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## Title

The Fire Resistance Performance Of Timber-based Doorsets When Fitted With BFT VISTA SW SXL Operator if they were to be tested in accordance with EN 1634-1:2014+A1:2018.

## WF Assessment Report No.:

**414769 issue 2**

## Original Issue Date:

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## Prepared for:

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# Signatories and Revision History

| Issue No. | Date | FM No. | Report scope and Signatures |
|---|---|---|---|
| 1 | 10/06/2019 | 414769 | Initial report issued to BFT S.P.A. |
| 2 | 16/09/2024 | 544603 | 5-year review/revalidation |

| Assessor | Reviewer |
|---|---|
| Name: ***R. Anning** | Name: ***M. Tolan** |
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*For and on behalf of Warringtonfire

# Executive summary

This report presents an assessment of the fire resistance performance of the BFT VISTA SW SXL door operator as fire tested and described in Appendix A when modified as detailed in Section 3 of this report.

The proposed modification includes an evaluation as to their use generally on insulated timber doorsets of various fire resistance performance, and alternative arm configurations.

This assessment report is subject to the requirements and limitations described Sections 2 and 8.

The assessment in Section 5 of this report found that if BFT VISTA SW SXL door operator as tested and described in Appendix A had been modified as proposed, it is expected that it would have been capable of up to 120minutes of integrity and insulation with timber-based doorsets if tested in a similar manner to EN 1634-1:2014+A1:2018.

This report represents our opinion as to the performance likely to be demonstrated on a test in accordance with the test standard specified above, on the basis of the test evidence referred to in this report. We express no opinion as to whether that evidence, and/or this report would be regarded by any Building Control authorities or any other third parties as sufficient for that or any other purpose.

**Contents**

# 1. Introduction

This report presents an assessment of the fire resistance performance of the BFT VISTA SW SXL door operator as fire tested and described in the Appendix and when modified as detailed in Section 3 of this report.

# 2. Assessment framework

An assessment is an opinion of the likely performance of a component or element of structure if it was subjected to a standard fire test.

This assessment report has been carried out in accordance with the Passive Fire Protection Forum (PFPF) 'Guide to Undertaking Technical Assessments of the Fire Performance of Construction Products Based on Fire Test Evidence - 2021' and has been written in accordance with the general principles outlined in BS EN 15725: 2023; *Extended application reports on the fire performance of construction products and building elements, as applicable.*

This scope document cannot be used as supporting documentation for either a CE or UKCA marking application for doorsets, nor can the conclusion be used to establish a formal classification against EN13501-2).

The scope presented in this report relates to the behaviour of the element under the particular conditions of the test; they are not intended to be the sole criterion for considering the potential fire hazard of the door assembly in use.

This report has been prepared and checked by product assessors with the necessary competence, who subscribe to the principles outlined in the Passive Fire Protection Forum (PFPF) 'Guide to Undertaking Technical Assessments of the Fire Performance of Construction Products Based on Fire Test Evidence - 2021'. The aim of the PFPF guidelines is to give confidence to end-users that assessments that exist in the UK are of a satisfactory standard to be used for building control and other purposes.

This report uses established empirical methods of extrapolation and experience of fire testing similar elements, in order to extend the scope of application by determining the limits for the designs based on the tested constructions and performances obtained. The scope is an evaluation of the potential fire resistance performance, if the variations specified herein were to be tested in accordance with test standard specified.

This report has been written using appropriate test evidence generated at UKAS accredited laboratories, to the relevant test standard. The supporting test evidence has been deemed appropriate to support the stated design and is summarised in Section 3 and Appendix A.

# 3. Description of the specimen and proposed modifications

## Description of the products

This report presents an appraisal of the fire resistance performance of timber-based door assemblies, when fitted with a surface mounted BFT VISTA SW SXL low energy swing door operator.

