state, and national regulations, mandates, and building codes for guidelines to install the electrical power supply.**

### 9.1 Electrical Code Requirements

Electrical code requirements are different in the USA and Canada. Refer to and follow the local building codes, the latest edition of the National Electrical Code (NFPA 70) in the USA, or the CGA C22.1 Canadian Electrical Code - Part 1.

Depending on the number of water heaters being installed, the circuit breaker(s) should be at least 15 amps for each unit. If more than one unit is installed, then a larger circuit breaker is required or separate 15 amp circuits. Installing a separate circuit breaker for each unit is recommended to isolate units during service or repair.



Use 15 Amp Breakers For Single Units or Larger Breakers For Multiple Units.

**Note:** For an electrical wiring schematic, refer to “15.2 Complete Wiring Diagram (all models)” on page 55 for additional information.

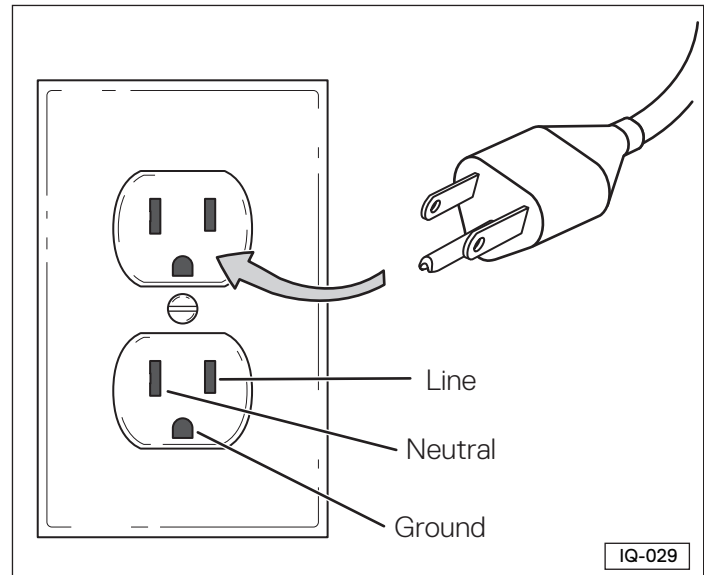
### **NOTICE**

*The electrical connections for the water heaters are polarity-sensitive. Before connecting the water heater to the power source, test the polarity of the electrical circuit.*

*For additional electrical protection, the use of a surge protection device is recommended. Damage(s) caused by power surges is not covered by the warranty.*

### 9.2 Electrical Connection and Polarity

On single unit installations, make sure the electrical outlet being used is wired with at least 12 gauge wire and grounded. A GFI ground fault receptacle is recommended. Only one water heater should be plugged into an outlet with the 12 gauge wire. It should also be connected to at least a 15 Amp circuit breaker. The electrical power required for the water heater is 120V AC at 60 Hz.



### **NOTICE**

#### **POLARITY**

*The plug provided with the unit is polarity sensitive. Ensure that the “line” and “neutral” are at the correct locations in the wall socket using a 3-wire receptacle tester or other similar testing device. If the polarity is reversed, it will cause the unit to malfunction and turn off every 15 seconds.*

### **WARNING**

**To avoid serious injury or even death from electrical hazards, an additional ON/OFF electrical junction box should be installed near the water heater. This switch will allow power to be removed from the water heater prior to service or in the case of an emergency.**

#### **SAFETY INSTRUCTIONS**

**If multiple units are being installed, the gauge of wire must be increased to meet the additional electrical load. Consult the electrical codes for the correct wire size.**

**If desired, the water heater can be wired into the electrical system by removing the power cord and replacing it with electrical cable. If this method is used, a separate ON/OFF switch must be installed to remove power from the unit.**



## 10. Adjusting CO<sub>2</sub> Level

### 10.1 General Information

This procedure is required:

- 1) only during installation in a high-altitude location over 2,000 feet, or
- 2) when converting the unit from natural gas to propane.

This procedure should be performed only by a qualified service technician.

### **⚠ DANGER**

A concentration of carbon monoxide (CO) as small as 0.04% (400 parts per million) in the air can be fatal. When making High Fire and/or Low Fire adjustments, CO levels must be monitored using a flue gas analyzer and must not exceed 400 ppm of CO at any time during the operation.

Adjusting the “Low Fire screw” or the “High Fire screw” even in small increments can result in a significant increase in CO concentration. To avoid serious injury or death, DO NOT make any adjustments to the gas valve without monitoring the exhaust gases with a functional and calibrated flue gas analyzer.

CO <sub>2</sub> and CO Standards		
Description	CO <sub>2</sub> Range (%)	Max. CO Level (ppm)
Natural Gas		
High Fire	9.1% to 9.3%	< 200 ppm
Low Fire	9.1% to 9.3%	< 60 ppm
Propane		
High Fire	10.1% to 10.5%	< 200 ppm
Low Fire	10.1% to 10.5%	< 60 ppm

### **NOTICE**

The values listed in the table are for nominal conditions. Variables such as gas pressure, heating value of the gas, humidity, and temperature of intake air can impact CO and CO<sub>2</sub> values. Changes in these variables can result in different CO and CO<sub>2</sub> values on the same water heater.

A qualified service technician must use a calibrated flue gas analyzer to adjust the gas valve to achieve the desired CO<sub>2</sub> and CO values.

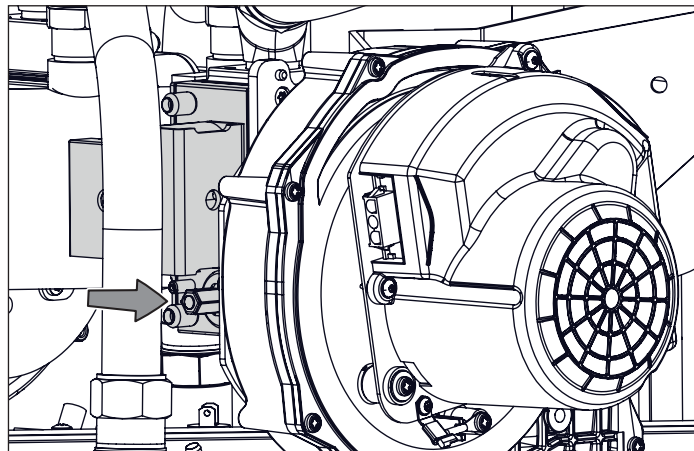
Before any adjustments are made, the service technician must confirm the static gas pressure meets these minimum requirements.

Natural Gas - 8" W.C.

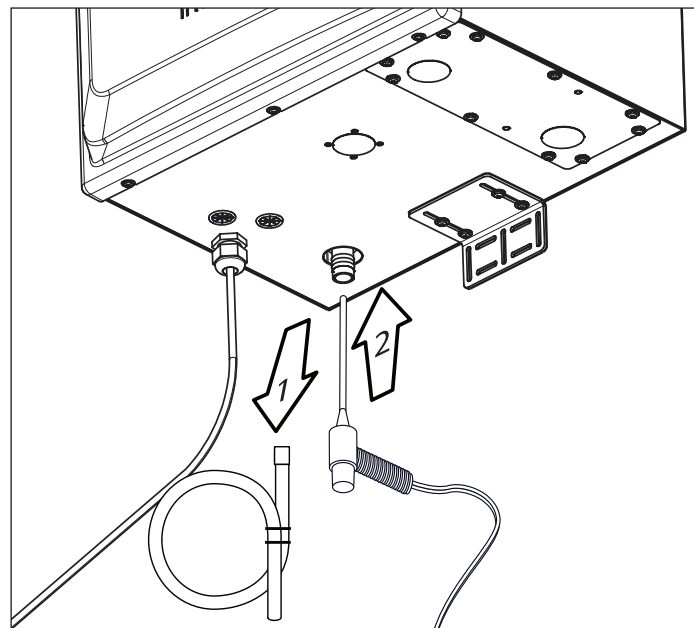
Propane - 11" W.C.

### 10.2 Adjustment Procedure

1. Remove the front cover panel.
2. Locate the gas valve on the heat engine.

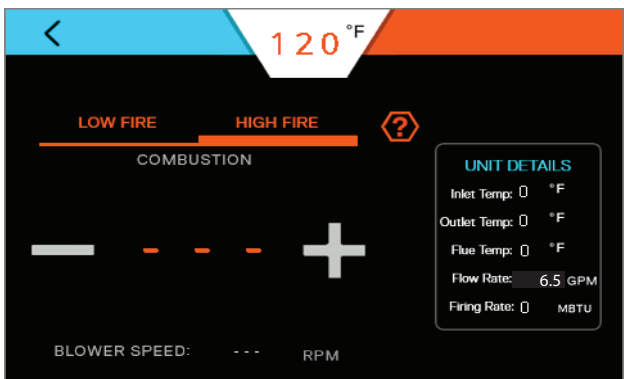
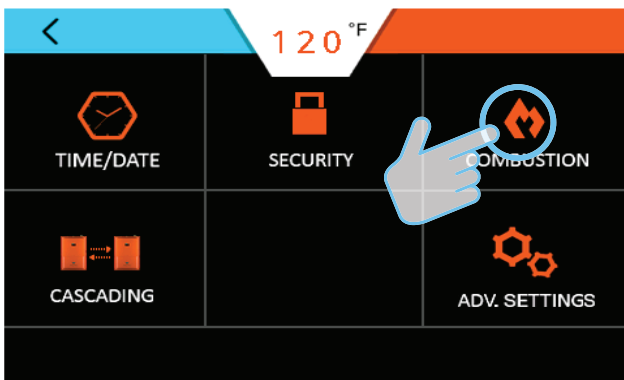
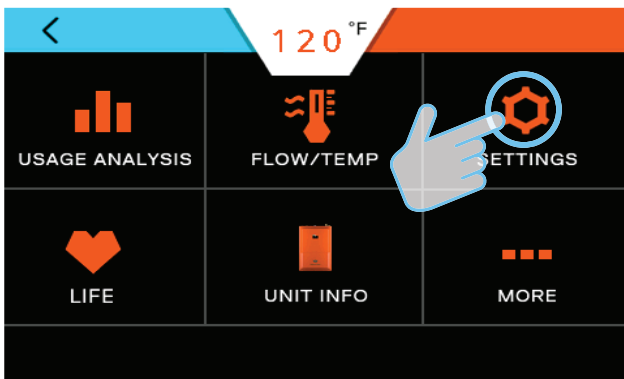
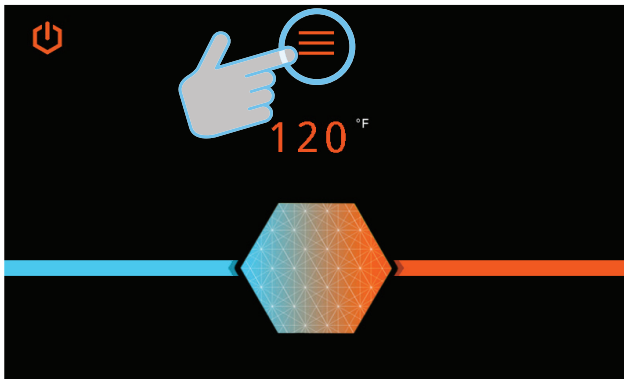


3. Remove the condensate tube and use that port to insert a calibrated flue CO<sub>2</sub> gas analyzer to check gas levels.





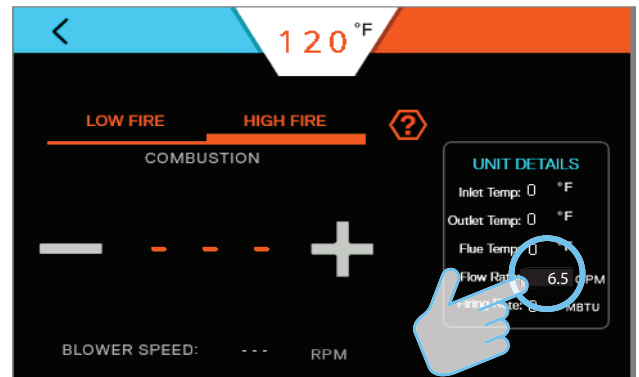
1. Follow the display screens.



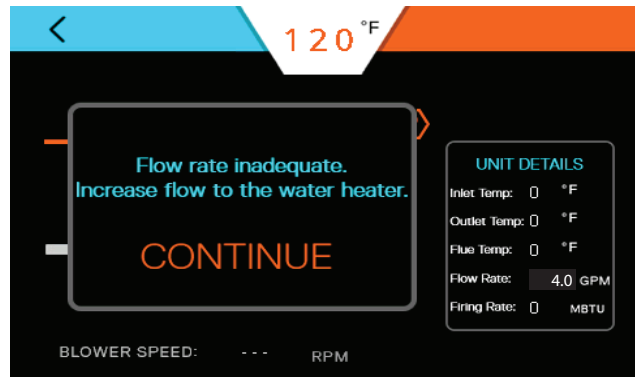
## NOTICE

*Do NOT change the blower speed settings. This adjustment MUST be performed by factory personnel ONLY. Changing this setting WILL VOID the warranty!*

2. Create a hot water flow of at least 6.0 GPM, as shown on the display screen.

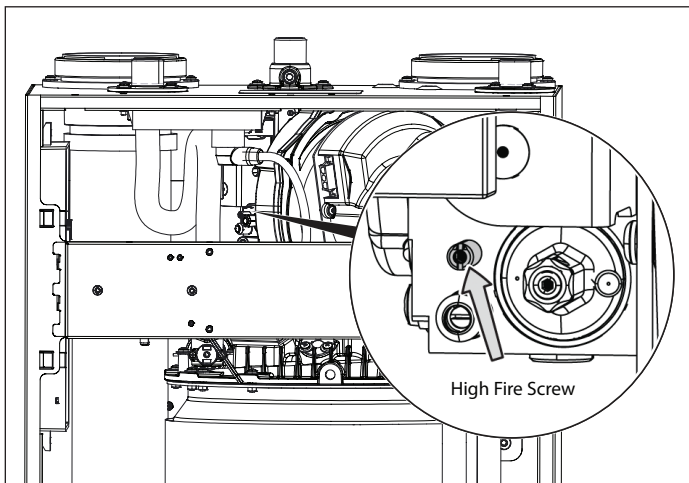


**Note:** If flow rate is inadequate, a pop-up message will notify to increase the flow.



3. At a flow rate of at least 6.0 GPM, the heat engine will start.
4. Allow three minutes of operation at High Fire.

- Record "initial output" in High Fire Recorded Values table.
- If the CO<sub>2</sub> values are within appropriate range, proceed to Step 10; otherwise, continue.
  - Use a flat blade screwdriver to turn the High Fire screw clockwise to decrease and counterclockwise to increase the CO<sub>2</sub> value.
  - Adjust in ¼ turn increments.
  - Wait three minutes to stabilize flue gas readings and recheck values.
  - Adjust until values fall with specified range.

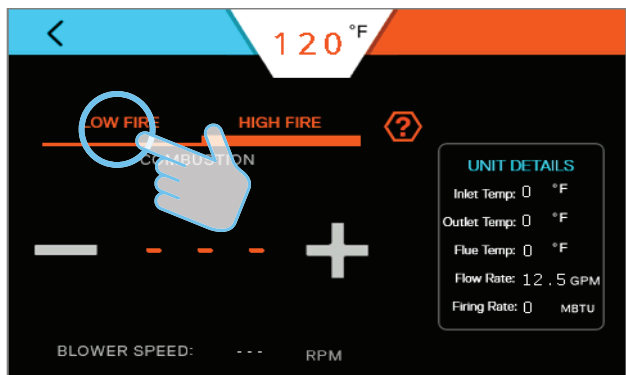


- Once the desired values are achieved, record the new High Fire CO<sub>2</sub> "adjusted values" in the table.

