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Testing. Advising. Assuring.

Title:

The Fire Resistance Performance Of Timber Based Doorsets When Fitted With Royde & Tucker Pivot Hardware and Accessories

Report No:

WF 112848 Issue 5

Prepared for:

Royde & Tucker Limited
The High Cross Centre
Fountayne Road
London
N15 4QN

Date:

15th March 2000

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Executive Summary

Objective

This report presents an appraisal of the expected fire resistance performance of single and double-acting timber based doorsets, in single or double-leaf configurations, when fitted with various models of Royde & Tucker pivot hardware and accessories.

Report Sponsor

Royde & Tucker Limited

Address

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Summary of Conclusions

Previously fire tested (or assessed by Exova Warringtonfire, Chiltern International Fire or BM TRADA) timber doorsets which have achieved 30 minutes integrity as discussed in this report may be fitted with H131 or H131-400 pivot hinges and H131-P44 pivot protectors (in conjunction with H131-400 pivot hinges), in accordance with recommendations given in this report, without detracting from the overall performance of the doorset for 30 minutes integrity performances (and insulation where relevant).

The assessment also concludes that previously fire tested timber doorsets constructed using a Halspan tri-layer particleboard door core or alternatively a Moralt 'Lamincore' door blank which have achieved 60 minutes integrity as discussed in this report may be fitted with the various Royde & Tucker pivot assemblies, in accordance with recommendations given in this report, without detracting from the overall performance of the doorset for 60 minutes integrity performances (and insulation where relevant).

The assessment further concludes that previously fire tested (or assessed by Exova Warringtonfire, Chiltern International Fire or BM TRADA) single-leaf timber doorsets which have achieved 30 or 60 minutes integrity as discussed in this report may be fitted with the H131-105, H131-106, H131-107 and H131-300 emergency release door stops, in accordance with recommendations given in this report, without detracting from the overall performance of the doorset for 30 or minutes integrity performances (and insulation where relevant).

The timber doorsets to which the items of hardware are to be fitted shall have been fire tested at a UKAS accredited laboratory (or assessed by Exova Warringtonfire, Chiltern International Fire or BM TRADA) to BS 476: Part 22: 1987, in a double-acting configuration, as discussed in this report, and for the relevant period of integrity.

Valid until

15th November 2022

Introduction

This report provides a considered opinion regarding the fire resistance performance of timber based doorsets, in single or double-leaf configurations, required to provide 30 minutes integrity performances, when fitted with H131 or H131-400 pivot hinges as discussed in this report.

The report also provides a considered opinion regarding the fire resistance performance of timber based doorsets in single or double-leaf configurations, required to provide 30 minutes integrity performances, when fitted with the H131-400 pivot hinge in conjunction with the H131-P44 pivot protectors and the H131-105, H131-106, H131-107 and H131-300 emergency release door stops (single-leaf doorsets only).

The proposed doorsets are required to provide a fire resistance performance of 30 minutes integrity and, where applicable insulation, with respect to BS 476: Part 22: 1987.

In addition to the above, the report provides a considered opinion regarding the fire resistance performance of timber based doorsets in single or double-leaf configurations required to provide 60 minutes integrity performances when fitted with the various Royde & Tucker pivot assemblies and the H131-105, H131-106, H131-107 and H131-300 emergency release door stops (single-leaf doorsets only), as detailed in the relevant sections of this report.

The proposed doorsets are required to provide a fire resistance performance of 60 minutes integrity and, where applicable insulation, with respect to BS 476: Part 22: 1987.

For the pivot assemblies when used in 60 minute applications, the appraisal is specific to doorsets constructed using a Halspan tri-layer particleboard door core or alternatively a Moralt 'Lamincore' door blank and attention should be made to the specific requirements for the use of the hardware with those different constructions.

FTSG

The data referred to in the supporting data section has been considered for the purpose of this appraisal which has been prepared in accordance with the Fire Test Study Group Resolution No. 82: 2001.

Assumptions

It is assumed that the proposed H131 and H131-400 pivot hinges, H131-P44 pivot protectors and emergency release door stops will be fitted to timber based doorsets which have previously been shown to be capable of providing 30 minutes integrity and, where applicable insulation, in a double-acting configuration.

It is further assumed that the proposed pivot hardware and emergency release door stops will be fitted to timber based doorsets which have previously been shown to be capable of providing 60 minutes integrity and, where applicable insulation, in a double-acting configuration.

