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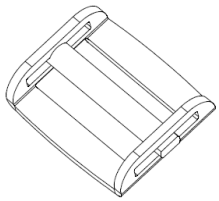
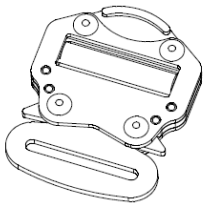
Webbing Abrasion Test Report

In Combination with Adjuster Hardware

Part Numbers: 451 & 723





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PROPRIETARY & CONFINDENTIAL

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1.0 GENERAL:

The purpose of this test plan is to show that the adjustment hardware and webbing combination used on the 497-H harness, meet the requirement of TSO-C167 section 10.5. The Nylon webbing shall withstand the minimum performance requirements for breaking strength after being conditioned per the test procedure in this document.

The conditioning procedure for the webbing used with the buckle (#723) will need to be modified from the TSO due to the nature of the design. The buckle adjuster is designed with a very narrow webbing slot that prevents slippage. The angle of $8^{\circ} \pm 2^{\circ}$ that is illustrated in Figure 4 of the SAE AS8043A document will not allow the webbing to release from the adjuster. A rectangular edge simulating the buckle's edge will be placed under the buckle to create the angle at which the buckle was designed to release. This will allow the webbing to be conditioned as it would during operational use. (Appendix II)

The slide adjuster (#451) will be tested per the Figure 4 illustration in the SAE AS8043A document. (Appendix I)

2.0 SPECIFICATIONS:

The breaking strength after the abrasion test shall not be less than 16.7kN (3,750lbf).

3.0 DESCRIPTION:

Test the webbing breaking strength on an area of webbing conditioned using the procedure in this document. Use the adjustment hardware and webbing combination that best represents the human harness' hardware and webbing. The combination must not show wear before conditioning. Use test equipment that provides the conditions of Figure 4 of SAE AS8043, Revision A, with a length of stroke of 152-203 mm (6-8 inches) and a cycle rate of 16-18 cycles per minute. One cycle consists of one lengthening stroke and one shortening.

NOTE: Condition the webbing for 4 hours at 21 + 1-degree C (70 + 3 degrees F) and 65 + 2 percent relative humidity. Test samples within 1 hour after conditioning.

4.0 TEST PROCEDURE:

1. Two different style adjusters will be used to condition the webbing. Buckle adjuster #723 and slide adjuster #451 will be tested individually.

2. Three Nylon MIL-Spec Type 13 webbing specimens cut to a minimum of 60 inches long will be tested per adjuster.

3. Attach a 3.2lb ± (2 ounce) weight on one end of the webbing, loop the other end through the adjuster and attach to the motor arm.

4. Power the motor so the webbing specimen is given a 6-8-inch traverse in the adjuster at a rate of 16-18 stokes per minute for 4 hours.
   NOTE: Break strength testing must be completed within 1-hour after conditioning.

5. Remove the weight and detach the webbing from the motor.

6. Place the webbing inside the load tester.

7. Continuously increase the force at a rate of 250lbs every 3-5 seconds until the webbing fails.

8. Record the breaking strength of the webbing.

5.0 LOAD CELL CALIBRATION:

Force Measurement: 10,000lb S-beam load cell (transducer) with one (I) each 0-10,000lbs digital gauge. Calibration conducted by Micro Precision Calibration, Inc. Sticker dated 05/02/16, valid thru 05/02/17.

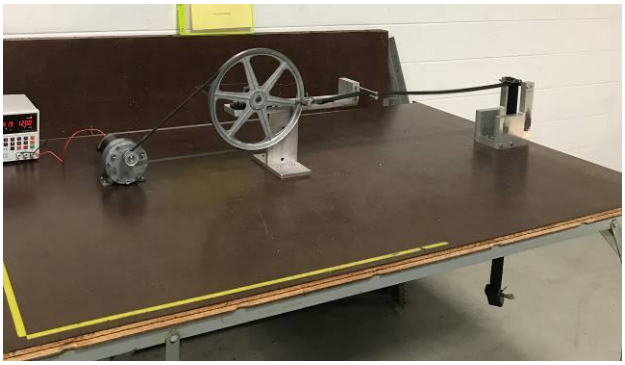


6.0 TEST RESULTS:

Sample	Part Number	Description	Breaking Strength N (lbf)	Pass/Fail >16.7kN
1	451	Slide Adjuster	17,787N (3,998.8lbf)	PASS
2	451	Slide Adjuster	17,716N (3,982.9lbf)	PASS
3	451	Slide Adjuster	17,736N (3,987.3lbf)	PASS
1	723	Buckle Adjuster	*22,018N (4,949.9lbf)	PASS
2	723	Buckle Adjuster	*20,010N (4,518.8lbf)	PASS
3	723	Buckle Adjuster	*20,162N (4,532.8lbf)	PASS

* Pull force stopped at reading due to requirement already being satisfied.

