DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK

CITY OF PORTLAND

BUILDING PERMIT

This is to certify that Zion Mechanical Heating Solutions **Located At** 1854 FOREST AVE

has permission to Install Triangle Tube Prestidge Boiler

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 thereof is occupied. If a certificate of occupancy is required, it must be procured prior to occupancy.

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.

PERMIT ISSUED
FEB 2 8 2017
CITY OF PORTLAND

City of Portland, Maine - Building or Use Permit Application
389 Congress Street, 04101
Tel: (207) 874-8703, FAX: (207) 8716

Job No:	Applicatin Date:	CBL:
2010-12-113-HVAC	12/20/2010	327 - - B - 004 - 001

Location of Construction:	Owner Name:	Owner Address:	Phone:
1854 FOREST	STATE GRANGE PATRONS OF MAINE	146 STATE ST AUGUSTA, ME - MAINE 04330	
Business Name:	**Contractor Name:**	**Contractor Address:**	**Phone:**
	Z M H S Inc, Zion Mechanical Heating Solutions	P.O. Box 129 BUXTON ME 04093 BUXTONMAINE04093	
Lessee/Buyer's Name:	**Phone:**	**Permit Type:**	**Zone:** B-2 Zone
Past Use:	**Proposed Use:** No use established yet	**Permit Fee:** / **Cost of Work:**	**CEO District:**
Proposed Project Description:			
Permit Taken By:	**Date Applied For:**		

PERMIT ISSUED
FEB 26 20..
CITY OF PORTLAND

FILL IN AND SIGN WITH INK

APPLICATION FOR PERMIT
HEATING OR POWER EQUIPMENT

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 1554 Forest Ave Portland Use of Building Commercial Date 12/14/2010

Name and address of owner of appliance Gabriel Zappia 18 Cottage Ln Cape Elizabeth me 04107

Installer's name and address Zion mechanical Heating Solutions (Z.M.H.S. INC.) PO Box 139 Buxton me 04093 Telephone 207-232-7525

Location of appliance:

☑ Basement ☐ Floor ☐ Attic ☐ Roof Just Boiler Install

Type of Fuel:

☑ Gas ☐ Oil ☐ Solid

Appliance Name: Triangle Tube Prestige.

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 # PMT 808

☐ Other _____

Type of Chimney:

☐ Masonry Lined

Factory built _____

☐ Metal

Factory Built U.L. Listing # _____

☑ Direct Vent

Type PVC UL# _____

Type of Fuel Tank

☐ Oil

☑ Gas Nat

RECEIVED
DEC 14 2010
Dept. of Building Inspections
City of Portland Maine

Size of Tank _____

Number of Tanks _____

Distance from Tank to Center of Flame _____ **feet.**

Cost of Work: $ 13,000

Permit Fee: $ 150

Approved

Fire: _____

Ele.: _____

Bldg.: _____

Approved with Conditions

☐ See attached letter or requirement

_____ Inspector's Signature

_____ Date Approved

Signature of Installer _____

White - Inspection Yellow - File Pink - Applicant's Gold - Assessor's Copy

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. Close-In (Electrical, Plumbing)
2. Final Inspection

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 OCCU0PIED.

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

Director of Planning and Urban Development
Penny St. Louis Littell

Job ID: 2010-12-113-HVAC **Located At:** 1854 FOREST **CBL**327 - - B - 004 - 001 - - - - -

Conditions of Approval:

Zoning

1. This permit is being approved on the basis of plans submitted. Any deviations shall require a separate approval before starting that work.
2. No new use has been assigned to this building. Separate permits are required PRIOR to alterations or establishing a new use.

Building

1. The installation must comply with UL, the Manufactures' Listing, and State of Maine gas regulations.
2. Separate permits are required for any electrical, plumbing, sprinkler, fire alarm HVAC systems, heating appliances, commercial hood exhaust systems and fuel tanks. Separate plans may need to be submitted for approval as a part of this process.
3. Maintain proper setback(s) from property lines/buildings and proper clearances from vertical openings when direct venting.

