High Wycombe Office:
Chiltern House, Stocking Lane,
High Wycombe,
HP14 4ND,
United Kingdom
T: +44 (0)1494 569750
W: www.warringtonfire.com

Title

Field of Application for:

The Halspan® Prima 60 Range of Doorsets.

Part 1: Timber Based Door Frames

For 60 minutes Fire Resistance

Report No.:

FEA/F96103 Part 1 Revision Q

Issue Date:

30th May 2024

Valid Until:

30th May 2029

Job Reference:

WF544568

Prepared for:

Halspan Limited
Regent House,
Regent Centre,
West Lothian,
EH49 7HU
United Kingdom

Written permission must be obtained from Halspan Limited in order to manufacture doorsets within the scope of this assessment.

This field of application report FEA/F96103 Part 1 Revision Q is one part of the suite of (Prima 60) assessments, other parts of the suite address other doorset designs.

Registered Office:
Warringtonfire Testing and Certification Limited, 3rd Floor, Davidson Building, 5 Southampton Street, London, WC2E 7HA, United Kingdom Co. Reg. No. 11371436

11 Installation

11.1 General

This section considers the installation of doorsets. This section considers:

- the door frame and architrave installation position relative to the wall
- the fire stopping between the frame and the wall
- the fixing requirement including packers
- the requirements for door edge gaps
- the trimming of door edges

11.2 Door Frame Installation

The following sub-sections provide tested and assessed acceptable door frame installations, which are dependent on the Frame type chosen.

11.2.1 Door Frame Installation – Frame 1, 2, 3 and 7

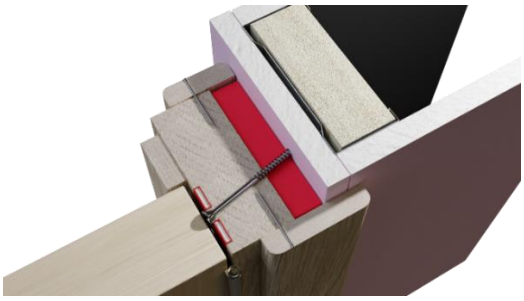
The following figures indicate the acceptable door frame installations. Please note that the firestopping element is provided in the below 3D models as a generic coloured seal. For further clarification of the approved firestopping systems see section 11.3.

This installation detail applies to all four sides of the 4-sided frame detailed in section 7.7.

Architraves requirements are documented in the firestopping section of this report.

11.2.1.1 Frame Fitted Flush to the Face of The Wall

In all instances this installation detail assumes the frame construction is as detailed within section 7 for each respective frame type.

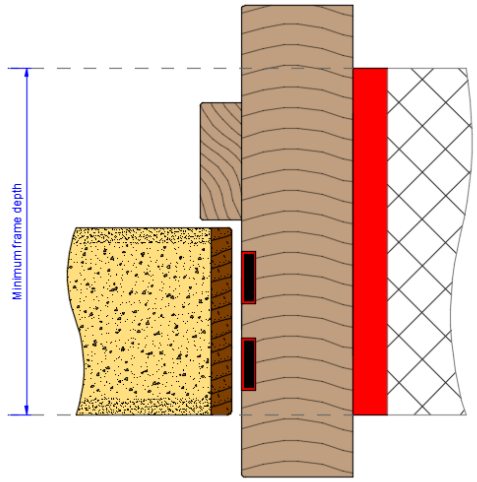
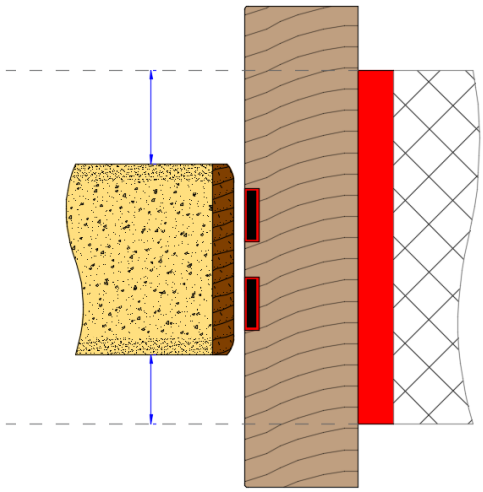
Permitted Installations	
	Instances where the door frame and the wall of the same depth such that architraves may be fitted flush to both faces. Note that the minimum door frame section size (width and depth) must be as per the requirements noted in this report – see section 7.
	Instances where the wall thickness is greater than the door frame depth. In this scenario, architraves when applied, may be fitted to both faces. Where the architrave cannot physically overlap both the wall and the frame it is permitted to apply the architrave abutting the wall as depicted in the figure to the left. Note that the minimum door frame section size (width and depth) must be as per the requirements noted in this report – see section 7.
	Split frames are permitted providing that both frame sections are secured to the wall in accordance with section 11.5. Furthermore, the frame section to which the door leaf is hung must be constructed to at least the minimum door frame section size (width and depth) as per the requirements noted in section 7. The extension piece must be constructed using the one of the materials permitted for the construction of door frames.

Note:

The drawings are provided as a generalised illustration of the door frame installation only; actual installation must be as per the text within this document specifies.

