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Title:

The Fire Resistance Performance of 'd line' Door Hardware When Fitted to Previously Tested Doorsets

Report No:

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Prepared for:

d line as

Roskildevej 22
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Denmark

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Foreword

This assessment report has been commissioned by d line as and relates to the fire resistance of door hardware.

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 hardware under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the hardware 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 – 2021. The aim of the PFPF guidelines is to give confidence to end-users that assessments that exist in the UK are of a satisfactory standard to be used 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.

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 provides a considered opinion regarding the fire resistance performance of single-acting timber and mineral composite based doorsets and uninsulated steel based doorsets, when fitted with the various items of d line as door hardware, as referenced later in this report.

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Summary of Conclusions

Should the recommendations given in this report be followed, it can be concluded that previously fire tested (or assessed by Warringtonfire, BM TRADA or Chiltern International Fire) timber or mineral composite based doorsets which have achieved up to 120 minutes integrity and insulation in accordance with EN 1634-1, as discussed in this report and subject to the restrictions detailed, may be fitted with the various items of hardware, as detailed in Annex A, without detracting from the overall performance of the doorset.

Furthermore, it may also be concluded that, following the recommendations given in this report, previously fire tested (or assessed by Warringtonfire, BM TRADA or Chiltern International Fire) steel based doorsets which have achieved up to 240 minutes integrity in accordance with EN 1634-1, as discussed in this report and subject to the restrictions detailed, may be fitted with the various items of hardware, as detailed in Annex A, without detracting from the overall performance of the doorset.

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

1st December 2024

Introduction

This report presents an appraisal of the fire resistance performance of single-acting insulated timber or mineral composite based doorsets when fitted with the various items of door hardware discussed and detailed in Annex A. The doorset, onto which the proposed hardware is to be fitted, may be of single-leaf or double-leaf configuration.

The proposed timber and mineral composite based doorsets are required to provide a fire resistance performance of up to 120 minutes integrity, and where applicable insulation, with respect to EN 1634-1, subject to the requirements and limitations detailed within this report.

This report also presents an appraisal of the fire resistance performance of single-acting uninsulated steel based doorsets when fitted with various items of door hardware discussed and detailed in Annex A. The doorset, onto which the proposed hardware is to be fitted, may be of single-leaf or double-leaf configuration.

The proposed steel based doorsets are required to provide a fire resistance performance of up to 240 minutes integrity, with respect to EN 1634-1, subject to the requirements and limitations detailed within this report.

FTSG / PFPF

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 and the Passive Fire Protection Federation (PFPF) Guide to Undertaking Technical Assessments of Fire Performance of Construction Products Based on Fire Test Evidence - 2021.

Assumptions

Supporting wall

It is 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 where applicable latched, position.

Doorset details

It is assumed that the proposed hardware will be fitted to timber or mineral composite based doorsets which have previously been shown to be capable of providing up to 60, 90 or 120 minutes integrity, or a steel based doorset which has previously been shown to be capable of providing up to 240 minutes integrity (as applicable), in a single-acting configuration.

Panic exit devices and dead lock mortice locks shall only be fitted to a previously proven as unlatched doorset fitted with a suitable surface mounted overhead door closer.

Mortice locks shall only be fitted to doorsets which have been previously proven when fitted with similarly sized and positioned items.

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

Hardware Variant Specifications

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

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 previously fire tested (or assessed by Warringtonfire, BM TRADA or Chiltern International Fire) 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 various items of d line door hardware, in accordance with the 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 Warringtonfire, BM TRADA or Chiltern International Fire) single-acting, uninsulated steel based doorsets which have achieved up to 240 minutes integrity performance, as discussed later in this report, may be fitted with various items of d line door hardware, in accordance with the recommendations given in this report, without detracting from the overall performance of the doorset.

It is proposed that the doorsets may be of single or double-leaf configuration.

Details of the items covered are included in Annex A of this report.

Basic Test Evidence

WF Test Report No. 314837

The test referenced WF No. 314837 included two single-acting, single-leaf timber based doorsets. The doorsets were referenced as 'Doorset A' and 'Doorset B' for the purpose of the test.

Doorset A had overall nominal dimensions of 2080 mm high by 1010 mm wide and incorporated a door leaf of overall nominal dimensions 2043 mm high by 941 mm wide by 44 mm thick. The doorset included a softwood door frame and a door leaf comprising softwood stiles and rails, a flaxboard core, MDF facings and was lipped with hardwood on the vertical edges. Doorset B had overall dimensions of 2180 mm high by 1010 mm wide and incorporated a leaf of overall dimensions 2037 mm high by 928 mm wide by 54 mm thick. The leaf was installed within a hardwood frame and comprised softwood stiles and rails, a flaxboard core, with non-combustible board sub-facings, hardwood lippings to the vertical edges and MDF outer facings.

Each doorset incorporated a 'D-Line' Surface mounted, overhead closer referenced on their exposed face. The doorsets each incorporated a 'D-Line' lock mechanism. Doorset A was orientated such that it opened away from the heating conditions of the test. Doorset B was orientated such that it opened towards the heating conditions of the test. Each doorset was rendered unlatched for the duration of the test.

The test demonstrated the ability of Doorset A to provide 38 minutes integrity and insulation performance and Doorset B to provide 54 minutes integrity and insulation performance.

WF Test Report No. 340086

The test referenced WF No. 340086 included an uninsulated single-acting, double-leaf steel based doorset.

The doorset had overall dimensions of 2800 mm high by 2500 mm wide consisting of a double leaf doorset with an over panel. Each leaf had overall dimensions of 2452 mm high by 1205 mm wide by 48 mm thick. The over panel was 300 mm high by 2500 mm wide.

The door leaves were formed from mild steel sheet skins with a paper honeycomb core. The door leaves were each hung within a profiled mild steel frame on four stainless steel hinges. Both leaves incorporated a vision panel. The active leaf (Leaf B), was fitted with a latch and handle set just below mid-height and the inactive leaf was fitted with top and bottom flush bolts

Both leaves were fitted with surface mounted overhead closers. The doorset was latched for the duration of the test.