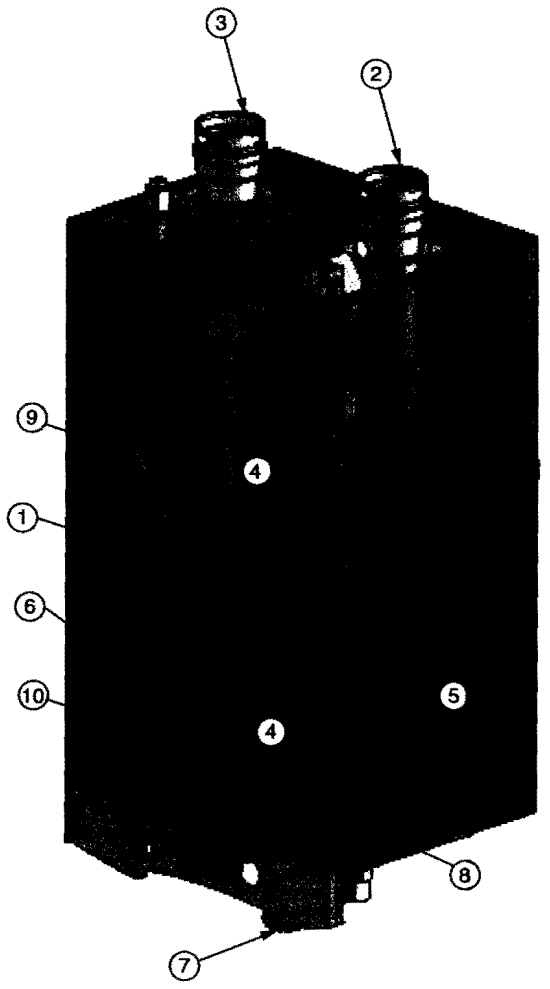


Fig. 27A: PRESTIGE Solo 175/250 Internal Components

Item	Part # PRESTIGE Solo 175/250	Description
1	PSRKIT25	Heat Exchanger Body Solo 175
	PSRKIT26	Heat Exchanger Body Solo 250
2	PSRKIT27	Vent Outlet Adapter
3	PSRKIT03	Combustion Air Inlet Adapter
4	PSRKIT04	Supply & Return NTC Sensor (NTC1, NTC2)
5	PSRKIT34	Flue NTC Sensor (NTC5)
6	PGRKIT20	LWCO Pressure Device
7	PSRKIT05	Condensate Drain Assembly
8	PSRKIT28	Boiler Piping - Return Assembly
9	PSRKIT29	Boiler Piping - Supply
10	PSRKIT17	Pressure Gauge and Fitting