CO <sub>2</sub> and CO Standards		
Description	CO <sub>2</sub> Range	Max. CO Level
Natural Gas High Fire	9.1% to 9.3%	< 200 ppm
Propane High Fire	10.1% to 10.5%	< 200 ppm

High Fire Recorded Values		
Date ____ / ____ / ____		
Heat Engine	Initial Output	Adjusted Value
CO <sub>2</sub> Value %		
Max CO ppm		

- Press LOW FIRE on the display screen.

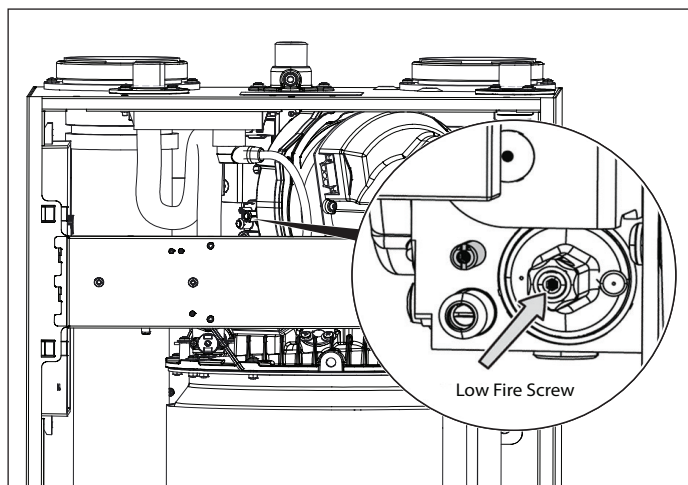


- Record "initial output" in Low Fire Recorded Values table.

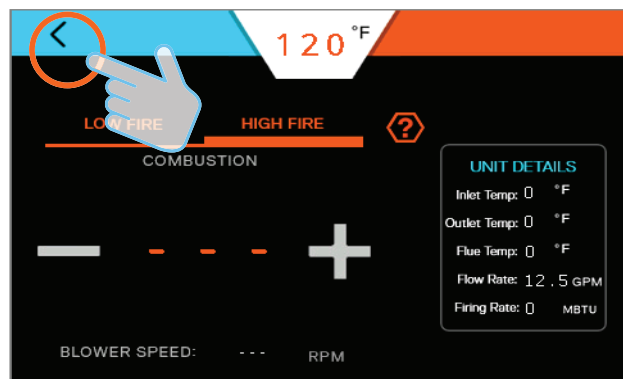
CO <sub>2</sub> and CO Standards		
Description	CO <sub>2</sub> Range	Max. CO Level
Natural Gas Low Fire	9.1% to 9.3%	< 60 ppm
Propane Low Fire	10.1% to 10.5%	< 60 ppm

Low Fire Recorded Values		
Date ____ / ____ / ____		
Heat Engine	Initial Output	Adjusted Value
CO <sub>2</sub> Value %		
Max CO ppm		

- Adjust the Low Fire screw while the burner operates at low fire using a 2mm hex wrench. Turn clockwise to increase CO<sub>2</sub> and counterclockwise to decrease CO<sub>2</sub>.



- Once the desired values are achieved, record the new Low Fire CO<sub>2</sub> "adjusted values" in the table.
- When the heat engine has been properly adjusted, turn off water flow.
- Remove flue gas analyzer probe and reinstall condensate hose.
- Press the back button to return to the main screen.



- Check for gas leaks using a leak detector.
- Install the front cover. If converting to propane, proceed to section "11. Natural Gas to Propane Conversion" on page 38.

11. Natural Gas to Propane Conversion

SAFETY INSTRUCTIONS

A qualified service technician MUST make the required changes to convert the water heater from Natural Gas to Propane.

11.1 General Information

**Note:** This conversion process also requires the CO<sub>2</sub> levels to be adjusted. Refer to "10. Adjusting CO<sub>2</sub> Level" on page <?> for instructions.

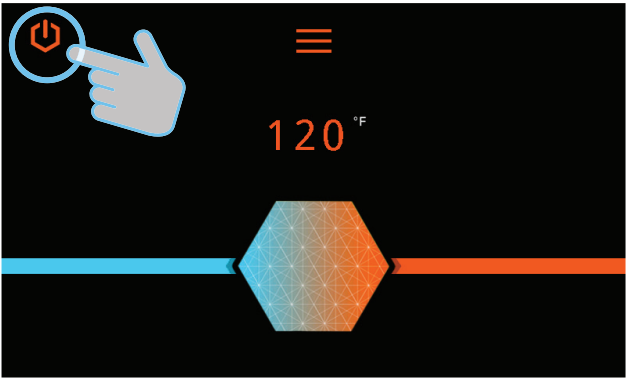
Before converting the unit for propane, verify the current gas inlet pressure meets the recommended pressure and record it in the space below.

Propane Static Gas Pressure	
Parameters	Specifications
Minimum Static Propane Gas Pressure	8" W.C. (non-corrugated, black iron)
Recommended Propane Gas Pressure	11" W.C.
Maximum Static Propane Gas Pressure	14" W.C.

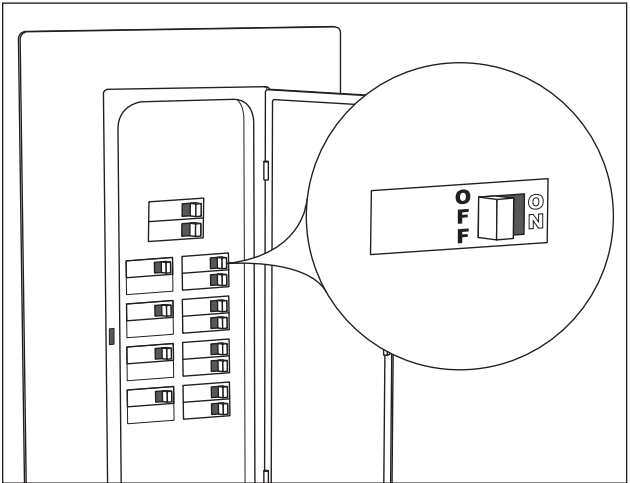
Current Static Propane Gas Pressure \_\_\_\_\_W.C.  
Date \_\_\_\_\_

11.2 Conversion Procedure

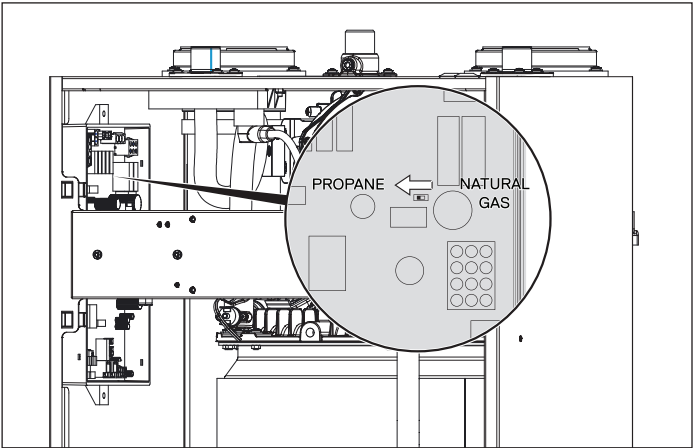
- 1. Follow these steps before repositioning the DIP switches.
  - a. Turn the water heater OFF using the display screen.



- b. Place the circuit breaker for the water heater at the main electrical panel in the OFF position. Verify there is no power to the unit(s).

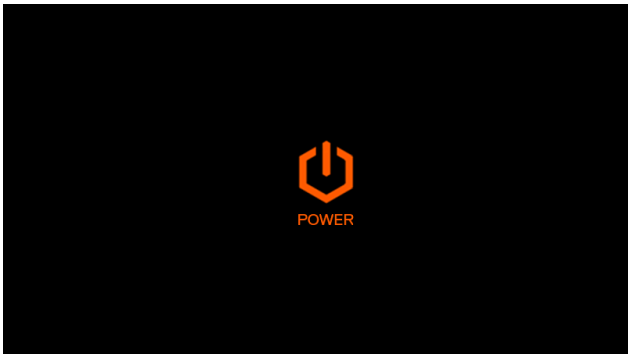


- c. Remove the front cover panel and locate the main circuit board.
- d. Locate DIP Switch 1.
- e. Move the DIP switch into the Propane position.

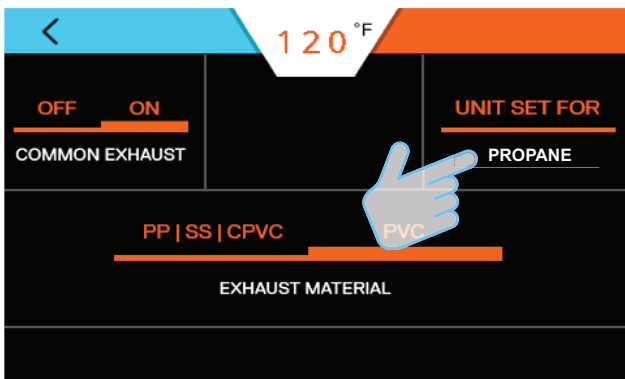
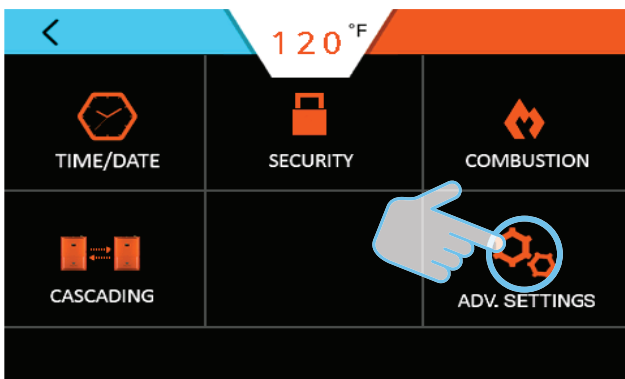
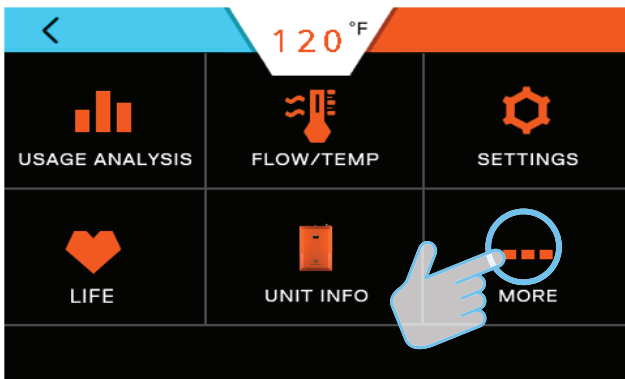
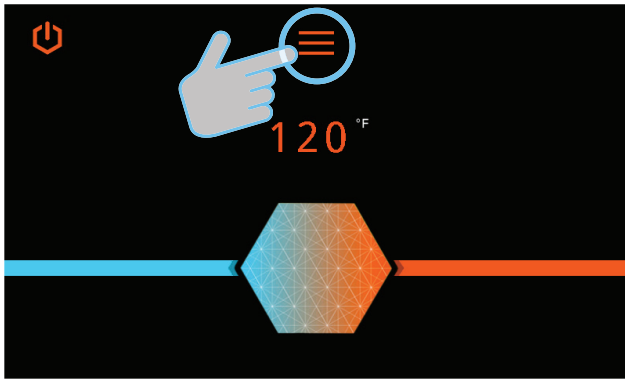


DIP Switch Settings		
SW1	<input checked="" type="checkbox"/> Propane	<input type="checkbox"/> Natural Gas

- f. Reset the circuit breaker to the ON position. Turn the water heater ON using the display screen.



1. Follow the display screens to make sure if the unit is now set to propane.

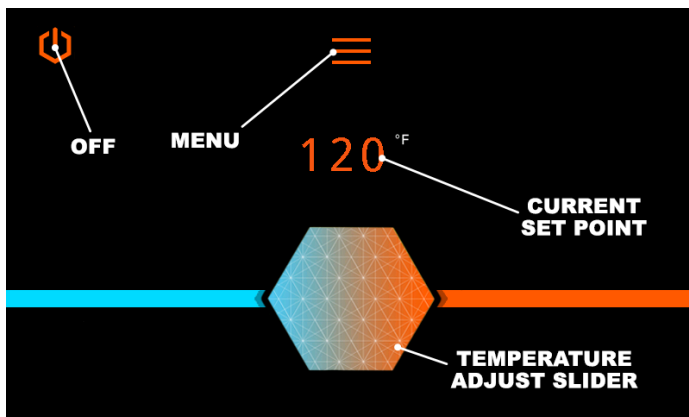
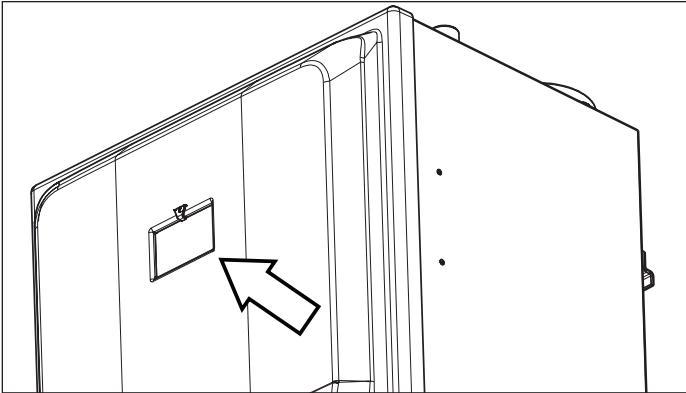


Verify unit is now set to PROPANE.

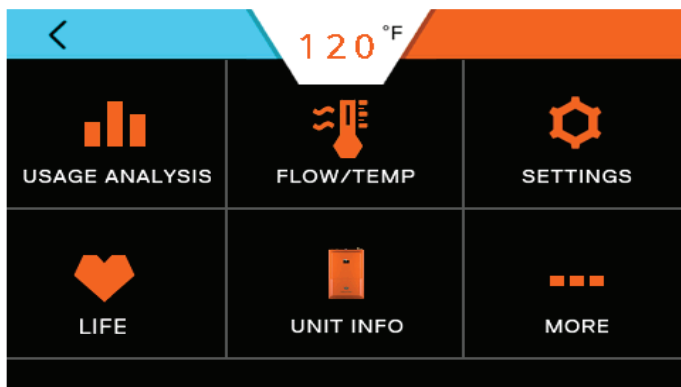
2. Refer to section “10. Adjusting CO<sub>2</sub> Level” on page <?> in this manual for instructions to adjust CO<sub>2</sub> levels.

