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Test Report

Personal Fall Arrest Equipment
ANSI/ASSE Z359.11-2014
Full Body Harness
(Qualification Testing)

Report no: 2.20.02.10

Client: Jinhua Jech Tools Co., Ltd.
No.1448 Tongxi Road, Linjiang Industrial Park
Wucheng District
Jinhua City
Zhejiang 321025
China

Manufacturer: Jinhua Jech Tools Co., Ltd.

Client orders and dates received: T/0681B (28 November 2019)
T/0681C (9 December 2019)

Model: JE115021S

Dates of tests: 1 December 2019 to 19 February 2020

Signed:

Steven Sum, Laboratory Manager

Issued: 19 February 2020

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Summary of assessment *

Clause	Requirement	Assessment (See Key)
3.1	Design requirements	Ltd
3.1.10	Static Feet First – Lanyard parking attachment element	Pass
3.2	**Attachment Element Requirement**	
3.2.1	Dorsal	Pass
3.2.1.3.1	Dynamic Feet First	Pass
3.2.1.3.2	Dynamic Head First	Pass
3.2.1.3.3	Static Feet First	Pass
3.2.1.3.4	Fall Arrest Indicator	Pass
3.2.2	Sternal	
3.2.2.3.1	Dynamic Feet First	
3.2.2.3.2	Static Feet First	
3.2.2.3.3	Fall Arrest Indicator	
3.2.3	Frontal	
3.2.3.1.1	Dynamic Feet First	
3.2.3.1.2	Static Feet First	
3.2.4	Shoulder	
3.2.4.1.1	Static Feet First	
3.2.5	Waist, Rear	
3.2.5.2.1	Static Feet First	
3.2.6	Hip	
3.2.6.1.1	Static Feet First	
3.2.7	Suspension Seat	
3.2.7.1.1	Static Feet First	
3.3	**Component Requirements**	
3.3.1	Load bearing straps	Ltd
3.3.1.2	Strap tensile test	Pass
3.3.1.5	Strap tensile test (after abrasion conditioning)	Pass
3.3.2	Thread and Stitching	Ltd
3.3.3	Connecting Components	NAs
3.3.1.2	Strap tensile test (soft loops)	
3.3.1.5	Strap tensile test (soft loops - after abrasion conditioning)	

Clause	Requirement	Assessment (See Key)
5.1	Marking requirements	Ltd
5.2	Instructions requirements	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. (2G231+)
Webbing (black color), part # 95	15 m	25 November 2019	01A – 01J
Webbing (blue color), part # 216	15 m		02A – 02J
Full body harness, model JE115021S with attachment element extender, part # JE910016	24		03 - 26
	09	19 December 2019	27 - 35

Procedures

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

Testing was performed in accordance with ANSI Z359.11-2014 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.

Result details

3	**Requirements**	
3.1	**Design Requirements**	
	Specimen 2G23103 was assessed.	
3.1.1	The specimen permanently incorporated a dorsal attachment element.	Pass
	The specimen did not incorporate other attachment element.	
3.1.2	The specimen did incorporate a load bearing sub-pelvic strap.	Pass
3.1.3	All shoulder straps on the specimen came together at the dorsal location and were crossed and attached with a connector (a D-ring).	Pass
	Testing of the D-ring was not requested.	NAs
3.1.4	The specimen permanently incorporated a back strap as a means to control the separation of the shoulder straps at the back of the full body harness.	Pass
	When the specimen was mounted on to the torso as per manufacturer's instructions, some portion of the back strap was located between datum levels G and K.	Pass
3.1.5	The specimen was equipped with a modular component (attachment element extender).	
3.1.5.1	The modular component described in 3.1.5 was attached to the harness using a connector (snaphook). Testing of the snaphook was not requested.	NAs
3.1.5.2	The specimen was equipped with an attachment element extender. The length between load bearing points was 18.3 inches	Pass
3.1.6	The specimen was not integrated into a vest or garment.	NAp
3.1.7	The specimen was equipped with two fall arrest indicators.	Pass
	Both fall arrest indicators deployed during dynamic testing defined in section 3.2 when attached to the dorsal attachment element.	Pass
	It was visually possible to inspect the fall arrester indicators.	Pass
3.1.7.1	There were no other attachment elements therefore this clause is not applicable.	NAp
3.1.8	The specimen was not equipped with connecting subsystem combinations.	NAp
3.1.9	The specimen did include strap retainers (keepers) which served to control the loose ends of straps.	Pass

3.1.10 Static Feet First Test - Lanyard Parking Attachment Element

Specimens 2G23103, 2G23104 and 2G23105 were assessed.