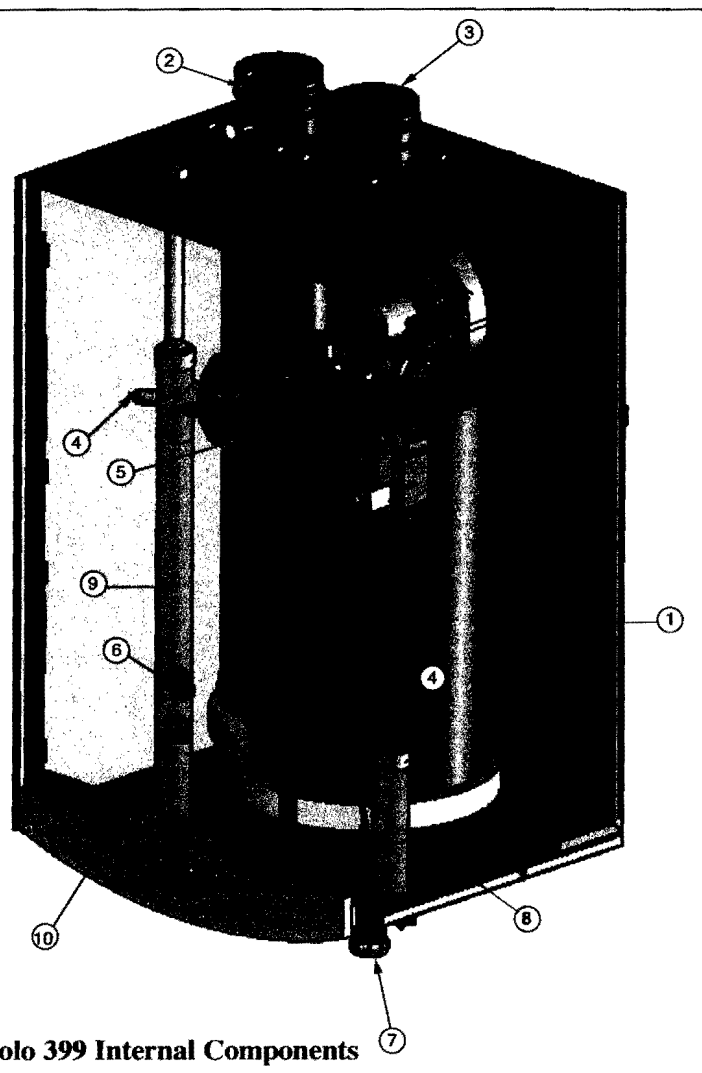


Fig. 27B: PRESTIGE Solo 399 Internal Components

Item	Part # PRESTIGE Solo 399	Description
1	PSRKIT44	Heat Exchanger Body
2	PSRKIT45	Vent Outlet Adapter
3	PSRKIT46	Combustion Air Inlet Adapter
4	PSRKIT47	Supply & Return NTC Sensor (NTC1, NTC2)
5	PSRKIT34	Flue NTC Sensor (NTC5)
6	PGRKIT20	LWCO Pressure Device
7	PSRKIT05	Condensate Drain Assembly
8	PSRKIT48	Boiler Piping - Return Assembly
9	PSRKIT49	Boiler Piping - Supply Assembly
10	PSRKIT17	Pressure Gauge and Fitting

