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 Absorber

Report no:	2.16.08.16
Client:	Jinhua Jech Tools Co., Ltd No.10 Jinlong Road, Bailongqiao Town, Jinhua City 215126, Zhejiang, China.
Manufacturer:	Jinhua Jech Tools Co., Ltd
Client order:	Signed T/0296
Date received:	10 June 2016
Model:	JE311015Y
Dates of tests:	12 June 2016 to 16 August 2016

Signed:

Steven Sum, Laboratory Manager

Issued: 29 August 2016

Conditions

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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.

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Summary of assessment*

Clause	Requirement	Assessment (See Key)
3.1.1	Classifications	Pass
3.1.2	Material	NAs
3.1.3	Terminations	Ltd
3.1.4	Connectors	NAs
3.1.5	Deployment indicator	Pass
3.1.6	Activation force	Pass
3.1.7	Static strength	Pass
3.1.8	Dynamic performance – ambient dry	Pass
3.1.9	Dynamic performance – ambient wet	Pass
	Dynamic performance – cold dry	Pass
	Dynamic performance – hot dry	Pass
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	Dates received	INSPEC specimen no. (2D091 +)
Energy absorber, model JE311015Y	06	3 June 2016	01 to 06
	02	12 July 2016	07 to 08

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.

Clause 5.0 Marking and Reference Literature were supplied electronically and used for assessment.

Result details

3.1 Personal Energy Absorber Component

All specimens were assessed and satisfied the design and testing requirements of this standard. Ltd

3.1.1 Classifications

The specimens assessed were classified by the manufacturer as "6 ft FF". Pass

3.1.2 Materials

The personal energy absorber was constructed of webbing. The characteristics of the material used were not assessed. Manufacturer to certify. NAs

3.1.3 Terminations

Specimen 2D09101 was assessed.

The end terminations satisfied 3.1.3.2, as appropriate (see below). Ltd

3.1.3.2 Webbing terminations

Specimen 2D09101 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 harness were white colour. This contrasted with the red 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

3.1.4 Connectors

Specimen 2D09101 was assessed.

It incorporated two integrally attached connectors (two snaphooks).

Testing of the connectors was not requested. NAs

3.1.5 Deployment indicator

Subsequent to the testing of specimen 2D09102 against 3.1.8, it became obvious that the energy absorber had been activated. Pass

3.1.6 Activation force

Specimen 2D09101 was assessed.

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

The permanent elongation of the specimen, following the test, was 1.34 inches. Pass
This is less than the maximum 2 inches permitted.

3.1.7 Static strength

Specimen 2D09102 was assessed.

It withstood the tensile test of 5,000 pounds applied for 1 minute without breaking. Pass

3.1.8 Dynamic performance test - Ambient dry condition

Specimen 2D09102 was assessed.

During the dynamic performance test, the average arrest force was 727 pounds. Pass
This value is less than the maximum 900 pounds permitted.
See Annex 1 for the plot of force versus time.

During the dynamic performance test, the maximum arrest force was 874 pounds. Pass
This value is less than the maximum 1,800 pounds permitted.
See Annex 1 for the plot of force versus time.

During the dynamic performance test, the deployment distance was 45.4 inches. Pass
This value is less than the maximum 48 inches permitted.

3.1.9 Dynamic performance test - Ambient wet condition

Specimen 2D09103 was assessed.

During the dynamic performance test, the average arrest force was 773 pounds. Pass
This value is less than the maximum 1,125 pounds permitted.
See Annex 1 for the plot of force versus time.

During the dynamic performance test, the maximum arrest force was 971 pounds. Pass
This value is less than the maximum 1,800 pounds permitted.
See Annex 1 for the plot of force versus time.

During the dynamic performance test, the deployment distance was 44.1 inches. Pass
This value is less than the maximum 48 inches permitted.

3.1.9 Dynamic performance test - Cold dry condition

Specimen 2D09104 was assessed.

During the dynamic performance test, the average arrest force was 775 pounds. Pass
This value is less than the maximum 1,125 pounds permitted.
See Annex 1 for the plot of force versus time.

During the dynamic performance test, the maximum arrest force was 846 pounds. Pass
This value is less than the maximum 1,800 pounds permitted.
See Annex 1 for the plot of force versus time.

During the dynamic performance test, the deployment distance was 40.5 inches. Pass
This value is less than the maximum 48 inches permitted.

3.1.9 Dynamic performance test - Hot dry condition

Specimen 2D09107 was assessed.

During the dynamic performance test, the average arrest force was 826 pounds. Pass
This value is less than the maximum 1,125 pounds permitted.
See Annex 1 for the plot of force versus time.

During the dynamic performance test, the maximum arrest force was 1474 pounds. Pass
This value is less than the maximum 1,800 pounds permitted.
See Annex 1 for the plot of force versus time.

During the dynamic performance test, the deployment distance was 42.7 inches. Pass
This value is less than the maximum 48 inches permitted.

5.1 / 5.2.4 Marking

Specimen 2D09101 was assessed. The detailed results of the assessment are given Ltd
on page 8 of this report.

