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Testing. Advising. Assuring.

**Title:**

The Fire Resistance  
Performance of DA-66 and  
SA-66 Locks When Fitted to  
Previously Tested Doorsets

**Report No:**

366932

**Prepared for:**

**Secure Access Technologies  
Ltd.**

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**Date: 7<sup>th</sup> June 2016**

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## Executive Summary

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<b>Objective</b>	This report provides a considered opinion regarding the fire resistance performance of timber or mineral composite based doorsets, when fitted with DA-66 and SA-66 Locks electric locks.
<b>Report Sponsor</b>	<b>Secure Access Technologies Ltd.</b>
<b>Address</b>	Pipetech House, Unit 8, Bentalls Business Park, Basildon, SS14 3BN
<b>Summary of Conclusions</b>	Should the recommendations given in this report be followed, it can be concluded that previously fire tested (or assessed by Exova Warringtonfire) timber or mineral composite based doorsets which have achieved 30 or 60 minutes integrity and insulation in accordance with BS 476: Part 22: 1987 or BS EN 1634-1, as discussed in this report, may be fitted with the proposed DA-66 and SA-66 Locks, without detracting from the overall performance of the doorset.
<b>Valid until</b>	1 <sup>st</sup> July 2021

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## Introduction

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This report presents an appraisal of the fire resistance performance of single-acting insulated timber or mineral composite based doorsets when fitted with the proposed DA-66 or SA-66 Locks. The doorset, onto which the proposed locks are to be fitted, may be of single-leaf or double-leaf configuration.

The proposed timber and mineral composite based doorsets are required to provide a fire resistance performance of 30 or 60 minutes integrity and where applicable insulation, with respect to BS 476: Part 22: 1987 or BS EN 1634-1, subject to the requirements and limitations detailed within this report.

### FTSG

The data referred to in the supporting data section has been considered for the purpose of this appraisal which has been prepared in accordance with the Fire Test Study Group Resolution No. 82: 2001.

## Assumptions

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### Supporting wall

It is assumed that the construction of the wall, which supports the proposed doorsets, will have been the subject of a separate test and the performance of the wall is such that it will not influence the performance of the doorset for the required period.

### Installation

It is assumed that the timber doorsets will be installed in a similar manner to that of the previously tested assembly by competent installers.

### Clearance gaps

Door leaf to frame clearance gaps can have a significant effect on the overall fire performance of a doorset. It is therefore assumed that the leaf to leaf and leaf to frame clearance gaps will not exceed those measured for the relevant fire tested doorset. In addition, it is assumed that the door leaves will be in the fully closed position.

### Doorset details

It is assumed that the lockset will be fitted to a doorset which has also been previously shown to be capable of providing the required fire resistance performance when tested in accordance with BS EN 1634-1 or BS 476: Part 22 in the proposed configuration i.e. single-leaf or double-leaf.

As the proposed electric locks are designed to fail unlocked, it is a requirement of this appraisal that they shall only be fitted to doorsets which are previously proven unlatched, or where the essential latching of the doorset is achieved by another means.

The proposed doorsets will include a surface mounted overhead door closer capable of returning the door leaf to the fully closed position overcoming the latch mechanism.

## Proposals

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It is proposed that previously fire tested (or assessed by Exova Warringtonfire) timber and mineral composite based doorsets which have achieved 30 minutes integrity or 60 minutes integrity and, where applicable, insulation performance, may be fitted with DA-66 or SA-66 Locks in accordance with recommendations given in this report without detracting from the overall performance of the doorset.

It is proposed that the doorsets may be of single or double-leaf configuration.

## Basic Test Evidence

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### WF Test Report No. 365045

The test referenced WF No. 365045 included two small scale single-acting, single-leaf timber based doorsets. The doorsets were referenced as 'Doorset A' and 'Doorset B' for the purpose of the test.

