Exova Warringtonfire
Holmesfield Road
Warrington
WA1 2DS
United Kingdom

T : +44 (0) 1925 655 116
F : +44 (0) 1925 655 419
E : warrington@exova.com
W: www.exova.com

Testing. Advising. Assuring.

11th October 2016

Consort Architectural Hardware Limited
29-31 Lower Loveday Street
Birmingham
B19 3SE

For the attention of Mr. D May

Review of Assessment Report Referenced WF Assessment report No. 306690 issue 2

1 Introduction

The assessment referenced WF Assessment report No. 306690 issue 2 presented a considered opinion regarding the expected the fire resistance performance of single-acting timber-based doorsets, when fitted with Consort doorset hardware items such as mortice case locks, steel hinges, lever handles and other ancillary items.

The appraisal report concluded that should the recommendations given in the report be followed:

- That previously fire tested (or assessed by Exova Warringtonfire) timber doorsets which have achieved 60 minutes integrity in accordance with BS 476: Part 22: 1987 or BS EN 1634-1, as discussed in this report, may be fitted with Consort doorset ironmongery items as detailed in Annex A, without detracting from the overall integrity performance (and insulation where relevant) of the doorset.

- That previously fire tested (or assessed by Exova Warringtonfire) timber or mineral composite based doorsets which have achieved up to 120 minutes integrity in accordance with BS 476: Part 22: 1987 or BS EN 1634-1, as discussed in this report, may be fitted with Consort CDC670, CDC700 or CDC750 surface mounted overhead door closers as detailed in Annex A, without detracting from the overall integrity performance (and insulation where relevant) of the doorset.

- That previously fire tested (or assessed by Exova Warringtonfire) steel based doorsets which have achieved up to 240 minutes integrity in accordance with BS 476: Part 22: 1987 or BS EN 1634-1, as discussed in this report, may be fitted with Consort CDC700 or CDC750 surface mounted overhead door closers, CBH102, 103, 104 & 105 stainless steel hinges and Consort mortice case locks* as detailed in Annex A, without detracting from the overall integrity performance (and insulation where relevant) of the doorset.

2 Confirmation of Specification

It has been confirmed by Consort Architectural Hardware Limited that there have been no changes to the specification of the door hardware considered in the original appraisal referenced WF Assessment report No. 306690 issue 2.

3 Conclusions

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. 306690 issue 2, the contents should remain valid until the 10th October 2021.

4 Validity

This review is based on information used to formulate the original assessment. No other information or data has been provided by Consort Architectural Hardware Limited 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.

Performed by:

R Anning
Senior Certification Engineer
Warrington Certification

Reviewed By:

A Kearns
Technical Manager
Warrington Certification

Exova Warringtonfire
Holmesfield Road
Warrington
WA1 2DS
United Kingdom

T : +44 (0) 1925 655 116
F : +44 (0) 1925 655 419
E : warrington@exova.com
W: www.exova.com

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Title:

The Fire Resistance Performance of Timber Doorsets Incorporating Consort Doorset Ironmongery

WF Assessment Report No:

306690 Issue 2

Prepared for:

Consort Architectural Hardware Limited

29-31 Lower Loveday Street
Birmingham
B19 3SE

Date:

5th May 2011

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SECTION **PAGE**

Executive Summary

Objective

This report considers the fire resistance performance of single-acting doorsets, when fitted with Consort doorset ironmongery of various types.

Report Sponsor

Consort Architectural Hardware Limited

Address

29-31 Lower Loveday Street, Birmingham B19 3SE

Summary of Conclusions

Should the recommendations given in this report be followed, it can be concluded that previously fire tested (or assessed by **Exova warringtonfire**) timber doorsets which have achieved 60 minutes integrity in accordance with BS 476: Part 22: 1987 or BS EN 1634-1, as discussed in this report, may be fitted with Consort doorset ironmongery items as detailed in Annex A, without detracting from the overall integrity performance (and insulation where relevant) of the doorset.

Should the recommendations given in this report be followed, it can also be concluded that previously fire tested (or assessed by **Exova warringtonfire**) timber or mineral composite based doorsets which have achieved up to 120 minutes integrity in accordance with BS 476: Part 22: 1987 or BS EN 1634-1, as discussed in this report, may be fitted with Consort CDC670, CDC700 or CDC750 surface mounted overhead door closers as detailed in Annex A, without detracting from the overall integrity performance (and insulation where relevant) of the doorset.

