

TERMINATION CLEARANCES (SIDE WALL)

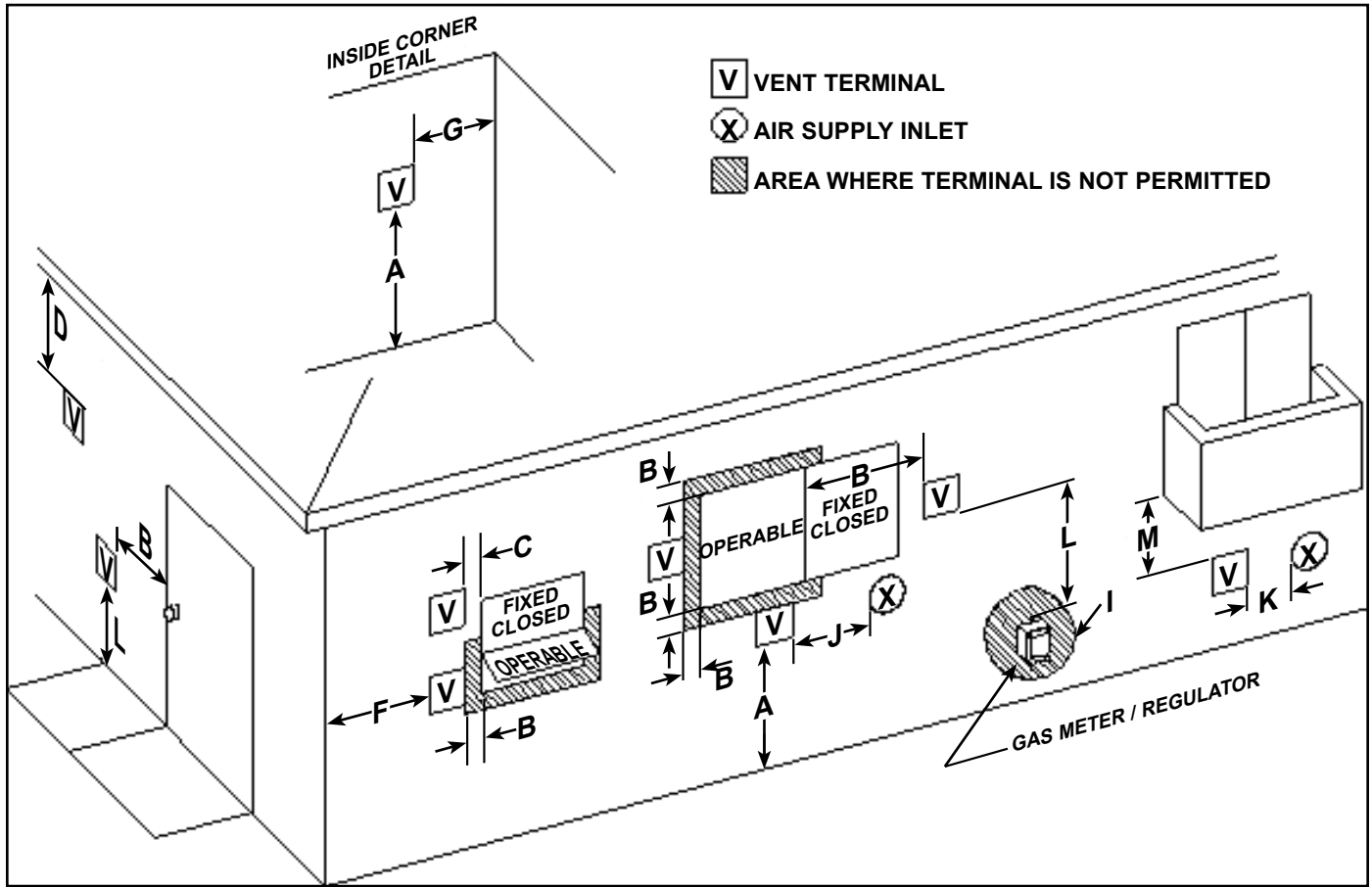


Figure 21.

Power Direct Vent Terminal Clearances				
A	above grade, veranda, porch, deck, or balcony	12 in.	I to regulator vent outlet	36 in.
B	to window or door that may be opened	6 in. for appliances ≤10,000 Btuh (3 kW), 9 in. for appliances > 10,000 Btuh (3 kW) and ≤ 50,000 Btuh (15 kW), 12 in. for appliances > 50,000 Btuh (15 kW)	J to non-mechanical air supply inlet to building or the combustion air inlet to any other appliance	6 in. for appliances ≤ 10,000 Btuh (3 kW), 9 in. for appliances > 10,000 Btuh (3 kW) and ≤ 50,000 Btuh (15 kW), 12 in. for appliances > 50,000 Btuh (15 kW)
C	to window or door that is permanently closed	0 in.	K to a mechanical air supply inlet	3 ft. above if within 10 ft. horizontally
D	to soffit	12 in.	L above equipment or public walkways	†
F	to outside corner	24 in.	M under veranda, porch deck, or balcony	12 in. ‡
G	to inside corner	18 in.		

† Where local experience indicates that condensate is a problem with Category III appliances, the vent shall not terminate over public walkways or over an area where condensate or vapor could create a nuisance or hazard or could be detrimental to the operation of regulators, relief valves, or other equipment.

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

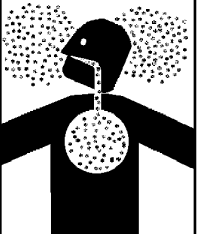
CAUTION

Improper Installation, use and service may result in property damage.

This unit includes an air intake terminal and an exhaust vent terminal.

WARNING

Breathing Hazard - Carbon Monoxide Gas



- Install vent system in accordance with codes.
- Do not operate water heater if flood damaged.
- Install water heater in accordance with the instruction manual.
- Do not operate if soot buildup is present.
- Do not obstruct water heater air intake(s) with insulating blanket.
- Do not place chemical vapor emitting products near water heater.
- Gas and carbon monoxide detectors are available.
- Never operate the heater unless it is vented to the outdoors and has adequate air supply to avoid risks of improper operation, fire, explosion or asphyxiation.
- Analyze the entire vent system to make sure that condensate will not become trapped in a section of vent pipe and therefore reduce the open cross sectional area of the vent.

Breathing carbon monoxide can cause brain damage or death. Always read and understand instruction manual.

Important: DO NOT common vent this water heater with any power vented appliance. DO NOT vent into a common chimney.

This water heater has a direct vent system in which all air for combustion is taken from the outside atmosphere and all combustion products are discharged to the outdoors.

This water heater must be properly vented for removal of exhaust gases to the outside atmosphere. Correct installation of the vent pipe system is mandatory for the safe and efficient operation of this water heater and is an important factor in the life of the unit.

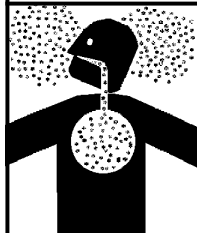
A Vent Kit included with this water heater consists of:

1. Blower outlet adapter (rubber coupling and gear clamps),
2. Two (2) 45° Vent Termination Elbows,
3. More-restrictive Vent Screens (see Figure 36 & Figure 37),
4. Less-restrictive Vent Screens (see Figure 36 & Figure 37),
5. Wall Plates,
6. Air intake adapter (3" to 2" ABS reducer) and 3" pipe nipple (2" venting only).

Vent pipe must be installed in accordance with all local codes or, in the absence of such, the latest edition of "National Fuel Gas Code", ANSI Z223.1/NFPA 54.

WARNING

Breathing Hazard - Carbon Monoxide Gas



- Install water heater in accordance with the instruction manual and NFPA 54.
- To avoid injury, combustion and ventilation air must be taken from outdoors.
- Do not place chemical vapor emitting products near water heater.

Breathing carbon monoxide can cause brain damage or death. Always read and understand instruction manual.

Important: Check to make sure the vent pipe is not blocked in any way.

Note: Do not common vent this water heater with any other appliance. Do not install in the same chase or chimney with a metal or high-temperature plastic from another gas or fuel burning appliance.

Side Wall Vent Terminal Installation

Important: When terminating the vent on a side wall, the following specifications pertaining to terminal location must be followed (see Figure 22).

1. The air intake terminal and the exhaust vent terminal must terminate on the same exterior wall.
2. The vertical centerline of the air intake terminal must be located at a minimum of 8" from the vertical centerline of the exhaust vent terminal.
3. The horizontal centerline of the air intake terminal may not be located more than 24" below the horizontal centerline of the exhaust vent terminal.
4. To avoid exhaust recirculation, the air intake terminal may be rotated away from the exhaust vent terminal (see Figure 22).

