# Declaration of Conformity

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

**Declaration #:** DOC-UFL201301
**Declaration Date:** 11/19/2019

**Item #:** UFL201301

**Description:** KStrong® 4.5 - 6 ft. Adjustable Clear Pack Design shock absorbing lanyard with Snap Hooks (ANSI)

**Brand Name:** KStrong

**Manufacturer:** KStrong

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

**Additional Items Conforming Under this Declaration (If Applicable):**

**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-UFL201301.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**

**INSPEC Technical Services (Kunshan) Co Ltd**
8 Jin Yang East Road,
Lu Jia Zhen Kunshan, Jiangsu, China
Tel: +86 (512) 5011 2646
email: testing@inspec.asia
www.inspec-international.com

**Accrediting Agency**

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

INSPEC Technical Services (Kunshan) Co Ltd • 8 Jin Yang East Road • Lu Jia Zhen • Kunshan • Jiangsu • China
Email: testing@inspec.asia Website: www.inspec-international.com
Tel: +86 (512) 5011 2646 Fax: +86 (512) 5011 2656

# Test Report

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

**Report no:** 2.19.11.02

**Client:** KSTRONG LLC
17330 Preston Road
#200 D Dallas
TX 7525
U.S.A

**Manufacturer:** KSTRONG LLC

**Client orders:** T/0571 (12 April 2019)
T/0699 (8 November 2019)

**Model:** UFL201301

**Dates of tests:** 19 April 2019 to 21 October 2019, and 19 November 2019

**Signed:** 

**Issued:** 19 November 2019

Steven Sum, Laboratory Manager

## 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.

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) |
|---|---|---|
| 3.2 | Energy absorber | See INSPEC Test Report 2.19.08.30 |
| 3.2.1 | Material | NAs |
| 3.2.2 | Terminations | Ltd |
| 3.2.3 | Connectors | NAs |
| 3.2.4 | Dynamic performance – ambient dry | Pass |
| 3.2.5 | Dynamic performance – ambient wet | Pass |
| | 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 |

**Key**

| | |
|---|---|
| | 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 | Requirement 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.

## Submission details

| Product | Quantity | Date received | INSPEC specimen no. |
|---|---|---|---|
| Energy absorbing lanyard, model UFL201101 | 01 pcs | 21 March 2016 | 2D03301 |
| Energy absorbing lanyard, model UFL201101 | 09 pcs | 12 May 2016 | 2D03302 to 2D03310 |
| Energy absorbing lanyard, model UFL201301 | 05 pcs | 15 April 2019 | 2G05401 to 2G05405 |

## 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.

The manufacturer declared:

1) Energy absorbing lanyard, model UFL201101 and model UFL201301 are of the same family of products. They have the same construction and are made of the same materials.
2) Both energy absorbing lanyards incorporate the same shock pack.
3) UFL201101 incorporates a fixed length lanyard while UFL201301 is adjustable in length.

**Result details**

### 3.2 Personal Energy Absorbing Lanyard Component

The specimen incorporated a Personal Energy Absorber Component which satisfied this standard. See INSPEC Test Report 2.19.08.30

### 3.2.1 Materials

Specimen 2G05401 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 characteristics, were not assessed. Manufacturer to certify. NAs

### 3.2.2 Terminations

Specimen 2G05401 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 2G05401 was assessed.

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

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

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

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

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

### 3.2.3 Connectors

Specimen 2G05401 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

Specimen 2G05401 was assessed.

The lanyard was adjusted to its minimum length.

During the dynamic performance test, the average arrest force was 834 pounds. This value is less than the maximum 900 pounds permitted. Pass

During the dynamic performance test, the maximum arrest force was 1026 pounds. This value is less than the maximum 1800 pounds permitted. Pass

During the dynamic performance test, the deployment distance was 35.4 inches. This value is less than the maximum 48 inches permitted. Pass

See Annex 1 for the plot of force versus time.

### 3.2.4 Dynamic performance test - Ambient dry condition

Specimen 2G05402 was assessed.

The lanyard was adjusted to its maximum length.

During the dynamic performance test, the average arrest force was 828 pounds. This value is less than the maximum 900 pounds permitted. Pass

During the dynamic performance test, the maximum arrest force was 1333 pounds. This value is less than the maximum 1800 pounds permitted. Pass

During the dynamic performance test, the deployment distance was 44.3 inches. This value is less than the maximum 48 inches permitted. Pass

See Annex 1 for the plot of force versus time.

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

Specimens 2D03302 to 2D03304 were assessed.

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

| | |
|---|---|
| Specimen 2D03302 was 706 pounds. | Pass |
| Specimen 2D03303 was 721 pounds. | Pass |
| Specimen 2D03304 was 723 pounds. | 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 2D03302 to 2D03304 were assessed.

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

| | |
|---|---|
| Specimen 2D03302 was 914 pounds. | Pass |
| Specimen 2D03303 was 977 pounds. | Pass |
| Specimen 2D03304 was 1004 pounds. | Pass |

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

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

Specimens 2D03302 to 2D03304 were assessed.

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

| | |
|---|---|
| Specimen 2D03302 was 46.7 inches. | Pass |
| Specimen 2D03303 was 46.4 inches. | Pass |
| Specimen 2D03304 was 46.3 inches. | Pass |

These values are less than the maximum 48 inches permitted.

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

Specimens 2D03305 to 2D03307 were assessed.

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

| | |
|---|---|
| Specimen 2D03305 was 928 pounds. | Pass |
| Specimen 2D03306 was 950 pounds. | Pass |
| Specimen 2D03307 was 925 pounds. | 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 2D03305 to 2D03307 were assessed.

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

| | |
|---|---|
| Specimen 2D03305 was 1338 pounds. | Pass |
| Specimen 2D03306 was 1399 pounds. | Pass |
| Specimen 2D03307 was 1272 pounds. | Pass |

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

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

Specimens 2D03305 to 2D03307 were assessed.

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

| | |
|---|---|
| Specimen 2D03305 was 29.4 inches. | Pass |
| Specimen 2D03306 was 28.7 inches. | Pass |
| Specimen 2D03307 was 29.8 inches. | Pass |

These values are less than the maximum 48 inches permitted.

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

Specimens 2D03308 to 2D03310 were assessed.

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

| | |
|---|---|
| Specimen 2D03308 was 718 pounds. | Pass |
| Specimen 2D03309 was 749 pounds. | Pass |
| Specimen 2D03310 was 728 pounds. | 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 2D03308 to 2D03310 were assessed.

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

| | |
|---|---|
| Specimen 2D03308 was 1006 pounds. | Pass |
| Specimen 2D03309 was 1120 pounds. | Pass |
| Specimen 2D03310 was 1098 pounds. | Pass |

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

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

Specimens 2D03308 to 2D03310 were assessed.

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

| | |
|---|---|
| Specimen 2D03308 was 46.2 inches. | Pass |
| Specimen 2D03309 was 45.6 inches. | Pass |
| Specimen 2D03310 was 45.4 inches. | Pass |

These values are less than the maximum 48 inches permitted.

### 3.2.6 Static strength

Specimens 2G05403 to 2G05405 were assessed.

