

DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK



CITY OF PORTLAND

BUILDING PERMIT

This is to certify that AMES-IRELAND PARTNERSHIP

Located At 1421 CONGRESS ST

Job ID: 2011-07-1796-HVAC

CBL: 194 - - C - 027 - 001 - - - -

has permission to Install 6 Prestige Triangle Tube gas boilers in the basement, direct vent provided that the person or persons, firm or corporation accepting this permit shall comply with all of the provisions of the Statues of Maine and of the Ordinances of the City of Portland regulating the construction, maintenance and use of the buildings and structures, and of the application on file in the department.

Notification of inspection and written permission procured before this building or part thereof is lathed or otherwise closed-in. 48 HOUR NOTICE IS REQUIRED.

A final inspection must be completed by owner before this building or part hereof is occupied. If a certificate of occupancy is required, it must be

Fire Prevention Officer


Code Enforcement Officer / Plan Reviewer

**THIS CARD MUST BE POSTED ON THE STREET SIDE OF THE PROPERTY
PENALTY FOR REMOVING THIS CARD**

City of Portland, Maine - Building or Use Permit Application

389 Congress Street, 04101 Tel: (207) 874-8703, FAX: (207) 8716

Job No: 2011-07-1796-HVAC	Date Applied: 7/27/2011	CBL: 194 - - C - 027 - 001 - - - - -	
Location of Construction: 1421 CONGRESS ST	Owner Name: AMES-IRELAND PARTNERSHIP	Owner Address: 347 MAIN ST GORHAM, ME - MAINE 04038	Phone:
Business Name:	Contractor Name: Steve Ames @ Zion Mechanical Heating Solutions Inc.	Contractor Address: PO Box 836, Gorham, ME 04038	Phone: 232-7525
Lessee/Buyer's Name:	Phone:	Permit Type: HVAC	Zone: R-5
Past Use: Six residential DU	Proposed Use: Same: six residential DU – to install a Triangle Tube heating system	Cost of Work: \$17,000.00	CEO District:
		Fire Dept: <input checked="" type="checkbox"/> Approved w/conditions <input type="checkbox"/> Denied <input type="checkbox"/> N/A	Inspection: Use Group: R-2 Type: Hutz DMC 2009 Signature: JMB 8/4/11
Proposed Project Description:		Pedestrian Activities District (P.A.D.)	

Permit Taken By: Lannie	Zoning Approval		
1. This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules. 2. Building Permits do not include plumbing, septic or electrical work. 3. Building permits are void if work is not started within six (6) months of the date of issuance. False informatin may invalidate a building permit and stop all work.	Special Zone or Reviews <input type="checkbox"/> Shoreland <input type="checkbox"/> Wetlands <input type="checkbox"/> Flood Zone <input type="checkbox"/> Subdivision <input type="checkbox"/> Site Plan <input type="checkbox"/> Maj <input type="checkbox"/> Min <input type="checkbox"/> MM Date: 7/29/11	Zoning Appeal <input type="checkbox"/> Variance <input type="checkbox"/> Miscellaneous <input type="checkbox"/> Conditional Use <input type="checkbox"/> Interpretation <input type="checkbox"/> Approved <input type="checkbox"/> Denied Date:	Historic Preservation <input checked="" type="checkbox"/> Not in Dist or Landmark <input type="checkbox"/> Does not Require Review <input type="checkbox"/> Requires Review <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/Conditions <input type="checkbox"/> Denied Date:
	CERTIFICATION		

I hereby certify that I am the owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent and I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in the appication is issued, I certify that the code official's authorized representative shall have the authority to enter all areas covered by such permit at any reasonable hour to enforce the provision of the code(s) applicable to such permit.

SIGNATURE OF APPLICANT	ADDRESS	DATE	PHONE
		DATE	PHON

BUILDING PERMIT INSPECTION PROCEDURES

Please call 874-8703 or 874-8693 (ONLY)

or email: buildinginspections@portlandmaine.gov

With the issuance of this permit, the owner, builder or their designee is required to provide adequate notice to the city of Portland Inspections Services for the following inspections. Appointments must be requested 48 to 72 hours in advance of the required inspection. The inspection date will need to be confirmed by this office.

- **Please read the conditions of approval that is attached to this permit!! Contact this office if you have any questions.**
- **Permits expire in 6 months. If the project is not started or ceases for 6 months.**
- **If the inspection requirements are not followed as stated below additional fees may be incurred due to the issuance of a "Stop Work Order" and subsequent release to continue.**

1. Final Inspection at completion of work

The project cannot move to the next phase prior to the required inspection and approval to continue, REGARDLESS OF THE NOTICE OF CIRCUMSTANCES.

IF THE PERMIT REQUIRES A CERTIFICATE OF OCCUPANCY, IT MUST BE PAID FOR AND ISSUED TO THE OWNER OR DESIGNEE BEFORE THE SPACE MAY BE OCCUPIED.



PORTLAND MAINE

Strengthening a Remarkable City, Building a Community for Life • www.portlandmaine.gov

Director of Planning and Urban Development
Penny St. Louis

Job ID: 2011-07-1796-HVAC

Located At: 1421 CONGRESS

CBL: 194 - - C - 027 - 001 - - - -

Conditions of Approval:

Fire

1. Installation shall comply with City Code Chapter 10.
2. Fuel-fired boilers shall be protected in accordance with NFPA 101, *Life Safety Code*.
3. Installation shall comply with NFPA 211, *Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances*; NFPA 54, *National Fuel Gas Code*; NFPA 70, *National Electrical Code*; and the manufacturer's published instructions.

Building

1. Application approval based upon information provided by applicant. Any deviation from approved plans requires separate review and approval prior to work.
2. The installation must comply with the State of Maine Gas Regulations.
3. The appliance and venting shall be installed in accordance with the manufacturers specs, UL listing, IMC 2003 and NFPA 211



FILL IN AND SIGN WITH INK

APPLICATION FOR PERMIT HEATING OR POWER EQUIPMENT



R-5

To the INSPECTOR OF BUILDINGS, PORTLAND, ME.

The undersigned hereby applies for a permit to install the following heating, cooking or power equipment in accordance with the Laws of Maine, the Building Code of the City of Portland, and the following specifications:

Location / CBL 1421 Congress St 194-C-27 Use of Building Apartment Date 7/26/11

Name and address of owner of appliance STEVE AMES PO BOX 836 Gorham ME 04038

Installer's name and address Zion Mechanical Heating Solutions inc Telephone 207-232-7525

Location of appliance:

- Basement
- Floor
- Attic
- Roof

Type of Fuel:

- Gas
- Oil
- Solid

Appliance Name: Triangle tube

U.L. Approved Yes No

Will appliance be installed in accordance with the manufacture's installation instructions? Yes No

IF NO Explain: _____

The Type of License of Installer:

- Master Plumber # _____
- Solid Fuel # _____
- Oil # _____
- Gas # PNT 808
- Other _____

Type of Chimney:

Masonry Lined
Factory built _____

Metal
Factory Built U.L. Listing # _____

Direct Vent
Type in c UL# _____

Type of Fuel Tank

- Oil
- Gas

Size of Tank N/A

Number of Tanks _____

Distance from Tank to Center of Flame _____ feet.

