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Testing. Advising. Assuring.

**Title:**

The Fire Resistance  
Performance of a Single-Acting,  
Double-Leaf Doorset Referenced  
'GDesign 60' When  
Incorporating Alternative Hinges

**WF Assessment Report No.**

405987

**Prepared for Joint Sponsors:**

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**Date:** 29<sup>th</sup> October 2018

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## Executive Summary

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**Objective** This report presents an appraisal of the fire resistance performance of a single-acting, double-leaf doorset, referenced 'GDesign 60', when modified to use alternative hinges, if subjected to a fire resistance test in accordance with EN 1634-1.

**Joint Sponsors** **CHEMOLLI S.A.S. di Eros Chemolli & C.**

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**Summary of Conclusions** It can be concluded that the proposed doorset should be capable of providing at least the same level of fire resistance integrity and insulation performance, as achieved and detailed within test report No. 50/U/12-152FR, if subjected to a fire resistance test in accordance with EN 1634-1.

**This assessment represents our opinion as to the performance likely to be demonstrated on a test in accordance with EN 1634-1, 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> November 2023

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## Introduction

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This report presents an appraisal of the fire resistance performance of a single-acting, double-leaf doorset, referenced 'GDesign 60' when modified to use alternative hinges.

The doorsets are required to provide at least the same integrity and insulation performance, as achieved and detailed within test report No. 50/U/12-152FR, if subjected to a fire resistance test in accordance with 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

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### General Construction

It is assumed that the general construction of the doorsets and the materials used in their construction will, unless specifically detailed in this report, be identical to those of the tested assembly. The doorset shall also be constructed in a similar manner, with regards to the attachment of various parts.

### Supporting Construction

It is assumed that the doorsets shall be fixed to a masonry or reinforced concrete supporting construction which is capable of maintaining adequate support for a period at least equivalent to that achieved by the doorset.

### Door Gaps

It is assumed that the door leaf to frame clearance gaps shall not exceed those of the previously fire tested assembly.

### Installation

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

## Proposals

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The test referenced '50/U/12-152FR' was performed in accordance with EN 1634-1, on a specimen of a single-acting, double-leaf doorset, referenced 'GDesign 60'. Two tests were carried out and reported in test report No. '50/U/12-152FR' - one opened towards the heating conditions of the test and one opened away from the heating conditions of the test. On both occasions the door leaves were hung using AGB 'Eclipse' model hinges.

It is proposed that the doorset will satisfy the integrity and insulation performance criteria of EN 1634-1, for the same periods as achieved and reported in '50/U/12-152FR', were they to be hung on AGB 'Eclipse 2.0' model hinges.

## Basic Test Evidence

### 50/U/12-152FR

A fire resistance test in accordance with EN 1634-1 on two specimens of single-acting, double-leaf doorsets referenced 'GDesign 60' – one opened towards the heating conditions of the test and one opened away from the heating conditions of the test.

The doorsets had overall nominal dimensions of 2160 mm high by 2120 mm wide, with the active leaf having dimensions of 2113 mm high by 1018 mm wide by 60 mm thick and the in-active leaf having dimensions 2113 mm high by 1042 mm wide by 60 mm thick.

The doorset that opened towards the heating conditions of the test satisfied the integrity and insulation performance criteria for a period of 65 minutes after which time the test was discontinued due to sustained flaming criteria failure.

The doorset that opened away from the heating conditions of the test satisfied the integrity and insulation performance criteria for a period of 68 minutes after which time the test was discontinued at the request of the sponsor, without failure.

## Assessed Performance

### Eclipse Hinge

**Model** The AGB 'Eclipse' model hinge which formed part of the tested construction is shown below in figures 1, 2 and 3.

