TEST REPORT: N.AT328PC/15
Sulmona, 10.11.15

APPROVAL N. 242RP DEL 31.07.15

LOAD CAPACITY TEST OF LOFT LADDER

CLIENT:	**FGM SCALE S.R.L. VIA DELL'ARTIGIANATO, 10 67039 SULMONA (AQ)**
DAY OF THE TEST:	**27th OCTOBER, 2015**
TEST SAMPLE:	**AUTOATTIC LOFT LADDER 70x100 H=276-300**
RELEVANT LEGISLATION:	**UNI EN 14975:2010 "Loft ladders – Requirements, marking and testing"**

The current report shall be made of n. 8 pages.

THE DIRECTOR OF LABORATORY
(Dr. Arch. Francesco Vadri)

LABORATORIO TECNOLOGICO SPERIMENTALE * Abruzzo Test SULMONA D.M. 18-10-84 N. 25234

LOAD CAPACITY TEST REPORT

PREFACE

Tests were performed on the 27th of October 2015 at the operating office of the Technology and Experimental Laboratory ABRUZZO TEST S.r.l., located in Sulmona.

A sample of loft ladder, provided by FGM S.r.l., has been tested. The sample is of the following type:

AutoAttic Loft ladder 70 x 100 (H = 276 – 300 cm)

according to the regulation throughout the legislation UNI EN 14975:2010 - "Loft ladders – Requirements, marking and testing". More in detail, there have been taken the following sections:

- 5.2 – Static load capacity test;
- 5.4 – Torsion test of the step;
- 5.5 – Handrail load test.

The sample has been installed on a specific metal framework being positioned from a height of 3 m from floor, in order to replicate the test conditions foreseen by law. Tests were run on the loft ladder when fully extended.

TEST EQUIPMENT

In order to carry out the test, the following equipment has been employed:

- Calibration masses of 10 and 20 kg;
- Digital dial gauge with sensitivity of 0,001 mm (last calibration date 06/02/15 - expiring date 06/02/18 c/o the office SIT N.135), placed on specific sawhorse;
- Equipment for weights hanging and application of forces needed to the tests execution being indicated in the previous paragraph.

STATIC LOAD CAPACITY TEST

Load capacity test has been carried out according to the following procedure (§ 5.2):

1) Positioning of the equipment needed for weights hanging and for the dial cauge in order to get the measurements of deformations;

2) Application of a preload of 1000 N (about 102 kg) for a time t of 60 seconds on the first step (position F_1) and measurement of horizontal deformation *f* as shown in figure 1:

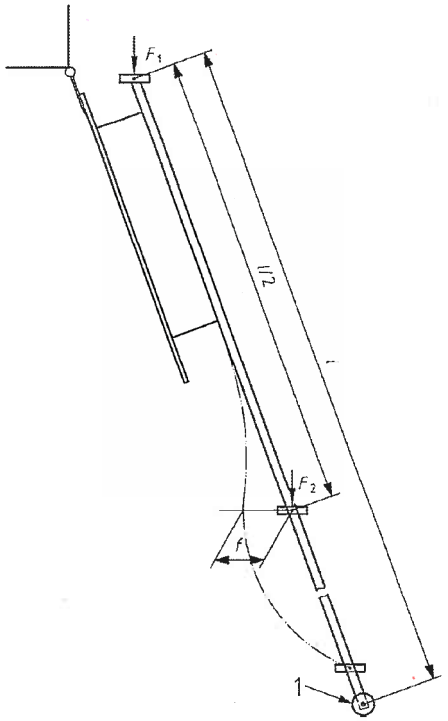
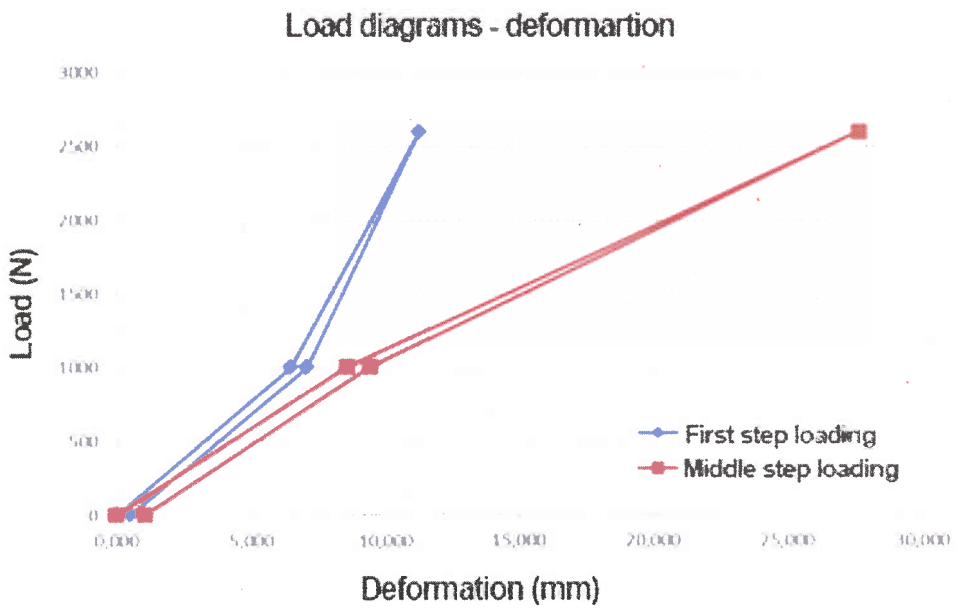