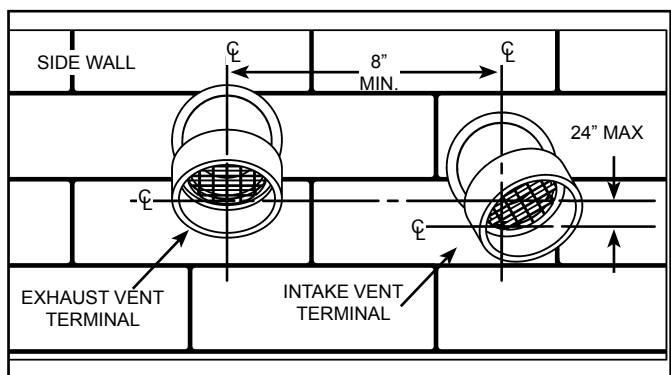


Figure 22.

Side Wall Vent For Cold Climates

Some winter weather conditions present a risk of ice accumulation at the intake termination screen. Such accumulation will restrict intake air flow. If local conditions present this risk, the termination configuration shown in Figure 23 is recommended. This will reduce the possibility of exhaust gas recirculation as well as reduce the chance of ice accumulation.

If necessary to avoid snow accumulation, the intake vent terminal may be fitted with a riser similar to that on the exhaust vent terminal. Both the intake and exhaust vent terminations may be 90° elbows if specified by local requirements. **Note:** The vertical centerline of the air intake termination and the vertical centerline of the exhaust vent termination must not be closer than 8".

Important: Elbows (excluding the termination elbow) and risers must be considered when calculating total equivalent vent length (see Table 4).

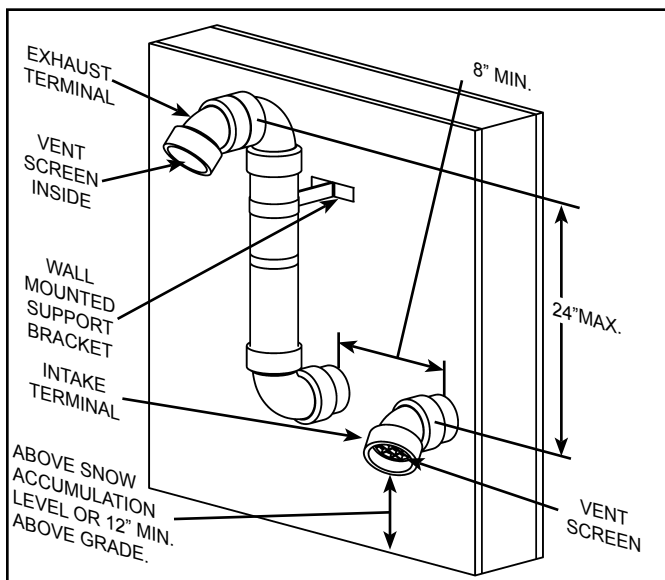


Figure 23.

If the installation requires restrictive screens and is susceptible to ice accumulation on the intake terminal, the restrictive screens should be installed near the blower as shown in Figure 24 and Figure 25. If the restrictive screens are installed near the blower, it is recommended that debris screens be installed at the terminations.

These debris screens (see Figure 3) may be removed while there is a risk of ice accumulation but this can make the air intake susceptible to debris buildup, the entry of birds, other small animals or rodents. If the debris screens are removed to prevent ice accumulation, it is recommended that they be re-installed when the risk of ice accumulation has passed.

The restrictive screen and the air intake piping should be secured in place to the reducer or air duct adaptor with a screw (see Figure 24 and Figure 25). To prevent damage to the equipment, first position the restrictive screen and air intake pipe in place, then drill a 7/64" pilot hole for a #8 screw. The screen must be fully seated and the screw

should not interfere with it. Once the pilot hole is drilled, place the intake pipe in position and secure in place using a #8 screw. Do not use glue to secure this joint in order to allow the restrictive screen to be removed for cleaning. The screen in the exhaust piping should be located close to the blower (see Figure 24 & Figure 25) and all exhaust piping joints should be glued.

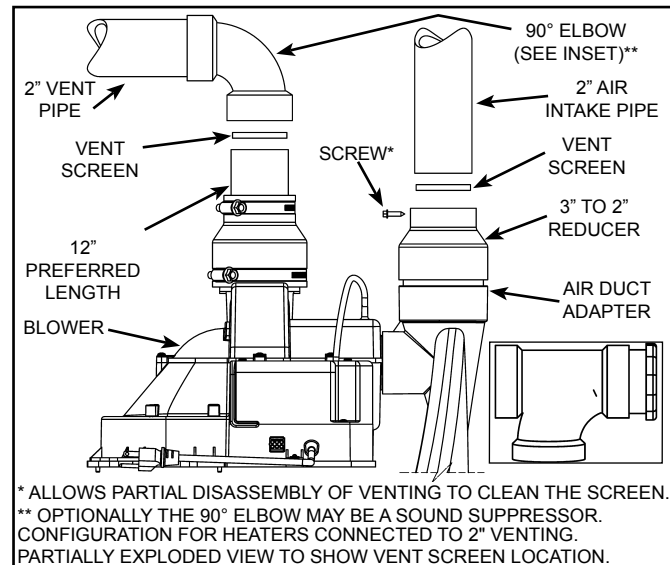


Figure 24.

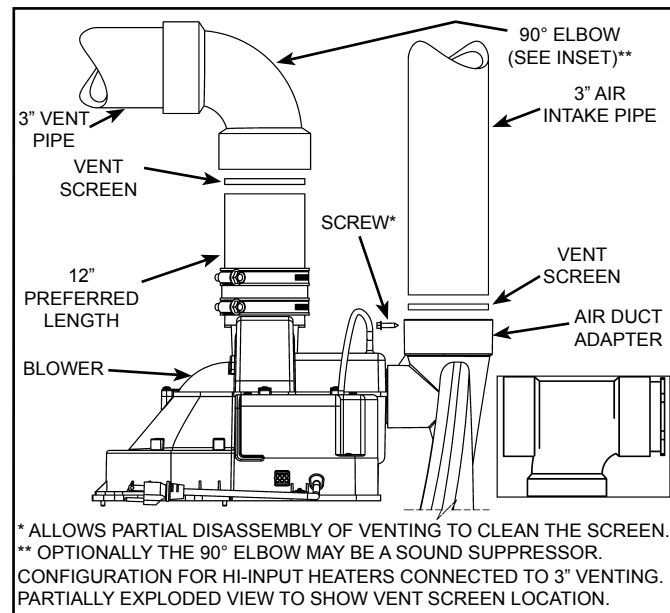


Figure 25.

Tee Termination Installation

A Tee fitting as the exhaust termination and a 90° fitting as the air intake termination are permitted on the water heater models listed in Table 2.

Note: The sound suppressor must not be installed if the Tee termination is installed.

WATER HEATER MODEL	MAX. EQUIV. VENT LENGTH	VENT DIAM.
40gal, 40K Btu/Hr	50'	2"
50gal, 45K Btu/Hr	50'	2"

Table 2.

When a Tee termination is used, two additional vent screens must be purchased and installed as seen in Figure 26 and Figure 27. On installations of venting less than 20', a restrictive screen must be used. On installation over 20' a non restrictive screen must be used.

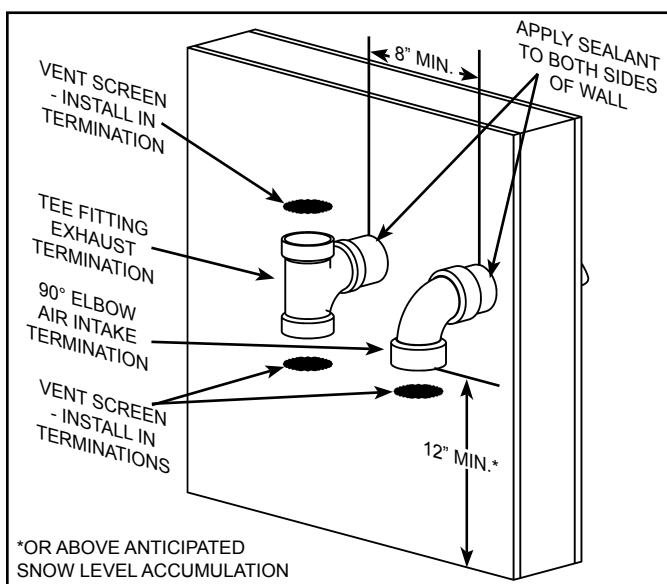


Figure 26.

