

**Title:**

The Fire Resistance  
Performance of Previously  
Tested Sliding Pocket Timber  
Door Assemblies When  
Incorporating Various  
Modifications

**WF Assessment Report  
No:  
407926**

**Prepared for:**

**P C Henderson Limited**

Durham Road  
Bowburn  
Durham  
DH6 5NG

**Date:**

**13<sup>th</sup> December 2018**

**TABLE OF CONTENTS**

<b>SECTION</b>	<b>PAGE</b>
Executive Summary .....	3
Introduction.....	4
Assumptions.....	4
Proposals .....	5
Basic Test Evidence.....	6
Assessed Performance .....	7
Conclusions .....	11
Validity .....	11
Summary of Primary Supporting Data .....	12
Declaration by PC Henderson Ltd .....	14
Signatories .....	15

## Executive Summary

---

### Objective

This report presents an appraisal of the expected fire resistance performance of FD30 or FD60 timber based sliding pocket doorsets, similar to those previously successfully tested under the references WF399097 and WF399104, but incorporating modifications to the closing mechanism and also alternative options for the door seals and floor guides.

The doorsets are required to provide 30 or 60 minutes integrity and insulation performance (depending on design) should the doorsets be tested in accordance with the relevant Clause of BS 476: Part 22: 1987.

### Report Sponsor

**P C Henderson Limited**

### Address

Durham Road  
Bowburn  
Durham  
DH6 5NG

### Summary of Conclusions

Previously tested timber based sliding pocket doorsets, as tested under the references WF399097 and WF399104, when incorporating the modifications/options discussed in this report, would be expected to be capable of satisfying the integrity and insulation criteria for a period of 30 or 60 minutes (depending on design), if subjected to a test in accordance with BS 476: Part 22: 1987.

This assessment represents our opinion as to the performance likely to be demonstrated on a test in accordance with BS 476: Part 22: 1987, on the basis of the evidence referred to above. 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

1<sup>st</sup> January 2024

**This report may only be reproduced in full. Extracts or abridgements of reports shall not be published without permission of Warringtonfire.**

## Introduction

---

This report presents an appraisal of the expected fire resistance performance of FD30 or FD60 timber based sliding pocket doorsets, similar to those previously successfully tested under the references WF399097 and WF399104, but incorporating modifications to the closing mechanism and also alternative options for the door seals and floor guides.

The doorsets are required to provide 30 or 60 minutes integrity and insulation performance (depending on design) should the doorsets be tested in accordance with the relevant Clause of BS 476: Part 22: 1987.

### 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 construction of the door leaves and the materials used in their construction will, unless specifically detailed in this report, be identical to those of the tested assemblies.

It is also assumed that the doorsets will be installed by competent installers in a similar manner to that used when installing the fire tested assembly.

The sliding doors will be mounted into timber stud partitioning systems. This report does not consider the installation of the doorset assemblies when mounted to steel stud partitioning systems.

The conclusions offered within this report regarding the expected fire resistance of the sliding door assemblies are based on the fact that the doors will be in the fully closed position and that the power/weight of any closing device is sufficient to overcome the frictional forces of any seals fitted to the door such that the leading edge of the leaf is in contact with the abutting frame section.

## Proposals

---

It is proposed that 30 and 60 minute timber sliding pocket doorset assemblies, previously tested in accordance with BS 476: Part 22: 1987 under the references WF399097 and WF399104 may incorporate the following design modifications:

- The tested 30 minute and 60 minute doors were fitted with 'SLIDE-close' units. These units comprise a plastic and aluminium pneumatic tube (730 mm by 21 mm diameter) which provides closing function. It is proposed that the 'SLIDE-close' mechanism is replaced by a steel counterbalance weight. Further information is provided in later sections of this report.
- The tested doorsets were fitted with 'Deventer Delta' smoke seals – self adhesive fitted to the timber door frame such that the leading edge of the leaf closed against the seals. It is proposed that these seals may be replaced with 'Firestop Acoustic Corner' seals. Further information is provided in later sections of this report.
- It is further proposed that the door edge seal described above may be omitted from the design
- The 60 minute doorset tested under the reference WF399097 included plastic rotating door guides, 52 mm diameter with 2no. 22 mm blades. The 30 minute doorset tested under the reference WF399104 incorporated plastic door guides, 13 mm with 5 mm blades. It is proposed that the floor guide designs as tested may be used on both 30 and 60 minute doorset variants. Further information is provided in later sections of this report.