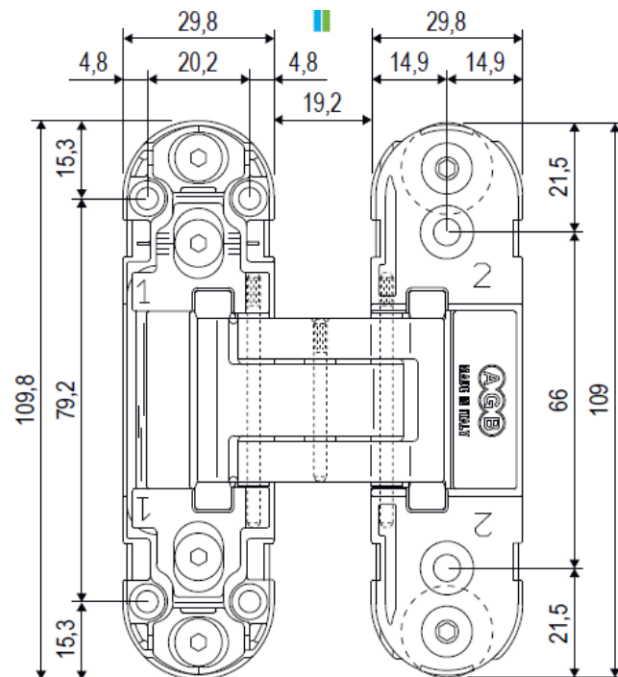
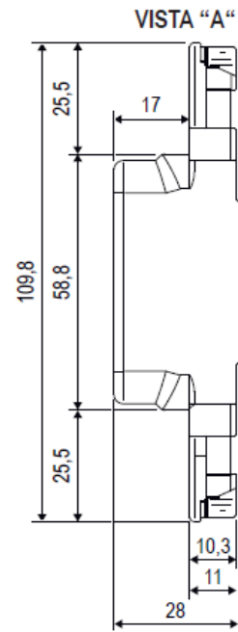
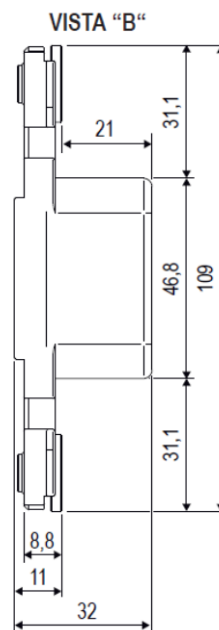


Figure 1



**Figure 2**



**Figure 3**

Figure 1 shows the full hinge assembly. Figure 2 shows the blade, of the hinge, which is fitted to the door frame profile. Figure 3 shows the blade, of the hinge, which is fitted to the door leaf.

**Eclipse 2.0 Model Hinge** The AGB 'Eclipse 2.0' model hinge, which is the proposed alternative to the above tested design, is shown below in figures 4, 5 and 6.

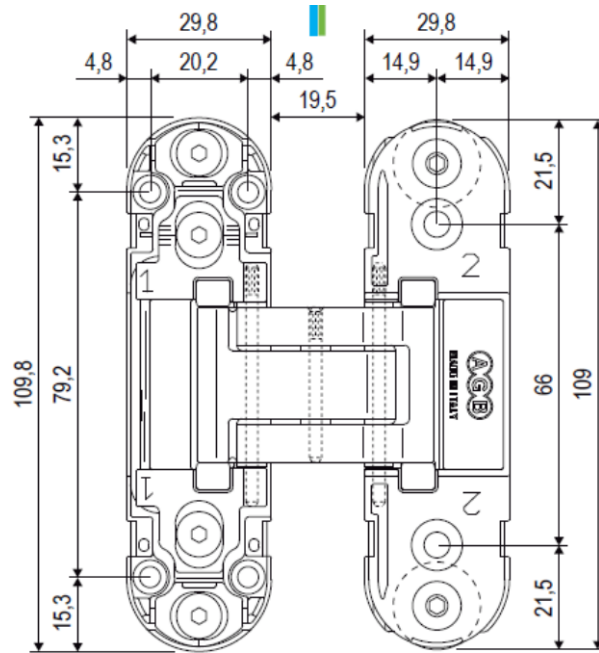


Figure 4

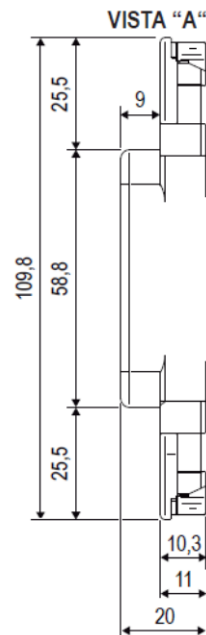
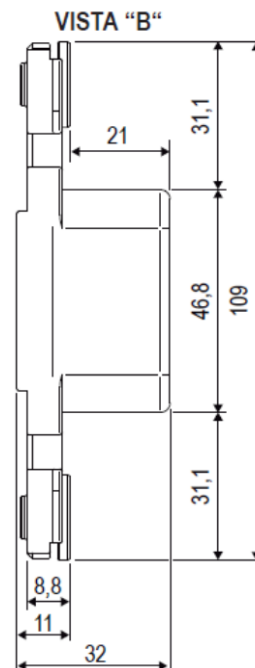


Figure 5



**Figure 6**

Figure 4 shows the full hinge assembly. Figure 5 shows the blade, of the hinge, which is fitted to the door frame profile. Figure 6 shows the blade, of the hinge, which is fitted to the door leaf.