## 12. Operation

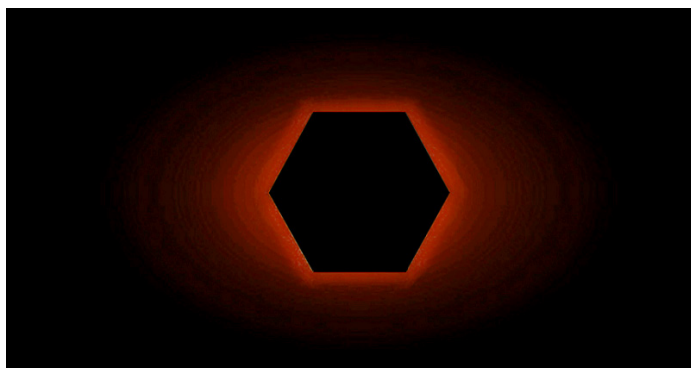
### 12.1 Control Panel



Main Menu Screen.



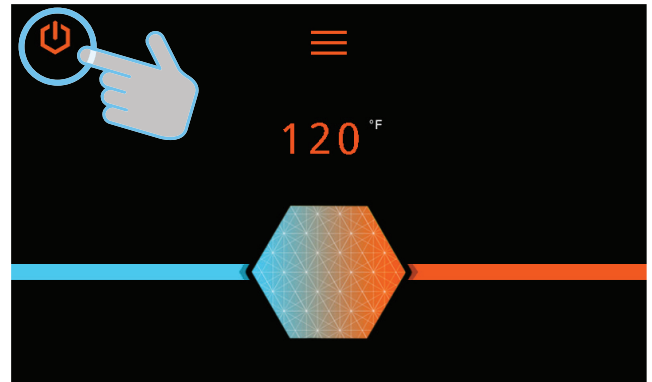
Selecting the Menu button brings up this screen.



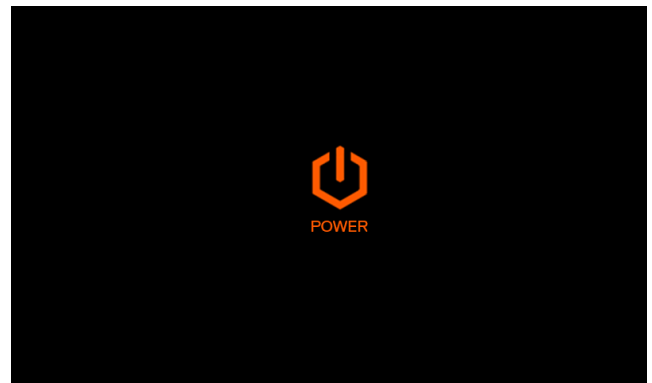
A sleep mode screen will appear after a period of inactivity.

### 12.2 Turning Water Heater ON and OFF

1. When the power cord is plugged in the Main Menu screen will automatically appear.
2. To turn the water heater OFF, press and hold the Power button in the upper left of the screen.



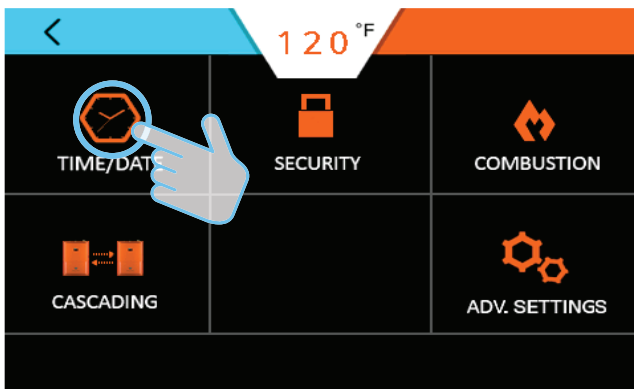
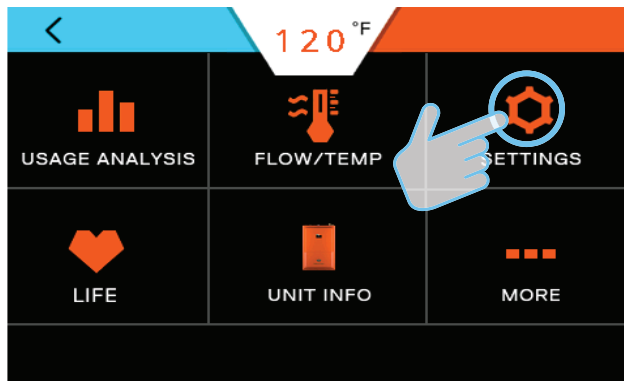
3. Press the Power button to turn the unit ON.



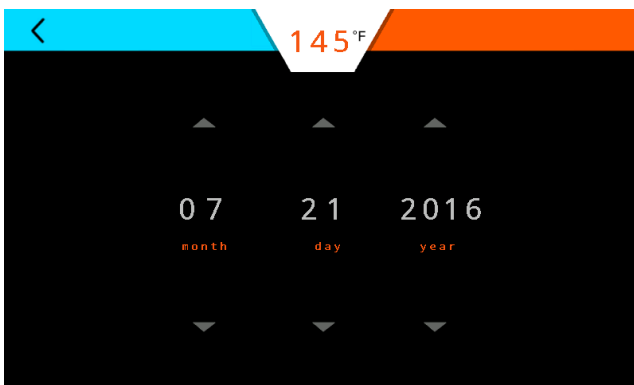
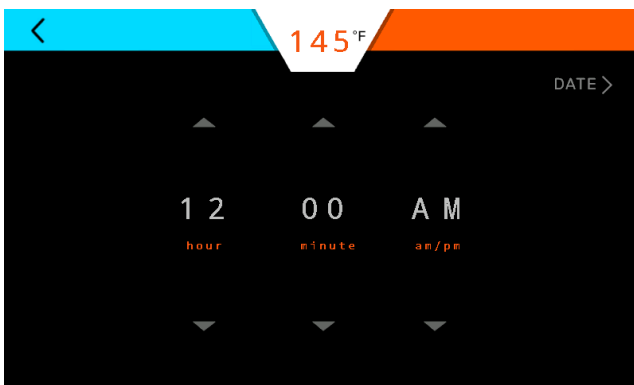
### **WARNING**

Turning the unit OFF does not disconnect it from the power source. Whenever working around electrical components within the water heater, turn OFF the power at its source. Touching live electrical components can cause serious injury or death.

## 12.3 Setting the Time



Press the Up/Down arrows to make adjustments. Press the Back button to return to the main screen.



## 12.4 Adjusting the Water Temperature

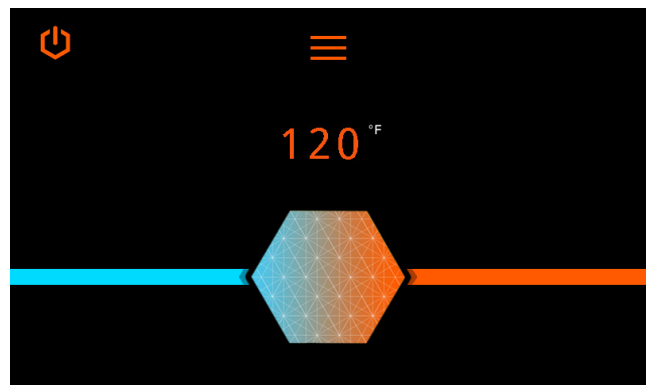
**Note:** The outlet water temperature is factory preset to 120°F; however, these commercial water heaters are capable of heating water to 190°F.



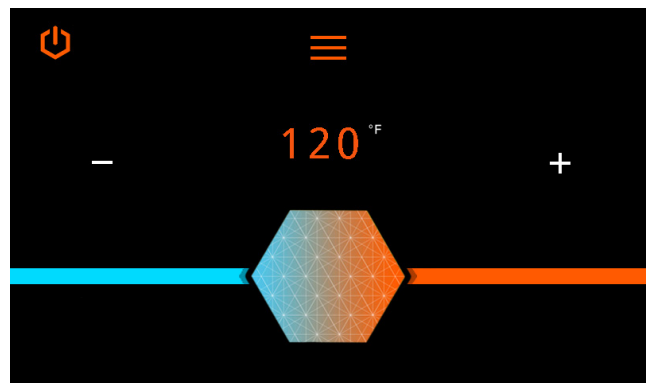
Hot water temperature over 125°F (52°C) can instantly cause severe burns or death from scalding. Children, the disabled, and the elderly are at the highest risk of being scalded. Do not leave children or the infirmed unsupervised. Check temperature of hot water before taking a shower or bath. To control water temperature to a particular faucet, temperature limiting valves can be installed by your service professional.

All water faucets must be closed before changing the temperature setting. The unit must not be operating.

1. Firmly press the slider and slide it to the right to increase the temperature or to the left to decrease. Firmly hold the icon until the current set point on the display reaches the desired temperature.



2. For finer temperature adjustments, use the (+) and (-) icons.



3. Follow any prompts shown on the screen.

12.5 Security

12.5.1 Setting Passcode Protection

It is not necessary to set a passcode for the water heater to function properly. This feature is available to help prevent unauthorized access to the unit.

If a passcode is set, it must be entered prior to accessing the main screen.



Press ON/OFF and follow the prompts.



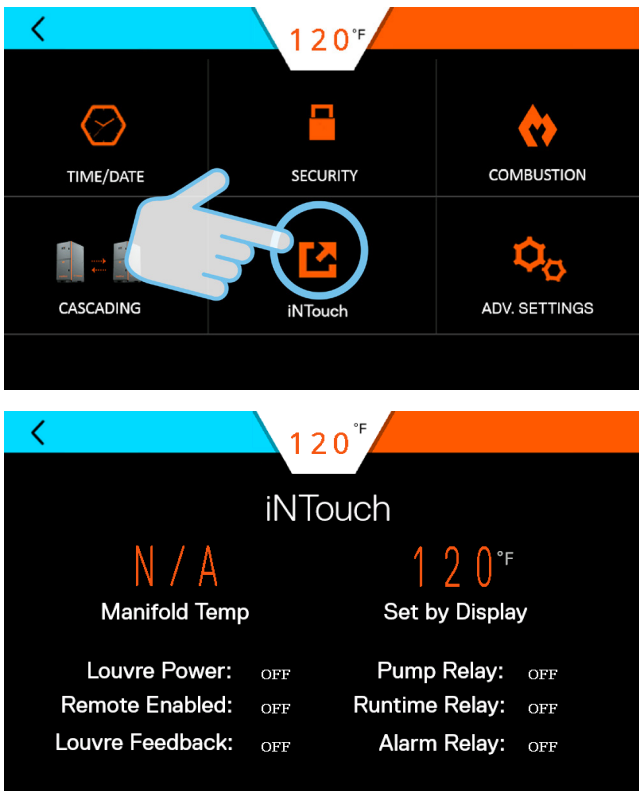
12.5.2 Forgot Passcode

If the unit passcode is lost or forgotten, press the “?” icon on the screen which opens the technical support screen. Call to obtain the passcode.



12.6 iNTouch

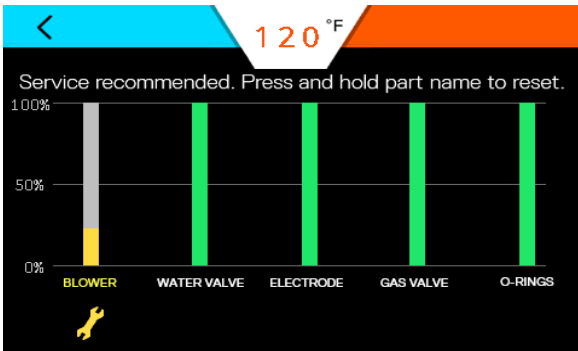
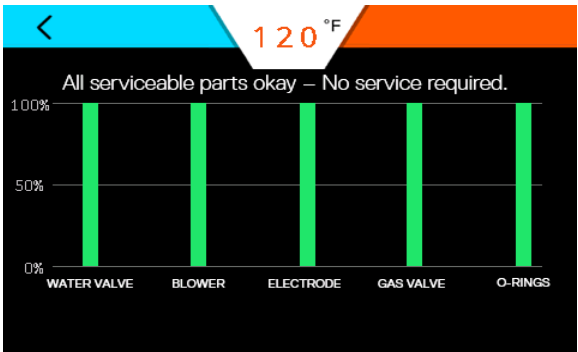
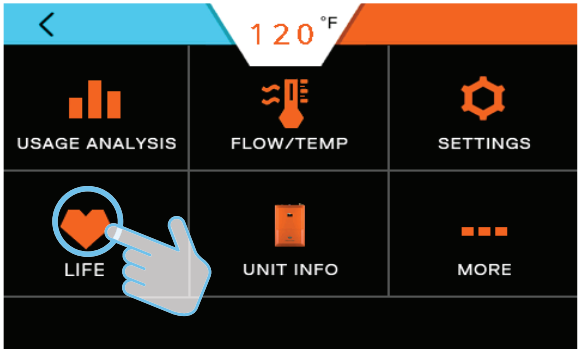
If equipped, the iNTouch icon will be active.



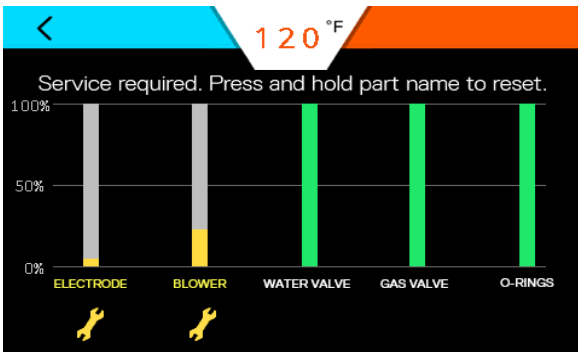
## 12.7 Life Screen

These screens provide a visual indication of the remaining life of various components.

**Note:** Parts can be ordered by contacting technical support.



**Service recommended:** Order appropriate replacement part as soon as possible. To reset life, press and hold the appropriate bar and follow the prompts.

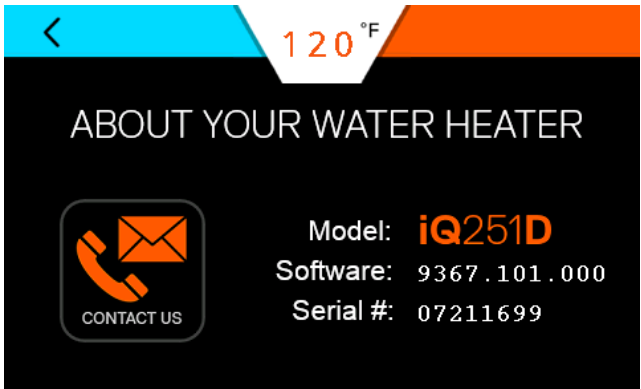
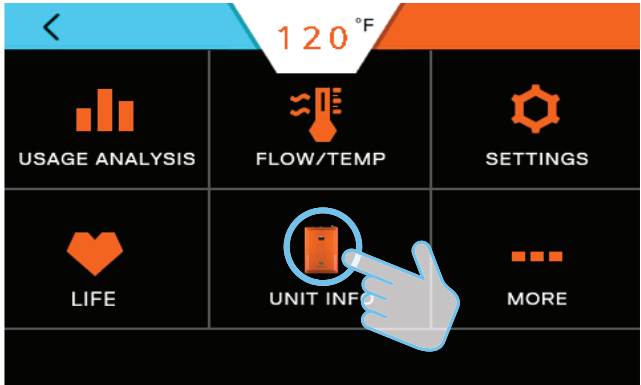


**Service required:** Take IMMEDIATE action when this screen appears because the part life is critical. To reset life, press and hold the appropriate bar and follow the prompts.

