



System 636[®]

INSTALLATION GUIDE

System 636[®] Type BH Class IIA (PVC)
and Class IIB (CPVC)

System 636 Flue Gas Venting
Systems for Gas-Burning Appliances
Categories II and IV

Minimum Installation Requirements in
Accordance with Standard ULC S636

- A. Examine all components for possible shipping damage prior to installation.
- B. Proper joint assembly is essential for a safe installation. Follow these instructions exactly as written.
- C. The venting system must be free to expand and contract and must be supported in accordance with these instructions and the local building code.
- D. Check for proper joint construction when joining pipe to fittings.
- E. Check for unrestricted vent movement through walls, ceilings, and roof penetrations.
- F. Different manufacturers have different joint systems and solvent cements. DO NOT mix pipe, fittings or joining methods from different manufacturers.
- G. DO NOT use or mix System 636® components with other IPEX product.
- H. IPEX OFFERS TRAINING AND REFRESHER COURSES UPON REQUEST AND RECOMMENDS TO A MINIMUM INSTALLERS RECEIVE FORMAL TRAINING ON SYSTEM 636 EVERY THREE (3) YEARS

System 636 Pipe, Fittings and Cements are certified as a system and must be installed as such.

LITERATURE & WEBSITE DISCLAIMER

The information contained here within is based on current information and product design at the time of publication and is subject to change without notification. IPEX does not guarantee or warranty the accuracy, suitability for particular applications, or results to be obtained therefrom.

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IT IS IMPORTANT TO READ AND UNDERSTAND THIS GUIDE. IT CONTAINS INFORMATION TO HELP MAINTAIN SAFETY AND PREVENT PROBLEMS.

Improper installation or use of System 636® can result in personal injury and/or property damage. It is important to be aware of and recognize safety alert messages as they appear in this guide.

The types of safety alert messages are described below.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid personal injury or death.

⚠ WARNING

"WARNING" Indicates a hazardous situation which, if not avoided, could result in severe injury or death.

⚠ CAUTION

"CAUTION" Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

"NOTICE" Indicates a hazardous situation which, if not avoided, could result in system failure and property damage.

"NOTE" signifies special instructions which are important but are not related to hazards.

System 636 Safety Alerts

⚠ WARNING

NEVER use or test System 636 with compressed air or other compressed gases.

Use of compressed air or gas in System 636 pipe and fittings can result in explosive failures and cause severe injury or death.



⚠ CAUTION

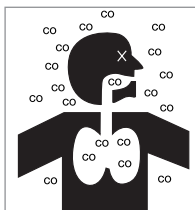
Do not tamper with the System 636 vent components. If the components appear to be damaged or do not operate correctly, decommission the vent system and do not attempt to repair. Contact IPEX for a replacement.

⚠ WARNING

Carbon monoxide (CO) can cause brain damage or death.

ONLY use ULC S636 vent material approved by the appliance manufacturer for venting of combustion gases.

READ & UNDERSTAND this instruction manual and safety messages before installing a ULC S636 venting system.



NOTICE

System 636 PVC and CPVC is approved for Venting Category II and IV appliances. PVC is rated for a maximum flue temperature of 65°C (149°F) and CPVC is rated for a maximum flue temperature of 90°C (194°F).

NOTICE

System 636 must be installed in accordance with CSA B149.1 Natural Gas and Propane Installation code, Local Building Code, Appliance Installation Instructions and the System 636 Installation Guide. If a conflict exists between these documents the more stringent requirements will apply.

⚠ WARNING

Follow all preparation and installation procedures.

Supplemental information

DO'S and DON'TS

CAUTION

Refer to the contents of this guide for complete installation instructions and guidelines.

DO's

- Gas fired heating appliances should only be installed with venting products listed to ULC S636 for venting of combustion gases
- Read the appliance and vent manufacturer's installation instructions and install products accordingly
- System 636 PVC and CPVC is approved for venting category II and IV appliances. PVC is rated for a maximum flue temperature of 65°C (149°F) and CPVC is rated for a maximum flue temperature of 90°C (194°F)
- Confirm with the appliance vent manufacturer that the fire-stop material is compatible with System 636 material.
- Keep pipe and fittings clean and in original packaging until needed
- Follow handling and storage procedures found in this guide
- Follow instructions in this guide exactly as written to ensure proper installation of vent system. **It is strongly recommended that installers complete IPEX System 636 installation training and read this guide in its entirety to ensure "BEST INSTALLATION PRACTICES" are always followed**
- Installers must be properly trained before proceeding to installation, operation or maintenance of System 636. IPEX offers training and refresher courses upon request. Contact your IPEX Representative for more information.
- Contact Local Building or Fire Officials about installation restrictions and installation inspection in your area
- Always adhere to local jobsite and workplace safety regulations
- Ensure the vent system is installed in accordance with CSA B149.1 Natural Gas and Propane Installation and Local Building codes
- Only tools described in this guide shall be used on System 636 pipe and fittings
- Cut the pipe ends squarely
- Deburr and bevel the pipe end with a chamfering tool before solvent welding
- Ensure excess primer and solvent cement does not run inside pipe and fittings
- Avoid puddling of solvent cement in fittings and pipe
- Allow for vent system movement due to expansion and contraction when installing supports
- Follow System 636 recommended Average Appliance Service Times found in this guide before commissioning the heating appliance

DON'Ts

- DO NOT mix pipe, fitting or joining methods from different manufacturers
- DO NOT use solvents or cements other than what is required by this guide
- DO NOT install adhesive tape, insulated wire, or cable in direct contact with System 636 product
- DO NOT use solvent cement that has exceeded its shelf life or has become discolored or jelled
- DO NOT drill or otherwise modify System 636 pipe or fittings beyond the instructions provided in this guide
- DO NOT use solvent cement near sources of heat or open flame, or when smoking
- DO NOT test vent system with compressed air or gases
- DO NOT cut pipe with dull or broken cutting-tool blades
- DO NOT use ratchet cutter or reciprocating saw to cut pipe
- DO NOT allow threaded rod to come in contact with the pipe; for example, threaded rods used to connect pipe hangers
- DO NOT use PVC/CPVC pipe and fittings listed for plumbing applications for venting of combustion gases
- DO NOT install a material for venting of combustion gases that has not been specified by the appliance and vent manufacturer

Handling and Storage of System 636 Pipe and Fittings

- a) The PVC and CPVC materials used for manufacturing System 636 pipe and fittings are strong and lightweight. Care shall be taken in handling and storage to prevent damage to the pipe and fittings.

When stored, System 636 pipe shall be given adequate support at all times. Pipe crates should not be stacked in large piles, especially in warm temperature conditions, as the weight of the pipe at or near the bottom may become deformed (oval) hindering the joining process.

For long-term storage, pipe racks shall be used, providing continuous support along the length of the pipe. If this is not possible, timber supports of at least 3 inch bearing width, at spacings not greater than 3 foot centers, shall be placed beneath the piping. If the stacks are rectangular, twice the spacing at the sides is required. Pipe shall not be stored more than seven layers high in racks. There shall be NO sharp corners on metal racks.

For temporary storage in the field when racks are not provided, care should be taken that the ground is level and free of sharp objects (i.e. loose stones, etc.). Pipe shall be stacked to reduce movement, but shall not exceed three to four layers high.

Joint integrity depends on the condition of the pipe end. Therefore, care should be taken in transit, handling and storage to avoid damage to these ends. Care should be taken when unloading and handling pipe in cold weather. Dropping pipe from a truck or forklift may cause damage. Methods and techniques normally used in warm weather may not be acceptable at the lower temperature range.

NOTICE

The impact resistance and flexibility of System 636 piping are reduced as temperatures approach 0°C (32°F) and below.

When loading pipe onto vehicles, care shall be taken to avoid contact with any sharp corners (i.e. angle irons, nail heads, etc.), as the pipe may be damaged.

While in transit, pipe shall be well secured and supported over the entire length and should never project unsecured from the back of a trailer.

- (b) Prolonged Outdoor Exposure:

Prolonged exposure of System 636 pipe to the direct rays of the sun will not damage the pipe. However, some mild discoloration may take place on the exposed surfaces.

- (c) Protection – Covering:

System 636 pipes are packaged in crates and wrapped in protective plastic film, which protects from UV and keeps the pipe clean. Discoloration of exposed pipe can be avoided by shading it from the direct rays of the sun. This can be accomplished by covering the stockpile or the crated pipe with a light colored opaque material such as canvas. If the pipe is covered, always allow for the circulation of air through the pipe to avoid heat buildup in hot summer weather. Make sure that the pipe is not stored close to sources of heat such as boilers, steam lines, engine exhaust outlets, etc.

Handling and Storage of System 636 Cement and Primer

Store System 636 cement and primer in the shade between 4°C (40°F) and 43°C (110°F) or as specified on label. Keep away from heat, spark, open flame and other sources of ignition such as electronic vapor cigarettes. Secure container lid tightly when not in use to prevent escape of solvent vapors. If the unopened container is subjected to freezing, it may become extremely thick or gelled. This cement can be placed in a warm area, where after a period of time, it will return to its original, usable condition. However, in the case where gelling has occurred as a result of solvent loss (i.e.: if the container has not been adequately sealed after use), the cement shall not be used. Cement in this condition should not be used and should be properly disposed of per Local Jurisdiction requirements.

DO NOT USE System 636 Solvent Cements after the expiration date found on the bottom of the can. IPEX solvent cements are formulated to be used "as received" in original containers. Adding thinners or primers to change viscosity is strictly prohibited. If the cement is found to be jelly-like and not free flowing, it should not be used.

System 636® PVC & CPVC Type BH Gas Venting Systems for category II and IV gas fired appliances are third party certified to ULC S636, latest edition. The following installation methods have been prepared in conformity with the requirements of section 4 of Standard ULC S636.

Product Application

- (a) System 636 PVC & CPVC Gas Venting Systems are third party certified to ULC S636 for venting of Type BH Class IIA and Class IIB gas fired appliances in residential and commercial applications.

NOTICE

Some System 1738 PVC & CPVC pipes, fittings, fitting assemblies or terminations that are dual certified by UL to both UL 1738 for USA and ULC S636 for Canada may be supplied with the gas fire heating appliances of some appliance and vent manufacturers. These components are identified with a UL 1738 and a ULC S636 marking on the certification sticker found on the component and is also marked with such information on the pipe print line. For installation requirements of these components in accordance with the B149.1 Gas code in Canada, please follow the instructions found in this guide.

- (b) System 636 PVC & CPVC Gas Venting Systems are intended for positive and negative pressures in both direct and common venting of gas fired appliances producing exhaust gas temperatures specified in the section below, under Limits of Use and Application.

Limits of Use and Application

- (a) The System 636 vent size and maximum vent length installed shall be in accordance with the appliance manufacturer's instructions.
- (b) System 636 PVC Venting System is suitable for a maximum flue gas temperature of 65°C (149°F). System 636 CPVC Venting System is suitable for a maximum flue gas temperature of 90°C (194°F).
- (c) System 636 PVC or CPVC common venting consists of venting multiple appliances while sharing a single fresh air intake and single exhaust vent. Reference the appliance manufacturer installation instructions to confirm (i) whether the appliance is approved for common venting, (ii) the maximum number of appliances that can be vented through one manifold and (iii) and required vent sizing.

⚠ WARNING

Improper installation of System 636 venting systems may result in personal injury or death. Only a licensed installer should attempt the installation of gas burning equipment and vent, following the gas appliance and vent manufacturer's directions.

- (d) All System 636 pipe and fittings must be carefully inspected by a licensed installer before installation to ensure no damage has occurred during handling of the product. Any damaged product must be replaced. No attempt at repairs are to be made at the job site.
- (e) Temperature changes in a gas venting application may cause the system to expand and contract accordingly. In accordance with this guide, proper care must be taken to allow for this movement through walls, ceilings, and roof penetrations. The venting system must be supported in accordance with these instructions.
- (f) Only the applicable System 636 primer and solvent cement shall be used to assemble System 636 venting systems.

NOTICE

Follow IPEX solvent welding procedures as outlined in this guide.

As per ULC S636 standard, DO NOT mix pipe, fittings or joining methods from different manufacturer's as they have different joint systems and adhesives. This can result in unsafe conditions and will void ULC S636 certification.

- (g) Venting should be as direct as possible using the fewest fittings as possible. The maximum vertical rise or horizontal run of vent pipe plus the effective length of all fittings in a single vent installation shall not exceed the maximum vent length outlined in the appliance manufacturer's installation instructions.
- (h) All framing requirements for floor, wall and ceiling penetrations shall be in accordance with the local building code and/or the local regulatory authority.
- (i) All penetrations of fire rated floors and walls shall be firestopped as described in the Firestop section of this guide.
- (j) Roof penetrations made for vent terminations should be sealed with a plumbing roof boot or equivalent flashing as per the local building code, or as permitted by the local regulatory authority.

- (k) Chemical attack can cause product failure. Only use sealants, gaskets and adhesives that are chemically compatible with the PVC or CPVC material that has been installed.
- (l) Venting of appliances certified to ANSI Z21.10.3 / CSA 4.3 (Gas-fired Water Heaters, Volume III, Storage water heaters with input ratings above 75,000 Btu per hour, circulating and instantaneous) and appliances certified to ANSI Z21.13 / CSA 4.9 (Gas-fired low pressure steam and hot water boilers) **SHALL NOT BE INSULATED.**
- (m) Insulating vent piping installed in an unconditioned space is recommended when venting an appliance certified to an ANSI/CSA appliance standard not listed above. Insulation should also be considered for inlet piping near the outside wall to prevent pipe condensation. Insulation must have an R value sufficient to prevent freezing of condensate. Consult with the insulation manufacturer for compatibility of insulation with System 636 PVC and CPVC pipe and fittings materials.

Reference the appliance installation instructions for additional details about the insulation of vent pipe.
- (n) All horizontal sections of the venting system must be installed with a slope not less than 0.25 in./ft. down towards the appliance in order to collect and remove condensate generated inside the vent. The removal of condensate will help reduce the possibility of ice buildup and blockage. Refer to the appliance manufacturer's installation instructions for further details regarding the installation of approved methods for draining condensate .
- (o) If painting the System 636 vent after installation, only latex/water base paint shall be used and all product markings must be either visible or accessible for visual inspection.

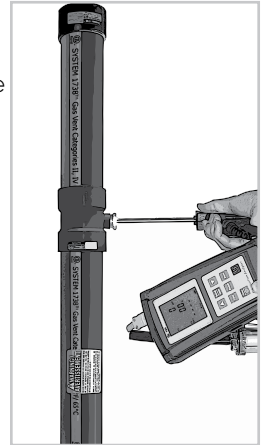
NOTE: Apply masking tape over product markings prior to painting. The ability to pull-back on the masking tape will allow for future inspection and product identification.

Maintenance

IPEX recommends that the System 636 Flue Gas Venting system be checked at least once per year by a licensed Plumbing or HVAC service technician. This can be done during any regular maintenance activities as required for the heating appliance or any other time.