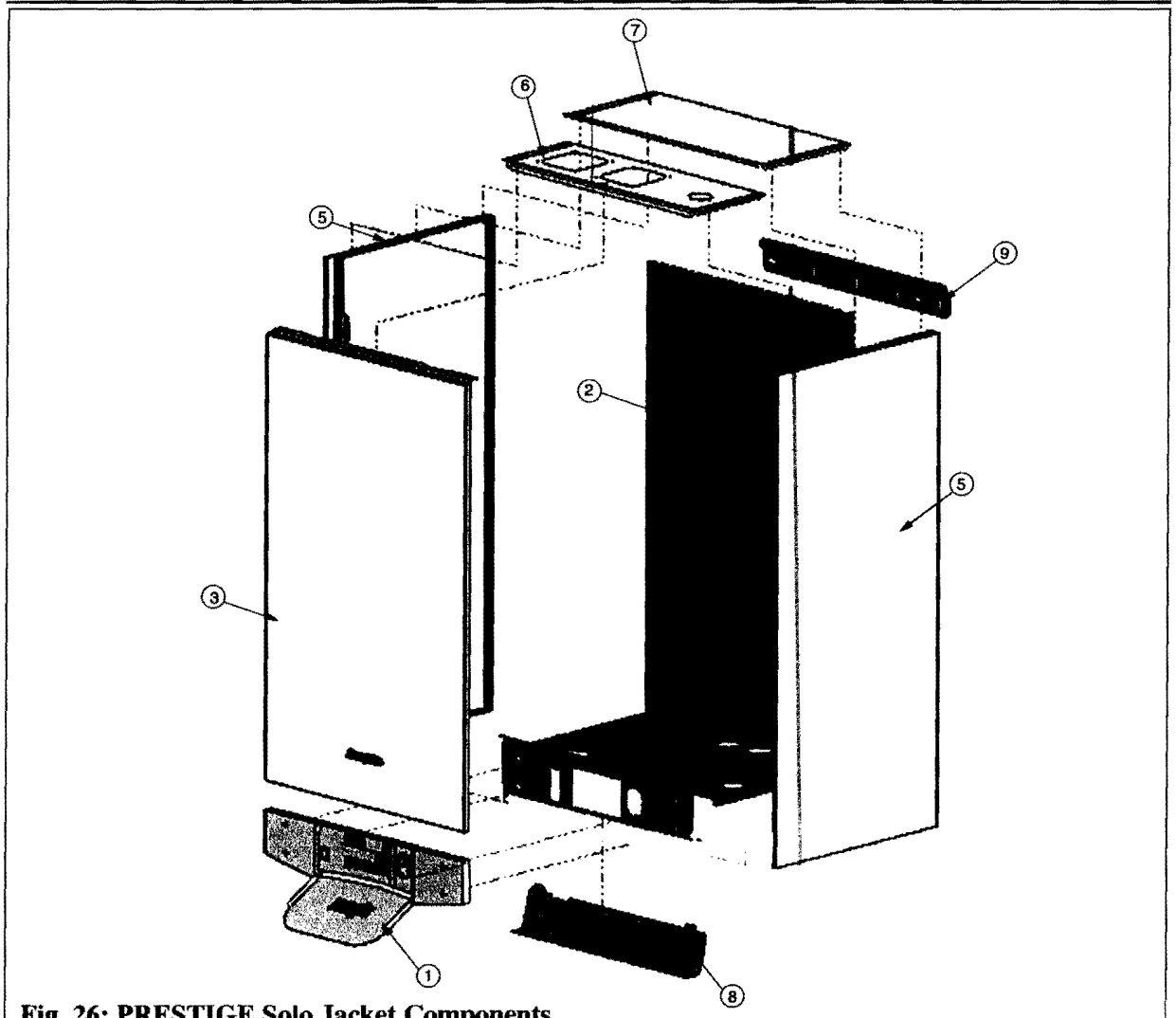


Fig. 26: PRESTIGE Solo Jacket Components

Item	Part # PRESTIGE Solo 60	Part # PRESTIGE Solo 175-250	Part # PRESTIGE Solo 399	Description
1	PSCS01			Disply Control Panel
1A	--	--	PSCS02 (Left) PSCS03 (Right)	Display Control Panel Extensions (Not Shown)
2	PSJKT01B	PSJKT03B	PSJKT04B	Base Panel
3	PSJKT01F		PSJKT02F	Front Jacket Panel
5	PSJKT02S		PSJKT03S	Side Jacket Panel (Left and Right)
6	PSJKT01T	PSJKT03T	PSJKT05T	Top Jacket Panel
7	PSJKT02T	PSJKT04T	PSJKT06T	Top Jacket Access Panel
8	PSJKT03		PSJKT04	Control Cover Panel
9	PSRKIT21			Wall Mounting Braket with 1 Hardware