Service Alert	Reset Code
Electrode	0836
Blower	2009
Time Valve (Water Valve)	0721
Gas Valve	0682
O-Ring (at the HEX inlet & HEX outlet)	0310

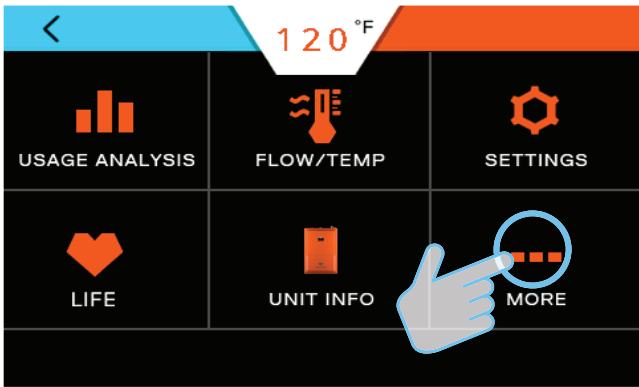
## 12.8 Unit Information

This screen provides the model, software version, serial number, and a link to the contact technical support.



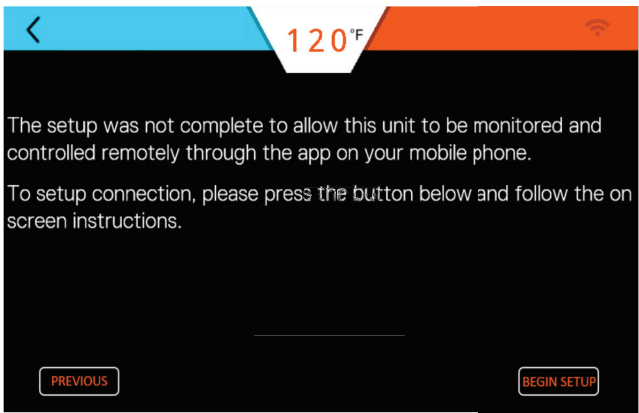
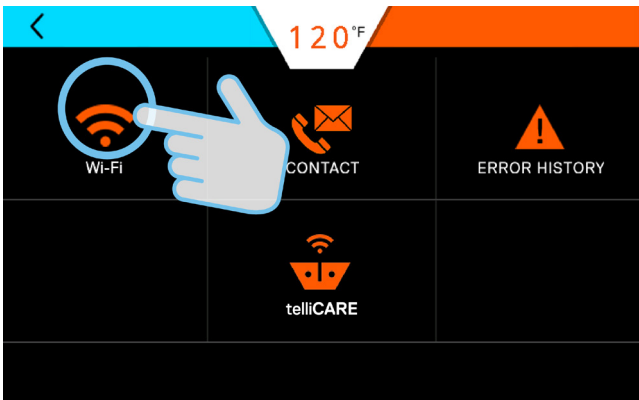


12.9 More Screens



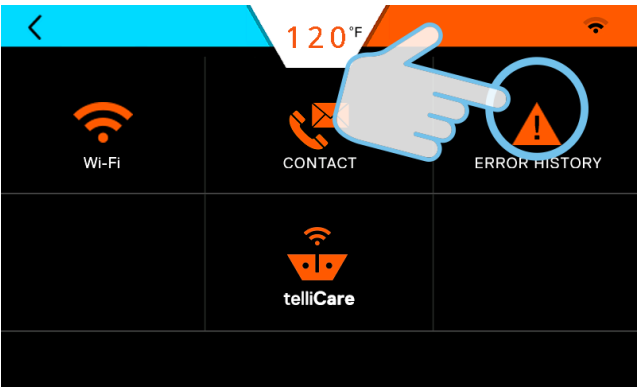
12.9.1 Wi-Fi

Intellihot Gen II water heaters are Wi-Fi capable with the factory installed IGT-SPR0085 WI-FI module. This feature also allows the units to be monitored and controlled from a mobile device.

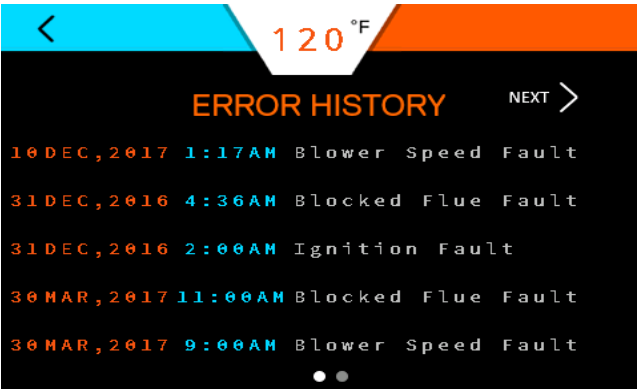


Status of Wi-Fi connection screen.

12.9.2 Error History

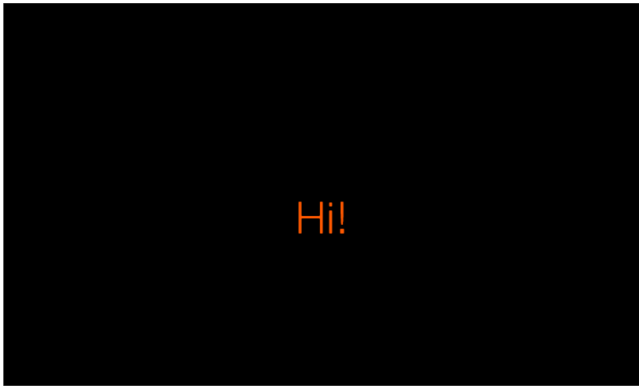


The error history screens provides an overview of the entire unit.

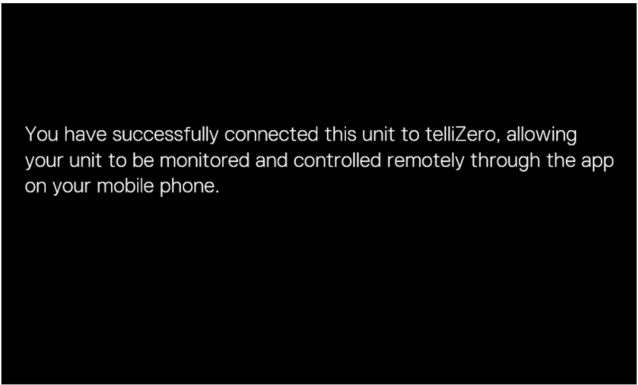
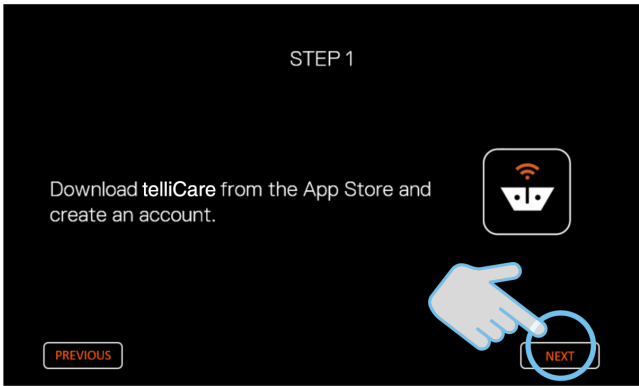
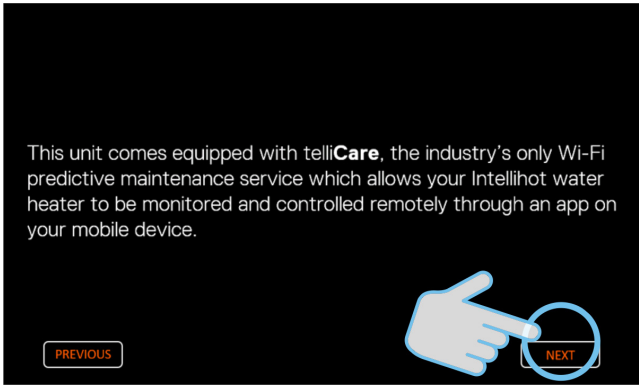
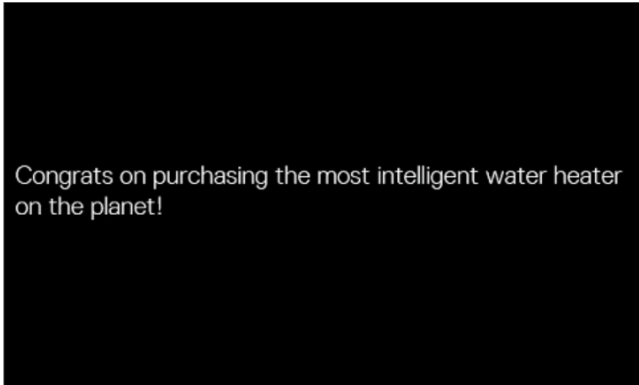


12.9.3 telliCare Service (Subscribe at Startup)

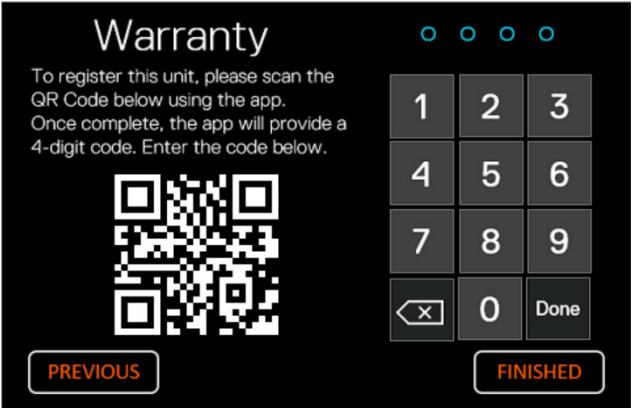
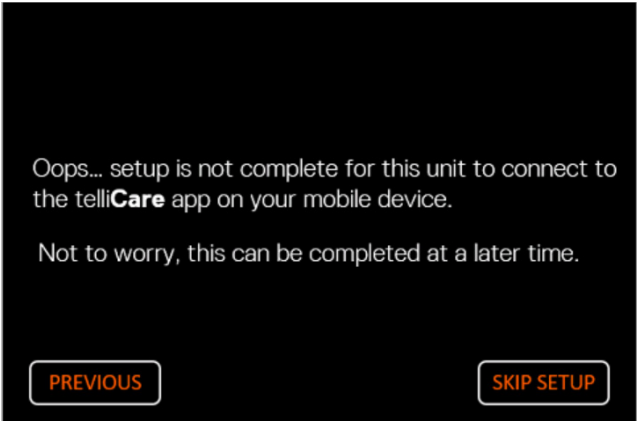
telliCare is a Wi-Fi enabled, prognostics and predictive maintenance service for Gen II water heaters. This service allows water heaters to be monitored and controlled remotely via an app on a mobile device.



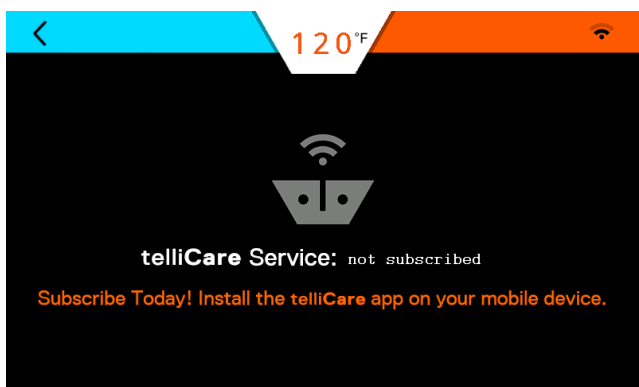
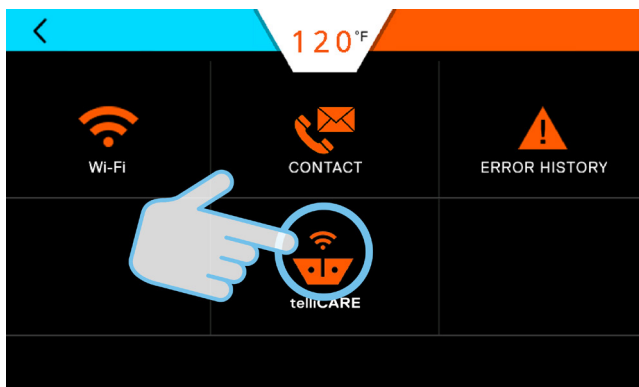
Tap anywhere on the screen to continue.



If setup is not complete:



If telliCare setup is skipped, register the unit by scanning the QR Code via the App.



Subscribe to this service by downloading the telliCare app from iTunes App Store and following the prompts on the app.

## 13. Connecting Multiple Units

### 13.1 General Information

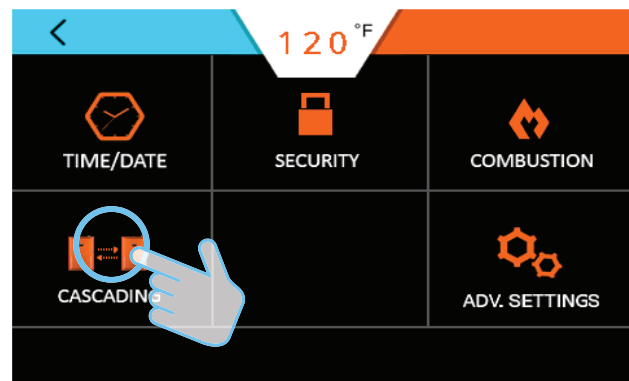
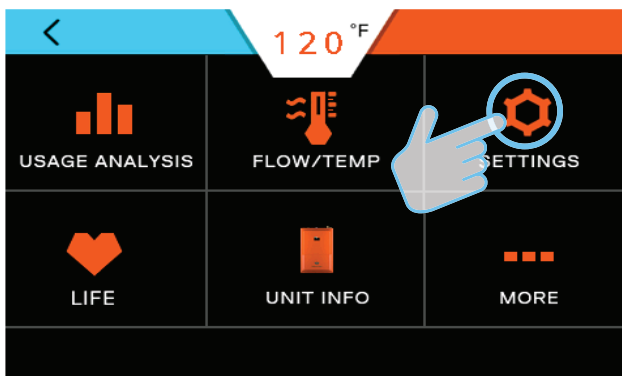
Multiple units can be connected together to supply large demands of hot water.

The water heaters communicate through a cable connection between each water heater. The benefits of connecting the units are:

- When demand for hot water is low, fewer units will operate.
- If one unit has an error code, the others will continue to operate.
- Changing the settings (temperature, time, etc.) on one unit changes settings on all the units.
- It allows shut down of one unit for maintenance while the others continue to operate.

### 13.2 Installation Procedure

1. Connect all the units to a gas supply pipe. Make sure the pipe is properly sized in accordance with the BTU draw and number of units being operated. Refer to “6. Gas Connection” on page <?> for additional information.
2. Connect all the units to the power supply. Refer to “9. Electrical” on page <?> for additional information.
3. Install the air intake inlet and exhaust gas outlet pipes. Refer to “7. Air Intake Inlet and Exhaust Gas Outlet Pipe Connections” on page <?> for additional information.
4. Install and connect the hot water pipes. If an optional hot water storage tank is required, connect the hot water pipes to this tank. Make sure the water pipe is properly sized in accordance with the number of units being operated. Refer to “8. Water Connections” on page <?> for additional information.
5. Install and connect the cold water pipes. Make sure the water pipe is properly sized in accordance with the number of units being operated. Refer to “8. Water Connections” on page <?> for additional information.
6. Connect and route the condensate drain lines to a suitable discharge location. Refer to “8. Water Connections” on page <?> for additional information.
7. **Do Not** connect communication cables at this time.
8. Power up all the units and assign a unique number, one through ten to each unit. Set the STAGING to ON.