**Doorset A** briefly had overall nominal dimensions 1490 mm high by 720 mm wide incorporating a section of door leaf with overall dimensions 1450 mm high by 653mm wide by 44 mm thick. The door leaf was of a solid graduated density chipboard construction, with 8 mm hardwood lippings to the vertical edges and was hung within a softwood frame on two stainless steel hinges.

**Doorset B** briefly had overall nominal dimensions 1490 mm high by 720 mm wide incorporating a section of door leaf with overall dimensions 1447 mm high by 648 mm wide by 54 mm thick. The door leaf was of a solid graduated density chipboard construction, with 8 mm hardwood lippings to the vertical edges and was hung within a hardwood frame on two stainless steel hinges.

Both doorsets were fitted with two 'DA-66' electronic locks, one mortised in to the frame at the head 100 mm in from the leading edge of the doorset with the strike plate mortised into the leaf, and one mortised in to the leaf at mid-height of the leading edge of the doorset with the strike plate mortised into the frame.

Both 'DA-66' electronic locks and strike plates were protected by a 1 mm intumescent around the lock case and 2 mm intumescent behind the forends and strike plates.

Both doorsets were orientated to simulate a full doorset that would open towards the heating conditions of the test.

Examination of the test report shows that there were no instances of sustained flaming or cotton pad failure associated with both locks fitted to the 30 minute doorset (Doorset A) for a test duration of 34 minutes, after which the door was sealed off to allow the test to continue.

Additionally there were no instances of sustained flaming or cotton pad failure associated with both locks fitted to the 60 minute doorset (Doorset B) for a test duration of 69 minutes at which time the test was discontinued.

## Assessed Performance

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### **DA-66 Electronic Lock**

The test referenced WF No. 365045 is cited to demonstrate the ability of the proposed DA66 electric lock to contribute to the performance of previously tested 30 and 60 minute fully insulated timber or mineral composite based doorsets.

The test comprised two, timber based doorsets, Door. Doorset A was of a typical 30 minute construction comprising a chipboard based door leaf, 44 mm thick with hardwood lippings to its vertical edges and a softwood timber door frame. Doorset B was of a typical 60 minute construction comprising a chipboard based door leaf, 54 mm thick with hardwood lippings to its vertical edges and a hardwood timber door frame.

Both the 30 and 60 minute doorsets were fitted with two DA66 electronic locks. One lock was fitted at the head of the door with the lock body morticed into the door frame and the strike plate morticed into the leaf, which is considered to be the typical installation detail. A second lock was also fitted at mid-height on the leading edge of doors, but with the lock body morticed into the leaf and the strike plate morticed into the frame to cover the alternative installation detail.

The locksets were provided with intumescent protection in the form of 1mm thick Interdens intumescent sheet material wrapped around the lock cases, with 2 mm thick Interdens intumescent sheet material provided as bedding for the strike plates and forends.

Examination of the test observations shows that the 30 minute doorsets was blanked off after 34 minutes to allow the test to continuation of the test for the 60 minute door. However there were no instances of sustained flaming or cotton pad failure at either of the lock locations on the 30 minute door for a duration of 34 minutes.

Further examination of the test observations show that were no instances of sustained flaming or cotton pad failure at either of the lock locations on the 60 minute door for duration of 69 minutes.

Based on the performance achieved with both the 30 minute and 60 minute door assemblies, the DA66 electronic lock is positively appraised for use with previously proven timber or mineral composite based doorsets, subject to installation with the same level of intumescent protection detailed above, without detracting from the performance of the doorset.