The specimens maintained its adjusted length, (no slippage of adjuster) during loading to 2,000 pounds force for 1 minute. Pass

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

## 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 |
| | *Marking labels were provided 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; | Pass |
| | · year of manufacture; | Pass |
| | · manufacturer's name or logo; [KSTRONG] | Pass |
| | · capacity rating; [130-310 lbs] | Pass |
| | · serial number; | Pass |
| | · standard number; [ANSI Z359.13-2013] | 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 |
| | · the need to make only compatible connections; | Pass |
| | · 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; | NAp |
| | · 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; (only the contents were assessed) | Ltd |
| | · 6 ft FF personal energy absorbers shall be in black print on a contrasting white background; | NAs |
| | · 12 ft FF personal energy absorbers shall be in white print on a contrasting black background;; | NAp |
| **5.2.2** | · 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 Testing 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.<br>*User Instructions were provided electronically and used for assessment.* | NAs |
| **5.3.2** | Instructions shall contain the following information: | |
| | · a statement that the manufacturer's instructions shall be provided to users; | Pass |
| | · manufacturer's name, address, and telephone number; | Pass |
| | · manufacturer's part number and model designation for the equipment; | Pass |
| | · intended use and purpose of the equipment; | Pass |
| | · proper method of use and limitation on use of the equipment; | Pass |
| | · illustrations showing locations of markings on the equipment; | Pass |
| | · reproduction of printed information on all markings; | Pass |
| | · inspection procedures required to assure the equipment is in serviceable condition and operating correctly; | Pass |
| | · anchorage requirements; | Pass |
| | · an illustration of how to calculate free fall distances; | Pass |
| | · criteria for discarding equipment which falls inspection; | Pass |
| | · procedures for cleaning, maintenance, and storage; | Pass |
| | · reference to the ANSI/ASSE Z359.13, *Personal Energy Absorbers and Energy Absorbing Lanyards*, standard and applicable regulations governing occupational safety. | Pass |
| **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. | Pass |
| **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 |

**Estimates of the uncertainty of measurement**

| Clause | Test | | | Uncertainty |
|---|---|---|---|---|
| 3.2 | Personal Energy Absorber Component, if fitted | | | See report |
| 3.2.1 | Materials | | | - |
| 3.2.2 | Terminations | | | - |
| 3.2.3 | Connectors | | | See report |
| 3.2.4 | Dynamic performance – ambient dry | Force | | ± 3% |
| | | Deployment distance | | ± 1mm |
| 3.2.5 | Dynamic performance – various conditions | Force | | ± 3% |
| | | 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 | | ± 3% |
| | | Deployment distance | | ± 1mm |
| 3.2.10.2 | Dynamic test, Y-lanyards only – Dual connection | | Force | ± 3% |
| 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.

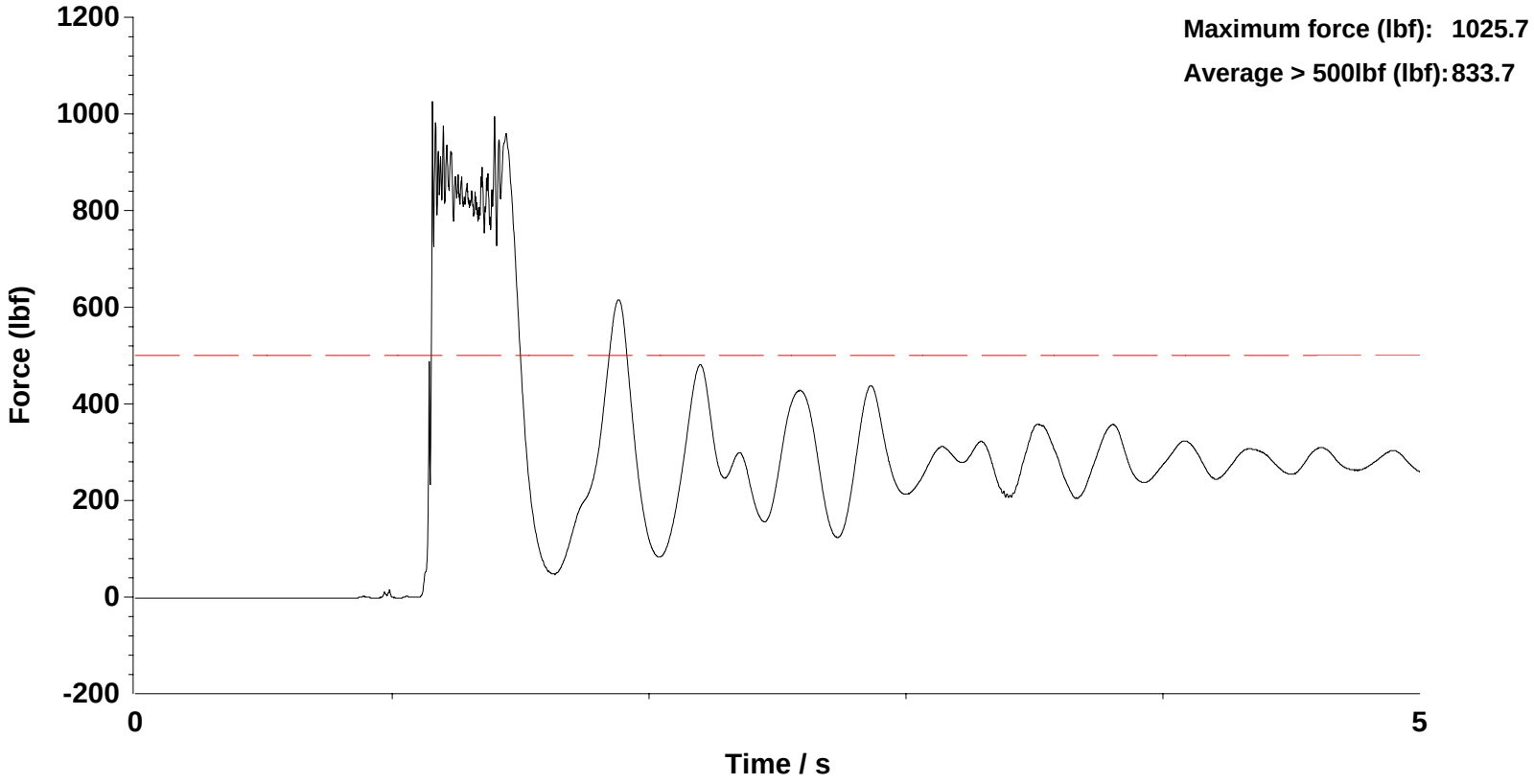
1. Plots of arrest force versus time. (11 pages)