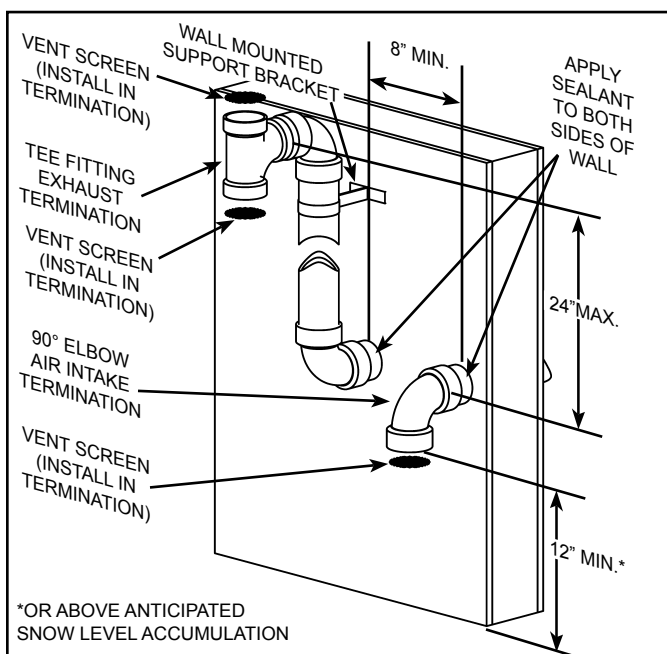


Figure 27.

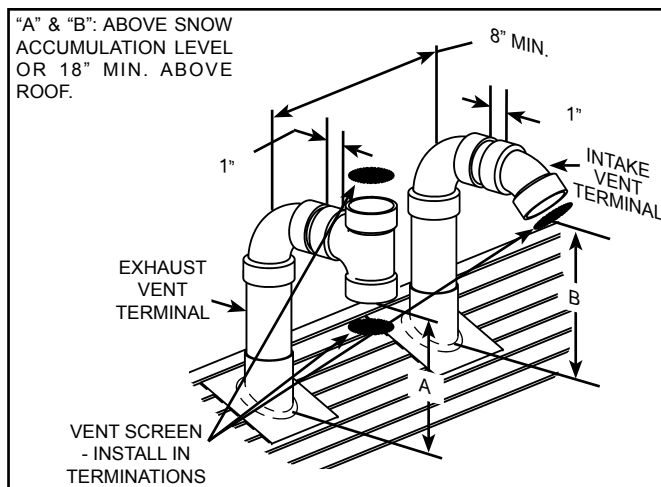


Figure 28.

Roof Vent Terminal Installation

Important: When terminating the vents through a roof, the following specifications pertaining to terminal location must be followed (see Figure 29).

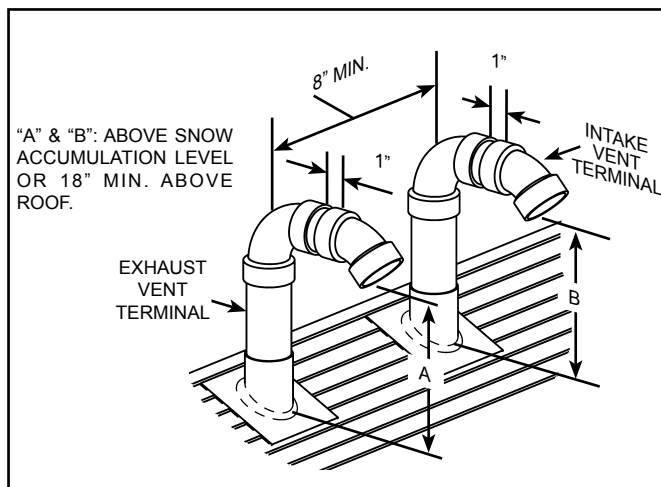


Figure 29.

1. The air intake termination and the exhaust vent termination shall extend above anticipated snow level or at least 18" above the roof.
2. Must provide proper support for all pipes protruding through roof.
3. The vertical roof terminations should be sealed with a plumbing roof boot or equivalent flashing.
4. The air intake termination and the exhaust vent termination must penetrate the same side of roof.
5. The centerline of the air intake termination and the centerline of the exhaust vent termination must not be closer than 8".
6. The air intake terminal and the exhaust vent terminal must be oriented facing downward and the same direction.

Concentric Vent Termination Installation

A concentric vent termination kit (see Table 3) may be used for vertical or horizontal terminations. Figure 30 illustrates the concentric vent kit for a horizontal (side wall) installation. To prevent rain water from entering the exhaust outlet, slope the vent kit at a downward pitch of 1/4" per 5' away from the inside wall. Ensure the combustion air intake location is above the anticipated snow level. Figure 31 illustrates the concentric vent termination kit in a vertical (roof) installation. Ensure the combustion air intake location is above the anticipated snow level.

VENT DIA.	P/N
2"	9008586005
3"	9006328005

Table 3.

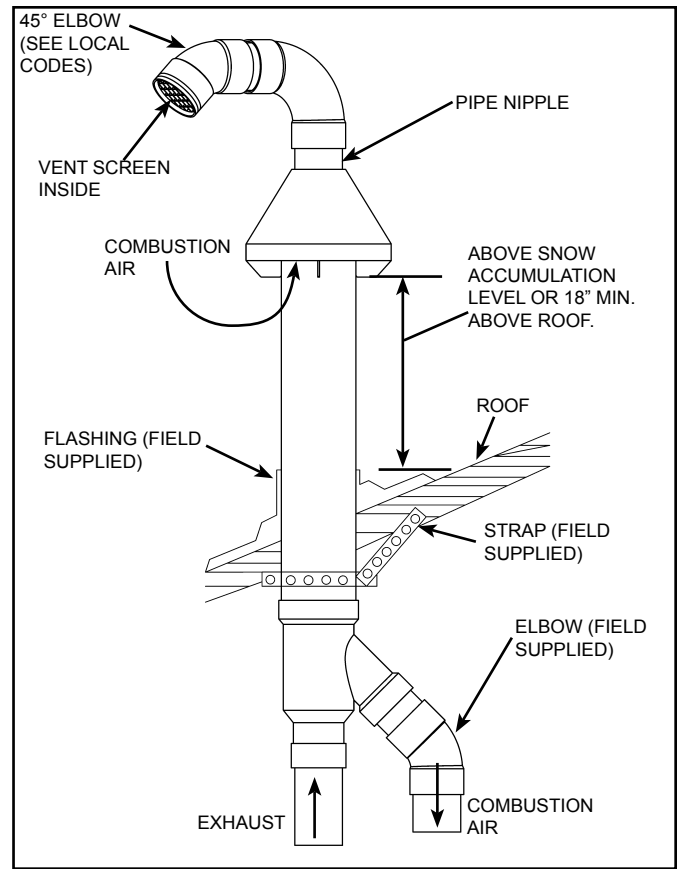


Figure 31.

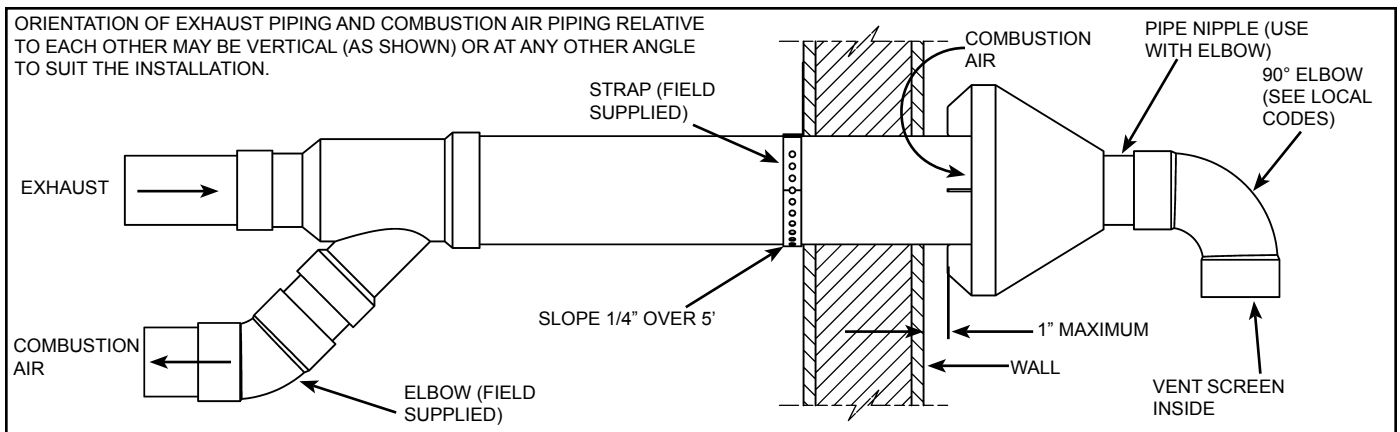


Figure 30.

