

Under this Declaration (If Applicable):

Declaration of Conformity

In Accordance with ANSI/ISEA 125-2014 and ANSI/ASSP Z359.7-2019

Declaration #: DOC-UFL204111 **Declaration Date:** 08/13/2019

Item #: UFL204111

Additional Items Conforming

Description: KStrong® 6 ft. Internal design shock absorbing lanyard with snap hook and rebar

hook (ANSI)

Brand Name: KStrong **Manufacturer:** KStrong

Address: 150 N. Radnor Chester Road, Suite F200, Radnor, PA 19087

KStrong declares that the product(s) listed above is in conformity with the requirements of the following performance standard(s):

ANSI Z359.13-2013

Conformity Assessment Method in accordance with ANSI/ISEA 125-2014



Level 1:

KStrong Lab Outside the Scope of ISO/IEC Standard 17025:2017



Level 2:

KStrong Lab Within the Scope of ISO/IEC Standard 17025:2017



Level 3:

Independent 3rd Party Lab accredited to ISO/IEC Standard 17025:2017

Supporting Documentation: KS-Test-UFL204111.pdf

This Certificate is a guarantee that the above standard(s) was met by the requirements of such standard. Testing was performed under normal operation mode. The results of testing apply only to the particular sample tested and the specific test carried out. This Certificate is only issued for products which have passed the testing requirements of listed standard(s).

Authorized Signature:

John H. Kemp Jr. President - KStrong

ISO 17025 Accredited Test Laboratory



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ANSI National Accreditation Boa A C C R E D I T E I

Accrediting Agency

ANSI National Accreditation Board 1899 L Street NW, Suite 1100-A Washington, DC 20036 Tel: 414-501-5494 anab@anab.org





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Test Report

Personal Fall Arrest Equipment ANSI Z359.13-2013 Energy Absorbing Lanyards

Client: KSTRONG LLC

17330 Preston Road

#200 D Dallas TX 7525

U.S.A

Manufacturer: KSTRONG LLC

Client orders: T/0289 (15 March 2016)

T/0609 (22 July 2019)

Model: UFL204111

Dates of tests: 12 April 2016 to 18 May 2016, and 9 August 2019

Signed: Issued: 13 August 2019

Steven Sum, Laboratory Manager Page 1 of 14

Conditions

This report may be reproduced and distributed to your clients, provided that it is reproduced and distributed in full.

Specimens will be disposed of four weeks from the date of this report, unless otherwise instructed.

Opinions, comments and interpretations expressed in this report are shown in italics.

Copies of INSPEC interpretations referenced in this report are available upon request.

Tests marked

are not included in our ANAB Scope of Accreditation.

■ Tests marked ■ are not included in our ANAB Scope of Accreditation.

This report has been provided in accordance with our standard Terms of Business, which can be viewed at, and printed from:

http://inspec-international.com/ToB.pdf

If you have difficulty accessing the Terms of Business, you may contact us for a copy.

Summary of assessment*

Clause	Requirement	Assessment (See Key)
3.1.6	Activation force	Pass
3.2	Energy absorber	Ltd
3.2.1	Material	NAs
3.2.2	Terminations	Ltd
3.2.3	Connectors	NAs
3.2.4	Dynamic performance – ambient dry	Pass
	Dynamic performance – ambient wet	Pass
3.2.5	Dynamic performance – cold dry	Pass
	Dynamic performance – hot dry	Pass
3.2.6	Static strength	Pass
3.2.7	Static test for wrap-around lanyards (3600 lbf – abraded)	
3.2.8	Static test for wrap-around lanyards (5000 lbf – unabraded)	
3.2.9	Static test for Y-lanyards	
3.2.10.1	Dynamic test for Y-lanyards (Single connection)	
3.2.10.2	Dynamic test for Y-lanyards (Dual connection)	
3.2.10.3	Dynamic test for Y-lanyards (Hip connection)	
5.1 / 5.2	Marking	Ltd
5.3 / 5.4	Instructions	Ltd

<u>Key</u>

	Shading shows the clauses requested. Any other clauses were not requested.	
Pass	Requirement satisfied.	
Ltd	Testing requested was insufficient completely to verify compliance with the clause. Refer to the "Result details" section for more information.	
Fail	quirement not satisfied. Refer to the "Result details" section for more information.	
NAs	Assessment not carried out.	
NAp	Requirement not applicable.	
NT	Requested but not tested due to early termination following failure.	

^{*} Assessment relates only to those specimens which were tested and are the subject of this report.

INSPEC Test Report No: 2.19.08.06

Submission details

Product	Quantity	Date received	INSPEC specimen no.
Energy absorbing lanyard, model UFL204111	01	9 April 2016	2D04901
Energy absorbing lanyard, model UFL204101	16	8 April 2016	2D04701 to 2D04716

Procedures

The specimens detailed within the submissions above were used for the tests covered by this report.