Full details and specification of the pocket doors mechanism and framing requirements are given within the test reports referenced WF399097 and WF399104 and this report should be read in conjunction with these test reports.

## Basic Test Evidence

---

### WF399097

A fire test to determine the fire resistance performance of an insulated sliding doorset when tested in accordance with BS 476: Part 22: 1987, Clause 6.

The doorset comprised a 54 mm thick graduated density chipboard leaf with 8 mm thick hardwood lippings to the vertical edges. The leaf had overall dimensions of 2315 mm high by 930 mm wide. The leaf was housed in an aluminium pocket frame with a softwood liner kit. The pocket frame incorporated two pairs of aluminium uprights with noggins and tie backs. The aluminium framing was formed from 55 x 20 mm extruded aluminium sections. The leaf was hung off an aluminium header track on a steel hanger with silicone rubber wheels. The threshold of the leaf ran on a plastic floor guide with the blade running centrally along a channel routed in the base of the leaf. The softwood liner encased the head and formed the uprights / jambs. The door assembly was housed in a timber frame partition, clad on both faces with two layers of 12.5 mm Fireline plasterboard. The doorset was held closed by an internal self-closing mechanism for the test duration.

The doorset achieved the following performance:

- Integrity: 66 minutes
- Insulation: 66 minutes

The test was discontinued after a period of 66 minutes.

### WF399104

A fire test to determine the fire resistance performance of an insulated sliding doorset when tested in accordance with BS 476: Part 22: 1987, Clause 6.

The doorset comprised a 44 mm thick graduated density chipboard leaf with 8 mm thick hardwood lippings to the vertical edges. The leaf had overall dimensions of 2315 mm high by 930 mm wide. The leaf was housed in an aluminium pocket frame with a softwood liner kit. The pocket frame incorporated two pairs of aluminium uprights with noggins and tie backs. The aluminium framing was formed from 55 x 20 mm extruded aluminium sections. The leaf was hung off an aluminium header track on a steel hanger with silicone rubber wheels. The threshold of the leaf ran on a plastic floor guide with the blade running centrally along a channel routed in the base of the leaf. The softwood liner encased the head and formed the uprights / jambs. The door assembly was housed in a timber frame partition, clad on both faces with two layers of 12.5 mm Fireline plasterboard. The doorset was held closed by an internal self-closing mechanism for the test duration.

The doorset achieved the following performance:

Integrity: 45 minutes  
Insulation: 45 minutes

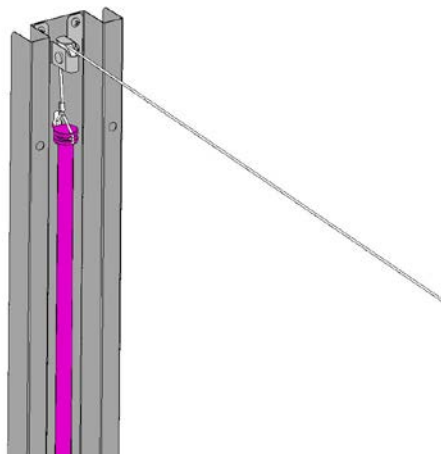
The test was discontinued after a period of 45 minutes.

## Assessed Performance

### Proposed Use of Counterbalance Weight as the Closing Mechanism

The tested 30 minute and 60 minute doors were fitted with 'SLIDE-close' units. These units comprise a plastic and aluminium pneumatic tube (730 mm by 21 mm diameter) which provides closing function. It is proposed that the 'SLIDE-close' mechanism is replaced by a steel counterbalance weight. Further information is provided in later sections of this report.

Details of the tested 'Slide-close' mechanism are detailed below:



The proposed closing mechanism will be a simple weighted counterbalance as detailed below:



The main principles of the sliding door assembly is that the leading edge of the leaf locates within a frame pocket with the head and trailing edges positioned between timber door framing sections which are protected with intumescent seals. The intumescent door leaf edge protection at these positions is orientated such that they act upon the face of the door leaf and seal the gap between the door face and the framing components. Their intumescent 'swelling' action does not induce any forces on the door which may cause it to open – in fact their reaction will effectively 'clamp' the door leaf in position. Providing the leaf is in the fully closed position at the commencement of any fire exposure conditions, it is unlikely that the door will 'open'.

