Swagelok

Product Test Report

PTR-424

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TITLE
Lock-Up and Creep Test of Swagelok® HFM Series Pressure Regulators

PRODUCT TESTED
(170 pieces) SS-HFM3B-VCR4-P-B and (80 pieces) SS-MSM-HFM3B-P-B pressure regulators

PURPOSE
Lock-up and creep pressure testing was conducted using methods from SEMI Draft Doc. 3193 Rev. G. This test measures the outlet pressure rise that occurs when the flow through the regulator changes from a trickle to zero.

TEST CONDITIONS
Original test date: January 2002

Laboratory tests were conducted under the following controlled conditions:
    System fluid: filtered nitrogen gas
    Temperature: ambient ~70°F (20°C)
    Inlet pressure: 100 psig (6.8 bar)
    Outlet pressure: 30 psig (2.0 bar)
    Flow rate: from 200 std cm^3/min to 0 std cm^3/min

TEST RESULTS
The one-minute lock-up test results for the Swagelok HFM series pressure regulators are summarized as follows:
    Number of test pieces: 250
    Mean value: 2.06 psi
    Median value: 2.00 psi
    Standard deviation: 0.61 psi
The 24-hour lock-up plus creep test results for the Swagelok HFM series pressure regulators are summarized as follows:
    Number of test pieces: 30 (taken from the 250 pieces of the one-minute test)
    Mean value: 2.49 psi
    Median value: 2.40 psi
    Standard deviation: 0.79 psi

These tests were 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.