Appliance Testing

DO NOT drill holes in System 636 piping. Should the appliance not be equipped with an access port for flue gas testing, IPEX recommends the installation of a System 636 Access Tee. The Access Tee has a 1/2" female thread outlet with a removable 1/2" male thread plug. The Access Tee shall be installed on the vertical vent as close to the appliance as possible. For installation instructions specific to the access tee, please reference the installation instructions found in this guide.



Firestops

Should System 636 pass through a fire separation required to have a fire-resistance rating, the penetration shall be firestopped with a PVC/CPVC listed device or caulking to restore the integrity of that fire separation in accordance with local building codes.

Vent Connection to the Appliance

Please refer to the appliance manual for instructions to connect System 636 to the appliance exhaust and intake collar. DO NOT use screws to join System 636 to the appliance.

Vent Replacement

IPEX recommends the flue gas venting system be replaced each time the heating appliance is replaced.

Warranty

A 10-year warranty is provided with System 636 Flue Gas Venting System when installed in accordance with the guidelines herein. Please reference our website at ipexna.com.

Training

The following is an excerpt from CSA B149.1-15 for Natural Gas and Propane Installation Code:

4.4.2: Personnel performing installation, operation, and maintenance work shall be properly trained in such functions.

IPEX offers training and refresher courses upon request and recommends to a minimum installers receive formal training on System 636 every three (3) years. Contact your IPEX Representative for more information on training sessions.

Installation of Vent Pipe Underground

A portion of System 636 piping may be installed underground when installed in accordance with the instructions below or the local building or plumbing code, whichever is more stringent. The piping **MUST** terminate above ground in accordance with the termination instructions found within this guide.

Trenching for underground installation shall allow a minimum of 100 mm clearance on all sides of the pipe, and a minimum of 100 mm of sand without stones or other foreign material shall be placed below the pipe. The trench should be backfilled with sand and packed to a minimum depth of 100 mm above the pipe before other backfilling takes place. Any underground pipe penetrating through a building exterior wall shall be sealed so that the penetration is watertight.

Expansion and Contraction

To accommodate expansion/contraction movement and stresses that may occur with System 636 PVC and CPVC venting (see Table 1), The following guidelines shall be followed during installation:

1. Leave adequate clearance between any System 636 elbows and walls or the underside of floor boards or joists so that vent movement is not restricted.
2. Use loose fitting clamps and hangers to allow free pipe movement if required.
3. For critical areas such as near the appliance outlet, two 45° elbows may be used in lieu of one 90° elbow for more structural flexibility.

TABLE 1 – PVC/CPVC Linear Expansion (ΔL) in inches

Temp. change	Length of Run (ft)									
	PVC					CPVC				
(°F)	10	20	30	40	50	10	20	30	40	50
10	0.04	0.07	0.11	0.14	0.18	0.05	0.09	0.14	0.18	0.23
20	0.07	0.14	0.22	0.29	0.36	0.09	0.18	0.27	0.36	0.46
30	0.11	0.22	0.32	0.43	0.54	0.14	0.27	0.41	0.55	0.68
40	0.14	0.29	0.43	0.58	0.72	0.18	0.36	0.55	0.73	0.91
50	0.18	0.36	0.54	0.72	0.90	0.23	0.46	0.68	0.91	1.14
60	0.22	0.43	0.65	0.86	1.08	0.27	0.55	0.82	1.09	1.37
70	0.25	0.50	0.76	1.01	1.26	0.32	0.64	0.96	1.28	1.60
80	0.29	0.58	0.86	1.15	1.44	0.37	0.73	1.09	1.46	1.82
90	0.32	0.65	0.97	1.30	1.62	0.41	0.82	1.23	1.64	2.05
100	0.36	0.72	1.08	1.44	1.80	0.46	0.91	1.37	1.82	2.28

TABLE 2 – PVC/CPVC Linear Expansion (ΔL) in mm

Temp. change	Length of Run (mm)									
	PVC					CPVC				
(°C)	3	6	9	12	15	3	6	9	12	15
5	0.8	1.6	2.4	3.2	4.1	1.0	2.0	3.1	4.1	5.1
10	1.6	3.2	4.9	6.5	8.1	2.0	4.1	6.1	8.2	10.2
15	2.4	4.9	7.3	9.7	12.2	3.1	6.1	9.2	12.2	15.3
20	3.2	6.5	9.7	13.0	16.2	4.1	8.0	12.2	16.3	20.4
25	4.1	8.1	12.2	16.2	20.3	5.1	10.2	15.3	20.4	25.5
30	4.9	9.7	14.6	19.4	24.3	6.1	12.2	18.4	24.5	30.6
35	5.7	11.3	17.0	22.7	28.4	7.1	14.3	21.4	28.6	35.7
40	6.5	13.0	19.4	25.9	32.4	8.2	16.3	24.5	32.6	40.8
45	7.3	14.6	21.9	29.7	36.5	9.2	18.4	27.5	36.7	45.9
50	8.1	16.2	24.3	32.4	40.5	10.2	20.4	30.6	40.8	51.0

Support and Restraint Spacing

- (a) System 636 PVC and CPVC systems must be supported horizontally at a maximum of every 5 feet. (Fig. 1).
- (b) Supports to be used on System 636 pipe shall be suitable for use on plastic pipe and shall not be tightly clamped onto the pipe to allow for possible expansion/contraction movement. Pipe clamps, hangers, metal strapping or equivalent shall not have sharp edges or fulcrum points which might damage the System 636 pipe over time. (Fig. 2.)

If metal strapping is used for support, strapping shall meet the following requirements

- 1/2" strapping - 22 gauge steel
- 3/4" strapping - 28 gauge steel

Strapping or equivalent shall be fixed to supporting structure (e.g. floor joists or cross members) using typical framing nails or screws. (Fig. 1).

- (c) Changes in direction (e.g. 90° elbows) shall be supported as close as practical to the fitting to avoid introducing excessive torsional stresses into the system. This is especially important for vertical 90° bends. If support is being applied to the fitting, then the fitting must be free to move during expansion and contraction of the venting system. (Fig. 3).

FIGURE 2

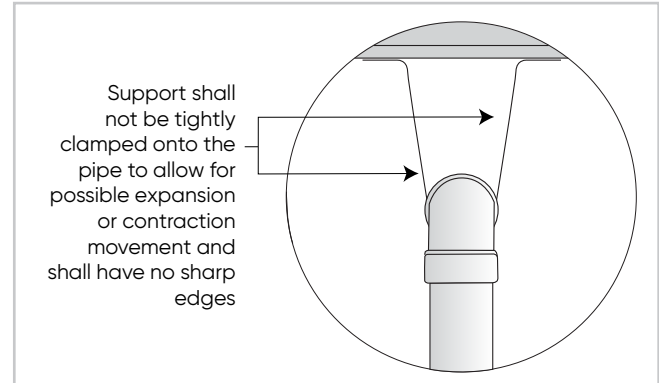


FIGURE 3

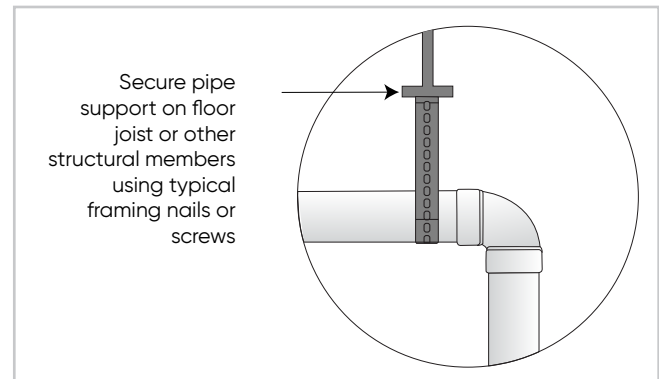
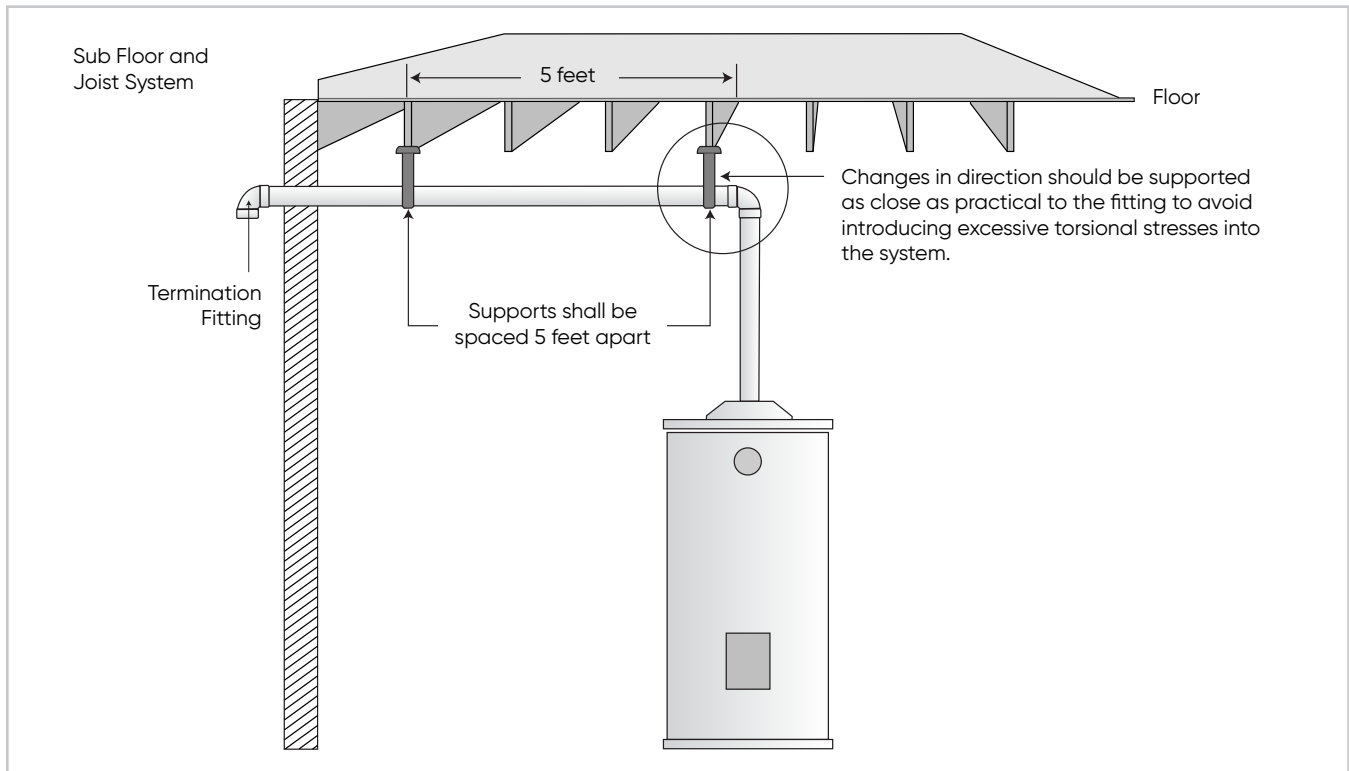


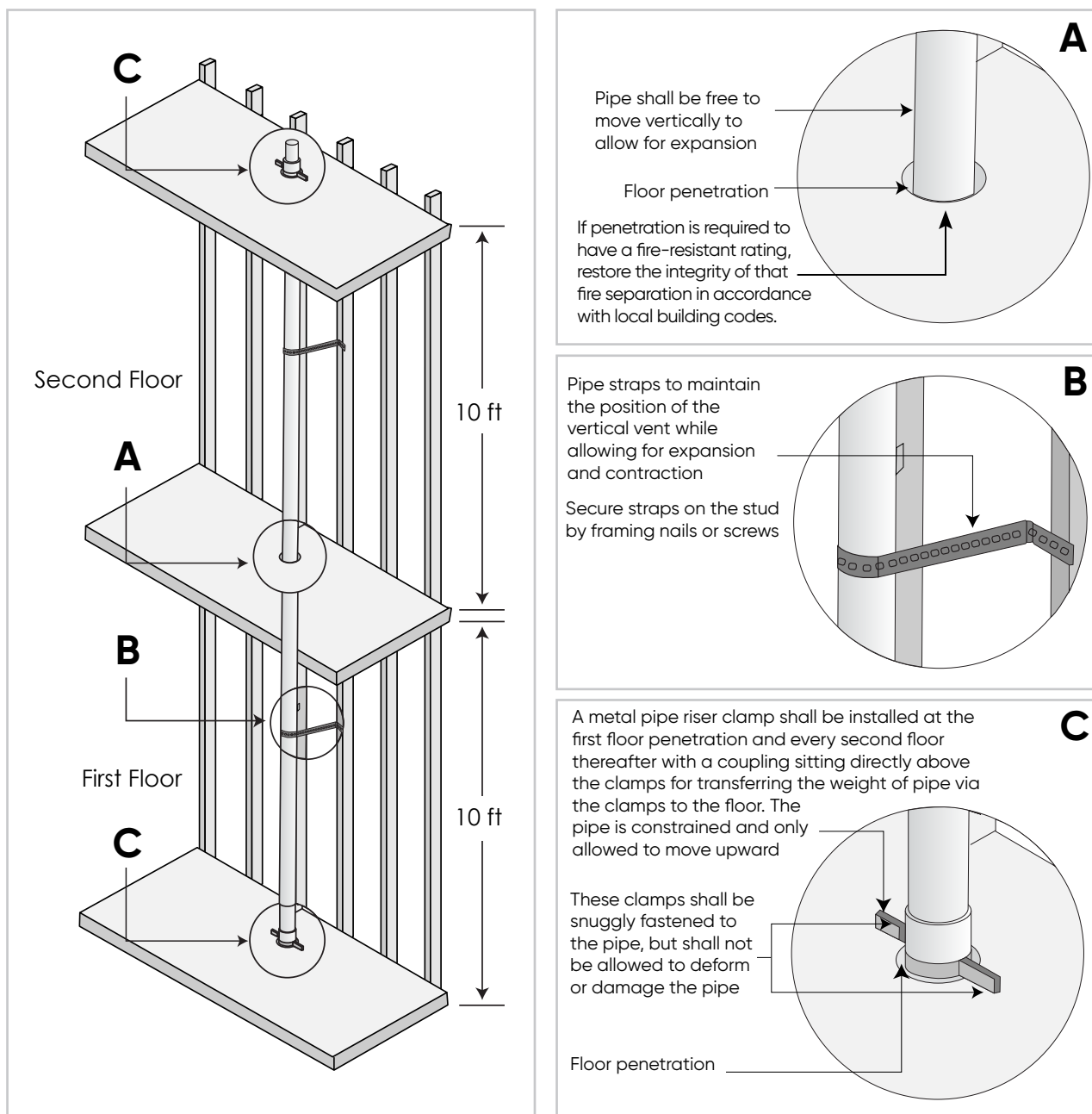
FIGURE 1



Vertical Vent Support

In order to adequately support the weight of vertical vent pipe, a pipe anchor or support shall be installed at the first floor penetration and every second floor thereafter with a System 636 coupling installed immediately above it. Securely fasten pipe anchors or supports to the building structure. Pipe anchors or supports used for this purpose shall be suitable for use with plastic pipe. These anchors or supports shall be snugly fastened to the vent in order to support the weight of the vent, but shall not be allowed to deform or damage the vent. Anchors or supports supporting the weight of the vertical vent shall be in addition to the required pipe straps referred to in Fig. 4-B which is intended only to maintain the position of the vertical vent while allowing for expansion and contraction. Make certain that allowance for expansion and contraction is provided in all venting installations.