Should the recommendations given in this report be followed, it can further be concluded that previously fire tested (or assessed by **Exova warringtonfire**) steel based doorsets which have achieved up to 240 minutes integrity in accordance with BS 476: Part 22: 1987 or BS EN 1634-1, as discussed in this report, may be fitted with Consort CDC700 or CDC750 surface mounted overhead door closers, CBH102, 103, 104 & 105 stainless steel hinges and Consort mortice case locks* as detailed in Annex A, without detracting from the overall integrity performance (and insulation where relevant) of the doorset.

* Mortice case locks shall only be fitted to doorsets previously proven unlatched

Valid until

1st June 2016

Introduction

This report considers the fire resistance performance of single-acting timber based doorsets, when fitted with Consort doorset hardware items such as surface mounted overhead door closers, mortice case locks, steel hinges, lever handles and other ancillary items, as referenced later in this report.

The report also considers the fire resistance performance of single-acting steel based doorsets when fitted with the Consort CDC670, CDC700 and CDC750 surface mounted overhead door closers, CBH 102, 103, 104 & 105 stainless steel hinges and the Consort mortice case locks.

The proposed timber based doorsets, when fitted with the various proposed items, are required to provide a fire resistance performance of 60 minutes integrity, and where applicable insulation, with respect to BS 476: Part 22: 1987 or BS EN 1634-1. Timber or mineral composite based doorsets fitted with the Consort surface mounted overhead door closers are required to provide up to 120 minutes fire resistance performance. Steel based doorsets fitted with the Consort CDC700 or CDC750 surface mounted overhead door closers CBH 102, 103, 104 & 105 stainless steel hinges and the Consort mortice case locks are required to provide up to 240 minutes fire resistance performance.

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

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 and latched position.

Doorset details

It is assumed that the proposed hardware items will be fitted to doorsets which have previously been shown to be capable of providing the appropriate integrity and (where appropriate) insulation performance, the critical aspects of the door construction are detailed later in this report.

The proposed doorsets will include a surface mounted overhead door closer capable of returning the door leaf to the fully closed position overcoming any latch mechanism as fitted.

The CH7252F dead lock and CH7255F roller bolt sashlock shall only be fitted to timber based doorsets which have previously been proven unlatched, or where they are permanently locked. All locksets shall only be fitted to steel based doorsets that have previously been proven unlatch.

Intumescent Material

The amount of interruption to the intumescent seal specification at the door leaf to frame perimeter clearance gaps should be replicated or reduced from that originally specified for the tested doorset. Hinge blades must be provided with 2 mm 'Interdens' intumescent sheet material behind each blade as the bedding material.

Proposals

It is proposed that previously fire tested (or assessed by **Exova warringtonfire**) timber doorsets which have achieved 60 minutes integrity and, where applicable, insulation performance, as discussed later in this report, may be fitted with the proposed items of Consort doorset ironmongery, in accordance with recommendations given in this report, without detracting from the overall performance of the doorset.

It is also proposed that previously fire tested (or assessed by **Exova warringtonfire**) timber and mineral composite based doorsets which have achieved up to 120 minutes integrity and, where applicable, insulation performance, as discussed later in this report, may be fitted with the proposed Consort CDC670, CDC700 or CDC750 surface mounted overhead door closers, in accordance with recommendations given in this report, without detracting from the overall performance of the doorset.

It is further proposed that previously fire tested (or assessed by **Exova warringtonfire**) steel based doorsets which have achieved up to 240 minutes integrity and, where applicable, insulation performance, as discussed later in this report, may be fitted with the proposed Consort CDC700 or CDC750 surface mounted overhead door closers, CBH 102, 103, 104 & 105 stainless steel hinges and the Consort mortice case locks in accordance with recommendations given in this report, without detracting from the overall performance of the doorset.

Additionally it is proposed that the doorsets may be of single or double-leaf configuration. The details and references of the proposed ranges of hardware items are detailed within Annex A.

Basic Test Evidence

WF Test Report No. 198541

The test reported under the reference WF Test Report No. 195150 issue 2 and briefly described in the supporting data section of this report, describes a test conducted in accordance with BS EN 1634-1: 2008 which included a single-acting, double-leaf timber based doorset and a single-acting, single leaf timber based doorset.

