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Title:

The Fire Resistance Performance Of Timber Or Mineral Based Insulated Doorsets When Fitted With 'Perko Powermatic R100' Jamb Mounted Concealed Door Closers

Report No:

WF 151270 – Issue 3

Prepared for:

Samuel Heath and Sons Plc

Leopard Street
Birmingham
B12 0UJ

Date:

13th December 2005

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Foreword

This assessment report has been commissioned by Samuel Heath and Sons Plc and relates to the fire resistance of edge-mounted concealed door closers.

This assessment is for National Application and has been written in accordance with the general principles outlined in BS EN 15725: 2010; Extended application reports on the fire performance of construction products and building elements, as appropriate.

This assessment uses established empirical methods of extrapolation and experience of fire testing similar products, in order to extend the scope of application by determining the limits for the design based on the tested constructions and performances obtained. The assessment is an evaluation of the potential fire resistance performance, if the elements were to be tested in accordance with EN1634.

This assessment has been written using appropriate test evidence generated at a UKAS accredited laboratory to the relevant test standard. The supporting test evidence has been deemed appropriate to support the manufacturer's products and is summarised within the assessment.

The defined scope presented in this assessment report relates to the behaviour of the proposed concealed door closers under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the closers in use.

This assessment has been prepared and checked by product assessors with the necessary competence, who subscribe to the principles outlined in the Guide to undertaking technical assessments of the fire performance of the fire performance of construction products based on fire test evidence – 2019. 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 in lieu of fire tests for building control and other purposes.

The PFPF guidelines are produced in association with the major fire testing, certification bodies and trade associations in the UK and are published by the PFPF, the representative body for the passive fire protection industry in the UK.

This report is not intended for use in support of EN 15269-2 and EN 15269-3 (Extended application of test results for fire resistance and/or smoke control for door, shutter and openable window assemblies, including their elements of building hardware.), or CE Marking of Doorset to EN 16034 (Pedestrian doorsets, industrial, commercial, garage doors and openable windows. Product standard, performance characteristics. Fire resisting and/or smoke control characteristics).

Executive Summary

Objective

This report presents an appraisal of the fire resistance performance of single-acting timber or mineral doorsets when fitted with a 'Perko Powermatic R100' jamb mounted concealed door closer if tested in accordance with BS EN 1634-1: 2000. In addition, this report will provide regarding the provision to offset the installation position within the leaf edge and/or frame rebate.

Report Sponsor

Samuel Heath And Sons Plc

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Summary of Conclusions

Should the recommendations given in this report be followed, it can be concluded that the 'Perko Powermatic R100' jamb mounted concealed door closers may be fitted to previously tested or assessed (by Warringtonfire, BM TRADA or Chiltern International Fire) insulated doorsets, to provide 60 minutes integrity and insulation performance if tested in accordance with BS EN 1634-1. The closer may be installed centrally within the leaf edge or maybe offset by up to 6 mm from the centre line.

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 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

20th April 2026

Introduction

This report presents an appraisal of the fire resistance performance of single-acting insulated (timber or mineral) doorsets when fitted with a 'Perko Powermatic R100' jamb mounted concealed door closer. The doorset, onto which the closer is to be fitted, may be of single-leaf or double-leaf configuration. In addition, this report will provide regarding the provision to offset the installation position within the leaf.

The proposed doorsets are required to provide a fire resistance performance of 60 minutes integrity and insulation with respect to BS EN 1634-1.

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 'Perko Powermatic R100' jamb mounted concealed door closers will be fitted to an insulated doorset (timber or mineral) which has been previously shown to be capable of providing the required fire resistance performance when tested in accordance with BS EN 1634-1 in the proposed configuration i.e. single-leaf or double-leaf.

The door leaf shall be a minimum of 53 mm thick and include sub-facings comprising a minimum of 3 mm thick non-combustible board.

It is assumed that the doorset will be in the fully closed position. It is also assumed that the door closer will return the doorset to the fully closed position, overcoming the latch mechanism (if fitted) from any angle.

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

Closer Installation

The closers shall be fixed with screws supplied by the closer manufacturer.