Supporting Construction

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 position and, where appropriate, latched position.

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

Proposals

It is proposed that previously fire tested (or assessed by Exova Warringtonfire, Chiltern International Fire or BM TRADA) timber doorsets which have achieved 30 minutes integrity and, where applicable, insulation performance, as discussed in this report, may be fitted with H131 or H131-400 pivot hinges, 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, Chiltern International Fire or BM TRADA) timber doorsets constructed using a Halspan tri-layer particleboard door core, or alternatively a Moralt 'Lamincore' door blank, which have achieved 60 minutes integrity and, where applicable, insulation performance, as discussed in this report, may be fitted with Royde & Tucker pivot hardware, 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, Chiltern International Fire or BM TRADA) timber doorsets which have achieved 30 or 60 minutes integrity and, where applicable, insulation performance, as discussed in this report, may be fitted with Royde & Tucker Emergency Release Door Stops, in accordance with recommendations given in

this report without detracting from the overall performance of the doorset.

Basic Test Evidence

CFR1009301 A fire resistance test conducted in accordance with BS EN 1634-1: 2008 to two timber based doorsets, one single-leaf double-acting and one double-leaf, single-acting.

Chilt/RF96062 A fire resistance test conducted in accordance with BS 476: Part 22: 1987 to a double-leaf, double-acting timber based doorset.

Chilt/RF07055 A fire resistance test conducted in accordance with BS 476: Part 22: 1987 to a double-leaf, double-acting, timber based doorset with glazing.

Assessed Performance

30 minutes applications

The proposals require H131 or H131-400 pivot hinges to be fitted to previously fire tested (or assessed by Exova Warringtonfire, Chiltern International Fire or BM TRADA) timber doorsets.

To enable the use of the proposed hinges on other 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 doors, the following points are given to enable the pivot hinges to be used safely:

The timber doorset, including door frame, intumescent seals and associated ironmongery should have achieved 30 minutes integrity and, where applicable, insulation when tested by a UKAS approved laboratory (or assessed by Exova Warringtonfire, Chiltern International Fire or BM TRADA) to BS 476: Part 22: 1987.

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

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 will be followed:

a) Door frame density - 460 kg/m^3,

b) Leaf to frame clearance gaps not to exceed 2.5 mm average and 3 mm maximum,

c) Lipping density - 460 kg/m^3.

The critical factor when changing from one item of ironmongery to another is the size of the alternative item. A larger item may require more timber material to be removed from the leaf and therefore may provide an easier route for the passage of flames and/or hot gases leading to premature integrity failure.

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.

H131 pivot hinge

Since the doorset to which the proposed H131 pivot hinge are to be fitted will have been tested in a double-acting configuration and thus will have included a floor spring and top pivot, the substitution of these items with the proposed pivot would be expected to reduce the required amount of timber removal from the leaf head and threshold.

The proposed doorsets, although originally tested in a double-acting configuration, will be single-acting and will require a surface mounted overhead door closer to be fitted in order to effect sufficient retention of the door leaf and to close the door overcoming any latch mechanism as fitted.

In the absence of any test evidence, the door closer which will be used in conjunction with the H131 pivot hinges shall be CERTIFIRE approved for the relevant period for timber based doorsets.

H131-400 double-acting pivot set

It is further proposed that the double acting pivot model H131-400 shall also be fitted within double-acting doorsets. This unit is essentially the same as that discussed above with the exception that the bottom hinge plate is replaced with a Pivot Bracket angle set into the frame. The door plate has also been replaced.

The Bottom Pivot Bracket shall be bedded onto 1 mm thick Interdens to supplement the interruption of intumescent seals within the frame.

An alternative adjustable pivot is also proposed for the H131-400 unit. This shall replace the 2 No. Door Plates. This element will result in an increase of door core material requiring to be removed as compared to the standard Door Plates. Therefore, the pivot will be required to be wrapped in 1 mm thick Interdens to all internal faces in order to maintain the 30 minutes integrity performance required.

H131-P44 pivot protector

The proposed pivot protector will be fitted in conjunction with the H131-400 double action pivot set. The pivot protector comprises two stainless steel folded plates with a fully welded seam which fit over the top and bottom corners of the door leaf hanging stile. The protectors are retained via three, stainless steel countersunk woodscrews fixed on each face of the door leaf.