Testing was performed in accordance with ANSI Z359.13-2013 unless otherwise specified below. Reference should be made to the standard when reading this report.

Unless stated otherwise, specimens were tested in the condition as received by INSPEC.

Testing was performed at INSPEC's laboratory in Kunshan, China.

5 Labels and Instructions were supplied electronically and used for assessment.

The manufacturer declared:

1) Energy absorbing lanyard UFL204101 and UFL204111 are of the same family of products. The design, materials and construction are the same except different connectors were used.

Energy absorbing lanyard, model UFL204101 was first tested and reported in Inspec Test Report 2.19.08.08. All performance test results are shared in this test report.

Result details

3.2 Personal Energy Absorbing Lanyard Component

Specimen 2D04901 was assessed.

The specimen had an energy absorbing ability that satisfied the design and testing Ltd requirements of this standard.

3.1.6 Activation force

Specimens 2D04713, 2D04714 and 2D04715 were assessed.

The specimens showed no sign of activation when subjected to the 450 pounds static Pass force.

The permanent elongation of the specimen 2D04713, following the test, was 0.79 inches. This is less than the maximum 2 inches permitted.

The permanent elongation of the specimen 2D04714, following the test, was 0.79 inches. This is less than the maximum 2 inches permitted.

The permanent elongation of the specimen 2D04715, following the test, was 0.59 inches. This is less than the maximum 2 inches permitted.

3.2.1 Materials

Specimen 2D04901 was assessed.

Webbing was used on the construction of the energy absorbing lanyard.

The materials used in the construction of this energy absorbing lanyard, and their NAs characteristics, were not assessed. Manufacturer to certify.

3.2.2 Terminations

Specimen 2D04901 was assessed.

The energy absorbing lanyard was constructed of webbing.

The end terminations satisfied 3.2.2.2, as appropriate (see below).

Ltd

3.2.2.2 Webbing terminations

Specimen 2D04901 was assessed.

Lock stitches sewn on all stitched eye termination straps were not assessed. a) NAs Manufacturer to certify.

The material and characteristics of thread used was not assessed. Manufacturer to b) certify.

NAs

Threads used for sewing the webbing were white colour. This contrasted with the red / black colour of the webbing.

Pass

The webbing was protected at load-bearing connector elements. c)

Pass

e) The ends of the webbing were hot cut so as to prevent unravelling. **Pass**

3.2.3 **Connectors**

Specimen 2D04901 was assessed.

It incorporated two integrally attached connectors.

Testing of the connectors was not requested.

NAs

3.2.4 Dynamic performance test – Ambient dry condition (average arrest force)

Specimens 2D04701 to 2D04703 were assessed.

During the dynamic performance tests, the average arrest force of the specimens were recorded as follows:

Specimen 2D04701 was 825 pounds. Specimen 2D04702 was 824 pounds. Pass **Pass**

Specimen 2D04703 was 823 pounds.

Pass

These values are less than the maximum 900 pounds permitted. See Annex 1 for the plot of force versus time.

3.2.4 Dynamic performance test – Ambient dry condition (maximum arrest force)

Specimens 2D04701 to 2D04703 were assessed.

During the dynamic performance tests, the maximum arrest force of the specimens were recorded as follows:

Specimen 2D04701 was 892 pounds.

Pass

Specimen 2D04702 was 885 pounds.

Pass

Specimen 2D04703 was 883 pounds.

Pass

These values are less than the maximum 1,800 pounds permitted.

See Annex 1 for the plot of force versus time.

3.2.4 Dynamic performance test – Ambient dry condition (deployment distance)

Specimens 2D04701 to 2D04703 were assessed.

During the dynamic performance tests, the deployment distance of the specimens were recorded as follows:

Specimen 2D04701 was 34.6 inches. Specimen 2D04702 was 34.1 inches. Specimen 2D04703 was 34.4 inches. Pass Pass Pass

These values are less than the maximum 48 inches permitted.

3.2.5 Dynamic performance test - Ambient wet condition (average arrest force)

Specimens 2D04704 to 2D04706 were assessed.

During the dynamic performance tests, the average arrest force of the specimens were recorded as follows:

Specimen 2D04704 was 820 pounds. Specimen 2D04705 was 834 pounds. Specimen 2D04706 was 828 pounds. Pass Pass

Pass

These values are less than the maximum 1,125 pounds permitted. See Annex 1 for the plot of force versus time.

3.2.5 Dynamic performance test - Ambient wet condition (maximum arrest force)

Specimens 2D04704 to 2D04706 were assessed.