The doorsets were referenced as Doorset A and Doorset B for the purpose of the test.

Doorset A had overall dimensions 1400 mm wide by 2087 mm high incorporating two door leaves. The active leaf had overall dimensions of 935 mm wide by 2040 mm high by 54 mm thick and the passive leaf had overall dimensions of 385 mm wide by 2040 mm high. The leaves were hung within a hardwood door frame. The doorset was fitted with various items of Consort hardware.

Doorset B had overall dimensions of 2087 mm high by 1012 mm wide and incorporated a door leaf of overall dimensions 2040 mm high by 933 mm wide by 54 mm thick and was hung within a hardwood door frame.

Both doorsets were oriented such that their door leaves opened towards the heating conditions of the test.

The test demonstrated the ability of both doorsets to provide 66 minutes integrity and insulation performances.

WF Test Report No. 319229 Issue 2

The test reported under the reference WF Test Report No. 319229 issue 2 and briefly described in the supporting data section of this report, describes a test conducted in accordance with BS EN 1634-1: 2008 which included a single-acting, double-leaf steel based doorset.

The doorset had overall nominal dimensions of 2190 mm high by 2005 mm wide and incorporated two door leaves each of overall nominal dimensions 2165 mm high by 990 mm wide by 46mm thick. The door leaves were formed from 1.5 mm thick mild steel skins with a paper honeycomb core. Both leaves incorporated glazed vision panes with a nominal sight size of 252 mm wide by 900 mm high. The leaves were each hung within a mild steel frame on three steel hinges. The active leaf incorporated a mortice dead lock and pull bar along with a surface mount closer on the unexposed face. The passive leaf incorporated flush bolts at the top and bottom of the leaf, a pull bar and a surface mount closer on the unexposed face of the leaf.

The doorset was oriented such that its door leaves opened away from the heating conditions of the test.

The doorset achieved an integrity performance of 42 minutes, which was subsequently assessed by addendum to 240 minutes.

WFRC Assessment No. 144029 issue 3

An assessment of the performance of various models of surface mounted overhead door closers when mounted to timber and steel based doorsets required to provide integrity performances of up to 240 minutes.

Assessed Performance

General

The supporting timber doorset evidence used as the basis for this appraisal is taken from a fire test in which the doorsets, when fitted with representative items of hardware, achieved 66 minutes integrity performances. It is therefore reasonable to conclude that the individual items included in the test, which are the subject of this report, can be considered to have suitably demonstrated their abilities, and their inclusion was not considered to have had a detrimental influence on the performance of the doorsets.

The supporting steel doorset evidence, WF No. 319229 issue 2, used as a basis for the appraisal of the Consort hinges and mortice case locksets, is taken from a fire test in which the doorset, when fitted with representative items of the lock and hinge ranges, achieved a 240 minute* integrity performance. It is therefore reasonable to conclude that the individual items included in the test, which are the subject of this report, can be considered to have suitably demonstrated their abilities, and their inclusion was not considered to have had a detrimental influence on the performance of the doorset.

Mortice case locks – Timber doorsets

The doorsets tested both included mortice case locksets. Doorset A was fitted with a sashlock referenced 'CH7250F-5572Z', Doorset B was fitted with a bathroom lockset referenced 'CH7253F-5578ZWC'. having nominal overall dimensions of :

Case – 166 mm high by 82 mm wide by 15 mm thick

Forend – 236 mm high by 24 mm wide

Strike plate – 171 mm high by 24/40 mm wide by 1.5 mm thick

The locksets were chosen to provide the greatest scope of assessment and were selected on the basis that they both included the largest strike plate. All locks considered by this assessment share the same overall lock case and forend dimensions and are steel cased.

The critical aspect to the performance of a lockset within a timber or mineral composite based doorset is the amount of leaf material which is required to be removed for fitment and also the affect of heat transfer through the steel based lockset material, both of these factors can affect charring and burn through performance.

Since all locks share the same case and forend dimensions, the performance of the locks included in the test referenced WF No. 198541 is cited to demonstrate the ability of all the mortice cased locksets referenced within Annex A to be fitted into previously proven timber based doorsets without detriment to the performance of the doorsets for the required 60 minute period.