Recessing for closers shall result in a tight fit, allowing for any intumescent protection where required.

The closers shall not be fitted higher than 1100 mm from the centre of the body to the finished floor level of the surrounding floors.

All closers used shall have power ratings appropriate to the leaf sizes subject to a minimum size 3 (as specified in BS EN 1154).

EN1634-1

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.

Proposals

It is proposed that 'Perko Powermatic R100' jamb mounted concealed door closers may be fitted onto a previously tested (in accordance with BS EN 1634-1) insulated (timber or mineral) doorset which has been shown to be capable of providing 60 minutes integrity and insulation in the same configuration as that proposed i.e. single-leaf or double-leaf.

Closers are typically fitted such that the rebates provided in the leaf edge are located along the centre line of the door. It is proposed that the closers installation may offset by up to 6 mm either side of the centre line of the door leaf.

Basic Test Evidence

WARRES No. 149150/A

The test referenced WARRES No. 149150/A included a fully insulated, single-acting, single-leaf, timber doorset which was fitted with a 'Perko Powermatic R100' jamb mounted concealed door closer.

The doorset was orientated such that the door leaf opened towards the heating conditions of the test and was rendered unlatched for the duration of the test.

Whilst integrity failure of the doorset occurred after a period of 52 minutes, there were no modes of integrity failure either co-incident with, or attributable to the 'Perko Powermatic R100' jamb mounted concealed door closer position for the 62 minute test duration.

Test report review

The original test reports used in support of this assessment have been reviewed and it has been concluded that the test data remains acceptable and the final result would be unchanged on the following basis:

- A comparison of the test procedures and performance criteria with the current standard has identified that any variations would have no detrimental impact on the performance of the doorset and hardware under test
- The client has confirmed that there has been no change to the design or material specification of the hardware tested originally, consequently.
- The reports are available in their entirety, the products are adequately referenced and linked to the products being considered for assessment, and the ownership of the test data has been confirmed as the assessment report holder.
- Where the test data is not the property of assessment report sponsor the original test sponsor has confirmed that this test data may still be used in support of this revalidation.

Assessed Performance

It is proposed that previously fire tested (or assessed by Warringtonfire, BM TRADA or Chiltern International Fire) timber or mineral based insulated doorsets may be fitted with a 'Perko Powermatic R100' jamb mounted concealed door closer in order to provide 60 minutes integrity, without detracting from the performance of the doorset.

The tested assembly included a 'Perko Powermatic R100' jamb mounted concealed door closer fitted within the door leaf edge/frame at approximately mid-height of the doorset.

The tested assembly restrained the doorset for the required period and did not incur any modes of integrity failure for the test duration of 62 minutes. This therefore provides direct test evidence relating to the ability of the proposed closer to contribute towards a fire performance in excess of 60 minutes.

Proposed Doorsets

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

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

a) The doorset shall carry valid certification or the doorset, including the door frame and associated ironmongery should have achieved up to 60 minutes integrity, when tested by a UKAS approved laboratory (or assessed by Warringtonfire, BM TRADA or Chiltern International Fire) to BS EN 1634-1.

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

c) The critical aspects of the doorset construction are given earlier in this report and shall be replicated on the proposed doorset, in particular the necessity for the door leaf to include non-combustible sub-facings.

d) Door leaves of solid lignocellulosic construction in the closer area encompassing the entire lock case.

e) The leaves should incorporate hardwood lippings of a minimum thickness of 8 mm and minimum density 640kg/m^3.

f) Door frame density - 640 kg/m^3.

g) Additionally, the amount of interruption to the intumescent seal specification at the door leaf to frame perimeter clearance gaps should be replicated, or greater than that that originally specified for the tested doorset.

Offset Closers

It is proposed that the closers installation may offset by up to 6 mm either side of the centre line of the door. This level of offset will ensure that the rebate is provided in the internal timber stiles of the door leaf and that the non-combustible facings are not compromised in any way. As the non-combustible facings are not removed, a significant level of protection will still be afforded to the rebate area and subsequently the likelihood of excessive charring and burn through at the position of the closer would not be expected to be increased.