During the dynamic performance tests, the maximum arrest force of the specimens were recorded as follows:

Specimen 2D04704 was 881 pounds. Specimen 2D04705 was 887 pounds. Specimen 2D04706 was 883 pounds.

Pass

Pass Pass

These values are less than the maximum 1,800 pounds permitted. See Annex 1 for the plot of force versus time.

3.2.5 Dynamic performance test - Ambient wet condition (deployment distance)

Specimens 2D04704 to 2D04706 were assessed.

During the dynamic performance tests, the deployment distance of the specimens were recorded as follows:

Specimen 2D04701 was 34.4 inches. Specimen 2D04702 was 32.7 inches. Specimen 2D04703 was 32.9 inches. Pass Pass Pass

These values are less than the maximum 48 inches permitted.

3.2.5 Dynamic performance test - Cold dry condition (average arrest force)

Specimens 2D04707 to 2D04709 were assessed.

During the dynamic performance tests, the average arrest force of the specimens were recorded as follows:

Specimen 2D04707 was 923 pounds.
Specimen 2D04708 was 933 pounds.
Specimen 2D04709 was 952 pounds.

Pass Pass

Pass

These values are less than the maximum 1,125 pounds permitted. See Annex 1 for the plot of force versus time.

3.2.5 Dynamic performance test - Cold dry condition (maximum arrest force)

Specimens 2D04707 to 2D04709 were assessed.

During the dynamic performance tests, the maximum arrest force of the specimens were recorded as follows:

Specimen 2D04707 was 1021 pounds. Specimen 2D04708 was 1030 pounds. Specimen 2D04709 was 1056 pounds. Pass

Pass Pass

These values are less than the maximum 1,800 pounds permitted. See Annex 1 for the plot of force versus time.

3.2.5 Dynamic performance test - Cold dry condition (deployment distance)

Specimens 2D04707 to 2D04709 were assessed.

During the dynamic performance tests, the deployment distance of the specimens were recorded as follows:

Specimen 2D04707 was 26.8 inches. Specimen 2D04708 was 26.0 inches. Specimen 2D04709 was 25.8 inches. Pass Pass

Pass

These values are less than the maximum 48 inches permitted.

3.2.5 Dynamic performance test - Hot dry condition (average arrest force)

Specimens 2D04710 to 2D04712 were assessed.

During the dynamic performance tests, the average arrest force of the specimens were recorded as follows:

Specimen 2D04710 was 779 pounds. Specimen 2D04711 was 785 pounds. Specimen 2D04712 was 775 pounds. Pass Pass Pass

These values are less than the maximum 1,125 pounds permitted. See Annex 1 for the plot of force versus time.

3.2.5 Dynamic performance test - Hot dry condition (maximum arrest force)

Specimens 2D04710 to 2D04712 were assessed.

During the dynamic performance tests, the maximum arrest force of the specimens were recorded as follows:

Specimen 2D04710 was 839 pounds. Specimen 2D04711 was 839 pounds. Specimen 2D04712 was 843 pounds. Pass

Pass Pass

These values are less than the maximum 1,800 pounds permitted. See Annex 1 for the plot of force versus time.

3.2.5 Dynamic performance test - Hot dry condition (deployment distance)

Specimens 2D04710 to 2D04712 were assessed.

During the dynamic performance tests, the deployment distance of the specimens were recorded as follows:

Specimen 2D04710 was 37.0 inches. Specimen 2D04711 was 37.2 inches. Specimen 2D04712 was 37.8 inches. Pass Pass

Pass

Pass

These values are less than the maximum 48 inches permitted.

3.2.6 Static strength

Specimens 2D04701 to 2D04703 were assessed.

The specimens withstood the tensile test of 5,000 pounds applied for 1 minute without breaking respectively.

5 Marking and Reference Literature

5.1 General Marking Requirements

5.1.1 Markings shall be in English.

Pass

5.1.2 The legibility and attachment of required markings shall endure for the life of the component, subsystem or system being marked was not assessed.

NAs

Labels were supplied electronically and used for assessment.

When pressure sensitive labels are used, they shall comply with the applicable provision of reference 8.5.1. This requirement was not assessed. Manufacturer to certify.

NAs

5.1.3 Equipment shall be marked with the following:

part number and model designation; [UFL204111]

Pass

year of manufacture;

· serial number:

Pass Pass

· manufacturer's name or logo; [KSTRONG]

Pass

· capacity rating; [130-310 lbs]

Pass

· standard number; [ANSI Z359.13]

Pass

· warning to follow the manufacturer's instructions included with the equipment at time of shipment from the manufacturer.

