



## Do Solvent Welded Fittings Need To Be Thrust Blocked?

This is a question that many installers and project owners ask. The answer to this question is no, but we must need to know the reasoning behind this response. The difference between a solvent welded, and Gasket (O-ring) joining system is the key to this answer.

In a piping system, the water pressure in a pipe creates forces in all directions. Not only is it exerting pressure to make the pipe and fittings larger, in diameter, like a balloon. It also wants to make the system longer. This pressure along the length of the pipe line causes separation of joints which are not solvent welded or threaded together. Think of a child's toy cork gun. Pressure is built up within the barrel. When the pressure is enough to overcome the friction retaining the cork, it blows out!

In a gasket or O-ring joint system the pipe and fittings are not welded or fused together. They remain separate pieces. An O-ring or gasket is used in the connection to prevent the joint from leaking. But, the only thing keeping the parts from separating is the friction of the gasket with the pipe and fitting. The resistance or friction is not capable of withstanding the water pressure and allows the joint to blow apart. This is the reason that a thrust block, commercially available joint clamp or other mechanical restraints are crucial on a Gasket or O-ring joining system.

Joints that are solvent welded are capable of withstanding the push forces generated by the water pressure in addition to any expansion, or contraction from temperature changes. The welding of steel pipe and fittings yields a fusion bond linking the parts like in solvent welded PVC connections. The minimum depth of socket specified in the American Society for Testing and Materials (ASTM) standards furnish over twice the bonding area needed to resist all push, pull and water pressure forces in the system.

When pipes and fittings are properly assembled with solvent cement the joint becomes stronger than the pipe. Test has proven that solvent welded joints can defy the forces working to detached them, even at more than 2-1/2 times the pressure rating of the pipe. This holds true for all size, class or schedule of PVC pipe and fittings. Solvent welded joints are capable of resisting the high pipe pull-out and push-out forces that will be created by the water pressure, pipe expansion or contraction.

In addition, documents such as: ASTM D 2774 ("Standard Practice for Underground Installation of Thermoplastic Pressure Piping") and ASTM F 690 ("Standard Practice for Underground Installation of Thermoplastic Pressure Piping Irrigation Systems") confirm the answer to our question. That unqualified answer is; thrust blocking is not needed on solvent welded joints.

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