Each specimen was equipped with two lanyard parking attachment elements.

The two lanyard parking attachment elements did not differ in design.

During the static feet-first tests, the lanyard parking attachment elements disengagement loads were:

Specimen 2G23103 - 71.9 pounds
Specimen 2G23104 - 74.2 pounds
Specimen 2G23105 - 71.9 pounds

The above values were less than the maximum 120 pounds permitted. Pass

Specimen 2G23103 was assessed.

3.1.11 It was not possible to remove elements of the full body harness that support the shoulders / upper torso from those that support the legs / lower torso. Pass

3.1.12 The dorsal attachment element was located along the vertical centreline of the full body harness. Pass

3.1.13 The specimen did not incorporate a sternal attachment element. NAp

3.1.14 The specimen did include a sub-pelvic strap therefore this clause is not applicable. NAp

3.2 Attachment Element Requirements

3.2.1 Dorsal

Specimen 2G23104 was assessed.

The dorsal attachment element was located in the dorsal area shown in figure 4 of the standard. Pass

The dorsal attachment element was specified in the User Instructions to be used for fall arrest. Pass

3.2.1.1 The dorsal attachment was specified in the User Instructions to be used in travel restrain.

3.2.1.2 During the dynamic performance test, it was confirmed that the design of the full body harness directed the load through the shoulder straps supporting the user and around the thighs. Pass

3.2.1.3 Dorsal Attachment Element Requirements (tested with dorsal D-ring attachment element)

3.2.1.3.1 Dynamic Feet First Test

Specimens 2G23106, 2G23107 and 2G23108 were assessed.

During the dynamic feet-first tests, the test torso was not released. Pass

The harnesses did support the test torso for a period of five minutes post fall. Pass

During this period, the angles of the test torso to vertical were:

Specimen 2G23106 - 6 degrees.
Specimen 2G23107 - 8 degrees.
Specimen 2G23108 - 9 degrees.

These values were less than the maximum 30 degrees permitted. Pass

Both fall arrest indicators deployed visibly and permanently on each specimen. Pass

Full body harness stretch were:

Specimen 2G23106 – 9.2 inches.
Specimen 2G23107 – 9.4 inches.
Specimen 2G23108 – 9.1 inches.

Full body harness stretch stated in the manufacturer's instructions was 18 inches.

Full body harness stretch shall not exceed 18 inches, or that which is stated in the manufacturer's instructions, whichever is less, was satisfied Pass

3.2.1.3.2 Dynamic Head First Test

Specimens 2G23109, 2G23110 and 2G23111 were assessed.

During the dynamic head-first tests, the test torso was not released. Pass

The harnesses did support the test torso for a period of five minutes post fall. Pass

During this period, the angles of the test torso to vertical were:

Specimen 2G23109 - 10 degrees.
Specimen 2G23110 - 8 degrees.
Specimen 2G23111 - 7 degrees.

These values were less than the maximum 30 degrees permitted. Pass

Both fall arrest indicators deployed visibly and permanently on each specimen. Pass

3.2.1.3.3 Static Feet First Test

Specimens 2G23115, 2G23116 and 2G23117 were assessed.

During the static feet-first tests, the test torso was not released from the harness.	Pass
During the static feet-first tests, all adjusters did not slip.	Pass
The straps to which buckle and eyelet adjusters were fitted, did not tear.	Pass
All other straps did not show signs of tearing.	Pass

3.2.1.3.4 Fall Arrest Indicator Test

Specimens 2G23112, 2G23113 and 2G23114 were assessed.

