



Installation Guide for Solvent-Welded CPVC Pressure Pipe

This installation guide has been developed by North American Pipe Corporation for use as a field installation guide. General information regarding the correct installation of solvent CPVC pressure pipe is included. This installation guide outlines general design and construction practices.

The statements contained in this installation guide are those of North American Pipe Corporation and are not warranties, nor are they intended to be warranties.

RECEIVING

When a load of pipe arrives at a job site, it is your responsibility to check it thoroughly. If possible, inspect each piece for damage. Check quantities against the shipping list. Note missing or damaged items on bill of lading. Set aside any damaged items and notify the shipper.

UNLOADING

It is also your responsibility to unload the shipment. **DO IT WITH REASONABLE CARE.** Careless unloading can result in damaged product or personal injury.

Use a fork-lift or front-end loader with fork attachment, if available. Ensure the fork attachment is long enough to support the bundles. When unloading by hand, remove one piece at a time, and block the shipment to keep pipe from rolling off the truck.

STORAGE

If you can unload the shipment in unit packages, the pipe will be easier to store. Stack it on reasonably level ground. Don't stack the pipe next to heat sources such as boilers, steam lines, electrical equipment or engine exhausts.

ASSEMBLY

CPVC pipe cuts easily with a tubing cutter, a fine-tooth hand or power saw or a ratcheting cutter specifically designed for use with plastic tubing. Make sure that the cut is square to the axis of the pipe. Remove any burrs or ridges that might have developed during the cutting process.

The solvent-cement joint is designed as interference fit joint. Dry fit the joint by inserting the dry spigot into the bell. Typically this interference develops when the spigot is inserted to about 1/3 to 2/3 of the socket depth. If the pipe is at the minimum tolerance and the socket is at the maximum tolerance it is possible that the spigot will inset fully into the socket the fit should be snug. Select a different fitting or pipe if the fit is wobbly.

Make sure that the mating surfaces are clean by removing any moisture, oil, dirt, or other foreign material.

BEFORE APPLICATION

Confirm that the available primer and solvent-cement are compatible and intended for use with the material to be joined. The primer should conform to ASTM F656 *Standard Specification for Primers for Use in Solvent Cement Joints of Poly(Vinyl Chloride)(PVC) Plastic Pipe and Fittings*. The solvent cement should conform to ASTM F493 *Standard Specification for Solvent Cements for CPVC Pipe and Fittings*. CPVC can also be joint in a one step process with a cement designed for that application. Before using the one step process confirm that its use is permitted by local codes. Keep the primer and cement containers closed when not in use. The cement should be discarded if there is an appreciable change in the viscosity.

Bonding of a typical solvent-cement joint develops in two ways. The section with the interference fit the pipe and socket fuses together. In the looser fit section the cement bonds the surfaces. The cement softens the joint surfaces so that fusion or bonding can take place. Primer is used to aid in the softening process and improves the bonding and fusion.

It is important to consider the atmospheric conditions when applying the primer and cement. With high humidity it is important to apply the cement quickly to minimize condensation of moisture on the cement surface. Surface temperatures should be kept below 110 degrees F to prevent the solvent-cement from drying before the joint can be assembled.



The assembly of sizes six inch and larger requires two people to apply primer and solvent cement and assemble in a prompt manner. A mechanical forcing device may also be required to insert the spigot and hold it in place.

APPLICATION OF PRIMER AND CEMENT

To apply the primer and cement use a natural or nylon brush with a width that is approximately 1/2 the diameter of the pipe (1/2 inch minimum). Be sure that the dauber is not larger than the size of the pipe.

Apply the primer to the inside of the bell first. Use a scrubbing motion to ensure penetration. Next apply primer to the spigot. Be sure that both surfaces are well softened.

Without delay apply the solvent-cement to bell and to the spigot while the surfaces are still wet with primer. At this stage in the assembly time is very important. If the solvent-cement starts to harden quickly apply another light coat. Forcefully insert the spigot into the bell until the spigot bottoms out, turning the pipe or the fitting 1/4 turn during the process. Hold the spigot in place for approximately one minute. This process should be performed in about 20 seconds. Take care not to disturb the joint and to allow the joint to set for the period of time recommended by the cement manufacturer.

A properly made joint will develop a bead of cement around its entire perimeter. It is important to wipe away any excess cement. In like manner do not apply cement in the bell to pipe transition area of pipe bells, particularly with pipe wall thicknesses of 1/8 inch or less.

COLD WEATHER NOTES

Primers and cements do not penetrate and soften the PVC as quickly in cold weather (below freezing) as in warm weather. Verify the softening by testing a scrap piece. Apply primer to a scrap piece and wait for a few minutes. Scrape the primed surface with a knife edge. A properly softened pipe surface will be removed during scraping.

Do not warm the cement and primer with open flame or electric heaters and attempt to prefabricate as much of the system in a heated

area. Remove all ice, snow, or other moisture before applying the primer. It will take longer for the solvents to evaporate in cold temperatures so allow for a longer than normal cure time.

PRESSURE TESTING

Do not fill the pipe with water or apply pressure before the joints are completely cured. **NEVER PRESSURIZE THE PIPE WITH AIR OR OTHER GAS.** Because of variances in atmospheric and assembly conditions the necessary time to cure can vary from minutes to days. Consult the manufacturer of the primer and cement for recommendations.

PIPING SUPPORT

Point Supports are not permitted for CPVC pipe. The supports should be as wide as possible. The clamp should not be so tight that it prevents movement due to thermal expansion and contraction. The actual rate of expansion and contraction for CPVC is 3/8 inch per 100 feet of pipe per 10 degrees F temperature change.

Vertical piping should be supported at floor level and guided at mid-story. Appurtenances such as valves should be supported separately.

Holes for piping through studs should be oversized to allow pipe movement. Holes in metal studs should be supported by grommets to prevent abrasion. Horizontal piping should be supported at minimum intervals of 36 inches.

OVERNIGHT PRECAUTIONS

At the end of each workday, be sure that all installed pipe ends are covered to keep dirt, debris and animals from entering the pipe.



CHECKLIST – Don't Forget!

- Take all sensible precautions necessary to protect workers and materials.
- Cut the pipe square and remove any burrs.
- Dry fit the joint.
- Use a primer to soften the bell and spigot.
- Apply the cement to the bell and then to the spigot before the primer has dried.
- Twist the pipe a quarter turn as it you insert the spigot completely into the bell.
- Hold the joint together until the cement begins to set.
- Allow the joint to cure completely before handling and pressure testing.
- Keep primer and cement away from all sources of ignition
- Warm temperatures and low humidity accelerate curing times.
- Cold weather and high humidity slow the curing process.