## Summary of the proposed

## modifications/designs

**Table 1 Summary of proposed modifications**

| Item | Proposed modifications |
|---|---|
| 1 | This report presents an assessment of the fire resistance performance of the BFT VISTA SW SXL door operator as fire tested and described in Appendix A of this report.<br>The proposed modification includes an evaluation as to their use generally on insulated timber doorsets of various fire resistance performance, and alternative arm configurations. |

# 4. General requirements and 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.
- 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.
- 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.
- 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.
- Bolt-through fixings shall not be used.
- Where the units are fitted to door leaves or frames that are manufactured from 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.
- All door hardware is subject to the acceptance by the chosen door assembly supplier's tested, assessed, or certificated scope, which generally identifies the types of hardware approved, the required specification/design based on the key materials/ maximum size. On this basis, approval should be sought from the specific door assembly supplier to ensure compliance based on this assessed/certificated scope.
- EN1634-1 was issued originally in 2000, with amended versions issued in 2008, 2014 and 2018. The differences between each version are mainly procedural and are not considered to have a practical impact on the performance of the samples under test. On this basis this evaluation is consider applicable to all versions of EN1634-1 issued prior to the issue of this assessment.
- It is assumed that the end user will have a full understanding of the tested specification as defined in the relevant test report(s) summarised in Appendix A.

- If a design variation or extension to scope is not explicitly detailed within the assessment it should not be assumed to be acceptable by omission.

# 5. Assessment of proposed modifications

## 5.1 BFT VISTA SW SXL swing door operator

### 5.1.1 Proposal

This report presents an appraisal of the fire resistance performance of timber-based door assemblies, when fitted with BFT VISTA SW SXL Operator.

Additionally the report considers alternative arm designs, covers and end caps.

The proposed doorsets fitted with BFT VISTA SW SXL Operator, are required to provide a fire resistance performance of up to 120 minutes integrity for insulated timber-based door assemblies, with respect to EN 1634-1.

All other aspects of the door operator shall remain as tested.

### 5.1.2 Discussions

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

An appraisal of the hardware variants detailed in this report is based upon product information supplied by the hardware manufacturer, which is retained in the confidential file relating to this report. Warringtonfire have not inspected the devices being appraised and cannot be held responsible for the accuracy of the information provided.

General operator performance

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-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 BFT VISTA SW SXL Operator provide a fire resistance performance of up to 120 minutes integrity and insulation with insulated timber-based door assemblies, with respect to EN 1634-1.

The equivalent of the BFT VISTA SW SXL Operator 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 BFT VISTA SW SXL Operator be fitted to timber-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 BFT VISTA SW SXL Operator is positively appraised for use on timber-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 (operator body remains fitted to the frame head). 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 arms 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 BFT VISTA SW SXL Operator 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.

Alternative covers and end caps

The tested Operator 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.

## 5.2 Proposed 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 to EN 1634-1 by a UKAS approved laboratory, or from a laboratory that has been accredited by a national accreditation body that is a signatory of the International Laboratories Accreditation Co-operation (ILAC) to EN 1634-1.

b) Where the units are fitted to door leaves or frames that are manufactured from 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) The doorset, onto which the proposed hardware is to be fitted, may be of single-leaf or double-leaf configuration, on the basis the scope is supported by the test data/Field of Application for the doorset proposed.

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.

f) All door hardware is subject to the acceptance by the chosen door assembly supplier's tested, assessed or certificated scope, which generally identifies the types of hardware approved, the required specification/design based on the key materials/ maximum size (e.g. blade size, knuckle diameter, fixing specification, etc.), and the application of any additional intumescent protection. On this basis approval should be sought from the specific door assembly supplier to ensure compliance based on this assessed/certificated scope.

# 6. Conclusions

Should the recommendations given in this report be followed, it can be concluded that single-acting, timber doorsets, which have previously been successfully fire tested to EN 1634- by a UKAS approved laboratory, or a laboratory accredited to IS/IEC 17025 (under International Laboratory accreditation Cooperation (ILAC) membership), and have achieved up to 120 minutes, as discussed in this report, may be fitted with BFT VISTA SW SXL Operator, without detracting from the overall achieved performance of the doorset..

# 7. Declaration

We the undersigned confirm that we have read and comply with obligations placed on us by the Passive Fire Protection Forum (PFPF) Guide to undertaking technical assessments and engineering evaluations based on fire test evidence 2021 Industry Standard Procedure

We confirm that any changes to a component or element of structure which are the subject of this assessment have not to our knowledge been tested to the standard against which this assessment has been made.

We agree to withdraw this assessment from circulation should the component or element of structure, or any of its component parts be the subject of a failed fire resistance test to the standard against which this assessment is being made.