Figure 1: scheme for static load test

3) Application of a maximum load of 2600 N (about 265 kg) for a time t of 60 seconds on first step (position F_1), and measurement of horizontal deformation *f* ;
4) Removal of load and measurement of the remaining horizontal deformation *f*;
5) Application of a preload of 1000 N (about 102 kg) for a time t of 60 seconds in the middle of the ramp (position F_2) and measurement of horizontal deformation *f* ;
6) Application of maximum load of 2600 N (about 265 kg) for a time t of 60 seconds in the middle of the ramp (position F_2), and measurement of horizontal deformation *f* ;
7) Removal of the load and measurement of the remaining horizontal deformation *f*;
8) Assessment of any possible deformations, breakages, alterations (due to loading) of every components making up the element (joints, weldings, steps, brackets);
9) Assessment of entirety of opening and closing mechanism of the loft ladder.

The results of the static capacity load testing are reported in the following chart and diagram:

STAGE 1 – FIRST STEP					
	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5
Load (N)	0	1000	2600	1000	0
Deformation *f* (mm)	0,000	6,461	11,240	7,066	0,523
STAGE 2 – MIDDLE STEP OF THE RAMP					
	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5
Load (N)	0	1000	2600	1000	0
Deformation *f* (mm)	0,000	8,542	27,615	9,412	1,051



The remaining and permanent horizontal deformation *f* has been of 1,051 mm (loading in the middle step of the ramp), which is below the allowable limit in compliance with the regulations of 15,9 mm (0,005 times the length of the loft ladder when fully extended).

No damages and/or structural failures occured; moreover no permanent deformation of steps, neither cracks/damages nor breakages on the joints and on weldings are to be reported.

TORSION TEST OF THE STEP

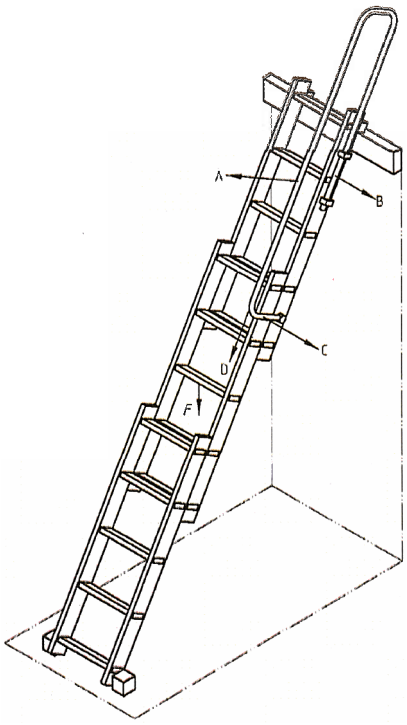
The torsion testing has been carried out by applying a twisting couple of 50 Nm in the middle of the step on a width of 100 mm.

The twisting couple was applied 10 times clockwise and 10 times counterclockwise.

After testing, neither damages of the weldings between the step and the framework of the loft ladder have been identified, nor it has been measured a significant deformation by torsion.