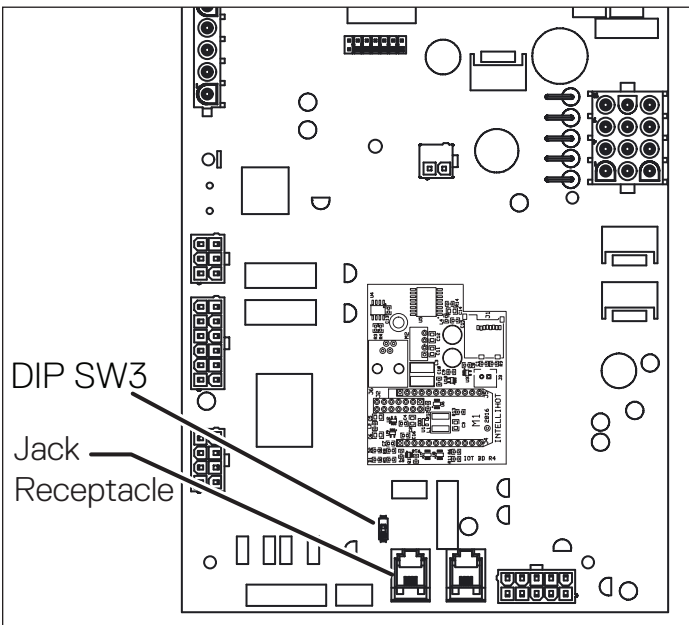
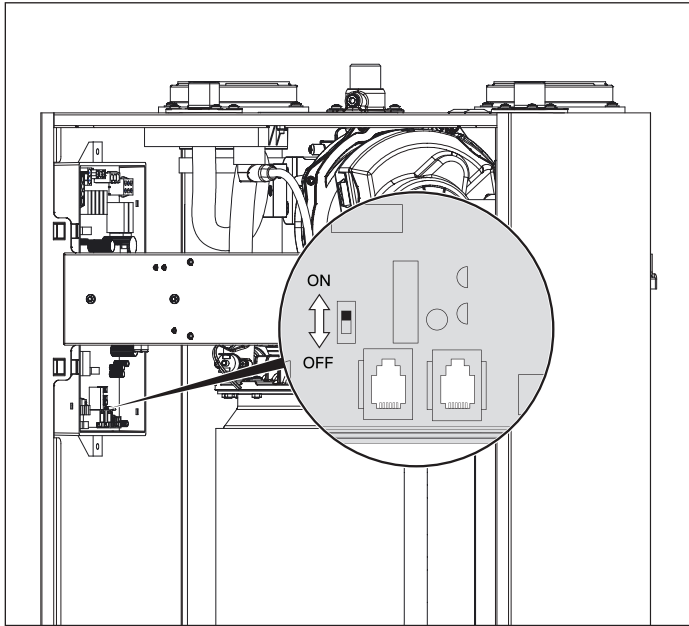


### WARNING

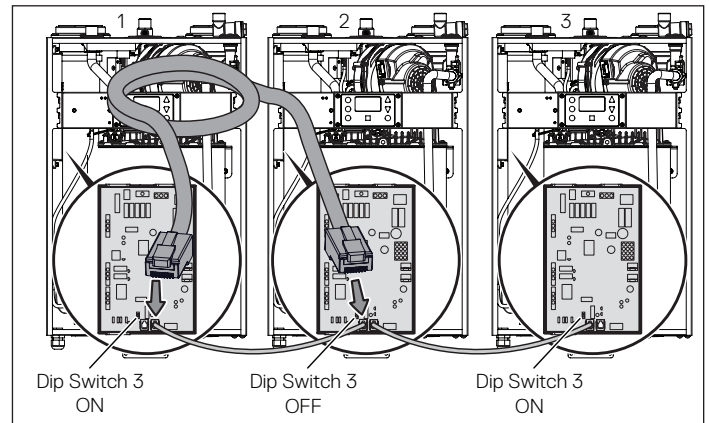
**Before making any adjustments or connections inside the water heater cabinet, make sure the power is disconnected. Unplug the water and/or turn the circuit breaker OFF.**

9. If necessary, press the Power button to turn OFF each water heater in the system and disconnect power from all the units in the system.

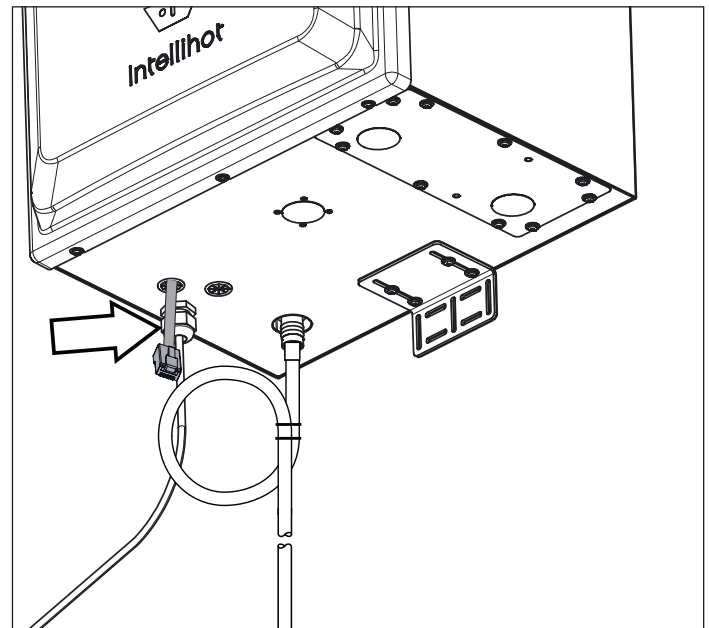
1. Remove the front cover and locate the main circuit board.
2. Set DIP switch 3 on the electronic board on all units.
  - a. On the first water heater, locate DIP Switch 3 on the circuit board. Position the switch in the ON position.
  - b. On any water heater unit between the first and last unit, position all DIP switch 3 switches in the OFF position.
  - c. On the last water heater, locate DIP Switch 3. Position the switch in the ON position.



3. Using the supplied cables, connect one end of a cable into either of two jack receptacles (arrows) located on the circuit board and the other end to the jack in the next unit.



- a. Pass the communication cable, supplied with water heater, through the grommet located in the bottom of the cabinet.



- b. Secure the cable using a zip tie.
- c. Replace the front cover.
4. Reconnect the power and turn the water heater ON. The water heaters should now be ready to communicate with each other and operate as a single system.

**Note:** Whenever a change is made to any one water heater, all the other units in the system will be automatically updated to the new settings.

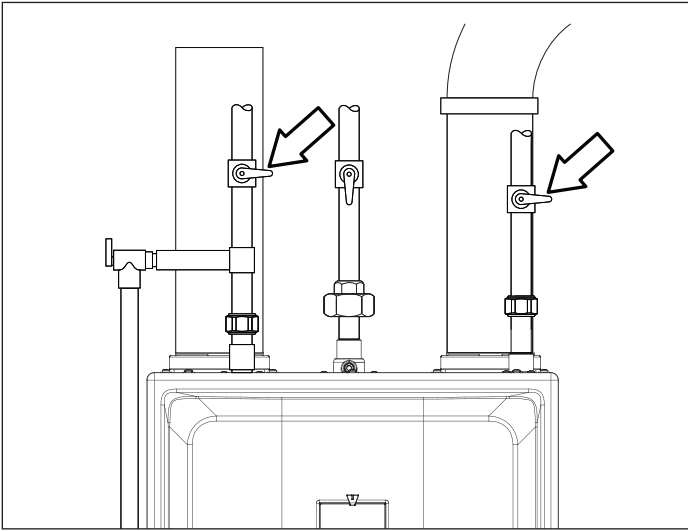
## 14. Maintenance

### 14.1 Draining the Water Heater

#### **CAUTION**

Hot water can cause burns to the skin. The water temperature is factory set to 120°F (49°C). To avoid burns, make sure the water heater is OFF and the power supply is disconnected. The water heater will remain hot for some time. Wait until the unit has completely cooled before draining the water heater or performing any other maintenance.

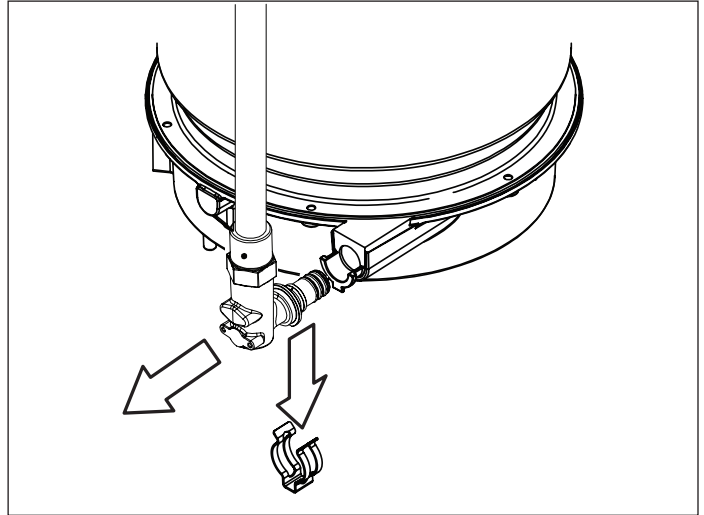
1. Press the Power button to turn OFF the water heater. Disconnect the electrical power.
2. Close the water supply inlet and outlet valves. The valve is closed typically when the handle is perpendicular to the pipe, as shown in the illustration.



3. Remove the front cover panel. Place a container or other method to retain/divert the water under the heat engine inlet.

**Note:** The water heater contains approximately one-half gallon of water. Make sure there is enough capacity to contain or divert the water from inside the water heater cabinet.

4. Remove the clip holding the pipe into the heat engine. Flex the pipe enough to allow the water to drain from the heat engine.



**Note:** Do not allow the water to pool or stand in the bottom of the water heater cabinet. Remove any spilled water with a clean, dry cloth.

5. When all the water has drained from the water heater, replace the pipe and the clip.

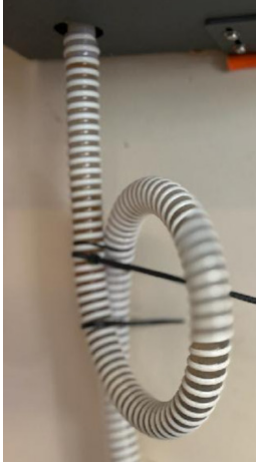
### 14.2 Filling the Water Heater

1. Open the hot water outlet valve. Slowly open the cold water inlet valve.
2. Open a hot water faucet. Once a steady stream of water flows and all the trapped air is purged from the system, close the hot water faucet.
3. Plug the unit into an electrical power supply.
4. Open a hot water faucet. The water heater should operate normally.

### 14.3 Condensate Hose cleaning

A condensate hose attached to the bottom of the unit should be removed and cleaned **every 3 months or as often as necessary**

1. The condensate is acidic, so please wear gloves. Have a container ready to capture any condensate that may be spilling.
2. Turn off the unit.
3. To remove the condensate hose, locate and pull the top of the hose from the water heater
4. Remove the other end of the condensate from the neutralizer or its connection.

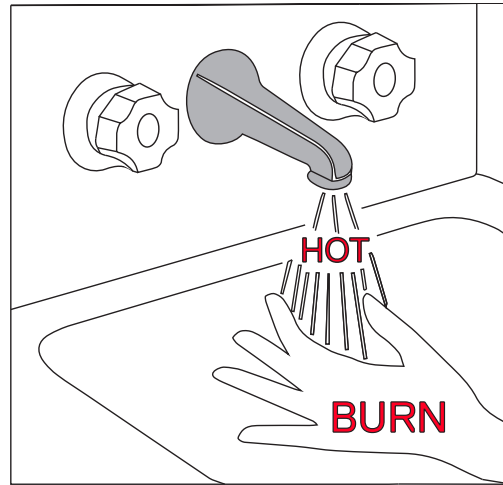


5. Pour water from the top of the hose and flip it to the drain
6. Pour water from the bottom of the hose and flip it to the drain
7. Pour water from the top to make sure water comes out from the bottom. Clean the loop.
8. Connect the condensate hose back to its original position
9. Turn ON the unit. Make sure there are no leaks coming out of the condensate connections.

### 14.4 T&P Test

The following procedures shall be performed with periodic maintenance to ensure the functionality of the T&P.

**⚠ DANGER**



**⚠ WARNING**

When testing the Temperature-Pressure Relief Valve's functionality, make sure that no one is standing in front of or near the discharge line's outlet. The discharged water may be hot and may cause injury to personnel.

**⚠ CAUTION**

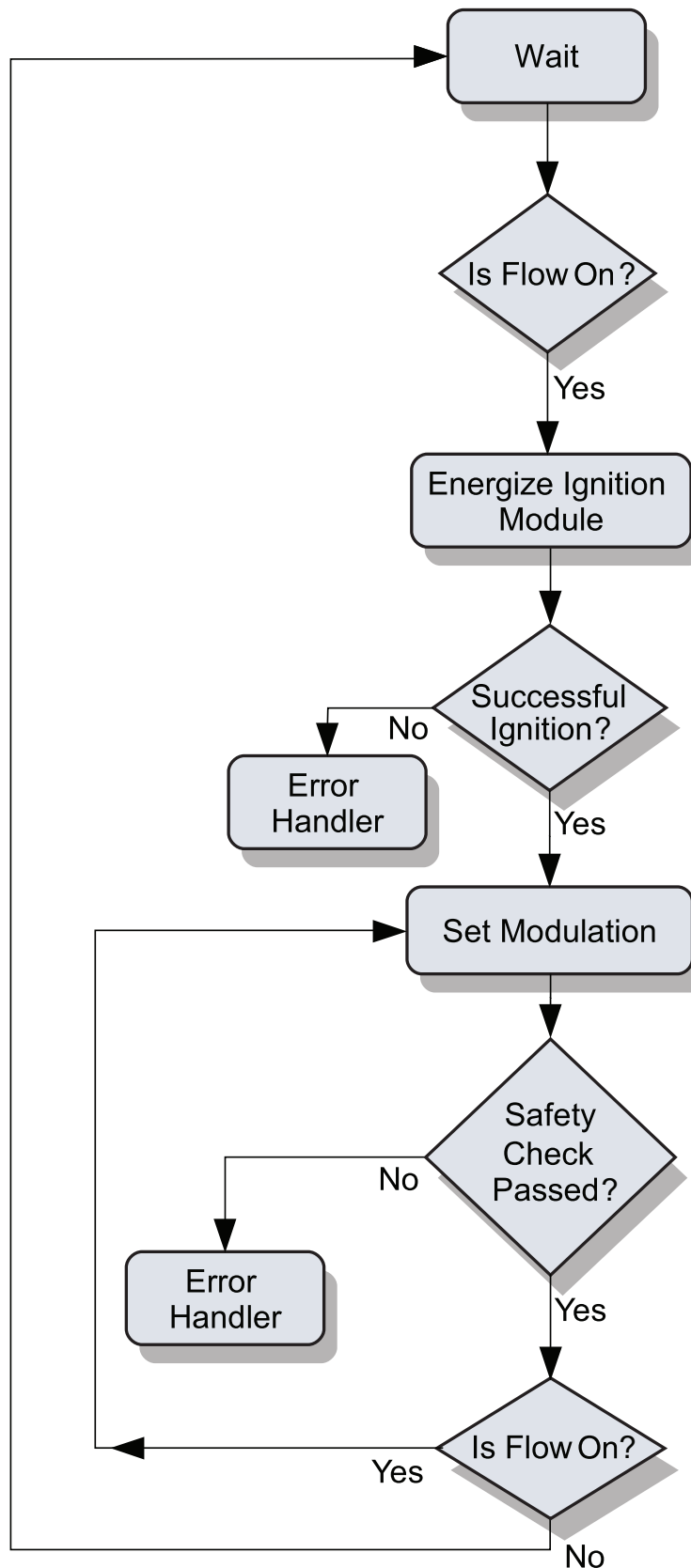
Make sure that the surrounding area is clear of any objects. The discharged water may be hot and may cause property damage.