Pass

5.2 Specific Marking Requirements

5.2.1 Energy absorbing lanyards shall be marked to identify:

· the fiber used in the material of construction; [Polyester; Nylon; Steel]

Pass

· the length; [6 FT]

Pass

· the need to avoid contact with sharp edges and abrasive surfaces;

Pass Pass

· the need to make only compatible connections;

_

• the maximum elongation; [48"]

Pass

· restriction, if any, on the types of components, subsystems, or systems with which the energy absorber is designed to be used;

Pass

• the average arrest force, maximum free fall distance and capacity of the energy absorber on a separate label identical in size, color and content as figure 16a and 16b of the standard; [size and color of the label was not assessed]

NAs

Ltd

 6 ft FF personal energy absorbers shall be in black print on a contrasting white background;

 12 ft FF personal energy absorbers shall be in white print on a contrasting black background;; NAp

• In addition to 5.2.1, Y-lanyards that fail the Dynamic Hip Test detailed in 3.2.10, must include a warning label on both connecting ends of the lanyard specifically directing users how to safely store the unused leg of the lanyard.

NAp

5.3 General Instruction Requirements

The instructions to users have been assessed as detail below, with reference only to the relevant requirements of the Standard.

INSPEC Technical Services has not assessed these instructions with respect to claims made by the manufacturer outside of these requirements, and therefore accepts no responsibility for the legitimacy of any such claims.

5.3.1 Instructions shall be provided to the user, printed in English, and affixed to the equipment at the time of shipment from the manufacturer.

NAs

Pass

Pass

Pass

Pass

Pass

Pass

Pass

Pass

Pass

Pass

Pass

Pass

Pass

However, instructions provided electronically, in English, were used for assessment.

- **5.3.2** Instructions shall contain the following information:
 - · a statement that the manufacturer's instructions shall be provided to users;
 - · manufacturer's name, address, and telephone number;
 - · manufacturer's part number and model designation for the equipment;
 - · intended use and purpose of the equipment;
 - · proper method of use and limitation on use of the equipment;
 - · illustrations showing locations of markings on the equipment;
 - · reproduction of printed information on all markings;
 - inspection procedures required to assure the equipment is in serviceable condition and operating correctly;
 - anchorage requirements;
 - · an illustration of how to calculate free fall distances;
 - · criteria for discarding equipment which falls inspection;
 - · procedures for cleaning, maintenance, and storage;
 - · reference to the ANSI/ASSE Z359.13, *Personal Energy Absorbers and Energy Absorbing Lanyards*, standard and applicable regulations governing occupational safety.
- **5.3.3** Instructions shall require that only the equipment manufacturer, or persons or entities authorized in writing by the manufacturer, shall make repairs to equipment.
- **5.3.4** Instructions shall require the user to remove equipment from field service if it has been subjected to the forces of arresting a fall.

Pass

NAs

5.4 Specific Instruction Requirements

5.4.1 In addition to general instruction requirements, written instructions for personal energy absorbers shall include:

chergy absorbers shall molade.	
· the material used in the personal energy absorber construction;	Pass
· the need to make only compatible connections and limitations of compatibility;	Pass
 proper method of coupling the personal energy absorber to adjacent components of the system; 	Pass
 the maximum arrest force of the personal energy absorber when dynamically tested in accordance with the requirements of this standard; 	Pass
 the maximum elongation of the personal energy absorber when dynamically tested in accordance with the requirements of this standard. 	Pass
 a reference chart that indicates the deployment distance of the personal energy absorber according to the user weight and free fall distance; 	Pass
· a statement that indicates information necessary in designing fall protection systems shall be made available from the manufacturer.	Pass

· Manufacturers may provide designers of fall protection systems a representative

graph(s) of the time history plot of the loading from a drop test.

Estimates of the uncertainty of measurement

Clause	Test		Uncertainty	
3.1.6	Activation force		See Note 1	
	Permanent elongation			± 0.33%
3.2	Personal Energy Absorber Component, if fi	tted		See report
3.2.1	Materials			-
3.2.2	Terminations			-
3.2.3	Connectors		See report	
3.2.4	Dynamic performance – ambient dry	Force		± 1.2%
	Dynamic penomiance – ambient dry	Deployment distance		± 1mm
3.2.5	Dynamic performance – various	Force		± 1.2%
3.2.5	conditions	Deployment distance		± 1mm
3.2.6	Static strength – single lanyard		See Note 1	
	Static strength – slippage		± 2.1%	
3.2.7	Abrasion and Static strength - Wrap-around energy absorbing lanyards only		See Note 1	
3.2.8	Static strength - Wrap-around energy absorbing lanyards only		See Note 1	
3.2.9	Static strength - Y-lanyards only		See Note 1	
3.2.10.1	Dynamic test, Y-lanyards only - Single connection	Force		± 1.2%
		Deployme	ent distance	± 1mm
3.2.10.2	Dynamic test, Y-lanyards only - Dual conne	ection Force		± 1.2%
3.2.10.3	Dynamic test, Y-lanyards only - Hip connection		See Note 1	
5.1 / 5.2	Marking		-	
5.3 / 5.4	Information		-	