Conclusions

Timber or mineral based doorsets that have previously been successfully fire tested by a UKAS accredited laboratory (or assessed by Warringtonfire, BM TRADA or Chiltern International Fire) which have achieved 60 minutes integrity and insulation as discussed in this report, may be fitted with 'Perko Powermatic R100' jamb mounted concealed door closers, without detracting from the overall performance of the doorset. The closer may be installed centrally within the leaf edge or maybe offset by up to 6 mm from the centre line of the door leaf.

The fitting of the door closers into alternative doorsets, on the basis of compliance with the conditions given above, is therefore considered to be acceptable.

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.

Review

It has been confirmed by Samuel Heath And Sons Plc that there have been no changes to the specification, materials or manufacturing location of the edge mounted concealed closers considered in the original appraisal referenced WF Assessment Report No. 151270 issue 2 issued 17th July 2007.

The original assessment has been written using appropriate test evidence generated at accredited test laboratories. The supporting test evidence has been deemed appropriate to support the manufacturers stated design.

The defined scope presented in the original assessment report relates to the behaviour of the proposed design under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the concealed closers in use.

This revalidation has been prepared and checked by product assessors with the necessary competence, who subscribe to the principles outlined in the PFPF guidelines to undertaking assessments in lieu of fire tests. 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 in lieu of fire tests for building control and other purposes.

The PFPF guidelines are produced by the UK Fire Test Study Group (FTSG) an association of the major fire testing laboratories in the UK and are published by the PFPF, the representative body for the passive fire protection industry in the UK.

The data used for the original appraisal has been re-examined and found to be satisfactory. The procedures adopted for the original assessment have also been re-examined and are similar to those currently in use.

Therefore, with respect to the assessment of performance given in WF Assessment Report No. 151270, the contents should remain valid for a further 5 years.

This review is based on information used to formulate the original assessment. No other information or data has been provided by Samuel Heath And Sons Plc which could affect this review.

The original appraisal report was performed in accordance with the principles of the UK Fire Test Study Group Resolution 82: 2001. This review has therefore also been conducted using the principles of Resolution 82: 2001.

Validity

This assessment 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 Samuel Heath And Sons Plc 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. The assessment is valid initially for a period of five years i.e. until 20th April 2026, after which time it is recommended that it be returned for re-evaluation.

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

WARRES No. 149150/A

Test report relating to the performance of a fully insulated, single-acting, single-leaf, timber doorset incorporating a jamb mounted concealed door closer referenced 'Perko Powermatic R100', when subjected to a test in accordance with BS EN 1634-1: 2000 to determine its fire resistance performance.

The doorsets had overall dimensions of 2090 mm high by 1015 mm wide and incorporated door leaves of overall dimensions 2040 mm high by 926 mm and by 53 mm thick.

The doorset was retained via a 'Perko Powermatic R100' jamb mounted concealed door closer.

The doorset was orientated such that the doorset opened towards the heating conditions of the test and was rendered unlatched for the duration of the test.

The specimen satisfied the test requirements for the following periods:

		Doorset B
Integrity	Sustained Flames	52 minutes
	Gap Gauge	62 minutes*
	Cotton Pad	52 minutes
Insulation		52 minutes

* The test duration.

Test date : 30th September 2005

Permission has been provided for this test report to be utilised for the purposes of this appraisal

Declaration by Samuel Heath And Sons Plc

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.

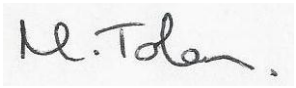
Signed:

For and on behalf of:

Signatories

Responsible Officer (Issue 3)

R Anning* - Principal Certification Engineer



Approved (Issue 3)

M Tolan* - Senior Certification Engineer

* For and on behalf of warringtonfire.

Report Issued: 13th December 2005

Revision History

Issue No: 2	Re-issue Date: 17th July 2007
Revised By: A Kearns	Approved By: C Johnson
Reason for Revision: Offset closer option added.	

Issue No: 3	Re-issue Date: 22nd April 2021
Revised By: Ray Anning	Approved By: Michelle Tolan
Reason for Revision: Review/revalidation.	