Multiple Concentric Vent Installation

When two concentric vent kits are being installed, the vent hood centers shall be either less than 9.5" apart or more than 43.5" apart. Spacings between 9.5" and 43.5" are not allowed due to the possibility of exhaust cross circulation (see Figure 32).

When more than 2 kits are installed only 2 of them shall be less than 9.5" apart. Never install 3 termination kits together less than 9.5" apart (see Figure 33).

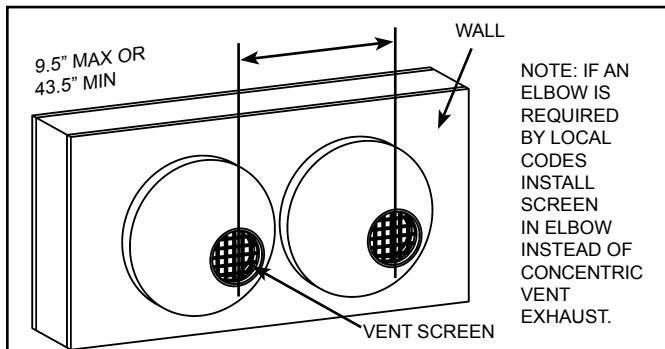


Figure 32.

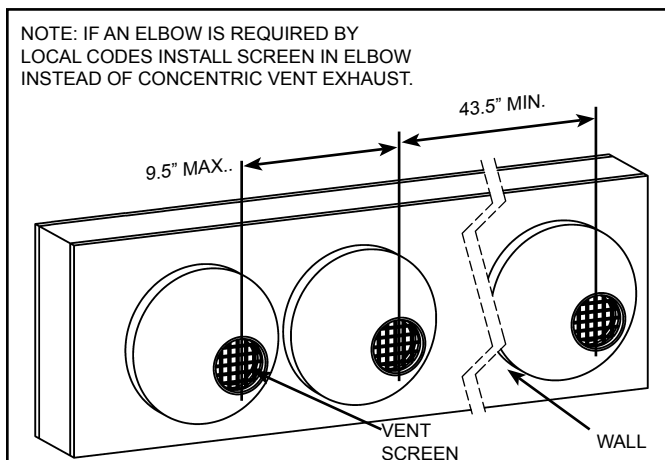


Figure 33.

Vent Pipe Material

This heater is certified to be installed using Schedule 40 PVC or CPVC or polypropylene or ABS plastic vent material for the exhaust. The combustion air intake material may be PVC, ABS, CPVC or polypropylene. Check local codes to determine which materials are allowed in your area and only use approved material. All venting material and components must be joined with the approved primer/cleaner and solvent cement. Do not cement the venting system to the heater. For polypropylene vent systems follow manufacturer's instructions. **Note:** Polypropylene vent systems require separate adaptor, termination, and elbows (field supplied). It is recommended to use InnoFlue® SW Residential products from Centrotherm (www.centrotherm.us.com).

Note: Use only solid (not foam core) piping. Plastic pipe and fittings are available through most plumbing suppliers. Always check the marking on the pipe to make sure you are using the correct material. Use of cellular core PVC (ASTM

F891), cellular core CPVC, or Radel® (polyphenolsulfone) in non-metallic venting systems is prohibited.

Polypropylene Vent Systems

Polypropylene vent systems do not use cement to connect the pipe and elbow sections but use a push together gasket seal method. Do not attempt to connect polypropylene with sealant cement.

Polypropylene vent systems are designed to use specific adaptors to connect into the rubber coupling on the top of the blower. These are available through your venting supplier.

The PVC vent termination elbow supplied with this heater has been certified to be used with polypropylene vent systems. A polypropylene to PVC end connection is required and is available through your supplier.

Optional wall plates that fit the polypropylene venting are also available through your supplier.

Carefully inspect the entire venting system for any signs of cracks or fractures, particularly at joints between elbows and other fittings and straight runs of vent pipe. Check system for signs of sagging or other stresses in joints as a result of misalignment of any components in the system. If any of these conditions are found, they must be corrected in accordance with the venting instructions in this manual before completing installation and putting the water heater into service.

The vent piping shall be connected to the blower with the rubber coupling and secured with gear clamps. The coupling and clamps are provided with the heater.

Even though the flue gas temperature leaving the blower is hot, some installations will have water condense in the vent piping. If this occurs, then adequate means of draining and disposing of the condensate shall be made by the installer.

Vent Pipe Length And Sizing

Refer to Table 4 for vent pipe materials and sizing. If the installation requires a vent riser, suitable drainage must be provided to ensure condensation does not accumulate (see Figure 43). The specified maximum lengths are for **each** of the intake and exhaust systems and **not** for the combined lengths of both systems. Minimum pipe length is 2' with a minimum of one 90° elbow per side (intake and exhaust).

1. Determine termination type and pipe size.
2. Determine number of elbows in vent system. Do not include termination elbow. Calculate the maximum equivalent length of the exhaust and air intake system.

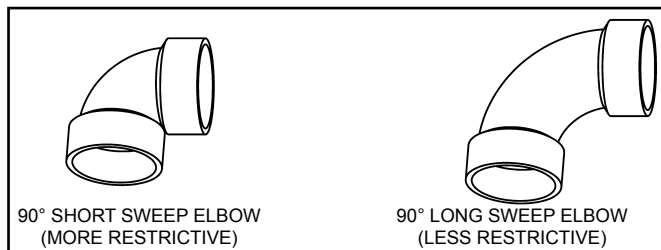


Figure 34.

WATER HEATER MODEL	HEATER INPUT (Btu/hr)	VENT SIZE (Inside Diam.)	PRESSURE SWITCH SETTINGS (" w.c.)		2 PIPE MAX. EQUIV. VENT LENGTH	2 PIPE MIN. EQUIV. VENT LENGTH	CONC. VENT MAX. EQUIV. VENT LENGTH	CONC. VENT MIN. EQUIV. VENT LENGTH
			N.O.	N.C.				
40 gal.	40,000	2"	-0.32	-2.12	50' + term. elbow and screen*	7' + term. elbow and screen*	50' + term. elbow and screen*	7' + term. elbow and screen*
50 gal.	45,000							
40 gal.	40,000	3"	-0.32	-2.12	125' + term. elbow and screen*	7' + term. elbow and screen*	100' + term. elbow and screen*	7' + term. elbow and screen*
50 gal.	45,000							
50 gal.	58,000 (L.P.)	3"	-1.25	-1.42	50' + term. elbow and screen*	7' + term. elbow and screen*	30' + term. elbow and screen*	7' + term. elbow and screen*
	62,000							
75 gal.	76,000							
	76,000							
40 gal.	40,000	4"	-0.32	-2.12	180' + term. elbow and screen*	50' + term. elbow and screen*	N/A	N/A
50 gal.	45,000							
50 gal.	58,000 (L.P.)							
	62,000							
75 gal.	76,000							

* see Figure 36 and Figure 37

Equivalent lengths of straight pipe for various elbows using Schedule 40 PVC, CPVC, ABS, and polypropylene.

Vent Pipe Size	Elbow Type	Short Sweep/ Radius	Long Sweep/ Radius	Notes:
2" 3" 4"	90°	8'	5'	1. Vent lengths shown do not include vent termination elbow. 2. A horizontal vent must have a 45° or 90° vent termination elbow to direct the vent pipe downward unless otherwise specified by local requirements. 3. A vertical vent must have a 90° elbow to direct the vent pipe horizontally followed by a vent termination 45° elbow to direct the vent pipe downward unless otherwise specified by local requirements. 4. If additional elbows are used in the vent system the allowable vent lengths are reduced. 5. Two 45° elbows are considered the equivalent of one 90° elbow. 6. The equivalent length of the sound suppressor is 15'.
2" 3" 4"	45°	4'	2.5'	

Table 4.

Use the appropriate vent termination screen as shown in Figure 36 & Figure 37. Install the vent termination screen in both the air intake pipe and the exhaust pipe.

Vent Screens

This water heater includes one (1) pair of more restrictive vent screens and one (1) pair of less restrictive vent screens (see Figure 36 & Figure 37). For safety and optimum efficiency performance, ensure the correct vent screen is installed for the vent length in your installation. A vent screen is required to keep foreign objects, rodents and small birds from entering the venting system. These screens have been sized to ensure maximum energy efficiency of the vent system based on the “equivalent length” of the vent piping. **CHOOSE ONLY the ONE SCREEN THAT MATCHES YOUR VENTING CONFIGURATION** (see Figure 36 & Figure 37). The vent screen **MUST** be installed for proper operation of the water heater. How to determine the “equivalent length” is shown in Table 4.

