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Title:

The Fire Resistance Performance Of Timber/Mineral-Based Doorsets When Fitted With Sesamo Proswing S/F Automatic Door Opener

WF Assessment Report No:

399941 Issue 2

Prepared for:

Sesamo s.r.l.

str. Gabannone 8/10
15030 - Terruggia (AL)
Italy

Date:

4th September 2018

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Executive Summary

Objective

This report presents an appraisal of the fire resistance performance of timber/mineral-based door assemblies, when fitted with Sesamo Proswing S/F automatic door opener.

Report Sponsor

Sesamo s.r.l.

Address

str. Gabannone 8/10
15030 - Terruggia (AL)
Italy

Summary of Conclusions

Should the recommendations given in this report be followed, it can be concluded that single-acting timber/mineral-based door assemblies, which have previously been successfully fire tested by a UKAS accredited laboratory (or assessed by Exova Warringtonfire, BM TRADA or Chiltern International Fire), to have achieved up to 120 minutes integrity and insulation performance in accordance with BS EN 1634-1, as discussed in this report, may be fitted with Sesamo Proswing S/F automatic door opener, without detracting from the overall achieved performance of the doorset.

This assessment represents our opinion as to the performance likely to be demonstrated on a test in accordance with EN1634-1, on the basis of the evidence referred to evidence referred to herein. We express no opinion as to whether that evidence, and/or this assessment, would be regarded by any Building Control authority as sufficient for that or any other purpose. This assessment is provided to the client for its own purposes and we cannot opine on whether it will be accepted by Building Control authorities or any other third parties for any purpose.

Valid until

7th September 2023

Introduction

This report presents an appraisal of the fire resistance performance of timber/mineral-based door assemblies, when fitted with Sesamo Proswing S/F automatic door opener.

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

It is assumed that the units will be fitted to doorsets which have been previously shown to be capable of providing the required fire resistance performance when tested in accordance with EN 1634-1, in the proposed configuration i.e. single-leaf or double-leaf, single-action, double-action.

It is also assumed that the doorsets will fully comply with any certification scope or assessed modifications, apart from the modifications specified in this report.

Supporting wall

It is also 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 or operator for the required period.

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/assessed doorset. In addition, it is assumed that the door leaves will be in the closed position.

Closer Installation

Bolt-through fixings shall not be used.

Where the units are fitted to door leaves or frames that are manufactured from mineral-based materials, or low-density cellulosic- based material, the door assembly shall have previously been shown capable of accommodating the installation of units at the head of the doorset, without detriment to the door assembly's performance.

Proposals

This report presents an appraisal of the fire resistance performance of timber/mineral-based door assemblies, when fitted with Sesamo Proswing S/F automatic door opener.

The proposed doorsets fitted with Sesamo Proswing S/F automatic door opener, are required to provide a fire resistance performance of up to 120 minutes integrity for insulated timber/mineral-based door assemblies, with respect to EN 1634-1.

Basic Test Evidence

WF Report No. 400107

The test report referenced WFRC No. 400107 and described briefly in the supporting data section of this report, relates to the fire resistance performance of a single-acting, single-leaf doorset, incorporating various items of hardware tested in accordance with BS EN 1634-1: 2014.

The doorset was a typical 30 minute timber-based single-acting, single-leaf doorset which was unlatched, incorporated the Sesamo Proswing S/F automatic door opener which was fixed to the frame head on the exposed side of the specimens in slide arm configuration.

The test demonstrated the ability of the doorsets to provide 34 minutes integrity performance.

Assessed Performance

Manufacturing location

Full details of the manufacturing plant for the unit is retained on file by EXOVA Warringtonfire.

General

Once the power has been disengaged/cut, the unit acts as a mechanical self-closing device and the automatic opening function becomes redundant.

The main function of a surface mounted self-closing devices, when used on unlatched timber/mineral-based doorsets subjected to fire resistance testing is to maintain the door in the fully closed position up until the intumescent in the leaf to frame clearance gaps has been given sufficient time to react. The door closer is not intended to remain in position for the test duration.

After a period between 10 and 15 minutes of the test, the intumescent seals will have reacted, thereby providing friction between the leaf and frame and inhibiting the tendency of the door leaf to swing open. It is therefore essential that the closer remains in position and operable up until this point.

Aluminium bodied surface mounted units, typically be expected to become detached under test conditions after 10-30 minutes, as the aluminium reaches its melting point. Within this time the force exerted by aluminium units also diminishes on a roughly lineal basis.

Whilst in place the unit does offer some resistance to thermally induced distortion at the top edge of the door leaf.

It is proposed that Sesamo Proswing S/F automatic door opener provide a fire resistance performance of up to 120 minutes integrity and insulation with insulated timber/mineral-based door assemblies, with respect to EN 1634-1.

The Sesamo Proswing S/F automatic door opener was incorporated on the doorset within the test referenced WF report No. 400107. Observations contained within the test report indicate that the key elements of the unit remained in position for a period of at least 20 minutes. During this period there was no visible tendency of the door leaf to open. It is therefore considered that the closer performed effectively during the test and positively contributed to the 34 minutes performance achieved.

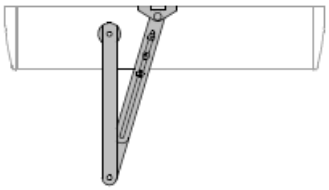
It is also considered that should the Sesamo Proswing S/F automatic door opener be fitted to timber/ mineral based doorsets designed to provide up to 120 minutes fire resistance, they would remain in place for a similar period, enabling the intumescent seals to effectively react.

