



Product Test Report

PTR-3254

Swagelok Company
29500 Solon Road
Solon, Ohio 44139 U.S.A.

Ver 02
November 2022
Page 1 of 2

TITLE

Cyclic Corrosion Testing of Swagelok® Jacketed Tube Connector (JTC)

PRODUCT TESTED

- (2) Stainless steel, 1/4 in. JTC seal cartridges, SS-4JTC-NFSET, assembled to TPU jacketed SS tubing and 1/4 in. tube fitting caps, SS-400-C
- (2) Stainless steel, 3/8 in. JTC seal cartridges, SS-6JTC-NFSET, assembled to TPU jacketed SS tubing and 3/8 in. tube fitting caps, SS-600-C
- (2) Stainless steel, 1/2 in. JTC seal cartridges, SS-8JTC-NFSET, assembled to TPU jacketed SS tubing and 1/2 in. tube fitting caps, SS-810-C

PURPOSE

The fittings were tested under laboratory conditions to observe the cyclic corrosion testing (CCT) performance of the Swagelok JTC.

TEST CONDITIONS

Original test date: October 2012

The test conditions were followed according to ASTM B117 and Volkswagen PV 1210.

- Chamber environment (salt fog): $95 \pm 3.6^{\circ}\text{F}$ ($35 \pm 2^{\circ}\text{C}$), 97 to 100% RH
- Chamber environment (drying): $73 \pm 3.6^{\circ}\text{F}$ ($23 \pm 2^{\circ}\text{C}$), 48 to 52% RH
- Chamber environment (elevated temperature, high humidity): $122 \pm 2^{\circ}\text{F}$ ($50 \pm 2^{\circ}\text{C}$), 97 to 100% RH
- NaCl (salt) concentration: 5%
- Total test time: 360 hours

TEST METHOD

1. The JTC seal cartridges were preswaged to each end of a 6 in. piece of thermoplastic polyurethane (TPU) jacketed SS tubing. All assemblies were preswaged using the Manual Gaugeable Preswage Tool. The jacketed tubing ends were prepared according to MS-CRD-0202.
2. Swagelok caps were used to cap each end of the JTC seal cartridge.
3. The JTC seal nuts were tightened hand-tight, and the three tubing samples were placed in the chamber.
4. The test chamber was cycled through the following cyclic corrosion testing (CCT):
 - a. four hours of salt fog,
 - b. four hours of drying with forced air with low humidity,
 - c. and sixteen hours of an elevated temperature, high humidity environment.
5. Step 4 was repeated four additional times for a total test time of 120 hours followed by 48 hours of rest in an ambient environment.
6. Step 5 was repeated two additional times for a cumulative test time of 360 hours.
7. The test samples were removed and evaluated for signs of corrosion on both the JTC seal cartridges and the bare ends of the jacketed tubing.



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Page 2 of 2

TEST RESULTS

No corrosion was observed on the JTC seal cartridges or the bare ends of the jacketed tubing test samples.

This test was performed to consider a specific set of conditions and should not be considered valid outside those conditions. Swagelok Company makes no representation or warranties regarding these selected conditions or the results attained. Laboratory tests cannot duplicate the variety of actual operating conditions. Test results are not offered as statistically significant. See the product catalog for technical data.

SAFE PRODUCT SELECTION

When selecting a product, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.

Referenced Documents

ASTM B117 —*Standard Practice of Operating Salt Spray (Fog) Apparatus*, ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2858

PV 1210, 2010-02: Volkswagen Cyclic Corrosion Testing, Volkswagen

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