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

END OF REPORT

INSPEC Technical Services

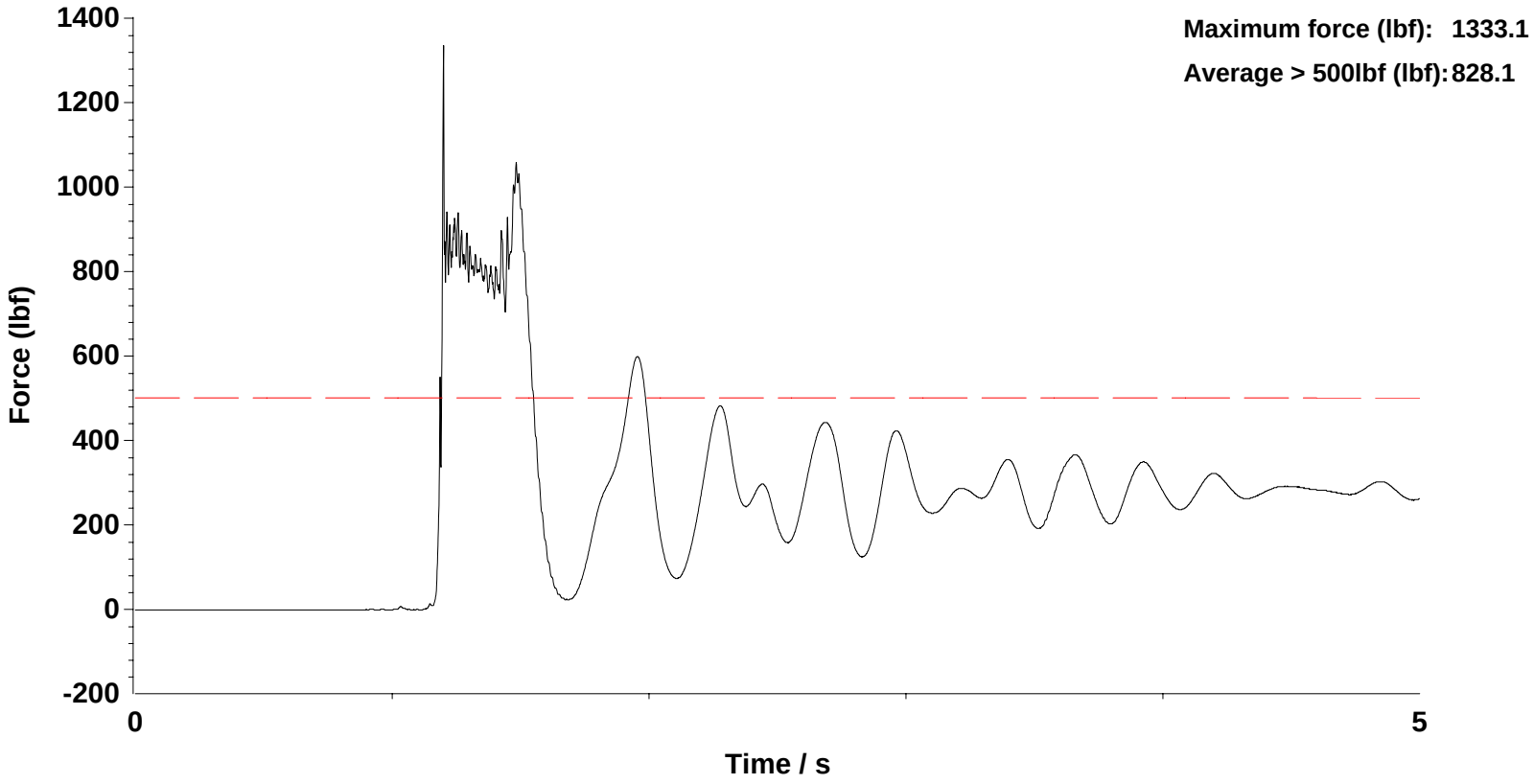
| | |
|---|---|
| Technician: | SS/YW |
| Standard | ANSI Z359.13:2013 EAL |
| Sample / File name: | 2G05401 |
| Drop item | Drop wight, US - 128KG |
| Orientation/Attachment Point: | Center eyebolt |
| Time and Date of Test: | 13:45 19/04/19 |




Results do not achieve full ANAB status until a formal test report has been issued.

INSPEC Technical Services

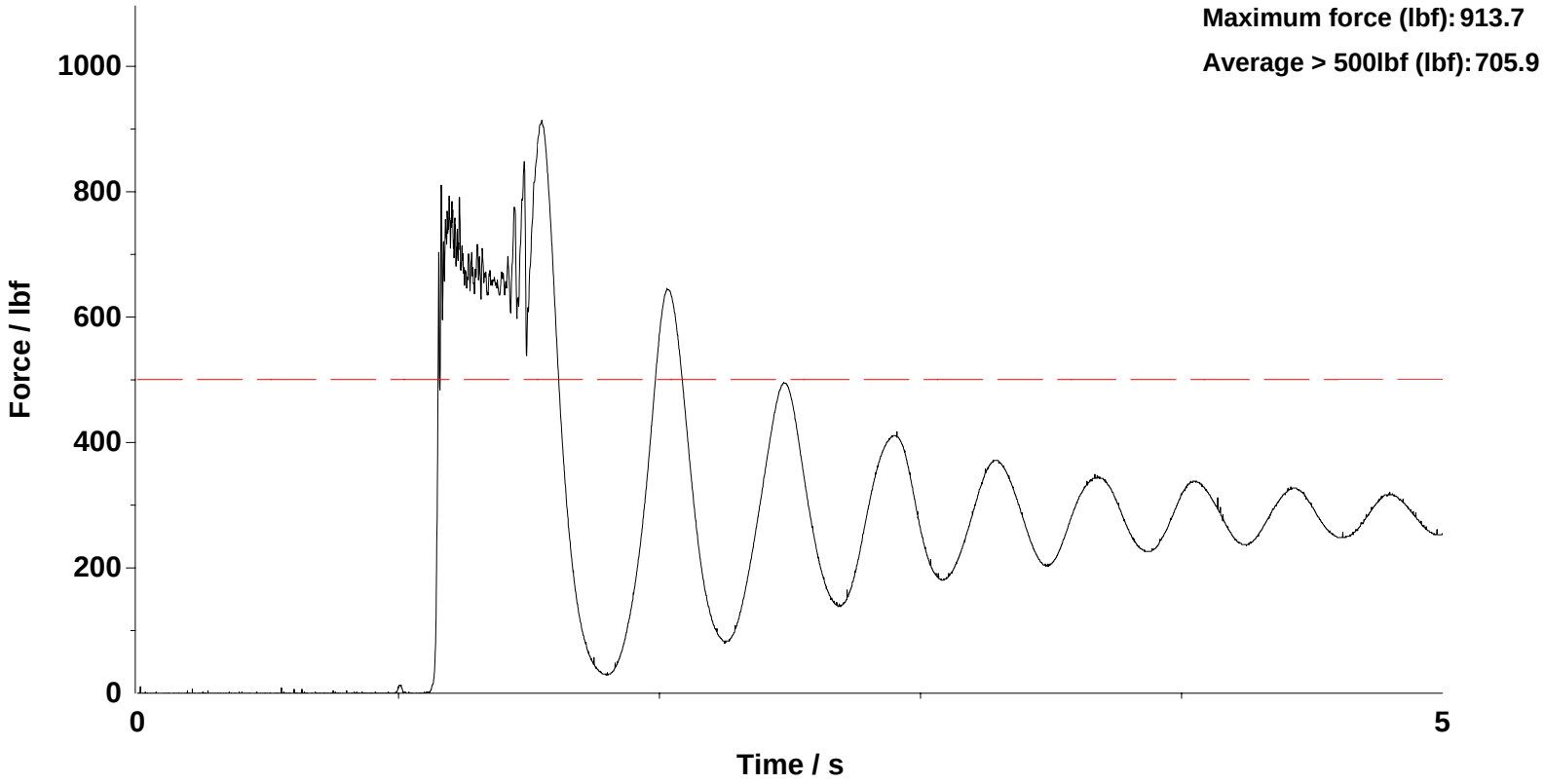
| | |
|---|---|
| Technician: | SS/YW |
| Standard | ANSI Z359.13:2013 EAL |
| Sample / File name: | 2G05402 |
| Drop item | Drop wight, US - 128KG |
| Orientation/Attachment Point: | Center eyebolt |
| Time and Date of Test: | 13:54 19/04/19 |




Results do not achieve full ANAB status until a formal test report has been issued.