6.1 451 SLIDE ADJUSTER:



a. Webb abrasion test setup.



b. #451 Adjuster mounted to test fixture.



c. Nylon MIL-Spec Type-13 webbing (Sample 1) after conditioning.



d. Webbing (Sample 1) loaded in pull tester.

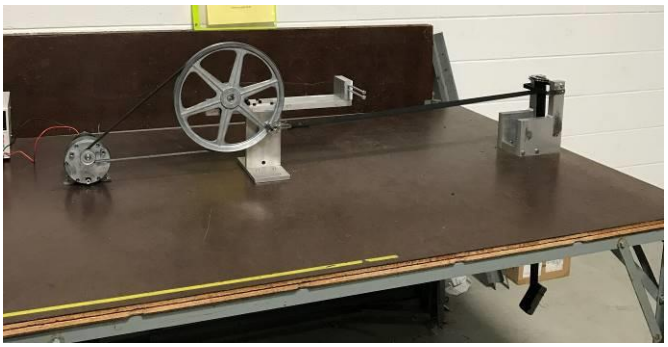


e. Webbing (Sample 1) broke at 3,998.8lbf (17,787N).



f. Webbing (Sample 1) after pull force.

6.2 723 BUCKLE ADJUSTER:



a. Web abrasion test setup.



b. #723 Buckle mounted to test fixture with edge bracket.



c. Nylon MIL-Spec Type-13 webbing (Sample 1) after conditioning.



d. Webbing (Sample 1) loaded in pull tester.



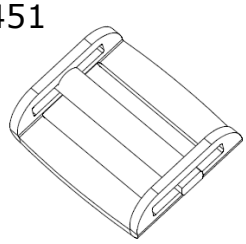
e. Webbing (Sample 1) did not break at 4,949.9lbf (22,018N). Force stopped due to requirement being satisfied.



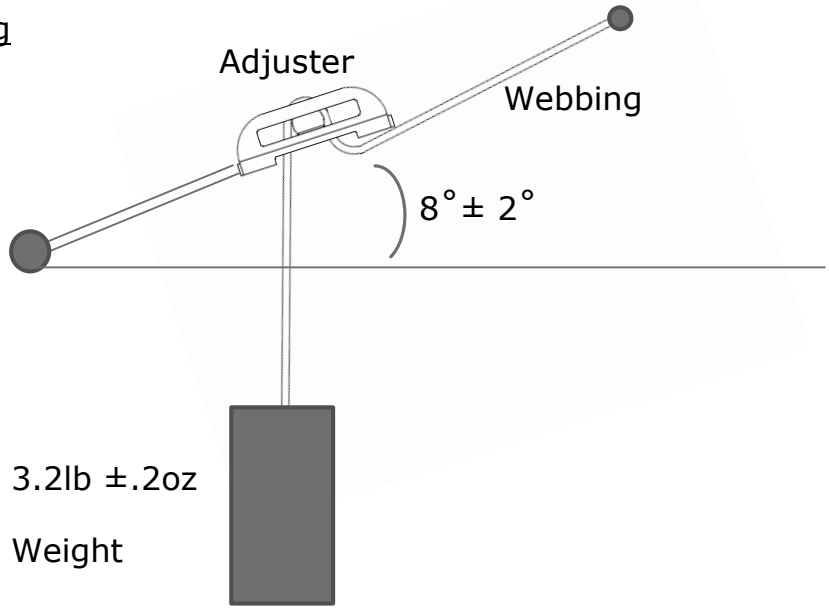
f. Webbing (Sample 1) after pull force. Holes starting to form in center of the webbing.

APPENDIX I:

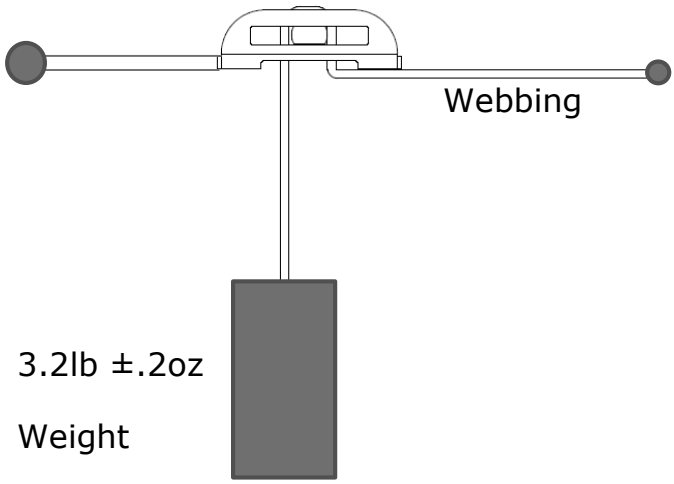
#451



Shortening



Lengthening



APPENDIX II:

#723

