

Test Report

EN 355 : 2002

PPE against fall from a height

Energy absorbers

Report no: 2.24.12.06

Customer: Zhejiang Bingfeng Outdoor Product Co., Ltd.
1/F, No.19 Xinchao Road, Wangjiang Community
Baiyun Street, Dongyang City
Jinhua City
Zhejiang Province
China


Manufacturer: Zhejiang Bingfeng Outdoor Product Co., Ltd.
as advised by the Customer

Customer order: T/1425

Order received: 25 October 2024

Model: HH-9375

Dates of tests: 6 Nov. 2024 to 26 Nov. 2024

Signed: 
Steven Sum, Laboratory Manager

Issued: 29 November 2024

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Conditions

This report may be reproduced and distributed to your customers, 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.

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Summary of assessment *

Clause	Requirement	Assessment (See Key)
4.1	Design & ergonomics	See page 7
4.2	Materials and construction	NAp
4.3	Static preloading ①	Pass
4.4	Dynamic performance ①	Pass
4.5	Static strength ①	Pass
4.6 / 6	Marking	Pass
4.6 / 7	Information	Pass
8	Packaging	Pass

① INSPEC Interpretation applies

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. (2M233+)
Energy absorber, model HH-9375	02	25 October 2024	06 to 07

Procedures

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

Testing was performed in accordance with EN 355:2002 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**4.1 Design and ergonomics**

Specimen 2M23306 was assessed against the general requirements specified in clause 4.1 of EN 363:2002. The detailed results of the assessment are given on page 7 of this report.

4.2 Materials and construction

Specimen 2M23306 was assessed.

The specimen did not incorporate a lanyard that cannot be removed without mutilating the lanyard or without the use of special tools. **NAp**

There was no connector incorporated into the specimen. **NAp**

4.3 Static preloading

Specimen 2M23306 was assessed.

The permanent extension of the specimen caused by activation resulting from a preload of 2 kN was 20 mm. This is less than the 50 mm maximum permitted. **Pass**

4.4 Dynamic performance

Specimen 2M23307 was assessed.

The length of the specimen L_t , measured to the nearest 5 mm between bearing points, was 2000 mm.

The maximum braking force developed by the specimen during the drop test was 5.0 kN. This was less than the 6 kN maximum permitted. **Pass**
See the Annex 1 for the force/time curve.

The arrest distance H measured during the drop test was 5114 mm.

The requirement is that H shall be less than the value $(2L_t + 1,750)$ mm, where L_t is 2000 mm, the length reported above. Thus, this value is 5750 mm. The requirement was therefore satisfied. **Pass**

4.5 Static strength

Specimen 2M23307 was assessed.

The fully developed energy absorber withstood the 15 kN force applied for 3-minutes without tearing or rupturing. **Pass**

4.6 Marking and information

6 Marking

Markings were provided electronically and used for assessment against the specific requirements of EN 355-2002 and the results are detailed below.

The same markings were assessed against the requirements specified in clause 2.2 of EN 365:1992. See detail results on page 8 of this report.

- | | |
|--|-------------|
| a) The specimen was marked with an "information pictogram". | Pass |
| b) The specimen was marked with its maximum length. [2000 mm] | Pass |
| c) The specimen was marked with the model / type identification. [HH-9375] | Pass |
| d) The specimen was marked with "EN 355". | Pass |

7 Information supplied by the manufacturer

Information in English was provided electronically and used for assessment against the specific requirements to EN 355 and the results are detailed below.

The instructions to users have been assessed against the specific requirements of EN 355 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.

The same information was assessed against the requirements specified in clause 2.1 of EN 365:1992. The results are given on page 8 of this report.

The information supplied by the manufacturer shall be provided in the languages of the country of destination and shall include at least advice or information as follows.

The language assessed was English.

- | | |
|---|-------------|
| a) that the total length of a sub-system with an energy absorber including lanyard, terminations and connectors shall not exceed 2 m (e.g., connector plus lanyard plus energy absorber plus connector); | Pass |
| b) the characteristics required for a reliable anchor point; | Pass |
| c) on how to connect to a reliable anchor point, to a full body harness and to other components of a fall arrest system; | NAp |
| d) on how to ensure the compatibility of any components to be used in conjunction with the energy absorber, e.g. by reference to other European Standards; | Pass |
| e) the necessary minimum clearance below the feet of the user, in order to avoid collision with the structure or ground in a fall from the height. With a mass of 100 kg and a fall factor two situation (worst case) the clearance is the arrest distance H (see 3.5) plus an extra distance of 1 m; | Pass |
| f) the material from which the energy absorber is made; | Pass |
| g) on limitations of the materials in the product or hazards which may affect its performance, e.g., temperature, the effect of sharp edges, chemical reagents, electrical conductivity, cutting, abrasion, UV degradation, other climatic conditions; | Pass |
| h) that, before and during use, consideration should be given as to how any rescue could be safely and efficiently carried out; | Pass |
| i) that the product should only be used by a trained and/or otherwise competent person, or the user should be under the direct supervision of such a person; | Pass |
| j) on how to clean the product, including disinfection, without adverse effect; | Pass |
| k) if information exists, the expected lifespan of the product (obsolescence) or how this may be determined; | Pass |
| l) on how to protect the product during transportation; | Pass |
| m) on the meaning of any markings on the product; | Pass |
| n) the model/type identification mark of the energy absorber; | Pass |
| o) the number of this European Standard, i.e. EN355. | Pass |