Cost of Work: \$ 17,000

Permit Fee: \$ 190

RECEIVED
JUL 26 2011
Dept. of Building Inspections
City of Portland Maine

11-26-11

Approved

Approved with Conditions

Fire: _____

Ele.: _____

Bldg.: _____

See attached letter or requirement

Inspector's Signature

Date Approved

Signature of Installer [Signature]

White - Inspection

Yellow - File

Pink - Applicant's

Gold - Assessor's Copy

prestige

Solo 60
Solo 175
Solo 250
Solo 399
Water Boiler



* INSTALLATION AND MAINTENANCE * M A N U A L

NOTICE

Warranty Registration Card must be filled out by the customer and mailed within thirty (30) days of installation in order to gain warranty coverage.

When receiving the PRESTIGE Solo unit, any claims for damage or shortage in shipment must be filed immediately against the transportation company by the consignee.

Leave all documentation received with appliance with owner for future reference.

⚠ WARNING

If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury or death.

FOR YOUR SAFETY

- 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.

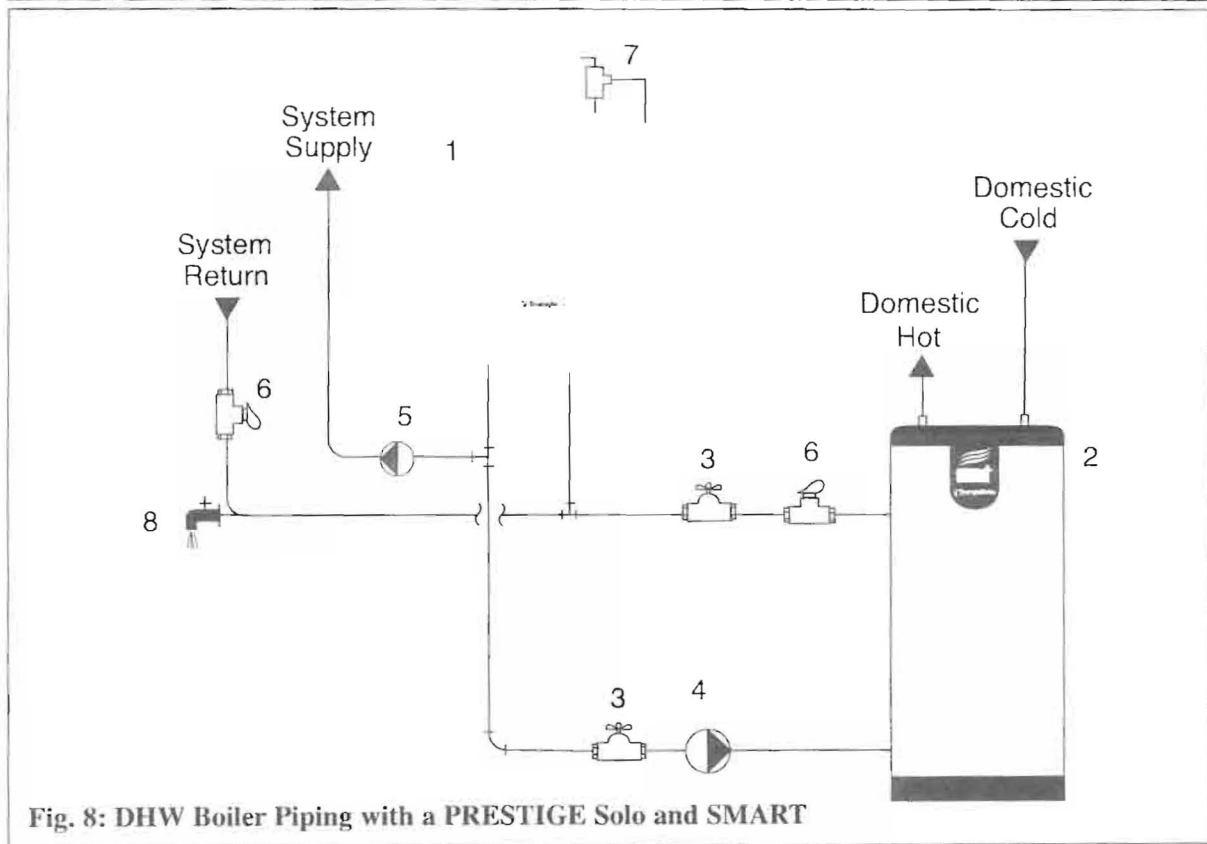


Fig. 8: DHW Boiler Piping with a PRESTIGE Solo and SMART

- | | |
|-------------------------|--------------------------|
| 1. PRESTIGE Solo boiler | 6. Flow/check valve |
| 2. SMART water heater | 7. Pressure relief valve |
| 3. Isolation valve | 8. Drain/purge valve |
| 4. DHW circulator | |
| 5. CH circulator | |

NOTICE

The boiler system piping shown in Fig. 8 must be a “closed” system to avoid any oxygen contamination and potential failure of the outer tank of the Smart.

System Piping - Zone Valves

Connect the PRESTIGE Solo to the system piping as shown in Fig. 10 page 21 when zoning with zone valves. The primary / secondary piping ensures that the boiler loop has sufficient flow.

NOTICE

To ensure an adequate flow rate through the PRESTIGE Solo, the boiler supply and return piping size must be a minimum of 1 inch for the PRESTIGE Solo 60, 1-1/4 inch for the PRESTIGE Solo 175/250 and 1-1/2 inch for the PRESTIGE Solo 399.

System Piping - Through Boiler

In new or retrofit applications in which primary/secondary arrangement is not utilized, the PRESTIGE Solo allows this flexibility due to a lower boiler pressure drop, see Graphs 2 through 7 on pages 75 through 77.

Figure 11, page 22 illustrates a multiple zone valve system with a single system/boiler circulator. A by-pass loop with a pressure differential valve must be installed on the system piping.

Figure 12, page 22 illustrates a single zone utilizing the boiler circulator as the system circulator.

System Piping - Radiant Heating

The heat exchanger design of the PRESTIGE Solo allows operation in a condensing mode. This feature requires no regulation of the return water temperature back to the boiler in radiant heating applications.

The boiler water supply temperature can be maintained by the PRESTIGE Solo, eliminating the need for a mix system to achieve the desired temperature.

It is recommended for the installer to add a high temperature limit as shown in Fig. 13 page 23. This will ensure that the primary supply temperature does not exceed the maximum allowable temperature for the radiant tubing.

BEST PRACTICE

The addition of the high temperature limit is important if the PRESTIGE Solo is connected to a domestic hot water system, which requires a high primary supply water temperature.

Size the system piping and circulator to provide the flow needed for the radiant system.

NOTICE

To ensure an adequate flow rate through the PRESTIGE Solo, the boiler supply and return piping size must be a minimum of 1 inch for the PRESTIGE Solo 60, 1-1/4 inch for the PRESTIGE Solo 175/250 and 1-1/2 inch for the PRESTIGE Solo 399.

System Piping - Special Application

If the boiler is used in conjunction with a chilled water/medium system, the boiler and chiller must be piped in parallel. Install flow/check valves to prevent the chilled medium from entering into the boiler.

If the boiler is used to supply hot water to the heating coils of an air handler where they may be exposed to chilled air circulation, install flow/check valves or other automatic means to prevent gravity circulation of the boiler water during cooling cycles.

System Piping - Multiple Units Installation

Use a balanced manifold system as the primary / secondary connection to the space heating piping as shown in Fig. 14 page 24.

Maintain a minimum of 6 inches [153 mm] of clearance between units to allow for servicing.

Refer to Figs. 6 and 7 page 18 to install air separator and expansion tank.

For the space heating piping refer to the applications mentioned in this manual or use recognized design methods.