When tested using the dorsal attachment element, both fall arrest indictors deployed visibly and permanently.	Pass

3.2.1.3 Dorsal Attachment Element Requirements (tested with attachment element extender)

3.2.1.3.1 Dynamic Feet First Test

Specimens 2G23118, 2G23119 and 2G23120 were assessed.

During the dynamic feet-first tests, the test torso was not released. Pass

The harnesses did support the test torso for a period of five minutes post fall. Pass

During this period, the angles of the test torso to vertical were:

Specimen 2G23118 - 7 degrees.
Specimen 2G23119 - 8 degrees.
Specimen 2G23120 - 7 degrees.

These values were less than the maximum 30 degrees permitted. Pass

Both fall arrest indicators deployed visibly and permanently on each specimen. Pass

Full body harness stretch were:

Specimen 2G23118 – 10.0 inches.
Specimen 2G23119 – 10.2 inches.
Specimen 2G23120 – 10.4 inches.

Full body harness stretch stated in the manufacturer's instructions was 18 inches.

Full body harness stretch shall not exceed 18 inches, or that which is stated in the manufacturer's instructions, whichever is less, was satisfied Pass

3.2.1.3.3 Dynamic Head First Test

Specimens 2G23121, 2G23122 and 2G23123 were assessed.

During the dynamic head-first tests, the test torso was not released. Pass

The harnesses did support the test torso for a period of five minutes post fall. Pass

During this period, the angles of the test torso to vertical were:

Specimen 2G23121 - 10 degrees.
Specimen 2G23122 - 11 degrees.
Specimen 2G23123 - 6 degrees.

These values were less than the maximum 30 degrees permitted. Pass

Both fall arrest indicators deployed visibly and permanently on each specimen. Pass

3.2.1.3.3 Static Feet First Test

Specimens 2G23127, 2G23128 and 2G23129 were assessed.

During the static feet-first tests, the test torso was not released from the harness.	Pass
During the static feet-first tests, all adjusters did not slip.	Pass
The straps to which buckle and eyelet adjusters were fitted, did not tear.	Pass
All other straps did not show signs of tearing.	Pass

3.2.1.3.4 Fall Arrest Indicator Test

Specimens 2G23124, 2G23125 and 2G23126 were assessed.

When tested using the dorsal attachment element, both fall arrest indictors deployed visibly and permanently.	Pass

3.3 Components Requirements

3.3.1 Load Bearing Straps

Specimen 2G23103 was assessed.

3.3.1.1	The minimum width of the load bearing straps was 45 mm. This is more than the minimum 41 mm specified.	Pass
3.3.1.2	Strap specimens 2G23101A to 01E and 2G23102A to 02E withstood the tensile tests of 5,000 pounds applied for 1 minute without breaking.	Pass
3.3.1.3	The material and characteristics of load-bearing straps were not assessed. Manufacturer to certify.	NAs
3.3.1.4	The ends of load bearing straps were hot-cut so as to prevent fraying.	Pass
3.3.1.5	Following abrasion conditioning, strap specimens 2G23101F to 01J and 2G23102F to 02J withstood the tensile tests of 3,600 pounds applied for 1 minute without breaking.	Pass
3.3.1.6	Straps in contact with metal connectors at attachment elements were protected from wear.	Pass
	Straps in contact with tongue buckles were protected from wear (Grommets were used).	Pass
3.3.1.7	The spacing between hole centres of adjacent eyelets for buckle and eyelet type adjusters was 48 mm. This is more than the minimum 29 mm and less the maximum 50 mm specified.	Pass

3.3.2 Thread and Stitching

Specimen 2G23103 was assessed.

3.3.2.1	The material and characteristics of thread used was not assessed. Manufacturer to certify.	NAs
3.3.2.2	All types of stitching were not assessed. Manufacturer to certify.	NAs
3.3.2.3	Threads used for sewing the harness were white colour. This contrasted with the black and blue colour of the load bearing straps.	Pass

3.3.3 Connecting Components

Specimen 2G23103 was assessed.