**Summary  
Comparison**

**of** As can be seen from comparing the above figures (1 to 6) the only difference between the two concealed hinge types, 'Eclipse' and 'Eclipse 2.0', is the depth of the blade which is fitted to the frame profile (shown in figures 2 and 5 respectively). The central body of the frame hinge blade is reduced in depth from 17 mm to 9 mm. Both designs are made from the same materials and are to be secured, to the frame and the leaf, in the same way – using screws as per the tested construction.

The reduction in the depth of the frame fitted blade is not thought to represent a less secure fixing as it will still use the same length, number and type of screws. In fact the reduced depth of the cut out in to the timber frame represents an improvement in the overall strength of the construction due to the fact that less material is being removed. The use of the AGB 'Eclipse 2.0' model hinges can, therefore, be positively appraised.



## Conclusion

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It can be concluded that the proposed doorset should be capable of providing at least the same level of fire resistance integrity and insulation performance, as achieved and detailed within test report No. 50/U/12-152FR, if subjected to a fire resistance test in accordance with EN 1634-1.

**This assessment represents our opinion as to the performance likely to be demonstrated on a test in accordance with EN 1634-1, 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

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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 CHEMOLLI S.A.S. di Eros Chemolli & C. and Alban Giacomo SPA 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> November 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 constructions other than those described in this report.

## Summary of Primary Supporting Data

### 50/U/12-152FR

A fire resistance test in accordance with EN 1634-1 on two specimens of single-acting, double-leaf doorsets referenced 'GDesign 60' – one opened towards the heating conditions of the test and one opened away from the heating conditions of the test.

The doorsets had overall nominal dimensions of 2160 mm high by 2120 mm wide, with the active leaf having dimensions of 2113 mm high by 1018 mm wide by 60 mm thick and the in-active leaf having dimensions 2113 mm high by 1042 mm wide by 60 mm thick.

All door leaves were constructed using a hardwood (720kg/m<sup>3</sup>) stile and rail perimeter structure. This consisted of three profiles for each upright and the upper transom, two profiles for the lower transom and one profile for the reinforcement transom (positioned 689mm up from the base of the leaf). One further profile was used to frame out the glazing aperture. The internal insulation consisted of 44 mm thick Promat 'Promapyr' (290kg/m<sup>3</sup>). The internal structure is sandwiched between one 8 mm thick MDF panel on each face (770kg/m<sup>3</sup>). Each leaf was hung using 4x AGB 'Eclipse' model hinges positioned 200, 1100, 1620 & 1920 mm up from the base of the leaf. The frame was a 60 mm x 111 mm hardwood (720kg/m<sup>3</sup>) which incorporated a stepped milled rebate.

#### Test Results:

		Open Towards	Open Away
<b>Integrity</b>	Sustained flaming	65 minutes	68 minutes (no failure)
	Gap gauge	65 minutes (no failure)	68 minutes (no failure)
	Cotton Pad	65 minutes (no failure)	68 minutes (no failure)
<b>Insulation</b>	(I <sub>1</sub> )	65 minutes (no failure)	68 minutes (no failure)
	(I <sub>2</sub> )	65 minutes (no failure)	68 minutes (no failure)

Test date : 17<sup>th</sup> May 2012 (opening away from the furnace)  
12<sup>th</sup> June 2012 (opening towards the furnace)

Test sponsor : Garofoli SPA

## **Declaration by CHEMOLLI S.A.S. di Eros Chemolli & C. and Alban Giacomo SPA**

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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
T Benyon* - Certification Engineer


Approved
A Kearns * - Technical Manager

\* For and on behalf of Exova Warringtonfire.

Report Issued: 29 <sup>th</sup> October 2018
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