

## Test Report

### Personal Fall Arrest Equipment ANSI Z359.12-2019 : Hardware


**Report no:** 2.20.07.27

**Client:** Nal Hon Industrial Co., Ltd  
No. 418 Hsi-Hu Road  
Ta-Li City (41263)  
Taichung Hsien  
Taiwan

**Manufacturer:** Nal Hon Industrial Co., Ltd

**Client order:** T/0698B

**Order received:** 6 March 2020

**Model:** YAH022 

**Dates of tests:** 6 May 2020 to 22 July 2020

**Type of testing:** Qualification testing

**Signed:**



Steven Sum, Laboratory Manager

**Issued:** 23 July 2020

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### **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.

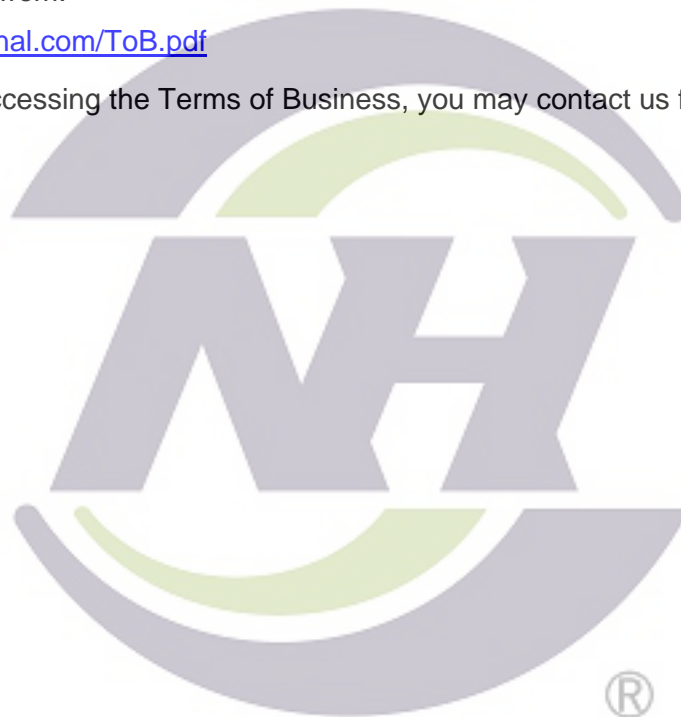
Copies of INSPEC interpretations referenced in this report are available upon request.

Tests marked ☒ are not included in our ANAB Scope of Accreditation.

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<http://inspec-international.com/ToB.pdf>

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**Summary of assessment\***

| Clause    | Requirement                   | Assessment<br>(See Key) |
|-----------|-------------------------------|-------------------------|
| 3.1.1     | Surface finish of hardware    | Pass                    |
| 3.1.2     | New and Unused                | Pass                    |
| 3.1.3     | Snaphooks & Carabiners        | Pass                    |
| 3.1.4     | D-rings, O-rings & Oval rings |                         |
| 3.1.5     | Buckles and adjusters         |                         |
| 3.1.6     | Proof load testing            |                         |
| 3.1.7     | Dynamic drop test             | Pass                    |
| 5.1 / 5.2 | Marking                       | Ltd                     |
| 5.3       | Instructions                  | NAp                     |

**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.<br>(2H020+) |
|------------------------|----------|-----------------|---------------------------------|
| Snaphook, model YAH022 | 18       | 13 January 2020 | 01 to 18                        |

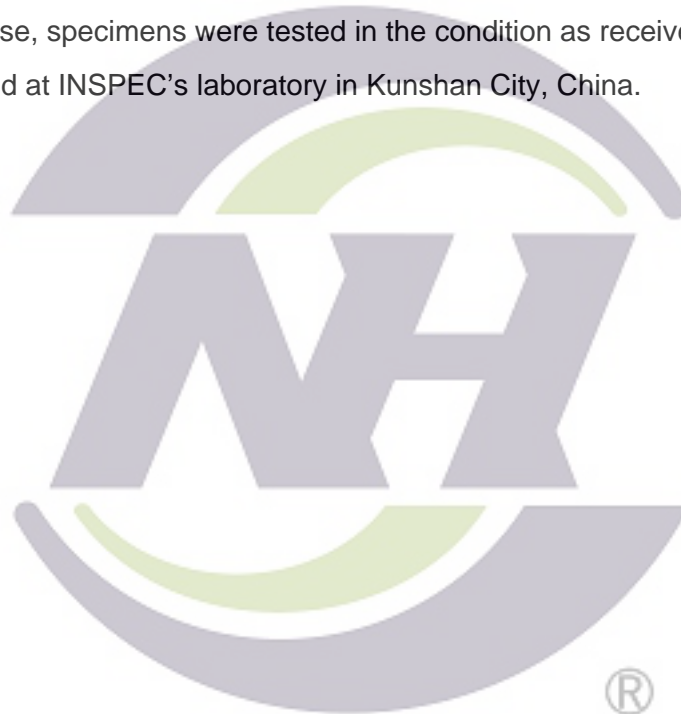
**Procedures**

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

Testing was performed in accordance with ANSI Z359.12-2019 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 City, China.



