

TEST REPORT



Title: Rack Bolt – Evaluation to EN
12051:2000

Report Number: WTE/08/012

On behalf of UAP Limited
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Introduction

It was requested that WTE Ltd carry out an evaluation of the UAP Rack Bolt to EN 12051:2000. The results are presented below.

Samples

Samples of the UAP Rack Bolt were supplied for the full evaluation to the standard. An initial durability test was carried out as project WTE 08/009, thus this project only covered the repeat durability test.

Photographs of the samples are shown in Appendix A.

Results

The Rack Bolts were evaluated in accordance with EN 12051:2000. Fire resistance (box 4) was selected as grade 0 (no fire safety requirement). All other classifications were tested to the highest possible level.

The references below refer to the respective clauses of that standard.

5.1 Category of Use (abuse test)

The bolt was fitted to a wooden block and obstructed as specified in the standard. A load was applied to the extremities of the key. When the applied load reached 57N the key slipped in the ratchet stopping any increase in load.

After removing the obstruction, the rack bolt operated normally with an applied torque < 0.2Nm.

Box 1 Category of Use – pass grade 1.

5.2 Number of Test Cycles

Two durability tests on the Rack Bolt were carried out. The first was detailed in report WTE/08/009. The second test was carried out as part of this evaluation. This second test was performed on a sample that had previously been subjected to the corrosion evaluation.

In both instances, the sample withstood 50,000 operations. Both samples continued to function and operating efforts were normal.

Box 2 Number of Test Cycles – pass grade 4

5.3 Door Mass

EN 12051:2000 has no requirement for door mass.

Box 3 Door Mass – no requirement

5.4 Fire Safety

The Rack Bolt was not subjected to a valid fire test according to prEN 1634-1.

Box 4 Fire Resistance – grade 0

5.5 Safety in Use

5.5.1 Operation Against a Moderate Side Load

The Rack Bolt was mounted in a wooden block and a side load of 250N applied. The force on the extreme edges of the key to unlock was 29N. The allowable load (Table 2) was 50N.

5.5.2 Operation After a Heavy Side Load

The Rack Bolt was mounted in a wooden block and a side load of 1kN applied. After removal of the side load, the force on the extreme edges of the key to unlock was 7N. The allowable load (Table 2) was 50N.

Box 5 Safety in Use – grade 1

5.6 Corrosion Resistance

The Rack Bolt was subjected to a corrosion evaluation in accordance with EN 1670:2006 grade 3 (96 hours).

After the test it was noted that:

- The Rack Bolt continued to operate normally with the force on the extreme edges of the key below 7N.
- The protective lacquer had lifted from the Rack Bolt.
- There were some red corrosion stains from the steel pins.
- The brass plating was removed from the bolt to 60% area.

Box 6 Corrosion Resistance – grade 3

5.7 Security

5.7.1 Resistance to End Load

The unloaded projection of the Rack Bolt was 18.5mm.

The Rack Bolt was mounted in a wooden block and subjected to an end load in accordance with the standard. At a load of 1.7kN, the bolt housing detached from the face plate allowing the bolt to retract into the block with minimal resistance.

Pass security grade 2.

5.7.2 Resulting Projection

During the above test, until failure, the projection of the bolt was in excess of 12mm.

Pass security grade 2.

5.7.3 Resistance to Sawing

The bolt was subjected to a sawing test in accordance with the standard. The bolt was sawn through in 1 minute 38 seconds.

Pass security grade 3.

5.7.4 Resistance to Side Load

The Rack Bolt was mounted in a wooden block and subjected to a side load in accordance with the standard.

Test	Failure Load	Mode of Failure
Test 1	3.0kN	The Rack Bolt deformed sufficiently to allow the bolt to slip out of the keep.
Test 2	3.1kN	Bolt snapped.
Test 3	3.6kN	Bolt snapped.

Pass security grade 2.

Box 7 Security – grade 2

7 Marking

UAP are reminded that for compliance with the standard the following requirements apply:

The product and/or its literature, packaging etc shall be marked with the following:

a) Manufacturer's name or trademark, or other positive means of identification;

- b) Classification according to clause 6 of the standard (may also be on the product's literature, labelling or packaging);*
- c) Number and date of the European Standard;*
- d) The month and year of final assembly by the manufacturer.*

Summary

An evaluation of the UAP Rack Bolt was carried out in accordance with EN 12051:2000.

The UAP Rack Bolts complied with BS EN 12051:2000, Building Hardware – Door and Window Bolts – Requirements and Test Methods to the following classification:

Box 1	Box 2	Box 3	Box 4	Box 5	Box 6	Box 7
Category of Use	Number of Test Cycles	Door Mass	Fire Resistance	Safety in Use	Corrosion Resistance	Security
1	4	-	0	1	3	2



Report authorised by:

Dr Martin White
Director

Date: 29 August 2008

REPORT ENDS

Appendix A – Photographs



UAP Rack Bolt



Corrosion Test



Saw Test



End Load Test



Side Load Test