HANDRAIL LOAD TEST

The handrail load test has been performed according the following scheme (§ 5.5 of regulation).



Direction	Force N
Outward force A	100
Outward force B	100
Outward force C	100
Downward force D	500
Static load *F*	400

Figure 2: scheme for the handrail load test

The test has been executed according to the following steps:

1) Locking of the foot of the loft ladder in order to prevent any movements during the handrail test;
2) Application of a load of 400 N (about 41 kg) in the middle step of the ramp, being kept in place throughout the test;
3) Application of distinct four forces A, B, C and D as being illustrated in figure 2, slowly enough in order to avoid dynamic effects. Each force has been applied 10 consecutive times and being held 5 seconds every time;
4) Assessment of the handrail and of the joints points.

After testing, the handrail have not reported neither breakages and/or holds failures, nor permanent deformations in the points of forces application larger than 15 mm, (see regulation).

CONCLUSIONS

With regard to the tests performed, to the results of the measurements of the movements and to the observations made, the test sample of the type "**AutoAttic Motorized AutoAttic loft ladder 70x100 (H = 276-300 cm)**", being provided by the FGM SCALE S.R.L.., has highlighted as following:

TEST	REGULATION	RATING
Static load test	UNI EN 14975:2010 § 5.2	**Compliant** Absence of breakages and/or structural failures, no permanent deformation of the step, absence of cracks and/or breakages on joints and weldings. Permanent deformation within the limits of regulation
Torsion test of the step	UNI EN 14975:2010 § 5.4	**Compliant** No damages of weldings between the step and the framework of the loft ladder Absence of permanent deformation by torsion.
Handrail load test	UNI EN 14975:2010 § 5.5	**Compliant** Absence of breakages and/or holds failures between the handrail and the framework of the loft ladder. Permanent deformation in the points of forces application within the limits of regulation

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PHOTOGRAPHIC DOCUMENTATION

Picture 1: static load test – first step

Picture 2: static load test – middle step of the ramp

PHOTOGRAPHIC DOCUMENTATION

Picture 3: static load test – middle step of the ramp, specific dial gauge

Picture 4: assessment of entirety of opening-closing mechanism

SUMMARY SHEET UNI EN 14975:2010 TESTING

Client: FGM SCALE S.r.l.

Address: Via dell'Artigianato,10 – 67039 Sulmona (AQ)

Product identification: Loft ladder

Trade name : AutoAttic Motorized loft ladder 70x100 (H = 276 – 300 cm)

References: Test report N. AT328PC/15 of the 10.11.2015

STATIC LOAD CAPACITY TEST (§ 5.2)				
	LOAD APPLIED ON FIRST STEP		LOAD APPLIED IN THE MIDDLE OF THE RAMP	
	Preload 1000 N (102 kg)	***Load 2600 N (265 kg)***	***Preload 1000 N (102 kg)***	***Load 2600 N (265 kg)***
Application time (1)	T = 60 seconds	T = 60 seconds	T = 60 seconds	T = 60 seconds
Weldings conditions	Unaltered	Unaltered	Unaltered	Unaltered
Springs conditions	Unaltered	Unaltered	Unaltered	Unaltered
Brackets conditions	Unaltered	Unaltered	Unaltered	Unaltered
Holds conditions	Unaltered	Unaltered	Unaltered	Unaltered
Step conditions	Unaltered	Unaltered	Unaltered	Unaltered
Opening/closing mechanism	Unaltered	Unaltered	Unaltered	Unaltered
Ladder rating	COMPLIANT	COMPLIANT	COMPLIANT	COMPLIANT

(1) Application time of preload of N 1000, T = 60 seconds in compliance with UNI EN 14975:2010
(1) Application time of preload of N 2600, T = 60 seconds in compliance with UNI EN 14975:2010

TORSION TEST OF THE STEP (§ 5.4)	
Twisting couple	50 Nm
Welding conditions after test	Unaltered
Permanent deformation of step after test	Absent
Ladder rating	COMPLIANT

HANDRAIL LOAD TEST (§ 5.5)	
Loads applied (2)	100 – 400 N (10 – 41 kg)
Anchoring supports conditions after test	Unaltered
Permanent deformations after test	Within the limits of the law
Ladder rating	COMPLIANT

(2) Loads applied according regulations and extents as required by UNI EN 14975:2010

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