The tested locksets were provided with intumescent protection in the form of a 1 mm thick wrapping of Interdens sheet around the lock case and a bedding of the same material behind their forends and strike plates. It is a requirement of this appraisal that in all instances the locks shall be provided with this same degree of intumescent protection.

The range of locks detailed within Annex A is therefore appraised for use with timber based doorsets which have demonstrated their ability to achieve 60 minute fire resistance performances.

All models incorporate an automatic latching function with the exception of the 'CH7252F' dead lock. The roller bolt sash lock' CH7255F' is also considered to provide a less positive latching action than the standard latch bolt models. As locks may be required to provide an essential latching function to the door, the scope of use of the dead lock and roller bolt sash lock models shall be limited to use only with doorset which are either:

a) Previously proven unlatched doorsets

b) Doorsets which are permanently locked

45 mm backset lock models

Three new lock models having a smaller backset and different centres than the tested lock have been introduced since the original testing was conducted. The new range comprises a sashlock, dead lock and latch.

The new models share the same materials and components as the tested locks and differ only slightly in overall dimensions as shown in the table below.

Tested 55/72	Proposed 85/45
Case – 166 mm high by 82 mm wide by 15 mm thick	Case – 170 mm high by 74 mm wide by 15 mm thick
Forend – 236 mm high by 24 mm wide	Forend – 240 mm high by 22 mm wide
Strike plate – 171 mm high by 24/40 mm wide by 1.5 mm thick	Strike plate – 204 mm high by 22/36 mm wide by 1.5 mm thick

Of these differences the only significant change can be considered to be that of the height increase of the strike plate, which at 33 mm taller than the tested lock's strike plate, does mean a greater amount of interruption to the leaf to frame clearance gap. However, it is reasonable to consider that the reduction in the width of the plate from 24 mm to 22 mm will have a slightly beneficial influence which can be considered to offset the height increase. Added to this the fact that the tested locksets achieved a 6 minute overrun of performance, it is reasonable to consider that the proposed new locksets, when fitted with the same level of intumescent protection, will be able to provide a positive contribution to the performance of timber based doorsets for the required 60 minute performance.

Mortice case locks – steel doorsets

The test detailed in the report referenced WF No. 319229 issue 2 included an uninsulated, steel based single-acting, double leaf doorset which was provided with a Consort 'CH725F-5572ZD' dead lock with stainless steel 'CH780' euro profile double cylinder and stainless steel escutcheons.

The dead lock was disengaged for the purpose of the test so did not provide an essential function in terms of the doorset's performance, however, is can be considered that the inclusion of the lock was not detrimental to the performance of the doorset.

It is therefore reasonable to conclude that, whilst the locksets have not been proven in the capacity of providing a positive latching function when fitted to a steel based doorset, the test does demonstrate that they can be included within a previously proven unlatch steel based doorset assembly without detriment to the integrity performance of the doorset for fire resistance periods of up to 240 minutes.

Hinges – timber based doorsets

During the test referenced WF No. 198541 the door leaves of doorset A were hung within their door frame on three steel hinges. The left hand leaf was hung on hinges referenced 'CBH103', the right hand leaf was hung on hinges referenced 'CBH105'. The leaf of Doorset B was hung on three hinges referenced 'CBH102'.

For both doorsets the hinges were bedded onto a 2 mm thickness of Interdens intumescent sheet material behind each blade.

The performance of the hinges during the test is considered to have suitably demonstrated the ability of all three hinge models to be fitted to 60 minute timber based doorsets without detriment to their performance for the required performance.

CBH104

One further model of hinge referenced 'CBH104' is also proposed by this report. The hinge is of the same design and construction as the three tested models and its overall sizes at 102 x 102 x 3 mm fall in between those of the CBH103 102 x 89 x 3 mm and CBH105 114 x 102 x 3.4 mm. It is reasonable to consider that the performance of the CBH105 would therefore be consistent with that of the tested models.

It is prerequisite to this assessment that the hinges shall be fitted with the same type, and thickness of intumescent sheet material included in the tested doorsets.

Hinges – steel based doorsets

During the test detailed in the report referenced WF No. 319229 the door leaves were each hung within the door frame on three stainless steel hinges referenced 'CBH 105'. The hinges provided a positive contribution to the overall performance of the doorset for the 264 minute duration of the test.

