



## Product Test Report

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

**PTR-865**  
Ver 06  
December 2022  
Page 1 of 2

### TITLE

Nitrogen Gas Seal Test with Repeated Reassembly of Alloy 825 Swagelok® Tube Fittings with Alloy 825 Tubing at 1.25 Times the Working Pressure

### PRODUCT TESTED

The following alloy 825 bar stock and forged body Swagelok tube fittings were tested with alloy 825 tubing.

Ordering Number	Part Form	Tubing Size	Tubing Hardness HRB
<b>Fractional, in.</b>			
825-400-1-4	Bar stock	1/4 × 0.035	88
825-400-9	Forging		
825-600-1-4	Bar stock	3/8 × 0.035	88
825-600-9	Forging		
825-810-1-4	Bar stock	1/2 × 0.035	80
825-810-9	Forging		
<b>Metric, mm</b>			
825-6M0-1-4	Bar stock	6 × 0.8	88
825-6M0-9	Forging		
825-10M0-1-4	Bar stock	10 × 1.0	88
825-10M0-9	Forging		
825-12M0-1-4	Bar stock	12 × 1.0	80
825-12M0-9	Forging		

### PURPOSE

The assemblies were tested to observe the performance of alloy 825 Swagelok tube fittings with alloy 825 tubing during a gas seal test with reassembly under laboratory conditions.

### TEST CONDITIONS

Original test date: December 2004

Each sample tested consisted of one tube length and two test fittings. The fitting was assembled according to the Swagelok tube fitting installation instructions. Testing was conducted at ambient room temperature.

### TEST METHOD

1. The test samples were attached to a gas test stand, submerged in water, pressurized to at least 1.25 times the tube working pressure with nitrogen for 10 minutes, and monitored for leakage. The judgment criterion was less than 1 bubble per minute at the test pressure. If leakage was observed, the fitting was tightened slightly (up to 1/8 turn) and re-tested.



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Page 2 of 2

2. Pressure was reduced to zero, and the fittings were disassembled. The fittings were reassembled according to Swagelok reassembly instructions.
3. The fittings were leak tested using nitrogen to at least 1.25 times the working pressure following the instructions and judgment criteria from step 1 at every fifth reassembly.
4. A total of 25 reassemblies were conducted on each test sample end.

### TEST RESULTS

Tubing Size	Samples Tested	Working Pressure psig (bar)	Test Pressure psig (bar)	Results
<b>Fractional, in.</b>				
1/4 × 0.035	44	6400 (440)	8000 (551)	Pass
3/8 × 0.035	44	4100 (282)	5125 (353)	Pass
1/2 × 0.035	44	3000 (206)	3750 (258)	Pass
<b>Metric, mm</b>				
6 × 0.8	44	5950 (410)	7431 (512)	Pass
10 × 1.0	44	4354 (300)	5442 (375)	Pass
12 × 1.0	44	3628 (250)	4528 (312)	Pass

Note: Working pressure was based on the Swagelok Tubing Data, MS-01-107.

The alloy 825 Swagelok tube fitting demonstrated both initial assembly gas seal and repeated gas seal through 25 reassemblies at 1.25 times the working pressure, under laboratory conditions.

**The tests were conducted beyond the product's recommended operating parameters and do not modify the published product ratings.**

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.