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Quick Splice Load Test Report

Part Number: 199



PROPRIETARY & CONFINDENTIAL

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INTRODUCTION

The purpose of this report is to demonstrate the strength of the #199 quick splice. Successful completion shall confirm the products suitability for use during helicopter hoist operations, including the deployment and recovery of both equipment and persons (Human External Cargo).

GENERAL

The wedge style quick splice is designed for in-flight replacement of the hoist hook should the cable become damaged, broken, or entangled. The device allows crew members to secure a replacement hook in less than a minute to continue with the mission. LSC designed the wedge style Quick Splice to prevent the large reduction in cable strength that occurs when using old style lace or wrap designs. This is caused by the sharp bend in the cable when laced on the plate. A thumbscrew pre-loads the wedge against the cable. As the load increases, the internal forces securing the cable increase until the splice is a more secure connection that the original hook swedge. Easy to follow instructions are etched on the face. Constructed of anodized aluminum with stainless steel fasteners for strength and corrosion resistance.

ACRONYMS AND ABBREVIATIONS

LSC: Lifesaving Systems Corp.
WLL: Working Load Limit
P/N: Part Number
S/N: Serial Number
lbf: Pound-Force

SECTION 1-INSPECTION AND TESTING

Testing and inspection will be performed at Lifesaving Systems Corporation's (LSC) manufacturing facility located in Apollo Beach, Florida by LSC personnel.

One #199 quick splice will be submitted for inspection and testing and will undergo the following:

- Visual Examination
- Inspection of Critical Areas
- Load Test

SECTION 2-TEST EQUIPMENT

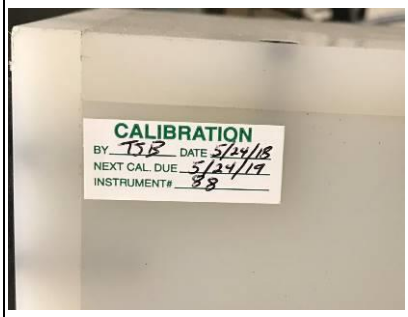
The primary testing equipment consists of the following items:

1. Force Application: Hydraulic load tester.

2. Force Measurement: 10,000lbs S-beam load cell (transducer) with one (1) each 0-10,000lbs digital gauge.

3. Fixtures: Shackles, pins, and custom fixtures as required to suspend the quick splice in the pull tester.

SECTION 3-EQUIPMENT CALIBRATION

Test Equipment	Description	Calibration Due Date
10k S-Beam Load Cell 	Force Measurement	5-24-2019  Cert No. 551220081388740 Performed by: Micro Precision Cal. Certificate at LSC

SECTION 4-EQUIPMENT UNDER TEST (EUT) IDENTIFICATION

		P/N: 199 Serial No: 1100

SECTION 5-VISUAL INSPECTION/EXAMINATION

Unaided visual inspection/examination to be performed as specified in the table below.

Success Criteria: Quick Splice must pass the noted inspection criteria.

Test Specimen: #199
S/N: 1100

Visual Inspection/Examination:

Inspection Criteria	Sample Pass/Fail	Notes & Observations
Surface - unclean, rough, fractured, malformed or containing cracks, nicks or other flaws (cosmetic only defects allowed).	PASS	
Any component missing, fractured, malformed, or otherwise damaged	PASS	
Any component loose or otherwise not securely retained	PASS	
Inspection of all critical areas prior to Load Test.	PASS	
Any functioning part that works with difficulty	PASS	
Faulty workmanship that would materially reduce performance, reliability, or durability	PASS	
Inspection of all critical areas prior to 600lbf (WLL) load Test.	PASS	
Inspection of all critical areas prior to 3500lbf load Test.	PASS	

SECTION 6-LOAD STRENGTH TEST

The #199 quick splice shall be attached inside the hydraulic load tester. A 3/16”, 19 x 7 steel cable shall be inserted into the quick splice that represents the hoist cable setup. Another 3/16”, 19 x 7 steel cable shall be attached to the shackle on the opposite end of the quick splice. Each cable shall be attached to a hydraulic arm inside the machine. Once the quick splice is mounted in the hydraulic tester a 600lb force will be applied. This will be repeated for each target load specified in the table below. The quick splice shall support a maximum load of 3500lbf without failure. Results shall be recorded.

Success Criteria:

(1) Quick Splice must pass the working load limit (WLL) of 600lbf and exhibit no damage (hardware fatigue, permanent deformation of shackle, slippage, etc.). Results will be recorded after the 600lbf load test.

(2) Quick Splice must pass the maximum load test criteria of 3500lbf and exhibit no damage (hardware fatigue, permanent deformation of shackle, slippage, etc.). Results will be recorded after the 3500lbf load test.

Test Specimen: #199
S/N: 1100

Load Table:

Target Load (lbf)	Load Cell Reading (lbf)	Success Criteria Pass/Fail	Notes & Observations
600	673	PASS	No Damage, no Slippage, no permanent deformation occurred.
1500	1608	PASS	No Damage, no Slippage, no permanent deformation occurred.
2500	2534	PASS	No Damage, no Slippage, no permanent deformation occurred.
3500	3084	PASS	Cable failed at 3,084lbf. The portion of the cable inside the quick spice was still intact and did not slip. No damage to quick splice.

ULIMATE LOAD	3825	PASS	Attached new cable to quick splice with no previous loading. Cable failed. No damage to quick splice.

SECTION 7-PHOTOGRAPHIC DOCUMENTATION

Pictures will be taken as needed after the test.



Load 673lbf



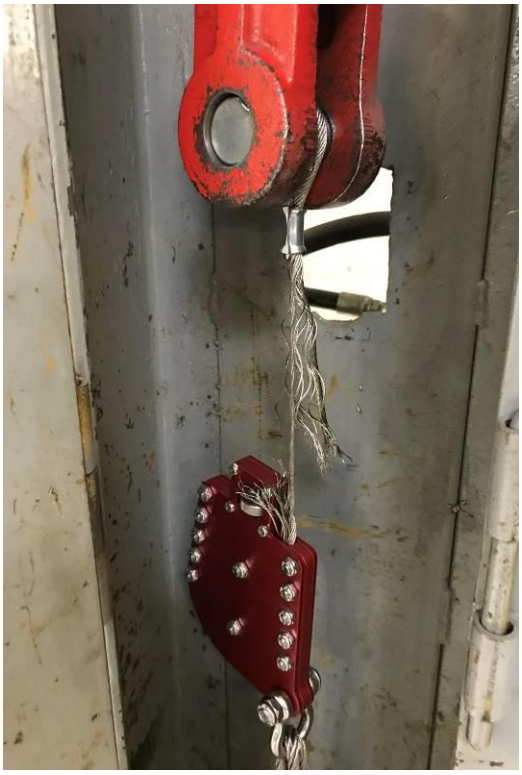
Load 1,608lbf



Load 2,534lbf



Load 3,084lbf



Cable failure

(This early failure of the cable was likely caused by the cyclic loading of previous tests, weakening the cable section)



Load 3,825lbf



Cable failure