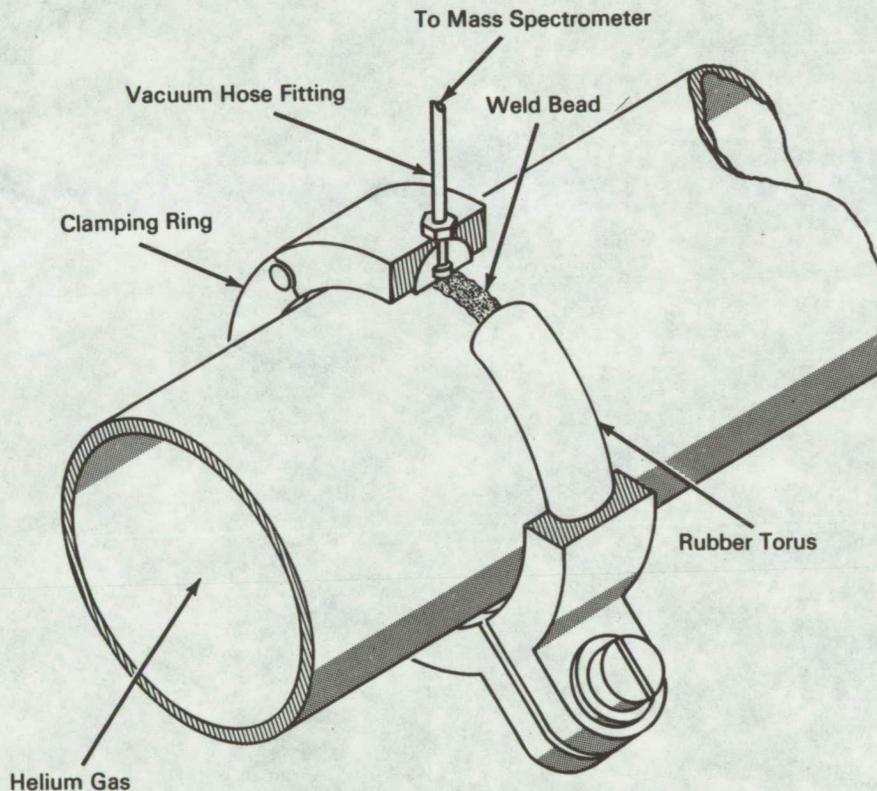


NASA TECH BRIEF



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Fixture Facilitates Helium Leak Testing of Pipe Welds



The problem:

To devise a fixture that will facilitate inspection testing of circumferential pipe welds for vacuum tightness, using helium gas as a leakage tracer in conjunction with a mass spectrometer. The pipes to be tested were too large for a vacuum chamber, and the use of a plastic bag taped around the welded joint for collection of the tracer gas did not provide sufficient measurement accuracy of the leakage rate.

The solution:

A fixture consisting of a split rubber torus and a mating clamping ring with a vacuum hose fitting.

How it's done:

The rubber torus is placed over the weld to be tested and the clamping ring is tightened around the torus to ensure a vacuum tight seal. A vacuum line is then connected between the vacuum hose fitting and the mass spectrometer. Any helium that leaks

(continued overleaf)

through the weld accumulates in the annular space within the rubber torus and is conducted to the mass spectrometer. As the pressure of the helium is considerably below atmospheric, helium leakage to the atmosphere is negligible.

Notes:

1. This fixture enables accurate and rapid helium leak testing of welded pipe joints, since it can be connected (and disconnected) within several seconds and requires only a few more seconds for establishment of the equilibrium gas pressure in the known annular volume of the rubber torus around the weld bead.

2. Inquiries concerning this innovation may be directed to:

Technology Utilization Officer
Marshall Space Flight Center
Huntsville, Alabama 35812
Reference: B67-10178

Patent status:

No patent action is contemplated by NASA.

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