3.3.3.1	Testing of connecting components was not requested.	NAs
3.3.3.2	Soft loop attachments were not used.	NAp
3.3.3.3	Soft loop attachments were not used.	NAp
3.3.3.4	Soft loop attachments were not used.	NAp

5 Marking and Instructions

5.1 Marking Requirements

5.1.1	-	Markings shall be in English.	Pass
	a	The legibility and attachment of required markings shall be designed to endure for the life of the component, subsystem or system been marked. Mfr to certify.	-
		Markings were provided electronically and used for assessment.	-
5.1.2	b	When pressure-sensitive labels are used, they shall comply with the applicable provision of the reference in Section 7.6. Mfr to certify.	NAs
	c	When labels are concealed, a permanent marking shall be visible to the unaided eye that describes how to access the labels.	NAs
	a	The material of construction; [Polyester]	Pass
	b	The size or range of sizes; [L/XL]	Pass
	c	Part number and/or model designation; [JE115021S]	Pass
	d	The month and year of manufacture; [08/2019]	Pass
	e	The manufacturer's name or logo; [JECH]	Pass
	f	An identifying number, unique to each individual FBH produced by the manufacturer; [0001]	Pass
	g	A warning to follow Mfr instructions included with the equipment at the time of shipment from the Mfr.	Pass
5.1.3	h	A label permanently attached to the lanyard parking attachment which either states "Park Lanyard Here. See instructions." verbally or conveys this by means of a pictogram. [only the text were assessed]	Ltd
	i	A label as defined in Figure 10a and 10b.	Ltd
		a) The label shall be placed in a prominent location on the FBH	NAs
		b) If the label is part of a label pack or book, the label shall be placed so that the user will see it first.	NAs
		c) The border surrounding the label text shall be no closer than 0.4 inches (10 mm) from any other markings on the FBH	NAs
		d) The label may be modified to include the mark of the qualification body, and may include a part number located on the label outside of the border as needed by the manufacturer as defined in figure 10a and 10b.	NAp

5.2 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.

5.2.1	Instructions shall be provided to the user in English, and affixed to the equipment at the time of shipment from the manufacturer. *User Instructions were provided electronically and used for assessment.*	NAs
5.2.2	**Instructions shall contain the following information:**	
a)	Annex A in its entirety, either incorporated in the Mfr's instructions, as an appendix to the Mfr's instructions, or separately provided with the product along with the Mfr's instructions.	Pass
b)	A statement that the Mfr's instructions shall be provided to the users.	Pass
c)	Manufacturer's name, address and telephone number.	Pass
d)	Manufacturer's part number and/or model designation for the equipment.	Pass
e)	Intended use and purpose of the equipment.	Pass
f)	Length of FBH Stretch H_s, and warning to include other factors such as D-ring/ connector length, setting of the user's body and all other contributing elements when calculating fall clearance.	Pass
g)	Proper method of use and limitations of the equipment.	Pass
h)	Illustrations showing locations and markings on the equipment.	Pass
i)	Reproduction of printed information on all markings.	Pass
j)	Inspection procedures (including frequency) required to assure the equipment is in serviceable condition and operating correctly.	Pass
k)	Criteria for discarding equipment that fails inspection.	Pass
l)	Procedures for cleaning, maintenance and storage.	Pass
m)	Reference to ANSI/ASSE Z359.11 (Full Body Harnesses) and applicable regulations governing occupational safety.	Pass
n)	Acceptable use for all attachment elements (see Annex A)	Pass
5.2.3	Instructions shall require that only the equipment Mfr, or persons or entities authorized in writing by the Mfr, make repairs to the equipment.	Pass
5.2.4	Instructions shall require the user to remove equipment from service if it has been subjected to the forces of arresting a fall and will include information on inspection of load indicators.	Pass
5.2.5	Instructions shall require the user to have a rescue plan and means at hand to implement it when using the FBH for fall arrest.	Pass

5.2.6	Instructions shall provide warnings against:	
a)	Altering equipment	Pass
b)	Misusing equipment	Pass
c)	Using combinations of components or sub-systems, or both, which may affect or interfere with the safe function of each other.	Pass
d)	Exposing the equipment to chemicals, heat, flames or other environmental conditions, which may produce a harmful effect and to consult the manufacturer in case of doubt.	Pass
e)	Using the equipment around moving machinery and electrical hazards.	Pass
f)	Using the equipment near sharp edges or abrasive surfaces.	Pass
g)	Exposure to light (UV degradation)	Pass