INSPEC Technical Services

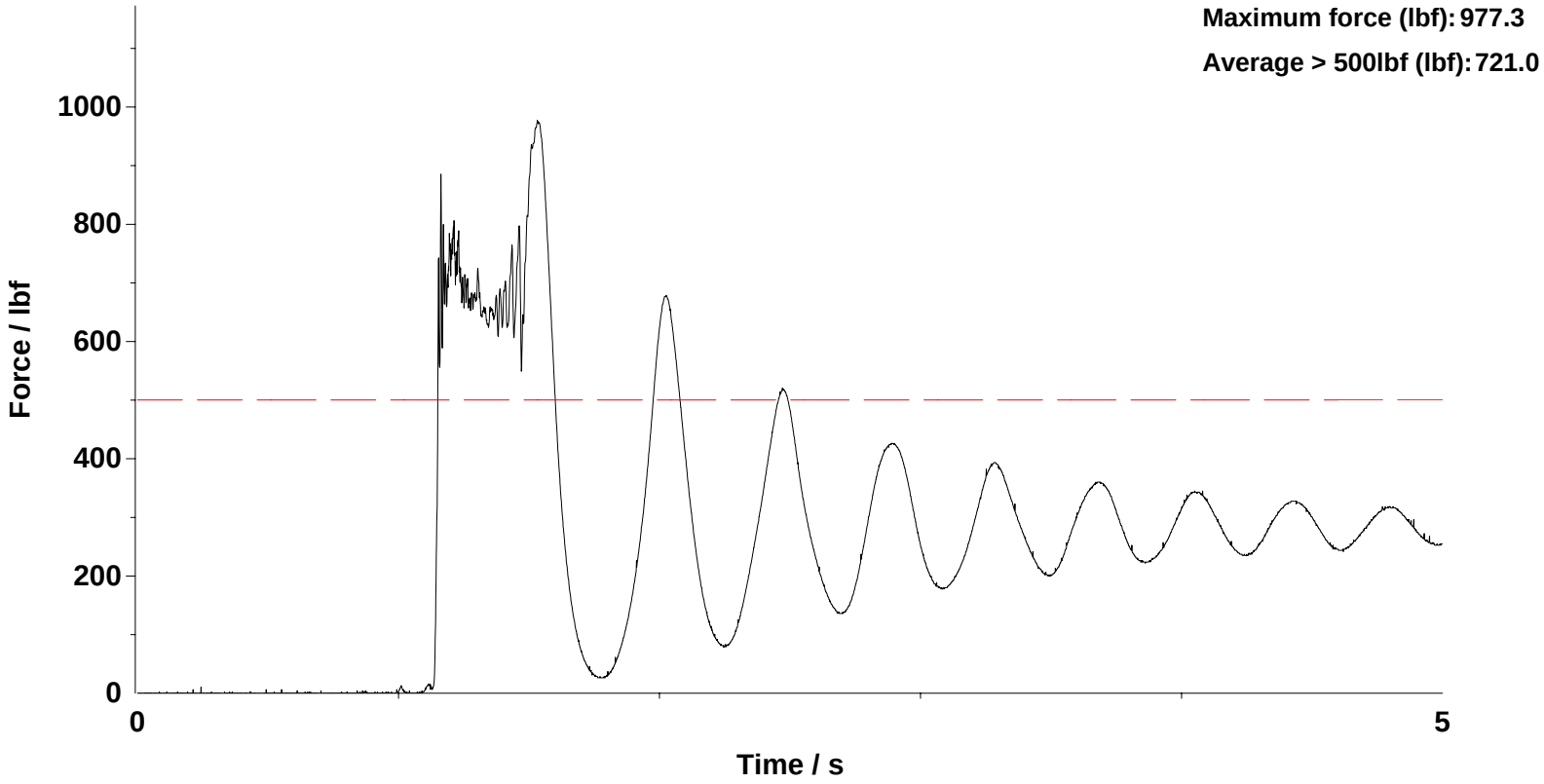
| | |
|---|---|
| Technician: | TAN |
| Standard | ANSI Z359.13:2013 Energy absorbing lanyard |
| Sample / File name: | 2D03302 |
| Drop item | ANSI test weight, 128 kg |
| Orientation/Attachment Point: | Centre eyebolt |
| Time and Date of Test: | 16:56 23/05/16 |




Results do not achieve full ANAB status until a formal test report has been issued.