The test demonstrated the ability of the doorset assembly to achieve an initial integrity performance of 54 minutes (excluding cotton pad failure) and the test was discontinued after a duration of 261 minutes.

WF Test Report No. 340092

The test referenced WF No. 340092 included two single-leaf timber based doorsets. The doorsets were referenced as 'Doorset A' and 'Doorset B' for the purpose of the test. Doorset A was of a single-acting configuration and Doorset B was of a double-acting configuration.

Doorset A had overall nominal dimensions of 2100 mm high by 1000 mm wide and incorporated a door leaf with dimensions of 2060 mm high by 920 mm wide by 54 mm thick. The door leaf was of a solid graduated density chipboard construction, with hardwood lippings to all edges and was hung within a hardwood frame, on pivots. The doorset included various items of d line door hardware including an overhead closer, a mortice cased lockset complete with lever handle set, cylinder and escutcheons and a cranked pull handle mounted back to back with another pull handle.

Doorset B had overall dimensions of 2100 mm high by 1000 mm wide and incorporated a door leaf with dimensions of 2060 mm high by 920 mm wide by 54 mm thick. The door leaf was of a solid graduated density chipboard construction, with hardwood lipping to all edges and was hung within a hardwood frame on the floor mounted spring and pivots. The doorset also included a pull handle mounted on its exposed side.

The test demonstrated the ability of both doorsets achieve integrity and insulation performances of 32 minutes. The test was discontinued after a duration of 63 minutes.

WF Test Report No. 340091

The test referenced WF No. 340091 included an insulated single-acting, single-leaf timber/mineral composite based doorset.

The doorset had overall dimensions of 2095 mm high by 990 mm wide incorporating a leaf with overall dimensions of 2040 mm high by 898 mm wide by 65 mm thick. The door leaf consisting of 4 mm thick MDF outer facings, 10 mm thick mineral board inner facings and a 37 mm thick particle core. The leaf was hung within a hardwood frame on five d line stainless steel hinges.

A d line concealed closer was fitted into the head of the leaf with its guide rail mounted into the head of the door frame. The doorset also incorporated a d line mortise lock at approximately mid height of the door leaf complete with d line handles, lock cylinder and escutcheons. A d line surface mounted push bar panic bolt assembly was fitted to the exposed face of the leaf.

The doorset was installed such that it opened away from the heating conditions of the test and the latch and panic bar were engaged for the duration of the test.

The test demonstrated the ability of the doorset assembly to achieve an initial integrity performance of 98 minutes and the test was discontinued after a duration of 122 minutes.

Assessed Performance

General

It is proposed that previously fire tested (or assessed by Warringtonfire, BM TRADA or Chiltern International Fire) timber, mineral composite and steel based doorsets may be fitted with the d line door hardware products detailed within this report without detracting from the performance of the doorset.

The exact scope of use for each product is detailed within the following sections and it should not be assumed that all products are appraised for all doorset types and fire resistance durations. The various product ranges are discussed in the following sections which will include the requirements and limitations of their use. Individual product references within each product range are listed in the tables of approved products given in Annex A of the report.

- The items covered by this appraisal are:
- d line door lever handles
- BASE door lever handles
- d line mortice lock cases
- BASE flush bolts and dust socket
- d line hinges
- d line escutcheons complete with bolt and bush
- BASE escutcheons complete with bolt and bush
- d line profile lock cylinders
- BASE 19 mm pull handles
- d line 19 mm pull handles
- Fixing bolts for pull handles
- d line panic exit devices
- products available in powder coated and PVD coated finishes in addition to the standard finishes identified

d line lever handles

It is proposed that the range of d line lever handles detailed in Annex A may be fitted, in conjunction with a suitable proven lock case, to timber and mineral composite based doorset construction for fire resistance performances of up to 120 minutes and steel based doorset constructions for fire resistance performances of up to 240 minutes, without detracting from the performance of the doorset.

Support for the proposed use of the range of lever handles is taken from the various fire resistance tests detailed earlier. Lever handles from the d line range have been fitted to locksets included in timber based doorsets for 30 and 60 minute fire resistance performances, mineral composite based doorsets for fire resistance performances of 120 minutes and steel based doorsets for fire resistance performances of in excess of 240 minutes.

Review of the observations taken during each of the tests shows that in every instance, the fitted lever handles provided a positive contribution to the performance of the doorset. In those instances where a premature integrity failure of the doorset did occur, the performance of the lever handles continued to be maintained for in excess of the required performance.

Based on the positive results of the tested models, it is reasonable to consider other models from the proposed range based on the similarity of their constructions and method of installation.

All d line lever sets considered by this appraisal share the same basic construction having a ball bearing base rose of aluminium or stainless steel with grade 316 stainless steel snap-on cover rose, solid stainless steel ball bearing rose or stainless steel back plate with stainless steel lever handles. All models mount to the door using the same bolt and bush components and require the same door leaf preparation.

Considering the similarity of all of the proposed models, it can be reasonably concluded that all of the d line lever handle models listed in the table in Annex A are therefore suitable for installation, with an appropriate lock case, to timber and mineral composite based doorset construction for fire resistance performances of up to 120 minutes and steel based doorset constructions for fire resistance performances of up to 240 minutes, without detracting from the performance of the doorset.

It was noted during the steel doorset test that the aluminium base rose melted away from the lever handles during the test. However, it was also confirmed that the snap-on stainless steel roses remain in place on both the lever handle and the lock cylinder escutcheon on the exposed side of the doorset after the total test duration of 261 minutes.

The lever handle sets are therefore positively appraised.

IKONS lever handles

The IKONS lever handles are architect designed lever handle models. These are again based on the d line standard construction of ball bearing rose, either solid or with snap-on cover, and stainless steel lever handles constructed of grade 316 stainless steel.

Based on the similarity of the proposed models to those of the d line range already discussed above, it is considered reasonable to conclude that, those models from the IKONS range listed in the table in Annex A are suitable for use with the same scope of approval as the d line lever handles.

