



GUIDE: FIELD CUTTING OF PVC PIPES



Most pipeline projects require pipe to be cut to short lengths at valves, fittings, manholes, or other similar locations. Although installers have been cutting pipe successfully for many years, this document provides the PVC Pipe Association's cutting recommendations. Additional information is available in the AWWA C605 standard for installation of PVC pipe and in Chapter 10 of the *Handbook of PVC Pipe*.

SAFETY

Worker safety is the most important consideration for the cutting of any pipe material. It is important to follow all safety recommendations of equipment manufacturers and to ensure that work proceeds in a controlled manner. Special care should be taken to ensure that the saw kerf remains open to prevent the saw blade from binding. All safety regulations – local, state/provincial, and federal – should be followed at all times.

WHY IS A GOOD CUT NECESSARY?

A straight and smooth spigot end will prevent problems in the field:

- A crooked cut may not allow the spigot to properly engage the bell's gasket, resulting in leakage.
- A jagged cut may cause damage to the gasket when the spigot is inserted into the pipe's bell, again causing leakage.
- In both cases, the result will be a costly, time-consuming repair.

CUT REQUIREMENTS

To make an acceptable cut for PVC pipe:

- The cut must be perpendicular to the pipe length.
- The cut must be straight all the way around the pipe circumference.
- The outer edge of the cut end of the pipe must be beveled properly.

HOW TO MAKE A STRAIGHT CUT

The steps necessary for making a straight cut are:

- Place the pipe on level ground.
- Provide adequate support to keep the pipe from moving during the cutting procedure.
- Measure to the location where the pipe will be cut.
- Draw a line all the way around the pipe circumference, making sure that the correct measurement is maintained.
- Using a saw and a saw blade intended for PVC pipe, safely and carefully cut the pipe along the marked line.

HOW TO MAKE A CORRECT BEVEL

Bevels are necessary for the pipe's spigot to correctly engage the sealing gasket.

- For PVC pipe inserted into a PVC pipe bell or into a PVC fitting:
 - Match the pipe's factory bevel.
 - Match the length of the bevel.
 - Match the angle of the bevel.
 - Bevels are typically made using either a beveling tool or a hand-held saw with an abrasive disk.
- For PVC pipe inserted into an iron fitting: the bells of iron fittings are much shallower than the bells of PVC pipe and fittings. In order to fully engage the iron fitting gasket, the spigot end of the PVC pipe should have only a slight chamfer.
 - Do not bevel the pipe.
 - Instead chamfer the end of the pipe by removing the sharp edge of the cut all the way around the outside edge.



INSERTION LINES

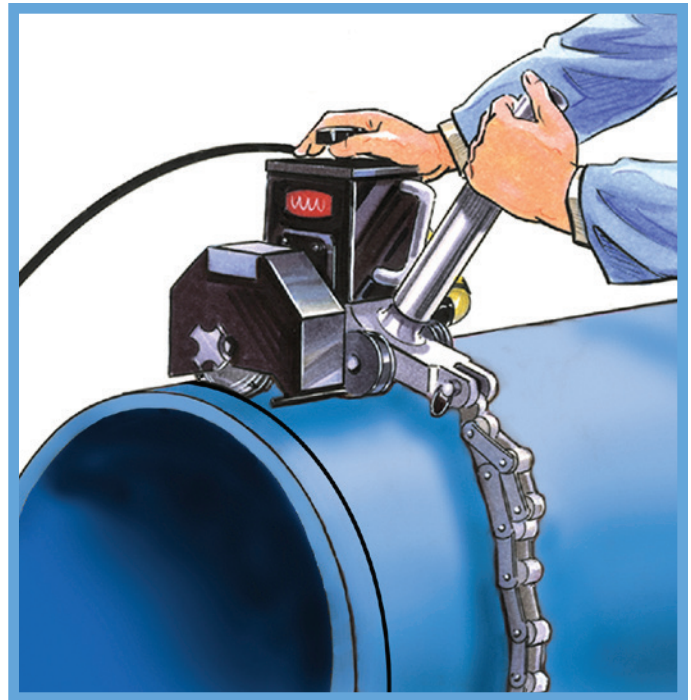
An insertion line is used to ensure that the pipe's spigot is correctly inserted into a fitting or a pipe bell.

- For PVC pipe inserted into a PVC pipe bell:
 - Match the pipe's factory insertion line
 - Measure from the beveled edge of the uncut pipe to the insertion line.
 - Draw a new line at the same distance from the cut edge of the pipe.
 - Insert the pipe into the bell until the insertion line is even with the front edge of the bell.
- For PVC pipe inserted into a PVC fittings: the factory insertion line may not be correct. For guidance, the manufacturer of the fitting should be consulted.
- For PVC pipe inserted into an iron fitting: an insertion line is not necessary. Insert the pipe into the iron fitting until the pipe bottoms out in the fitting.
- Bell depths of different PVC pipe manufacturers may vary – the location of the insertion reference mark may need to be adjusted.

CUTTING LARGE-DIAMETER PIPE

PVC pipe is now available in sizes up to 60-inch for both pressure and gravity applications. Large-diameter pipe's combination of size, heavy weight, and thick wall means that cutting techniques that have been used for smaller pipe may no longer be safe or efficient. The following considerations become even more important:

- **Pipe movement:** it is necessary to roll a pipe to cut it all the way around its circumference. However, uncontrolled pipe movement should be prevented for safety reasons.
- **Saw kerf:** proper support of the pipe being cut is necessary to prevent the saw kerf from closing (binding the saw blade) or opening (potentially cracking the pipe).
- **Equipment:** PVC pipe can be cut with a power saw using an abrasive disc. For larger sizes of pipe, other cutting tools may be appropriate.



CUTTING OF ALREADY-INSTALLED PIPE

If a cut is required within 24 inches of a metallic joint restraint device (one that uses serrated teeth to grip the pipe), the device should be loosened prior to the cut. After the pipe is cut, the device's bolts should be re-tightened to the manufacturer's recommended values using the manufacturer's recommended procedures.

PROFILE-WALL PRODUCTS

Cutting of profile-wall products may require different techniques. Consult the pipe manufacturer if making a field cut to profile pipe.

References:

AWWA C605 "Underground Installation of Polyvinyl Chloride (PVC) and Molecularly Oriented Polyvinyl Chloride (PVCO) Pressure Pipe and Fittings" (2013); *Handbook of PVC Pipe – Design and Construction*, Uni-Bell PVC Pipe Association (2013)