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Test Report

Personal Fall Arrest Equipment
ANSI Z359.12-2009 : Hardware

Report no: 2.17.05.37

Client: Nal Hon Industrial Co., Ltd
No. 418 Shi-Hwu Road
Tali City
Taichung Hsien 41263
Taiwan

Manufacturer: Nal Hon Industrial Co., Ltd

Client order: T/0407

Order received: 9 May 2017

Models: YIC003ND and YIC003NT

Dates of tests: 25 May 2017 to 31 May 2017

Signed:

Issued: 24 June 2017

Steven Sum, Laboratory Manager

Conditions

This report may be reproduced and distributed to your clients, 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 model	Assessment (See Key) YIC003ND	 YIC003NT
3.1.1.1	Surface finish	Pass	Pass
3.1.1.2	New and unused	Pass	Pass
3.1.1.3	Carabiners & snaphooks	Pass	Pass
3.1.1.4	D, O and oval rings		
3.1.1.5	Buckles and adjusters		
3.1.1.6	Proof load testing		
3.1.1.7	Drop test	Pass	Pass
5.1 / 5.2	Marking	Ltd	Ltd
5.3	Instructions	Pass	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 - model YIC003ND

Product	Quantity	Date received	INSPEC specimen no. (2E102+)
Carabiner, model YIC003ND	18	24 May 2017	01 to 18

Submission details - model YIC003NT

Product	Quantity	Date received	INSPEC specimen no. (2E103+)
Carabiner, model YIC003NT	18	24 May 2017	01 to 18

Procedures

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

Testing was performed in accordance with ANSI Z359.12-2009 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.

5 Markings and Instructions were supplied electronically and used for assessment.

Result details - YIC003ND

3.1 Component and Element Requirements

3.1.1 Connector (Hardware) Components and Elements

3.1.1.1 Surface Finish of Hardware

Specimens 2E10201 to 2E10203 were assessed.

a)	The finishes of the specimens were clean and free of scale, rust and deposits of foreign matter.	Pass
b)	Following the salt spray tests, there were no evidence of either, red rust visible to the unaided eye, or corrosion of the base metal of the specimen.	Pass
c)	All surfaces of the specimens, which may come in contact with tearable materials, were free of burrs, pits, sharp edges and rough surfaces.	Pass

3.1.1.2 Condition of Hardware

Specimens 2E10201 to 2E10218 were assessed as new and unused when received. Pass

3.1.1.3 Snaphooks and Carabiners

a)	The connector incorporated a self-closing gate.	Pass
	The gate locked automatically when the gate closed.	Pass
	The connector was capable of being opened only by at least two consecutive, deliberate actions.	Pass
b)	When tested along the major axis, specimens 2E10204 to 2E10206 withstood the 5,000 pounds force for 1 minute without breaking and without distortion sufficient to release the gate.	Pass
c)	During the gate face tests, specimens 2E10210 to 2E10212 withstood the 3,600 pounds force for 1 minute and the gate did not separate from the nose.	Pass
d)	During the gate side tests, specimens 2E10213 to 2E10215 withstood the 3,600 pounds force for 1 minute and the gate did not separate from the nose.	Pass
	Following the gate side test, there were no permanent deformation of the gate.	Pass
e)	When tested along the minor axis, specimen 2E10207 to 2E10209 withstood the 3,600 pounds force for 1 minute without breaking and without distortion sufficient to release the gate.	Pass

3.1.1.7 Dynamic drop test

When tested to the dynamic drop test, following abrasion and cold conditioning, specimens 2E10216 to 2E10218 withstood the drop without breaking and without permanent deformation sufficient to release the gate. Pass

5.1 / 5.2 Marking

The detailed results of the assessment are given below. Ltd

5.3 Instructions

The detailed results of the assessment are given below. Pass

5.1 General Marking Requirements

5.1.1 *The Markings were in English.* Pass

5.1.2 The legibility and attachment of required markings shall endure for the life of the component being marked was not assessed. NAs

Markings were supplied electronically and used for assessment.

5.1.3 Any restrictions on the use of such connectors (hardware) shall be marked on the connectors (hardware) or components, subsystems and systems of which they are an integral part. (*No restrictions were listed).* NAp

5.2 Specific Marking Requirements

5.2.1 Connectors. Connectors shall be marked to identify the following:

· Year of manufacture; “17” Pass

· Manufacturer’s identification; Pass

· Markings for connectors shall be sufficient to provide traceability. Pass

· Load rating for the major axis of the connector stamped or otherwise permanently marked on the device, minimum 22 kN or 5,000 pounds; “22 kN” Pass

· Load rating for gate stamped or otherwise permanently marked on the gate mechanism; “16 kN” Pass

· For connectors that are non-integral part (non-captive eye), then “ANSI Z359.12” is required. Pass

5.3 General Instruction Requirements

5.3.1 Connectors. Instructions for connector components shall include:

Instruction was supplied electronically and used for assessment.

