

Questions About the GAP?

Why Does My PVC Sewer Pipe Joint Have A Gap?

By Craig Fisher, P.E.
Association Engineer

Televised inspections of PVC pipelines often reveal a small gap between the spigot end of the pipe and the neck of the adjoining bell. This observation may lead to questions about why such gaps exist, whether they adversely affect the hydraulics or maintenance requirements of the pipeline, and should those gaps be eliminated by pushing joints completely home.

Why Are Those Gaps There?

The best place to begin is a quick discussion of the gasketed, PVC joint. PVC pipes are engineered with deep-insertion, push-together, gasketed joints. A properly assembled joint will have a gap between the end of the spigot and the neck of the bell to allow room for expansion. When

assembled in this manner, there is also provision for some angular offset at the joint, which is useful for those unexpected cases of aggressive ground movements. The deep-insertion joints of gasketed, PVC sewer pipes contribute to the pipe's ability to provide watertight joints under adverse conditions. Figure 1 shows a

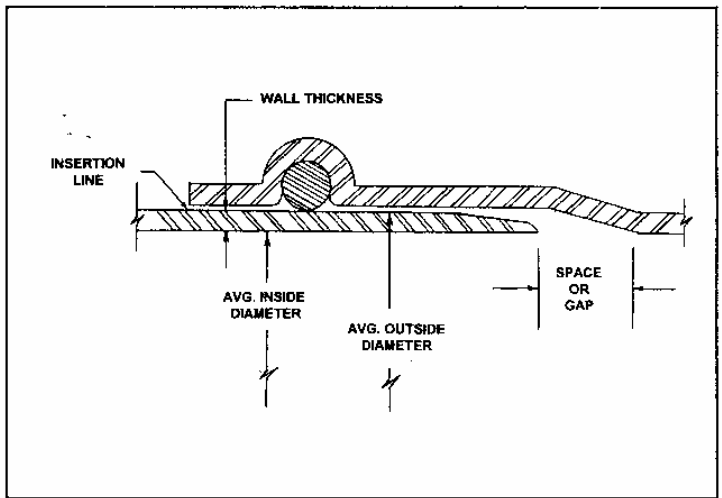


Figure 2: Illustration shows a cross-section of PVC pipe joint.

properly assembled PVC sewer pipe joint. Note that the insertion line (the black line on the spigot end of the pipe) is even with the edge of the bell entry lip. Other names for the insertion line are the stop mark, assembly stripe, or reference line.

Figure 2 shows a wall cross-section of a PVC pipe joint. From Figure 2 you can see that the insertion depth allows more room for contraction than expansion. The gap opening is comparatively small.

Do Those Gaps Affect Hydraulics or Maintenance?

A report entitled, "Hydraulic Characteristics of PVC Sewer Pipe In Sanitary Applications,"¹ is quite helpful in answering these questions. The report summarizes twenty-five separate measurements of flow conditions at four different localities. The PVC pipelines included in these measurements varied from new installations to lines that had been in service for five years.

One author of the report was contacted to verify that the PVC pipe joints in the study were assembled according to recommended construction practices. Specifically, that joints were assembled with a small gap between the spigot and bell. The author confirmed the fact that the pipes were installed in such a manner.

The average Manning's "n" value for the twenty-five installations was

0.00896, which is an extremely attractive hydraulic value. The question of gaps and maintenance was also answered. The report states that

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the paper was profusely present in the flows measured. The investigators reported trouble with paper clogging their velocity meters. Nevertheless, the "n" value was low, which would indicate that profuse paper and other debris in the line was not clogging the PVC sewer lines at the pipe joints.

Understanding the rationale for the gap and knowing that the effects are not adverse, the gaps you see in your next televised inspection should no longer trouble you.

Bibliography

¹Jeppson, Dr. Roland, and Ron Bishop, "Hydraulic Characteristics of PVC Sewer Pipe In Sanitary Applications (A Report of Field Measurements)," Utah State University, Logan, Utah, September, 1975.

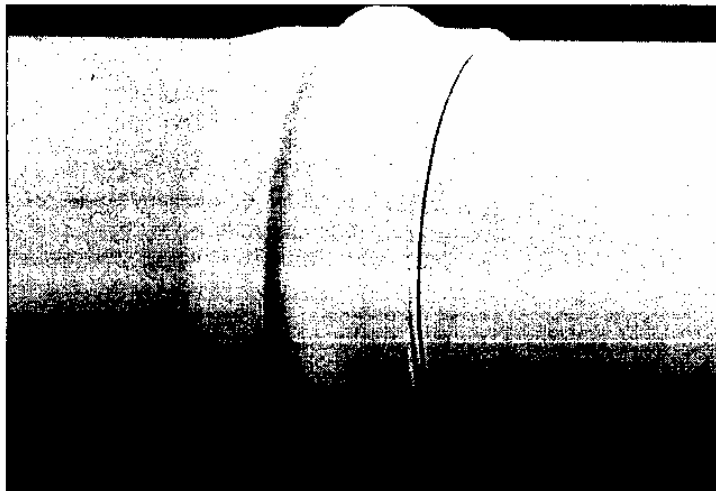


Figure 1: The insertion line on pipe spigot is visible at bell entry lip of a properly assembled PVC sewer pipe joint.