The test report referenced CFR1009301 is cited as evidence of the suitability of the pivot protectors, when fitted in conjunction with the H131-400 pivot set.

The tested doorset assembly was of a double-acting, single-leaf configuration comprising a Pine softwood timber frame and a door leaf of 44 mm thick Halspan 'Prima' core tri-layer particleboard with hardwood timber lippings to all four edges.

The H131-400 pivot set was provided with the requisite intumescent protection detailed earlier in this report. The pivot protectors fitted to the head and based of the door leaf hanging stile were provided with a 1 mm thick layer of Interdens sheet intumescent fitted to the horizontal face and the vertical face at the heel between the leaf and the pivot protector.

The test continued for a period of 50 minutes without an instance of integrity failure, and until the test was discontinued after 51 minutes without any instance of integrity failure either directly relating to, or as a consequence of the presence or performance of the H131-400 pivot set or the H131-P44 pivot protectors.

It can therefore be concluded that the H131-P44 pivot protectors may be confidently fitted in conjunction with the H131-400 double action pivot set, subject to the inclusion of the previously detailed intumescent protection described for each item.

The tested doorset included hardwood timber lippings to all four edges, is shall therefore be a requirement of this appraisal that any door leaf to which the H131-P44 pivot protectors are fitted shall also include hardwood lippings to all four edges and that these lippings shall have a minimum thickness of 8 mm and a minimum density of 640 kg/m^3.

Subject to the observation of these requirements, the use of the H131-P44 pivot protectors, when fitted in conjunction with the H131-400 double-action pivot set, is positively appraised with timber doorsets which have previously achieved 30 minutes integrity performances.

60 minute applications – Halspan doorset

The proposal requires the Royde & Tucker Pivot assemblies and accessories listed in the table below to be fitted to previously fire tested (or assessed by Exova Warringtonfire, Chiltern International Fire or BM TRADA) timber doorsets constructed using Halspan tri-layer particleboard door cores.

To enable the use of the proposed hardware on a range of doorsets constructed using Halspan tri-layer particleboard cores 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 doors using Halspan tri-layer particleboard cores, the following points are given to enable the hardware to be used safely:

The timber doorset, 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, Chiltern International Fire or BM TRADA) to BS 476: Part 22: 1987.

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

The critical aspects of the doorset construction are considered to be the material of the door and door frame, the leaf to frame clearance gaps, the lipping material and the standard intumescent specification of the doorset. Attention should be paid to these details and these should not be amended from that previously fire tested. The following minimum specification will be followed:

a) The door leaf construction shall be formed from a Halspan tri-layer particleboard core (Prima or Optima) having a minimum core thickness of 42 mm and minimum overall thickness of 54 mm.

b) Door frame shall be hardwood with a minimum density of 650 kg/m³.

c) Leaf to frame clearance gaps not to exceed 3.5 mm average and 4.5 mm maximum.

d) Door leaves shall be lipped to all four edges with 8 mm thick hardwood lipping density having a minimum density of 650 kg/m³.

e) The standard intumescent specification of the doorset shall comprise:

- 2no. 15 x 4 mm seals to the door frame head and jambs spaced 10 mm apart and centrally fitted
- 2no. 15 x 4 mm seals to one door leaf meeting edge for double leaf doorsets
- 1no. 15 x 4 mm seal centrally fitted to the door leaf bottom edge

The individual pivot assemblies proposed are:

H131-100, H131-101, H131-102, H131-400, H131-401 and H131-402

Assessment of the performance of the pivot sets is made by comparison of their individual components with those of floor spring closers fitted to a previously, successfully tested Halspan doorset construction.

The fire resistance test report referenced as Chilt/RF96062 is cited in support of this appraisal and details a fire resistance test conducted in accordance with BS 476: Part 22: 1987 on a specimen of double-acting, double-leaf timber based doorset.

The doorset briefly comprised two Halspan particleboard cored door leaves each having nominal overall dimensions of 2040 mm high by 825 mm wide and 54 mm thick mounted within a hardwood timber door frame. The door leaves comprised a core of Halspan particleboard, 42 mm thick, faced on either side with 6 mm thick MDF and lipped to all four edges with hardwood timber, 10 mm thick.

The door leaves were supported on double action floor spring closers complete with double action mounting accessories comprising top pivot and strap and bottom strap.

The doorset achieved integrity and insulation performances of 64 minutes.