We understand that this assessment is based on test evidence and will be withdrawn should evidence become available that causes the conclusion to be questioned. In that case, we accept that new test evidence may be required.

We are not aware of any information that could affect the conclusions of this assessment. If we subsequently become aware of any such information, we agree to ask the assessing authority to withdraw the assessment.

(in accordance with the principles of FTSG Resolution No. 82: 2001)

Signed: Firmato da: Renzo Renzi D35458D912084FD...

Name: Renzo Renzi

Position: Projects & Development Director

Date: 16th September 2024

For and on behalf of: **BFT SPA**

# 8. Limitations

This assessment report:

- Does not provide an endorsement by Warringtonfire of actual products supplied.
- Has been prepared based on information provided by the Applicant. Warringtonfire has not verified the accuracy or completeness of that information and will not be responsible for any errors or omissions that might be incorporated into this report as a result.
- Any figures included in this report are provided for illustrative purposes only and may not fully reflect the actual scope being assessed. Warringtonfire cannot guarantee the accuracy of the drawings against the scope being assessed. The scope of this report is limited to assessments of the modifications to the tested systems as described in Section 3.
- This report addresses itself solely to the elements and subjects discussed and do not cover any other criteria or modifications. All other details not specifically referred to should remain as tested or assessed.
- This report is issued on the basis of test data and information to hand at the time of issue. If contradictory evidence becomes available to Warringtonfire, the assessment will be unconditionally withdrawn, and the applicant will be notified in writing. Similarly, the assessment should be re-evaluated if the assessed construction is subsequently tested since actual test data is deemed to take precedence.
- This assessment has been carried out in accordance with Fire Test Study Group Resolution No. 82: 2001.
- Opinions and interpretation expressed herein are outside the scope of UKAS accreditation.
- This assessment report relates only to those aspects of design, materials and construction that influence the performance of the element(s) under fire resistance test conditions that are stipulated in the standard this assessment concludes to. It does not purport to be a complete specification ensuring fitness for purpose and long-term serviceability. It is the responsibility of the client to ensure that the element conforms to recognised good practice in all other respects and that, with the incorporation of the guidance given in this assessment, the element is suitable for its intended purpose.
- This report represents our opinion as to the performance likely to be demonstrated on a test in accordance with the standard to which this assessment concludes, on the basis of the test evidence referred to in this report. We express no opinion as to whether that evidence, and/or this report would be regarded by any Building Control authorities or any other third parties as sufficient for that or any other purpose.
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- Previous versions of the report(s), if applicable, are withdrawn from the date of the up-issued assessment report with immediate effect. That means that they may no longer be relied upon in support of any products being placed on the market (or for the stated project/address where applicable) from the issue date stated on the front cover of this report. The withdrawal of an assessment report does not affect any reliance placed on the report up to the issue date stated on the front cover of this assessment; however, going forward, the up-issued report must be referenced in any literature or product specifications in place of the previous versions of the assessment.

# 9. Validity

This assessment report is not valid unless signed by all signatories identified within the Signatories and Revision History section of this report.

This assessment report is not valid unless it incorporates the declaration given in Section 7 duly signed by the applicant.

The assessment is valid initially for a period of five years after which time it is recommended that it be submitted to the assessing authority for re-evaluation.

# Appendix A
# Summary of supporting data

The summaries in this section are for information only. It is assumed that the end user will have a full understanding of the tested specification as defined in the relevant test report.

The test evidence used in the evaluation is over 5 years old. In accordance with industry guidance, the evidence has been reviewed to consider its suitability. Warringtonfire are satisfied that there have been no significant revisions to the relevant test standards which would render the evidence irrelevant.

## A.1 Primary Evidence

| **Test Report Reference WF 400107 Issue 2** | |
|---|---|
| Report sponsor | Confidential – the sponsor has given permission for the use of this test evidence in support of this assessment report. |
| Test laboratory | Warringtonfire, Warrington. |
| Test date | 22nd June 2018 |
| Test standard | BS EN 1634-1:2014 |
| Specimen summary | 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.<br>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.<br>The equivalent of the BFT VISTA SW SXL Operator 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.<br>The hardware was not independently sampled. |
| Test results | Integrity: 34 minutes<br>Insulation: 34 minutes |