- Supplied with this heater are several vent screens (see Figure 36 & Figure 37).
- Install the appropriate vent screen into the vent termination elbow.
- Gently push the screen into the termination elbow until it sits against the inside shoulder.
- The metal wire screens are self-securing.
- Plastic screens must be secured with two (2) corrosion resistant sheet metal screws as shown in Figure 35. This will allow for easy removal for inspection and cleaning.

Note: Before installing the Power Direct Vent Water Heater, it is recommended that the location of the pipe terminations (air intake and exhaust vent) be determined.

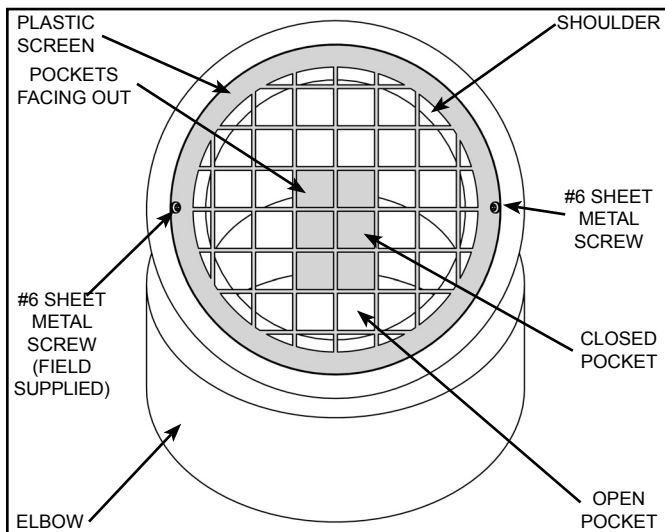


Figure 35.

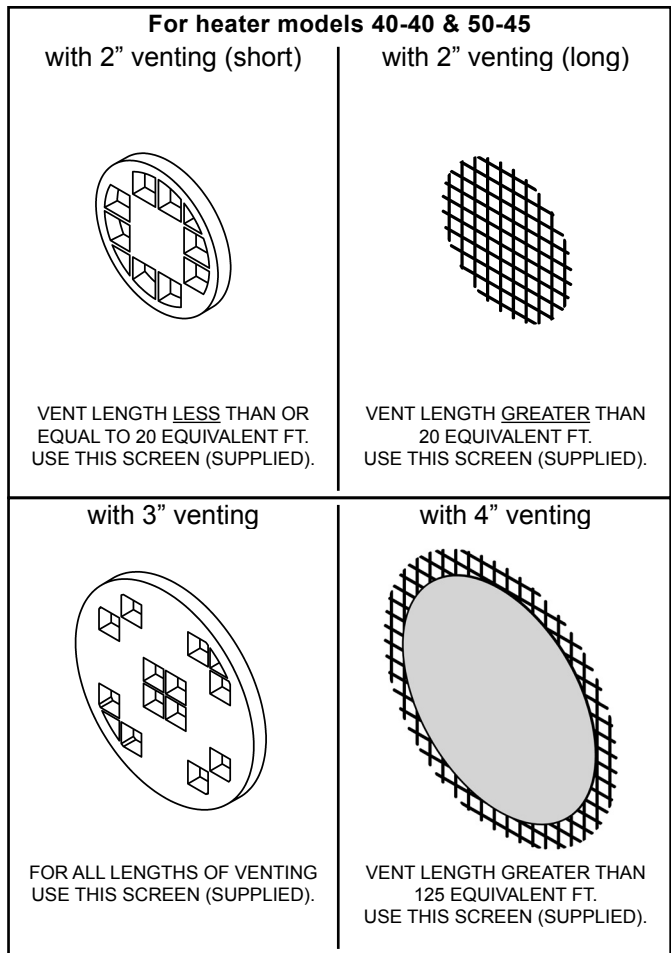


Figure 36.

Note: The same screens should be installed in the intake and the exhaust piping. These screens are supplied in the vent kit. In the concentric vent application, the screen is to be installed in the exhaust piping only.

Important: Failure to install the appropriate screen in the vent system could result in improper heater operation with attendant risk of property damage, personal injury or death by fire or carbon monoxide poisoning.

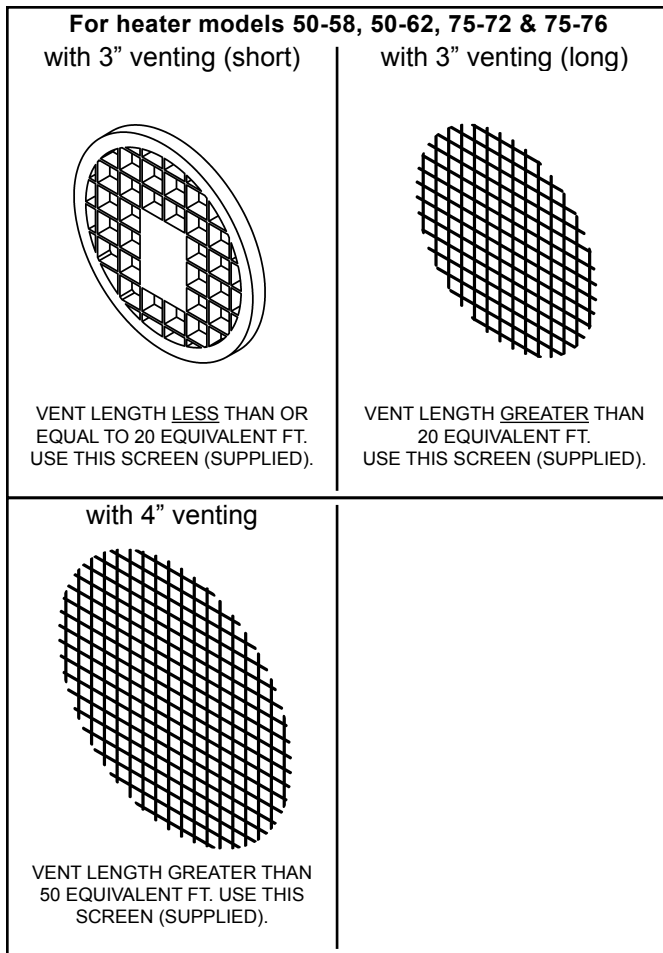


Figure 37.

Vent Pipe Installation

The following guidelines should be followed when installing the air intake and exhaust vent system:

- Venting should be as direct as possible with a minimum number of pipe fittings.
- Vent diameter must not be reduced unless specifically noted in the installation instructions.
- Support all horizontal pipe runs every 4' and all vertical pipe runs every 5' or according to local codes or venting manufacturer's instructions.
- Vents run through unconditioned spaces where below freezing temperatures are expected, are not recommended.
- Vents run through unconditioned spaces inside a building may result in the condensation of flue gases during the winter season. The rubber coupling joined to the blower includes a nipple with a cap. In installations such as this connect a condensation trap to this nipple.

The combustion air intake and exhaust vent system and termination may be installed in one of the following type terminations:

1. Horizontal (2 Pipe) (air intake and exhaust vent)
2. Vertical (2 Pipe) (air intake and exhaust vent)
3. Concentric Vent Termination (horizontal/side wall installation).
4. Concentric Vent Termination (vertical/roof installation).

All pipe, fittings, pipe cement, primers and procedures must conform to American National Standard Institute and American Society for Testing and Materials (ANSI/ASTM) standards. This water heater has been design certified by CSA International for use with the specified (CSA) listed plastic vent pipe.

Do not use solvent cement to connect the exhaust vent system to the blower. Use the rubber coupling and gear clamps instead. This connection must be removable to service the heater. All other joints in the exhaust vent system must be properly cemented.

Note: If a vent screen in the air intake vent system is located at the blower, this joint should not be cemented but secured with a screw to allow servicing (see Figure 24 & Figure 25).


Vent Pipe Runs


1. The exhaust vent system must not, under any circumstances, be run downhill then run uphill thus forming a valley. It may leave a space to accumulate condensation and block vent pipe.
2. Horizontal runs require a minimum 1/8" rise per 5' and a support every 4' or according to venting manufacturer's instructions. Ensure there is enough height between heater and termination to raise vent pipe runs the required distance.
3. Vertical runs require a support every 5' that must provide proper support to prevent stress on the pipes or according to venting manufacturer's instructions.


Vent Terminal Installations

Important: The vent system must terminate so that proper clearances are maintained as cited in local codes or the latest edition of "National Fuel Gas Code", ANSI Z223.1/NFPA 54.

Plan the vent system layout so that proper clearances are maintained from plumbing and wiring. Vent pipes serving power vented appliances are classified by building codes as "vent connectors". Required clearances from combustible materials must be provided in accordance with information in this manual under "Locating The New Water Heater" and with the latest edition of "National Fuel Gas Code", ANSI Z223.1/NFPA 54 and local codes.