11.2.1.2 Frame Fitted Projecting the Face of The Wall (Leaf fitted within the thickness of the wall)

In all instances this installation detail assumes the frame construction is as detailed within section 7 for each respective frame type. In particular the requirement to offset each face of the leaf of double acting doorsets from each face of the wall, must be complied with.

Permitted Installations	
	**Single Acting Arrangement** Instances where the door leaf is fitted flush to wall face. The minimum door frame section size (width and depth) must be as per the requirements noted in this report – see section 7. And be positioned within the grey dotted section (shown left).
	**Double Acting Arrangement** Instances where the door leaf is fitted set back from each face of the wall as required in section 7 for each permitted frame type respectively. (shown left – in blue). The minimum door frame section size (width and depth) must be as per the requirements noted in this report – see section 7. And be positioned within the grey dotted section (shown left).
Split frames are permitted for single acting arrangements only, providing that: • Both frame sections are secured to the wall in accordance with section 11.5. • The main frame section meets the minimum frame section sizes and projection as shown above is in excess of the minimum frame sizes. • The extension piece must be constructed using the same timber species as the main frame section.	

Note:

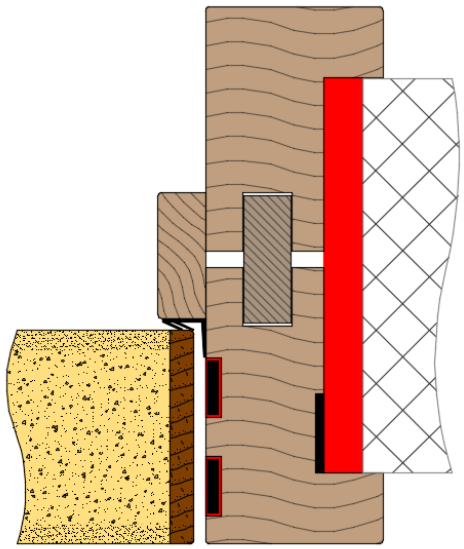
The drawings are provided as a generalised illustration of the door frame installation only; actual installation must be as per the text within this document specifies.

11.2.2 Door Frame Installation – Frame 4

The installation is based on test reference CFR2211141 (Left Hand doorset).

The frame must be fitted with the two parts to wrap around the wall as shown, with the integral architraves fitting to the face of the wall.

The following figure indicates the acceptable door frame installation.

Permitted Installation	
	Frame 4 is permitted providing that both frame sections are secured to the wall in accordance with section 11.5. Note that the minimum door frame section sizes must be as per the requirements noted in this report – see section 7. Firestopping shall be as detailed in section 11.3.2.

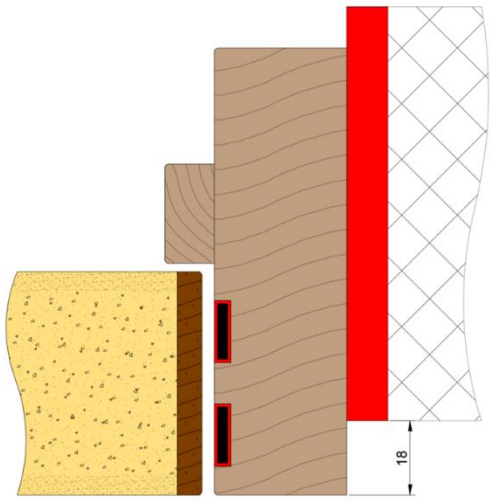
Note:

The drawing is provided as a generalised illustration of the door frame installation only; actual installation must be as per the text within this document specifies.

11.2.3 Door Frame Installation – Frame 5 – Projecting

The following figures indicate the acceptable door frame installations. Please note that the firestopping element is provided in the below 3D models as a generic-coloured seal. For further clarification of the approved firestopping systems see section 11.3.

Architraves requirements are documented in the firestopping section of this report.

Permitted Installations	
	The opening and / or closing face of the frame is permitted to project by a maximum of 18mm beyond the wall, based on CFR2211141 (Left Hand doorset). Note that the minimum door frame section size (width and depth) must be as per the Frame 5 requirements noted in this report – see door frame section. In this scenario, architraves when applied, may be fitted to the side of a frame which does not project from the wall. Where the architrave cannot physically overlap both the wall and the frame it is permitted to apply the architrave abutting the wall as depicted in the figure to the left.

Note:

The drawing is provided as a generalised illustration of the door frame installation only; actual installation must be as per the text within this document specifies.

11.2.4 Door Frame Installation – Shadow gaps

11.2.4.1 General

The testing of frames with integral architraves (frame type 4) and projecting door frames (frame type 5) demonstrates that timber based frame types are capable of a degree of resistance to fire from the rear when the frame material protrudes beyond the face of the wall.

CFR2211141B, WF504819 and WF504821 tested frames featuring integral architraves which protruded into the furnace by 18mm, as did the face of the door leaves.

A specific shadow gap detail was also tested in WF508668 and WF508198. These tests provide evidence of the performance of the associated trims and intumescent protection for the shadow gap details listed within this section.