1. Operate the lever at the relief valve's end several times. Make sure that the valve functions properly.
2. The temperature-pressure relief valve must be replaced if it fails to completely reset and continues to release water.



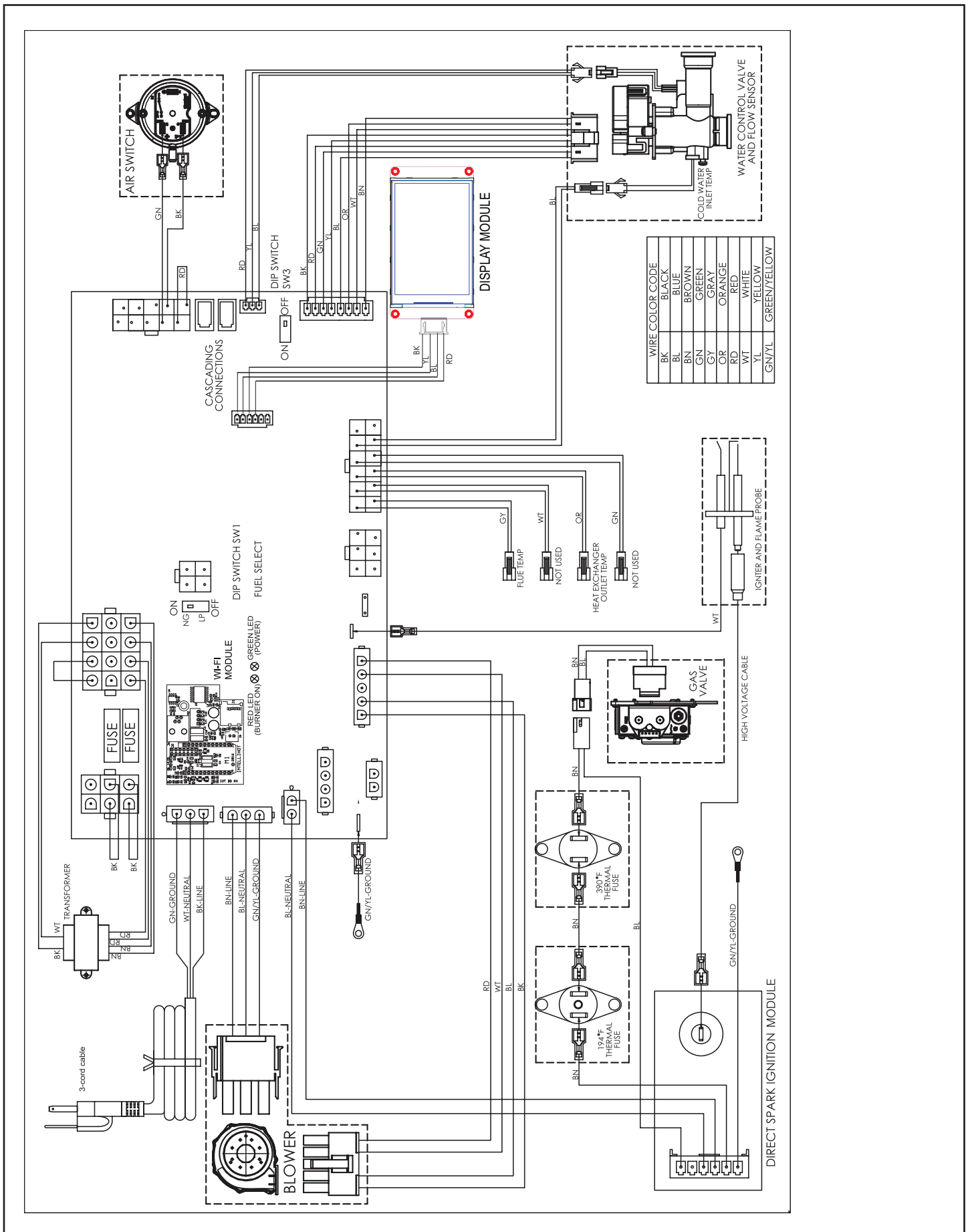
## 15. Wiring Diagrams and Troubleshooting

### 15.1 Operational Flow Chart

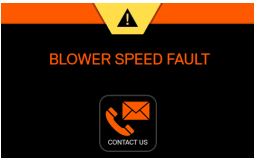

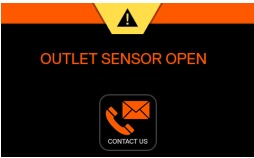
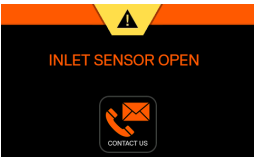
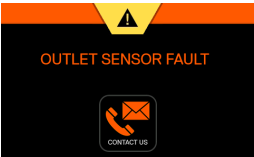
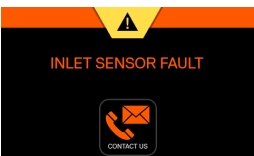
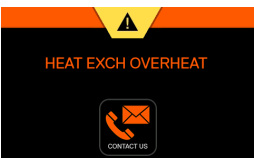


IQ-35




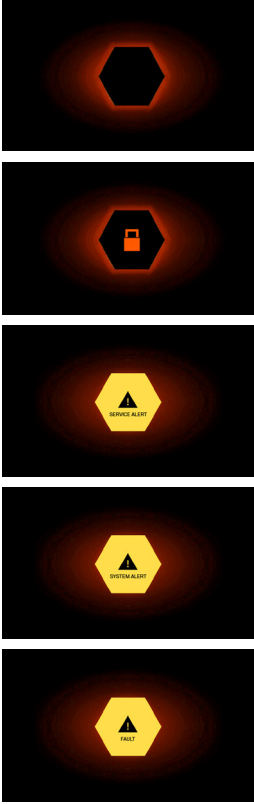
## 15.2 Complete Wiring Diagram (all models)



## 13.2 Troubleshooting Guide

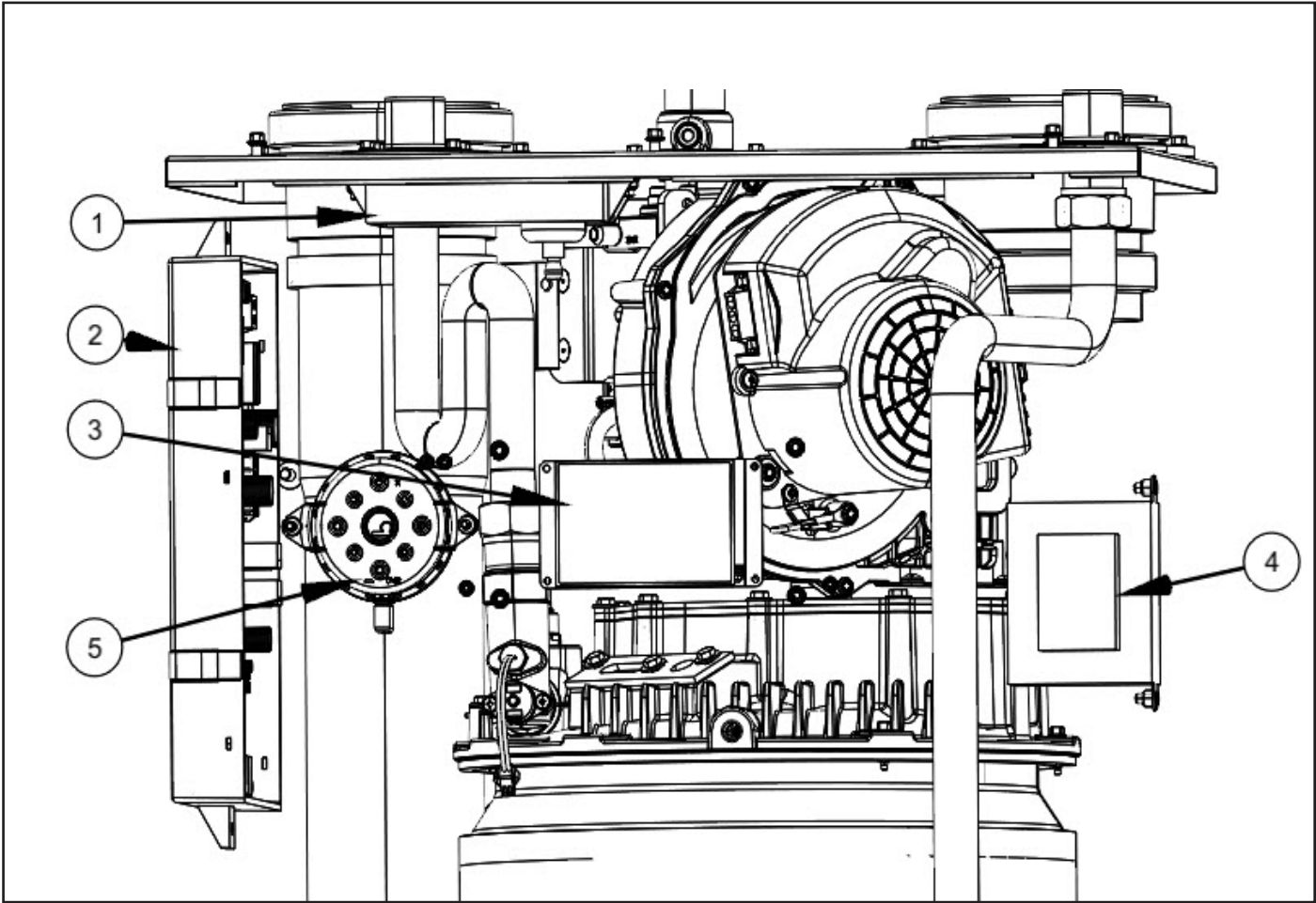
Description	Possible Cause	Remedy
<b>Blower</b> Speed Fault 	<ul style="list-style-type: none"> <li>• Blower noisy / impeller jammed.</li> <li>• Disconnected signal wire.</li> <li>• Wiring faulty.</li> </ul>	<ul style="list-style-type: none"> <li>• Inspect blower / impeller. Clean and remove any obstructions.</li> <li>• Check PWN signal. Check for loose wires / pins, and repair.</li> <li>• If the problem persists, turn control panel OFF, shut OFF gas valve, disconnect power from unit, and contact an authorized service technician.</li> </ul>
<b>Igniter</b> Ignition Failure 	<ul style="list-style-type: none"> <li>• Water over-heat switch tripped.</li> <li>• Faulty DSI, faulty igniter wire, faulty ignition connection, faulty PCB, bad igniter.</li> <li>• Low gas pressure.</li> <li>• Wiring faulty.</li> </ul>	<ul style="list-style-type: none"> <li>• Check the pump, cross-over solenoid, and for electrical noise (DSI).</li> <li>• Replace part.</li> <li>• Adjust gas pressure at regulator, check / increase size of gas pipe, check for gas pipe blockage.</li> <li>• If the problem persists, turn control panel OFF, shut OFF gas valve, disconnect power from unit, and contact an authorized service technician.</li> </ul>
<b>Open Sensors</b> Inlet / Outlet Sensors  	<ul style="list-style-type: none"> <li>• Unplugged connectors.</li> <li>• Faulty sensor wiring.</li> <li>• Faulty sensor.</li> <li>• Heat engine water outlet temperature sensor.</li> <li>• Flue temperature sensor.</li> <li>• Inlet water temperature sensor.</li> <li>• Faulty controller.</li> </ul>	<ul style="list-style-type: none"> <li>• Check connectors and ensure they are securely connected.</li> <li>• Check for nicked or broken sensor wiring or connectors. Also check for corroded or wet connectors.</li> <li>• Measure resistance of sensor at connector (18 kΩ at 50°F, 10 kΩ at 77°F, 3 kΩ at 140°F).</li> <li>• Replace controller.</li> </ul>
<b>Faulty Sensors</b> Inlet / Outlet Sensors  	<ul style="list-style-type: none"> <li>• Faulty sensor wiring or faulty sensor.</li> <li>• Inlet water temperature sensor.</li> <li>• Heat engine water outlet temperature sensor.</li> <li>• Faulty controller.</li> </ul>	<ul style="list-style-type: none"> <li>• Check for nicked or broken sensor wiring or connectors. Also check for corroded or wet connectors.</li> <li>• Measure resistance of sensor at connector (18 kΩ at 50°F, 10 kΩ at 77°F, 3 kΩ at 140°F).</li> <li>• Replace controller.</li> </ul>
<b>Heat Engine</b> Outlet temperature exceeded set limit 	<ul style="list-style-type: none"> <li>• Flow rate changes excessive.</li> <li>• Faulty sensor wiring.</li> <li>• Faulty sensor.</li> <li>• Faulty controller.</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure the water flow rate does not change faster than 1 GPM every five seconds.</li> <li>• Check for nicked or broken sensor wiring or connectors. Also check for corroded or wet connectors.</li> <li>• Measure resistance of sensor at connector (18 kΩ at 50°F, 10 kΩ at 77°F, 3 kΩ at 140°F).</li> <li>• Replace controller.</li> </ul>

