

Test Report

PPE against fall from a height EN 353-2 : 2002 Guided type fall arresters including a flexible anchor lines

Report no: 2.20.11.32

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

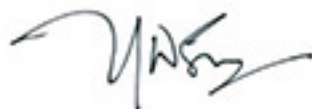
Client order: T/0733

Order received: 3 March 2020

Model: JE3211D

Dates of tests: 28 May 2020 to 23 November 2020

Signed:



Steven Sum, Laboratory Manager

Issued: 24 November 2020

Page 1 of 155

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)
4.1	Design and ergonomics	See page 8
	Materials and construction	Pass
4.2	Lanyard	
	Energy absorber	NAs
	Connectors	NAs
4.3.1	Locking after conditioning – hot/cold/wet	Pass
4.3.2	Locking after optional conditioning	
4.4	Static strength	Pass
4.5	Dynamic performance	Pass
4.6	Corrosion resistance	Pass
4.7 / 6	Marking	Pass
4.7 / 7	Instructions	Pass
8	Packaging	Pass

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. (2H086+)
Fall arrester including a flexible anchor line, model JE3211D consisting of: Fall arrester, model JE510037SET Flexible anchor line, model JE60120	04 sets	13 April 2020	01 to 04

Procedures

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

Testing was performed in accordance with EN 353-2:2002, 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 2H08601 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 8 of this report.

4.2 Materials and construction

Specimen 2H08601 was assessed.

Anchor line

The anchor line was made from synthetic fibre rope.

Pass

EN 354:2002, clause 4.2.2 was not assessed. Manufacturer to certify.

The specimen included a carabiner at its upper end, to facilitate connection to an anchor point.

Pass

The lower end was fitted with an end stop, to prevent the guided type fall arrester from running off the anchor line unintended.

Pass

Fall arrester

The specimen did not rely solely on inertia sensing.

Pass

The specimen did not have a manual locking feature.

NAp

The specimen was equipped with an integral energy absorber. Testing of the energy absorber was not requested.

NAs

The total length Lt (including energy absorber and connector) was 440 mm. This is less than the maximum 1 m permitted.

Pass

Testing of connectors incorporated into the specimen was not requested.

NAs

4.3 Locking**4.3.1 Locking after conditioning**

Specimen 2H08601 was assessed.

After conditioning as described in clause 5.1.2.1 and testing as described in clause 5.1.2.3, the specimen locked and remained locked until released.

Pass

4.4 Static strength

Specimen 2H08604 was assessed.

4.4.1 Anchor line

The specimen sustained the 22 kN force applied for 3 minutes.

Pass

4.4.2 Fall arrester (including the connector)

The specimen sustained the 15 kN force applied for 3 minutes.

Pass

4.5 Dynamic performance

Specimen 2H08602 was assessed.

The maximum braking force developed was 4.1 kN. This is less than the 6 kN maximum permitted. See the Annex for the force/time curve.

Pass

The arrest distance, H , was 1154 mm.

Pass

The requirement is that H shall be less than the value $(2L_t + 1,000)$ mm, where L_t is 440 mm, the length of the energy absorber reported in 4.2 above. Thus, this value is 1880 mm. The requirement was therefore satisfied.

4.6 Corrosion resistance

Specimen 2H08603 was assessed.

After testing as described in clause 5.4, there was no corrosion present.

Pass

4.7 Marking and information

See 6 and 7 below.

6 Marking

Marking labels were provided electronically and used for assessment.

Results of assessment against EN 365:2004 are given on page 9 of this report. The 2004 issue of EN 365 was used in accordance with Recommendation for Use sheet CNB/P/11.101, issued by the Co-ordination of Notified Bodies Committee.

Markings were in the English.

- a) The required pictogram was included.
- b) An indication of the correct orientation for use "Vertical" was included.
- c) The words "Use the correct rope only" were included.
- d) The model / type identification "JE3211D" was included.
- e) EN 353-2 was included.

Pass

Pass

Pass

Pass

Pass

7 Information supplied by the manufacturer

User Instructions were provided electronically and used for assessment. The detailed results of the assessment are given below.

Results of assessment against EN 365:2004 are given from page 10 to 13 of this report. The 2004 issue of EN 365 was used in accordance with Recommendation for Use sheet CNB/P/11.101, issued by the Co-ordination of Notified Bodies Committee.