- Note 1. The acceptance criterion for this test is a straightforward "Pass/Fail", rather than a numerical value. Consequently, as there is no value to be reported, uncertainty has not been reported either.
- Note 2. The uncertainty value is based on a standard uncertainty multiplied by a coverage factor k = 2, which provides for a confidence level of approximately 95%. Values expressed as a percentage (%) are relative.
- Note 3. It should be noted that the above values have not been taken into account when making assessments against the pass/fail criteria.

ANNEX

This Annex comprises two sections.

1. Plots of arrest force versus time. (12 pages)

2. Photograph of the product tested. (1 page)

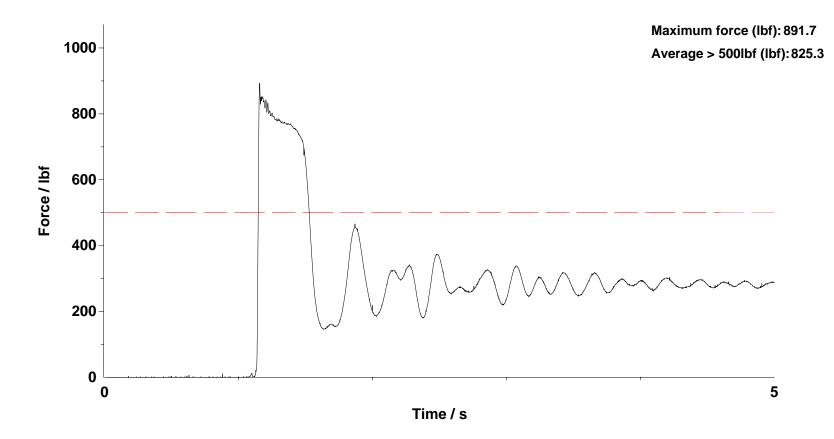
Technician: Tan

Standard ANSI Z359.13:2013 Energy absorbing lanyard

Sample / File name: 2D04701

Drop item Drop weight, US - 128kg

Orientation/Attachment Point: Centre eyebolt
Time and Date of Test: 13:46 21/04/16



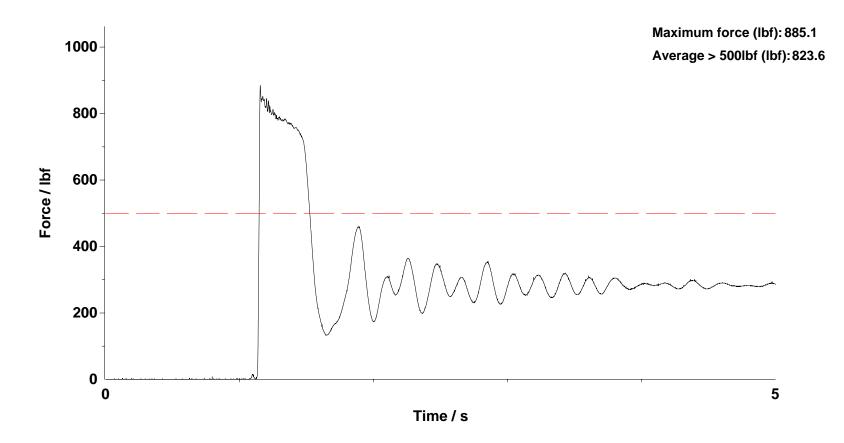
Technician: Tan

Standard ANSI Z359.13:2013 Energy absorbing lanyard

Sample / File name: 2D04702

Drop item Drop weight, US - 128kg

Orientation/Attachment Point: Centre eyebolt
Time and Date of Test: 13:56 21/04/16



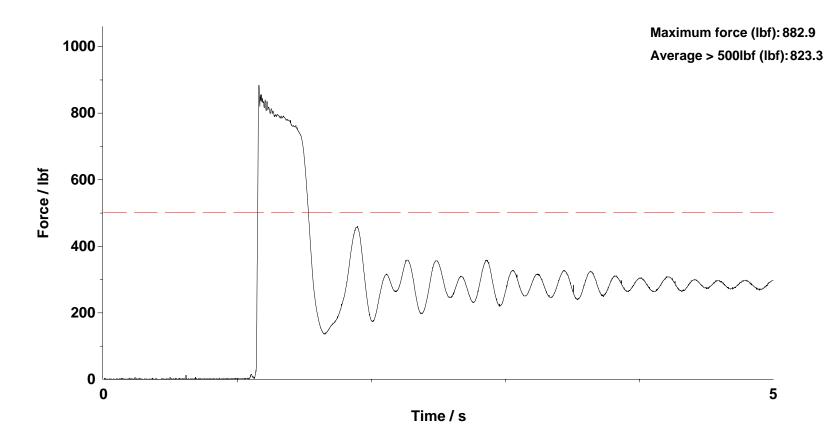
Technician: Tan

Standard ANSI Z359.13:2013 Energy absorbing lanyard

Sample / File name: 2D04703

Drop item Drop weight, US - 128kg

Orientation/Attachment Point: Centre eyebolt
Time and Date of Test: 14:05 21/04/16