5.3 / 5.4.4 Instructions

Specimen 2D09101 was assessed. The detailed results of the assessment are given Ltd
from page 9 to page 10 of this report.

5.1 General Marking Requirements

5.1.1 Markings shall be in English.

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

Markings 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 Except for connectors, as set forth in Section 5.2.1, equipment shall be marked with the following:

- part number and model designation; "JE311015Y" Pass
- year of manufacture; "02/08/15" Pass
- manufacturer's name or logo; JECH ® Pass
- capacity rating; "130-310 lbf" Pass
- serial number; "20150829" Pass
- standard number; "ANSI/ASSE 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" 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; Pass
- the average arrest force, maximum free fall distance and capacity of the energy absorber were marked on a separate label. Pass

Label size, colour and content as figure 16a and 16b of the standard were not assessed. NAs

- 6 ft FF personal energy absorbers shall be in black print on a contrasting white background; Pass
- 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 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. *However, a set of instructions in English were supplied 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

5.4 Specific Instruction Requirements

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

· 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.	NAs

Estimates of the uncertainty of measurement

Clause	Test		Uncertainty
3.1.1	Classifications		-
3.1.2	Material		-
3.1.3	Terminations		-
3.1.4	Connectors		-
3.1.5	Deployment indicator		*
3.1.6	Activation force		*
	Permanent elongation		0.33%
3.1.7	Static strength		*
3.1.8	Dynamic performance – ambient dry	Force	1.7%
		Deployment distance	1mm
3.1.9	Dynamic performance – various conditions	Force	1.7%
		Deployment distance	1mm
5.1 / 5.2	Marking		-
5.3 / 5.4	Information		-

* 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.

Values expressed as a percentage (%) are relative.

It should be noted that the above values have not been taken into account when making assessment to the pass/fail criteria.

Jinhua Jech Tools Co., Ltd –
Energy absorber,
model JE311015Y

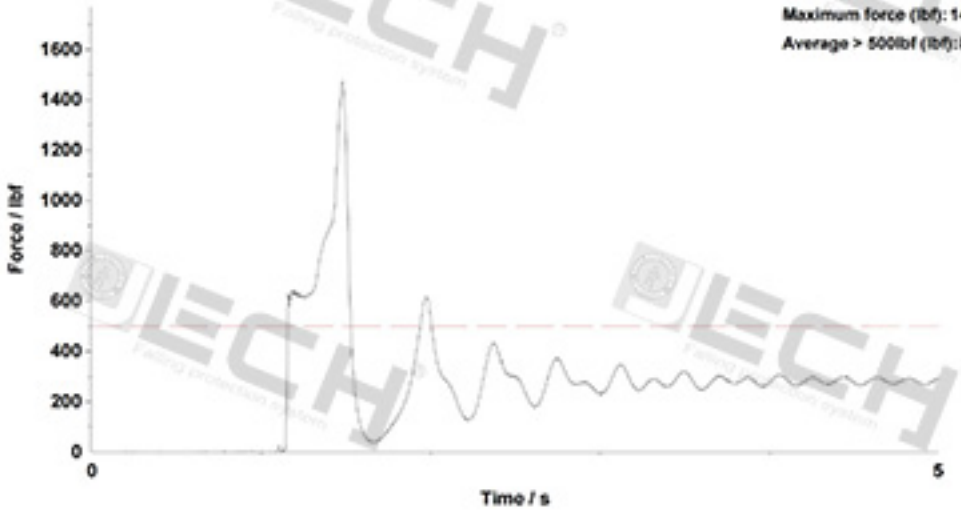
INSPEC Testing Services' specimen 2D09101 12 June 2016

ANNEX

This Annex comprises two sections.

INSPEC Technical Services

Technician:	TAN
Standard	ANSI Z359.13:2013 Energy absorber
Sample / File name:	2D09107
Drop item	Drop weight, US - 128 kg
Orientation/Attachment Point:	Centre eyebolt
Time and Date of Test:	16:33 20/07/16



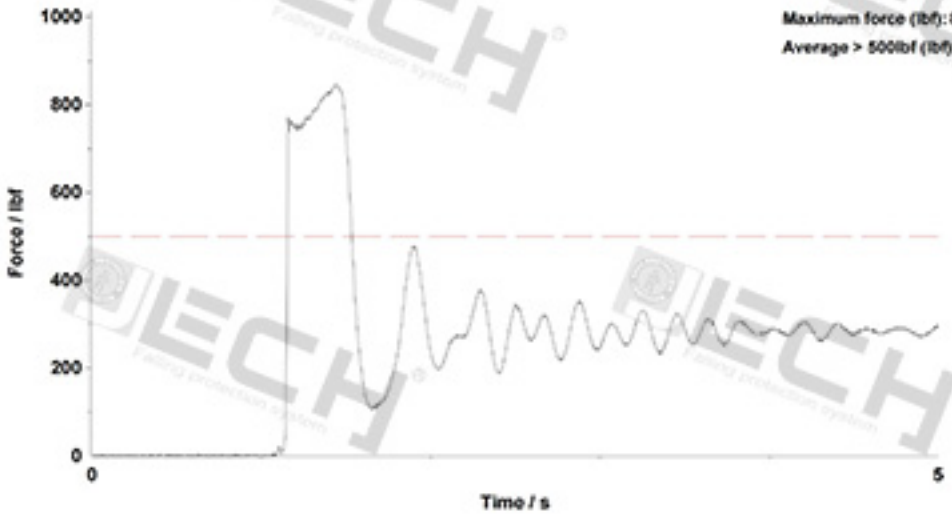
Results do not achieve full ANAB status until a formal test report has been issued.