FIGURE 4 - VERTICAL VENT SUPPORT



General Termination Requirements

- (a) **THESE MINIMUM REQUIREMENTS ARE GENERAL/ AND NOT APPLIANCE SPECIFIC. APPLIANCE MANUFACTURERS MAY SUPPLY CLEARANCE REQUIREMENTS THAT ARE SPECIFIC TO THE APPLIANCE. IN THIS CASE, THE APPLIANCE MANUFACTURER'S REQUIREMENTS SHALL SUPERSEDE THE CLEARANCES DESCRIBED IN THIS GUIDE.**
- (b) Installation and location of terminations must be in accordance with the latest edition of the System 636 installation guide, appliance manufacturer's installation instructions, local building code requirements and CSA B149.1 Natural Gas and Propane Code. If any conflict exists between requirements within these documents, the more stringent requirement shall apply.
- (c) The termination type of choice must be specified for use as a termination option in the appliance manufacturer's installation manual.
- (d) Unless otherwise specified in the appliance installation instructions, intake and vent pipes may be terminated either horizontally through an outside wall or vertically through a roof.
- (e) System 636 PVC & CPVC vent terminations require zero clearance to combustible construction materials.
- (f) The exit points of gas venting pipe must maintain the minimum clearances to an adjacent opening into the building as specified in the appliance installation instructions and the local building code. If there are discrepancies between these documents, the most stringent requirements shall apply. Do not direct exhaust to window wells, alcoves or stairwells.
- (g) The termination of the venting system shall not be located in traffic areas, such as walkways, unless the venting system is at least 7 feet (2.13 m) above the ground.
- (h) For installation instructions specific to System 636 low profile or concentric terminations, please reference their installation instructions found in this guide.
- (i) **THE FOLLOWING RECOMMENDATIONS ARE NOT TO SUPERSEDE LOCAL BUILDING CODE REQUIREMENTS.**

Clothes Dryer Clearances for Side wall Terminations:

Domestic Type Clothes Dryers (Type 1):

A moisture-exhaust duct from a domestic type clothes dryer shall not terminate within 3 feet in any direction of any System 636 pressure regulator vent termination or fresh air intake.

Commercial Type Clothes Dryers (Type 2):

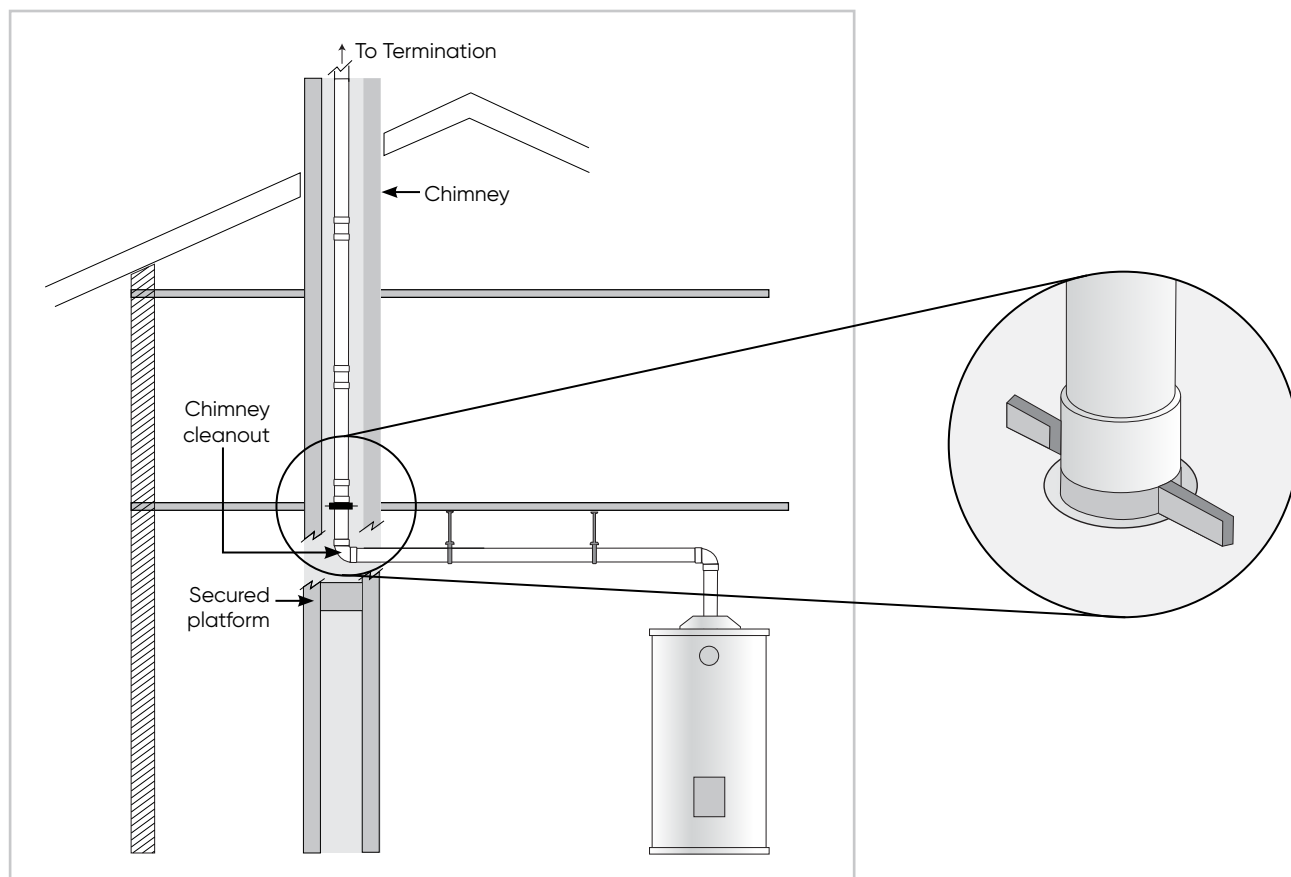
A dryer shall be connected to a metal moisture-exhaust duct that terminates outdoors and shall not be less than 3 feet from any System 636 pressure regulator vent terminations and not less than 10 feet from a fresh-air intake.

Chimney Terminations

If System 636 piping is installed through an existing unused chimney space, installers shall adhere to the following guidelines when doing such installations:

- (a) Vent pipe sizing to be as per appliance manufacturers' instructions.
- (b) Existing vent systems shall not be reused. It shall all be replaced with System 636 as required.
- (c) The chimney space shall be cleaned prior to installation to remove any debris, creosote, or other material.
- (d) All recommended practices for solvent welding must be followed in the same manner as regular System 636 installations. Refer to solvent welding basic principles and installation steps within this guide.
- (e) If permitted by local code, multiple vent pipes are permitted in one chimney space as limited by the interior available cross-sectional area. Zero clearance to combustibles is permitted between multiples runs of System 636 piping and other combustibles.
- (f) Fresh air intakes may also be installed within existing unused chimney spaces providing acceptable spacing and clearance is obtained at the termination as per minimum required clearances found in this guide or as per appliance manufacturer requirements. The more stringent of these two minimum clearances shall be applied.
- (g) Vertical piping through the chimney space or any other vertical spaces exceeding 20 feet is to be structurally supported by use of a pipe coupling installed immediately above and sitting upon a snugly fit metal pipe riser clamp. One of these pipe coupling and metal pipe riser clamp combinations is to be installed through the entrance of the chimney clearance to support the pipe weight. The clamp at the entrance of the chimney is to be rigidly fixed against the wall or floor (see Fig. 5). Alternatively, a wooden platform can be fastened securely against both sides of the chimney walls immediately below the elbow to support the weight above. Reference the Vertical Vent Support Section of this guide for additional information. Should the pipe run exceed 60 feet inside the chimney space, please contact IPEX for further requirements.
- (h) It is recommended to install an air-tight seal at the chimney exit to prevent entry of water, snow, moisture or cold air.

FIGURE 5 - Vertical Support of Vent for Chimney Installations



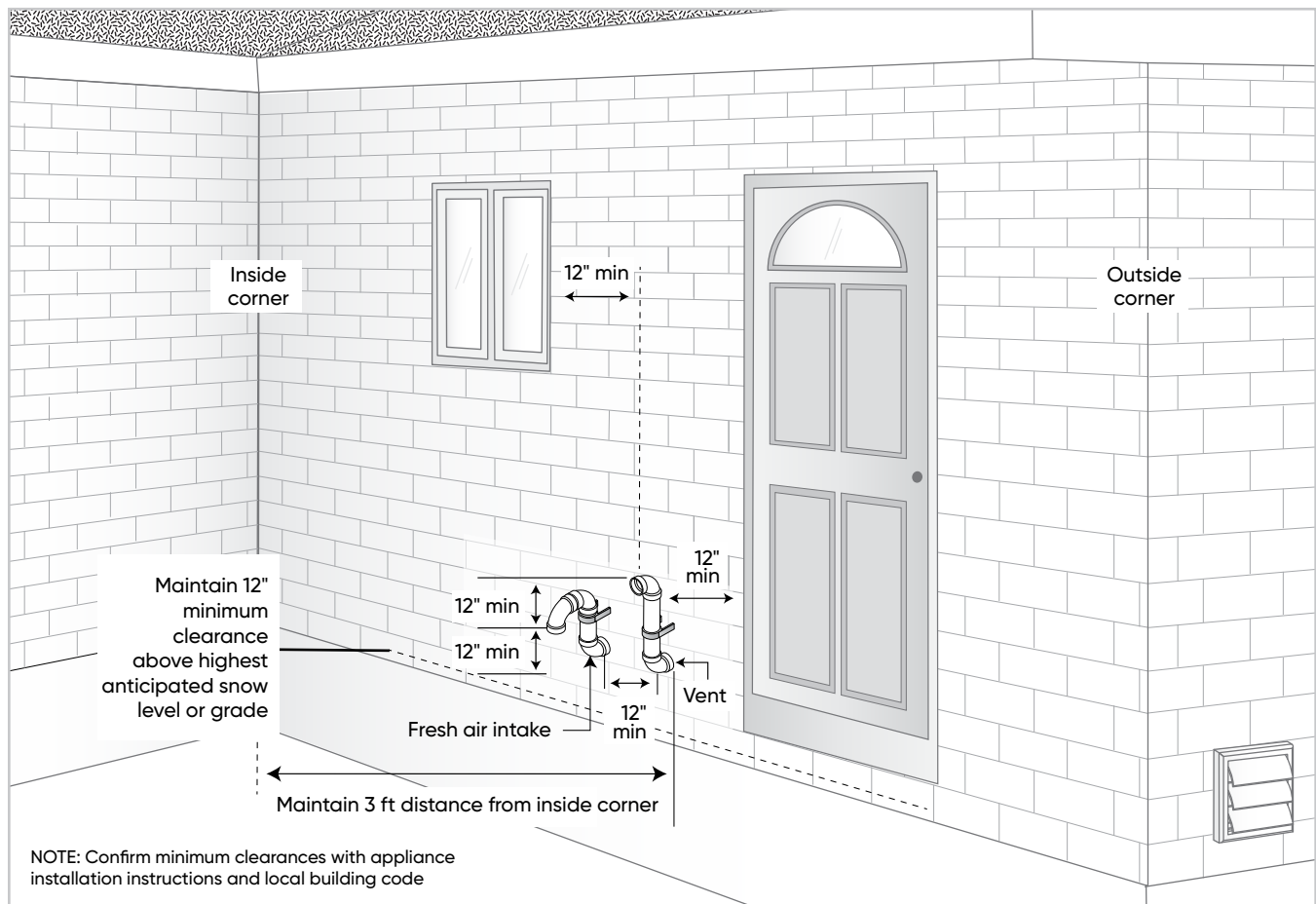
Side Wall Terminations

Snorkel, Low Profile or Concentric

- (a) **BEFORE BEGINNING AN INSTALLATION, ALL MINIMUM CLEARANCES SHALL BE CONFIRMED WITH LOCAL BUILDING CODE REQUIREMENTS AND MINIMUM CLEARANCES.**
- (b) When terminating horizontally through an exterior wall, the System 636 PVC & CPVC venting system requires zero clearance to combustible construction materials.
- (c) Reference figures by termination type covered by this section for guidance on minimum clearances for side wall termination.
- (d) For side wall snorkel vent termination, it shall be installed straight out or elevated and with a 90° elbow as the last fitting. (Figs. 6, 7 & 8)
- (e) For side wall snorkel fresh air intake terminal, it shall point down through the use of two 90° elbows. (Figs 6, 7 & 8)
- (f) The termination through the side wall with a snorkel, low profile or concentric termination will be such that the bottom of the termination is at a level of at least 12" above the expected snow level or grade, which ever is greater.
- (g) If increased exhaust velocity is required, reference the appliance manufacturer's installation instructions for approval and installation direction.
- (h) The fresh air intake and vent shall maintain a minimum clearance of 3 ft from the inside corner of an exterior wall. (Fig. 6)
- (i) The vent must not be terminated within 3 ft from another mechanical opening.