The critical factor when changing from one item of ironmongery to another is the size of the alternative item. A larger item may require more timber material to be removed from the leaf and therefore may provide an easier route for the passage of flames and/or hot gases leading to premature integrity failure.

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.

The proposed Royde & Tucker pivot sets comprise the 131-1** range and the 131-4** range.

Top components

All components are formed from either stainless steel strip or are cast stainless steel. All sets utilise the same frame mounted top part, differing only in square or radius edges for the two ranges respectively. The footprint of the top part of the proposed pivot sets has nominal dimensions of 25 mm wide by 130 mm long and 5 mm thick which compares favourably to the dimensions of the top centre frame portion originally tested which had footprint dimensions of 25 mm wide by 165 mm long by 6 mm thick.

Similarly the door portion of the top centre tested had dimensions of 29 mm wide by 122 mm long by 15 mm deep. The comparable component of the 131-1** pivot sets is the door plate which has dimensions of 25 mm wide by 110 mm long and 5 mm thick. For the 131-4** pivot sets the door plate is a cast steel component having dimensions of 25 mm wide by 46 mm long and 12 mm deep.

It can therefore be determined that the components fitted to the top part of the door and frame are generally smaller and have no dimensions greater than those of the tested components and therefore will require less removal of door leaf and frame material and less interruption to the intumescent seal specification at the door leaf to frame perimeter.

Further review of the tested specification shows that intumescent protection in the form of 2 mm thick graphite based intumescent sheet material was fitted around the pivot components fitted to both the door leaf and frame. Therefore is shall be a condition of this assessment that the same level and type of intumescent protection is provided to the proposed hardware. The intumescent material included in the original test is not referenced in the test report. Based on test experience, 'THERM-A-FLEX' graphite intumescent sheet material shall be required to be fitted.

Bottom components

Both ranges have identical door plates for top and bottom mounting to the door leaf. The bottom strap of the tested floor spring assembly had nominal dimensions of 24 mm wide by 235 mm long. Comparison of the door plates to the strap shows that the proposed components are negligibly wider at 25 mm but are much shorter, at 110 mm and 46 mm long, and therefore require much less removal of door material for their installation.

Where the original assembly was mounted on a floor spring closer mounted within a recess in the floor below the doorset, the proposed pivot sets are

either mounted on a frame/floor mounted 'L' bracket partially recessed into the door frame (131-100, 131-400) or a floor mounted pivot plate (131-101/2, 131-401/2).

The tested assembly included intumescent protection in the form of 2 mm thick graphite based intumescent sheet material was fitted around the bottom strap, therefore, is shall be a condition of this assessment that the same level and type of intumescent protection is provided to the door plates of the proposed hardware.

The floor mounted support plates can be considered as a comparable condition to the original tested assembly and therefore no additional intumescent protection is required to these components. For those models where an 'L' bracket support is used, the brackets shall be provided with a bedding of 2 mm thick intumescent sheet material of the same type as discussed for the other components. This intumescent bedding shall be provided between the contact faces of the bracket and the door frame.

60 minute applications – Moralt doorset

The proposal requires the Royde & Tucker Pivot assemblies and accessories listed in the table below to be fitted to previously fire tested (or assessed by Exova Warringtonfire, Chiltern International Fire or BM TRADA) timber doorsets constructed using a Moralt 'Lamincore' door blank.

To enable the use of the proposed hardware on a range of doorsets constructed using a Moralt 'Lamincore' door blank, 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 doors using the Moralt 'Lamincore' door blank, the following points are given to enable the hardware to be used safely:

The timber doorset, 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, Chiltern International Fire or BM TRADA) to BS 476: Part 22: 1987.

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

The critical aspects of the doorset construction are considered to be the material of the door and door frame, the leaf to frame clearance gaps, the lipping material and the standard intumescent specification of the doorset. Attention should be paid to these details and these should not be amended from that previously fire tested. The following minimum specification will be followed:

a) The door leaf construction shall be formed from a Moralt 'Lamincore' door blank overall minimum thickness of 54 mm and a 'Laminboard rail insert within the head of the door leaf nominally 30 mm high by 25 mm wide.

b) Door frame shall be hardwood with a minimum density of 640 kg/m^3.

c) Leaf to frame clearance gaps not to exceed 3.5 mm average and 4 mm maximum.

d) Door leaves shall be lipped to top, bottom and leading edges with 9 mm thick hardwood lipping, hanging edge shall be lipped with 15 mm thick radiused to minimum 10 mm. All lippings shall having a minimum density of 650 kg/m³.