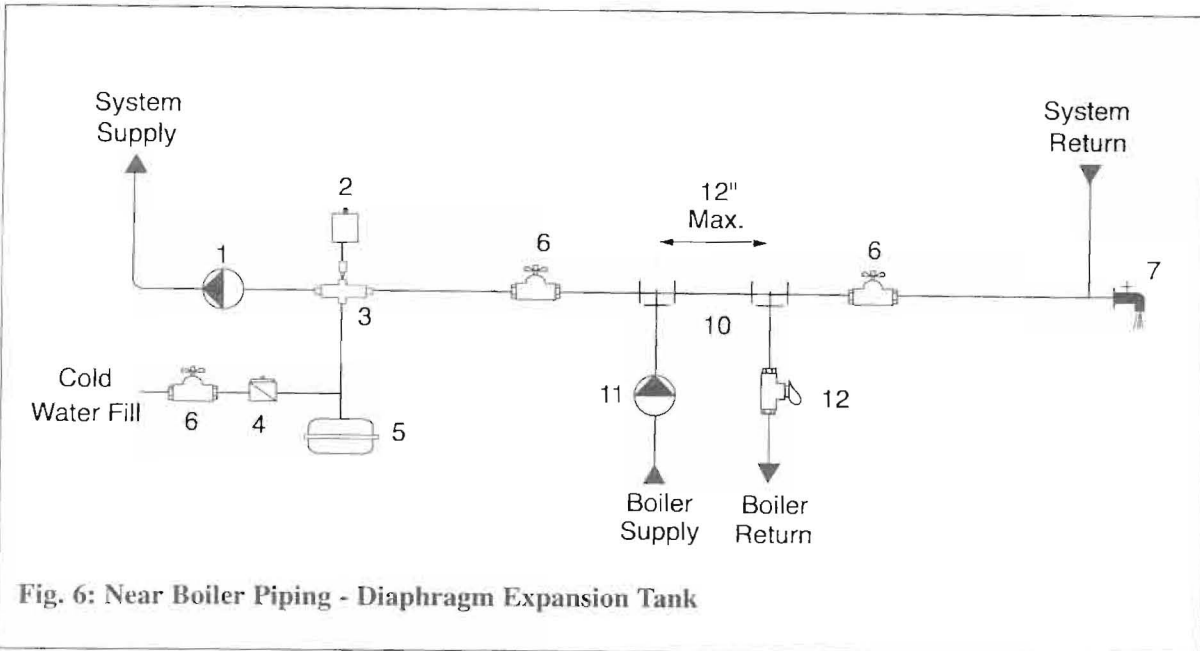
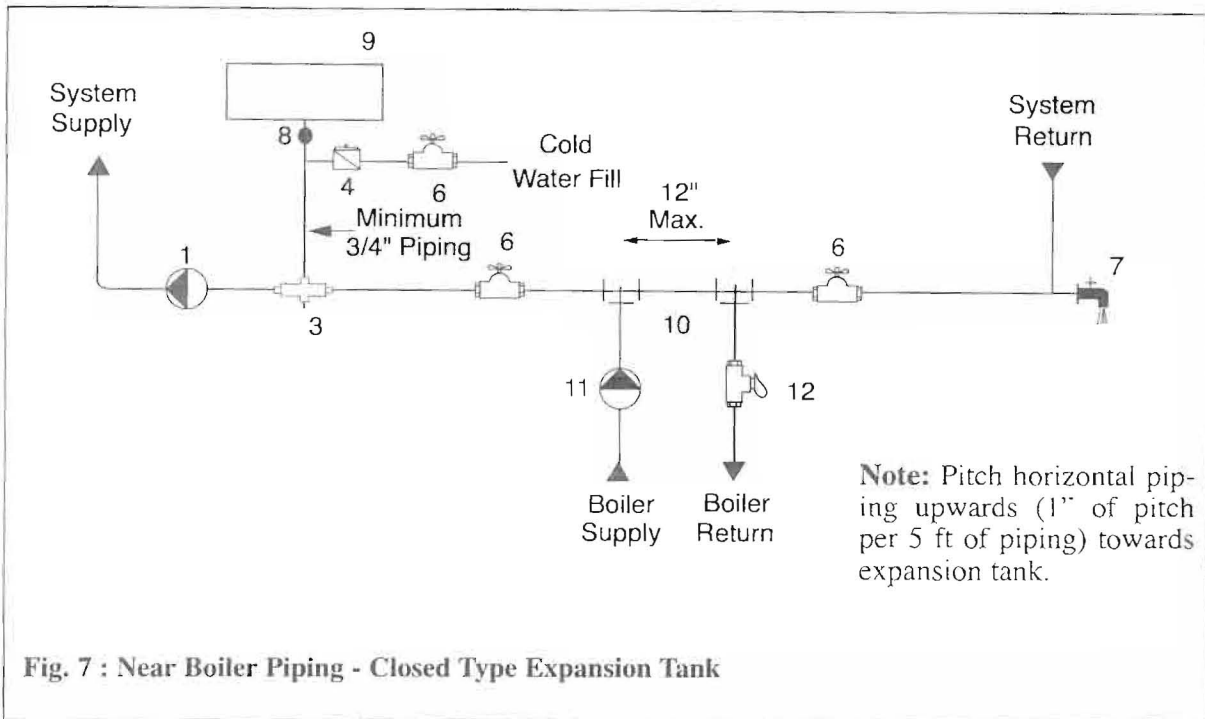


Fig. 6: Near Boiler Piping - Diaphragm Expansion Tank



Note: Pitch horizontal piping upwards (1" of pitch per 5 ft of piping) towards expansion tank.

Fig. 7 : Near Boiler Piping - Closed Type Expansion Tank

- | | |
|-----------------------------|----------------------------------|
| 1. System circulator | 7. Drain/purge valve |
| 2. Automatic air vent | 8. Tank fitting |
| 3. Air separator | 9. Closed type expansion tank |
| 4. Automatic fill valve | 10. Primary/secondary connection |
| 5. Diaphragm expansion tank | 11. Boiler circulator |
| 6. Isolation valve | 12. Flow/check valve |

The expansion tank must be located as shown in Fig. 6 and Fig. 7 on page 18 when using a primary/secondary piping arrangement or as per recognized design methods. Refer to the expansion tank manufacturer instructions for additional installation details.

Connect the expansion tank to an air separator only if the air separator is located on the suction side (inlet) of the system circulator. Always locate and install the system fill connection at the same location as the expansion tank connection to the system.

Diaphragm Expansion Tank

Always install an automatic air vent on the top of the air separator to remove residual air from the system.

Closed-Type Expansion Tank

It is recommended to pitch any horizontal piping upwards toward the expansion tank 1 inch per 5 feet of piping. Use 3/4" piping for the expansion tank to allow air within the system to rise.



DO NOT install automatic air vents on a closed-type expansion tank system. Air must remain in the system and be returned to the expansion tank to provide an air cushion. An automatic air vent would cause air to be vented from the system resulting in a water-logged expansion tank.

Circulator

The PRESTIGE Solo must be supplied with a Central Heating (CH) circulator. The circulator when wired directly to the PRESTIGE Solo will allow for domestic hot water priority and to provide circulation for the freeze protection feature of the boiler control. See Graphs 2 through 5 on pages 72 & 73 for pressure drop and minimum flow rate through the boiler.

Sizing Primary Piping

See Fig. 8 through 14, pages 20 - 24, for recommended piping arrangements based on various applications. Size the piping and system components required in the space heating system, using recognized design methods.