Typical Side Wall Snorkel Termination

FIGURE 6 - Minimum Clearances for a Snorkel Termination



Typical Side Wall Snorkel Termination (con't)

FIGURE 7 - Minimum Separation Between Snorkel Termination Vent and Intake TOP VIEW

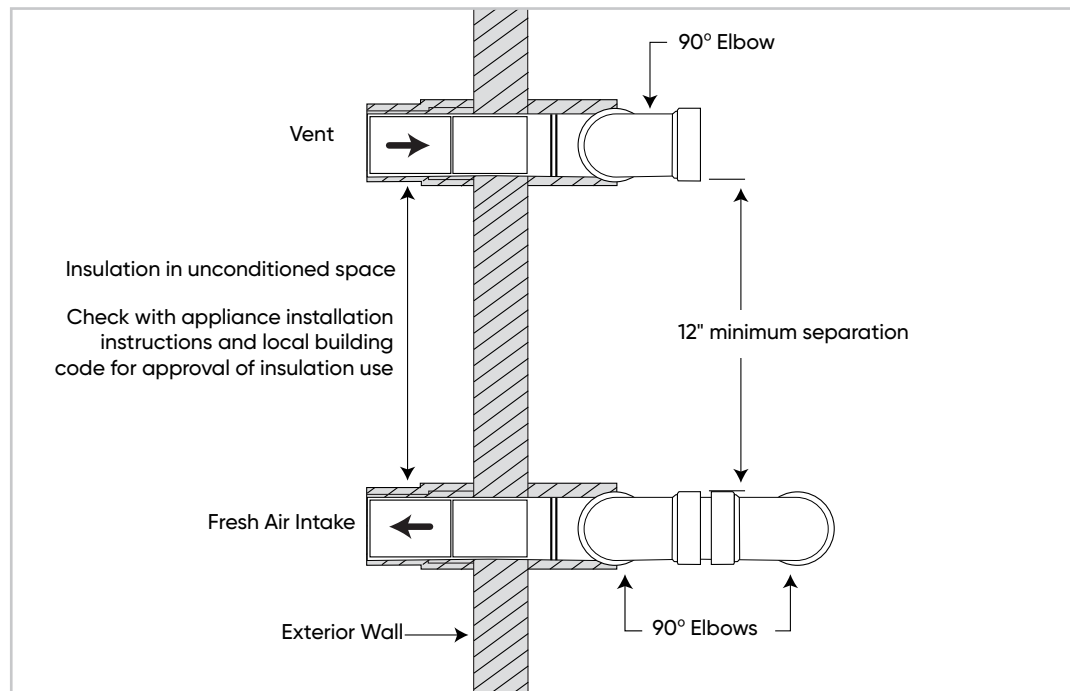
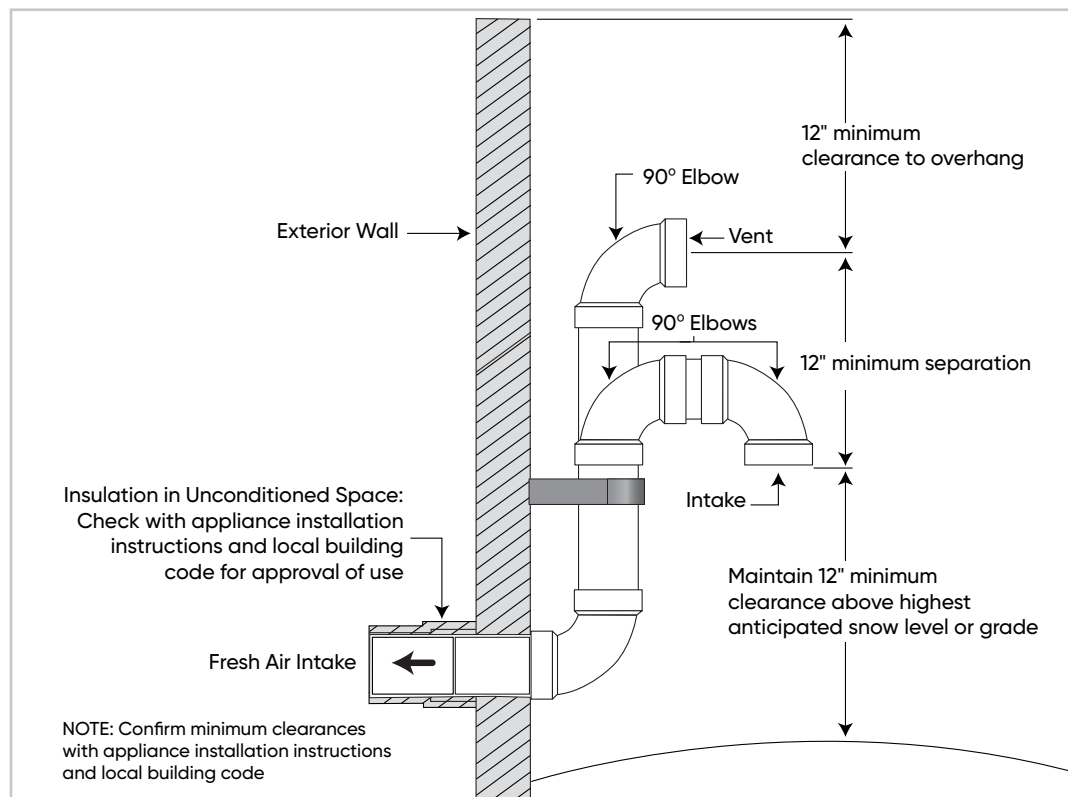
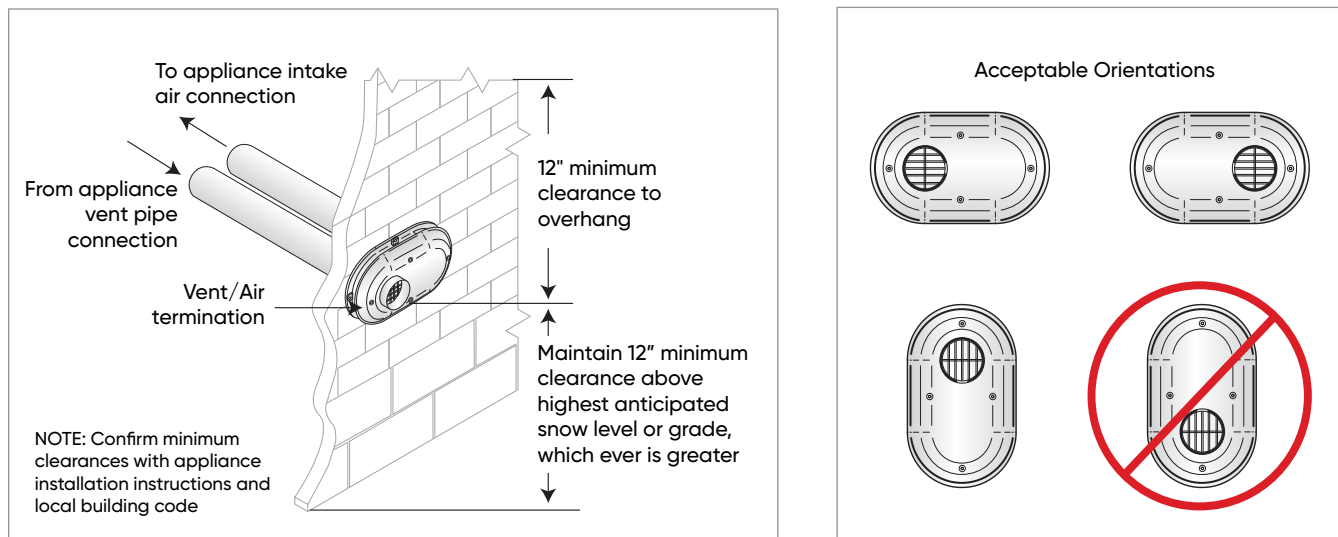


FIGURE 8 - Minimum Clearances for a Snorkel Termination SIDE VIEW



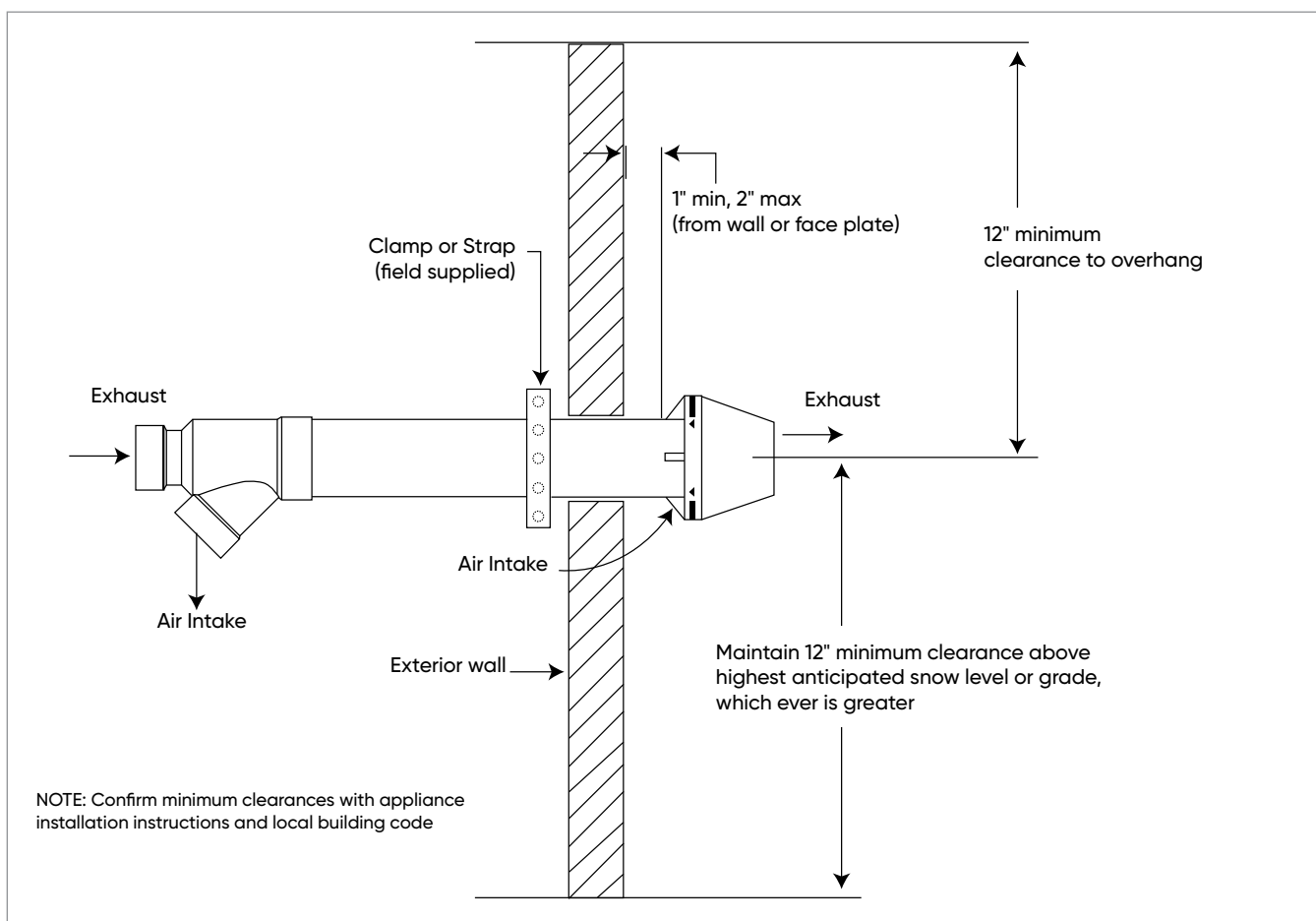
Typical Side Wall Low Profile Termination

FIGURE 9 - Low Profile Side Wall Termination Clearances and Installation Orientation



Typical Side Wall Concentric Vent Termination

FIGURE 10 - Concentric Vent Side Wall Termination Clearances



Multiple Side Wall Terminations

Snorkel, Low Profile or Concentric Terminations

⚠ WARNING

All vent outlets must terminate at the same horizontal plane to avoid recirculation of flue gas through adjacent terminations and causing the possibility of severe personal injury, death or substantial property damage.

- For installation of multiple horizontal low profile terminations through a side wall, maintain a minimum clearance of 12" between the edge of the intake inlet and adjacent exhaust outlet. (Fig. 12)
- To prevent flue gas from recirculating when installing multiple concentric terminations through a side wall, install multiple concentrics as follows: (Fig. 13)

2 concentric vent kits:

- Maintain a maximum clearance of 4" between rain caps or a minimum of 24" distance apart

3 concentric vent kits:

- Option 1 – keep all 3 kits a minimum of 24" apart
- Option 2 – group 2 kits up to a maximum of 4" apart and the third kit over 24" apart

4 or more concentric vent kits:

- Option 1 – keep all concentric kits a minimum of 24" apart
- Option 2 – each group of 2 kits up to a maximum of 4" apart, while keeping the next grouping of 2 kits a minimum of 24" apart

NOTE: The dimensions shown are distances between the edges of the rain caps.

- For installation of multiple snorkel terminations through a side wall, 12" minimum clearance must be maintained between the fresh air intake termination inlet and adjacent exhaust outlet termination. The exhaust termination shall also maintain 12" height clearance above the fresh air intake termination inlet. (Fig. 11)

FIGURE 11 – Multiple Snorkel Terminations

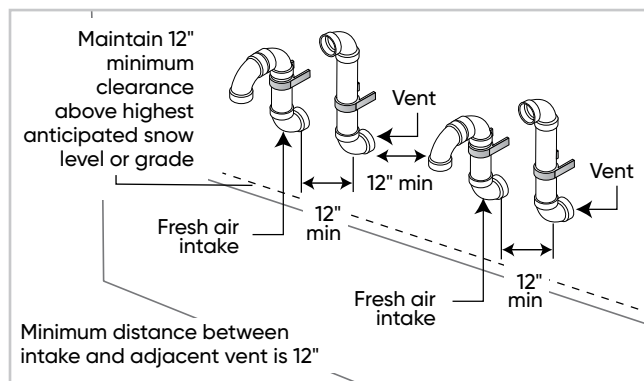


FIGURE 12 – Minimum Clearances:
Multiple Low Profile Side Wall Terminations

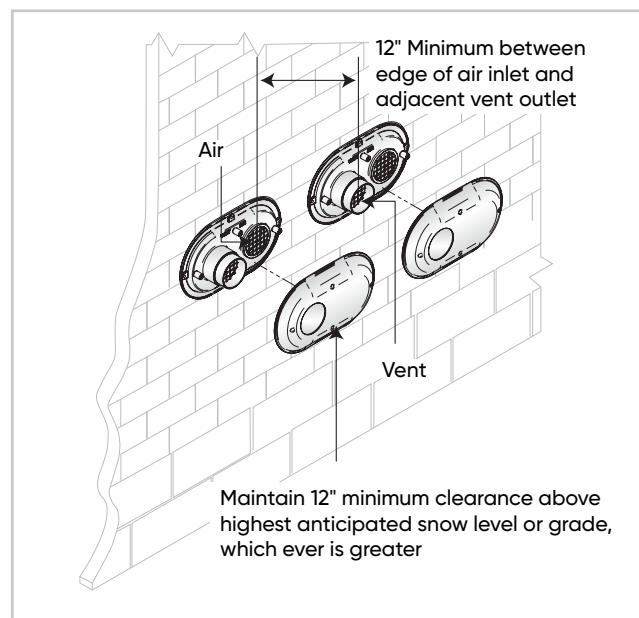
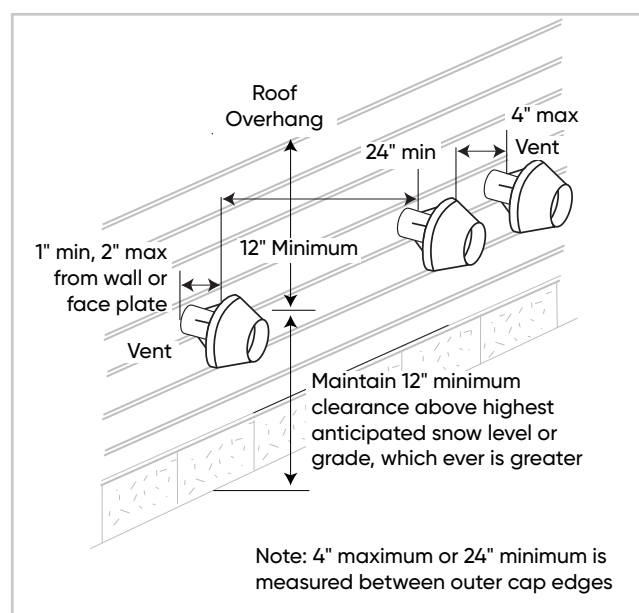