	<p>WARNING</p>
	<p>Fire Hazard</p> <ul style="list-style-type: none"> • Primers and cements are extremely flammable, and must not be stored or used near heat or open flame. • Also, use only in a well ventilated area.

	! WARNING
	Fire Hazard
<ul style="list-style-type: none"> • Cans of cement and primer should be closed at all times when not in use to prevent evaporation of chemicals and hardening of cement. • They are also very flammable and should be kept away from heat or flame. 	

! WARNING	
Fire or Explosion Hazard	
<ul style="list-style-type: none"> • Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance. • Avoid all ignition sources if you smell gas. • Do not expose water heater control to excessive gas pressure. • Use only gas shown on rating plate. • Maintain required clearances to combustibles. • Keep ignition sources away from faucets after extended period of non-use. 	
	<p>Read instruction manual before installing, using or servicing water heater.</p>
	

VENT PIPE PREPARATION

1. INITIAL PREPARATION

- Make sure the solvent cement you are planning to use is designed for the specific application you are attempting.
- Know the physical and chemical characteristics and limitations of the PVC and CPVC piping materials that you are about to use.
- Know the reputation of your manufacturer and their products.
- Know your own qualifications or those of your contractor. The solvent welding technique of joining PVC and CPVC pipe is a specialized skill just as any other pipe fitting technique.
- Closely supervise the installation and inspect the finished job before start-up.
- Contact the manufacturer, supplier, or competent consulting agency if you have any questions about the application or installation of PVC and CPVC pipe.
- Take the time and effort to do a professional job. Shortcuts will only cause you problems and delays in start-up. By far, the majority of failures in PVC and CPVC systems are the result of shortcuts and/or improper joining techniques.

2. SELECTION OF MATERIALS (PVC and CPVC VENTING)


- Cutting Device - Saw or Pipe Cutter
- Deburring Tool, Knife, File, or Beveling Machine (2" and above)
- Brush - Pure Bristle
- Rag - Cotton (Not Synthetic)
- Primer and Cleaner
- Solvent Cement - PVC for PVC Components and CPVC for CPVC Components only
- Containers - Metal or Glass to hold Primer and Cement. Select the type of PVC or CPVC materials to be used on the basis of their application with respect to chemical resistance, pressure rating, temperature characteristics, etc.
- Insertion Tool - Helpful for larger diameter pipe and fittings 6" and above.

Primer:

It is recommended that Tetrahydrofuran (THF) be used to prepare the surfaces of pipe and fittings for solvent welding. Do not use water, rags, gasoline or any other substitutes for cleaning PVC or CPVC surfaces. A chemical cleaner such as MEK may be used.

Cement:

PVC Materials should use ASTM D-2564 Grade Cement; CPVC Materials should use ASTM F-493 Grade Cement and ABS Materials should use ASTM D-2235 Grade Cement. Select the proper cement; Schedule 40 cement should be used for Schedule 40 pipe. Never use all-purpose cements, commercial glues and adhesives or ABS cement to join PVC or CPVC pipe and fittings.

	! WARNING
	Fire Hazard
<ul style="list-style-type: none"> • Primers and cements are extremely flammable, and must not be stored or used near heat or open flame. • Also, use only in a well ventilated area. 	

Applicators:

Select a suitable pure bristle type paint brush. Use a proper width brush or roller to apply the primer and cement (see chart below). Speedy application of cement is important due to its fast drying characteristics. **IMPORTANT NOTE:** A dauber type applicator should only be used on pipe sizes 2" and below. For larger diameter pipe, a brush or roller must be used.

RECOMMENDED BRUSH* SIZE FOR PRIMER AND CEMENT APPLICATIONS	
Nominal Pipe (IPS)	Brush Size
2	1.5"
3	1.5" - 2.5"
*USE ONLY NATURAL BRISTLE	

Table 5.

3. MAKING THE JOINT

A. Cutting

Pipe must be squarely cut to allow for the proper interfacing of the pipe end and the fitting socket bottom. This can be accomplished with a miter box saw or wheel type cutter. Wheel type cutters are not generally recommended for larger diameters since they tend to flare the corner of the pipe end. If this type of cutter is used, the flare on the end must be completely removed.

Note: Power saws, if used, should be specifically designed to cut plastic pipe.

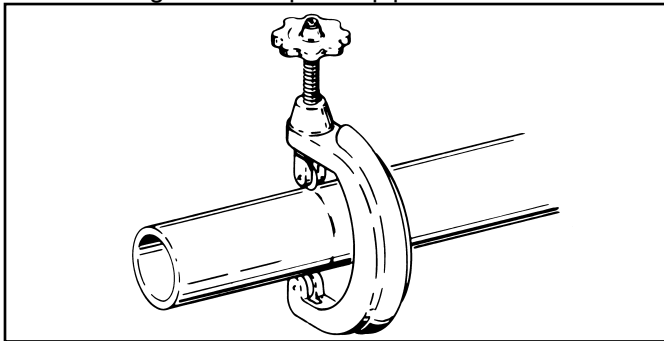


Figure 38.

B. Deburring

Use a knife, plastic pipe deburring tool, or file to remove burrs from the end of small diameter pipe. Be sure to remove all burrs from around the inside as well as the outside of the pipe. A slight chamfer (bevel) of about 10°-15° should be added to the end to permit easier insertion of the pipe into the end of the fitting. Failure to chamfer the edge of the pipe may remove cement from the fitting socket, causing the joint to leak.

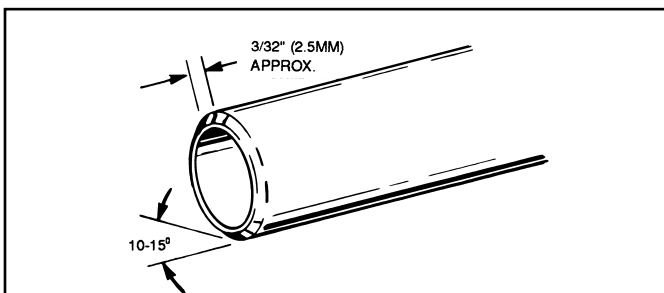


Figure 39.

C. Test dry fit of the joint

Tapered fitting sockets are designed so that an interfaced fit should occur when the pipe is inserted about 1/3 to 2/3 of the way into the socket. Occasionally, when pipe fitting dimensions are at the tolerance extremes, it will be possible to fully insert dry pipe to the bottom of the fitting socket. When this happens, a sufficient quantity of cement must be applied to the joint to fill the gap between the pipe and fitting. The gap must be filled to obtain a strong, leak-free joint.

D. Inspection, cleaning, priming

Visually inspect the inside of the pipe and fitting sockets and remove all dirt, grease or moisture with a clean dry rag. If wiping fails to clean the surfaces, a chemical cleaner must be used. Check for possible damage such as splits or cracks and replace if necessary.

Depth-of-entry

Marking the depth of entry is a way to check if the pipe has reached the bottom of the fitting socket in Step F. Measure the fitting depth and mark this distance on the pipe O.D. You may want to add several inches to the distance and make a second mark as the primer and cement will most likely destroy your first one.

Apply primer to the surface of the pipe and fitting socket with a natural bristle brush. This process softens and prepares the PVC or CPVC for the solvent cementing step. Move quickly and without hesitation to the cementing procedure while the surfaces are still wet with primer.

E. Application of solvent cement

- Apply solvent cement evenly and quickly around outside of pipe at a width a little greater than the depth of the fitting socket.
- Apply a light coat of cement evenly around the inside of the fitting socket. Avoid puddling.
- Apply a second coat of cement to the pipe end.

	WARNING
	Fire Hazard
	<ul style="list-style-type: none"> • Cans of cement and primer should be closed at all times when not in use to prevent evaporation of chemicals and hardening of cement. • They are also very flammable and should be kept away from heat or flame.

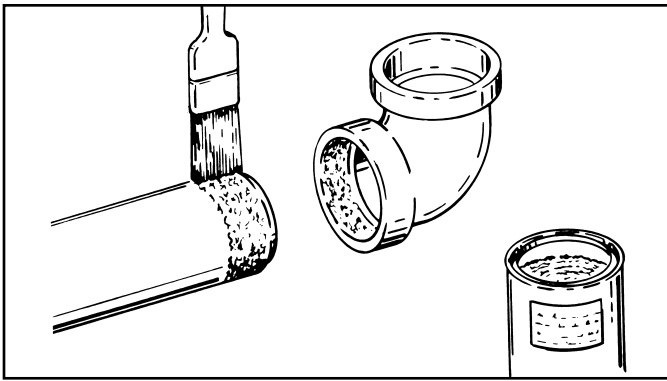


Figure 40.