Domestic Hot Water System Piping

See Fig. 8, page 20 for recommended piping to a DHW system. This recommended piping configuration ensures priority is given to the production and recovery of the DHW.

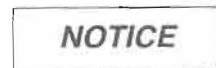
The piping for the DHW is separate from the boiler system piping and does not require a primary / secondary piping configuration.

To wire the DHW circulator to the boiler control module, reference Section VIII - External Wiring.

System Piping - Zone Circulators

Connect the PRESTIGE Solo to the system piping as shown in Fig. 9 page 21 when zoning with zone circulators.

The installer must provide a separate circulator for each zone of space heating as well as the boiler circulator.



To ensure an adequate flow rate through the PRESTIGE Solo, the boiler supply and return piping size must be a minimum of 1 inch for the PRESTIGE Solo 60, 1-1/4 inch for the PRESTIGE Solo 175/250 and 1-1/2 inch for the PRESTIGE Solo 399.

Additional Limit Control

If a separate LWCO device is required by certain local jurisdictions or when the boiler is installed above the system piping, the following guidelines must be followed:

- The LWCO device must be designed for water installations, electrode probe-type is recommended.
- The LWCO device must be installed in a tee connection on the boiler supply piping above the boiler.
- Wiring of the LWCO device to the PRESTIGE Solo is done directly onto the 24V terminal strip, reference Fig. 20 page 32 for available terminals for an external limit (manual or auto reset).

If the installation is to comply with ASME or Canadian requirements, an additional high temperature limit may be needed. Consult local code requirements to determine compliance. The limit should be installed as follows:

- Install the limit in the boiler supply piping between the boiler and any isolation valve.
- Maximum set point for the limit is 194°F.
- For wiring of the limit reference Fig. 20, page 32, using the external limit/manual reset terminals on the 24V terminal strip. This will provide a "hard" lockout requiring a manual reset of the control.

Backflow Preventer

- Use a backflow preventer valve in the make-up water supply to the unit as required by local codes.

Boiler System Piping Applications

BEST PRACTICE

It is recommended on all piping applications to utilize a primary/secondary piping arrangement as a means to provide freeze protection of the boiler, which is an integral function of the boiler control. Maintain the minimum boiler flow rate, see Graphs 2 through 5 on pages 72 & 73. For other piping arrangements, consult the Engineering Department at Triangle Tube or consult other approved/recognized design arrangements.

BEST PRACTICE

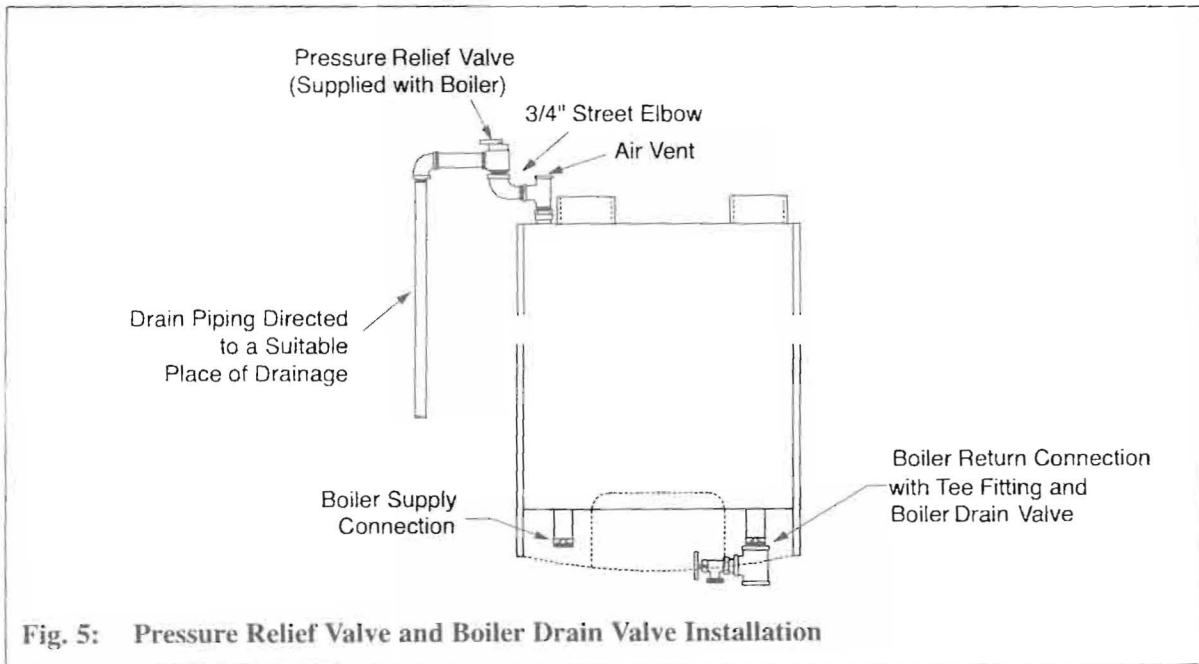
On piping applications utilizing a single zone or other recognized piping design arrangements, it is recommended that the installer uses flow/check valves with weighted seats at or near the appliance to prevent gravity circulation.

Expansion Tank and Makeup Water

Ensure the expansion tank is properly sized for the boiler volume (3 gallons [12 L] for the PRESTIGE Solo 60, 5 gallons [19 L] for the PRESTIGE Solo 175/250, 7 gallons [26 L] for PRESTIGE Solo 399) and the system volume and temperature.

CAUTION

Undersized expansion tanks will cause system water to be lost through the pressure relief valve and cause additional makeup water to be added to the system. Eventual boiler heat exchanger failure can result due to this excessive makeup water addition.



SECTION IV - Boiler Piping

General Piping Requirements

- All plumbing must meet or exceed all local, state and national plumbing codes.
- Support all piping using hangers. **DO NOT** support piping by the unit or its components.
- Use isolation valves to isolate system components.
- Install unions for easy removal of the PRESTIGE Solo from the system piping.

 **WARNING**

Use a two wrench method when tightening piping onto the boiler connections. Use one wrench to prevent the boiler piping from turning / twisting. Failure to support the boiler piping and connections in this manner could cause damage to the boiler and its components.

Pressure Relief Valve

1. The PRESTIGE Solo is supplied with a 30 psi pressure relief valve and must be piped using the PRV connection as shown in Fig. 5 page 15.
2. To avoid potential water damage to the surrounding area or potential scalding hazard due to the operation of the relief valve, the discharge piping:
 - Must be connected to the discharge outlet of the relief valve and directed to a safe place of disposal.
 - Length should be as short and direct as possible. The size of the discharge line should not be reduced, maintain the same size as the outlet of the relief valve.
 - Should be directed downward towards the floor at all times. The piping should terminate at least 6 inches [153 mm] above any drain connection to allow clear visibility of the discharge.

- Should terminate with a plain end, not with a threaded end. The material of the piping should have a serviceable temperature rating of 250°F or greater.
- Should not be subject to conditions where freezing could occur.
- Should not contain any shut-off valves or obstructions. No shut-off valve should be piped between the boiler and relief valve.

 **WARNING**

Failure to comply with the guidelines on installing the pressure relief valve and discharge piping can result in personal injury, death or substantial property damage.

Low Water Cutoff Device

- The PRESTIGE Solo is equipped with a factory installed pressure switch type Low Water Cut Off device.
- The minimum operating system pressure allowable with this device is 10 psig.
- Check local codes if a Low Water Cutoff Device is required. If so, determine if this device meets the requirements of the local codes.