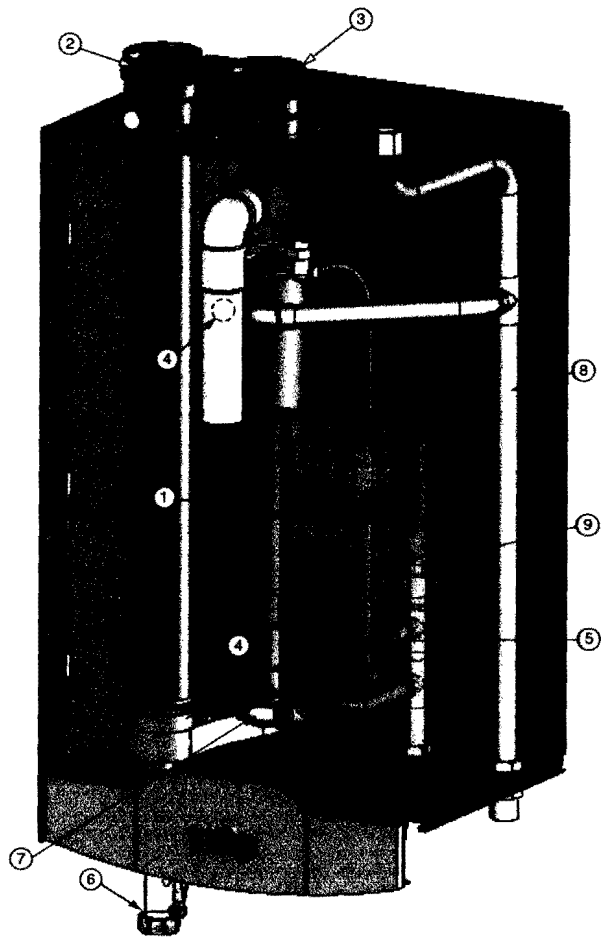


Fig. 27: PRESTIGE Solo 60 Internal Components

Item	Part #	Description
1	PSRKIT01	Heat Exchanger Body
2	PSRKIT02	Vent Outlet Adapter
3	PSRKIT03	Combustion Air Inlet Adapter
4	PSRKIT04	NTC Sensor (NTC1, NTC2 and NTC5)
5	PGRKIT20	LWCO Pressure Device
6	PSRKIT05	Condensate Drain Assembly
7	PSRKIT06	Boiler Piping - Return Assembly
8	PSRKIT52	Boiler Piping - Supply Assembly
9	PSRKIT17	Pressure Gauge and Fitting

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:

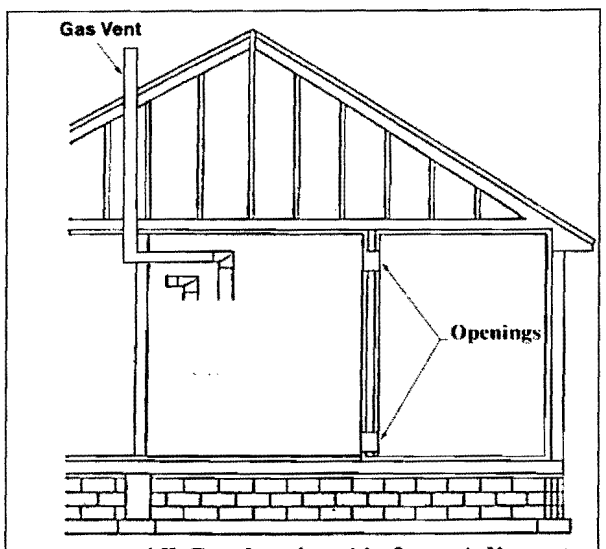


Fig. 1: All Combustion Air from Adjacent Indoor Spaces Through Indoor Combustion Openings

- 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

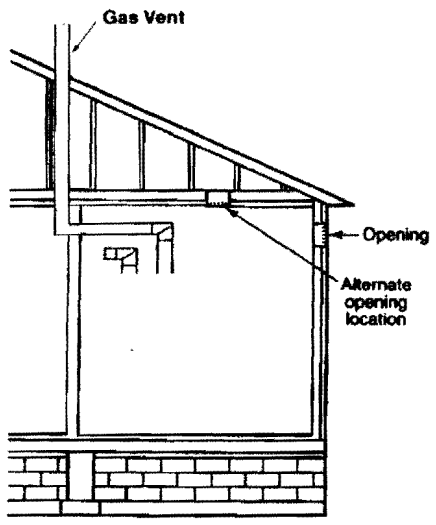


Fig. 2: All Combustion Air from Outdoors Through One Permanent Air Opening

- 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.