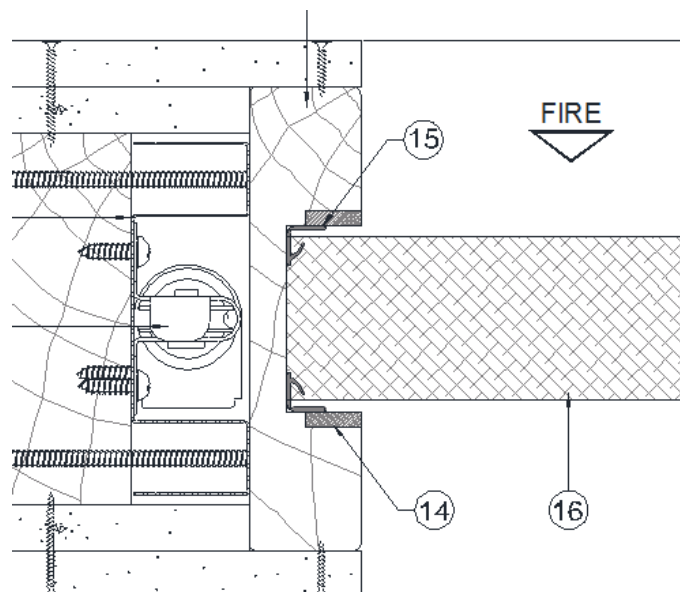
The purpose of any closing mechanism is to ensure the door slides into the fully closed position, overcoming any frictional forces where the door closes against the flexible seals. Providing the counterbalance is weighted such that the door closes fully, its use is considered acceptable. As the weight is of an all steel construction compare the plastic/aluminium 'SLIDE-close' mechanism as tested, there is a benefit in the design in that combustible components are removed from the design – in essence this could be seen as a design benefit.

Based on the above, the proposed used of the counterbalance weight closing mechanism in lieu of the system tested is positively appraised.

#### Use of Alternative Seals

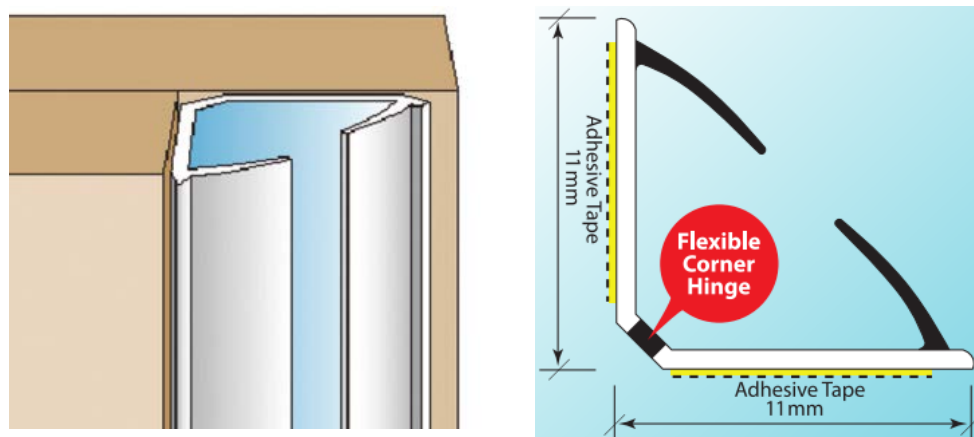
The tested doorsets were fitted with 'Deventer Delta' smoke seals – self adhesive fitted to the timber door frame such that the leading edge of the leaf closed against the seals. It is proposed that these seals may be replaced with 'Firestop Acoustic Corner' seals.

The tested seal arrangements are detailed below (similar seal spec for both 30 and 60 minute doorsets):





The proposed 'Firestop Acoustic Corner' seal is detailed below:



It has been stated that the proposed seal has been fire tested to BS 476: Part 22: 1987.

The positioning of the tested and proposed seals are both such that they sit behind the intumescent seal fitted into the door frame. The risk of ignition of the seal is therefore unlikely due to the protection offered by the intumescent seal and also due to the fully insulating nature of the timber leaf/timber frame. Providing the closing method utilised (either the tested 'SLIDE-close' mechanism or the assessed counterbalance method) is sufficiently powered to ensure the door leaf closes fully, counteracting any frictional forces imposed by the seals, no deleterious effects on fire performance is envisaged and as such their use is positively appraised.

#### Omission of Seals

A further proposal involves the omission of the seals for the doorset designs (not this applies only to the 'acoustic' seals and not the intumescent seals which MUST be retained).

As no smoke performance is being considered or claimed for the doorset designs, and the fact that the fitment of the seals does not actually enhance the fire resistance performance of the doorsets, the omission of the seals is positively appraised.

