



CONTROLLING
PRESSURE & VACUUM

HAM-LET Interchangeability

March, 2005



INTERCHANGEABILITY

LET-LOK[®] **TUBE FITTINGS**

Are manufactured to be totally interchangeable with Swagelok tube fittings. Piece by piece examination reveals that the two brands are totally intermixable components. The exceptional quality standards of both products assure complete reliability of service when intermixing the component parts.



Swagelok[®] is a registered trademark of Crawford Fitting co.



Lloyds Certification

Lloyd's Register

Project: IOL 01

Certificate Number: MTL 9920012/1

Client: Ham-Let (Canada) Fittings & Valves
Inc.
3190 Ridgeway Drive, Unit 33,
Mississauga, Ontario L5L 5S8

Office: Toronto

Client's Order Number:

Date: 18 March 1999

Order Status: Complete

Inspection Dates

First: 17 March 1999

Final: 17 March 1999

This certificate is issued to Ham-Let (Canada) Fittings & Valves Inc. to certify that the undersigned surveyor to Lloyd's Register, did, at their request, attend at the works of Newman Hattersley of Mississauga, Ontario for the purpose of witnessing the hydraulic test of the assembled pipes and fittings.

The test assembly consisted of 316L seamless stainless steel tubing 1/4" dia. x 0.049" wall and combination of Swagelock and Ham-Let fittings as per copy of the attached drawings "Test Plan for Ham-Let Compression Fittings"

The assembly was subjected six (6) times to the hydrostatic pressure of 3000 psi and held for a minimum of 60 seconds each time with no leaks observed.

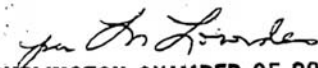
The assembly was broken and remade after each testing. The fittings were checked for thread galling and damage. No thread galling or damage was noticed.

After completion of initial testing to 3000 psi, the assembly was subjected to a hydrostatic pressure of 5000 psi, 6000 psi, 7000 psi for the duration of 60 seconds each and to 8000 psi for the duration of 180 seconds with no leaks noted.

Whilst maintaining 8000 psi pressure some of the fittings were slackened causing leaks and subsequently retightened stopping leaks completely. The results of the tests are tabulated on the attached Test Result Sheet.

The test station utilised pressure gauge Haenni serial no. 008, range 0-10,000 psi, calibrated on 16.03.98 stated using company's master gauge S.S.D. serial no. 2977/805 calibrated on 25.01.99. Copies of certificates are attached.

It is certified that the test results meet the test objectives.


BURLINGTON CHAMBER OF COMMERCE


M. Cizykowski
Surveyor to Lloyd's Register of Shipping



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March 4, 1999

Test Plan for Ham-Let Compression Fittings

Special Test Program

- Test Objective:** To compare the leak integrity under pressure working conditions, of Ham-Let and Swagelok fittings in the following configurations:
a. Intermixed - components mixed at random
b. Interchanged - nut and ferrules of one make, body of the other.
- Test Pressures:** Nitrogen or water or air at 3,000 psi, or as requested by customer.
- Test Criteria:** The test pressure shall be maintained for a minimum of 60 seconds in each test and any leakage shall be noted.
No thread galling should be observed after 5 remakes.
- Test Parts:** 2 pieces of 1/4 inch Let-Lok Union Connectors.
2 pieces of 1/4 inch Swagelok Union Connectors.
1 piece of 1/4 inch Let-Lok Union Elbow.
1 piece of 1/4 inch Let-Lok Union Tee.
2 pieces of 1/4 inch Swagelok Union Elbow.
1/4 inch x 0.049 tubing 316L seamless ASTM A269 or equivalent with max hardness 90 HRB.
- Test Procedure:**
1. Make up test assembly using the manufacturers instructions (1.1/4 turns from finger tight) in the configurations shown on the drawing.
 2. Pressurize the assembly to 3000 psi.
 3. Place entire assembly under water for 60 seconds.
 4. Check for and note any leaks.
 5. Remove from container.
 6. Break and re-make each fitting five (5) times. Note any differences in make up.
 7. Repeat steps 2 through 5.

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