**Result details****3.1 Component and Element Requirements****3.1.1 Surface Finish of Hardware**

Specimens 2H02001 to 2H02003 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 test, there were no evidence of either, red rust visible to the unaided eye, or corrosion of the base metal of the specimens. | 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 |

**3.1.2 Condition of Hardware**

|  |      |
|--|------|
| All specimens were new and unused when received. | Pass |
|--|------|

**3.1.3 Snaphooks and Carabiners**

Specimen 2H02004 was assessed.

|   |      |
|---|------|
| 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 |
|---|------|

|         |   |      |
|---------|---|------|
| 3.1.3.1 | When tested along the major axis, specimens 2H02004 to 2H02006 withstood the 5,000 pound force for 1 minute without breaking. The gate did not separate from the nose of the snaphook body. | Pass |
|---------|---|------|

|         |  |      |
|---------|--|------|
| 3.1.3.2 | During the gate face test, specimens 2H02007 to 2H02009 withstood the 3,600 pounds force for 1 minute and the gate did not separate from the nose. | Pass |
|---------|--|------|

|         |  |      |
|---------|--|------|
| 3.1.3.3 | During the gate side test, specimens 2H02010 to 2H02012 withstood the 3,600 pounds force for 1 minute and the gate did not separate from the nose. | Pass |
|---------|--|------|

|         |   |     |
|---------|---|-----|
| 3.1.3.4 | The specimens were captive-eye snaphooks. Minor axis testing is not required. | NAp |
|---------|---|-----|

|         |   |     |
|---------|---|-----|
| 3.1.3.5 | The clause is not applicable to the type of connector tested. | NAp |
|---------|---|-----|

|         |   |     |
|---------|---|-----|
| 3.1.3.6 | The clause is not applicable to the type of connector tested. | NAp |
|---------|---|-----|

### 3.1.7 Dynamic drop test

When tested to the dynamic drop tests following abrasion and cold conditioning, specimens 2H02013 to 2H02015 withstood the drop tests without permanent deformation sufficient to release the gate. Pass

## 5.1 General Marking Requirements

5.1.1 Markings shall be in English. Pass

5.1.2 The requirement that markings shall be expected to remain present and legible throughout the expected life of the component being marked was not assessed. NAs

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 (all components listed in 3.1.6, requiring proof loading as per this standard, i.e. snaphooks, carabiners, D-rings, O-rings and Oval rings) shall be marked to identify the following:

- Year of manufacture; Pass
- Manufacturer's identification; [manufacturer's logo] Pass
- Markings for connectors shall be sufficient to provide traceability; [batch number] Pass
- Load rating for the major axis of the connector stamped or otherwise permanently marked on the device, minimum 5,000 lb (22 kN); [5000 lbs] Pass
- Load rating for gate stamped or otherwise permanently marked on the gate mechanism; [3600 lbs] Pass
- For connectors that are non-integral part (non-captive eye), then "ANSI Z359.12-XX" ("XX" denotes year of standard) is required. NAp

## 5.3 Specific Instruction Requirements

The connectors are used as integral parts of a finished product. Therefore specific instructions are not required. NAp

**Estimates of the uncertainty of measurement**

| Clause    | Test                            |                 | Uncertainty |
|-----------|---------------------------------|-----------------|-------------|
| 3.1.1     | Surface finish of hardware      |                 | See Note 1  |
| 3.1.2     | New and Unused                  |                 | See Note 1  |
| 3.1.3     | Snaphooks and carabiners        | Tensile test    | $\pm 1.4\%$ |
|           |                                 | Gate resistance | $\pm 1.4\%$ |
| 3.1.4     | D-rings, O-rings and Oval rings |                 | $\pm 0.4\%$ |
| 3.1.5     | Buckles and Adjusters           |                 | $\pm 0.4\%$ |
| 3.1.6     | Proof load testing              |                 | -           |
| 3.1.7     | Dynamic Drop test               |                 | See Note 1  |
| 5.1 / 5.2 | Marking                         |                 | See Note 1  |
| 5.3       | Instructions                    |                 | 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





Nal Hon Industrial Co., Ltd –  
Snaphook, model YAH022