 **NOTICE**

The PRESTIGE Solo control system also senses the system water temperatures entering and exiting the heat exchanger to provide protection against low water conditions. Where local codes and jurisdiction do not accept a pressure device for low water protection, the jurisdictions may accept these PRESTIGE Solo integral control functions as a means of providing low water protection.

PRESTIGE Solo 60/175/250 Stud Walls - Installation

1. Locate the studs in the general area of the boiler placement.
2. Place the wall-mounting bracket on the wall centering the mounting slots with the stud centers and ensuring the upper edge of the bracket is away from the wall.
3. Level the bracket, while maintaining it's centering with the studs and use a pencil to mark the location of the mounting slots.
4. Remove the bracket from the wall and drill 1/4" diameter hole by 3" deep positioned in the center of each mark. For applications using metal studs and 3/16" toggle bolts, drill the required clearance hole.
5. Reposition the bracket onto the wall and align mounting slots/holes. Insert the two lag screws provided (or toggle bolts for metal studs) through the mounting slots/holes and loosely tighten.
6. Level bracket and tighten screws (bolts for metal studs) securely making sure not to over-tighten to avoid damaging drywall or plaster.

PRESTIGE Solo 399 Stud Walls - Installation

1. To distribute the weight of the boiler evenly when mounting onto a stud wall it is recommended to use the PRESTIGE Solo Wall Frame kit.
2. When using the wall frame to mount the boiler reference the kit installation instructions and ensure the frame is securely fastened to the wall.
3. If the structure of wall is questionable, in supporting a minimum weight of 250 pounds [115 kg.], it is recommended to use the optional floor stand.

Wall Bracket Installation - Solid Walls

1. Locate the general area of the boiler placement.
2. Place the wall-mounting bracket on the wall ensuring the upper edge of the bracket is away from the wall.
3. Level the bracket and use a pencil to mark the location of the mounting slots on the wall.
4. Remove the bracket from the wall and drill a 5/8" diameter hole by 1-3/8" deep positioned in the center of each mark.
5. Install the anchors (provided) flush or slightly recessed in the drilled holes with threaded side facing down.
6. Reposition the bracket on the wall and align mounting slots/holes. Insert the two bolts (provided) through the mounting slots/holes and loosely tighten.
7. Level bracket and tighten bolts securely.

Boiler Mounting

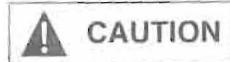
1. Obtain assistance in lifting the boiler onto the wall bracket.
2. Install the boiler making sure the boiler mounting lip located along the upper edge of the rear jacket panel engages the wall-mounting bracket. Ensure the boiler is seated properly and is secure.

SECTION III - Unit Preparations

Handling Instructions

The PRESTIGE Solo is generally easier to handle and maneuver once removed from the shipping carton.

To remove the shipping carton:



Use care not to lift the unit from, or place the unit on the front plastic control panel, damage can occur. Use care not to drop, bump or rotate the boiler upside down, as damage to the boiler will result.

1. Remove any shipping straps and open the side of the shipping carton.
2. Slide the unit with the foam inserts out of the carton.
3. Discard all packing materials.

Wall Mounting Installation

The PRESTIGE Solo should be wall mounted using the bracket provided with the boiler. The PRESTIGE Solo is not designed for floor installation. If floor installation is required an optional floor stand is available through Triangle Tube.

NOTICE

The wall used for mounting the PRESTIGE Solo must be vertically plumbed and capable of supporting a minimum 130 pounds [59 kg] for the PRESTIGE Solo 60, 175 pounds [80 kg] for PRESTIGE Solo 175/250 and 250 pounds [115 Kg] for PRESTIGE Solo 399. Failure to comply with these requirements could result in personal injury, death or substantial property damage.

Wall Mounting Guidelines

1. The wall-mounting bracket is designed for stud spacing of 12 inch or 16 inch on centers. For unconventional stud spacing, a solid / secure mounting surface must be provided for installation of the bracket.
2. For applications using wood studs, install the bracket using the lag screws provided with the boiler. Ensure both lag screws are installed securely in the studs.
3. For applications using metal studs, install the bracket to the studs using 3/16" toggle bolts and washers.
4. DO NOT mount or attempt to mount the wall bracket to hollow sheet rock or lath walls using anchors. Only install boiler to studs or equivalent wood structure.
5. For applications using solid walls (rock, concrete, brick, cinder block, etc.), install the wall bracket using anchors (double expansion shields) and bolts with washers provided with the boiler.
6. The boiler is too heavy and bulky for a single person to lift and attempt to mount; a minimum of 2 people is required for mounting the boiler.

NOTICE

Use extreme care not to drop the boiler or cause bodily injury while lifting or mounting the boiler onto the bracket. Once mounted verify that the boiler is securely attached to the bracket and wall. Failure to comply with the above guidelines could result in property damage, personal injury or death.

Commonwealth of Massachusetts Installations Only

For direct-vent appliances, mechanical-vent heating appliances or domestic hot water equipment, where the bottom of the vent terminal and the air intake is installed below four feet above grade the following requirements must be satisfied:

1. If there is not one already present, on each floor level where there are bedroom(s), a carbon monoxide detector and alarm shall be placed in the living area outside the bedroom(s). The carbon monoxide detector shall comply with NFPA 720 (2005 Edition).
2. A carbon monoxide detector shall also be located in the room that houses the appliance or equipment and shall:
 - a. Be powered by the same electrical circuit as the appliance or equipment such that only one service switch services both the appliance and the carbon monoxide detector;
 - b. Have battery back-up power;
 - c. Meet ANSI/UL 2034 Standards and comply with NFPA 720 (2005 Edition); and
 - d. Have been approved and listed by the Nationally Recognized Testing Laboratory as recognized under 527 CMR.
3. A Product-approved vent terminal must be used, and if applicable, a Product-approved air intake must be used. Installation shall be in strict compliance with the manufacturer's instructions. A copy of the installation instructions shall remain with the appliance or equipment at the completion of the installation.
4. A metal or plastic identification plate shall be mounted at the exterior of the building, four feet directly above the location of vent terminal. The plate shall be of sufficient size to be easily read from a distance of eight feet away, and read "Gas Vent Directly Below".

NOTICE

Installer must provide tag identification plate and ensure the lettering meets code requirements.

For direct-vent appliances, mechanical-vent heating appliances or domestic hot water equipment, where the bottom of the vent terminal and the air intake are installed above four feet above grade the following requirements must be satisfied:

1. If there is not one already present, on each floor level where there are bedroom(s), a carbon monoxide detector and alarm shall be placed in the living area outside the bedroom(s). The carbon monoxide detector shall comply with NFPA 720 (2005 Edition).
2. A carbon monoxide detector shall:
 - a. Be located in the room that houses the appliances or equipment;
 - b. Be either hard wired or battery powered or both; and
 - c. Shall comply with NFPA 720 (2005 Edition)
3. A Product-approved vent terminal must be used, and if applicable, a Product-approved air intake must be used. Installation shall be in strict compliance with the manufacturer's instructions. A copy of the installation instructions shall remain with the appliance or equipment at the completion of the installation.

Removal of an Existing Boiler from a Common Vent System

BEST PRACTICE

When an existing boiler is removed from a common venting system, the common venting system is likely to be too large for proper venting of the remaining appliances. At the time of removal of an existing boiler, the following steps shall be followed with each appliance remaining connected to the common venting system placed in operation, while the other appliances remaining connected to the common venting system are not in operation.