7 Information supplied by the manufacturer

The information supplied by the manufacturer shall be provided in the languages of the country of destination. It shall conform to 2.1 of EN 365:1992 and in addition shall include at least advice or information as follows:

- | | | |
|----|--|------|
| a) | on how to connect to a full body harness, which conforms to EN 361 and includes an attachment point located appropriately in relation to the fall arrester, and a recommendation to use a front attachment; | Pass |
| b) | instructions for the correct installation of the flexible anchor line with the guided type fall arrester to a reliable anchor point and how to connect to other components of a fall arrest system; | Pass |
| c) | the specific conditions, the length of the lanyard, under which the guided type fall arrester including a flexible anchor line may be used; | Pass |
| d) | the characteristics required for a reliable anchor point; | Pass |
| e) | on how to ensure the compatibility of any components to be used in conjunction with the guided type fall arrester including a flexible anchor line, e. g. by reference to other European Standards; | Pass |
| f) | for the guided type fall arrester, the diameter and model/type of the anchor line and that only the recommended anchor line(s) shall be used; | Pass |
| g) | if a complete system is supplied, that components of any complete system shall not be substituted; | Pass |
| h) | the correct way of operating the guided type fall arrester on the flexible anchor line; | Pass |
| i) | if the guided type fall arrester can be removed from the flexible anchor line, how to attach and detach it; | NAp |
| j) | the necessary minimum clearance below the feet of the user, in order to avoid collision with the structure or ground in a fall from a height. This should take into account the arrest distance H (see 3.9), the elongation of the anchor line, take-up by the harness and an extra distance of 1 m; | Pass |
| k) | the materials from which the flexible anchor line is made; | Pass |
| l) | 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 |
| m) | that before and during use, consideration should be given as to how any rescue could be safely and efficiently carried out; | Pass |
| n) | 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 |
| o) | on how to clean the product, including disinfection, without adverse effect; | Pass |
| p) | if information exists, the expected lifespan of the product (obsolescence) or how this may be determined; | Pass |
| q) | on how to protect the product during transportation; | Pass |
| r) | on the meaning of any markings on the product; | Pass |
| s) | the model/type identification mark of the guided type fall arrester or the guided type fall arrester including a flexible anchor line; | Pass |
| t) | the number of this European Standard, i. e. EN 353-2. | Pass |

8 Packaging

Specimen 2H08501 was assessed.

The specimen was wrapped in a clear plastic bag.

Pass

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 365:2004, Clause 4.8, Marking

- 4.8.1** Each item of PPE or other equipment shall be clearly, indelibly and permanently marked by the manufacturer in the official language of the country of destination, by any suitable method not having a harmful effect on the materials so marked, and shall include at least:

The language assessed was English.

- a) means of identification, e.g. manufacturer's name, supplier's name, or trademark; **Pass**

Note 1. When PPE is marked with the supplier's name this should be with the approval of the Notified Body.

- b) manufacturer's production batch or serial number or other means of traceability; **Pass**

- c) model and type/identification; **Pass**

- d) number and year of the document to which the equipment conforms; **Pass**

- e) pictogram or other method to indicate the necessity for users to read the instructions for use; **Pass**

Note 2: Any additional relevant marking specific to the item of equipment should also be included.

- 4.8.2** The characters in the markings shall be legible and unambiguous. **Pass**

EN 365:2004, Clause 4.1 to 4.7, Instructions

4.1 General

The manufacturer shall prepare instructions for use, for maintenance and for periodic examination for each item of PPE or other equipment, in the official languages of the country of destination.

Pass

The language assessed was English.

Note. The instruction for use, for maintenance and for periodic examination may be supplied in separate documents.

4.2 Instructions for use

4.2.1 The instructions for use shall be in a written format, shall be clear, legible and unambiguous, and shall contain appropriate detail, supplemented by diagrams if necessary, to enable the PPE or other equipment to be used correctly and safely.

Pass

4.2.2 The instructions for use shall include:

- a) name and contact details of the manufacturer or authorised representative as appropriate; Pass
- b) statements describing the equipment, its intended purpose, application and limitations; Pass
- c) warning about medical conditions that could affect the safety of the equipment user in normal and emergency use; Pass
- d) warning that the equipment shall only be used by a person trained and competent in its safe use; Pass
- e) warning that a rescue plan shall be in place to deal with any emergencies that could arise during the work; Pass
- f) warning against making any alterations or additions to the equipment without the manufacturer's prior written consent, and that any repair shall only be carried out in accordance with manufacturer's procedures; Pass
- g) warning that the equipment shall not be used outside its limitations, or for any purpose other than that for which it is intended; Pass
- h) advice as to whether the equipment should be a personal issue item, where this is applicable; Pass
- i) sufficient information to ensure the compatibility of items of equipment when assembled into a system; Pass
- j) warning of any dangers that may arise by the use of combinations of items of equipment in which the safe function of any one item is affected by or interferes with the safe function of another; Pass
- k) instruction for the user to carry out a pre-use check of the equipment, to ensure that it is in a serviceable condition and operates correctly before it is used; Pass

Note1. A pre-use check by the user may not be applicable in the case of certain parts of equipment for emergency use which have been pre-packed or sealed by a competent person.