8 Packaging

Specimen 2M23301 was wrapped in a clear plastic bag.	Pass
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EN 363:2002, Clause 4.1, Design and ergonomics

A fall arrest system shall be so designed and manufactured:

- that, in the foreseeable conditions of use for which it is intended, the user can perform the risk-related activity normally while enjoying appropriate protection of the highest possible level; **NAs**
- as to preclude risks and other nuisance factors under foreseeable conditions of use; **NAs**
- as to facilitate correct positioning on the user and to remain in place for the foreseeable period of use, bearing in mind ambient factors, movements to be made and postures to be adopted. For this purpose, it shall be possible to optimize the adoption of a full body harness to user morphology by all appropriate means, such as adequate adjustment elements or the provision of an adequate size range; **NAp**
- that it is as light as possible without prejudicing design strength and efficiency; **NAs**
- as to become not incorrectly adjusted without the user's knowledge under the foreseeable conditions of use; **NAp**
- that, under the foreseeable conditions of use, the vertical drop of the user is minimized to prevent collision with obstacles and the braking force does not, however, attain the threshold value at which physical injury or the tearing or rupture of any component or element which might cause the user to fall can be expected to occur; **NAs**
- that, after arresting, the user is maintained in a correct position in which he may await help if necessary. **NAp**

Only the characteristics given in indents 3, 5 and 7 lend themselves to objective assessment. Compliance or otherwise with the relevant European standard, against which the specimen has been tested, support the assessments made against those characteristics.

The characteristics given in the other indents, whilst being desirable attributes, cannot be objectively assessed by a testing laboratory, because they involve parameters about which the technician may have only an opinion, not factual knowledge.

EN 365:1992, Clause 2.2, Marking

Each detachable component of a system shall be clearly, indelibly and permanently marked, by any suitable method not having a harmful effect on the materials, with the following information:

Identification mark comprising:

- the last two digits of the year of manufacture. [24] **Pass**
 - the manufacturer's or supplier's name, trade mark or other means of identification. [Xinda] **Pass**
 - the manufacturer's batch number or serial number of the component. [24301220H020] **Pass**
- The characters in the identification mark shall be readable and discernible. **Pass**

EN 365:1992, Clause 2.1, Instructions for use

Written instructions in the language of the country of sale shall be supplied with each system or component and shall include at least the following:

- | | |
|--|-------------|
| a) Instructions containing appropriate detail, supplemented by sketches, if necessary, to enable the user to use the system or component correctly. | Pass |
| b) Advice as to whether the system or component, e.g. harness, should be a personal issue to anyone who needs to use it. | Pass |
| c) Advice that documentation should be issued with and kept for each system or component. The record card should contain the following particulars: | |
| - identification mark/s; | Pass |
| - manufacturer's or supplier's name and address; | Pass |
| - the manufacturer's serial number; | Pass |
| - year of manufacture; | Pass |
| - suitability for use with other components within personal fall arresting systems; | Pass |
| - date of purchase; | Pass |
| - date first put into service; | Pass |
| - name of user; | Pass |
| - a space for comments. | Pass |
| d) Instructions that the anchorage of the fall arresting system should be above the position of the user, and indication of the proper anchorage point. The minimum anchorage strength should be stated. | Pass |
| e) Instructions that immediately before use, the user shall: | |
| - make a visual inspection of the system or component to ensure that it is in a serviceable condition and operates correctly; and | Pass |
| - ensure that the recommendations for use with other components within a system, as advised on the record card for the system or component, are complied with. | Pass |
| f) A warning to replace the system or component immediately, should any doubt arise about its safe condition. This shall be carried out by the manufacturer or by another competent person. | Pass |
| g) Instruction that if the system or component has been used to arrest a fall it is essential for safety that it be withdrawn from use and returned to the manufacturer or competent repair centre for servicing and retest. | Pass |
| h) For textile material components the recommended cleaning procedure, and a warning that such procedure be strictly adhered to. | Pass |
| i) For textile material components an instruction that in the event of becoming wet either when in use or due to cleaning, it shall be allowed to dry naturally away from an open fire or other source of heat. | Pass |
| j) Instructions for protection during use. | Pass |
| k) Instructions for protection against hazards. | Pass |
| l) Instructions for storage. Where environmental or industrial factors affect the materials, instruction should be given for proper storage. | Pass |
| m) Instruction that the system or component be examined - or where deemed necessary by the manufacturer, serviced - at least once every twelve months by a competent person authorized by the manufacturer. | Pass |