Description	Possible Cause	Remedy
<b>Flue</b> Temperature Exceeded Set Limit 	<ul style="list-style-type: none"> <li>• Incorrect vent set up.</li> <li>• High inlet temperature.</li> <li>• Faulty sensor wiring.</li> <li>• Faulty sensor.</li> <li>• Faulty controller.</li> </ul>	<ul style="list-style-type: none"> <li>• If vent pipe material is CPVC or polypropylene, ensure that CPVC is selected in the vent material screen.</li> <li>• Ensure inlet temperature is lower than 150°F if vent pipe material is PVC or lower than 190°F if vent pipe material is CPVC or polypropylene.</li> <li>• Check for nicked or broken sensor wiring and connectors. Also check for corroded or wet connectors.</li> <li>• Measure resistance of sensor at connector (18 kΩ at 50°F, 10 kΩ at 77°F, 3 kΩ at 140°F).</li> <li>• Replace controller.</li> </ul>
Blocked Flue Fault 	<ul style="list-style-type: none"> <li>• Exhaust blocked (bird, etc).</li> <li>• Backed up condensate.</li> <li>• Wiring loose (switch open).</li> </ul>	<ul style="list-style-type: none"> <li>• Check exhaust termination. Check exhaust connection at water heater. Install screens to prevent blockage.</li> <li>• Check slope of drain. Check for double loops, air locks, or debris in loop.</li> <li>• Check wiring.</li> </ul>
Flue sensor  	<ul style="list-style-type: none"> <li>• Unplugged connectors.</li> <li>• Faulty sensor wiring.</li> <li>• Faulty sensor.</li> <li>• Flue temperature sensor.</li> <li>• Inlet water temperature sensor.</li> <li>• Faulty controller.</li> </ul>	<ul style="list-style-type: none"> <li>• Check connectors and ensure they are securely connected.</li> <li>• Check for nicked or broken sensor wiring or connectors. Also check for corroded or wet connectors.</li> <li>• Measure resistance of sensor at connector (18 kΩ at 50°F, 10 kΩ at 77°F, 3 kΩ at 140°F).</li> <li>• Replace controller.</li> </ul>
<b>Cascading</b> Fault 	<ul style="list-style-type: none"> <li>• Loss of communication between units.</li> </ul>	<ul style="list-style-type: none"> <li>• Check for broken or nicked communication cable or loose connector.</li> <li>• Ensure that the communication cable is not bundled or tied to any high voltage lines.</li> <li>• Ensure dip switch (SW3) is ON in first and last units and OFF in all other units.</li> <li>• Ensure each unit numbering is unique.</li> </ul>
<b>Water Valve</b> 	<ul style="list-style-type: none"> <li>• Faulty sensor wiring.</li> <li>• Water valve is damaged or inlet strainer is clogged.</li> </ul>	<ul style="list-style-type: none"> <li>• Check for nicked or broken sensor wiring or connectors. Also check for corroded or wet connectors.</li> <li>• Replace water valve and/or clean strainer.</li> </ul>
<b>Software</b>  	<ul style="list-style-type: none"> <li>• Incorrect settings.</li> <li>• Incompatible settings.</li> <li>• Incorrect software version.</li> <li>• Faulty wiring.</li> </ul>	<ul style="list-style-type: none"> <li>• Review and correct settings.</li> <li>• Review and correct settings.</li> <li>• Update software version.</li> <li>• Check for nicked or broken sensor wiring or connectors. Also check for corroded or wet connectors.</li> </ul>

Description	Possible Cause	Remedy
<b>System Alert</b> 	<ul style="list-style-type: none"> <li>• A system alert is present (main menu screen).</li> <li>• Malfunction of monitored part or system.</li> </ul>	<ul style="list-style-type: none"> <li>• Refer to the remedy for indicated part or system.</li> </ul>
<b>Fault</b> 	<ul style="list-style-type: none"> <li>• A fault or error is present (main menu screen).</li> <li>• Malfunction of monitored part or system.</li> </ul>	<ul style="list-style-type: none"> <li>• Refer to the remedy for indicated part or system.</li> </ul>
<b>Alert / Error / Fault</b> 	<ul style="list-style-type: none"> <li>• An alert, fault, or error is present (active screen).</li> <li>• Malfunction of monitored part or system.</li> </ul>	<ul style="list-style-type: none"> <li>• Refer to the remedy for indicated part or system.</li> </ul>
<b>Alive</b> 	<ul style="list-style-type: none"> <li>• Shows status of water heater.</li> <li>• Sleep mode.</li> <li>• Sleep mode passcode protected.</li> <li>• Indicates a service problem exists within the monitored parts.</li> <li>• Indicates an alert exists within the monitored systems.</li> <li>• Indicates a fault exists within the monitored parts or system.</li> </ul>	<ul style="list-style-type: none"> <li>• Touch display screen to awake.</li> <li>• Touch display screen to awake and enter passcode.</li> <li>• Refer to the remedy for indicated part or system.</li> <li>• Refer to the remedy for indicated part or system.</li> <li>• Refer to the remedy for indicated part or system.</li> </ul>

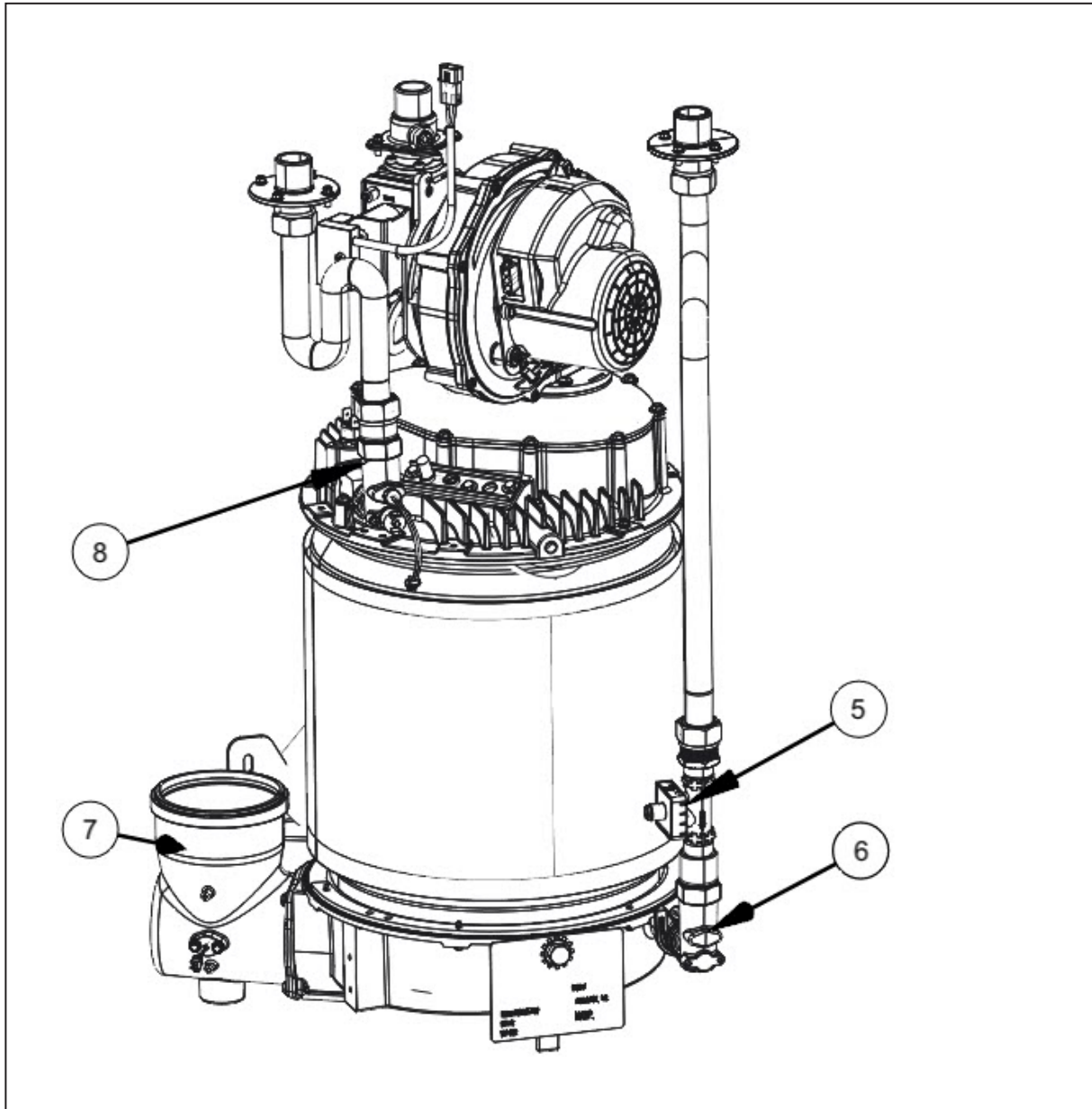
18. Serviceable Parts

16.1 Electrical Components



Item	Part Number	Description
1	IGT-SPR0005	Igniter Module (DSI)
2	IGT-SPR0002	Control Board
3	IGT-SPR0089	Small Screen Display Kit
4	IGT-SPR0065	Transformer
5	IGT-ELC0456	Air Switch

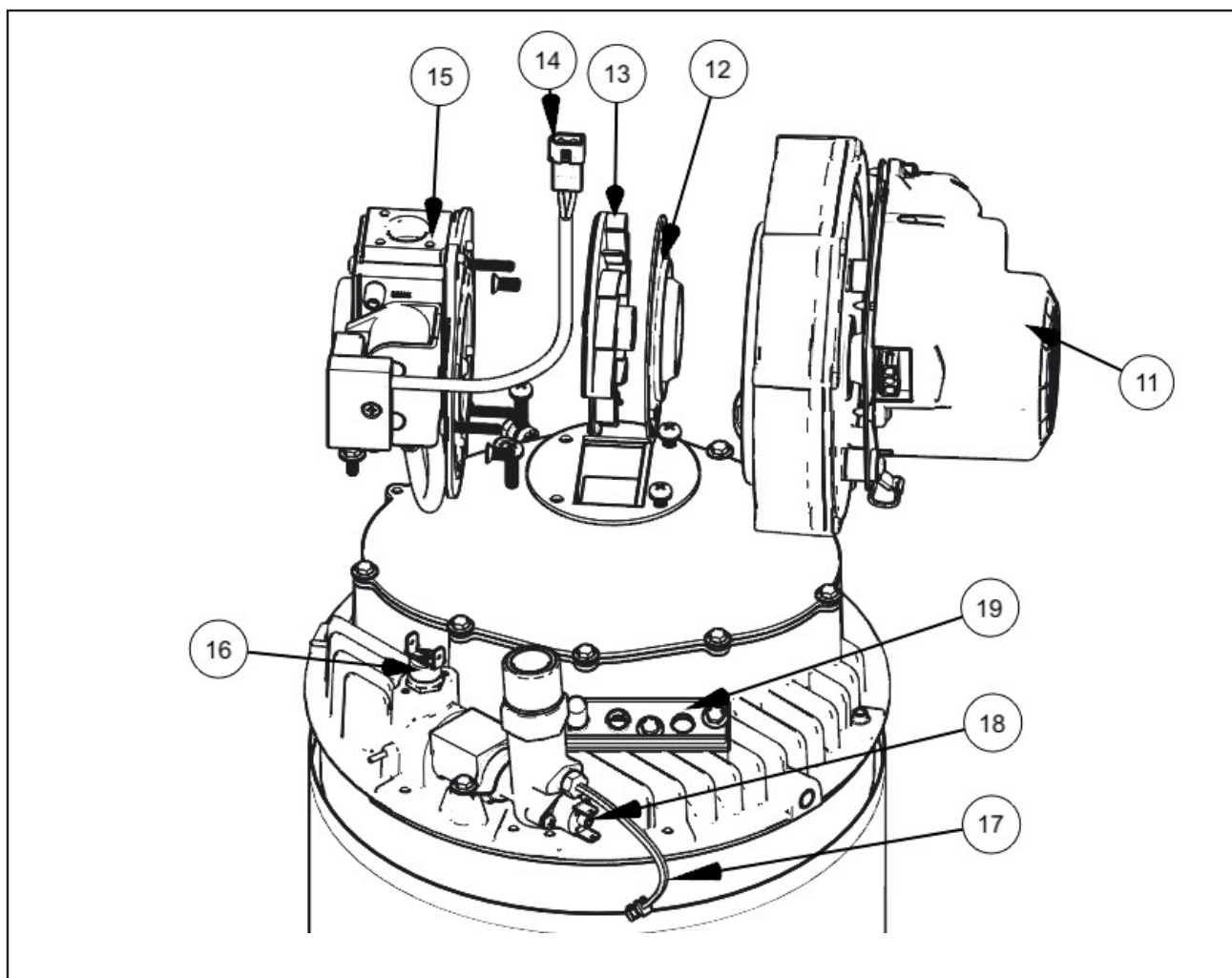
## 16.2 Water Lines and Fittings



Item	Part Number	Description
5	IGT-SPR0021	Flow Sensor Kit
6	IGT-SPR0010	Water Inlet
7	IGT-CST0029	Side Cast
8	IGT-SPR0012	Water Outlet

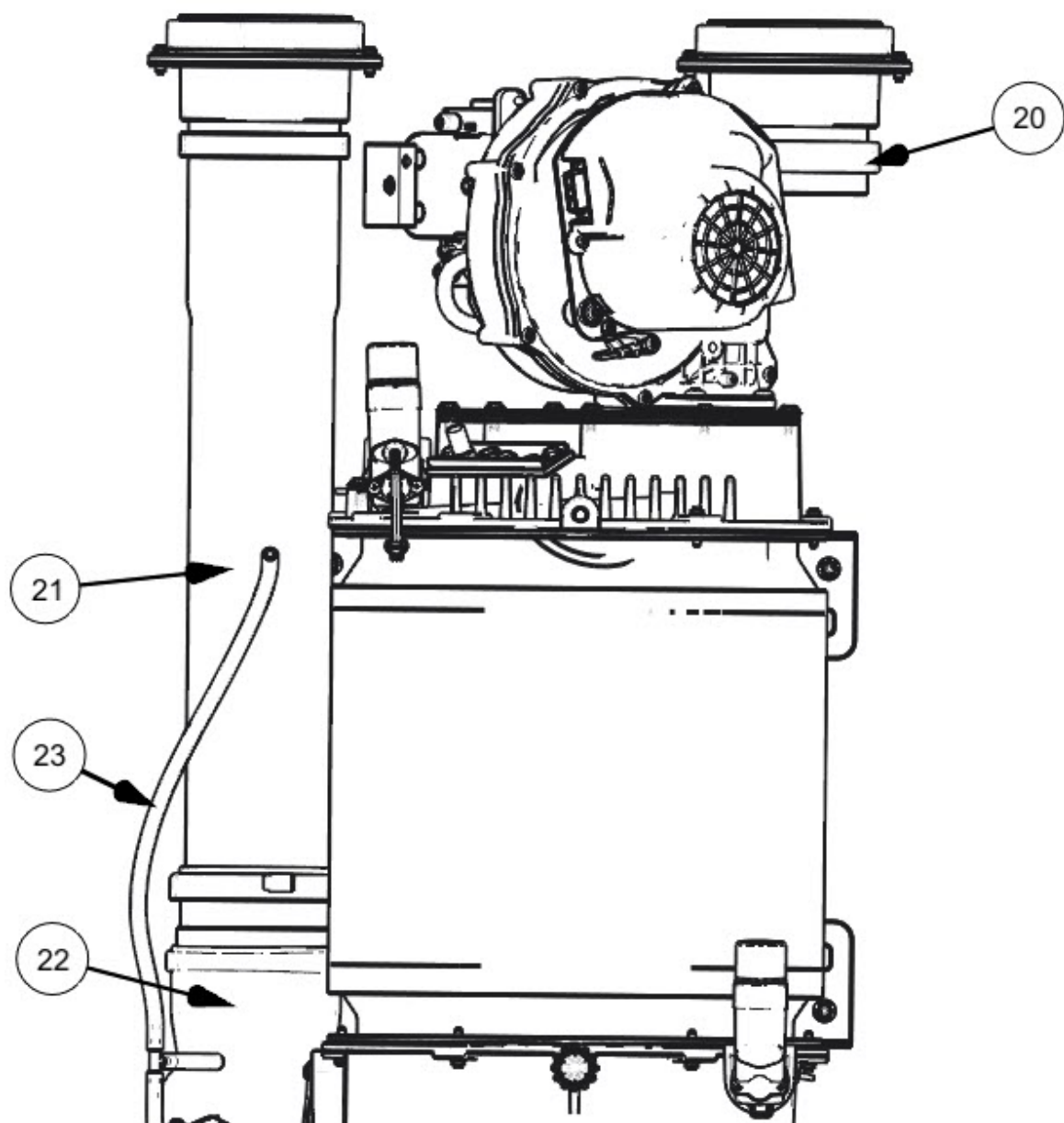


## 16.3 Blower, Gas Valve



Item	Part Number	Description
11	IGT-SPR0134	Blower Kit
12	IGT-SM0606	Blower Adapter Plate
13	IGT-ELC0147	Gray Swirl Plate
14	IGT-ELC0020	Gas Valve Harness
15	IGT-SPR0011	Gas Valve Kit
16	IGT-SPR0097	High Temp Sensor
17	IGT-SPR0110	Sensors Kit
18	IGT-SPR0066	Resettable Switch
19	IGT-SPR0106	Electrode Kit

16.4 Exhaust & Air Intake



Item	Part Number	Description
20	IGT-EX0002	Air Intake
21	IGT-EX0001	Exhaust
22	IGT- SPR0151	Side Cast
23	IGT-SA0430	Side Cast Tubing

## 16.5 Miscellaneous

Part Number	Description
IGT-ELC0092	25 ft cascading cable
IGT-ELC0232	50 ft cascading cable
IGT-SPR0109	O-Ring Kit
IGT-ELC0181	DSI to Electrode HV Cable
IGT-ELC0289	Display Harness
IGT-ELC0312	Wiring Harness
IGT-SPR0111	Burner Kit
IGT-SPR0141	Flapper Kit
IGT-SPR0162	iQ251D G2 V2 Replacement HEX (with Blower & Gas Valve)
IGT-SPR0192	iQ251D G2 V2 Replacement HEX (without Blower & Gas Valve)
IGT-SPR0067	BMS Kit

## 16. Requirements for State of Massachusetts

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### 16.1 Notice Before Installation

This appliance must be installed by a licensed plumber or gas fitter in accordance with the Massachusetts Plumbing and Fuel Gas Code 248 CMR Sections 2.00 and 5.00.