### **SA-66 Electronic Lock**

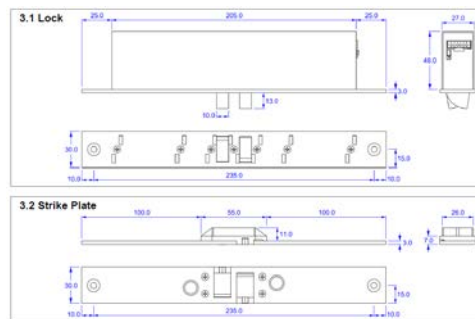
It is proposed that based on the performance demonstrated by the DA-66 an additional lock, the SA-66 may also be considered as suitable for 30 and 60 minute timber or mineral composite based doorsets applications. The critical aspects of the locks and latches in terms of their impact upon the performance of the doorset are considered to be the materials of construction, the lock case, strike and forend dimensions and the intumescent material incorporated around the lock.

In terms of the materials of construction, it is critical that materials which are combustible or have a lower melting point are not utilised since materials which melt or ignite may advance the burn through of the leaf and therefore lead to a premature integrity failure.

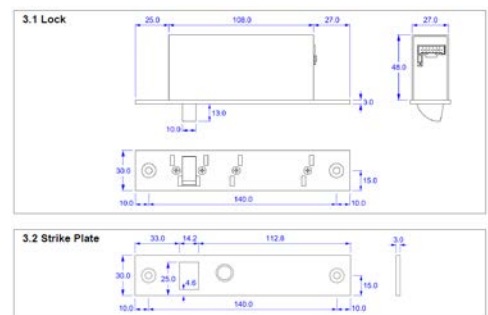
Lock cases of larger dimensions require an increased mortice in the door leaf or frame which in turn means the removal of more leaf or frame material. This may lead to an earlier burn through of the leaf or frame. Increased strike/forend dimensions may lead to the penetration of flames/hot gases at the leaf edge due to further interruption of intumescent seals and an increase in conducted heat.

In terms of the intumescent protection, it is important that this is not reduced from that tested, as the reaction of this material when subjected to the heating conditions of the test is essential in limiting the burn through of the leaf and at the leaf to frame gap at the lock position.

The proposed SA-66 is essentially the same construction in terms of materials as the DA-66 but with reduced overall case, forend and strike plate dimensions compared to the tested lock.



**DA-66**



**SA-66**

The performance of the proposed lock is therefore considered acceptable as its reduced size would be expected to be less onerous than the tested model and subject to its installation with the same level of intumescent protection as that detailed for the tested lock, this model is positively appraised.

It should be noted that this appraisal does not make any assumptions regarding the ability of the lock to provide an essential latching function to the doorset and so it is a requirement of this appraisal that the locks are only fitted to doorsets that are previously proven unlatched, when fitted with a suitable door closer, or where any required essential latching is provided by another means.

**Suitable doorsets**

As stated in this report, the doorset, in the required configuration, will be previously tested (or assessed by Exova Warringtonfire) and its performance is therefore not in doubt.

To enable the use of the DA-66 or SA-66 on a range of doorsets, it is necessary to address the available information on the proposed doorset. As this appraisal is intended to be used on a general basis and not restricted to any particular manufacturer of fire resisting doorsets, the following points are given to enable the locks to be used safely:

- The doorset shall carry valid certification or the doorset, including the door frame and associated ironmongery should have achieved 60 or 30 minutes integrity, as appropriate, when tested by a UKAS approved laboratory (or assessed by Exova Warringtonfire) to BS EN 1634-1.
- If the proposed doorset is to be used in double-leaf configuration the test or assessment evidence should be applicable to double-leaf configuration.
- The leaves of the proposed doorset shall be of a minimum thickness of 53 mm for 60 minute doorsets and 43 mm thick for 30 minute doors
- The leaves should incorporate hardwood lippings of a minimum thickness of 6 mm and minimum density 650kg/m<sup>3</sup>.
- The door frame of 60 minute doorsets shall be of hardwood and have a minimum density of 650kg/m<sup>3</sup> and for 30 minute doorsets the doorframe will have a minimum density of 450kg/m<sup>3</sup>.

The locks shall only be fitted in conjunction with the additional intumescent protection detailed in the relevant section of this report.

