

PVC PIPE ASSOCIATION TECHNICAL BRIEF

EXPANSION GAPS FOR GASKETED PVC PIPE: MAXIMIZING JOINT PERFORMANCE

Video inspections of PVC sewer pipelines often reveal small longitudinal gaps between the spigot end and the bell shoulder of the gasketed joints. These gaps are not flaws. In fact, gaps are an important design consideration for both pressure and non-pressure PVC pipes.

PROPER ASSEMBLY OF THE PVC PIPE JOINT

Figure 1 shows a properly assembled PVC joint: the pipe spigot is pushed into the bell until the insertion line is flush with the lip of the bell. The expansion gap is shown. Figure 2 shows a pipe that has been over-inserted until the end of the spigot has contacted the shoulder of the bell. There is no gap present.

Figure 1: Properly Inserted Spigot

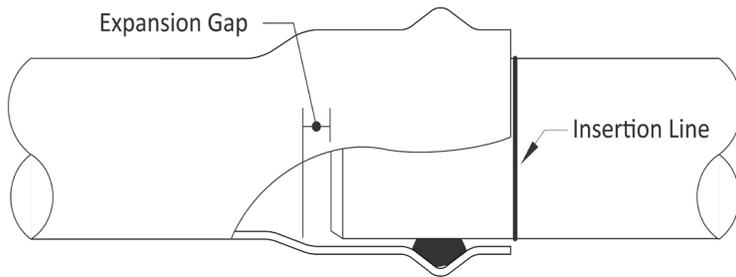
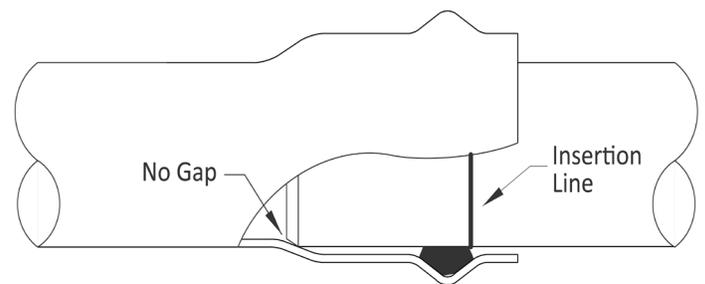


Figure 2: Over-Inserted Spigot



WHY PVC PIPE JOINTS SHOULD HAVE GAPS

PVC pipes are engineered with push-on gasketed joints. After assembly of a joint, **there should be a gap** between the end of the spigot and the shoulder of the bell. This gap protects the integrity of the joint, allowing room for thermal expansion. The gap also allows unstressed angular offset at the joint, which is beneficial in accommodating unexpected ground movements and other adverse field conditions.

GAPS DO NOT AFFECT GASKET SEALING

Some installers are concerned that the joint will leak unless the spigot is “bottomed out” in the bell. This is not correct. The joint is designed with sufficient length of insertion past the gasket to permit thermal contraction without compromising the gasket seal – even with the gap.

GAPS DO NOT AFFECT HYDRAULIC DESIGN

For sewer-pipe hydraulics, Manning’s “n” value is used as a measure of a pipe material’s smoothness – the lower the “n” value, the smoother the pipe. For PVC pipe, testing has shown that $n = 0.009$ is an accurate design value for pipe with gaps at the joints.

For pressure-pipe hydraulics, the Hazen-Williams “C” factor measures smoothness – the higher the “C” value, the smoother the pipe. For PVC pipe, testing has shown that $C = 150$ is the correct design value for pipe with gaps at the joints.

References: “Why Does My PVC Sewer Pipe Joint Have a Gap,” *Uni-Bell PVC Pipe News*; and “Gasketed PVC Pipe: The Importance of Insertion Lines,” *Uni-Bell Technical Brief*