As detailed previously, the CBH 105 is the largest hinge from the proposed range, but all remaining hinges are manufactured from the same grade of stainless steel, albeit slightly thinner at 3.0 mm rather than 3.4 mm, are of the same design and would be attached to the door leaf and frame via 4no. stainless steel machine screws per hinge blade as per the tested model.

Based on the performance of the tested hinge model it can be confidently concluded that all of the hinge models referenced would be equally suitable, subject to sizing considerations based on the weight of the proposed door leaf, for use with previously proven steel based doorsets required to provide fire resistant performances of up to 240 minutes.

Lever handles

Included with the tested doorset assemblies were 'CH900' solid stainless steel lever handles on roses (Doorset A) and 'CH100' hollow stainless steel lever handles on roses.

The handles tested were selected as being typical of their respective ranges and the most onerous of all handle sets to be considered by appraisal. All models within the two handle ranges use the same basic construction and components formed from stainless steel with a steel under body construction, differing only in the design of the lever. In addition to the tested lever on roses it is proposed that stainless steel levers on stainless steel backplates may also be positively appraised.

As has been previously discussed, the tested doorsets achieved 66 minutes integrity performance. Failure of both doorsets at that time was due to sustained flaming at positions remote from the positions of the locksets or their handles. No instance of failure was directly related to, or as a consequence of the installation of either lockset or their accompanying handles.

The performance of the tested handles provides a high degree of confidence in the abilities of the other designs within their respective ranges, and the other designs of handles proposed and detailed within Annex A to be fitted to timber based doorsets, in conjunction with a suitably proven lock or latch, without detriment to the performance of the doorset for fire resistance performances of 60 minutes.

Escutcheons

Included with the stainless steel lever handles are stainless steel escutcheons with steel under construction. The Doorset A included 'CH311' escutcheons. The other designs considered here are constructed of the same materials.

All of these accessories are surface mounted and are not considered to have any detrimental influence on the likely performance of the doorset or lock to which they are fitted. On this basis they are all positively appraised and detailed within Annex A.

Turn & release accessories

Doorset B was fitted with a bathroom lockset and a turn and release referenced 'CHTT3&ER'. Various designs of turn and release are proposed and detailed in Annex A. These accessories fit to the door leaf in the same way as the lever handles and are actuated by either standard 8 mm spindles, as the lever handles, or smaller 5 mm spindles. Positive appraisal of these accessories is made on the basis that they are no more onerous that the previously appraised lever handles from the same ranges.

Euro profile cylinders

The sash lockset fitted to Doorset A included a CH780.2SNP 70 mm Double Cylinder'. Manufactured from brass. Based on the results of the test it is also proposed that other brass euro profile cylinders either double of differing lengths from 60 mm up to 90 mm, bathroom cylinder, cylinders and turns or single cylinders may also be considered. The double cylinder is considered to present the most onerous case and is deemed to provide suitable evidence to allow the positive appraisal of all of the other cylinders detailed in Annex A.

Stainless steel flush bolts

Doorset A was of a double leaf configuration and the passive leaf was fitted with two stainless steel flush bolts. Bolts referenced 'FB4', fitted at the head and 'FB2', fitted at the base. The 'FB4' had overall dimensions of 304 mm high by 19 mm wide with a 38 mm forend. 'FB2' was of the same design and construction differing only in its overall length which was shorter at 203 mm.

The bolts were fitted into mortises cut into the leading edge of the door leaf. Prior to installation of the bolts, the mortises were lined with a layer of 2 mm thick Interdens sheet intumescent.

As no instance of integrity failure occurred in relation to the presence or performance of either bolt assembly, a high level of confidence can be taken from their performance and allow their positive appraisal for use in other previously tested 60 minute timber doorset constructions.

The tested doorset included 8 mm thick Sapele hardwood lippings to the door leaf meeting edges. To ensure compatibility of the flush bolts with other timber doorset constructions, it shall be a requirement of this appraisal that in all instances the alternative doorset construction shall also incorporate hardwood timber lippings at a minimum of 6 mm thick and the timber shall have a minimum density of 650kg/m^3.

As the longest bolt tested was the FB4 at 3004 mm long, this shall be the maximum length of bolt positively appraised. Two other bolts referenced FB1 (150 mm) and FB3 (250 mm) are also considered acceptable based on the maximum limitation on bolt length based on the tested FB4.

It is prerequisite to this assessment that the flush bolts shall be fitted with the same type, and thickness of intumescent sheet material included in the tested doorset.