INSPEC Technical Services

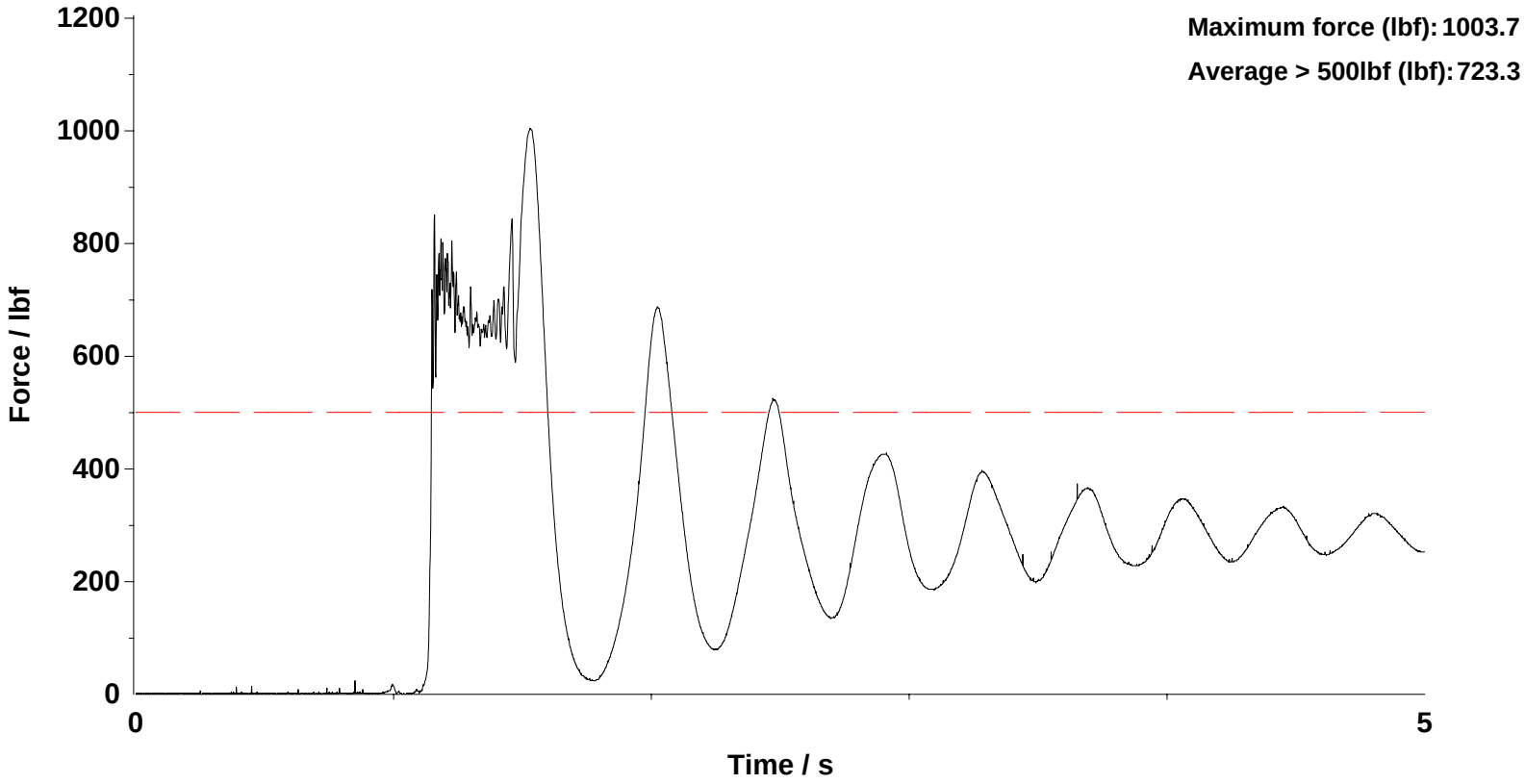
| | |
|---|---|
| Technician: | TAN |
| Standard | ANSI Z359.13:2013 Energy absorbing lanyard |
| Sample / File name: | 2D03303 |
| Drop item | ANSI test weight, 128 kg |
| Orientation/Attachment Point: | Centre eyebolt |
| Time and Date of Test: | 17:04 23/05/16 |




Results do not achieve full ANAB status until a formal test report has been issued.

INSPEC Technical Services

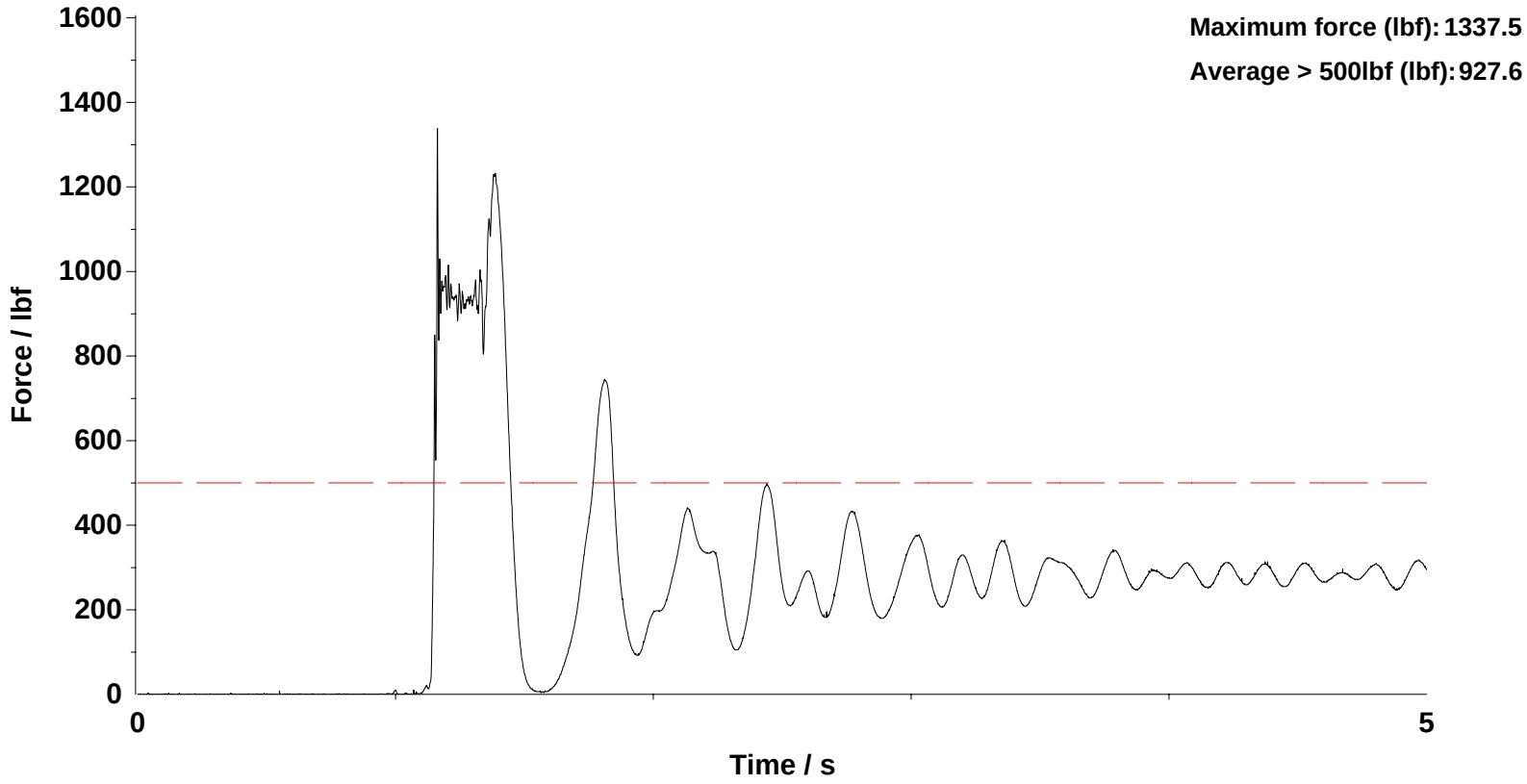
| | |
|---|---|
| Technician: | TAN |
| Standard | ANSI Z359.13:2013 Energy absorbing lanyard |
| Sample / File name: | 2D03304 |
| Drop item | ANSI test weight, 128 kg |
| Orientation/Attachment Point: | Centre eyebolt |
| Time and Date of Test: | 17:11 23/05/16 |




Results do not achieve full ANAB status until a formal test report has been issued.