· the material used in the connector construction; Pass

· the size of the connector and dimensions affecting its compatibility with objects to which it may be connected; Pass

· the need to make only compatible connections and limitations of compatibility; Pass

· proper method of coupling the connector and checking that it is closed and locked; Pass

· the minimum strength of the connector body when loaded in the direction set forth in the applicable sections of this standard; Pass

· the minimum strength of carabiner and snaphook gates when loaded in the directions set forth in 3.1.1.3; Pass

Result details - YIC003NT

3.1 Component and Element Requirements

3.1.1 Connector (Hardware) Components and Elements

3.1.1.3 Surface Finish of Hardware

Specimens 2E10301 to 2E10303 were assessed.

a)	The finishes of the specimens were clean and free of scale, rust and deposits of foreign matter.	Pass
b)	Following the salt spray tests, there were no evidence of either, red rust visible to the unaided eye, or corrosion of the base metal of the specimen.	Pass
c)	All surfaces of the specimens, which may come in contact with tearable materials, were free of burrs, pits, sharp edges and rough surfaces.	Pass

3.1.1.4 Condition of Hardware

Specimens 2E10301 to 2E10318 were assessed as new and unused when received. Pass

3.1.1.3 Snaphooks and Carabiners

a)	The connector incorporated a self-closing gate.	Pass
	The gate locked automatically when the gate closed.	Pass
	The connector was capable of being opened only by at least two consecutive, deliberate actions.	Pass
b)	When tested along the major axis, specimens 2E10304 to 2E10306 withstood the 5,000 pounds force for 1 minute without breaking and without distortion sufficient to release the gate.	Pass
c)	During the gate face tests, specimens 2E10310 to 2E10312 withstood the 3,600 pounds force for 1 minute and the gate did not separate from the nose.	Pass
d)	During the gate side tests, specimens 2E10313 to 2E10315 withstood the 3,600 pounds force for 1 minute and the gate did not separate from the nose.	Pass
	Following the gate side test, there were no permanent deformation of the gate.	Pass
e)	When tested along the minor axis, specimen 2E10307 to 2E10309 withstood the 3,600 pounds force for 1 minute without breaking and without distortion sufficient to release the gate.	Pass

3.1.1.7 Dynamic drop test

When tested to the dynamic drop test, following abrasion and cold conditioning, specimens 2E10316 to 2E10318 withstood the drop without breaking and without permanent deformation sufficient to release the gate. Pass

5.1 / 5.2 Marking

The detailed results of the assessment are given below. Ltd

5.3 Instructions

The detailed results of the assessment are given below. Pass

5.1 General Marking Requirements

5.1.1 *The Markings were in English.* Pass

5.1.2 The legibility and attachment of required markings shall endure for the life of the component being marked was not assessed. NAs

Markings were supplied electronically and used for assessment.

5.1.3 Any restrictions on the use of such connectors (hardware) shall be marked on the connectors (hardware) or components, subsystems and systems of which they are an integral part. (*No restrictions were listed).* NAp

5.2 Specific Marking Requirements

5.2.1 Connectors. Connectors shall be marked to identify the following:

· Year of manufacture; “17” Pass

· Manufacturer’s identification; Pass

· Markings for connectors shall be sufficient to provide traceability. Pass

· Load rating for the major axis of the connector stamped or otherwise permanently marked on the device, minimum 22 kN or 5,000 pounds; “22 kN” Pass

· Load rating for gate stamped or otherwise permanently marked on the gate mechanism; “16 kN” Pass

· For connectors that are non-integral part (non-captive eye), then “ANSI Z359.12” is required. Pass

5.3 General Instruction Requirements

5.3.1 Connectors. Instructions for connector components shall include:

Instruction was supplied electronically and used for assessment.

· the material used in the connector construction; Pass

· the size of the connector and dimensions affecting its compatibility with objects to which it may be connected; Pass

· the need to make only compatible connections and limitations of compatibility; Pass

· proper method of coupling the connector and checking that it is closed and locked; Pass

· the minimum strength of the connector body when loaded in the direction set forth in the applicable sections of this standard; Pass

· the minimum strength of carabiner and snaphook gates when loaded in the directions set forth in 3.1.1.3; Pass

Estimates of the uncertainty of measurement

Clause	Test	Uncertainty
3.1.1.1	Surface finish	*
3.1.1.2	New and unused	-
3.1.1.3	Carabiners & snaphooks	Tensile test ±1.4%
		Gate resistance ±1.4%
3.1.1.4	D, O and oval rings	±0.4%
3.1.1.5	Buckles and adjusters	±0.4%
3.1.1.6	Proof load testing	NAs
3.1.1.7	Drop test	*
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.

ANNEX

This Annex comprises one section.

1. Photographs of the product tested. (2 pages)

Nal Hon Industrial Co., Ltd – Carabiner, model YIC003ND

INSPEC Testing Services' specimen 2E10201 **25 May 2017**

Nal Hon Industrial Co., Ltd – Carabiner, model YIC003NT

INSPEC Testing Services' specimen 2E10301 **25 May 2017**