Surface mounted door closers

Two surface mounted overhead door closers were included in the test. Doorset A was fitted with a Consort CDC670 mounted on the exposed side of the doorset in projecting arm configuration. Doorset B was provided with a Consort CDC750 which was also mounted on the exposed side of the doorset in projecting arm configuration.

The main function of a door closer, when used on unlatched doorsets subjected to such a test, 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. Once the perimeter seals have reacted the performance of the closer can be considered superfluous to the performance of the doorset from that point onwards.

The observations taken during the test referenced WF No. 198541 indicated that the closers were still attached to the doorsets at 15 minutes. During the entire duration of the test neither doorset showed any tendency to open and the door leaves of both doorsets remained in the closed position for the test duration.

It is therefore considered that the closers performed effectively during the test and positively contributed to the doorsets' achieved performances, when mounted in projecting arm configuration.

It is therefore reasonable to consider that the tested CDC670 and CDC750 closer units could be fitted to other, previously proven timber or mineral composite based doorset constructions capable of achieving up to 120 minute integrity performances without detriment to the doorset's performance.

CDC700

The only difference between the CDC700 and the CDC750 models is the ability of the latter to be power adjusted via a spring, thus requiring a closer body of slightly increased dimensions (236 mm compared to 206 mm). The design and manufacture of the CDC700 is therefore considered to be sufficiently similar to consider its performance would be equal to that of the CDC750.

CDC700/CDC750 with steel doorsets

When mounted to a steel based doorset the requirements for the closer unit are slightly different, the closer may be expected to resist forces generated by the thermal expansion of the door leaf and maintain the leaf in the closed position until such time as this thermal expansion of the door leaf has caused it to jam within its frame. A further consideration when fitting a closer to an uninsulated steel doorset is that the closer unit may not necessarily be mounted on the side of the doorset exposed to fire. In these situations the closer body can be exposed to high levels of thermal transfer through the door leaf which could result in ignition of components of the closer unit, or cause it to release its hydraulic fluid which could then ignite and cause integrity failure of the doorset.

To fully evaluate a closer's performance in these applications the closer must prove itself capable of holding the door leaf closed, whilst the inclusion of a second closer body mounted on the outside face of the doorset evaluates the potential for ignition of the unit.

A previous assessment referenced WFRC Assessment No. 144029 issue 3 discusses the performance of surface mounted door closers identical in construction and design to the CDC700 and CDC750 door closers when mounted to uninsulated, steel based doorsets for fire resistance performances of up to 240 minutes.

That report cited evidence from further fire resistance tests performed on these identical closer units (CDC750) when mounted to an uninsulated steel based doorset. The closer unit was mounted on the exposed side of the door in a parallel arm configuration. An additional closer body was mounted on the unexposed side of the door leaf. The doorset achieved a performance of 240 minutes without any occurrence of integrity failure related to either the active closer unit or the inactive body.

It is therefore considered acceptable to apply the findings of that previous assessment to the CDC700 and CDC750 units considered by this report.

The tested closer was fitted with a steel arm set and soffit plate. Where the closer is used in other configurations the associated arms and fixing plates should also be of steel.

Parallel arm configuration

The active closer unit was mounted in parallel arm configuration, it is recognised that when mounted in this configuration, the closer applies a weaker closing force and so it is considered a more onerous fitting application. The combination of timber doorset fire evidence where the closer was mounted in projecting arm configuration and steel doorset fire evidence where the closer was mounted in parallel arm configuration is considered sufficient to positively appraise the use of either arm configuration with both doorset types.

Suitable doorsets

As this appraisal is intended to be used on a general basis and not restricted to any particular manufacturer of fire doors, the following points are given to enable the hardware to be used safely:

Steel based doorsets shall carry valid certification or the doorset, including the door frame and associated ironmongery should have achieved up to 240 minutes integrity, when tested by a Notified laboratory (or assessed by **Exova warringtonfire**) to EN 1634-1 or BS 476: Part 22: 1987.

Where on of the assessed lock model is to be included in a steel based doorset, the doorset must be previously proven as unlatch.

Timber doorsets, including door frame, intumescent seals and associated ironmongery should have achieved 60 minutes integrity and, where applicable, insulation when tested by a UKAS approved laboratory (or assessed by **Exova warringtonfire**) to EN 1634-1 or BS 476: Part 22: 1987.