IMPORTANT: In the State of Massachusetts (248 CMR 4.00 & 5.00)

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 fueled equipment, the installing plumber or gas fitter shall observe that a hard wired carbon monoxide detector with an alarm and battery backup 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 and 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 fueled 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 5.08(2)(a)1 through 4.

## 17. Warranty

### 17.1 Warranty

#### General

This unit is warranted by Intellihot Inc. and covers defects in materials and workmanship, subject to the applicable time periods and terms below. All Warranty coverages begin on installation date as identified in a company verified startup report or 60 days from the date of manufacture without a verified startup. The manufacturing date is determined using the serial number located on the ratings label on the unit.

This warranty is extended to the original purchaser and any subsequent owner at the original install location and applies only when the unit is properly installed by a licensed contractor adhering to and operated per the Installation and Operation manual, or other instructions supplied by Intellihot. This warranty is limited to repairs or replacement of parts, at Intellihot's option, that are proven defective under normal use and connected only to either potable water systems or swimming pool applications.

**Any replacement parts, including the Heat Exchanger Assembly or full unit will be warranted only for the unexpired portion of the original water heater's limited warranty period. Owners are responsible for all labor and installation costs associated with repairing and/or replacing the product.**

#### Warranty Period (effective from 7/1/2024):

Item	Without Startup	With Startup	With Startup and activated telliCare remote monitoring system
Heat Exchanger Assembly	1 Year	10 years (prorated)	10 years (prorated)
All Other Parts	1 Year	2 Years	2 Years
Labor Coverage	No Coverage	No Coverage	Limited 12 months

**"Startup"** refers to Intellihot-verification of product installation and operation, carried out at the site by the installing contractor or by IntelliPro contractor using the startup form. The startup form is available online at <https://www.intellihot.com/start-up/>). This form must be completed and verified by Intellihot within 30 days from date of installation.

In addition to completing the **Startup when telliCare remote monitoring service** is activated within 30 days from date of installation, the unit is eligible for limited labor warranty.

**Limited Labor:** Intellihot will pay predefined labor charges for repairing or replacing parts or components during the labor warranty period. All repair parts must be genuine Intellihot parts. All repairs or replacements must be performed by a licensed contractor trained to do the type of repair. Only Intellihot can authorize the replacement of the entire unit at its sole discretion.

Intellihot does not authorize any person or company to assume any obligation or liability concerning the replacement of the product. The total number of labor hours during the 12 months is limited, and the labor rates are defined for all regions. For complete details of the limited labor coverage, please visit <https://www.intellihot.com/warranty/>

#### Heat Exchanger Assembly Warranty:

The heat exchanger assembly is defined solely as the heating-subassembly from the burner casting assembly to bottom casting assembly and doesn't include the blower, gas valve, water fittings, and brackets. The Heat Exchanger Assembly Warranty is prorated as shown below:

Year	Discount from current List Price
1-5	100%
6	70%
7	60%
8	50%
9	40%
10	30%

#### All Other Parts and Components:

A replacement part will be warranted for the unexpired term of the original warranty. Defective parts submitted to Intellihot may not be returned. No returns will be accepted without prior authorization from Intellihot.

#### Shipping Costs:

When a replacement part is shipped under the terms of this warranty, Intellihot will cover the cost of ground service delivery. Any expedited shipping expenses will be paid by the customer.

## Definition of Potable Water

Potable water is defined as drinkable water supplied from utility or well water in compliance with EPA secondary maximum contaminant levels (40 CFR part 143.3) as shown in the table.

Contaminant	Level
Aluminum	0.05 to 0.2 mg/l
Chloride	250 mg/l
Color	15 color units
Copper	1.0 mg/l
Corrosivity	Non-corrosive
Fluoride	2.0 mg/l
Foaming Agents	0.5 mg/l
Iron	0.3 mg/l
Manganese	0.05 mg/l
Odor	3 threshold odor number
pH	6.5-8.5 mg/l
Silver	0.1 mg/l
Sulfate	250 mg/l
Total dissolved solids (TDS)	500 mg/l
Zinc	5 mg/l

The following recommended levels are required for swimming pool applications.

Contaminant	Level
Chlorine	1 - 3 ppm
pH	7.2 - 7.8

## Water Hardness Criteria

This warranty applies only when the water quality and supply meet the parameters as explained below.

The maximum allowable hardness is shown below. To use the table, locate the desired unit setpoint temperature on the left side of the table. Then, locate the incoming water pressure across the top. The corresponding value in the table is the maximum allowable hardness in grains per gallon (gpg).

Maximum Allowable Hardness (grains per gallon, gpg)						
Unit Setpoint (°F)	Incoming Water Pressure (psi)					
	30	40	50	60	80	100
100-119	8	15	20	25	30	30
120-139°	5	11	15	20	27	30
140-159°	4	5	11	13	18	20
160-190°	3	4	10	12	15	17

## Not Covered by this Warranty

This warranty does not cover failures or problems due to:

- Failure to install in accordance with applicable building codes, ordinances, normal plumbing, or electrical trade practices.
- Improper installation, improper use, improper maintenance, improperly made replacements or repairs, accidents or abuse.
- Missing drip leg (or not including an alternative method) on the gas line connection
- Sediment deposits, fire, flood, lightning, freezing, and acts of God, or any causes other than defects in materials and workmanship.
- The unit is installed without consideration for an adequate drain to accommodate leaks,
- The unit installed where the leakage could result in damage to the area adjacent to the water heater or to the lower floors of the building.
- Damages due to improper/inadequate water hardness treatment or damages from scale formation due to water hardness.
- Water hammer arrestor must be installed to prevent heat exchanger damages. Otherwise, Heat exchanger warranty request will not be honored.
- Electrical failures due to Inadequately sized electrical breaker or inadequately sized wire
- Damage caused by power surges or lightning
- Not performing recommended maintenance.
- Component failures due to side panels not being properly closed
- Not properly electrically grounding the unit or not following the electrical grounding requirements.
- Holes drilled in the cabinet
- Holes drilled on the exhaust pipes
- Improper propane conversion or not performing the conversion within the 72 hours
- The manufacturer will not be responsible for any damages resulting from leaking if adequate drainage is not provided

This warranty will be void and have no effect if:

- The unit is modified or altered in any way.
- Holes are drilled on the exhaust sidecast
- Appliance(s) or equipment are attached to the unit that have not been approved by Intellihot Inc.
- The serial number is altered, defaced, or discarded.

## Warranty Limitations

This warranty applies only when the unit is used in the United States or Canada. Except for the limited warranties provided above, Intellihot Inc. disclaims any and all other warranties, including but not limited to warranties of merchantability and fitness for a particular purpose; provided, however, that implied warranties of merchantability and fitness for a particular purpose are not disclaimed during the 1-year period from the effective date. Intellihot shall not be liable for indirect, special, incidental, consequential, or other similar damages, including lost profits, arising from or relating to the unit. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

### How to Make a Claim

Please Call (877) 835-1705.

The warranty claim can be submitted online at <https://www.intellihot.com/warranty-claim/>

or

by calling (877) 835-1705. Proof of purchase in the form of a dated sales receipt or warranty registration should be included with your claim. The product owner should submit the warranty claim directly to Intellihot at the following address:

Intellihot Inc.

Attn: Warranty Claims

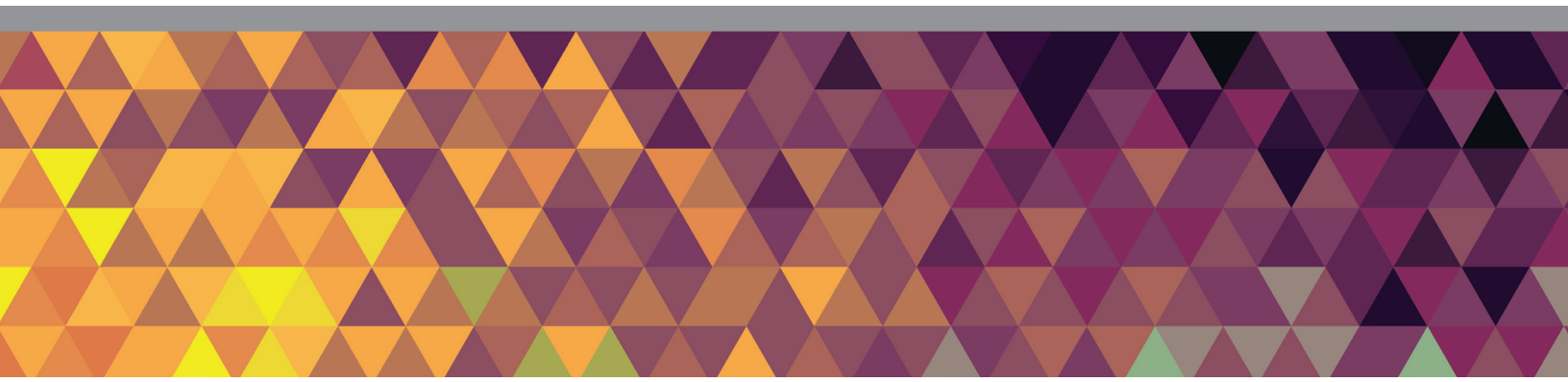
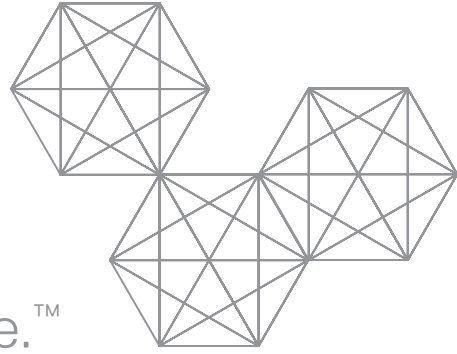
2900 W. Main St.

Galesburg, IL 61401

All parts claimed to be defective may be requested to be returned to Intellihot for examination prior to full claim settlement. Please include the following information on your warranty claim:

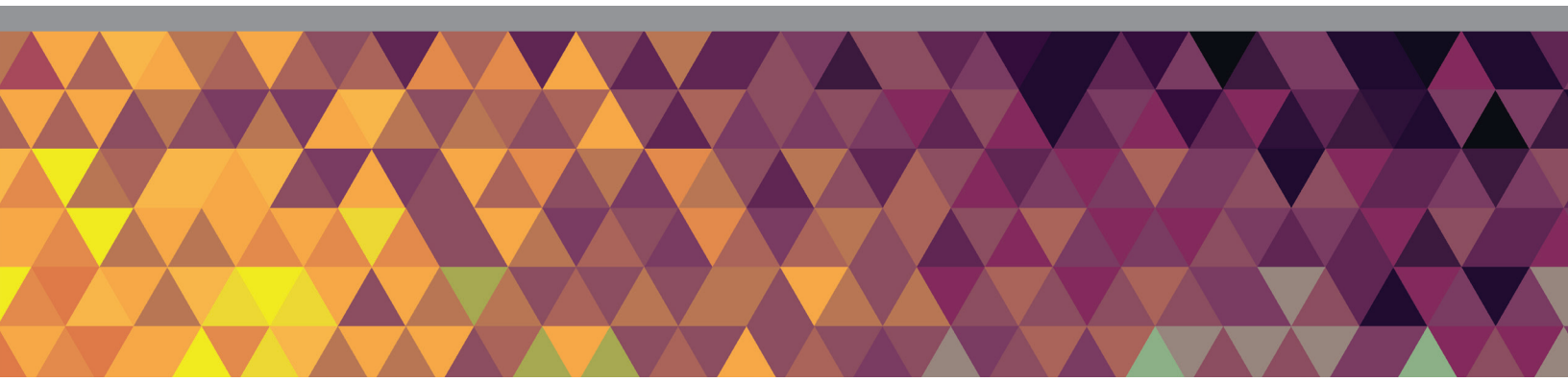
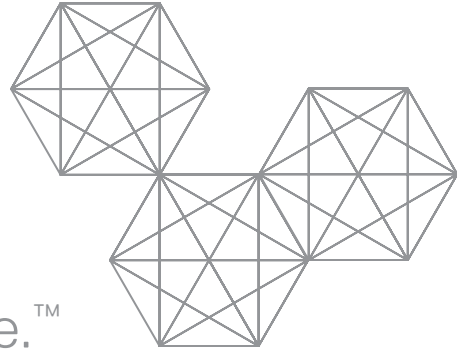
- Model number and serial number of the unit.
- Date of original purchase.
- Owner's name and address.
- A description of the problem with the part and unit.

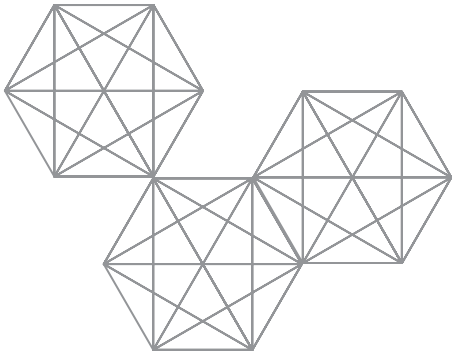
Endless water. Zero waste.<sup>TM</sup>





Endless water. Zero waste.<sup>TM</sup>





# Intellihot

Revised 10-2025  
Part#: IGT-MNL0024