Based on the testing referenced above shadow gap details are permitted within the following parameters:

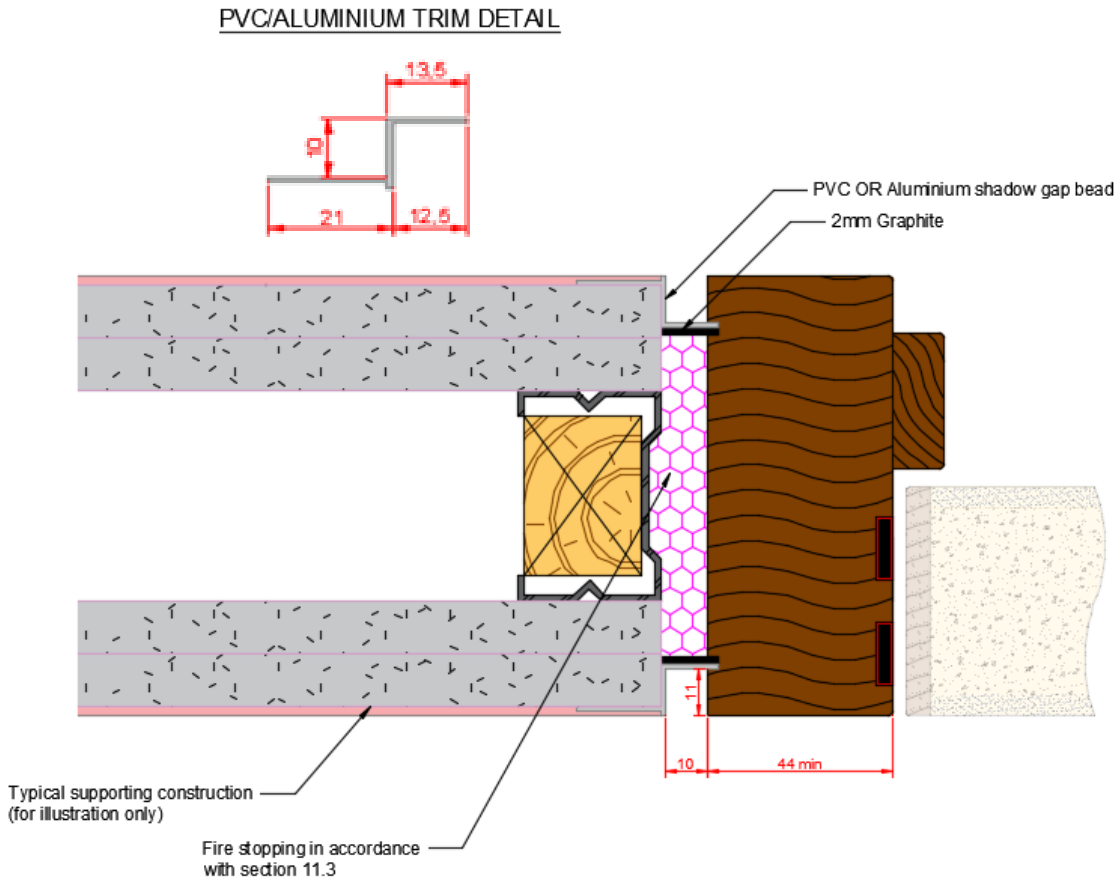
Frame: 1 and 3

- In all instances the frame must be as detailed below and otherwise to the specification in 7.1.1 and 7.3.1.
- This installation detail may be applied to all four sides of the 4-sided frame detailed in section 7.7 when utilised.

Configurations: LSASD, ULSASD, DASD, LSADD, ULSADD, DADD and permitted with the leaf sizes and intumescent specifications in section 4.5 unless other limiting factors need to be applied based on the use of specific items of hardware or installation methods (e.g. utilising a 4-sided frame where the intumescent requirements within section 7.7 must also be complied with).

The following sections outline the permitted shadow gap details which are considered by this assessment:

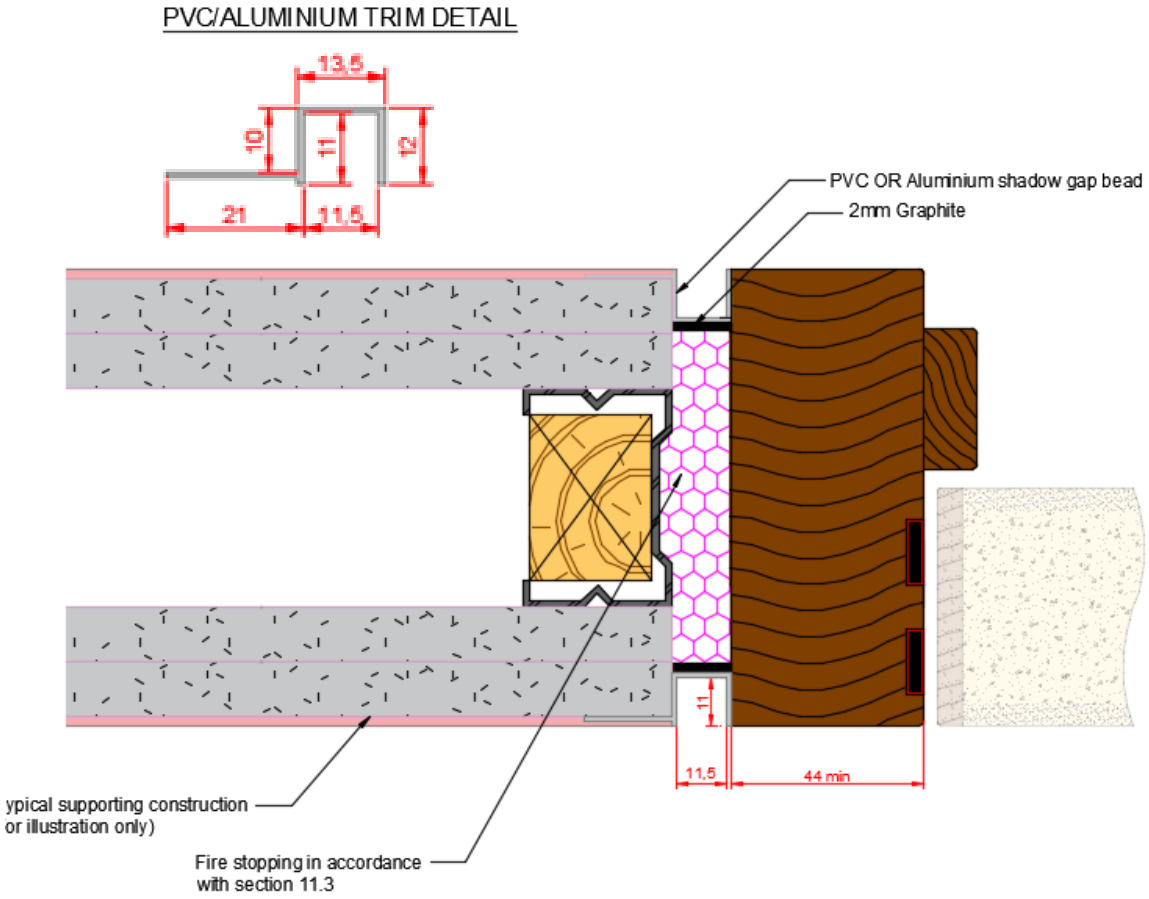
11.2.4.2 Shadow Gap – Option A



Permitted Specifications:

- The shadow gap is formed to the rear of the frame by a reduction in the depth of the fire stopping material and the application of a PVC / aluminium trim as depicted above.
- The overall dimensions of the PVC / Aluminium trim must be no greater than those depicted above except that the thickness of the item may be between 0.8mm and 1.5mm thick.
- It is permitted to groove the trim and associated intumescent (as required below) into the rear of the door frame by no more than 3mm.
- The PVC / aluminium trim must be protected by
  - 2mm thick graphite strip applied lining the rear of the trim material as depicted above.
- The intumescent must be fitted around the whole perimeter of the door frame.
- Minimum frame widths must be as defined below:
  - For single acting doorsets the minimum frame section width after any rebates have been taken out of the back of the frame must remain as 44mm.
  - For double acting doorsets the minimum frame section width after any rebates have been taken out of the back of the frame must remain as 54mm.
  - Where a minimum frame width / thickness is specified for a particular item of hardware (e.g. Concealed Transom Closer, Section 10.7.5.), in order to utilise shadow gaps, the minimum dimension provided in the hardware section must be increased by a minimum of 10mm.
- Fire stopping is carried out in accordance with section 11.3.4, as applicable for the shadow gap option.