BASE lever handles

The BASE range of lever are again similar to the d line range, but with a less complex range of options. All of the models proposed for appraisal comprise stainless steel levers with an aluminium ball bearing base rose with 304 grade stainless steel snap-on cover, or alternatively a solid stainless steel ball bearing rose or stainless steel back plate.

Doorset A included in the test referenced WF No. 340092 included a pair of BASE 28-1816.02.010 return to door levers. Whilst early integrity failures of the doorset did occur prior to the required 60 minute performance, no instance of integrity failure associated with the presence or performance of the lever handles was recorded in the 63 minute duration of the test.

Given the positive performance of the tested lever handle model, and the similarity of this model with all other proposed models detailed in the table in Annex A, it is considered acceptable for the BASE lever handles to be fitted, in conjunction with a suitable lockset, to previously proven timber based doorsets required to provide fire resistance performances of up to 60 minutes without detracting from the performance of the doorset.

d line mortice locks

The proposed range includes sash locks, latches, dead locks, WC locks and panic locks.

All lock cases are of the same basic design having forend dimensions of 24 mm wide by 235 mm high, case dimensions of 165 mm high by 98 mm (maximum) wide and 15 mm thick. Standard locks include latch and/or dead bolts of Zamak alloy, panic locks include stainless steel latch and dead bolts.

30 and 60 minute timber door applications

The details of the doorsets included in the test referenced WF No. 314837 is cited in support of the proposed use of the locks with 30 and 60 minute timber based doorsets.

Doorset A was of a typical 30 minute construction and Doorset B was of a typical 60 minute timber doorset construction. Both doorsets were provided with a d line mortice lock complete with stainless steel lever handles, thumb turn (Doorset A) and euro profile double cylinder (Doorset B) and stainless steel escutcheons.

Both lock cases were provided with intumescent protection enveloping the lock case and behind their forends and strike plates. The protection used was a 1 mm thickness of mono ammonium phosphate sheet intumescent in the 30 minute doorset and a 2 mm thickness of the same material in the 60 minute doorset.

Review of the observations from the test shows that the 30 minute doorset, Doorset A, achieved a 38 minute integrity performance. An early integrity failure of the 60 minute doorset, Doorset B, did occur after 54 minutes, but this mode of failure was remote from the lockset and therefore not as a consequence of, or in any way related to, the presence or performance of the lockset or its associated items. No instance of integrity failure was recorded at the position of the lockset to Doorset B in the 61 minute duration of the test.

Based on the performance of the tested assemblies it is reasonable to conclude that the performance of the tested models would be the same for any of the other proposed model, if fitted in the same manner.

As the tested locks included intumescent protection as part of their installation, it is prerequisite that in all instances the same level and type of intumescent protection is included with the lockset.

Dead lock models are included in the proposed range of locksets, as these models do not incorporate any means of automatic latching, their use shall be limited such that they may only fitted to doorsets where they are not required to provide an essential latching function. Therefore they shall only be fitted to a previously proven as unlatched doorset fitted with a suitable surface mounted overhead door closer.

120 minute timber/mineral composite door applications – Panic locks

Evidence in support of the proposed use of locksets with 120 minute timber/mineral composite doorsets is cited as the test referenced WF No. 340091. The doorset was provided with a d line 14.9050.02.658 Panic escape lock complete with d line 14.1836.02.013 stainless steel lever handles, a d line 04.100.303.0081.SCP brass euro profile cylinder with thumb turn and d line 14.3435.02.215 stainless steel escutcheons. The lockset was engaged such that it provided a retaining function to the doorset.

The lockset was provided with intumescent protection in the form of 2 mm thick Interdens sheet enveloping the lock case and bedded behind the forend and strike plate.

The test observations show that initial integrity failure of the doorset occurred after 98 minutes of testing, however, this mode of failure was not related to the presence or performance of the lockset or its associated items. The test continued for a total of 122 minutes with no instance of integrity failure attributed to the lockset.

Based on the performance of the tested lock model, it is reasonable to conclude that the lock provided a positive contribution to the performance of the doorset for in excess of 120 minutes. All lock models considered for use in this 120 minute application are Panic escape locks of the same construction as the tested Panic escape lock and differ from each other only in that they are handed or have radius or square forends. All models considered for this 120 minute application include the same stainless steel latch bolt as the tested model. As the lockset did provide an essential latching function to the tested doorset, this appraisal is restricted to only those other panic escape locks having the same stainless steel bolts. The approved models are detailed in the table given in Annex A.

As the tested lock included intumescent protection as part of its installation, it is prerequisite that in all instances the locks will be installed with the same 2 mm thick Interdens intumescent sheet protection to the lock case and behind the forend and strike plate.

240 minute steel door applications

The doorset included in the test referenced WF No. 340086 was of an uninsulated steel based construction and was a single-acting, double-leaf configuration. The doorset was fitted with various items of door hardware including a d line 14.9111.02.600 sash lock complete with 14.1816.02.016 lever handles, a d line 14.DPS.KD.31K31 brass euro profile cylinder with thumb turn and stainless steel d line 14.34.02.215 escutcheons.

Initial integrity failures of the doorset occurred prior to the required 240 minutes, but none was attributable to the lockset installation. The test continued for a period of 261 minutes without any instance of integrity failure related to the presence or performance of the lockset or its associated items.

The test is therefore considered to provide justification of the suitability of the installation of the locks within steel based door constructions for integrity performances of up to 240 minutes.

Whilst the performance of the tested lockset is considered to have demonstrated the suitability of the range of locksets in this application, the tested model included a Zamak alloy latch bolt. Due to the relatively low melting point of Zamak it is unlikely that the lock provided a positive latching action for the duration of the test, therefore, it is necessary to restrict the use of all lock models including the same bolt material.

This appraisal limits the use of all lock models, with the exception of the Panic escape models, such that they shall only be fitted to steel based doorsets which are previously proven unlatched, and will not be reliant on the retention afforded by the latch bolt of these locks.