Estimates of the uncertainty of measurement

Clause	Test		Uncertainty
3.1.1	Dorsal attachment		See Note 1
3.1.2	Sub-pelvic strap		See Note 1
3.1.3	Shoulder straps		See Note 1
	Connector		See report
3.1.4	Waist belt or back strap – control of separation of shoulder straps		See Note 1
3.1.5	Modular components or assemblies, as appropriate		See Note 1
3.1.5.1	Modular components.		See report
3.1.5.2	Attachment element extender	Length	±0.04 inches
3.1.6	Full body harness integrated into a vest		See Note 1
3.1.7	Fall Arrest Indicator		See Note 1
3.1.8	Harness with attached connecting subsystem combinations		See report
3.1.9	Strap retainers (keepers)		See Note 1
3.1.10	Lanyard parking attachment element - Disengagement load		±3.4%
3.1.11	Support – shoulders/upper torso		See Note 1
3.1.12	Location of single point attachment		See Note 1
3.1.13	Sternal attachment – bilateral elements		See Note 1
3.1.14	Sub-pelvic straps		See Note 1
3.2.1	Dorsal attachment element		See Note 1
3.2.1.3.1	Dorsal attachment element	Dynamic Feet First	±3.4%
3.2.1.3.2		Dynamic Head First	±3.4%
3.2.1.3.3	Dorsal attachment element	Static strength	See Note 1
		Slippage	±1.3%
3.2.1.3.4	Fall Arrest Indicator test – dorsal attachment		See Note 1
3.2.2	Sternal attachment element		See Note 1
3.2.2.3.1	Sternal attachment element	Dynamic Feet First	±3.4%
3.2.2.3.2	Sternal attachment element	Static strength	See Note 1
		Slippage	±1.3%
3.2.2.3.3	Fall Arrest Indicator test – sternal attachment		See Note 1
3.2.3	Frontal attachment element		See Note 1
3.2.3.1.1	Frontal attachment element	Dynamic Feet First	±3.4%
3.2.3.1.2	Frontal attachment element	Static strength	See Note 1
		Slippage	±1.3%
3.2.4	Shoulder attachment element		See Note 1

3.2.4.1.1	Shoulder attachment element	Static strength	See Note 1
		Slippage	±1.3%
3.2.5	Waist, Rear attachment element		See Note 1
3.2.5.2.1	Waist, Rear attachment element	Static strength	See Note 1
		Slippage	±1.3%
3.2.6	Hip attachment element		See Note 1
3.2.6.1.1	Hip attachment element	Static strength	See Note 1
		Slippage	±1.3%
3.2.7	Suspension Seat attachment element		See Note 1
3.2.7.1.1	Suspension Seat attachment element	Static strength	See Note 1
		Slippage	±1.3%
3.3.1.1	Straps	Width	±1.3%
3.3.1.2	Straps	Static strength	See Note 1
3.3.1.3	Straps – material and characteristics		Not applicable
3.3.1.4	Straps - terminations		See Note 1
3.3.1.5	Straps (after abrasion)	Static strength	See Note 1
3.3.1.6	Straps – contact with metal connectors		See Note 1
3.3.1.7	Buckle & eyelet type adjusters	Spacing	±0.02 inches
3.3.2.1	Threads and stitching – material		See Note 1
3.3.2.2	Lock stitching		Not applicable
3.3.2.3	Stitching – contrasting colour		See Note 1
3.3.3.1	Connecting components (except soft loops)		See report
3.3.3.2	Soft loop attachments		See Note 1
3.3.3.3	Soft loop	Static strength	See Note 1
	Soft loop (after abrasion)	Static strength	See Note 1
3.3.3.4	Soft loop attachments – protection from wear		See Note 1
5.1	Marking requirements		See Note 1
5.2	Instructions requirements		See Note 1

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 assessment to the pass/fail criteria.

ANNEX

This Annex comprises one section.

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

END OF REPORT

Jinhua Jech Tools Co., Ltd –
Full body harness, model JE115021S
with attachment element extender, part # JE910016

INSPEC Testing Services' specimen 2G23103 29 November 2019