e) The standard intumescent specification of the doorset shall comprise:

- 2no. 15 x 4 mm seals to the door leaf hanging edge spaced 8.5 mm apart and centrally fitted
- 2no. 15 x 4 mm seals to one door leaf meeting edge for double leaf doorsets, spaced 10 mm apart and centrally fitted
- 1no. 40 x 6 mm seal centrally fitted to the head of the door frame

The individual pivot assemblies proposed are:

H131-100, H131-101, H131-102, H131-400, H131-401 and H131-402

Assessment of the performance of the pivot sets is made by comparison of their individual components with those of floor spring closers fitted to a previously, successfully tested Moralt doorset construction.

The fire resistance test report referenced as Chilt/RF07055 is cited in support of this appraisal and details a fire resistance test conducted in accordance with BS 476: Part 22: 1987 on a specimen of double-acting, double-leaf timber based doorset.

The doorset briefly comprised two Spruce ply veneer cored door leaves each having nominal overall dimensions of 2600 mm high by 950 mm wide and 55 mm thick mounted within a hardwood timber door frame. The door leaves comprised a core of Moralt Spruce ply veneer, 47 mm thick, faced on either side with 4 mm thick particleboard with a rail insert of 'Laminboard' nominally 30 mm high by 25 mm thick within the head of each door leaf and lipped to all four edges with hardwood timber.

The door leaves were supported on double action floor spring closers complete with double action mounting accessories comprising top pivot and strap and bottom strap.

The doorset achieved integrity and insulation performances of 61 minutes. Initial integrity failure of the doorset was recorded as flaming to one of the glazed vision panels. No instance of integrity failure directly associated with the presence or performance of the floor spring or its pivot accessories was recorded during the 74 minute duration of the test.

The critical factor when changing from one item of ironmongery to another is the size of the alternative item. A larger item may require more timber material to be removed from the leaf and therefore may provide an easier route for the

passage of flames and/or hot gases leading to premature integrity failure.

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.

The proposed Royde & Tucker pivot sets broadly comprise the 131-1** range and the 131-4** range.

Top components

All components are formed from either stainless steel strip or are cast stainless steel. All sets utilise the same frame mounted top part, differing only in square or radius edges for the two ranges respectively. The footprint of the top part of the proposed pivot sets has nominal dimensions of 25 mm wide by 130 mm long and 5 mm thick which compares favourably to the dimensions of the top centre frame portion originally tested which had footprint dimensions of 25 mm wide by 165 mm long by 6 mm thick.

Similarly the door portion of the top centre tested had dimensions of 29 mm wide by 122 mm long by 15 mm deep. The comparable component of the 131-1** pivot sets is the door plate which has dimensions of 25 mm wide by 110 mm long and 5 mm thick. For the 131-4** pivot sets the door plate is a cast steel component having dimensions of 25 mm wide by 46 mm long and 12 mm deep.

It can therefore be determined that the components fitted to the top part of the door and frame have no dimensions greater than those of the tested components and therefore will require less removal of door leaf and frame material and less interruption to the intumescent seal specification at the door leaf to frame perimeter.

Further review of the tested specification shows that intumescent protection in the form of 1 mm thick Lorient Polyproducts 'MAPP paper' intumescent sheet material was fitted around the pivot components fitted to both the door leaf and frame. Therefore is shall be a condition of this assessment that the same level and type of intumescent protection is provided to the proposed hardware.

Bottom components

Both ranges have identical door plates for top and bottom mounting to the door leaf. The bottom strap of the tested floor spring assembly had nominal dimensions of 24 mm wide by 235 mm long. Comparison of the door plates to the strap shows that the proposed components are negligibly wider at 25 mm but are much shorter, at 110 mm and 46 mm long, and therefore require much less removal of door material for their installation.

Where the original assembly was mounted on a floor spring closer mounted within a recess in the floor below the doorset, the proposed pivot sets are either mounted on a floor mounted 'L' bracket recessed into the door frame (131-100, 131-400) or a floor mounted pivot plate (131-101/2, 131-401/2).

The tested assembly did not included intumescent protection to the bottom strap or floor spring, therefore, those models including a floor mounted support plate can be considered as a comparable condition to the original tested assembly and no requirement for additional intumescent protection is required to these components. For those models where an 'L' bracket support

is used, the brackets shall be provided with a bedding of intumescent sheet material of the same type and thickness as discussed for the other components and referenced as 1 mm thick Lorient Polyproducts 'MAPP paper'.