1. Seal any unused openings in the common venting system.
2. Visually inspect the venting system for proper size and horizontal pitch and determine there is no blockage or restriction, leakage, corrosion and other deficiencies which could cause an unsafe condition.
3. Insofar as is practical, close all building doors and windows and all doors between the space in which the appliances remaining connected to the common venting system are located and other spaces of the building. Turn on clothes dryers and any appliance not connected to the common venting system. Turn on any exhaust fans, such as range hoods and bathroom exhausts, so they will operate at maximum speed. Do not operate a summer exhaust fan. Close fireplace dampers.
4. Place in operation the appliance being inspected. Follow the lighting instructions. Adjust thermostat so appliance will operate continuously.

5. Test for spillage at the draft hood relief opening after 5 minutes of main burner operation. Use the flame of a match or candle, or smoke from a cigarette, cigar or pipe.
6. After it has been determined that each appliance remaining connected to the common venting system properly vents when tested as outlined above, return doors, windows, exhaust fans, fireplace dampers, and any other gas-burning appliance to their previous condition of use.
7. Any improper operation of the common venting system should be corrected so the installation conforms with the National Fuel Gas Code, ANSI Z223.1/NFPA 54 and/or CAN/CGA B149, Installation codes. When resizing any portion of the common venting system, the common venting system should be resized to approach the minimum size as determined using the appropriate tables in Part II of the National Fuel Gas Code ANSI Z223.1/NFPA 54 and/or CAN/CGA B149, Installation codes.

DANGER

Do not install the PRESTIGE Solo into a common vent with other gas or oil appliances. This may cause flue gas spillage or appliance malfunction, resulting in possible severe personal injury, death or substantial property damage.

Combustion Air Venting



Outdoor Opening(s) Location. Outdoor opening(s) shall be located in accordance with the Outdoor Combustion Air section.

Outdoor Opening(s) Size. Outdoor opening(s) shall be calculated in accordance with the following:

- The ratio of the interior spaces shall be the available volume of all communicating spaces divided by the required volume.
- The outdoor size reduction factor shall be 1 minus the ratio of interior spaces.
- The minimum size of outdoor opening(s) calculated in accordance with the above outdoor air section multiplied by the reduction factor. The minimum dimension of air openings shall not be less than 3 in.

DANGER

Do not install the PRESTIGE Solo into a common vent with other gas or oil appliances. This may cause flue gas spillage or appliance malfunction, resulting in possible severe personal injury, death or substantial property damage.

Combustion Air and Vent Piping

The PRESTIGE Solo requires a Category IV venting system, which is designed for pressurized venting and condensate.

The PRESTIGE Solo is certified per ANSI Z21.13 as a Category IV or Direct Vent (sealed combustion) appliance. A Category IV appliance utilizes uncontaminated indoor or outdoor air (surrounding the appliance) for combustion. A Direct Vent appliance utilizes uncontaminated outdoor air (piped directly to the appliance) for combustion.

BEST PRACTICE

In order to reduce the potential risks associated with indoor contaminants (listed on page 5), flammable vapors and tight housing construction (little or no infiltration air), it is recommended to pipe uncontaminated combustion air directly from the outdoors to the appliance. This practice also promotes higher system efficiency by reducing heated indoor air from being exhausted from the house and replaced by cold infiltration air into the house.

NOTICE

Install combustion air and vent pipe as detailed in the PRESTIGE Solo Vent Supplement included in the boiler installation envelope. Refer to optional vent kit instructions for addition vent installation instructions.

DANGER

Verify installed combustion air and vent piping are sealed gas tight and meet all provided instructions and applicable codes, failure to comply will result in severe personal injury or death.

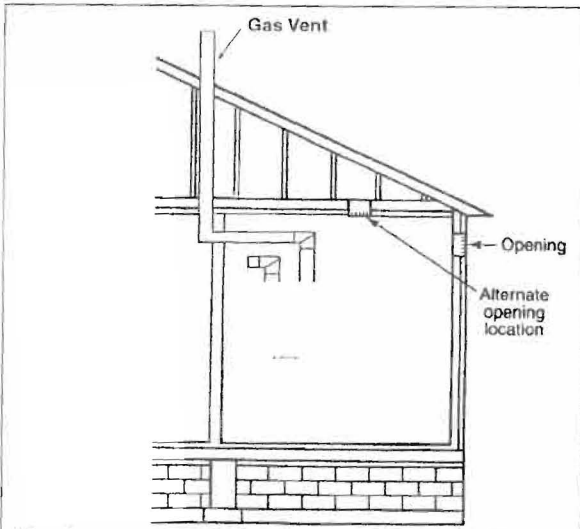


Fig. 2: All Combustion Air from Outdoors Through One Permanent Air Opening

- Not less than the sum of the areas of all vent connectors in the space.

Two Permanent Openings Method.

Two permanent openings, one commencing within 12 in. of the top and one commencing within 12 in. of the bottom of the enclosure, shall be provided. The openings shall communicate directly, or by ducts, with the outdoors or spaces that freely communicate with the outdoors, as follows:

- Where directly communicating with the outdoors or where communication to the outdoors is through vertical ducts, each opening shall have a minimum free area of 1 sq. in./4000 Btu/hr of total input rating of all equipment in the enclosure. See Fig.3.
- Where communicating with the outdoors is through horizontal ducts, each opening shall have a minimum free area of not less than 1 sq.in./2000 Btu/hr of total input rating of all equipment in the enclosure. See Fig. 4.

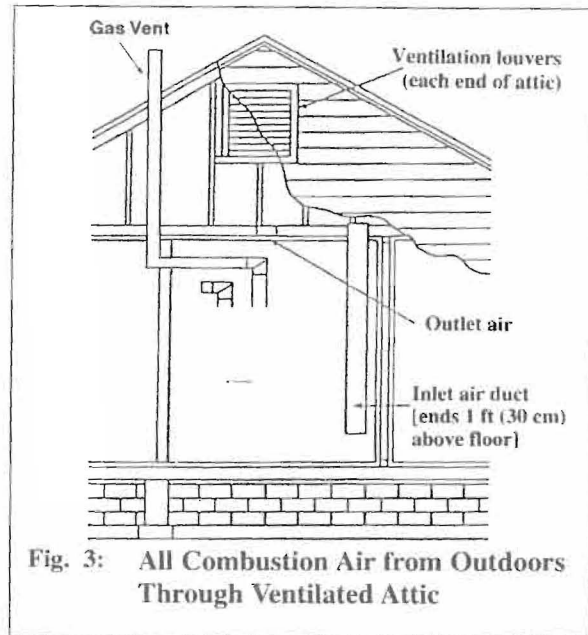


Fig. 3: All Combustion Air from Outdoors Through Ventilated Attic

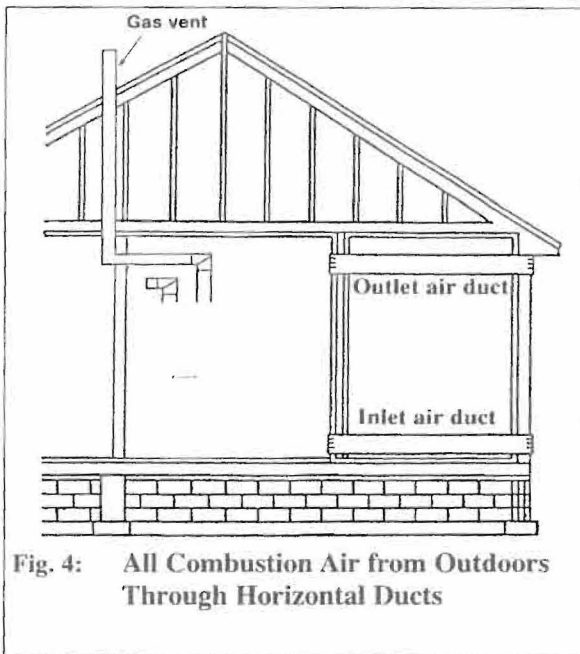


Fig. 4: All Combustion Air from Outdoors Through Horizontal Ducts

Combination of Indoor and Outdoor Combustion Air

Indoor Openings: Where used, openings connecting the interior spaces shall comply with the Indoor Combustion Air section on page 7.