The critical aspects of the doorset construction in terms of the performance of the proposed hardware are considered to be the material of the door frame, the leaf to frame clearance gaps and the lipping material to the door leaf. Attention should be paid to these details and these should not be amended from that previously fire tested. Where this information is not known the following minimum specification will be followed:

a) Door frame density - 650 kg/m^3.

b) Hardwood lippings to the door leaf vertical edges, lipping density - 650 kg/m^3, minimum thickness 6 mm.

d) Door leaf thickness – 54 mm minimum.

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

If the proposed doorset is to be used in double-leaf configurations, the test or assessment must relate to this configuration.

Conclusions

Previously fire tested (or assessed by **Exova warringtonfire**) timber doorsets which have achieved 60 minutes integrity in accordance with BS 476: Part 22: 1987 or BS EN 1634-1, as discussed in this report, may be fitted with the Consort hardware items as detailed in Annex A, without detracting from the overall performance of the doorset.

Previously fire tested (or assessed by **Exova warringtonfire**) timber or mineral composite based doorsets which have achieved up to 120 minutes integrity in accordance with BS 476: Part 22: 1987 or BS EN 1634-1, as discussed in this report, may be fitted with the Consort hardware CDC670, CDC700 and CDC750 surface mounted overhead door closers as detailed in Annex A, without detracting from the overall performance of the doorset.

Previously fire tested (or assessed by **Exova warringtonfire**) steel based doorsets which have achieved up to 240 minutes integrity in accordance with BS 476: Part 22: 1987 or BS EN 1634-1, as discussed in this report, may be fitted with the Consort hardware CDC700 and CDC750 surface mounted overhead door closers, CBH 102, 103, 104 & 105 stainless steel hinges and the Consort mortice case locks* as detailed in Annex A, without detracting from the overall performance of the doorset.

*Locks shall only be fitted to previously proven unlatched steel based doorsets.

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 Consort Architectural Hardware 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 1st June 2016, 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

WF Test Report No. 198541

Doorset A incorporated two door leaves. The active leaf had overall dimensions of 935 mm wide by 2040 mm high by 54 mm thick and the passive leaf had overall dimensions of 385 mm wide by 2040 mm high. Each door leaf comprised a GDC core with hardwood lippings to the vertical edges. The leaves were hung within a hardwood door frame, the active leaf on three steel hinges referenced, 'CBH103' and the passive leaf on three steel hinges, referenced, 'CBH105'.

The active leaf was fitted with a latch referenced 'CH7250F-5572Z', lever handles, referenced 'CH900' and a cylinder and escutcheon referenced 'CH780.2SNP 70 mm Double Cylinder' and 'CH311' respectively. A surface mount closer, referenced 'CDC670' was also fitted to exposed face of the active leaf.

The passive leaf was fitted with two flush bolts, referenced 'FB4', fitted at the head and 'FB2', fitted at the base.

The doorset was orientated such that it opened towards the heating conditions of the test. The active leaf was unlatched and the flush bolts on the passive leaf were engaged for the duration of the test.

Doorset B incorporated a door leaf of overall dimensions 2040 mm high by 933 mm wide by 54 mm thick. The door leaf was formed from graduated density chipboard with hardwood lippings to the vertical edges. The door leaf was hung within a hardwood door frame on three steel hinges, referenced 'CBH102'.

A latch referenced 'CH7253F-5578ZWC', lever handles, referenced 'CH100' and a thumb turn referenced 'CHTT3&ER' were fitted to the doorset and a surface mount closer, referenced 'CDC750' was fitted to exposed face of the doorset.

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

The specimens satisfied the test requirements for the following periods:

		Doorset A	Doorset B
Integrity	Sustained Flames	66 minutes	66 minutes
	Gap Gauge	67 minutes	67 minutes
	Cotton Pad	66 minutes	66 minutes
Insulation		66 minutes	66 minutes

The test was discontinued after a period of 67 minutes.