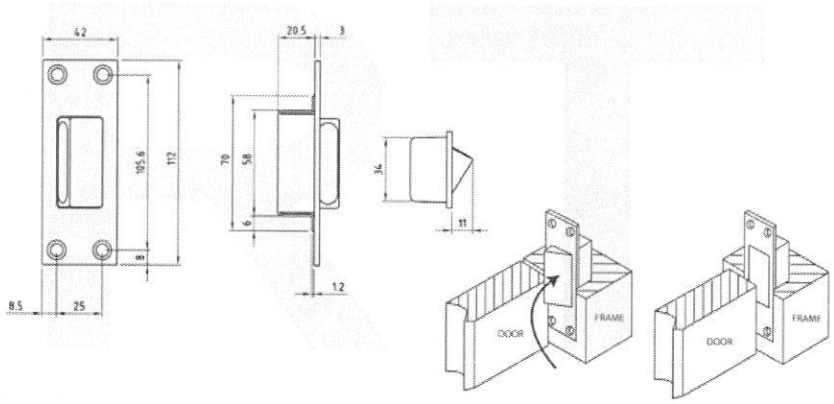
Emergency release door stops

It has been proposed that the Royde & Tucker range of emergency release door stops may be included in previously proven timber based single-leaf doorsets required to provide 30 and 60 minute fire resistance performances. The models considered by this assessment are:

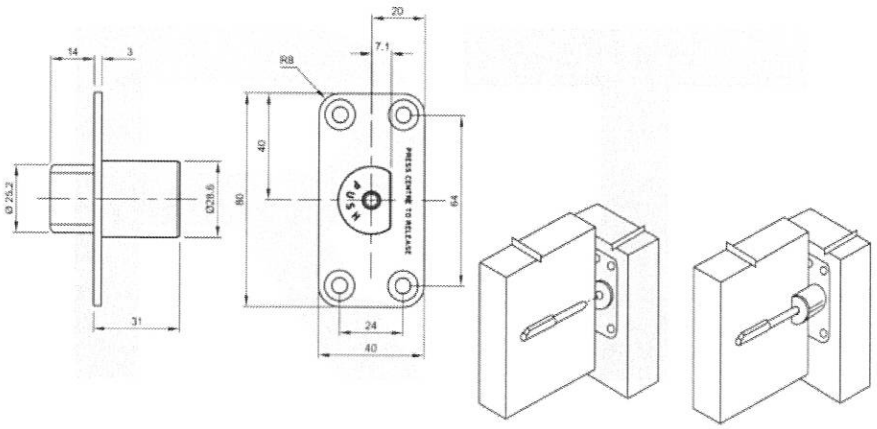
H131-105, H131-106, H131-107 and H131-300

All of the emergency release door stops detailed above are manufactured from Grade 304 stainless steel and are mounted within the door frame. The purpose of the hardware is to limit the door leaf of single-leaf doorsets to single swing in normal use, but allow the door to be opened in the opposite direction in the event of emergency access being required. The stops are designed for use with the Royde & Tucker pivot hardware previously discussed, but could equally be fitted in conjunction with other, suitable pivot hardware.

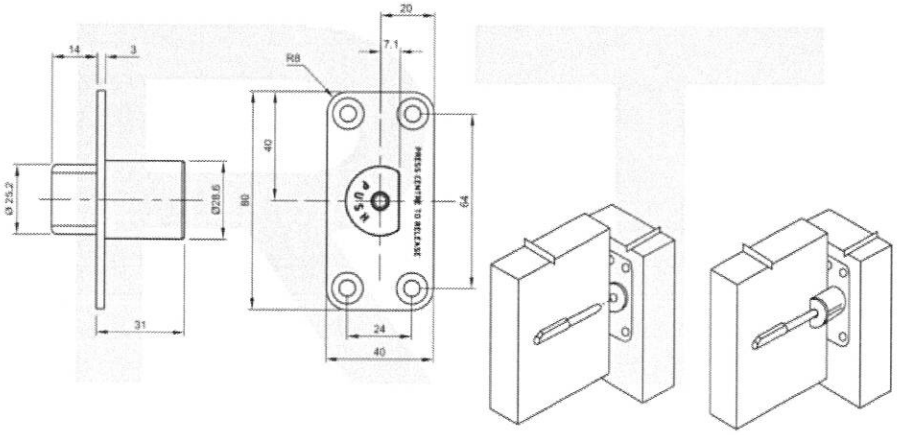
Details of the individual models are given in the figures below.