INSPEC Technical Services

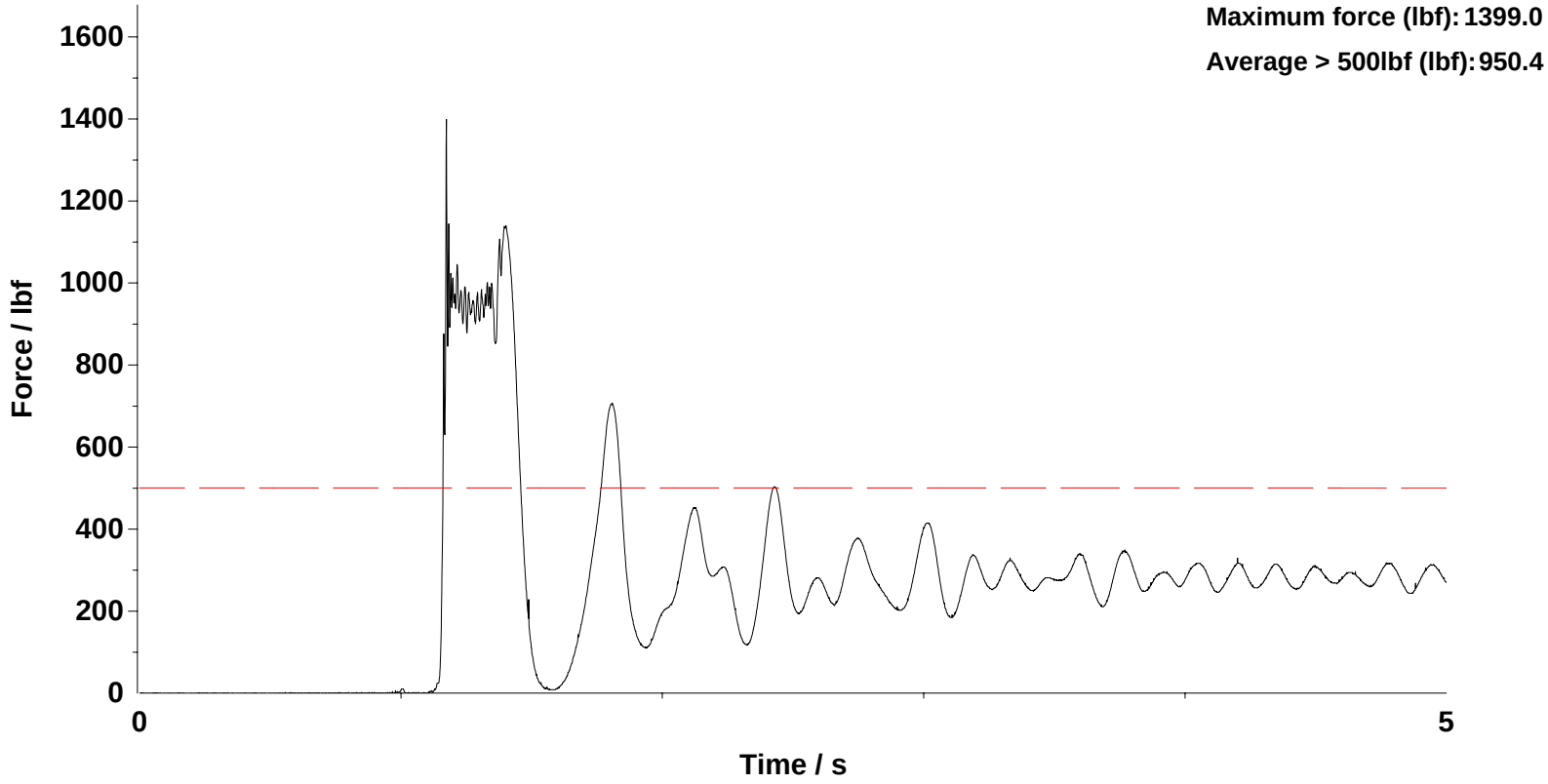
| | |
|---|---|
| Technician: | TAN |
| Standard | ANSI Z359.13:2013 Energy absorbing lanyard |
| Sample / File name: | 2D03305 |
| Drop item | ANSI test weight, 128 kg |
| Orientation/Attachment Point: | Centre eyebolt |
| Time and Date of Test: | 16:22 23/05/16 |




Results do not achieve full ANAB status until a formal test report has been issued.

INSPEC Technical Services

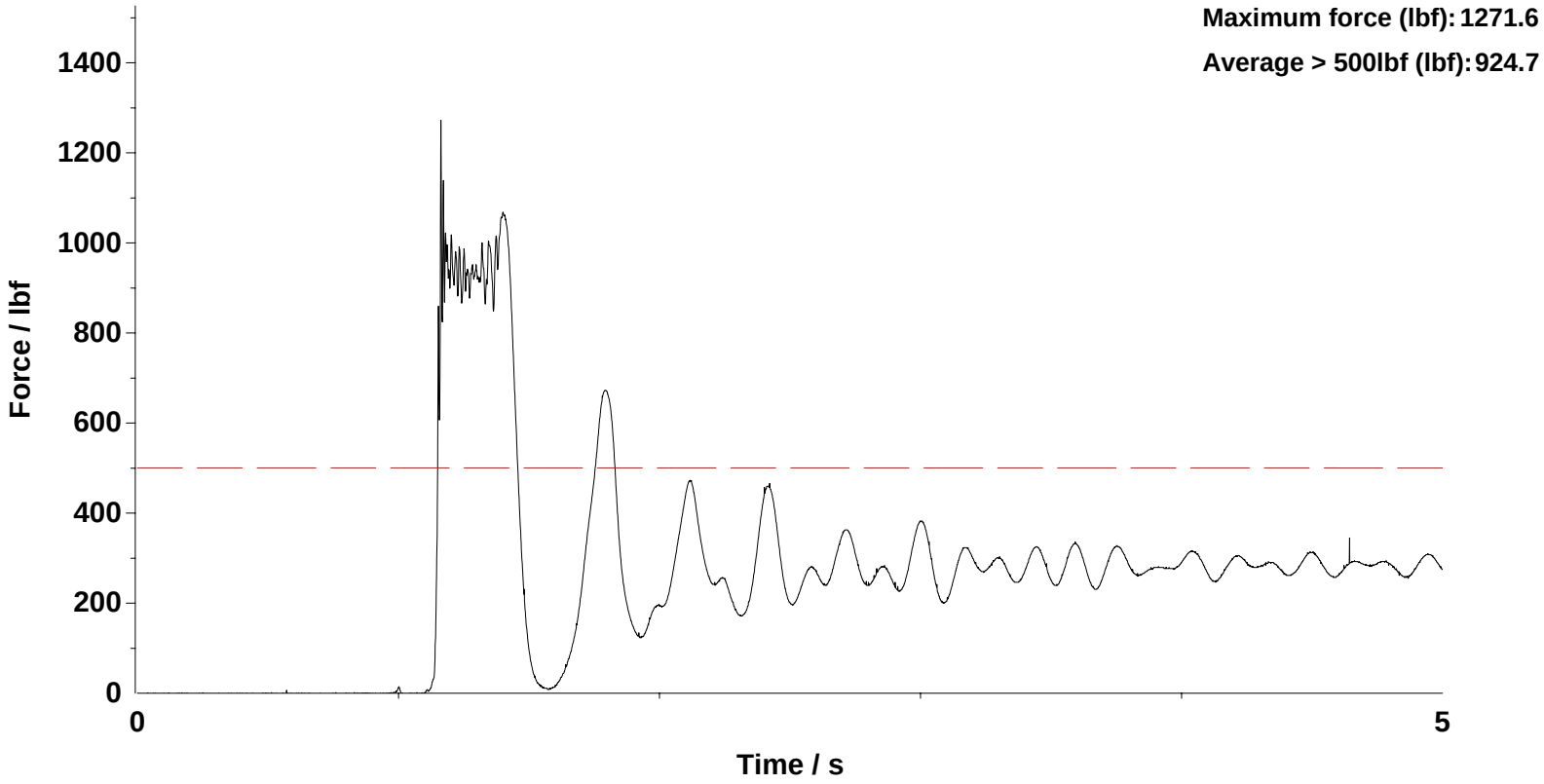
| | |
|---|---|
| Technician: | TAN |
| Standard | ANSI Z359.13:2013 Energy absorbing lanyard |
| Sample / File name: | 2D03306 |
| Drop item | ANSI test weight, 128 kg |
| Orientation/Attachment Point: | Centre eyebolt |
| Time and Date of Test: | 16:30 23/05/16 |




Results do not achieve full ANAB status until a formal test report has been issued.

