INSPEC TESTING SERVICES

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Test Report

ANSI Z359.11-2021
Full Body Harnesses

Report no:	2.24.08.07
Customer:	Safety Solutions Inc. - SAFETECH 149, H.L.Sarkar Road, Naskarpara, Bansdroni Kolkata-700070, West Bengal India
Manufacturer: **as advised by the Customer**	Safety Solutions Inc. - SAFETECH
Customer orders:	T/0998 and T/1365
Orders received:	9 March 2022 and 10 July 2024 respectively
Model:	SAFE-T-H-101-111
Dates of tests:	22 Jan. 2024 to 26 Mar. 2024 and 5 Aug. 2024

Signed: 

Steven Sum, Laboratory Manager

Issued: 7 August 2024

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	Design requirements	**Ltd**
3.1.10	Static Feet-First test - Lanyard parking attachment	**Pass**
3.2	**Attachment Element Requirement**	
3.2.1	**Dorsal**	**Pass**
3.2.1.3.1	Dynamic Feet-First test	**Pass**
3.2.1.3.2	Dynamic Head-First test	**Pass**
3.2.1.3.3	Static Feet-First test	**Pass**
3.2.1.3.4	Visual Indicator test	**Pass**
3.2.2	**Sternal**	
3.2.2.3.1	Dynamic Feet-First test	
3.2.2.3.2	Static Feet-First test	
3.2.2.3.3	Visual Indicator test	
3.2.3	**Frontal**	
3.2.3.1.1	Dynamic Feet-First test	
3.2.3.1.2	Static Feet-First test	
3.2.4	**Shoulder**	
3.2.4.1.1	Static Feet-First test	
3.2.5	**Waist, Rear**	
3.2.5.2.1	Static Feet-First test	
3.2.6	**Hip**	
3.2.6.1.1	Static Feet-First test	
3.2.7	**Suspension Seat**	
3.2.7.1.1	Static Feet-First test	
3.3	**Component Requirements**	**Ltd**
3.3.1.1	Load bearing straps - width	**Pass**
3.3.1.2	Strap tensile test	**Pass**
3.3.1.5	Strap tensile test (after abrasion)	**Pass**
3.3.3.1	Connecting Components (except soft loop attachments)	**NAs**
3.3.3.3	Strap tensile test - soft loops attachments	
	Strap tensile test – soft loops attachment (after abrasion)	
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.

Submissions details

Submission 01

Products	**Quantity**	**Dates received**	**INSPEC specimen no.** (2L248+)
Full body harness, model SAFE-T-H-101-111	17	17 Jul. 2023	01 to 17

Submission 02

Products	**Quantity**	**Dates received**	**INSPEC specimen no.** (2L248+)
Full body harness, model SAFE-T-H-101-111	17	17 Jan. 2024	18 to 34

Procedures

The specimens detailed within the submission 02 above were used for the tests covered by this report.

Testing was performed in accordance with ANSI Z359.11-2021 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.

Following the request of the manufacturer, specimens 2L24801 to 2L24817 (17 harnesses) were returned to the manufacturer.

New specimens 2L24818 to 2L24834 (17 harnesses) were re-submitted for testing.

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

Result details

3 Requirements

3.1 Design Requirements

Specimen 2L24821 was assessed.

3.1.2	The specimen permanently incorporated a dorsal attachment element.	**Pass**
	The specimen did not incorporate other attachment elements.	
	The specimen incorporated a load bearing sub-pelvic strap.	**Pass**
3.1.3	Shoulder straps on the full body harness came together at the dorsal location and were crossed and attached with a connector (a D-ring).	**Pass**
	Testing of the D-ring connector 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 on 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 / 3.1.5.1	The specimen was not equipped with modular components or assemblies.	**NAp**
3.1.5.2	The specimen was not equipped with an attachment element extender; therefore this clause is not applicable.	**NAp**
3.1.6	The specimen was not integrated into a vest or garment.	**NAp**
3.1.7	The specimen was equipped with two visual indicators at the dorsal area.	**Pass**
	Both visual indicators deployed during dynamic testing defined in section 3.2.1.3.1 and 3.2.1.3.2, when attached to the dorsal attachment element.	**Pass**
	It was visually possible to inspect both visual indicators.	**Pass**
3.1.7.1	The specimen was not equipped with other visual indicators.	**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 serve to control the loose ends of straps.	**Pass**

3.1.10 Static Feet First Test - Lanyard Parking Attachment Element

Specimens 2L24818, 2L24819 and 2L24820 were assessed.