#### Floor Guide Options

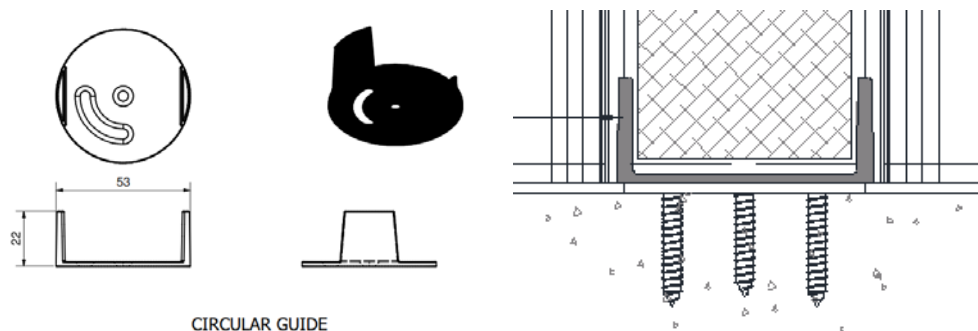
The 60 minute doorset tested under the reference WF399097 included plastic rotating 'circular' door guides, 52 mm diameter with 2no. 22 mm blades.

The 30 minute doorset tested under the reference WF399104 incorporated '102N' plastic door guides, 13 mm with 5 mm blades.

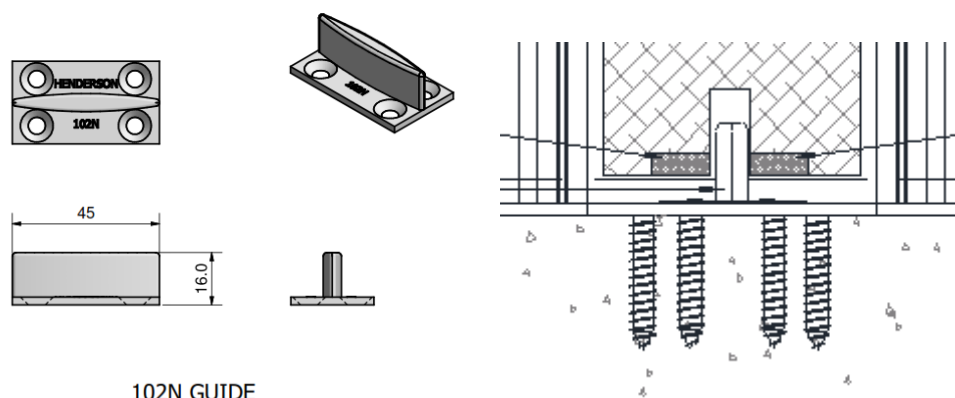
It is proposed that the floor guide designs as tested may be used on both 30 and 60 minute doorset variants.

Details of the floor guides as tested are detailed below:

**As tested in  
WF399097 – 60  
minutes**



**As tested in  
WF399104 – 30  
minutes**



The design of the circular guides mean that no leaf material is removed when they are utilised. As such, and also based on the fact that the threshold is under negative pressure conditions (i.e. any flammables will be drawn into the furnace chamber which minimises the risk of unexposed face flaming), the use of this guide on both the 60 minute doorsets as tested and also the 30 minutes doors is considered acceptable and is positively appraised.

The '102N' guide does involve a groove to be provided within the threshold of the door leaf. As the guide has been successfully tested on the 30 minute doorset, automatic approval is given. For 60 minute doorset applications, there are mitigating factors that allow the use of this guide design:

The door leaf on which the '102N' was successfully tested was 44 mm thick, whereas the 60 minute door will be 54 mm thick. Additional timber protection is therefore offered around the position of the guides. Although a longer fire resistance period is required, the fact that the 44 mm thick doorset achieved a 45 minutes performance provides some confidence in the opinion that failure at the threshold on a thicker door is unlikely.

Intumescent protection (10mm x 4 mm graphite based strips) is provided within the bottom edge of the leaf, either side of the groove – i.e. 2 off 10x4mm seals are fitted in the bottom edge of the door. This level of intumescent is expected to more than compensate for the removal of a relatively small section of leaf material, and it is expected that such protection will limit charring at the threshold and subsequently protect against loss of impermeability.