- l) features of the equipment that require the pre-use check, the method of checking, and the criteria against which the user can decide whether or not the equipment is defective; Pass

- | | |
|--|------|
| m) warning stating that it is essential for safety that equipment is withdrawn from use immediately should: | |
| 1) any doubt arise about its conditions for safe use or; | Pass |
| 2) it have been used to arrest to fall and not used again until confirmed in writing by a competent person that it is acceptable to do so; | Pass |
| n) requirements of the anchor device or structural member chosen to serve as the anchor point(s), in particular the minimum required strength, the suitability and the position; | Pass |
| o) where relevant, instruction on how to connect to the anchor device or structure; | Pass |
| p) where relevant, an instruction detailing the correct harness attachment point to use, and how to connect to it; | Pass |
| q) for equipment intended for use in fall arrest systems, a warning to emphasise that it is essential for safety that the anchor device or anchor point should always be positioned, and the work carried out in such a way, as to minimise both the potential for falls and potential fall distance. Where it is essential that the anchor device/point is placed above the position of the user, the manufacturer shall make a statement to that effect; | Pass |
| r) where relevant, an instruction that a full body harness is the only acceptable body holding device that can be used in a fall arrest system; | Pass |
| s) for equipment intended for use in fall arrest systems, a warning to emphasise that it is essential for safety to verify the free space required beneath the user at the workplace before each occasion of use, so that, in the case of a fall, there will be no collision with the ground or other obstacle in the fall path; | Pass |
| t) information on the hazards that may affect the performance of the equipment and corresponding safety precautions that have to be observed, e.g. extremes of temperature, trailing or looping of lanyards or lifelines over sharp edges, chemical reagents, electrical conductivity, cutting, abrasion, climatic exposure, pendulum falls; | Pass |
| u) instruction as relevant on how to protect the equipment against damage during transportation; | Pass |
| v) information on the meaning of any markings and/or symbols on the equipment; | Pass |
| w) statement describing the equipment model, type, identification marks and, if appropriate, the document and year to which it conforms; | Pass |
| x) where it is a requirement that an EC type examination be carried out by a Notified Body, the name, address and identification number of the Notified Body involved with the design stage and of the Notified Body involved in the production control phase; | Pass |
| y) statement of any known limit to the safe useable life of the product or any part of the product and/or advice on how to determine when the product is no longer safe to use; | Pass |
| z) warning that it is essential for the safety of the user that, if the product is re-sold outside the original country of destination, the reseller shall provide instructions for use, for maintenance, for periodic examination and for repair in the language of the country in which the product is to be used. | Pass |

Note 2. Any additional relevant information specific to the item of equipment should also be provided.

4.3 Instructions for maintenance

4.3.1 The maintenance instruction shall be clear, legible and unambiguous, and shall contain appropriate detail, supplemented by diagrams if necessary, to enable the PPE or other equipment to be maintained correctly and safely. Pass

4.3.2 The maintenance instructions shall include:

- a) cleaning procedures, including disinfection where applicable, without causing adverse effect on the materials used in the manufacture of the equipment, or to the user, and a warning that the procedure is to be strictly adhered to; Pass
- b) where appropriate, a warning that, when the equipment becomes wet, either from being in use or when due to cleaning, it shall be allowed to dry naturally, and shall be kept away from direct heat; Pass
- c) storage procedures, including all necessary preventative requirements where environmental or other factors could affect the condition of components, e.g. damp environment, sharp edges, vibration, ultraviolet degradation; Pass
- d) other maintenance procedures as relevant to the equipment, e.g. lubrication. NAp

4.4 Instructions for periodic examination

Instructions for periodic examination shall include:

- a) warning to emphasize the need for regular periodic examinations, and that the safety of users depends upon the continued efficiency and durability of the equipment; Pass
- b) recommendation in regard to the frequency of periodic examinations, taking account of such factors as legislation, equipment type, frequency of use, and environmental conditions. The recommendation shall include a statement to the effect that the periodic examination frequency shall be at least every 12 months; Pass
- c) warning to emphasize that periodic examinations are only to be conducted by a competent person for periodic examination and strictly in accordance with the manufacturer's periodic examination procedures; Pass
- d) where deemed necessary by the manufacturer, e.g. due to the complexity or innovation of the equipment, or where safety critical knowledge is needed in the dismantling, reassembly, or assessment of the equipment, (e.g. a retractable type fall arrester), an instruction specifying that periodic examinations shall only be conducted by the manufacturer or by a person or organisation authorised by the manufacturer; NAp
- e) requirement to check the legibility of the product markings. Pass