The use of Sesamo Proswing S/F automatic door opener is positively appraised for use on timber/mineral-based door assemblies, of up to 120 minutes integrity and insulation with respect to EN 1634-1.

Arm configuration

The tested unit was fitted to the frame head on the exposed side of the doorset in slide arm configuration (Pull Arm), incorporating steel arm and aluminium guide rail fitted to the face of the door leaf, such that the door leaf opened towards the heating conditions of the test. It is proposed that the units be additionally approved in a projecting arm application (Push Arm). The essential components of the link-arms are of steel.

Pull Arm (tested)



Push Arm

The arm are manufactured using the same materials, and are predominately of steel construction and therefore are expected to perform in a similar manner under fire test conditions with regards melting/flaming.

The client has identified that Sesamo Proswing S/F automatic door opener in this tested slide arm (Pull Arm) configuration applies a reduced closing force to the leaf relative to the projecting arm (push arm), causing opening of the doorset and subsequent failure to be more likely. Therefore since units in projecting arm (push arm) will apply a greater closing force to the door leaves relative to the tested configuration, it is considered that this would have slightly positive effect on the performance of the doorset under standard test conditions and the use of the proposed units in projecting arm (push arm) configuration is therefore positively appraised.

Modifications

The tested Sesamo Proswing S/F automatic door opener incorporated an aluminium cover with plastic end caps. It is proposed that an alternative design of aluminium cover with steel end caps be offered.

It is the case that the covers and end caps are largely sacrificial, and it can be seen from the observation with WF Report No. 400107 that that the cover had melted away at 20 minutes, however the body and arm were still in place at this time.

Although not specifically recorded it can be assumed that the plastic end caps would have been consumed much earlier within the test, consequently the change to steel end plates would not have a detrimental effect, as they would remain in place until the cover itself had been lost.

The use of alternative covers and steel end caps is therefore positively appraised.

Alternative doorsets

To enable the use of the door units 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 units to be used safely:

a) For timber doorsets applications, the doorset, including the door frame and associated ironmongery should have achieved up to 120 minutes integrity and insulation performance, when tested by a UKAS approved laboratory (or assessed by Exova Warringtonfire, BM TRADA or Chiltern International Fire) to EN 1634-1.

b) Where the units are fitted to door leaves or frames that are manufactured from mineral-based materials, or low-density cellulosic-based material, the door assembly shall have previously been shown capable of accommodating the installation of units at the head of the doorset, without detriment to the door assembly's performance.

c) If the proposed doorset is to be used in double-leaf configurations, the test or assessment evidence should be applicable to double-leaf configurations.

d) Likewise, if the proposed doorset is to be used in unlatched configurations then the available test evidence should be applicable to unlatched doorsets.

e) The size and weight of the door leaf of the proposed doorset should be compatible with the power rating of the unit.

The fitting of the Sesamo Proswing S/F automatic door openers onto alternative doorsets, on the basis of compliance with the conditions given above, is therefore considered to be acceptable.

Conclusions

Should the recommendations given in this report be followed, it can be concluded that single-acting timber/mineral-based door assemblies, which have previously been successfully fire tested by a UKAS accredited laboratory (or assessed by Exova Warringtonfire, BM TRADA or Chiltern International Fire), to have achieved up to 120 minutes integrity and insulation performance in accordance with BS EN 1634-1, as discussed in this report, may be fitted with Sesamo Proswing S/F automatic door opener, without detracting from the overall achieved performance of the doorset.

Validity

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 Sesamo s.r.l. 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 7th September 2023, 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.

This assessment represents our opinion as to the performance likely to be demonstrated on a test in accordance with EN1634-1, on the basis of the evidence referred to evidence referred to herein. We express no opinion as to whether that evidence, and/or this assessment, would be regarded by any Building Control authority as sufficient for that or any other purpose. This assessment is provided to the client for its own purposes and we cannot opine on whether it will be accepted by Building Control authorities or any other third parties for any purpose.

Summary of Primary Supporting Data

WF Report No. 400107

The test report referenced WF No. 400107 describes the fire resistance performance of a single-acting, single-leaf doorset, incorporating various items of hardware tested in accordance with BS EN 1634-1: 2014.

The doorset had overall nominal dimensions 2180 mm high by 995 mm wide incorporating a leaf with overall dimensions of 2040 mm high by 936 mm 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, opening towards the heating conditions of the test. A 'Sesamo Proswing S/F' was fixed to the exposed face of the doorset. The body of the operator was fixed to top horizontal frame section with the arm and slide channel fixed to the leaf. The doorset was unlatched for the duration of the test.

The hardware was not independently sampled.

The doorset achieved the following results:

Test Results:		**Doorset A**
Integrity	**Sustained flaming**	34 minutes
	Gap gauge	35 minutes*
	Cotton Pad	34 minutes
Insulation		34 minutes

*The test was discontinued after 35 minutes.

Test date : 22nd June2018

Test Sponsor : Sesamo s.r.l.

Declaration by Sesamo s.r.l.

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:

Aldo Amerio

For and on behalf of:

SESAMO s.r.l.

Signatories

Responsible Officer

R Anning* - Principal Certification Engineer

Approved

A Kearns* - Technical Manager

* For and on behalf of Exova Warringtonfire.

Report Issued: 4th September 2018

Issue 2: Minor corrections (5th November 2018)

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