Methods of Accessing Combustion Air Into A Space - Category IV

Indoor Combustion Air

NOTICE

The methods listed in this section for accessing Indoor Combustion Air assume that the infiltration rate is adequate and not less than .40 ACH. For infiltration rates less than .40 ACH, reference the NFPA 54 National Fuel Gas Code for additional guidance.

Opening Size and Location

Openings used to connect indoor spaces shall be sized and located in accordance with the following see Fig. 1:

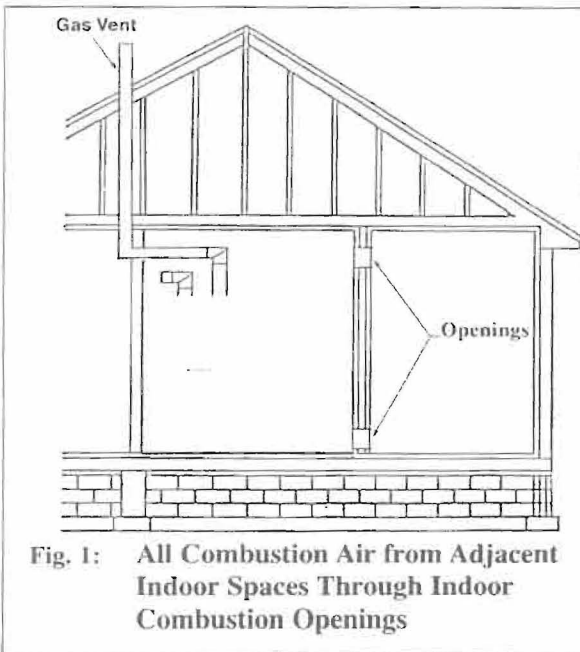


Fig. 1: All Combustion Air from Adjacent Indoor Spaces Through Indoor Combustion Openings

- Combining spaces on the same story. Each opening shall have a minimum free area of 1 sq. in./1000 Btu/hr of the total input rating of all gas utilization equipment in the space, but not less than 100 sq. inches. One opening shall commence within 12 inches of the top, and one opening shall commence within 12 inches of the bottom of the enclosure.

The minimum dimension of air openings shall be not less than 3 inches.

- Combining spaces in different stories. The volumes of spaces in different stories shall be considered as communicating spaces where such spaces are connected by one or more openings in doors or floors having a total minimum free area of 2 sq. in./1000 Btu/hr of total input rating of all gas utilization equipment.

Outdoor Combustion Air

BEST PRACTICE

Isolating the combustion appliance room from the rest of the building and bringing in uncontaminated outside air for combustion and ventilation is always preferred.

Opening Size and Location

The minimum dimension of air openings shall be not less than 3 inches

Openings used to supply combustion and ventilation air shall be sized and located in accordance with the following:

One Permanent Opening Method. See Fig. 2

One permanent opening, commencing within 12 in. of the top of the enclosure, shall be provided. The equipment shall have clearances of at least 1 inch from the sides and 6 in. from the front of the appliance. The opening shall directly communicate with the outdoors or shall communicate through a vertical or horizontal duct to the outdoors or spaces that freely communicate with the outdoors and shall have a minimum free area of the following:

- 1sq. in./3000 Btu/hr of the total input rating of all equipment located in the enclosures, and

Ventilation and Combustion Air Requirements - Direct Vent

A Direct Vent appliance utilizes uncontaminated outdoor air (piped directly to the appliance) for combustion.

For Direct Vent installations, involving only the PRESTIGE Solo, in which the minimum service clearances are maintained as listed on page 4, no ventilation openings are required.

For Direct Vent, zero clearance installations involving only the PRESTIGE Solo, the space / enclosure must provide two openings for ventilation. The openings must be sized to provide 1 square inch of free area per 1,000 BTUH of boiler input. The openings shall be placed 12 inches from the top of the space and 12 inches from the floor of the space.

For installations in which the PRESTIGE Solo shares the space with air movers (exhaust fan, clothes dryers, fireplaces, etc.) and other combustion equipment (gas or oil) the space must be provided with adequate air openings to provide ventilation and combustion air to the equipment. To properly size the ventilation / combustion air openings, the installer must comply with the National Fuel Gas Code NFPA 54, ANSI Z223.1 for installations in the U.S or CSA B149.1 and B149.2 for installations in Canada.

WARNING

The space must be provided with ventilation / combustion air openings properly sized for all make-up air requirements (exhaust fans, clothes dryers, fireplaces, etc.) and the total input of all appliances located in the same space as the PRESTIGE Solo, excluding the input of a Direct Vent PRESTIGE Solo which uses combustion air directly from the outside, thus additional free area for the openings is not required. Failure to provide or properly size the openings could result in severe personal injury, death or substantial property damage.

Ventilation and Combustion Air Requirements - Category IV

A Category IV appliance utilizes uncontaminated indoor or outdoor air (surrounding the appliance) for combustion.

BEST PRACTICE

In order to reduce the potential risks associated with indoor contaminants (listed on page 5), flammable vapors and tight housing construction (little or no infiltration air), it is recommended to pipe uncontaminated combustion air directly from the outdoors to the appliance. This practice also promotes higher system efficiency by reducing heated indoor air from being exhausted from the house and replaced by cold infiltration air into the house.

For installations in which the PRESTIGE Solo shares the space with air movers (exhaust fan, clothes dryers, fireplaces, etc.) and other combustion equipment (gas or oil) the space must be provided with adequate air openings to provide ventilation and combustion air to the equipment. To properly size the ventilation / combustion air openings, the installer must comply with the National Fuel Gas Code NFPA 54, ANSI Z223.1 for installations in the U.S or CSA B149.1 and B149.2 for installations in Canada, as referenced in this section of the manual and titled Methods of Accessing Combustion Air into a Space.

WARNING

The space must be provided with ventilation / combustion air openings properly sized for all make-up air requirements (exhaust fans, clothes dryers, fireplaces, etc.) and the total input of all appliances, including the PRESTIGE Solo when located in the same space. Failure to provide or properly size the openings could result in severe personal injury, death or substantial property damage.

SECTION II - Combustion Air and Venting

Combustion Air Contamination

⚠ WARNING

If the PRESTIGE Solo combustion air inlet is located in any area likely to cause or contain contamination, or if products, which would contaminate the air cannot be removed, the combustion air must be repiped and terminated to another location. Contaminated combustion air will damage the unit and its burner system, resulting in possible severe personal injury, death or substantial property damage.

⚠ WARNING

Do not operate a PRESTIGE Solo if its combustion air inlet is located near a laundry room or pool facility. These areas will always contain hazardous contaminants.

Pool and laundry products and common household and hobby products often contain fluorine or chlorine compounds. When these chemicals pass through the burner and vent system, they can form strong acids. These acids can create corrosion of the heat exchanger, burner components and vent system, causing serious damage and presenting a possible threat of flue gas spillage or water leakage into the surrounding area.