F. Joint assembly

Working quickly, insert the pipe into the fitting socket bottom and give the pipe or fitting a 1/4 turn to evenly distribute the cement. Do not continue to rotate the pipe after it has hit the bottom of the fitting socket. A good joint will have sufficient cement to make a bead all the way around the outside of the fitting hub. The fitting will have a tendency to slide back while the cement is still wet so hold the joint together for about 15 seconds.

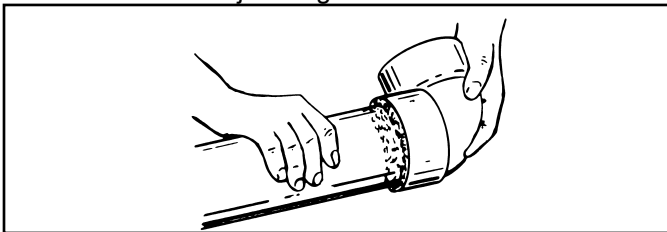


Figure 41.

G. Cleanup and joint movement

Remove all excess cement from around the pipe and fitting with a dry cotton rag. This must be done while the cement is still soft.

The joint should not be disturbed immediately after the cementing procedure, and sufficient time should be allowed for proper curing of the joint. Exact drying time is difficult to predict because it depends on variables such as temperature, humidity and cement integrity. For more specific information, you should contact your solvent cement manufacturer.

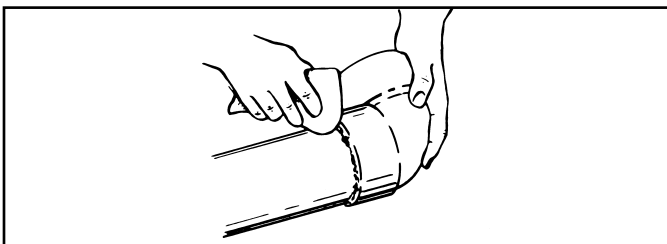


Figure 42.

BLOWER ASSEMBLY INSTALLATION

1. This power vented water heater comes with blower assembly installed.
2. After unit is set in place, make sure blower assembly is still mounted securely. Make sure there is no damage to blower.
3. Make sure there is no packing material in the inlet or discharge of the blower.
4. Make sure that the plastic tubing is still attached from the air pressure switch to the port on the blower motor housing. Make sure the plastic tubing is not folded anywhere between the pressure switch and the blower motor housing (see Figure 44 thru Figure 48).
5. This water heater is a polarity sensitive appliance and will not operate if the power supply polarity is reversed. Power to this water heater must be wired properly (correct polarity).
6. Do not plug in power cord until vent system is completely installed. The Power Direct Vent operates on 110 -120 VAC. therefore a grounded outlet must be within reach of the 6 foot flexible power cord supplied with the heater. The power cord supplied may be used on a unit only where local codes permit. If local codes do not permit use of flexible power supply cord:
 - a. Make sure the unit is unplugged from the wall outlet. Remove the screw and open panel on the front of the junction box on the blower.
 - b. Cut the flexible power cord, leaving enough to be able to make connections. Remove the strain relief fitting from the box.
 - c. Install a suitable conduit fitting inside the enclosure.
 - d. Splice field wiring into existing wiring using code authorized method (wire nuts, etc).
 - e. Be certain that the neutral and line connections are not reversed when making these connections.
 - f. Ground heater properly. This water heater must be grounded in accordance with the current edition of "**National Electrical Code**", **NFPA 70** and/or local codes. These must be followed in all cases. The water heater must be connected to a grounded metal, permanent wiring system or an equipment grounding conductor must be run with the circuit conductors and connected to the equipment grounding terminal or lead on the water heater (see Figure 12; the wiring diagram).
 - g. Close the panel on the junction box. Make sure that the access panel is secured shut.
7. The blower discharge has a rubber coupling made to accept only straight sections of 2" or 3" pipe. To start off with an elbow, a short section of the straight pipe must be cut and glued into the end of the elbow that will mount in the rubber coupling.

Connections To The Blower And Air Duct

1. The plastic vent piping connects into the rubber coupling located on the top of the blower assembly. This coupling includes gear clamps to connect the venting to the blower.

Important: These connections must be properly seated and tightened to prevent the leakage of flue gases into the area. See Figure 44 thru Figure 48.

2. The 40 and 50-gallon heaters with rated inputs of 45k Btu/hr or less are designed and supplied with a 2" rubber coupling to accept the vent pipe.
3. The 50 and 75-gallon models with rated inputs of 58k Btu/hr or more are supplied with a 3" rubber coupling to accept the vent pipe. **Note:** Polypropylene vent systems require separate adaptor (field supplied).
4. Before installing clean and lightly sand the end of the ABS/PVC/CPVC plastic vent piping that will connect into the rubber coupling. For polypropylene vent systems follow manufacturer's instructions.
5. Loosen the upper clamp on the rubber coupling and insert the sanded end of the vent piping a full 1-1/4". Do not use glue or sealant in the rubber coupling. Check that there is no stress on the connection or the vent piping that may be caused by twisting or bending.
6. Tighten the upper clamp so that the vent piping is firmly secured in the coupling and is gas tight. Do not over tighten or cause distortion of any of the parts. Ensure the bottom of the rubber coupling is firmly seated on the blower outlet and that the lower gear clamp is also secure. Check to ensure there is no distortion or movement of the clamped assembly once it is completed.

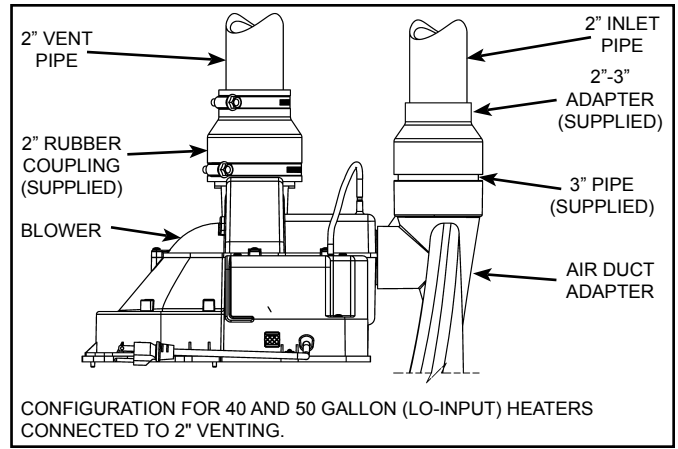


Figure 44.

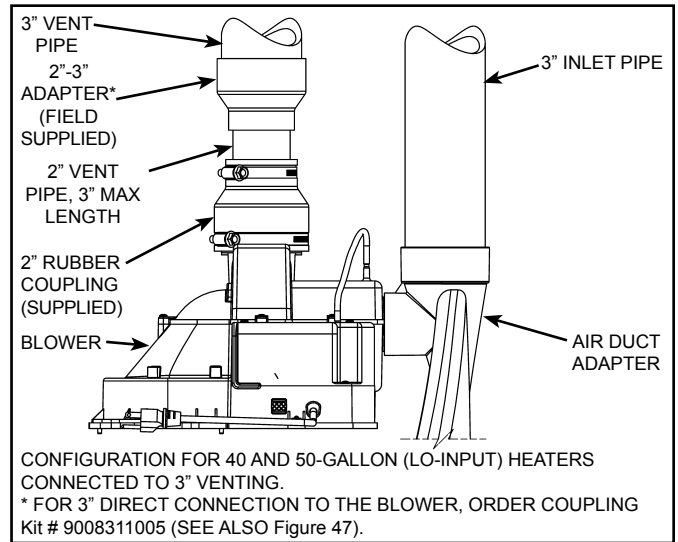


Figure 45.

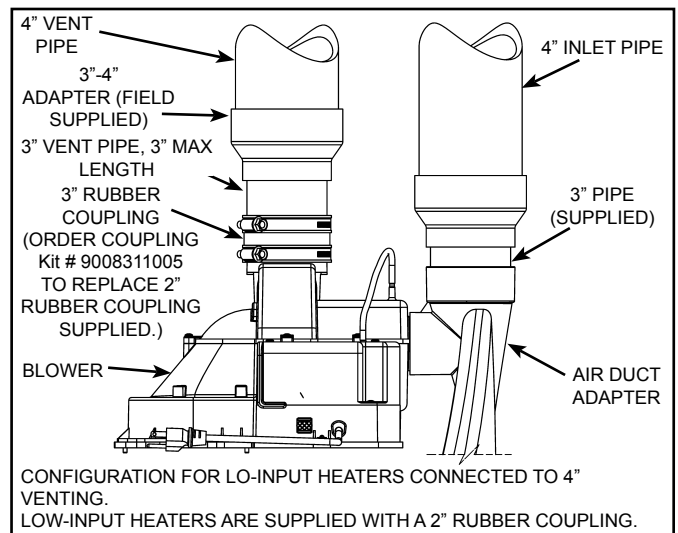


Figure 46.