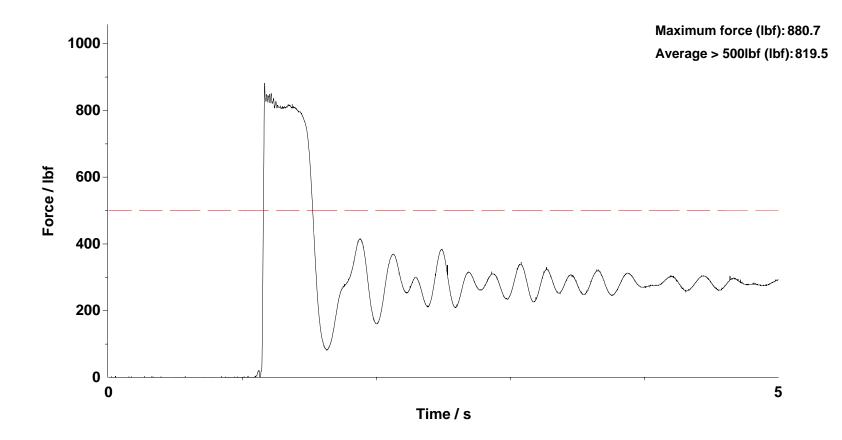
Technician: Tan

Standard ANSI Z359.13:2013 Energy absorbing lanyard

Sample / File name: 2D04704

Drop item Drop weight, US - 128 kg

Orientation/Attachment Point: Centre eyebolt
Time and Date of Test: 16:49 22/04/16



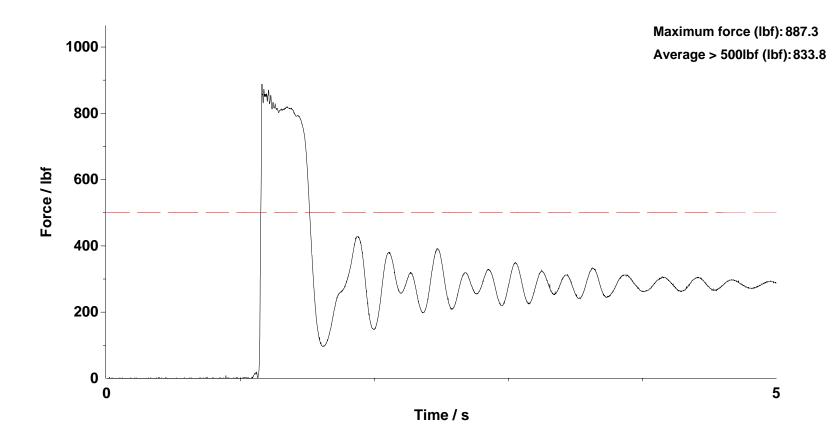
Technician: Tan

Standard ANSI Z359.13:2013 Energy absorbing lanyard

Sample / File name: 2D04705

Drop item Drop weight, US - 128 kg

Orientation/Attachment Point: Centre eyebolt
Time and Date of Test: 16:56 22/04/16



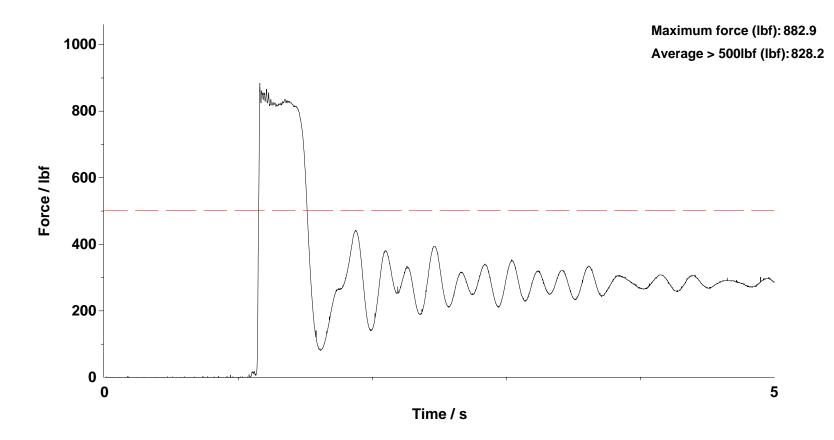
Technician: Tan

Standard ANSI Z359.13:2013 Energy absorbing lanyard

Sample / File name: 2D04706

Drop item Drop weight, US - 128 kg

Orientation/Attachment Point: Centre eyebolt
Time and Date of Test: 17:02 22/04/16