Alternative Doorsets

To enable the use of the locksets 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 locksets to be used safely:

a) Timber and mineral composite doorsets, including the door frame and associated ironmongery should have achieved up to 30, 60 or 120 minutes integrity and insulation performance, when tested by a UKAS approved laboratory (or assessed by Warringtonfire, BM TRADA or Chiltern International Fire) to EN 1634-1.

b) Steel based doorsets, including the door frame and associated ironmongery should have achieved up to 240 minutes integrity performance, when tested by a UKAS approved laboratory (or assessed by Warringtonfire, BM TRADA or Chiltern International Fire) to EN 1634-1.

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

d) Likewise, if the proposed doorset is to be used in unlatched configurations then the available test evidence should be applicable to unlatched doorsets.

For timber and mineral composite based doorsets the critical aspects of the doorset construction are considered to be the material of the door frame, the leaf to frame clearance gaps and the lipping material. 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 shall be followed:

a) Door frame density - 450kg/m^3 for 30 minute doorsets and 650kg/m^3 for 60 and 120 minute doorsets.

b) The minimum thickness of door leaves shall be 44 mm for 30 minute doorsets, 54 mm for 60 minute doorsets and 65 mm for 120 minute

doorsets.

c) Lipping density - 650kg/m^3.

d) Mineral composite doorsets shall include sub-facings of mineral board of 10 mm minimum thickness to each face of the door leaf.

In all cases the locksets shall be fitted with the additional intumescent protection detailed in the relevant section of this report.

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

BASE flush bolts steel door applications

The proposed flush bolts are designed for use with steel based doorset constructions, therefore, it is proposed that the range of flush bolts are considered for use with steel based doorsets for fire resistance periods of up to 240 minutes.

The test report referenced WF No. 340086 details a test conducted on a single-acting, double-leaf uninsulated steel based doorset. The passive leaf of the doorset was provided with d line 28.5092.02.200 flush bolts to its head and base.

Review of the observations taken during the test shows that whilst early integrity failures did occur on the doorset prior to the required 240 minutes, none was associated with the presence or performance of the flush bolts fitted to the doorset. No instance of failure of integrity relating to the flush bolts occurred within the 261 minute duration of the test.

The tested bolt is the 200 mm length taken from a range of bolts which are all of the same design and grade 304 stainless steel construction. The tested model is the shortest from the range; the largest has a length of 600 mm. All models include the same 12 mm diameter bolt and have the same bolt throw.

As the bolts are all intended for use with steel based doorsets, the variation of length is not considered likely to have any influence on performance of the bolt when installed within this type of doorset construction; therefore the performance of the tested bolt is acceptable justification for the use of all bolts from the range.

The range is complemented by an optional dust socket, BASE reference 28.5090.02.020. This socket is of an all steel construction and intended for mounting into the threshold below a doorset for the engagement of bottom mounted bolts. This unit is considered acceptable based on its materials and location remote from the doorset.

D line hinges steel door applications

The d line hinges considered are all of the same design, size and construction. Further reference to the fire test report WF No. 340086 is made in support of this proposal. The report details a test conducted on a single-acting, double-leaf uninsulated steel based doorset which was fitted with d line 14.5003.02.001 hinges.

Review of the test observations has shown that the hinges continued to support the door leaves for the full 261 minute duration of the test, notwithstanding the

earlier integrity failures of the doorset.

All hinges proposed are constructed of grade 316 stainless steel and are essentially identical to the tested hinge model on terms of sizes and fixing and differ only in options for square or radius corners and finish.

It is therefore reasonable to conclude that all hinge models can be positively appraised for use with steel based doorsets for fire resistance performances of up to 240 minutes.

The range of approved hinges is detailed in the table given in Annex A.

Alternative Doorsets

To enable the use of the hinges 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 hinges to be used safely:

a) Doorsets, including the door frame and associated ironmongery should have achieved up to 240 minutes integrity performance, when tested by a UKAS approved laboratory (or assessed by Warringtonfire, BM TRADA or Chiltern International Fire) to EN 1634-1.

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

c) Likewise, if the proposed doorset is to be used in unlatched configurations then the available test evidence should be applicable to unlatched doorsets.

d) The tested doorset included four hinges per door leaf, the number of hinges required to be fitted shall be commensurate with the size and mass of the proposed door leaf.

D line and BASE escutcheons

Both of these ranges comprise aluminium base roses, stainless steel snap-on covers and brass fixing bolts and bushes.

Versions of these escutcheons have been included with the tested d line locksets included in timber, mineral composite and steel based doorsets for fire resistance performances of up to 240 minutes. No instance of integrity failure of any of the tested doorsets has been as a result of the installation of the escutcheons, or their method of fixing, it is therefore considered that a positive assessment of these items can be made, subject to their installation in conjunction with a suitable, proven lockset.

The range of approved items is detailed in the table given in Annex A.

D line profile lock cylinders

All of the proposed lock cylinders are of a euro profile design manufactured from brass. The range includes cylinders with thumb turns, double cylinders and single cylinders.

Like the escutcheons, the lock cylinders have been included with d line lock cases in all of the referenced tests and in all instances have not contributed to any mode of integrity failure of the lockset, or ultimately the doorset.

The most onerous lock cylinders of this type would be double or cylinder and turn models as these fully penetrate through the door leaf. As these type of cylinder were included in each of the referenced tests, it is considered acceptable that these, and the other models proposed, may be fitted without detracting from the performance of the doorset.

Positive appraisal of the lock cylinders for use with timber based doorsets for fire resistance periods of up to 60 minutes, mineral composite based doorsets for up to 120 minutes and steel based doorsets for up to 240 minutes, when fitted in conjunction with a previously proven lockset, is therefore considered acceptable.

The range of approved cylinders is detailed in the table given in Annex A.

BASE & d line pull handles and fixing bolts

Both ranges comprise 19 mm diameter pull handles in straight or cranked designs and of various lengths. It is proposed that both ranges may be fitted to previously proven timber based doorsets for fire resistance performances of up to 60 minutes.

Examples from both ranges were included in the test referenced WF No. 340092 fitted to 60 minute timber doorset constructions.

Back to back pull handles were fitted to the leaf of Doorset A and a single straight pull handle was fixed to the exposed face of the leaf of Doorset B using ‘Pig bolt’ fixings.

In both instances the inclusion of the pull handle assemblies did not detract from the integrity performances of the doorsets for the 63 minute duration of the test.