ANNEX

This Annex comprises two sections.

INSPEC Technical Services

Technician:	TAN
Standard	ANSI Z359.13:2013 Energy absorber
Sample / File name:	2D09104
Drop item	Drop weight, US - 128 kg
Orientation/Attachment Point:	Centre eyebolt
Time and Date of Test:	15:24 21/06/16



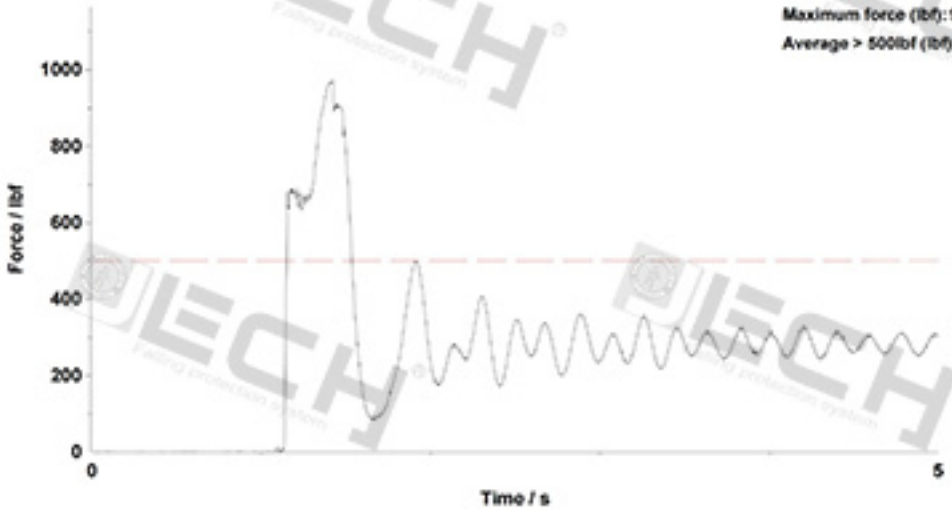
Results do not achieve full ANAB status until a formal test report has been issued.

ANNEX

This Annex comprises two sections.

INSPEC Technical Services

Technician:	TAN
Standard	ANSI Z359.13:2013 Energy absorber
Sample / File name:	2D09103
Drop item	Drop weight, US - 128 kg
Orientation/Attachment Point:	Centre eyebolt
Time and Date of Test:	16:39 21/06/16



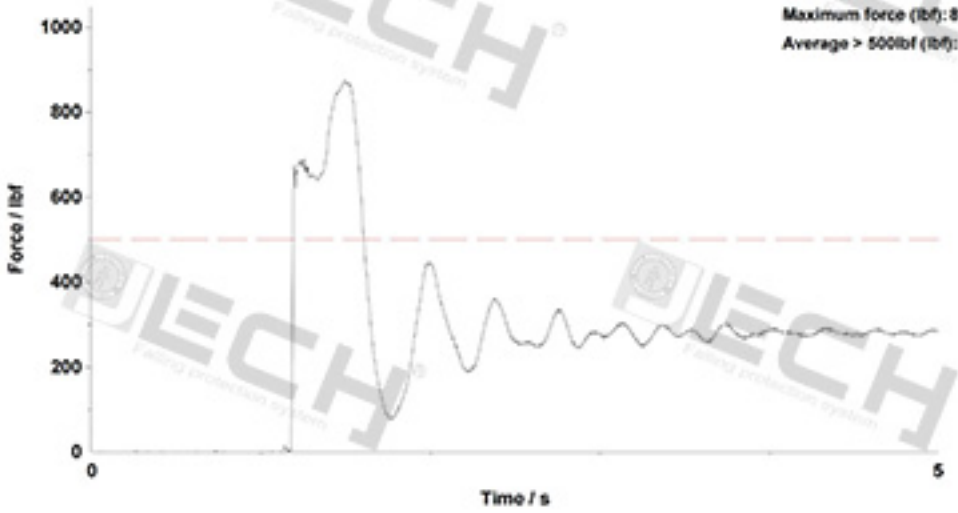
Results do not achieve full ANAB status until a formal test report has been issued.

ANNEX

This Annex comprises two sections.

INSPEC Technical Services

Technician:	TAN
Standard	ANSI Z359.13:2013 Energy absorber
Sample / File name:	2D09102
Drop item	Drop weight, US - 128 kg
Orientation/Attachment Point:	Centre eyebolt
Time and Date of Test:	13:40 20/06/16



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

ANNEX

This Annex comprises two sections.

1. Plot of arrest force versus time. (4 pages)

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