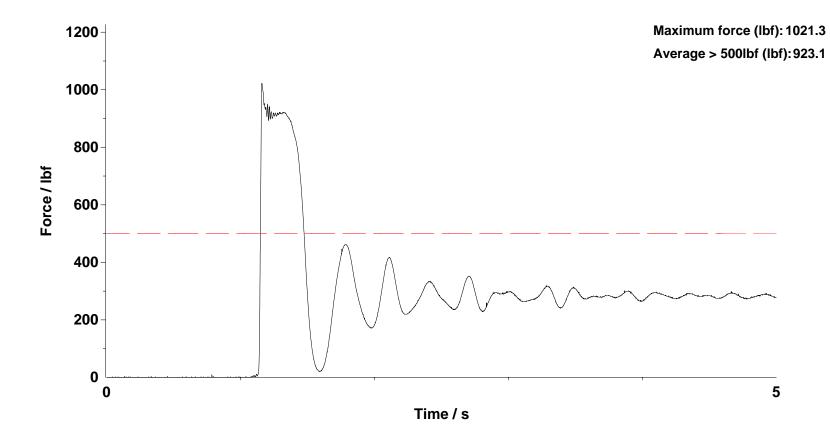
Technician: Tan

Standard ANSI Z359.13:2013 Energy absorbing lanyard

Sample / File name: 2D04707

Drop item Drop weight, US - 128 kg

Orientation/Attachment Point: Centre eyebolt
Time and Date of Test: 16:22 22/04/16



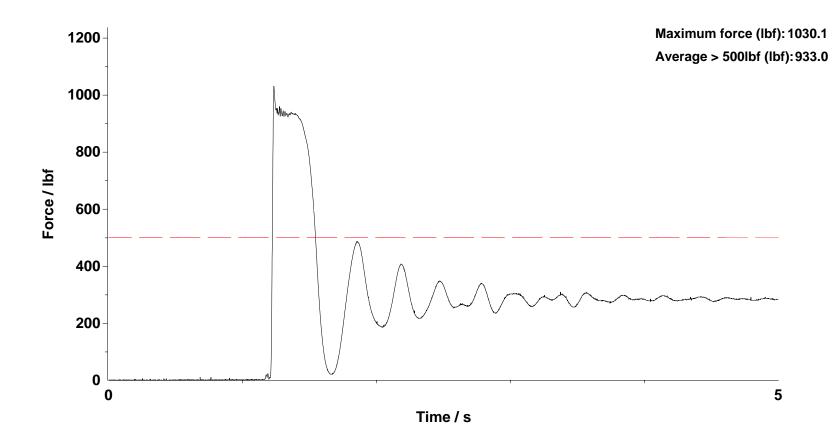
Technician: Tan

Standard ANSI Z359.13:2013 Energy absorbing lanyard

Sample / File name: 2D04708

Drop item Drop weight, US - 128 kg

Orientation/Attachment Point: Centre eyebolt
Time and Date of Test: 16:32 22/04/16



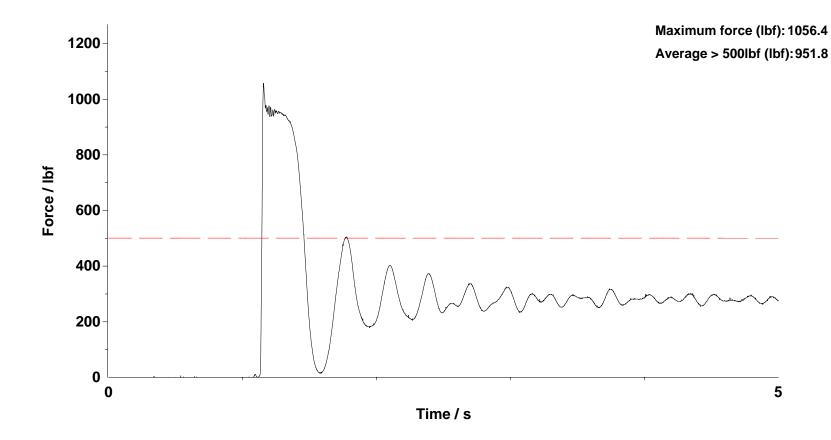
Technician: Tan

Standard ANSI Z359.13:2013 Energy absorbing lanyard

Sample / File name: 2D04709

Drop item Drop weight, US - 128 kg

Orientation/Attachment Point: Centre eyebolt
Time and Date of Test: 16:38 22/04/16