FIGURE 13 – Minimum Clearances:
Multiple Sidewall Concentric Vent Terminations



Pitched Roof Terminations

Snorkel or Concentric Termination

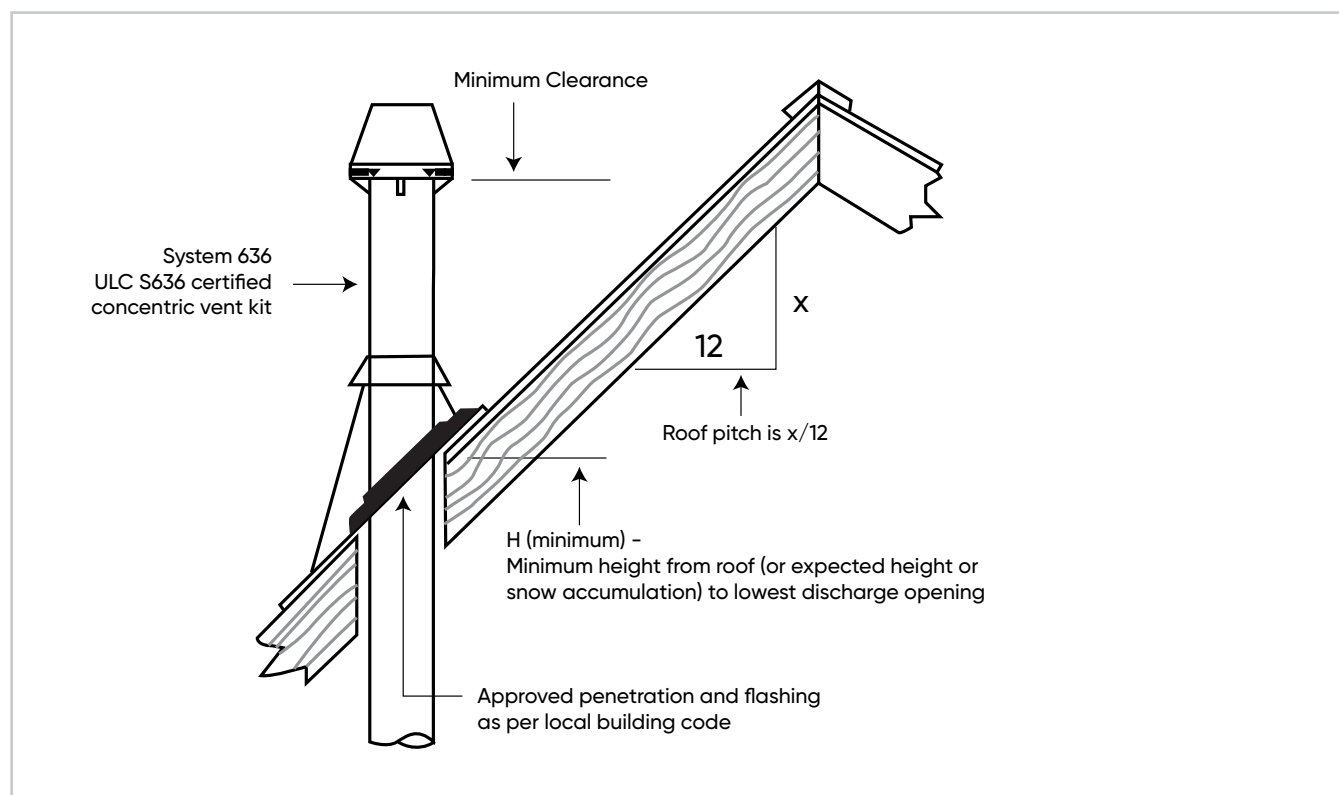
- (a) Snorkel and Concentric Vent Roof termination clearances shall be installed in accordance with the requirements of this section. These clearances shall be cross referenced to the appliance installation manual for appliance specific minimum clearances and local building code requirements. **IF A CONFLICT EXISTS, THE MOST STRINGENT CLEARANCE SHALL APPLY.**
- (b) When terminating vertically through a roof, the System 636 PVC and CPVC venting systems require zero clearance to combustible construction materials.
- (c) In accordance with the requirements of the latest edition of the CSA B149.1 Natural Gas and Propane Code, gas vents that are 12 inches or less shall not be less than 8 ft from a vertical wall or similar obstruction.
- (d) Depending on the roof pitch, the height of the lowest discharge point of the termination shall maintain the minimum clearance identified in Table 2. Refer to the table for guidance on the minimum height requirement of the vent above the roof depending on the slope of the roof.

In regions where snow accumulation is common, the minimum value provided in Table 2 must be added to the anticipated snow level for the region the installation is performed.

TABLE 2 – Minimum Pitched Roof Termination Clearance

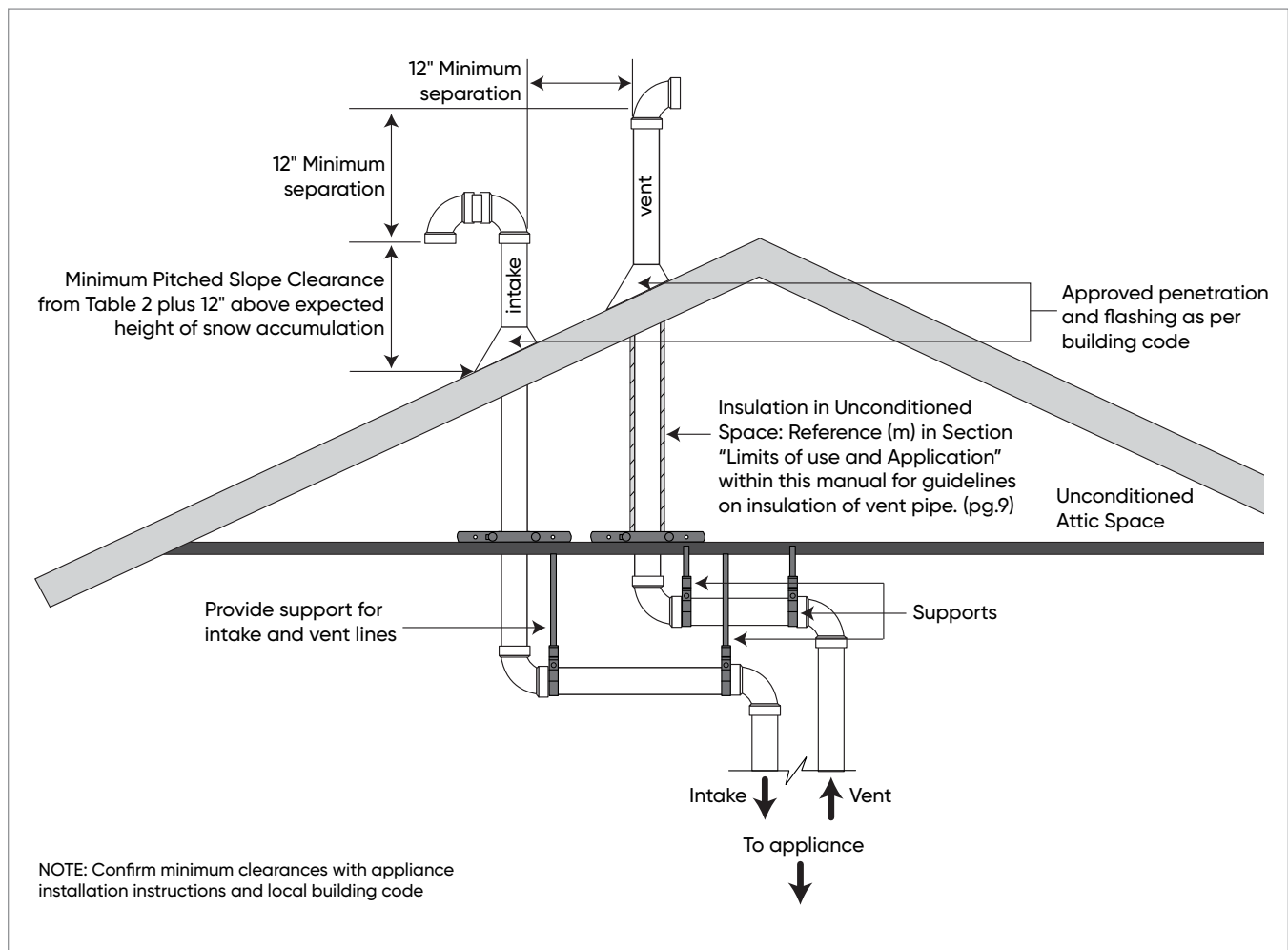
Roof Slope	H (minimum) ft
Flat to 6/12	1.0
Over 6/12 to 7/12	1.25
Over 7/12 to 8/12	1.5
Over 8/12 to 9/12	2.0
Over 9/12 to 10/12	2.5
Over 10/12 to 11/12	3.25
Over 11/12 to 12/12	4.0
Over 12/12 to 14/12	5.0

FIGURE 14 – Minimum Concentric Vent Kit Clearance over a Pitched Roof



- (e) Terminate the vent piping of a snorkel termination straight up when penetrating through a roof. The use of a 90° elbow can be used to redirect exhaust or minimize precipitation from entering into the vent (Fig 15).
- (f) Intake piping of a snorkel termination through the roof must be directed straight down through the use of two 90° elbows (Fig 15).
- (g) The run of intake and vent pipes for a snorkel termination shall be installed with a minimum 12" separation.
- (h) To avoid recirculation of exhaust gas from roof snorkel terminations, the end of the vent pipe shall be a minimum elevation of 12" above the intake inlet.
- (i) The termination shall maintain the minimum pitched roof slope clearance from Table 2 plus 12" minimum clearance above highest anticipated snow level of height specified in Fig. 15.
- (j) Vertical terminations greater than 60" above the roof line shall be supported by guy wires or bracing that is suitable for use on plastic pipe.
- (k) Install a stretch fit roof flash or equivalent in accordance with the local code requirement. The flashing is installed over the pipe to ensure a proper roof seal. Follow the installation instructions of the flashing manufacturer.

FIGURE 15 - Typical Snorkel Roof Termination



Flat Roof Terminations

Snorkel or Concentric Terminations

- (a) Terminations shall maintain 12" minimum height clearance above highest anticipated snow level.
- (b) Vertical termination greater than 60" above the roof line shall be supported by guy wire or bracing suitable for use with plastic pipe.
- (c) Install a stretch fit roof flashing or equivalent in accordance with local code requirement over the pipe to ensure a proper roof seal. Follow the installation instructions of the flashing manufacturer.
- (d) **Snorkel termination:** For flat roof termination installations, the air intake and the exhaust vent terminations must be a minimum of 12" above the highest anticipated snow level or a minimum of 24" above any parapet, vertical wall or structure within 10 feet horizontally. (Fig. 16).
- (e) **Concentric Vent Kit termination:** When installing a concentric termination vertically through a flat roof, the termination's vent cap must be a minimum of 10 feet away from any parapet, vertical wall or structure. (Fig 17). If not, a 24" clearance above an adjacent vertical wall or structure must be maintained.

FIGURE 16 – Flat Roof Snorkel Termination

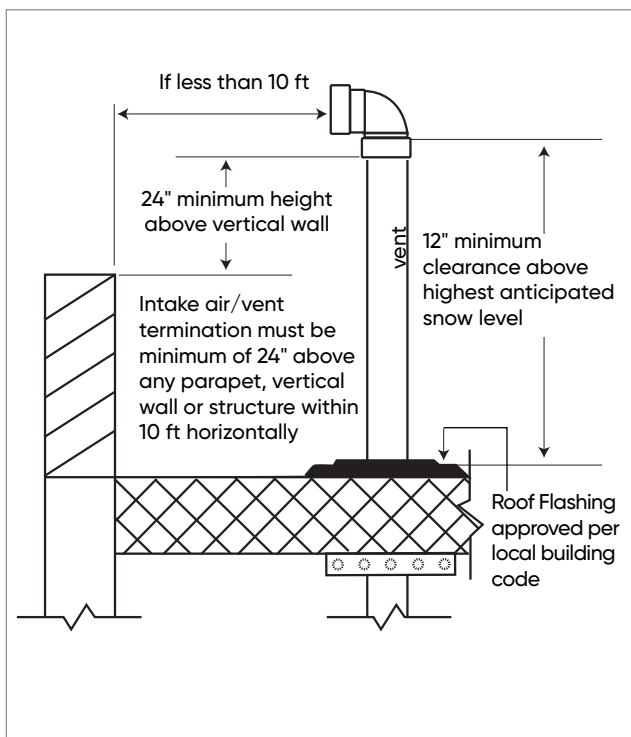
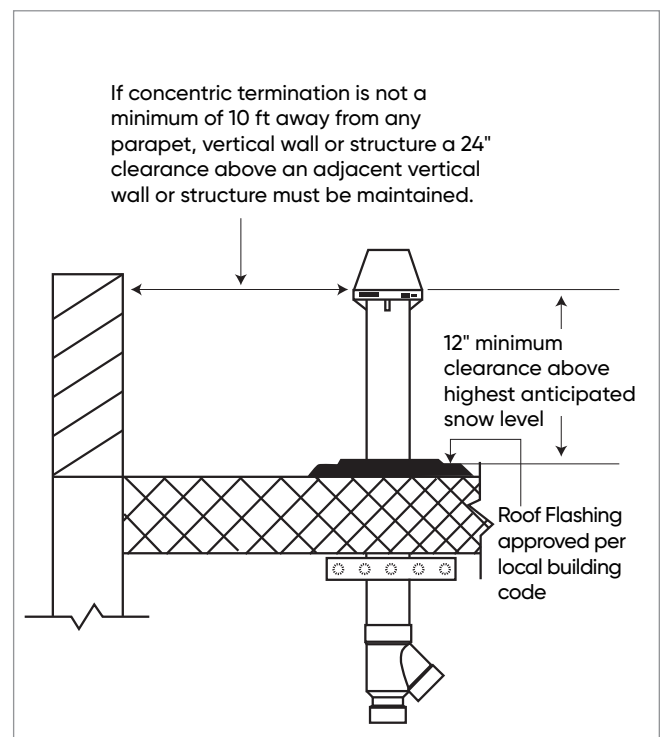


FIGURE 17 – Concentric Vent Flat Roof Termination



Multiple Roof Terminations

Snorkel or Concentric Terminations

⚠ WARNING

All vent outlets and fresh air intake inlets must terminate at the same horizontal plane to avoid the possibility of severe personal injury, death or substantial property damage.

- (a) For installation of multiple snorkel terminations through a roof, 12" minimum clearance must be maintained between intake and adjacent exhaust of snorkel terminations. Exhaust termination shall also maintain 12" height clearance above fresh air intake termination.

All terminations should be installed along the same horizontal plane. Should the terminations be installed in rows along a sloped plane, a minimum clearance of 60" shall be maintained between rows of terminations.

- (b) Maintain the minimum clearance over a pitched roof identified in Table 2, plus 12" above highest anticipated snow level (see Figure 18).

- (c) To prevent flue gas from recirculating when installing through a roof, install multiple concentric vent kits as follows:

2 concentric vent kits:

- Maintain a maximum clearance of 4" between rain caps or a minimum of 24" distance apart.