All of the pull handles included in the list of proposed items are of the same construction in terms of materials, and the BASE and d line ranges differ only in the use of different grades of stainless steel (BASE grade 304, d line grade 316).

Importantly all models use the same method of fixing to the door leaf comprising either M8 fixing bolts for back to back fixing or M8 pig nose bolts for single handle through bolt fixing.

As both types of fixing used for all of the proposed pull handles have been shown to work successfully in the referenced fire test, it is acceptable to consider all of the proposed pull handles and fixing bolts as suitable for use.

Direct test evidence for the pull handles comes from testing conducted on 60 minute door constructions. Based on the face that no failures occurred and given the relatively small size of the fixings, it is considered that the pull handles can be positively appraised for use with 30 minutes timber based doorset constructions, but this will be subject to the door leaf having a

minimum thickness of 44 mm.

The range of approved pull handles and fixing bolts is detailed in the table given in Annex A.

D line panic exit devices

The test referenced WF No. 340091 included a single-leaf, single-acting mineral composite based doorset fitted with a d line 3-point surface mounted push bar panic exit device.

The tested assembly was surface mounted and was attached to the exposed side of the door leaf. Review of the test observations shows that the panic exit assembly had detached from the door after a period of 33 minutes and therefore had no further influence in the performance of the doorset beyond that time.

On the basis that the tested and proposed models are all entirely surface mounted, it is considered acceptable that these items may be positively appraised for use with timber and mineral composite based insulated doorsets for fire resistance periods of up to 120 minutes.

This appraisal covers only those items included in the table given in Annex A and does not approve the use of any form or outside access device used in conjunction with the hardware.

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.

The following requirements of the doorset are however considered to be essential:

- The doorset shall be of a timber or mineral composite based construction and must have provided the required 30, 60 or 120 minute integrity performance and tested at a UKAS accredited laboratory in accordance with EN 1634-1, be assessed for the required period by Warringtonfire.

- The tested/assessed doorset as described above must have been tested or assessed in the required configuration i.e. number of leaves and action.

- The doorset should be of a proven unlatched configuration and fitted with a suitable self-closing device.

The fitting of the panic exit devices onto alternative doorsets, on the basis of compliance with the conditions given above, is therefore considered to be acceptable.

Powder coated and PVD coated finishes

It is proposed that all the products shown in Annex A of this report be available in powder coated and PVD coated finishes in addition to the standard finishes identified.

Empirical data suggest that surface coatings of this type have no detrimental effect on the performance of the hardware under fire test conditions; the use of powder coated and PVD coated finishes is therefore approved on all products in Annex A (as appropriate), for all applications covered by this report.

Conclusions

It may also be concluded that, following the recommendations given in this report, previously fire tested (or assessed by Warringtonfire, BM TRADA or Chiltern International Fire) timber or mineral composite based doorsets which have achieved up to 120 minutes integrity and insulation in accordance with EN 1634-1, as discussed in this report and subject to the restrictions detailed, may be fitted with the various items of hardware, as detailed in Annex A, without detracting from the overall performance of the doorset

Furthermore, it may also be concluded that, following the recommendations given in this report, previously fire tested (or assessed by Warringtonfire, BM TRADA or Chiltern International Fire) steel based doorsets which have achieved up to 240 minutes integrity in accordance with EN 1634-1, as discussed in this report and subject to the restrictions detailed, may be fitted with the various items of hardware, as detailed in Annex A, without detracting from the overall performance of the doorset.

Review (29th November 2019)

It has been confirmed by **d line as** that there have been no changes to the specification, materials or manufacturing location of the door hardware considered in the original appraisal referenced WF Assessment Report No. 345970 issued 21st November 2014.

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 Door Drive Units 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. 345970, 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 **d line as** 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 available at the time of issue. If contradictory evidence becomes available to Warringtonfire the assessment will be unconditionally withdrawn and d line as 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 December 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.

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.

Summary of Primary Supporting Data

WF Test Report No. 314837

The test referenced WF No. 314837 included two single-acting, single-leaf timber based doorsets. The doorsets were referenced as 'Doorset A' and 'Doorset B' for the purpose of the test.

Doorset A had overall nominal dimensions of 2080 mm high by 1010 mm wide and incorporated a door leaf of overall nominal dimensions 2043 mm high by 941 mm wide by 44 mm thick. The doorset included a softwood door frame and a door leaf comprising softwood stiles and rails, a flaxboard core, MDF facings and was lipped with hardwood on the vertical edges. Doorset B had overall dimensions of 2180 mm high by 1010 mm wide and incorporated a leaf of overall dimensions 2037 mm high by 928 mm wide by 54 mm thick. The leaf was installed within a hardwood frame and comprised softwood stiles and rails, a flaxboard core, with non-combustible board sub-facings, hardwood lippings to the vertical edges and MDF outer facings.

Each doorset incorporated a 'D-Line' Surface mounted, overhead closer referenced on their exposed face. The doorsets each incorporated a 'D-Line' lock mechanism. Doorset A was orientated such that it opened away from the heating conditions of the test. Doorset B was orientated such that it opened towards the heating conditions of the test. Each doorset was rendered unlatched for the duration of the test.

The specimens satisfied the test requirements for the following periods:

		Doorset A	Doorset B
Integrity	Sustained Flames	38 minutes*	54 minutes
	Gap Gauge	38 minutes*	54 minutes
	Cotton Pad	38 minutes*	54 minutes
Insulation		38 minutes*	54 minutes

*Doorset blanked off to allow the test to continue on Doorset B.

The test was discontinued after a period of 61 minutes.

Test date : 12th January 2005

Test Sponsor: d line as

WF Test Report No. 340086

The test referenced WF No. 340086 included an uninsulated single-acting, double-leaf steel based doorset.

The doorset had overall dimensions of 2800 mm high by 2500 mm wide consisting of a double leaf doorset with an over panel. Each leaf had overall dimensions of 2452 mm high by 1205 mm wide by 48 mm thick. The over panel was 300 mm high by 2500 mm wide.

