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A Member of the SAES Getters Group

FST TECLab™ Analytical Services

Date: July 8, 2003 Report # EO3138
Customer: Triunion Indústria e Comércio Ltda.
Address: Av. Morais Costa, 945 - Vila Industrial
São Paulo - SP - Brasil
Phone: (305) 371-1300
Subject: Triunion Helium Leak Test

Introduction

FST TECLab™ performed helium leak testing on seven Triunion 1/2" compression fittings as supplied from Triunion. The minimum specified leak rate of 1X10-9 mbar liter/seconds was easily achieved and surpassed. We utilized an Inficon ModUL200 helium leak detector that was calibrated to a NIST traceable standard. The fittings and 1/2" 316 stainless steel tubing that was cut and prepared (faced and de-burred) was assembled at FST TECLab™ in accordance with the manufactures assembly instructions. The testing was conducted at FST TECLab™ in Hillsboro, OR.

Analytical Testing Protocol

The 316 stainless steel fittings and tubing were received and inspected prior to assembly. Each connection was hand tightened and marked on the nut and fitting. The nut was then rotated one and 1/4 turns past the starting point. The fittings and tubing were assembled in a u-shaped manifold as depicted in the sample configuration supplied with the exception of one "LU" fitting at the bottom left hand side. Each fitting was bagged and taped to provide a tight seal for containment of helium around each fitting. The manifold was attached to the UL200 helium mass spectrometer leak detector. The manifold was evacuated internally to a starting leak rate of 1X10-11 mbar liters / second. 100% UHP grade helium was then sprayed into each bag surrounding the fittings and allowed to soak for 10 minutes min. No leak greater than 1X10-11 mbar liters / second was indicated.

Equipment / Gases

Inficon MODUL 200 Helium Mass Spectrometer Leak Detector
S/N D950100036 / FST# 245
Last NIST Traceable Calibration Feb. 25, 2003
Next NIST Traceable Calibration due Feb. 25, 2004

AL Gases 100% UHP Grade Helium

Table with 3 columns: Quantity, Fittings, Description. Rows include 4 Union, 3 Elbow, and 7 tube (6" long).

Signature of Grant L. Ingram / TECLab™ Mgr.

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Helium Leak Test Report

Customer: Triunion Indústria eComércio Ltda. Date: July 8, 2003
 Quote : 3BRZX0326 Location: TECLab™
 Instrumentation: Inficon UL200 #245 Test Type: Inboard

<u>Serial Number</u>	<u>Internal Calibrated Leak</u>	<u>Sensitivity</u>	<u>Last NIST Cal</u>	<u>NIST Cal Due</u>
D950100036	8.2E-7 mbar l/sec	1E-11 mbar l/sec	Feb. 25 2003	Feb. 25, 2004

Starting Leak Rate: 1E-11 mbar l/sec Final Leak Rate: 1E-11 mbar l/sec

Specifications: 1E-9 mbar liters / second

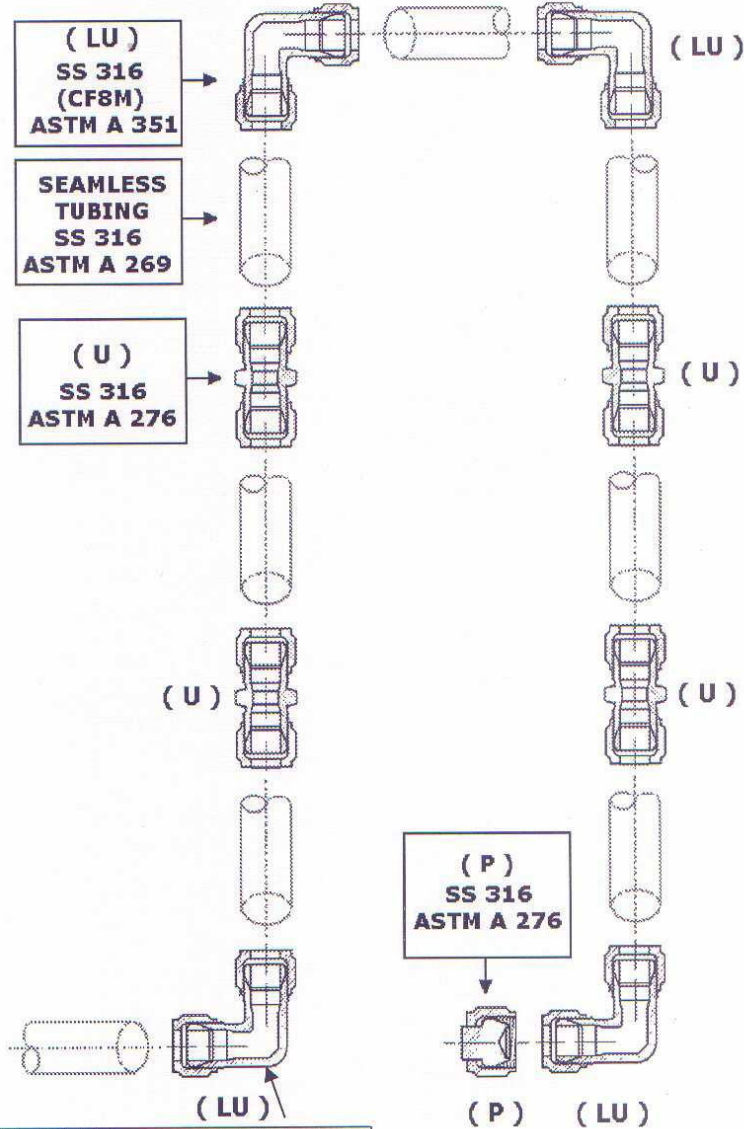
Test Duration: N/A Set-Up Time: N/A

Certification: N/A Retest: N/A

Comments An inboard helium leak test was performed on seven fittings as supplied from Triunion. The fittings consisted of four unions and three elbows all of which were 1/2" compression type fittings. Each fitting was bagged individually and filled with 100% UHP grade helium.

Performer's Signature: *Grant Trojan* Verifier's Signature: *Don Stearns*
 Printed Name: Grant Trojan Printed Name: DON STEARNS
 ASNT MSLT Level II

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|-------------------------|---------------------------|----------------------------|-------------------------------------|-------------------------------------|--|
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Note: This fitting was not included in the test.