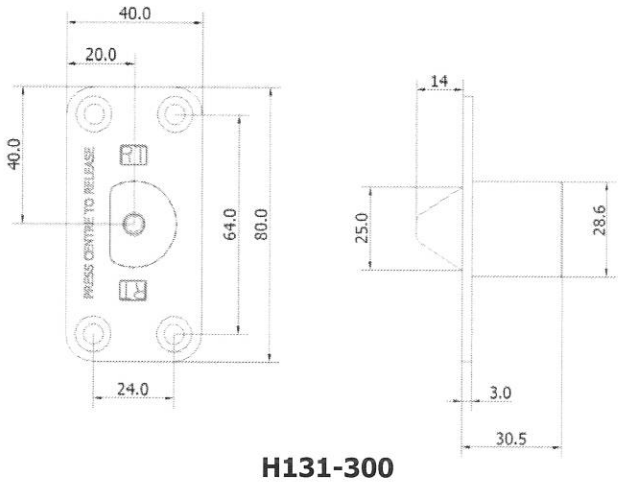
H131-105



H131-106



H131-107



H131-300

In all cases the items are morticed into the door frame such that they act on the face of the door leaf and do not fully protrude into the leaf to frame clearance gap. When fitted, the face plate of the item partially projects into the door gap by approximately 10-13 mm, dependent on model.

In consideration of the fact that the stops are all essentially surface mounted with no more than 13 mm projection into the leaf to frame clearance gap, it is considered acceptable to appraise their use with both 30 and 60 minute timber based doorsets. The positive appraisal of the stops is subject to the requirement that they are provide with a bedding of intumescent sheet material behind their face plates to negate any partial interruption of the doorset's standard intumescent seals where the stop's face plate projects into the door clearance gap.

The required intumescent bedding shall be a 1 mm thickness of Interdens sheet or a similar mono ammonium phosphate based intumescent sheet material.

Based on the above discussion, the Royde & Tucker emergency release door stops are positively appraised for use with previously proven, single-leaf timber based doorsets required to provide fire resistance performances of 30 or 60 minutes in terms of BS 476: Part 22: 1987.

Conclusions

Previously fire tested (or assessed by Exova Warringtonfire, Chiltern International Fire or BM TRADA) timber doorsets which have achieved 30 minutes integrity as discussed in this report may be fitted with H131 or H131-400 pivot hinges and H131-P44 pivot protectors (in conjunction with H131-400 pivot hinges), in accordance with recommendations given in this report, without detracting from the overall performance of the doorset for 30 minutes integrity performances (and insulation where relevant).

Previously fire tested timber doorsets constructed using a Halspan tri-layer particleboard door core or alternatively a Moralt 'Lamincore' door blank which have achieved 60 minutes integrity as discussed in this report may be fitted with the various Royde & Tucker pivot assemblies, in accordance with recommendations given in this report, without detracting from the overall performance of the doorset for 60 minutes integrity performances (and insulation where relevant).

Previously fire tested (or assessed by Exova Warringtonfire, Chiltern International Fire or BM TRADA) single-leaf timber doorsets which have achieved 30 or 60 minutes integrity as discussed in this report may be fitted with the H131-105, H131-106, H131-107 and H131-300 emergency release door stops, in accordance with recommendations given in this report, without detracting from the overall performance of the doorset for 30 or minutes integrity performances (and insulation where relevant).

The timber doorsets to which the items of hardware are to be fitted shall have been fire tested at a UKAS accredited laboratory (or assessed by Exova Warringtonfire, Chiltern International Fire or BM TRADA) to BS 476: Part 22: 1987, in a double-acting configuration, as discussed previously, and for the relevant period of integrity.

Review

It has been confirmed by Royde & Tucker Ltd that there have been no changes to the specification considered in the original appraisal, beyond

those identified and justified within 112848 Issue 5 of this report.

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. 112848 Issue 5, the contents should remain valid for a further 5 years. i.e. 15th November 2022.