The door leaves were formed from mild steel sheet skins with a paper honeycomb core. The door leaves were each hung within a profiled mild steel frame on four stainless steel hinges. Both leaves incorporated a vision panel. The active leaf (Leaf B) was fitted with a latch and handle set just below mid-height and the inactive leaf was fitted with top and bottom flush bolts.

Both leaves were fitted with surface mounted overhead closers. The doorset was latched for the duration of the test.

The specimen satisfied the test requirements for the following periods:

Integrity	Sustained Flames	54 minutes
	Gap Gauge	261 minutes
	Cotton Pad	12 minutes
Insulation		4 minutes

#The test duration. The test was discontinued after a period of 264 minutes.

Test date : 26th April 2014

Test Sponsor: d line as

WF Test Report No. 340092

The test referenced WF No. 340092 included two single-leaf timber based doorsets. The doorsets were referenced as 'Doorset A' and 'Doorset B' for the purpose of the test. Doorset A was of a single-acting configuration and Doorset B was of a double-acting configuration.

Doorset A had overall nominal dimensions of 2100 mm high by 1000 mm wide and incorporated a door leaf with dimensions of 2060 mm high by 920 mm wide by 54 mm thick. The door leaf was of a solid graduated density chipboard construction, with hardwood lippings to all edges and was hung within a hardwood frame, on pivots. The doorset included various items of d line door hardware including an overhead closer, a mortice cased lockset complete with lever handle set, cylinder and escutcheons and a cranked pull handle mounted back to back with another pull handle.

Doorset B had overall dimensions of 2100 mm high by 1000 mm wide and incorporated a door leaf with dimensions of 2060 mm high by 920 mm wide by 54 mm thick. The door leaf was of a solid graduated density chipboard construction, with hardwood lipping to all edges and was hung within a hardwood frame on the floor mounted spring and pivots. The doorset also included a pull handle mounted on its exposed side.

The specimens satisfied the test requirements for the following periods:

		Doorset A	Doorset B
Integrity	Sustained Flames	32 minutes	32 minutes
	Gap Gauge	43 minutes	58 minutes
	Cotton Pad	32 minutes	32 minutes
Insulation		32 minutes	32 minutes

The test was discontinued after a period of 63 minutes.

Test date : 2nd May 2014

Test Sponsor: d line as

WF Test Report No. 340091

The test referenced WF No. 340091 included an insulated single-acting, single-leaf timber/mineral composite based doorset.

The doorset had overall dimensions of 2095 mm high by 990 mm wide incorporating a leaf with overall dimensions of 2040 mm high by 898 mm wide by 65 mm thick. The door leaf consisting of 4 mm thick MDF outer facings, 10 mm thick mineral board inner facings and a 37 mm thick particle core. The leaf was hung within a hardwood frame on five d line stainless steel hinges.

A d line concealed closer was fitted into the head of the leaf with its guide rail mounted into the head of the door frame. The doorset also incorporated a d line mortise lock at approximately mid height of the door leaf complete with d line handles, lock cylinder and escutcheons. A d line surface mounted push bar panic bolt assembly was fitted to the exposed face of the leaf.

The doorset was installed such that it opened away from the heating conditions of the test and the latch and panic bolt were engaged for the duration of the test.

The specimen satisfied the test requirements for the following periods:

Integrity	Sustained Flames	98 minutes
	Gap Gauge	113 minutes
	Cotton Pad	98 minutes
Insulation		98 minutes

The test was discontinued after a period of 122 minutes.

Test date : 16th May 2014

Test Sponsor: d line as

Declaration by d line as

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

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

We are not aware of any information that could 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.

(In accordance with the principles of FTSG Resolution 82)

Signature:

Name:

Position:

Company:

Date:

Signatories

Responsible Officer

R. Anning* - Principal Certification Engineer

Approved

M. Tolan* - Senior Certification Engineer

* For and on behalf of Warringtonfire.

Report Issued: 21st November 2014

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

Revision History

Issue No: 1	Issue Date: 21st November 2014
Written By: D Forshaw	Approved By: A Kearns
Issue No: 2	Re-issue Date: 3rd December 2019
Revised By: R Anning	Approved By: A Kearns
Reason for Revision: Review and revalidation + address change.	
Issue No: 3	Re-issue Date: 20th January 2022
Revised By: R Anning	Approved By: M Tolan
Reason for Revision: Add decorative finishes to currently assessed products.	

Annex A – Approved Hardware

Hardware approved for use with timber and mineral composite based doorsets for up to 120 minutes and steel based doorsets for up to 240 minutes.

DOOR LEVER d line

ARTICLE NO	DESCRIPTION
14.0416.02.011	14L on Ø50mm alum. rose with SSS-316snap on cover,
14.1016.02.011	16L on Ø50mm alum. rose with SSS-316 snap on cover,
14.1616.02.010	19L on Ø50mm alum. rose with SSS-316 snap on cover,
14.0016.02.010	22L on Ø50mm alum. rose with SSS-316 snap on cover,
14.0516.02.017	14U on Ø50mm alum. rose with SSS-316 snap on cover,
14.1216.02.017	16U on Ø50mm alum. rose with SSS-316 snap on cover,
14.1816.02.016	19U on Ø50mm alum. rose with SSS-316 snap on cover,
14.0116.02.010	22U on Ø50mm alum. rose with SSS-316 snap on cover,
14.2616.02.010	16Con Ø50mm alum. rose with SSS-316 snap on cover,
14.2316.02.010	19C on Ø50mm alum. rose with SSS-316 snap on cover,
14.0916.02.010	19C2 on Ø50mm alum. rose with SSS-316 snap on cover,
14.0616.02.010	16U2 on Ø50mm alum. rose with SSS-316 snap on cover,
14.0816.02.010	19U2 on Ø50mm alum. rose with SSS-316 snap on cover,
14.1316.02.015	16M on Ø50mm alum. rose with SSS-316 snap on cover,
14.1916.02.014	19M on Ø50mm alum. rose with SSS-316 snap on cover,
14.1416.02.010	16UF on Ø50mm alum. rose with SSS-316 snap on cover,
14.2016.02.010	19UF on Ø50mm alum. rose with SSS-316 snap on cover,
14.1516.02.010	16LF on Ø50mm alum. rose with SSS-316 snap on cover,
14.2116.02.010	19LF on Ø50mm alum. rose with SSS-316 snap on cover,
14.2416.02.010	19B on Ø50mm alum. rose with SSS-316 snap on cover,
14.2516.02.010	19FF on Ø50mm alum. rose with SSS-316 snap on cover,
14.0216.02.010	19FFG on Ø50mm alum. rose with SSS-316 snap on cover,
14.0316.02.010	19FFU on Ø50mm alum. rose with SSS-316 snap on cover,
14.2716.02.010	19.O on Ø50mm alum. rose with SSS-316 snap on cover,