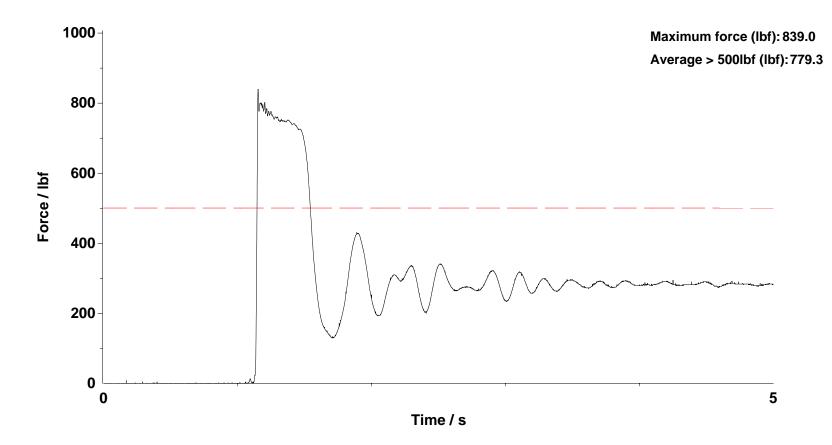
Technician: Tan

Standard ANSI Z359.13:2013 Energy absorbing lanyard

Sample / File name: 2D04710

Drop item Drop weight, US - 128 kg

Orientation/Attachment Point: Centre eyebolt
Time and Date of Test: 15:54 22/04/16



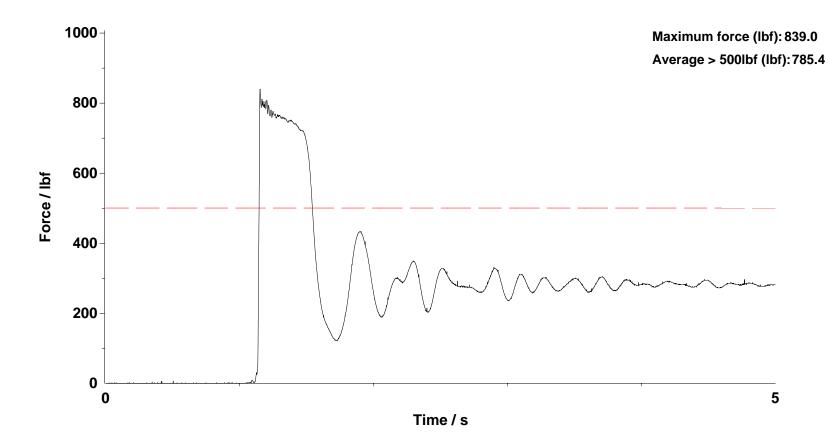
Technician: Tan

Standard ANSI Z359.13:2013 Energy absorbing lanyard

Sample / File name: 2D04711

Drop item Drop weight, US - 128 kg

Orientation/Attachment Point: Centre eyebolt
Time and Date of Test: 16:05 22/04/16



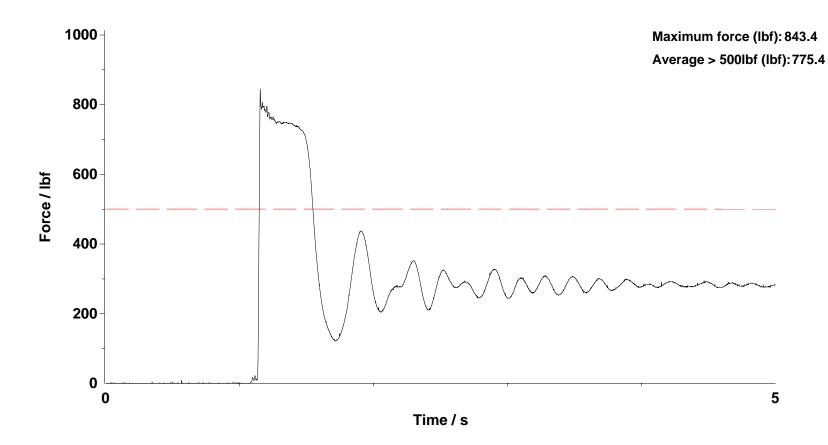
Technician: Tan

Standard ANSI Z359.13:2013 Energy absorbing lanyard

Sample / File name: 2D04712

Drop item Drop weight, US - 128 kg

Orientation/Attachment Point: Centre eyebolt
Time and Date of Test: 16:15 22/04/16



KSTRONG LLC – Energy absorbing lanyard, model UFL204111