3 concentric vent kits:

- Option 1 - keep all 3 kits a minimum of 24" apart
- Option 2 - group 2 kits up to a maximum of 4" apart and the third kit over 24" apart

4 or more concentric vent kits:

- Option 1 - keep all concentric kits a minimum of 24" apart
- Option 2 - each group of 2 kits up to a maximum of 4" apart, while keeping the next grouping of 2 kits a minimum of 24" apart

NOTE: The dimensions shown are distances between the outer edges of the rain caps (see Figure 19).

Figure 18: Multiple Snorkel Roof Terminations

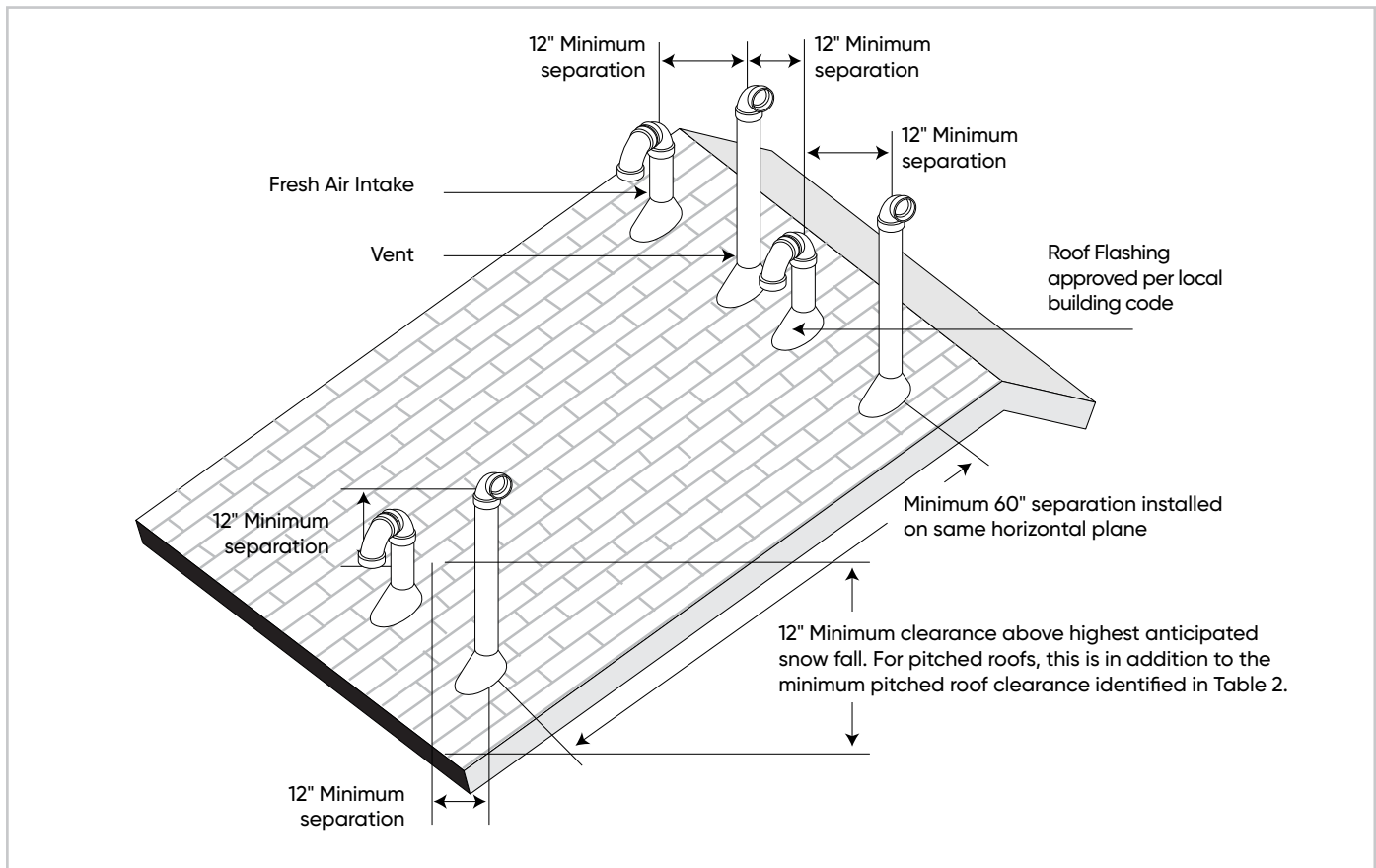
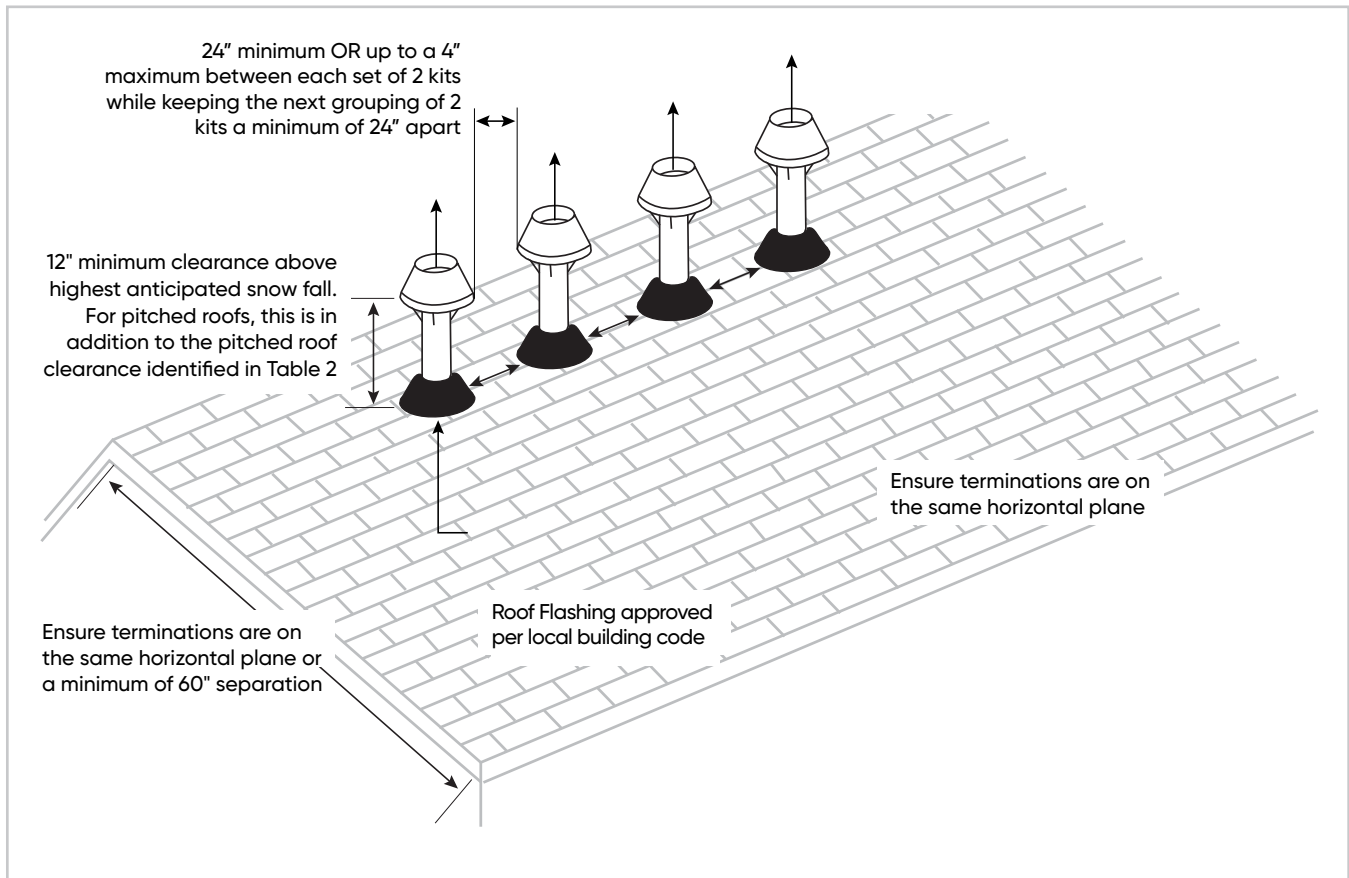


Figure 19: Typical Multiple Concentric Vent Roof Terminations



Common Venting

ENSURE SYSTEM 636 PVC OR CPVC HAS BEEN LISTED BY THE APPLIANCE MANUFACTURE AS AN APPROVED VENT MATERIAL TO BE USED WITH THEIR APPLIANCES IN A COMMON VENTING APPLICATION.

To ensure the safe and correct installation of the common vent system, carefully follow the instructions and guidelines listed within the CSA B149.1, Appliance Manufacture Installation Guide and IPEX System 636 Installation Methods Guide. If a conflict exists between these documents, the most stringent requirement shall apply.

Before committing to a particular appliance manufacturer or type, check whether the manufacturer has approved the appliance for common venting. Once confirmed, verify the number of units that can be combined on a manifold.

IPEX's Common Venting System is designed to System 636 specifications and dimensions. Only pipe and fittings from the same manufacturer shall be used to ensure compatibility between pipes, fittings, cements and accessories.

NOTICE

The IPEX backflow valve is manufactured specifically for the application of Flue Gas Venting.

The Backflow Valve is designed to System 636 specifications and dimensions. Do not use the Backflow Valve with products that are not from the System 636 product line.

1. Refer to the applicable appliance installation instructions to ensure that the IPEX common venting backflow valve is approved by the Appliance Manufacturer. If the Appliance Manufacturer has not approved the use of the IPEX backflow valve, however, has approved a ULC S636 certified PVC and/or CPVC material, please follow the instructions listed within the Appliance Manufacturer Installation Guide to transition from the approved backflow valve listed.
2. The IPEX PVC backflow valve is rated for a maximum operating temperature of 65°C (149°F).

The IPEX CPVC backflow valve is rated for a maximum operating temperature of 90°C (194°F).

⚠ WARNING

The IPEX backflow valve shall ONLY be used in a common vent installation that include appliances of the same type and model and from the same appliance manufacturer..

3. The IPEX System 636 common venting system must be installed in accordance with the latest edition of the following documents:

- a. The applicable appliance installation instructions
- b. This Guide
- c. Local building code
- d. The CSA B149.1 Natural Gas and Propane Code

If any conflict exists between requirements within these documents, the most stringent requirements shall apply.

NOTICE

The backflow valve spigot and socket connection dimension is 4". Use a PVC or CPVC reducer bushing or coupling for connecting to a 2" or 3" appliance flue collar.

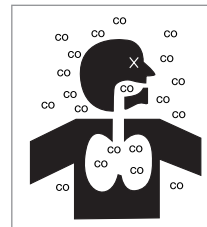
4. Before starting the common vent installation, please reference the applicable appliance installation instructions. Reference more specifically instructions concerning:
 - a. Specified vent material
 - b. The maximum number of appliances that can be connected to the common vent system
 - c. Sizing of the appliance vertical vent
 - d. Sizing of the manifold vent
 - e. Allowable common vent configurations
 - f. Maximum equivalent vent length allowed
 - g. Termination options
 - h. Minimum clearance requirements
5. After determining the appliance location, common vent configuration, and vertical pipe diameter, refer to the System 636 product brochure for a selection of pipe and fittings to plan your common vent installation.
6. Measure the vertical distance between the appliance connection collar and the manifold connection while taking into consideration the height of the backflow valve. Mark the required length of the vertical pipe and cut.

⚠ WARNING

Carbon monoxide (CO) can cause brain damage or death.

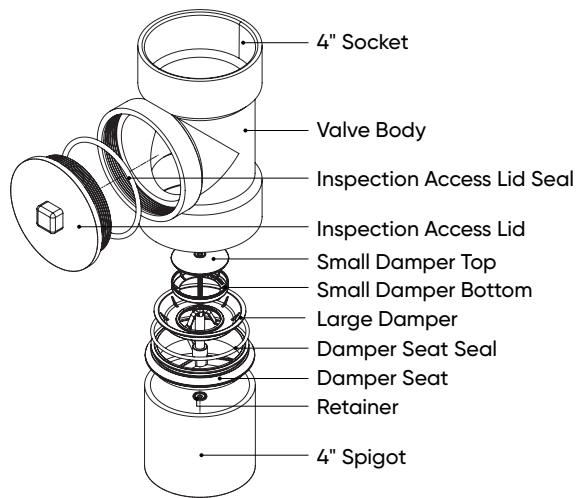
ONLY use a common venting system approved by the appliance for venting of combustion gases.

READ & UNDERSTAND all applicable installation instructions and safety messages before installing the IPEX backflow valve.



Backflow Valve

IPEX PVC Backflow Valve Components



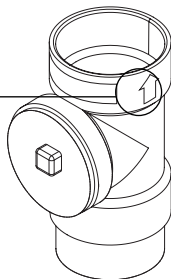
⚠ WARNING

Installation of the IPEX backflow valve with pipe and fittings for the application of common venting gas-fired appliances requires a certain degree of skill to avoid joint failures which could be life threatening. Creating optimal solvent welded connections requires attention to detail, proper preparation of components and an understanding of instructions provided in this Guide. On-site training is available from IPEX for proper solvent welding procedures as well as other important installation points. Contact IPEX for details.

⚠ WARNING

Always ensure that the backflow valve is installed with the flow direction arrow pointing in an upward position.

The backflow valve will not function properly if the above direction is not followed, resulting in the risk of a carbon monoxide leak causing injury or death.



1. Using System 636 PVC or CPVC cement, solvent weld the vertical pipe to the IPEX backflow valve socket end using the solvent welding procedure as outlined in this guide.
2. The pipe must be solvent welded into the backflow valve socket in a horizontal position. This will avoid solvent cement contacting the backflow valve dampers and interfering with the proper operation of the valve.

NOTICE

Solvent cement shall only come in contact with the fitting socket and pipe. DO NOT use excessive cement as it may puddle inside the valve and interfere with the function of the IPEX backflow valve damper. Solvent cement will damage these components and prevent proper sealing. Discard any valve that has solvent cement on these components.

3. Newly assembled joints must be handled with care.
4. Following the appliance collar connection method outlined in the appliance installation instructions, connect the spigot of the backflow valve to the appliance flue collar.

⚠ WARNING

Never use or test the common venting system with compressed air or other compressed gases.

The use of compressed air or gas in pipe and fittings can result in explosive failures and cause severe injury or death.



5. Following the installation of the backflow valve and vertical pipe, install the appropriate 4" Elbow for connecting into the Reducing Wye or Double Reducing Wye, depending on the common vent configuration. All Wyes reduce down to 4" in size.
6. Once the common vent system has been fully assembled and before commissioning the system, ensure that the average appliance service time has elapsed for all joints. Reference the "Average Appliance Service Time" Table in the solvent cement section of this guide.
7. Measure the horizontal distance between the reducing wye or double reducing wye fittings, mark the required length of the horizontal pipe and cut.
8. For installation of the cleanout condensate drain and termination fittings, please refer to pages 26 and 27 of this guide.
9. Once the entire common vent system has been fully assembled, including all pipe and fittings from the appliance collar to the vent termination, ensure that the average appliance service time has elapsed for all joints before commissioning the system. Reference the "Average Appliance Service Time" Table in the solvent cement section of this guide.