DOOR LEVER d line

Panic lock/fire door lever set according to EN179	
ARTICLE NO	DESCRIPTION
14.2036.02.010	19UF Ø50mm SS rose and cover, 9mm spindle DIN18273
14.1836.02.013	19U Ø50mm SS rose and cover, 9mm spindle DIN18273

Annex A – Approved Hardware (continued)

Hardware approved for use with timber and mineral composite based doorsets for up to 120 minutes and steel based doorsets for up to 240 minutes.

IKONS DOOR LEVER d line

ARTICLE NO	DESCRIPTION
12.4054.74.038	Arne Jacobsen, 111mm SSS 304
12.4044.74.038	Arne Jacobsen, 97mm SSS 304
12.4141.74.038	PLH design, SSS 304
12.4091.02.038	Aarstiderne, SSS 304
12.4181.02.038	Jean Nouvel SSS 304
12.4191.02.038	Cubo SSS 304
12.4028.74.038	Classic SSS 304
12.4160.74.380	SHL SSS 304
12.4131.74.038	Onen SSS 304
12.4065.74.038	HL SSS 304
12.4412.02.010	Triangle SSS 304
12.4212.02.010	Cubo Cut SSS 304

All d line door levers can be mounted on:

1: Ø50mm ball bearing rose with aluminium base rose and SS snap on cover
2: Ø50mm ball bearing rose with SS base rose and SS snap on cover,
for spindles 9mm DIN 18273
3: Ø50mm ball bearing rose SS solid stainless steel, 3mm
4: 30x 65mm ball bearing rose with aluminium base rose and SS snap on cover
5: 30x 65mm ball bearing rose with SS base rose and SS snap on cover
for spindles 9mm DIN 18273
6: 30x 65mm ball bearing rose solid SS, 3mm
7: Back plates in the sizes: 60x170x2mm, 60x210x2mm, 60x240x10/4mm, 42x210x2mm, 30x210x3mm, 30x240x10/4mm, 52x240x10/4mm, 175x175x2mm

Note: The above product approvals are subject to their installation with a suitable lockset as detailed in the report. All lever handles are approved for standard installation with 25 mm diameter recessing for spindle hole preparation to the door. Scandinavian installation method is not approved by this report.

Annex A – Approved Hardware (continued)

Hardware approved for use with timber and mineral composite based doorsets for up to 60 minutes.

DOOR LEVER BASE

ARTICLE NO	DESCRIPTION
28.1016.0.2010	16L on Ø50mm alum. rose with SSS-304 snap on cover,
28.1616.02.010	19L on Ø50mm alum. rose with SSS-304 snap on cover,
28.1216.02.010	16U on Ø50mm alum. rose with SSS-304 snap on cover,
28.1816.02.010	19U on Ø50mm alum. rose with SSS-304 snap on cover,
28.2516.02.010	19FF on Ø50mm alum. rose with SSS-304 snap on cover,

All BASE door levers can be mounted on:

1: Ø50mm ball bearing rose with aluminium base rose and SS snap on cover

2: Ø50mm ball bearing rose solid SS, 3mm

3: Back plates in the sizes: 55x210x2mm, 30x210x3mm and 175x175x2mm

Note: The above product approvals are subject to their installation with a suitable lockset as detailed in the report.

Annex A – Approved Hardware (continued)

Hardware approved for use with timber and mineral composite based doorsets for 30 minutes, 60 minutes and up to 120* minutes and steel based doorsets for up to 240 minutes.

LOCK d line

ARTICLE NO	DESCRIPTION
14.9110.02.600	Sash lock Ø-forend
14.9111.02.600	Sash lock Sq-forend
14.9112.02.600	WC sash lock Ø-forend
14.9113.02.600	WC sash lock Sq. forend
14.9114.02.600	Latch lock Ø-forend
14.9115.02.600	Latch lock Sq. forend
14.9116.02.600	Dead lock Ø-forend
14.9117.02.600	Dead lock Sq. forend
14.9118.02.600	WC dead lock Ø-forend
14.9119.02.600	WC dead lock Sq. forend
14.9050.02.658	Panic lock 65mm, Ø LH
14.9050.02.659	Panic lock 65mm, Ø RH
14.9051.02.658	Panic lock 65mm, Sq. LH
14.9051.02.659	Panic lock 65mm, Sq. RH

* Only Panic lock is approved for use with mineral composite based doorsets for applications greater than 60 minutes and up to 120 minute fire resistance.

Note: The above product approvals are subject to their installation with the specified intumescent protection (where relevant) as detailed in the report.

Annex A – Approved Hardware (continued)

Hardware approved for use with steel based doorsets for up to 240 minutes.

FLUSH BOLTS BASE

ARTICLE NO	DESCRIPTION
28.5092.02.200	Flush bolt-304, Steel doors, 200mm
28.5092.02.250	Flush bolt-304, Steel doors, 250mm
28.5092.02.300	Flush bolt-304, Steel doors, 300mm
28.5092.02.450	Flush bolt-304, Steel doors, 450mm
28.5092.02.600	Flush bolt-304, Steel doors, 600mm
28.5090.02.020	Dust socket BASE

HINGES d line

ARTICLE NO	DESCRIPTION
14.5003.02.000	Hinge Ø leaf, SSS-316 89x102x3mm
14.5003.02.001	Hinge Sq.leaf, SSS-316 89x102x3mm
16.5003.01.000	Hinge Ø leaf, polished SS-316 89x102x3mm
16.5003.01.001	Hinge Sq. leaf, polished SS-316 89x102x3mm

Annex A – Approved Hardware (continued)

Hardware approved for use with timber and mineral composite based doorsets for up to 120 minutes and steel based doorsets for up to 240 minutes.