CAUTION

Property Damage Hazard

- Do not overtighten the top and bottom gear clamps of the rubber coupling.
- Do not apply solvent cement or silicone to the rubber coupling connection.

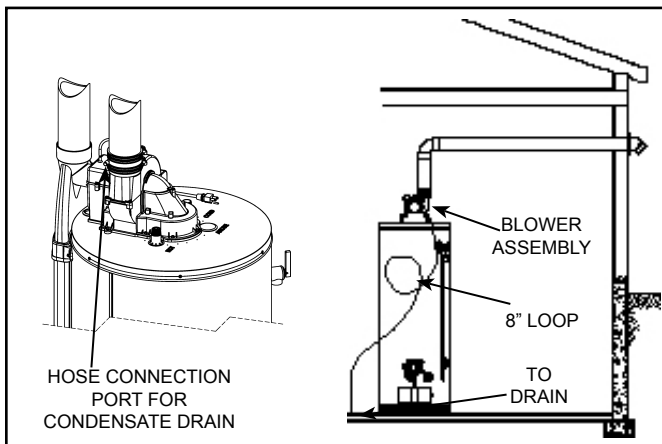


Figure 43.

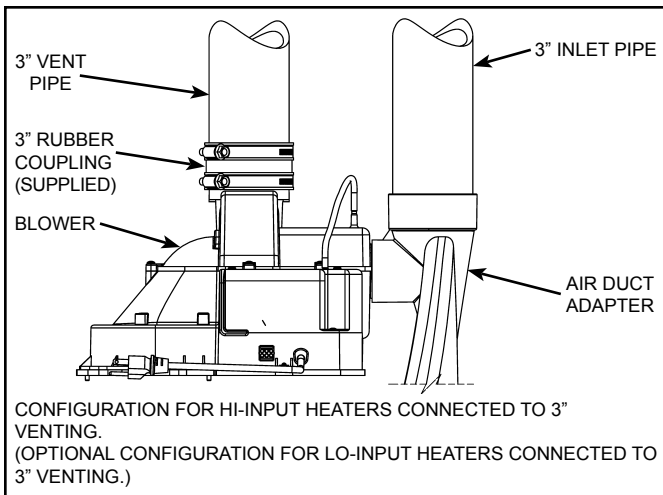


Figure 47.

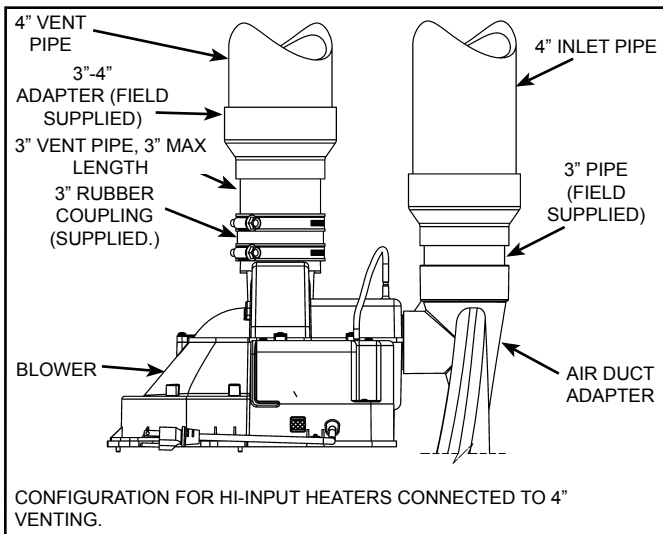


Figure 48.

CONDENSATE

In certain conditions, installations in unconditioned space or having long horizontal or vertical vent runs can accumulate condensate. Long lengths of venting that pass through cool/cold areas will experience condensation. The vent pipe should be sloped upwards away from the blower assembly, then adequate means for draining and disposing of the condensate needs to be made by the installer. Condensate formation does not occur in all installations of power direct vented water heaters, but should be drained on installations where it can form in the venting system. Condensation in the venting system of power direct vented water heaters is dependent upon installation conditions including, but not limited to:

- ambient temperature and humidity of installation location,
- ambient temperature and humidity of venting space,
- vent discharge and slope,
- product usage.

If installation conditions cause condensation, install a condensate trap loop approximately 8" in diameter using 3/8" plastic hose. Connect the hose to the built-in drain port of the rubber coupling of the blower assembly (see Figure 43). Loop the hose in a vertical position as shown. The tube loop must be filled with water at least halfway prior to operating the heater. Ensure the end of the tube has access to a drain as condensate will flow from the end. Secure the tubing to the side of the heater. Caution must be used to ensure that drain is free and clear of debris and will not allow backflow through the condensate drain line. Care should be taken to ensure there is no kink or twist in the condensate hose.

- Condensate lines must be free and clear of debris and must not allow back flow through drain line.
- Condensate lines must be able to flow freely to an appropriate drain.
- Do not allow condensate lines to become crimped closed.
- Analyze entire vent system to make sure that condensate will not become trapped in a section of vent pipe and therefore reduce open cross sectional area of vent.

Condensate from this water heater is mildly acidic. Please note that some local codes require that condensate be treated by using a pH neutralizing filter prior to disposal. Condensate neutralizer kits are available. Contact your distributor or Service Agency.

Prior to operating the water heater, make sure the removable cap is installed on the drain port in installations where a drain hose is not needed. **Note:** This cap must remain in place if a drain hose is not installed.

SOUND SUPPRESSOR (OPTIONAL)

The sound suppressor can reduce the noise generated by the water heater heard outside. Depending on the configuration of the water heater, the sound suppressor will be either a 2" or a 3" fitting (see Table 6). The sound suppressor can be fitted to the venting near the blower assembly (see Figure 49 and Figure 50). The sound suppressor has an equivalent vent length of 15'.

Venting size	Sound suppressor kit #
2"	9009046005
3"	9009059005

Table 6.

Sound Suppressor At Blower

The preferred location for the Sound Suppressor is 12" away from the blower as shown in Figure 49 and Figure 50 and serves as the first 90° elbow. If restrictive vent screens are required, they may be located near the blower (see Figure 24 & Figure 25).

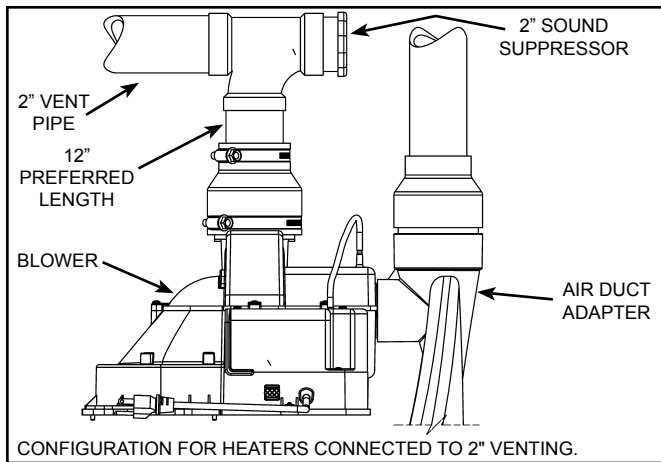


Figure 49.

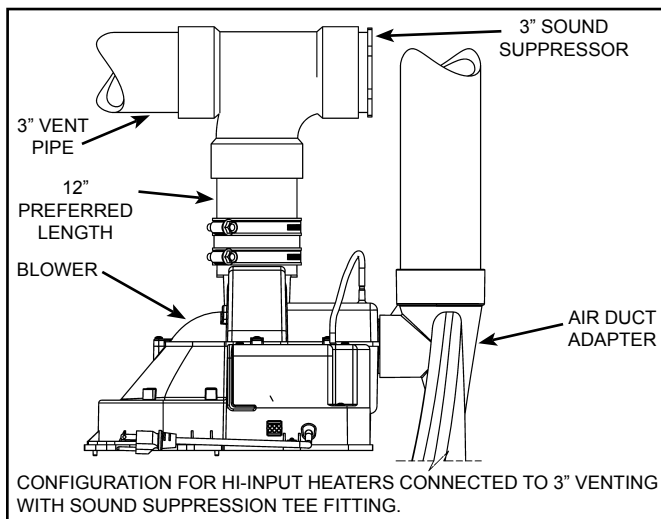


Figure 50.