Please read the information listed below. If contaminating chemicals are located near the area of the combustion air inlet, the installer should pipe the combustion air inlet to an outside area free of these chemicals per SECTION V of this installation manual.

Potential contaminating products

- Spray cans containing chloro/fluorocarbons
- Permanent Wave Solutions
- Chlorinated wax
- Chlorine - based swimming pool chemicals / cleaners
- Calcium Chloride used for thawing ice
- Sodium Chloride used for water softening
- Refrigerant leaks
- Paint or varnish removers
- Hydrochloric acid / muriatic acid
- Cements and glues
- Antistatic fabric softeners used in clothes dryers
- Chlorine-type bleaches, detergents, and cleaning solvents found in household laundry rooms
- Adhesives used to fasten building products and other similar products

Areas likely to contain these products

- Dry cleaning / laundry areas and establishments
- Beauty salons
- Metal fabrication shops
- Swimming pools and health spas
- Refrigeration Repair shops
- Photo processing plants
- Auto body shops
- Plastic manufacturing plants
- Furniture refinishing areas and establishments
- New building construction
- Remodeling areas
- Garages with workshops

- Reference the appropriate vent supplement for clearance requirements.

BEST PRACTICE

To provide serviceability to the unit it is recommended that the following clearances be maintained:

- Top boiler jacket - 24 inches [610 mm].
- Front - 24 inches [610 mm].
- Bottom boiler piping - 24 inches [610 mm].
- Rear - 0 inches
- Sides - 6 inches [153 mm]

WARNING

If the clearances listed above cannot be maintained or the enclosure in which the boiler is installed is less than 85 cubic feet, the space must be ventilated. See page 6 for ventilation requirements.

NOTICE

When maintaining zero clearance or less than recommended clearances, some product labeling may become hidden and unreadable.

WARNING

When installing the PRESTIGE Solo in a confined space, sufficient air must be provided for proper combustion and venting and to allow, under normal operating conditions, proper air flow around the product to maintain ambient temperatures within safe limits to comply with the National Fuel Gas Code NFPA 54 - latest edition.

Residential Garage Installations

When installing the PRESTIGE Solo in a residential garage, the following special precautions per NFPA 54/ANSI Z223.1 must be taken:

- Mount the unit a minimum 18 inches [458 mm] above the floor level of the garage. Ensure the burner and ignition devices / controls are no less than 18 inches [458 mm] above the floor level.
- Locate or protect the unit in a manner so it cannot be damaged by a moving vehicle.

Boiler Freeze Protection Feature

The boiler control has a freeze protection feature built in. This feature monitors the boiler temperature and responds as follows when no call for heat is present:

- 46°F Boiler circulator is ON
- 38°F Boiler circulator is ON and burner operates at low fire
- 50°F Burner OFF and boiler circulator operates for approximately 10 minutes

CAUTION

The boiler freeze protection feature is disabled during a hard lockout, however the CH circulator will operate.

CAUTION

The boiler freeze protection feature is designed to protect the boiler. The boiler should be installed in a primary/secondary piping arrangement if it is installed in an unheated space or exposed to water temperatures of 46°F or less. See Section IV for primary/secondary piping examples. See Section IX for antifreeze guides.

SECTION I - Pre-Installation Items

Code Compliance

This product must be installed in accordance to the following:

- All applicable local, state, national and provincial codes, ordinances, regulations and laws.
- For installations in Massachusetts, code requires the boiler to be installed by a licensed plumber or gas fitter, and if antifreeze is utilized, the installation of a reduced pressure backflow preventer device is required in the boiler's cold water fill or make up water supply line.
- For installation in Massachusetts all direct vented appliances must comply with the guidelines as outlined on page 11.
- The National Fuel Gas Code NFPA54/ANSI Z 223.1 - Latest edition.
- National Electric Code ANSI/NFPA 70.
- For installations in Canada - "Installation Code for Gas Burning Equipment" CGA/B149.1 or B149.2 Canadian Electrical Code Part 1 CSA C22.1.
- Standards for Controls and Safety Devices for Automatically Fired Boilers, ANSI/ASME CSD-1, when required.

NOTICE

The PRESTIGE Solo boiler gas manifold and gas controls meet the safe lighting and other performance requirements as specified in ANSI Z21.13 latest edition.

Determining Product Location

Before locating the PRESTIGE SOLO check for convenient locations to:

- Heating system piping
- Venting
- Gas supply piping
- Electrical service

Ensure the boiler location allows the combustion air/vent piping to be routed directly through the building and terminate properly outside with a minimum amount of length and bends.

Ensure the area chosen for the installation of the PRESTIGE Solo is free of any combustible materials, gasoline and other flammable liquids.



Failure to remove or maintain the area free of combustible materials, gasoline and other flammable liquids or vapors can result in severe personal injury, death or substantial property damage.

Ensure the PRESTIGE Solo and its controls are protected from dripping or spraying water during normal operation or service.

The PRESTIGE Solo should be installed in a location so that any water leaking from the boiler or piping connections or relief valve will not cause damage to the area surrounding the unit or any lower floors in the structure.

Boiler Replacement

If the PRESTIGE Solo is replacing an existing boiler, the following items should be checked and corrected prior to installation:

- Boiler piping leaks and corrosion.
- Improper location and sizing of the expansion tank on the boiler heating loop.
- If applicable, level and quality of freeze protection within the boiler system.

Recommended Clearances

The PRESTIGE Solo is approved for zero clearance to combustibles, excluding vent and boiler piping.

- Boiler Piping - 1/4 inch from combustible materials.

 **DANGER**

Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system which has been under water.

 **WARNING**

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.

 **WARNING**

Should overheating occur or the gas supply fails to shut off, turn OFF the manual gas control valve external to the appliance.

 **WARNING**

DO NOT add cold make up water when the boiler is hot. Thermal shock can cause potential cracks in the heat exchanger.

 **CAUTION**

When servicing the boiler:

- Avoid electrical shock by disconnecting the electrical supply prior to performing maintenance.

 **WARNING**

Qualified Installer:

Prior to installing this product read all instructions included in this manual and all accompanying manuals/documents with this appliance. Perform all installation steps required in these manuals in the proper order given. Failure to adhere to the guidelines within these manuals can result in severe personal injury, death or substantial property damage.

Homeowner:

- This product should be maintained / serviced and inspected annually by a qualified service technician.
- This manual is intended for use by a qualified Installer/Service Technician.

NOTICE

Please reference the unit's model number and the serial number from the rating label, on the backside of the control panel when inquiring about service or troubleshooting.

NOTICE

Triangle Tube accepts no liability for any damage resulting from incorrect installation or from the use of components or fittings not specified by Triangle Tube.



CITY OF PORTLAND, MAINE

Department of Building Inspections

Original Receipt

7-26 2011

Received from

Zinc Mechanical

Location of Work

1121 Cayes St

Cost of Construction \$ _____ Building Fee: _____

Permit Fee \$ _____ Site Fee: _____

Certificate of Occupancy Fee: _____

Total: 190

Building (IL) _____ Plumbing (15) _____ Electrical (12) _____ Site Plan (U2) _____

Other Fluid _____

CBL: 194-0-21

Check #: 1354

Total Collected \$ 190

**No work is to be started until permit issued.
Please keep original receipt for your records.**

Taken by: [Signature]

WHITE - Applicant's Copy
YELLOW - Office Copy
PINK - Permit Copy