4.5 Instructions for repair

Where the manufacturer permits repair, repair instructions shall be supplied in the official languages of the country in which the item is in service. These instructions shall include a statement to the effect that any repair shall only be conducted by a competent person for repair, who has been authorised by the manufacturer, and that the repair procedure shall be strictly in accordance with the manufacturer's instructions. NAp

[repair not permitted]

4.6 Records

Advice shall be given that a record is kept for each component, subsystem and system. The record should contain headings for, and spaces to allow entry of, the following details:

- | | |
|--|------|
| a) product, (e.g. full body harness), model and type/identification and its trade name; | Pass |
| b) name and contact details of the manufacturer or supplier; | Pass |
| c) means of identification, which could be the batch or serial number; | Pass |
| d) where applicable, the year of manufacturer or life expiry date, (refer to 4.2.2 y); | Pass |
| e) date of purchase; | Pass |
| f) any other information as necessary, e.g. maintenance and frequency of use; | Pass |
| g) date first put into use; | Pass |
| h) history of periodic examinations and repairs, to include: | |
| 1) dates and details of each periodic examination and repair, and the name and signature of the competent person who carried out the periodic examination or repair; | Pass |
| 2) next due date of periodic examination. | Pass |

Note. It is the responsibility of the user organisation to provide the record and enter into the record the details required.

4.7 Periodic examination

Manufacturers shall provide all the necessary information and equipment e.g. instructions, checklists, spare parts lists and special tools etc, to enable periodic examinations to be carried out by a competent person.	Pass
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Estimates of the uncertainty of measurement

Clause	Test	Uncertainty
4.1	Design and ergonomics	-
4.2	Materials and construction	See Note 1
4.2	Length of Fall arrester	± 1.5 mm
4.2	Energy absorber	See INSPEC Report
4.2	Connectors	See INSPEC Report
4.3.1	Locking after conditioning – hot/cold/wet	See Note 1
4.3.2	Locking after optional conditioning	N/A
4.4	Static strength	See Note 1
4.5	Dynamic performance	$\pm 3.3\%$
4.6	Corrosion resistance	See Note 1
4.7 / 6	Marking	-
4.7 / 7	Instructions	-
8	Packaging	-

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

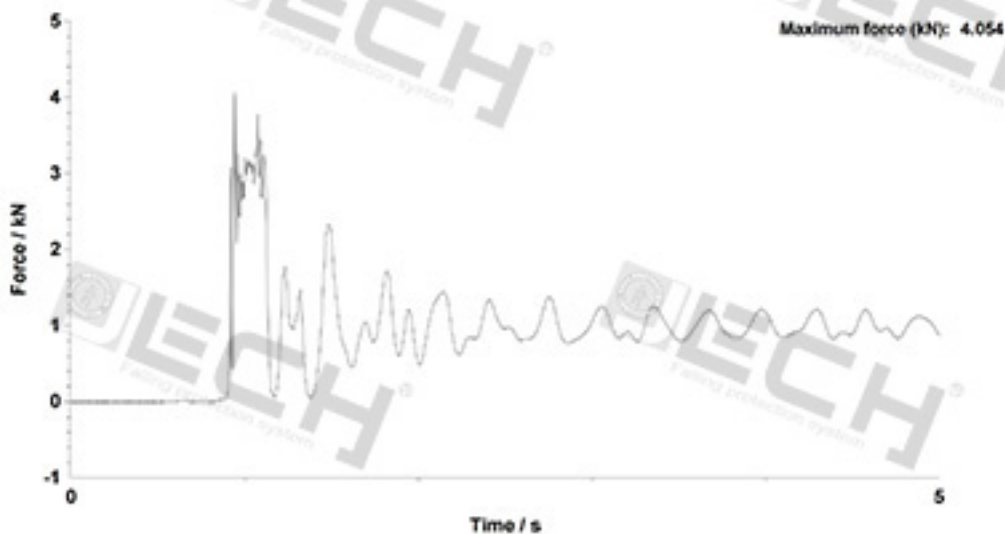
This Annex comprises two sections.

1. Plot of arrest force versus time, (1 page)
2. Photograph of the product tested. (1 page)

END OF REPORT

INSPEC Technical Services

Technician: L.J.Lu
Standard: EN 353-2 2002 Guided type fall arrester
Sample / File name: 2H08602
Drop item: K0079 EN drop mass, 100 kg
Orientation/Attachment Point: Centre eyebolt
Time and Date of Test: 13:24 29/05/20



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

**Jinhua Jech Tools Co., Ltd –
Fall arrester including a flexible anchor lifeline, model JE3211D**



INSPEC Testing Services' specimen 2H08601

28 May 2020