



## Product Test Report

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

**PTR-1207**  
Ver 06  
November 2022  
Page 1 of 4

### TITLE

Positive Pressure Helium Gas Leak Test with Repeated Reassembly of Stainless Steel Swagelok® Medium-Pressure Tube Fittings in Excess of Rated Pressure

### PRODUCT TESTED

The following stainless steel Swagelok medium-pressure tube fittings were tested with the identified stainless steel tubing.

Ordering Number	Quantity Tested	Tubing	Tubing Hardness
<b>Fractional</b>			
SS-4FK0-1-4	19	1/4 × 0.095 in. annealed	Rb 80
SS-4FK0-C	14		
SS-4FK0-9	5		
SS-4FK0-1-4	19	1/4 × 0.065 in. cold-drawn 1/8-hard	Rc 25
SS-4FK0-C	14		
SS-4FK0-9	5		
SS-6FK0-1-4	19	3/8 × 0.134 in. annealed	Rb 84
SS-6FK0-C	14		
SS-6FK0-9	5		
SS-6FK0-1-4	19	3/8 × 0.083 in. cold-drawn 1/8-hard	Rc 22
SS-6FK0-C	14		
SS-6FK0-9	5		
SS-8FK0-1-4	19	1/2 × 0.188 in. annealed	Rb 89
SS-8FK0-C	14		
SS-8FK0-9	5		
SS-8FK0-1-4	19	1/2 × 0.109 in. cold-drawn 1/8-hard	Rc 23
SS-8FK0-C	14		
SS-8FK0-9	5		
SS-12FK0-1-44M	16	3/4 × 0.165 in. cold-drawn 1/8-hard	Rc 26
SS-12FK0-C	16		



## Product Test Report

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

**PTR-1207**  
Ver 06  
November 2022  
Page 2 of 4

Ordering Number	Quantity Tested	Tubing	Tubing Hardness
<b>Metric</b>			
SS-6MFK0-1-4	12	6 × 2.2 mm annealed	Rb 85
SS-6MFK0-C	12		
SS-6MFK0-1-4	12	6 × 1.5 mm cold-drawn 1/8-hard	Rc 23
SS-6MFK0-C	12		
SS-10MFK0-1-44M	12	10 × 3.5 mm annealed	Rb 88
SS-10MFK0-C	12		
SS-10MFK0-1-44M	12	10 × 2.2 mm cold-drawn 1/8-hard	Rc 28
SS-10MFK0-C	12		
SS-12MFK0-1-44M	12	12 × 4.5 mm annealed	Rb 90
SS-12MFK0-C	12		
SS-12MFK0-1-44M	12	12 × 2.8 mm cold-drawn 1/8-hard	Rc 25
SS-12MFK0-C	12		

### PURPOSE

These assemblies were tested to observe the performance of Swagelok medium-pressure tube fittings during gas seal test with repeated reassembly under laboratory conditions.

### TEST CONDITIONS

Original test date: April 2006

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

### TEST METHOD

1. The assemblies were attached to a positive gas test stand, submerged in water, pressurized to 1.25 times working pressure with helium for 10 minutes, and monitored for leakage. The judgment criterion was less than one bubble per minute at the applied pressure.
2. Pressure was dropped and the fittings were disassembled. The fittings were reassembled according to Swagelok reassembly instructions.
3. The fittings were leak tested using helium at 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 end.



## Product Test Report

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

**PTR-1207**  
Ver 06  
November 2022  
Page 3 of 4

### TEST RESULTS

Tubing	Samples Tested	Working Pressure (WP) psig (bar)	Test Pressure psig (bar)	Results
<b>Fractional</b>				
1/4 × 0.095 in. annealed	19	15 000 (1034)	18 750 (1291)	Pass
1/4 × 0.065 in. cold-drawn 1/8-hard	19			Pass
3/8 × 0.134 in. annealed	19			Pass
3/8 × 0.083 in. cold-drawn 1/8-hard	19			Pass
1/2 × 0.188 in. annealed	19			Pass
1/2 × 0.109 in. cold-drawn 1/8-hard	19			Pass
3/4 × 0.165 in. cold-drawn 1/8-hard	16			Pass
<b>Metric</b>				
6 × 2.2 mm annealed	12	15 000 (1034)	18 750 (1291)	Pass
6 × 1.5 mm cold-drawn 1/8-hard	12			Pass
10 × 3.5 mm annealed	12			Pass
10 × 2.2 mm cold-drawn 1/8-hard	12			Pass
12 × 4.5 mm annealed	12			Pass
12 × 2.8 mm cold-drawn 1/8-hard	12			Pass

The stainless steel Swagelok medium-pressure 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.

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



## Product Test Report

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

**PTR-1207**  
Ver 06  
November 2022  
Page 4 of 4

---

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.

Swagelok—TM Swagelok Company