Each specimen was equipped with two lanyard parking attachment elements. Both lanyard parking attachment elements did not differ in design.

During the static feet-first tests, the lanyard parking attachment element's disengagement loads were 54.0, 58.5 and 69.7 pounds respectively. These values were less than the maximum 120 pounds (0.5kN) permitted. **Pass**

Specimen 2L24821 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 laterally along the vertical centreline of the full body harness. **Pass**

3.1.13 The specimen did not corporate sternal attachment elements. **NAp**

3.1.14 The specimen did include a sub-pelvic strap. **NAp**

3.2 Attachment Element Requirements

3.2.1 Dorsal

Specimen 2L24821 was assessed.

The dorsal attachment element was located in the dorsal area shown in Fig. 2 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 restraint or rescue.*

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

3.2.1.3.1 Dynamic Feet First Test

Specimens 2L24821, 2L24822 and 2L24823 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 10, 10 and 10 degrees respectively. These values were less than the maximum 30 degrees permitted. **Pass**

Both visual indicators on each specimen deployed visibly and permanently. **Pass**

Full body harnesses stretches were 8.8, 8.6 and 9.0 inches respectively.

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 2L24824, 2L24825 and 2L24826 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 10, 10 and 15 degrees, respectively. These values were less than the maximum 30 degrees permitted. **Pass**

Both visual indicators on each specimen deployed visibly and permanently. **Pass**

3.2.1.3.3 Static Feet First Test

Specimens 2L24827, 2L24828 and 2L24829 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**

All straps of the full body harnesses did not show signs of tearing. **Pass**

3.2.1.3.4 Fall Arrest Indicator Test

Specimens 2L24830, 2L24831 and 2L24832 were assessed.

When tested in accordance with 4.3.6.1 using the dorsal attachment element, both visual indicators of each specimen deployed visibly and permanently. **Pass**

3.3 Components Requirements

3.3.1 Load Bearing Straps

Specimen 2L24821 was assessed.

3.3.1.1	The minimum width of the load bearing straps were 1.77 inches (45mm). This is more than the minimum 1.625 inches (41mm) specified.	**Pass**
3.3.1.2	All load bearing straps withstood the tensile tests of 5,000 pounds applied for 1-minute without breaking. See INSPEC Test Report 2.23.05.77	**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 to prevent fraying.	**Pass**
3.3.1.5	Following abrasion conditioning, all load bearing straps withstood the tensile tests of 3,600 pounds applied for 1-minute without breaking. See INSPEC Test Report 2.23.05.77	**Pass**
3.3.1.6	Straps in contact with the metal connectors at the attachment elements were protected from wear. Plastic sleeves were used.	**Pass**
3.3.1.7	The specimen did not incorporate buckle and eyelet type adjusters.	**NAp**

3.3.2 Thread and Stitching

Specimen 2L24821 were assessed.

3.3.2.1	The material and characteristics of threads 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 yellow and black colours of the load bearing straps.	**Pass**

3.3.3 Connecting Components

Specimen 2L24821 was assessed.

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

5 Marking and Instructions

5.1 Marking Requirements

Markings in English were provided electronically and used for assessment.