Estimates of the uncertainty of measurement

Clause	Test		Uncertainty
4.1	Design & ergonomics		Not applicable
4.2	Materials and construction	Connectors	See test reports
4.3	Static preloading		±0.4%
4.4	Dynamic performance	Maximum breaking force	±4.4%
		Maximum arrest distance	±0.7%
4.5	Static strength		See Note 1
4.6	Marking and information		Not applicable
8	Packaging		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

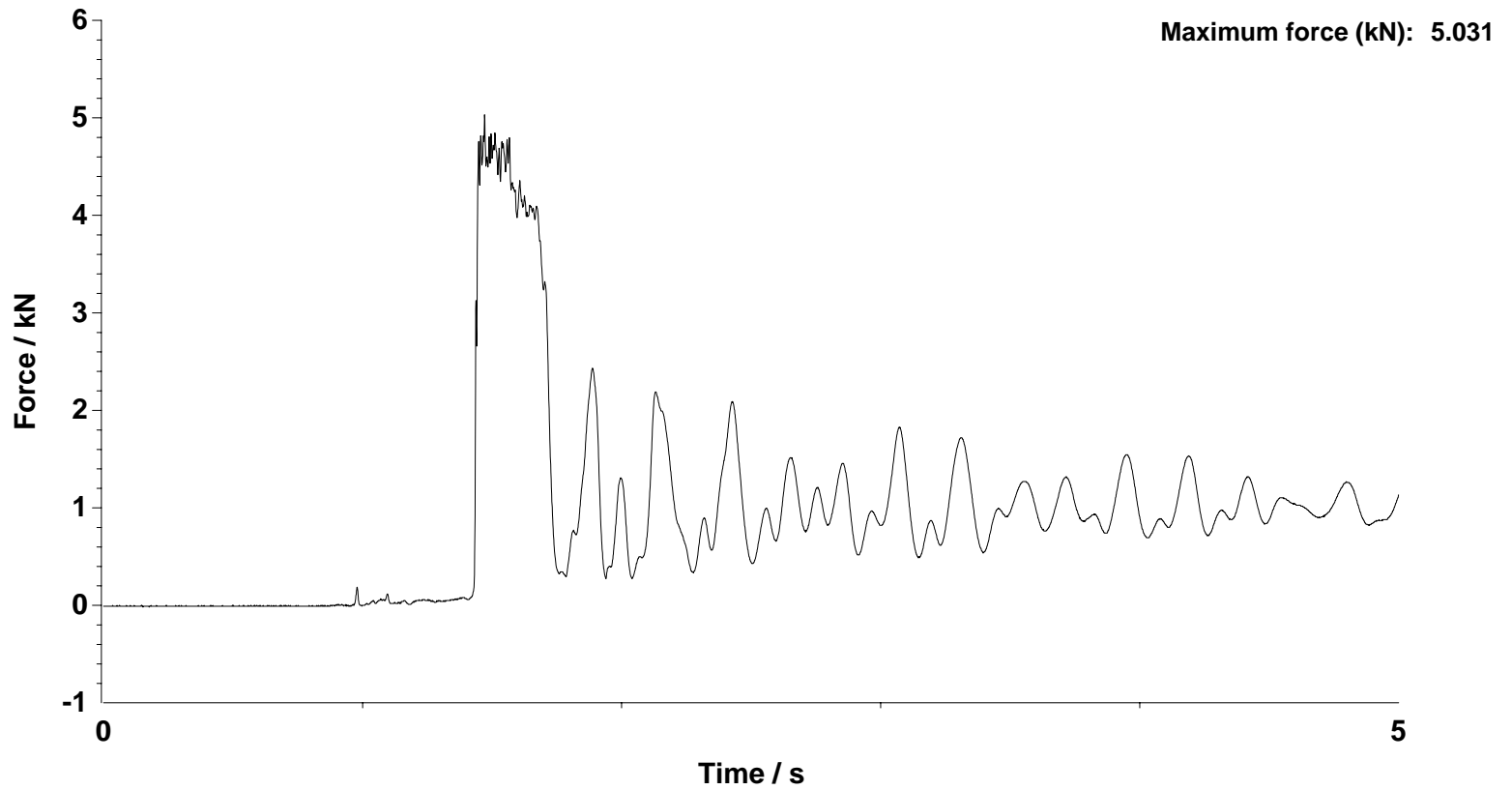
This Annex comprises two sections.

1. Plot of the force/time curve. (1 page)
2. Photograph of the product tested. (1 page)

END OF REPORT

INSPEC Technical Services

Technician: LJ
Standard: EN355 Energy absorberEN drop mass, 100 kg
Sample / File name: 2M23307
Drop item: Centre eyebolt
Orientation/Attachment Point: Drop Tower
Time and Date of Test: 14:44 06/11/24



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

Zhejiang Bingfeng Outdoor Product Co., Ltd. -
Energy absorber, model HHZSQ06