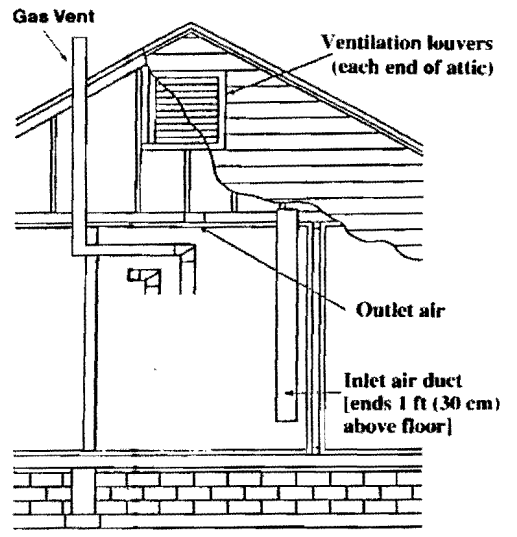


Fig. 3: All Combustion Air from Outdoors Through Ventilated Attic

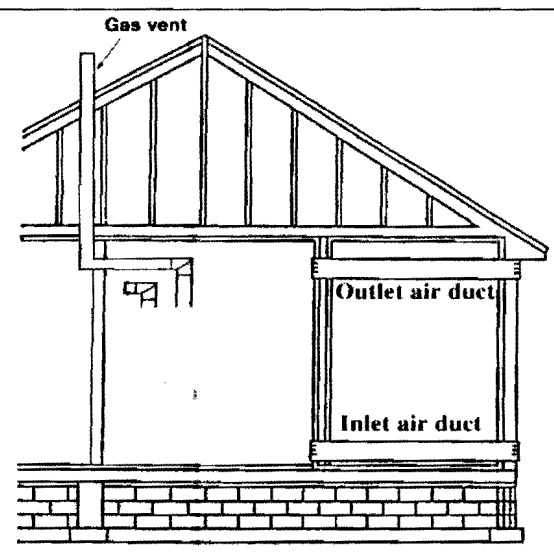


Fig. 4: All Combustion Air from Outdoors Through Horizontal Ducts

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.

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 uncontamined 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 contaminates (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 of death.

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.

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.

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:

⚠ CAUTION

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.

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 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.

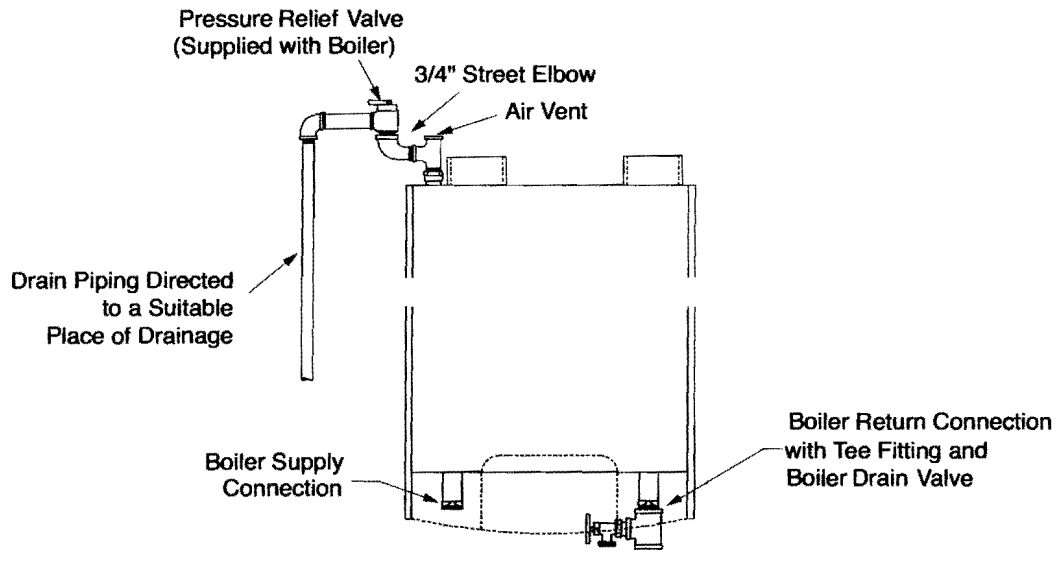


Fig. 5: Pressure Relief Valve and Boiler Drain Valve Installation

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.

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.

⚠ CAUTION

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.

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.

