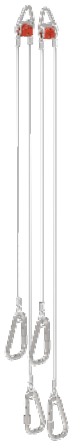
Lifesaving Systems Corporation
220 Elsberry Road
Apollo Beach, Florida 33572
www.Lifesavingsystems.com

ENVIRONMENTAL TEST REPORT

Part Number: 193-(series)



PROPRIETARY & CONFINDENTIAL

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION OWNED BY LIFESAVING SYSTEMS AND MAY NOT BE DUPLICATED, COMMUNICATED TO OTHER PARTIES OR USED FOR ANY PURPOSE WITHOUT THE EXPRESS WRITTEN PERMISSION OF LIFESAVING SYSTEMS CORP.

Prepared by: _____ Date: 06/30/2021
Mario Vittone, GM

Witnessed by: Chad VanderKlok
Chad VanderKlok (Jun 30, 2021 13:57 EDT) Date: 06/30/2021
Chad VanderKlok, QA

Document History

Revision	Issue Date	Description of Revision/Modification	Revised by	Approved by
A	16-JUN-2021	Initial Release	-	

Contents

SECTION 1 - SPECIFICATIONS 5
SECTION2 - ENVIRONMENTAL TEST 6
2.1 Equipment 6
2.2 CALIBRATION 7
2.3 Procedure 8
SECTION 3 - RESULTS 9
SECTION 4 – SUMMARY 12

INTRODUCTION

The purpose of this report is to prove the performance capabilities of the 193-(series) hoisting sling in extreme cold conditions. Successful completion shall confirm the 193-(series) demonstrates the suitability and safety for use on products designed to aid during helicopter hoist operations, including the deployment and recovery of both equipment and persons, in harshly cold environments.

The expected outcomes of this test will be minor deformation of the stainless steel V-Ring and Snap Ring on the individual sling legs with no other damage. If that is achieved, the sling will be given a cold operating temperature limit of -40 ℃.

The test was performed on June 16th, 2021

ACRONYMS AND ABBREVIATIONS

℃: Degrees Celsius
℉ Degrees Fahrenheit
IAW: In Accordance With
kN: KiloNewton
lbf: Pound-Forces
LSC: Lifesaving Systems Corp.
P/N: Part Number

SECTION 1 - SPECIFICATIONS

Technical Specifications	
V-ring:	• P/N: 190-1-LR • Material: T-304 Stainless Steel • Size: 2.25” x 2.57” x .16”
Locking Snap Hook:	• P/N: 369 • Material: T-316 Stainless Steel • Breaking Strength: 4,500 lbs (2041.2 kg)
Cable:	• P/N: RW002 • Material: T-304 Stainless Steel • Diameter: 5/32” • Construction: 7 x 19 • Breaking Strength: 2,400 lbs (1088.6 kg
Thimble:	• P/N: RWH001 • Material: T-304 Stainless Steel • Size: 5/32”
Sleeve:	• P/N: RWH002 • Material: Zinc Plated Copper • Size: 5/32” • Meets U.S. Military standard MS-51844

SECTION2 - ENVIRONMENTAL TEST

2.1 Equipment

No.	Test Equipment	Description
1	Climate Test Chamber	Temperature Control
2	Hydraulic Pull Tester	Force Application
3	10k S-Beam Load Cell	Force Measurement
4	Digital Caliper	Dimensional Measurement

2.2 CALIBRATION

Test Equipment	Description	Calibration Due Date
Climate Test Chamber	Temperature Control	08/05/2021
	• Temperature Control: PLC temperature controller with a range of -70°C to 150°C.	
Test Equipment	**Description**	**Calibration Due Date**
10k S-Beam Load Cell	Force Measurement	07/03/2021
	• Force Measurement: 10,000lb S-Beam load cell (transducer) with one (I) each 0-10,000lbs. • Calibration certification number: 136826 • Sampling rate of 60 Hz	
Test Equipment	**Description**	**Calibration Due Date**
TAPE MEASURE	STANDARD REFERENCE	N/A

2.3 Procedure

1. Pre-Test: Measure the length of V-Ring to be cold conditioned using standard tape measure.

2. Freeze the sling assembly to a temperature of -40°F (-40°C) for 4 hours.

3. Attach the short legs of the sling to the shackles inside the load tester.

4. Apply a force to sling legs in increments of 250lbf every 3 seconds until the target load of 5,000 lbf (22.2 kNs) is reached.

5. After the target load is reached it shall be held for one minute, the force shall then be dropped to zero and the sling shall be visually inspected for cracks, deformation, and any defects.

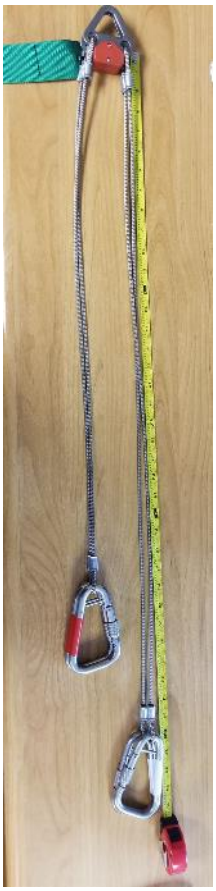
6. The sling legs shall be re-measured to detect any change in length

7. Steps 3-6 shall be repeated for the long legs of the sling.

8. All results shall be recorded.

SECTION 3 - RESULTS

Short Leg				
Load Force 5,000lbf (22.2 kN)	Measurement		Pass/Fail	Material Distortion (Yes/No)
	Pre-Test	Post-Test		
5,036 lbf (22.4 kN)	33.125”	33.75”	Pass	Yes
 Reading on Pull Tester (5,036 lbf > 5,000 lbf)			 Post-Test: Pull Tester	

Long Leg				
Load Force 5,000 lbf (22.2 kN)	Measurement		Pass/Fail	Material Distortion (Yes/No)
	Pre-Test	Post-Test		
5,059 lbf (22.5 kN)	40.875”	41.375”	Pass	Yes
 Reading on Pull Tester (5,059 lbf > 5,000 lbf)	 Post-Test: Dimensional Measurement (inches)		 Post-Test: Pull Tester	

Pre-Test



Temperature Display with V-rings in Climate Chamber



Sling in Load Tester

SECTION 4 – SUMMARY

The 193 (series) litter sling performed as expected and exhibited no damage beyond minor deformation after being pulled to 5,000 lbs (2,268 kg) at – 40 degrees centigrade.

A cold operating temperature limit of -40 ℃ will be set for these devices and associated/like components.

193-EnvironmentalTest-20210616

Final Audit Report 2021-06-30

Created:	2021-06-30
By:	Engineering Lifesaving Systems (software@lifesavingsystems.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAA90VuQk385ZN422uaURtYEqlLBxI8IVnN

"193-EnvironmentalTest-20210616" History

Document created by Engineering Lifesaving Systems (software@lifesavingsystems.com)
2021-06-30 - 3:17:55 PM GMT- IP address: 34.206.122.126

Document emailed to Chad VanderKlok (chad@lifesavingsystems.com) for signature
2021-06-30 - 3:18:13 PM GMT

Email viewed by Chad VanderKlok (chad@lifesavingsystems.com)
2021-06-30 - 5:57:04 PM GMT- IP address: 66.102.8.75

Document e-signed by Chad VanderKlok (chad@lifesavingsystems.com)
Signature Date: 2021-06-30 - 5:57:31 PM GMT - Time Source: server- IP address: 34.206.122.126

Agreement completed.
2021-06-30 - 5:57:31 PM GMT