

Vacuum Box Bubble Leak Weld Testing on Pipes

Pipeline welding is a critical part of constructing and maintaining reliable piping systems. Whether a pipeline is being fabricated in the field, repaired, modified, or assembled into a larger system, verifying the integrity of welded joints is an important part of quality control.



Vacuum box testing is particularly useful when the opposite side of a weld cannot easily be pressurized or when a localized leak test is desirable. The method can provide a quick visual indication of leakage without requiring an entire pipeline section to be filled or pressurized.

Pipeline welds can present unique inspection challenges because of the curved surface of the pipe and the often-limited access available around the weld. **A properly sized vacuum box conforms to the pipe surface** while providing a sealed inspection area directly over the weld.

This allows the inspector to progressively examine the circumference of a girth weld or other localized weld areas without having to pressurize the entire pipeline. The ability to inspect a relatively small section at a time also makes vacuum box testing useful for identifying the specific location of a leak, particularly during fabrication, field welding, repair, and quality-control inspections.



For pipeline applications, however, selecting the correct vacuum box requires more than simply choosing a box based on the nominal pipe size. The diameter and curvature of the pipe directly affect the ability of the box gasket to establish a reliable seal. For this reason, **NPS 3-inch is the minimum practical pipe size for our standard pipeline vacuum box configuration.**