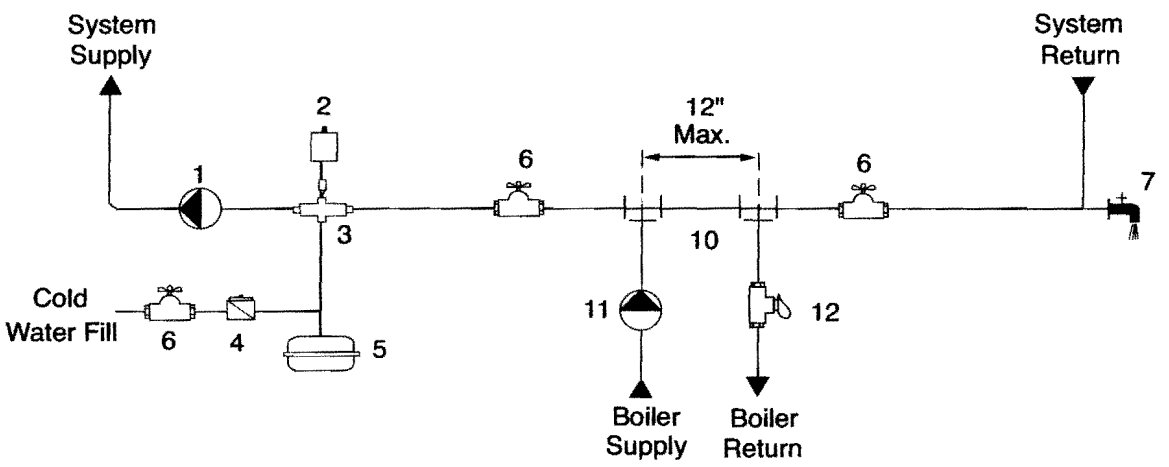
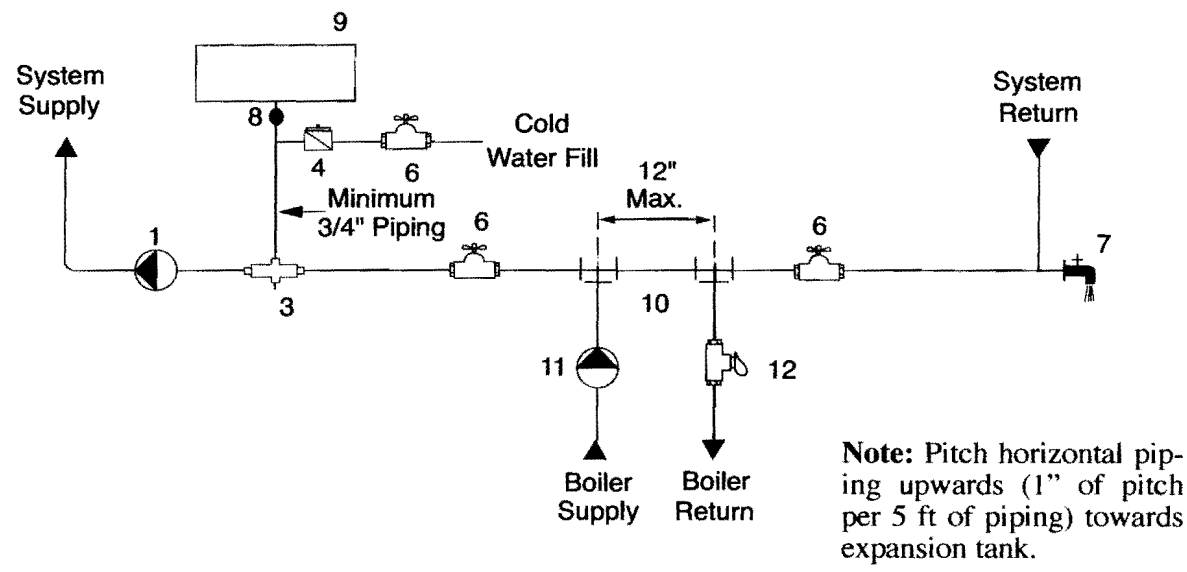


Fig. 6: Near Boiler Piping - Diaphragm Expansion Tank



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

CITY OF PORTLAND, MAINE

Department of Building Inspections

Original Receipt

12:14 2010

Received from Zion.

Location of Work 1354 Forest Ave

Cost of Construction $_____ Building Fee:_____

Permit Fee $_____ Site Fee:_____

Certificate of Occupancy Fee:_____

Total: 150

Building (IL) ___ Plumbing (I5) ___ Electrical (I2) ___ Site Plan (U2) ___

Other_____

CBL: 322-C-4

Check #: 5006 **Total Collected $** 150

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

Taken by: D. P.

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