## Conclusions

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Timber or mineral composite based doorsets that have previously been successfully fire tested by a UKAS accredited laboratory (or assessed by Exova Warringtonfire) which have achieved 60 or 30 minutes integrity in accordance with BS 476: Part 22: 1987 or BS EN 1634-1, as discussed in this report, may be fitted with the DA-66 and SA-66 electric locks, without detracting from the overall performance of the doorset.

## Validity

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This assessment is issued on the basis of test data and information available at the time of issue. If contradictory evidence becomes available to Exova Warringtonfire the assessment will be unconditionally withdrawn and Abloy UK will be notified in writing. Similarly the assessment is invalidated if the assessed construction is subsequently tested because actual test data is deemed to take precedence over an expressed opinion. The assessment is valid initially for a period of five years i.e. until 1<sup>st</sup> July 2021, after which time it is recommended that it be returned for re-appraisal.

The appraisal is only valid provided that no other modifications are made to the tested construction other than those described in this report.



## Summary of Primary Supporting Data

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### **WF Test Report No. 365045**

The test referenced WF No. 365045 included two single-acting, single-leaf timber based doorsets. The doorsets were referenced as 'Doorset A' and 'Doorset B' for the purpose of the test.

**Doorset A** briefly had overall nominal dimensions 1490 mm high by 720 mm wide incorporating a section of door leaf with overall dimensions 1450 mm high by 653mm wide by 44 mm thick. The door leaf was of a solid graduated density chipboard construction, with 8 mm hardwood lippings to the vertical edges and was hung within a softwood frame on two stainless steel hinges.

**Doorset B** briefly had overall nominal dimensions 1490 mm high by 720 mm wide incorporating a section of door leaf with overall dimensions 1447 mm high by 648 mm wide by 54 mm thick. The door leaf was of a solid graduated density chipboard construction, with 8 mm hardwood lippings to the vertical edges and was hung within a hardwood frame on two stainless steel hinges.

Both doorsets were fitted with two 'DA-66' electronic locks, one mortised in to the frame at the head 100 mm in from the leading edge of the doorset with the strike plate mortised into the leaf, and one mortised in to the leaf at mid-height of the leading edge of the doorset with the strike plate mortised into the frame.

Both 'DA-66' electronic locks and strike plates were protected by a 1 mm intumescent around the backset of the locks and with 2 mm intumescent behind the forends and strike plates.

Both doorsets were orientated to simulate a full doorset that would open towards the heating conditions of the test.

The specimen formed the front vertical face of a 1.5 metre wide by 1.5 metre high by 2 metre deep gas fired furnace chamber, the temperature rise of which was controlled to conform to the relationship given in BS EN 1363-1:2012.

The test was discontinued after a period of 69 minutes.

Test date : 21<sup>st</sup> May 2016

Test Sponsor: Secure Access Technologies Ltd.

## Declaration by Secure Access Technologies Ltd.

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We the undersigned confirm that we have read and complied with the obligations placed on us by the UK Fire Test Study Group Resolution No. 82: 2001.

We confirm that the component or element of structure, which is the subject of this assessment, has not to our knowledge been subjected to a fire test to the Standard against which the assessment is being made.

We agree to withdraw this assessment from circulation should the component or element of structure be the subject of a fire test to the Standard against which this assessment is being made.

We are not aware of any information that could adversely affect the conclusions of this assessment.

If we subsequently become aware of any such information we agree to cease using the assessment and ask Exova Warringtonfire to withdraw the assessment.

Signed:

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For and on behalf of:

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## Signatories

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Responsible Officer

S. Gilfedder\* - Certification Engineer



Approved

A Kearns\* - Technical Manager

\* For and on behalf of Exova Warringtonfire.

Report Issued: 7<sup>th</sup> June 2016

The assessment report is not valid unless it incorporates the declaration duly signed by the applicant.

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