PLASTIC TRENDS
Quality Fittings By Design

TECHNICAL BULLETIN

Pipe Push-Through Directly Related To Spigot Field-Cut Chamfer

There is a direct correlation between the type and size of chamfer on a pipe spigot and the force required to drive the spigot past the mating fitting's pipe stop. In general, the sharper the chamfer, the less force required to drive the spigot past the mating fitting's pipe stop, into the fitting body. Once this occurs, failure of the joint due to fracturing of the pipe fitting or pipe is likely.

During installation on the jobsite, to aid in the ease of assembly, it is common practice to apply a field-cut chamfer to the end of the pipe segment before it is assembled. This chamfer is typically applied by an abrasive cutting wheel. The resulting chamfer is uncontrolled, and typically results in an uneven, rough edge, that is either sharp or has little surface left at the end of the pipe. This crude chamfered edge can damage the gasket during assembly, causing leakage. It also creates a tapered lead for the pipe to be driven more easily past the pipe stop, into the body of the fitting.

Plastic Trends has verified this through testing. Testing was conducted using an Instron load cell. Test pieces used were 12" x 4" molded SDR 35 sewer tees (ASTM F1336) with square pipe stops and 4" pipe segments. Results were as follows:

4" Pipe (Spigot) Chamfer Description	Force To Push Spigot Past Pipe Stop
Simulated field cut, .780" long x 15 degree, .031" land remaining of .240" wall thickness	3,636 Lbs.
Controlled cut, .25" long x 15 degree, .173" land remaining of .240" wall thickness	5,938 Lbs.

As tested, the controlled cut chamfer required 63% more force than the simulated field-cut chamfer to push past the pipe stop, into the body of the fitting.

It should be noted that the simulated field-cut chamfer was lathe-turned, thus more consistent than an actual field-cut chamfer. An actual field-cut chamfer is likely to be uneven, rough, and not square, resulting in localized stress concentrations due to point loading and less force required to push past the pipe stop than in the test referenced above.

Conclusion – Field-cut pipe chamfers can lead to system failure when used as a component of an elevation change (riser) in a flexible conduit system, due to pipe push-through. They can also damage the gasket during assembly. Plastic Trends recommends the use of a pipe chamfering tool capable of creating a controlled, smooth chamfer, that removes no more than 30% of the wall thickness of the pipe.

For Further information on this bulletin, please contact Plastic Trends, Inc.

PLASTIC TRENDS

Plastic Trends, Inc.
56400 Mound Road
Shelby Twp., MI 48316
586.781.2700 • 800.232.5690
Fax: 586.781.0888
www.plastictrends.com

Rev. 2003