Backflow Valve Inspection Port Usage

The Backflow Valve has an inspection port which is designed for visual inspection purposes. During inspection, the threaded plug can be removed, and the components can be inspected. If the plug is removed, follow the below instructions.

1. Prior to commissioning each appliance connected to the common vent system, unthread and remove the 4" inspection plug from each IPEX backflow valve and inspect the small and large dampers to ensure they are free of any damage or obstruction.
2. Remove any debris that may be present on the top of the IPEX backflow valve dampers. If any damage to the dampers has been detected, the backflow valve must be replaced.
3. If no damage or obstruction exists, rethread the inspection plug until hand tight. Once hand tight, slowly turn the plug an additional one-half (1/2) turn using a pair of channel lock pliers.

⚠ WARNING

DO NOT apply PTFE tape to the inspection plug threads. Teflon tape will not allow for a proper seal. The EPDM O-ring will help ensure a gas-tight seal.

4. If the threads of the inspection plug appear to be damaged or have been cross threaded, the entire IPEX backflow valve must be replaced.

NOTICE

This IPEX backflow valve has been engineered with an inline condensate drain. The valve will independently and automatically drain to the appliance any condensate that collects within the valve. No additional provision for draining condensate at the valve is required.

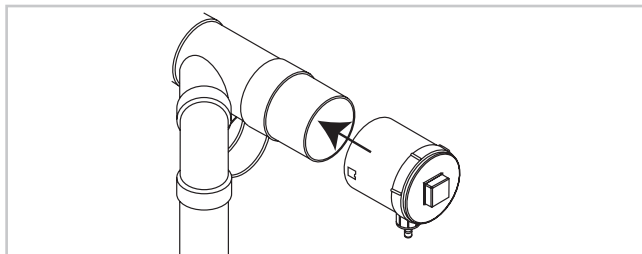
⚠ WARNING

Before and during operation of the appliance, the backflow valve inspection port plug must be properly installed.

Cleanout with Condensate Drain

Installation

1. Ensure there is no foreign material inside the Cleanout prior to installation.
2. Ensure the hose barb is directed towards the ground when the fitting is installed as seen in the image.
3. **The cleanout condensate drain is engineered with a self-draining ball check style drain that does not require any priming of the hose barb.**
4. For any additional information, refer to the appliance manufacturer's installation guide.



Cleanout Inspection Port Usage

The Cleanout with Condensate Drain has a cleanout port which is designed for visual inspection and obstruction removal purposes. During inspection, the threaded plug can be removed, and vent can be inspected. If the plug is removed, follow the below instructions.

1. **Prior to commissioning, unthread and remove the cleanout port and inspect the exhaust vent to ensure it is free of any debris or obstruction.**
2. Once completed, hand tighten the plug into the inspection port until the plug no longer can tighten.
3. Slowly turn the plug an additional one-half (1/2) turn using a pair of channel lock pliers.
4. Once in operation, check for any leaks around the threaded plug to ensure it has been properly tightened. If there is leakage, the assembly should be replaced. If the plug is removed, repeat the above from step #2.

Notes:

- a. Take caution not to cross thread the fitting.
- b. If the fitting appears to be damaged during the threading, the entire assembly should be replaced.

⚠ WARNING

Do not apply PTFE tape to the inspection plug threads. Teflon tape will not allow for a proper seal. The EPDM O-ring will ensure a gas-tight seal.

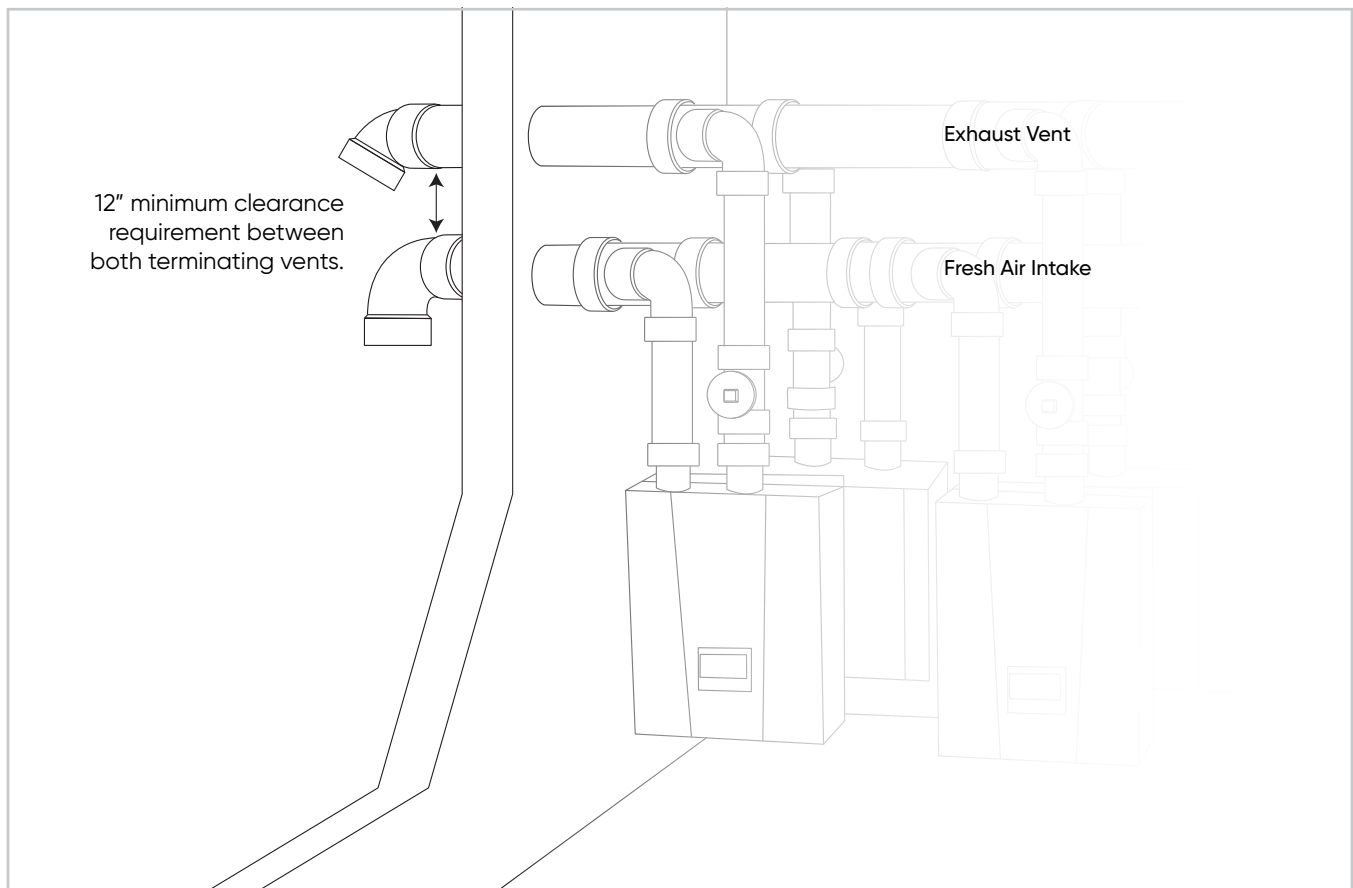
⚠ WARNING

Before and during operation of the appliances, the inspection port plug must be properly installed.

Common Vent Terminations

- (a) A Common Venting System will require two penetrations: one for the exhaust vent and one for the air-intake vent for multiple appliance installations.
 - (b) When terminating horizontally or vertically through an exterior wall or roof, the System 636 PVC and CPVC common vent system requires zero clearance to combustible construction materials.
 - (c) In accordance with the latest edition of the CSA B149.1 Natural Gas and Propane Code, gas vents that are 12 inches or less in size shall not be less than 8 ft from a vertical wall or similar obstruction.
 - (d) Ensure that the Appliance Manufacturer has approved the appliances that are installed in a common vent system, to be terminated horizontally through an exterior wall and/or vertically through the roof.
 - (e) IPEX offers a variety of 45° and 90° Termination Elbows including a vent screen guard.
 - (f) Carefully follow the guidelines listed within the Appliance Manufacturer Common Vent Installation Guide, the CSA B149.1, and within this guide.
- If a conflict exists between these documents the more stringent requirements will apply.

Figure 20: Common Vent Side Wall Termination



Solvent Welding

WARNING

DANGER: Highly flammable liquid and vapor may form explosive peroxide. Carefully follow guidelines below.

Safety Precautions

Solvent cements and primers for System 636 pipe and fittings are flammable and shall not be used or stored near heat, spark, open flames and other sources of ignition. Vapors may ignite explosively. Keep containers closed when not in use and covered as much as possible when in use.

Use solvent cements and primers in well ventilated area. Keep away from heat, sparks, open flames, hot surfaces, and other ignition sources. Take action to prevent static discharges. Use explosion proof equipment. Use non-sparking tools. **If confined or partially enclosed, use forced ventilation or NIOSH-approved respirator.** Avoid breathing vapors. If airborne concentrations exceed those limits, use of NIOSH-approved organic vapor cartridge with full face piece is recommended. The effectiveness of an air purifying respirator is limited. Use it only for a single, short term exposure. For emergency and other conditions where short-term exposure guidelines may be exceeded, use an approved positive pressure self-contained breathing apparatus. Do not smoke, eat or drink while using these products. Avoid contact with skin, eyes and clothing. Wash clothing if contaminated before re-use. May cause eye injury. Protective equipment such as gloves, goggles and an impervious apron shall be used. **KEEP OUT OF REACH OF CHILDREN.** Carefully read our instructions on the cement and primer can label, precautions and instructions in this guide, and the MSDS sheets found at System 636.com.

First Aid

Inhalation: If feeling ill from inhalation, person should be moved to a source of fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Eye Contact: Remove contact lenses if present, flush eyes with plenty of water for 15 minutes and get medical attention.

Skin Contact: Wash skin with plenty of soap and water for at least 15 minutes. If irritation develops, get medical attention.

Ingestion: If swallowed, consume 1 to 2 glasses of water or milk, **DO NOT INDUCE VOMITING.** Get medical attention.

Use Caution with Welding Torches

At sites where System 636 is being installed or has recently been solvent welded, extreme caution should be taken when using welding torches or other equipment where sparks may be involved. Flammable vapors from welded joints sometimes linger within or around a piping system for some time.

Special care must be taken when using a welding torch around System 636 systems in areas with little or no air circulation. In all cases, solvent vapors must be removed by air circulation, purging, or other means prior to the use of welding torches, or other spark or flame generating equipment or procedures. This includes electronic sources of ignition such as electronic vapor cigarettes.

Solvent Welding Basics

⚠ WARNING

Installation of System 636 for the application of flue gas venting requires a certain degree of skill to avoid joint failures which could be life threatening. Creating optimal solvent welded connections requires attention to detail, proper preparation of components and an understanding of all instructions in this guide. Training is available from IPEX on proper solvent welding procedures as well as other important installation points. Contact IPEX for details.

To make consistently good joints, the following points should be clearly understood.

- (a) DO NOT use solvents or cements other than what is required by this guide.
- (b) Before the use of cement and/or primer, shake the can thoroughly to ensure complete mixture of container content.
- (c) Dry fit all joints prior to solvent welding to confirm proper interference fit.
- (d) Discard fitting joints without proper interference fit.
- (e) DO NOT solvent weld joints that are too loose or too tight.
- (f) DO NOT solvent weld joints without first beveling pipe ends.
- (g) System 636 primer is mandatory for installation temperatures at or below 0°C (32°F) and for 6" size and larger.
- (h) Assembly of pipe and fittings shall be made while the surfaces are still wet and cement is still fluid.
- (i) Joint strength develops as the cement cures. The bottom of the socket, where there is a resistance fit with the pipe, will fuse, whereas the top part of the socket will bond with the pipe. It is therefore critical to bottom out the pipe in the socket during installation.
- (j) Solvent welding material transitions:
 - **PVC and CPVC:** use only System 636 CPVC cement
 - **ABS and PVC:** use only System 636 PVC or CPVC cement
 - **ABS and CPVC:** use only System 636 CPVC cement
- (k) FOLLOW ALL solvent welding instructions provided in this guide and on each System 636 solvent cement can label.
- (l) FOLLOW ALL System 636 installation instructions.

Solvent Cement Selection Guide

NOTICE

Some appliance manufacturers furnish adapter fittings made of PVC but black in colour resembling ABS. Check with the appliance manufacturers to confirm whether these fittings are ABS or PVC before selecting a solvent cement.

System 636 PVC

Size Range	Cement Options	Primer Use
1-1/2" - 6"	• System 636 PVC Heavy Bodied (grey) or	• Mandatory use of System 636 primer for all installations performed at temperatures of 0°C (32°F) or less
1-1/2" - 12"	• System 636 CPVC Heavy Bodied (orange) cement	• Use of primer is mandatory for sizes 6" - 12" • Some jurisdictions have mandated the use of primer regardless of temperature. Verify with your local Regulatory Authority

System 636 CPVC

Size Range	Cement Options	Primer Use
1-1/2" - 12"	• System 636 CPVC Heavy Bodied (orange) cement	• Mandatory use of System 636 primer for all installations performed at temperatures of 0°C (32°F) or less. • Use of primer is mandatory for sizes 6" - 12" • Some jurisdictions have mandated the use of primer regardless of temperature. Verify with your local Regulatory Authority.

Cement Shelf Life

Cement and primers shall be used prior to the expiration date or within 3 years for PVC cement and 2 years for CPVC cement of the Date of Manufacture stated on the bottom of the can.

To determine the age of System 636 cement and primer, refer to the bottom of the container where the Date of Manufacture, Expiry Date, or both will be displayed.

Estimated Quantity of Solvent Cement

Average Number of Joints/Qt. of IPEX System 636 Cement*

Pipe Diameter (inches)	1-1/2	2	3	4	6	8	10	12
Number of Joints	90	60	40	30	10	5	2.5	1.5

For the same number of joints if primer is used, one pint of primer will be required for each quart of cement used.

*These figures are estimates based on our laboratory tests. Due to the many variables in the field, these figures should be used as a general guide only.

System 636 Solvent Weld Appliance Service Time

⚠ WARNING

During the curing of the solvent welded joints, vapors may accumulate inside the piping system, especially should one end of the line be capped. Nearby sparks from welders or torches may inadvertently ignite these vapors and create a hazardous incident. Attention must be given to removing all vapors using air-blowers or water flushing prior to capping one end of an empty piping system.

Newly assembled joints require a certain amount of time to lapse prior to being placed into appliance service.

"Appliance Service Time" is the time required from when the last joint is made to the time the appliance is placed into service.

Newly assembled joints need to be handled with care before the Appliance Service Time is achieved time. ALL VERTICAL ASSEMBLIES shall be fully supported during this period.

⚠ CAUTION

Average Appliance Service Times are for flue gas venting applications only.

The average Appliance Service Times for flue gas venting shown in Table 3 below, are estimates based on testing done under laboratory conditions. Field working conditions can vary significantly. This chart should be used as a general reference only.