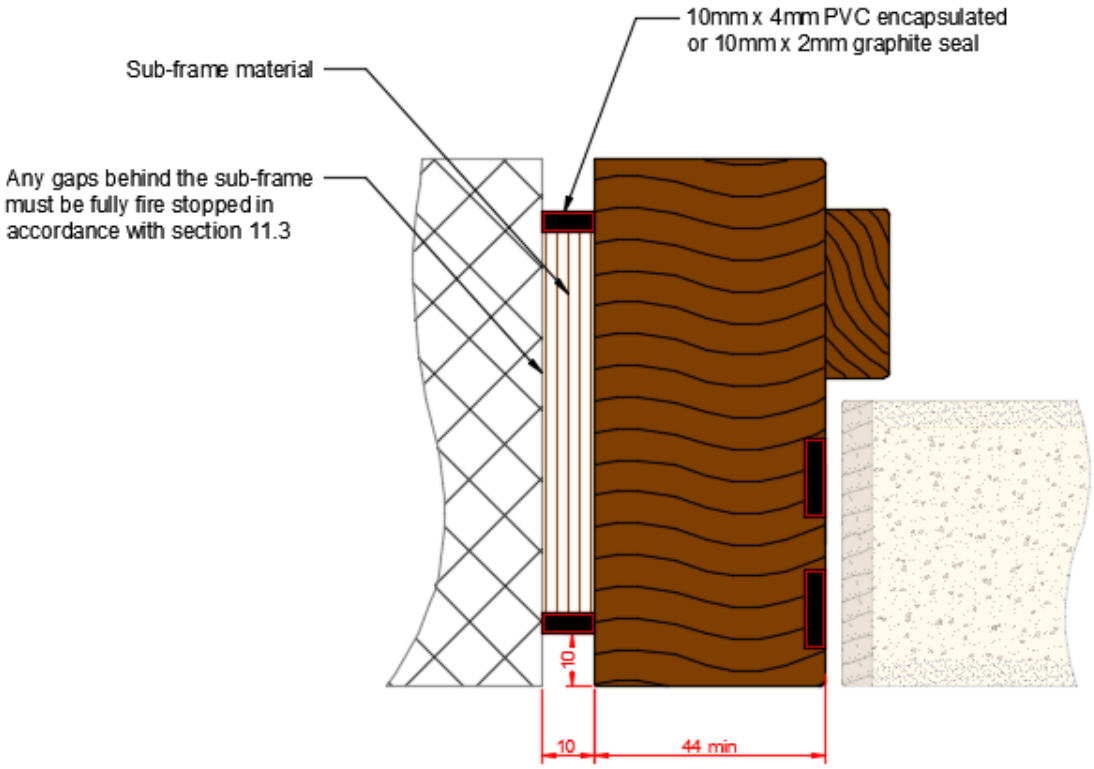
11.2.4.3 Shadow Gap – Option B



Permitted Specifications:

- The shadow gap is formed to the rear of the frame by a reduction in the depth of the fire stopping material and the application of a PVC / aluminium trim as depicted above.
- The overall dimensions of the PVC / Aluminium trim must be no greater than those depicted above except that the thickness of the item may be between 0.8mm and 1.5mm thick.
- The PVC / aluminium trim must be protected by
    - 2mm thick graphite strip applied lining the rear of the trim material as depicted above.
- The intumescent must be fitted around the whole perimeter of the door frame.
- Minimum frame widths must be as defined below:
    - For single acting doorsets the minimum frame section width after any rebates have been taken out of the back of the frame must remain as 44mm.
    - For double acting doorsets the minimum frame section width after any rebates have been taken out of the back of the frame must remain as 54mm.
    - Where a minimum frame width / thickness is specified for a particular item of hardware (e.g. Concealed Transom Closer, Section 10.7.5.), in order to utilise shadow gaps, the minimum dimension provided in the hardware section must be increased by a minimum of 10mm.
- Fire stopping is carried out in accordance with section 11.3.4, as applicable for the shadow gap option.

11.2.4.4 Shadow Gap – Option C

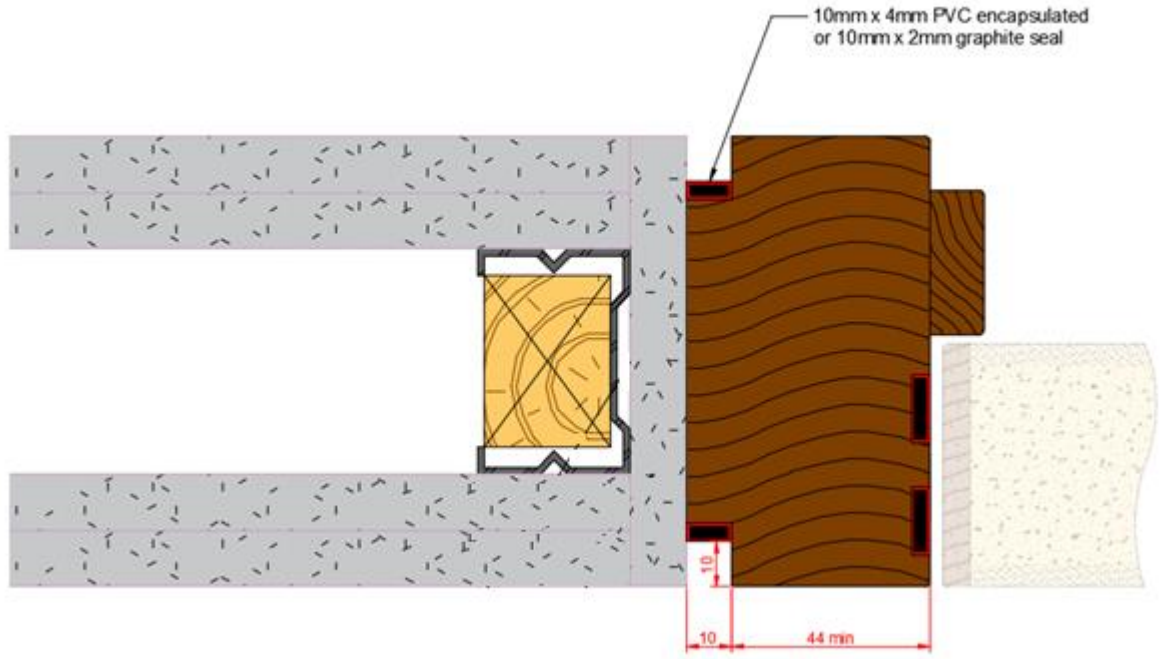


Permitted Specifications:

- The shadow gap is formed to the rear of the frame by the application of a sub-frame.
- Sub-frame materials must be formed from a single piece of material without joints across any single length, the permitted materials are:
    - Hardwood (excluding beech, Fagus species) with a density >640kg/m³
    - Plywood with a density >600kg/m³
    - MDF with a density >700kg/m³
    - Particleboard with a density >600kg/m³
    - Non-combustible board
- The sub-frame when applied must be fixed with steel screws appropriate for timber substrates. The screws must be applied through the sub frame into the rear of the door frame positioned at 100mm from ends and no greater than 350mm centres. Fixings must penetrate the rear of the frame by a minimum of 20mm. A twin line of fixings is optionally permitted. The joint must be additionally reinforced with PU or PVA adhesive.
- The shadow gap after the fitting of the required intumescent material is a maximum of 10mm wide x 10mm deep.
- The shadow gap must be protected by either:
    - a 10mm wide x 2mm thick graphite strip or
    - a 10mm x 4mm PVC encapsulated graphite seal
- The chosen intumescent must be fitted to the base of the shadow gap around the whole perimeter of the door frame (as depicted above).
- Minimum frame widths must be as defined below:
    - For single acting doorsets the minimum frame section width after any rebates have been taken out of the back of the frame must remain as 44mm.

  - For double acting doorsets the minimum frame section width after any rebates have been taken out of the back of the frame must remain as 54mm.
  - Where a minimum frame width / thickness is specified for a particular item of hardware (e.g. Concealed Transom Closer, Section 10.7.5.), in order to utilise shadow gaps, the minimum dimension provided in the hardware section must be increased by a minimum of 10mm.
- Fire stopping is carried out in accordance with section 11.3.4, as applicable for the shadow gap option.

11.2.4.5 Shadow Gap – Option D



Permitted Specifications:

- The shadow gap is formed to the rear of the frame by rebating the frame by 10mm wide x a maximum of 14mm deep.
- The shadow gap after the fitting of the required intumescent material is a maximum of 10mm wide x 10mm deep.
- The shadow gap must be protected by either:
    - a 10mm wide x 2mm thick graphite strip or
    - a 10mm x 4mm PVC encapsulated graphite seal
- The chosen intumescent must be fitted to the base of the shadow gap around the whole perimeter of the door frame (as depicted above).
- Minimum frame widths must be as defined below:
    - For single acting doorsets the minimum frame section width after any rebates have been taken out of the back of the frame must remain as 44mm.
    - For double acting doorsets the minimum frame section width after any rebates have been taken out of the back of the frame must remain as 54mm.
    - Where a minimum frame width / thickness is specified for a particular item of hardware (e.g. Concealed Transom Closer, Section 10.7.5.), in order to utilise shadow gaps, the minimum dimension provided in the hardware section must be increased by a minimum of 10mm.
- Fire stopping is carried out in accordance with section 11.3.4, as applicable for the shadow gap option.

11.3 Firestopping

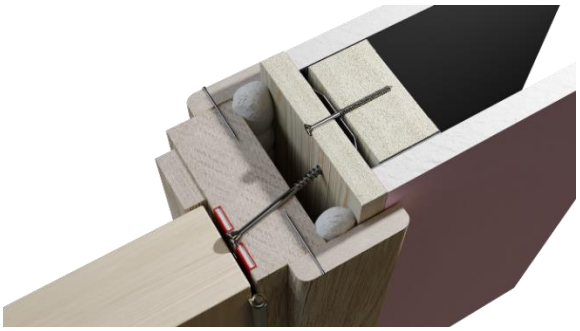
The following sub-sections provide tested and assessed acceptable door frame firestopping requirements which are dependent on the Frame type chosen.

11.3.1 Firestopping – Frame 1, 2, 3, 7

The firestopping requirements between the back of frame and wall are dependent on the gap size between the substrates. The table below provides the requirements based upon the gaps size. Please note that in the 3D depictions noted below show the application where a door frame is of the same depth as the overall wall thickness.

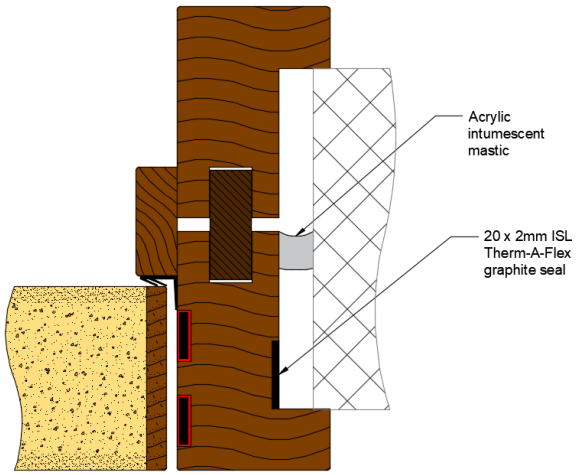
This installation detail also applies to all four sides of the 4-sided frame detailed in section 7.7.

Gap (mm)	Requirement	3D model depiction
Up to 10	Gap must be sealed on both sides with a 10mm depth of acrylic intumescent mastic, fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1. If the evidence for the fire stopping used included architraves, they must be fitted as tested. Architraves may be fitted to both faces.	
Up to 20	Gap must be tightly packed with mineral fibre capped on both sides with a 10mm depth of acrylic intumescent mastic, fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1 or full depth expanding PU foam, fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1. If the evidence for the fire stopping used included architraves, they must be fitted as tested. Architraves may be fitted to both faces.	 