5.1.1	-	Markings shall be in English.	**Pass**
5.1.2	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.	**NAs**
	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; Nylon; Steel]	**Pass**
	b	The size or range of sizes;	**Pass**
	c	Part number and/or model designation; [SAFE-T-H-101-111]	**Pass**
	d	The month and year of manufacture;	**Pass**
	e	The manufacturer's name or logo; [SAFETECH]	**Pass**
	f	An identifying number, unique to each individual FBH produced by the manufacturer;	**Pass**
	g	A warning to follow Mfr instructions included with the equipment at the time of shipment from the Mfr.	**Pass**
	h	A label permanently attached to the lanyard parking attachment which either state "Park Lanyard Here. See instructions." verbally or conveys this by means of a pictogram.	**Pass**
5.1.3	i	If the harness stretch measurement for the frontal attachment exceeds 18 inches (457 mm) in 3.2.3.1.1, then harness shall include a warning with the stated stretch out distance.	**NAp**
	j	If the FBH includes an integrated D-ring extender, a warning shall be included on the D-ring extender that increased free fall should be considered when using this product.	**NAp**
	k	Applicable pictogram in Fig. 12 with a minimum height of 0.8 inches (20mm) or applicable pictograms from CSA Z259.10-18 Fig. 1 – Fig. 8. [height of pictogram was not assessed; makings were provided electronically]	**Ltd**
	l	A label as defined in Figure 11a:	**Ltd**
		1) The label shall be placed in a prominent location on the FBH	**Pass**
		2) If the label is part of a label pack or book, the label shall be placed so that the user will see it first.	**Pass**
		3) 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 11a and 11b.	**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 in English were provided electronically and used for assessment*	**Ltd**
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)	An illustration demonstrating the load indicator before and after deployment.	**Pass**
j)	Reproduction of printed information on all markings.	**Pass**
k)	Inspection procedures (including frequency) required to assure the equipment is in serviceable condition and operating correctly.	**Pass**
l)	Criteria for discarding equipment that fails inspection.	**Pass**
m)	Procedures for cleaning, maintenance and storage.	**Pass**
n)	Reference to ANSI/ASSP Z359.11 (full body harnesses) and applicable regulations governing occupational safety.	**Pass**
o)	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	Design Requirements		Not applicable
3.1.3	Connector		See Test Report
3.1.5.1	Modular Components		See Test Report
3.1.5.2	Attachment Element Extender	Length	±0.1 inches
3.1.8	Connecting Subsystem Combinations		See Test Report
3.1.10	Lanyard Parking Attachment Element	Static Feet-First test	±3.4%
3.2	Attachment Element Requirement		Not applicable
3.2.1.3.1	Dorsal attachment element	Dynamic Feet-First test	±3.4%
3.2.1.3.2		Dynamic Head-First test	±3.4%
3.2.1.3.3		Static strength test	See Note 1
		Slippage	±1.3%
3.2.1.3.4		Visual Indicator test	See Note 1
3.2.2.3.1	Sternal attachment element	Dynamic Feet-First test	±3.4%
3.2.2.3.2		Static strength test	See Note 1
3.2.2.3.2		Slippage	±1.3%
		Visual Indicator test	See Note 1
3.2.3.1.1	Frontal attachment element	Dynamic Feet-First test	±3.4%
3.2.3.1.2		Static strength test	See Note 1
		Slippage	±1.3%
3.2.4.1.1	Shoulder attachment element	Static strength test	See Note 1
		Slippage	±1.3%
3.2.5.2.1	Waist, Rear attachment element	Static strength test	See Note 1
		Slippage	±1.3%
3.2.6.1.1	Hip attachment element	Static strength test	See Note 1
		Slippage	±1.3%
3.2.7.1.1	Suspension Seat attachment element	Static strength test	See Note 1
		Slippage	±1.3%

Clause	**Test**		**Uncertainty**
3.3	Component Requirements		Not applicable
3.3.1.1	Load Bearing Straps	Width	±0.1 inch
3.3.1.2		Static strength test	See Note 1
3.3.1.5		Static strength test (after abrasion)	See Note 1
3.3.1.7		Buckle & eyelet type adjusters (Spacing)	±0.1 inch
3.3.3.1	Connecting components (except soft loop attachments)		See Test Report
3.3.3.3	Soft loop attachments	Static strength test	See Note 1
		Static strength test (after abrasion)	See Note 1
5	Markings and Instructions		Not applicable

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

Safety Solutions Inc. - SAFETECH –
Full body harness, model SAFE-T-H-101-111