The threshold position is in the negative pressure zone. This means that cold air will be sucked under the door from the unexposed side to the furnace exposed side of the door. This will limit the thermal dose the threshold area experiences and will draw any flaming of door or guide components into the furnace chamber, thus minimising the risk of flaming on the unexposed face of the doorset.

Based on the above, a positive appraisal for the use of either of the guide designs on both 30 and 60 minute doorset designs.

## Conclusions

---

Previously tested timber based sliding pocket doorsets, as tested under the references WF399097 and WF399104, when incorporating the modifications/options discussed in this report, would be expected to be capable of satisfying the integrity and insulation (where applicable) criteria for a period of 30 or 60 minutes (depending on design), if subjected to a test in accordance with BS 476: Part 22: 1987.

This assessment represents our opinion as to the performance likely to be demonstrated on a test in accordance with BS 476: Part 22: 1987, on the basis of the evidence referred to above. 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.

## 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 Warringtonfire the assessment will be unconditionally withdrawn and **P C Henderson Limited** 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> January 2024, 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

---

### WF399097

A fire test to determine the fire resistance performance of an insulated sliding doorset when tested in accordance with BS 476: Part 22: 1987, Clause 6.

The doorset comprised a 54 mm thick graduated density chipboard leaf with 8 mm thick hardwood lippings to the vertical edges. The leaf had overall dimensions of 2315 mm high by 930 mm wide. The leaf was housed in an aluminium pocket frame with a softwood liner kit. The pocket frame incorporated two pairs of aluminium uprights with noggins and tie backs. The aluminium framing was formed from 55 x 20 mm extruded aluminium sections. The leaf was hung off an aluminium header track on a steel hanger with silicone rubber wheels. The threshold of the leaf ran on a plastic floor guide with the blade running centrally along a channel routed in the base of the leaf. The softwood liner encased the head and formed the uprights / jambs. The door assembly was housed in a timber frame partition, clad on both faces with two layers of 12.5 mm Fireline plasterboard. The doorset was held closed by an internal self-closing mechanism for the test duration.

The doorset achieved the following performance:

- Integrity: 66 minutes
- Insulation: 66 minutes

The test was discontinued after a period of 66 minutes.

Test Date : 12<sup>th</sup> July 2018

Sponsor : P C Henderson Limited

#### WF399104

A fire test to determine the fire resistance performance of an insulated sliding doorset when tested in accordance with BS 476: Part 22: 1987, Clause 6.

The doorset comprised a 44 mm thick graduated density chipboard leaf with 8 mm thick hardwood lippings to the vertical edges. The leaf had overall dimensions of 2315 mm high by 930 mm wide. The leaf was housed in an aluminium pocket frame with a softwood liner kit. The pocket frame incorporated two pairs of aluminium uprights with noggins and tie backs. The aluminium framing was formed from 55 x 20 mm extruded aluminium sections. The leaf was hung off an aluminium header track on a steel hanger with silicone rubber wheels. The threshold of the leaf ran on a plastic floor guide with the blade running centrally along a channel routed in the base of the leaf. The softwood liner encased the head and formed the uprights / jambs. The door assembly was housed in a timber frame partition, clad on both faces with two layers of 12.5 mm Fireline plasterboard. The doorset was held closed by an internal self-closing mechanism for the test duration.

The doorset achieved the following performance:

Integrity: 45 minutes

Insulation: 45 minutes

The test was discontinued after a period of 45 minutes.

Test Date : 12<sup>th</sup> July 2018

Sponsor : P C Henderson Limited

## Declaration by PC Henderson Ltd

---

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 Warringtonfire to withdraw the assessment.

Signed:

-----  
For and on behalf of:

-----  
Signed:

-----  
For and on behalf of:  
-----

## Signatories

---



Responsible Officer

A. Kearns\* - Technical Manager



Approved

D. Hankinson\* - Principal Certification  
Engineer

\* For and on behalf of Warringtonfire.

Report Issued: 13<sup>th</sup> December 2018

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

This copy has been produced from a .pdf format electronic file that has been provided by **Warringtonfire** to the sponsor of the report and must only be reproduced in full. Extracts or abridgements of reports must not be published without permission of **Warringtonfire**. The pdf copy supplied is the sole authentic version of this document. All pdf versions of this report bear authentic signatures of the responsible **Warringtonfire** staff.

All work and services carried out by Warringtonfire Testing and Certification Limited are subject to, and conducted in accordance with, the Standard Terms and Conditions of Warringtonfire Testing and Certification Limited, which are available at <https://www.element.com/terms/terms-and-conditions> or upon request.