Test date : 19th November 2010

Test sponsor : Consort Architectural Hardware Limited

WF Test Report No. 319229 Issue 2

The doorset had overall nominal dimensions of 2190 mm high by 2005 mm wide and incorporated two door leaves each of overall nominal dimensions 2165 mm high by 990 mm wide by 46mm thick. The door leaves were formed from 1.5 mm thick mild steel skins with a paper honeycomb core. Both leaves incorporated 'Anemostat FireLight vision panes' with a nominal sight size of 252 mm wide by 900 mm high. The leaves were each hung within a mild steel frame on three steel hinges. The active leaf incorporated a mortice latch and pull bar along with a surface mount closer on the unexposed face. The passive leaf incorporated flush bolts at the top and bottom of the leaf, a pull bar and a surface mount closer on the unexposed face of the leaf.

The doorset was installed such that it opened away from the heating conditions of the test and was unlatched with the flush bolts disengaged for the duration of the test

The specimens satisfied the test requirements for the following periods:

Integrity	Sustained Flames	$^{\$}$42 minutes	
	Gap Gauge	264 minutes*	
	Cotton Pad	$^{\$}$42 minutes	
Insulation		Area 1: Doorset	10 minutes
		Area 2: Glazing	3 minutes

*The test duration. The test was discontinued after 264 minutes.

$^{\$}$ An addendum to this report concludes that a 240 minute integrity performance would be anticipated for the doorset (detailed in the addendum to the report).

Test date : 15th June 2012

Test sponsor : Consort Architectural Hardware Limited

WFRC Assessment No. 144029 issue 3

An assessment of the performance of various models of surface mounted overhead door closers when mounted to timber and steel based doorsets required to provide various integrity performances up to 240 minutes.

Report sponsor : The sponsor has provided permission for the use of the report in support of this assessment

Declaration by Consort Architectural Hardware Limited

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:

For and on behalf of:

Signatories


Responsible Officer D Forshaw* - Certification Engineer


Approved A Kearns* - Technical Manager

* For and on behalf of **Exova warringtonfire.**

Report Issued: 5th May 2011

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

Issue 2: Inclusion of new 85/45 lock models and additional steel door evidence from WF No. 319229 issue 2 (08/11/12)

Annex A – Approved Hardware Items

Mortice Case Locks/Latches	
CH7250F Sash Lock	CH7251F Latch
CH7252F Dead Lock	CH7253F Bathroom Lock
CF7254F Night Latch	CH7255F Roller Bolt Sash Lock
CH7256F Escape Sash Lock	

CH8540F Sash Lock	CH8542F Latch
CH8541F Dead Lock	

Hollow Stainless Steel Lever Handles
CH100, CH199, CH299, CH399, CH499, CH599, CH599R, CH699, CH799, CH899, CH999

Stainless Steel Levers on Back Plates
CH170, CH180, CH185

Solid Stainless Steel Lever Handles
CH900, CH901, CH902, CH906, CH908, CH909, CH910, CH911, CH912, CH913, CH914, CH917, CH918, CH919, CH920, CH921, CH922, CH923

Brass Euro Profile Cylinders
Double cylinder CH780.1 60MM, CH780.2 70MM, CH780.3 80MM, CH780.4 90MM
Bathroom cylinder CH782.1 60MM, CH782.2 70MM, CH782.3 80MM
Cylinder & turn CH783.1 60MM, CH783.2 70MM, CH783.2 80MM
Single cylinders CH781.1, CH781.2, CH781TO

Bathroom turns & Indicators, Stainless steel with steel under body
CHTT3&ER, CHTD1&ER CHTD 2, CHER
Escutcheons, Stainless steel with steel under body
CH310, CH311, CH312, CH313

Stainless Steel Flush bolts for timber doors
FB1 150mm, FB2 200mm, FB3 250mm, FB4 300mm and CDS75 Dust excluding socket

Stainless Steel Ball Bearing Hinges
CBH102 102x76x3mm grade 201,202,304,316 square and radius corner
CBH103 102x89x3mm grade 201,202,304,316 square and radius corner
CBH104 102x102x3mm grade 201,202,304,316 square and radius corner
CBH105 114x102x3.4mm grade 201,202,304,316 square and radius corner

Annex A – (continued)

Surface Mounted Overhead Closers		
Model	**Configuration**	**Application**
CDC670	Projecting arm (Figure 1)	Timber Doorsets
CDC700	Projecting arm (Figure 1) and Parallel arm (Figure 66)	Timber Doorsets and Steel Doorsets
CDC750	Projecting arm (Figure 1) and Parallel arm (Figure 66)	Timber Doorsets and Steel Doorsets