This review is based on information used to formulate the original assessment. No other information or data has been provided by Royde & Tucker Ltd 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 Exova Warringtonfire, the assessment will be unconditionally withdrawn and **Royde & Tucker 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 15th November 2022, 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

CFR1009301

A fire resistance test conducted in accordance with BS EN 1634-1: 2008 to two timber based doorsets, one single-leaf double-acting and one double-leaf, single-acting.

The doorset designated as 'Left hand doorset' had nominal overall dimensions of 2255 mm high by 912 mm wide and incorporated a door leaf with nominal overall dimensions of 2201 mm high by 825 mm wide by 44 mm thick. The door leaf comprised a core of Halspan 'Prima' tri-layer particleboard lipped to all four edges with Sapele hardwood timber.

The door leaf was supported on a Royde & Tucker Ltd 'H131-400' double-acting pivot set complete with 'H131-P44' stainless steel pivot protectors fitted to the top and bottom edges of the door leaf's hanging stile.

The doorset was also fitted with a Royde & Tucker Ltd roller latch and strike plate referenced 'H131-771' and 'H131-516' respectively. The latch was engaged for the test.

The specimen doorset satisfied the test requirements for the following periods:

Test Results:		**Doorset A**
Integrity performance	Sustained flaming	50 minutes
	Gap gauge	51 minutes*
	Cotton Pad	50 minutes
Insulation performance		50 minutes

*The test duration. The test was discontinued after a period of 51 minutes

Date of Test 30th September 2010

Chilt/RF96062

A fire resistance test conducted in accordance with BS 476: Part 22: 1987 to a double-leaf, double-acting timber based doorset.

The doorset briefly comprised two Halspan particleboard cored door leaves each having nominal overall dimensions of 2040 mm high by 825 mm wide and 54 mm thick mounted within a hardwood timber door frame. The door leaves comprised a core of Halspan particleboard, 42 mm thick, faced on either side with 6 mm thick MDF and lipped to all four edges with hardwood timber, 10 mm thick.

The door leaves were supported on double action floor spring closers complete with double action mounting accessories comprising top pivot and strap and bottom strap. The doorset was not fitted with any form of latch and was therefore tested unlatched.

The specimen doorset satisfied the test requirements for the following periods:

Test Results:

Integrity performance	64 minutes
Insulation performance	64 minutes

The test was discontinued after a period of 68 minutes.

Date of Test 17th July 1996

Test Sponsor The sponsor of the test has provided permission for the use of the report in the preparation of the assessment

Chilt/RF07055

A fire resistance test conducted in accordance with BS 476: Part 22: 1987 to a double-leaf, double-acting, timber based doorset with glazing.

The doorset briefly comprised two Spruce ply veneer cored door leaves each having nominal overall dimensions of 2600 mm high by 950 mm wide and 55 mm thick mounted within a hardwood timber door frame. The door leaves comprised a core of Moralt Spruce ply veneer, 47 mm thick, faced on either side with 4 mm thick particleboard and lipped to all four edges with hardwood timber, 9 mm thick.

The door leaves were supported on double action floor spring closers complete with double action mounting accessories comprising top pivot and strap and bottom strap. Each door leaf also included a glazed vision panel having nominal sight sizes of 1145 mm high by 145 mm wide. The doorset was not fitted with any form of latch and was therefore tested unlatched.

The specimen doorset satisfied the test requirements for the following periods:

Test Results:

Integrity performance	61 minutes
Insulation performance	61 minutes

The test was discontinued after a period of 74 minutes.

Date of Test	1st May 2007
Test Sponsor	The sponsor of the test has provided permission for the use of the report in the preparation of the assessment

Declaration by Royde & Tucker 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:

ROYDE & TUCKER LTD

Signatories


Responsible Officer (Issue 5) M. Tolan* - Certification Engineer


Approved (Issue 5) A. Kearns * - Technical Manager

* For and on behalf of Exova Warringtonfire.

Report Issued: 15th March 2000

Issue 2 - H131-400 pivot hinge added 19th October 2005

Issue 3 – Inclusion of the H131-P44 pivot protector and associated test evidence. 22nd August 2012

Issue 4 – Inclusion of addition pivot hardware for use with 60 minute timber doorsets and emergency release door stops. 15th May 2015

Issue No: 5	Re - Issue Date : 16th November 2017
Revised By: M. Tolan	Approved By: A. Kearns
Reason for Revision: This document replaces issue 4 of the same number, which has been withdrawn. The content of this assessment has been reviewed and revalidated in accordance with the principles of the UK Fire Test Study Group Resolution 82: 2001.	