TABLE 3 -
Average Appliance Service Time for Flue Gas Venting

Temperature Range		Joint Size	
°C	°F	2" to 8"	10" to 12"
15 to 40	60 to 105	30 min	2 hrs
4 to 16	40 to 60	2 hr	8 hrs
-18 to 4	3 to 40	12 hr	24 hrs
Note - In damp or humid conditions above 60% relative humidity, allow at least 50% more time.			

NOTE: The average appliance service time schedule is applicable if the following conditions have been met:

1. All joints have been made per requirements of this guide.
2. All joints represent an acceptable interference fit.
A proper interference fit is present with the beveled pipe can only be inserted 1/3 to 2/3 of the way into the fitting socket. Refer to Step 6 of the solvent welding preparation guidelines section of this guide.
3. Vertical weight loads (i.e. pipe) with freshly made joints, need to be fully supported during the Appliance Service time.

Cold Weather Solvent Welding

– Below 10°C (50°F)

1. Prefabricate as much of the system as possible in a heated area.
2. Store System 636 primer and solvent cement at temperatures between 4°C and 43°C (40°F and 110°F) when not in use and make certain cement remains fluid.
3. Take special care to remove moisture including snow and ice from the surfaces being joined including pipe ends and fitting sockets.
4. Ensure that the pipe, fittings and accessories are at the same temperature prior to solvent welding.
5. Primer shall be used when installing System 636 in temperatures of 0°C (32°F) or colder.
6. Ensure the surfaces are softened through the application of primer before joining. Check for proper softening of surfaces and correct amount of cement on a sample pipe. Surfaces are sufficiently softened when scraping a blade on the treated part results in the effortless removal of a thin layer of the base material.

Hot Weather Solvent Welding

– Above 30°C (86°F)

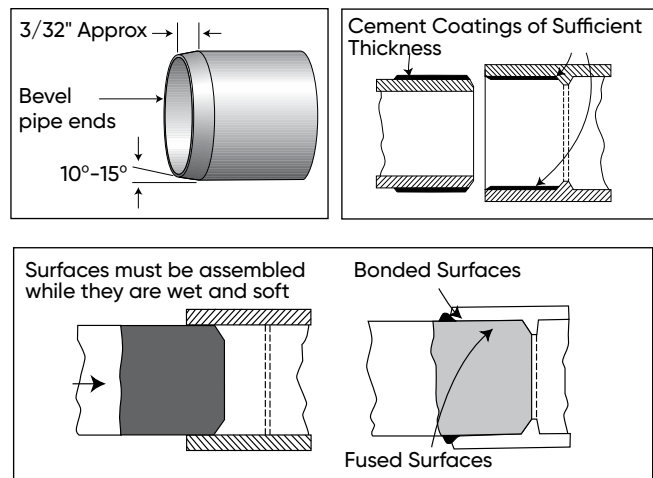
1. Store System 636 primer and solvent cement in a cool or shaded area prior to use.
2. Store pipe and fittings in a shaded area prior to solvent welding.
3. Cool surfaces to be joined with a clean, damp rag. Be sure the surface is dry prior to solvent welding.
4. Consider solvent welding joints in the cooler morning hours.
5. Make sure both surfaces to be joined are still wet with solvent cement when joining them together.
6. Vigorously stir or shake the System 636 solvent cement before use.

Completed joints must be handled with extreme care until the Average Appliance Service Time has expired. See Table 3, The Average Appliance Service Time Schedule for flue gas venting of this guide in the System 636 Solvent Weld section of this guide for details.

Joint strength continues to develop as the solvent cement cures.

Surface Interaction in Solvent Welded Joint

Sufficient cement must be applied to fill the gap in the top part of the joint. Besides filling the gap, adequate solvent cement layers will penetrate the surfaces and must remain wet until the joint is assembled. If the solvent cement coatings on the pipe and fittings are wet and fluid when assembly takes place, they will tend to flow together and become one solvent cement layer. Also, if the solvent cement is wet, the surfaces beneath them will still be soft, and these dissolved surfaces in the tapered part of the fitting socket will fuse together.



NOTICE

DO NOT use excessive amounts of primer or solvent cement. Too much primer or solvent cement can lead to puddling in the pipe and fittings which can result in product failures and property damage. Always follow these instructions and those printed on each System 636 primer, and solvent cement can label.

Solvent Welding Preparation Guidelines

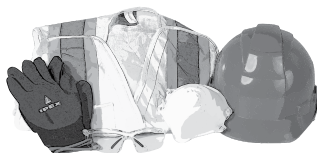
1) ASSEMBLE

Before beginning, assemble proper materials for the job: System 636 cement and primer (if required), personal protective equipment, PVC pipe cutter, appropriate applicator for the size of pipe and fittings to be assembled, tape measure, contrasting color marker and beveling tool.



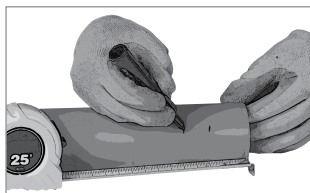
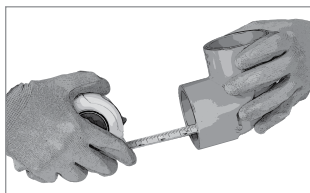
⚠ CAUTION

Use proper Personal Protective Equipment (PPE) for the job:
respirator, safety glasses, gloves and protective clothing.



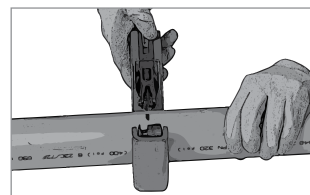
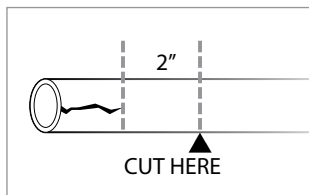
2) MARKING THE CUT

Measure the fitting socket depth and mark the outside of the pipe with this dimension followed by a second mark 1 inch further back. The first line will provide a guide for ensuring enough solvent cement is applied on the pipe. Maintaining a 1 inch distance to the second line once the pipe is inserted into the fitting socket will indicate full and proper insertion of the pipe inside the fitting socket.



3) CUTTING THE PIPE

It is important to cut the pipe squarely. A square cut provides the surface of the pipe with the maximum bonding area. Pipe can be easily cut with a wheel-type plastic tubing cutter or chop saw, or quick cut saw. Do not use reciprocating saws. Tools used to cut System 636 pipe must be in good condition in accordance with the tool manufacturer's recommendations. If there is any indication of pipe damage or evidence of pipe end cracking, cut off at least 2 inches beyond any visible crack. Use of ratchet cutters is not recommended as they may split the pipe if not properly used and maintained.

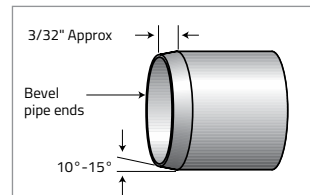
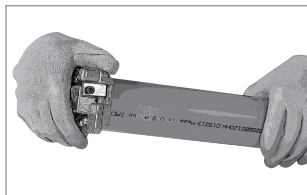
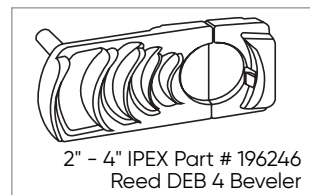
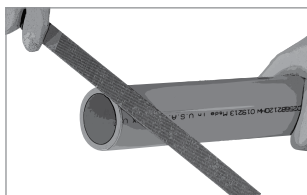


NOTICE

Chop saws and quick cut saws will produce shavings inside the pipe which must be removed. Failure to do so may compromise the performance of the appliance and venting system.

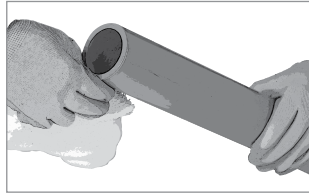
4) PREPARING PIPE ENDS

After cutting, always remove all burrs and filings from both the inside and outside of the pipe. Remove burrs and filings from the pipe using a knife edge or file. Failure to remove burrs can scrape channels into pre-softened surfaces, create obstructions inside surface walls, or inadvertently plow cement out of the joint during assembly. Bevel the pipe end ensuring a minimum 10° - 15° bevel.



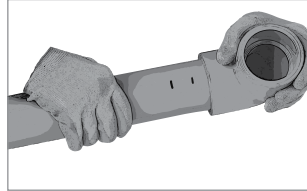
5) CLEANING

Using a clean dry cloth, wipe any dirt and moisture from the fitting socket and the pipe end. Moisture will increase cure times and dirt and grease can prevent adhesion.



6) DRY FITTING

Before applying primer or solvent cement, perform a dry fit test on all connections (pipe, fittings and accessories) to confirm a proper interference fit exists. Dry-fit contact between properly beveled pipe and fitting sockets is essential in making a good joint. The beveled pipe should easily enter the fitting socket and make contact with the inner fitting socket wall before bottoming out in a dry fit. A proper interference fit is present when the beveled pipe can only be inserted 1/3 to 2/3 of the way into the fitting socket.



⚠ CAUTION

DO NOT SOLVENT WELD PIPE, FITTINGS OR ACCESSORIES THAT FIT LOOSELY TOGETHER OR WHERE PIPE BOTTOMS OUT IN A DRY FIT. Proper joint strength cannot be developed. Do not solvent weld pipe, fittings or accessories if a beveled pipe cannot easily be inserted at least 1/3 of the way into the fitting socket. This may cause excessive stresses during assembly leading to joint failure.

7) APPLICATOR SIZE

Use the proper size cement and primer applicator for the diameter of pipe or fittings being joined. As a general guide, the applicator size should be approximately 1/2 of the pipe diameter. It is important that a satisfactory size applicator be used to help ensure that sufficient layers of cement are applied.



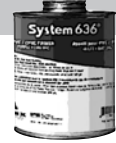
SWABS

- P/N 074426 for use with pipe diameters from 3" to 6"
- P/N 074456 for use with pipe diameters 6" and larger.

Priming Guidelines

NOTICE

System 636 primer is mandatory for installation temperatures at or below 0°C (32°F) and for 6" size and larger.



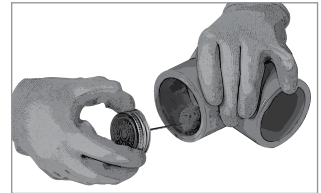
8) Using the correct applicator (as outlined in step #7), aggressively work the primer into fitting socket, keeping the surface and applicator wet until the surface has been softened.



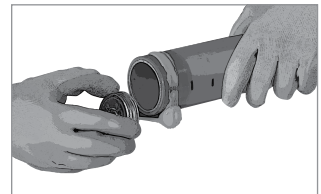
9) Aggressively work the primer on to the end of the pipe to a point 1/2" beyond the depth of the fitting socket.



10) A second application of primer in the fitting socket is required.



11) Immediately and while the surfaces are still wet, apply the appropriate System 636 cement using the solvent welding guidelines that follows.



Solvent Welding Guidelines

NOTICE

System 636 PVC cement is grey in color and CAN NOT BE USED for solvent welding System 636 CPVC joints

System 636 CPVC cement is orange in color and CAN BE USED for solvent welding BOTH System 636 CPVC or System 636 PVC joints.

NOTICE

Excessive cement may cause the fitting to weaken due to softening by the trapped solvents.

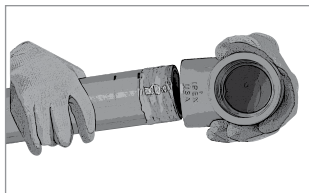
12) Vigorously shake the System 636 cement can before using. If the cement is jelled, replace with a new can.



13) Using the proper size applicator for the pipe size (as outlined in Step #7), aggressively work a full even layer of cement on to the pipe end equal to the depth of the fitting socket – do not brush it out to a thin paint type layer, as it will dry too quickly.



14) Aggressively work a medium layer of cement into the fitting socket. Avoid puddling cement in the socket by holding the fitting on an angle.

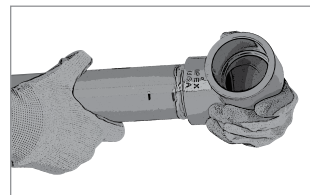


15) Apply a second full, even layer of cement on the pipe. Apply enough solvent cement to completely fill all the gaps between the pipe and fitting at socket entrance.

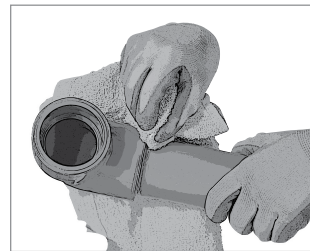


16) Without delay, while the solvent cement is still wet, assemble the pipe and fitting.

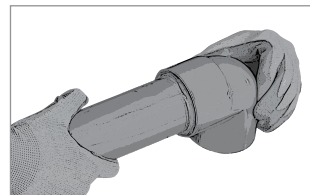
17) Hold the pipe and fitting together for approximately 30 seconds to resist pushout due to tapered sockets. Higher potential for pushout exists in colder weather installations.



18) A bead of solvent cement must be formed around the entire socket fitting entrance. With a clean, dry cloth, remove the excess solvent cement from the pipe and fitting socket entrance. This will allow the solvent to evaporate from within the joint and prevent weakening of the pipe.



19) Measure from the fitting socket end to the secondary line marked 1" back from the first line on the pipe. If this line measures more than 1", pushout has occurred and the pipe is under inserted. If pushout does occur, the joint will need to be replaced.



20) Handle newly assembled joints carefully until the appliance service time has expired. Follow the System 636 Average Appliance Service Time Schedule for flue gas venting outlined in Table 3 of this guide.

⚠ CAUTION

The average joint hold time when solvent welding is 30 seconds for preventing pushout. Reference Step #2 of the Solvent Welding Preparation Guidelines and Step #17 + #19 of the Solvent Welding Guidelines, for directions on determining how to mark the pipe, the proper amount of hold time and evaluating pushout.

System Repair

Carefully inspect any fittings for damage and remove and replace them accordingly.

Inspect pipe for any damage such as cracking and deep gouges. Locate the end of any pipe cracks and be sure to cut at least 2" beyond the crack line to ensure it is removed.

Following the Solvent Welding Guidelines, repairs can be made by solvent welding new sections of pipe and fittings. Follow all the solvent welding instruction within this guide. However, installation conditions during a repair vary greatly when compared to a new installation. Repairs or cut-ins to an existing system are typically done in confined spaces, on closed end piping systems, and often have more humidity present. All of these factors can inhibit the evaporation of the solvent leading to increased Average Appliance Service Times. As such, IPEX recommends that the standard Average Appliance Service Times be increased by 50% for repairs or cut-ins. Refer to the System 636 Average Appliance Service Time Schedule for flue gas venting outlined in Table 3 of this guide.

CAUTION

When modifying or repairing aged PVC and CPVC pipe, use only wheel cutters or saws that are new and sharp. DO NOT use ratchet style cutters.

System 636® Pipe, Fittings and Cements are certified as a system and must be installed as such.
Do NOT use or mix with other IPEX products other than those specified in this guide.
Different manufacturers have different materials, joining systems and adhesives.
Do NOT mix pipe, fittings, or joining methods from different manufacturers, this can result in unsafe conditions.

These recommendations were issued on December 2023, and are subject to periodic review.
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A policy of ongoing product improvement is maintained. This may result in modifications of features and/or specifications without notice.



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