INSPEC Technical Services

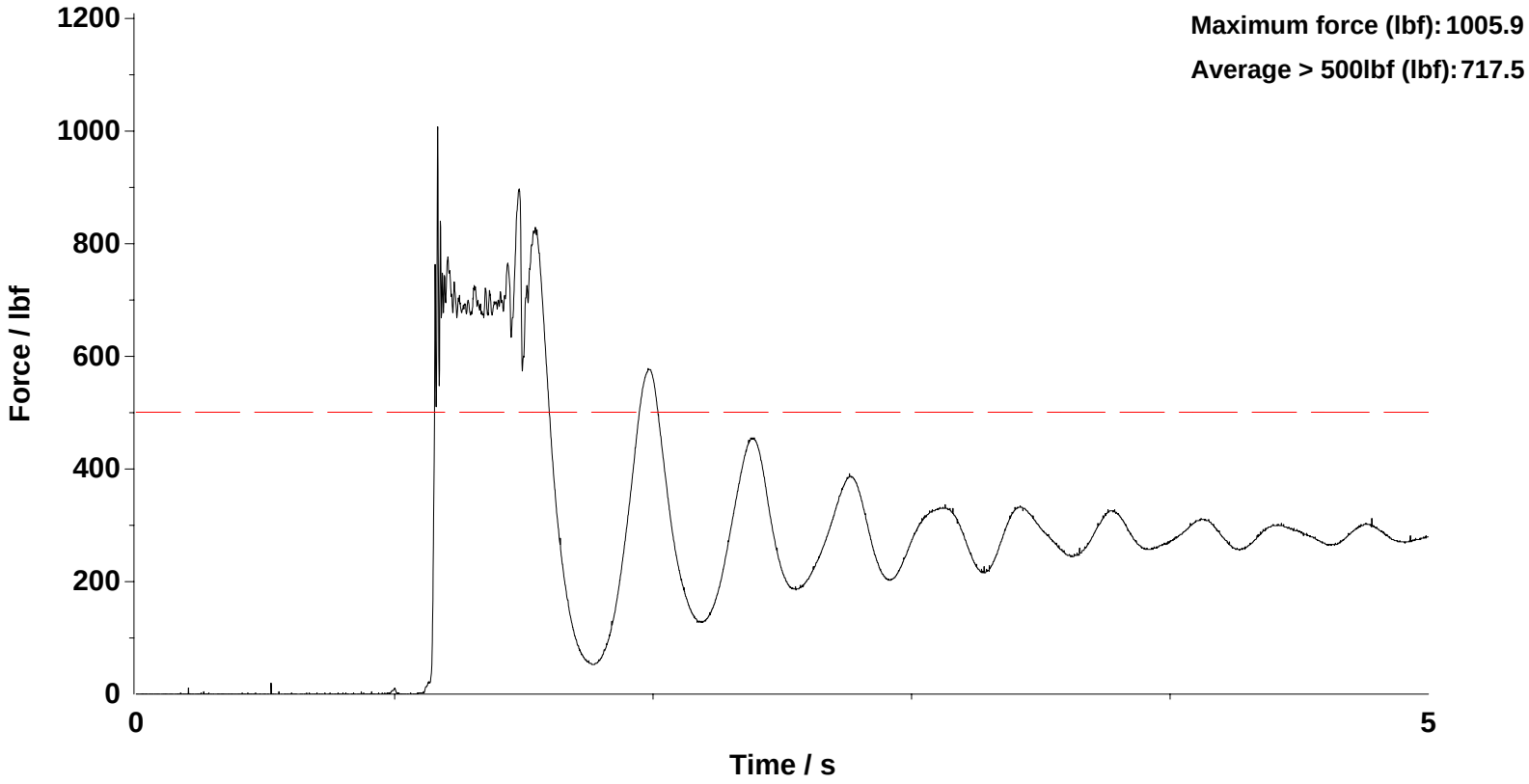
| | |
|---|---|
| Technician: | TAN |
| Standard | ANSI Z359.13:2013 Energy absorbing lanyard |
| Sample / File name: | 2D03307 |
| Drop item | ANSI test weight, 128 kg |
| Orientation/Attachment Point: | Centre eyebolt |
| Time and Date of Test: | 16:39 23/05/16 |




Results do not achieve full ANAB status until a formal test report has been issued.