Gap (mm)	Requirement	3D model depiction
Over 20	A timber based or non-combustible subframe up to 50mm thick x the depth of the frame can be inserted and fixed to the wall bedded on a continuous bead of intumescent mastic, the gap between door frame and subframe filled as follows: Subsequent gaps between the frame and the subframe of 5 to 10mm must be filled utilising one of the options given above. Architraves may be fitted to both faces.	 

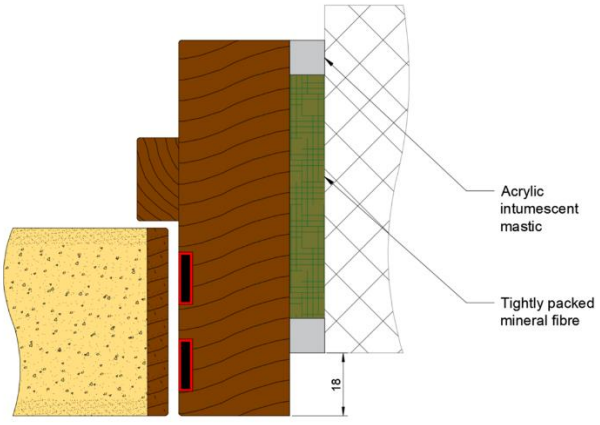
11.3.2 Firestopping for Frame 4

When installing frame 4, the following firestopping must be used, based on test reference CFR2211141 (Left Hand doorset).

Gap (mm)	Requirement	Depiction
3 – 7	Intumescent comprising 20 x 2mm ISL Therm-A-Flex is required to be recessed into the rear of the frame as shown. A 10mm depth of acrylic intumescent mastic, fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1, must be applied as shown to the primary frame section before the installation of the secondary frame section.	

11.3.3 Firestopping for Frame 5 – Projecting

The firestopping requirements between the back of frame and wall are dependent on the gap size between the substrates. The table below provides the requirements based upon the gaps size.

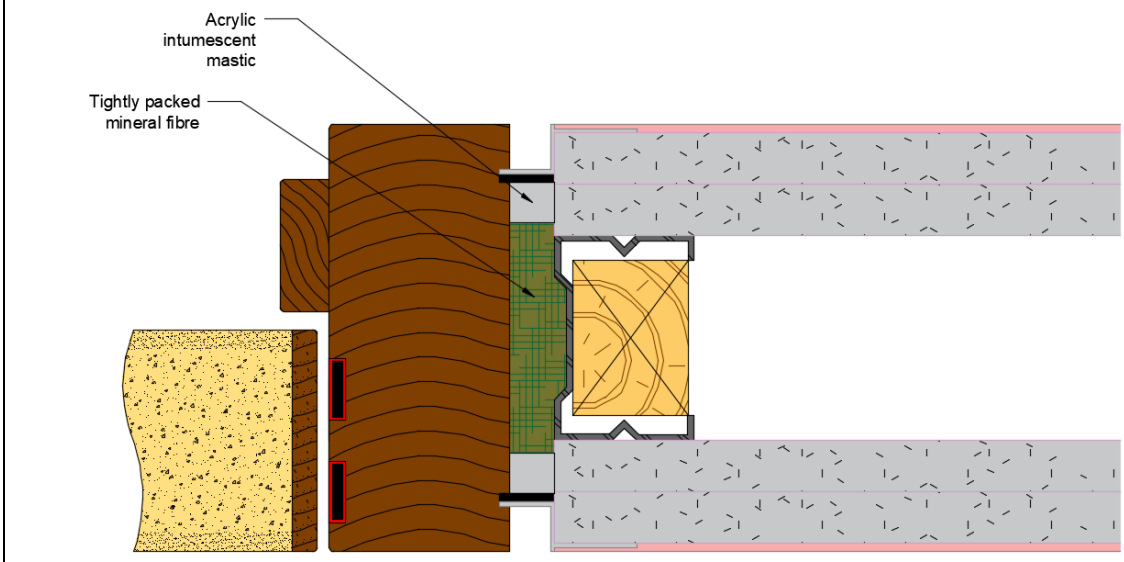
Gap (mm)	Requirement	Depiction
Up to 20	Gap must be tightly packed with mineral fibre capped on both sides with a 10mm depth of acrylic intumescent mastic, fire tested for this application to BS 476: Part 22: 1987. If the evidence for the fire stopping used included architraves, they must be fitted as tested. Architraves may be fitted to both faces, when fitted.	

11.3.4 Firestopping for shadow gap detail

When installing a shadow gap detail as detailed within section 11.2.4, the following firestopping must be used depending on the shadow gap option utilised.

11.3.4.1 Firestopping – Shadow Gap – Options A & B

The shadow gap options (A & B) as detailed within section 11.2.4.2 & 11.2.4.3 must utilise the following method of firestopping:

Gap (mm)	Requirement
Up to 13.5	Gap must be tightly packed with mineral fibre capped on both sides with a 10mm depth of acrylic intumescent mastic, fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1. Architraves are not required.
Depiction	
	

Gaps greater than 13.5mm are not permitted.

11.3.4.2 Firestopping – Shadow Gap – Options C & D

The shadow gap options (C & D) as detailed within section 11.2.4.4 & 11.2.4.5 must utilise the following method of firestopping:

Gap (mm)	Requirement
Up to 3	Bedded on 2No. nominally Ø6mm continuous beads of acrylic intumescent mastic, fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1. The beads must be set back 5mm from each face of the framing material. Architraves are not required.