PROF. ESCUTCHEON+BOLT/BUSH d line

ARTICLE NO	DESCRIPTION
14.3435.02.215	PZ rose d line SSS snap on cover on Alu. base rose
14.2961.74.107	M4x110mm section bolt/bush. Brass/Nickel pltd

PROF. ESCUTCHEON+BOLT/BUSH BASE

ARTICLE NO	DESCRIPTION
28.3435.02.215	PZ rose BASE, SSS snap on cover on Alu. base rose
28.3235.02.804	Key hole rose
28.3245.02.800	Blind rose

PROFILE CYLINDERS d line

ARTICLE NO	DESCRIPTION
04.100.303.0081.	Euro cylinder
14.DPS.KD.31K31	d line EPS Cylinder with thumb turn
14.DPS.DKA.3131	Double cylinder DPS-6 KA 3131
14.DPS.DKA.3636	Double cylinder DPS-6 KA
14.DPS.DKD.3131	Double cylinder DPS-5 KD 140D
14.DPS.EKD.3131	Escape cylinder DPS-5 KD 140D
14.DPS.EMK.3131	Escape cylinder DPS-5 MK
14.DPS.SKA.032	Single Cylinder DPS-5 KA
14.DPS.SKD.027	Single cylinder DPS-5 KD
14.DPS.SKD.032	Single cylinder DPS-5 KD
14.DPS.SKD.037	Single cylinder DPS-5 KD

Note: The above product approvals are subject to their installation with a suitable lockset as detailed in the report.

Annex A – Approved Hardware (continued)

Hardware approved for use with timber and mineral composite based doorsets for up to 60 minutes.

Ø19mm PULL HANDLES AISI-304 BASE

ARTICLE NO	DESCRIPTION
28.4212.0.2304	Straight. thread M8, CC300 mm
28.4214.02.303	Straight, bush, CC300 mm
28.4212.02.657	Straight. thread M8, CC650 mm
28.4214.02.656	Straight, bush, CC650 mm
28.4232.02.301	Cranked, thread M8, CC300mm
28.4234.0.2301	Cranked, bush, CC300mm
28.4232.02.654	Cranked, thread M8, CC650mm
28.4234.02.653	Cranked, bush, CC650mm

Ø19mm PULL HANDLES AISI-316 d line

ARTICLE NO	DESCRIPTION
14.4212.02.126	Straight, thread M8, CC125mm
14.4212.02.207	Straight, thread M8, CC200mm
14.4212.02.304	Straight, thread M8, CC300mm
14.4212.02.405	Straight, thread M8, CC400mm
14.4212.02.450	Straight, thread M8, CC450mm
14.4212.02.657	Straight, thread M8, CC650mm
14.4214.02.125	Straight, bush, CC125mm
14.4214.02.206	Straight, bush, CC200mm
14.4214.02.303	Straight, bush, CC300mm
14.4214.02.404	Straight, bush, CC400mm
14.4214.02.450	Straight, bush, CC450mm
14.4214.02.656	Straight, bush, CC650mm
14.4218.02.301	Straight, thread M8/bush, CC300mm
14.4218.02.654	Straight, thread M8/bush, CC650mm
14.4232.02.123	Cranked, thread M8, CC125mm

Annex A – Approved Hardware (continued)

Hardware approved for use with timber and mineral composite based doorsets for up to 60 minutes.

Ø19mm PULL HANDLES AISI-316 d line (continued)

ARTICLE NO	DESCRIPTION
14.4232.02.301	Cranked, thread M8, CC300mm
14.4232.02.405	Cranked, thread M8, CC400mm
14.4232.02.654	Cranked, thread M8, CC650mm
14.4234.02.122	Cranked, bush, CC125mm
14.4234.02.301	Cranked, bush, CC300mm
14.4234.02.404	Cranked, bush, CC400mm
14.4234.02.653	Cranked, bush, CC650mm
14.4222.02.125	FF, thread M8 CC125mm
14.4222.02.200	FF, thread M8 CC200mm
14.4222.02.300	FF. thread M8 CC300mm
14.4222.02.400	FF, thread M8 CC400mm
14.4222.02.650	FF, thread M8 CC650mm
14.4224.02.125	FF, bush, CC125mm
14.4224.02.200	FF, bush, CC200mm
14.4224.02.300	FF, bush, CC300mm
14.4224.02.400	FF, bush, CC400mm
14.4224.02.650	FF, bush, CC650mm
14.4228.02.300	FF, thread M8/bush, CC300mm
14.4228.02.650	FF, thread M8/bush, CC650mm

FIXING BOLTS FOR PULL HANDLES d line

ARTICLE NO	DESCRIPTION
14.4915.92.380	M8x30mm Fixing bolt for 19mm pull handles
14.4915.92.584	M8x58mm Fixing bolt for 19mm pull handles
14.4915.92.983	M8x98mm Fixing bolt for 19mm pull handles
14.4915.92.991	M8x120mm Fixing bolt for 19mm pull handles
14.4920.02.306	M8x30mm pig nose bolt
14.4920.02.608	M8x60mm pig nose bolt
14.4920.02.900	M8x90mm pig nose bolt

Annex A – Approved Hardware (continued)

Hardware approved for use with timber and mineral composite based doorsets for up to 120 minutes.

PANIC EXIT DEVICE d line

ARTICLE NO	DESCRIPTION
14.5122.02.001	Panic exit device, One point locking
14.5122.02.002	Panic exit device, Two point locking
14.5122.02.003	Panic exit device. Three point locking

Note: Products not approved for use with any type of external access device.

Annex A – Approved Hardware (continued)

All hardware approved for use with timber and mineral composite based doorsets for up to 120 minutes and steel based doorsets for up to 240 minutes.

Note: the use of powder coated and PVD coated finishes are approved on all products in Annex A (where appropriate), for all applications covered by this report.