INSPEC Technical Services

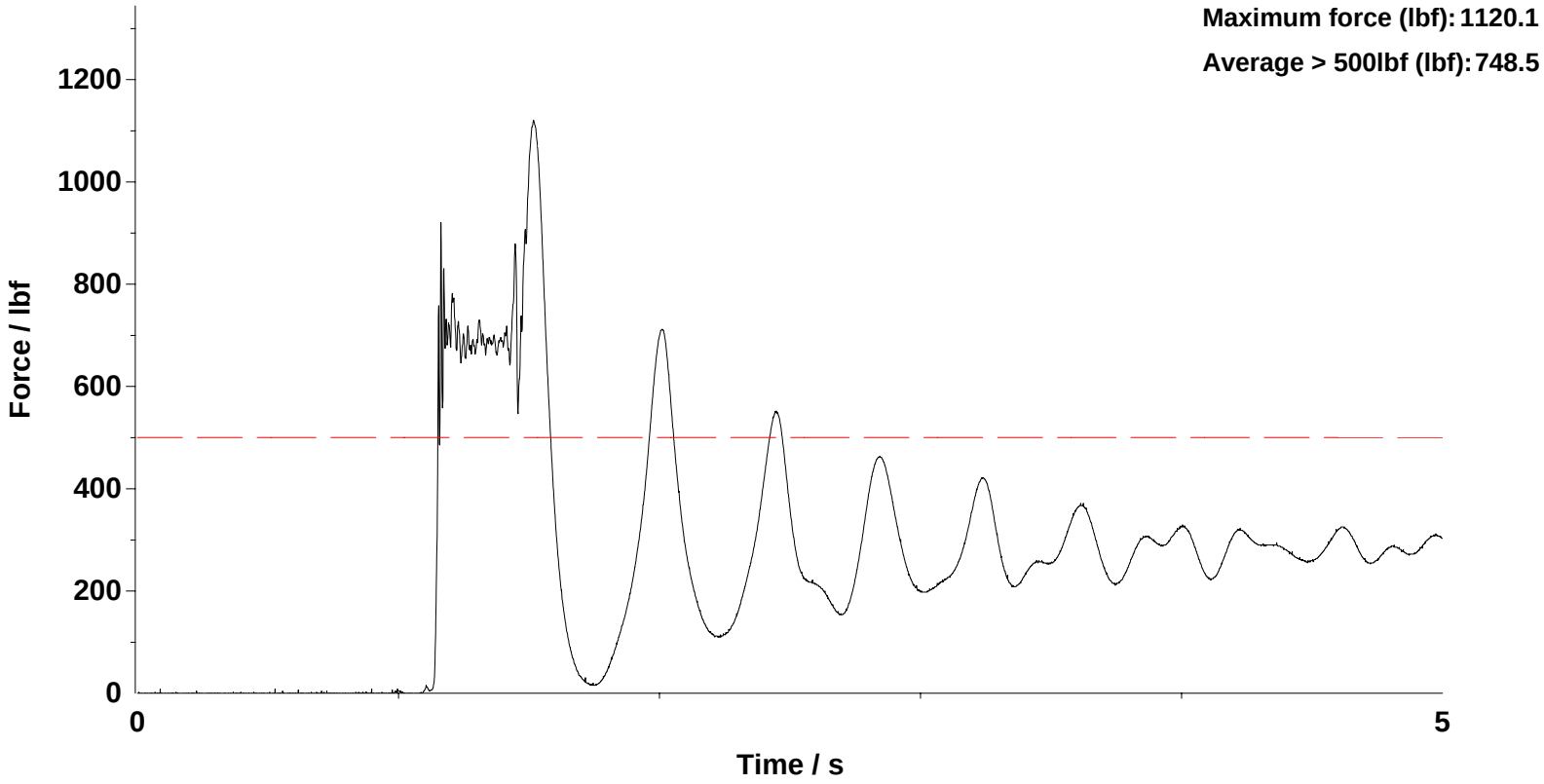
| | |
|---|---|
| Technician: | TAN |
| Standard | ANSI Z359.13:2013 Energy absorbing lanyard |
| Sample / File name: | 2D03308 |
| Drop item | ANSI test weight, 128 kg |
| Orientation/Attachment Point: | Centre eyebolt |
| Time and Date of Test: | 15:54 23/05/16 |




Results do not achieve full ANAB status until a formal test report has been issued.

INSPEC Technical Services

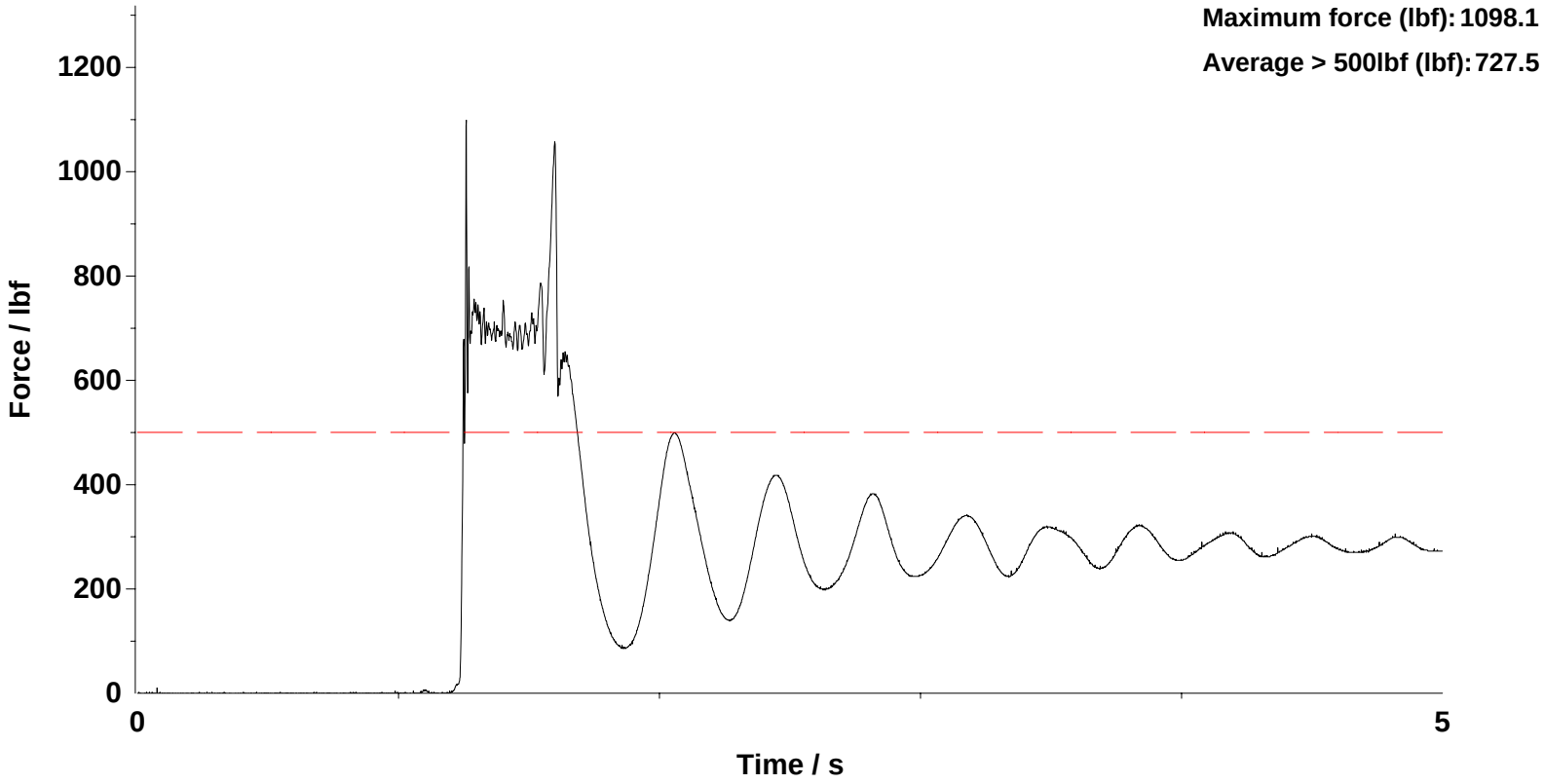
| | |
|---|---|
| Technician: | TAN |
| Standard | ANSI Z359.13:2013 Energy absorbing lanyard |
| Sample / File name: | 2D03309 |
| Drop item | ANSI test weight, 128 kg |
| Orientation/Attachment Point: | Centre eyebolt |
| Time and Date of Test: | 16:03 23/05/16 |




Results do not achieve full ANAB status until a formal test report has been issued.

INSPEC Technical Services

| | |
|---|---|
| Technician: | TAN |
| Standard | ANSI Z359.13:2013 Energy absorbing lanyard |
| Sample / File name: | 2D03310 |
| Drop item | ANSI test weight, 128 kg |
| Orientation/Attachment Point: | Centre eyebolt |
| Time and Date of Test: | 16:12 23/05/16 |




Results do not achieve full ANAB status until a formal test report has been issued.

KSTRONG LLC – Energy absorbing lanyard,
model UFL201301