

***** This test was performed on an unusual hose, in order to test the upper limits of the Crimped Ground Joint Fitting and Ferrule combination. The results of this test show the extreme pressures that this system can endure.**

Couplings: Ground Joint Couplings: Interlocking Male Stems
- Coupling/ferrule system rated to 1000 psi. WP

Hose: High Pressure Air: 2" Dayco Wildcatter rated to 3000 psi.***

Attachment: Crimped: plated steel long ferrules

Goal: To exceed 4000 psi. (coupling/ferrule WP of 1000 psi. @ 4 to 1 Safety Factor)

Results: Couplings exceeded 9 ½ times WP. The coupling/ferrule movement occurred at 9500 psi.

Although the test was not conducted to ASTM D380 standards due to the steps in pressurization, all other aspects were in conformance. See engineering details below.

HOSE: 2" Dayco Wildcatter hose, 3000 psi. WP, initial length of 17".

END CONNECTION #1: Assembled by Campbell, IMS-8, a 2" interlocking male stem with an FPS200252L plated steel ferrule. Hose wall measured between .345" and .375" (.360" average). The ferrule was crimped to a setting of ϕ 2.700 in a single hit per chart crimp A, dated 1-10-03. Crimp diameter verified at between ϕ 2.700 and ϕ 2.720. This end was connected to our tester manifold using an adapter through our usual 3/4" ground joint style connection. Teflon tape and pipe dope was used on the NPT threads.

END CONNECTION #2: Assembled by Campbell, same as above. This end was fitted with a valve adapter with valve attached. Teflon tape and pipe dope was used on the NPT threads.

TEST: The assembly was filled with water and air was evacuated from the system by use of the valve at the free end of the assembly. Pressure was raised in steps to allow observation. The approximate temperature of the test components was 75° F. See in tester photo.

Pressure was raised to fitting working pressure of 1250 psi. No leaks or fitting separation was detected. The hose only slightly elongated, no further elongation was detected thereafter.

Pressure was raised to hose working pressure of 3000 psi. No leaks or fitting separation was detected.

Pressure was raised to 1.5 times hose working pressure or 4500 psi. No leaks or fitting separation was detected.

Pressure was raised to two times hose working pressure or 6000 psi. No leaks or fitting separation was detected.

Pressure was then more rapidly raised until a failure was observed at 9500 psi. The failure was the ferrule interlock opening up under the force and separating from the fitting located at the valve end. This allowed the inner tube to elongate and the plies of the hose to separate. The inner tube remained on the fitting and the ferrule stayed with the outer cover giving the appearance of the ferrule peeling back the wire braid and cover from the inner tube. See failure and failure close up photos. The other fitting and ferrule located at the manifold end was intact. See intact photo.

CONCLUSION: Raising the pressure in a slower manner allows observation that is not usually possible by rapid pressurization. Seeing any problems before failure is as important as noting the failure pressure.

Although the assembly did not reach four times hose working pressure, it did far exceed four times working pressure of the fitting. The assembly exceeded the 1000 psi. fitting pressure rating by 9.5 times safety factor. Certainly operating at 1000 psi. at 70° F, as the fitting was intended, should not present any problem for this assembly combination.

prepared by Dave Street, Engineering Manager