Gaps greater than 3mm are not permitted.

11.4 Packers

Packers can be timber of equal density to the frame, or, MDF or plywood or plastic packers if fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1.

Packers should be of a suitable size and set in place to allow the fire stopping materials to be applied over the top.

Packers should not be left exposed when architraves are not applied. Where packers are exposed, regardless of the packing material, they should be cut back at least 5mm and capped with tested intumescent mastic.

11.5 Wall Types, Structural Opening & Fixity

11.5.1 Wall Types

The following wall types are approved for this doorset design:

a) Plasterboard clad timber stud partitions
b) Plasterboard clad steel stud partitions including timber lining.
c) Masonry constructions

Wall types a & b above must have supporting fire resistance test evidence which demonstrates that it is capable of staying in place and intact for a minimum of 60 minutes supporting a doorset design.

Wall type c above must be determined to be able to provide at least the same level of fire resistance of the doorset design.

All wall types detailed above shall provide a suitable medium to permit adequate fixity, it is anticipated that for:

- Plasterboard clad timber stud partitions, the timber stud will be of sufficient dimensions such that the fixing for the door frame penetrates into solid timber.
- Plasterboard clad steel stud partitions will include a timber lining of sufficient dimensions such that the fixing for the door frame penetrates into solid timber.
- Masonry constructions are anticipated to be constructed of a solid block or brickwork to receive the fixings.

Note: Other tested solutions to achieve adequate fixity may be detailed within the above noted supporting fire resistance test evidence.

11.5.1.1 Minimum wall thickness

For Frame 4, in addition to the requirements in section 11.5.1 the wall must be a minimum of 100mm thick.

When installed with the shadow gap detail in section 11.2.4, in addition to the requirements in section 11.5.1 the wall must:

a) be a minimum of 100mm thick

11.5.2 Structural Opening

For all wall types the structural opening shall be square, plumb and provide a flat surface for installation of the doorset.

For flexible wall types such as steel and timber stud partitions the structural opening must be prepared in line with the test evidence provided by the wall manufacturer.

11.5.3 Fixity

In all instances the fixing position must be such that it provides adequate restraint to the element of construction throughout the exposure to fire. This may therefore sometimes necessitate a twin line of fixings.

For single leaf doorset without fanlights or sidepanels, the frame jambs only are to be fixed to the supporting construction using steel fixings at 600mm maximum centres and maximum of 150mm from corners. The fixings must be of the appropriate type for the supporting construction and must penetrate to a minimum depth of 50mm. It is not necessary to fix the frame head.

For all other configurations of doorset, the upper horizontal framing section abutting the structural opening (i.e. frame head on double doors) must also be secured to the wall using steel fixings at 600mm maximum centres and maximum of 150mm from corners. The fixings must be of the appropriate type for the supporting construction and must penetrate to a minimum depth of 50mm.

For split frames which include two elements (including extension liners), both sections of the frame shall be fixed to the supporting structure as detailed above.

11.6 Post Production (Onsite) Leaf Size Adjustment

The Prima 60 range of doorsets may be altered as follows:

Leaf Size Adjustment Specification	
Element	Reduction
Lipping	The post-production lipping thickness for flat timber based lippings may be reduced by 1mm for fitting purposes, providing that the door gaps and intumescent conditions remain as required by this assessment and the minimum limitation in terms of lipping thickness is still maintained. Otherwise, no modification can be made.

11.7 Door Gaps

Door gaps and alignment tolerances must fall within the following range:

Door Gap & Alignment Tolerance Specification	
Location	Dimension
Door edge gaps	A minimum of 2mm and a maximum of 4mm
Alignment tolerances	Leaves must not be proud of each other or from the door frame by more than 1mm but may be fitted to sit back from the opening face by up to 2mm. The following specific requirement for Double Acting arrangements, take precedence: • Required set back distances given in section 7 must be complied with. The following specific requirement for Single Acting arrangements (as considered in section 11.2.1.2), take precedence: • Leaves must not be proud of the wall face by more than 1mm but may be fitted to sit back from the opening face of the wall by up to 2mm.
Threshold / Bottom edge of the leaf This is the maximum tolerance for fire resistance only.	8mm between bottom of leaf and top of floor covering. The following specific gap requirements, for designs as detailed in section 7, take precedence: • 4-sided timber frame with door stop (section 7.7): a minimum of 2mm and a maximum of 4mm between bottom of leaf and timber threshold. • Hardwood timber threshold (section 7.8): 8mm between bottom of leaf and timber threshold. • Aluminium threshold (section 7.9): 4mm between bottom of leaf and aluminium threshold at the opening side of the doorset.

12 Insulation Performance

Insulation performance may be claimed for a doorset to this design meeting the following:

Insulation Performance Criteria	
Type	Details
Non-insulating	Doorsets incorporating greater than 20% of non-insulating glazing
Partially insulating	Doorsets incorporating up to 20% of non-insulating glazing
Fully insulating	Unglazed doorsets or doorsets including 60-minute insulating glazing