A Proof Ring is a simple constant load device for round tensile specimens. It is used to evaluate metal for environmental cracking resistance under uniaxial tensile loading. A tensile specimen is loaded to a particular stress level to give a failure/no-failure test result. Quantitatively, the failure can be determined using a time-to-failure parameter. The testing method has been specified in NACE TM0177-2005 "Laboratory Testing of Metals for Resistance to Sulfide Stress Cracking and Stress Corrosion Cracking in H₂S Environments": Method A – NACE Standard Tensile Test.

Benefits

Cormet updates the proof ring concept with new construction materials, an advanced load application device and a load cell.

Conventionally, proof ring testing cells have been manufactured of acrylic materials that are brittle with poor resistance against grease removing chemicals. Cormet’s proof ring testing cell has a borosilicate glass cylinder and robust polypropylene lids that are easy to handle and clean. The testing cell lid port types and sizes can be manufactured according to the Customer’s needs.
Cormet manufactures material- and corrosion-testing instruments for the laboratory and field environments. We specialise in high-temperature high-pressure applications. Cormet delivers instruments to university and industrial laboratories including the power-generation, chemical, transportation and oil & gas industries. Nearly all the products are tailored according to customers’ needs.

The early-age proof rings had a single nut for tightening the load application. It was often difficult to apply a uniaxial torsion-free load in an accurate and reproducible way using such a nut. Cormet’s proof rings have a special Superbolt® multi-jackbolt tensioner that is operated using four small bolts. The new tightening system provides torsion-free and easily reproducible stresses for the tensile specimen.

Tensile specimens yield during the constant load test. A proof ring maintains stable stress relatively well but it is practically impossible to measure how much yielding reduces the stress level. Cormet equips proof rings with load cells that provide continuous on-line load measurement. The operator can monitor the load level from a digital display and make small adjustments using Cormet’s Superbolt® tightening nut.

**Accessories**

Proof rings can be instrumented with temperature control systems. A chiller / heater circulates heat transfer fluid through a Hastelloy coil positioned inside the testing cell. Temperature is controlled and monitored using a temperature sensor in a Hastelloy pocket immersed in the testing cell solution.

Cormet can provide gas management tools for H₂S operation including valves, flow meters, neutralization tools, draft cabinets, gas cabinets, H₂S sensors with alarm and ventilation devices and even entire H₂S laboratories.

Cormet’s data acquisition system will continuously read multiple load cell values and testing cell temperatures. The often unreliable microswitch used to determine time-to-failure can be discarded because the specimen rupture is indicated by a massive load drop. The design starting points for Cormet’s proof ring were ease of use and reliable test results.

**Example port configuration ¼” NPT ports – Ports customizable**

**Cormet also manufactures traditional Proof Rings without load cell**